Phase I and II Geoenvironmental Site Assessment
Bennett Street, Manchester

Reference: 15-974-R1-2
Date: December 2022

PHASE I & II GEOENVIRONMENTAL SITE ASSESSMENT

Bennett Street
Manchester
M12 5NL

Prepared for:
Kellen Homes

Report Ref: 15-974-R1-2
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QUALITY ASSURANCE

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EXECUTIVE SUMMARY

Site Address	Bennett Street, Manchester, M12 5NL
Grid Reference	E 386189, N 397031
Site Area	6.08 Ha.
Proposed Development	Kellen Homes are considering the proposed acquisition and future redevelopment of a parcel of land off Bennett Street, Manchester, for low-rise housing and apartment blocks with associated gardens, adopted estate roads, and utility infrastructure. Two branches of Corn Brook are culverted beneath the site recorded as Corn Brook, anticipated at the central area of the site running east-west, and Black Brook (Corn Brook diversion), expected to run from the north boundary in a southwesterly direction. Both have been culverted. E3P understands that Kellen intent to keep Corn Brook active and divert Black Brook as per the proposed development plan.
Background	E3P has been commissioned by Kellen Homes to undertake a detailed Phase II Geoenvironmental Site Assessment at land north of Bennett Street, Manchester, M12 5NL. E3P completed an initial phase of intrusive investigation across the site in December 2021. During the initial phase of site works, the site was in use as an active storage yard; as such, some areas of the site were not accessible due to the presence of shipping containers and buildings. Following the removal of shipping containers and demolition of structures across the site, in line with the RE-1 in Section 3.8 of the E3P Remediation and Enabling Works Strategy (Ref: 15-974-R2-1, dated July 2022), a supplementary investigation was undertaken to determine potential contaminated land liabilities and remediation requirements required in the previously inaccessible area of the site. In addition to the above, following correspondence with the EA, E3P has investigated the underlying principal aquifer and culverts present across the site to determine the quality of the culverted water surface waters and bedrock aquifer beneath the site and the requirement for any remedial action. This report is required to determine potential contaminated land liabilities, remediation requirements, and geotechnical engineering works that will be required as part of the proposed development for a proposed low-rise residential development.
Current Site Use	The subject site is a parcel of land located north of Bennett Street, Manchester, and is currently occupied by a container storage depot with associated offices, waste material stockpiles, and several existing buildings. The majority of the site has shipping containers stacked for storage with various miscellaneous items/waste stored around the site. Large aggregate stockpiles are present in the east of the site. Significant clearance operations are expected at the site.

Current Site Use	There is one disused corrugated metal warehouse in the northeast corner of the site; access inside was not permitted due to surrounding waste materials stockpiles. A larger brick warehouse is present in the southwest corner of unknown use. An office building is present in the central west of the site, with overhead services supplying the building. An above-ground storage tank was on a raised platform utilised for refuelling. This was noted to be in poor condition with localised spillages at ground level. A bund was not present.	
Site History	A review of the pertinent Ordnance Survey mapping suggests that circa 1848 the site comprised agricultural land with a building in the centre of the site marked as Burgess Villa. Two channels of Corn Brook run through the site in an east-to-west direction. By circa 1890, the site was recorded as an iron foundry with associated features appearing to include two ponds, travelling crane, and rail sidings. The Corn Brook channels are no longer marked and are assumed to have been culverted. The iron foundry had been expanded by circa 1905, and Manchester City Football Ground was also present in the southern part of the site. The boiler works and ponds are no longer marked. In circa 1922, the iron foundry is no longer mapped on the site. Buildings were developed, and a transport depot is recorded from circa 1932. The football ground is no longer mapped after this time. By 1980 the transport depot had been marked as a bus depot, and the site layout remains largely unchanged until the present day. During the Capita walkover in 2020 (CS/097181-PRA-V2, March 2020) a printers was noted within the eastern area of the southern warehouse, with vehicle inspection pits noted associated with its former use as a bus maintenance depot. Contaminative uses identified in the immediate surrounding area include railways and historical boiler works.	
Environmental Setting	**Drift Geology**	Glacial Till - Devensian
	Bedrock Geology	Chester Formation – West – SANDSTONE Manchester Marls Formation – Central – MUDSTONE Collyhurst Sandstone Formation – East – SANDSTONE
	Faults	The Ardwick Fault is located on the western site boundary with the downthrow to the east.
	Hydrogeology	Secondary undifferentiated aquifer in the Drift geology. Principal aquifer in the Chester Formation and Collyhurst Sandstone Formation, secondary B aquifer in the Manchester Marl.
	Hydrology	Two Corn Brook branches are recorded on the site– Corn Brook, anticipated at the central area of the site, running east-west, and Black Brook (Corn Brook diversion), anticipated to run from the north boundary in a south-westerly direction. Both have been culverted.

Environmental Setting	Flood Risk	The site is in flood risk zone 2 and has a high risk for surface and groundwater flooding in the southwest corner.
Natural Landform and Geomorphology	The site has a generally flat topography, altered only by the stockpiles of waste across the site. Originally it is likely that the site topography fell towards the original course of Corn Brook. When this was culverted, the site was levelled. During various phases of development and demolition, further changes to site level were likely. More recently, there is evidence that stockpiles of construction and demolition waste have been placed on this.	
Previous Reports	The following previous reports have been completed for the site: • **White Young Green (WYG)** – *Ground Contamination Desktop Study Report*. Reference E11066/DTS-V1, December 2006. Prepared for Braidwater Ltd. • **WYG** – *Phase II Geo-Environmental Ground Investigation Interpretative Report*. Reference E11056-1, January 2008. Prepared for Braidwater Ltd. • **CAPITA** – *Geoenvironmental Desk Study*. Reference CS/019/097181-PRA-V2, March 2020. Prepared for G L Hearn.	
Utility Locations	Service plans were obtained and reviewed, and subsequently identified significant utility infrastructure across the site. Ground-penetrating radar (GPR) borehole clearance was undertaken before any intrusive works took place. It is recommended that an updated full underground utility survey is completed before any earthworks commence due to the sensitive nature of the services and infrastructure they support.	
Landfill Sites and Ground Gases	No landfill sites (current or historical) are located within 250 m of the site. The site has undergone some historical development and ground working, the Made Ground associated with the historical development and infilling of historic ponds may produce hazardous ground gases such as methane and carbon dioxide.	
Radon	Between 1-3% of houses above the 'Action Level' – no special precautions are required.	
Hazardous Installations	No permitted hazardous installations have been identified within 250 m of the site.	

Initial Conceptual Site Model	**Contaminant Source** - Infilled Pond : Heavy metals, PAH, asbestos and ground gas. - Iron Foundry: Heavy metals, PAH, TPH and asbestos. - Former Transport Depot: Heavy metals, PAH, SVOC, VOC, BTEX, TPH and asbestos. - Printers: Heavy metals, PAH, SVOC, VOC, TPH and asbestos. - Tanks and localised spillages: TPH, BTEX, PAH, VOC and SVOC. - Former Football Stadium: Heavy metals, PAH and asbestos. - Railway sidings: Heavy metals, PAH and TPH. - Historic buildings: Asbestos
Initial Conceptual Site Model	**Pathways** - Direct contact and ingestion - Volatilisation/indoor explosion - Vapour inhalation - Dust inhalation - Soil ingestion - Vertical / Lateral Migration - Uptake by plants **Receptors** - Future site users (proposed residential end-users and construction workers) - Buildings (proposed residential units) - Infrastructure (water pipelines) - Corn Brook - Underlying aquifer (Principal and Secondary B bedrock aquifer)

GROUND INVESTIGATION

Ground Investigation Works	E3P completed an initial phase of intrusive ground investigation in December 2021 comprising: - 36 x window sample boreholes - UXO supervision/clearance - 5 x rotary open holes - 3 x cable percussive boreholes - Groundwater sampling - 23 x installation of shallow environmental monitoring wells - 3 x installation of deep environmental monitoring wells. E3P completed a supplementary intrusive ground investigation in October 2022 comprising: - 30 x mechanically excavated trial pits; - 4 x Rotary boreholes; - Culvert water sampling; and - Construction of environmental monitoring installations within the principal aquifer.
Ground Conditions	**MADE GROUND – 0.00 m bgl to 4.40 m bgl** Made Ground deposits have been encountered within all exploratory hole locations to a maximum proven depth of 5.45 m bgl (WS106). Although in general, Made Ground in the south of the site extends to circa 2.00 m bgl and 3.00 m in the north. Beneath the main building in the south-east, Made Ground was proven to a depth of 1.30 m bgl and comprised concrete over yellowish-brown, slightly clayey gravel over reworked gravelly clay. Made Ground could not be proven to its full extent at WS106, WS111, WS112, WS115, WS124, WS128 and WS136. This was due to obstructions in the east of the site, cobbles within Made Ground or dense Made Ground. During the supplementary ground investigation, the full extent of Made Ground could not be proven within five locations (TP107, TP110, TP123, TP126 and TP128) due to the instability of pits, pit collapse and the influx of groundwater. In general, the majority of locations identified asphalt or concrete surface cover overlaying reworked gravelly clays containing gravel of mixed lithology, including brick, concrete, clinker, ash, ceramic, sandstone and coal. Beneath former structures in the north east and south of the site, concrete was generally underlain by blackish brown gravelly fine to medium sand, with gravels of concrete, mudstone, sandstone, and brick between depths of 0.40 – 2.10 m bgl (TP127). Fragments of metal, ceramic, and timber were also encountered within this material. In one location, the concrete slab was underlain by soft grey clay with plant debris between 0.05 – 1.10 m bgl (TP118).

Ground Conditions	Hydrocarbon odours were identified in 16 of the 36 locations within Made Ground, with no evidence of any specific separate phase impact. Relict foundations will likely be present across the site, beneath former and existing building footprints and railway tracks. A Depth of Made Ground Plan is presented as Drawing 15-974-006 in Appendix III.
	DRIFT – 0.40 m bgl to 30.50 m bgl Drift deposits were identified within the majority of exploratory hole locations to a maximum proven depth of 30.50 m bgl (RB202). In general, drift deposits were encountered as a firm to very stiff brown CLAY with varying sand content. Drift geology was generally homogenous across the site. Granular deposits comprising brown gravelly SAND with gravel of sandstone and mudstone were generally found at greater depth (>10.00 m bgl) overlying the bedrock. Pockets of organic deposits were identified at 3.50 m bgl within WS113.
	BEDROCK: 12.10 m bgl to 40.00 m bgl Bedrock was encountered within the advanced rotary boreholes only between 12.10 m bgl (RB104) and 30.50 m bgl (RBH202) to a maximum proven depth of 40.00 m bgl. A red SANDSTONE was identified beneath the drift overlying a reddish grey MUDSTONE with SANDSTONE bands. In general, the bedrock is shallower in the east of the site and deeper in the west.
	GROUNDWATER – Groundwater was encountered between 0.50 m bgl to 1.80 m bgl during the site investigation.

CONTAMINATED LAND ASSESSMENT

Human Health	A Tier I human health risk assessment has been undertaken using the chemical analysis results of the soils and comparing them to the relevant Tier I criteria (residential end-use with plant uptake), as this is the worst-case scenario. The results of this direct comparison indicate that the data exceeds the screening criteria for a residential end-use for the following contaminants: - Asbestos - chrysotile - Heavy metals – arsenic, lead, mercury, zinc - PAHs – naphthalene, acenaphthylene, acenaphthene, fluorene, fluoranthene, phenanthrene, pyrene, benzo(a)anthracene, chrysene. - benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno, 1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(ghi)perylene - Hydrocarbon fractions - C10-C12, C12-C16, C16-C21 and C21-C35 - 2,4-Methylphenol

Human Health	2, 4-dimethylphenol In relation to heavy metals, non-volatile PAHs and TPH C16-35, these contaminants have primary exposure pathways related to dermal contact, ingestion of soils, and consumption of homegrown vegetables. The risk to chronic human health associated with the elevated concentrations of heavy inorganic metals and non-volatile PAH compounds can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils. The upfilling of the site may help form a part of this. In relation to mercury exceedances, for the majority of samples analysed, mercury was found to be non-volatile and therefore the risk can be mitigated through the construction and validation of suitable clean cover systems. Where samples could not be quantified, a theoretical risk remains, these areas should be treated as isolated hotspots requiring speciated testing during the remediation and enabling works. SVOCs above the limit of detection (LOD) have been identified across the site within Made Ground. These detected compounds have been compared to the available Atkins ATRSK tables, and this indicates one exceedance at WS121. Dibenzofuran, carbazole, anthraquinone, 2-methyl naphthalene and 2,4-dimethylphenol do not have prescribed GAC values. As such, any presence has been considered a potential risk. In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. The majority of the SVOC exceedances are identified in locations with elevated levels of volatile TPH, which is attributed to be the source of the SVOCs. On review of the current site activities, it is considered highly likely that the original cobbles across the site are bounded by coal tar cement. Prior to the supplementary investigation, the cobbles had been lifted and removed. This recorded a reduction in TPH exceedances – as anticipated – as the source of TPH, the coal tar, has been removed. To mitigate the residual risk from SVOCs across the site, a provision for vapour membranes should be made for all proposed plots. This would remove the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation. Asbestos in the form of chrysotile has also been identified within a localised area in shallow Made Ground deposits (WS125 at 0.50m bgl). Asbestos quantification has shown <0.001 % asbestos therefore, soils should be placed beneath a cover system depth. No visual signs of ACM were encountered during the ground investigation; it is, therefore, likely that only trace fibres are present. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model Chemical analysis of the natural drift deposits has identified these soils to be acceptable for use as subsoil within any landscaping areas. There are no suitable sources of topsoil at the site.

Controlled Waters	Potential sources of mobile/soluble phase contaminant impact were identified at the site in the form of tanks, Made Ground and the site's historical use as a transport depot, printers and iron foundry. The results of the data review and Tier I qualitative risk assessment have allowed E3P to draw the following conclusions with respect to the risk to controlled waters: • There have been multiple phases of ground investigation, which has enabled reasonable characterisation of the pollution risk and potential to impact the critical receptors; • Low permeability cohesive clay deposits encountered beneath the site will inhibit the downward migration of contamination and offer protection to the underlying aquifers. • Site-wide heavy metal, PAH and isolated TPH exceedances have been recorded within leachate analysis and perched groundwater. This is considered to be associated with residual impact on shallow anthropogenic materials. All primary and secondary pollution sources have now been removed from the site in their entirety. • Within Black Brook, minor heavy metals (copper and zinc) and PAH (anthracene and fluoranthene) exceedances have been identified in comparison to EQS. However, significant exceedances of naphthalene and TPH (C10-C16) exceedances have been identified in comparison to the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, with a more significant TPH and naphthalene impact likely associated with the current and historical industrial activities in the wider area (off site). Further surface water testing should be undertaken up and downstream during remediation and enabling. • Within Corn Brook – identified as the primary receptor – minor exceedances of heavy metal (zinc and total cyanide) and PAH (naphthalene) exceedances have been identified in comparison the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, likely associated with the wider industrial activities in the area. Further surface water testing should be undertaken up and down stream of the site to confirm this. • No exceedances of determinant tested within the principal aquifer groundwater samples against DWS. • Relatively low-level exceedances of heavy metals and PAH were identified within BH202 and BH204 compared to EQS. Given the lack of active groundwater abstraction recorded within 1km of the site, low permeability of the overlying drift limiting vertical migration and low solubilities and concentrations of heavy metal and PAH recorded, there is considered to be no unacceptable risk to the underlying aquifer.

	- Black Brook is to be diverted as part of the proposed development and will be fully encapsulated, as such, it is not considered that Black Brook will be in hydraulic continuity with the site upon completion of these works. - Corn Brook is to remain untouched, at this stage, it is assumed that it is in hydraulic continuity with the site. As such, Corn Brook has been identified to be the critical receptor for controlled waters. - A full survey for Corn Brook is not currently available. However, it is likely that the culvert is sealed off from the site as such, not in hydraulic conductivity. A survey should be completed to confirm the condition of the Corn Brook culvert, with repairs made in areas of degradation and damage. Upon completion of this works it is considered that there will not be a direct contamination pathway between the site and surface water features, as such, no unacceptable risk of the controlled water receptor will be present. - Further analysis of the surface water in Black Brook and Corn Brook should be undertaken as groundworks progress to ensure no future mobilisation of contaminants is caused, which may pose a risk to the watercourse.
Ground Gas	Sources of ground gas at the site include Made Ground, tanks and formerly infilled ponds. Ground gas monitoring suggests that the site can be predominantly classified as CS1, and in these areas, it is considered that gas protection measures against carbon dioxide and methane will not be required. However, due to the presence of site-wide residual SVOC impact within the soils across the site, provision for vapour membranes should be made for all plots.
Potable Water Infrastructure	This will need to be confirmed following the completion of a UKWIR risk assessment. Post-remediation and enabling works ground conditions may be different from those identified during this site investigation. The site is likely to require a barrier pipe.

COAL MINING ASSESSMENT

Coal Mining	The site is located in a coal mining reporting area but not within a development high-risk area. However, the Coal Authority interactive map shows underground workings are present beneath the site to the east. E3P has reviewed the historical reports, desk study, BGS geological mapping and CA information, in addition to completing nine 40 m rotary boreholes to investigate shallow mine workings. A summary of the findings is included below: • Across two phases of intrusive ground investigations comprising a total of nine, deep, rotary boreholes E3P did not identify any shallow coal seams or evidence of historic mine workings to the base of the boreholes. • Reasonably deep drift at the site may suggest historic shallow mining would not be viable. • No evidence of surface disturbances or record of the same in the Coal Authority report. • During the E3P works completed to date, no evidence has been noted to support the presence of a viable shallow coal seam beneath the site. • No evidence is encountered of historical shallow workings.

GEOTECHNICAL ASSESSMENT

Underground Obstructions	Above-ground and underground obstructions have been encountered at the site during the investigation. These obstructions include existing buildings, areas of hardstanding across the majority of the site and foundations from the former buildings in the north and eastern sectors of the site. During a phase of cut-and-fill enabling works to create a development platform, all below-ground obstructions will require grubbing out in their entirety to facilitate foundations. A full turnover of the site will also be required to the base of Made Ground. Two branches of Corn Brook are culverted beneath the site recorded as Corn Brook, anticipated at the central area of the site running east-west and Black Brook (Corn Brook diversion) anticipated to run from the north boundary in a south westerly direction. Both have been culverted. E3P understands that Kellen intent to keep Corn Brook active and divert Black Brook as per the proposed development plan.
Allowable Bearing Pressure	An ABP in the order of 100 kN/m^2 can be achieved at circa 2.00 m across the majority of the site based on existing ground levels. An ABP in the order of 200 kN/m^2 can be achieved from circa 2.50 m bgl. Clayey SAND was identified at depth within the cable percussive boreholes and was identified as medium dense and dense with an ABP of 400 kN/m^2 from 6.00 m bgl.

Foundation Options	A phase of cut-and-fill enabling works will be required to create a proposed development platform suitable for residential development. This will generally comprise increasing levels across the site. Therefore, upon completion of these enabling works, it is likely that the most cost-effective option for the majority of the site would be to re-engineer the newly placed granular Made Ground using vibro-replacement stone columns (VRSC) to support a shallow strip or spread foundation. A foundation solution based on current ground levels would likely utilise a combination of the shallow strip, mass trench and VRSC. Foundation depths within the conjectured influence of former, existing or proposed trees will need to be deepened to ensure that structural loading bears within the underlying target founding stratum, which cannot be subject to volumetric instability associated with fluctuation in moisture content. Piling may not be feasible in areas of sensitive infrastructure, including the underground culvert.
Building Floor Slabs	Ground-bearing floor slabs are unlikely to be viable given the depths of reworked Made Ground > 600 mm and shallow cohesive soils.
Heave Precautions	Given that the underlying clay is of medium volume change potential, heave precautions will be required for the internal face of a foundation that is less than 1.5 m in depth. Heave precautions will be required to the underside of floor slabs (where there is no 200 mm void) and pile ground beams are required within the modelled influencing distance of trees. An engineered design will be required in areas of proposed apartment blocks.
Soakaway Drainage	Permeability testing has not been undertaken to date. However, due to the presence of shallow Made Ground onto low permeability cohesive deposits, soakaway drainage is likely to be unviable at the site. Should soakaways be used in the development, all soakaways should be designed in accordance with BRE Special Digest 365 – Soakaway Design.
Sulphate Assessment	The soils generally meet class DS-1, AC-1s. Elevated sulphate concentrations meeting Class DS-2, AC-1s were noted within the Made Ground deposits in WS123b, WS125 and WS133. DS-4, AC-3s are identified at WS121. However, upon completion of site enabling works it will, in all likelihood, be DS-1 AC-1s.
CBR Design %	Granular soils can be re-engineered to ensure 5% within the subgrade during favourable climatic conditions. Natural clay soils will provide a CBR in the order of 3–5% during drier climatic periods. However, if water is allowed to shed onto the formation, the CBR will reduce to < 2%, which will require specialist engineering of the subgrade.
Cut/Fill	Development levels are unknown at this time; however, it is known that levels are due to be raised, as confirmed by the developed Kellen Homes. As such, it is likely a significant program of cut-and-fill works will be likely be required to prepare the development platform. Levels of the site are to be raised by circa 500 mm to mitigate flood risk. The existing stockpiles of waste material are unlikely to be suitable for use in increasing site levels.
Civil Engineering Excavations	Site observations indicated that excavations should be feasible on the near-surface with normal plant equipment.

	Shallow concrete obstructions were encountered during the E3P ground investigation in the east of the site. Further obstructions are likely to be present below the current building footprints. During a phase of cut fill enabling works to create a developable platform, all below-ground obstructions will require grubbing out in their entirety to facilitate abnormal foundations. If local pumping of groundwater is required during the advancement of excavations for the proposed foundations, then consideration should be given to the potential for dewatering gravels in the surrounding areas that may cause structural damage to building substructures close to the site.
Waste Characterisation	Any material that is to be disposed of off-site should undergo assessment using Technical Guidance WM3: *Waste Classification – Guidance on the classification and assessment of waste*.I t is likely that barrier pipe will be utilised at the site.

RECOMMENDATIONS

Based on the findings of the geoenvironmental site assessment, the following additional works are recommended to be completed in due course:

- Plot-specific foundation schedule (upon receipt of the final development levels).
- Arboriculture survey.
- Retaining wall survey.
- Remediation and enabling earthworks strategy.
- Construction Phase Surface Water Management Plan.
- CL:AIRE DoW CoP Material Management Plan.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

1. INTRODUCTION 16
1.1. Background 16
1.2. Proposed Development 16
1.3. Objectives 17
1.4. Scope of Works 18
1.5. Limitations 18
1.6. Confidentiality 18

2. SITE SETTING 19
2.1. Site Details 19
2.2. Current Site Use 19
2.3. Surrounding Area 20

3. SITE HISTORY 21
3.1. On-Site Historical Development 21
3.2. Off-Site Historical Development 23
3.3. Planning History 24
3.3.1. Enforcement Notices 25
3.4. Anecdotal Information 25
3.5. Previous Reports 25

4. ENVIRONMENTAL SETTING 29
4.1. Geology and Hydrogeology 29
4.2. Natural Landform and Geomorphology 31
4.3. Geotechnical Data 32
4.4. Coal Mining 32
4.5. Coal Mining Information 33
4.5.1. Coal Mining Geology 35
4.6. Coal Mining Risk Assessment 36
4.1. Radon Risk Potential 37
4.2. Preliminary Geotechnical Assessment 37
4.3. Hydrology 38
4.4. Industrial Land Uses 38
4.5. Sensitive Land Uses 39
4.6. Site Sensitivity Assessment 39

5. CONSULTATIONS 41
5.1. Contaminated Land Officer 41
5.2. Landfill Sites and Waste Treatment Sites 41
5.3. Regulatory Database 41
5.4. Unexploded Ordnance 42

6. INITIAL CONCEPTUAL SITE MODEL 43
6.1. Conceptual Site Model 44

7. GROUND INVESTIGATION 49
7.1. General Overview 49
7.2. Limitations of the Investigation 49
7.3. Scope of Investigation 49
7.4. In-Situ Standard Penetration Testing (SPT) 51
7.5. Laboratory Analysis 52



8. GROUND AND GROUNDWATER CONDITIONS 53
8.1. Summary of Ground Conditions 53
8.2. Made Ground 55
8.3. Drift Deposits 56
8.4. Solid Geology 56
8.5. Groundwater 56
8.6. Visual and Olfactory Evidence of Contamination 57
8.7. Soil Consistency 59
8.8. Side Stability and Ease of Excavation 72
8.9. Consolidation 72
8.10. Soil Plasticity 72
8.11. pH and Sulphate 73

9. TIER I QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT 75
9.1. Human Health Risk Assessment 75
9.1.1. human health Risk Assessment and Mitigation 81
9.2. Controlled Waters Risk Assessment 87
9.2.1. Controlled Water Risk Assessment and Mitigation 99
9.2.2. YSI Slow Flow Data 101
9.2.3. m-BAT Assessment 104
9.2.4. Discussion of Controlled Waters Risk Assessment 104
9.2.5. Surface water features ..... **Error! Bookmark not defined.**
9.2.6. Principal Aquifer 106
9.2.7. Controlled Water Summary 106
9.3. Ground Gas 107
9.4. Monitoring Methodology 109
9.4.1. Summary of Monitoring Results 109
9.4.2. Groundwater 113
9.4.3. Barometric pressure 113
9.4.4. Gas Flow 113
9.4.5. Gas Concentrations 113
9.4.6. Conclusion 113
9.5. Potable water supply 115
9.6. Conceptual Site Model 116

10. COAL MINING 127
10.1. Scope of Intrusive Ground Investigation 127
10.2. Summary of Ground Investigation Works 127
10.2.1. Rotary Boreholes to Investigate Workings in Coal 127
10.3. Summary of Coal Mining Issues 128

11. GEOTECHNICAL ASSESSMENT 128
11.1. Site Preparation 128
11.2. Foundation Conditions and Assessment of Potential Bearing Capacities 128
11.3. Ground Floor Slabs 134
11.4. Heave Precautions 134
11.5. Highways Construction 135
11.6. Drainage 135
11.7. Concrete Durability 136
11.8. Excavations 136
11.9. Construction Activity and Inspection 137
11.10. Geotechnical Risk Register 138
11.11. Further Works 140

12. CONCLUSIONS AND RECOMMENDATIONS 141
12.1. Contaminated Land Assessment 141
12.2. Coal Mining 144
12.3. Geotechnical Assessment 144

APPENDIX I LIMITATIONS 146

APPENDIX II GLOSSARY 148

APPENDIX III DRAWINGS 151

APPENDIX IV PHOTOGRAPHS 153

APPENDIX V E3P EXPLORATORY HOLE LOGS 160

APPENDIX VI CHEMICAL AND GEOTECHNICAL TESTING RESULTS 161

APPENDIX VII ORIGIN OF TIER I GENERIC ASSESSMENT CRITERIA 162

APPENDIX VIII COAL AUTHORITY REPORT 164

APPENDIX IX HISTORICAL MAPS 165

APPENDIX X HISTORICAL CHEMICAL DATA 166

DRAWING LIST

15-974-001 - Site Location Plan
15-974-002 - Proposed Development Plan
15-974-003 - Historical Features Plan
15-974-004 - Site Features Plan
15-974-005 - Exploratory Hole Location Plan
15-974-006 - Depth of Made Ground Plan
15-974-008 - Depth to Founding Strata Plan
15-974-010 - Conceptual Site Model – Human Health
15-974-010 - Conceptual Site Model – Controlled Waters
15-974-011 - Culvert Location Plan
15-974-012 - Development Constraints Plan
15-974-013 - Human Health Exceedance Plan
15-974-014 - Depth to Bedrock Plan
15-974-023 - Historical Exploratory Hole Plan
15-974-024 - Historical Contamination Issues Plan (Human Health)

1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Kellen Homes to undertake a detailed Phase II Geoenvironmental Site Assessment at land north of Bennett Street, Manchester, M12 5NL.

E3P completed an initial phase of intrusive investigation across the site in December 2021. During the initial phase of site works, the site was in use as an active storage yard. As such, some areas of the site were not accessible due to the presence of shipping containers and buildings.

Following the removal of shipping containers and demolition of structures across the site, in line with the RE-1 in Section 3.8 of the E3P Remediation and Enabling Works Strategy (Ref: 15-974-R2-1, dated July 2022), a supplementary investigation was undertaken to determine potential contaminated land liabilities and remediation requirements required in the previously inaccessible area of the site.

In addition to the above, following correspondence with the EA, E3P has undertaken an investigation of the underlying principal aquifer and culverts across the site to determine the quality of the culverted water surface waters and bedrock aquifer beneath the site and the requirement for any remedial action.

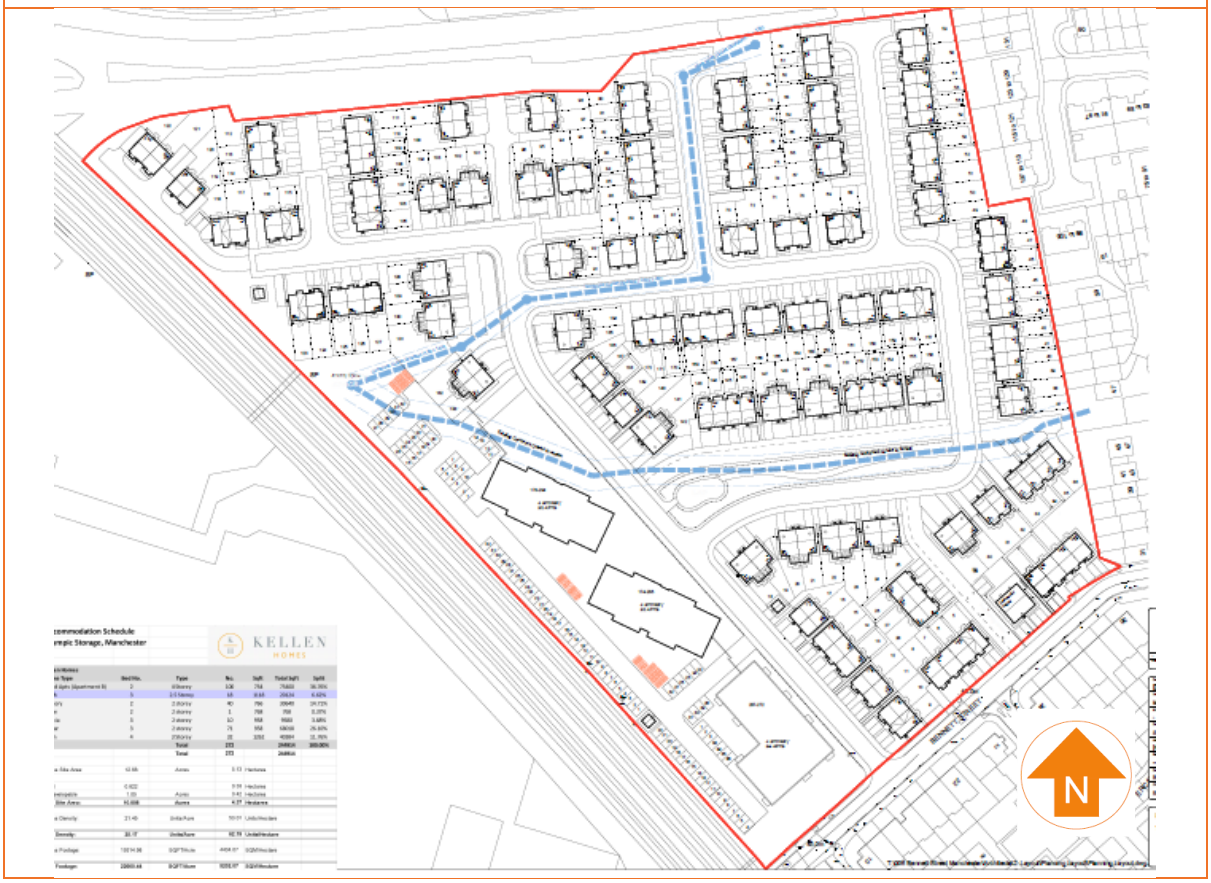
This report is required to determine potential contaminated land liabilities, remediation requirements and geotechnical engineering works that will be required as part of the proposed development for a proposed low-rise residential development.

1.2. PROPOSED DEVELOPMENT

Kellen Homes intends to construct a mixed-use development comprising low-rise housing and apartment block with adopted estate roads and infrastructure.

Two branches of Corn Brook are culverted beneath the site recorded as Corn Brook, anticipated at the central area of the site running east-west and Black Brook (Corn Brook diversion) expected to run from the north boundary in a southwesterly direction. Both have been culverted. E3P understands that Kellen intends to keep Corn Brook active and divert Black Brook as per the proposed development plan presented in Figure 1.1.

FIGURE 1.1 SNAPSHOT OF PROPOSED DEVELOPMENT



1.3. OBJECTIVES

The objectives of the geoenvironmental assessment are as follows:

- Undertake site wide sampling and analysis targeting contamination sources (former transport depo, foundry, football ground and printers) to provide an overview of environmental issues identified.
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and relation to off-site receptors.
- Assess the geotechnical information and provide preliminary recommendations in relation to foundations, pavement construction and floor slabs.
- Provide recommendations regarding future works required.

1.4. SCOPE OF WORKS

Mulitple phases of work have been undertaken including the following elements:

- A detailed review of historical information;
- Design of suitable intrusive ground investigation;
- Window sample probeholes with, and construction of, environmental monitoring installations;
- Deep cable percussive boreholes with groundwater monitoring installations;
- Rotary boreholes with and construction of environmental monitoring installations;
- In-situ geotechnical testing;
- Chemical and geotechnical laboratory analysis;
- Groundwater and culverted surface water monitoring and sampling;
- Ground gas monitoring;
- Contamination risk assessment and conceptual site model;
- Geotechnical assessment and interpretation; and
- Factual and interpretive reporting.

1.5. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.6. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.

2. SITE SETTING

2.1. SITE DETAILS

Site Address	Bennett Street, Manchester, M12 5NL
National Grid Reference	E 386189, N 397031
Site Area	6.08 Ha.

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 15-974-001.

2.2. CURRENT SITE USE

During the December 2021 phase of investigation E3P undertook a site walkover of accessible areas of the site. A description of the key findings is summarised in Table 2.1 with salient features shown in Drawing 15-974-004.

TABLE 2.1 SITE DESCRIPTION

Occupancy/Use	The subject site is a parcel of land located north of Bennett Street, Manchester, and is currently occupied by a container storage depot with associated offices. The majority of the site has shipping containers stacked for storage with various miscellaneous items/waste stored around the site. The site walkover took place after heavy rainfall and large standing pools of water were visible in the south of the site over the main road into the site.	
Surface Cover (%)	**Buildings**	25%
	Hardstand	70%
	Soft Cover	5%
Structures	A large brick warehouse and office buildings are present in the southwest of the site and a disused steel-framed warehouse is present in the northeast corner which is currently inaccessible.	
Access	Pedestrian and vehicular access to the site can be gained to the south of the site via Bennett Street.	
Slope	The site is relatively level with the exception of the eastern and southeastern areas where several large stockpiles of aggregates are present. These are unlikely to be permanent features and so further assessment is not likely.	
Retaining Structures	A substantial brick retaining wall and viaduct is present along the western boundary of the site, which supports the railway lines adjacent to the site.	
Vegetation/Ecology	Scrub vegetation is present in the south-east corner with areas of overgrown grasses, the vegetation also covers the mounds.	
Hazardous Material Storage	An above-ground storage tank was also present on-site on a raised platform utilised for refuelling. This was noted to be in poor condition with localised spillages at ground level. A bund was not recorded.	
Asbestos-Containing Material (ACM)	ACM is likely to be present on-site due to the buildings and their age. The unused warehouse has suspected asbestos roofing and walls.	

Polychlorinated Biphenyls (PCBs)	There is no equipment identified that may contain PCBs within the site boundary.
Waste Storage	Potentially hazardous waste streams could be potentially be generated at the site. Significant stockpiles of waste are present at the site and will need assessment for their removal to licensed facilities.
Drainage	A public sewer and private sewer are present along the southern boundary of the site, the private sewer then runs north along the western boundary of the site.Corn Brook is culverted in two branches beneath the site. It is unknown if this is in hydraulic continuity with the site.

2.3. SURROUNDING AREA

The surrounding area land uses are summarised in Table 2.2.

TABLE 2.2 SURROUNDING LAND USES

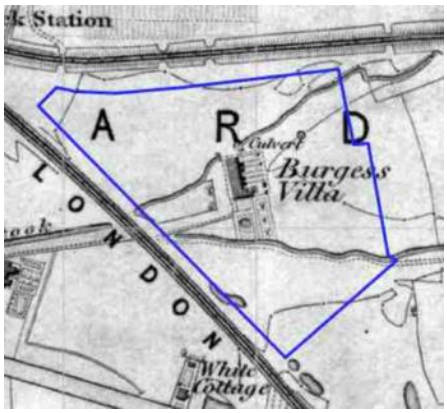
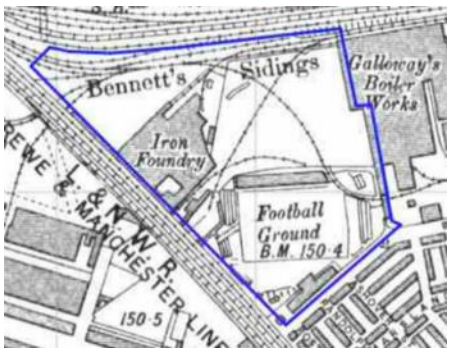
DIRECTION	LAND USE
North	Railway, car park, industrial area
East	Residential area, industrial units
South	Residential area
West	Railway, industrial units

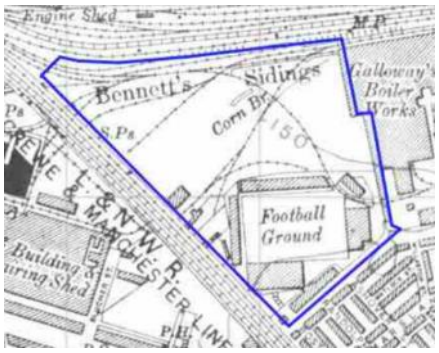
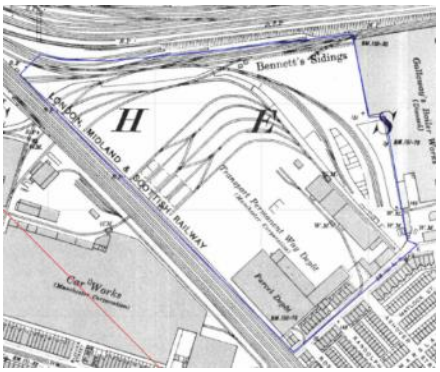
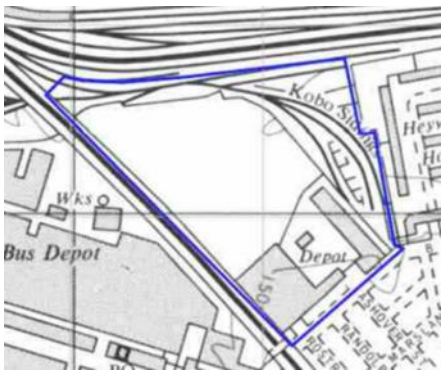
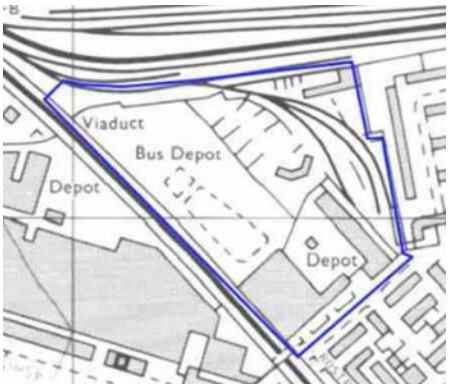
3. SITE HISTORY

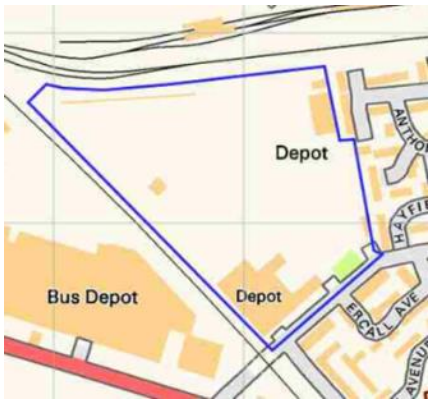
3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 3.1. In addition, historical site features are presented in Drawing No 15-974-003 in Appendix III.

TABLE 3.1 HISTORICAL DEVELOPMENT

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1848 1:10,560	The site is mapped as undeveloped land divided by six boundaries. A group of buildings are located in the centre of the site and are marked as Burgess Villa. An access road to the building comes from the western boundary of the site. Two branches of Corn Brook run through the site in an east-west direction.	
1890 1:10,560	The site is no longer agricultural land but is now marked as an iron foundry. Sidings, two ponds, and a travelling crane are also marked on site. Both branches of the brook are no longer marked and have been culverted.	
1905 1:10,560	The iron foundry in the west has been expanded with associated Bennetts Sidings in the north and Manchester City Football Ground located to the south of the site. The ponds are no longer mapped.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1922 **1:10,560**	The iron foundry is no longer marked on the map.	
1932 **1:2,500**	The football ground is no longer mapped. Buildings are now present in the south, with the southeast corner being marked as a parcel depot. A transport depot is marked on-site with sidings that extend across the site.	
1968 **1:10,560**	The central sidings are no longer marked.	
1980 **1:10,000**	A bus depot is marked in the west of the site.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
2012 **1:10,000**	Two depots are now marked in the southwest and northeast. A building is mapped in the central west.	
2020 **1:10,000**	No significant changes have occurred. Capita record the presence of printers within the north easterly wing of the southern depo. Additionally, a storage yard is present across the central areas of the site.	

3.2. OFF-SITE HISTORICAL DEVELOPMENT

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250 m radius of the site is summarised in Table 3.2.

TABLE 3.2 SURROUNDING HISTORICAL DEVELOPMENT

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Gallways Boiler Work Then: marked as disused Then: no longer marked	10m	Pre 1905 – Pre 1933 Pre 1933 – Pre 1938 Pre 1938 – Present	East
Kobo Sidings Then: no longer marked	10m	Pre 1985 – Pre 2001 Pre 2001 – Present	East
Railway Lines	10 m	Pre 1848 – Present	North and West
Timber Yard Then: no longer marked	100 m	Pre 1890 – Pre 1905 Pre 1905 – Present	West
Car Repair Shed Then: marked as car works Then: marked as a bus depot	80 m	Pre 1923 – Pre 1933 Pre 1933 – Pre 1968 Pre 1968 – Present	West
Tramway Depot Then: marked as a bus depot	100 m	Pre 1905 – Pre 1956 Pre 1956 – Present	West
Saw Mill Then: no longer marked	110 m	Pre 1890 – Pre 1905 Pre 1905 – Present	West
Goods Shed Then: no longer marked	150 m	Pre 1890 – Pre 1980 Pre 1980 – Present	North

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Electricity Substation Then: no longer marked	200 m	Pre 1905 – Pre 1933 Pre 1933 – Present	East
Coal and Mineral Depot Then: no longer marked	220 m	Pre 1890–Pre 1988 Pre 1988–Present	North
Oil Store Then: no longer marked	230 m	Pre 1923 – Pre 1933 Pre 1933 – Present	East

3.3. PLANNING HISTORY

E3P has undertaken a review of online planning records held by Manchester City Council and details are set out below:

TABLE 3.3 PLANNING HISTORY

TYPE	DETAILS	DATE	REFERENCE NUMBER	DECISION
Discharge of conditions	Discharge of conditions 5, 9, 11, 17, 18, 19, 21, 24, 25, 27, 28, 41, 42, 44, 45, 47, 48.	2019	CDN/18/0936	Approved and Refused Approved – condition 3 Refused – condition 4, 6

TABLE 3.4 SUMMARY OF CHANGE OF USE APPLICATIONS

Reference	070103/FO/2003/N2
Application Validated	Fri 21 Nov 2003
Address	M And A Demolition UK Ltd, Bennett Street, Ardwick
Proposal	Continuation of use of the site as a recycling facility including storage and processing of controlled waste, including crusher/screener machinery to be housed in a 6m high building, storage containers, garage unit and offices with associated parking and erection of a 50 metre long 5m high internal screen/acoustic wall.
Decision	Refused & Enforced
Decision Issued Date	Thu 18 Mar 2004
Appeal Status	Unknown

3.3.1. ENFORCEMENT NOTICES

The below denotes a planning enforcement notice received at the site about the reuse and storage of wastes at the site.

TABLE 3.5 SUMMARY OF ENFORCEMENT NOTICES

Reference	ENF/04374/03
Address	Bennett Street, Ardwick, Manchester
Nature of Complaint	Without planning permission, the unauthorised change of use of the land from use as a business premises (including offices and storage of plant) to a mixed use as a business premises (Including offices and storage of plant) and as a waste transfer, recycling, crushing and screening facility and for the storage of waste and recovered materials.
Persons Notice Served	• M&A Demolition (UK) Limited • Trustees of the Uniexpress Directors Retirement Benefit Scheme • Uniexpress Limited • The Company Secretary, Uniexpress Limited

3.4. ANECDOTAL INFORMATION

A web-based search of the subject site has recovered no other significant information.

3.5. PREVIOUS REPORTS

The following previous site investigation reports have been provided to E3P for review:

- **White Young Green (WYG)** – *Ground Contamination Desktop Study Report*. Reference E11066/DTS-V1, December 2006. Prepared for Braidwater Ltd.
- **WYG** – *Phase II Geo-Environmental Ground Investigation Interpretative Report*. Reference E11056-1, January 2008. Prepared for Braidwater Ltd.
- **CAPITA** – *Geoenvironmental Desk Study*. Reference CS/019/097181-PRA-V2, March 2020. Prepared for G L Hearn.

The key findings of the previous site investigation reports are summarised below and where necessary, data is used to support the E3P geoenvironmental site assessment.

WYG 2006

- The historical maps indicate that in 1848 the site consisted of agricultural fields with a building, two culverts run through the site east to west. By 1893 an iron foundry, sidings, and a travelling crane are marked on site. Two ponds are also visible. By 1908 the iron foundry had expanded and Manchester City Football Ground is present on site. By 1922 all original buildings have been cleared and a transport depot with sidings is marked. By 1988 the building layout is largely the same as today.
- Made Ground not recorded but expected. The site is underlain by superficial deposits of Glacial Till. The western third of the site is underlain by Bunter Sandstone, the eastern two-thirds are

Manchester Marls, Collyhurst Sandstone, and the Ardwick Group. The Ardwick fault runs along the western site boundary.

- On-site sources of contamination include the current use as a shipping storage container depot and demolition contractor works, residual ground contamination from previous land use (iron foundry), railways sidings, and any ground imported from off-site sources.
- Offsite sources of contamination include the adjacent railway lines, and industrial land used located wit 100km of the site.
- Receptors include current site users, development workers, future site users, flora and fauna, underlying groundwater, surface water, adjacent property, land users, and future buildings.
- It is recommended that site investigation should be carried out to fully characterise the risks associated with ground stability and potential contamination within the ground and groundwater. Future site investigation works will be likely after the demolition of existing structures and the removal of shipping containers.

WYG 2008

- Site investigation works commenced on the 8th November 2007 and comprised of the following:
    - 46 windowless sample boreholes to a maximum depth of 4.80 m bgl.
    - 13 mechanically excavated trial pits to a maximum depth of 3.50 m bgl
    - 7 shallow dug hand pits to 1.00 m bgl
    - 6 cable percussion boreholes to a maximum depth of 10.45 m bgl.
- The site is characterised by a blanket of Made Ground of variable thickness over clay deposits of Glacial Till. The Till is generally firm in upper horizons becoming stiff and very stiff at greater depth. Made Ground was encountered at all holes and comprised of reworked gravel/sand or soft to firm sandy clay. It is approximately 1.00 to 2.00 m in thickness in the east and south of the site, this increases to 2.00 to 3.00 m in the central and western parts of the site. One localised area of deep Made Ground (over 4.00 m) in the northwest of the site.
- Visual and olfactory evidence of potential contamination was noted in 12 of the exploratory holes in the 2007 investigation and 6 exploratory holes in the 2006 investigation. The majority of contamination was observed in the Quinn Group compound. Table 3.6 summarises the contamination found during the investigation.

TABLE 3.6 OBSERVED POTENTIAL CONTAMINATION

LOCATION	CONTAMINATION OBSERVATION	DEPTH (M BGL)
BH1	Slight hydrocarbon odour	0.60 – 1.20
BH4	Hydrocarbon odour	0.50 – 1.50
BH6	Hydrocarbon odour (tar) Hydrocarbon odour Hydrocarbon odour	0.20 – 0.90 1.20 – 1.70 2.20 – 2.60
WS104	Hydrocarbon sheen noted on surface water	Ground level
WS122	Hydrocarbon odour Hydrocarbon odour	3.60 3.90
WS132	Slight hydrocarbon odour	3.00 – 3.30
HD2	Strong acetone odour and evidence of staining by paint/dyes	Ground level
HD3	Strong acetone odour and evidence of staining by paint/dyes	Ground level
HD4	Hydrocarbon odour	Ground level
HD5	Hydrocarbon odour	Ground level
TP3	Hydrocarbon staining noted on the surface	Ground level
TP15	Slight hydrocarbon odour	0.10 – 0.50

- Gas monitoring data of the site infers a negligible risk from ground gas.
- The level of risk associated with ground contamination ranges from low to high for current users and for future site users it is moderate to high. In zone 1 arsenic, copper, lead and benzo(a)pyrene were found at elevated concentrations. In zone 2, arsenic, copper, acenaphthylene and benzo(a)pyrene was found at slightly elevated concentrations.
- The risk is considered low for controlled waters.

CAPITA 2020

The site has had multiple uses in its lifespan, hosting an iron foundry with rail tracks and a football ground. A series of depots, such as a bus depot replaced these.

- Made Ground is likely to be encountered, in particular around the culvert. The superficial geology shown to be underlying the site is Till (Diamicton) of the Devensian age. The bedrock consists of Chester Formation sandstones, Manchester Marls Formation mudstones, and Collyhurst Sandstone Formation sandstones.
- Small scale printers present within the southern warerehouse and vehicle inspection pits noted within warehouse associated as its historical use as a bus maintainince depot.
- The Ardwick fault lies adjacent to the western site boundary.
- The Chester Formation bedrock is classified as a Principal Aquifer, the Manchester Marls Formation bedrock is classified as a Secondary B aquifer and the Collyhurst Sandstone Formation bedrock is classified as a secondary A aquifer.
- 16 accounts of recorded pollution have been identified within a 500m radius of the site, with 10 relating to the site itself.
- Potential sources of contamination on-site include, Made Ground, PAHs, Asbestos, heavy metals and metalloids inorganic compounds, PCBs, diesel tanks, hydrocarbons, chemicals, and hydrocarbons from printers.

- Potential sources of contamination off-site include herbicides on the railway line, ground gas.
- Receptors identified include construction workers, end-users, neighbouring site users, existing buildings, water supply pipes, the Corn Brook Culvert, Secondary A, Secondary B, and Principal Aquifer.
- Remediation is expected to be required to protect identified receptors. Without remediation, the risks to the human health of future site users and groundwater are considered to be high. The risk to surface water is considered to be moderate/high.

4. ENVIRONMENTAL SETTING

4.1. GEOLOGY AND HYDROGEOLOGY

The British Geological Survey (BGS) map (Sheet 85) for the site, (1:50,000, Solid and Drift editions) and online records indicate the site is underlain by the geological sequence presented in Table 4.1.

TABLE 4.1 SUMMARY OF UNDERLYING GEOLOGY

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Glacial Till - Devensian	Diamicton	Secondary undifferentiated
Solid	Chester Formation – west Manchester Marls Formation – centre Collyhurst Sandstone Formation - east	SANDSTONE, MUDSTONE, SANDSTONE	Principal Secondary B Principal

TABLE 4.2 SUMMARY OF BGS BOREHOLE RECORDS

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
22 m SE	20.00 m	0.00 – 1.00 m, Brick and ash	1.00 – 17.60 m, stiff – very stiff brown boulder CLAY. 17.60 – 20.00 m, Firm reddish brown silty CLAY	Not encountered

TABLE 4.3 SUMMARY OF WHITE YOUNG GREEN EXPLORATORY HOLE LOGS - E11056-1

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
BH1	8.00 m	0.00 – 0.20 m, light brownish-grey gravelly fine to coarse grained sand with brick and concrete. 0.20 – 1.55 m, black slightly gravelly very sandy clay/silt with brick, ash, clinker, concrete, wood.	1.55 – 2.90 m, soft to firm grey slightly sandy gravelly CLAY. 2.90 – 7.20 m, stiff grey slightly gravelly CLAY.	7.20 – 8.00 m, Very dense red brown fine to coarse grained SAND.
BH2	8.30 m	0.00 – 0.20 m, light brown grey gravelly fine to coarse grained sand with brick and concrete. 0.20 – 0.70 m, Black slightly silty slightly clayey very sandy gravel with ash, brick, clinker, concrete, and ceramic. 0.70 – 2.10 m, very soft mottled orange brown grey slightly sandy gravelly reworked clay with coal, clinker, brick.	2.10 – 7.30 m, soft to firm mottled orange brown and grey slightly gravelly CLAY with occasional black specks of decaying organic material. 7.30 – 8.30 m, very stiff brown grey sandy CLAY.	Not encountered.

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
BH3	7.95 m	0.00 – 0.20 m, cobble sets. 0.20 – 0.40 m, concrete 0.40 – 1.20 m, black brown very sandy slightly clayey gravel with concrete, clinker, ash, limestone, sandstone 1.20 – 2.10 m, very soft to fir grey black mottled orange slightly sandy gravelly reworked clay with brick, clinker, ceramic.	2.10 – 7.95 m, firm mottled orange brown and grey slightly gravelly CLAY, with organic matter and rootlets	Not encountered.
BH4	6.50 m	0.00 – 0.10 m, tarmacadam. 0.10 – 0.50 m, black gravelly fine to coarse grained sand with brick, concrete, ash, clinker. 0.50 – 0.70 m, grey clayey gravely fine to coarse grained sand with brick, ash, concrete, clinker, limestone. 0.70 – 2.10 m, very soft grey black slightly sandy slightly gravelly clay with brick, ash, clinker, spent lime.	2.10 – 4.20 m, stiff orange brown mottled grey slightly sandy slightly gravelly CLAY. 4.20 – 5.10 m, medium dense brown slightly clayey gravelly fine to coarse grained SAND. 5.10 – 6.50 m, very stiff dark brown slightly gravelly sandy CLAY.	Not encountered.
BH5	7.95 m	0.00 – 0.10 m, tarmacadam. 0.10 -0.20 m, concrete. 0.20 – 2.40 m, loose grey and orange dark brown gravelly fine to coarse grained sand with brick, concrete, ash, clinker, and tarmacadam. 2.40 – 2.60 m, soft grey brown slightly silty slightly sandy slightly gravelly reworked clay with brick, concrete, ceramic.	2.60 – 3.20 m, stiff grey brown slightly silty slightly sandy slightly gravelly CLAY. 3.20 – 5.90 m, stiff orange brown mottled grey slightly sandy slightly gravelly CLAY. 5.90 – 6.20 m, medium dense brown clayey fine to medium grained SAND. 6.20 – 7.95 m, very stiff brown slightly gravelly CLAY.	Not encountered.
BH6	10.45 m	0.00 – 0.20 m, cobble sets. 0.20 – 0.90 m, black gravelly fine to coarse grained sand with brick, concrete, ash, clinker, limestone. 0.90 – 1.70 m, firm black grey slightly sandy gravelly clay with brick, clinker, ash, coal, mudstone. 1.70 – 2.20 m, stiff orange brown sandy gravelly clay with sandstone and coal.	2.60 – 6.40 m, stiff brown slightly gravelly CLAY. 6.40 – 8.10 m, very stiff slightly sandy slightly gravelly CLAY. 8.10 – 10.45 m, very stiff slightly sandy slightly gravelly CLAY.	Not encountered.

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
		2.20 – 2.60 m, black grey slightly sandy gravelly clay with cobbles, brick ash, clinker, coal, mudstone.		

TABLE 4.4 FAULTING

LOCATION	DESCRIPTION
Along the immediate western boundary	Ardwick Fault with downthrow to the east

The Groundsure report indicates that the site is not located within a groundwater source protection zone. Furthermore, there are no groundwater/potable abstractions within 1 km of the site.

4.2. NATURAL LANDFORM AND GEOMORPHOLOGY

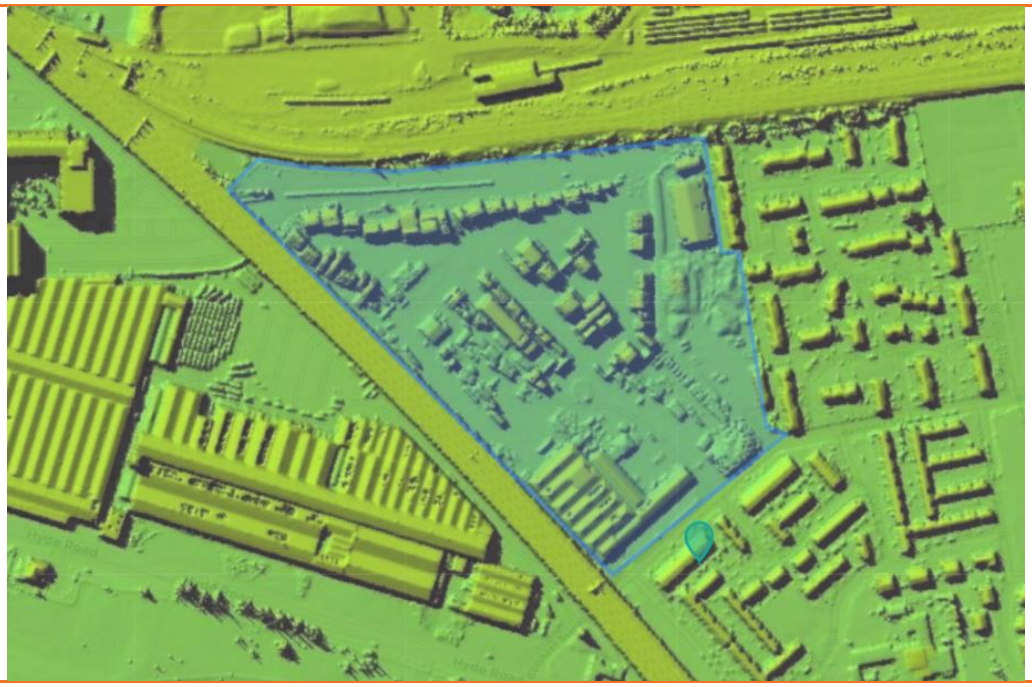
Based on the initial geological assessment, a review of available topographic data, and pertinent mapping, E3P has undertaken a preliminary geomorphological assessment of the landform and its possible mechanism for formation.

From the LIDAR imagery shown in Figure 4.1, the site has a varied topography and alteration to the natural landform. In the southeast of the site, ridges and mounds are present with covering vegetation. From historical mapping and imagery, it is known that these are not natural and have been created using materials. The rest of the site is relatively level.

Due to the various historical land uses, the current site level plateau may have been formed by the placement and filling of material before construction phases. It is also possible that historical development has resulted in a greater thickness of Made Ground overlying the natural Glacial Till.

The two branches of Corn Brook which run across the site were covered and culverted. This would result in them being covered in the material which could create a profile within the ground of their location. The current site use of a storage depot will most likely of resulted in levelling of the site further using materials to ensure that the site could be used as a depot.

FIGURE 4.1 SURFACE LIDAR DATA OF THE SITE AND SURROUNDING AREA



4.3. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in Table 4.5.

TABLE 4.5 SUMMARY OF GEOTECHNICAL DATA

HAZARD	DESIGNATION
Shrink-Swell Clay	Very low risk
Landslides	Very low risk
Ground Dissolution	Negligible
Compressible Ground	Very low risk
Collapsible Deposits	Very low risk
Running Sand	Very low risk

4.4. COAL MINING

The Groundsure report states the site is in an area that may be affected by coal mining.

The Coal Authority map suggests the site does not lie within a high-risk development area. However, a review of online data suggests underground workings are present beneath the site to the east. A Coal Mining Desk Assessment has been performed by Capita and states that three historic surface workings have been identified within 250 m of the site boundary, including a Brick Field, an unspecified pit, and ponds. The nearest working is approximately 180 m east. However, there is no mention of workings pertaining to coal mining.

No historic underground workings have been identified within 1 km of the site according to the Groundsure reporting.

The CA operates a risk-based approach to the assessment of potential instability issues associated with the future development of land located within the predefined CA consultation areas. This risk-based approach subdivides the potential risk into “low” and “high” risk categories.

The risk categories can be defined as:

Low-Risk Sites – Deemed to be land where coal mining has taken place, however, it was at such depth not to pose a risk to new development and it, therefore, contains no known recorded risks and as such no further assessment is required.

For low-risk sites, the CA categorically states:

> *If your proposed development is within the Development Low Risk Area there is no need for you to submit any coal mining information with your planning application and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice.*

High-Risk Sites – Deemed to be landholdings located within an area known to contain legacy risks that include:

- Mine entries (shaft or adit);
- Shallow coal workings (recorded and probable);
- Workable coal seam outcrops;
- Mine gas sites and areas;
- Recorded coal-mining-related hazards;
- Geological features (fissures and break lines); and
- Former surface mining sites (sometimes using historic opencast extraction methods).

4.5. COAL MINING INFORMATION

Prior to the enactment of the Coal Mines Regulation Act (1872), which came into force on the 1st January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the CA has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth that could result in a subsidence event in the future (through successive cavitation) associated with failure of the support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires the consideration of a wide range of information and E3P has completed a review of relevant information in relation to potential coal mining activities.

In the first instance, E3P has reviewed the Coal Authority Online Viewer and an excerpt of this is presented in Figure 4.2. This map shows that the site lies within a Coal Authority reporting area and there are underground workings potentially present within the site boundary. A review of online data and the available coal map for the site suggests that the Openshaw Mine seam lies 1.4 km north-east of the site and dips at 28˚ southwest a ssuch, the calculated seam level is 744 m below site.

A coal mining desk assessment performed by Capita states that three historic surface workings have been identified within 250 m of the site boundary, including a brickfield, an unspecified pit, and ponds. No specific coal mining workings are disclosed.

FIGURE 4.2 EXCERPT OF THE COAL AUTHORITY ONLINE VIEWER

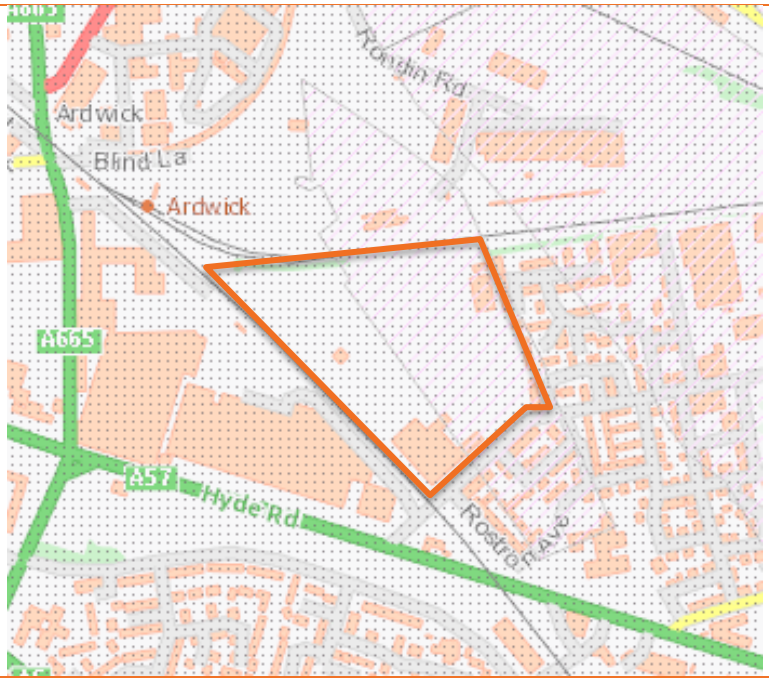


Table 4.6 provides a summary of pertinent coal mining information presented in the Capita (2020) Report.

TABLE 4.6 COAL MINING INFORMATION

SOURCES OF INFORMATION	SUMMARY
Known Past Underground Mining	The property is in a surface area that could be affected by underground mining in 4 seams of coal at 320 m to 1,090 m depth, and last worked in 1957. Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.
Probable Unrecorded workings	N/A
Spine Roadways at Shallow Depth	N/A
Mine Entries within 100m of the site	There are no known coal mine entries within or within 20 metres of the boundary of the property.
Mine Abandonment plans	N/A
Faults / Fissures	The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.
Opencast mines	The property is not within the boundary of an opencast site from which coal has been removed by opencast methods. The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.
Remediated Sites	The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

SOURCES OF INFORMATION	SUMMARY
Coal Mining Subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before the coal is worked under section 33 of the Coal Mining Subsidence Act 1991.
Mine Gas	The Coal Authority has no record of a mine gas emission requiring action.
Future Underground Mining	The property is not in an area where the Coal Authority has received an application and is currently considering whether to grant a licence to remove or work coal by underground methods. The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods. The property is not in an area likely to be affected by any planned future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future. No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.
British Geological Survey Mapping	The 1:10,000 geological mapping for the area notes the Openshaw Mine is present 1.4km north-west of the site dipping 26° south-west towards the site. However, BGs mapping shows several faults are present between this coal seam and the site.
Review of Coal Authority Archive	No CA archives/mine abandonment plans are made available.
Historical Ordnance Survey Mapping	A review of the 1:10,000 Ordnance Survey mapping from circa 1850, which has records of mine workings that predate the Mining & Regulation Act of 1872, has not identified any pertinent coal mining features.
Historical Site Investigations	E3P has been provided with the following historic site investigation reports. • **WYG** – *Phase II Geo-Environmental Ground Investigation Interpretative Report*. Reference E11056-1, January 2008. Prepared for Braidwater Ltd. The pertinent points of this are summarised in section 3.5 of this report.

4.5.1. COAL MINING GEOLOGY

Figure 4.3 is a photograph of the 1:10,000 plan for the site which shows the geological faults at the site. The Openshaw mine seam is to the far north-east.

FIGURE 4.3 PHOTOGRAPH OF THE 1:10,000 PLAN FOR THE SITE



4.6. COAL MINING RISK ASSESSMENT

This risk assessment comprises a desk-based review of all available information on coal mining issues that are relevant to the application site deemed to be located within a low-risk area. This includes:

- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- Demonstrating to the local planning authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The coal mining risk assessment is summarised in Table 4.7.

TABLE 4.7 SUMMARY OF COAL MINING RISK ASSESSMENT

COAL MINING RISK ASSESSMENT	YES/NO	RISK ASSESSMENT
Recorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Very Low
Recorded Underground Coal Mining at Shallow Depth (> 30 m)	No	Very Low
Evidence of Unrecorded Surface Extraction of Coal Outcrop	No	Very Low
Unrecorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Very Low
Mine Entries (Shaft/Adits)	No	Very Low
Coal Mining Geology – Fractures/Fissures	No	Very Low
Recorded Gas Emissions	No	Very Low
Recorded Mining Surface Hazard	No	Very Low
Surface Mining (Opencast)	No	Very Low

Based on the above, a very low risk of unrecorded coal mining at shallow depth has been identified. Due to the mapped underground workings, the CA, as a statutory consultee, will require a series of rotary open holes across the site to determine the presence of any coal on site and to understand the nature of any coal workings.

4.1. RADON RISK POTENTIAL

The Groundsure report indicates the site is situated in an area where less than 1% of homes are above the "Action Level" and that the BGS reports that full radon protective measures are not necessary for the construction of new dwellings or extensions.

4.2. PRELIMINARY GEOTECHNICAL ASSESSMENT

Based on the desk-study information, the following geotechnical assessment has been made:

- Given the historical development of the site, there will likely be Made Ground across the site. In 2008 the site investigation undertaken by WSG found Made Ground in every exploratory hole. This typically comprised of reworked gravel/sand or soft to firm sand clay with gravel to cobble-sized fragments of brick, ash, clinker, concrete, and other man-made materials. The Made Ground is approximately 1.0m to 2.0m in thickness in the east and south. This increases to 2.0 to 3.0m in the central and western parts of the site.
- Due to historical and current buildings being present on-site, asbestos-containing (ACM) will likely be present in Made Ground deposits.
- Two historically infilled ponds are present on-site, which are potential sources of alluvial deposits, silts, possible organic peat deposits, ground gas, and depths of Made Ground.
- Existing buildings on site will require demolition and further investigation within their footprint.
- Soakaways are unlikely to be suitable where cohesive soils are present.

4.3. HYDROLOGY

Surface water features within 250 m of the subject site are summarised in Table 4.8.

TABLE 4.8 SURFACE WATER FEATURES

SURFACE WATER FEATURE	QUALITY	DISTANCE (m)	DIRECTION
Corn Brook	-	On-Site, underground (Culverted)	East to West
Black Brook (Corn Brook Diversion)	-	On-Site, underground (Culverted)	North East to South West

Two branches of Corn Brook are recorded present on the site the site – Corn Brook, anticipated at the central area of the site running east west and Black Brook (Corn Brook diversion) anticipated to run from the north boundary in a south westerly direction. Both have been culverted.

The site is predominantly located within a currently defined "Flood Risk Zone 2"; defined as land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding, or land having between a 1 in 200 and 1 in 1000 annual probability of sea flooding.

4.4. INDUSTRIAL LAND USES

A list of current industrial land uses listed within the Trade Directory on-site and within 250 m of the site are shown in Table 4.9.

TABLE 4.9 CURRENT INDUSTRIAL LAND USES

LOCATION	COMPANY	ACTIVITY
On-Site	Olympic Freight Storage	Container storage, distribution, and haulage.
24 m SE	Kaytex	Industrial products
41 m S	A K Autos	Vehicle repair and servicing
93 m SW	Maple Industrial Estate	Business park and industrial estate
99 m W	Universal Square	Business park and industrial estate
118 m SW	Mason Marble & Granite Ltd.	Stone Quarrying
140 m	Ardwick Rail Station	Rail services
146 m SW	Pods	Container storage
146 m SW	G & G Tyres	Vehicle parts
146 m SW	Manchester Paper Plastic Ltd.	Recycling, reclamation and disposal
150 m N	Sims Metal Management	Scrap metal merchants
167 m W	Form Furniture	Office and shop equipment
167 m W	Expert medical Services	Medical equipment, supplies and pharmaceuticals
177 m NW	Trade Centre	Vehicle repair, testing, and servicing
202 m SW	Apex Self Storage	Container and storage
207 m SE	Britannia Knitwear	Clothing
208 m SE	Auto car Centre	Vehicle repair and testing
208 m SE	Ardwick MOT Centre	Vehicle repair and testing
210 m E	Tank	Industrial
217 m SE	Hyde Road Wheels & Tyres	Vehicle parts and accessories
228 m N	Holland Hydroponics	Horticultural equipment
230 m W	Style Knitwear Ltd	Clothing
232 m W	Newcamp Ltd	Clothing
232 m W	Pakman Ltd	Clothing
232 m W	Northern Knitwear Ltd	Clothing
232 m W	K D	Clothing
232 m W	B K Knitwear Ltd	Textiles, fabrics, Machinery
232 m W	H & C Textiles Ltd	Textiles, Fabrics, Machinery

4.5. SENSITIVE LAND USES

The closest residential properties are located adjacent to the southern and eastern boundaries of the site. To the west and north of the site, railway lines are also present.

The site is located within an SSSI impact risk zone.

4.6. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a "Moderate" sensitivity setting as discussed in Table 4.10

TABLE 4.10 SITE SENSITIVITY ASSESSMENT

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	None Recorded.	Low
Distance to the Closest Groundwater Abstraction Point	None within 1 km of the site.	Low
Aquifer Classification in Superficial Drift Deposits	Secondary undifferentiated.	Moderate

SENSITIVITY PROFILE	DISCUSSION	RATING
Aquifer Classification in Bedrock	Chester Formation – Principal. Manchester Marls Formation – Secondary B. Collyhurst Sandstone Formation – Principal. No groundwater abstraction within 1km of the site.	Moderate
Is the Site Underlain by Low-Permeability Drift to Depths in Excess of 10 m?	Exploratory holes show the drift to be clay interbedded with sandy clays and gravels, which increases the potential for mobile phase contaminants to migrate. However, low-permeability clay will inhibit the migration of pollutants if present.	Moderate
Is the Site Located Within 50 m of a Surface Watercourse?	Corn Brook is located on-site underground as it has been culverted. A survey has been completed to trace its location.	High
Sensitive Land Uses	The site is located within an SSSI impact risk zone. To the west and north of the site, there are train lines and the nearest residential housing is located to the south and east.	Low
OVERALL SITE ENVIRONMENTAL SENSITIVITY		**Moderate**

5. CONSULTATIONS

5.1. CONTAMINATED LAND OFFICER

E3P contacted the environmental health department at Manchester City Council and has confirmed the following an environmental search of the site:

- The site is not registered as Contaminated Land.
- The site is not considered to be Contaminated Land in the future.
- The council is not aware of any site uses or environmental issues either on-site or in the immediate vicinity that will require additional assessment as part of future redevelopment.

5.2. LANDFILL SITES AND WASTE TREATMENT SITES

There are no active landfill sites or waste treatment sites within 250 m of the site.

Thirteen waste exemptions are listed within the Groundsure Report pertaining to the site. They are all listed under treating waste exemptions related to WEEE, scrap metal, mixed waste, construction waste and storing waste exemptions Table 5.1 denotes pollution incidents at the site relating to land and air impact; these are related to materials wastes stored on site.

5.3. REGULATORY DATABASE

The information summarised in Table 5.1 has been obtained from a commercially available environmental database. The summary table only includes records from within 250 m of the subject site and is not otherwise detailed in the report.

TABLE 5.1 SUMMARY OF ENVIRONMENTAL DATA

RECORD	ENTRIES WITHIN 250 m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified
Authorised Industrial Processes (IPC/IPPC/LAPPC)	1	178 m north at ONE51 ES Metals Ltd & Howarth Metals Ltd, non-ferrous metal foundry processes, historical permit.
Fuel Stations Entries	3	131 m and 184 m east from 1948 – 1963.
Licensed Radioactive Substances	0	None Identified
Enforcements, Prohibitions or Prosecutions	0	None Identified
Discharge Consents	0	None Identified
Pollution Incidents	14	10 on-site between 2002 – 2011, 2 had a significant impaconto land from biodegradable wastes and construction waste. Four, 215 m NW of the site in 2001, all had no impact or minor impact.

RECORD	ENTRIES WITHIN 250 m	DETAILS
Consents Issued Under the Planning (Hazardous Substances) Act 1990	0	None Identified
Control of Major Accident Hazard (COMAH) Sites	0	None Identified

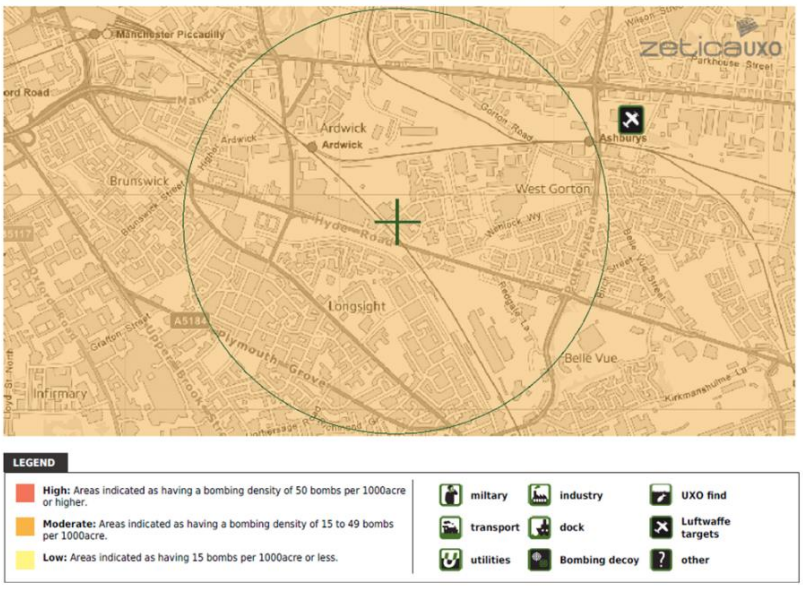
5.4. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the site is in an area at moderate risk from possible unexploded ordnance (UXO) resulting from the Second World War. The Zeticia UXO Risk Map is presented in Figure 5.1.

A UXO desk-based study has been completed by Brimstone for E3P and the findings are set out below:

- The site was located in the WWII-era county borough of Manchester, which sustained 27 bombs/1,000 acres, a low-to-moderate bombing density.
- Confirmed bomb strike 80m south-west on Hyde Road.
- Potential evidence of bomb damage observable in post WWII OS mapping, immediately east of the site on Bennett Street.
- Numerous (>30) permanent HAA batteries were active within a range of the site during WWII. LAA guns may have defended vulnerable points within range of the site. Luftwaffe activity in the region was relatively frequent, it is possible that an unexploded AA shell struck the site.
- The risk associated with (any) very shallow and shallow buried UXO will have been partially mitigated. The risk associated with (any) deep buried UXO almost certainly remains unmitigated.

FIGURE 5.1 ZETICA UXO RISK MAP



Source - https://zeticauxo.com/downloads-and-resources/risk-maps/

6. INITIAL CONCEPTUAL SITE MODEL

In accordance with EA LCRM (2019) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), E3P has developed an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised in Table 6.1.

ON-SITE SOURCES OF CONTAMINATION

The following potential on-site sources of contamination have been identified:

- Infilled Pond : Heavy metals, PAH, asbestos and ground gas.
- Iron Foundry: Heavy metals, PAH, TPH and asbestos.
- Former Transport Depot: Heavy metals, PAH, SVOC, VOC, BTEX, TPH and asbestos.
- Printers: Heavy metals, PAH, SVOC, VOC, TPH and asbestos.
- Tanks and localised spillages: TPH, BTEX, PAH, VOC and SVOC.
- Former Football Stadium: Heavy metals, PAH and asbestos.
- Railway sidings: Heavy metals, PAH and TPH.
- Historic buildings: Asbestos

PATHWAYS

The following potential contamination pathways have been identified:

- Direct contact and ingestion
- Volatilisation/indoor explosion
- Vapour inhalation
- Dust inhalation
- Soil ingestion
- Vertical / Lateral Migration
- Surface runoff.
- Migration through permeable strata and preferential pathways.
- Perched waters migration.
- Uptake by plants

OFF-SITE SOURCES OF CONTAMINATION

The following potential off-site source of contamination have been identified:

- Railway lines
- Historical boiler works

6.1. CONCEPTUAL SITE MODEL

Following the completion of the intrusive site investigation, chemical analysis and risk assessment, the conceptual model shown in Table 6.1 has been prepared for the site.

TABLE 6.1 CONCEPTUAL MODEL

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL1 PL2	Heavy Metals, non-volatile PAH, PCBs (Made Ground, infilled ponds, iron foundry, transport depot, printers, tanks/spillages, football stadium, railway sidings)	Dermal contact. Dermal contact and ingestion.	Future site users. Off-site receptors.	Likely	High	To be determined
Assessment: Made Ground is highly likely to be present on-site due to the historical development and industrial history of the site. Made Ground on-site may be a source of PAHs, heavy metals, asbestos, TPH, and ground gas. A previous site investigation by WYG in 2008 showed Made Ground be present across the site at depths of approximately 1.0m to 2.0m in the east and south. This increases to 2.0 to 3.0m in the central and western parts of the site. Elevated levels of arsenic, copper, lead and benzo(a)pyrene were found in zone 1, and elevated levels of arsenic, copper, acenaphthylene and benzo(a)pyrene were found in zone 2. These sources may pose a short-term risk to construction workers who may come into contact with impacted soils during earthworks and future site users. **Recommendation:** The investigation is required to confirm the conceptual site model. Construction workers are to wear appropriate PPE during site work.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL3	ACM in Made Ground	Inhalation of dust.	Future site users. Buildings. Off-site land users.	Likely	High	To be determined
Assessment: ACM is likely to be present in Made Ground deposits due to historic buildings on the site and the current buildings on site containing asbestos. This may pose a risk to future site users and site neighbours who may come into contact with fibres. These risks can be mitigated through the development of a detailed enabling works strategy following guidance and protocol specified within the Control of Asbestos Regulations (2012) and industry best practice as detailed in CIRIA733 (Asbestos in Soil and Made Ground: A guide to understanding risk). **Recommendation:** Investigation required to confirm conceptual site model.						
PL4	Volatile contaminants such as hydrocarbons, solvents (Made Ground, infilled ponds, iron foundry, transport depot, printers, tanks/spillages, railway sidings)	Inhalation of vapours. Migration through permeable strata and preferential pathways.	Future site users. Off-site receptors.	Likely	High	To be determined
Assessment: Significant sources of volatile contamination have been identified through historical mapping and the site walkover. Leakages and spillages of volatile contamination are considered likely. Elevated concentrations of VOC, SVOC and petroleum hydrocarbons were found in zone 1 by WYG in 2008. These sources may pose a risk to construction workers who may come into contact with the contaminant during work. All construction work must be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this potential risk. **Recommendation:** Investigation required to confirm conceptual site model.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL4	Methane, carbon dioxide (Made Ground, infilled ponds on site)	Inhalation of gas. Migration through permeable strata and preferential pathways. Explosion in confined spaces.	Future site users. Buildings. Off-site land users.	Low likelihood	Moderate	To be determined

Assessment:
Two former ponds on site and Made Ground on site have been identified as sources of ground gas. Where the material contains putrescible materials there is a risk of ground gas generation, such as carbon dioxide and methane. Ground gas can accumulate within confined spaces such as excavations, sub-structures, or deep excavations. Inhalation of these gases could result in asphyxiation, while the accumulation of methane gases can be explosive. Therefore, if a gas risk is identified, construction workers should carefully manage entry within deep excavations or confined spaces and allow for adequate ventilation/monitoring. Investigation by WYG in 2008 showed that no gas protection measures were deemed necessary.

Recommendation:
Investigation and gas monitoring is required to confirm the conceptual site model.

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL5	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (Made Ground, infilled ponds, iron foundry, transport depot, printers, tanks/spillages, railway sidings)	Surface runoff. Migration through permeable strata and preferential pathways. Perched waters migration.	Groundwater (Principal bedrock aquifer, secondary B aquifer). On-site culvert(s)	Likely	Moderate	To be determined
Assessment: Significant sources of mobile contamination have been identified as well as leakages and spillages being identified at the site walkover and historical mapping. The underlying clay geology across the site may reduce the downward migration into the underlying bedrock aquifers and lateral migration to the on-site culvert. The sensitivity of the aquifers is reduced, given there are no groundwater abstractions within 1km. **Recommendation:** Further investigation and sampling of groundwater and surface water are required.						
PL6	Sulphate (potential ash within Made Ground, iron foundry)	Sulphate attack on concrete.	Building structure.	Likely	Moderate/Low	To be determined
Assessment: Potential Made Ground across the site could contain ash and sulphate, elevated levels of sulphate can increase the chance of a sulphate attack on foundations. Findings by WYG in 2008 show sulphate and pH in the ground to be slightly aggressive and as such it is likely that there would be no more than a minor impact on future buildings providing that the appropriate concrete mix is adapted. **Recommendation:** Investigation is required to confirm the conceptual site model.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL7	Organic contaminants such as hydrocarbons, solvents (Made Ground, historical foundry, tanks/spillages, printers, transport depot, railway sidings)	Ingestion of tainted water supply.	Future site users. Water pipes.	Likely	Moderate	To be determined
Assessment: Sources of organic contaminants have been identified on site through historical mapping. Given the presence of future structures and a water supply, this increases the risk to Moderate. Elevated levels of hydrocarbons found by WYG in 2008 suggest that they may be able to permeate into water supply pipes. **Recommendation:** Investigation required to confirm conceptual site model.						
PL8	Phytotoxic contaminants (Made Ground)	Direct Contact (plant uptake).	Flora.	Low Likelihood	Low	To be determined
Assessment: Contamination may be present within shallow Made Ground which may be taken up by flora in soft landscaping. **Recommendation:** Intrusive investigation to determine risk on a site-wide basis. If identified, a cover system may be required within any future proposed gardens and landscaped areas.						

Main exposure pathways:
PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply, PL8=Uptake by plants

7. GROUND INVESTIGATION

7.1. GENERAL OVERVIEW

An initial phase of ground investigation was designed based on the findings of the desk study and was undertaken in between 13th December 2021 and 16th December 2021, with exploratory holes advanced to target specific potential contaminant sources identified within the previous site investigations. The December 2021 investigation has been used to collect geotechnical information to assist in the design and construction of the proposed development.

A second phase of the supplementary investigation was undertaken and completed between the 12th and 13th of October 2022, with exploratory holes advanced to target previously inaccessible areas. Additionally, following correspondence with the Environment Agency, rotary boreholes were advanced to sample the underlying Principal bedrock aquifer.

The works are summarised in Table 7.1 in section 7.3.

7.2. LIMITATIONS OF THE INVESTIGATION

The initial phase of the intrusive investigation, undertaken in December 2021, was limited to accessible areas only. The majority of the site was accessible, and admittance to the main larger warehouse in the south was granted, however, large stockpiles were present during the investigation, and the culvert along with other underground high-risk utilities prevent access in some areas of the site. Therefore, there was a requirement for a phase of supplementary works to investigate beneath the existing building in the north-east of the site, beneath stockpiles in the east and below the existing tank that was undertaken in October 2022.

7.3. SCOPE OF INVESTIGATION

TABLE 7.1 SUMMARY OF FIELDWORK

POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (M BGL)	MONITORING WELLS RESPONSE ZONE (M BGL)
General Ground Conditions Including the Presence/Nature of Obstructions	WS101	Window Sample Probehole	4.05	2.00–3.00
	WS102		2.45	N/A
	WS103		2.45	1.00–2.00
	WS109		4.43	0.50–2.50
	WS110a		0.15	N/A
	WS110b		4.44	0.50–2.00
	WS115		1.11	N/A
	WS118		5.45	N/A
	WS123a		0.50	N/A
	WS123b		5.45	0.50–2.00
	WS124		0.50	N/A
	WS125		4.45	N/A
	WS128		3.45	N/A
	WS129		5.45	2.00–4.00
	WS133		5.45	0.50–3.00
	WS136		2.45	N/A

POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (M BGL)	MONITORING WELLS RESPONSE ZONE (M BGL)
General Ground Conditions Including the Presence/Nature of Obstructions	TP104	Mechanically Excavated Trial Pit	2.20	N/A
	TP107		3.10	N/A
	TP113		2.90	N/A
	TP114		3.30	N/A
	TP116		2.50	N/A
	TP129		3.10	N/A
Former Football Ground Stands	WS104	Window Sample Probehole	3.14	1.50–3.00
	WS105		3.44	0.50–1.00
	WS106		5.45	N/A
	WS107		4.44	1.00–2.00
	WS135		3.29	0.50–1.00
	TP109	Mechanically Excavated Trial Pit	2.80	N/A
	TP108		3.20	N/A
Former Iron Foundry	WS111	Window Sample Probehole	1.25	N/A
	WS112a		0.30	N/A
	WS112b		0.65	N/A
	WS116		5.45	1.50–2.00
	WS117		5.45	N/A
	TP121	Mechanically Excavated Trial Pit	2.80	N/A
	TP122		3.70	N/A
	TP123		3.50	N/A
	TP124		3.00	N/A
Former Railway Sidings	WS113	Window Sample Probehole	4.44	2.00–3.00
	WS114		2.45	1.00–2.00
	WS119		5.45	3.00–5.00
	WS120		5.45	0.50–2.00
	WS121		2.45	N/A
	TP120	Mechanically Excavated Trial Pit	3.00	N/A
	TP125		3.60	N/A
	TP126		2.00	N/A
	TP127		2.40	N/A
	TP128		2.20	N/A
Former Pond	TP115		2.20	N/A
	WS122	Window Sample Probehole	2.44	0.50–1.00
Former Building	WS127		4.11	3.00–4.00
Former Football Ground	WS108		4.45	0.50–2.00
	WS126		5.43	2.00–4.00
	WS130		5.45	1.00–2.00
	WS134		2.45	N/A
Former Transport Depo and Warehouse	WS131		2.41	0.50–1.00
	WS132		2.38	0.50–1.00
	TP101	Mechanically Excavated Trial Pit	2.00	N/A
	TP105		0.30	N/A
	TP106		2.40	N/A
	TP110		1.60	N/A
	TP111		4.30	N/A
	TP112		2.70	N/A
Printers	TP102		2.00	N/A
	TP103		2.50	N/A

POTENTIAL SOURCE/RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (M BGL)	MONITORING WELLS RESPONSE ZONE (M BGL)
North East Depot	TP117	Mechanically Excavated Trial Pit	2.50	N/A
	TP118		2.30	N/A
	TP119		1.80	N/A
Tanks	TP130		2.70	N/A
Investigation of deeper soil horizons	CP101	Cable Percussive Borehole	9.88	4.00–9.00
	CP102		8.40	6.00–8.00
	CP103		8.38	6.00–8.00
Investigation of potential shallow underground workings	RB101	Rotary Borehole	50.00	N/A
	RB102		46.00	N/A
	RB103		46.00	N/A
	RB104		40.00	N/A
	RB105		45.00	N/A
Investigation of potential shallow underground workings and principal aquifer	RB201		40.00	22.00 – 40.00
	RB202		40.00	31.00 – 40.00
	RB203		40.00	24.00 – 40.00
	RB204		40.00	25.00 – 40.00

Window sample probeholes were advanced to undertake in-situ detailed geotechnical testing, obtain environmental samples and install groundwater and ground gas monitoring wells.

Cable percussion boreholes were advanced to install groundwater monitoring wells and facilitate the investigation of deeper soil horizons with extensive in-situ geotechnical testing.

The series of rotary boreholes were advanced to investigate the potential presence of shallow underground workings. These boreholes were drilled in accordance with the CA permissions process and industry best practices.

Mechanically excavated trial pits were advanced to investigate ground conditions and to retrieve environmental samples. Trial pits have been completed targeting on-site contamination sources and previously inaccessible areas. TP105 was attempted. However, the excavator was unable to break through the concrete slab in this location and therefore, this exploratory hole location could not be advanced.

A second series of rotary boreholes were advanced to investigate deeper soil horizons and install deep monitoring wells, targeting the principal bedrock aquifer.

The sampling locations are illustrated in Drawing 15-974-005 (Appendix III). The ground conditions encountered are indicated on the logs, which are provided in Appendix V.

Return visits were made to monitor installations for groundwater levels and gas concentrations. In addition, selected wells were purged and samples of groundwater were recovered for chemical analysis.

7.4. IN-SITU STANDARD PENETRATION TESTING (SPT)

In-situ geotechnical testing was conducted using the standard penetration test (SPT) and, where the ground is granular, a 60° cone (SPT(C)) was used instead of the sampling tube. The results are shown in the probe hole logs in Appendix V and presented in Table 8.5 and discussed in Section 11.

7.5. LABORATORY ANALYSIS

Selected soil samples were submitted for a range of chemical analyses comprising:

- Metals.
- pH, total sulphate, water-soluble sulphate (2:1 extract).
- Sulphide.
- Cyanide.
- Phenols.
- Total and speciated polycyclic aromatic hydrocarbons (PAHs).
- Semi-Volatile Organic Compounds (SVOC).
- Volatile Organic Compounds (VOC).
- Asbestos identification and quantification.
- Speciated and banded total petroleum hydrocarbon (TPH).
- Total Organic Carbon (TOC).
- Soil leachate analysis.

I2 Analytical undertook the analytical work and the testing results are included in Appendix VI and discussed in Section 9.

Selected samples were submitted to PSL Laboratory where the following geotechnical tests were undertaken:

- Atterberg limits determinations;
- Moisture content;
- Consolidation tests: and
- Single-stage triaxial tests.

Laboratory analysis sheets are included in Appendix VI and are summarised in Section 8.

8. GROUND AND GROUNDWATER CONDITIONS

8.1. SUMMARY OF GROUND CONDITIONS

The ground investigation generally confirms the published geology and identifies the strata set out in Table 8.1.

TABLE 8.1 SUMMARY OF STRATA

HOLE	DEPTH TO STRATUM (m bgl)				
	MADE GROUND	SOFT CLAY	FIRM / STIFF CLAY	SAND/GRAVEL	BEDROCK
WS101	0.00–1.60	–	1.60–4.05	–	–
WS102	0.00–2.45	–	–	–	–
WS103	0.00–1.20	–	1.20–2.45	–	–
WS104	0.00–1.00	–	1.00–3.14	–	–
WS105	0.00–1.00	–	1.00–3.45	–	–
WS106	0.00–5.45	–	–	–	–
WS107	0.00–4.00	–	4.00–4.45	–	–
WS108	0.00–2.10	–	2.10–4.45	–	–
WS109	0.00–2.50	–	2.50–4.45	–	–
WS110a	0.00–0.15	–	–	–	–
WS110b	0.00–2.25		2.25–4.45	–	–
WS111	0.00–1.25	–	–	–	–
WS112a	0.00–0.30	–	–	–	–
WS112b	0.00–0.65	–	–	–	–
WS113	0.00–2.00	–	2.00–4.45	–	–
WS114	0.00–1.00	1.00–2.00	–	–	–
WS115	0.00–1.11	–	–	–	–
WS116	0.00–2.80	2.80–3.00	3.00–5.45	–	–
WS117	0.00–2.00	–	2.00–5.45	–	–
WS118	0.00–2.80	–	2.80–5.45	–	–
WS119	0.00–2.50	–	2.50–5.45	–	–
WS120	0.00–3.20	–	3.20–5.45	–	–
WS121	0.00–1.10	–	1.10–2.45	–	–
WS122	0.00–1.45	–	1.45–2.45	–	–
WS123a	0.00–0.50	–	–	–	–
WS123b	0.00–2.10	–	2.10–5.45	–	–
WS124	0.00–0.50	–	–	–	–
WS125	0.00–2.20	–	2.20–4.45	–	–
WS126	0.00–2.00	2.00–3.90	3.90–5.45	–	–

HOLE	DEPTH TO STRATUM (m bgl)				
	MADE GROUND	SOFT CLAY	FIRM / STIFF CLAY	SAND/GRAVEL	BEDROCK
WS127	0.00–2.90	–	2.90–4.10	–	–
WS128	0.00–3.45	–	–	–	–
WS129	0.00–1.80	–	1.80–5.45	–	–
WS130	0.00–1.90	–	1.90–5.45	–	–
WS131	0.00–1.30	–	1.30–2.40	–	–
WS132	0.00–0.95	–	0.95–2.38	–	–
WS133	0.00–3.00	–	3.00–5.45	–	–
WS134	0.00–1.80	–	1.80–2.45	–	–
WS135	0.00–1.80	–	1.80–3.30	–	–
WS136	0.00–2.45	–	–	–	–
CP101	0.00–2.60	–	2.60–6.50	6.50–9.88	–
CP102	0.00–3.90	–	3.90–8.40		–
CP103	0.00–3.10	–	3.10–4.80 6.20–8.38	4.80–6.20	–
RB101	0.00–2.60	–	2.60–6.50 9.50–11.20	6.50–9.50 11.20–29.10	29.10–50.00
RB102	0.00–3.20	–	3.20–13.70	13.70–19.20	19.20–46.00
RB103	0.00–3.10	–	3.10–4.80 6.20–17.60	4.80–6.20 17.60–24.00	24.00–46.00
RB104	0.00–1.40	–	1.40–7.70	7.70–12.10	12.10–40.00
RB105	0.00–1.90	–	1.90–7.10 7.90–19.10	7.10–7.90 19.10–23.60	23.60–45.00
TP101	0.00–0.60	–	0.60– 2.00	–	–
TP102	0.00–0.60	–	0.60–2.00	–	–
TP103	0.00–1.50	–	1.50–2.50	–	–
TP104	0.00–1.10	–	1.10-2.20	–	–
TP106	0.00–1.80	–	1.80–2.40	–	–
TP107	0.00–3.10*	–	–	–	–
TP108	0.00–1.80	–	1.80–2.80	–	–
TP109	0.00–1.70	2.30–3.00	1.70–2.30 3.00–3.20	–	–
TP110	0.00–1.60*	–	–	–	–
TP111	0.00–2.00	–	2.00–4.30	–	–
TP112	0.00–1.80	–	1.80–2.70	–	–
TP113	0.00–1.90	1.90–2.40	2.40–2.90	–	–
TP114	0.00–1.60	1.80–3.30	1.60–1.80	–	–
TP115	0.00–0.80	–	0.80–2.20	–	–

HOLE	DEPTH TO STRATUM (m bgl)				
	MADE GROUND	SOFT CLAY	FIRM / STIFF CLAY	SAND/GRAVEL	BEDROCK
TP116	0.00–0.80	–	0.80–2.50	–	–
TP117	0.00–1.00	–	1.00–2.50	–	–
TP118	0.00–1.40	–	1.40–2.30	–	–
TP119	0.00–1.60	–	1.60–1.80	–	–
TP120	0.00–2.50	–	2.50–3.00	–	–
TP121	0.00–1.90	–	1.90-2.80	–	–
TP122	0.00–2.40	3.00–3.70	2.40–3.00	–	–
TP123	0.00–3.50*	–	–	–	–
TP124	0.00–2.70	–	2.70–3.00	–	–
TP125	0.00–3.10	–	3.10–3.60	–	–
TP126	0.00–2.00*	–	–	–	–
TP127	0.00–2.10	–	2.10–2.40	–	–
TP128	0.00–2.20*	–	–	–	–
TP129	0.00–1.90	–	1.90–3.10	–	–
TP130	0.00–1.20	–	1.20–2.70	–	–
RB201	0.00–1.80	–	1.80–14.70	14.70–21.20	21.20–40.00
RB202	0.00–2.30	–	2.30–17.00	17.00–30.50	30.50–40.00
RB203	0.00–1.90	–	1.90–10.60 14.10–19.20	10.60–14.10 19.20–28.30	28.30-40.00
RB204	0.00–1.80	–	1.80–17.10	17.10–24.40	24.40–40.00

8.2. MADE GROUND

Made Ground deposits have been encountered within all exploratory hole locations to a maximum proven depth of 5.45 m bgl (WS106). Although in general, Made Ground in the south of the site extends to circa 2.00 m bgl and 3.00 m in the north.

Beneath the main building in the south-east, Made Ground was proven to a depth of 1.30 m bgl and comprised concrete over yellowish-brown slightly clayey gravel over reworked gravelly clay. Made Ground could not be proven to its full extent at WS106, WS111, WS112, WS115, WS124, WS128 and WS136. This was due to obstructions in the east of the site, cobbles within Made Ground or dense Made Ground. During the supplementary ground investigation the full extent of Made Ground could not be proven within five locations (TP107, TP110, TP123, TP126 and TP128) due to the instability of pits, pit collapse and influx of groundwater.

In general, the majority of locations identified asphalt or concrete surface cover overlaying reworked gravelly clays, containing gravel of mixed lithology, including brick, concrete, clinker, ash, ceramic, sandstone and coal. Beneath former structures in the north east and south of the site concrete was generally underlain by blackish brown gravelly fine to medium sand, with gravels of concrete, mudstone, sandstone, and brick between depths of 0.40 – 2.10 m bgl (TP127). Fragments of metal, ceramic, and timber were also encountered within this material.

In one location the concrete slab was underlain by soft grey clay with plant debris between 0.05 – 1.10 m bgl (TP118).

Visual and olfactory evidence of contamination was noted within several exploratory hole locations. Hydrocarbon odours were identified in 16 out of the 36 locations within Made Ground (WS101, WS104, WS107, WS109, WS112b, WS113, WS115, WS116, WS117, WS118, WS121, WS128, WS132, WS133, WS135, WS136, TP106, TP107, TP111 and TP120). An oily sheen was observed in WS133 in Made Ground.

Relict foundations are likely to be present across the site, beneath former and existing building footprints and railway tracks.

A conjectured Depth of Made Ground Plan is presented as Drawing 15-974-006 in Appendix III.

8.3. DRIFT DEPOSITS

Drift deposits were identified within the majority of exploratory hole locations to a maximum proven depth of 30.50 m bgl (RB202). In general, drift deposits were encountered as a firm to very stiff brown CLAY with varying sand content. Drift geology was generally homogenous across the site.

Soft clay was identified at WS114 from 1.00 to 2.00 m bgl, WS116 from 2.80 to 3.00 m bgl, WS126 from 2.00 to 3.70 m bgl, and TP114 from 1.80 to 3.30 m bgl.

Granular deposits comprising brown gravelly SAND with gravel of sandstone and mudstone were generally found at greater depth (>10.00 m bgl) overlying the bedrock.

Pockets of organic deposits were identified at 3.50 m bgl within WS113.

8.4. SOLID GEOLOGY

Bedrock was encountered within the advanced rotary boreholes only, with the top of bedrock encountered between 12.10 m bgl (RB104) and 30.50 m bgl (RB202) to a maximum proven depth of 40.00 m bgl. Red SANDSTONE was identified beneath the drift overlying a reddish grey MUDSTONE with SANDSTONE bands.

In general, the bedrock is shallower in the east of the site and deeper in the west.

A conjectured Depth to Bedrock Plan is presented as Drawing 15-974-014 in Appendix III.

8.5. GROUNDWATER

Perched groundwater strikes were encountered as seepages. The depth of the seepages is shown on the exploratory hole records in Appendix V and is summarised in Table 8.2.

TABLE 8.2 SUMMARY OF GROUNDWATER STRIKES

LOCATION	DEPTH TO STRIKE (m)	NOTES
E3P 2022		
WS105	1.80	Perched within CLAY
WS107	2.00	Perched within MADE GROUND
WS109	2.00	Perched within MADE GROUND
WS110B	1.40	Perched within MADE GROUND
WS113	1.20	Perched within MADE GROUND
WS114	0.50	Perched within MADE GROUND
WS117	2.00	Perched on CLAY

LOCATION	DEPTH TO STRIKE (m)	NOTES
E3P 2022		
WS122	1.00	Perched within MADE GROUND
WS126	2.00	Perched on CLAY
WS134	1.00	Perched within MADE GROUND
WS136	1.00	Perched within MADE GROUND
TP107	1.40	Seepage
TP109	2.00	Seepage
TP110	1.40	Perched, fast ingress
TP111	3.00	Seepage
TP118	1.10	Perched, fast ingress
TP119	0.80	Perched, fast ingress
TP121	1.60	Seepage
TP123	3.30	Seepage
TP126	0.80	Perched, fast ingress
TP127	2.10	Perched, fast ingress
TP128	1.90	Perched, fast ingress
RB203	29.00	Large water pressure in rock
RB204	26.00	Medium water pressure in rock
WYG 2008		
BH2	4.50	Slow ingress through CLAY
BH3	2.10	Perched within MADE GROUND
BH4	2.60	Moderate ingress through CLAY
	5.10	Slow ingress through SAND
BH5	5.90	Very slow ingress through SAND
TP3	0.70	Perched within MADE GROUND
TP4	2.00	Perched within MADE GROUND
TP15	1.30	Seepage through CLAY
WS101	1.20	Ingress through the land drain
WS110	2.00	Perched within MADE GROUND

8.6. VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

Visual and olfactory evidence of potential contamination has been identified during the site investigation and these are summarised in Table 8.3.

TABLE 8.3 SUMMARY VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

LOCATION	DEPTH (m)	STRATUM	NOTES
E3P 2021/22			
WS101	0.40–0.90	Made Ground	Slight hydrocarbon odour
WS104	0.40–0.60	Made Ground	Slight hydrocarbon odour
WS107	1.00–1.60	Made Ground	Hydrocarbon odour
WS109	1.75–2.50	Made Ground	Hydrocarbon odour
WS112b	0.50	Made Ground	Hydrocarbon odour
WS113	1.10–1.20	Made Ground	Strong hydrocarbon odour
WS115	0.30	Made Ground	Strong hydrocarbon odour
WS116	0.30	Made Ground	Slight hydrocarbon odour
WS117	0.60–0.70	Made Ground	Hydrocarbon odour
WS118	1.90–1.95	Made Ground	Hydrocarbon odour
WS121	0.50–1.00	Made Ground	Hydrocarbon odour
WS128	0.50–0.80	Made Ground	Hydrocarbon odour
WS132	0.45–0.75	Made Ground	Hydrocarbon odour
WS133	0.40–0.80	Made Ground	Hydrocarbon odour/Oily sheen
WS135	0.80–1.00	Made Ground	Hydrocarbon odour
WS136	0.30–0.60 0.70–1.00	Made Ground	Hydrocarbon odour
TP106	0.50–1.00	Made Ground	Slight hydrocarbon odour
TP107	1.40–2.20	Made Ground	Hydrocarbon odour
TP111	0.00–0.80	Made Ground	Slight hydrocarbon odour
TP120	0.50–1.00	Made Ground	Hydrogen Sulphide Odour
WYG 2008			
BH1	0.60 – 1.20	Made Ground	Slight hydrocarbon odour
BH4	0.50 – 1.50	Made Ground	Hydrocarbon odour
BH6	0.20 – 0.90 1.20 – 1.70 2.20 – 2.60	Made Ground	Hydrocarbon odour (tar) Hydrocarbon odour Hydrocarbon odour
WS104	Ground level	Made Ground	Hydrocarbon sheen noted on surface water
WS122	3.60 3.90	Made Ground	Hydrocarbon odour Hydrocarbon odour
WS132	3.00 – 3.30	Made Ground	Slight hydrocarbon odour
HD2	Ground level	Made Ground	Strong acetone odour and evidence of staining by paint/dyes
HD3	Ground level	Made Ground	Strong acetone odour and evidence of staining by paint/dyes
HD4	Ground level	Made Ground	Hydrocarbon odour

LOCATION	DEPTH (m)	STRATUM	NOTES
E3P 2021/22			
HD5	Ground level	Made Ground	Hydrocarbon odour
TP3	Ground level	Made Ground	Hydrocarbon staining noted on the surface
TP15	0.10 – 0.50	Made Ground	Slight hydrocarbon odour

8.7. SOIL CONSISTENCY

Undrained shear strength values were measured using in situ vayne testing and laboratory undrained triaxial tests. Results of the tests are presented in Table 8.4 and 8.5, which indicates the clay soils to generally be very stiff, however results across the site vary between very soft and very stiff. Strength test data is generally consistent with the field descriptions of the aforementioned soils.

TABLE 8.4 SUMMARY OF LABORATORY UNDRAINED SHEAR STRENGTH TEST RESULTS

LOCATION	SAMPLE DEPTH (m)	LAB DESCRIPTION	UNDRAINED SHEAR STRENGTH (kN/m^2)	CONSISTENCY
WS123b	2.50–3.00	Very stiff brown very sandy CLAY.	184	Very Stiff
WS129	3.50–4.00	Very stiff brown very sandy CLAY.	263	Very Stiff
WS131	1.50–2.00	Very stiff brown very sandy CLAY.	210	Very Stiff

TABLE 8.5 SUMMARY OF HAND SHEAR VANE TESTS

LOCATION	DEPTH	SHEAR STRENGTH (kPA)	CALCULATED ALLOWABLE BEARING PRESSURE (kN/m^2)
TP101	1.00	137	321.95
TP101	1.50	196	460.60
TP102	1.00	196	460.60
TP102	1.50	196	460.60
TP103	1.70	196	460.60
TP103	2.30	196	460.60
TP104	1.00	63	148.05
TP104	1.50	136	319.60
TP104	2.00	158	371.30
TP106	2.00	196	460.60
TP108	1.80	85	199.75
TP108	2.40	41	96.35
TP108	2.60	152	96.35
TP109	2.00	118	277.30

LOCATION	DEPTH	SHEAR STRENGTH (kPA)	CALCULATED ALLOWABLE BEARING PRESSURE (kN/m^2)
TP109	3.00	179	420.65
TP111	2.00	66	155.10
TP111	2.50	50	117.10
TP111	4.00	162	380.70
TP112	2.00	196	460.60
TP112	2.50	196	460.60
TP113	2.40	151	354.85
TP113	2.80	196	460.60
TP114	1.60	132	310.20
TP114	2.00	23	54.05
TP114	2.50	12	28.20
TP114	3.00	26	61.10
TP115	1.00	194	455.90
TP115	1.50	196	460.60
TP115	2.00	196	460.60
TP116	1.00	196	460.60
TP116	1.50	196	460.60
TP116	2.00	196	460.60
TP117	1.0	196	460.60
TP117	1.50	196	460.60
TP117	2.00	196	460.60
TP117	2.50	196	460.60
TP118	1.50	196	460.60
TP118	2.00	196	460.60
TP120	2.70	63	148.05
TP121	2.00	99	232.65
TP121	2.40	120	282.00
TP121	2.70	152	357.20
TP122	2.50	80	188.00
TP122	3.00	60	141.00
TP124	2.80	56	131.60
TP125	3.20	191	448.85
TP127	2.20	120	282.00
TP129	2.00	63	148.05
TP129	2.40	68	159.80

LOCATION	DEPTH	SHEAR STRENGTH (kPA)	CALCULATED ALLOWABLE BEARING PRESSURE (kN/m^2)
TP129	3.00	75	176.25
TP130	1.20	83	195.05
TP130	1.60	55	129.25
TP130	1.90	66	155.10
TP130	2.20	172	404.20
TP130	2.60	117	274.95

Notes
ABP was Calculated using Stroud and Butler et al 1974.

Results of the standard penetration tests, including undrained shear strengths derived from SPTs, are included in Table 8.6.

TABLE 8.6 STANDARD/CONE PENETRATION TEST RESULTS

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS101	1.00	MADE GROUND: slightly clayey gravel	5	5.04	Loose	N/A	N/A	N/A	-
WS101	2.00	gravelly CLAY	13	11.88	N/A	Medium strength	Stiff	59.38	139.54
WS101	3.00	slightly sandy gravelly CLAY	48	41.74	N/A	Very high strength	Very Stiff	208.72	490.48
WS101	3.60	slightly sandy slightly gravelly CLAY	50	42.66	N/A	Very high strength	Very Stiff	213.32	501.30
WS102	1.00	MADE GROUND: gravelly clay	28	28.23	N/A	High strength	Very Stiff	141.14	-
WS102	2.00	slightly gravelly CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS103	1.00	MADE GROUND: gravelly clay	17	17.14	N/A	High strength	Very Stiff	85.69	-
WS103	2.00	gravelly CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS104	1.00	gravelly CLAY	8	8.07	N/A	Medium strength	Stiff	40.33	94.77
WS104	2.00	slightly gravelly CLAY	30	27.41	N/A	High strength	Very Stiff	137.03	322.02
WS104	2.70	slightly gravelly CLAY	50	44.01	N/A	Very high strength	Very Stiff	220.03	517.06
WS105	1.00	CLAY	8	8.07	N/A	Medium strength	Stiff	40.33	94.77

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS105	2.00	CLAY	5	4.57	N/A	Low strength	Firm	22.84	53.67
WS105	3.00	CLAY	50	43.48	N/A	Very high strength	Very Stiff	217.41	510.92
WS106	1.00	MADE GROUND: gravelly clay	4	4.03	N/A	Low strength	Firm	20.16	-
WS106	2.00	MADE GROUND: gravelly clay	3	2.74	N/A	Very low strength	Soft	13.70	-
WS106	3.00	MADE GROUND: slightly sandy gravelly clay	8	6.96	N/A	Low strength	Firm	34.79	-
WS106	4.00	MADE GROUND: slightly gravelly clay	32	27.04	N/A	High strength	Very Stiff	135.18	-
WS106	5.00	MADE GROUND: slightly gravelly clay	24	19.91	N/A	High strength	Very Stiff	99.55	-
WS107	1.00	MADE GROUND: clayey gravel	8	8.07	Loose	N/A	N/A	N/A	-
WS107	2.00	MADE GROUND: clay	8	7.31	N/A	Low strength	Firm	36.54	-
WS107	3.00	MADE GROUND: clay	7	6.09	N/A	Low strength	Firm	30.44	-
WS107	4.00	MADE GROUND: clay	50	42.24	N/A	Very high strength	Very Stiff	211.21	-
WS108	1.00	MADE GROUND: sandy gravelly clay	11	11.09	N/A	Medium strength	Stiff	55.45	-
WS108	2.00	MADE GROUND: slightly gravelly clay	8	7.31	N/A	Low strength	Firm	36.54	-

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS108	3.00	slightly sandy CLAY	24	20.87	N/A	High strength	Very Stiff	104.36	245.24
WS108	4.00	gravelly CLAY	50	42.24	N/A	Very high strength	Very Stiff	211.21	496.35
WS109	1.00	MADE GROUND: very gravelly clay	13	13.11	N/A	Medium strength	Stiff	65.53	-
WS109	2.00	MADE GROUND: slightly sandy slightly gravelly clay	13	11.88	N/A	Medium strength	Stiff	59.38	-
WS109	3.00	CLAY	10	8.70	N/A	Medium strength	Stiff	43.48	102.18
WS109	4.00	slightly gravelly CLAY	50	42.24	N/A	Very high strength	Very Stiff	211.21	496.35
WS110b	1.00	MADE GROUND: sandy clay	17	17.14	N/A	High strength	Very Stiff	85.69	-
WS110b	2.00	MADE GROUND: gravelly clay	12	10.96	N/A	Medium strength	Stiff	54.81	-
WS110b	4.00	CLAY	50	42.24	N/A	Very high strength	Very Stiff	211.21	496.35
WS111	1.00	MADE GROUND: sand	50	50.41	Very Dense	N/A	N/A	N/A	-
WS112b	0.60	MADE GROUND: clayey gravel	50	54.48	Very Dense	N/A	N/A	N/A	-
WS113	1.00	MADE GROUND: gravel	9	9.07	Loose	N/A	N/A	N/A	-
WS113	2.00	slightly gravelly CLAY	7	6.39	N/A	Low strength	Firm	31.97	75.14

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS113	3.00	slightly gravelly CLAY	7	6.09	N/A	Low strength	Firm	30.44	71.53
WS113	4.00	slightly gravelly CLAY	50	42.24	N/A	Very high strength	Very Stiff	211.21	496.35
WS114	1.00	gravelly CLAY	3	3.02	N/A	Very low strength	Soft	15.12	35.54
WS114	2.00	slightly sandy gravelly CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS115	0.70	MADE GROUND: slightly gravelly clay	50	53.21	N/A	Very high strength	Very Stiff	266.04	-
WS116	1.00	MADE GROUND: sandy gravelly clay	4	4.03	N/A	Low strength	Firm	20.16	-
WS116	2.00	MADE GROUND: sandy gravelly clay	4	3.65	N/A	Very low strength	Soft	18.27	-
WS116	3.00	slightly gravelly CLAY	20	17.39	N/A	High strength	Very Stiff	86.97	204.37
WS116	4.00	slightly gravelly CLAY	31	26.19	N/A	High strength	Very Stiff	130.95	307.74
WS116	5.00	slightly sandy slightly gravelly CLAY	31	25.72	N/A	High strength	Very Stiff	128.59	302.19
WS117	1.00	MADE GROUND: slightly clayey gravelly sand	12	12.10	Medium Dense	N/A	N/A	N/A	-
WS117	2.00	slightly gravelly CLAY	9	8.22	N/A	Medium strength	Stiff	41.11	96.61
WS117	3.00	CLAY	8	6.96	N/A	Low strength	Firm	34.79	81.75

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS117	4.00	CLAY	9	7.60	N/A	Low strength	Firm	38.02	89.34
WS117	5.00	slightly gravelly CLAY	29	24.06	N/A	High strength	Very Stiff	120.30	282.69
WS118	1.00	MADE GROUND: sandy clay	8	8.07	N/A	Medium strength	Stiff	40.33	-
WS118	2.00	MADE GROUND: slightly sandy gravelly clay	15	13.70	N/A	Medium strength	Stiff	68.52	-
WS118	3.00	gravelly CLAY	16	13.91	N/A	Medium strength	Stiff	69.57	163.49
WS118	4.00	CLAY	34	28.72	N/A	High strength	Very Stiff	143.62	337.52
WS118	5.00	slightly gravelly CLAY	15	12.44	N/A	Medium strength	Stiff	62.22	146.22
WS119	1.00	MADE GROUND: gravelly clay	4	4.03	N/A	Low strength	Firm	20.16	-
WS119	2.00	MADE GROUND: gravelly clay	6	5.48	N/A	Low strength	Firm	27.41	-
WS119	3.00	slightly gravelly CLAY	33	28.70	N/A	High strength	Very Stiff	143.49	337.21
WS119	4.00	slightly gravelly CLAY	23	19.43	N/A	High strength	Very Stiff	97.16	228.32
WS119	5.00	slightly gravelly CLAY	17	14.10	N/A	Medium strength	Stiff	70.52	165.72
WS120	1.00	MADE GROUND: slightly silty sandy gravelly clay	4	4.03	N/A	Low strength	Firm	20.16	-
WS120	2.00	MADE GROUND: slightly silty clay	4	3.65	N/A	Very low strength	Soft	18.27	-

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS120	3.00	MADE GROUND: slightly silty clay	7	6.09	N/A	Low strength	Firm	30.44	-
WS120	4.00	sandy CLAY	43	36.33	N/A	Very high strength	Very Stiff	181.64	426.86
WS120	5.00	sandy CLAY	50	41.48	N/A	Very high strength	Very Stiff	207.41	487.40
WS121	1.00	CLAY	14	14.11	N/A	Medium strength	Stiff	70.57	165.84
WS121	2.00	CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS122	1.00	MADE GROUND: gravelly clay	11	11.09	N/A	Medium strength	Stiff	55.45	-
WS122	2.00	slightly gravelly CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS123b	1.00	MADE GROUND: gravelly clay	4	4.03	N/A	Low strength	Firm	20.16	-
WS123b	2.00	slightly gravelly CLAY	22	20.10	N/A	High strength	Very Stiff	100.49	236.15
WS123b	3.00	slightly gravelly CLAY	25	21.74	N/A	High strength	Very Stiff	108.71	255.46
WS123b	4.00	slightly gravelly CLAY	24	20.28	N/A	High strength	Very Stiff	101.38	238.25
WS123b	5.00	slightly gravelly CLAY	21	17.42	N/A	High strength	Very Stiff	87.11	204.71
WS125	1.00	MADE GROUND: gravelly clay	11	11.09	N/A	Medium strength	Stiff	55.45	-

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS125	2.00	MADE GROUND: slightly gravelly clay	7	6.39	N/A	Low strength	Firm	31.97	-
WS125	3.00	gravelly CLAY	13	11.31	N/A	Medium strength	Stiff	56.53	132.84
WS125	4.00	gravelly CLAY	50	42.24	N/A	Very high strength	Very Stiff	211.21	496.35
WS126	1.00	MADE GROUND: clayey gravel	17	17.14	Medium Dense	N/A	N/A	N/A	-
WS126	2.00	CLAY	4	3.65	N/A	Very low strength	Soft	18.27	42.94
WS126	3.00	slightly silty CLAY	1	0.87	N/A	Extremely low strength	Very Soft	4.35	10.22
WS126	4.00	slightly silty CLAY	27	22.81	N/A	High strength	Very Stiff	114.05	268.03
WS126	5.00	slightly silty CLAY	50	41.48	N/A	Very high strength	Very Stiff	207.41	487.40
WS127	1.00	MADE GROUND: gravelly clay	13	13.11	N/A	Medium strength	Stiff	65.53	-
WS127	2.00	MADE GROUND: slightly gravelly clay	19	17.36	N/A	High strength	Very Stiff	86.79	-
WS127	3.00	slightly gravelly CLAY	28	24.35	N/A	High strength	Very Stiff	121.75	286.12
WS128	1.00	MADE GROUND: clay	5	5.04	N/A	Low strength	Firm	25.20	-

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS128	2.00	MADE GROUND: clay	15	13.70	N/A	Medium strength	Stiff	68.52	-
WS128	3.00	MADE GROUND: clay	3	2.61	N/A	Very low strength	Soft	13.04	-
WS129	1.00	MADE GROUND: gravelly clay	10	10.08	N/A	Medium strength	Stiff	50.41	-
WS129	2.00	slightly gravelly CLAY	21	19.18	N/A	High strength	Very Stiff	95.92	225.42
WS129	3.00	slightly gravelly CLAY	20	17.39	N/A	High strength	Very Stiff	86.97	204.37
WS129	4.00	slightly sandy gravelly CLAY	23	19.43	N/A	High strength	Very Stiff	97.16	228.32
WS129	5.00	slightly sandy gravelly CLAY	29	24.06	N/A	High strength	Very Stiff	120.30	282.69
WS130	1.00	MADE GROUND: gravelly clay	10	10.08	N/A	Medium strength	Stiff	50.41	-
WS130	2.00	slightly sandy CLAY	8	7.31	N/A	Low strength	Firm	36.54	85.87
WS130	3.00	gravelly CLAY	9	7.83	N/A	Low strength	Firm	39.13	91.97
WS130	4.00	slightly gravelly CLAY	23	19.43	N/A	High strength	Very Stiff	97.16	228.32
WS130	5.00	slightly gravelly CLAY	19	15.76	N/A	High strength	Very Stiff	78.81	185.21
WS131	1.00	MADE GROUND: slightly gravelly clay	11	11.09	N/A	Medium strength	Stiff	55.45	-
WS131	2.00	CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS132	1.00	slightly gravelly CLAY	26	26.21	N/A	High strength	Very Stiff	131.06	307.99

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING PRESSURE (kN/m^2)*
WS132	2.00	slightly gravelly CLAY	50	45.68	N/A	Very high strength	Very Stiff	228.38	536.70
WS133	1.00	MADE GROUND: gravelly clay	18	18.15	N/A	High strength	Very Stiff	90.73	-
WS133	2.00	MADE GROUND: very gravelly clay	14	12.79	N/A	Medium strength	Stiff	63.95	-
WS133	3.00	slightly gravelly CLAY	24	20.87	N/A	High strength	Very Stiff	104.36	245.24
WS133	4.00	slightly gravelly CLAY	29	24.50	N/A	High strength	Very Stiff	122.50	287.88
WS133	5.00	slightly gravelly CLAY	39	32.36	N/A	Very high strength	Very Stiff	161.78	380.17
WS134	1.00	MADE GROUND: gravelly clay	6	6.05	N/A	Low strength	Firm	30.24	-
WS134	2.00	CLAY	4	3.65	N/A	Very low strength	Soft	18.27	42.94
WS135	1.00	MADE GROUND: slightly gravelly clay	5	5.04	N/A	Low strength	Firm	25.20	-
WS135	2.00	gravelly CLAY	11	10.05	N/A	Medium strength	Stiff	50.24	118.07
WS135	3.00	sandy slightly gravelly CLAY	50	43.48	N/A	Very high strength	Very Stiff	217.41	510.92
WS136	1.00	MADE GROUND: clay	10	10.08	N/A	Medium strength	Stiff	50.41	-
WS136	2.00	MADE GROUND: clay	50	45.68	N/A	Very high strength	Very Stiff	228.38	-

NOTES

* The Allowable Bearing Pressure (ABP) should be considered indicative.
The interpretation of in situ mass undrained shear strength (cu) data from SPT Blow Count (N) results and the influence of the Plasticity Index (PI) was reported in Standard Penetration Test in Insensitive Clays and Soft Rocks. Stroud (1974). The standard penetration test and the engineering properties of glacial materials subsequently. Stroud and Butler (1975) and (1989).
Allowable bearing pressure on sands. Soil Mechanics in Engineering Practice Terzaghi, K. & Peck, R.B. 1996.

8.8. SIDE STABILITY AND EASE OF EXCAVATION

The presence of brick and concrete cobbles within the Made Ground deposits site-wide, meant that breaking out was slow through the Made Ground and in some places, Made Ground could not be fully penetrated.

8.9. CONSOLIDATION

Two undisturbed samples of Glacial Till were submitted for oedometer analysis. The results are provided in Table 8.7.

TABLE 8.7 OEDOMETER CONSOLIDATION RESULTS

LOCATION	DEPTH (m)	SAMPLE TYPE	MOISTURE CONTENT (%)	OEDOMETER CONSOLIDATION		
				PRESSURE RANGE (kPa)	Mv (m^2/MN)	Cv (m^2/year)
WS131	1.5	U	18	0–35	0.087	53.427
				35–70	0.067	15.372
				70–140	0.111	8.323
				140–280	0.087	3.617
				280–35	0.057	1.629
WS123b	2.5	U	18	0–55	0.305	13.313
				55–110	0.247	3.372
				110–220	0.178	2.660
				220–440	0.111	1.680
				440–55	0.056	3.363

When considered at over-burden pressure with an additional load of 110 kPa the coefficient of volume compressibility (Mv) ranged from 0.111 m^2/MN up to 0.178 m^2/MN. The material is considered to be low to medium compressibility.

The rate at which settlement is likely to occur is determined by the coefficient of consolidation (Cv). As shown in Table 8.6, the coefficient ranges from 2.660 m^2/yr to 8.3239 m^2/yr.

8.10. SOIL PLASTICITY

The liquid and plastic limits of samples of natural in-situ clay are determined using the cone penetrometer method and the rolling thread test. These tests enable the determination of an average plasticity index (PI) for each “type” of clay, although the judgement is applied where variable results are reported.

The Atterberg limits determinations, summarised in Table 8.8, show the clay to be of predominantly moderate plasticity with discrete areas of low plasticity clay.

TABLE 8.8 SUMMARY OF PLASTICITY INDEX TEST RESULTS

LOCATION	DEPTH (m)	NATURAL MOISTURE CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	PASSING 425 µm SIEVE (%)	MODIFIED PLASTICITY INDEX	NHBC VOLUME CHANGE POTENTIAL
WS102	2.00	16	18	36	18	88	15.84	Low
WS114	1.00	28	21	44	23	90	20.70	Medium
WS117	2.00	30	22	47	25	89	22.25	Medium
WS121	2.00	19	21	43	22	100	22.00	Medium
WS123b	3.00	20	22	46	24	97	23.28	Medium
WS126	2.00	34	25	53	28	97	27.16	Medium
WS130	2.00	47	25	52	27	99	26.73	Medium
WS132	2.00	16	17	34	17	96	16.32	Low

The results of the Atterberg limits testing confirmed that the soils would be deemed to be "Low to Medium Volume Change Potential" in accordance with the classification system utilised by the LABC/NHBC industry guidance.

8.11. pH AND SULPHATE

Chemical analyses for pH and soluble sulphate content contained in Appendix VI and summarised in Table 8.9, show that the soils at the site generally meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE *Special Digest 1* (2005).

Elevated sulphate conditions meeting class DS-4, AC-3s is identified for use at WS121. DS-2-AC-1s is identified at WS123B, WS125 and WS133 and TP129.

TABLE 8.9 SUMMARY OF pH AND SULPHATE DATA

LOCATION	DEPTH (m)	SO_4 IN 2:1 WATER/SOIL (g/l)	pH VALUE	CLASSIFICATION
WS104	0.50	0.085	11.6	DS-1, AC-1s
WS105	1.80	0.12	7.5	DS-1, AC-1s
WS109	2.00	0.20	8.1	DS-1, AC-1s
WS110	1.80	0.13	8.2	DS-1, AC-1s
WS114	0.50	0.13	8.1	DS-1, AC-1s
WS116	0.25	0.049	8.0	DS-1, AC-1s
WS119	2.50	0.038	8.0	DS-1, AC-1s
WS121	0.70	3.3	6.8	**DS-4, AC-3s**
WS122	0.80	0.039	8.4	DS-1, AC-1s
WS123B	0.80	1.1	7.6	**DS-2, AC-1s**

LOCATION	DEPTH (m)	SO_4 IN 2:1 WATER/SOIL (g/l)	pH VALUE	CLASSIFICATION
WS125	0.50	0.57	8.8	**DS-2, AC-1s**
WS128	0.60	0.029	7.9	DS-1, AC-1s
WS131	0.95	0.19	7.8	DS-1, AC-1s
WS133	0.50	0.89	7.7	**DS-2, AC-1s**
WS135	0.90	0.43	7.2	DS-1, AC-1s
WS136	0.50	0.28	7.3	DS-1, AC-1s
TP102	0.40	0.32	8.2	DS-1, AC-1s
TP103	0.60	0.26	7.9	DS-1, AC-1s
TP103	2.00	0.059	8.5	DS-1, AC-1s
TP106	0.90	0.061	7.9	DS-1, AC-1s
TP107	1.60	0.21	7.8	DS-1, AC-1s
TP109	2.50	0.052	8	DS-1, AC-1s
TP111	0.80	0.3	8.3	DS-1, AC-1s
TP112	0.60	0.11	8.4	DS-1, AC-1s
TP116	1.50	0.067	8.6	DS-1, AC-1s
TP118	1.20	0.31	8.2	DS-1, AC-1s
TP120	0.60	0.082	7.8	DS-1, AC-1s
TP122	0.90	0.07	8	DS-1, AC-1s
TP123	1.90	0.027	7.7	DS-1, AC-1s
TP124	0.70	0.19	10.1	DS-1, AC-1s
TP126	1.00	0.057	8.2	DS-1, AC-1s
TP127	2.20	0.03	8.3	DS-1, AC-1s
TP129	0.40	1.4	11	**DS-2, AC-1s**
TP130	0.60	0.14	9.4	DS-1, AC-1s

9. TIER I QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT

E3P has undertaken a Tier I qualitative risk assessment to determine if any potential contaminants within the underlying soils and groundwater pose an unacceptable level of risk to the identified receptors.

9.1. HUMAN HEALTH RISK ASSESSMENT

At Tier I stage, the long term (chronic) human health toxicity of the soil has been assessed by comparing the on-site concentrations of organic and inorganic compounds with reference values published in LQM/CIEH S4UL (S4UL3267). The results of this comparison have been summarised in Table 9.1.

Where Tier I screening values are not provided by LQM, other screening values have been used and these are referenced in Table 9.1.

Data obtained from the historical WYG (2008) report has also been assessed against updated Tier I screening values and are included in Appendix X. The exceedances are plotted on the Historical Contamination Issues Plan (Drawing 15-974-024) in Appendix III. This assessment has been completed to provide a full appraisal of previous data and offer a fully updated and robust conceptual site model of the site.

TABLE 9.1 SUMMARY OF INORGANIC AND HYDROCARBON TOXICITY ASSESSMENT FOR A RESIDENTIAL END-USE WITH PLANT UPTAKE

CONTAMINANT	UNIT	GAC	N	MC	LOC. OF EX	PATH -WAY	ASSESSMENT
Arsenic	mg/kg	37	45	120 110 110 110 99 91 91 84 66 57 53 48 49 38	TP118 1.20 TP122 0.90 WS123B 0.80 WS107 1.00 WS110 1.80 WS136 0.50 WS121 0.70 WS115 0.40 WS122 1.70 WS101 0.60 TP130 0.60 WS109 2.00 WS118 1.90 WS128 0.60	1	**Further Action**
Cadmium	mg/kg	11	45	7.7	-	1	No Further Action
Chromium (VI)	mg/kg	6.1	45	<4.0	-	1	No Further Action
Lead	mg/kg	200	45	4300 720 650 610 600 590 540 520 450 440 440 430 420	WS115 0.40 WS122 1.70 TP122 0.90 TP118 1.20 WS123B 0.80 WS107 1.00 WS128 0.60 TP123 1.90 WS136 0.50 TP126 1.00 TP130 0.60 WS116 0.25 WS135 0.90	1	**Further Action**

CONTAMINANT	UNIT	GAC	N	MC	LOC. OF EX	PATH -WAY	ASSESSMENT
Lead (Cont..)	mg/kg	200	45	410 380 380 370 350 350 320 320 260 260 220 210	TP103 0.60 WS133 0.50 WS114 0.50 WS136 1.20 TP107 1.60 TP124 0.7 TP111 0.80 WS110 1.80 WS133 2.30 TP120 0.80 WS109 2.00 TP112 0.60	1	Further Action
Mercury	mg/kg	1.2	45	7.3 6.5 3.5 2.7 2.6 2.2 5.1 3.1	TP124 0.70 WS123B 0.80 TP107 1.60 WS136 1.20 TP122 0.90 WS135 0.90 WS115 0.40 WS107 1.00	4	Further Action
Nickel	mg/kg	180	45	77	-	1	No Further Action
Selenium	mg/kg	250	45	<1.0	-	1	No Further Action
Copper	mg/kg	2400	45	520	-	1	No Further Action
Zinc	mg/kg	3700	45	5900	WS115 0.40	1	Further Action
Cyanide – Total	mg/kg	791	45	12	-	1	No Further Action
Phenols – Total	mg/kg	210	45	73	-	1	No Further Action
Asbestos	Fibres	NFD	45	<0.00 1	WS125 0.50	3	Further Action
Naphthalene	mg/kg	2.3	45	1400 23 11 8.7 7.7 5 4.5 3.3 3.1 4.8 3.2	WS121 0.70 WS104 0.50 TP122 0.90 WS133 2.30 TP107 1.60 TP120 0.80 WS136 1.20 WS125 0.50 WS133 0.50 WS110 1.80 WS117 2.40	4	Further Action
Acenaphthylene	mg/kg	170	45	1600	WS121 0.70	2	Further Action
Acenaphthene	mg/kg	210	45	490	TP124 0.70	1	Further Action
Fluorene	mg/kg	170	45	2200 450	WS121 0.70 TP124 0.70	1	Further Action
Phenanthrene	mg/kg	95	45	4600 1800 370 360 270	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25	2	Further Action

CONTAMINANT	UNIT	GAC	N	MC	LOC. OF EX	PATH -WAY	ASSESSMENT
Phenanthrene (cont..)	mg/kg	95	45	240 130 110	WS128 0.60 TP130 0.60 TP122 0.90	2	**Further Action**
Anthracene	mg/kg	2400	45	1800	-	2	No Further Action
Fluoranthene	mg/kg	280	45	3100 1400 480 390	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40	2	**Further Action**
Pyrene	mg/kg	620	45	2500 1400 480	WS121 0.70 TP124 0.70 TP111 0.80	2	**Further Action**
Benzo(a)Anthracene	mg/kg	7.2	45	2200 730 220 190 91 77 66 64 42 37 35 24 23 23 22 21 20 20 18 17 16 16 11 11 12 8.6	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 WS128 0.60 TP130 0.60 TP122 0.90 TP107 1.60 TP112 0.60 WS104 0.50 TP129 0.40 TP102 0.40 WS136 1.05 WS135 0.90 WS136 1.20 WS133 2.30 TP120 0.80 WS133 0.50 TP106 0.90 TP103 0.60 WS107 1.00 WS122 1.70 WS110 1.80 WS125 0.50 WS122 1.70	2	**Further Action**
Chrysene	mg/kg	15	45	750 230 170 77 72 59 53 38 31 19 18 17	TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 WS128 0.60 TP122 0.90 TP130 0.60 TP107 1.60 TP112 0.60 TP120 0.80 TP102 0.40 TP129 0.40	2	**Further Action**

CONTAMINANT	UNIT	GAC	N	MC	LOC. OF EX	PATH -WAY	ASSESSMENT
Benzo(b)Fluoranthene	mg/kg	2.6	45	1500 670 210 140 64 64 63 62 38 30 28 25 20 18 18 18 15 14 13 12 12 11 8.4 7.9 7.7 6.8 4.4 4 2.7	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 WS128 0.60 TP130 0.60 TP122 0.90 TP107 1.60 WS104 0.50 TP112 0.60 WS136 1.05 TP129 0.40 WS135 0.90 TP102 0.40 TP120 0.80 TP106 0.90 WS107 1.00 WS136 1.20 WS133 2.30 TP103 0.60 WS125 0.50 WS122 1.70 WS110 1.80 WS133 0.50 WS131 0.95 WS123B 0.80 WS101 0.60 TP118 1.20	2	Further Action
Benzo(k)Fluoranthene	mg/kg	77	45	1200 360 120 87	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40	2	Further Action
Benzo(a)Pyrene	mg/kg	2.2	45	1600 710 190 150 67 59 55 53 32 28 27 27 22 19 18 18 14 14 13 13 10	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 TP122 0.90 TP130 0.60 WS128 0.60 TP107 1.60 WS104 0.50 WS136 0.50 TP112 0.60 TP129 0.40 WS135 0.90 TP120 0.80 TP102 0.40 TP106 0.90 WS107 1.00 WS136 1.20 TP103 0.60 WS125 0.50	2	Further Action

Benzo(a)Pyrene (cont..)	mg/kg	2.2	45	9.6 9.5 6.5 5.9 5.6 3.9 3.5 3.2 3.0	WS110 1.80 WS133 2.30 WS122 1.70 WS133 0.50 WS131 0.95 WS101 0.60 WS123B 0.80 TP118 1.20 WS117 2.40	2	**Further Action**
Indeno(123-cd)Pyrene	mg/kg	27	45	770 360 84 73 34 31 28	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 TP122 0.90 TP130 0.60	2	**Further Action**
Dibenzo(a,h)Anthracene	mg/kg	0.24	45	260 100 26 24 10 9.9 8.5 7.9 6.1 4.2 3.8 3.1 2.6 2.5 2.2 1.7 1.7 1.6 1.4 1.3 1.2 1.2 1.2 0.9 0.73 0.68 0.44	WS121 0.70 TP124 0.70 TP111 0.80 WS115 0.40 WS116 0.25 TP122 0.90 TP130 0.60 WS128 0.60 TP107 1.60 WS104 0.50 WS136 0.50 TP120 0.80 TP129 0.40 WS135 0.90 WS107 1.00 TP106 0.90 TP103 0.60 WS125 0.50 WS136 1.20 WS110 1.80 WS122 1.70 WS133 0.50 WS133 2.30 WS131 0.95 WS101 0.60 WS123B 0.80 WS117 2.40	2	**Further Action**
Benzo(ghi)Perylene	mg/kg	320	45	670 420 33	WS121 0.70 TP124 0.70 TP130 0.60	2	**Further Action**
TPH C5-C6 (aliphatic)*	mg/kg	42	45	< 1.0	-		No Further Action
TPH C6-C8 (aliphatic)*	mg/kg	100	45	< 0.1	-	4	No Further Action
TPH C8-C10 (aliphatic)*	mg/kg	27	45	< 0.1	-	4	No Further Action
TPH C10-C12 (aromatic)*	mg/kg	74	45	2400 180 100	WS121 0.70 WS115 0.40 WS116 0.25	4	**Further Action**

TPH C12-C16 (aromatic)*	mg/kg	140	45	5200 320 550 220 180	WS121 0.70 WS136 1.20 WS115 0.40 WS116 0.25 WS128 0.60	4	**Further Action**
TPH C16-C21 (aromatic)*	mg/kg	260	45	9400 1400 1200 690 480 470 410	WS121 0.70 WS115 0.40 WS136 1.20 WS136 0.50 WS128 0.60 WS116 0.25 TP112 0.60	1	**Further Action**
TPH C21-C35 (aromatic)*	mg/kg	1100	27	8900 1400 2300	WS121 0.70 WS136 1.20 WS115 0.40	1	**Further Action**
Cis 1,2-Dichloroethene**	mg/kg***	0.0556	20	<0.00 1	-	4	No Further Action
1,1,1-Trichloroethane	mg/kg	8.8	20	<0.00 1	-	4	No Further Action
Trichloroethene	mg/kg	0.016	20	<0.00 1	-	4	No Further Action
Tetrachloroethene**	mg/kg	0.18	20	<0.00 1	-	4	No Further Action
Vinyl Chloride	mg/kg	0.00064	20	<0.00 1	-	4	No Further Action
1,2,4-Trimethylbenzene**	mg/kg ***	1.17	20	0.03	-	4	No Further Action
4-Methylphenol**	mg/kg	92.2	23	100	WS121 0.70	4	**Further Action**
2,4-Dimethylphenol**	mg/kg	21.2	23	49	WS121 0.70	4	**Further Action**
Dibenzofuran	mg/kg	-	23	870	-	4	**Further Action**
Carbazole	mg/kg	-	23	440	-	4	**Further Action**
Anthraquinone	mg/kg	-	23	120	-	4	**Further Action**
2-methylnaphthalene	mg/kg	-	23	610	-	4	**Further Action**
2,4- dimethylphenol	mg/kg	-	23	49	-	4	**Further Action**

Notes
PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants

Abbreviations: GAC = general assessment criteria, n = number of samples, MC = maximum concentration; Loc of Ex = location of exceedance; NFD = no fibres detected.

* The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. E3P has utilised the Tier 1 values for aliphatic compounds for the volatile and semi-volatile fractions (C5-C12) and the Tier 1 values for an aromatic compounds for the non-volatile fractions (C12-C35). The comparison of total (aliphatic/aromatic) compounds to an individual fraction are considered to be a conservative approach and satisfactory for the protection of human health.
** Atkins ATRISK
*** USEPA Risk Management Levels

Referring to Table 9.1, the results of this direct comparison indicates that the data exceeds the screening criteria for a residential end-use for the following contaminants:

- Asbestos - Chrysotile
- Heavy Metals – Arsenic, Lead, Mercury and Zinc.
- PAHs – Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Fluoranthene, Phenanthrene, Pyrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(k)fluoranthene, Benzo(a)Pyrene, Indeno, 1,2,3-cd)pyrene, Dibenzo(a,h)Anthracene and Benzo(ghi)perylene.
- Hydrocarbon fractions - C10-C12, C12-C16, C16-C21 and C21-C35.
- 4-Methylphenol
- 2, 4-dimethylphenol

Volatile organic contaminants (VOCs) above the limit of detection have been identified in WS121 at 0.70 m bgl, WS112 CD1 0.50 m bgl within Made Ground samples.

Semi-volatile organic contaminants (SVOCs) were identified above the limit of detection within Made Ground samples during the E3P investigation and discussed further in Section 9.1.1. During the previous WYG investigation SVOC were identified above the detection limit at WS112 CD1 (0.50m), BH1 D2 (0.95m), WS122 CD3 (3.90m).

The laboratory analysis confirms the assessment within the initial conceptual site model and the previous site investigation from 2008 (WYG) that the main constituents of concern were likely to be heavy metals, PAHs, hydrocarbon compounds, semi-volatile and volatile compounds and asbestos.

In relation to these exceedances, the following can be determined:

- The main exposure pathways based on the Tier I exceedances are:
  - Soil ingestion;
  - Vapour inhalation (indoor);
  - Dermal contact and ingestion;
  - Consumption of homegrown vegetables; and
  - Fibre/dust inhalation.
- The exceedances for all determinants are associated with shallow Made Ground deposits.

9.1.1. HUMAN HEALTH RISK ASSESSMENT AND MITIGATION

In relation to heavy metals, non-volatile PAHs and TPH C16-35, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils and consumption of homegrown vegetables.

The risk to chronic human health associated with the elevated concentrations of heavy inorganic metals and non-volatile PAH compounds can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils. The upfilling of the site may help form a part of this.

The specific design and installation process for the appropriate cover systems will be clearly defined within the site remediation and enabling works strategy. However, industry best practice (as outlined within Manchester City Council & Contaminated Land Technical Guidance) will likely require the following minimum depths of certified clean cover:

- Residential gardens – 600 mm
- Landscaped areas– 450 mm
- Public open space (POS) – 450 mm

A physical break layer consisting of a geotextile membrane is recommended beneath the cover system.

Where mercury exceedances have been identified, WS123B, WS135, WS136 have been speciated and show the elemental mercury level to be below 1.2 mg/kg of elemental mercury. As such, the mercury exceedances in these areas can be addressed using a clean cover system.

The remaining exceedances did not have enough sample left to speciate the mercury, and so, these samples should be speciated by the laboratory during enabling works to determine the quantity of elemental mercury within the sample. Should elemental mercury values exceed 1.2 mg/kg, a hotspot removal may be required with chemical validation during remediation and enabling works to ensure no future risk of indoor vapour inhalation by the residential end-user. However, where elemental mercury is not found at exceeding concentrations, the risk to end users will be mitigated through the provision of a clean cover system. Alternatively, an allowance should be made for vapour membranes within all proposed properties.

SVOCs above the limit of detection (LOD) have been identified across the site within Made Ground at WS101, WS104, WS110, WS107, WS117, WS115, WS116, WS118, WS128, WS121, WS133, WS135, WS136 and within TP103, TP106, TP107, TP111, TP120, TP122, TP124. The SVOCs identified within both phase of E3P investigation and their maximum recorded value are as follows:

- 4-methylphenol (100 mg/kg)
- 2,4-dimethylphenol (49 mg/kg)
- 2-methylnaphthalene (610 mg/kg)
- Dibenzofuran (870 mg/kg)
- Carbazole (440 mg/kg)
- Anthraquinone (120 mg/kg)

The above compounds have been compared to the available Atkins ATRSK tables where a value is prescribed, and elevated concentrations are still identified at WS121. Dibenzofuran, carbazole, anthraquinone, 2-methyl naphthalene and 2,4-dimethylphenol do not have prescribed GAC values; as such, any presence has been considered a theoretical risk.

E3P has undertaken further risk-based assessment for pertinent compounds is discussed below.

2-Methylnaphthalene

2-methylnaphthalene is a white crystalline **solid** compound.

This determinand is classified as a non-threshold substance, therefore even the smallest amount of exposure is considered to pose a theoretical risk to the critical receptor within the context of the developed CSM.

The vapour pressure of 2-methylnaphthalene (0.055 mm Hg @ 25°C) is slightly lower than that of naphthalene ((0.085 mm Hg @ 25°C), it is therefore determined that the compound is less volatile than naphthalene. This data is obtained from Pub Chem.

The Tier 1 CIEH / LQM S4UL for naphthalene is 2.3mg/kg for a residential with plant update scenario, however this assessment assumes dermal contact, inhalation of particulate and other direct exposure pathways. The developed CSM for the subject site incorporates clean cover systems to ensure no direct exposure pathways.

When considering that 2-Methylnaphthalene has a notably reduced vapour pressure to that of naphthalene, the absence of the compound in the vast majority of samples tested (38 of 45) and in due consideration of the maximum concentration of the determinand being only 1.5 ppm, the potential for this compound to enter the vapour phase from soil with temperatures ~10°C is low.

There is no justifiable or peer reviewed toxicological data for an inhalation pathway for 2-methylnaphthalene, therefore is it not possible to develop a robust site-specific risk assessment model given the absence of suitable input parameters.

In light of the above, we must consider the lines of evidence to hand and given that the compound is a non-threshold substance with no peer reviewed, robust or justifiable toxicological data the suggested method to ensure safe regeneration is the adoption of the As Low As Reasonably Possible (ALARP) approach.

In this instance, the methodology for the analytical technique is considered to be the lowest reasonably possible method of determining the presence of the non threshold substance and mitigating risk to the lowest practicable level.

The US national library for medicine confirms:

If released to soil, 2-methylnaphthalene is expected to have slight to no mobility based upon log Koc values of 3.00-5.96. Volatilization from moist soil surfaces is expected based upon a Henry's Law constant of 5.18X10-4 atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. 2-Methylnaphthalene is not expected to volatilize from dry soil surfaces based upon its vapor pressure.

This compound has a very low to no actual volatility, there is no inhalation of dust (indoor or outdoor air) or inhalation of vapour (indoor or outdoor) exposure. The total inhalation background is 1.52%.

As discussed, herein it is highly unlikely that this compound can enter the vapour phase in the soil temperatures furthermore the presence of a passively ventilated sub-floor void with a reasonable volume change potential (24hr) will ensure that in the extremely unlikely event that this compound could volatilise and migrate, the standard mitigation measure would ensure there is absolutely no potential for ingress into the habitable space.

The US EPA has a residential screening value of 24mg/kg for this compound, while this value cannot be utilised for a SSRT, it must be noted that the risk based approach assumes significant dermal uptake. Therefore within the context of the developed site CSM and the lines of evidence approach, it can be determined that the residual compound in this instance is highly unlikely to pose any risk in terms of vapour migration and ingress to the dwelling.

Dibenzofuran

This is a white solid compound generally derived from coal tar.

There is little or no toxicological data for dibenzofuran, therefore it is not possible to generate a site specific risk based assessment criteria to determine at what concentration the compound would post no unacceptable level of risk when considering a vapour exposure pathway in isolation.

The relatively low volatility of this compound within soils with a temperature of ~10°C all but inhibits any volatilisation potential.

In the absence of any viable peer-reviewed toxicological data, the ALARP principle is adopted, therefore works on-site will ensure removal of this material where possible and incorporation of robust and highly risk adverse mitigation measures in the construction of new dwellings.
The US national library for medicine confirms:

Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 2.1X10-4 atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization.

Dibenzofuran is not expected to volatilize from dry soil surfaces(SRC) based upon its vapor pressure

The US EPA has a residential screening value of 7.3mg/kg for this compound, while this value cannot be utilised for a SSRT, it must be noted that the risk-based approach assumes significant dermal uptake.

Carbazole

Carbazole is a non-threshold substance.

Carbazole is a white, crystalline solid. It has a characteristic odour. It is a product of incomplete combustion of organic matter and occurs in petroleum, coal, peat, crude oil and coal tar.

There is no toxicological data available to inform the preparation of a robust site-specific risk based assessment criteria that would model the potential for ingress of vapour to indoor air.

The US national library for medicine confirms:

Carbazole released to air will also be in or on particles that eventually fall to the ground. It is expected to be broken down by sunlight, depending on environmental conditions. ***It will not move into air from moist soil and water surfaces.***

If released to soil, carbazole can have high to no mobility based upon a Koc range of 114-4980, with most values suggesting low mobility to immobility. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 1.16X10-7 atm-cu m/mole. Carbazole is not expected to volatilize from dry soil surfaces based upon its vapor pressure.

It is accepted that carbazole is a non-threshold substance, however, it will be encapsulated in soils with a temperature in the region of 10°C, furthermore given that it is highly unlikely to move into the ambient air via a vapour phase migratory pathway from soil or water there cannot be a complete pollutant linkage in this instance.

The recorded concentrations are marginally above the limit of detection for the analytical method.

Anthraquinone

Anthraquinone is a polycyclic aromatic hydrocarbon derived from *anthracene* or *phthalic anhydride*. Anthraquinone is used in the manufacture of dyes, in the textile and pulp industries, and as a bird repellant.

The US national library for medicine confirms:

If released to soil, anthraquinone is expected to have slight to no mobility based upon a Koc values of 2,755-17,416. Volatilization from moist soil surfaces is not expected to be an important fate process

based upon an estimated Henry's Law constant of 2.35X10-8 atm-cu m/mole. ***Anthraquinone is not expected to volatilize from dry soil surfaces based upon its vapor pressure of 1.16X10-7 mm Hg.***

The US EPA has a residential screening value of 13mg/kg for this compound, while this value cannot be utilised for a SSRT, it must be noted that the risk based approach assumes significant dermal uptake. Therefore within the context of the developed site CSM and the lines of evidence approach, it can be determined that the residual compound in this instance is highly unlikely to pose any risk in terms of vapour migration and ingress to the dwelling.

In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. The majority of the SVOC exceedances are identified in locations with elevated levels of volatile TPH, which is attributed to be the source of the SVOCs. On review of the current site activities, it is considered highly likely that the original cobbles across the site are bounded by coal tar cement. Prior to the supplementary investigation the cobbles had been lifted and removed. This recorded a reduction in TPH exceedances – as anticipated – as the source of TPH, the coal tar, has been removed. However, residual organic pollutants associated with the coal tar remain as highlighted by the presence of site wide SVOCs above the LOD; As such, to mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

VOCs identified above the LOD in Made Ground at WS115 (0.40m) are attributed to the identified TPH impact in this location. The VOC results have been compared against the Atkins ATRISK values for residential with plant uptake and the chemical results are below the target values presented. As such, no further risk assessment is considered to be required.

WS125 (0.50m) identified asbestos in the form of chrysotile at <0.001%. The risk to the end-user is via fibre inhalation and so soils should be managed to ensure they are placed below clean cover systems or in an area of low sensitivity such as below hardstanding or POS at the site. Given the historical use of the site, further asbestos fibres and debris can not be ruled out as being present across the site.

Asbestos in the form of chrysotile has also been identified within a localised area in shallow Made Ground deposits (WS125 at 0.50m bgl). Asbestos quantification has shown <0.001 % asbestos therefore, soils should be placed beneath a cover system depth. No visual signs of ACM were encountered during the ground investigation; it is, therefore, likely that only trace fibres are present. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model shown in Figure 9.1.

FIGURE 9.1 ASBESTOS RISK MITIGATION CONCEPTUAL SITE MODEL



Notes
ND None Detect
0.001% Soils may contain ≤ 0.001% asbestos using composite testing to ensure there is no potential risk to human health. This value is present within areas where there may be a short term low-level exposure of soils containing trace asbestos fibres by construction workers where an appropriate level of asbestos management is employed (dust suppression)
0.1% Soils at a depth of >1.00m bgl may contain <0.1% asbestos using composite testing where they will not be likely to be disturbed in the future and will therefore be in an area of low sensitivity. Risk assessment completed in accordance with Asbestos JIWG risk assessment tools.
Undefined- this will be dependent upon soils encountered during earthworks, which may be placed at these depths to ensure no potential risk to human health.

Chemical analysis of the natural clay drift deposits has identified these soils to be acceptable for use as subsoil within the proposed garden areas; however, further chemical validation samples will be required to confirm this. There are no suitable sources of topsoil available on the site.

9.2. CONTROLLED WATERS RISK ASSESSMENT

E3P has undertaken a controlled waters risk assessment for the site based on the consideration of the conceptual site model and the sensory receptors which are summarised in Table 9.2.

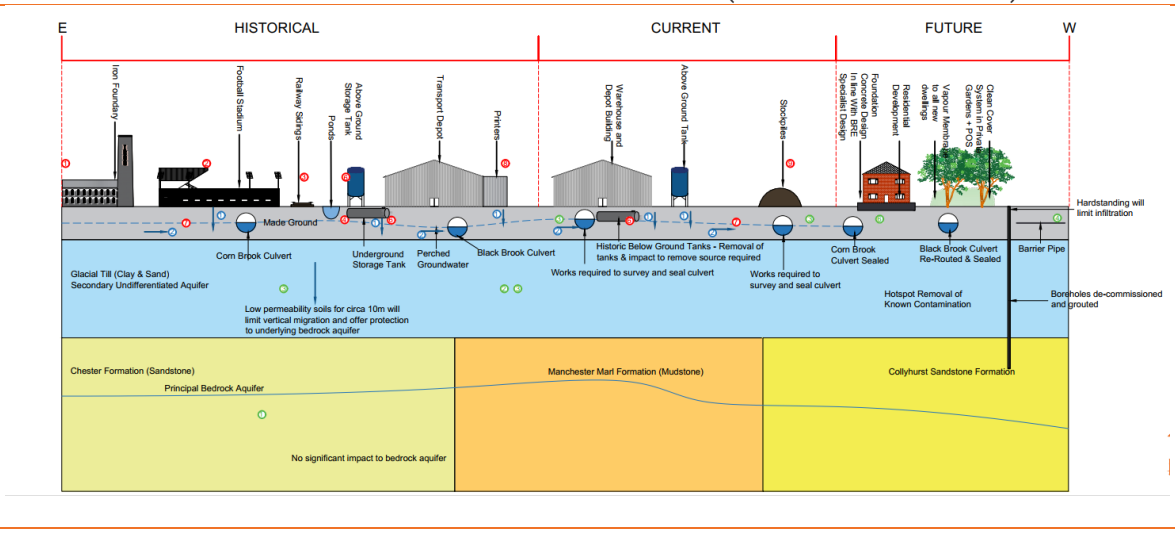
TABLE 9.2 CONTROLLED WATERS CONCEPTUAL MODEL AND SENSITIVITY PROFILE

DISCUSSION	SENSITIVITY RATING
Contaminant Source	
Made Ground Mobile contamination may be present as a result of the Made Ground across the site where infilling and artificial levelling of the site has occurred. The intrusive investigation has shown Made Ground to consist of both cohesive and granular deposits and so there are mixed levels of permeability within the strata. Hydrocarbon and semi-volatile contamination are present throughout the Made Ground to a depth of 1.20 m bgl. Made Ground is considered to be a secondary source, impacted from primary sources discussed below.	**Moderate**
Tank The presence of a raised fuel tank in the centre of the site is a potential source of localised mobile contamination. Spillages were noted during the site walkover but an investigation into this feature has not been possible due to the presence of underground services within the vicinity. This will need further investigation.	**High**
Foundry The presence of the former iron foundry on-site would have produced contaminants that may have entered soils historically and released contaminated effluent into the perched water table on site.	**High**
Transport Depot/Warehouses The presence of the transport depot with vehicle inspection pits on-site would have produced contaminants that may have entered soils historically and released contaminated effluent into the perched water table on site such as TPH, PAH and heavy metals. Given its former use it is likely that fuel storage (for vehicles) was present on site, as such localised TPH and BTEX impact cannot be discounted.	**High**
Printers The presence of the former printers on-site would have produced contaminants that may have entered soils historically and released contaminated effluent into the perched water table on site such as PAH, SVOC and heavy metals.	**High**
Pathway	
Vertical Migration Due to the majority of the site being underlain by cohesive glacial till deposits, vertical migration of contaminants is unlikely to occur as a result of the low permeability of the drift deposits. The presence of this low permeability drift will offer some protection to the underlying aquifer. Cable percussive boreholes have proven the drift to be interbedded with SAND however this is at depth and is beneath circa 5.00 m of cohesive cover therefore the likelihood of migration through this strata is significantly reduced.	**Low**
Lateral migration Lateral migration of contaminants is considered possible due to the presence of granular Made Ground deposits across the site. However, it is considered unlikely that contaminants have the potential to migrate laterally through drift deposits. As such, the likelihood is reduced.	**Medium**

Receptor		
Aquifer Classification in Superficial Drift Deposits	Secondary undifferentiated.	**Moderate**
Aquifer Classification in Bedrock	Chester Formation – Principal. Manchester Marls Formation – Secondary B. Collyhurst Sandstone Formation – Principal.	**High**
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	None Recorded.	**Low**
Distance to the Closest Groundwater Abstraction Point	None within 1000 m of the site.	**Low**
Is the Site Located Within 50 m of a Surface Watercourse?	Two branches of Corn Brook are recorded present on the site the site – Corn Brook, anticipated at the central area of the site running east west and Black Brook (Corn Brook diversion) anticipated to run from the north boundary in a south westerly direction. Both have been culverted. A survey has been completed to trace both culverts locations.	**High**
The ICSM developed within the context of the site setting has a viable pollutant pathway, which would be the lateral migration of potentially mobile phase-soluble contaminants within the Made Ground towards the on-site underground Corn Brook. A full survey for both culverted brooks is not currently available, therefore it is assumed that it is in hydraulic continuity with the site. Black Brook is to be diverted as part of the proposed development and will be fully encapsulated, as such, it is not considered that Black Brook will be in hydraulic continuity with the site upon completion of these works. Corn Brook is to remain untouched, as such, Corn Brook has been identified to be the critical receptor for controlled waters. During both phases of E3P investigation, a consistent water table was not identified, and since all locations advanced were underlain by low permeability CLAY, it is unlikely that vertical migration will occur at the site. The underlying aquifer is considered to be of reduced sensitivity due to the proven depths of cohesive drift beneath the potentially mobile contamination in the Made Ground, the site not being within an SPZ and there being no recorded potable water abstraction points within 1km of the site. Four boreholes have been undertaken into the underlying principal aquifer to determine the quality of the bedrock aquifer beneath the site that indicated the presence of groundwater within the top 20m of rock head.		

In addition to the above, E3P has developed a diagrammatic conceptual model which considers the factors in Table 9.2. This is available as Drawing 15-974-010 and a snapshot is included in Figure 9.2.

FIGURE 9.2 DIAGRAMMATIC CONCEPTUAL SITE MODEL (CONTROLLED WATERS)



To ensure a robust appraisal of the identified risk to controlled waters, E3P has identified the sources of potential contamination that represent a risk to controlled waters from the initial CSM, we have then assessed the availability of ground investigation data in the form of analysis of the solid phase (soil) and dissolved phase within the perched groundwater or aquifer. The results of this assessment are presented in Table 9.3.

TABLE 9.3 QUALITATIVE RISK TO CONTROLLED WATERS FROM SOIL ANALYTICAL RESULTS

CONTAMINANT	ASSESSMENT RATING	DISCUSSION
BTEX > 1 mg/kg	The soil data analysis has identified detectable concentrations of VOCs at WS121 at 0.70 m bgl, WS112 CD1 at 0.50 m bgl above 1 mg/kg that may be indicative of VOC impact.	**Further discussion**
Total VOC > 1 mg/kg		
Total SVOC > 1 mg/kg	SVOC analysis recorded concentrations above the laboratory LOD on a site-wide basis.	**Further discussion**
C5-C10 > 5 mg/kg	All concentrations are below or slightly exceeding the laboratory LOD.	None
C10-C12 > 10 mg/kg	Concentrations of C10-C12 have been recorded above 10 mg/kg throughout the site.	**Further discussion**
C12-C16 > 50 mg/kg	Concentrations of C12-C16 have been recorded throughout the site.	**Further discussion**
Phenols > 2 mg/kg	All concentrations are below the laboratory LOD.	None
Naphthalene > 2 mg/kg	Concentrations of naphthalene above 2 mg/kg have been recorded across the site.	**Further discussion**
Total PAH > 10 mg/kg	Total concentrations of low-solubility PAH compounds greater than 10 mg/kg have been detected throughout the site.	**Further discussion**
PCB > 1 mg/kg	No potential sources of PCB have been identified.	None
Heavy metals > 500 mg/kg	Concentrations of heavy metals above 500 mg/kg have been recorded at WS115, WS122, WS123B, WS107, WS128, BH1 D2, BH4 CD1, WS121, CD1, TP118, TP122 and TP123.	**Further discussion**

The Tier I assessment has included a comparison of leachate analysis from samples of the Made Ground, perched groundwater samples and principal bedrock aquifer samples to environmental quality standards (EQS) and drinking water standards (DWS). Table 9.4 includes site investigation data from E3P from 2021 and WYG from 2008. Table 9.5 includes site investigation data from the October 2022 E3P investigation.

These are presented in Table 9.4 and 9.5.

TABLE 9.4 COMPARISON OF GROUNDWATER AND LEACHATE ANALYSIS WITH TIER 1 SCREENING LEVELS IN E3P DECEMBER 2021 INVESTIGATION

DETERMINANT	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Arsenic	µg/l	50	10	15	8.67	-	3	12	-	No Further Action
Cadmium	µg/l	0.08-0.25	5	15	0.28	WS103 R3	3	0.12	-	**Further Action**
Chromium (VI)	µg/l	3.4	–	15	<5	-	3	< 5.0	-	No Further Action
Chromium (III)	µg/l	4.7	50	15	6.0 7.8 5.0 5.1	WS109 R1 WS109 R2 WS129 R2 WS108 R3	3	4.1	-	**Further Action**
Copper	µg/l	1	2000	15	3.3 2.6 1.9 2.2 3.4 7.8 6.3 9.4 5.5 4.9 5.4 4.5 5.4 1.2 3.9	WS109 R1 WS101R1 WS119R1 WS113R1 WS127R1 WS101R2 WS103R2 WS109R2 WS113R2 WS129R2 WS101R3 WS103R3 WS108R3 WS113R3 WS127R3	3	56 6.5 13	WS104 0.50 WS133 2.30 WS115 0.40	**Further Action**
Total Cyanide	µg/l	1	50	15	<1	-	3	1.8 1.4	WS104 0.50 WS115 0.40	**Further Action**
Lead	µg/l	1.2	10	15	0.7	-	3	2.7 2.4 6.5	WS104 0.50 WS133 2.30 WS115 0.40	**Further Action**

DETERMINANT	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Mercury	µg/l	–	1.0	15	<0.05	-	3	<0.5	-	No Further Action
Nickel	µg/l	4	20	15	12 11 6.5 8.7 5.9 4.3 5.6 6.4 8.4 4.3 5.6 6.4 8.4	WS109 R1 WS101 R1 WS119 R1 WS113 R1 WS127 R1 WS101 R2 WS103 R2 WS109 R2 WS113 R2 WS101 R3 WS103 R3 WS109 R3 WS113 R3	3	8.4 5.5	WS104 0.50 WS133 2.30	Further Action
Selenium	µg/l	–	10	15	9.4	-	3	<4.0	-	No Further Action
Zinc	µg/l	10.9	–	15	240 15 120 16 63 41	WS113 R2 WS109 R1 WS113 R1 WS127 R1 WS108 R3 WS113 R3	3	16 27	WS133 2.30 WS115 0.40	Further Action
pH	6–9			15	6.8-7.4	-	3	11.9	WS104 0.50	No Further Action
Polycyclic Aromatic Hydrocarbons										
Naphthalene	µg/l	2	10*	15	2.90 3.70	WS109 R1 WS113 R1	3	220	WS104 0.50	Further Action
Anthracene	µg/l	0.1	10*	15	0.26 0.48 1.90 0.53	WS109 R1 WS119 R1 WS113 R1 WS109 R2	3	3.5 4.7	WS104 0.50 WS115 0.40	Further Action

DETERMINANT	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Benzo[b]fluoranthene	µg/l	0.00017*	10*	15	0.43 3.50 0.82	WS119 R1 WS113 R1 WS109 R2	3	0.37	WS104 0.50	Further Action
Benzo[k]fluoranthene	µg/l	0.00017*	10*	15	0.22 1.50 0.36	WS119 R1 WS113 R1 WS109 R2	3	0.17	WS104 0.50	Further Action
Benzo(a)pyrene	µg/l	0.00017*	10*	15	0.44 3.60 0.71	WS119 R1 WS113 R1 WS109 R2	3	0.40	WS104 0.50	Further Action
Indeno(123-cd)pyrene	µg/l	0.00017*	10*	15	1.20 0.33	WS113 R1 WS109 R2	3	<0.01	-	Further Action
Fluoranthene	µg/l	0.0063	10*	15	0.59 1.80 8.00 2.10	WS109 R1 WS119 R1 WS113 R1 WS109 R2	3	1.6 2.6	WS104 0.50 WS115 0.40	Further Action
Benzo(ghi)perylene	µg/l	1.7–4	10*	15	1.6	-	3	<0.01	-	No Further Action
Aromatic Hydrocarbon [5]										
TPH C5-C6 (benzene)	µg/l	10	1	15	<1	-	3	< 1.0	-	No Further Action
TPH C6-C8 (toluene)	µg/l	74	700	15	<1	-	3	< 1.0	-	No Further Action
TPH C8-C10 (ethyl benzene)	µg/l	20	300	15	<1	-	3	< 1.0	-	No Further Action
TPH C10-C12 (xylene)	µg/l	30	500	15	190 130	WS109 R2 WS103 R2	3	360 73	WS104 0.50 WS115 0.40	Further Action
TPH C12-C16	µg/l	2	90[5]	15	270 60	WS109 R2 WS103 R2	3	530 480	WS104 0.50 WS115 0.40	Further Action
TPH C16-C35	µg/l	50#	90[5]	15	200	WS109 R2	3	720 570	WS104 0.50 WS115 0.40	Further Action

DETERMINANT	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Aliphatic Hydrocarbon [5]										
TPH C5-C6	µg/l	–	15000	15	<1	-	3	-	-	No Further Action
TPH C6-C8	µg/l	–	15000	15	<1	-	3	-	-	
TPH C8-C10	µg/l	–	300	15	<1	-	3	-	-	
TPH C10-C12	µg/l	–	300	15	490	-	3	-	-	
TPH C12-C16	µg/l	–	300	15	110	-	3	-	-	
TPH C16-C21	µg/l	–	300**	15	<10	-	3	-	-	
TPH C21-C35	µg/l	–	300**	15	<10	-	3	-	-	
Volatile Organic Compounds										
Tetrachloroethylene	µg/l	0.4	10	15	<1	-	-	-	-	No Further Action
Trichloroethylene	µg/l	10	10	15	<1	-	-	-	-	
Trichlorobenzene	µg/l	0.4	–	15	<1	-	-	-	-	
Trichloromethane	µg/l	2.5	–	15	<1	-	-	-	-	
Dichloromethane	µg/l	20	200	15	<1	-	-	-	-	
Carbon Tetrachloride	µg/l	12	3	15	<1	-	-	-	-	
Vinyl Chloride	µg/l	–	0.3	15	<1	-	-	-	-	

TABLE 9.5 COMPARISON OF GROUNDWATER AND LEACHATE ANALYSIS WITH TIER 1 SCREENING LEVELS IN E3P DECEMBER 2022 INVESTIGATION

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN PRINCIPAL AQUIFER	LOCATION OF EXCEEDANCE	NO. OF CULVERT SAMPLES	MAX CONC. IN CULVERT	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Arsenic	µg/l	50	10	4	5.1	-	4	5.16	-	3	3	-	No Further Action
Cadmium	µg/l	0.08-0.25	5	4	0.06	-	4	0.07	-	3	<0.08	-	No Further Action
Chromium (VI)	µg/l	3.4	–	4	<5.0	-	4	<5.0	-	3	<5.0	-	No Further Action
Chromium (III)	µg/l	4.7	50	4	0.2	-	4	0.2	-	3	4.6	-	No Further Action
Copper	µg/l	1	2000	4	1.2-4.8	**EQS**: BH201 BH204	4	4.7 4.6 3.6 1.4	**EQS**: SW2 rd2 SW2 rd1 SW1 rd 1 SW1 rd 1	3	18	**EQS**: TP103 at 0.60m TP119 at 1.20 m TP123 at 0.40 m	**Further Assessment**
Total Cyanide	µg/l	1	50	4	1.5	**EQS**: BH204	2	2.5	**EQS**: SW2 rd2	3	<1.0	-	**Further Assessment**
Lead	µg/l	1.2	10	4	0.3	-	4	0.5	-	3	8.6	**EQS**: TP103 at 0.60m TP119 at 1.20 m TP123 at 0.40 m	**Further Assessment**
Mercury	µg/l	–	1.0	4	<0.05	-	4	<0.05	-	3	<0.5	-	No Further Action

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN PRINCIPAL AQUIFER	LOCATION OF EXCEEDANCE	NO. OF CULVERT SAMPLES	MAX CONC. IN CULVERT	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Nickel	µg/l	4	20	4	2	–	2	1.8	-	3	7.6	**EQS**: TP103 at 0.60m TP119 at 1.20 m TP123 at 0.40 m	**Further Assessment**
Selenium	µg/l	–	10	4	2.2	–	2	0.7	-	3	<4.0	-	No Further Action
Zinc	µg/l	10.9	–	4	6.9	–	4	42 30 29	**EQS**: SW1 rd1 SW1 rd2 SW2 rd2	3	35	**EQS**: TP103 at 0.60m TP119 at 1.20 m TP123 at 0.40 m	**Further Assessment**
pH		6-9	–	4	7.0-7.5	–	2	7.9-8.1	-	3	7.9	-	No Further Action
Polycyclic Aromatic Hydrocarbons													
Naphthalene	µg/l	2	10*	4	<0.01	–	2	36 8.9 36	**EQS**: SW1 rd2 SW2 rd2 **DQS:** SW1 rd2	3	<0.01	-	No Further Action
Anthracene	µg/l	0.1	10*	4	<0.01	–	2	0.11	**EQS**: SW1 rd2	3	<0.01	-	No Further Action

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN PRINCIPAL AQUIFER	LOCATION OF EXCEEDANCE	NO. OF CULVERT SAMPLES	MAX CONC. IN CULVERT	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Benzo[b]fluoranthene	µg/l	0.00017*	10*	4	0.66	**EQS:** BH202	2	<0.01	-	3	<0.01	-	Further Assessment
Benzo[k]fluoranthene	µg/l	0.00017*	10*	4	0.25	**EQS:** BH202	2	<0.01	-	3	<0.01	-	Further Assessment
Benzo(a)pyrene	µg/l	0.00017*	10*	4	0.51	**EQS:** BH202	2	<0.01	-	3	<0.01	-	Further Assessment
Indeno(123-cd)pyrene	µg/l	0.00017*	10*	4	0.34	**EQS:** BH202	2	<0.01	-	3	<0.01	-	Further Assessment
Fluoranthene	µg/l	0.0063	10*	4	0.41-0.84	**EQS:** BH202 BH204	2	0.45	**EQS**: SW1 rd2	3	<0.01	-	Further Assessment
Benzo(ghi)perylene	µg/l	1.7–4	10*	4	0.38	-	2	<0.01	-	3	<0.01	-	No Further Action
Aromatic Hydrocarbon [5]													
TPH C5-C6 (benzene)	µg/l	10	1	4	<1.0	-	2	<1.0	-	3	<1.0	-	No Further Action
TPH C6-C8 (toluene)	µg/l	74	700	4	<1.0	-	2	<1.0	-	3	<1.0	-	No Further Action
TPH C8-C10 (ethyl benzene)	µg/l	20	300	4	<1.0	-	2	<1.0	-	3	<1.0	-	No Further Action
TPH C10-C12 (xylene)	µg/l	30	500	4	<0.01	-	2	70	**EQS**: SW1 rd2	3	<1.0	-	Further Assessment
TPH C12-C16	µg/l	2	90[5]	4	<10	-	2	110	**EQS + DWS**: SW1 rd2	3	<10	-	Further Assessment
TPH C16-C35	µg/l	50#	90[5]	4	<10	-	2	400	**EQS + DWS**: SW1 rd2	3	<10	-	Further Assessment

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN PRINCIPAL AQUIFER	LOCATION OF EXCEEDANCE	NO. OF CULVERT SAMPLES	MAX CONC. IN CULVERT	LOCATION OF EXCEEDANCE	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Aliphatic Hydrocarbon [5]													
TPH C5-C6	µg/l	–	15000	4	<10	-	2	<1.0	-	3	<1.0	-	No Further Action
TPH C6-C8	µg/l	–	15000	4	<10	-	2	<1.0	-	3	<1.0	-	No Further Action
TPH C8-C10	µg/l	–	300	4	<10	-	2	<1.0	-	3	<1.0	-	No Further Action
VOC													
Tetrachloroethylene	µg/l	0.4	10	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action
Trichloroethylene	µg/l	10	10	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action
Trichlorobenzene	µg/l	0.4	–	4	<0.05	-	2	<1.0	-	-	-	-	No Further Action
Trichloromethane	µg/l	2.5	–	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action
Dichloromethane	µg/l	20	200	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action
Carbon Tetrachloride	µg/l	12	3	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action
Vinyl Chloride	µg/l	–	0.3	4	<1.0	-	2	<1.0	-	-	-	-	No Further Action

Notes
Solubility <0.01µg/l
AA – Annual Average
MAC- Maximum Admissible Concentration
* Polyaromatic hydrocarbons (PAH) - Benzo(a)pyrene (BaP), Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water
** There are no WHO Guideline Values for aliphatic fractions C16-C21 and C21-C35, therefore the guideline value for aliphatic fractions inclusive of C8-C16 (300µg/l) has been applied.
The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations (2015)
Directive establishing a framework for Community action in the field of water policy (Water Framework Directive)
Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) - List II substances
Council Directive on the quality of water intended for human consumption (Drinking Water Directive)
WHO Guidelines for Drinking Water Quality. Third edition (2004)
SW1 – Black Brook Samples
SW2 – Corn Brook Samples

9.2.1. CONTROLLED WATER RISK ASSESSMENT AND MITIGATION

This comparison indicates that the data exceeds the EQS values for the following:

- Cadmium
- Chromium (III)
- Copper
- Total Cyanide
- Lead
- Nickel
- Zinc
- Naphthalene
- Anthracene
- Benzo[b]fluoranthene
- Benzo[k]fluoranthene
- Benzo(a)pyrene
- Indeno(123-cd)pyrene
- Fluoranthene
- TPH C10-C12 (xylene) (Aromatic)
- TPH C12-C16 (Aromatic)
- TPH C16-C35 (Aromatic)

In relation to the exceedances, Table 9.6 provides a summary of their presence.

TABLE 9.6 SUMMARY OF Maximum ELEVATED CONTAMINANTS IN GROUNDWATER

CONTAMINANT	LECHATE	PERCHED GROUNDWATER	CULVERT	PRINCIPAL AQUIFER
Cadmium		√		
Chromium (III)		√		
Copper	√	√	√	√
Total Cyanide	√		√	√
Lead	√			
Nickel	√	√		
Zinc	√	√	√	
Naphthalene	√	√	√	
Anthracene	√	√	√	√
Benzo[b]fluoranthene	√	√		√
Benzo[k]fluoranthene	√	√		√
Benzo(a)pyrene	√	√		√
Indeno(123-cd)pyrene	√			√
Fluoranthene	√	√	√	√
TPH C10-C12 (xylene) (Aromatic)	√	√	√	
TPH C12-C16 (Aromatic)	√	√	√	
TPH C16-C35 (Aromatic)	√	√	√	

The Tier I assessment shows there is a leachable potential within the shallow Made Ground soils at the site for a range of contaminants including heavy metals, PAHs and aromatic hydrocarbons. This is indicated by leachate sampling and several rounds of groundwater monitoring at the site with samples from wells installed within the Made Ground at the site.

Contaminants have the theoretical potential to migrate laterally towards the culverts through the granular Made Ground if mobilised by perched groundwater. Marginally elevated heavy metals, PAH and TPH have been identified in the perched groundwater and culverts at the site as shown by Tables 9.4, 9.5 and 9.6.

Tables 9.5 and 9.6 indicates the presence of copper, total cyanide and several PAHs within the principal aquifer beneath the site in comparison to EQS. Water storage in the bedrock aquifer is likely to form a baseflow to groundwater in the wider area. Within the bedrock aquifer minor exceedances of heavy metal (copper and total cyanide) and PAH's (benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[123-cd]pyrene and fluoranthene) have been recorded in comparison to EQS. Cyanide has low solubility in water as most cyanide forms hydrogen within groundwaters. Copper is soluble in water at all pH levels and therefore is deemed to be potentially mobile within the bedrock aquifer, however, with increasing pH the solubility of copper decreases. The pH is recorded at 7-7.5 within the bedrock aquifer, at these pH levels the solubility and mobility of copper is significantly reduced in comparison to more acidic waters. In relation to the minor PAH exceedances these have low solubilities and therefore are considered to be lower mobility and are considered to be low risk.

Given the lack of active groundwater abstraction recorded within 1km of the site, low permeability of the overlying drift limiting vertical migration and low solubilities and concentrations of heavy metal and PAH recorded, there is considered to be no unacceptable risk to the underlying aquifer.

During both phases of E3P investigation, a consistent water table was not identified, and since all locations advanced were underlain by low permeability CLAY, it is unlikely that vertical migration will occur at the site.

The potential for lateral migration of mobile phase contamination through perched groundwater within the granular made ground towards the culverted surface water features cannot be discounted.

In relation to the remaining exceedances, Table 9.7 provides a summary.

TABLE 9.7 SUMMARY OF MAXIMUM ELEVATED CONTAMINANTS IN GROUNDWATER (µg/l)

CONTAMINANT	WS109	WS101	WS119	WS113	WS127	WS129	WS103	WS108
	Contaminant Source							
	General Made Ground		Former Railway Sidings		Former Building	General Made Ground		Former Football Stands
Cadmium	-	-	-	-	-	-	0.28	-
Chromium (III)	7.8	-	-	-	-	5	-	5.1
Copper	9.4	7.8	1.9	5.5	3.9	4.9	6.3	5.4
Nickel	12	11	6.5	8.7	5.9	-	6.5	8.7
Zinc	15	-	-	240	16	-	-	63
Naphthalene	2.9	-	-	3.7	-	-	-	-
Anthracene	0.53	-	-	1.9	-	-	-	-
Benzo[b]fluoranthene	0.82	-	-	3.5	-	-	-	-
Benzo[k]fluoranthene	0.36	-	-	1.5	-	-	-	-
Benzo(a)pyrene	0.71	-	-	3.6	-	-	-	-
Indeno(123-cd)pyrene	0.33	-	-	1.2	-	-	-	-
Fluoranthene	2.1	-	-	8	-	-	-	-
TPH C10-C12 (xylene) (Aromatic)	190	-	-	-	-	-	130	-
TPH C12-C16 (Aromatic)	270	-	-	-	-	-	60	-
TPH C16-C35 (Aromatic	200	-	-	-	-	-	-	-
2-methylphenol	0.91	-	-	-	-	-	-	-
2,4-dimethylphenol	20	-	-	-	-	-	-	-
2-methylnaphthalene	0.38	-	0.25	0.85	-	-	-	-
Dibenzofuran	0.47	-	0.49	1.5	-	-	-	-
Carbazole	2.5	-	0.24	1.2	-	-	-	-

9.2.2. YSI SLOW FLOW DATA

Three return visits were made to the site to monitor the wells for slow flow sampling in addition to groundwater sampling by an E3P engineer on the 4th January 2022 (WS101, WS106, WS113, WS119 and WS127) and 31st January 2022 (WS101, WS103, WS108, WS113, WS127 and WS129) and 22nd February 2022. The data collected is presented in Table 9.8.

TABLE 9.8 SUMMARY OF YSI DATA

Location	Depth Of Well (m)	Time (Mins)	Water Level (m bgl)	Temperature (˚c)	Dissolved Oxygen	pH	Oxidation Reduction Potential (mV)
WS101	3.00	0	1.00	6.8	41.0	7.21	123.2
		5	1.50	7.6	14.8	7.11	-196.5
		10	1.70	7.6	11.1	7.09	-225.7
		15	1.80	7.3	22.6	7.13	-165.7
		20	1.82	7.6	33.6	7.17	-189.9
		25	2.00	8.2	10.2	7.06	-245.3
		30	2.00	8.2	9.4	7.06	-246.0
		35	2.00	8.2	9.2	7.06	-245.0
		0	1.62	7.9	35.9	7.04	-174.0
		5	1.75	7.9	32.3	7.06	-163.5
		10	1.90	7.8	29.8	7.08	-126.0
		15	2.00	7.9	27.9	7.07	-109.7
		20	2.10	7.8	26.3	7.06	-96.0
		0	1.15	7.9	26.2	8.54	-69.8
		5	1.21	8	20	8.03	-83.9
		10	1.24	8.2	16.5	7.67	-94.6
		15	1.26	8.1	15.6	7.47	-101.9
		20	1.29	8.2	15	7.36	-106.1
		25	1.31	8.4	14.5	7.25	-106.6
		30	1.33	8.5	14.3	7.19	-105.2
		35	1.35	8.5	14.4	7.15	-106.5
		40	1.37	8.6	14.3	7.14	-106.3
WS109	2.50	0	1.65	7.3	38.0	7.10	-132.1
		5	1.65	7.8	26.7	7.15	-201.9
		10	1.65	8.1	15.6	7.17	-225.1
		15	1.65	8.3	12.1	7.19	-229.5
		20	1.65	8	13.7	7.19	-214.7
		25	1.65	8.3	12.6	7.19	-218.4
WS113	3.00	0	0.90	7.5	47.0	7.18	-158.1
		5	1.30	8.2	21.2	7.13	-201.6
		10	1.30	8.4	10.7	7.13	-212.1
		15	1.30	8	8.3	7.13	-214.6
		20	1.30	8	7.7	7.13	-216.7
		0	1.50	8.4	14.2	7.12	-225.3
		5	1.50	8.3	14.1	7.15	-162.7
		10	1.50	8.1	28.1	7.21	-148.0
		15	1.50	8.0	33.8	7.24	-103.0
		20	1.50	8.0	40.2	7.31	-71.2.0
		25	1.50	8.0	46.3	7.35	-61.0
		30	1.50	8.0	54.3	7.42	-59.4
		35	1.50	7.9	60.0	7.47	-58.9
		40	1.50	7.9	61.5	7.48	-59.9
		0	1.3	8.9	18	8.14	-124.1
		5	1.3	8.7	12.4	7.52	-115.8
		10	1.3	8.6	10.6	7.33	-115.2
		15	1.3	8.7	9.2	7.23	-115
		20	1.3	8.6	8.2	7.18	-118.2
		25	1.3	8.6	7.7	7.15	-122.9
		30	1.3	8.6	7	7.13	-128.3

Location	Depth Of Well (m)	Time (Mins)	Water Level (m bgl)	Temperature (˚c)	Dissolved Oxygen	pH	Oxidation Reduction Potential (mV)
WS119	5.00	0	1.80	8.8	24.0	7.25	-105.6
		5	2.00	8.7	9.2	7.25	-183.0
		10	2.00	8.7	9.8	7.25	-187.9
		15	2.10	8.7	13.1	7.25	-191.3
WS127	4.00	0	1.00	8.6	18.1	7.27	-168.2
		5	1.10	8.8	9.3	7.27	-202.5
		10	1.10	7.4	7.5	7.27	-202.9
		15	1.10	7.2	7.0	7.25	-198.8
		20	1.15	7.3	7.0	7.24	-194.8
		25	1.20	7.3	7.3	7.24	-199.1
		30	1.20	7.3	7.4	7.24	-199.9
		0	1.40	8.6	10.1	7.31	-230.2
		5	1.43	8.5	6.0	7.34	-236.6
		10	1.45	8.5	5.4	7.35	-238.2
		15	1.48	8.5	4.2	7.34	-237.7
		20	1.50	8.5	4.4	7.35	-240.3
		0	1.15	8.4	16.8	7.23	-130.2
		5	1.24	8.6	8.6	7.2	-153.2
		10	1.29	8.6	7	7.19	-161.9
		15	1.33	8.5	6.2	7.18	-166.8
		20	1.38	8.4	5.9	7.18	-170.6
WS103	2.00	0	0.35	7.7	10.2	7.41	-177.6
		5	0.50	7.6	7.0	7.43	-213.3
		10	0.62	7.7	6.2	7.43	-227.0
		15	0.75	7.7	5.7	7.43	-240.5
		20	0.80	7.7	5.1	7.44	-242.4
		0	1	8.2	18.1	7.38	-206.6
		5	1.02	8.9	13.7	7.36	-183.5
		10	1.02	8.9	12.8	7.37	-169
		15	1.02	8.5	11.6	7.36	-158.4
		20	1.02	8.5	11.1	7.36	-157.4
WS108	2.00	0	1.34	9	18.0	7.16	-164.2
		5	1.39	8.8	10.3	7.14	-171.1
		10	1.44	8.8	7.9	7.16	-179.9
		15	1.49	8.8	7.0	7.17	-188.2
		20	1.53	8.8	6.0	7.18	-198.8
		0	1.13	8.4	14	6.92	-185.1
		5	1.13	8.5	10.5	6.89	-217
		10	1.13	8.6	9	6.88	-236.1
		15	1.13	8.6	8.4	6.88	-232
		20	1.13	8	7.9	6.87	-233
WS129	4.00	0	1.45	9.1	10.0	7.28	-58.8
		5	1.50	9.1	7.5	7.27	-72.2
		10	1.60	9.1	5.5	7.26	-95.0
		15	1.67	9.1	4.8	7.25	-110.2
		20	1.78	9.1	4.1	7.25	-127.3

9.2.3. M-BAT ASSESSMENT

Due to exceedances in leachate, perched groundwater and surface water (culvert) samples for copper, nickel and zinc, an m-BAT assessment has been completed to assess the bioavailability of the metals with respect to surface water receptors (Corn Brook and Black Brook culverts). The chemical values from the groundwater analysis have been input into the assessment.

Where the Risk Characterisation Ratio (RCR) is greater than 1, this indicates the bioavailable concentration is above the EQS and the receptor is therefore at risk. In this instance, groundwater and surface water chemical data for DOC was input into the m-BAT for the onsite locations. Table 9.8 provides a summary of the m-BAT findings:

9.8 M-BAT SUMMARY

LOCATION	VISIT	COPPER RCR	Zinc RCR	Nickel RCR
SW1 (Black Brook)	Round 2	0.06	0.93	**1.11**
SW2 (Corn Brook)	Round 2	0.80	**1.36**	0.26

The chemical samples from Black Brook (SW1) and Corn Brook (SW2) culverts were also assessed within the tool and noted RCR exceedances of zinc within Corn Brook and nickel within Black Brook.

No exceedances of nickel in comparison to EQS were recorded within the culverted surface water features at the site. Additionally, copper is not considered bioavailable within culverted surface water features across the site, due to the RCR values being below 1. In light of the above assessment, E3P do not consider the site to pose an unacceptable level of risk to surface waters for copper or nickel.

As part of the proposed development the current Black Brook culvert is to be removed and diverted into a newly installed culvert (Drawing 15-974-002). The new culvert will be sealed with a concrete lining, this lining will act as a barrier breaking the pathway between any potential mobile phase contamination leaching from the soils across the site and present in the perched groundwater to Black Brook.

9.2.4. DISCUSSION OF CONTROLLED WATERS RISK ASSESSMENT

Historically, the site has been subjected to limited infilling and several industrial uses including an iron foundry, transport depot, fuel storage tanks and a print works. Chemical by-products of manufacturing processes and coal tar sealant to cobble sets may have subsequently leached down into the underlying ground impacting the localised discontinuous perched groundwater within Made Ground deposits.

The site is underlain by mixed geology, generally comprising cohesive clay present beneath a granular Made Ground, with cohesive deposits becoming interbedded with granular deposits with depth. Given the largely cohesive nature of drift deposits beneath the site, lack of potable water abstraction points and the site does not lie within an SPZ, the sensitivity of the aquifer receptors is significantly reduced.

During both phases of E3P investigation, a consistent water table was not identified, and since all locations advanced were underlain by low permeability CLAY, it is unlikely that vertical migration will occur at the site.

Groundwater was present within monitoring wells set within the underlying bedrock to 40.00 m bgl, indicating the bedrock aquifer is present within the upper 20.00 m of rock head.

The potential for lateral migration of mobile phase contamination through perched groundwater within granular made ground, towards the culverted surface water features cannot be discounted.

As the site is currently open with little hard standing surface cover, rainfall is not being intercepted and subsequently infiltrates freely into the underlying Made Ground, potentially mobilising the identified contaminants.

The proposed development will create hardstanding cover across the site, thus reducing the amount of infiltration generated. This will, in turn, reduce the number of contaminants present in leachate off the site and reduce the risk to the underlying culvert. Given that the site is underlain by low permeability clay, the leaching of contaminants into the culverts will be significantly reduced as the Made Ground beneath plots and roads will be contained beneath the impermeable surface covering, and beneath the natural clay aquitard and the Made Ground in gardens will be contained beneath the clean cover system, likely utilising low permeability CLAY as subsoil, and the natural clay aquitard beneath

Two branches of Corn Brook are recorded present on the site the site – Corn Brook, anticipated at the central area of the site running east west and Black Brook (Corn Brook diversion) anticipated to run from the north boundary in a south westerly direction. Both have been culverted.

Black Brook is to be abandoned and diverted into a newly constructed culvert, the lining of which will act as a barrier between any mobile phase contamination on site and the receptor. Corn Brook is to remain untouched. A full survey for Corn Brook is not currently available, therefore, at this stage it is assumed that it is in hydraulic continuity with the site, albeit localised.

As such, Corn Brook has been identified to be the critical receptor for controlled waters.

Relatively low level heavy metal and PAH contamination and limited TPH contamination has been identified in the soil and leachate analysis at the site. The source of the contaminants cannot be attributed to one area or point source and the majority of the contamination is considered present on a site-wide basis. Groundwater analysis has confirmed the presence of these contaminants Drawings within Appendix III show the extent of these exceedances on the EQS Exceedance Plan.

9.2.5. SURFACE WATER FEATURES

Within Black Brook heavy metal (copper and zinc), PAH (naphthalene, anthracene and fluoranthene) and TPH (C10-C16) exceedances have been identified in comparison the EQS. Exceedances of all the aforementioned contaminants have been identified in the leachate and perched groundwater across the site. However, as part of the proposed works Black Brook is to be diverted into a newly constructed culvert. The new culvert will comprise of a concrete cylinder, of which will act as a barrier between potential on site contamination sources and the surface water receptor, as such Black Brook will no longer be in hydraulic conductivity of the site. Upon completion of this work it is considered there will be no unacceptable risk to Black Brook.

Within Corn Brook – identified as the primary receptor – relatively low level heavy metal (zinc and total cyanide) and PAH (naphthalene) exceedances have been identified in comparison the EQS. Exceedances of zinc and naphthalene have been identified in the leachate and perched groundwater across the site, elevated total cyanide was present within leachate analysis. As elevated total cyanide is not present within perched groundwater in any location on site, it is unlikely that the total cyanide exceedances within Corn Brook originate off site, given that the migration pathway (perched groundwater) records no elevated total cyanide; this should be confirmed with supplementary testing up and down stream during enabling works. Additionally, an m-BAT assessment has shown that zinc is not considered bioavailable within Corn Brook, due to the RCR values being below 1. As such, zinc is not considered to pose an unacceptable risk to Corn Brook. The Tier 1 assessment has identified a possible pollutant linkage between naphthalene leaching from made ground soils across the site and migrating through perched groundwater to Corn Brook, culverted beneath the centre of the site.

A maximum recorded concentration of 36ug/l is recorded in Cornbrook Culvert. In reality, this is a marginal exceedance of the EQS within an urban environment with high background levels of PAH impact on soils and groundwater.

The culvert is noted to exhibit a significant flow with only confined fairly limited perched groundwater bodies, therefore, the potential for the site to create a significant contributing flow into the culvert is limited. In light of the above, it is highly probable that the recorded Naphthalene is representative of impact to the culvert from the wider urban area and not specifically from the development site.

A full survey for Corn Brook is not currently available, however, it is likely that the culvert is sealed off from the site as such, not in hydraulic conductivity. A survey should be completed to confirm the condition of the Corn Brook culvert, with repairs made in areas of degradation and damage. Upon completion of this work, it is considered that there will be no complete pollutant linkage.

9.2.6. PRINCIPAL AQUIFER

The site is underlain by a principal bedrock aquifer, with the top of bedrock encountered between 12.10 m bgl (RB104) and 30.50 m bgl (RB202). In addition, cohesive clay deposits have been encountered site-wide between 0.40 m bgl and 30.50 m bgl, the presence of which will limit the vertical migration of perched waters with potential dissolved phase impact therefore offering some protection to the underlying aquifer.

As part of the October 2022 E3P ground investigation, four deep water monitoring wells were installed within response zones set within the bedrock between 22.00 m and 40.00 m bgl.

Samples were obtained from each monitoring location, as per Table 9.4, relatively low-level exceedances of heavy metals and PAH were identified within BH202 and BH204 compared to EQS. Water storage in the bedrock aquifer is likely to form a baseflow to groundwater in the wider area. Given the lack of active groundwater abstraction recorded within 1km of the site, low permeability of the overlying drift limiting vertical migration and low solubilities and concentrations of heavy metal and PAH recorded, there is considered to be no unacceptable risk to the underlying aquifer.

During both phases of E3P investigation, a consistent water table was not identified, and since all locations advanced were underlain by low permeability CLAY, it is unlikely that vertical migration will occur at the site.

No exceedances of drinking water standards (DWS) were recorded within the principal aquifer at any location.

In light of the above, there is not deemed to be an unacceptable risk to the underlying aquifer from shallow residual impact within the Made Ground soils across the site. The developed CSM does not identify any significant pollution sources or viable exposure pathways.

9.2.7. CONTROLLED WATER SUMMARY

The results of the data review and Tier I qualitative risk assessment have allowed E3P to draw the following conclusions in respect to the risk to controlled waters:

- There have been multiple phases of ground investigation, which has enabled reasonable characterisation of the pollution risk and potential to impact the critical receptors;
- Low permeability cohesive clay deposits encountered site wide beneath the site will inhibit the downward migration of contamination and offer protection to the underlying aquifers.
- Site wide heavy metal, PAH and isolated TPH exceedances have been recorded within leachate analysis and perched groundwater. This is considered to be associated with residual impact to shallow anthropogenic materials. All primary and secondary pollution sources have now been removed from the site in their entirety.

- Within Black Brook, minor heavy metal (copper and zinc) and PAH (anthracene and fluoranthene) exceedances have been identified in comparison to EQS. However, significant exceedances of naphthalene and TPH (C10-C16) exceedances have been identified in comparison to the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, with a more significant TPH and naphthalene impact likely associated the current and historic industrial activities in the area. Further surface water testing should be undertaken up and down stream of the site to confirm this.

- Within Corn Brook – identified as the primary receptor – minor exceedances of heavy metal (zinc and total cyanide) and PAH (naphthalene) exceedances have been identified in comparison the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, likely associated with the wider industrial activities in the area. Further surface water testing should be undertaken up and down stream of the site to confirm this.

- No exceedances of principal aquifer groundwater samples against DWS;

- Relatively low-level exceedances of heavy metals and PAH were identified within BH202 and BH204 compared to EQS. Given the of active groundwater abstraction recorded within 1km of the site, low permeability of the overlying drift limiting vertical migration and low solubilities and concentrations of heavy metal and PAH recorded, there is considered to be no unacceptable risk to the underlying aquifer.

- Black Brook is to be diverted as part of the proposed development and will be fully encapsulated; as such, it is not considered that Black Brook will be in hydraulic continuity with the site upon completion of these works.

- Corn Brook is to remain untouched; at this stage, it is assumed that it is in hydraulic continuity with limited perched waters beneath the site. As such, Corn Brook has been identified to be the critical receptor for controlled waters.

- A full survey for Corn Brook is not currently available. However, it is likely that the culvert is sealed off from the site as such not in hydraulic conductivity. A survey should be completed to confirm the condition of the Corn Brook culvert, with repairs made in areas of degradation and damage. Upon completion of this works it is considered that there will not be a direct contamination pathway between the site and surface water features, as such, no unacceptable risk the controlled water receptor will be present.

- Further analysis of the surface water in Black Brook and Corn Brook should be undertaken as groundworks progress to ensure no future mobilisation of contaminants is caused, which may pose a risk to the watercourse

9.3. GROUND GAS

The potential impact on the development of ground gases has been assessed with reference to standards and guidelines published in:

- CIRIA Report 665 – Assessing risks posed by hazardous ground gases to buildings (2007)

- BS8485:2015+A1:2019 – Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation (CS) and the proposed development based on building type.

Therefore, in accordance with BS8485, based on the measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) shall be derived for each monitoring point, from which the site characteristic hazardous gas flow rate (Q_{hgs}), and then the Characteristic Situation (CS) can be determined.

The following equation should be utilised:

$$Q_{hg} = q\left(\frac{C_{hg}}{100}\right)$$

Where:
q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe
C_{hg} is the measured hazardous gas concentration (in percentage volume/volume).

The subsequent derived gas screening value (GSV) should be the maximum Q_{hg} (flow rate x concentration as a percentage volume) for all the monitoring events.

A 'worst case check' may be carried out using the maximum recorded flow in any hole with the maximum concentration in any hole to present the plausible worst case conditions. Adoption of the worst case Q_{hg} requires thorough justification and reference to the CSM.

The final derived GSV can then be used to characterise the site as summarised in Table 9.9.

TABLE 9.9 SITE CHARACTERISATION BY GSV (BS8485:2015+A1:2019)

CS	HAZARD POTENTIAL	GSV (l/hr) FOR METHANE AND CARBON DIOXIDE	ADDITIONAL FACTORS
CS1	Very Low	< 0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	< 0.70	Typical measured flow rate <70 l/h (otherwise consider an increase to CS3)
CS3	Moderate	< 3.5	N/A
CS4	Moderate to High	< 15	N/A
CS5	High	< 70	N/A
CS6	Very High	> 70	N/A

Notes
1. The CS is equivalent to the characteristic GSV in CIRIA C665.
2. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter should be considered.
3. Gas Screening Value is the Borehole Gas Volume Flow Rate, in litres per hour, multiplied by the concentration in the air stream of the particular gas being considered.
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

9.4. MONITORING METHODOLOGY

Concentrations of methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2) (hydrogen sulphide) were measured using a calibrated infrared gas analyser (GFM435) with gas flow rates measured using an integrated flow meter.

Gas measurements were recorded for a minimum of 500 seconds at each location, at which point the maximum concentration of CH_4 and CO_2, together with the lowest concentration of O_2 were recorded.

The results of the ground gas monitoring are presented in Table 9.8.

In addition to the raw data, the results for each individual standpipe have been assessed with reference to guidance provided in BS8485:2015+A1:2019. Based on the initial peak measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) have been derived for each monitoring point, from which an individual Characteristic Situation (CS) can ultimately be determined.

9.4.1. SUMMARY OF MONITORING RESULTS

Table 9.10 presents of the ground gas and groundwater monitoring results to date.

TABLE 9.10 SUMMARY OF GROUND GAS MONITORING RESULTS

WELL	DATE	CH_4 INITIAL (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 INITIAL (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS101	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1024	Rising	0.1	0	2.00 - 3.00	3.31	1.34
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1000	Steady	0.1	0		3.30	2.25
WS103	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.5	1024	Rising	0.1	0	1.00 - 2.00	1.80	0.13
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1000	Steady	0.1	0		1.80	1.20
WS104	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1026	Rising	0.1	0	1.50 – 3.00	-	-
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1000	Steady	0.1	0		-	-
WS105	11/01/2022	Area Flooded											0.50 - 1.00		
	04/02/2022														
WS107	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1024	Rising	0.1	0	1.00 - 2.00	1.93	1.93
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1001	Steady	0.1	0		1.95	1.90
WS108	11/01/2022	Area Flooded											0.50 - 2.00		
	04/02/2022														
WS109	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1025	Rising	0.1	0	0.50 - 2.50	2.47	1.77
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1001	Steady	0.1	0		2.50	2.00
WS110	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1025	Rising	0.1	0	0.50 - 2.00	1.87	1.64
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1001	Steady	0.1	0		1.90	1.85
WS113	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1025	Rising	0.1	0	1.00 - 3.00	2.26	1.42
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1001	Steady	0.1	0		2.30	1.65

WELL	DATE	CH_4 INITIAL (%V/V)	CH_4 STEADY (%V/V)	CH_4 GSV (l/hr)	CO_2 INITIAL (%V/V)	CO_2 STEADY (%V/V)	CO_2 GSV (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS114	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1025	Rising	0.1	0	1.00 - 2.00	1.82	0.61
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1001	Steady	0.1	0		1.85	1.10
WS116	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	1.50 - 2.00	1.92	1.70
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1002	Steady	0.1	0		1.95	1.90
WS119	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	2.00 - 5.00	3.50	1.38
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1002	Steady	0.1	0		3.50	2.30
WS120	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	0.50 - 2.00	1.98	1.82
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1002	Steady	0.1	0		2.00	Dry
WS122	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	0.50 - 1.00	1.03	0.83
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1002	Steady	0.1	0		1.05	1.00
WS123b	11/01/2022	Buried											0.50 - 2.00		
	04/02/2022														
WS126	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1026	Rising	0.1	0	2.00 - 4.00	3.89	3.05
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1003	Steady	0.1	0		4.00	3.40
WS127	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	1.00 - 4.00	3.92	1.05
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1022	Steady	0.1	0		3.95	1.80
WS129	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	2.00 - 4.00	3.94	1.26
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1023	Steady	0.1	0		3.95	2.10
WS130	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1025	Rising	0.1	0	1.00 - 2.00	1.93	1.68
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1023	Steady	0.1	0		1.95	1.85

WELL	DATE	CH_4 INITIAL (%V/V)	CH_4 STEADY (%V/V)	CH_4 GSV (l/hr)	CO_2 INITIAL (%V/V)	CO_2 STEADY (%V/V)	CO_2 GSV (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS131	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1025	Rising	0.1	0	0.50 - 1.00	1.00	1.00
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1000	Steady	0.1	0		1.00	Dry
WS132	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1025	Rising	0.1	0	0.50 - 1.00	1.02	0.65
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.7	1000	Steady	0.1	0		1.05	0.90
WS133	11/01/2022	Well Destroyed											0.50 - 3.00		
	04/02/2022														
WS135	11/01/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1024	Rising	0.1	0	0.50 - 1.00	1.03	1.03
	04/02/2022	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1000	Steady	0.1	0		1.05	1.00

CIRIA Characteristic Situation	Q_{hg}		
CS1	<0.07	Typical Max CO2 <5 % Typical Max CH4 <1 %	Values in **BOLD** exceed CS1 Thresholds
CS2	<0.7	Flow rate not to exceed 70 l/hr otherwise consider increase to CS3	Values in BLUE denote water above the level of response zone (flooded)
CS3	<3.5		
CS4	<15	Quantitative Risk Assessment is required to evaluathe te scope of protective measures	

9.4.2. GROUNDWATER

Monitoring wells WS101, WS103, WS114, WS119 and WS129 were flooded on the first monitoring visit and cannot, therefore, be included within the initial gas assessment. Groundwater was recorded between 0.13 m (WS103) and 3.05 m bgl (WS126).

Within remaining monitoring wells, groundwater levels were observed to rise over the monitoring period, however, due to the predominantly low permeability cohesive drift stratum, it is likely that water levels are representative of surface water collecting within the standpipes and not a true representation of groundwater.

9.4.3. BAROMETRIC PRESSURE

Visits 1 was undertaken during a period of relatively high/rising pressure, with pressure recorded to be 1025 mbar.

Visit 2 was undertaken during a period of steady pressure recorded to be 1000 mbar.

It is therefore considered that the visits have not yet been undertaken over representative conditions.

9.4.4. GAS FLOW

During the monitoring, a positive flow was noted in all boreholes. The measure of positive flow is considered to be the result of groundwater fluctuations and flooding of the well, causing compression as opposed to gas generation as the highest flows are recorded during periods of high groundwater levels.

Negative flows are indicative of back pressure from the wind being greater than the active flow from the wells. Negative flows have not been recorded to date.

9.4.5. GAS CONCENTRATIONS

No elevated concentrations of methane or carbon dioxide were recorded within any of the monitoring wells. The maximum methane and carbon dioxide value recorded within the monitoring wells was 0.1% v/v (limit of detection of the analyser).

9.4.6. CONCLUSION

The determined Characteristic Situation for each standpipe for each visit is presented in Table 9.11. This indicates that based on the peak flow rates the majority of the monitoring visits classify as Characteristic Situation (CS)1 – Very Low Gas Risk.

TABLE 9.11 GAS RISK PROFILE AND LOCATION

LOCATION	MAX CH_4 (% v/v)	GSV (l/hr)	MAX CO_2 (% v/v)	GSV (l/hr)	CLASSIFICATION
WS101	Flooded.				
WS103	Flooded.				
WS104	0.10	0.0001	0.10	0.0001	Green/CS1
WS105	Area Flooded.				
WS107	0.10	0.0001	0.10	0.0001	Green/CS1
WS108	Area Flooded.				
WS109	0.10	0.0001	0.10	0.0001	Green/CS1
WS110	0.10	0.0001	0.10	0.0001	Green/CS1
WS113	0.10	0.0001	0.10	0.0001	Green/CS1
WS114	Flooded.				
WS116	0.10	0.0001	0.10	0.0001	Green/CS1
WS119	Flooded.				
WS120	0.10	0.0001	0.10	0.0001	Green/CS1
WS122	0.10	0.0001	0.10	0.0001	Green/CS1
WS123b	Buried.				
WS126	0.10	0.0001	0.10	0.0001	Green/CS1
WS127	0.10	0.0001	0.10	0.0001	Green/CS1
WS129	Flooded.				
WS130	0.10	0.0001	0.10	0.0001	Green/CS1
WS131	0.10	0.0001	0.10	0.0001	Green/CS1
WS132	0.10	0.0001	0.10	0.0001	Green/CS1
WS133	Destroyed.				
WS135	0.10	0.0001	0.10	0.0001	Green/CS1

The GSV has been compared to the criteria outlined with BS8485 to determine the level of risk to the proposed development and to ensure the appropriate remedial options are incorporated into any future building design in this area.

Ground gas monitoring suggests that the site can be predominantly classified as CS1, and in these areas, it is considered that gas protection measures against carbon dioxide and methane will not be required. However, due to the presence of site wide residual SVOC contamination within the soils across the site, provision for vapour membranes should be made for all plots.

Due to the site being upfilled by circa 0.50 m bgl on a site-wide basis, post enabling works monitoring will likely be required to reclassify the site to reflect the new ground gas regime.

9.5. POTABLE WATER SUPPLY

This section provides a summary of the site investigation data with reference to the selection of potable water supply pipework. The assessment is made with reference to the UK Water Industry Research (UKWIR) publication "*Guidance on the selection of Water Supply Pipes to be used in Brownfield Sites*".

TABLE 9.12 PIPELINE SELECTION PE THRESHOLD CONCENTRATIONS

Contaminant Group	PE-threshold (mg/kg)	Concentrations at Current pipeline depth (mg/kg)
Total VOC	0.5	<1.0
Total BTEX And MTBE	0.1	N/A
Total SVOCs (Excluding PAH and those substances marked with an *)	2	193.15 (WS107 1.00m) 266.80 (WS135 0.90m) 393.90 (WS136 0.80m)
EC5-EC10 Aliphatic and Aromatic Hydrocarbons	2	<1.1
EC10-EC16- Aliphatic and Aromatic Hydrocarbons	10	24.6 (WS107 1.00m) <12.2 (WS123b 0.80m) <12.2 (WS131 0.95m) 44.4 (WS135 0.90m) 355 (WS136 1.20m)
EC16-EC40 Aliphatic and Aromatic Hydrocarbons	500	505 (WS135 0.90m) 2770 (WS122 0.80m)
Phenols (From SVOC Analysis)*	2	<0.2
Cresols and Chlorinated Phenols (From SVOC Analysis)	2	N/A
Ethers*	0.5	NA
Nitrobenzene*	0.5	NA
Ketones*	0.5	NA
Aldehydes*	0.5	NA
Amines	Fail	NA
Other Consideration		
Are there any exceedances of the PE threshold outside of the pipeline depth?	Yes; • Total VOCs: ○ 92.5 mg/kg (WS115 0.40m) • Total SVOCs: ○ 2501.2mg/kg (WS1150.40m) ○ 1389mg/kg (WS116 0.25m) ○ 21.54mg/kg(WS118 1.90m) ○ 1220.95 mg/kg (WS128 0.60m) • EC10-EC16- Aliphatic and Aromatic Hydrocarbons: ○ 18.9mg/kg (WS110 1.80m), 730mg/kg (WS115 0.40m), 320mg/kg (WS116 0.25m), 16.8 mg/kg (WS117 2.40m)<10.5 m	
Is free product present in soil and groundwater?	None	

Could hydrocarbon impact at greater depth than current pipeline depth be mobilised by rising groundwater levels?	No – heavy end hydrocarbon impact and low solubility PAH has been identified within Made Ground. Groundwater levels are generally significantly deeper than pipeline depth.
Will soils impacted with the above determinants likely be utilised elsewhere on site?	Unconfirmed.
Will soils be imported to site as part of any future earth works	Site levels are to be raised by 0.50 m as part of a phase of enabling works. The importation of materials may affect the WIR Risk Assessment which should be updated after completion.

Notes - Pipe line depth is normally between 0.75m–1.35m

Based on the assessment of current site conditions it is likely that barrier pipe will be required at the proposed development.

9.6. CONCEPTUAL SITE MODEL

As per Section 6 and Table 6.1 of this report, prior to intrusive investigation E3P developed an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. Upon completion of two phases of intrusive ground investigation E3P has updated the CSM for the site, summarised below and within Table 9.13.

ON-SITE SOURCES OF CONTAMINATION

The following potential on-site sources of contamination have been identified:

Infilled Pond

The ICSM identified the likely contaminants associated with historic on site ponds of heavy metals, PAH, asbestos and ground gas. TP115 and WS122 were advanced in the location of former ponds. Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (arsenic and lead) and non-volatile PAH's (Benzo(a)Anthracene, Benzo(b)Fluoranthene, Benzo(a)Pyrene, Dibenzo(a,h)Anthracene. Asbestos was not identified within the former pond backfill. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with the elevated concentrations of inorganic heavy metals and non-volatile PAH compounds can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

Iron Foundry

The ICSM identified the likely contaminants associated with the former iron foundry of heavy metals, BTEX, PAH, SVOC, VOC, TPH and asbestos. WS111, WS112a, WS112b, WS116, WS117, TP121, TP122, TP123 and TP124 were advanced in the location of the former foundry. asbestos and ground gas.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (arsenic, mercury and lead), non-volatile PAH's (Acenaphthene, Fluorene, Phenanthrene, Fluoranthene, Pyrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Benzo(a)Pyrene, Indeno(123-cd)Pyrene, Dibenzo(a,h)Anthracene and Benzo(ghi)Perylene) and TPH (C10-C16 and C16-35). Elevated SVOC's above the LOD have been identified throughout. Asbestos was not identified within the former foundry footprint. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals, TPH C16-35 and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. To mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

Transport Depot

The ICSM identified the likely contaminants associated with the former transport depot heavy metals, PAH, SVOC, VOC, TPH and asbestos. WS131, WS132, TP101, TP105, TP106, TP110, TP111 and TP112 were advanced in the location of the former transport depot.

Due to the presence of vehicle inspection pits and historic use of the site banded TPH analysis (including BTEX) was undertaken on the sample obtained within made ground soils in TP112.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (lead), non-volatile PAH's (Phenanthrene, Fluoranthene, Pyrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Benzo(a)Pyrene, Indeno(123-cd)Pyrene, Dibenzo(a,h)Anthracene) and TPH (C10-C16 and C16-35). Elevated SVOC's above the LOD have been identified throughout. Asbestos and elevated TPH concentrations were not identified within the former transport depot footprint. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

In relation to SVOCs, these contaminants have primary exposure pathways related to vapour. To mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

Printers

The ICSM identified the likely contaminants associated with the former printers heavy metals, PAH, SVOC, VOC, and TPH. TP102 and TP103 were advanced in the location of the former printers.

Samples obtained confirm the ICSM recording elevated concentrations of non-volatile PAH's (Benzo(a)Anthracene, Benzo(b)Fluoranthene, Benzo(a)Pyrene, Dibenzo(a,h)Anthracene). SVOC analysis on samples of the made ground from TP103 did not record results above the LOD. Asbestos, heavy metals and elevated TPH concentrations were not identified within the former printers footprint. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

Tanks and localised spillages

The ICSM identified the likely contaminants associated with the above ground storage tank as TPH, BTEX, PAH, VOC and SVOC. TP130 was advanced in the location of the former above ground tank.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (lead) and non-volatile PAH's (Phenanthrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(a)Pyrene, Indeno(123-cd)Pyrene, Dibenzo(a,h)Anthracene). Elevated SVOC's above the LOD have been identified throughout. Asbestos and elevated TPH concentrations were not identified within the vicinity of the above ground tank. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

Former Football Stadium

The ICSM identified the likely contaminants associated with the former football stadium as heavy metals, PAH, asbestos and ground gas. WS104 – WS108, WS126, WS130, WS134, WS135, TP108 and TP109 were advanced in the location of the former football stadium and stands.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (arsenic, mercury and lead) and non-volatile PAH's (Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(a)Pyrene and Dibenzo(a,h)Anthracene. Elevated SVOC's above the LOD have been identified throughout. Asbestos was not identified within the former football stadium footprint. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals, TPH C16-35 and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

In relation to SVOCs (including naphthalene), these contaminants have primary exposure pathways related to vapour. To mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

Railway sidings

The ICSM identified the likely contaminants associated with railway sidings as heavy metals, PAH, TPH, SVOC, VOC and coal tar. WS113, WS114, WS119, WS120, WS121, TP120 and TP125 to TP128 were advanced in the location of historical rail sidings.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (arsenic, mercury and lead), non-volatile PAH's (Fluorene, Phenanthrene, Fluoranthene, Pyrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Benzo(a)Pyrene, Indeno(123-cd)Pyrene, Dibenzo(a,h)Anthracene and Benzo(ghi)Perylene) and TPH (C10-C16 and C16-35). Elevated SVOC's above the LOD have been identified throughout. Asbestos was not identified. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals, TPH C16-35 and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. To mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

Made Ground

The ICSM identified the likely contaminants associated with general made ground across the site as heavy metals, PAH, TPH, SVOC, VOC, coal tar, BTEX and asbestos. WS101, WS102, WS103, WS109, WS110a, WS110b, WS115, WS118, WS123a, WS123b, WS124, WS125, WS128, WS129, WS133, WS136, TP104, TP107, TP113, TP114, TP116 and TP129 were advanced to across the site with made ground encountered in all locations.

Samples obtained confirm the ICSM recording elevated concentrations of heavy metals (arsenic, mercury, zinc and lead), non-volatile PAH's (Fluorene, Phenanthrene, Fluoranthene, Pyrene, Benzo(a)Anthracene, Chrysene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Benzo(a)Pyrene, Indeno(123-cd)Pyrene, Dibenzo(a,h)Anthracene and Benzo(ghi)Perylene) and TPH (C10-C16 and C16-35). Elevated SVOC's above the LOD have been identified throughout. Asbestos identified within WS125. Ground gas monitoring has not identified a carbon dioxide or methane gassing risk.

In relation to heavy metals, TPH C16-35 and non-volatile PAHs, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils. The risk to chronic human health associated with these contaminants can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils.

In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. To mitigate the residual risk from SVOCs across the site a provision for vapour membranes should be made for all proposed plots. This would severe the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation.

Asbestos in the form of chrysotile has also been identified within a localised area in shallow Made Ground deposits (WS125 at 0.50m bgl). Asbestos quantification has shown <0.001 % asbestos therefore, soils should be placed beneath a cover system depth. No visual signs of ACM were encountered during the ground investigation; it is, therefore, likely that only trace fibres are present. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model.

Historic buildings

Due to the age of historic buildings on site there is a potential for asbestos to be present within soils from within the former building matrix.

Asbestos in the form of chrysotile has also been identified within a localised area in shallow Made Ground deposits (WS125 at 0.50m bgl). Asbestos quantification has shown <0.001 % asbestos therefore, soils should be placed beneath a cover system depth. No visual signs of ACM were encountered during the ground investigation; it is, therefore, likely that only trace fibres are present. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model

Following the completion of the intrusive site investigation, chemical analysis and risk assessment, the conceptual model shown in Table 9.12 has been prepared for the site based on the current site soil profile.

TABLE 9.13 CONCEPTUAL MODEL

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL1 PL2	Heavy Metals, non-volatile PAH (Made Ground, infilled ponds, iron foundry, transport depot, printers, tanks/spillages, football stadium, railway sidings)	Dermal contact. Dermal contact and ingestion.	Future site users. Off-site receptors.	Likely	High	LOW
Assessment: Heavy metals (arsenic, zinc, mercury and lead) and non-volatile PAHs were identified throughout Made Ground between depths of 0.25 m and 5.45 m therefore there is currently a risk to the end-user via the dermal contact and ingestion of contaminated soils. **Recommendation:** Cover system to all garden and landscaped areas will prevent exposure to future site users. Geotextile membrane should be installed as a break layer in residential gardens. Construction works completed with PPE and provision of welfare.						
PL3	ACM in Made Ground	Inhalation of dust.	Future site users. Buildings. Off-site land users.	Likely	High	LOW
Assessment: Asbestos in the form of loose chrysotile fibres (>0.001%) has been identified in one area of the Made Ground in WS125 at 0.50 m bgl. There is not considered to be a site-wide risk, however, its presence in building fabric and in inaccessible areas within Made Ground soils cannot be discounted. **Recommendation:** The soils will require placement in accordance with the asbestos CSM. Construction works completed with PPE and provision of welfare.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL4	Volatile Contaminants such as SVOC, VOC, naphthalene, hydrocarbons, solvents (Made Ground, infilled ponds, iron foundry, transport depot, tanks/spillages, railway sidings)	Inhalation of vapours. Migration through permeable strata and preferential pathways.	Future site users. Off-site receptors.	Likely	Moderate	LOW

Assessment:
Elevated concentrations of mercury, naphthalene, short chain TPH, SVOC and VOC have been identified in the Made Ground across the site in both the E3P 2021 investigation and the WYG 2008 investigation.

Recommendation:
Given the site wide residual presence of SVOCs, vapour membranes are required within all proposed residential properties.

Visual and olfactory evidence of contamination has been identified in several locations, therefore a watching brief should be completed during remediation works to monitor the locations where visual or olfactory hydrocarbon impact has been identified during all phases of investigation completed to date.

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL4	Methane, carbon dioxide, vapour (Made Ground and potentially infilled features on the site)	Inhalation of gas. Migration through permeable strata and preferential pathways. Explosion in confined spaces.	Future site users. Buildings. Off-site land users.	Low likelihood	Moderate	LOW

Assessment:
Deep Made Ground deposits have been identified as potential sources of hazardous ground gas. Glacial Till will likely restrict the migration of any gas into shallow foundations.

Recommendation:
Gas monitoring suggests that the site can be classified as CS1/Green. However, due to the presence of site wide SVOC contamination in made ground soils vapour membranes are required. Due to the likely upfill of the site by 0.50 m, post earthworks gas monitoring may be required to reclassify the site and monitor the new ground gas regime at the site.

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL5	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (Made Ground, iron foundry, printers, transport depot, tanks)	Surface runoff. Migration through permeable strata and preferential pathways. Perched waters migration.	Groundwater (principal aquifer). Surface water (Corn Brook and Black Brook).	Likely	Moderate	LOW

Assessment:
Site wide heavy metal, PAH and isolated TPH exceedances have been recorded within leachate analysis and perched groundwater. Within Black Brook heavy metal (copper and zinc), PAH (naphthalene, anthracene and fluoranthene) and TPH (C10-C16) exceedances have been identified in comparison the EQS. Within Corn Brook heavy metal (zinc and total cyanide) and PAH (naphthalene) exceedances have been identified in comparison the EQS. No exceedances of principal aquifer groundwater samples against DWS, additionally, there are no groundwater abstractions within 1km of the site. There is not deemed to be an unacceptable risk to the underlying principal aquifer. Black Brook is to be diverted as part of the proposed development and will be fully encapsulated, as such, it is not considered that Black Brook will be in hydraulic continuity with the site upon completion of these works. The Tier 1 assessment has identified a possible pollutant linkage between naphthalene leaching from made ground soils across the site and migrating through perched groundwater to Corn Brook, culverted beneath the centre of the site.

Recommendation:
A survey should be completed to confirm the condition of the Corn Brook culvert, with repairs made in areas of degradation and damage. Upon completion of this works it is considered that there will not be a direct contamination pathway between the site and surface water features, as such, no unacceptable risk the controlled water receptor will be present. Further analysis of the surface water in Black Brook and Corn Brook should be undertaken as groundworks progress, to ensure no future mobilisation of contaminants is caused. No unacceptable risk to underground aquifers.

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL6	Sulphate (potential ash within Made Ground)	Sulphate attack on concrete.	Building structure.	Likely	Moderate/Low	**LOW**
Assessment: The soils at the site generally meet class DS-1, AC-1s, however, sulphate levels were higher at WS123B (0.80mbgl), WS125 (0.50mbgl) and WS133 (0.50mbgl) and require DS-2, AC-1s concrete. At WS121 (0.70mbgl), DS-4, AC-3s conditions were identified. **Recommendation:** Concrete should be designed in accordance with the chemical testing results.						
PL7	Organic contaminants such as hydrocarbons, solvents (Made Ground, depot, tank and works)	Ingestion of tainted water supply.	Future site users. Water pipes.	Likely	Moderate	**LOW**
Assessment: Elevated concentrations of TPH have been identified at the proposed pipeline depth (0.75 m – 1.35 m). **Recommendation:** Based on the assessment of current site conditions, it is likely that barrier pipe will be required. This will need to be confirmed with a UKWIR risk assessment post remediation.						
PL8	Phytotoxic contaminants (Made Ground)	Direct Contact (plant uptake).	Flora.	Likely	Low	**Low**
Assessment: Contamination has been encountered within shallow Made Ground across the site which may be taken up by flora in soft landscaping. **Recommendation:** Installation of a clean cover system within gardens and any areas of soft landscaping to prevent plant uptake of contaminants. Where any trees are proposed, the clean cover system may require deepening to allow for suitable root growth.						

Main exposure pathways:
PL1 = soil ingestion
PL2 = dermal contact and ingestion
PL3 = dust inhalation;
PL4 = Vapour/Gas Inhalation;
PL5 = Vertical / Lateral Migration;
PL6 = Corrosion of concrete;
PL7=Tainting of water supply;
PL8 = Uptake by plants;

10. COAL MINING

10.1. SCOPE OF INTRUSIVE GROUND INVESTIGATION

In due consideration of the potential presence of noted potential underground workings, a series of rotary boreholes have been advanced in accordance with Coal Authority Permission ref: 24284 to assess the potential presence of shallow workings within this seam and the potential for ground instability to induce a future subsidence event within the proposed development.

10.2. SUMMARY OF GROUND INVESTIGATION WORKS

10.2.1. ROTARY BOREHOLES TO INVESTIGATE WORKINGS IN COAL

Five rotary boreholes have been advanced at the locations detailed within the E3P exploratory borehole location plan at positions to interject the potential coal seams and assess the potential for any workings.

TABLE 10.1 ROTARY BOREHOLES

ROTARY BOREHOLE	DEPTH TO ROCKHEAD (m bgl)	DEPTH TO COAL (m bgl)	EVIDENCE OF MINING ACTIVITY/SEAM	REMARKS
RB101	29.10	N/A	N/A	No coal seams or evidence of workings recorded
RB102	19.20	N/A	N/A	
RB103	24.00	N/A	N/A	
RB104	12.10	N/A	N/A	
RB105	23.60	N/A	N/A	
RB201	21.20	N/A	N/A	
RB202	30.50	N/A	N/A	
RB203	28.30	N/A	N/A	
RB204	24.40	N/A	N/A	

10.3. SUMMARY OF COAL MINING ISSUES

E3P has reviewed the historical reports, desk study, BGS geological mapping and CA information, in addition to completing nine 40 m rotary boreholes to investigate shallow mine workings. A summary of the findings is provided below.

- The intrusive ground investigations comprising five, deep, rotary boreholes did not identify any shallow coal seams or evidence of historic mine workings to the base of the boreholes.
- Reasonably deep drift at the site may suggest historic shallow mining would not be viable.
- No evidence of surface disturbances or record of the same in the Coal Authority report.
- During the E3P works completed to date, no evidence has been noted to support the presence of a viable shallow coal seam beneath the site.
- No evidence is encountered of historical shallow workings.

11. GEOTECHNICAL ASSESSMENT

11.1. SITE PREPARATION

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the *Manual of Contract Documents for Highway Works (MCHW)*. This should include the following:

- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill.
- Demolition of all existing buildings and removal of all concrete hardstanding.
- Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill.
- Buried structures and old foundations have been encountered on site. These should be excavated from below the proposed development footprint with the resulting void backfilled.

11.2. FOUNDATION CONDITIONS AND ASSESSMENT OF POTENTIAL BEARING CAPACITIES

In due consideration of the identified ground conditions, in-situ and laboratory geotechnical testing, E3P has undertaken an assessment of the net safe allowable bearing pressure (ABP) within the underlying natural stratum to assist in the detailed design of foundations and infrastructure and determine the target founding stratum. The results of this assessment are summarised in Table 11.1.

TABLE 11.1 SUMMARY OF ABP

GRANULAR SOILS			
Description	**Depth (Range m bgl)**	**Relative Density**	**Allowable Bearing Pressure (kN/m^2)**
Clayey SAND	6.50–9.95	Dense	402–408
Clayey SAND	5.00–5.45	Medium Dense	141
COHESIVE SOILS			
Description	**Depth (range m bgl)**	**Undrained Shear Strength (Cu) (kN/m^2)**	**Allowable Bearing Pressure (kN/m^2)**
Soft gravelly CLAY (WS114, WS116, WS126, WS134)	1.00–3.45	15–18	31–37
Soft CLAY (WS105, WS113, WS117, WS130)	1.00–3.45	22–39	46–80
Soft CLAY	4.00–5.45	38	78
Firm to very stiff CLAY	1.00–3.45	40–228	82–469
Description	**Depth (range m bgl)**	**Undrained Shear Strength (Cu) (kN/m^2)**	**Allowable Bearing Pressure (kN/m^2)**
Firm to very stiff CLAY	4.00–5.45	62–213	127–438
Stiff to very stiff CLAY	6.50–8.45	194–204	399–419

Based on the assessment of the relative undrained shear strength, relative in-situ densities and corresponding safe net allowable bearing pressure, the suitable target founding stratum has been identified as the underlying stiff to very stiff glacial clays.

To determine if VSC is viable at the subject site, E3P has completed a Ground Improvement Design Risk Matrix that is summarised in Table 11.2.

TABLE 11.2 GROUND IMPROVEMENT DESIGN RISK MATRIX

RISK ITEM	COMMENT	PASS/FAIL
Soft clays with an undrained shear strength less than 30 kN/m^2	CLAY soils are generally firm to stiff with Cu > 80 kN. Isolated areas of softer clay soils were encountered with Cu < 30 kN/m^2 at WS114, WS116 and WS126 however, it is considered that these will either be piled or soft material excavated to remove the organic deposits.	**PASS**
Ground with peat layers close to foundation level or the base of the stone column, or where intermediate layers of peat are thicker than 200 mm, either as a single layer or the sum of the thicknesses of individual layers throughout the length of the stone column	Peat and organic silts have not been identified.	**PASS**
Voided filled ground, e.g. old water tanks, pottery, glass bottles, concrete rubble or brick fill of unsuitable grading	Made Ground beneath the north-eastern sector will require removal and processing to render the site suitable for VSC. The existing building's substructure will also require excavation and processing into a graded aggregate suitable for vibro treatment.	**PASS – on completion of enabling works**
Loose or non-engineered fill not previously subject to rising or fluctuating water levels saturation	None identified.	**PASS**
Filled ground still settling or expected to settle under its own weight or due to the effects of surcharging/upfilling where there is a high organic content or where decay is continuing	None identified – the site was historically filled circa 50 years ago with a mixture of clayey SAND and sandy CLAY. It is considered that the material has consolidated under self-weight settlement.	**PASS**
Fill, containing degradable material where organic material forms more than 15% of fill by volume	None identified.	**PASS**
Clays with a plasticity index greater than 40%	None identified.	**PASS**
Highly sensitive soils liable to collapse or remoulding	None identified.	**PASS**
Cohesive soils with trees in influencing distance	Plots where tree influence has been modelled and will either be subject to a piled or mass trench-fill solution.	**PASS**
Overall Risk Rating and Suitability for Vibratory Ground Improvement		**PASS**

Due to the levels likely increasing across the site, it is likely that proposed low-rise plots in this area would be constructed using a combination of foundation solutions including VSC to support strip or trench-fill foundations. Where high-rise apartment blocks are proposed, driven pile or raft foundations may be utilised depending on the structural loadings proposed.

An ABP in the order of 100 kN/m^2 can be achieved at circa 2.00 m across the site based on existing ground levels. An ABP in the order of 200 kN/m^2 can be achieved from circa 2.50 m bgl.

Foundation depths should take account of the presence of existing and proposed trees, with foundations deepened locally to mitigate the potential for volumetric instability attributed to fluctuations in moisture content, in accordance with the requirements of NHBC standards.

It is recommended that at working drawing stage a foundation schedule is prepared for the development, taking account of the physical change of the natural clay soils and the current/proposed locations of trees.

Piling may not into be feasible in the area of sensitive underground infrastructure including the underground culvert.

At this time it is not possible to accurately define the foundation types due to the absence of a detailed tree survey and final development levels; however, based on our extensive experience of similar sites, we would anticipate that the final foundation solution based on the current ground level would be a combination of the following:

- VSC to support a shallow strip foundation bearing engineered Made Ground at circa 3 m bgl; and,
- Trench fill to support reinforced strip foundations in areas of shallower variable ground and/or potential tree influence at circa 1.50 m bgl; and,
- Piled or raft foundations for apartment blocks.

A summary of anticipated foundations is presented in Table 10.3 and a Depth to Founding Strata Plan is included as Drawing 15-974-008 in Appendix III.

TABLE 11.3 ANTICIPATED FOUNDATIONS

LOCATION	ANTICIPATED FOUNDING STRATA DEPTH (m bgl)	GROUND WATER (m bgl)	TARGET STRATUM	TREES	FOUNDATION TYPE	TYPE OF CONCRETE
WS101	2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS102	>2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS103	1.65	N/A	Stiff CLAY	N	Mass Trench	DS-1 AC-1s
WS104	1.85	N/A	Stiff CLAY	N	Mass Trench	DS-1 AC-1s
WS105	1.45	N/A	Stiff CLAY	N	Strip	DS-1 AC-1s
WS106	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS107	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS108	2.55	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS109	2.95	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS110b	2.70	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS111	>1.25	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS112b	>0.65	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS113	2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS114	>2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS115	>1.11	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS116	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS117	2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS118	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS119	2.95	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS120	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS121	1.55	N/A	Stiff CLAY	N	Mass Trench	DS-4, AC-3s
WS122	1.90	N/A	Stiff CLAY	N	Mass Trench	DS-1, AC-1s
WS123b	2.55	N/A	Stiff CLAY	N	VSC/Pile	DS-2, AC-1s
WS124	>0.50	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS125	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-2, AC-1s
WS126	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS127	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS128	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS129	2.25	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS130	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS131	1.75	N/A	Stiff CLAY	N	Mass Trench	DS-1 AC-1s
WS132	1.45	N/A	Stiff CLAY	N	Strip	DS-1 AC-1s
WS133	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-2, AC-1s

LOCATION	ANTICIPATED FOUNDING STRATA DEPTH (m bgl)	GROUND WATER (m bgl)	TARGET STRATUM	TREES	FOUNDATION TYPE	TYPE OF CONCRETE
WS134	>2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS135	2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
WS136	>2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
CP101	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
CP102	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
CP103	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RBH101	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RBH102	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RBH103	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RBH104	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RBH105	>3.00	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP101	1.05	N/A	Stiff CLAY	N	Strip	–
TP102	1.05	N/A	Stiff CLAY	N	Strip	DS-1 AC-1s
TP103	1.95	N/A	Stiff CLAY	N	Mass Trench	DS-1 AC-1s
TP104	1.55	N/A	Stiff CLAY	N	Mass Trench	–
TP106	2.25	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP107	>2.50	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP108	2.25	N/A	Stiff CLAY	N	VSC/Pile	–
TP109	2.15	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP110	>2.50	N/A	Stiff CLAY	N	VSC/Pile	–
TP111	2.45	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP112	2.25	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP113	2.35	N/A	Stiff CLAY	N	VSC/Pile	–
TP114	>2.50	N/A	Stiff CLAY	N	VSC/Pile	–
TP115	1.25	N/A	Stiff CLAY	N	Mass Trench	–
TP116	1.25	N/A	Stiff CLAY	N	Strip	DS-1 AC-1s
TP117	1.45	N/A	Stiff CLAY	N	Strip	–
TP118	1.85	N/A	Stiff CLAY	N	Mass Trench	DS-1 AC-1s
TP119	2.05	N/A	Stiff CLAY	N	VSC/Pile	–
TP120	>2.50	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP121	2.35	N/A	Stiff CLAY	N	VSC/Pile	–
TP122	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP123	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP124	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s

LOCATION	ANTICIPATED FOUNDING STRATA DEPTH (m bgl)	GROUND WATER (m bgl)	TARGET STRATUM	TREES	FOUNDATION TYPE	TYPE OF CONCRETE
TP125	>2.5	N/A	Stiff CLAY	N	VSC/Pile	–
TP126	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP127	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
TP128	>2.5	N/A	Stiff CLAY	N	VSC/Pile	–
TP129	>2.5	N/A	Stiff CLAY	N	VSC/Pile	**DS-2, AC-1s**
TP130	>2.5	N/A	Stiff CLAY	N	VSC/Pile	DS-1 AC-1s
RB201	>2.5	N/A	Stiff CLAY	N	VSC/Pile	–
RB202	>2.5	N/A	Stiff CLAY	N	VSC/Pile	–
RB203	>2.5	N/A	Stiff CLAY	N	VSC/Pile	–
RB204	1.65	N/A	Stiff CLAY	N	Mass Trench	–

It is recommended that, at the working drawing stage, a foundation schedule is prepared for the development taking account of the physical change of natural clay soils and the current/proposed locations of trees.

11.3. GROUND FLOOR SLABS

Current building control regulations require that where the infilled ground is present to depths in excess of 600 mm, or where the substratum is variable in terms of the structure and settlement potential, or where clay soils are present within the influence of existing or proposed trees, a suspended floor slab is required.

In this instance, it is considered that for the majority of substructures, the underlying stratum would have in excess of 600 mm of infill and, as such, a suspended floor slab will be required.

Where a cast in-situ suspended slab is utilised with no subfloor void, appropriate compressible material (heave precautions) will be required in the construction of the substructure.

11.4. HEAVE PRECAUTIONS

The site has been proven to be underlain by clay soils, which are susceptible to volumetric instability due to fluctuations in moisture content, particularly within the influencing distance of trees as per the NHBC/LABC conjectured zones of influence.

As the clay is deemed to be moderate plasticity, heave precautions are required to the internal face of the external load-bearing walls (outside or within tree influence).

If a ground beam is to be constructed within the zone of tree influence, heave precautions are required to the underside of this and edge beams.

If the ground floor slab is to be constructed with a beam and block floor, a minimum subfloor void of 250 mm is required within any structures located in the zone of conjectured tree influence.

If the ground floor slab is constructed with a cast in-situ suspended floor slab, then heave precautions that can tolerate 100 mm of clay swelling are required within any part of the floor slab to be located within the zone of influence of a tree.

An engineered design will be required in areas of proposed apartment blocks.

A summary of heave precautions is presented in Table 11.4.

TABLE 11.4 SUMMARY OF HEAVE PRECAUTIONS

		MINIMUM VOID DIMENSION FOR FOUNDATIONS, GROUND BEAMS AND SUSPENDED IN-SITU CONCRETE GROUND FLOORS		MINIMUM VOID DIMENSIONS UNDER PRECAST CONCRETE AND SUSPENDED TIMBER FLOORS
Plasticity Index of Soil	**Required Foundation Depth (m)**	**Thickness of Void Former Against Side of Foundation or Ground Beam (mm)**	**Thickness of Void Former on Underside of Edge Beam and Floor Slab (mm)**	**Void Dimension (mm)**
High Plasticity (> 40)	> 2.5	Engineer Design		Engineer Design
	2.0–2.5	35	150	300
	1.5–2.0	25	75	
Moderate Plasticity (20–40)	> 2.5	Engineer Design		Engineer Design
	2.0–2.5	25	100	250
	1.5–2.0	25	50	
Low Plasticity (< 20)	2.0–2.5	N/A	50	200
	> 2.0	No Special Precautions		

11.5. HIGHWAYS CONSTRUCTION

A programme of remediation and enabling works will be required to remediate the proposed road subgrade in accordance with the requirements of the Manual of Contract Documents for Highway Works Volume 1 Specification For Highway Works (Series 600-Earthworks) for a method compaction.

It is considered that the material can be re-engineered using method compaction to achieve a CBR in excess of 5% if works are completed in favourable climatic conditions.

11.6. DRAINAGE

The presence of substantial depths of Made Ground across some areas of the site may result in settlement. It is therefore recommended that drain runs are designed using steeper gradients and flexible joints to allow for some differential settlement.

Furthermore, the site is predominantly underlain by circa 1–2 m of likely low-permeability gravelly CLAY. Therefore, the use of soakaway drainage will be limited, and as the lateral continuity of the Made Ground cannot be assured, it is not recommended that soakaways are utilised for disposal of surface water runoff.

If soakaway drainage is to be considered, full BRE 365 testing must be completed to inform the detailed design.

11.7. CONCRETE DURABILITY

Based upon the results of the chemical analyses it is considered that subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with the recommendations provided in BRE *Special Digest 1* (2005).

Elevated sulphate concentrations meeting Class DS-2, AC-1s were noted within the Made Ground deposits in WS123b, WS125 and WS133 and TP129. DS-4, AC-3s is identified at WS121.

11.8. EXCAVATIONS

Trial pits were generally stable in both granular Made Ground and natural strata; as such, it is considered that near-surface excavations will be feasible. In areas where Made Ground exceeded 2 m, excavations were generally less stable.

Site observations indicated that excavations should be feasible in the near-surface with normal plant; however, obstructions were identified in the near-surface, including former foundations and former floor slabs. It is anticipated that any obstructions will be grubbed out during the reduced-level dig for the substructure works.

However, due to the depth and variability of the Made Ground and the likelihood of trench collapse, it is considered that all excavations are supported or battered back in accordance with the guidance contained in CIRIA R97.

If local pumping of groundwater is required during the advancement of excavations for the proposed foundations then consideration should be given to the potential for dewatering gravels in the surrounding areas that may cause structural damage to building substructures in close proximity to the site.

TABLE 10.5 CIVIL ENGINEERING EXCAVATION RISK MATRIX

RISK ITEM	PRESENT	COMMENT
Running Sands	No	No running sand has been identified.
Minor Water Ingress	No	Minor water ingress will require localised dewatering/sump pumping during the construction of site drainage infrastructure. Ingress of water into foundation excavation will potentially flood foundation excavations, limiting the viability of spread foundations to be constructed.
Shallow Bedrock	No	Shallow bedrock has not been identified

11.9. CONSTRUCTION ACTIVITY AND INSPECTION

The following activities and inspections should be incorporated into the site works:

- Due to the variability of the soils at the site, it is recommended that a sufficient allowance is made for the inspection of formations and sub formations to foundations and pavement construction.
- Excavations where access is required should be subject to a risk assessment from a competent person and, where appropriate, mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 should be utilised.
- It is considered that dewatering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to the provision of space for settling tanks or an attenuation pond.
- Where access to confined spaces is required, appropriate mitigation measures should be addressed within the construction stage health and safety plan. Particular account should be taken of the gas results.
- The presence of potential contamination and mitigation measures should be addressed as part of the construction stage health and safety plan and should include measures to design out the risks, reduce their impact and, finally, include the use of personnel protective equipment (PPE).

11.10. GEOTECHNICAL RISK REGISTER

POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Remediation of contaminated soils	On-site	95	Site wide risk of heavy metal, PAH, SVOC, TPH contamination with some areas still outstanding updated investigation works. Vapour membranes in all proposed buildings and a site-wide cover system are required. Removal of all waste stockpiles.
Obstructions	All	20	Site has been subject to significant historical development and, while above-ground structures have been removed, potential subsurface obstruction from relict foundations and slabs remain. A culvert is located on-site.
Artificially levelled and filled platforms	On site	100	The site appears to have been levelled and artificially backfilled.
Retaining walls	West	10	There is a retaining wall to the west supporting network rail infrastructure. This will need to be assessed by a structural engineer prior to development as it is integral to the former factory wall.
Trench collapse	All	100	Made Ground present beneath the site is likely to be loosely compacted and possibly prone to collapse.
Mature trees	North and south	10	Arboriculture survey required to determine areas of potential tree influence. The site is predominantly surfaced by hardstanding, however a number of semi mature trees are present in the very south and very north periphery of the site.
Volume change potential clay	On site	80	The site is likely to be underlain by moderate volume change cohesive soils. Where a potential for volumetric instability is present in cohesive deposits, heave precautions are required and a specialist pile design is required for apartment blocks in order to prevent pile failure generated from heave.

POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Concrete design	On site	20	Based upon the results of the chemical analyses it is considered that subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with the recommendations provided in BRE *Special Digest 1* (2005). Elevated sulphate concentrations meeting Class DS-2, AC-2 were noted within the Made Ground deposits in WS123b, WS125 and WS133. However, upon completion of site enabling works it will, in all likelihood, be DS1 AC1s. DS-4, AC-4s is identified for use at WS121.
Low-permeability ground	On site	100	Soakaways unlikely to be effective in areas where low permeability cohesive deposits are present or where areas of potentially contaminated soil and groundwater are present.
Services/sensitive structures	-	-	A review of online services has identified a number of services within the site boundary as well as the culvert which should be considered sensitive in this case. Piling may not be possible within proximity to any sensitive infrastructure.
Abnormal foundation solutions	On site	100	An engineered foundation is likely to be required due to the proposals to raise site levels.
Areas not investigated	On site	20	Further investigation will be required to determine the chemical analysis for soils underneath the existing buildings, areas deemed to be inaccessible due to standing water or stockpiles and areas where active services are currently present on site.
Surface water features	On site	TBC	Two branches of Corn Brook are recorded underneath the site, these are now fully culverted.
Historically infilled pond	On site	TBC	Historic ponds will need to be clearly demarked and investigated during remediation and enabling works to confirm the extent of any organic material.
Mining	N/A	N/A	Based on the evidence to date, no evidence is encountered of a viable shallow coal seam or historical shallow workings.

11.11. FURTHER WORKS

Based on the findings of the intrusive site investigation, the following additional works are recommended to be completed in due course:

- Plot-specific foundation schedule (upon receipt of the final development levels).
- Arboriculture survey.
- Retaining wall survey.
- Settlement Analysis for earthworks design.
- Geotechnical earthworks strategy (infrastructure).
- Update to the remediation and enabling works strategy.
- Construction Phase Surface Water Management Plan.

12. CONCLUSIONS AND RECOMMENDATIONS

12.1. CONTAMINATED LAND ASSESSMENT

Human Health	A Tier I human health risk assessment has been undertaken using the chemical analysis results of the soils and comparing them to the relevant Tier I criteria (residential end-use with plant uptake) as this is the worst-case scenario. The results of this direct comparison indicate that the data exceeds the screening criteria for a residential end-use for the following contaminants: - Asbestos - chrysotile - Heavy metals – arsenic, lead, mercury, zinc - PAHs – naphthalene, acenaphthylene, acenaphthene, fluorene, fluoranthene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno, 1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(ghi)perylene - Hydrocarbon fractions - C10-C12, C12-C16, C16-C21 and C21-C35 - 4-Methylphenol - 2, 4-dimethylphenol In relation to heavy metals, non-volatile PAHs and TPH C16-35, these contaminants have primary exposure pathways related to dermal contact and ingestion of soils and consumption of homegrown vegetables. The risk to chronic human health associated with the elevated concentrations of inorganic heavy metals and non-volatile PAH compounds can be mitigated through the installation of a suitable cover system in all proposed private gardens, landscaping and public open space to remove any potential for direct exposure to impacted soils. The upfilling of the site may help form a part of this. In relation to mercury exceedances, for the majority of samples analysed, mercury was found to be non-volatile and therefore the risk can be mitigated through the construction and validation of suitable clean cover systems. Where samples could not be quantified, a theoretical risk remains, these areas should be treated as isolated hotspots requiring speciated testing during the remediation and enabling works. SVOCs above the limit of detection (LOD) have been identified across the site within Made Ground. These detected compounds have been compared to the available Atkins ATRSK tables and this indicates one exceedance at WS121. Dibenzofuran, carbazole, anthraquinone, 2-methyl naphthalene and 2,4-dimethylphenol do not have prescribed GAC values, as such any presence has been considered a potential risk.

Human Health	In relation to SVOCs (including naphthalene), VOCs and TPH C10-16, these contaminants have primary exposure pathways related to vapour. The majority of the SVOC exceedances are identified in locations with elevated levels of volatile TPH, which is attributed to be the source of the SVOCs. On review of the current site activities, it is considered highly likely that the original cobbles across the site are bounded by coal tar cement. Prior to the supplementary investigation, the cobbles had been lifted and removed. This recorded a reduction in TPH exceedances – as anticipated – as the source of TPH, the coal tar, has been removed. To mitigate the residual risk from SVOCs across the site, a provision for vapour membranes should be made for all proposed plots. This would remove the contamination pathway between source and receptor and mitigate the risk to the end-user against indoor vapour inhalation. Asbestos in the form of chrysotile has also been identified within a localised area in shallow Made Ground deposits (WS125 at 0.50m bgl). Asbestos quantification has shown <0.001 % asbestos therefore, soils should be placed beneath a cover system depth. No visual signs of ACM were encountered during the ground investigation; it is, therefore, likely that only trace fibres are present. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model Chemical analysis of the natural drift deposits has identified these soils to be acceptable for use as subsoil within any landscaping areas. There are no suitable sources of topsoil at the site.
Controlled Waters	Potential sources of mobile contamination were identified at the site in the form of tanks, Made Ground and the site's historical use as a transport depot, printers and iron foundry. The results of the data review and Tier I qualitative risk assessment have allowed E3P to draw the following conclusions with respect to the risk to controlled waters: • There have been multiple phases of ground investigation, this has enabled reasonable characterisation of the pollution risk and potential to impact the critical receptors; • Low permeability cohesive clay deposits encountered site wide beneath the site will inhibit the downward migration of contamination and offer protection to the underlying aquifers. • Site-wide heavy metal, PAH and isolated TPH exceedances have been recorded within leachate analysis and perched groundwater. This is considered to be associated with residual impact on shallow anthropogenic materials. All primary and secondary pollution sources have now been removed from the site in their entirety.

Controlled Waters	• Within Black Brook, minor heavy metals (copper and zinc) and PAH (anthracene and fluoranthene) exceedances have been identified in comparison to EQS. However, significant exceedances of naphthalene and TPH (C10-C16) exceedances have been identified in comparison to the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, with a more significant TPH and naphthalene impact likely associated with the current and historical industrial activities in the wider area (off site). Further surface water testing should be undertaken up and downstream during remediation and enabling. • Within Corn Brook – identified as the primary receptor – minor exceedances of heavy metal (zinc and total cyanide) and PAH (naphthalene) exceedances have been identified in comparison the EQS. This indicates a minor heavy metal and PAH impact is present within the surface water feature, likely associated with the wider industrial activities in the area. Further surface water testing should be undertaken up and down stream of the site to confirm this. • No exceedances of determinant tested within the principal aquifer groundwater samples against DWS. • Relatively low-level exceedances of heavy metals and PAH were identified within BH202 and BH204 compared to EQS. Given the lack of active groundwater abstraction recorded within 1km of the site, low permeability of the overlying drift limiting vertical migration and low solubilities and concentrations of heavy metal and PAH recorded, there is considered to be no unacceptable risk to the underlying aquifer. • Black Brook is to be diverted as part of the proposed development and will be fully encapsulated, as such, it is not considered that Black Brook will be in hydraulic continuity with the site upon completion of these works. • Corn Brook is to remain untouched, at this stage, it is assumed that it is in hydraulic continuity with the site. As such, Corn Brook has been identified to be the critical receptor for controlled waters. • A full survey for Corn Brook is not currently available. However, it is likely that the culvert is sealed off from the site as such, not in hydraulic conductivity. A survey should be completed to confirm the condition of the Corn Brook culvert, with repairs made in areas of degradation and damage. Upon completion of this works it is considered that there will not be a direct contamination pathway between the site and surface water features, as such, no unacceptable risk of the controlled water receptor will be present. • Further analysis of the surface water in Black Brook and Corn Brook should be undertaken as groundworks progress to ensure no future mobilisation of contaminants is caused, which may pose a risk to the watercourse.

Ground Gas	Sources of ground gas at the site include Made Ground, tanks and formerly infilled ponds. Ground gas monitoring suggests that the site can be predominantly classified as CS1, and in these areas, it is considered that gas protection measures against carbon dioxide and methane will not be required. However, due to the presence of site wide residual SVOC contamination within the soils across the site, provision for vapour membranes should be made for all plots.
Potable Water	This will need to be confirmed following the completion of a UKWIR risk assessment. Post-remediation and enabling works ground conditions may be different from those identified during this site investigation. Currently, it is recommended that barrier pipe be utilised at the site.

12.2. COAL MINING

Coal Mining	E3P has reviewed the historical reports, desk study, BGS geological mapping and CA information, in addition to completing nine 40 m rotary boreholes to investigate shallow mine workings. A summary of the findings is presented below: • The intrusive ground investigations comprising five, deep, rotary boreholes did not identify any shallow coal seams or evidence of historic mine workings to the base of the boreholes. • Reasonably deep drift at the site may suggest historic shallow mining would not be viable. • No evidence of surface disturbances or record of the same in the Coal Authority report. • During the E3P works completed to date, no evidence has been noted to support the presence of a viable shallow coal seam beneath the site. • No evidence is encountered of historical shallow workings.

12.3. GEOTECHNICAL ASSESSMENT

Significant concrete and brick obstructions have been encountered within the Made Ground, indicative of relic foundations from the former building and potential infilled basements in the southern sector of the site.

During a phase of cut-and-fill enabling works to create a developable platform, all below-ground obstructions will require grubbing out to the base of the Made Ground to enable the construction of proposed plots.

The site is due to be lifted by circa 0.50 m bgl to alleviate flood risk. As such, deeper foundations will likely be required and an earthworks specification should be utilised to ensure adequate compaction of materials to support the proposed loadings.

Due to the levels likely increasing across the site, it is likely that proposed low-rise plots in this area would be constructed using a combination of foundation solutions including VSC to support strip or trench-fill foundations. Where high-rise apartment blocks are proposed, driven pile or raft foundations may be utilised depending on the structural loadings proposed.

An ABP in the order of 100 kN/m^2 can be achieved at circa 2.00 m across the site based on existing ground levels. An ABP in the order of 200 kN/m^2 can be achieved from circa 2.50 m bgl.

Soft CLAY was identified directly underlying the Made Ground at WS114, WS116, WS126, WS134 and TP114 with an ABP range of 29–51 kN/m^2. This material may require removal during enabling works and foundations should be deepened in these areas.

Clayey SAND was identified at depth within the cable percussive boreholes and was identified as medium dense and dense with an ABP of 400kn/m^2 from 6.00 m bgl.

Foundation depths should take account of the presence of existing and proposed trees, with foundations deepened locally to mitigate the potential for volumetric instability attributed to fluctuations in moisture content, in accordance with the requirements of NHBC standards.

It is recommended that at working drawing stage a foundation schedule is prepared for the development, taking account of the physical change of the natural clay soils and the current/proposed locations of trees.

Piling may not into be feasible in the area of sensitive underground infrastructure including the underground culvert.

At this time it is not possible to accurately define the foundation types due to the absence of a detailed tree survey and final development levels; however, based on our extensive experience of similar sites, we would anticipate that the final foundation solution based on the current ground level would be a combination of the following:

- VSC to support a shallow strip foundation bearing engineered Made Ground at circa 3 m bgl; and,
- Trench fill to support reinforced strip foundations in areas of shallower variable ground and/or potential tree influence at circa 1.50 m bgl; and,
- Deeper piles or rafts for apartment blocks.

END OF REPORT

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.3.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

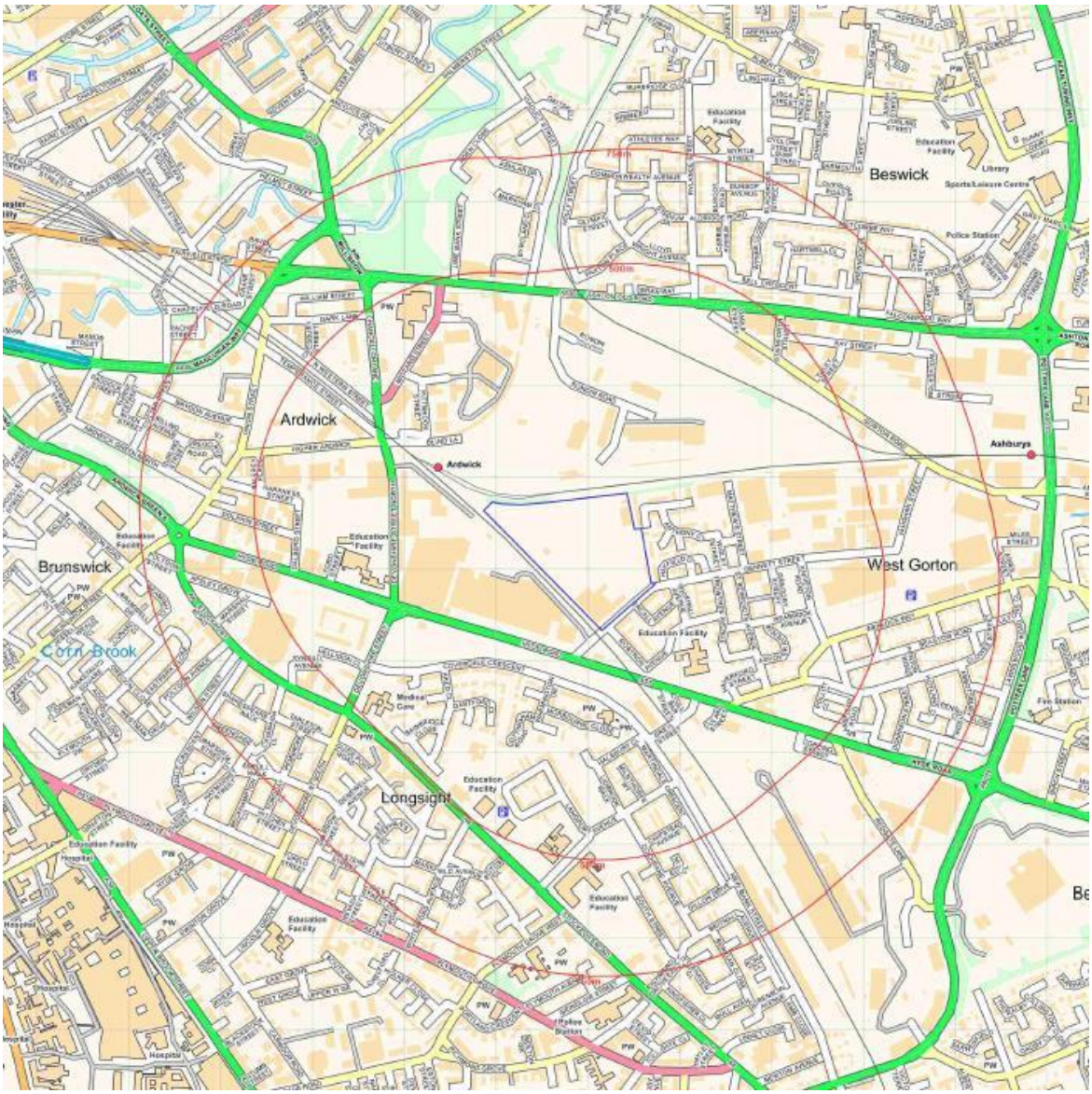
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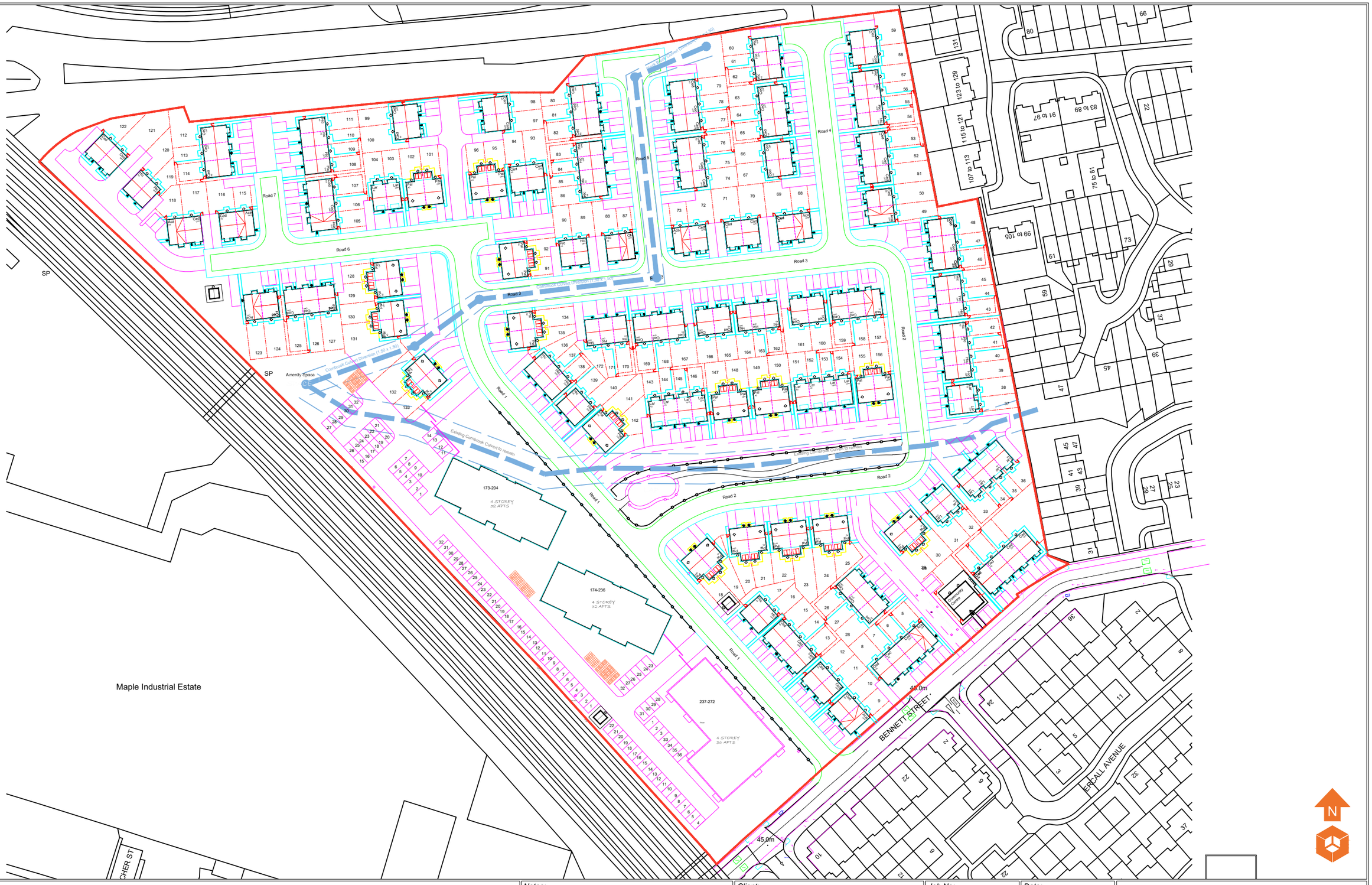
ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	**NR**	Not recorded
CA	Coal Authority	**PAH**	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	**PCB**	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	**PI**	Plasticity index
CIRIA	Construction Industry Research Association	**PID**	Photo ionisation detector
CLEA	Contaminated land exposure assessment	**POS**	Public open space
CML	Council of Mortgage Lenders	**PPE**	Personnel protective equipment
CoC	Contaminants of concern	**ProPG**	Professional practice guidance
CSM	Conceptual site model	**QA**	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	**SGV**	Soil guideline value
DWS	Drinking water standard	**SPH**	Separate-phase hydrocarbon
EA	Environment Agency	**SPT**	Standard penetration test
EQS	Environmental quality standard	**SVOC**	Semi-volatile organic compound
FFL	Finished floor level	**TPH**	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	**TPH CWG**	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	**UKWIR**	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	**UST**	Underground storage tank
HCV	Health criteria value	**VCC**	Vibro-concrete column
ICSM	Initial conceptual site model	**VOC**	Volatile organic compound
LEL	Lower explosive limit	**VRSC**	Vibro-replacement stone columns
LMRL	Lower method reporting limit	**VSC**	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	**WHO**	World Health Organisation
MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme

MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection

APPENDIX III
DRAWINGS

DRAWING 15-974-001 – SITE LOCATION PLAN





P1	REVA	21.07.2022	EB	MD
Phase	Issue	Date	Drawn	Checked

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 21.07.2022

Drawing No: 002

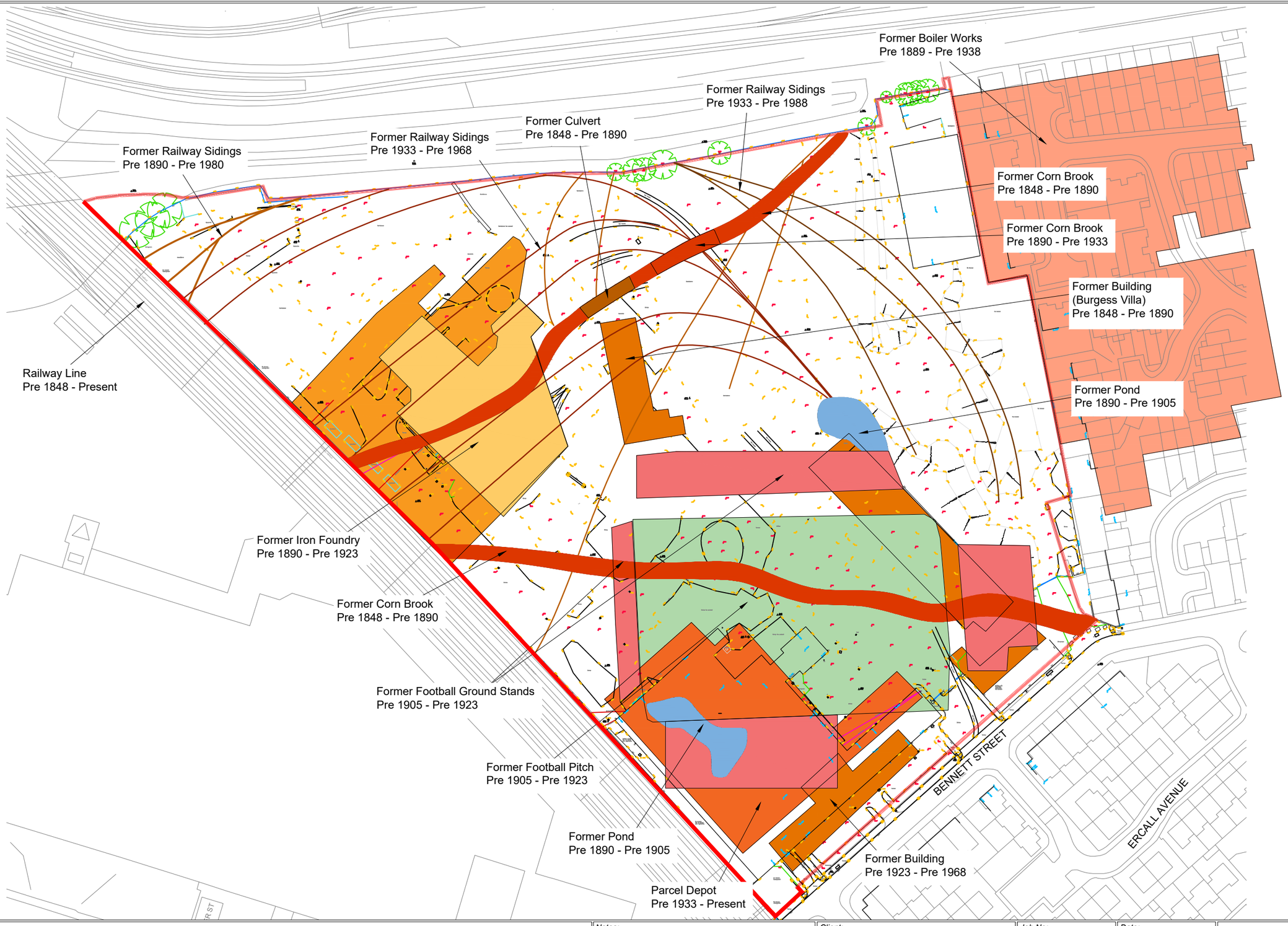
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Job Title: Bennett Street, Manchester

Drawing Title: Proposed Development Plan

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Historical Features

- Iron Foundry
- Iron Foundry Warehouse
- Buildings
- Culverts
- Ponds
- Football Pitches
- Football Stadium Stands
- Parcel Depot
- Boiler Works
- Culvert
- Railway Sidings
- Railway Sidings
- Railway Sidings

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 29.03.2022

Drawing No: 003

Scale: NTS@ A3

Phase	Issue	Date	Drawn	Checked
P1	REVB	29.03.2022	LM	NS
P1	REVA	06.01.2022	LM	OJ

Job Title: Bennett Street, Manchester

Drawing Title: Historical Features Plan

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Site Features

- Derelict Warehouse
- Warehouse
- Standing Water
- Vegetation
- Main Entrance
- Blocked Entrance
- Hardstanding
- Road
- Tank
- Existing Office Building
- Containers
- Waste / Scrap
- Overhead Services
- Aggregate Stockpile
- Tyres

Notes:

P1	REVB	06.04.2022	HM	OJ
P1	REVA	05.01.2022	LM	OJ
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job No: 15-974

Date: 06.04.2022

Drawing No: 004

Scale: NTS@ A3

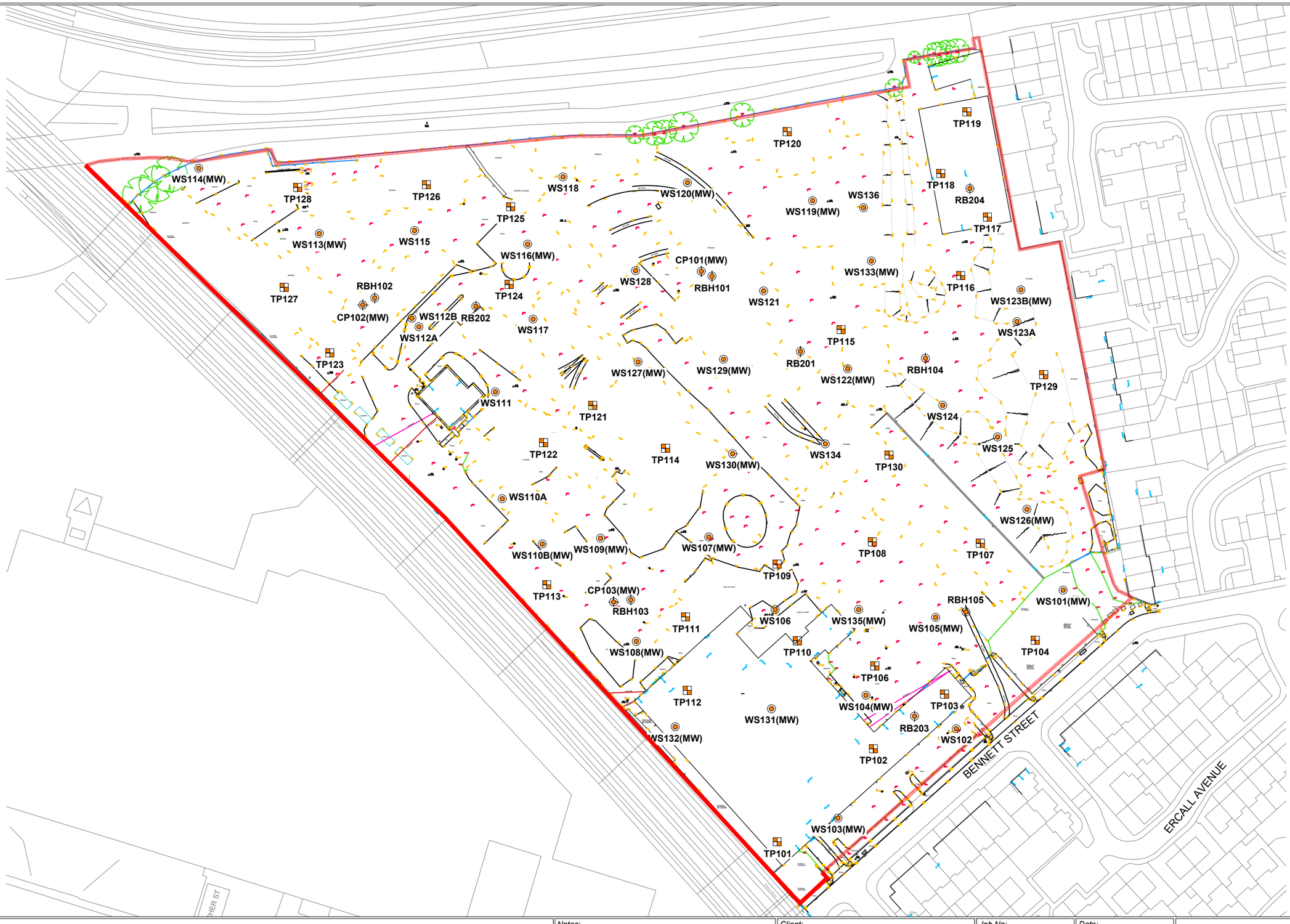
Job Title: Bennett Street, Manchester

Drawing Title: Site Features Plan

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Location Symbols

- WS101 — Approximate Window Sample Probehole Location
- WS101(MW) — Approximate Window Sample Probehole Location with Install
- CP101 — Approximate Cable Percussive Borehole Location
- RB101 — Approximate Rotary Borehole Location
- TP101 — Approximate Trial Pit Location

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVI	31.10.2022	EB	NS
P1	REVH	21.10.2022	EB	SE
P1	REVG	14.03.2022	HM	OJ
P1	REVF	26.01.2022	LM	OJ
P1	REVE	13.01.2022	LM	EC
P1	REVD	10.01.2022	LM	EC
P1	REVC	04.01.2022	CB	EC
P1	REVB	21.12.2021	EB	EC
P1	REVA	02.12.2021	LM	MD

Client: Kellen Homes

Job No: 15-974

Date: 31.10.2022

Drawing No: 005

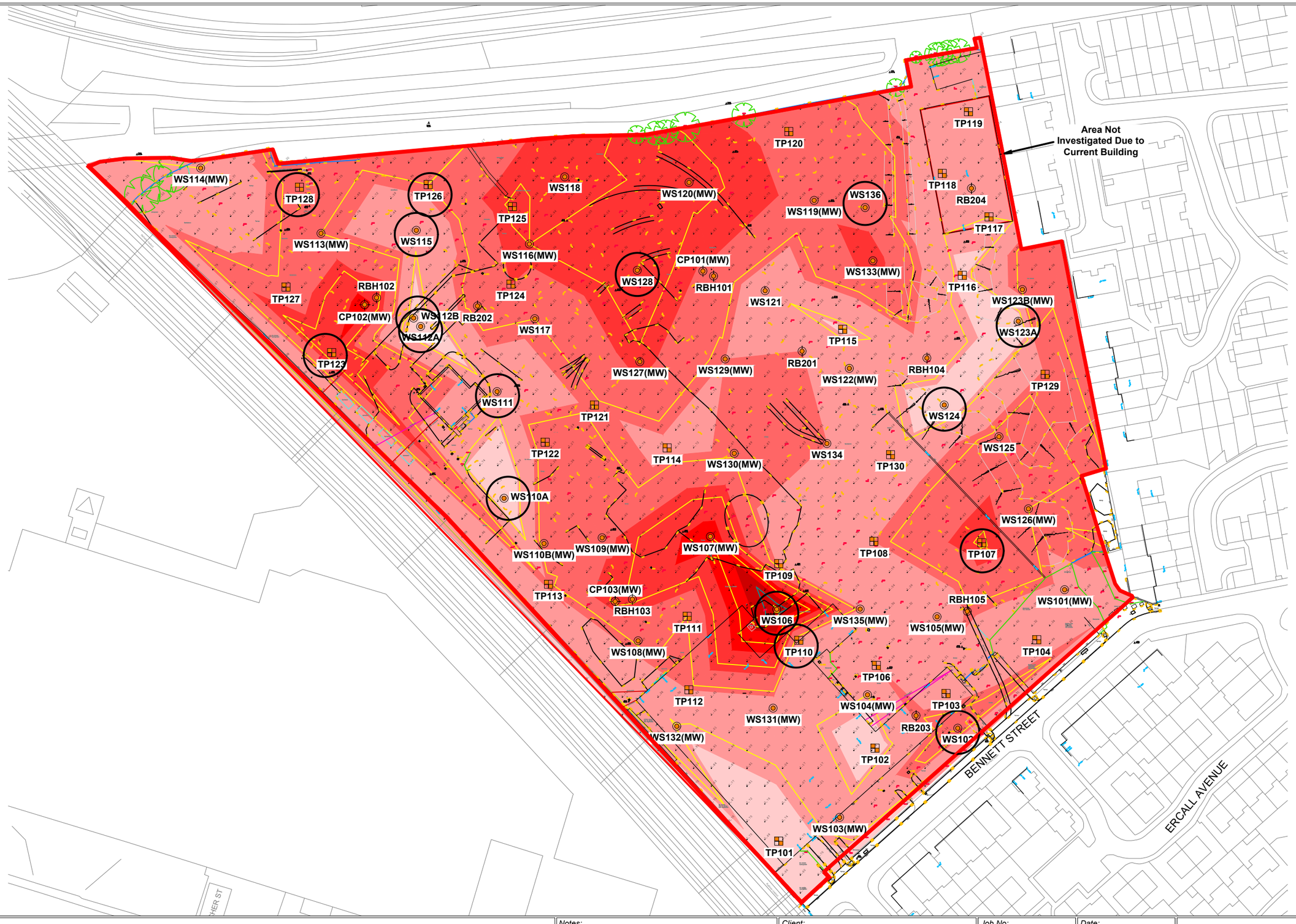
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Job Title: Bennett Street, Manchester

Drawing Title: Exploratory Hole Location Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location
- Full Extent of Made Ground not proven

Made Ground Depth (m)

- Depth of Made Ground 0.00 - 0.89m
- Depth of Made Ground 0.90 - 1.49m
- Depth of Made Ground 1.50 - 2.09m
- Depth of Made Ground 2.10 - 2.69m
- Depth of Made Ground 2.70 - 3.29m
- Depth of Made Ground 3.20 - 4.09m
- Depth of Made Ground 4.10 - 4.99m
- Depth of Made Ground 5.00 - 5.89m
- Depth of Made Ground >5.90m

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVB	09.11.2022	EB	HM
P1	REVA	14.03.2022	HM	OJ

Client: Kellen Homes

Job No: 15-974

Date: 09.11.2022

Drawing No: 006

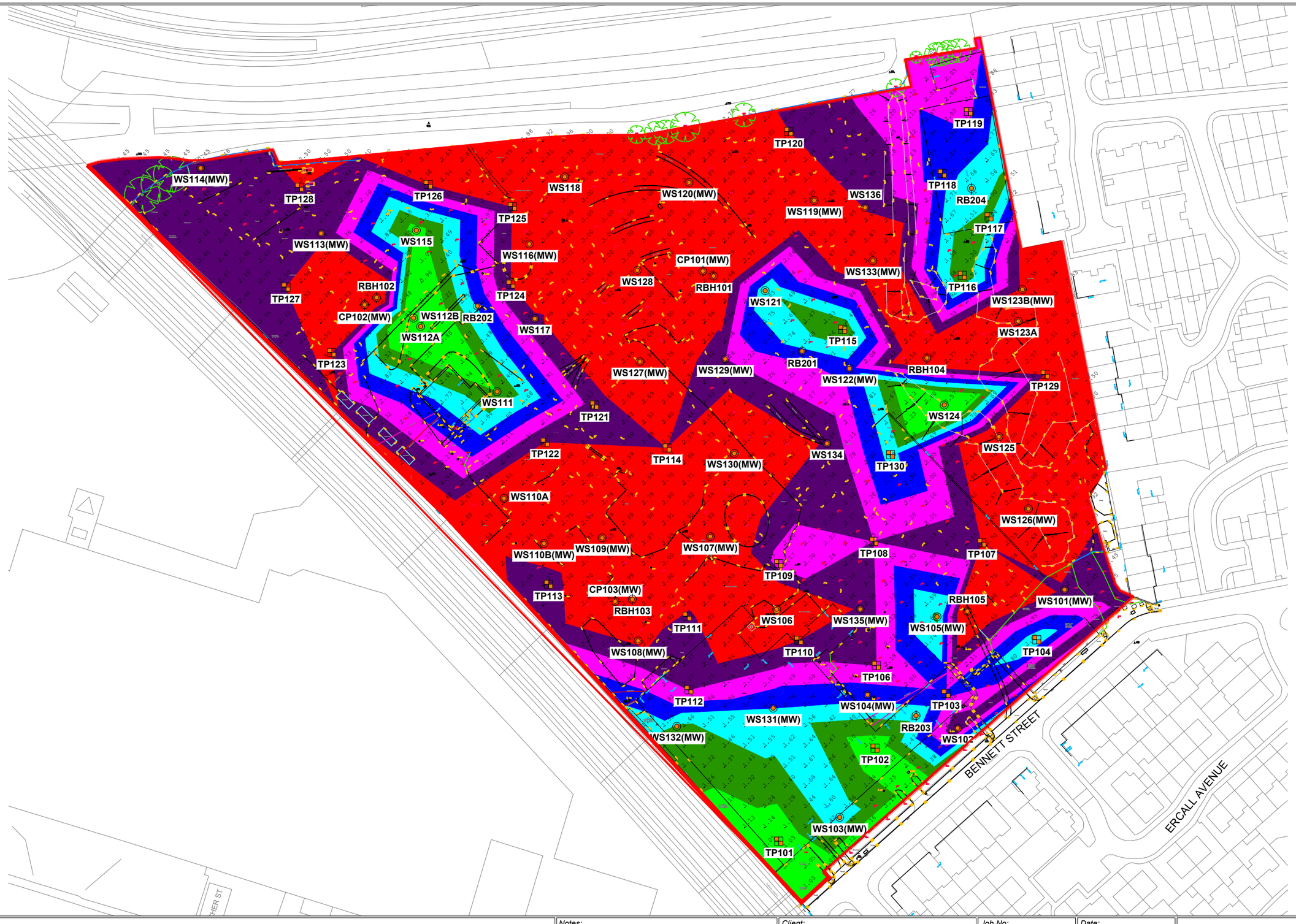
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Depth of Made Ground Plan

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Location Symbols

- WS101 — Approximate Window Sample Probehole Location
- WS101(MW) — Approximate Window Sample Probehole Location with Install
- CP101 — Approximate Cable Percussive Borehole Location
- RB101 — Approximate Rotary Borehole Location

Shallow Spread Footings

- Depth to Founding Strata 0.00 - 1.24m
- Depth to Founding Strata 1.25 - 1.49m

Mass Trench Fill Footings

- Depth to Founding Strata 1.50 - 1.74m
- Depth to Founding Strata 1.75 - 1.99m
- Depth to Founding Strata 2.00 - 2.24m

Engineered Footings

- Depth to Founding Strata 2.25 - 2.49m
- Depth to Founding Strata >2.50m

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVB	24.11.2022	LM	MD
P1	REVA	24.03.2022	LM	OJ

Client: Kellen Homes

Job No: 15-974

Date: 24.11.2022

Drawing No: 008

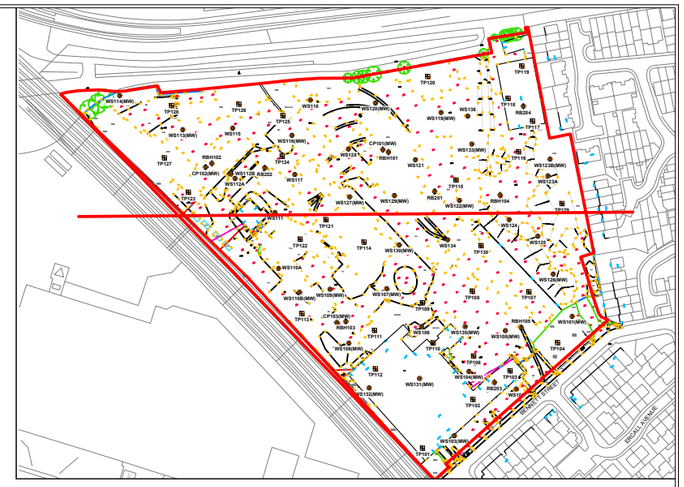
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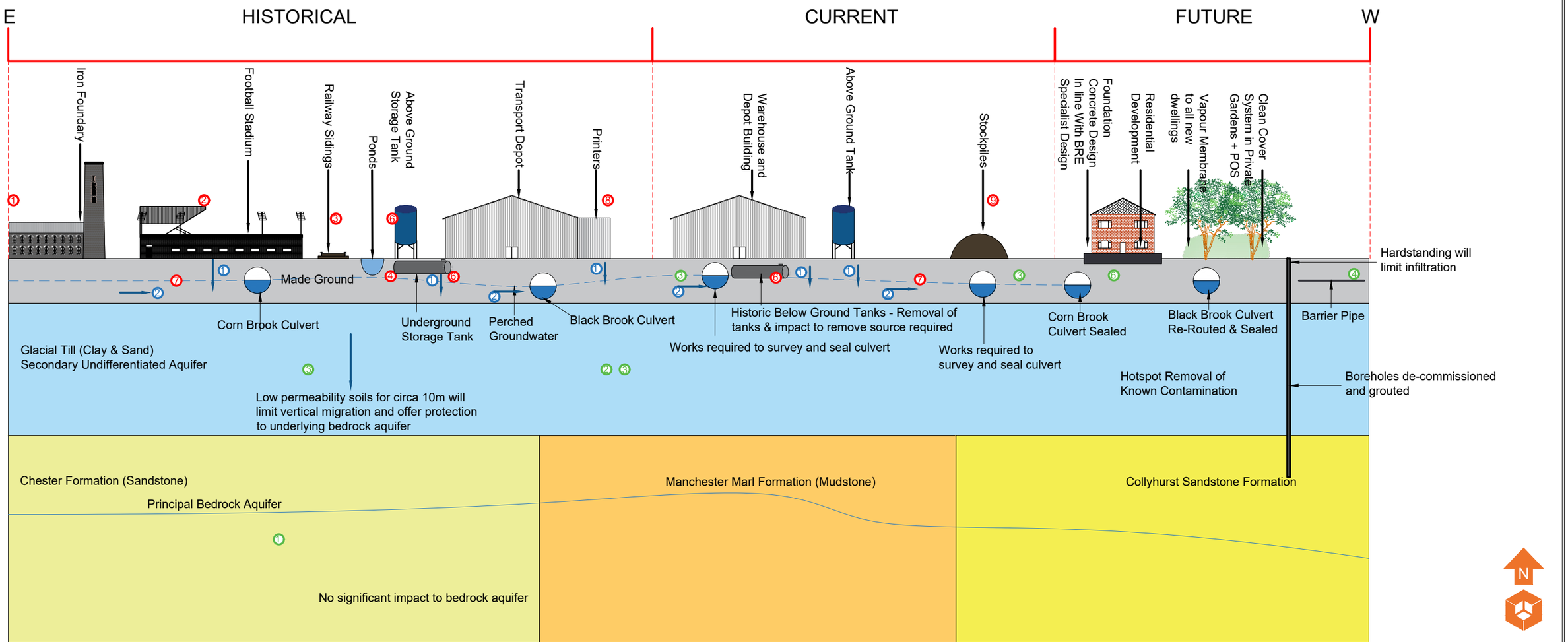
Job Title: Bennett Street, Manchester

Drawing Title: Depth to Founding Strata Plan

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Geology Key

- Made Ground
- Glacial Till
- Collyhurst Sandstone
- Manchester Marl Formation
- Chester Formation

Sources

1. Iron Foundry (Heavy Metal, BTEX, VOC, SVOC, TPH, Asbestos)
2. Football Stadium (Heavy Metal, PAH, Asbestos, Ground Gas)
3. Railway Sidings (Heavy Metal, PAH, SVOC, VOC, Coal Tar)
4. Infilled Ponds (Heavy Metals, PAH, Asbestos, Ground Gas)
5. AST & UST (TPH, BTEX, PAH, VOC, SVOC)
6. AST & UST (TPH, BTEX, PAH, VOC, SVOC)
7. Made Ground (Heavy Metal, PAH, TPH, VOC, SVOC, BTEX, Asbestos, Coal Tar, Ground Gas)
8. Printers (Heavy Metal, PAH, VOC, SVOC, TPH)
9. Stockpiles (Heavy Metal, PAH, Asbestos, PCB's, TPH)

Pathway

1. Vertical migration through Made Ground
2. Lateral migration via perched water

Receptor

1. Groundwater Aquifer
2. Perched Groundwater
3. Surface Water Features (Culverts)
4. Water infrastructure

Notes:

P1	REVA	12.01.2023	HM	MD
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job No: 15-974

Date: 12.01.2023

Drawing No: 010

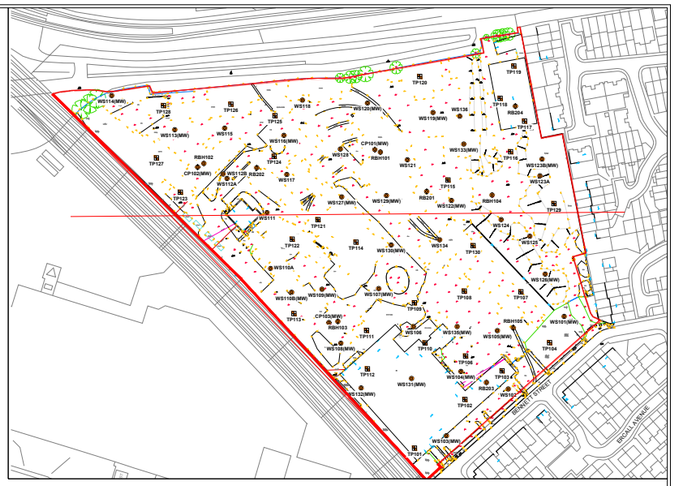
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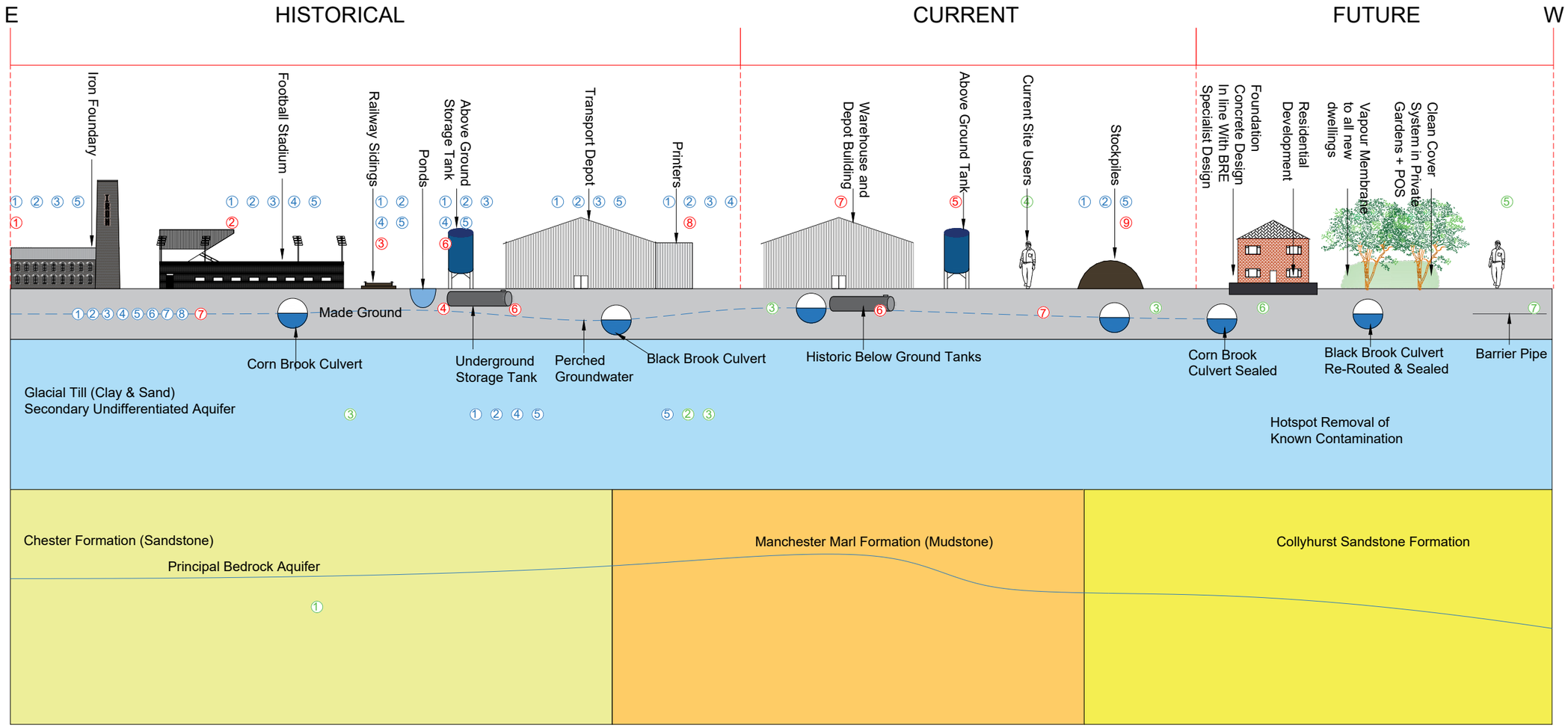
Job Title: Bennett Street, Manchester

Drawing Title: Conceptual Site Model (Groundwater)

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Geology Key

- Made Ground
- Glacial Till
- Collyhurst Sandstone
- Manchester Marl Formation
- Chester Formation

Sources

1. Iron Foundry (Heavy Metal, BTEX, VOC, SVOC, TPH, Asbestos)
2. Football Stadium (Heavy Metal, PAH, Asbestos, Ground Gas)
3. Railway Sidings (Heavy Metal, PAH, SVOC, VOC, Coal Tar)
4. Infilled Ponds (Heavy Metals, PAH, Asbestos, Ground Gas)
5. AST & UST (TPH, BTEX, PAH, VOC, SVOC)
6. AST & UST (TPH, BTEX, PAH, VOC, SVOC)
7. Made Ground (Heavy Metal, PAH, TPH, VOC, SVOC, BTEX, Asbestos, Coal Tar, Ground Gas)
8. Printers (Heavy Metal, PAH, VOC, SVOC, TPH)
9. Stockpiles (Heavy Metal, PAH, Asbestos, PCB's, TPH)

Pathway

1. Soil Ingestion
2. Dermal Contact and Ingestion
3. Dust Inhalation
4. Vapour / Gas Inhalation
5. Vertical / Lateral Migration
6. Corrosion of Concrete
7. Tainting Water Supply

Receptor

1. Groundwater Aquifer
2. Perched Groundwater
3. Surface Water Features (Culverts)
4. Current Site Users (Construction Workers)
5. Future Site Users
6. Building Foundations & Structures
7. Water Infrastructure

Notes:

P1	REVA	10.01.2023	HM	MD
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job Title: Bennett Street, Manchester

Job No: 15-974

Date: 10.01.2023

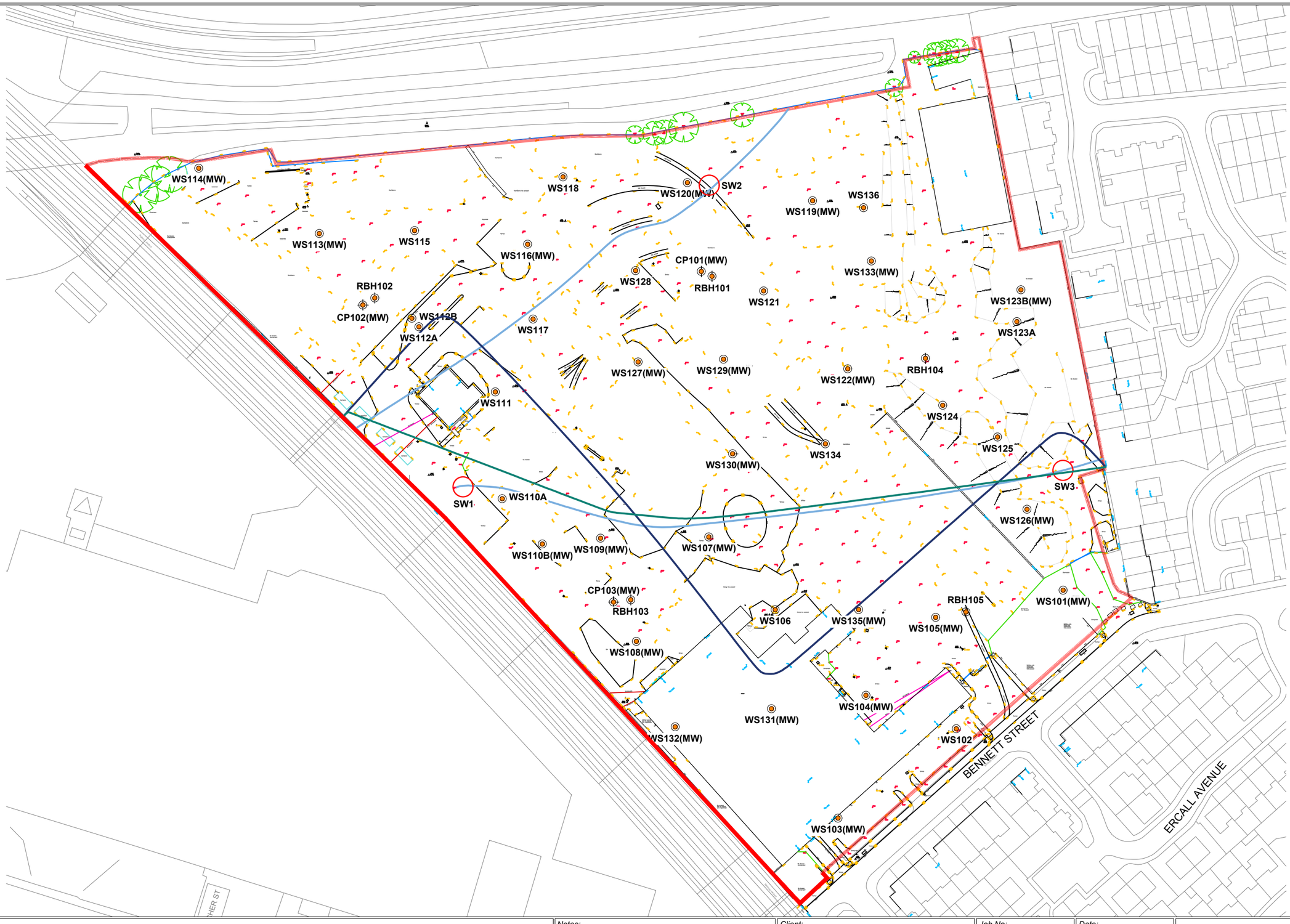
Drawing No: 010

Scale: NTS@ A3

Drawing Title: Conceptual Site Model

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location
- Surface Water Monitoring Point
- Culvert
- Indicates proposed route of culvert watercourse diversion via the central section of the new access roads.
- Indicates existing route of Corn Brook culvert

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 08.012.2021

Drawing No: 011

Scale: NTS@ A3

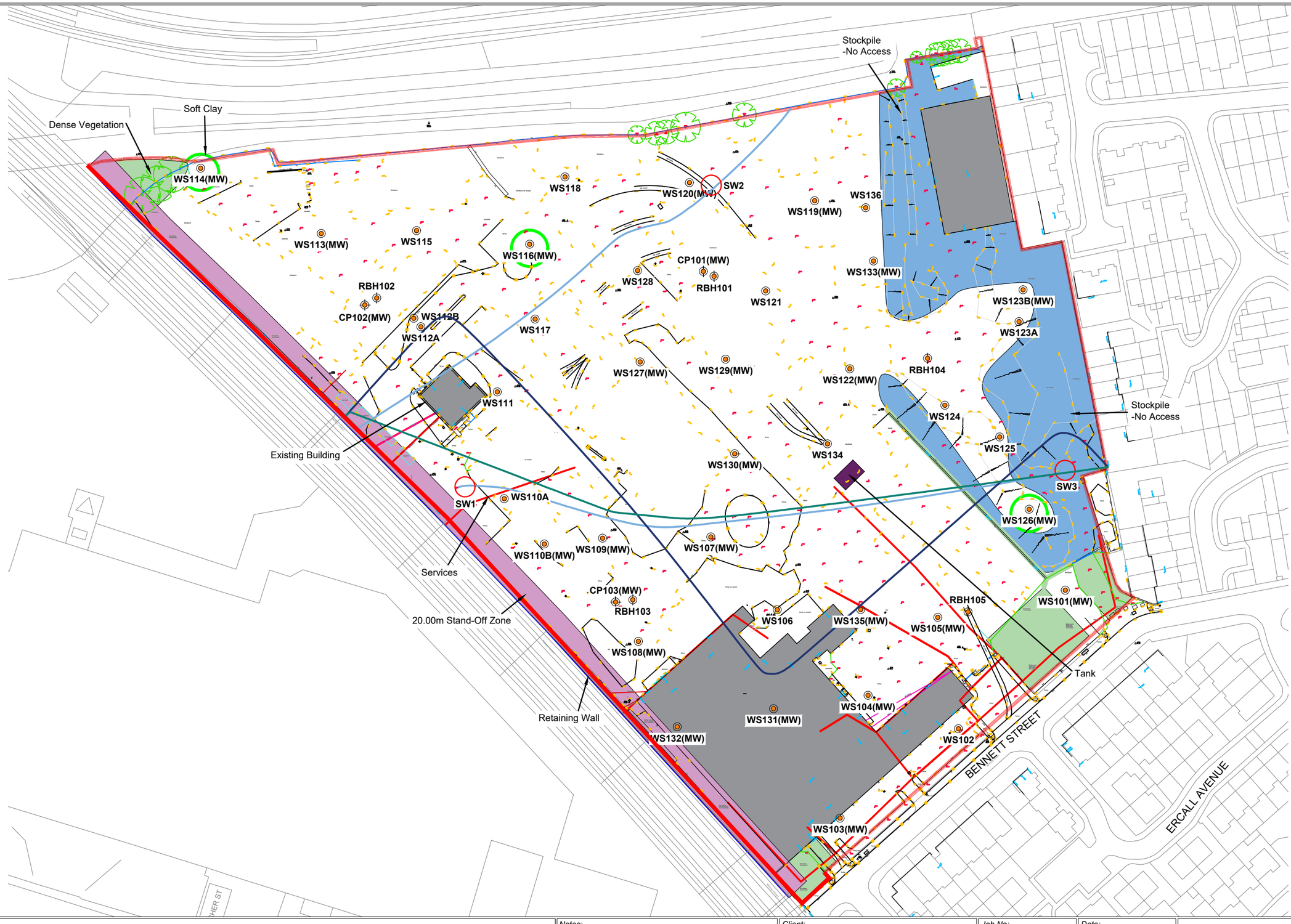
Phase	Issue	Date	Drawn	Checked
P1	REVA	08.12.2021	EB	OJ

Job Title: Bennett Street, Manchester

Drawing Title: Culvert Location Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location

Development Constraints

- Retaining Wall
- 20.00m Stand Off Zone
- Tank
- Existing Building
- Dense Vegetation
- Stockpile (No Access)
- Approximate Location of Services
- Soft Clay
- Culvert
- Indicates proposed route of culvert watercourse diversion via the central section of the new access roads.
- Indicates existing route of Corn Brook culvert
- Surface Water Monitoring Point

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVB	06.04.2022	HM	OJ
P1	REVA	14.03.2022	HM	OJ

Client: Kellen Homes

Job No: 15-974

Date: 06.04.2022

Drawing No: 012

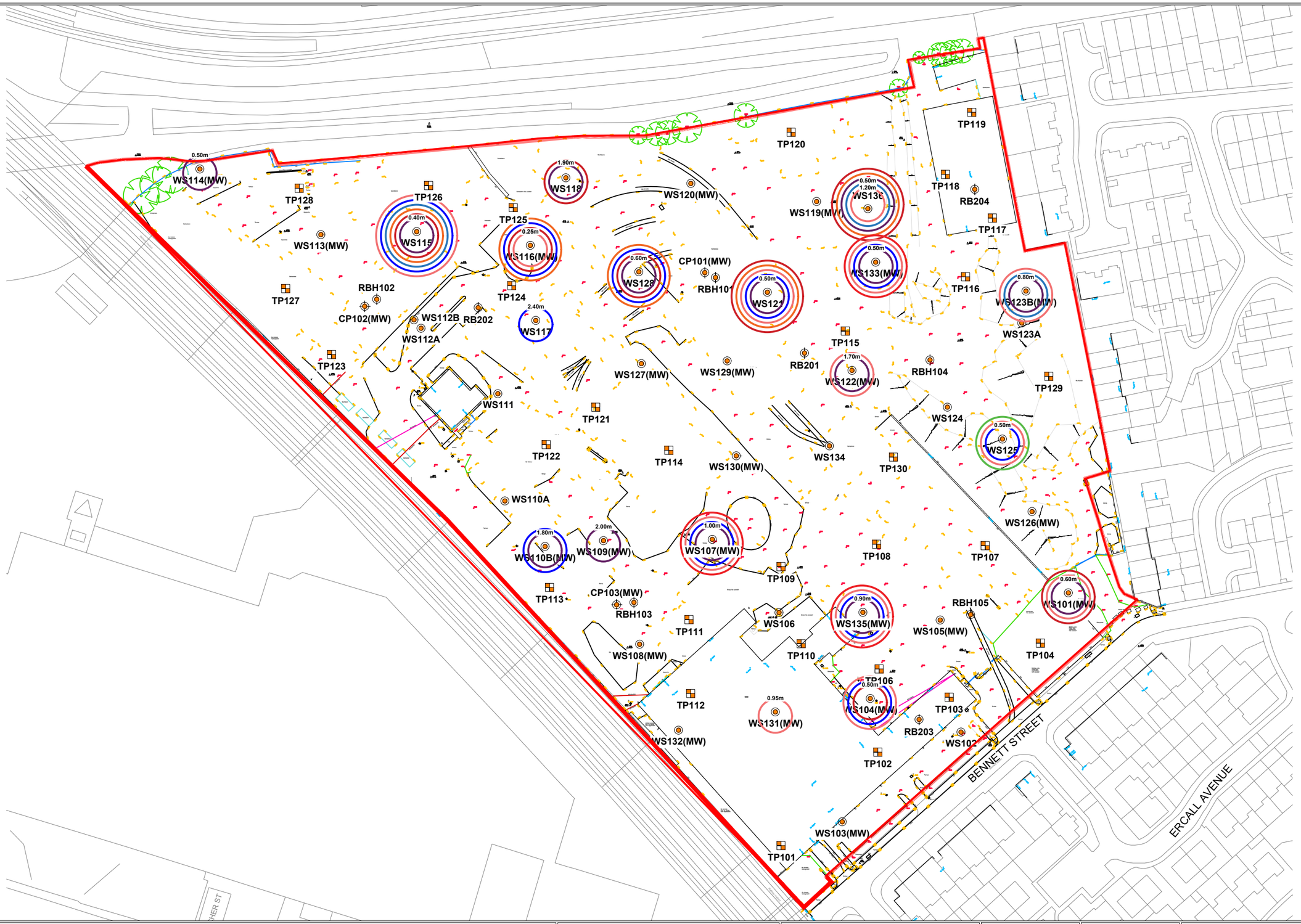
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Development Constraints Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location

Human Health

- PAH
- Metals
- Mercury
- SVOC
- Asbestos
- Napthalene
- TPH

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVB	24.11.2022	LM	MD
P1	REVA	14.03.2022	HM	OJ

Client: Kellen Homes

Job No: 15-974

Date: 24.11.2022

Drawing No: 013

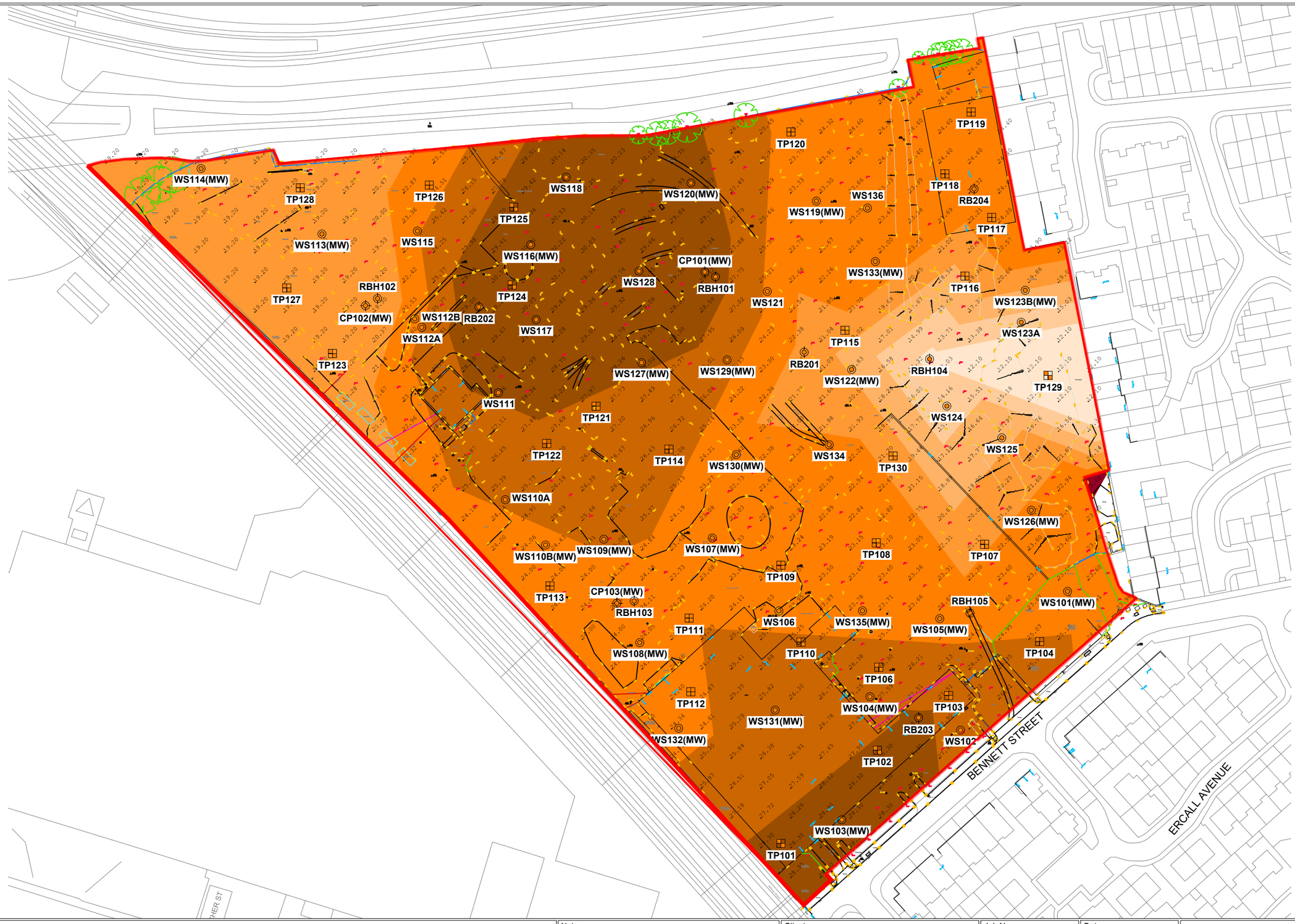
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Human Health Exceedances Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location

Bedrock Depth (m)

- Depth to Bedrock 10.00 - 12.99m
- Depth to Bedrock 13.00 - 15.99m
- Depth to Bedrock 16.00 - 18.99m
- Depth to Bedrock 19.00 - 21.99m
- Depth to Bedrock 22.00 - 24.99m
- Depth to Bedrock 25.00 - 27.99m
- Depth to Bedrock >28.00m

Notes:

P1	REVB	08.11.2022	EB	HM
P1	REVA	14.03.2022	HM	OJ
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job No: 15-974

Date: 08.11.2022

Drawing No: 014

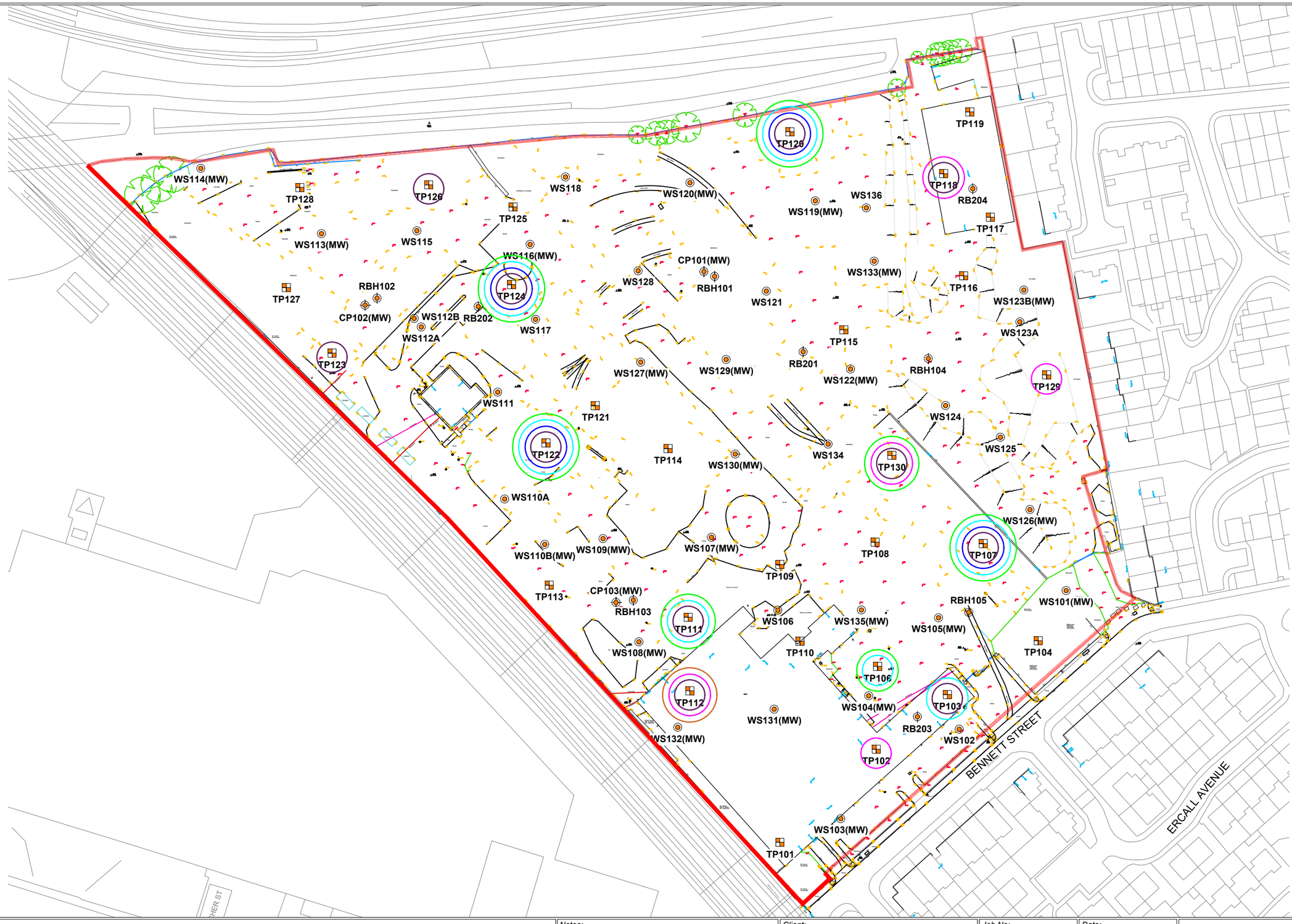
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Depth to Bedrock Plan

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Location Symbols

- WS101 — Approximate Window Sample Probehole Location
- WS101(MW) — Approximate Window Sample Probehole Location with Install
- CP101 — Approximate Cable Percussive Borehole Location
- RB101 — Approximate Rotary Borehole Location
- TP101 — Approximate Trial Pit Location

Contamination Issues

- PAH
- Metals
- Mercury
- SVOC
- Naphthalene
- TPH

Notes:

P1	REVA	07.11.2022	EB	HM
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job No: 15-974

Date: 07.11.2022

Drawing No: 018

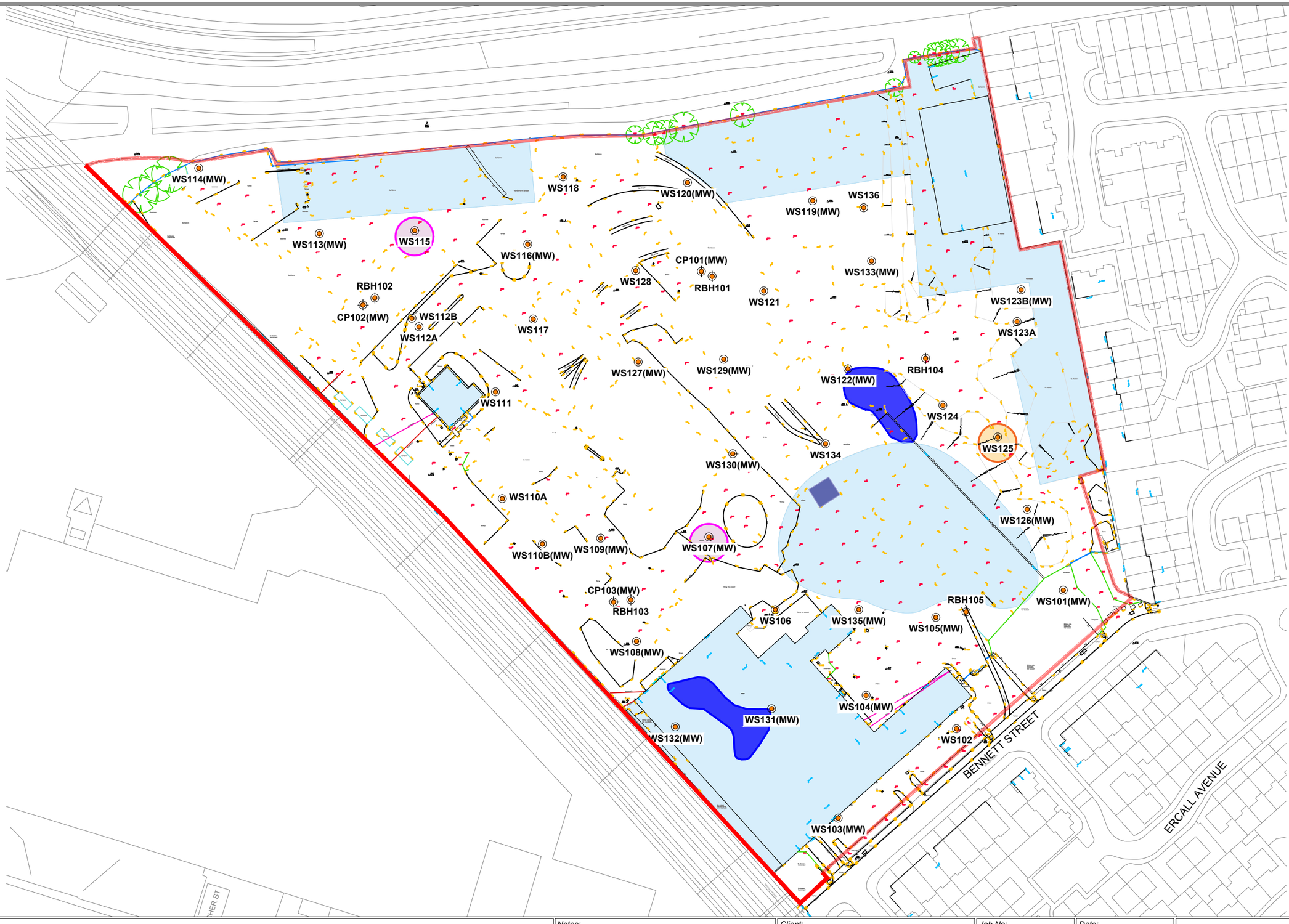
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Contamination Issues Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Rotary Borehole Location

Remediation Issues

- Mercury Hotspot - Specification Required
- Asbestos Hotspot
- Further Site Investigation Required
- Tank Investigation Required
- Investigation of Former Pond

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 14.04.2022

Drawing No: 019

Scale: NTS@ A3

P1	REVA	14.04.2022	CB	OJ
Phase	Issue	Date	Drawn	Checked

Job Title: Bennett Street, Manchester

Drawing Title: Remediation Issues Plan

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Location Symbols

- WS101 — Approximate Window Sample Probehole Location
- WS101(MW) — Approximate Window Sample Probehole Location with Install
- CP101 — Approximate Cable Percussive Borehole Location
- TP101 — Approximate Trial Pit Location
- HP101 — Approximate Hand Dug Pit Location

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 21.07.2022

Drawing No: 023

Scale: NTS@ A3

P1	REVA	24.03.2022	LM	OJ
Phase	Issue	Date	Drawn	Checked

Job Title: Bennett Street, Manchester

Drawing Title: Historical Exploratory Hole Location Plan

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Location Symbols

- Approximate Window Sample Probehole Location
- Approximate Window Sample Probehole Location with Install
- Approximate Cable Percussive Borehole Location
- Approximate Trial Pit Location
- Approximate Hand Dug Pit Location

Historical Contamination

- Heavy Metals
- PAH
- TPH
- Volatile / Semi Volatile

Notes:

P1	REVA	24.03.2022	LM	OJ
Phase	Issue	Date	Drawn	Checked

Client: Kellen Homes

Job No: 15-974

Date: 21.07.2022

Drawing No: 024

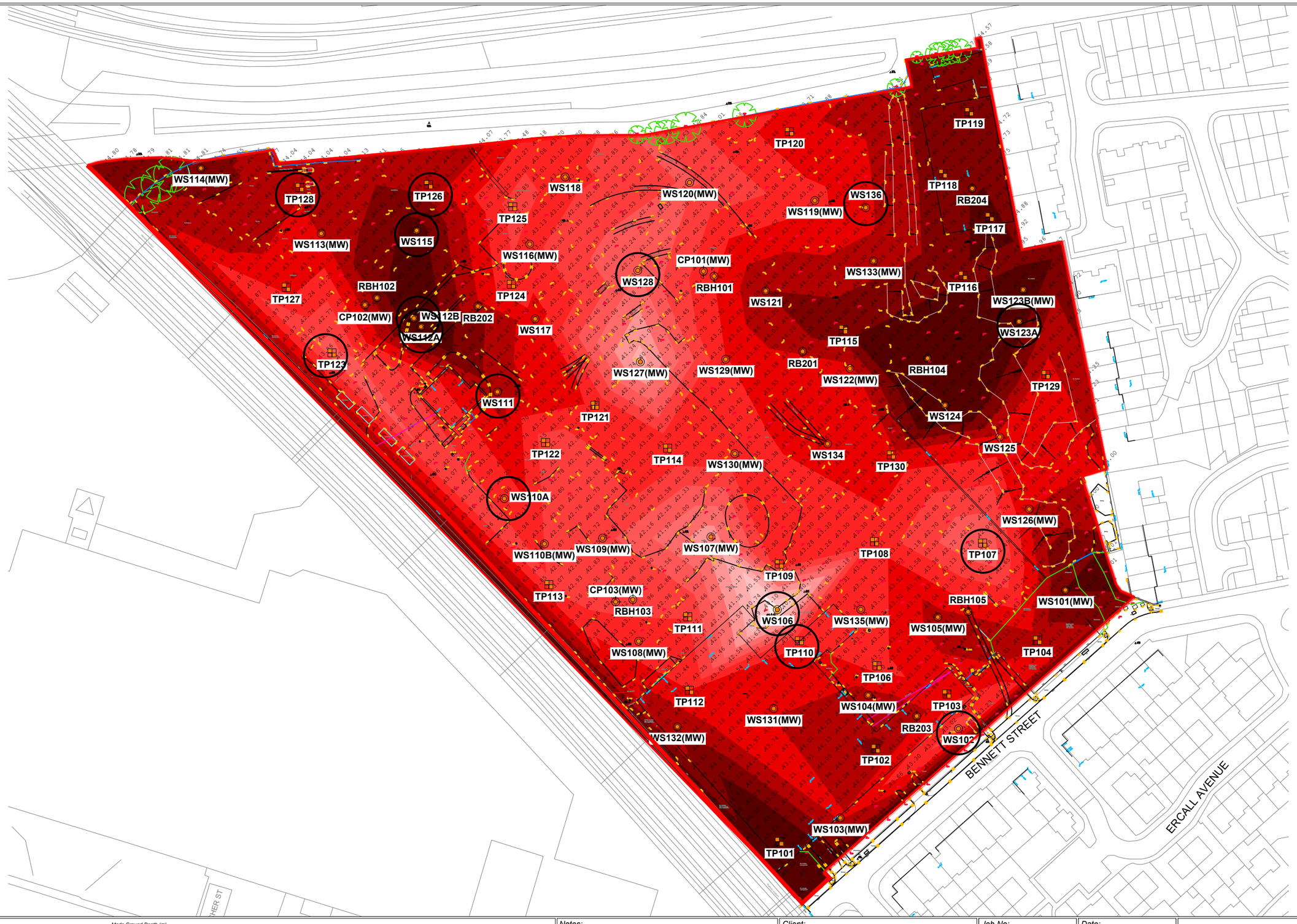
Scale: NTS@ A3

Job Title: Bennett Street, Manchester

Drawing Title: Historical Contamination Exceedances Plan

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Location Symbols

- WS101 — Approximate Window Sample Probehole Location
- WS101(MW) — Approximate Window Sample Probehole Location with Install
- CP101 — Approximate Cable Percussive Borehole Location
- RB101 — Approximate Rotary Borehole Location
- Full Extent of Made Ground not proven

Made Ground Depth (m)

- Depth of Made Ground 39.50 - 39.99mAOD
- Depth of Made Ground 40.00 - 40.49mAOD
- Depth of Made Ground 40.50 - 40.99mAOD
- Depth of Made Ground 41.00 - 41.49mAOD
- Depth of Made Ground 41.50 - 41.99mAOD
- Depth of Made Ground 42.00 - 42.49mAOD
- Depth of Made Ground 42.50 - 42.99mAOD
- Depth of Made Ground 43.00 - 43.49mAOD
- Depth of Made Ground 43.50 - 43.99mAOD
- Depth of Made Ground 44.00 - 44.49mAOD
- Depth of Made Ground 44.50 - 44.99mAOD
- Depth of Made Ground >45.00mAOD

Notes:

Client: Kellen Homes

Job No: 15-974

Date: 24.11.2022

Drawing No: 026

Scale: NTS@ A3

P1	REVA	24.11.2022	LM	MD
Phase	Issue	Date	Drawn	Checked

Job Title: Bennett Street, Manchester

Drawing Title: Depth of Made Ground Plan (mAOD)

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APPENDIX IV
PHOTOGRAPHS

PLATE 1 NORTH WEST SECTOR WITH RETAINING WALL IN WEST



PLATE 2 VIEW OF SITE FACING NORTH



PLATE 3 VIEW TOWARDS EAST OF SITE



PLATE 4 VIEW OF SITE IN SOUTH-EAST



PLATE 5 VIEW OF SITE WITHIN SOUTH-WESTERN BUILDING



PLATE 6 VIEW OF TANK IN CENTRE OF SITE



PLATE 7 VIEW OF WS131 ARISINGS



PLATE 8 VIEW OF WS113 ARISINGS



PLATE 9 VIEW OF ARISINGS AT WS129



PLATE 10 VIEW OF NORTH EASTERN BUILDING AND STOCKPILES PREVENTING ACCESS



PLATE 11 VIEW OF EAST OF SITE



PLATE 12 VIEW OF WS101 ARISINGS



APPENDIX V
E3P EXPLORATORY HOLE LOGS

Borehole Log

Borehole No. **RB201**

Sheet 1 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND: Concrete.
								MADE GROUND: Black gravel. Gravel is fine to coarse subangular to subrounded of brick with ash.
					1.80			Firm to stiff brown sandy CLAY.
								Continued on next sheet

Remarks

1. Complete. 2. Monitoring well installed (response zone 22.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 24.00 m bgl).

Borehole Log

Borehole No. **RB201**

Sheet 2 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					14.70			Brown gravelly fine to medium SAND with bands of brown CLAY. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone.

Continued on next sheet

Remarks

1. Complete. 2. Monitoring well installed (response zone 22.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 24.00 m bgl).

Borehole Log

Borehole No. **RB201**

Sheet 3 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					21.20			Red SANDSTONE with bands of GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone.
					24.00			Red SANDSTONE.
								Continued on next sheet

21 22 23 24 25 26 27 28 29 30

Remarks

1. Complete. 2. Monitoring well installed (response zone 22.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 24.00 m bgl).

Borehole Log

Borehole No.
RB201
Sheet 4 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					40.00			End of borehole at 40.00 m

31 32 33 34 35 36 37 38 39 40

Remarks
1. Complete. 2. Monitoring well installed (response zone 22.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 24.00 m bgl).

Borehole Log

Borehole No. **RB202**

Sheet 1 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25			MADE GROUND: Concrete.
								MADE GROUND: Blackish brown gravel. Gravel is fine to coarse subangular to subrounded of bricks and concrete.
					2.30			Firm to stiff brown sandy CLAY.
								Continued on next sheet

Remarks

1. Complete. 2. Moved three times due to hitting obstruction in the fist meter. 3. Monitoring well installed (response zone 31.00 - 40.00 m bgl). 4. Four hours collecting water. 5. Cased from 0.00 - 31.50 m bgl).

Borehole Log

Borehole No. **RB202**

Sheet 2 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								17.00 Brown gravelly fine to medium SAND. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone.

11 12 13 14 15 16 17 18 19 20

Continued on next sheet

Remarks

1. Complete. 2. Moved three times due to hitting obstruction in the fist meter. 3. Monitoring well installed (response zone 31.00 - 40.00 m bgl). 4. Four hours collecting water. 5. Cased from 0.00 - 31.50 m bgl).

Borehole Log

Borehole No.
RB202
Sheet 3 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

21
22
23
24
25
26
27
28
29
30

Continued on next sheet

Remarks
1. Complete. 2. Moved three times due to hitting obstruction in the fist meter. 3. Monitoring well installed (response zone 31.00 - 40.00 m bgl). 4. Four hours collecting water. 5. Cased from 0.00 - 31.50 m bgl).

Borehole Log

Borehole No. **RB202**

Sheet 4 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50			Red SANDSTONE.
					40.00			End of borehole at 40.00 m

Remarks

1. Complete. 2. Moved three times due to hitting obstruction in the fist meter. 3. Monitoring well installed (response zone 31.00 - 40.00 m bgl). 4. Four hours collecting water. 5. Cased from 0.00 - 31.50 m bgl).

Borehole Log

Borehole No. **RB203**

Sheet 1 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Blackish brown gravel. Gravel is fine to coarse subangular to subrounded of sandstone, brick, concrete with ash.
					1.90			Firm to stiff brown CLAY.
								Continued on next sheet

Remarks

1. Complete. 2. Monitoring well installed (response zone 24.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 29.00. 5. Large water pressure in rock.

Borehole Log

Borehole No. **RB203**

Sheet 2 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.60			Brown fine to medium SAND.
					14.10			Firm to stiff brown CLAY.
					19.20			Brown sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone.
								Continued on next sheet

11 12 13 14 15 16 17 18 19 20

Remarks

1. Complete. 2. Monitoring well installed (response zone 24.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 29.00. 5. Large water pressure in rock.

Borehole Log

Borehole No. **RB203**

Sheet 3 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Red sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone.
					23.40			
								Red SANDSTONE.
					28.30			
								Continued on next sheet

21 22 23 24 25 26 27 28 29 30

Remarks

1. Complete. 2. Monitoring well installed (response zone 24.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 29.00. 5. Large water pressure in rock.

Borehole Log

Borehole No. **RB203**

Sheet 4 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					40.00			End of borehole at 40.00 m

31 32 33 34 35 36 37 38 39 40

Remarks

1. Complete. 2. Monitoring well installed (response zone 24.00 - 40.00 m bgl). 3. Four hours collecting water. 4. Cased from 0.00 - 29.00. 5. Large water pressure in rock.

Borehole Log

Borehole No. **RB204**

Sheet 1 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Blackish brown gravel. Gravel is fine to coarse subangular to subrounded of concrete, brick with ash.
					1.80			Firm to stiff brown sandy CLAY with bands of brown fine to medium SAND.
								Continued on next sheet

Remarks

1. Complete. 2. Monitoring well insatlled (response zone 25.00 - 40.00 m bgl). 3. Three and a half hours collecting water. 4. Cased from 0.00 - 26.00. 5. medium water pressure in rock.

Borehole Log

Borehole No. **RB204**

Sheet 2 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								17.10 Brown GRAVEL with bands of fine to medium SAND. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone.

Continued on next sheet

Remarks
1. Complete. 2. Monitoring well insatlled (response zone 25.00 - 40.00 m bgl). 3. Three and a half hours collecting water. 4. Cased from 0.00 - 26.00. 5. medium water pressure in rock.

Borehole Log

Borehole No. **RB204**

Sheet 3 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					22.10			Brown sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone and mudstone.
					24.40			Red SANDSTONE.
					28.20			Red SANDSTONE with bands of GRAVEL. Gravel is fine to coarse subangular to subrounded of mudstone.
								Continued on next sheet

21 22 23 24 25 26 27 28 29 30

Remarks

1. Complete. 2. Monitoring well insatlled (response zone 25.00 - 40.00 m bgl). 3. Three and a half hours collecting water. 4. Cased from 0.00 - 26.00. 5. medium water pressure in rock.

Borehole Log

Borehole No. **RB204**

Sheet 4 of 4

Project Name: Bennett Street	Project No. 15974	Co-ords: -	Hole Type BH
Location: Manchester		Level:	Scale 1:50
Client: Kellen Homes		Dates: -	Logged By H. Mason

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					40.00			End of borehole at 40.00 m

31 32 33 34 35 36 37 38 39 40

Remarks

1. Complete. 2. Monitoring well insatlled (response zone 25.00 - 40.00 m bgl). 3. Three and a half hours collecting water. 4. Cased from 0.00 - 26.00. 5. medium water pressure in rock.

Trial Pit Log

			TrialPit No TP101 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386217.95 - 396892.61 Level: 45.29	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.00	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	44.99		MADE GROUND: Concrete slab with reinforced rebar.
				0.60	44.69		MADE GROUND: Grey sandy gravel. Gravel is fine to coarse angular to sub angular of concrete.
	1.00	HVP	137				Stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone. Becoming very stiff at 1.50 m bgl.
	1.20	ES					
	1.50	HVP	196				
				2.00	43.29		End of Pit at 2.00m

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Trial Pit Photographs



TP101



TP101 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

			TrialPit No TP102 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386250.00 - 396915.91 Level: 45.20	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.00	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.15	45.05		MADE GROUND: Concrete slab.
	0.40	ES					MADE GROUND: Brownish black clayey gravelly fine to medium sand. Gravel is fine to coarse angular to sub rounded of mudstone, brick and concrete.
				0.60	44.60		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	1.00	HVP	196				
	1.50	HVP	196				
				2.00	43.20		End of Pit at 2.00m

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Trial Pit Photographs



TP102



TP102 spoil

Remarks: 1. Complete.

Stability: Stable

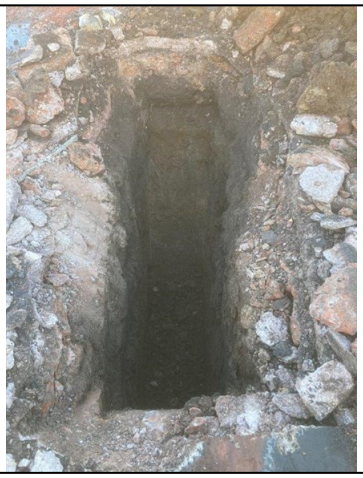
Trial Pit Log

			TrialPit No TP103 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386273.49 - 396933.20 Level: 45.25	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.50	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	45.05		MADE GROUND: Concrete slab.
	0.60	ES					MADE GROUND: Brown with black pockets very gravelly fine to medium sand with cobbles. Gravel is fine to coarse angular to sub angular of mudstone, brick, concrete with fragments of metal. Cobbles are sub angular of metal. Ink odour in black pockets.
				1.50	43.75		
	1.70	HVP	196				Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	2.00	ES					
	2.30	HVP	196				
				2.50	42.75		End of Pit at 2.50m

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Trial Pit Photographs



TP103



TP103 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No: TP104
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386304.53 - 396953.84 Level: 45.30	Date 13/10/2022
Location: Manchester		Dimensions (m): Depth 2.20 — 0.60 × 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	45.10		MADE GROUND: Concrete slab.
				0.50	44.80		MADE GROUND: Blackish grey gravelly fine to medium sand. Gravel is fine to medium sub angular of mudstone, ash and brick.
	0.70	ES					MADE GROUND: Greyish brown slightly sandy gravelly clay (reworked). Gravel is fine to coarse sub angular to sub rounded of mudstone and brick.
	1.00	HVP	63	1.10	44.20		
	1.50	HVP	136				Stiff yellowish brown slightly sandy CLAY. Becoming stiff at 1.50 m bgl. Becoming very stiff at 2.00 m bgl.
	2.00	HVP	158				
				2.20	43.10		End of Pit at 2.20m

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Trial Pit Photographs



TP104



TP104 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

			TrialPit No TP106 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386253.23 - 396945.71 Level: 45.12	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.40	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25	44.87		MADE GROUND: Concrete slab.
	0.30	ES		0.50	44.62		MADE GROUND: Black gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of ash, brick and concrete.
	0.90	ES		1.00	44.12		MADE GROUND: Greyish black sandy clay. Slight hydrocarbon odour.
				1.80	43.32		MADE GROUND: Firm brown slightly gravelly sandy clay (reworked). Gravel is fine to medium sub angular of brick and mudstone.
	2.00	HVP	196	2.40	42.72		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
							End of Pit at 2.40m

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Trial Pit Photographs



TP106



TP106 spoil

Remarks: 1. Complete. 2. Slight hydrocarbon odour between 0.50 - 1.00 m bgl.

Stability: Stable

Trial Pit Log

TrialPit No: TP107
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386285.03 - 396982.60 Level: 45.04	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 3.10	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.20	ES					MADE GROUND: Brown slightly clayey very gravelly fine to medium sand with cobbles. Gravel is fine to coarse angular to sub rounded of mudstone, brick, concrete and ceramic. Cobbles are sub angular of brick.
▼ 1.40				1.40	43.64		
	1.60	ES					MADE GROUND: Blackish grey clayey gravelly fine to medium sand. Gravel is fine to coarse sub angular of ash and metal. (Hydrocarbon odour).
				2.20	42.84		MADE GROUND: Grey gravelly clayey fine to medium sand. Gravel is fine to medium sub angular to sub rounded of mudstone and brick.
				3.00	42.04		MADE GROUND: Brick obstruction.
				3.10	41.94		End of Pit at 3.10m

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Trial Pit Photographs



TP107



TP107 spoil

Remarks: 1. Terminated due to brick obstruction at base of pit. 2. Suspected top of culvert at base of pit. 3. Water strike encountered at 1.40 m bgl. 4. Hydrocarbon odour between 1.40 - 2.20 m bgl.

Stability: Stable

Trial Pit Log

			TrialPit No TP108 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386252.16 - 396989.19 Level: 45.10	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.80	Scale 1:30
Client: Kellen Homes			Logged J.Beer

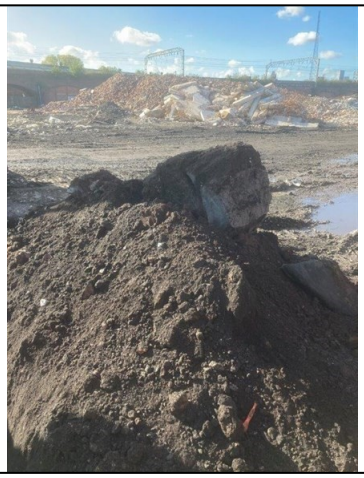
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.60	ES					MADE GROUND: Blackish brown gravelly fine to medium sand with cobbles. Gravel is fine to coarse angular to sub rounded of mudstone, brick, ash, and concrete with frequent fragments of ceramic and plastic. Cobbles are sub angular of brick.
	1.80	HVP	85	1.80	43.30		Firm to stiff dark grey sandy CLAY. Becoming firm at 2.40 m bgl.
	2.40	HVP	41				
	2.60	HVP	152	2.50	42.60		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
				2.80	42.30		End of Pit at 2.80m

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Trial Pit Photographs



TP108



TP108 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No TP109
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386219.70 - 396980.63 Level: 44.97	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 × 2.20 Depth 3.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	44.77		MADE GROUND: Concrete slab.
				0.60	44.37		MADE GROUND: Brown slightly gravelly clay (reworked). Gravel is fine to coarse angular to sub rounded of mudstone and brick.
				1.70	43.27		MADE GROUND: Blackish brown very gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of ash, mudstone, brick with some fragments of ceramic.
▼ 2.00	2.00	HVP	118				Stiff grey sandy CLAY.
	2.50	ES		2.30	42.67		Firm yellowish brown very sandy CLAY.
	3.00	HVP	179	3.00	41.97		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
				3.20	41.77		End of Pit at 3.20m

1 2 3 4

Trial Pit Photographs



TP109



TP109 spoil

Remarks: 1. Complete. 2. Water strike encountered at 2.00 m bgl.

Stability: Stable

Trial Pit Log

TrialPit No: TP110
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386223.50 - 396954.44 Level: 45.04	Date 13/10/2022
Location: Manchester		Dimensions (m): Depth 1.60 (0.60 × 2.20)	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.80	ES		1.00	44.04		MADE GROUND: Brown slightly clayey very gravelly fine to medium sand with cobbles. Gravel is angular to sub rounded of mudstone, brick , concrete, rebar and timber. Cobbles are sub angular of brick and concrete.
▼ 1.40							MADE GROUND: Greyish brown slightly sandy gravel with cobbles. Gravel is medium to coarse sub angular of mudstone and brick. Cobbles are sub angular of brick and concrete.
				1.60	43.44		End of Pit at 1.60m

1 2 3 4

Trial Pit Photographs



TP110



TP110 spoil

Remarks: 1. Terminated due to instability and fast water ingress. 2. Perched water at 1.40 m bgl.

Stability: Unstable

Trial Pit Log

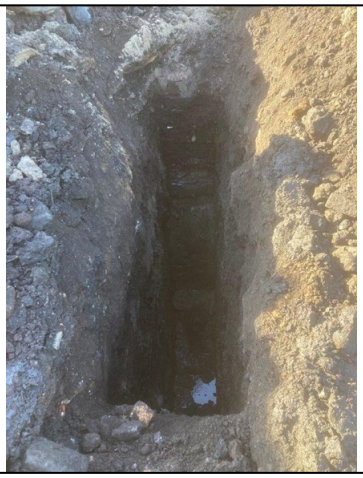
TrialPit No: TP111
Sheet 1 of 2

Project Name: Bennett Street	Project No. 15974	Co-ords: 386191.50 - 396963.20 Level: 44.99	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 4.30	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.80	ES					MADE GROUND: Brownish black very sandy gravel. Gravel is fine to coarse angular to sub rounded of mudstone, ash, brick, concrete and clinker with some fragments of glass and ceramic. Slight hydrocarbon odour.
	2.00	HVP	66	2.00	42.99		Firm grey sandy CLAY. Becoming very sandy at 3.00 m bgl.
	2.50	HVP	50				
▼ 3.00							
				3.80	41.19		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of
	4.00	HVP	162				

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Trial Pit Photographs



TP111



TP111 spoil

Remarks: 1. Complete. 2. Seepage at 3.00 m bgl.

Stability: Unstable

Trial Pit Log

TrialPit No: TP111
Sheet 2 of 2

Project Name: Bennett Street	Project No. 15974	Co-ords: 386191.50 - 396963.20 Level: 44.99	Date 13/10/2022
Location: Manchester	Dimensions (m): Depth 4.30	0.60 / 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				4.30	40.69		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone. End of Pit at 4.30m

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Remarks: 1. Complete. 2. Seepage at 3.00 m bgl.

Stability: Unstable

Trial Pit Log

TrialPit No: TP112
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386189.43 - 396934.12 Level: 45.30	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.70	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	45.00		MADE GROUND: Concrete slab with reinforced rebar.
	0.60	ES		1.00	44.30		MADE GROUND: Blackish brown clayey gravelly fine to medium sand. Gravel is fine to coarse angular to sub rounded of mudstone, brick and concrete.
	2.00	HVP	196	1.80	43.50		MADE GROUND: Brown gravelly sandy clay (reworked). Gravel is fine to coarse angular to sub rounded of mudstone, brick and concrete.
	2.50	HVP	196	2.70	42.60		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
							End of Pit at 2.70m

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Trial Pit Photographs



TP112



TP112 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

			TrialPit No TP113 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386142.63 - 396974.57 Level: 44.82	Date 13/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.90	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00	ES		1.30	43.52		MADE GROUND: Blackish brown slightly clayey very gravelly fine to medium sand with cobbles. Gravel is fine to coarse angular to sub rounded of mudstone, brick, concrete, with fragments of timber and metal. Cobbles are sub angular of brick. Layer of angular mudstone gravel at 0.90 m bgl.
				1.90	42.92		MADE GROUND: Brown gravelly sandy clay (reworked). Gravel is fine to medium sub angular to sub rounded of mudstone and brick.
	2.40	HVP	151	2.40	42.42		Firm yellowish brown very sandy CLAY.
	2.80	HVP	196	2.90	41.92		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
							End of Pit at 2.90m

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Trial Pit Photographs



TP113



TP113 spoil

Remarks: 1. Complete.

Stability: Unstable

Trial Pit Log

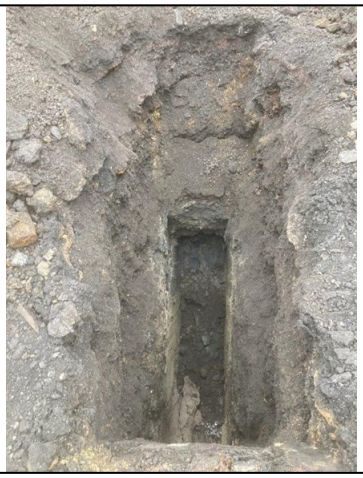
TrialPit No: TP114
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386182.71 - 397015.02 Level: 45.04	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 × 2.20, Depth 3.30	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00	ES					MADE GROUND: Brownish black slightly clayey very gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of mudstone, brick and concrete with fragments of glass.
	1.60	HVP	132	1.60	43.44		Stiff yellowish brown slightly sandy CLAY.
				1.80	43.24		Soft grey very sandy CLAY. Becoming very soft at 2.50 m bgl. Becoming soft at 3.00 m bgl.
	2.00	HVP	23				
	2.50	HVP	12				
	3.00	HVP	26				
				3.30	41.74		End of Pit at 3.30m

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Trial Pit Photographs



TP114



TP114 spoil

Remarks: 1. Complete.

Stability: Unstable

Trial Pit Log

TrialPit No: TP115
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386242.72 - 397061.14 Level: 45.67	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 2.20 (0.60 × 2.20)	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.60	ES		0.80	44.87		MADE GROUND: Blackish brown very sandy gravel. Gravel is fine to coarse angular to sub rounded of mudstone, brick, sandstone and ash.
	1.00	HVP	194				Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	1.50	HVP	196				
	2.00	HVP	196	2.20	43.47		End of Pit at 2.20m

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Trial Pit Photographs



TP115



TP115 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No: TP116
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386281.17 - 397075.83 Level: 45.74	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 2.50 — 0.60 × 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.80	44.94		MADE GROUND: Brownish black very sandy gravel with cobbles. Gravel is fine to coarse angular to sub angular of ash, brick, concrete and mudstone.
	1.00	HVP	196				Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	1.50	ES					
	1.50	HVP	196				
	2.00	HVP	196				
				2.50	43.24		End of Pit at 2.50m

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Trial Pit Photographs



TP116



TP116 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

			TrialPit No TP117 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386287.64 - 397101.33 Level: 46.17	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.50	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	45.97		MADE GROUND: Concrete slab with reinforced rebar.
	0.50	ES					MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to coarse angular to sub angular of mudstone, brick, concrete, with ash and fragments of glass.
	1.00	HVP	196	1.00	45.17		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	1.50	HVP	196				
	2.00	HVP	196				
	2.50	HVP	196	2.50	43.67		End of Pit at 2.50m

1 2 3 4

Trial Pit Photographs



TP117



TP117 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No: TP118
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386274.35 - 397114.55 Level: 46.17	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.30	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05	46.12		MADE GROUND: Concrete slab. MADE GROUND: Soft grey clay with plant debris.
	0.80	ES					
1.10	1.20	ES		1.10	45.07		MADE GROUND: Black gravel. Gravel is fine to coarse angular to sub angular of mudstone and ash.
	1.50	HVP	196	1.40	44.77		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
	2.00	HVP	196				
				2.30	43.87		End of Pit at 2.30m

1 2 3 4

Trial Pit Photographs



TP118



TP118 spoil

Remarks: 1. Terminated due to instability and fast water ingress. 2. Perched water at 1.10 m bgl.

Stability: Unstable

Trial Pit Log

			TrialPit No TP119 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386283.60 - 397130.22 Level: 46.17	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 1.80 — 0.60 × 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	45.87		MADE GROUND: Concrete slab with reinforced rebar.
▼ 0.80				0.80	45.37		MADE GROUND: Brown gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of mudstone, concrete, and brick with fragments of ceramic.
	1.20	ES					MADE GROUND: Black gravel. Gravel is fine to coarse angular to sub angular of mudstone and ash.
				1.60	44.57		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of mudstone.
				1.80	44.37		End of Pit at 1.80m

1 2 3 4

Trial Pit Photographs



TP119



TP119 spoil

Remarks: 1. Terminated due to instability and fast water ingress. 2. Perched water at 0.80 m bgl.

Stability: Unstable

Trial Pit Log

			TrialPit No TP120 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386234.93 - 397127.88 Level: 46.30	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 3.00 — 0.60 × 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.50	45.80		MADE GROUND: Black sandy gravel. Gravel is fine to coarse angular to sub angular of brick, concrete and ash.
	0.80	ES		1.00	45.30		MADE GROUND: Brown gravelly fine to medium sand with buried plastic sack. Gravel is fine to coarse angular to sub angular of mudstone, brick. (Hydrogen sulphide odour).
				1.90	44.40		MADE GROUND: Very soft black sandy clay (reworked).
				2.50	43.80		MADE GROUND: Brown gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of mudstone, brick and concrete.
	2.70	HVP	63	3.00	43.30		Firm brownish grey organic sandy CLAY.
							End of Pit at 3.00m

1 2 3 4

Trial Pit Photographs



TP120



TP120 spoil

Remarks: 1. Complete. 2. Hydrogen sulphide odour between 0.50- 1.00 m bgl.

Stability: Stable

Trial Pit Log

TrialPit No: TP121
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386156.47 - 397034.22 Level: 45.31	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.80	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.70	44.61		MADE GROUND: Brown slightly clayey very gravelly fine to medium and with cobbles. Gravel is fine to coarse angular to sub rounded of mudstone and brick with fragments of timber, ceramic and ash. Cobbles are sub angular of brick and concrete.
1.60				1.90	43.41		MADE GROUND: Brown sandy very gravelly clay (reworked). Gravel is fine to coarse sub angular to sub rounded of mudstone, brick, concrete and slag.
	2.00 2.00	ES HVP	99				Frim to stiff grey slightly sandy CLAY. Becoming stiff at 2.40 m bgl. Becoming very stiff at 2.70 m bgl
	2.40	HVP	120				
	2.70	HVP	152	2.80	42.51		End of Pit at 2.80m

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Trial Pit Photographs



TP121



TP121 spoil

Remarks: 1. Complete. 2. Water strike encountered at 1.60 m bgl.

Stability: Slightly unstable

Trial Pit Log

TrialPit No: TP122
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386132.80 - 397023.32 Level: 45.15	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 3.70	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	45.05		MADE GROUND: Black slightly clayey fine to medium sand.
				0.30	44.85		MADE GROUND: Yellowish orange slightly clayey fine to medium sand.
	0.90	ES					MADE GROUND: Brown slightly clayey very gravelly fine to medium and with cobbles and rare boulders. Gravel is fine to coarse angular to sub rounded of mudstone and brick, with fragments of timber, glass, ceramic and ash. Cobbles are sub angular of brick and concrete. Boulders are sub angular of cemented bricks at 0.60 m bgl.
	2.50	HVP	80	2.40	42.75		Firm to stiff grey slightly sandy CLAY.
	3.00	HVP	60	3.00	42.15		Firm grey very sandy CLAY. Becoming very soft at 3.50 m bgl.
				3.70	41.45		End of Pit at 3.70m

1 2 3 4

Trial Pit Photographs



TP122



TP122 spoil

Remarks: 1. Complete.

Stability: Slightly unstable

Trial Pit Log

			TrialPit No TP123 Sheet 1 of 1
Project Name: Bennett Street	Project No. 15974	Co-ords: 386070.04 - 397050.72 Level: 45.71	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 3.50 — 2.20 × 0.60	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15	45.56		MADE GROUND: Concrete slab.
	0.40	ES					MADE GROUND: Brownish black sandy gravel. Gravel is fine to coarse angular to sub angular of brick, ash, concrete and mudstone.
				1.70	44.01		MADE GROUND: Brown gravelly very sandy clay (reworked). Gravel is fine to coarse angular to sub rounded of mudstone, brick, concrete and coal.
	1.90	ES					
▼ 3.30							
				3.50	42.21		End of Pit at 3.50m

1 2 3 4

Trial Pit Photographs



TP123



TP123 spoil

Remarks: 1. Terminated due to instability. 2. Water seepage at 3.30 m bgl.

Stability: Unstable

Trial Pit Log

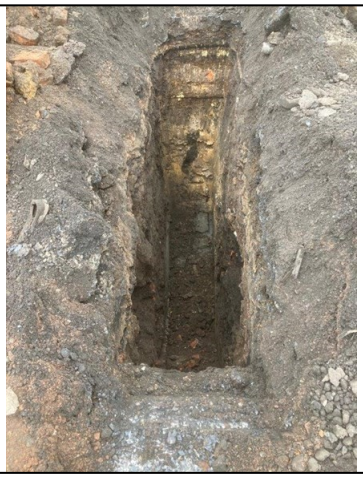
TrialPit No: TP124
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386126.42 - 397072.87 Level: 45.79	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20, Depth 3.00	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	45.59		MADE GROUND: Concrete slab with tar coating.
				0.50	45.29		MADE GROUND: Black sandy gravel. Gravel is fine to coarse angular to sub angular of brick, ash, mudstone and concrete.
	0.70	ES					MADE GROUND: Blackish brown very gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of mudstone, brick, and concrete with fragments of ceramic.
				1.30	44.49		MADE GROUND: Black sandy gravel. Gravel is fine to coarse angular to sub angular of brick, ash, mudstone and concrete.
	2.80	HVP	56	2.70	43.09		Firm grey slightly sandy CLAY.
				3.00	42.79		End of Pit at 3.00m

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Trial Pit Photographs



TP124



TP124 spoil

Remarks: 1. Complete.

Stability: Unstable

Trial Pit Log

TrialPit No: TP125
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386128.38 - 397100.64 Level: 45.90	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 3.60	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				1.00	44.90		MADE GROUND: Black very gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of brick, mudstone, ash and concrete.
	2.00	ES					MADE GROUND: Soft greyish brown slightly sandy gravelly clay (reworked). Gravel is fine to coarse angular to sub rounded of mudstone, brick, and concrete with fragments of timber and metal.
	3.20	HVP	191	3.10	42.80		Very stiff grey mottled brown CLAY.
				3.60	42.30		End of Pit at 3.60m

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Trial Pit Photographs



TP125



TP125 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No: TP126
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386098.40 - 397109.63 Level: 46.30	Date 12/10/2022
Location: Manchester		Dimensions (m): Depth 2.00 — 0.60 × 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
▼ 0.80	1.00	ES		0.80	45.50		MADE GROUND: Black slightly clayey gravelly fine to medium sand. Gravel is fine to coarse angular to sub rounded of mudstone, brick, ash and concrete.
				1.70	44.60		MADE GROUND: Grey slightly clayey gravelly fine to medium sand. Gravel is fine to medium sub angular to sub rounded of mudstone and brick.
				2.00	44.30		MADE GROUND: Very soft brownish black sandy clay (reworked).
							End of Pit at 2.00m

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Trial Pit Photographs



TP126



TP126 spoil

Remarks: 1. Terminated due to instability and fast water ingress. 2. Perched water at 0.80 m bgl.

Stability: Unstable

Trial Pit Log

TrialPit No: TP127
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386048.52 - 397073.62 Level: 45.79	Date 12/10/2022
Location: Manchester	Dimensions (m): Depth 2.40	2.20 × 0.60	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	45.59		MADE GROUND: Concrete slab.
							MADE GROUND: Brownish black gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of brick, mudstone, concrete and ash.
▼ 2.10	2.20 2.20	ES HVP	120	2.10	43.69		Stiff brown mottled grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub rounded of mudstone.
				2.40	43.39		End of Pit at 2.40m

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Trial Pit Photographs



TP127



TP127 spoil

Remarks: 1. Terminated due to instability and rapid water ingress. 2. Perched water at 2.10 m bgl.

Stability: Unstable

Trial Pit Log

TrialPit No: TP128
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386056.54 - 397105.88 Level: 46.24	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20, Depth 2.20	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	ES		0.80	45.44		MADE GROUND: Brownish black very gravelly fine to medium sand. Gravel is fine to coarse angular to sub angular of mudstone, brick and ash.
▼ 1.90				1.90	44.34		MADE GROUND: Brown gravelly very sandy clay. Gravel is fine to coarse angular to sub rounded of mudstone, brick, concrete and ash.
				2.20	44.04		MADE GROUND: Grey with black pockets slightly gravelly sandy clay. Gravel is fine sub angular to sub rounded of mudstone. Black pocket of organic material.
							End of Pit at 2.20m

1 2 3 4

Trial Pit Photographs



TP128



TP128 spoil

Remarks: 1. Terminated due to instability and rapid water ingress. 2. Perched water at 1.90 m bgl.

Stability: Unstable

Trial Pit Log

TrialPit No: TP129
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386311.83 - 397042.31 Level: 45.75	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 × 2.20, Depth 3.10	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.50	45.25		MADE GROUND: Brown slightly clayey gravelly fine to medium sand with cobbles. Gravel is fine to coarse angular to sub rounded of mudstone, brick, and concrete, with fragments of timber and ceramic.
				0.80	44.95		MADE GROUND: Concrete slab with reinforced rebar.
				1.90	43.85		MADE GROUND: Brownish black sandy gravel. Gravel is fine to coarse angular to sub angular of mudstone, ash, brick, and coal with fragments of ceramic.
	2.00	HVP	63				Firm grey mottled black slightly silty CLAY. Becoming firm at 2.40 m bgl.
	2.40	HVP	68				
	3.00	HVP	75	2.70	43.05		Firm grey mottled orange CLAY.
				3.10	42.65		End of Pit at 3.10m

1 2 3 4

Trial Pit Photographs



TP129



TP129 spoil

Remarks: 1. Complete.

Stability: Stable

Trial Pit Log

TrialPit No: TP130
Sheet 1 of 1

Project Name: Bennett Street	Project No. 15974	Co-ords: 386257.18 - 397017.96 Level: 45.01	Date 12/10/2022
Location: Manchester		Dimensions (m): 0.60 x 2.20 Depth 2.70	Scale 1:30
Client: Kellen Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.60	ES					MADE GROUND: Black very sandy gravel with cobbles. Gravel is fine to coarse angular to sub angular of mudstone, ash, brick and concrete. Cobbles are sub angular of brick.
	1.20	HVP	83	1.20	43.81		Firm to stiff grey mottled black slightly silty CLAY. Becoming firm at 1.60 m bgl
	1.60	HVP	55				
	1.90	HVP	66				
	2.20	HVP	172	2.00	43.01		Very stiff grey mottled orange CLAY. Becoming stiff at 2.60 m bgl.
	2.60	HVP	117				
				2.70	42.31		End of Pit at 2.70m

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Trial Pit Photographs



TP130



TP130 spoil

Remarks: 1. Complete.

Stability: Stable

Borehole Log

Borehole No. **WS101**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386322E - 396975N	Hole Type WS
Location:	Manchester		Level:	45.61 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	45.61		MADE GROUND: Concrete and brick.
		0.60	ES					MADE GROUND: Firm dark brown gravelly clay. Gravel is fine to coarse, angular to subangular of coal, brick, wood and sandstone. (Slight hydrocarbon odour).
		0.60	ES (L)		0.90	45.21		
		1.00	SPT					MADE GROUND: Loose reddish brown slightly clayey gravel. Gravel is fine to coarse, angular to subangular of brick, sandstone, wood and coal.
		1.00	SPT	N=5 (1,1/1,1,1,2)	1.20	44.71		
		1.40	ES					MADE GROUND: Firm greyish brown slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone.
					1.60	44.41		
		2.00	SPT		2.00	44.01		Stiff orange mottled greenish grey gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and coal.
		2.00	SPT	N=13 (3,3/3,3,3,4)				Stiff medium strength brownish grey gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and coal.
		3.00	SPT	N=48 (7,9/11,12,13,12)	3.00	43.61		Very stiff very high strength greyish brown slightly sandy gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.50 - 4.00	U		3.50	42.61		Very stiff very high strength brown slightly sandy slightly gravelly CLAY with bands of light brown fine to medium SAND. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.60	SPT	N=50 (10,12/12,13,14,11)				
		4.00	SPT		4.05	42.11		End of Borehole at 4.05m

Remarks

1. Refused on very stiff very high strength clay at 4.05m bgl. 2. Slight hydrocarbon odour at 0.40m - 0.90m bgl. 3. Monitoring well installed. 4. Response zone at 2.00m - 3.00m bgl.

Borehole Log

Borehole No. **WS102**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386283E - 396923N	Hole Type WS
Location:	Manchester		Level:	45.15 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	45.15		MADE GROUND: Concrete and brick.
		0.60	ES		0.50	44.75		MADE GROUND: Red sandy gravel. Gravel is fine to coarse angular to subangular of brick (Brick structure).
		1.00	SPT		1.00	44.65		MADE GROUND: Stiff dark brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone.
		1.00	SPT	N=28 (3,3/4,10,7,7)				
		1.20	ES		1.40	44.15		MADE GROUND: Very stiff high strength brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of coal, brick and sandstone.
		2.00	SPT					MADE GROUND: Very stiff very high strength (from circa 2.00m bgl) brown mottled black slightly gravelly clay. Gravel is fine to medium, subangular to subrounded of sandstone.
		2.00	SPT	N=50 (7,9/11,14,15,10)				
					2.45	43.75		End of Borehole at 2.45m

Remarks

1. Refused on very stiff very high strength clay at 2.45m bgl.

Borehole Log

Borehole No. **WS103**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386246E - 396891N	Hole Type WS
Location:	Manchester		Level:	45.13 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	ES		0.30	45.13		MADE GROUND: Concrete (recovered as light grey gravel with occasional cobbles. Gravel is fine to coarse, subangular to subrounded of sandstone and concrete. Cobbles are subangular of concrete).
					0.70	44.83		MADE GROUND: Brown mottled grey gravelly clay with frequent rootlets. Gravel is fine to coarse, subangular to subrounded of brick, sandstone, coal and organic material.
		1.00 1.00	SPT SPT	N=17 (4,4/4,4,4,5)	1.20	44.43		MADE GROUND: Very stiff high strength (from circa 1.00m bgl) brown mottled grey gravelly clay. Gravel is fine to medium, subangular to subrounded of sandstone, coal and brick.
		2.00 2.00	SPT SPT	N=50 (5,7/11,12,14,13)				Very stiff very high strength (from circa 2.00m bgl) brown gravelly CLAY with frequent rootlets. Gravel is fine to coarse, subangular to subrounded of sandstone, coal and organic material.
					2.45	43.93		End of Borehole at 2.45m

Remarks

1. Refused on very stiff very high strength clay at 2.45m bgl. 2. Monitoring well installed. 3. Response zone at 1.00m - 2.00m bgl.

Borehole Log

Borehole No. **WS104**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386255E - 396938N	Hole Type WS
Location:	Manchester		Level:	45.12 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Concrete.
		0.50	ES		0.40	45.12		
		0.50	ES (L)		0.60	44.72		MADE GROUND: Greyish brown slightly clayey sandy gravel. Gravel is fine to coarse, subangular to subrounded of brick, ash, ceramic and sandstone. (Slight hydrocarbon odour).
		0.70	ES		0.80	44.52		
		1.00	SPT		1.00	44.32		MADE GROUND: Firm dark brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, glass, coal, ceramic and sandstone.
		1.00	SPT	N=8 (1,1/2,2,2,2)				
					1.40	44.12		MADE GROUND: Firm brown mottled orange gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone.
					1.50	43.72		
		2.00	SPT					No recovery (inferred as stiff medium strength brown gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of coal and sandstone).
		2.00	SPT	N=30 (3,6/6,8,8,8)	2.10	43.62		
					2.30	43.02		Stiff medium strength brown gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of coal and sandstone.
		2.70	SPT	50 (8,10/50 for 285mm)				Very stiff high strength brown mottled grey slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of coal and sandstone.
		3.00	SPT					
					3.14	42.82		Very stiff high strength brown slightly gravelly CLAY with pockets of orange fine to medium SAND. Gravel is fine to medium, subangular to subrounded of sandstone.
								Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone and coal. Circa 2.70m bgl becomes very stiff very high strength.
								End of Borehole at 3.14m

Remarks

1. Refused on very stiff high strength clay at 3.14m bgl. 2. Slight hydrocarbon odour at 0.40m - 0.60m bgl. 3. Monitoring well installed. 4. Response zone at 1.50m - 3.00m. 5. Breaking out for 40 minutes.

Borehole Log

Borehole No. **WS105**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386278E - 396963N	Hole Type WS
Location:	Manchester		Level:	45.22 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	45.22		MADE GROUND: Concrete.
					0.70	44.92		MADE GROUND: Brownish grey clayey gravel. Gravel is fine to medium, subangular to subrounded of brick and mudstone.
		0.80	ES		0.85	44.52		MADE GROUND: Dark brownish grey slightly sandy slightly gravelly clay. Gravel is fine to medium, subangular to angular of brick, ceramic and ash.
		1.00	SPT		1.00	44.37		MADE GROUND: Reddish orange gravelly clay. Gravel is fine to medium, subangular of brick.
		1.00	SPT	N=8 (2,2/2,2,2,2)				Stiff medium strength brown CLAY.
					1.40	44.22		Stiff medium strength greenish grey mottled black CLAY.
	1.80	1.80	ES					
		2.00	SPT		2.00	43.82		Firm low strength light grey CLAY.
		2.00	SPT	N=5 (1,0/0,0,2,3)				
		3.00	SPT		3.00	43.22		Very stiff very high strength brown CLAY.
		3.00	SPT	50 (3,7/50 for 290mm)				
					3.44	42.22		End of Borehole at 3.44m

Remarks

1. Refused on very stiff high strength clay at 3.44m bgl. 2. Water strike at 1.80m bgl. 3. Monitoring well installed. 4. Response zone at 0.50m - 1.00m bgl.

Borehole Log

Borehole No. **WS106**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386221E - 396964N	Hole Type WS
Location:	Manchester		Level:	45.13 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Concrete.
		0.50	ES		0.40	45.13		
					0.60	44.73		MADE GROUND: Dark greyish brown gravel. Gravel is fine to coarse, angular to subangular of ash and clinker.
		1.00	SPT					MADE GROUND: Firm (from circa 1.00m bgl) brown mottled orange gravelly clay. Gravel is fine to coarse, angular to subangular of brick, sandstone, coal and wood.
		1.00	SPT	N=4 (1,1/1,1,1,1)	1.10	44.53		MADE GROUND: Firm brown mottled grey gravelly clay. Gravel is fine to medium, angular to subangular of sandstone, brick, coal and wood.
		2.00	SPT		2.00	44.03		MADE GROUND: Soft orange mottled grey clay. Gravel is fine to medium, angular to subangular of sandstone, ceramic and wood.
		2.00	SPT	N=3 (0,0/0,1,1,1)				
		2.10	ES					
					2.60	43.13		MADE GROUND: Soft brown gravelly clay. Gravel is fine to coarse, angular to subangular of sandstone and brick.
		3.00	SPT		3.00	42.53		MADE GROUND: Firm brown slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of brick, sandstone and coal.
		3.00	SPT	N=8 (1,3/1,2,2,3)				
					3.80	42.13		MADE GROUND: Firm brown slightly sandy gravelly clay. Gravel is fine to medium, angular to subangular of brick and sandstone.
		4.00	SPT		4.00	41.33		MADE GROUND: Very stiff reddish brown mottled brown slightly gravelly clay. Gravel is fine, angular to subangular of brick, coal, sandstone and glass.
		4.00	SPT	N=32 (5,7/6,8,9,9)				
		4.20	ES					
		5.00	SPT					
		5.00	SPT	N=24 (3,4/5,5,7,7)				
					5.45	41.13		End of Borehole at 5.45m

Remarks

1. Complete. 2. No recovery 4.45m - 5.00m bgl.

Borehole Log

Borehole No. **WS107**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386207E - 396980N	Hole Type WS
Location:	Manchester		Level:	45.20 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	45.20		MADE GROUND: Asphalt.
								MADE GROUND: Concrete.
					0.45	45.10		MADE GROUND: Dark brown mottled orange, slightly gravelly clay. Gravel is fine to medium, subangular to subrounded of clinker and ash.
		1.00	ES		1.00	44.75		MADE GROUND: Loose dark brown clayey gravel. Gravel is fine to coarse, angular to subangular of coal, clinker, brick and wood. (Hydrocarbon odour).
		1.00	ES (L)					
		1.00	SPT					
		1.00	SPT	N=8 (2,2/2,2,2,2)				
					1.60	44.20		MADE GROUND: Orangish brown clayey gravel. Gravel is fine to medium, angular to subangular of brick and sandstone.
					1.75	43.60		
	2.00				1.95	43.45		MADE GROUND: Grey gravelly clay. Gravel is fine to medium, angular to subangular of brick and mudstone.
		2.00	ES					
		2.00	SPT					
		2.00	SPT	N=8 (1,1/1,1,2,4)				
					2.60	43.25		MADE GROUND: Stiff medium strength light grey mottled black clay.
		3.00	SPT	N=7 (1,0/1,1,2,3)				MADE GROUND: Firm low strength (from circa 3.00m bgl) light grey clay.
					3.65	42.60		MADE GROUND: Yellowish brown clayey gravelly fine to medium sand. Gravel is fine to coarse, subangular to subrounded of sandstone, brick and ceramic.
		3.80	ES					
		3.80	ES (L)		4.00	41.55		Very stiff very high strength brown CLAY.
		4.00	SPT					
		4.00	SPT	50 (3,6/50 for 290mm)				
					4.44	41.20		End of Borehole at 4.44m

Remarks

1. Refused on very stiff very high strength clay at 4.44m bgl . 2. Water strike at 2.00m bgl. 3. Hydrocarbon odour at 1.00m - 1.60m bgl. 4. Monitoring well installed. 5. Response zone 1.00m - 2.00m bgl. 6. Breaking out for 35 minutes.

Borehole Log

Borehole No. **WS108**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386173E - 396956N	Hole Type WS
Location:	Manchester		Level:	45.20 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	45.20		MADE GROUND: Concrete.
					0.40	44.90		MADE GROUND: Grey slightly clayey sandy gravel. Gravel is fine to medium, angular to subangular of ash, coal and sandstone.
		0.80	ES					
		1.00	SPT		1.00	44.80		MADE GROUND: Black slightly clayey sandy gravel. Gravel is fine to medium, subangular to subrounded of brick, ceramic, sandstone, coal, metal fragments and wood.
		1.00	SPT	N=11 (5,4/4,3,2,2)	1.20	44.20		
					1.50	44.00		MADE GROUND: Stiff brown mottled black sandy gravelly clay. Gravel is fine to coarse, angular to subangular of sandstone and brick.
					1.60	43.70		MADE GROUND: Stiff brown mottled red slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of sandstone, brick and coal.
		1.90	ES					
		2.00	SPT		2.10	43.60		MADE GROUND: Stiff dark blackish brown gravelly clay. Gravel is fine to coarse, angular to subangular of coal.
		2.00	SPT	N=8 (1,2/2,2,2,2)				
					2.80	43.10		MADE GROUND: Firm brownish grey mottled green gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, sandstone and coal.
		3.00	SPT					
		3.00	SPT	N=24 (3,4/5,5,7,7)	3.10	42.40		Firm low strength grey mottled green slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
					3.20	42.10		Very stiff high strength (from circa 3.00m bgl) grey mottled green CLAY with bands of black slightly sandy CLAY.
		4.00	SPT					Very stiff high strength dark brown CLAY with sandstone bands.
		4.00	SPT	N=50 (6,9/11,12,13,14)				Very stiff high strength brownish red gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone. Becomes very stiff very high strength circa 4.00m bgl.
					4.45	42.00		End of Borehole at 4.45m

Remarks

1. Refused on very stiff high strength clay at 4.45m bgl. 2. Monitoring well installed. 3. Response zone 0.50m - 2.00m bgl. 4. Breaking out for 40 minutes.

Borehole Log

Borehole No. **WS109**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386169E - 396978N	Hole Type WS
Location:	Manchester		Level:	45.16 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	45.16		MADE GROUND: Concrete.
					0.50	44.96		MADE GROUND: Dark brown slightly clayey, gravelly medium to coarse sand. Gravel is fine to medium, angular to subangular of brick, concrete, coal and asphalt.
		0.80	ES		0.55	44.66		MADE GROUND: Dark brown mottled black and orange sandy clay.
		0.80	ES (L)		0.95	44.61		MADE GROUND: Brown clayey gravelly medium to coarse sand. Gravel is fine to medium, angular to subangular of brick, ash with pockets of light brown medium to coarse sand.
		1.00	SPT		1.00	44.21		MADE GROUND: Yellowish brown, dark brown and orange multicoloured slightly gravelly clay. Gravel is fine, subangular to subrounded of brick, mudstone and ash.
		1.00	SPT	N=13 (2,1/2,3,4,4)	1.75	44.16		MADE GROUND: Stiff dark brown very gravelly clay. Gravel is fine to medium, angular to subangular of ceramic, ash and brick.
	2.00	2.00	ES		2.50	43.41		MADE GROUND: Stiff dark grey slightly sandy slightly gravelly clay. Gravel is fine to medium, angular to subangular of brick. (Hydrocarbon odour).
		2.00	ES (L)		3.00	42.66		Stiff medium strength greyish brown mottled black CLAY.
		2.00	SPT		3.65	42.16		Stiff medium strength light grey CLAY.
		2.00	SPT	N=13 (2,2/3,3,3,4)	3.95	41.51		Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone and mudstone.
		3.00	SPT		4.45	41.21		Very stiff very high strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone and mudstone.
		3.00	SPT	N=10 (1,2/3,2,2,3)				End of Borehole at 4.43m
		3.50	ES					
		4.00	SPT					
		4.00	SPT	50 (4,7/50 for 280mm)				

Remarks

1. Refused due to stiff clay. 2. Water strike at 2.00m bgl. 3. Hydrocarbon odour at 1.75m - 2.50m bgl. 4. Monitoring well installed. 5. Response zone 0.50m - 2.50m bgl. 6. Breaking out for 35 minutes.

Borehole Log

Borehole No. **WS110a**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386105E - 397010N	Hole Type WS
Location:	Manchester		Level:	45.37 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15	45.37		MADE GROUND: Concrete. End of Borehole at 0.15m

Remarks

1. Terminated due to concrete. 2. breaking out for 40 minutes.

Borehole Log

Borehole No. **WS110b**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386128E - 396989N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND: Concrete.
					0.30			MADE GROUND: Light grey slightly sandy gravel. Gravel is fine to medium, subangular of concrete.
					0.70			MADE GROUND: Brown slightly sandy very gravelly clay. Gravel is fine to medium, subangular to subrounded of ash, clinker and concrete
		1.00	SPT					
		1.00	SPT	17 (1,4/17 for 280mm)	1.10			MADE GROUND: Very stiff high strength (from circa 1.00m bgl) dark brown mottled orange slightly gravelly clay with rare cobble. Gravel is fine to coarse, subangular of clinker, ash and brick. Cobble is subangular brick at 0.95m bgl.
					1.45			MADE GROUND: Very stiff high strength orangish brown sandy clay.
					1.95			MADE GROUND: Purplish brown clayey gravel. Gravel is fine to coarse, angular to subangular of plastic, ceramic, brick and sandstone.
		2.00	SPT		2.00			
		2.00	SPT	12 (1,2/12 for 280mm)	2.25			MADE GROUND: Stiff medium strength brownish grey clay.
								MADE GROUND: Stiff medium strength brownish grey gravelly clay. Gravel is fine to medium, subangular of brick, ceramic and mudstone.
		3.00	SPT		3.00			Greenish grey mottled black CLAY. No recovery (inferred as light greyish brown CLAY).
					3.50			Light greyish brown CLAY.
		4.00	SPT		4.00			Very stiff very high strength brown mottled grey CLAY.
		4.00	SPT	50 (3,7/50 for 290mm)				
					4.44			End of Borehole at 4.44m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on very stiff very high strength clay at 4.44m. 2. Water strike at 1.40m bgl. 3. No recovery 3.00m - 3.50m bgl- no SPT test undertaken. 4. Monitoring well installed. 5. response zone 0.50m - 2.00m bgl. 6. Breaking out for 30 minutes.

Borehole Log

Borehole No. **WS111**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386130E - 397039N	Hole Type WS
Location:	Manchester		Level:	45.48 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.25	ES		0.25	45.48		MADE GROUND: Concrete.
		0.25	ES (L)		0.30	45.23		MADE GROUND: Red slightly gravelly medium to coarse sand. Gravel is fine to medium, subangular to subrounded of asphalt and concrete.
		1.00	SPT					MADE GROUND: Dark brown slightly gravelly fine to medium sand. Gravel is fine to coarse, angular to subangular of glass, clinker, plastic and brick with pockets of light brown fine to medium sand. Circa 0.65m bgl becomes very gravelly.
		1.00	SPT	50 (10,15/50 for 100mm)	1.25	45.18		End of Borehole at 1.25m

Remarks

1. Terminated at 1.25m on cobble of brick. 2. Broken out by hand pit.

Borehole Log

Borehole No. **WS112a**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386099E - 397061N	Hole Type WS
Location:	Manchester		Level:	45.83 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25	45.83		MADE GROUND: Asphalt.
					0.30	45.58		MADE GROUND: Concrete.
								End of Borehole at 0.30m

Remarks

1. Terminated at 0.30m bgl - unable to penetrate through concrete. 2. Breaker used for 70 minutes.

Borehole Log

Borehole No. **WS112b**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386095E - 397070N	Hole Type WS
Location:	Manchester		Level:		Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25			MADE GROUND: Concrete.
		0.60	SPT	90 (25 for 5mm/90 for 0mm)	0.65			MADE GROUND: Very dense (from circa 0.60m bgl) black clayey gravel. Gravel is fine to coarse, subangular to angular of clinker, brick and asphalt. (Hydrocarbon odour).
								End of Borehole at 0.65m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on very dense gravel at 0.65m bgl. 2. Hydrocarbon odour at 0.50m bgl. 3. Broken out using corer.

Borehole Log

Borehole No. **WS113**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386065E - 397086N	Hole Type WS
Location:	Manchester		Level:	46.01 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25	46.01		MADE GROUND: Concrete.
					0.50	45.76		MADE GROUND: Yellow brown slightly clayey gravel. Gravel is fine to coarse, angular to subangular of sandstone. (sub base).
		1.00	SPT					MADE GROUND: Greyish brown mottled black and yellow gravelly reworked clay. Gravel is fine to coarse, angular to subangular of brick, wood, glass, coal and plastic wire.
	1.20	1.00	SPT	N=9 (1,0/0,6,1,2)	1.10	45.51		
					1.20	44.91		MADE GROUND: Loose black gravel. Gravel is fine to coarse, angular to subangular of concrete and bitumen. (Strong hydrocarbon odour).
		1.70	ES					MADE GROUND: Greyish brown mottled black slightly sandy gravelly reworked clay. Gravel is fine to medium, subangular to angular of brick, coal, sandstone.
		1.70	ES (L)					
		2.00	SPT		2.00	44.81		
		2.00	SPT	N=7 (1,0/1,1,2,3)				Firm low strength brownish grey slightly gravelly CLAY with rare rootlets, streaks of greenish grey slightly silty CLAY and pockets of brown PEAT at 3.50m bgl. Gravel is fine to medium, subrounded of mudstone. Circa 4.00m bgl becomes stiff very high strength.
		2.50	ES					
		3.00	SPT					
		3.00	SPT	N=7 (1,0/1,1,2,3)				
		4.00	SPT					
		4.00	SPT	50 (4,7/50 for 290mm)				
					4.44	44.01		End of Borehole at 4.44m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on firm low strength clay at 4.44m bgl. 2. Water strike at 1.20m bgl. 3. Monitoring well installed. 4. Response zone 2.00m - 3.00m bgl. 5. Strong hydrocarbon odour at 1.10m - 1.20m bgl. 6. Broken out using corer.

Borehole Log

Borehole No. **WS114**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386027E - 397107N	Hole Type WS
Location:	Manchester		Level:	45.81 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	45.81		MADE GROUND: Concrete.
	0.50	0.50	ES		0.40	45.61		MADE GROUND: Blackish brown clayey gravel with occasional cobbles. Gravel is fine to coarse, angular to subangular of brick, coal, clinker and wood. Cobbles are subangular of brick.
		0.50	ES (L)					
		1.00	SPT		1.00	45.41		MADE GROUND: Greyish brown mottled black slightly sandy gravelly clay with pockets of light grey medium to coarse sand. Gravel is fine to coarse, subangular to angular of brick, coal and sandstone.
		1.00	SPT	N=3 (0,0/0,1,1,1)				
		1.20	ES		1.20	44.81		Soft very low strength greenish grey mottled yellow gravelly CLAY with pockets of medium to coarse orange SAND. Gravel is fine to medium, subangular of sandstone.
		2.00	SPT					Soft very low strength brownish grey slightly sandy gravelly CLAY. Gravel is fine to medium, subangular of sandstone. Circa 2.00m bgl becomes very stiff very high strength.
		2.00	SPT	50 (1,4/50 for 295mm)				
					2.45	44.61		End of Borehole at 2.45m

Remarks

1. Refused on sandstone cobble at 2.45m bgl. 2. Water strike at 1.40m bgl. 3. Monitoring well installed. 4. Response zone 1.00m - 2.00m bgl. 5. Broken out using corer.

Borehole Log

Borehole No. **WS115**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386097E - 397087N	Hole Type WS
Location:	Manchester		Level:	46.35 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.25	46.35		MADE GROUND: Concrete.
		0.30	ES (L)		0.40	46.10		MADE GROUND: Black slightly sandy gravel with rare pockets of white medium sand. Gravel is fine to medium, angular to subangular of bitumen and asphalt. (Strong hydrocarbon odour).
		0.70	SPT	50 (12,13/50 for 260mm)				MADE GROUND: Very stiff very high strength (from circa 0.70m bgl) black mottled light brown slightly gravelly clay. Gravel is fine to medium, subangular of asphalt.
		1.00	SPT		1.11	45.95		End of Borehole at 1.11m

Remarks

1. Terminated at 1.11m bgl- unable to penetrate through Made Ground. 2. Strong hydrocarbon odour at 0.30m bgl. 3. Broken out using corer.

Borehole Log

Borehole No. **WS116**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386134E - 397084N	Hole Type WS
Location:	Manchester		Level:	45.94 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.25	ES		0.30	45.94		MADE GROUND: Black gravelly clay. Gravel is fine to coarse, angular to subangular of coal, sandstone and concrete. (Slight hydrocarbon odour).
		0.25	ES (L)					
					0.70	45.64		MADE GROUND: Dark brown very clayey gravelly sand. Gravel is fine to coarse, angular to subangular of concrete, brick and coal.
					0.80	45.24		
		1.00	SPT		1.00	45.14		MADE GROUND: Yellowish brown mottled black slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of brick, coal and sandstone.
		1.00	SPT	N=4 (1,2/1,1,1,1)				
		1.50	ES					MADE GROUND: Dark brown slightly sandy gravelly clay. Gravel is fine, angular to subangular of coal and wood.
		1.50	ES (L)					
		2.00	SPT	N=4 (1,1/1,1,1,1)				MADE GROUND: Firm low strength greyish brown slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of brick, coal, sandstone and asphalt. (With bands of light grey mottled yellow very sandy gravelly clay. Gravel is fine to coarse, subangular to angular of brick, glass, clinker and coal at 1.30 - 1.35m bgl.) Becomes soft very low strength circa 2.00m bgl.
					2.30	44.94		
					2.80	43.64		MADE GROUND: Soft very low strength dark greyish brown mottled black gravelly clay. Gravel is fine to medium, subangular to angular of brick.
		3.00	ES		3.00	43.14		
		3.00	SPT					Soft light grey mottled orange slightly gravelly CLAY. Gravel is fine, subangular to subrounded of sandstone.
		3.00	SPT	N=20 (2,3/4,5,5,6)				Very stiff high strength brown mottled grey slightly gravelly CLAY. Gravel is fine, subangular to subrounded of sandstone and coal.
		4.00	SPT					
		4.00	SPT	N=31 (5,7/7,8,7,9)				
					4.75	42.94		Very stiff high strength yellowish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine subangular to subrounded of sandstone.
		5.00	SPT					
		5.00	SPT	N=31 (8,7/11,6,6,8)				
					5.45	41.19		End of Borehole at 5.45m

Remarks

1. Complete. 2. Monitoring well installed. 3. Response zone 1.5m - 2.0m bgl. 4. Slight hydrocarbon odour at 0.00m - 0.30m bgl. 5. Broken out using corer.

Borehole Log

Borehole No. **WS117**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386138E - 397063N	Hole Type WS
Location:	Manchester		Level:	45.69 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.35	45.69		MADE GROUND: Concrete.
		0.50	ES		0.60	45.34		MADE GROUND: Dark brown slightly sandy, slightly clayey gravel. Gravel is fine to coarse, angular to subangular of wood, brick and concrete.
		0.80	ES		0.70	45.09		MADE GROUND: Concrete (recovered as subangular cobble) (Hydrocarbon odour).
		1.00	SPT		0.80	44.99		MADE GROUND: Stiff medium strength slightly sandy, gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick and sandstone.
		1.00	SPT	N=12 (1,2/3,4,2,3)	1.30	44.89		MADE GROUND: Medium dense (from circa 1.00m bgl) orangish brown slightly clayey gravelly sand. Gravel is fine to medium, subangular to subrounded of sandstone.
					1.60	44.39		MADE GROUND: Firm dark brown slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, wood and sandstone.
	2.00	2.00	SPT		2.00	44.09		MADE GROUND: Firm dark blackish brown slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of brick, wood and sandstone.
		2.00	SPT	N=9 (1,1/2,2,3,2)				Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone.
		2.40	ES		2.70	43.69		Stiff medium strength greenish grey mottled yellow CLAY.
								No recovery (inferred as firm low strength light greyish brown CLAY).
		3.00	SPT		3.00	42.99		
		3.00	SPT	N=8 (1,2/2,2,2,2)				
		4.00	SPT		4.00	42.69		Firm low strength light greyish brown CLAY.
		4.00	SPT	N=9 (1,2/2,2,2,3)				
					4.50	41.69		Very stiff high strength brownish orange slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		5.00	SPT					
		5.00	SPT	N=29 (4,5/7,7,7,8)				
					5.45	41.19		End of Borehole at 5.45m

Remarks

1. Complete. 2. Water strike at 2.00m bgl. 3. Hydrocarbon odour at 0.60m - 0.70m bgl. 4. No recovery 3.00m - 4.00m bgl due to too wet.

Borehole Log

Borehole No. **WS118**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386154E - 397103N	Hole Type WS
Location:	Manchester		Level:	46.00 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	46.00		MADE GROUND: Concrete.
					0.40	45.70		MADE GROUND: Black slightly clayey gravel. Gravel is fine to medium, subangular to subrounded of mudstone, sandstone and asphalt.
					0.70	45.60		MADE GROUND: Dark brown very clayey gravelly sand. Gravel is fine to medium, angular to subangular of brick and coal.
		1.00	SPT		0.95	45.30		
		1.00	SPT	N=8 (1,2/3,2,2,1)	1.10	45.05		MADE GROUND: Dark greyish brown slightly sandy gravel. Gravel is fine to medium, subangular to subrounded of clinker and mudstone.
					1.45	44.90		MADE GROUND: Firm light grey slightly sandy, slightly gravelly clay. Gravel is fine to coarse, angular to subangular of brick and coal.
		1.90	ES					
		2.00	SPT					MADE GROUND: Stiff light brown sandy clay.
		2.00	SPT	N=15 (2,5/6,5,2,2)				MADE GROUND: Stiff medium strength greyish brown slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, sandstone with bands of black slightly sandy gravel . (Hydrocarbon odour at 1.90m - 1.95m bgl).
		2.80	ES		2.80	44.55		
		3.00	SPT		3.00	43.20		Stiff medium strength greenish grey mottled black slightly silty CLAY.
		3.00	SPT	N=16 (2,3/3,3,4,6)				Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, subrounded of mudstone.
		4.00	SPT	N=34 (5,6/7,8,9,10)	4.00	43.00		Very stiff high strength orange mottled grey CLAY.
					4.35	42.00		Very stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, subrounded of mudstone. Becomes stiff medium strength circa 5.00m bgl.
		5.00	SPT					
		5.00	SPT	N=15 (2,3/4,4,3,4)				
					5.45	41.65		End of Borehole at 5.45m

Remarks

1. Complete. 2. Hydrocarbon odour at 1.90m - 1.95m bgl. 3. Broken out using corer.

Borehole Log

Borehole No. **WS119**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386229E - 397102N	Hole Type WS
Location:	Manchester		Level:	45.85 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	45.85		MADE GROUND: Orange slightly clayey gravel with frequent cobbles. Gravel is fine to coarse, angular to subangular of brick. Cobbles are subangular of brick.
		0.50	ES					
		0.50	ES (L)					MADE GROUND: Black slightly sandy gravel. Gravel is fine to medium, subangular of asphalt, brick and wood.
					0.85	45.65		
		1.00	SPT	N=4 (1,1/1,1,1,1)	1.00	45.00		MADE GROUND: Firm brown gravelly clay. Gravel is fine to coarse, angular to subangular of brick, ceramic and coal.
								MADE GROUND: Firm low strength dark brownish grey gravelly clay. Gravel is fine to coarse, subangular of brick. Becomes blackish grey circa 2.00m bgl.
		2.00	SPT	N=6 (1,1/1,1,2,2)				
		2.50	ES		2.50	44.85		Very stiff high strength orangish brown slightly gravelly CLAY. Gravel is fine to medium, subrounded to rounded of mudstone and sandstone. Becomes stiff medium strength circa 5.00m bgl.
		3.00	SPT	N=33 (3,3/6,8,9,10)				
		4.00	SPT	N=23 (3,5/5,6,6,6)				
		5.00	SPT	N=17 (2,3/4,3,4,6)				
					5.45	43.35		End of Borehole at 5.45m

Remarks

1. Complete. 2. Monitoring well installed. 3. Response zone at 3.00m to 5.00m bgl. 4. Broken out using corer for 30 minutes.

Borehole Log

Borehole No. **WS120**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386183E - 397111N	Hole Type WS
Location:	Manchester		Level:	45.82 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	45.82		MADE GROUND: Blackish brown slightly sandy clayey gravel. Gravel is fine to medium, subangular of clinker.
					0.70	45.72		MADE GROUND: Greyish brown gravelly sand. Gravel is fine to medium, subangular to subrounded of mudstone, asphalt, clinker and coal.
		1.00 1.00 1.00	ES ES (L) SPT	N=4 (1,1/1,1,1,1)				MADE GROUND: Firm low strength (from circa 1.00m bgl) greyish brown slightly silty sandy gravelly clay. Gravel is fine to medium of brick and sandstone.
		2.00 2.00	ES SPT	N=4 (1,1/1,1,1,1)	2.00	45.12		MADE GROUND: Soft very low strength greenish grey mottled black slightly silty clay.
					2.70	43.82		MADE GROUND: Soft very low strength greyish brown slightly gravelly clay. Gravel is fine to medium, subangular of brick and coal.
		3.00	SPT	N=7 (1,1/1,1,2,3)	3.00	43.12		
					3.20	42.82		MADE GROUND: Firm low strength greenish grey mottled black slightly silty clay.
					3.40	42.62		Firm low strength light grey silty sandy CLAY.
		4.00	SPT	N=43 (6,8/11,12,10,10)				Very stiff very high strength (from circa 4.00m bgl) brown CLAY.
					4.15	42.42		Very stiff very high strength brown slightly sandy CLAY.
		5.00	SPT	N=50 (7,10/13,12,12,13)				
					5.45	41.67		End of Borehole at 5.45m

Remarks

1. Complete. 2. Monitoring well installed. 3. Response zone at 0.50m - 2.00m bgl.

Borehole Log

Borehole No. **WS121**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386218E - 397070N	Hole Type WS
Location:	Manchester		Level:	45.60 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50	45.60		MADE GROUND: Concrete.
		0.70	ES		0.55	45.10		MADE GROUND: Dark brown mottled orange slightly clayey sandy gravel. Gravel is fine to coarse, angular to subangular of clinker.
		0.70	ES (L)					
		1.00	SPT		1.00	45.05		MADE GROUND: Black gravel. Gravel is fine to coarse, angular to subangular of bitumen and asphalt. (Strong hydrocarbon odour).
		1.00	SPT	N=14 (2,2/2,3,4,5)	1.10	44.60		MADE GROUND: Dark brown clayey gravel. Gravel is fine to medium, subangular of clinker.
								Stiff medium strength light brown mottled grey CLAY. Becomes very stiff very high strength circa 2.00m bgl).
		2.00	SPT					
		2.00	SPT	N=50 (6,8/11,13,13,13)				
					2.45	44.50		End of Borehole at 2.45m

Remarks

1. Refused on stiff medium strength clay at 2.45m bgl.. 2. Strong hydrocarbon odour at 0.55m - 1.00m bgl.

Borehole Log

Borehole No. **WS122**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386237E - 397043N	Hole Type WS
Location:	Manchester		Level:	45.31 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.05	45.31		MADE GROUND: Asphalt (recovered as dark brown slightly sandy gravel. Gravel is fine to coarse subangular of asphalt).
					0.25	45.26		MADE GROUND: Concrete.
					0.55	45.06		MADE GROUND: Dark brown clayey gravelly sand. Gravel is fine to medium, angular to subangular of concrete and brick.
		0.80	ES		0.70	44.76		MADE GOUND: Firm light brown mottled black slightly gravelly clay. Gravel is fine, subangular to angular of brick, mudstone and clinker.
	1.00	1.00	SPT		0.90	44.61		MADE GROUND: Firm blackish grey gravelly clay. Gravel is fine to medium, subangular to subrounded of clinker, sandstone and mudstone.
		1.00	SPT	N=11 (1,2/3,3,2,3)	1.00	44.41		MADE GROUND: Light brown mottled greyish black slightly gravelly clay. Gravel is fine, subangular to subrounded of brick of mudstone.
					1.45	44.31		MADE GROUND: Stiff medium strength dark greyish brown gravelly clay. Gravel is fine to medium, angular to subangular of brick and mudstone.
		1.70	ES					Stiff medium strength light brown mottled grey slightly gravelly CLAY with pockets of brownish red medium to coarse SAND. Gravel is fine to medium subangular to subrounded of mudstone. Becomes very stiff very high strength circa 2.00m bgl).
		2.00	SPT					End of Borehole at 2.44m
		2.00	SPT	50 (3,6/50 for 290mm)	2.44	43.86		

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on stiff medium strength clay at 2.44m bgl. 2. Water strike at 1.00m bgl. 3. Monitoring well installed. 4. Response zone at 0.50m - 1.00m bgl. 5. Breaking out for 60 minutes.

Borehole Log

Borehole No. **WS123a**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386281E - 397063N	Hole Type WS
Location:	Manchester		Level:	45.72 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50	45.72		MADE GROUND: Dark brown gravel. Gravel is fine to coarse angular to subangular of brick and concrete.
								End of Borehole at 0.50m

Remarks

1. Refused on concrete at 0.50m bgl.

Borehole Log

Borehole No. **WS123b**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386288E - 397051N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 15/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			MADE GROUND: Dark brown gravel. Gravel is fine to coarse angular to subangular of brick and concrete.
		1.00	SPT					MADE GROUND: Firm dark brown slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, wood, ceramic and sandstone.
		1.00	SPT	N=4 (1,1/1,1,1,1)	1.10			MADE GROUND: Firm low strength dark brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone.
					1.50			MADE GROUND: Firm low strength brown mottled grey gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick and sandstone.
		2.00	SPT		2.10			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		2.00	SPT	N=22 (2,3/4,6,6,6)	2.30			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		2.50 - 3.00	U					Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.00	SPT					Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.00	SPT	N=25 (3,4/5,6,7,7)	3.10			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		4.00	SPT		4.00			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		4.00	SPT	N=24 (3,4/5,5,7,7)	4.50			Very stiff high strength brown mottled grey slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		5.00	SPT					
		5.00	SPT	N=21 (2,3/4,4,5,8)	5.45			End of Borehole at 5.45m
					5.45			

Remarks

1. Complete. 2. Monitoring well installed. 3. Response zone 0.50m - 2.00m bgl. 4. Breaking out for 40 mins.

Borehole Log

Borehole No. **WS124**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386276E - 397041N	Hole Type WS
Location:	Manchester		Level:	45.66 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50	45.66		MADE GROUND: Brown slightly sandy gravelly clay with frequent cobbles. Gravel is fine to coarse, angular to subangular of brick and concrete. Cobbles are subangular of brick. End of Borehole at 0.50m

Remarks

1. Terminated at 0.50m bgl-unable to penetrate through Made Ground. 2. Breaking out for 20 minutes.

Borehole Log

Borehole No. **WS125**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386297E - 397023N	Hole Type WS
Location:	Manchester		Level:	46.05 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	46.05		MADE GROUND: Brown gravel. Gravel is fine to coarse, angular to subangular of brick and concrete.
		0.50	ES		0.50	45.65		MADE GROUND: Dark brown clayey gravel. Gravel is fine to coarse, subangular to subrounded of brick, concrete and sandstone.
		1.00	SPT		0.60	45.55		MADE GROUND: Grey gravel. Gravel is fine to coarse, angular to subangular of ash, brick and sandstone.
		1.00	SPT	N=11 (1,2/3,4,2,2)	1.00	45.45		MADE GROUND: Dark brown mottled light brown clayey gravel. Gravel is fine to coarse, subangular to subrounded of brick, ceramic, wood and sandstone.
		1.50	ES		1.30	45.05		MADE GROUND: Stiff dark brown mottled orange gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, ceramic, wire, rope and sandstone.
		2.00	SPT		1.80	44.75		MADE GROUND: Stiff dark blackish brown clayey gravel. Gravel is fine to coarse, subangular to subrounded of brick, ceramic and sandstone.
		2.00	SPT	N=7 (2,2/2,2,1,2)	2.20	44.25		MADE GROUND: Stiff greyish green mottled black slightly gravelly clay. Gravel is fine to medium, subangular to subrounded of sandstone, wood and brick. Becomes firm low strength circa 2.00m bgl).
		3.00	SPT		2.80	43.85		Firm low strength grey mottled green CLAY.
		3.00	SPT	N=13 (3,4/3,3,3,4)	3.00	43.25		Firm low strength light greyish green slightly sandy CLAY.
		4.00	SPT					Stiff medium strength grey mottled brown gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and coal. Becomes very stiff very high strength circa 4.00m bgl.
		4.00	SPT	50 (8,7/50 for 295mm)				
					4.45	43.05		End of Borehole at 4.45m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on stiff medium strength clay at 4.45m bgl.

Borehole Log

Borehole No. **WS126**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386309E - 397000N	Hole Type WS
Location:	Manchester		Level:	46.00 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50	46.00		MADE GROUND: Brown clayey gravelly fine to coarse sand with occasional rootlets and frequent cobbles. Gravel is fine to coarse, angular to subangular of brick, mudstone and ceramic. Cobbles are subangular of brick.
		0.80	ES		0.90	45.50		MADE GROUND: Black clayey gravel. Gravel is fine to medium, angular to subangular of clinker.
		0.80	ES (L)					
		1.00	SPT		0.95	45.10		MADE GROUND: Firm black, grey and orange multicoloured slightly gravelly sandy clay. Gravel is fine to medium, angular to subangular of clinker and coal.
		1.00	SPT	N=17 (1,3/7,3,3,4)	1.35	45.05		
		1.50	ES					MADE GROUND: Medium dense black clayey gravel with occasional cobbles. Gravel is fine to coarse, subangular of clinker. Cobbles are subangular of clinker.
		1.50	ES (L)		1.75	44.65		
					1.80	44.25		
	▼ 2.00	2.00	SPT		2.00	44.20		MADE GROUND: Firm dark blackish grey slightly sandy, slightly gravelly clay with occasional rootlets. Gravel is fine to medium, subangular to subrounded of brick, ceramic, wood and mudstone. (Organic odour).
		2.00	SPT	N=4 (1,0/1,1,1,1)				
		2.50	ES		2.70	44.00		MADE GROUND: Firm light grey slightly silty clay.
								MADE GROUND: Firm dark brownish black slightly gravelly slightly sandy clay. Gravel is fine, subangular of ash.
		3.00	SPT					Soft very low strength greyish brown CLAY.
		3.00	SPT	N=1 (1,0/0,0,0,1)				Soft very low strength light brownish grey slightly silty CLAY. Becomes very soft extremely low strength circa 3.00m bgl.
					3.70	43.30		
					3.90	42.30		Greyish brown mottled orange gravelly coarse SAND. Gravel is fine to medium, subangular to subrounded of mudstone.
		4.00	SPT					Very stiff high strength greyish brown slightly silty CLAY. Becomes very high strength circa 5.00m bgl.
		4.00	SPT	N=27 (2,4/6,6,7,8)				
		5.00	SPT					
		5.00	SPT	50 (5,9/50 for 280mm)				
					5.43	42.10		End of Borehole at 5.43m

Remarks

1. Refused on very stiff very high strength clay at 5.43m bgl . 2. Water strike at 2.00m bgl. 3. Organic odour at 1.35m - 1.75m. 4. Monitoring well installed. 5. Response zone at 2.00m - 4.00m bgl. 6. Breaking out for 20 minutes.

Borehole Log

Borehole No. **WS127**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386159E - 397042N	Hole Type WS
Location:	Manchester		Level:	45.16 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	45.16		MADE GROUND: Concrete.
		0.50	ES					MADE GROUND: Firm dark brown slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular of wood, concrete, ceramic and metal fragments.
		0.50	ES (L)					
		1.00	SPT		1.00	44.76		MADE GROUND: Stiff dark brown slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of sandstone, brick and wood.
		1.00	SPT	N=13 (1,2/7,2,2,2)	1.20	44.16		
					1.30	43.96		MADE GROUND: Stiff brown mottled grey gravelly clay. Gravel is fine to coarse, angular to subangular of concrete.
					1.50	43.86		
		2.00	SPT					MADE GROUND: Stiff brown gravelly clay. Gravel is fine to medium, angular to subangular of brick, sandstone and coal.
		2.00	SPT	N=19 (2,3/4,4,4,7)				
								MADE GROUND: Stiff greyish green mottled slightly gravelly clay. Gravel is fine to medium, angular to subangular of sandstone and brick. Becomes very stiff high strength circa 2.00m bgl.
					2.90	43.66		
		3.00	SPT		3.00	42.26		Very stiff high strength reddish brown mottled grey slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.00	SPT	N=28 (5,5/6,6,6,10)	3.20	42.16		
		3.50	ES					Very stiff high strength red slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.70	SPT	50 (,25/50 for 255mm)				
								Very stiff high strength reddish brown mottled grey slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
					4.11	41.96		End of Borehole at 4.11m

Remarks

1. Refused on very stiff high strength clay at 4.11m bgl. 2. Monitoring well installed. 3. Response zone at 3.00m - 4.00m bgl. 4. Breaking out for 30 minutes.

Borehole Log

Borehole No. **WS128**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386176E - 397081N	Hole Type WS
Location:	Manchester		Level:	45.44 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	13/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.60	ES		0.50	45.44		MADE GROUND: Firm dark brown gravelly clay with frequent cobbles of brick. Gravel is fine to coarse, subangular to subrounded of brick and asphalt.
		1.00	SPT	N=5 (4,4/2,2,1,0)				MADE GROUND: Firm greyish brown gravelly clay with rare cobble . Gravel is fine to medium, subangular of brick, coal and wood with band of orangish brown clay at 1.95m bgl. Cobble is subangular of brick at 1.95m bgl. Becomes stiff medium strength circa 2.00m and soft very low strength circa 3.00m.
		1.80	ES					
		2.00	SPT	N=15 (1,2/4,3,4,4)				
		3.00	SPT	N=3 (0,1/0,1,0,2)				
					3.45	44.94		End of Borehole at 3.45m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refusal on cobble of brick at 3.45m bgl. 2. Hydrocarbon odour at 0.50m - 0.80m bgl. 3. Broken out by hand pit for 25 minutes.

Borehole Log

Borehole No. **WS129**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386201E - 397046N	Hole Type WS
Location:	Manchester		Level:	45.29 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	15/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	45.29		MADE GROUND: Asphalt.
		0.60	ES		0.60	44.89		MADE GROUND: Firm dark brown mottled gravelly clay with cobbles. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone. Cobbles are subangular to angular of ballast.
		1.00	SPT		1.00	44.69		MADE GROUND: Firm brown mottled grey gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal and sandstone.
		1.00 1.20	SPT ES	N=10 (1,2/3,2,3,2)	1.40	44.29		MADE GROUND: Stiff medium strength dark brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick and sandstone.
					1.80	43.89		MADE GROUND: Stiff brown mottled gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick and sandstone.
		2.00	SPT		2.00	43.49		Stiff medium strength light brown mottled gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		2.00	SPT	N=21 (3,3/4,5,5,7)				Very stiff high strength dark brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.00	SPT		3.00	43.29		Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		3.00	SPT	N=20 (3,3/4,4,6,6)				
		3.50 - 4.00	U		3.60	42.29		Very stiff high strength brown slightly sandy CLAY.
		4.00	SPT		4.00	41.69		Very stiff high strength brown slightly sandy gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.
		4.00	SPT	N=23 (4,4/6,4,6,7)				
		5.00	SPT					
		5.00	SPT	N=29 (5,6/6,7,8,8)				
					5.45	41.29		End of Borehole at 5.45m

Remarks

1. Complete. 2. Monitoring well installed. 3. Response zone at 2.00m - 4.00m bgl. 4. Breaking out using corer and hand pitting for 50 minutes.

Borehole Log

Borehole No. **WS130**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386203E - 397015N	Hole Type WS
Location:	Manchester		Level:	45.26 m AOD	Scale 1:50
Client:	Onward Homes		Dates:	14/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	45.26		MADE GROUND: Concrete.
					0.60	45.06		MADE GROUND: Grey slightly clayey sandy gravel. Gravel is fine to coarse, subangular to subrounded of concrete and ash.
		1.00	SPT		1.00	44.66		MADE GROUND: Dark brown sandy gravel. Gravel is fine to coarse, subangular to subrounded of brick, coal, wood and sandstone.
		1.00	SPT	N=10 (12,9/4,2,2,2)	1.10	44.26		MADE GROUND: Stiff brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of wood, sandstone, brick and metal fragments.
		1.60	ES					MADE GROUND: Stiff medium strength brown, mottled orange slightly sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of ceramic, brick, sandstone and wood.
		1.60	ES (L)		1.90	44.16		
		2.00	SPT					Firm low strength brown, grey mottled black slightly sandy CLAY.
		2.00	SPT	N=8 (2,2/2,2,2,2)				
		2.50	ES					
					2.80	43.36		Firm low strength grey slightly sandy CLAY.
		3.00	SPT		3.00	42.46		Firm low strength orange mottled grey gravelly CLAY. Gravel is fine to medium, angular to subangular of coal, sandstone.
		3.00	SPT	N=9 (1,2/2,2,2,3)				
		4.00	SPT		4.00	42.26		Very stiff high strength reddish brown mottled slightly gravelly CLAY. Gravel is fine, subangular to subrounded of sandstone.
		4.00	SPT	N=23 (2,3/4,5,5,9)				
		5.00	SPT					
		5.00	SPT	N=19 (2,3/3,4,6,6)				
					5.45	41.26		End of Borehole at 5.45m

Remarks

1. Complete. 2. Monitoring well installed. 3. response zone at 1.00m - 2.00m bgl. 4. Breaking out for 30 minutes.

Borehole Log

Borehole No. **WS131**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386212E - 396934N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 16/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.27			MADE GROUND: Concrete.
					0.45			MADE GROUND: Yellowish brown slightly clayey gravel. Gravel is fine to coarse, angular to subangular of concrete. (Sub base).
		0.95 1.00	ES SPT	N=11 (1,1/1,2,3,5)				MADE GROUND: Stiff dark brown slightly gravelly clay. Gravel is fine to coarse, angular to subangular of brick and concrete.
		1.50 - 2.00	U		1.30			Stiff medium strength brown CLAY. Becomes very stiff very high strength circa 2.00m bgl.
		2.00 2.00	SPT SPT	50 (6,8/50 for 260mm)				
					2.41			End of Borehole at 2.41m

1 2 3 4 5 6 7 8 9 10

Remarks

1. Refused on very stiff very high strength clay at 2.41m bgl. 2. Monitoring well installed. 3. Response zone at 0.50m - 1.00m bgl. 4. Breaking out concrete using breaker for 35 minutes.

Borehole Log

Borehole No. **WS132**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386191E - 396924N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 16/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	ES		0.40			MADE GROUND: Concrete.
		0.50	ES (L)		0.45			MADE GROUND: Light greyish brown slightly clayey gravel. Gravel is fine to coarse, angular to subangular of concrete.
		1.00	SPT		0.75			MADE GROUND: Blackish brown slightly gravelly clay .Gravel is fine to coarse, angular to subangular of concrete with rare cobbles at 05.0m bgl. Cobbles are subangular of concrete.
		1.00	SPT	N=26 (2,4/4,7,7,8)	0.85			MADE GROUND: Firm brown mottled reddish brown slightly sandy slightly gravelly clay. Gravel is fine to medium, subangular to angular of brick, sandstone and coal.
		1.50	ES		0.95			MADE GROUND: Firm dark brown slightly gravelly clay. Gravel is fine to medium, angular to subangular of brick and coal.
		2.00	SPT		1.00			MADE GROUND: Firm greyish brown slightly gravelly clay. Gravel is fine to medium, angular to subangular of brick, coal and mudstone.
		2.00	SPT	50 (7,10/50 for 225mm)	2.38			Very stiff high strength brown mottled grey slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of mudstone. Becomes very high strength circa 2.00m bgl.
								End of Borehole at 2.38m

Remarks

1. Refused on very stiff very high strength clay at 2.38m bgl. 2. Slight hydrocarbon odour at 0.45m - 0.75m bgl. 3. Monitoring well installed. 4. Response zone 0.50m - 1.00m bgl.

Borehole Log

Borehole No. **WS133**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386246E - 397078N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 15/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	ES		0.40			MADE GROUND: Concrete.
		0.50	ES (L)					MADE GROUND: Blackish brown slightly sandy clayey gravel. Gravel is fine to coarse, subangular to subrounded of brick, sandstone and bitumen. (Slight hydrocarbon odour).
		1.00	SPT		0.80			MADE GROUND: Blackish grey gravel. Gravel is fine to coarse, subangular to subrounded of bitumen. (Strong hydrocarbon odour and oily sheen).
		1.00	SPT	N=18 (2,3/4,4,4,6)	0.85			MADE GROUND: Firm dark brown gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, wood, sandstone and coal.
		1.50	ES		1.00			MADE GROUND: Very stiff high strength brown mottled grey gravelly clay. Gravel is fine to coarse, subangular to subrounded of sandstone, brick and coal.
		2.00	SPT		2.00			MADE GROUND: Stiff medium strength blackish grey very gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, sandstone, ceramic and bitumen. (Oily sheen and hydrocarbon odour).
		2.00	SPT	N=14 (3,3/3,3,4,4)				
		2.30	ES					
		2.30	ES (L)					
		3.00	SPT		3.00			No recovery (inferred as very stiff very high strength brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone).
		3.00	SPT	N=24 (4,5/6,6,6,6)				
					3.50			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone.
		4.00	SPT	N=29 (6,6/6,7,7,9)	4.00			Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and coal. Becomes very high strength circa 5.00m bgl.
		5.00	SPT	N=39 (3,7/10,11,10,8)				
					5.45			End of Borehole at 5.45m

Remarks

1. Complete. 2. Hydrocarbon odour at 0.40m - 0.80m bgl, 0.80m - 0.85m bgl, 2.00m - 3.00m bgl. 3. Monitoring well installed. 4. Response zone at 0.50m - 3.00m bgl. 5. Broken out using corer for 40 minutes.

Borehole Log

Borehole No. **WS134**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386230E - 397025N	Hole Type WS
Location:	Manchester		Level:		Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			MADE GROUND: Concrete.
		0.50	ES		0.60			MADE GROUND: Brick.
					0.75			MADE GROUND: Firm purple to brown gravelly clay. Gravel is fine to medium, angular to subangular of clinker, brick and coal.
	1.00	1.00	SPT		0.90			MADE GROUND: Dark brown clayey gravel. Gravel is fine to medium of sandstone and brick.
		1.00	SPT	N=6 (2,2/1,1,2,2)				MADE GROUND: Firm low strength (from circa 1.00m bgl) dark brown gravelly clay. Gravel is fine to medium, subangular to angular of brick, mudstone and sandstone.
					1.80			Firm low strength brownish grey CLAY. Becomes soft very low strength circa 2.00m bgl.
		2.00	ES					
		2.00	SPT					
		2.00	SPT	N=4 (1,1/1,1,1,1)	2.45			End of Borehole at 2.45m

Remarks

1. Terminated in soft very low strength clay at 2.45m bgl . 2. Water strike at 1.00m bgl. 3. Hole collapsed back to 1.00m bgl. 4. Breaking out for 40 minutes.

Borehole Log

Borehole No. **WS135**

Sheet 1 of 1

Project Name: Bennett Street	Project No. 15425	Co-ords: 386245E - 396971N	Hole Type WS
Location: Manchester		Level:	Scale 1:50
Client: Onward Homes		Dates: 16/12/2021	Logged By HM

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	ES		0.30			MADE GROUND: Concrete.
		0.90	ES		0.80			MADE GROUND: Firm brown mottled gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, coal, wood and ceramic.
		0.90	ES (L)		1.00			MADE GROUND: Firm dark brown blackish gravelly clay. Gravel is fine to coarse, subangular to subrounded of coal, brick, glass, wire and sandstone. (Slight hydrocarbon odour).
		1.00	SPT	N=5 (1,1/1,1,1,2)				
		1.20	ES		1.60			MADE GROUND: Firm light brown greyish green slightly gravelly clay. Gravel is fine to coarse, subangular to subrounded of sandstone and coal.
					1.80			MADE GROUND: Brick.
		2.00	SPT		2.00			Firm low strength brown mottled orange slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone and coal.
		2.00	SPT	N=11 (2,2/2,2,3,4)				
					2.80			Stiff medium strength brown mottled grey gravelly CLAY with pockets of orangish red fine to medium SAND. Gravel is fine to coarse, subangular to subrounded of sandstone and coal.
		3.00	SPT					Stiff medium strength light brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone. Becomes very stiff very high strength circa 3.00m bgl.
		3.00	SPT	50 (8,13/50 for 135mm)	3.29			End of Borehole at 3.29m

Remarks

1. Refused on very stiff very high strength clay at 3.29m bgl. 2. Hydrocarbon odour at 0.80m - 1.00m bgl. 3. Monitoring well installed. 4. Response zone at 0.50m - 1.00m bgl.

Borehole Log

Borehole No. **WS136**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386249E - 397111N	Hole Type WS
Location:	Manchester		Level:		Scale 1:50
Client:	Onward Homes		Dates:	16/12/2021	Logged By EC

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			MADE GROUND: Concrete.
					0.30			MADE GROUND: Brick and 5mm rebar.
		0.50	ES					MADE GROUND: Black clayey gravel. Gravel is fine to medium, angular to subangular of bitumen and asphalt. (Strong hydrocarbon odour).
		0.50	ES (L)		0.60			
					0.70			MADE GROUND: Brownish grey mottled orange clayey gravel. Gravel is fine to coarse, angular to subangular of glass, brick, clinker and asphalt. (Hydrocarbon odour).
	1.00	1.00	SPT		1.00			
		1.00	SPT	N=10 (1,1/2,2,3,3)				
		1.20	ES					MADE GROUND: Firm dark brown slightly sandy gravelly clay. Gravel is fine to medium, subangular to subrounded of mudstone, glass, brick and plastic. (Hydrocarbon odour).
					1.40			
		2.00	SPT					MADE GROUND: Stiff medium strength greenish brown clay with frequent rootlets. (Hydrocarbon odour).
		2.00	SPT	N=50 (3,7/11,13,13,13)				
					2.45			MADE GROUND: Stiff light grey slightly gravelly clay. Gravel is fine, subangular to angular of brick. Becomes very stiff very high strength circa 2.00m bgl.
								End of Borehole at 2.45m

Remarks

1. Refused on very stiff very high strength clay at 2.45m bgl. 2. Water strike at 1.00m bgl. 3. Hydrocarbon odour at 0.30m - 0.60m bgl and 0.70m to 1.00m bgl. 4. Breaking out for 40 minutes.

Borehole Log

Borehole No. **CP101**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386199E - 397077N	Hole Type CP
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	26/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	1.00	1.00	SPT	N=5 (1,2/1,1,1,2)				MADE GROUND: Loose black Gravel. Gravel is fine to coarse angular to subangular of brick and ash. Becomes medium dense circa 2.00m bgl.
	2.60	2.00	SPT	N=25 (2,3/7,5,6,7)	2.60			
		3.00	SPT	N=17 (3,4/4,4,4,5)				Stiff medium strength brown CLAY. Becomes very stiff high strength circa 4.00m bgl.
		4.00	SPT	N=21 (3,4/5,5,5,6)				
		5.00	SPT	N=23 (3,4/5,6,6,6)				
		6.50	SPT	50 (10,12/50 for 230mm)	6.50			Dense red clayey fine to medium SAND with frequent boulders. Boulders are subangular to rounded of sandstone and mudstone.
		8.00	SPT	50 (11,13/50 for 230mm)				
		9.50	SPT	50 (11,12/50 for 228mm)	9.88			End of Borehole at 9.88m

Remarks

1. Refused due to dense SAND. 2. Monitoring well installed. 3. Response zone 4.00m - 9.00m bgl. 4. Chiselling from 0.20-0.50m bgl for 45 mins, chiselling from 6.70-9.50m for 240 mins.

Borehole Log

Borehole No. **CP102**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386084E - 397062N	Hole Type CP
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	27/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.00	SPT	N=5 (1,1/1,1,2,1)	0.20			Concrete.
								MADE GROUND: Loose black gravel. Gravel is fine to coarse angular to subangular of brick and ash.
	2.60	2.00	SPT	N=4 (1,2/1,1,1,1)	2.60			MADE GROUND: Soft brown clay.
		3.00	SPT	N=4 (1,2/1,1,1,1)				
	4.50	4.00	SPT	N=16 (2,3/3,4,4,5)	3.90			Stiff medium strength brown sandy CLAY. Becomes very stiff very high strength circa 5.00m bgl.
		5.00	SPT	50 (4,7/50 for 260mm)				
		6.50	SPT	N=50 (3,5/7,20,21,2)				
		8.00	SPT	50 (10,12/50 for 250mm)	8.40			End of Borehole at 8.40m

Remarks

1. Refused due to very stiff CLAY. 2. Monitoring well installed. 3. Response zone 6.00m - 8.00m bgl. 4. Chiselling from 5.80-8.00 for 210 minutes. 5. 45 mins coring concrete.

Borehole Log

Borehole No. **CP103**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386172E - 396964N	Hole Type CP
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	28/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Concrete.
		1.00	SPT	N=4 (1,1/1,1,1,1)				MADE GROUND: Loose black gravel. Gravel is fine to coarse angular to subangular of brick and ash.
		2.00	SPT	N=5 (1,1/2,1,1,1)				
		3.00	SPT	N=33 (2,3/5,8,10,10)	3.10			Very stiff high strength brown CLAY.
		4.00	SPT	N=25 (3,3/4,5,6,10)				
		5.00	SPT	N=17 (2,3/4,4,4,5)	4.80			Medium dense fine to medium SAND with clay bands.
		6.50	SPT	50 (4,7/50 for 270mm)	6.20			Very stiff very high strength red sandy CLAY.
		8.00	SPT	48 (5,10/48 for 230mm)	8.38			End of Borehole at 8.38m

Remarks

1. Refused due to very stiff CLAY. 2. Monitoring well installed. 3. Response zone 6.00m - 8.00m bgl. 4. 40 mins coring concrete.

Borehole Log

Borehole No. **RB101**

Sheet 1 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386198E - 397077N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	28/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Loose black Gravel. Gravel is fine to coarse angular to subangular of brick and ash.
					2.60			Stiff brown CLAY.
					6.50			Red clayey fine to medium SAND with frequent boulders. Boulders are subangular to rounded of sandstone and mudstone.
					9.50			Very stiff brown sandy CLAY.
					11.20			Grey silty fine to medium SAND with gravelly CLAY bands.
					29.10			Red SANDSTONE.

Remarks

1. Complete.

Borehole Log

Borehole No. **RB101**

Sheet 2 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386198E - 397077N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	28/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Red SANDSTONE.
					42.50			Reddish grey MUDSTONE with SANDSTONE bands.
					50.00			End of Borehole at 50.00m

41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Remarks

1. Complete.

Borehole Log

Borehole No. **RB102**

Sheet 1 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386086E - 397063N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	31/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50			Concrete (with steel from circa 0.30-0.50m bgl). MADE GROUND: Blackish brown gravelly clay. Gravel is fine to medium subangular to subrounded of brick,ash, sandstone and mudstone.
					3.20			Very stiff brown CLAY.
					13.70			Brown gravelly fine to medium SAND.
					19.20			Red SANDSTONE.

Remarks

1. Complete.

Borehole Log

Borehole No. **RB102**

Sheet 2 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386086E - 397063N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	31/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Red SANDSTONE.
					46.00			End of Borehole at 46.00m

Remarks

1. Complete.

Borehole Log

Borehole No. **RB103**

Sheet 1 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386176E - 396965N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	31/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Concrete.
								MADE GROUND: Loose black gravel. Gravel is fine to coarse angular to subangular of brick and ash, sandstone and mudstone.
					3.10			Very stiff brown CLAY.
					4.80			Medium dense fine to medium SAND with clay bands.
					6.20			Very stiff red sandy CLAY.
					8.00			Stiff sandy CLAY with SAND bands.
					17.60			Dense SAND with occasional GRAVEL and CLAY bands.
					24.00			Red SANDSTONE.
					37.80			Reddish grey MUDSTONE.

Remarks

1. Complete.

Borehole Log

Borehole No. **RB103**

Sheet 2 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386176E - 396965N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	31/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					40.60			Reddish grey MUDSTONE.	41
								Red SANDSTONE with mudstone bands.	42
									43
									44
									45
					46.00				46
								End of Borehole at 46.00m	47
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Remarks

1. Complete.

Borehole Log

Borehole No. **RB104**

Sheet 1 of 1

Project Name:	Bennett Street	Project No. 15425	Co-ords: 386272E - 397052N	Hole Type BH
Location:	Manchester		Level:	Scale 1:200
Client:	Onward Homes		Dates: 26/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: Concrete and ash. Dark brown gravel with frequent cobbles. Gravel is fine to coarse angular to subrounded concrete, ash, sandstone and mudstone.
					1.40			Stiff brown CLAY.
					7.70			Dense red fine to medium SAND with CLAY and GRAVEL bands.
					12.10			Grey SANDSTONE.
					13.10			Red SANDSTONE.
					21.30			Red SANDSTONE.
					22.40			Red SANDSTONE with occasional mudstone bands.
					36.20			Greyish red MUDSTONE.
					40.00			End of Borehole at 40.00m

Remarks

1. Complete.

Borehole Log

Borehole No. **RB105**

Sheet 1 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386288E - 396967N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	27/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.35			Concrete.
					1.90			MADE GROUND: Loose black gravel. Gravel is fine to coarse angular to subangular of brick, ash, sandstone and mudstone.
								Stiff brown CLAY.
					7.10			Brown sandy GRAVEL. Gravel is fine to medium angular to subrounded sandstone.
					7.90			Stiff brown sandy gravelly CLAY with SAND bands. Gravel is fine to medium subangular to subrounded of sandstone mudstone.
					19.10			Dense grey fine to medium SAND.
					23.60			Red SANDSTONE with occasional mudstone bands.
					39.60			

Remarks

1. Complete.

Borehole Log

Borehole No. **RB105**

Sheet 2 of 2

Project Name:	Bennett Street	Project No. 15425	Co-ords:	386288E - 396967N	Hole Type BH
Location:	Manchester		Level:		Scale 1:200
Client:	Onward Homes		Dates:	27/01/2022	Logged By E Canham

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Greyish red MUDSTONE.	41 42 43 44
					45.00			End of Borehole at 45.00m	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Remarks

1. Complete.

APPENDIX VI
CHEMICAL AND GEOTECHNICAL TESTING RESULTS

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Analytical Report Number : 22-35267

Project / Site name:	Bennet Street	**Samples received on:**	17/12/2021
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	25/01/2022
Your order number:	000416	**Analysis completed by:**	03/02/2022
Report Issue Number:	1	**Report issued on:**	03/02/2022
Samples Analysed:	3 soil samples		

Signed: Izabela Wójcik

Izabela Wójcik
Technical Reviewer (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

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

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: 22-35267
Project / Site name: Bennet Street
Your Order No: 000416

Lab Sample Number				2148990	2148991	2148992
Sample Reference				WS123B	WS135	WS136
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.90	1.20
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	10	22
Total mass of sample received	kg	0.001	NONE	1.2	0.60	0.50

Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	5.665	1.612	2.271
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.112	0.235	0.152
Elemental Mercury	mg/kg	0.005	NONE	0.441	0.226	0.242

Speciated Mercury (Dry Weight)

F1 - Water soluble	mg/kg	0.005	NONE	0.046	0.061	0.040
F2 - Weak acid	mg/kg	0.005	NONE	0.071	0.055	0.059
F3 - Organo- complexed	mg/kg	0.005	NONE	0.112	0.235	0.152
F4 - Strongly complexed	mg/kg	0.005	NONE	0.441	0.226	0.242
F5 - Mineral bound	mg/kg	0.005	NONE	5.548	1.496	2.171

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-35267
Project / Site name: Bennet Street

* 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 *
2148990	WS123B	None Supplied	0.8	Brown clay and loam with gravel and vegetation.
2148991	WS135	None Supplied	0.9	Brown loam and sand with gravel and vegetation.
2148992	WS136	None Supplied	1.2	Brown clay and sand.

Analytical Report Number : 22-35267
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	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.	L019-UK/PL	D	NONE
Speciated Mercury in soil by Millennium Merlin Ana	Determination of Speciated Mercury in soil by Millennium Merlin Analyzer	In-house method	L085-PL	Dry	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Analytical Report Number : 22-35267
Project / Site name: Bennet Street

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.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS123B	None Supplied	S	2148990	a	None Supplied	None Supplied	None Supplied
WS135	None Supplied	S	2148991	a	None Supplied	None Supplied	None Supplied
WS136	None Supplied	S	2148992	a	None Supplied	None Supplied	None Supplied

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

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Analytical Report Number : 22-31069

Project / Site name:	Bennet Street	**Samples received on:**	17/12/2021
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	04/01/2022
Your order number:	000177	**Analysis completed by:**	11/01/2022
Report Issue Number:	1	**Report issued on:**	11/01/2022
Samples Analysed:	2 leachate samples - 15 soil samples		

Signed: Karolina Marek

Karolina Marek
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

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127817	2127818	2127819	2127820	2127821
Sample Reference				WS101	WS104	WS105	WS121	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.50	1.80	0.70	1.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	10	22	14	19
Total mass of sample received	kg	0.001	NONE	1.2	0.60	0.50	1.2	0.50
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO		MLO	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	11.6	7.5	6.8	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.9	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	-	2600	500	5800	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	0.085	0.12	3.3	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	170	230	6600	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	84.5	115	3300	-
Sulphide	mg/kg	1	MCERTS	-	150	77	630	-
Total Sulphur	mg/kg	50	MCERTS	-	1100	960	7700	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	1.3	1.2	-	-
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	14	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	5.1	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.3
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.96
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	2.4
Fluorene	mg/kg	0.05	MCERTS	-	-	0.35	-	1.9
Phenanthrene	mg/kg	0.05	MCERTS	-	-	1.3	-	12
Anthracene	mg/kg	0.05	MCERTS	-	-	0.36	-	3.8
Fluoranthene	mg/kg	0.05	MCERTS	-	-	1.3	-	16
Pyrene	mg/kg	0.05	MCERTS	-	-	1.2	-	15
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	0.78	-	8.6
Chrysene	mg/kg	0.05	MCERTS	-	-	0.48	-	7.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.68	-	8.4
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.25	-	2.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	0.55	-	6.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.28	-	3.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.28	-	4.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	7.85	-	95.7

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127817	2127818	2127819	2127820	2127821
Sample Reference				WS101	WS104	WS105	WS121	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.50	1.80	0.70	1.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	57	8.9	6.2	91	66
Barium (aqua regia extractable)	mg/kg	1	MCERTS	180	-	-	-	370
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.1	-	-	-	2.1
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	-	-	-	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	11	26	7.1	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	42	14	51	280
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	36	25	160	720
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	62	12	16	20	57
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	160	-	-	-	87
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	70	46	54	130	80
Petroleum Hydrocarbons								
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	< 2.0	27	< 2.0	2400	2.9
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	9.4	65	< 4.0	5200	59
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	37	180	7.0	9400	100
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	79	290	32	8900	220
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	32	67	21	1300	63
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	160	630	60	27000	450

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127817	2127818	2127819	2127820	2127821
Sample Reference				WS101	WS104	WS105	WS121	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.50	1.80	0.70	1.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127817	2127818	2127819	2127820	2127821
Sample Reference				WS101	WS104	WS105	WS121	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.50	1.80	0.70	1.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	73	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	100	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	49	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	0.48	23	-	1400	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	0.5	14	-	610	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	1600	-
Acenaphthene	mg/kg	0.05	MCERTS	0.99	15	-	170	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	0.4	7.3	-	870	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	0.87	13	-	2200	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	5.3	67	-	4600	-
Anthracene	mg/kg	0.05	MCERTS	1.5	21	-	1800	-
Carbazole	mg/kg	0.3	MCERTS	0.3	6.2	-	440	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	3.3	-	120	-
Fluoranthene	mg/kg	0.05	MCERTS	7.6	65	-	3100	-

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127817	2127818	2127819	2127820	2127821
Sample Reference				WS101	WS104	WS105	WS121	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.50	1.80	0.70	1.70
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Pyrene	mg/kg	0.05	MCERTS	9.3	61	-	2500	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.2	35	-	2200	-
Chrysene	mg/kg	0.05	MCERTS	4.0	30	-	1400	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.0	30	-	1500	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.9	15	-	1200	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.9	28	-	1600	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.9	12	-	770	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.73	3.8	-	260	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	14	-	670	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127822	2127823	2127824	2127825	2127826
Sample Reference				WS123B	WS125	WS131	WS132	WS133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.50	0.95	1.50	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	2.2	19	14	24
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	0.50	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO	MLO		MLO
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.6	8.8	7.8	-	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	2600	2700	730	-	1800
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	1.1	0.57	0.19	-	0.89
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	2200	1100	370	-	1800
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1100	569	187	-	892
Sulphide	mg/kg	1	MCERTS	26	150	26	-	57
Total Sulphur	mg/kg	50	MCERTS	3000	1300	1100	-	2200
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.1	2.1	2.1	-	3.5
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.60	3.3	1.5	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.42	0.29	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	1.7	3.2	1.2	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	1.4	2.4	1.2	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	8.3	16	8.5	0.30	-
Anthracene	mg/kg	0.05	MCERTS	1.8	3.2	2.0	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	8.4	20	10	0.37	-
Pyrene	mg/kg	0.05	MCERTS	8.4	19	12	0.38	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.8	11	6.1	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	3.9	9.4	6.3	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.4	11	6.8	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.1	4.6	1.4	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.5	10	5.6	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.7	5.0	2.4	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.68	1.6	0.90	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	5.9	3.0	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	53.2	126	68.9	1.05	-

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127822	2127823	2127824	2127825	2127826
Sample Reference				WS123B	WS125	WS131	WS132	WS133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.50	0.95	1.50	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	110	9.0	21	9.6	32
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	130	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	1.1	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	0.8	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	14	20	-	160
Copper (aqua regia extractable)	mg/kg	1	MCERTS	520	48	250	28	160
Lead (aqua regia extractable)	mg/kg	1	MCERTS	600	140	100	19	380
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	6.5	< 0.3	0.7	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	48	15	22	34	53
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	29	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	99	320	59	210
Petroleum Hydrocarbons								
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	< 2.0	2.5	< 2.0	< 2.0	< 2.0
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	12	14	10	< 4.0	12
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	46	56	28	< 1.0	95
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	220	290	64	< 1.0	130
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	140	180	22	< 10	26
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	420	540	120	< 10	270

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127822	2127823	2127824	2127825	2127826
Sample Reference				WS123B	WS125	WS131	WS132	WS133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.50	0.95	1.50	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127822	2127823	2127824	2127825	2127826
Sample Reference				WS123B	WS125	WS131	WS132	WS133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.50	0.95	1.50	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	3.1
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	2.5
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	0.76
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	2.6
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	8.4
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	19
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	8.1
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	0.7
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	34

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127822	2127823	2127824	2127825	2127826
Sample Reference				WS123B	WS125	WS131	WS132	WS133
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.50	0.95	1.50	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	27
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	11
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	8.7
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	7.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	2.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	5.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	3.0
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	3.8

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127827	2127828	2127829	2127830	2127906
Sample Reference				WS133	WS135	WS136	WS136	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.30	0.90	0.50	1.20	0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	35	22	27	45	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	0.50	1.2	0.50
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO	MLO	MLO	MLO
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	7.2	7.3	-	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	3.5	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	-	1300	1400	-	220
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	0.43	0.28	-	0.039
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	860	570	-	78
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	431	283	-	39.2
Sulphide	mg/kg	1	MCERTS	-	79	57	-	7.3
Total Sulphur	mg/kg	50	MCERTS	-	1900	1600	-	160
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	3.1	5.2	-	0.9
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	0.53
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.80
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.78
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	0.33
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	0.37
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.36
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-	-	3.72

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127827	2127828	2127829	2127830	2127906
Sample Reference				WS133	WS135	WS136	WS136	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.30	0.90	0.50	1.20	0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	27	91	24	6.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	220	-	-	170	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.2	-	-	0.90	-
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	-	-	1.7	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	20	23	-	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	160	130	170	100	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	260	420	450	370	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	2.2	0.8	2.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	24	50	21	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	48	-	-	29	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	150	83	100	58

Petroleum Hydrocarbons

TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	12	2.2	< 2.0	25	< 2.0
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	66	42	80	320	< 4.0
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	200	220	690	1200	5.2
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	160	270	430	1400	14
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	37	15	66	170	< 10
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	480	540	1300	3100	19

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127827	2127828	2127829	2127830	2127906
Sample Reference				WS133	WS135	WS136	WS136	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.30	0.90	0.50	1.20	0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127827	2127828	2127829	2127830	2127906
Sample Reference				WS133	WS135	WS136	WS136	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.30	0.90	0.50	1.20	0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	8.7	1.7	1.6	4.5	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	6.5	2.3	0.9	4.8	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	2.3	0.90	1.5	-
Acenaphthene	mg/kg	0.05	MCERTS	9.8	5.4	2.0	9.5	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	22	2.1	0.9	17	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	41	6.0	1.7	39	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	77	35	16	79	-
Anthracene	mg/kg	0.05	MCERTS	15	8.3	4.5	20	-
Carbazole	mg/kg	0.3	MCERTS	1.8	1.6	1.6	1.7	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	4.2	< 0.3	< 0.3	< 0.3	-
Fluoranthene	mg/kg	0.05	MCERTS	74	45	30	87	-

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2127827	2127828	2127829	2127830	2127906
Sample Reference				WS133	WS135	WS136	WS136	WS122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.30	0.90	0.50	1.20	0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Pyrene	mg/kg	0.05	MCERTS	49	49	34	58	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	18	22	23	21	-
Chrysene	mg/kg	0.05	MCERTS	14	21	16	16	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	18	25	13	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.4	10	11	3.7	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	9.5	19	27	9.8	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.1	7.0	14	3.5	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.2	2.5	4.2	1.4	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.7	8.6	18	3.5	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street
Your Order No: 000177

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-PL 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
2127823	WS125	0.50	153	Bitumen	**Chrysotile**	< 0.001	**< 0.001**

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

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

Analytical Report Number: 22-31069
Project / Site name: Bennet Street

Your Order No: 000177

Lab Sample Number				2127831	2127832
Sample Reference				WS104	WS133
Sample Number				None Supplied	None Supplied
Depth (m)				0.50	2.30
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	11.9	7.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	1.8	< 1.0
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	140	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	220	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	0.41	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	30	< 0.01
Fluorene	µg/l	0.01	ISO 17025	13	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	13	< 0.01
Anthracene	µg/l	0.01	ISO 17025	3.5	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	1.6	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.91	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	280	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	µg/l	1	ISO 17025	9.1	12
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	0.12
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	4.1	2.0
Copper (dissolved)	µg/l	0.7	ISO 17025	56	6.5
Lead (dissolved)	µg/l	1	ISO 17025	2.7	2.4
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	8.4	5.5
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	8.6	16
Monoaromatics & Oxygenates					
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10

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Analytical Report Number: 22-31069
Project / Site name: Bennet Street

Your Order No: 000177

Lab Sample Number				2127831	2127832
Sample Reference				WS104	WS133
Sample Number				None Supplied	None Supplied
Depth (m)				0.50	2.30
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Petroleum Hydrocarbons					
TPH1 (C10 - C40) EH_1D_TOTAL_#1_#2_MS	µg/l	10	NONE	1600	< 10
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	360	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	530	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	570	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	150	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	1600	< 10

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Analytical Report Number : 22-31069
Project / Site name: Bennet Street

* 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 *
2127817	WS101	None Supplied	0.6	Brown clay and loam with gravel and vegetation.
2127818	WS104	None Supplied	0.5	Brown loam and sand with gravel and vegetation.
2127819	WS105	None Supplied	1.8	Brown clay and sand.
2127820	WS121	None Supplied	0.7	Black gravel with tar.**
2127821	WS122	None Supplied	1.7	Brown clay and sand with gravel.
2127822	WS123B	None Supplied	0.8	Brown clay and sand with gravel.
2127823	WS125	None Supplied	0.5	Brown clay and sand with gravel.
2127824	WS131	None Supplied	0.95	Brown clay and sand with gravel.
2127825	WS132	None Supplied	1.5	Brown clay and sand.
2127826	WS133	None Supplied	0.5	Brown clay and sand with gravel and vegetation.
2127827	WS133	None Supplied	2.3	Brown clay and sand with gravel.
2127828	WS135	None Supplied	0.9	Brown clay and loam with gravel and vegetation.
2127829	WS136	None Supplied	0.5	Brown clay and sand with gravel and vegetation.
2127830	WS136	None Supplied	1.2	Brown clay and loam with gravel and vegetation.
2127906	WS122	None Supplied	0.8	Brown clay and sand.

** Non MCERTS matrix

Analytical Report Number : 22-31069
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	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.	L039-PL	W	ISO 17025
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	L038-PL	D	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	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 (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS

Analytical Report Number : 22-31069
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Analytical Report Number : 22-31069
Project / Site name: Bennet Street

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Sample Deviation Report

Analytical Report Number : 22-31069
Project / Site name: Bennet Street

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS101	None Supplied	S	2127817	a	None Supplied	None Supplied	None Supplied
WS104	None Supplied	L	2127831	a	None Supplied	None Supplied	None Supplied
WS104	None Supplied	S	2127818	a	None Supplied	None Supplied	None Supplied
WS105	None Supplied	S	2127819	a	None Supplied	None Supplied	None Supplied
WS121	None Supplied	S	2127820	a	None Supplied	None Supplied	None Supplied
WS122	None Supplied	S	2127821	a	None Supplied	None Supplied	None Supplied
WS122	None Supplied	S	2127906	a	None Supplied	None Supplied	None Supplied
WS123B	None Supplied	S	2127822	a	None Supplied	None Supplied	None Supplied
WS125	None Supplied	S	2127823	a	None Supplied	None Supplied	None Supplied
WS131	None Supplied	S	2127824	a	None Supplied	None Supplied	None Supplied
WS132	None Supplied	S	2127825	a	None Supplied	None Supplied	None Supplied
WS133	None Supplied	L	2127832	a	None Supplied	None Supplied	None Supplied
WS133	None Supplied	S	2127826	a	None Supplied	None Supplied	None Supplied
WS133	None Supplied	S	2127827	a	None Supplied	None Supplied	None Supplied
WS135	None Supplied	S	2127828	a	None Supplied	None Supplied	None Supplied
WS136	None Supplied	S	2127829	a	None Supplied	None Supplied	None Supplied
WS136	None Supplied	S	2127830	a	None Supplied	None Supplied	None Supplied

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Analytical Report Number : 21-30518

Project / Site name:	Bennet Street	**Samples received on:**	15/12/2021
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	17/12/2021
Your order number:	000177	**Analysis completed by:**	28/12/2021
Report Issue Number:	1	**Report issued on:**	28/12/2021
Samples Analysed:	1 leachate sample - 12 soil samples		

Signed: Karolina Marek

Karolina Marek
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

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

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: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124227	2124228	2124229	2124230	2124231
Sample Reference				WS107	WS109	WS109	WS110	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.50	1.80	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	19	17	30	22
Total mass of sample received	kg	0.001	NONE	1.0	1.0	0.50	1.0	0.50
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	EC	EC		EC	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	8.1	-	8.2	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	-	1000	-	1200	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	0.20	-	0.13	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	400	-	270	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	202	-	133	-
Sulphide	mg/kg	1	MCERTS	-	65	-	110	-
Total Sulphur	mg/kg	50	MCERTS	-	4700	-	4700	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	2.5	-	2.8	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	4.8	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	5.3	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	4.2	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	1.7	< 0.05	26	0.64
Anthracene	mg/kg	0.05	MCERTS	-	0.54	< 0.05	9.1	0.21
Fluoranthene	mg/kg	0.05	MCERTS	-	2.8	< 0.05	29	0.70
Pyrene	mg/kg	0.05	MCERTS	-	3.1	< 0.05	28	0.72
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.6	< 0.05	12	0.40
Chrysene	mg/kg	0.05	MCERTS	-	1.3	< 0.05	8.6	0.30
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.3	< 0.05	7.9	0.18
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.59	< 0.05	5.6	0.27
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.4	< 0.05	9.6	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.51	< 0.05	3.9	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	1.3	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.62	< 0.05	4.6	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	15.5	< 0.80	160	3.71

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124227	2124228	2124229	2124230	2124231
Sample Reference				WS107	WS109	WS109	WS110	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.50	1.80	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	110	48	3.0	99	16
Barium (aqua regia extractable)	mg/kg	1	MCERTS	550	-	84	-	99
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	6.1	-	0.45	-	1.0
Boron (water soluble)	mg/kg	0.2	MCERTS	2.8	-	0.5	-	2.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	20	-	29	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	320	140	12	260	44
Lead (aqua regia extractable)	mg/kg	1	MCERTS	590	220	13	320	72
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	3.1	0.8	< 0.3	1.2	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	77	28	11	74	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	88	-	17	-	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	340	66	35	230	280
Petroleum Hydrocarbons								
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	3.6	< 2.0	< 2.0	2.9	< 2.0
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	21	< 4.0	< 4.0	16	< 4.0
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	130	12	< 1.0	86	10
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	250	24	28	180	23
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	52	< 10	< 10	54	< 10
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	460	36	28	340	33
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chloroethane	µg/kg	1	NONE	< 1.0	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124227	2124228	2124229	2124230	2124231
Sample Reference				WS107	WS109	WS109	WS110	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.50	1.80	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tribromomethane	µg/kg	1	NONE	< 1.0	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	1.8	-	-	-	-

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124227	2124228	2124229	2124230	2124231
Sample Reference				WS107	WS109	WS109	WS110	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.50	1.80	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	1.8	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	1.1	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	3.1	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	1.5	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	3.7	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	26	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	5.8	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	1.3	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	30	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	30	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	16	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	14	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	14	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	6.6	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	14	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.1	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.7	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.5	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124232	2124233	2124234	2124235	2124236
Sample Reference				WS114	WS115	WS116	WS117	WS118
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.25	2.40	1.90
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	18	17	20	24
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	0.50	0.50
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EC	DBU	DBU		DBU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	-	8.0	-	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.5
Total Sulphate as SO4	mg/kg	50	MCERTS	730	-	900	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.13	-	0.049	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	250	-	99	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	126	-	49.3	-	-
Sulphide	mg/kg	1	MCERTS	180	-	180	-	-
Total Sulphur	mg/kg	50	MCERTS	1900	-	1400	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3	-	3.0	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	3.2	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	2.9	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	2.2	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	-	10	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	3.6	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	8.2	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	7.2	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	3.5	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	-	3.1	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	2.3	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	1.9	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	3.0	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	1.2	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	0.44	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	1.3	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	-	54.6	-

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124232	2124233	2124234	2124235	2124236
Sample Reference				WS114	WS115	WS116	WS117	WS118
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.25	2.40	1.90
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	84	18	10	49
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	880	-	200	85
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	1.7	-	1.3	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.6	-	1.3	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	7.7	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	-	24	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	83	330	110	52	150
Lead (aqua regia extractable)	mg/kg	1	MCERTS	380	4300	430	45	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.8	5.1	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	40	28	31	44
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	52	-	32	92
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	5900	250	79	68
Petroleum Hydrocarbons								
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	< 2.0	180	100	4.8	< 2.0
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	< 4.0	550	220	12	8.5
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	< 1.0	1400	470	25	9.0
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	< 1.0	2300	630	27	4.3
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	530	82	< 10	< 10
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	4900	1500	68	22
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124232	2124233	2124234	2124235	2124236
Sample Reference				WS114	WS115	WS116	WS117	WS118
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.25	2.40	1.90
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Toluene	µg/kg	1	MCERTS	-	6.6	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	9.9	< 1.0	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	16	< 1.0	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	13	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	17	< 1.0	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	30	< 1.0	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	86	23	-	1.9

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124232	2124233	2124234	2124235	2124236
Sample Reference				WS114	WS115	WS116	WS117	WS118
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.25	2.40	1.90
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	1.2
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	54	16	-	1.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	5.5	1.8	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	82	59	-	1.0
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	51	35	-	0.4
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	70	50	-	0.67
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	360	270	-	3.5
Anthracene	mg/kg	0.05	MCERTS	-	100	74	-	1.0
Carbazole	mg/kg	0.3	MCERTS	-	24	20	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	7.7	7.2	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	390	220	-	3.2
Pyrene	mg/kg	0.05	MCERTS	-	360	200	-	2.8
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	190	91	-	1.8
Chrysene	mg/kg	0.05	MCERTS	-	170	77	-	1.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	140	64	-	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	81	37	-	0.67
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	150	67	-	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	73	34	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	24	10	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	83	33	-	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124237	2124238
Sample Reference				WS119	WS128
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	0.60
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	23
Total mass of sample received	kg	0.001	NONE	0.50	1.0

Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A		DBU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	320	590
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.038	0.029
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	75	58
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	37.6	29.0
Sulphide	mg/kg	1	MCERTS	30	< 1.0
Total Sulphur	mg/kg	50	MCERTS	1400	640
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.2	3.1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	0.37	-
Fluorene	mg/kg	0.05	MCERTS	0.22	-
Phenanthrene	mg/kg	0.05	MCERTS	0.89	-
Anthracene	mg/kg	0.05	MCERTS	0.23	-
Fluoranthene	mg/kg	0.05	MCERTS	0.97	-
Pyrene	mg/kg	0.05	MCERTS	0.96	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.51	-
Chrysene	mg/kg	0.05	MCERTS	0.44	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.36	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.30	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.44	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.69	-

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124237	2124238
Sample Reference				WS119	WS128
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	0.60
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	38
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	42
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	110
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27	540
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	230
Petroleum Hydrocarbons					
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	MCERTS	< 2.0	27
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	MCERTS	< 4.0	180
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	7.6	480
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	MCERTS	12	620
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	68
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	MCERTS	19	1400
VOCs					
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124237	2124238
Sample Reference				WS119	WS128
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	0.60
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Toluene	µg/kg	1	MCERTS	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	34

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street
Your Order No: 000177

Lab Sample Number				2124237	2124238
Sample Reference				WS119	WS128
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	0.60
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	28
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.95
Acenaphthene	mg/kg	0.05	MCERTS	-	56
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	29
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	41
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	240
Anthracene	mg/kg	0.05	MCERTS	-	61
Carbazole	mg/kg	0.3	MCERTS	-	17
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	8.1
Fluoranthene	mg/kg	0.05	MCERTS	-	190
Pyrene	mg/kg	0.05	MCERTS	-	170
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	77
Chrysene	mg/kg	0.05	MCERTS	-	72
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	54
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	30
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	53
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	25
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	7.9
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	27

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street

Your Order No: 000177

Lab Sample Number				2124259
Sample Reference				WS115
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (automated)	pH Units	N/A	ISO 17025	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	1.4
Total Phenols				
Total Phenols (monohydric)	µg/l	1	ISO 17025	30
Speciated PAHs				
Naphthalene	µg/l	0.01	ISO 17025	1.2
Acenaphthylene	µg/l	0.01	ISO 17025	2.2
Acenaphthene	µg/l	0.01	ISO 17025	43
Fluorene	µg/l	0.01	ISO 17025	6.3
Phenanthrene	µg/l	0.01	ISO 17025	1.2
Anthracene	µg/l	0.01	ISO 17025	4.7
Fluoranthene	µg/l	0.01	ISO 17025	2.6
Pyrene	µg/l	0.01	ISO 17025	1.8
Benzo(a)anthracene	µg/l	0.01	ISO 17025	0.54
Chrysene	µg/l	0.01	ISO 17025	0.49
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	0.37
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	0.17
Benzo(a)pyrene	µg/l	0.01	ISO 17025	0.40
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01
Total PAH				
Total EPA-16 PAHs	µg/l	0.2	NONE	65
Heavy Metals / Metalloids				
Arsenic (dissolved)	µg/l	1	ISO 17025	8.7
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	13
Lead (dissolved)	µg/l	1	ISO 17025	6.5
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.9
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	27
Monoaromatics & Oxygenates				
Benzene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10

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Analytical Report Number: 21-30518
Project / Site name: Bennet Street

Your Order No: 000177

Lab Sample Number				2124259
Sample Reference				WS115
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Petroleum Hydrocarbons				
TPH1 (C10 - C40) EH_1D_TOTAL_#1_#2_MS	µg/l	10	NONE	1100
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	73
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	480
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	450
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	120
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	1100

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Analytical Report Number : 21-30518
Project / Site name: Bennet Street

* 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 *
2124227	WS107	None Supplied	1	Brown sand with gravel and clinker
2124228	WS109	None Supplied	2	Brown clay with gravel.
2124229	WS109	None Supplied	3.5	Grey clay.
2124230	WS110	None Supplied	1.8	Brown gravelly sand.
2124231	WS113	None Supplied	2.5	Brown clay.
2124232	WS114	None Supplied	0.5	Brown clay with gravel.
2124233	WS115	None Supplied	0.4	Brown gravelly sand.
2124234	WS116	None Supplied	0.25	Brown loam and clay with gravel.
2124235	WS117	None Supplied	2.4	Brown clay.
2124236	WS118	None Supplied	1.9	Brown gravelly sand with oil / petroleum.
2124237	WS119	None Supplied	2.5	Brown clay.
2124238	WS128	None Supplied	0.6	Brown clay with gravel.

Analytical Report Number : 21-30518
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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.	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	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.	L039-PL	W	ISO 17025
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	L038-PL	D	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	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 (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS

Analytical Report Number : 21-30518
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Analytical Report Number : 21-30518
Project / Site name: Bennet Street

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

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

Analytical Report Number : 21-30518
Project / Site name: Bennet Street

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Sample Deviation Report

Analytical Report Number : 21-30518
Project / Site name: Bennet Street

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS107	None Supplied	S	2124227	a	None Supplied	None Supplied	None Supplied
WS109	None Supplied	S	2124228	a	None Supplied	None Supplied	None Supplied
WS109	None Supplied	S	2124229	a	None Supplied	None Supplied	None Supplied
WS110	None Supplied	S	2124230	a	None Supplied	None Supplied	None Supplied
WS113	None Supplied	S	2124231	a	None Supplied	None Supplied	None Supplied
WS114	None Supplied	S	2124232	a	None Supplied	None Supplied	None Supplied
WS115	None Supplied	L	2124259	a	None Supplied	None Supplied	None Supplied
WS115	None Supplied	S	2124233	a	None Supplied	None Supplied	None Supplied
WS116	None Supplied	S	2124234	a	None Supplied	None Supplied	None Supplied
WS117	None Supplied	S	2124235	a	None Supplied	None Supplied	None Supplied
WS118	None Supplied	S	2124236	a	None Supplied	None Supplied	None Supplied
WS119	None Supplied	S	2124237	a	None Supplied	None Supplied	None Supplied
WS128	None Supplied	S	2124238	a	None Supplied	None Supplied	None Supplied

4041

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Analytical Report Number : 22-31525-2

Replaces Analytical Report Number: 22-31525, issue no. 1
Client sampling date amended.

Project / Site name:	Bennett Street	**Samples received on:**	06/01/2022
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	06/01/2022
Your order number:	000227	**Analysis completed by:**	13/01/2022
Report Issue Number:	2	**Report issued on:**	06/12/2022
Samples Analysed:	4 water samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-31525
Project / Site name: Bennett Street

Lab Sample Number				2130133	2130134	2130135	2130136
Sample Reference				WS109	WS101	WS119	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/01/2022	05/01/2022	05/01/2022	05/01/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH	pH Units	N/A	ISO 17025	7.0	6.9	7.1	7.0
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	23.9	10.6	7.92	2.39
Total Phenols							
Total Phenols (monohydric)	µg/l	1	ISO 17025	8.8	5	3.6	3.5
Heavy Metals / Metalloids							
Calcium (dissolved)	mg/l	0.012	ISO 17025	240	100	140	180
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	8.67	0.8	3.09	2.68
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.04	< 0.02	0.04	0.05
Chromium (dissolved)	µg/l	0.2	ISO 17025	6	2.7	3.3	3.6
Copper (dissolved)	µg/l	0.5	ISO 17025	3.3	2.6	1.9	2.2
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	0.3	0.4
Manganese (dissolved)	µg/l	0.05	ISO 17025	3300	1900	2700	980
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	12	11	6.5	8.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.6	< 0.6	1.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	15	7.9	9	120
Monoaromatics & Oxygenates							
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH1 (C10 - C40) EH_1D_TOTAL_MS	µg/l	10	ISO 17025	< 10	< 10	13	55
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	24
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	22
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	46

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Analytical Report Number: 22-31525
Project / Site name: Bennett Street

Lab Sample Number				2130133	2130134	2130135	2130136
Sample Reference				WS109	WS101	WS119	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/01/2022	05/01/2022	05/01/2022	05/01/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
VOCs							
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-31525
Project / Site name: Bennett Street

Lab Sample Number				2130133	2130134	2130135	2130136
Sample Reference				WS109	WS101	WS119	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/01/2022	05/01/2022	05/01/2022	05/01/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-31525
Project / Site name: Bennett Street

Lab Sample Number				2130133	2130134	2130135	2130136
Sample Reference				WS109	WS101	WS119	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/01/2022	05/01/2022	05/01/2022	05/01/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
SVOCs							
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	0.5	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	2.9	< 0.01	0.49	3.7
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	0.38	< 0.05	0.25	0.85
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	1.8	< 0.01	1.5	2.9
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	0.46	< 0.05	0.49	1.5
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	0.66	< 0.01	0.74	1.7
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	0.37	< 0.01	1.5	5.6
Anthracene	µg/l	0.01	ISO 17025	0.26	< 0.01	0.48	1.9
Carbazole	µg/l	0.05	NONE	2.5	< 0.05	0.24	1.2
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	0.59	< 0.01	1.8	8
Pyrene	µg/l	0.01	ISO 17025	0.51	< 0.01	1.6	7.5
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.49	3.4
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.49	3.7
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.43	3.5
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.22	1.5
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.44	3.6

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

Analytical Report Number: 22-31525
Project / Site name: Bennett Street

Lab Sample Number				2130133	2130134	2130135	2130136
Sample Reference				WS109	WS101	WS119	WS113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/01/2022	05/01/2022	05/01/2022	05/01/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	1.2
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.35
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	1.6

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-31525
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	ISO 17025

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

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4041

Analytical Report Number : 22-31525
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

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Analytical Report Number : 22-36962

Project / Site name:	Bennet Street	**Samples received on:**	01/02/2022
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	02/02/2022
Your order number:	000535	**Analysis completed by:**	09/02/2022
Report Issue Number:	1	**Report issued on:**	09/02/2022
Samples Analysed:	5 water samples		

Izabela Wójcik

Signed:

Izabela Wójcik
Technical Reviewer (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

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

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: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.0	7.3	7.0	7.4	7.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	11.4	4.45	17.9	5.65	5.40
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	28	< 1.0	< 1.0
Heavy Metals / Metalloids								
Calcium (dissolved)	mg/l	0.012	ISO 17025	120	120	230	210	160
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.91	1.16	5.83	1.99	1.38
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.12	< 0.02	0.03	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	3.8	4.0	7.8	4.7	5.0
Copper (dissolved)	µg/l	0.5	ISO 17025	7.8	6.3	9.4	5.5	4.9
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	0.7	0.4	0.4
Manganese (dissolved)	µg/l	0.05	ISO 17025	1900	1000	1600	570	1100
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.3	5.6	6.4	8.4	3.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	5.3	0.8	2.3	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	6.4	7.8	6.6	240	7.3
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH1 (C10 - C40) EH_2D_TOTAL_#1_#2	µg/l	10	NONE	< 10	790	1100	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	490	380	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	110	100	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10	600	490	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10	130	190	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10	60	270	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10	< 10	120	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10	< 10	80	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10	190	660	< 10	< 10

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Analytical Report Number: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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

Analytical Report Number: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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

Analytical Report Number: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	0.91	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	20	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.76	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	1.8	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	0.47	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.50	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.94	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.53	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	2.0	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	2.1	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	1.7	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.86	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.75	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.82	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.36	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.71	< 0.01	< 0.01

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Analytical Report Number: 22-36962
Project / Site name: Bennet Street

Your Order No: 000535

Lab Sample Number				2158091	2158092	2158093	2158094	2158095
Sample Reference				WS101	WS103	WS109	WS113	WS129
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.33	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.40	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-36962
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Analytical Report Number : 22-36962
Project / Site name: Bennet Street

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

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Analytical Report Number : 22-41913

Project / Site name:	Bennett	**Samples received on:**	23/02/2022
Your job number:	15 425	**Samples instructed on/ Analysis started on:**	24/02/2022
Your order number:	000718	**Analysis completed by:**	03/03/2022
Report Issue Number:	1	**Report issued on:**	03/03/2022
Samples Analysed:	5 water samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (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

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

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

Analytical Report Number: 22-41913
Project / Site name: Bennett

Your Order No: 000718

Lab Sample Number				2185419	2185420	2185421	2185422	2185423
Sample Reference				WS101	WS103	WS108	WS113	WS127
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.1	7.4	6.8	7.0	7.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	13.9	11.8	14.1	11.0	10.6
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	3.9	2.8	3.8	2.8	3.0
Heavy Metals / Metalloids								
Calcium (dissolved)	mg/l	0.012	ISO 17025	140	130	330	250	190
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.59	0.81	1.56	1.43	0.87
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.28	0.10	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.3	4.2	5.1	4.5	3.6
Copper (dissolved)	µg/l	0.5	ISO 17025	5.4	4.5	5.4	1.2	3.9
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	1500	930	270	750	1600
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.9	6.5	8.7	3.5	4.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	3.6	5.8	9.4	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.9	6.8	63	41	7.1
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH1 (C10 - C40) $_{EH\_2D\_TOTAL\_\#1\_\#2}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 22-41913
Project / Site name: Bennett

Your Order No: 000718

Lab Sample Number				2185419	2185420	2185421	2185422	2185423
Sample Reference				WS101	WS103	WS108	WS113	WS127
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-41913
Project / Site name: Bennett

Your Order No: 000718

Lab Sample Number				2185419	2185420	2185421	2185422	2185423
Sample Reference				WS101	WS103	WS108	WS113	WS127
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 22-41913
Project / Site name: Bennett

Your Order No: 000718

Lab Sample Number				2185419	2185420	2185421	2185422	2185423
Sample Reference				WS101	WS103	WS108	WS113	WS127
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-41913
Project / Site name: Bennett

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

Analytical Report Number : 22-41913
Project / Site name: Bennett

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

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Analytical Report Number : 22-31527

Project / Site name:	Bennett Street	**Samples received on:**	06/01/2022
Your job number:	15-425	**Samples instructed on/ Analysis started on:**	06/01/2022
Your order number:	000227	**Analysis completed by:**	13/01/2022
Report Issue Number:	1	**Report issued on:**	13/01/2022
Samples Analysed:	1 water sample		

Izabela Wójcik

Signed:

Izabela Wójcik
Technical Reviewer (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

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

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: 22-31527
Project / Site name: Bennett Street

Lab Sample Number				2130145
Sample Reference				WS127
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH	pH Units	N/A	ISO 17025	7.4
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	5.00
Total Phenols				
Total Phenols (monohydric)	µg/l	1	ISO 17025	2.0
Heavy Metals / Metalloids				
Calcium (dissolved)	mg/l	0.012	ISO 17025	120
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.86
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05
Chromium (dissolved)	µg/l	0.2	ISO 17025	3.2
Copper (dissolved)	µg/l	0.5	ISO 17025	3.4
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4
Manganese (dissolved)	µg/l	0.05	ISO 17025	960
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.9
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.8
Zinc (dissolved)	µg/l	0.5	ISO 17025	16
Monoaromatics & Oxygenates				
Benzene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
Petroleum Hydrocarbons				
TPH1 (C10 - C40) $_{EH\_2D\_TOTAL\_\#1\_\#2}$	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C5 - C6 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH\_1D\_AL\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH\_1D\_AR\_\#1\_\#2\_MS}$	µg/l	10	NONE	< 10

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Analytical Report Number: 22-31527
Project / Site name: Bennett Street

Lab Sample Number				2130145
Sample Reference				WS127
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
VOCs				
Chloromethane	µg/l	1	ISO 17025	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0

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Analytical Report Number: 22-31527
Project / Site name: Bennett Street

Lab Sample Number				2130145
Sample Reference				WS127
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01

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Analytical Report Number: 22-31527
Project / Site name: Bennett Street

Lab Sample Number				2130145
Sample Reference				WS127
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/01/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-31527
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

Analytical Report Number : 22-31527
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

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Analytical Report Number : 22-90537

Project / Site name:	Benett Street	**Samples received on:**	14/10/2022
Your job number:	15-974	**Samples instructed on/ Analysis started on:**	14/10/2022
Your order number:		**Analysis completed by:**	25/10/2022
Report Issue Number:	1	**Report issued on:**	28/10/2022
Samples Analysed:	3 leachate samples - 18 soil samples		

Signed:

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

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

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

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

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463387	2463388	2463389	2463390	2463391
Sample Reference				TP127	TP123	TP124	TP126	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.20	1.90	0.70	1.00	0.80
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	17	11	15	19
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3	0.3
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	N/A	LFT	LFT	N/A	LFT
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3	7.7	10.1	8.2	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	240	590	1300	700	2600
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.03	0.027	0.19	0.057	0.82
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	61	54	380	110	1600
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	30.3	27.1	188	57.4	824
Sulphide	mg/kg	1	NONE	< 1.0	1.2	100	35	64
Total Sulphur	mg/kg	50	MCERTS	160	400	1800	560	3200
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	1.2	-	0.7	2.8
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	8.5	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	7.2	4.4	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	< 0.05	-
Acenaphthene	mg/kg	0.05	NONE	0.34	0.39	-	0.73	-
Fluorene	mg/kg	0.05	NONE	0.23	0.25	-	0.38	-
Phenanthrene	mg/kg	0.05	NONE	2.1	2.3	-	1.8	-
Anthracene	mg/kg	0.05	NONE	0.81	0.88	-	0.91	-
Fluoranthene	mg/kg	0.05	NONE	2.5	2.9	-	3.7	-
Pyrene	mg/kg	0.05	NONE	2.4	2.8	-	3.8	-
Benzo(a)anthracene	mg/kg	0.05	NONE	0.8	1.1	-	1.3	-
Chrysene	mg/kg	0.05	NONE	1.2	1.2	-	1.7	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.67	0.75	-	1.1	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.62	0.62	-	0.86	-
Benzo(a)pyrene	mg/kg	0.05	NONE	0.82	1	-	1.4	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.32	0.42	-	0.55	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.39	0.57	-	0.68	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	13.2	15.3	-	19	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463387	2463388	2463389	2463390	2463391
Sample Reference				TP127	TP123	TP124	TP126	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.20	1.90	0.70	1.00	0.80
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	17	30	14	32
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	22	16	12	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	150	57	110	49	170
Lead (aqua regia extractable)	mg/kg	1	MCERTS	79	520	350	440	260
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.1	7.3	0.5	1.2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	36	27	27	14	38
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	76	110	120	260
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	NONE	-	-	-	-	-
Toluene	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	NONE	-	-	-	-	-
p & m-xylene	µg/kg	1	NONE	-	-	-	-	-
o-xylene	µg/kg	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	NONE	< 2.0	4.6	290	< 2.0	13
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	NONE	< 4.0	12	2000	4.2	47
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	13	27	6000	28	210
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	16	50	5400	51	370
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	NONE	< 10	15	230	< 10	66
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	29	110	14000	83	710
VOCs								
Chloromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463387	2463388	2463389	2463390	2463391
Sample Reference				TP127	TP123	TP124	TP126	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.20	1.90	0.70	1.00	0.80
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1-Dichloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dichloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Benzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
p & m-Xylene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Styrene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
o-Xylene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
n-Propylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
p-Isopropyltoluene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463387	2463388	2463389	2463390	2463391
Sample Reference				TP127	TP123	TP124	TP126	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.20	1.90	0.70	1.00	0.80
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Phenol	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	-	-	< 0.05	-	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Isophorone	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Naphthalene	mg/kg	0.05	NONE	-	-	290	-	5
2,4-Dichlorophenol	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	140	-	2.7
2-Chloronaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	-	-	< 0.05	-	1.7
Acenaphthene	mg/kg	0.05	NONE	-	-	490	-	7.8
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	-	-	300	-	3.7
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Fluorene	mg/kg	0.05	NONE	-	-	450	-	7.9
Azobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Phenanthrene	mg/kg	0.05	NONE	-	-	1800	-	40
Anthracene	mg/kg	0.05	NONE	-	-	710	-	12
Carbazole	mg/kg	0.3	NONE	-	-	180	-	2.2
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	< 0.2	-	0.3
Anthraquinone	mg/kg	0.3	NONE	-	-	63	-	2
Fluoranthene	mg/kg	0.05	NONE	-	-	1400	-	39
Pyrene	mg/kg	0.05	NONE	-	-	1400	-	37
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	< 0.3	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	-	-	730	-	20
Chrysene	mg/kg	0.05	NONE	-	-	750	-	19
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	-	670	-	18
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	-	360	-	9

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463387	2463388	2463389	2463390	2463391
Sample Reference				TP127	TP123	TP124	TP126	TP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.20	1.90	0.70	1.00	0.80
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	NONE	-	-	710	-	18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	-	360	-	9.8
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	-	100	-	3.1
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	-	410	-	11

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463392	2463393	2463394	2463395	2463396
Sample Reference				TP129	TP116	TP118	TP130	TP122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	1.20	0.60	0.90
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12	35	12	16
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3	0.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	LFT	N/A	LFT	LFT	LFT

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11	8.6	8.2	9.1	8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	9500	330	2300	1800	1100
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	1.4	0.067	0.31	0.14	0.07
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	2700	130	620	280	140
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1360	66.9	311	140	69.8
Sulphide	mg/kg	1	NONE	35	< 1.0	670	1.2	4.8
Total Sulphur	mg/kg	50	MCERTS	3900	180	19000	1200	930
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.7	0.8	4	6.2	4.8
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	1.9	< 0.05	0.74	17	-
Acenaphthylene	mg/kg	0.05	NONE	0.57	< 0.05	< 0.05	2.8	-
Acenaphthene	mg/kg	0.05	NONE	3.7	< 0.05	0.63	25	-
Fluorene	mg/kg	0.05	NONE	2.7	< 0.05	0.57	24	-
Phenanthrene	mg/kg	0.05	NONE	26	< 0.05	3.9	130	-
Anthracene	mg/kg	0.05	NONE	8.6	< 0.05	1.3	41	-
Fluoranthene	mg/kg	0.05	NONE	59	< 0.05	5.6	130	-
Pyrene	mg/kg	0.05	NONE	54	< 0.05	6.7	130	-
Benzo(a)anthracene	mg/kg	0.05	NONE	24	< 0.05	3.7	66	-
Chrysene	mg/kg	0.05	NONE	17	< 0.05	4.1	53	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	20	< 0.05	2.7	63	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	13	< 0.05	2.6	21	-
Benzo(a)pyrene	mg/kg	0.05	NONE	22	< 0.05	3.2	55	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	9.4	< 0.05	1.7	28	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	2.6	< 0.05	< 0.05	8.5	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	11	< 0.05	2.1	33	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	275	< 0.80	39.5	828	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463392	2463393	2463394	2463395	2463396
Sample Reference				TP129	TP116	TP118	TP130	TP122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	1.20	0.60	0.90
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.1	8.2	120	53	110
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	25	33	23	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	78	57	320	200	280
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	14	610	440	650
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.8	2.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	31	80	51	71
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	190	70	220	220	200
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	NONE	-	-	-	-	-
Toluene	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	NONE	-	-	-	-	-
p & m-xylene	µg/kg	1	NONE	-	-	-	-	-
o-xylene	µg/kg	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	-	-	-	-
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	NONE	3.4	< 2.0	< 2.0	< 2.0	33
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	NONE	20	< 4.0	5.5	2400	200
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	280	< 1.0	35	11000	800
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	1200	< 1.0	110	3100	1200
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	NONE	480	< 10	34	130	180
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	1900	< 10	190	16000	2400
VOCs								
Chloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463392	2463393	2463394	2463395	2463396
Sample Reference				TP129	TP116	TP118	TP130	TP122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	1.20	0.60	0.90
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	NONE	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	NONE	-	-	-	-	< 1.0
Toluene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
p & m-Xylene	µg/kg	1	NONE	-	-	-	-	< 1.0
Styrene	µg/kg	1	NONE	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0
o-Xylene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
n-Propylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463392	2463393	2463394	2463395	2463396
Sample Reference				TP129	TP116	TP118	TP130	TP122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	1.20	0.60	0.90
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	NONE	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	NONE	-	-	-	-	11
2,4-Dichlorophenol	mg/kg	0.3	NONE	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	7.4
2-Chloronaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	-	-	-	-	0.9
Acenaphthene	mg/kg	0.05	NONE	-	-	-	-	30
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	-	-	-	-	13
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Fluorene	mg/kg	0.05	NONE	-	-	-	-	25
Azobenzene	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	NONE	-	-	-	-	110
Anthracene	mg/kg	0.05	NONE	-	-	-	-	42
Carbazole	mg/kg	0.3	NONE	-	-	-	-	9
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	NONE	-	-	-	-	5.2
Fluoranthene	mg/kg	0.05	NONE	-	-	-	-	120
Pyrene	mg/kg	0.05	NONE	-	-	-	-	110
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	-	-	-	-	64
Chrysene	mg/kg	0.05	NONE	-	-	-	-	59
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	-	-	-	62
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	-	-	-	29

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463392	2463393	2463394	2463395	2463396
Sample Reference				TP129	TP116	TP118	TP130	TP122
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	1.20	0.60	0.90
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	NONE	-	-	-	-	59
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	-	-	-	31
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	-	-	-	9.9
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	-	-	-	35

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463397	2463398	2463399	2463400	2463401
Sample Reference				TP112	TP106	TP103	TP103	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.90	0.60	2.00	0.40
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	25	20	12	20
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.8	0.3	0.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	LFT	LFT	LFT	N/A	GFI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	7.9	7.9	8.5	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	700	500	1000	350	930
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.11	0.061	0.26	0.059	0.32
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	210	120	520	120	640
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	108	60.9	258	58.7	320
Sulphide	mg/kg	1	NONE	< 1.0	69	170	2.4	1.2
Total Sulphur	mg/kg	50	MCERTS	470	1300	3900	250	610
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.1	3.9	2.3	0.9	2.3
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	2.2	-	-	< 0.05	1.9
Acenaphthylene	mg/kg	0.05	NONE	0.41	-	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	8.2	-	-	< 0.05	4.5
Fluorene	mg/kg	0.05	NONE	5.9	-	-	< 0.05	2.9
Phenanthrene	mg/kg	0.05	NONE	60	-	-	0.61	31
Anthracene	mg/kg	0.05	NONE	15	-	-	< 0.05	8.4
Fluoranthene	mg/kg	0.05	NONE	67	-	-	0.74	41
Pyrene	mg/kg	0.05	NONE	72	-	-	0.87	47
Benzo(a)anthracene	mg/kg	0.05	NONE	37	-	-	0.38	23
Chrysene	mg/kg	0.05	NONE	31	-	-	0.38	18
Benzo(b)fluoranthene	mg/kg	0.05	NONE	28	-	-	0.3	18
Benzo(k)fluoranthene	mg/kg	0.05	NONE	14	-	-	0.2	8.6
Benzo(a)pyrene	mg/kg	0.05	NONE	27	-	-	0.31	18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	9.4	-	-	< 0.05	6.7
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	3.7	-	-	< 0.05	2.6
Benzo(ghi)perylene	mg/kg	0.05	NONE	13	-	-	< 0.05	8.8

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	393	-	-	3.79	238

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463397	2463398	2463399	2463400	2463401
Sample Reference				TP112	TP106	TP103	TP103	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.90	0.60	2.00	0.40
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	14	23	8.4	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	23	23	31	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	52	170	31	70
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210	120	410	33	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	1.1	< 0.3	< 0.3	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	24	39	37	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	58	70	70	75
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Toluene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
p & m-xylene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
o-xylene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	NONE	< 1.0	-	-	-	4.8
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	NONE	< 2.0	-	-	-	12
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	< 8.0	-	-	-	28
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	< 8.0	-	-	-	25
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	-	-	-	69
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	NONE	< 1.0	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	NONE	57	-	-	-	36
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	410	-	-	-	220
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	590	-	-	-	330
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	1100	-	-	-	590
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	-
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	NONE	-	25	< 2.0	< 2.0	-
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	NONE	-	160	13	< 4.0	-
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	-	310	110	< 1.0	-
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	-	280	140	< 1.0	-
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	NONE	-	26	< 10	< 10	-
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	-	800	260	< 10	-
VOCs								
Chloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Bromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463397	2463398	2463399	2463400	2463401
Sample Reference				TP112	TP106	TP103	TP103	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.90	0.60	2.00	0.40
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trichloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Benzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Tetrachloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Dibromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Dibromochloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Chlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
p & m-Xylene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Styrene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
o-Xylene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Bromobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
n-Propylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463397	2463398	2463399	2463400	2463401
Sample Reference				TP112	TP106	TP103	TP103	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.90	0.60	2.00	0.40
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
Phenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	NONE	-	< 0.05	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Isophorone	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Naphthalene	mg/kg	0.05	NONE	-	44	0.72	-	-
2,4-Dichlorophenol	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	28	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	-
Acenaphthylene	mg/kg	0.05	NONE	-	< 0.05	0.22	-	-
Acenaphthene	mg/kg	0.05	NONE	-	32	1.9	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	NONE	-	16	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Fluorene	mg/kg	0.05	NONE	-	33	1.1	-	-
Azobenzene	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Phenanthrene	mg/kg	0.05	NONE	-	80	7.4	-	-
Anthracene	mg/kg	0.05	NONE	-	22	3.9	-	-
Carbazole	mg/kg	0.3	NONE	-	16	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	-
Anthraquinone	mg/kg	0.3	NONE	-	1.3	< 0.3	-	-
Fluoranthene	mg/kg	0.05	NONE	-	37	27	-	-
Pyrene	mg/kg	0.05	NONE	-	38	32	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.05	NONE	-	17	16	-	-
Chrysene	mg/kg	0.05	NONE	-	15	12	-	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	15	12	-	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	4	7.3	-	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463397	2463398	2463399	2463400	2463401
Sample Reference				TP112	TP106	TP103	TP103	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.90	0.60	2.00	0.40
Date Sampled				12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	NONE	-	14	13	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	6.1	4.7	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	2.2	1.7	-	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	7.8	6	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463402	2463403	2463404
Sample Reference				TP111	TP107	TP109
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.60	2.50
Date Sampled				12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	30	16
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	GFI	GFI	N/A
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.3	7.8	8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1600	1000	220
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.3	0.21	0.052
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	610	420	100
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	303	208	52.2
Sulphide	mg/kg	1	NONE	30	120	28
Total Sulphur	mg/kg	50	MCERTS	1300	21000	300
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	5.2	5.9	0.2
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	NONE	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	-	-	< 0.05
Acenaphthene	mg/kg	0.05	NONE	-	-	< 0.05
Fluorene	mg/kg	0.05	NONE	-	-	< 0.05
Phenanthrene	mg/kg	0.05	NONE	-	-	0.39
Anthracene	mg/kg	0.05	NONE	-	-	< 0.05
Fluoranthene	mg/kg	0.05	NONE	-	-	0.65
Pyrene	mg/kg	0.05	NONE	-	-	0.63
Benzo(a)anthracene	mg/kg	0.05	NONE	-	-	0.26
Chrysene	mg/kg	0.05	NONE	-	-	0.27
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	-	0.17
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	-	0.23
Benzo(a)pyrene	mg/kg	0.05	NONE	-	-	0.25
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	-	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	-	-	2.85

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463402	2463403	2463404
Sample Reference				TP111	TP107	TP109
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.60	2.50
Date Sampled				12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	34	5.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	19	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	110	50
Lead (aqua regia extractable)	mg/kg	1	MCERTS	320	350	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	3.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	25	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	260	180	110
Monoaromatics & Oxygenates						
Benzene	µg/kg	1	NONE	-	-	-
Toluene	µg/kg	1	NONE	-	-	-
Ethylbenzene	µg/kg	1	NONE	-	-	-
p & m-xylene	µg/kg	1	NONE	-	-	-
o-xylene	µg/kg	1	NONE	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	-	-	-
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	NONE	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	NONE	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	NONE	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	NONE	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	NONE	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	NONE	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	-	-
TPH (C5 - C6) $_{HS\_1D\_TOTAL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS\_1D\_TOTAL}$	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	2	NONE	71	11	< 2.0
TPH (C12 - C16) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	4	NONE	690	170	< 4.0
TPH (C16 - C21) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	2500	1000	2.7
TPH (C21 - C35) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	1	NONE	3800	2700	70
TPH (C35 - C40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	NONE	210	410	54
TPH Total C5 - C40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	7300	4300	130
VOCs						
Chloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Bromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463402	2463403	2463404
Sample Reference				TP111	TP107	TP109
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.60	2.50
Date Sampled				12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1-Dichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-
Trichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2-Dichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-
Benzene	µg/kg	1	NONE	< 1.0	< 1.0	-
Tetrachloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-
Trichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-
Dibromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-
Toluene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,3-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-
Dibromochloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2-Dibromoethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Chlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
p & m-Xylene	µg/kg	1	NONE	< 1.0	< 1.0	-
Styrene	µg/kg	1	NONE	< 1.0	< 1.0	-
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-
o-Xylene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
Bromobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
n-Propylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
p-Isopropyltoluene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463402	2463403	2463404
Sample Reference				TP111	TP107	TP109
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.60	2.50
Date Sampled				12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
SVOCs						
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-
Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	< 0.2	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	NONE	< 0.1	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	< 0.1	< 0.1	-
2-Methylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Hexachloroethane	mg/kg	0.05	NONE	< 0.05	< 0.05	-
Nitrobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Isophorone	mg/kg	0.2	NONE	< 0.2	< 0.2	-
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Naphthalene	mg/kg	0.05	NONE	25	7.7	-
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	NONE	< 0.1	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	24	6.6	-
2-Chloronaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-
Dimethylphthalate	mg/kg	0.1	NONE	< 0.1	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	-
Acenaphthylene	mg/kg	0.05	NONE	3	< 0.05	-
Acenaphthene	mg/kg	0.05	NONE	71	29	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Dibenzofuran	mg/kg	0.2	NONE	32	9.1	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Diethyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	-
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Fluorene	mg/kg	0.05	NONE	55	27	-
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Phenanthrene	mg/kg	0.05	NONE	370	67	-
Anthracene	mg/kg	0.05	NONE	110	26	-
Carbazole	mg/kg	0.3	NONE	20	2.9	-
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	-
Anthraquinone	mg/kg	0.3	NONE	21	2	-
Fluoranthene	mg/kg	0.05	NONE	480	81	-
Pyrene	mg/kg	0.05	NONE	480	81	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	NONE	220	42	-
Chrysene	mg/kg	0.05	NONE	230	38	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	210	38	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	120	11	-

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463402	2463403	2463404
Sample Reference				TP111	TP107	TP109
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.60	2.50
Date Sampled				12/10/2022	12/10/2022	12/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Benzo(a)pyrene	mg/kg	0.05	NONE	190	32	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	84	15	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	26	6.1	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	99	19	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463405	2463406	2463437
Sample Reference				TP123	TP119	TP103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.20	0.60
Date Sampled				12/10/2022	12/10/2022	13/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	7.8	7.9	7.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Total Phenols						
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	1.4
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids						
Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	26	< 1.0
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	4.6	1.3	1.2
Copper (dissolved)	µg/l	0.7	ISO 17025	12	18	7.2
Lead (dissolved)	µg/l	1	ISO 17025	5.7	8.6	4.8
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.8	7.6	6.6
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	35	27	12
Monoaromatics & Oxygenates						
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10

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Analytical Report Number: 22-90537
Project / Site name: Benett Street

Lab Sample Number				2463405	2463406	2463437
Sample Reference				TP123	TP119	TP103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.20	0.60
Date Sampled				12/10/2022	12/10/2022	13/10/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Petroleum Hydrocarbons						
TPH1 (C10 - C40) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10

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Analytical Report Number : 22-90537
Project / Site name: Benett Street

* 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 *
2463387	TP127	None Supplied	2.2	Brown clay and loam.
2463388	TP123	None Supplied	1.9	Brown clay and sand.
2463389	TP124	None Supplied	0.7	Brown sandy gravel.**
2463390	TP126	None Supplied	1	Brown sandy clay with gravel.
2463391	TP120	None Supplied	0.8	Brown clay and sand with gravel.
2463392	TP129	None Supplied	0.4	Brown clay and sand with gravel and vegetation.
2463393	TP116	None Supplied	1.5	Brown clay and sand with gravel.
2463394	TP118	None Supplied	1.2	Brown sandy gravel.**
2463395	TP130	None Supplied	0.6	Brown sandy gravel.**
2463396	TP122	None Supplied	0.9	Brown sandy gravel.**
2463397	TP112	None Supplied	0.6	Brown sandy gravel.**
2463398	TP106	None Supplied	0.9	Brown sandy clay.
2463399	TP103	None Supplied	0.6	Brown clay and sand with gravel.
2463400	TP103	None Supplied	2	Brown clay and sand with gravel.
2463401	TP102	None Supplied	0.4	Brown sandy clay with gravel.
2463402	TP111	None Supplied	0.8	Brown sandy clay with gravel and tar.
2463403	TP107	None Supplied	1.6	Brown sandy clay with gravel and vegetation.
2463404	TP109	None Supplied	2.5	Brown clay and sand.

**Non MCERTS Matrix

Analytical Report Number : 22-90537
Project / Site name: Benett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
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	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	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.	L039-PL	W	ISO 17025
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	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 (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
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
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	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.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	MCERTS

Analytical Report Number : 22-90537
Project / Site name: Benett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
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
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

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

Analytical Report Number : 22-90537
Project / Site name: Benett Street

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

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Analytical Report Number : 22-94889

Project / Site name:	Bennet Street	**Samples received on:**	04/11/2022
Your job number:	13928	**Samples instructed on/ Analysis started on:**	04/11/2022
Your order number:	15974JJ	**Analysis completed by:**	11/11/2022
Report Issue Number:	1	**Report issued on:**	11/11/2022
Samples Analysed:	4 water samples		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-94889
Project / Site name: Bennet Street

Your Order No: 15974JJ

Lab Sample Number				2489199	2489200	2489201	2489202
Sample Reference				BH201	BH202	BH203	BH204
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				03/11/2022	03/11/2022	03/11/2022	03/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH	pH Units	N/A	ISO 17025	7	7.5	7.3	7.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1.5
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	14.9	4.46	2.05	3.59
Total Phenols							
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Heavy Metals / Metalloids							
Calcium (dissolved)	mg/l	0.012	ISO 17025	230	100	110	180
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	5.1	1.51	2.29	0.55
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.03	0.06	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.2	< 0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	4.8	4.6	1.2	2.9
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	0.3
Manganese (dissolved)	µg/l	0.05	ISO 17025	4100	380	220	1100
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.3	2	0.6	1.9
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.3	2.2	< 0.6	0.9
Zinc (dissolved)	µg/l	0.5	ISO 17025	5.1	6.9	5	1.8
Monoaromatics & Oxygenates							
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH1 (C10 - C40) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10

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Analytical Report Number: 22-94889
Project / Site name: Bennet Street

Your Order No: 15974JJ

Lab Sample Number				2489199	2489200	2489201	2489202
Sample Reference				BH201	BH202	BH203	BH204
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				03/11/2022	03/11/2022	03/11/2022	03/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
VOCs							
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 22-94889
Project / Site name: Bennet Street

Your Order No: 15974JJ

Lab Sample Number				2489199	2489200	2489201	2489202
Sample Reference				BH201	BH202	BH203	BH204
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				03/11/2022	03/11/2022	03/11/2022	03/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
SVOCs							
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	0.27	< 0.01	0.23
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.84	< 0.01	0.41
Pyrene	µg/l	0.01	ISO 17025	< 0.01	0.79	< 0.01	0.38

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Analytical Report Number: 22-94889
Project / Site name: Bennet Street

Your Order No: 15974JJ

Lab Sample Number				2489199	2489200	2489201	2489202
Sample Reference				BH201	BH202	BH203	BH204
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				03/11/2022	03/11/2022	03/11/2022	03/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	0.46	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	0.51	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.66	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.24	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.51	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.34	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	0.38	< 0.01	< 0.01

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-94889
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	ISO 17025

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

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4041

Analytical Report Number : 22-94889
Project / Site name: Bennet Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

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Analytical Report Number : 22-94889
Project / Site name: Bennet Street

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.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH201	None Supplied	W	2489199	c	pH at 20oC in water (automated)	L099-PL	c
BH202	None Supplied	W	2489200	c	pH at 20oC in water (automated)	L099-PL	c
BH203	None Supplied	W	2489201	c	pH at 20oC in water (automated)	L099-PL	c
BH204	None Supplied	W	2489202	c	pH at 20oC in water (automated)	L099-PL	c

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4041

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Analytical Report Number : 22-97570

Project / Site name:	Bennett Street	**Samples received on:**	18/11/2022
Your job number:	15-974	**Samples instructed on/ Analysis started on:**	18/11/2022
Your order number:	003520	**Analysis completed by:**	23/11/2022
Report Issue Number:	1	**Report issued on:**	24/11/2022
Samples Analysed:	2 water samples		

Signed:

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

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

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

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

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

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

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

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Analytical Report Number: 22-97570
Project / Site name: Bennett Street

Your Order No: 003520

Lab Sample Number				2504361	2504430
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				10/11/2022	10/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	5.16	0.82
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.07	0.05
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	3.6	4.6
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.8	1
Zinc (dissolved)	µg/l	0.5	ISO 17025	42	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-97570
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

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.

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

Analytical Report Number : 22-97570
Project / Site name: Bennett Street

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.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
SW1	None Supplied	W	2504361	c	Hexavalent chromium in water	L080-PL	c
SW1	None Supplied	W	2504361	c	Cr (III) in water	L080-PL	c
SW1	None Supplied	W	2504361	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
SW1	None Supplied	W	2504361	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
SW1	None Supplied	W	2504361	c	pH at 20oC in water (automated)	L099-PL	c
SW2	None Supplied	W	2504430	c	Hexavalent chromium in water	L080-PL	c
SW2	None Supplied	W	2504430	c	Cr (III) in water	L080-PL	c
SW2	None Supplied	W	2504430	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
SW2	None Supplied	W	2504430	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
SW2	None Supplied	W	2504430	c	Settleable Solids in water	L004-PL	c
SW2	None Supplied	W	2504430	c	Suspended solids in water	L004-PL	c
SW2	None Supplied	W	2504430	c	pH at 20oC in water (automated)	L099-PL	c

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Analytical Report Number : 22-98874

Project / Site name:	Bennett Street	**Samples received on:**	24/11/2022
Your job number:	15-974	**Samples instructed on/ Analysis started on:**	24/11/2022
Your order number:	003588	**Analysis completed by:**	01/12/2022
Report Issue Number:	1	**Report issued on:**	01/12/2022
Samples Analysed:	2 water samples		

Signed: _____

Karolina Marek
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

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

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

Analytical Report Number: 22-98874
Project / Site name: Bennett Street

Your Order No: 003588

Lab Sample Number				2511570	2511571
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2022	23/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH	pH Units	N/A	ISO 17025	7.9	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	2.5
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	6.13	2.66
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	3.6	3.4
Heavy Metals / Metalloids					
Calcium (dissolved)	mg/l	0.012	ISO 17025	42	98
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.92	0.9
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.06
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	1.4	4.7
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	85	100
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.2	1.8
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.7	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	30	29
Monoaromatics & Oxygenates					
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0
Petroleum Hydrocarbons					
TPH1 (C10 - C40) EH_1D_TOTAL_MS *	µg/l	10	NONE	910	97
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	70	30
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	110	30
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	330	37
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	400	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	910	97

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Analytical Report Number: 22-98874
Project / Site name: Bennett Street

Your Order No: 003588

Lab Sample Number				2511570	2511571
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2022	23/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
VOCs					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0

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4041

Analytical Report Number: 22-98874
Project / Site name: Bennett Street

Your Order No: 003588

Lab Sample Number				2511570	2511571
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2022	23/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0

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Analytical Report Number: 22-98874
Project / Site name: Bennett Street

Your Order No: 003588

Lab Sample Number				2511570	2511571
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2022	23/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
SVOCs					
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	36	8.9
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	0.83	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.65	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	0.24	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	0.21	< 0.01
Anthracene	µg/l	0.01	ISO 17025	0.11	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	0.45	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.42	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01

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4041

Analytical Report Number: 22-98874
Project / Site name: Bennett Street

Your Order No: 003588

Lab Sample Number				2511570	2511571
Sample Reference				SW1	SW2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2022	23/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample
*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number : 22-98874
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	ISO 17025

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

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Analytical Report Number : 22-98874
Project / Site name: Bennett Street

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

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LABORATORY REPORT

4043

Contract Number: PSL21/9931

Report Date: 14 February 2022

Client's Reference: 15-425

Client Name: E3P
Taylor Road
Urmston
Manchester
M41 7JQ

For the attention of: Eleanor Canham

Contract Title: Bennet Street

Date Received: 20/12/2021
Date Commenced: 20/12/2021
Date Completed: 8/2/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)
L Knight (Senior Technician)
S Eyre (Senior Technician)
T Watkins (Senior Technician)

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rberriman@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS102		Tub	2.00		Brown gravelly sandy CLAY.
WS114		Tub	1.00		Brown gravelly sandy CLAY.
WS117		Tub	2.00		Brown gravelly sandy CLAY.
WS121		Tub	2.00		Brown sandy CLAY.
WS123b		Tub	3.00		Brown slightly gravelly sandy CLAY.
WS126		Tub	2.00		Brown slightly gravelly slightly sandy CLAY.
WS130		Tub	2.00		Brown slightly gravelly slightly sandy CLAY with some organic material.
WS132		Tub	2.00		Brown slightly gravelly very sandy CLAY.
WS123b		Liner	2.50	3.00	Very Stiff Brown very sandy CLAY.
WS129		Liner	3.50	4.00	Very Stiff Brown very sandy CLAY.
WS131		Liner	1.50	2.00	Very Stiff Brown very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS102		Tub	2.00		16			36	18	18	88	Intermediate Plasticity CI
WS114		Tub	1.00		28			44	21	23	90	Intermediate Plasticity CI
WS117		Tub	2.00		30			47	22	25	89	Intermediate Plasticity CI
WS121		Tub	2.00		19			43	21	22	100	Intermediate Plasticity CI
WS123b		Tub	3.00		20			46	22	24	97	Intermediate Plasticity CI
WS126		Tub	2.00		34			53	25	28	97	High Plasticity CH
WS130		Tub	2.00		47			52	25	27	99	High Plasticity CH
WS132		Tub	2.00		16			34	17	17	96	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Bennet Street

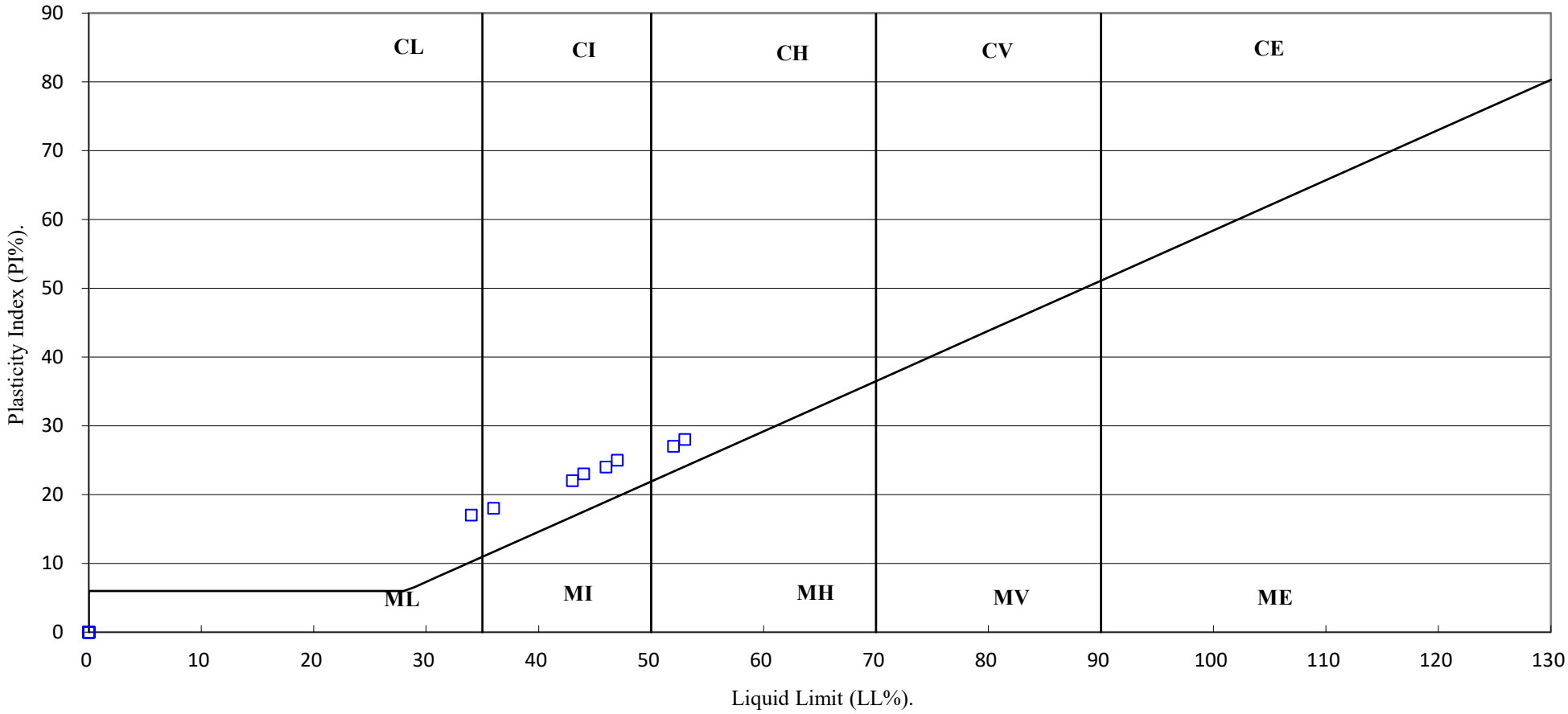
Contract No:

PSL21/9931

Client Ref:

15-425

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Bennet Street	Contract No: PSL21/9931 Client Ref: 15-425

ONE DIMENSIONAL CONSOLIDATION TEST

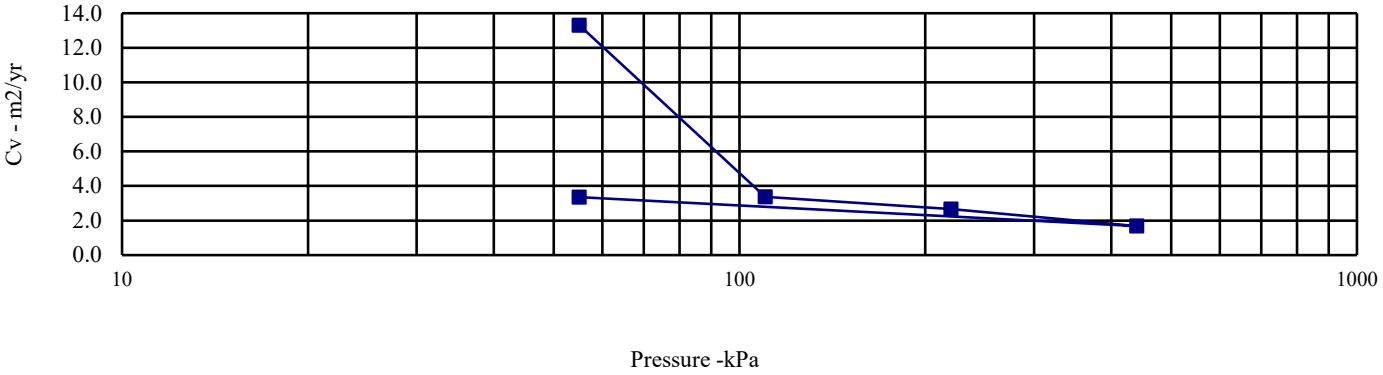
BS 1377: Part 5: 1990: Clause 3

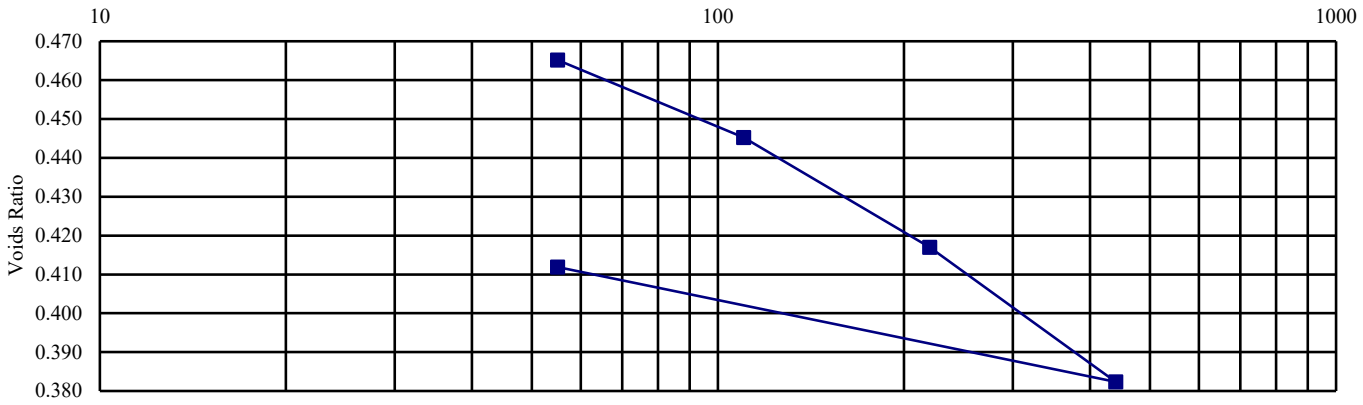
Hole Number: **WS123b** **Top Depth (m):** **2.50**

Sample Number: **Base Depth (m) :** **3.00**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	18						
Bulk Density (Mg/m3):	2.10	0	55	0.305	13.313	Method used to	
Dry Density (Mg/m3):	1.78	55	110	0.247	3.372	determine CV:	T90
Voids Ratio:	0.490	110	220	0.178	2.660	Nominal temperature	
Degree of saturation:	97.3	220	440	0.111	1.680	during test ' C:	20
Height (mm):	20.06	440	55	0.056	3.363	Remarks:	
Diameter (mm)	75.08					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043	PSL Professional Soils Laboratory	**Bennet Street**	**Contract No:** PSL21/9931 **Client Ref:** 15-425

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

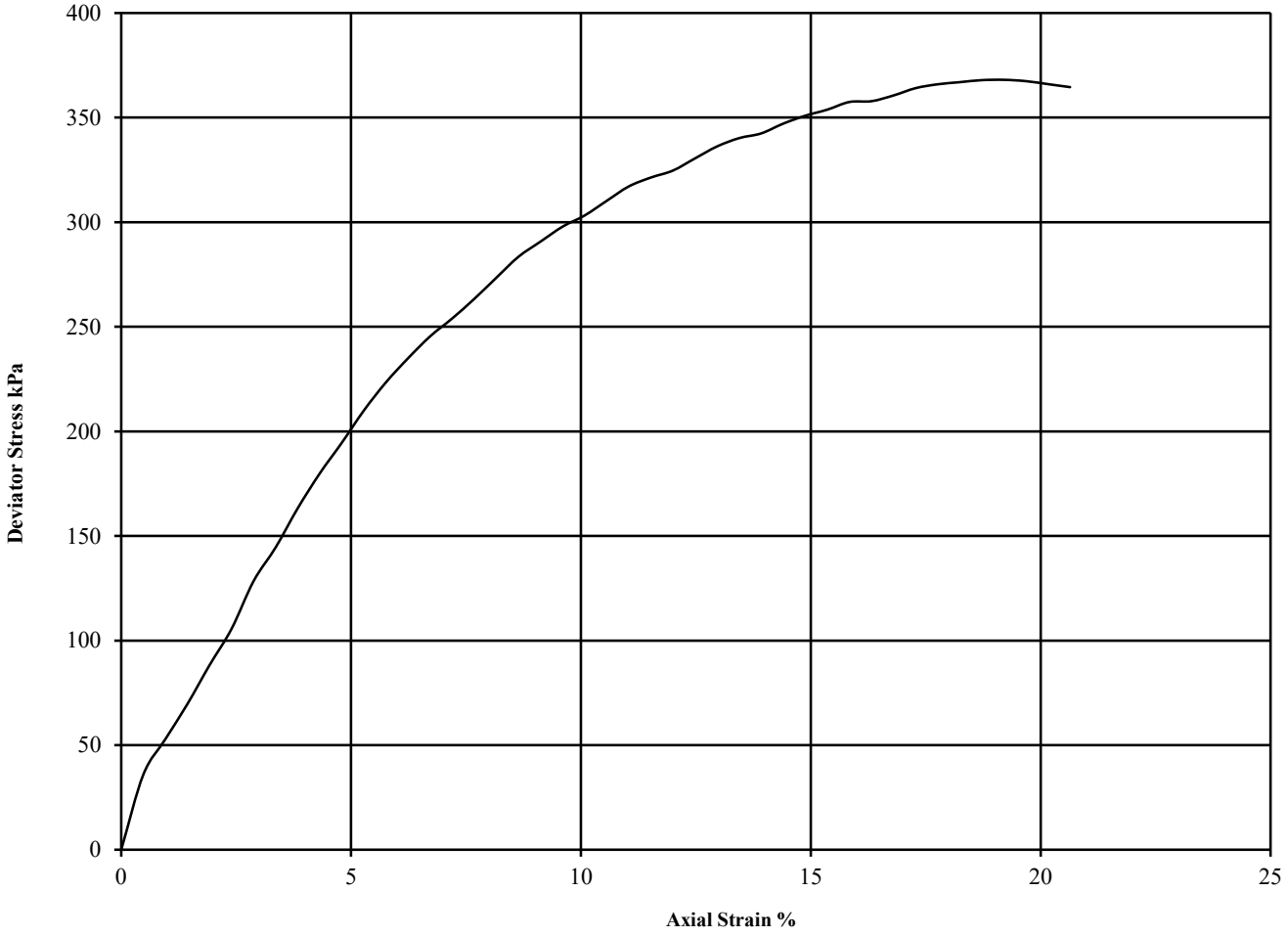
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **WS123b** **Top Depth (m):** **2.50**

Sample Number: **Base Depth (m):** **3.00**

Sample Type **Liner**



Diameter (mm):		72	Height (mm):		150	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.45
1	18	2.09	1.77	55	368	184	19.2	Plastic	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Bennet Street

Contract No: PSL21/9931

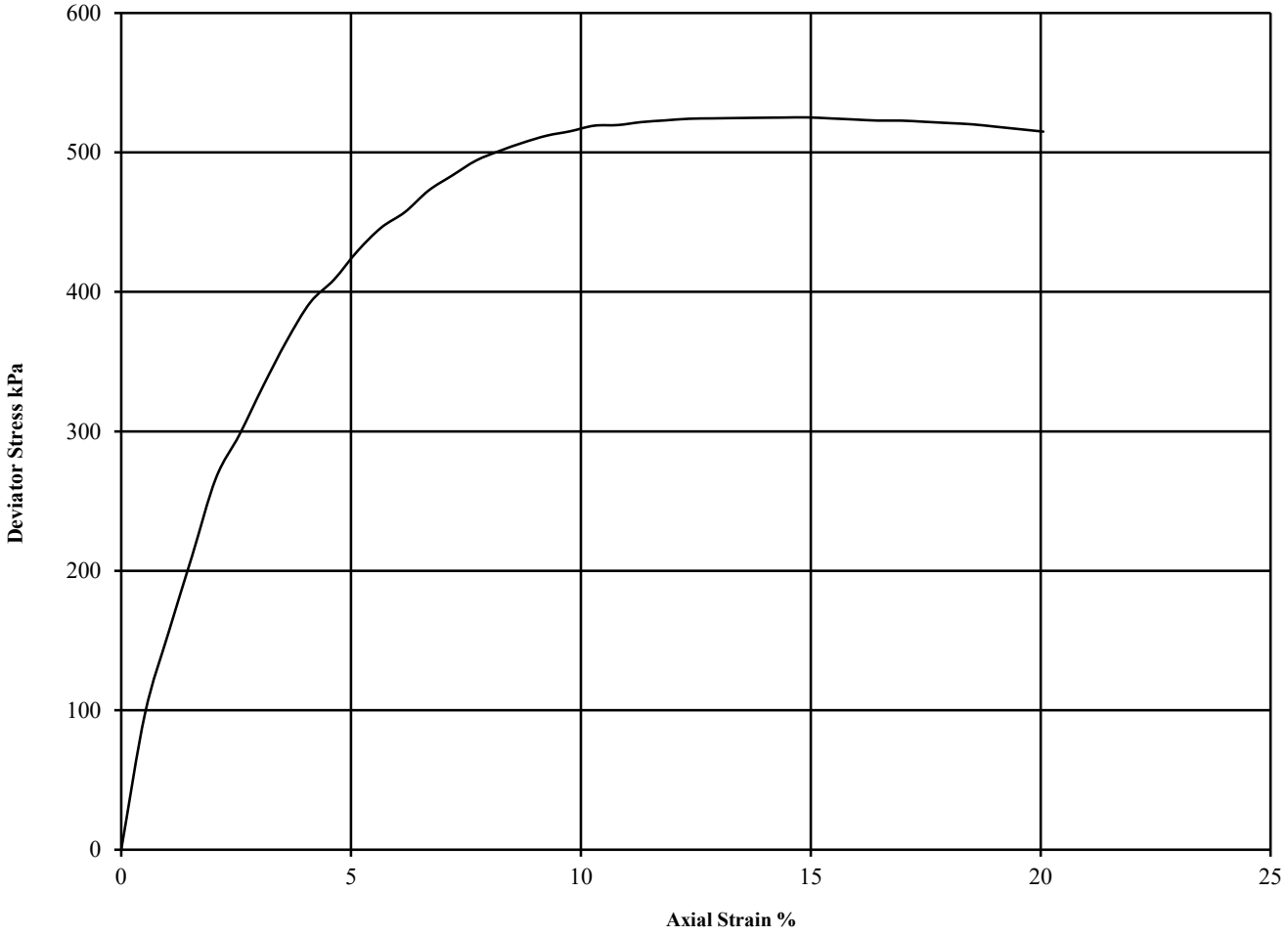
Client Ref: 15-425

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS129**	**Top Depth (m):**	**3.50**
Sample Number:		**Base Depth (m):**	**4.00**
Sample Type	**Liner**		



Diameter (mm):		72	Height (mm):		140	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.47
1	18	2.08	1.76	75	525	263	14.9	Brittle	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Bennet Street

Contract No:
PSL22/9931
Client Ref:
15-425

ONE DIMENSIONAL CONSOLIDATION TEST

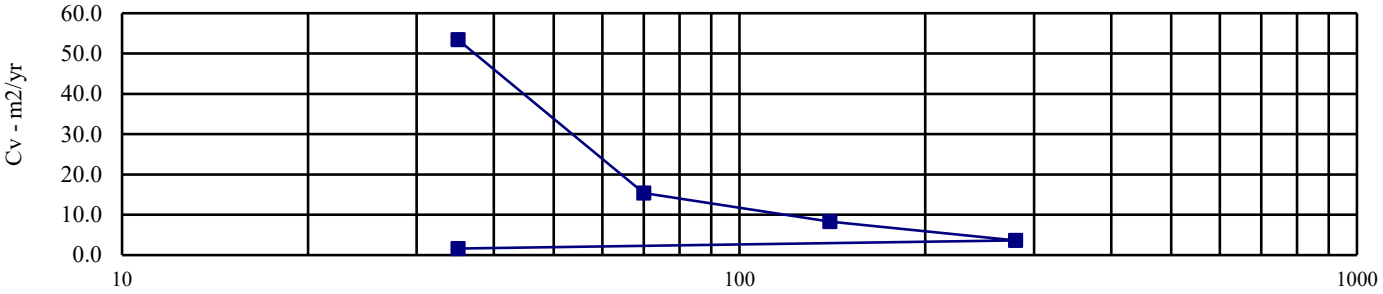
BS 1377: Part 5: 1990: Clause 3

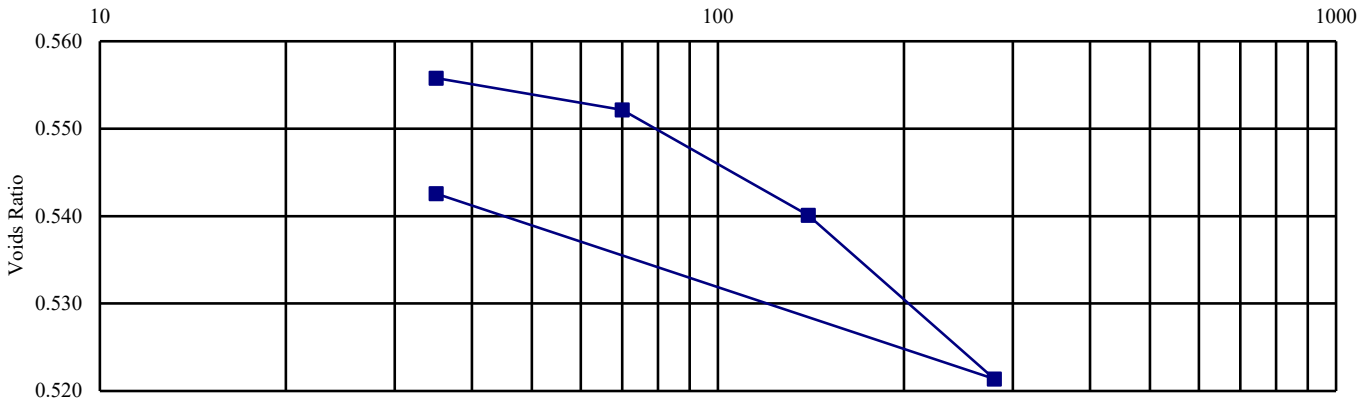
Hole Number: **WS131** **Top Depth (m):** **1.50**

Sample Number: **Base Depth (m) :** **2.00**

Sample Type: **Liner**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	18						
Bulk Density (Mg/m3):	2.01	0	35	0.087	53.427	Method used to	
Dry Density (Mg/m3):	1.70	35	70	0.067	15.372	determine CV:	T90
Voids Ratio:	0.561	70	140	0.111	8.323	Nominal temperature	
Degree of saturation:	87.4	140	280	0.087	3.617	during test ' C:	20
Height (mm):	20.09	280	35	0.057	1.629	Remarks:	
Diameter (mm)	75.07					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





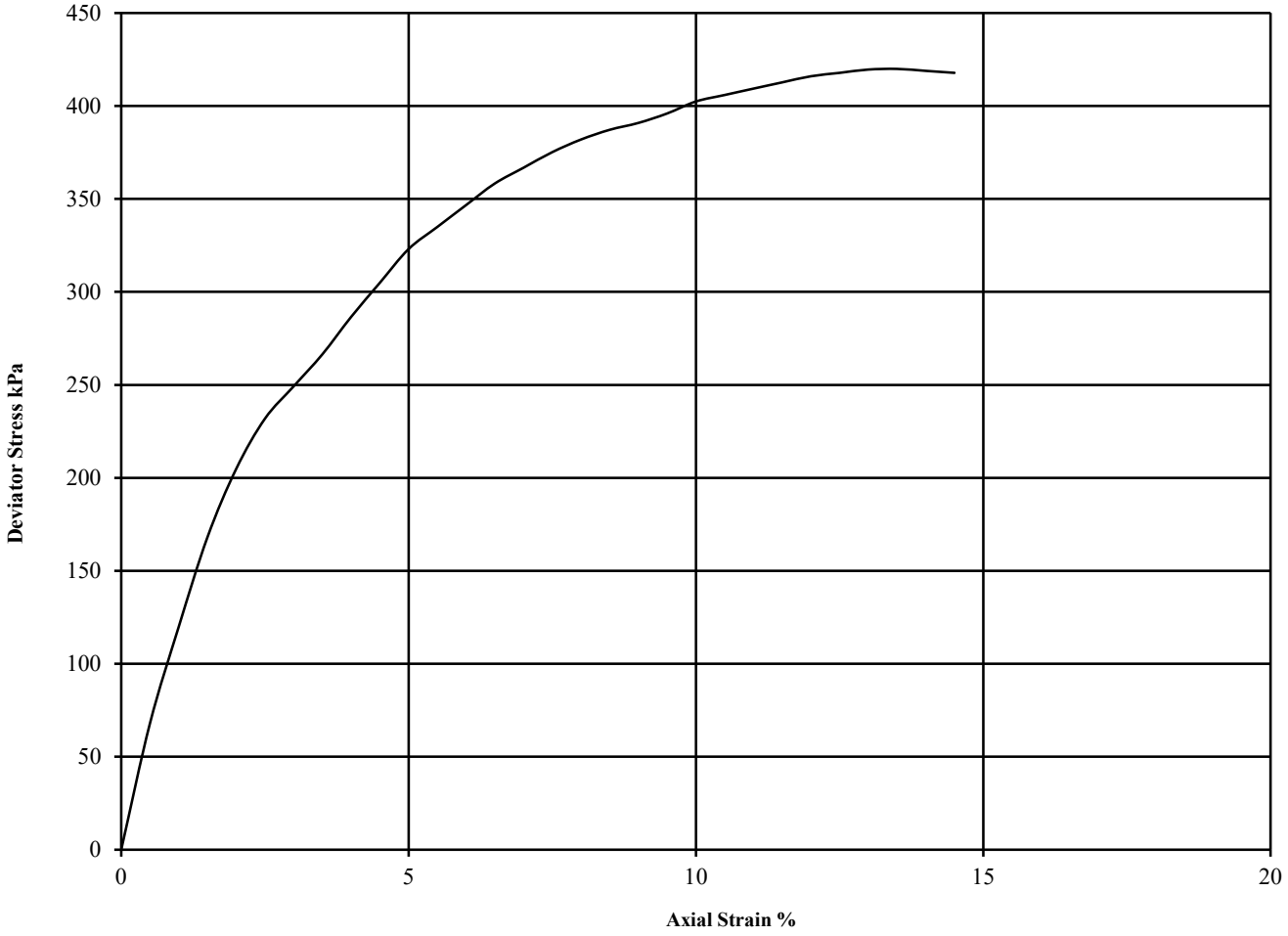
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Bennet Street**	**Contract No:** PSL21/9931 **Client Ref:** 15-425

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS131**	**Top Depth (m):**	**1.50**
Sample Number:		**Base Depth (m):**	**2.00**
Sample Type	**Liner**		



Diameter (mm):		85	Height (mm):		170	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.41 See summary of soil descriptions
1	18	1.97	1.66	35	420	210	13.5	Brittle	

UKAS TESTING 4043	PSL Professional Soils Laboratory	**Bennet Street**	**Contract No:** PSL22/9931 **Client Ref:** 15-425

APPENDIX VII
ORIGIN OF TIER I GENERIC ASSESSMENT CRITERIA

CONSTITUENT	ORIGIN OF RISK ASSESSMENT VALUE
Arsenic	2014 LQM/CIEH S4ULs
Cadmium	2014 LQM/CIEH S4ULs
Chromium	2014 LQM/CIEH S4ULs
Lead	2014 LQM/CIEH S4ULs
Mercury	2014 LQM/CIEH S4ULs – methylmercury
Nickel	2014 LQM/CIEH S4ULs
Selenium	2014 LQM/CIEH S4ULs
Copper	2014 LQM/CIEH S4ULs
Zinc	2014 LQM/CIEH S4ULs
Cyanide – Total	2014 LQM/CIEH S4ULs
Phenols – Total	2014 LQM/CIEH S4ULs
Naphthalene	General assessment criteria (GAC) developed by CIEH/LQM Suitable 4 Use Levels with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM.
Acenaphthylene	
Acenaphthene	
Fluorene	
Phenanthrene	
Anthracene	
Fluoranthene	
Pyrene	
Benzo(a)Anthracene	
Chrysene	
Benzo(b/k)Fluoranthene [iii]	
Benzo(a)Pyrene	
Indeno(123-cd)Pyrene	
Dibenzo(a,h)Anthracene	
Benzo(ghi)Perylene	
TPH C_5-C_6 (aliphatic)	
TPH C_6-C_8 (aliphatic)	
TPH C_8-C_{10} (aliphatic)	
TPH C_{10}-C_{12} (aliphatic)	
TPH C_{12}-C_{16} (aromatic)	
TPH C_{16}-C_{21} (aromatic)	
TPH C_{21}-C_{35} (aromatic)	

APPENDIX VIII
COAL AUTHORITY REPORT

Appendix H – Coal Authority Report

The Coal Authority

Resolving the impacts of mining

CON29M Non-Residential Mining Report







STORAGE LAND, OLYMPIC FREIGHT TERMINAL, BENNETT STREET, MANCHESTER, GREATER MANCHESTER M12 5NL

Date of enquiry:	15 November 2018
Date enquiry received:	15 November 2018
Issue date:	15 November 2018
Our reference:	51001968481001
Your reference:	GS-5619975

CON29M Non-Residential Mining Report

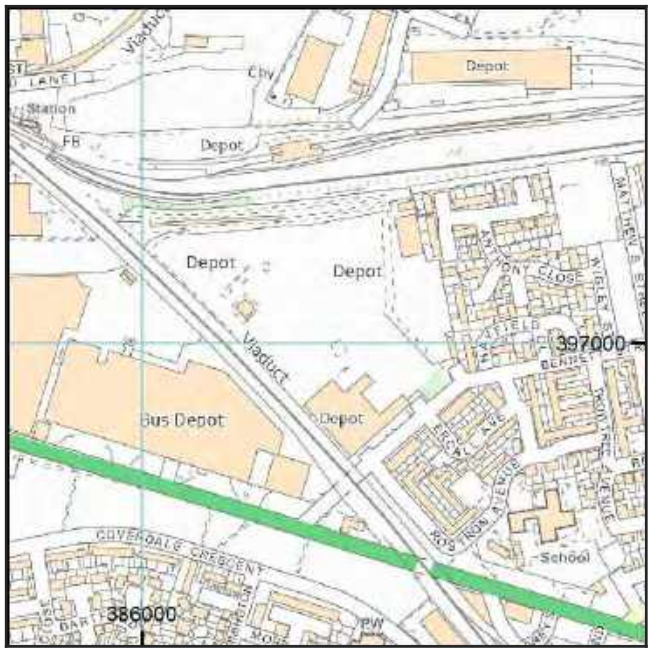
This report is based on, and limited to, the records held by the Coal Authority, at the time we answer the search.

Client name

GROUNDSURE LIMITED

Enquiry address

STORAGE LAND, OLYMPIC FREIGHT TERMINAL, BENNETT STREET, MANCHESTER,, GREATER MANCHESTER, M12 5NL



Approximate position of property

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Mansfield
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NG18 4RG

www.groundstability.com

/company/the-coal-authority
/thecoalauthority
/coalauthority

Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 4 seams of coal at 320m to 1090m depth, and last worked in 1957.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

2. Present underground coal mining

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

3. Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

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

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

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

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

4. Mine entries

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

5. Coal mining geology

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

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

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

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

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

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

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

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

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

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

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

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

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

14. Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Additional remarks

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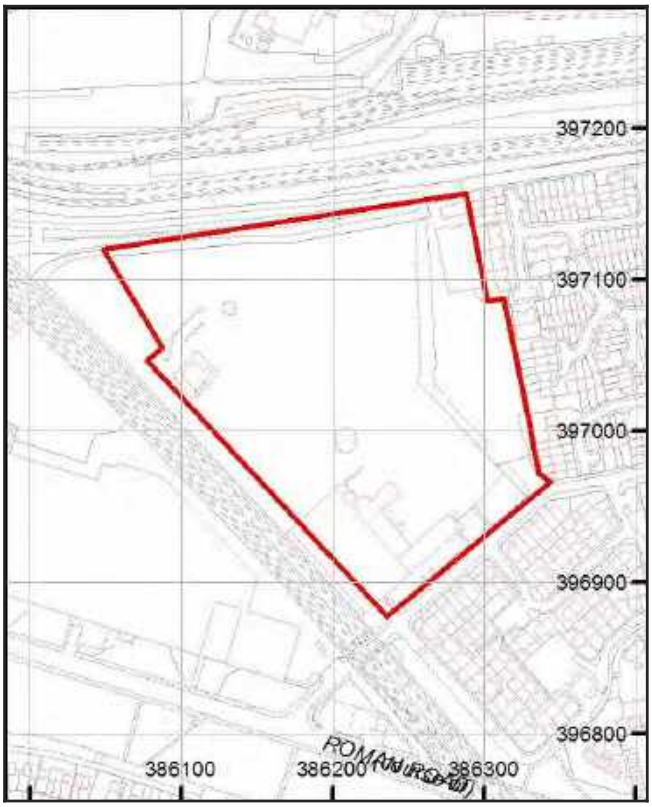
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



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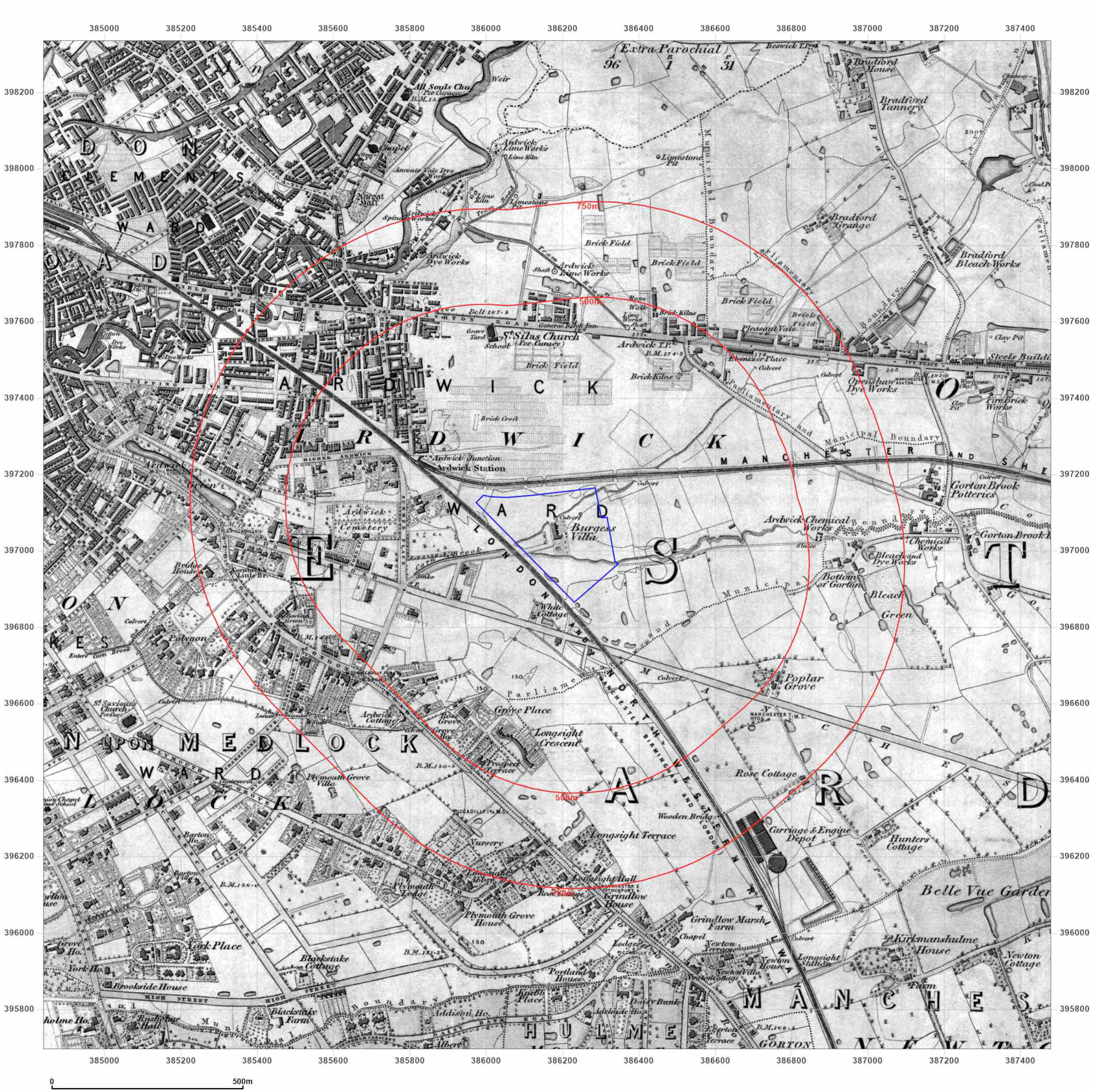
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Tel +44 (0)1342 327161
Registered office: 30 Berners Street, London, W1T 3LR;

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APPENDIX IX
HISTORICAL MAPS



Groundsure INSIGHTS

Site Details:

STORAGE LAND, OLYMPIC FREIGHT TERMINAL, BENNETT STREET, MANCHESTER, M12 5NL

Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1890-1891**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1891
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Edition 1891
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Levelled N/A

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Revised 1890
Edition 1890
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1905-1906**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1906
Edition 1906
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1905
Edition 1905
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1921
Edition 1923
Copyright N/A
Levelled 1906

Surveyed 1844
Revised 1915
Edition 1923
Copyright N/A
Levelled 1915

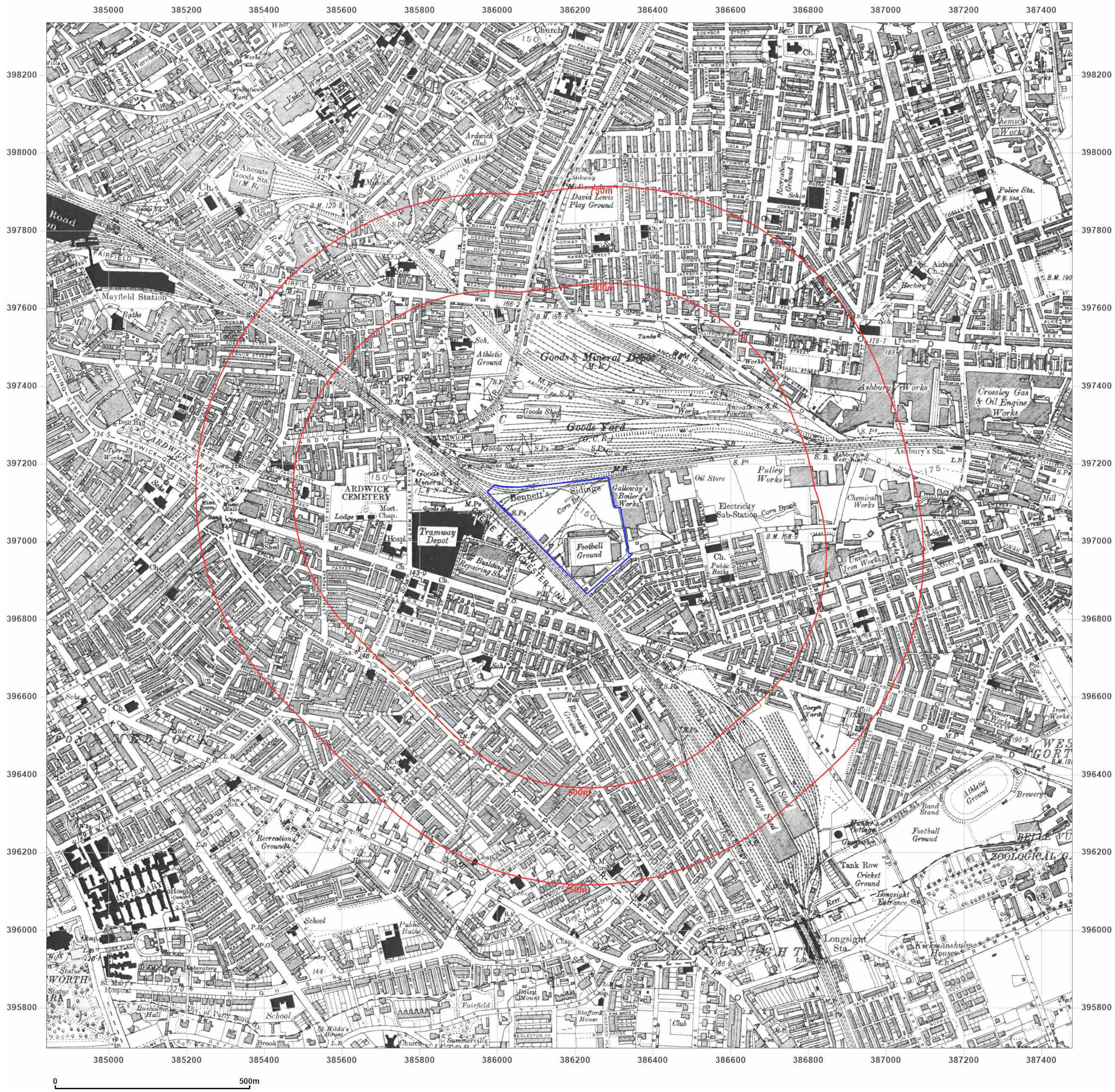
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Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1923**

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Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1933-1934**

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Printed at: 1:10,560

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Revised 1933
Edition 1933
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1934
Edition 1934
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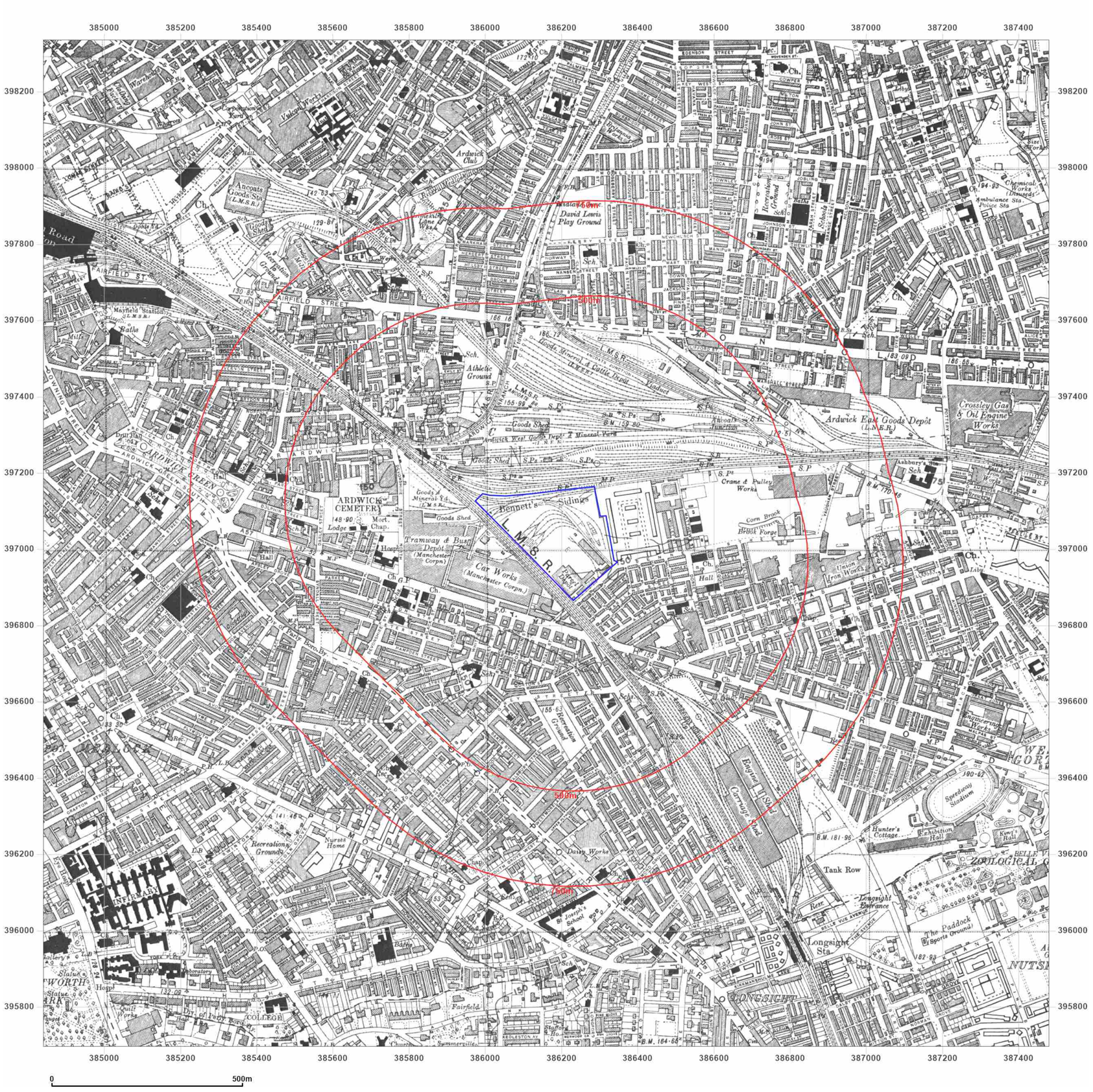
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

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Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

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Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

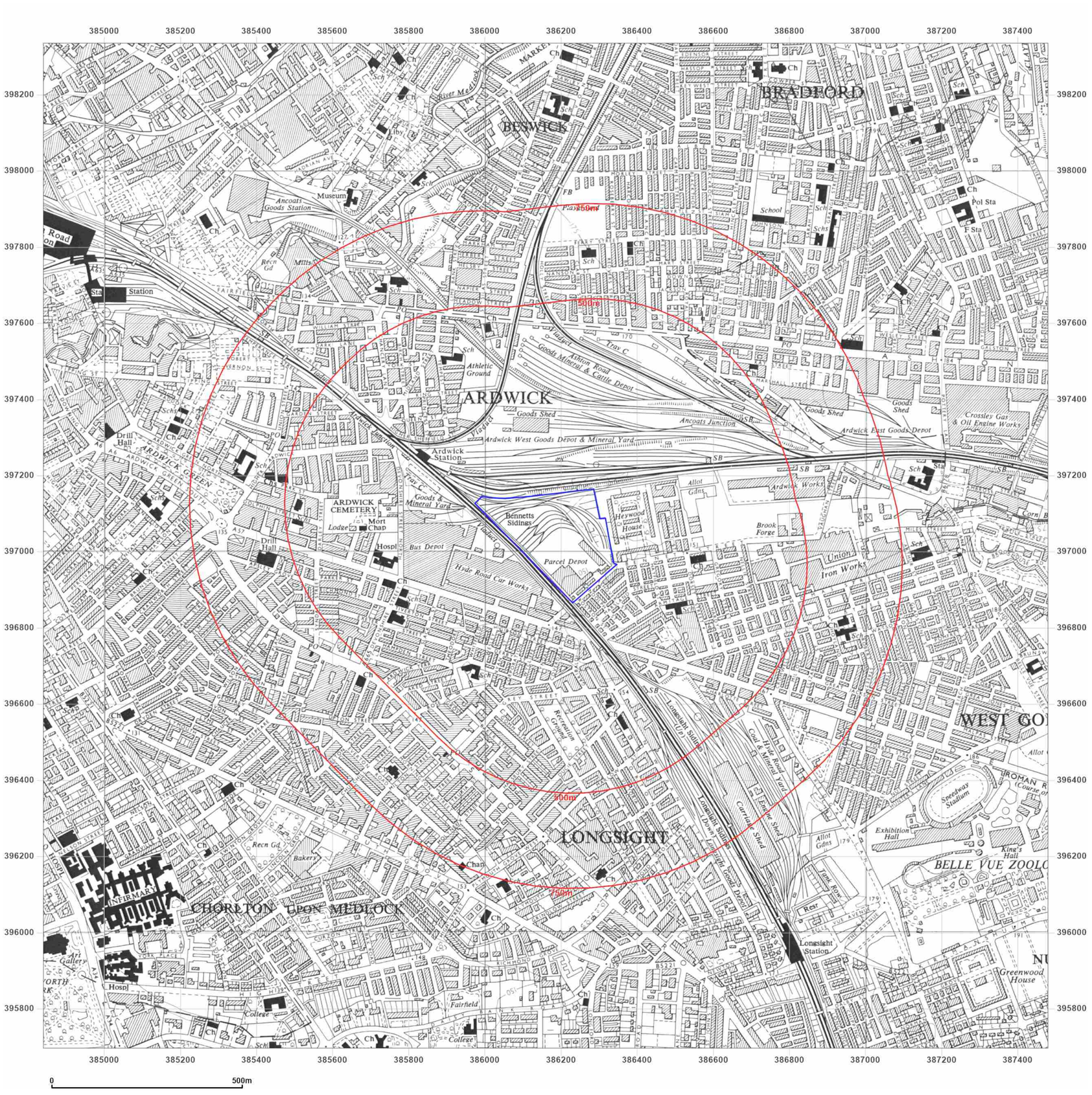
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: Provisional

Map date: **1956**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1956
Revised 1956
Edition N/A
Copyright 1956
Levelled N/A

Surveyed 1956
Revised 1956
Edition N/A
Copyright 1956
Levelled N/A

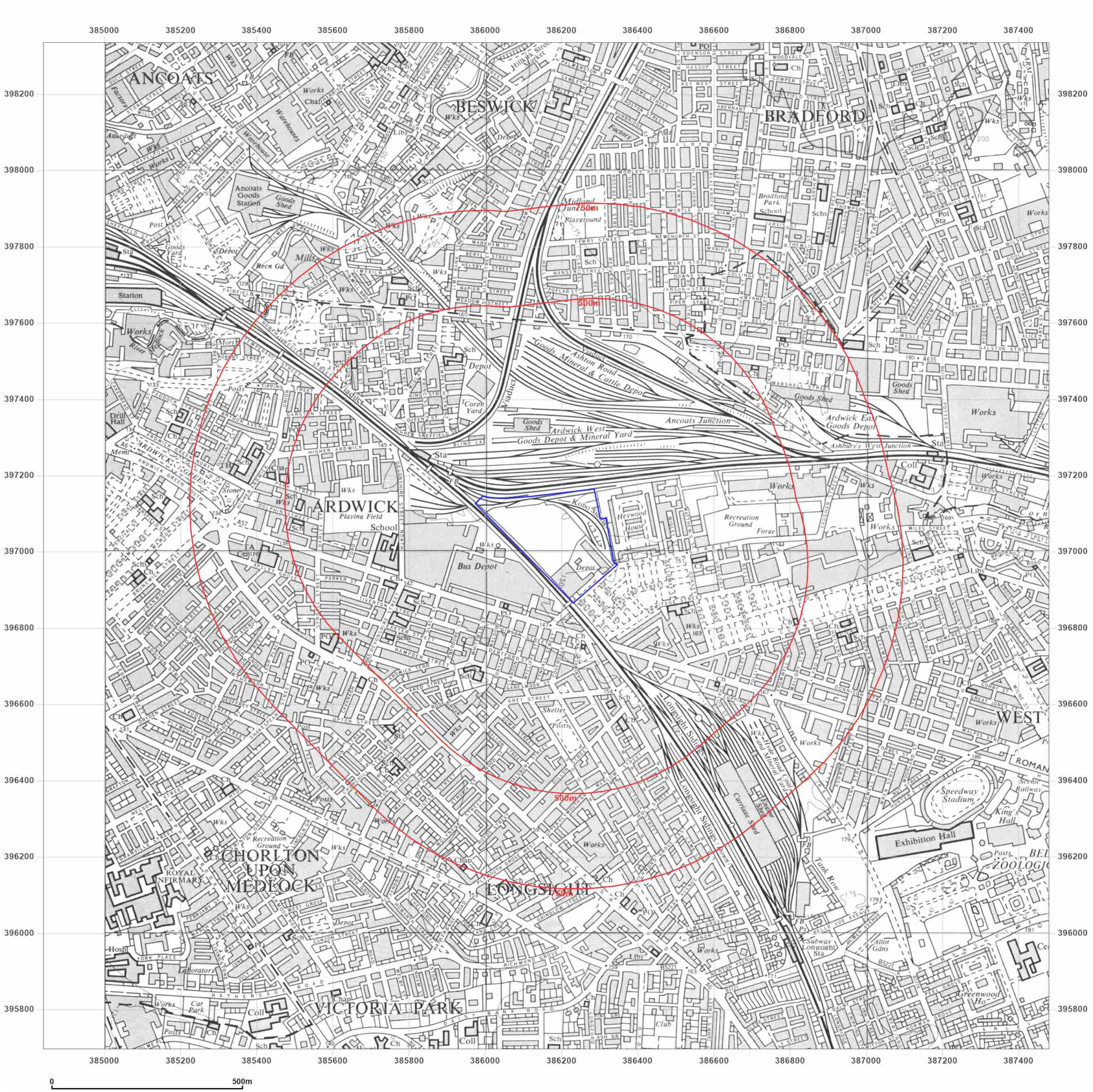
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Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: Provisional

Map date: **1968**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1968
Edition N/A
Copyright 1968
Levelled N/A

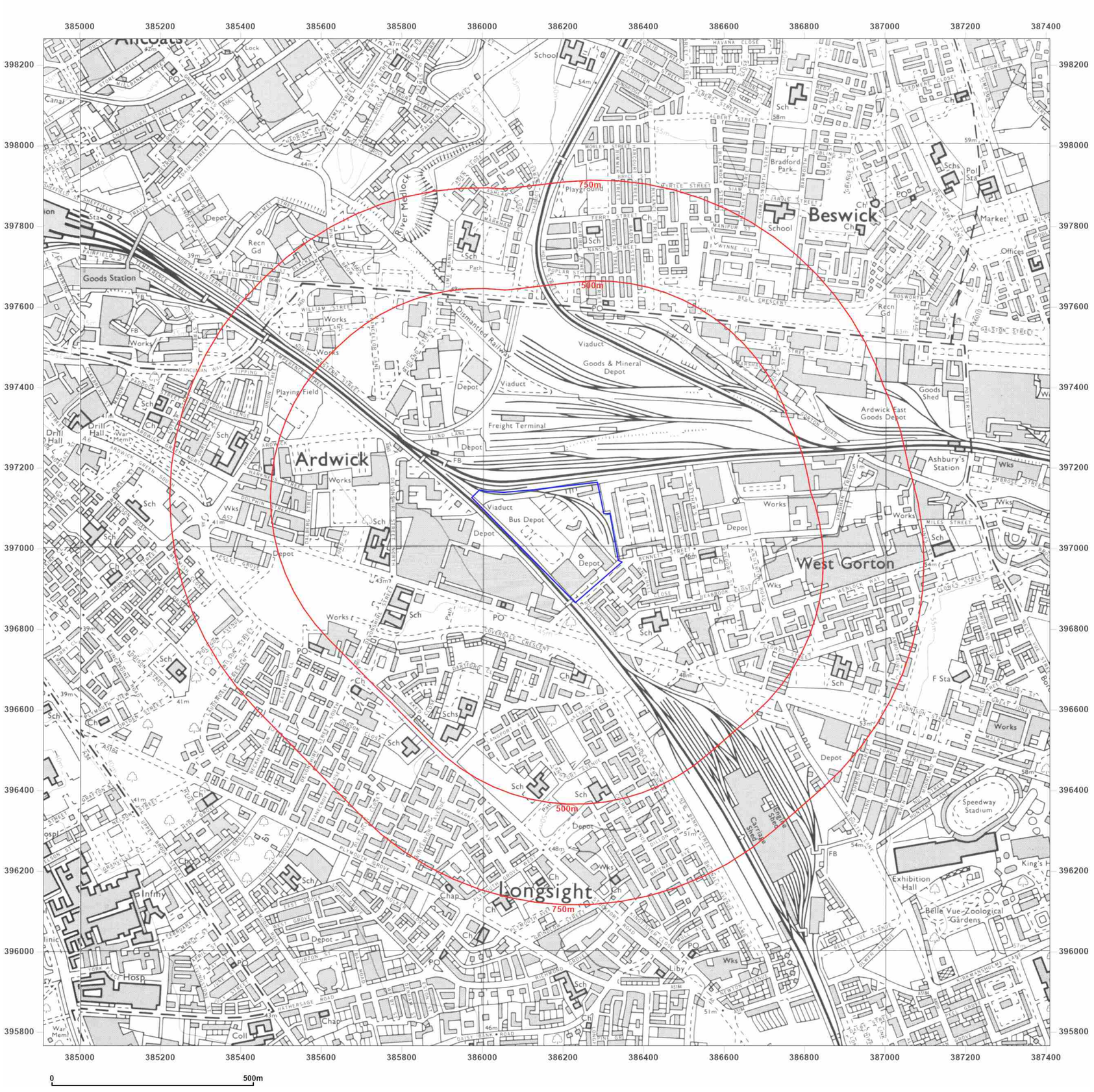
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1976 Revised 1980 Edition N/A Copyright 1980 Levelled 1976	Surveyed 1976 Revised 1980 Edition N/A Copyright 1981 Levelled 1976

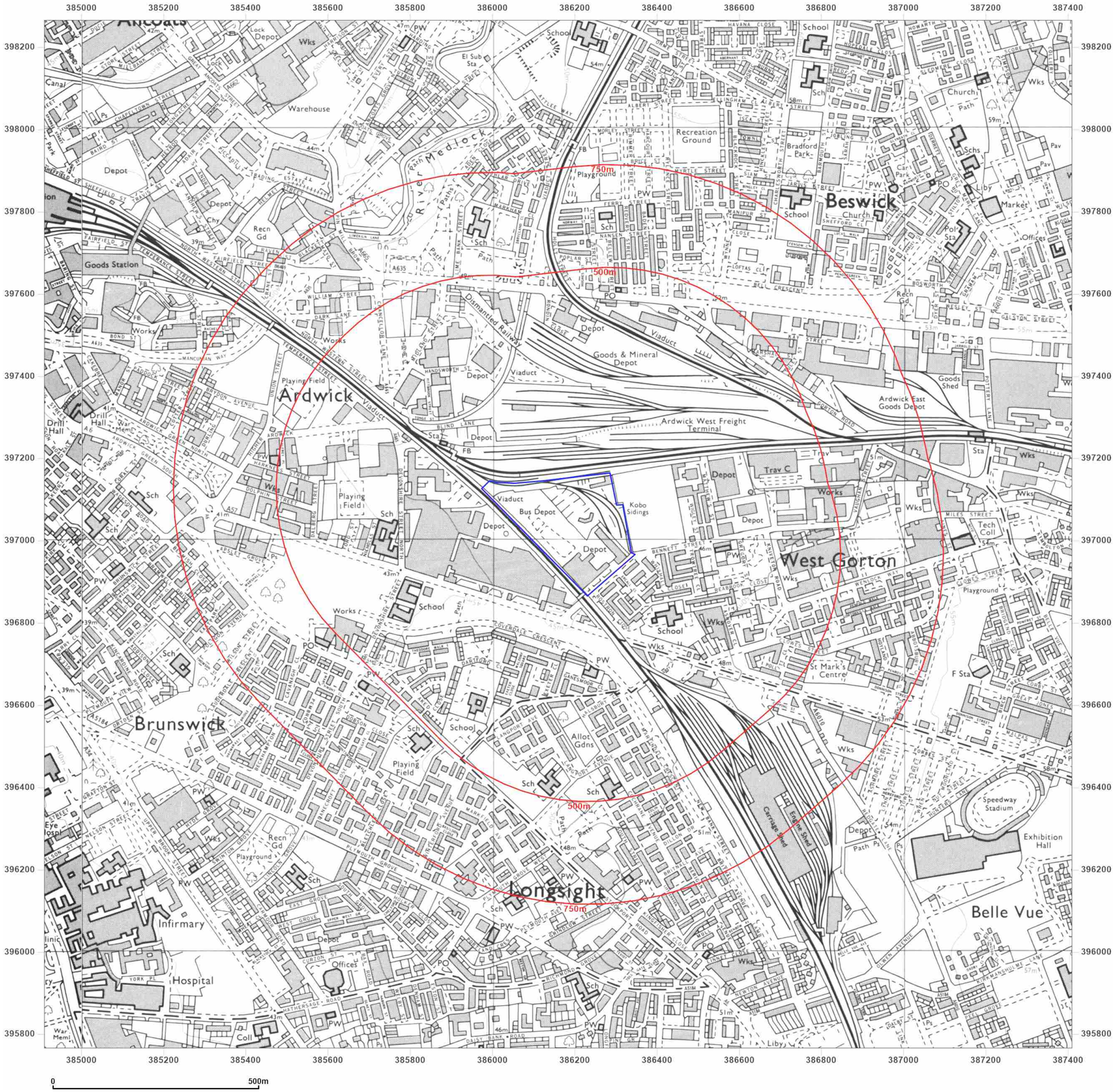
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1983
Revised 1985
Edition N/A
Copyright 1985
Levelled 1981

Surveyed 1985
Revised 1985
Edition N/A
Copyright 1985
Levelled 1981

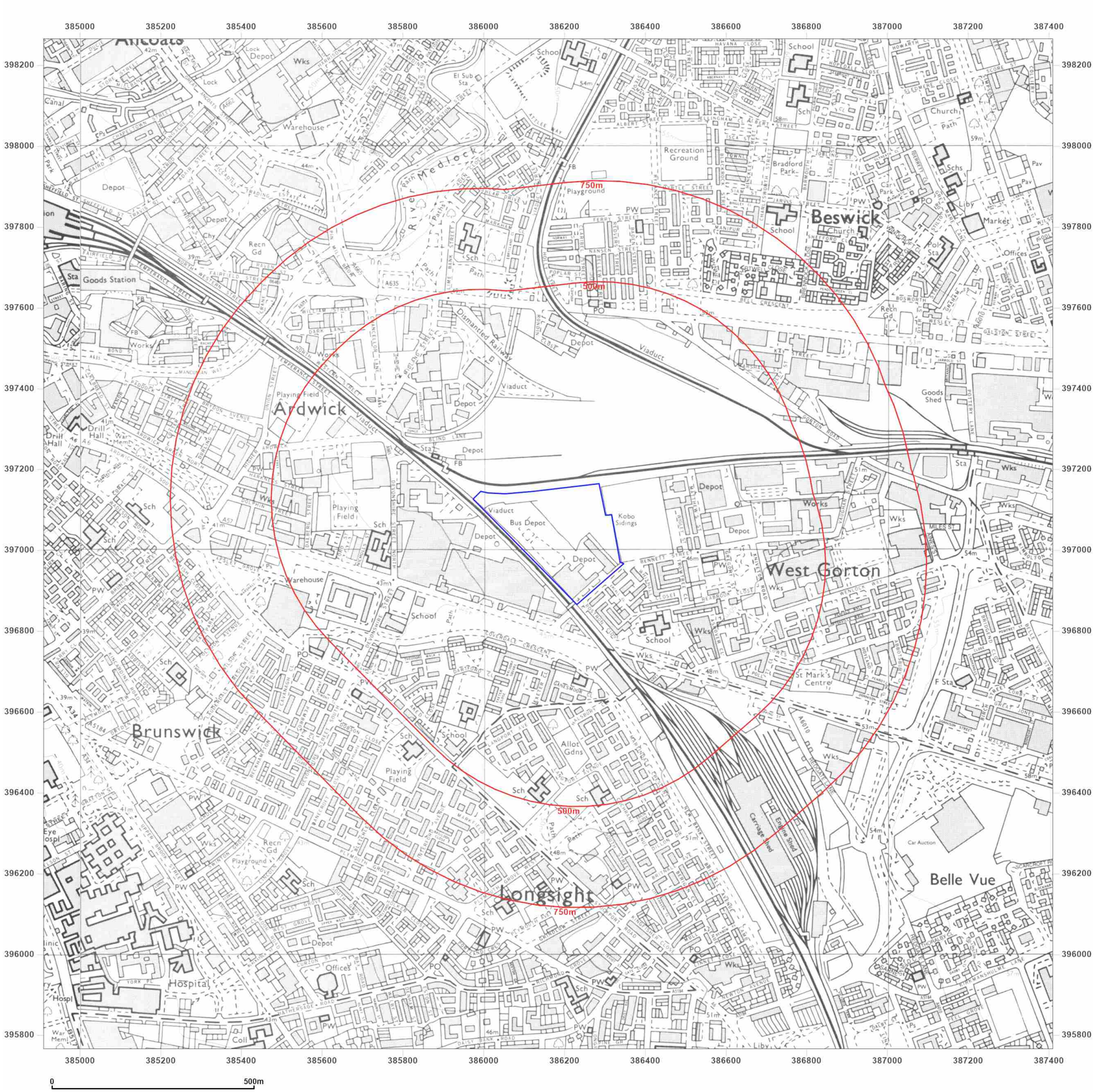
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **1988-1991**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1991
Edition N/A
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Levelled 1981

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Site Details:

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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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2001

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Site Details:

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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

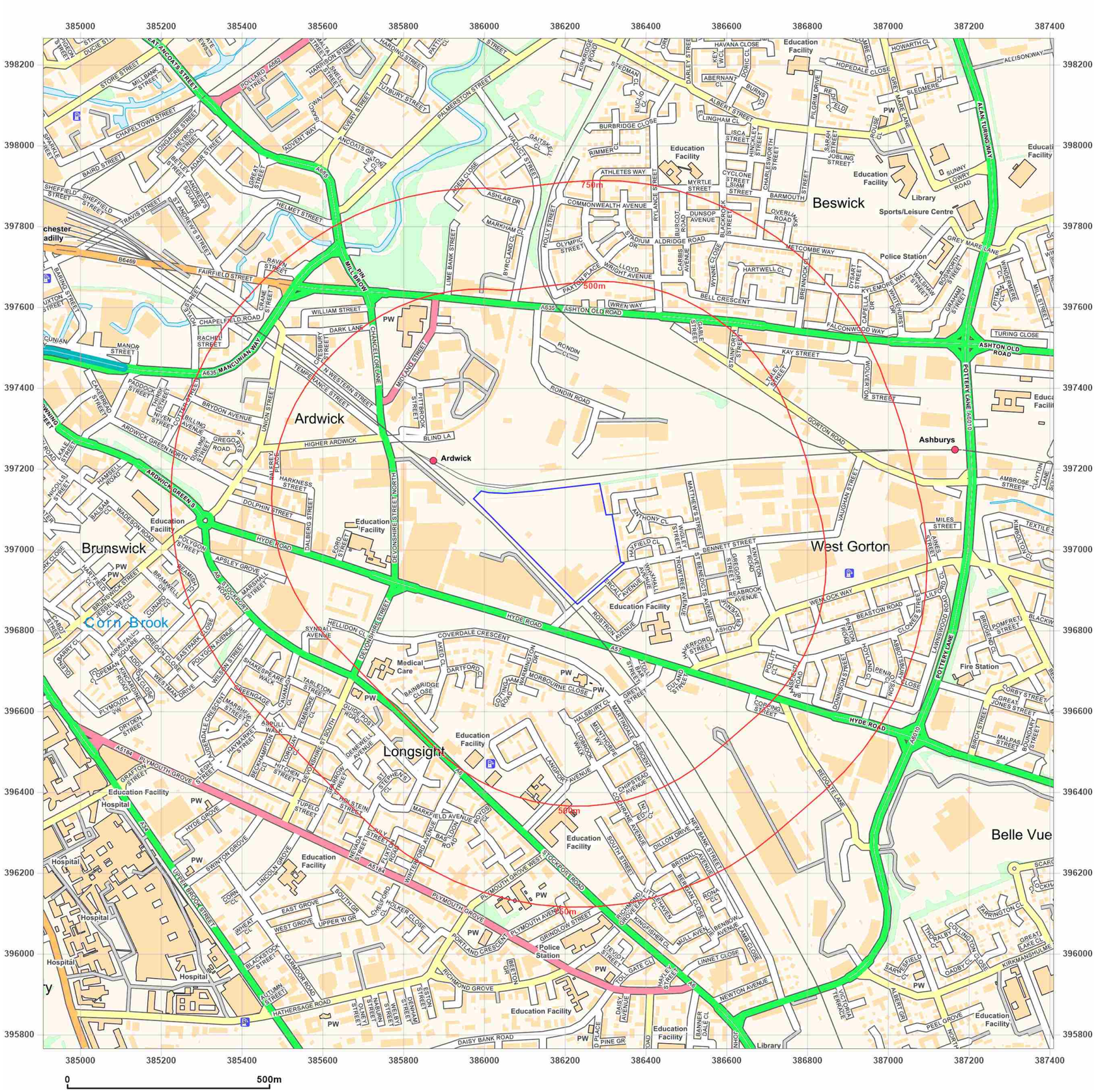
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Site Details:

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Client Ref: 15-425-HM-A
Report Ref: GS-8418437
Grid Ref: 386159, 397015

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

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2021

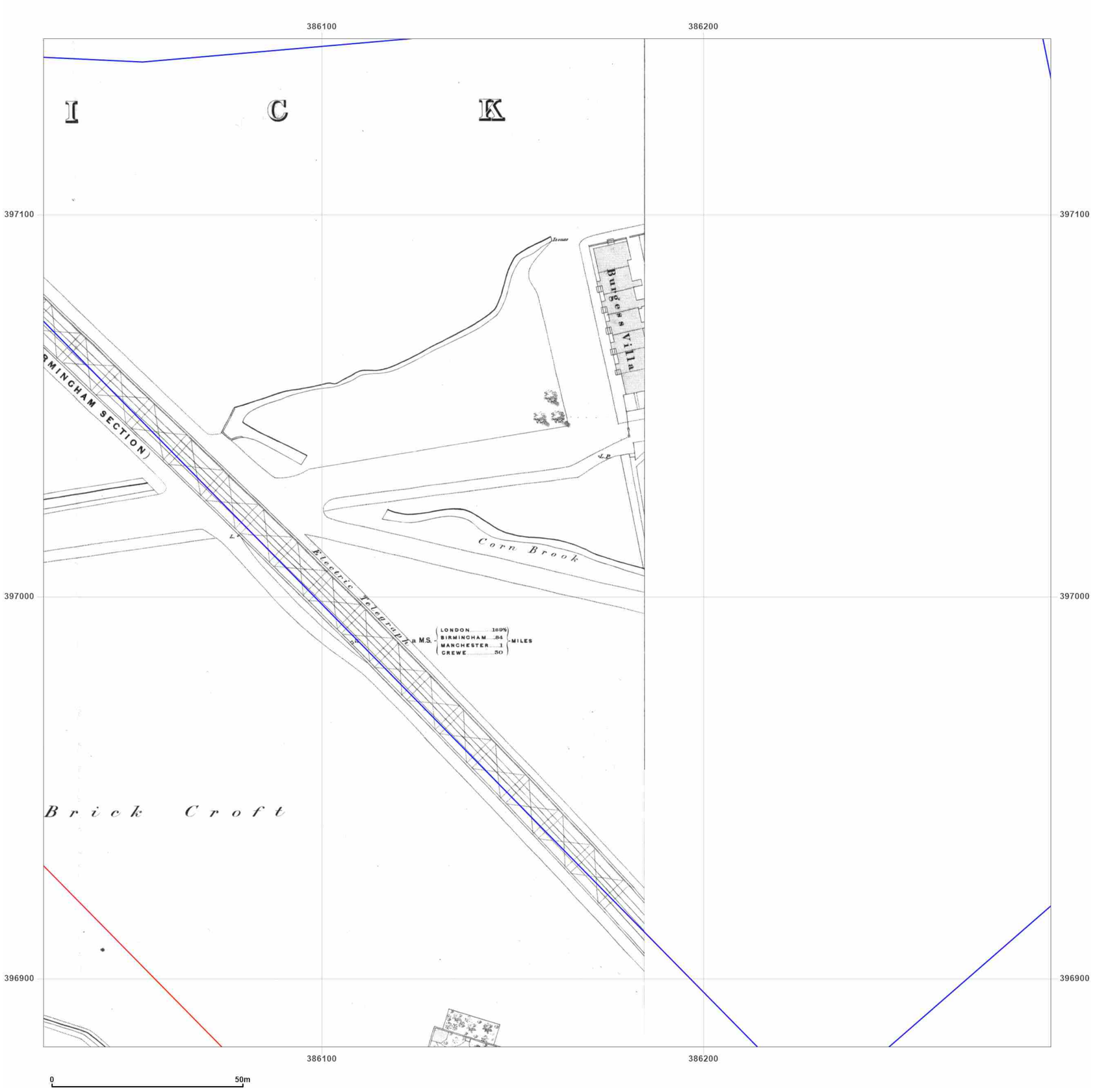
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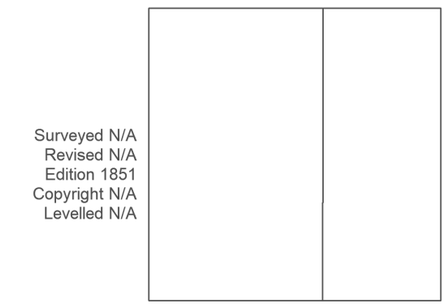
Site Details:

STORAGE LAND, OLYMPIC FREIGHT TERMINAL, BENNETT STREET, MANCHESTER, M12 5NL

Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: 1056 Scale Town Plan
Map date: **1851**
Scale: 1:1,056
Printed at: 1:1,056

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Surveyed N/A
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

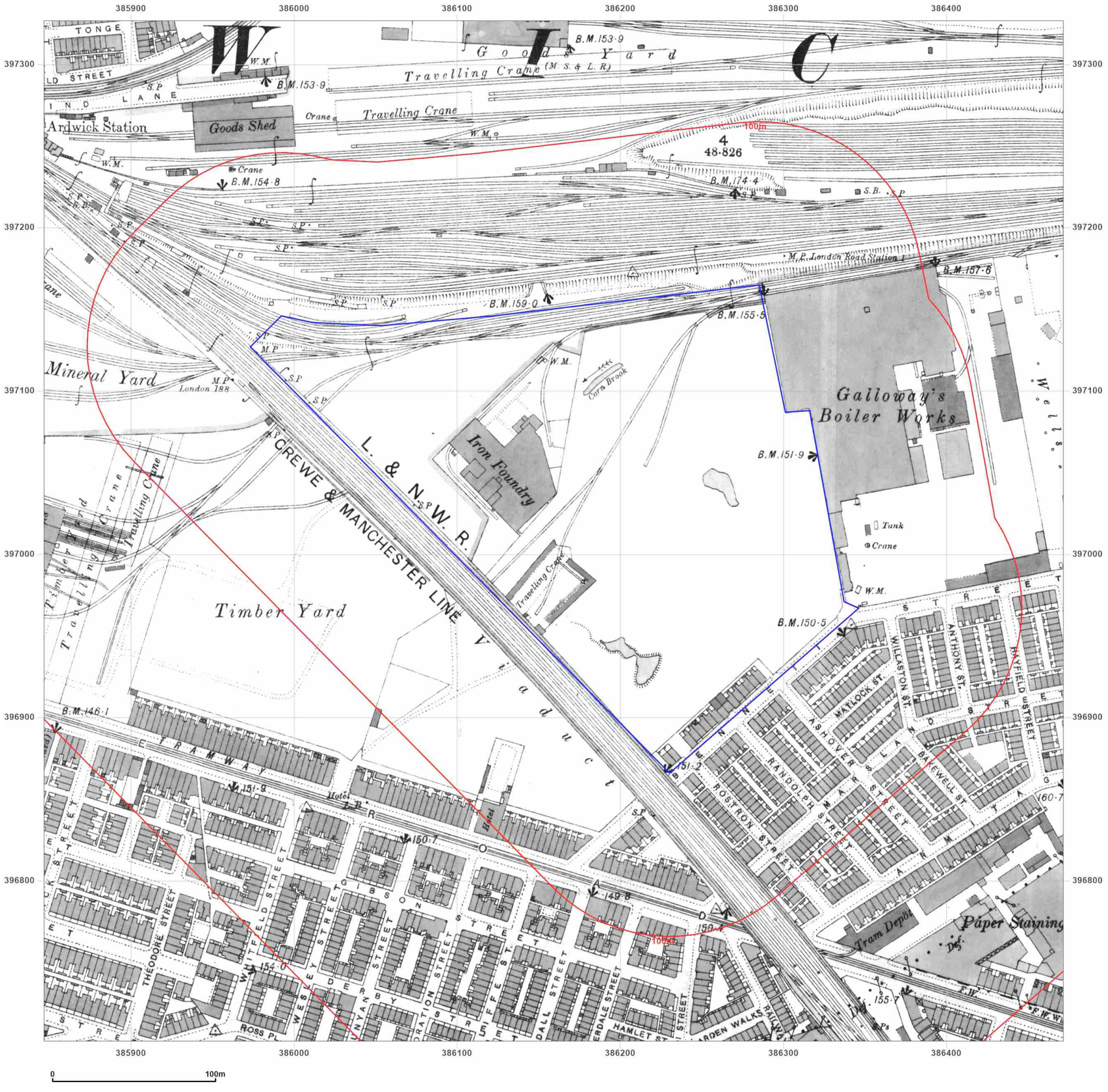
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Site Details:

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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: County Series

Map date: **1889**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1889
Revised N/A
Edition 1889
Copyright N/A
Levelled N/A

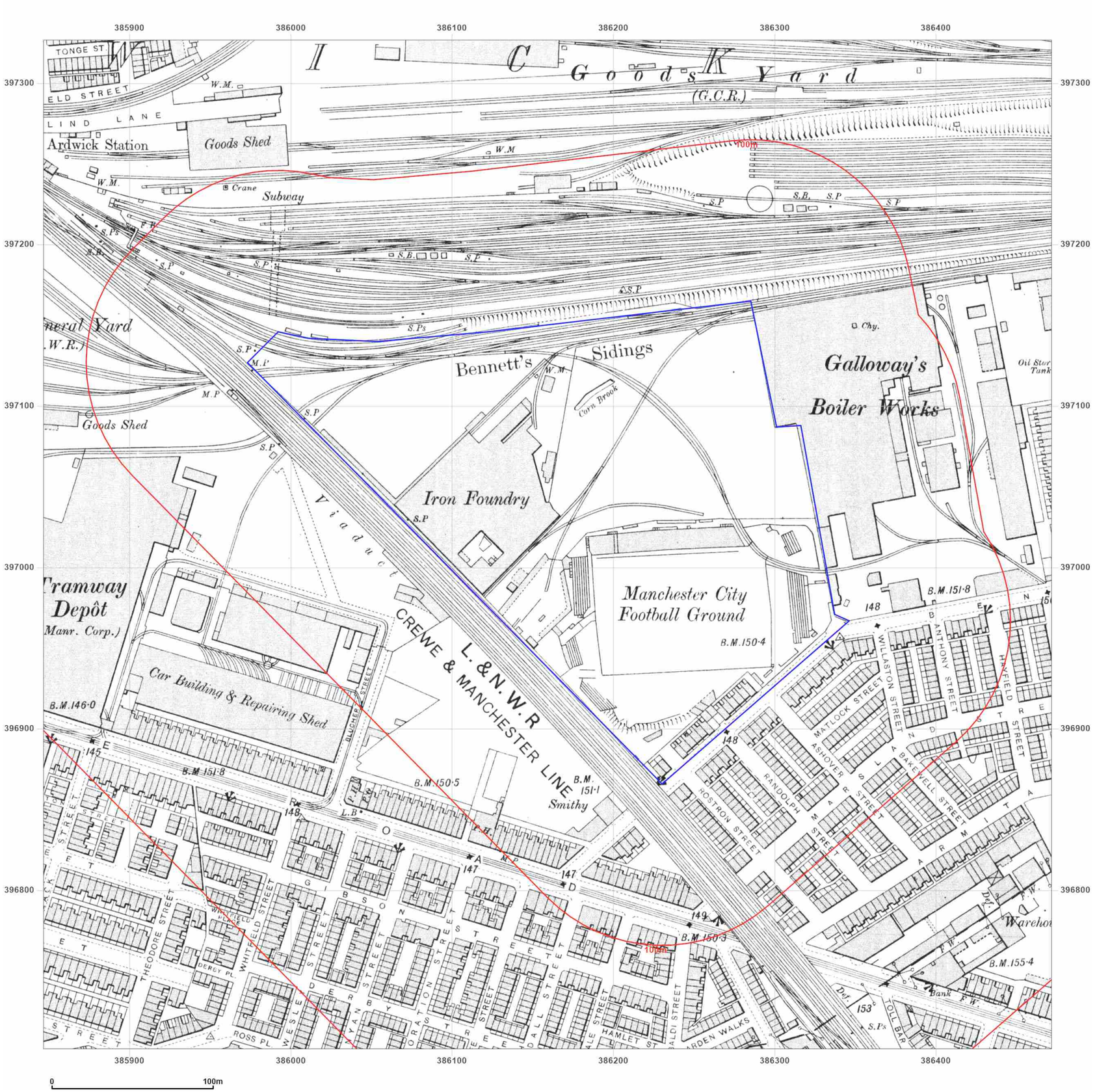
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: County Series
Map date: **1908**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1891
Revised 1905
Edition 1908
Copyright N/A
Levelled N/A

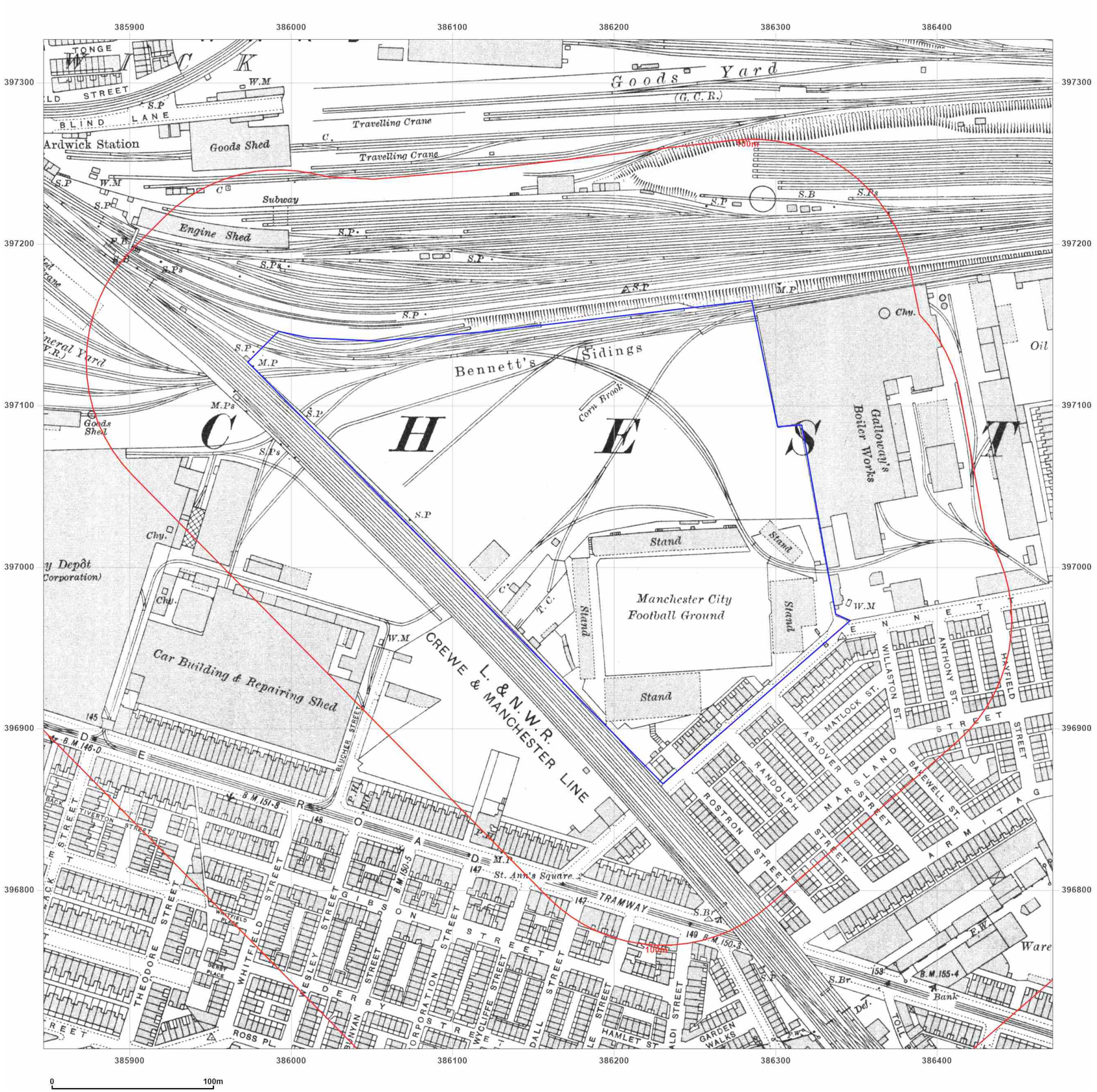
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: County Series

Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

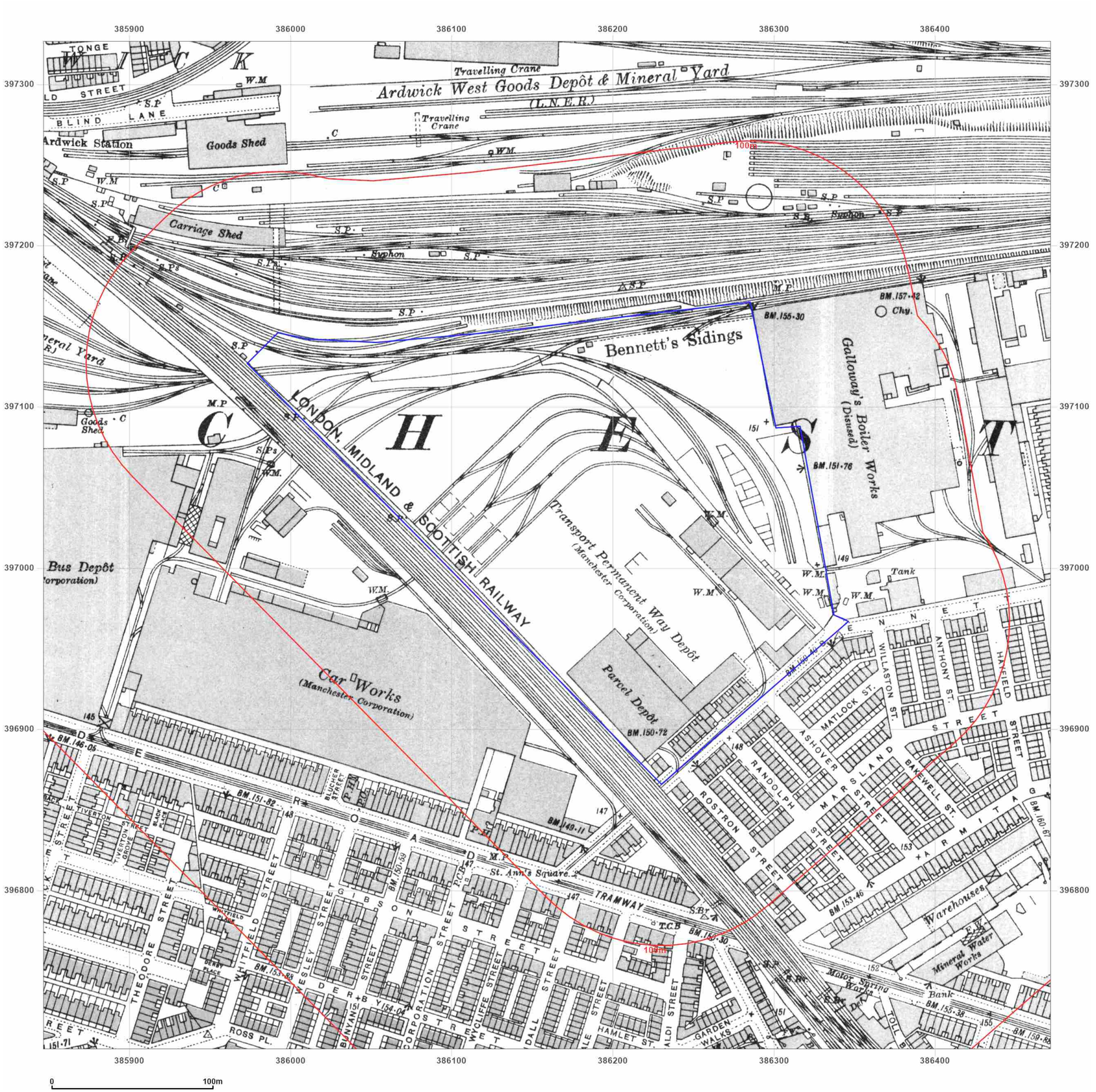
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1873
Revised 1932
Edition N/A
Copyright N/A
Levelled 1927

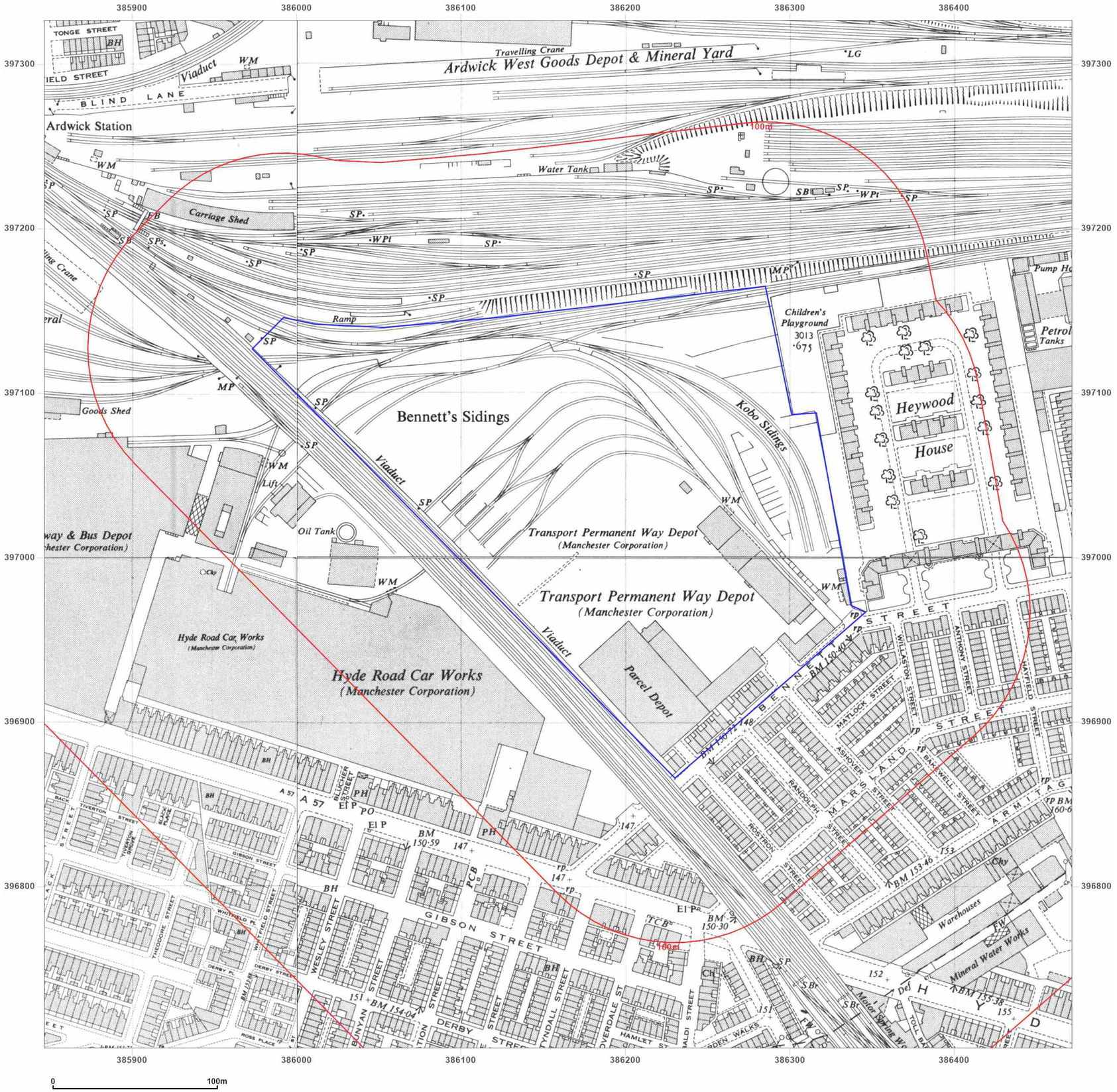
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: National Grid

Map date: **1949-1950**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1948
Revised 1948
Edition N/A
Copyright 1949
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1949
Levelled 1929

Surveyed 1949
Revised 1949
Edition N/A
Copyright 1950
Levelled 1929

Surveyed 1949
Revised 1949
Edition N/A
Copyright 1950
Levelled 1929

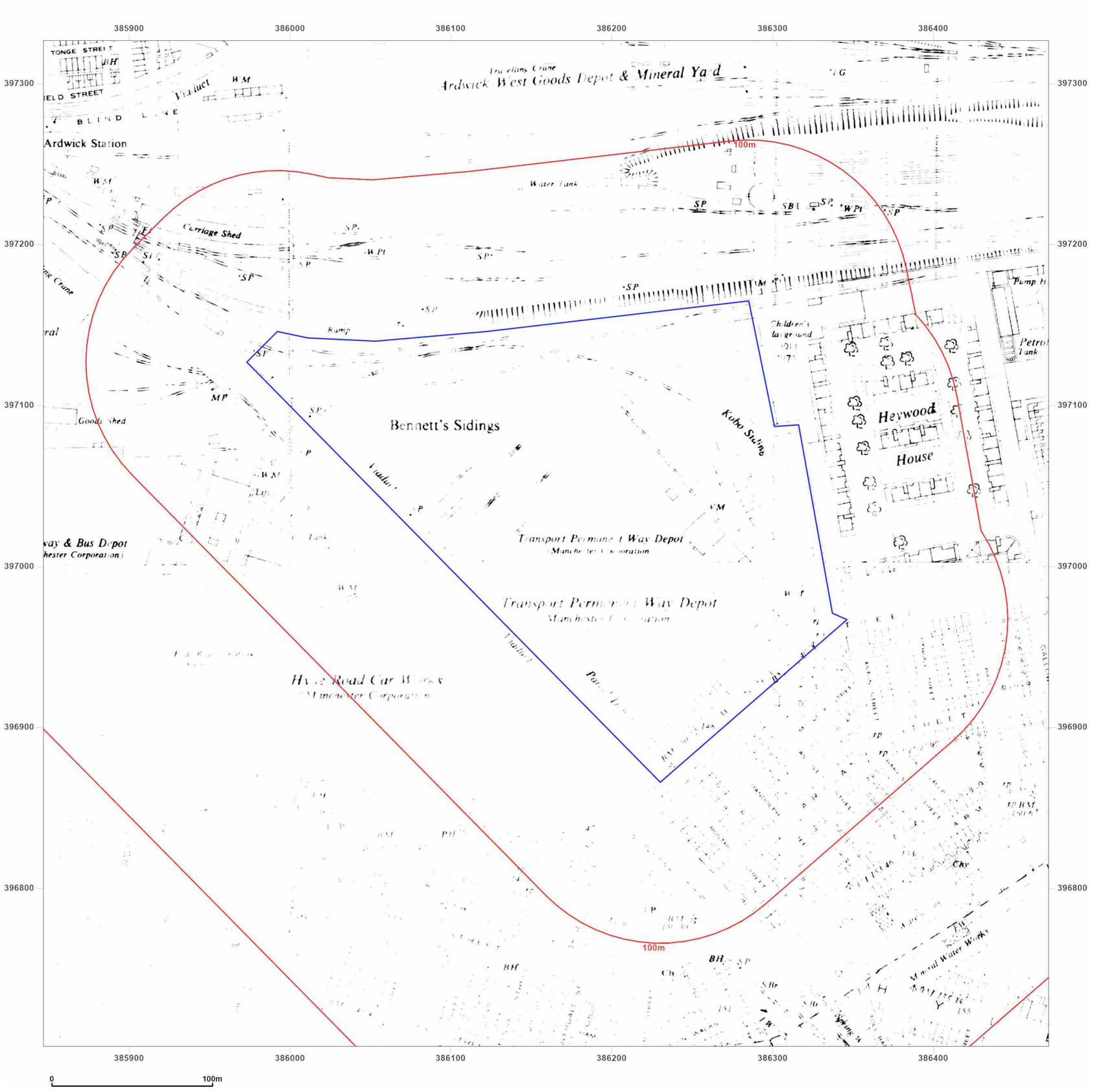
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: National Grid

Map date: **1950-1951**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised 1948
Edition 1950
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1949
Revised N/A
Edition N/A
Copyright 1951
Levelled N/A

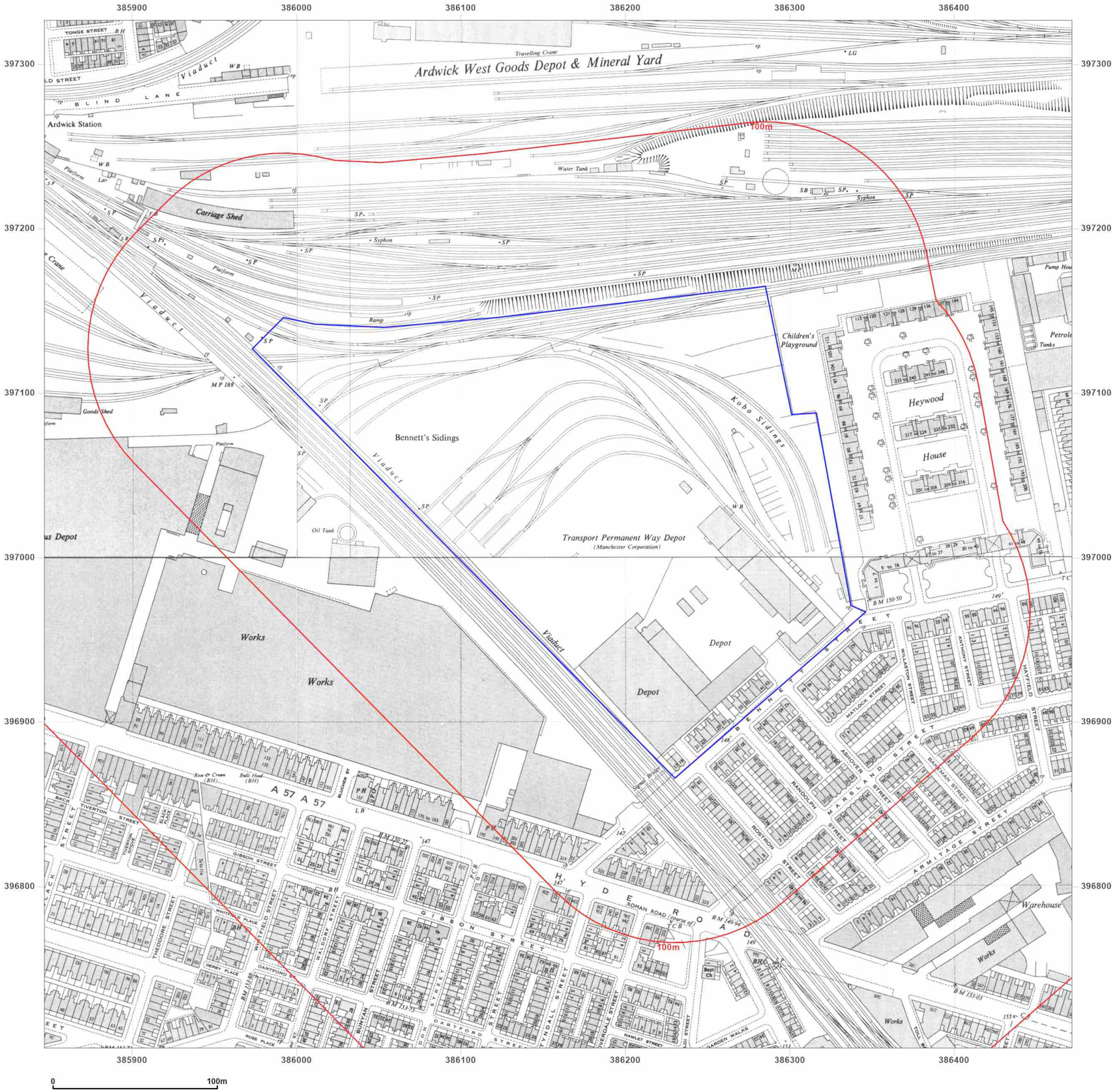
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Client Ref: 15-425-HM-A
Report Ref: GS-8418437_LS_1_1
Grid Ref: 386159, 397014

Map Name: National Grid

Map date: **1963-1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1965
Levelled 1959

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1967
Levelled 1959

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1958

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1964
Levelled 1959

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Production date: 23 December 2021

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APPENDIX X
HISTORICAL CHEMICAL DATA

Combined CIEH Generic Assessment Criteria & WYGE Tier One Human Health Soil Screening Values						Date: March 2008
	Determinand (mg/kg)	Residential with Plant Uptake	Residential without Plant Uptake	Industrial / Commercial	Notes	Source
Heavy Metals and Metalloids	Arsenic	20	20	500		SGV Report 1
	Beryllium	12.1	84.9	1950	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
	Cadmium	1 (pH6)	30	1400		SGV Report 3
		2 (pH7)				
		8 (pH8)				
	Chromium (IV)	130	200	5000		SGV Report 4
	Copper	111	2080	45700	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
	Lead	450	450	750		SGV Report 10
	Mercury	8	15	480		SGV Report 5
	Nickel	50	75	5000		SGV Report 7
	Selenium	35	260	8000		SGV Report 9
	Vanadium	140	150	4250	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
	Zinc	330	8250	188000	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
PAHs	Acenaphthene	12	12	47000		WYGE RISC WORKBENCH 4
	Acenaphthylene	1	1	39		WYGE RISC WORKBENCH 4
	Anthracene	2800	3400	94000		WYGE RISC WORKBENCH 4
	Benzo(a)Anthracene	7.2	7.8	470		WYGE RISC WORKBENCH 4
	Benzo(a)pyrene	1.12	1.3	29.7	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.08	1.31	29.7	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		1.09	1.32	29.9	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		1.3	1.4	47		WYGE RISC WORKBENCH 4
	Benzo(b)fluoranthene	16	17	470		WYGE RISC WORKBENCH 4
	Benzo(k)fluoranthene	16	17	470		WYGE RISC WORKBENCH 4
	Benzo(g,h,i)perylene	2100	2600	71000		WYGE RISC WORKBENCH 4
	Chrysene	32	170	4700		WYGE RISC WORKBENCH 4
	Dibenzo(a,h)anthracene	1.14	1.3	29.7	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.13	1.34	29.7	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		1.1	1.32	29.9	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		1.6	1.7	47		WYGE RISC WORKBENCH 4
	Indeno(1,2,3-cd)pyrene	16	17	470		WYGE RISC WORKBENCH 4
	Fluoranthene	95	103	4700		WYGE RISC WORKBENCH 4
	Fluorene	38.4	2770	59000	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		91.4	2640	59400	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		184	2700	59500	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		2600	3400	94000		WYGE RISC WORKBENCH 4
	Napthalene	3.47	6.94	290	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		8.47	17.1	720	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		17	33.7	1440	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		5.6	5.6	230		WYGE RISC WORKBENCH 4
	Phenanthrene	2800	3400	94000		WYGE RISC WORKBENCH 4
	Pyrene	1500	1700	47000		WYGE RISC WORKBENCH 4
TPH Allphatic	EC 5-6	2.11	2.11	95.3	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		3.72	3.72	168	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		6.38	6.39	288	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		14	14	650		WYGE RISC WORKBENCH 4
	EC >6-8	5.37	5.37	242	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		11.9	11.9	535	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		22.7	22.7	1020	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		35	35	*		WYGE RISC WORKBENCH 4
	EC >8-10	1.46	1.46	65.9	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		3.55	3.56	160	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		7	7.05	317	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		8.2	8.2	1.20E+05		WYGE RISC WORKBENCH 4
	EC >10-12	8.53	8.6	29900	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		20.8	21.2	30600	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		40.1	41.7	30400	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		42	42	2.60E+05		WYGE RISC WORKBENCH 4
	EC >12-16	40.7	42.1	29900	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		93.4	101	30600	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		163	187	30400	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		6500	6800	2.60E+05		WYGE RISC WORKBENCH 4
	EC >16-35	16400	27600	617000	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		16400	27600	631000	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		16300	26800	627000	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		190,000	1.90E+05	*		WYGE RISC WORKBENCH 4
	EC >35-44	16400	27600	617000	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		16400	27600	631000	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		16300	26800	627000	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria

Combined CIEH Generic Assessment Criteria & WYGE Tier One Human Health Soil Screening Values						Date: March 2008
	Determinand (mg/kg)	Residential with Plant Uptake	Residential without Plant Uptake	Industrial / Commercial	Notes	Source
TPH Aromatic	EC 5-7(benzene)	0.575	0.613	26.9	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.33	1.41	62.1	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		2.57	2.75	121	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		0.05	0.05	2.5		WYGE RISC WORKBENCH 4 (Benzene)
	EC >7-8 (toluene)	0.624	0.694	30.4	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.46	1.63	71.1	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		2.85	3.18	139	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		7	8	350		TOLUENE SGV Report 15
	EC >8-10	1.09	2.39	107	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		2.67	5.88	263	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		5.3	11.6	513	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		13	13	630		WYGE RISC WORKBENCH 4
	EC >10-12	1.94	14.2	625	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		4.76	34.1	1450	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		9.44	63.9	2600	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		72	72	7.50E+04		WYGE RISC WORKBENCH 4
	EC >12-16	2.19	72.7	12200	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		5.39	152	12500	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		10.7	235	12400	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		330	345	1.00E+05		WYGE RISC WORKBENCH 4
	EC >16-21	115	291	9190	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		132	336	9400	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		133	362	9350	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		2100	2800	7.70E+04		WYGE RISC WORKBENCH 4
	EC >21-35	157	417	9250	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		161	417	9460	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		157	404	9410	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		2100	2800	7.70E+04		WYGE RISC WORKBENCH 4
	EC >35-44	157	417	9250	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		161	417	9460	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		157	404	9410	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
TPH Aliphatic and Aromatic	EC >44-70	174	417	9250	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		179	417	9460	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		174	404	9410	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
Phenolics	Phenol	150	34400	43000		SGV Report 8
Chlorinated Solvents	Chlorobenzene	10.6	32.9	140000	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		24.8	79.3	143000	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		50	155	143000	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	1,2-Dichloroethane	0.00791	0.0118	0.536	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		0.0172	0.0256	1.16	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		0.0328	0.0486	2.2	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	1,2 Dichloroethane (DCA)	0.012	0.012	0.61		WYGE RISC WORKBENCH 4
	Hexachlorobutadiene	0.00422	0.0496	1.98	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		0.0103	0.12	4.72	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		0.0206	0.23	8.77	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	Tetrachloroethane	0.562	3.6	150	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.25	8.05	332	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		2.38	15.3	620	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	Tetrachloroethene	1.01	1.46	63.1	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		2.32	3.39	146	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		4.5	6.58	283	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	1122 Tetrachloroethane + 1112 Tetrachloroethane	6.6	6.6	290		WYGE RISC WORKBENCH 4
	PCE (Tetrachloroethene)	1.5	1.5	67		WYGE RISC WORKBENCH 4
	1,1,1-Trichloroethane	11.7	12.9	552	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		27.2	29.8	1280	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		53.1	57.9	2490	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		15	15	650		WYGE RISC WORKBENCH 4
	Trichloroethene	0.134	0.15	6.42	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		0.308	0.346	14.8	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		0.598	0.673	28.8	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	Trichloroethylene (TCE)	0.17	0.17	7.8		WYGE RISC WORKBENCH 4
	Trichlormethane	0.888	1.72	79.4	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		1.99	3.91	180	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		3.86	7.52	345	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
	Vinyl Chloride	0.000953	0.00129	0.0587	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		0.00184	0.00248	0.113	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		0.00329	0.00447	0.203	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
		0.002	0.002	0.1		WYGE RISC WORKBENCH 4
BTEX	Benzene	0.05	0.05	2.50		WYGE RISC WORKBENCH 4
	Toluene	7	8	350		SGV Report 15
	Ethylbenzene	21	41	48000		SGV Report 16
	Xylenes (mixed isomers)	9.8	9.8	440		WYGE RISC WORKBENCH 4
Pesticides	Atrazine	0.0204	7.04	152	Sandy Soil, SOM = 1%, pH = 7	CIEH Generic Assessment Criteria
		0.0489	6.86	157	Sandy Soil, SOM = 2.5%, pH = 7	CIEH Generic Assessment Criteria
		0.0984	7.03	157	Sandy Soil, SOM = 5%, pH = 7	CIEH Generic Assessment Criteria
pH		<5, >9	<5, >9	<5, >9		
Asbestos %		Presence	Presence	Presence		Lab Screening
Easily Liberatable Cyanide (free)		36	36	36		Acute effects infant 1 dose 3g soil
Dioxins/furans		8.90E-06	0.00005	0.0013	As 2378TCDD WHO-TEQ (see Tox 12 for data assessment method)	WYGE RISC WORKBENCH 4

Notes:

All WYGE derived screening values calculated using a Fraction Organic Carbon (FOC) value of 1.45% which is equivalent to a Soil Organic Matter (SOM) of 2.5%. For reference FOC=0.58*SOM. Check FOC/SOM against your Conceptual Site Model.

* No significant toxicological risk to human health

E11066-1 Bennett Street

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

	Method	Units	Detection Limit	TSV	Sample Identity	TP1-CD1	TP2-CD2	TP3-CD1	TP3-CD3	TP4-CD1	TP4-CD2	TP4-CD3	WS102-CD1	WS103-CD1	HD1-CD2	TP5-D1	TP6-D1	TP8-CD1	TP13-CD1	TP13-CD2	TP14-CD2	WS104-CD1	WS105-CD1	WS105-CD3	WS106-CD1	WS107-CD1
					Depth (mbgl)	0.50	1.30	0.40	1.50	0.30	1.50	2.60	0.50	0.50	0.75	0.50	0.40	0.50	0.35	1.20	1.50	0.40	0.50	1.30	0.50	0.40
					Date	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	09/11/2007	08/11/2007	08/11/2007	09/11/2007	09/11/2007	09/11/2007	09/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007
Mercury Low	TM129	mg/kg	<0.4	8		0.4	7.8	1.4		2.1	0.4		22	0.4	0.4	0.4	0.4	0.4	1.4	1.2	1.8	0.6	0.4	0.4	0.4	0.4
Boron Water Soluble	TM129	mg/kg	<3.5			3.5	3.5	3.5		3.5	4.8		3.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Arsenic	TM129	mg/kg	<3.0	20		55	110.0	31.0		31.0	8		130	6	8	3	3	85	21.0	29.0	10.0	28.0	37	3	4	5
Cadmium	TM129	mg/kg	<0.3	8		0.9	0.5	3.9		0.3	0.3		0.3	0.3	0.3	0.4	0.4	0.6	0.9	0.5	0.5	1.3	0.8	0.5	0.4	0.6
Chromium	TM128	mg/kg	<4.5	130		24	23.0	22.0		20.0	17		27	16	31	28	28	19	17.0	18.0	16.0	18.0	26	26	15	16
Copper	TM129	mg/kg	<6	111		240	210.0	280.0		140.0	39		180	51	20	11	11	360	190.0	180.0	86.0	120.0	140	13	24	43
Lead	TM129	mg/kg	<2	450		490	1900.0	1700.0		270.0	89		490	230	170	9	20	260	370.0	390.0	510.0	310.0	1600	22	950	100
Nickel	TM129	mg/kg	<0.9	50		46	55.0	37.0		53.0	25		77	16	33	31	32	49	41.0	28.0	14.0	33.0	41	31	19	19
Selenium	TM129	mg/kg	<3	35		3	3.0	3.0		3.0	3		3	3	3	3	3	3	3.0	3.0	3.0	3.0	3	3	3	3
Vanadium	TM129	mg/kg	<1.5	140		63	70.0	65.0					98		35	29	31	79	55.0	37.0	18.0	37.0	51	28	27	39
Zinc	TM129	mg/kg	<2.5	330		300	600.0	290.0		110.0	57		240	120	82	54	66	250	170.0	120.0	170.0	150.0	190	70	42	49
Water Soluble Sulphate as SO4 2:1 Extrac	TM098	g/l	<0.003			0.11	0.2	0.2		0.1	0.027		0.14	1.4	0.079	0.048	0.029	0.15	0.0	0.0	1.5	1.0	0.14	0.034	0.047	0.095
Acid Soluble Sulphide	TM101	mg/kg	<50			50	50.0	230.0		50.0	50		50	50	50	50	50	50	50.0	50.0	300.0	50.0	50	50	50	50
Hexavalent Chromium	TM151	mg/kg	<0.3	130		3	6.0	3.0		3.0	6		3	0.3	0.3	0.3	0.3	3	3.0	3.0	0.3	1.5	0.3	1.5	3	1.8
Phenols Monohydric	TM062	mg/kg	<0.15	150		0.15	0.2	0.2		0.2	0.15		0.15	0.15	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2	0.15	0.15	2.1	0.15
Total Cyanide	TM153	mg/kg	<1	38		1	1.0	1.0		1.0	1		1	1	1	1	1	1	1.0	1.0	1.0	1.0	1	1	1	1
Free Cyanide	TM153	mg/kg	<1	38		1	1.0	1.0		1.0	1		1	1	1	1	1	1	1.0	1.0	1.0	1.0	1	1	1	1
Complex Cyanide	TM153	mg/kg	<1	38		1	1.0	1.0		1.0	1		1	1	1	1	1	1	1.0	1.0	1.0	1.0	1	1	1	1
Asbestos Presence Screen	TM001	NONE		present			Absent	Absent		Absent				Absent				Absent	Absent			Absent			
pH Value	TM133	pH Units	<1.00	9		7.79	7.5	7.3		6.8	7.83		7.77	8.75	7.44	8.33	8.42	7.56	8.2	8.3	7.7	8.8	8	8.75	8.41	11.13
Petroleum Hydrocarbons																										
Gas Range Organics GRO (C4-C12)	TM089	mg/kg	<0.01			0.010	0.010	0.010	0.010	0.380	0.010	0.010		0.010			0.010	0.010		1.200	0.077	0.010	0.010			
MTBE	TM089	mg/kg	<0.01			0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Benzene	TM089	mg/kg	<0.01	0.05		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Toluene	TM089	mg/kg	<0.01	7		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Ethyl benzene	TM089	mg/kg	<0.01	21		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.016	0.020	0.010	0.010			
m & p Xylene	TM089	mg/kg	<0.01	9.8		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.024	0.021	0.010	0.010			
o Xylene	TM089	mg/kg	<0.01	9.8		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.015	0.010	0.010	0.010			
Aliphatics C5-C6	TM089	mg/kg	<0.01	14		0.010	0.010	0.010	0.010	0.061	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Aliphatics >C6-C8	TM089	mg/kg	<0.01	35		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Aliphatics >C8-C10	TM089	mg/kg	<0.01	8.2		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.042	0.010	0.010	0.010			
Aliphatics >C10-C12	TM089	mg/kg	<0.01	42		0.010	0.010	0.010	0.010	0.130	0.010	0.010		0.010			0.010	0.010		0.420	0.012	0.010	0.010			
Aliphatics >C12-C16	TM173	mg/kg	<0.1	5500		17.000	12.000	29.000	3.700	410.000	17.000	18.000		19.000			4.000	98.000		20.000	6.500	13.000	25.000			
Aliphatics >C16-C21	TM173	mg/kg	<0.1	190000		24.000	9.500	26.000	3.800	1700.000	51.000	35.000		55.000			5.100	300.000		25.000	9.300	46.000	140.000			
Aliphatics >C21-C35	TM173	mg/kg	<0.1	190000		130.000	17.000	79.000	13.000	720.000	32.000	23.000		510.000			9.500	300.000		55.000	25.000	570.000	1500.000			
Aromatics C6-C7	TM089	mg/kg	<0.01	0.05		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Aromatics >C7-C8	TM089	mg/kg	<0.01	7		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.010	0.010	0.010	0.010			
Aromatics >EC8-EC10	TM089	mg/kg	<0.01	13		0.010	0.010	0.010	0.010	0.010	0.010	0.010		0.010			0.010	0.010		0.120	0.048	0.010	0.010			
Aromatics >EC10-EC12	TM089	mg/kg	<0.01	72		0.010	0.010	0.010	0.010	0.190	0.010	0.010		0.010			0.010	0.010		0.840	0.017	0.010	0.010			
Aromatics >EC12-EC16	TM173	mg/kg	<0.1	330		19.000	4.100	38.000	1.700	68.000	5.600	4.200		9.600			0.100	160.000		130.000	34.000	17.000	29.000			
Aromatics >EC16-EC21	TM173	mg/kg	<0.1	2100		63.000	19.000	71.000	2.500	210.000	17.000	4.100		39.000			0.410	440.000		640.000	120.000	71.000	130.000			
Aromatics >EC21-EC35	TM173	mg/kg	<0.1	2100		390.000	190.000	270.000	11.000	430.000	65.000	13.000		440.000			8.200	1300.000		2700.000	410.000	700.000	870.000			
EPH (DRO) (C10-C40)	TM061	mg/kg	<35			1300	520.0						600		130	63	87		11000.0		1100.0		4100	110	4200	5800
EPH C10-20	TM061	mg/kg	<35			170	120.0						290		35	35	35		2800.0		310.0		490	59	1100	1800
EPH >C20-30	TM061	mg/kg	<35			690	220.0						190		67	35	36		5600.0		530.0		2200	44	2200	2800
EPH >C30-40	TM061	mg/kg	<35			420	180.0						120		35	35	35		2700.0		250.0		1400	35	950	1200
Polycyclic Aromatic Hydrocarbons																										
Acenaphthene	TM142	mg/kg	<0.05	12		1.3	0.6	1.1		5.9	0.05		0.05	0.05	0.05	0.05	0.05	29	76.0	24.0	7.8	1.7	5.1	0.35	7	42
Acenaphthylene	TM142	mg/kg	<0.05	1		3.4	1.3	3.3		0.1	0.05		0.05	0.05	0.05	0.05	0.05	13	19.0	5.3	2.1	1.7	3.3	0.49	13	14
Anthracene	TM142	mg/kg	<0.05	2800		3.1	0.3	1.3		4.0	0.25		0.05	1.2	0.25	0.05	0.05	33	92.0	49.0	7.9	3.3	7	0.12	23	50
Benz(a)anthracene	TM142	mg/kg	<0.05	7.2		11	2.2	3.5		11.0	0.68		0.4	4.1	0.66	0.05	0.05	94	190.0	83.0	12.0	7.7	16	0.3	44	78
Benzo(a)pyrene	TM142	mg/kg	<0.05	1.3		8.3	4.9	2.1		4.0	6.8		0.05	3.6	0.05	0.05	0.05	35	120.0	50.0	8.2	9.2	2.9	4.2	37	46
Benzo(b)fluoranthene	TM142	mg/kg	<0.05	16		7.7	2.8	2.8		5.2	0.56		0.52	4.9	0.86	0.05	0.05	16	110.0	72.0	10.0	7.1	11	0.31	24	27
Benzo(ghi)perylene	TM142	mg/kg	<0.05	2100		5.2	0.1	0.1		1.3	0.05		0.05	2.4	0.05	0.05	0.05	14	84.0	32.0	5.5	3.8	11	0.05	9.7	30
Benzo(k)fluoranthene	TM142	mg/kg	<0.05	16		11	2.8	2.4		6.9	0.5		0.15	2.9	0.32	0.05	0.05	37	190.0	43.0	7.3	6.5	16	0.2	37	72
Chrysene	TM142	mg/kg	<0.05	32		11	2.2	3.3		9.0	0.84		0.4	3.6	0.9	0.05	0.05	32	150.0	73.0	11.0	7.8	15	0.35	48	26
Dibenzo(ah)anthracene	TM142	mg/kg	<0.05	1.6		0.96	0.1	0.1		1.4	0.14		0.05	0.73	0.05	0.05	0.05	1.4	3.2	3.8	0.8	1.6	3.7	0.05	4.1	1.9
Fluoranthene	TM142	mg/kg	<0.05	95		22	3.0	7.8		24.0	1.8		0.7	9.7	1.8	0.05	0.05	110	420.0	210.0	32.0	19.0	40	0.84	87	180
Fluorene	TM142	mg/kg	<0.05	2800		1	0.1	21.0		3.3	0.05		0.05	0.05	0.05	0.05	0.05	16	55.0	21.0	5.9	1.8	4.4	0.07	11	30
Indeno(123cd)pyrene	TM142	mg/kg	<0.05	16		5.1	0.1	0.1		2.8	0.84		0.05	3.4	0.05	0.05	0.05	19	70.0	33.0	5.9	5.5	7.4	0.05	19	39
Naphthalene	TM142	mg/kg	<0.05	5.6		3.1	1.8	4.8		6.0	0.05		0.05	0.05	0.05	0.05	0.05	40	53.0	20.0	4.8	1.2	2.7	0.25	11	34
Phenanthrene	TM142	mg/kg	<0.05	2800		12	1.7	12.0		48.0	2.6		7	6.3	1.3	0.05	0.05	130	410.0	220.0	37.0	16.0	30	0.78	83	180
Pyrene	TM142	mg/kg	<0.05	1500		21	3.1	15.0		24.0	1.7		0.8	8.8	1.6	0.05	0.05	87	370.0	170.0	29.0	17.0	34	0.78	95	150
Semi Volatile Organic Compounds																										
1,2,4-Trichlorobenzene	TM157	ug/kg	<100					100		100				500								100	100			
1,2-Dichlorobenzene	TM157	ug/kg	<100					100		100				500								100	100			
1,3-Dichlorobenzene	TM157	ug/kg	<100					100		100				500								100	100			
1,4-Dichlorobenzene	TM157	ug/kg	<100					100		100				500								100	100			
2,3,4,6-Tetrachlorophenol	TM157	ug/kg	<100																							
2,4,5-Trichlorophenol	TM157	ug/kg	<100					100		100				500								100	100			
2,4,6-Trichlorophenol	TM157	ug/kg	<100					100		100				500								100	100			
2,4-Dichlorophenol	TM157	ug/kg	<100					100		100				500								100	100			

E11066-1 Bennett Street

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

	Method	Units	Detection Limit	TSV	Sample Identity	TP1-CD1	TP2-CD2	TP3-CD1	TP3-CD3	TP4-CD1	TP4-CD2	TP4-CD3	WS102-CD1	WS103-CD1	HD1-CD2	TP5-D1	TP6-D1	TP8-CD1	TP13-CD1	TP13-CD2	TP14-CD2	WS104-CD1	WS105-CD1	WS105-CD3	WS106-CD1	WS107-CD1
					Depth (mbgl)	0.50	1.30	0.40	1.50	0.30	1.50	2.50	0.50	0.50	0.75	0.50	0.40	0.50	0.35	1.20	1.50	0.40	0.50	1.30	0.50	0.40
					Date	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	09/11/2007	08/11/2007	08/11/2007	09/11/2007	09/11/2007	09/11/2007	09/11/2007	08/11/2007	08/11/2007	08/11/2007	09/11/2007	09/11/2007
2,4-Dimethylphenol	TM157	ug/kg	<100					100		100				500								100	100			
2,4-Dinitrotoluene	TM157	ug/kg	<100					100		100				500								100	100			
2,6-Dichlorophenol	TM157	ug/kg	<100																							
2,6-Dinitrotoluene	TM157	ug/kg	<100					100		100				500								100	100			
2-Chloronaphthalene	TM157	ug/kg	<100					100		100				500								100	100			
2-Chlorophenol	TM157	ug/kg	<100					100		100				500								100	100			
2-Methylnaphthalene	TM157	ug/kg	<100					1500		3800				670								320	590			
2-Methylphenol	TM157	ug/kg	<100					100		100				500								100	100			
2-Nitroaniline	TM157	ug/kg	<100					100		100				500								100	100			
2-Nitrophenol	TM157	ug/kg	<100					100		100				500								100	100			
3-Nitroaniline	TM157	ug/kg	<100					100		100				500								100	100			
4-Bromophenylphenylether	TM157	ug/kg	<100					100		230				500								100	100			
4-Chloro-3-methylphenol	TM157	ug/kg	<100					100		100				500								100	100			
4-Chloroaniline	TM157	ug/kg	<100					100		100				500								100	100			
4-Chlorophenylphenylether	TM157	ug/kg	<100					100		100				500								100	100			
4-Methylphenol	TM157	ug/kg	<100					470		160				500								100	100			
4-Nitroaniline	TM157	ug/kg	<100					100		100				500								100	100			
4-Nitrophenol	TM157	ug/kg	<100					100		100				500								100	100			
Aniline	TM157	ug/kg	<100																							
Anthraquinone	TM157	ug/kg	<100																							
Azobenzene	TM157	ug/kg	<100					100		100				500								100	100			
Biphenyl	TM157	ug/kg	<100																							
Bis(2-chloroethoxy)methane	TM157	ug/kg	<100					100		100				500								100	100			
Bis(2-chloroethyl)ether	TM157	ug/kg	<100					100		100				500								100	100			
Bis(2-ethylhexyl) phthalate	TM157	ug/kg	<100					100		5100				1500								160	350			
Bis(2-chloroisopropyl)ether	TM157	ug/kg	<100																							
Bromo phenyl phenyl ether	TM157	ug/kg	<100																							
Butylbenzyl phthalate	TM157	ug/kg	<100					100		100				500								100	100			
Carbazole	TM157	ug/kg	<100					440		1800				500								360	890			
Dibenzofuran	TM157	ug/kg	<100					1100		3300				620								330	820			
Diethyl phthalate	TM157	ug/kg	<100					100		100				500								100	100			
Dimethyl phthalate	TM157	ug/kg	<100					100		100				500								100	100			
Di-n-butyl phthalate	TM157	ug/kg	<100					100		100				500								100	100			
Di-n-Octyl phthalate	TM157	ug/kg	<100					100		100				500								100	100			
Hexachlorobenzene	TM157	ug/kg	<100					100		100				500								100	100			
Hexachlorobutadiene	TM157	ug/kg	<100					100		100				500								100	100			
Hexachlorocyclopentadiene	TM157	ug/kg	<100					100		100				500								100	100			
Hexachloroethane	TM157	ug/kg	<100					100		100				500								100	100			
Isophorone	TM157	ug/kg	<100					100		100				500								100	100			
Nitrobenzene	TM157	ug/kg	<100					100		100				500								100	100			
N-nitrosodi-n-propylamine	TM157	ug/kg	<100					100		100				500								100	100			
Pentachlorophenol	TM157	ug/kg	<100					100		100				500								100	100			
Volatile Organic Compounds																										
1,1,1,2-Tetrachloroethane	TM116	ug/kg	<10	6800				10		10				10								10	10			
1,1,1-Trichloroethane	TM116	ug/kg	<7	15000				7		15				7								7	7			
1,1,2,2-Tetrachloroethane	TM116	ug/kg	<10	6600				10		10				10								10	10			
1,1,2-Trichloroethane	TM116	ug/kg	<10					10		10				10								10	10			
1,1-Dichloroethane	TM116	ug/kg	<8					8		150				8								8	8			
1,1-Dichloroethene	TM116	ug/kg	<10					10		10				10								10	10			
1,1-Dichloropropene	TM116	ug/kg	<11					11		11				11								11	11			
1,2,3-Trichlorobenzene	TM116	ug/kg	<11					11		11				11								11	11			
1,2,3-Trichloropropane	TM116	ug/kg	<17					17		17				17								17	17			
1,2,4-Trichlorobenzene	TM116	ug/kg	<6					6		6				6								6	6			
1,2,4-Trimethylbenzene	TM116	ug/kg	<9					9		9				9								9	9			
1,2-Dibromo-3-chloropropane	TM116	ug/kg	<14					14		14				14								14	14			
1,2-Dibromoethane	TM116	ug/kg	<12					12		12				12								12	12			
1,2-Dichlorobenzene	TM116	ug/kg	<12					12		12				12								12	12			
1,2-Dichloroethane	TM116	ug/kg	<5	12				5		5				5								5	5			
1,2-Dichloropropane	TM116	ug/kg	<12					12		12				12								12	12			
1,3,5-Trimethylbenzene	TM116	ug/kg	<8					8		8				8								8	8			
1,3-Dichlorobenzene	TM116	ug/kg	<8					8		8				8								8	8			
1,3-Dichloropropane	TM116	ug/kg	<7					7		7				7								7	7			
1,4-Dichlorobenzene	TM116	ug/kg	<5					5		5				5								5	5			
2,2-Dichloropropane	TM116	ug/kg	<12					12		12				12								12	12			
2-Chlorotoluene	TM116	ug/kg	<9					9		9				9								9	9			
4-Chlorotoluene	TM116	ug/kg	<12					12		12				12								12	12			
4-Isopropyltoluene	TM116	ug/kg	<11					11		11				11								11	11			
Bromobenzene	TM116	ug/kg	<10					10		10				10								10	10			
Bromochloromethane	TM116	ug/kg	<14					14		14				14								14	14			
Bromodichloromethane	TM116	ug/kg	<7					7		7				7								7	7			
Bromoform	TM116	ug/kg	<10					10		10				10								10	10			
Bromomethane	TM116	ug/kg	<13					13		13				13								13	13			
Carbon Disulphide	TM116	ug/kg	<7					7		7				7								7	7			
Carbontetrachloride	TM116	ug/kg	<14					14		14				14								14	14			

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

				Sample Identity	TP1-CD1	TP2-CD2	TP3-CD1	TP3-CD3	TP4-CD1	TP4-CD2	TP4-CD3	WS102-CD1	WS103-CD1	HD1-CD2	TP5 D1	TP8-D1	TP8-CD1	TP13-CD1	TP13-CD2	TP14-CD2	WS104-CD1	WS105-CD1	WS105-CD3	WS106-CD1	WS107-CD1
				Depth (mbgl)	0.50	1.30	0.40	1.50	0.30	1.50	2.60	0.50	0.50	0.75	0.50	0.40	0.50	0.35	1.20	1.50	0.40	0.50	1.30	0.50	0.40
				Date	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	09/11/2007	08/11/2007	08/11/2007	09/11/2007	09/11/2007	09/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	08/11/2007	09/11/2007	09/11/2007
	Method	Units	Detection Limit	TSV																					
Chlorobenzene	TM116	ug/kg	<5	50000			5		5				5								5	5			
Chloroethane	TM116	ug/kg	<14				14		14				14								14	14			
Chloroform	TM116	ug/kg	<8	3860			8		8				8								8	8			
Chloromethane	TM116	ug/kg	<7				7		7				7								7	7			
cis-1-2-Dichloroethene	TM116	ug/kg	<5				5		5				5								5	5			
cis-1-3-Dichloropropene	TM116	ug/kg	<14				14		14				14								14	14			
Dibromochloromethane	TM116	ug/kg	<13				13		13				13								13	13			
Dibromomethane	TM116	ug/kg	<9				9		9				9								9	9			
Dichlorodifluoromethane	TM116	ug/kg	<4				4		4				4								4	4			
Dichloromethane	TM116	ug/kg	<10				10		10				10								10	10			
Hexachlorobutadiene	TM116	ug/kg	<12	21			12		12				12								12	12			
Isopropylbenzene	TM116	ug/kg	<5				5		5				5								5	5			
n-Butylbenzene	TM116	ug/kg	<10				10		10				10								10	10			
Propylbenzene	TM116	ug/kg	<11				11		11				11								11	11			
sec-Butylbenzene	TM116	ug/kg	<10				10		10				10								10	10			
Styrene	TM116	ug/kg	<10				10		10				10								10	10			
tert-Butylbenzene	TM116	ug/kg	<12				12		12				12								12	12			
Tetrachloroethene	TM116	ug/kg	<5	1500			5		5				5								5	5			
trans-1-2-Dichloroethene	TM116	ug/kg	<11				11		11				11								11	11			
trans-1-3-Dichloropropene	TM116	ug/kg	<14				14		14				14								14	14			
Trichloroethene	TM116	ug/kg	<9				9		9				9								9	9			
Trichlorofluoromethane	TM116	ug/kg	<6				6		6				13								6	19			
Vinyl Chloride	TM116	ug/kg	<10	10			10		10				10								10	10			
112-Trichl-122-Trifluoroethane	TM116	ug/kg	<25																						

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

				Sample Identity	WS108-CD2	WS109-CD1	WS110-CD1	WS110-CD2	BH1-D2	BH1-D3	WS111-CD1	WS112-CD1	WS112-CD3	WS113-CD1	WS114-CD1	WS115-CD1	WS117-CD1	WS118-CD1	WS119-CD2	WS120-CD1	WS121-CD1	WS121-CD2	WS122-CD1	WS122-CD3	WS123-CD1
				Depth (mbgl)	2.00	0.75	0.50	1.50	0.95	2.80	0.75	0.50	2.20	0.80	0.75	0.60	0.80	0.60	1.00	0.60	0.60	1.80	0.90	3.90	0.30
				Date	09/11/2007	09/11/2007	09/11/2007	09/11/2007	12/11/2007	12/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	10/11/2007
	Method	Units	Detection Limit	TSV																					
Mercury Low	TM129	mg/kg	<0.4	8	0.4	0.4	1.4	0.4	5.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.0	1.6	1.1	0.4	0.6	1.7
Boron Water Soluble	TM129	mg/kg	<3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Arsenic	TM129	mg/kg	<3.0	20	16	78	19.0	69	66.0	3	20	61	4	26	110	38	33	8	9	23.0	33.0	8.0	23	23.0	85.0
Cadmium	TM129	mg/kg	<0.3	8	0.4	1.1	0.3	0.8	0.5	0.3	0.3	0.3	0.3	0.3	0.5	0.9	1.8	0.3	0.3	0.8	0.3	0.3	0.3	0.6	1.5
Chromium	TM129	mg/kg	<4.5	130	23	29	15.0	26	28.0	24	17	15	22	18	18	17	29	16	24	17.0	19.0	15.0	16	91.0	23.0
Copper	TM129	mg/kg	<5	111	25	160	120.0	74	210.0	15	48	230	22	89	2600	91	1500	28	770	140.0	380.0	25.0	170	350.0	120.0
Lead	TM129	mg/kg	<2	450	49	470	260.0	140	810.0	20	49	150	14	370	270	340	480	93	48	360.0	680.0	170.0	120	230.0	400.0
Nickel	TM129	mg/kg	<0.9	50	27	81	45.0	28	56.0	17	21	60	29	28	48	23	41	14	33	28.0	44.0	17.0	85	25.0	39.0
Selenium	TM129	mg/kg	<3	35	3	3	3.0	3	3.0	3	3	3	3	3	3	3	3	3	3	3.0	3.0	3.0	3	3.0	3.0
Vanadium	TM129	mg/kg	<1.5	140	37	89	45.0	35	31.0	30	45	52	25	45	70	41	92	38	31	39.0	46.0	22.0	48	28.0	48.0
Zinc	TM129	mg/kg	<2.5	330	70	570	120.0	100	220.0	68	45	100	62	130	62	190	1200	84	93	200.0	150.0	54.0	88	150.0	160.0
Water Soluble Sulphate as SO4 2:1 Extrac	TM098	g/l	<0.003		0.054	0.21	0.3	0.15	0.1	0.015	0.17	0.11	0.049	0.084	0.14	0.075	0.12	0.083	0.042	0.0	0.1	0.0	0.093	0.1	0.1
Acid Soluble Sulphide	TM101	mg/kg	<50		50	50	50.0	50	50.0	100	50	50	210	50	50	50	50	50	960	50.0	50.0	50.0	50	850.0	50.0
Hexavalent Chromium	TM151	mg/kg	<0.3	130	1.5	3	0.3	3	3.0	3	0.3	3	0.3	0.3	0.3	3	3	3	0.3	3.0	0.3	0.3	0.3	6.0	3.0
Phenols Monohydric	TM062	mg/kg	<0.15	150	0.15	0.15	0.2	0.15	0.2	0.15	0.15	0.15	0.15	0.15	0.15	0.67	0.15	0.15	0.15	1.4	0.2	0.2	0.15	0.2	0.2
Total Cyanide	TM153	mg/kg	<1	36	1	1	1.0	1	12.0	1	1	1	1	1	1	4	1	1	1	1.0	1.0	1.0	1	1.0	1.0
Free Cyanide	TM153	mg/kg	<1	36	1	1	1.0	1	1.0	1	1	1	1	1	1	4	1	1	1	1.0	1.0	1.0	1	1.0	1.0
Complex Cyanide	TM153	mg/kg	<1	36	1	1	1.0	1	13.0	1	1	1	1	1	1	4	1	1	1	1.0	1.0	1.0	1	1.0	1.0
Asbestos Presence Screen	TM001	NONE		present	Absent	Absent			Absent		Absent			Absent			Absent							Absent	
pH Value	TM133	pH Units	<1.00	9	7.9	8.05	7.5	7.10	7.5	7.73	7.56	7.91	8.06	8.1	7.83	11.38	8.25	7.53	7.59	8.1	8.8	8.1	10.59	7.8	8.1
Petroleum Hydrocarbons																									
Gas Range Organics GRO (C4-C12)	TM089	mg/kg	<0.01		0.010	0.010	0.010	0.01	0.010			0.110			0.010					0.330	0.016		0.065	0.010	
MTBE	TM089	mg/kg	<0.01		0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.010	0.010	
Benzene	TM089	mg/kg	<0.01	0.05	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.010	0.010	
Toluene	TM089	mg/kg	<0.01	7	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.027	0.016		0.012	0.010	
Ethyl benzene	TM089	mg/kg	<0.01	21	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.026	0.010		0.010	0.010	
m & p Xylene	TM089	mg/kg	<0.01	9.8	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.037	0.010		0.010	0.010	
o Xylene	TM089	mg/kg	<0.01	9.8	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.017	0.010		0.010	0.010	
Aliphatics C5-C6	TM089	mg/kg	<0.01	14	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.010	0.010	
Aliphatics >C6-C8	TM089	mg/kg	<0.01	35	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.027	0.010	
Aliphatics >C8-C10	TM089	mg/kg	<0.01	8.2	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.010	0.010	
Aliphatics >C10-C12	TM089	mg/kg	<0.01	42	0.010	0.010	0.010	0.01	0.010			0.042			0.010					0.084	0.010		0.010	0.010	
Aliphatics >C12-C16	TM173	mg/kg	<0.1	6500	1.600	13.000	11.000	5.7	21.000			5.500			15.000					37.000	9.700		10.000	110.000	
Aliphatics >C16-C21	TM173	mg/kg	<0.1	190000	3.500	18.000	16.000	9.5	32.000			7.200			14.000					54.000	12.000		22.000	180.000	
Aliphatics >C21-C35	TM173	mg/kg	<0.1	190000	4.900	49.000	39.000	22	66.000			48.000			18.000					130.000	35.000		130.000	460.000	
Aromatics C6-C7	TM089	mg/kg	<0.01	0.05	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.010	0.010		0.010	0.010	
Aromatics >C7-C8	TM089	mg/kg	<0.01	7	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.027	0.016		0.012	0.010	
Aromatics >EC8-EC10	TM089	mg/kg	<0.01	13	0.010	0.010	0.010	0.01	0.010			0.010			0.010					0.087	0.010		0.016	0.010	
Aromatics >EC10-EC12	TM089	mg/kg	<0.01	72	0.010	0.010	0.010	0.01	0.010			0.064			0.010					0.130	0.010		0.010	0.010	
Aromatics >EC12-EC16	TM173	mg/kg	<0.1	330	0.100	11.000	22.000	3.7	88.000			8.600			12.000					280.000	15.000		77.000	110.000	
Aromatics >EC16-EC21	TM173	mg/kg	<0.1	2100	1.500	37.000	73.000	14	400.000			26.000			21.000					1000.000	42.000		230.000	290.000	
Aromatics >EC21-EC35	TM173	mg/kg	<0.1	2100	11.000	190.000	500.000	73	1500.000			120.000			63.000					3600.000	160.000		760.000	530.000	
EPH (DRO) (C10-C40)	TM061	mg/kg	<35		85	730		300		580	90		35	10000	180	7300	200	7700	130		480.0	200.0			900.0
EPH C10-20	TM061	mg/kg	<35		35	200		75		54	35		35	2900	100	2100	80	2300	53		160.0	80.0			380.0
EPH >C20-30	TM061	mg/kg	<35		35	300		130		330	51		35	5500	69	3700	77	3700	48		230.0	83.0			370.0
EPH >C30-40	TM061	mg/kg	<35		35	220		97		200	35		35	2100	35	1600	47	1700	35		85.0	56.0			150.0
Polycyclic Aromatic Hydrocarbons																									
Acenaphthene	TM142	mg/kg	<0.05	12	0.05	0.86	2.1	0.05	18.0	1.2	0.05	0.51	0.05	22	0.05	58	0.05	21	0.24	14.0	1.4	0.1	12	40.0	7.3
Acenaphthylene	TM142	mg/kg	<0.05	1	0.05	1.7	2.5	0.78	6.1	0.31	0.05	0.94	0.05	4.9	0.05	17	0.05	4	0.86	3.3	0.1	0.1	3.9	4.4	3.0
Anthracene	TM142	mg/kg	<0.05	2800	0.05	0.75	4.0	0.14	17.0	0.77	0.07	0.68	0.05	27	0.05	73	0.05	22	0.2	16.0	1.9	0.1	13	3.8	6.7
Benz(a)anthracene	TM142	mg/kg	<0.05	7.2	0.11	0.92	15.0	0.05	31.0	1.2	0.5	2	0.05	48	0.05	120	0.25	21	0.39	23.0	3.9	0.1	16	5.7	6.0
Benzo(a)pyrene	TM142	mg/kg	<0.05	1.3	2.8	4	30.0	0.98	14.0	8.2	0.65	11	0.05	45	0.05	110	0.09	22	0.05	21.0	13.0	0.1	23	5.0	11.0
Benzo(b)fluoranthene	TM142	mg/kg	<0.05	16	0.33	1.5	15.0	0.05	33.0	2.2	0.83	3	0.05	28	0.05	120	0.35	11	0.45	12.0	3.2	0.2	12	2.8	6.8
Benzo(ghi)perylene	TM142	mg/kg	<0.05	2100	0.05	0.05	15.0	1.1	22.0	0.05	0.05	1.4	0.05	24	0.05	70	0.05	9.8	0.05	9.9	1.8	0.1	8.4	0.1	3.1
Benzo(k)fluoranthene	TM142	mg/kg	<0.05	16	0.13	0.82	17.0	1.2	12.0	0.73	0.22	0.63	0.05	41	0.05	92	0.34	20	0.26	19.0	3.1	0.1	12	5.2	3.0
Chrysene	TM142	mg/kg	<0.05	32	0.08	1.1	14.0	0.65	36.0	1.9	0.64	2.2	0.05	49	0.05	120	0.32	19	0.37	22.0	3.9	0.1	15	4.9	5.7
Dibenzo(ah)anthracene	TM142	mg/kg	<0.05	1.6	0.05	0.05	2.0	1.2	16.0	0.05	0.05	0.65	0.05	1.4	0.05	3.6	0.05	0.95	0.05	0.8	0.1	0.1	0.05	0.1	0.4
Fluoranthene	TM142	mg/kg	<0.05	95	0.4	3.6	24.0	1.1	74.0	3.8	1.3	4.7	0.05	120	0.05	340	0.84	66	1	59.0	11.0	0.2	46	31.0	20.0
Fluorene	TM142	mg/kg	<0.05	2600	0.05	0.4	2.0	0.83	15.0	0.67	0.05	0.51	0.05	13	0.05	43	0.05	15	0.05	9.8	1.4	0.1	10	25.0	4.9
Indeno(123cd)pyrene	TM142	mg/kg	<0.05	16	0.05	0.05	16.0	0.55	6.0	0.05	0.05	3	0.05	21	0.05	62	0.05	10	0.05	9.5	1.3	0.1	7.4	0.1	2.8
Naphthalene	TM142	mg/kg	<0.05	5.6	0.05	0.41	3.6	0.56	2.0	1.9	0.05	1.4	0.27	7	0.85	47	0.05	29	2.1	10.0	3.0	0.6	13	2.2	19.0
Phenanthrene	TM142	mg/kg	<0.05	2800	0.21	2.8	20.0	0.37	55.0	4.2	0.94	3.7	0.07	130	2.7	330	1.5	86	1.1	64.0	9.9	0.1	58	1.5	24.0
Pyrene	TM142	mg/kg	<0.05	1500	0.46	4.4	25.0	2.3	75.0	3.4	1.4	4.3	0.05	110	0.05	290	0.94	55	0.96	50.0	11.0	0.3	41	23.0	15.0
Semi Volatile Organic Compounds																									
1,2,4-Trichlorobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
1,2-Dichlorobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
1,3-Dichlorobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
1,4-Dichlorobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2,3,4,6-Tetrachlorophenol	TM157	ug/kg	<100																						
2,4,5-Trichlorophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2,4,6-Trichlorophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2,4-Dichlorophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	

E11066-1 Bennett Street

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

				Sample Identity	WS108-CD2	WS109-CD1	WS110-CD1	WS110-CD2	BH1-D2	BH1-D3	WS111-CD1	WS112-CD1	WS112-CD3	WS113-CD1	WS114-CD1	WS115-CD1	WS117-CD1	WS118-CD1	WS119-CD2	WS120-CD1	WS121-CD1	WS121-CD2	WS122-CD1	WS122-CD3	WS123-CD1
				Depth (mbgl)	2.00	0.75	0.50	1.50	0.95	2.80	0.75	0.50	2.20	0.80	0.75	0.60	0.80	0.60	1.00	0.60	0.60	1.80	0.90	3.90	0.30
				Date	09/11/2007	09/11/2007	09/11/2007	09/11/2007	12/11/2007	12/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	10/11/2007
	Method	Units	Detection Limit	TSV																					
2,4-Dimethylphenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2,4-Dinitrotoluene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2,6-Dichlorophenol	TM157	ug/kg	<100																						
2,6-Dinitrotoluene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2-Chloronaphthalene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2-Chlorophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2-Methylnaphthalene	TM157	ug/kg	<100				1500	100	3800			1800												100.0	
2-Methylphenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2-Nitroaniline	TM157	ug/kg	<100				1000	100	1000			100												100.0	
2-Nitrophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
3-Nitroaniline	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Bromophenylphenylether	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Chloro-3-methylphenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Chloroaniline	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Chlorophenylphenylether	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Methylphenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Nitroaniline	TM157	ug/kg	<100				1000	100	1000			100												100.0	
4-Nitrophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Aniline	TM157	ug/kg	<100																						
Anthraquinone	TM157	ug/kg	<100																						
Azobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Biphenyl	TM157	ug/kg	<100																						
Bis(2-chloroethoxy)methane	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Bis(2-chloroethyl)ether	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Bis(2-ethylhexyl) phthalate	TM157	ug/kg	<100				1000	100	1000			160												170.0	
Bis(2-chloroisopropyl)ether	TM157	ug/kg	<100																						
Bromo phenyl phenyl ether	TM157	ug/kg	<100																						
Butylbenzyl phthalate	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Carbazole	TM157	ug/kg	<100				2200	100	4000			970												940.0	
Dibenzofuran	TM157	ug/kg	<100				1400	100	9100			1200												2200.0	
Diethyl phthalate	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Dimethyl phthalate	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Di-n-butyl phthalate	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Di-n-Octyl phthalate	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Hexachlorobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Hexachlorobutadiene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Hexachlorocyclopentadiene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Hexachloroethane	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Isophorone	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Nitrobenzene	TM157	ug/kg	<100				1000	100	1000			100												100.0	
N-nitrosodi-n-propylamine	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Pentachlorophenol	TM157	ug/kg	<100				1000	100	1000			100												100.0	
Volatile Organic Compounds																									
1,1,1,2-Tetrachloroethane	TM116	ug/kg	<10	6600			10	10	10			10												10	
1,1,1-Trichloroethane	TM116	ug/kg	<7	15000			7	7	7			7												7	
1,1,2,2-Tetrachloroethane	TM116	ug/kg	<10	6600			10	10	10			10												10	
1,1,2-Trichloroethane	TM116	ug/kg	<10				10	10	10			10												10	
1,1-Dichloroethane	TM116	ug/kg	<8				8	8	8			8												8	
1,1-Dichloroethene	TM116	ug/kg	<10				10	10	10			10												10	
1,1-Dichloropropene	TM116	ug/kg	<11				11	11	11			11												11	
1,2,3-Trichlorobenzene	TM116	ug/kg	<11				11	11	11			11												11	
1,2,3-Trichloropropane	TM116	ug/kg	<17				17	17	17			17												17	
1,2,4-Trichlorobenzene	TM116	ug/kg	<6				6	6	6			6												6	
1,2,4-Trimethylbenzene	TM116	ug/kg	<9				9	9	9			23												9	
1,2-Dibromo-3-chloropropane	TM116	ug/kg	<14				14	14	14			14												14	
1,2-Dibromoethane	TM116	ug/kg	<12				12	12	12			12												12	
1,2-Dichlorobenzene	TM116	ug/kg	<12				12	12	12			12												12	
1,2-Dichloroethane	TM116	ug/kg	<5	12			5	5	5			5												5	
1,2-Dichloropropane	TM116	ug/kg	<12				12	12	12			12												12	
1,3,5-Trimethylbenzene	TM116	ug/kg	<8				8	8	8			8												8	
1,3-Dichlorobenzene	TM116	ug/kg	<6				6	6	6			6												6	
1,3-Dichloropropane	TM116	ug/kg	<7				7	7	7			7												7	
1,4-Dichlorobenzene	TM116	ug/kg	<5				5	5	5			5												5	
2,2-Dichloropropane	TM116	ug/kg	<12				12	12	12			12												12	
2-Chlorotoluene	TM116	ug/kg	<9				9	9	9			9												9	
4-Chlorotoluene	TM116	ug/kg	<12				12	12	12			12												12	
4-Isopropyltoluene	TM116	ug/kg	<11				11	11	11			11												11	
Bromobenzene	TM116	ug/kg	<10				10	10	10			10												10	
Bromochloromethane	TM116	ug/kg	<14				14	14	14			14												14	
Bromodichloromethane	TM116	ug/kg	<7				7	7	7			7												7	
Bromoform	TM116	ug/kg	<10				10	10	10			10												10	
Bromomethane	TM116	ug/kg	<13				13	13	13			13												13	
Carbon Disulphide	TM116	ug/kg	<7				7	7	7			7												7	
Carbontetrachloride	TM116	ug/kg	<14				14	14	14			14												14	

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

				Sample Identity	WS108-CD2	WS109-CD1	WS110-CD1	WS110-CD2	BH1 D2	BH1-D3	WS111-CD1	WS112-CD1	WS112-CD3	WS113-CD1	WS114-CD1	WS115-CD1	WS117-CD1	WS118-CD1	WS119-CD2	WS120-CD1	WS121-CD1	WS121-CD2	WS122-CD1	WS122-CD3	WS123-CD1
				Depth (mbgl)	2.00	0.75	0.50	1.50	0.95	2.60	0.75	0.50	2.20	0.80	0.75	0.60	0.80	0.60	1.00	0.60	0.60	1.80	0.90	3.90	0.30
				Date	09/11/2007	09/11/2007	09/11/2007	09/11/2007	12/11/2007	12/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	10/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	10/11/2007
	Method	Units	Detection Limit	TSV																					
Chlorobenzene	TM116	ug/kg	<5	60000			5	5	5			5												5	
Chloroethane	TM116	ug/kg	<14				14	14	14			14												14	
Chloroform	TM116	ug/kg	<8	3860			8	8	8			8												8	
Chloromethane	TM116	ug/kg	<7				7	7	7			7												7	
cis-1-2-Dichloroethene	TM116	ug/kg	<5				5	5	5			5												5	
cis-1-3-Dichloropropene	TM116	ug/kg	<14				14	14	14			14												14	
Dibromochloromethane	TM116	ug/kg	<13				13	13	13			13												13	
Dibromomethane	TM116	ug/kg	<9				9	9	9			9												9	
Dichlorodifluoromethane	TM116	ug/kg	<4				4	4	4			4												4	
Dichloromethane	TM116	ug/kg	<10				10	10	10			10												10	
Hexachlorobutadiene	TM116	ug/kg	<12	21			12	12	12			12												12	
Isopropylbenzene	TM116	ug/kg	<5				5	5	5			5												5	
n-Butylbenzene	TM116	ug/kg	<10				10	10	10			10												10	
Propylbenzene	TM116	ug/kg	<11				11	11	11			11												11	
sec-Butylbenzene	TM116	ug/kg	<10				10	10	10			10												10	
Styrene	TM116	ug/kg	<10				10	10	10			10												10	
tert-Butylbenzene	TM116	ug/kg	<12				12	12	12			12												12	
Tetrachloroethene	TM116	ug/kg	<5	1500			5	5	5			5												5	
trans-1-2-Dichloroethene	TM116	ug/kg	<11				11	11	11			11												11	
trans-1-3-Dichloropropene	TM116	ug/kg	<14				14	14	14			14												14	
Trichloroethene	TM116	ug/kg	<9				9	9	9			9												9	
Trichlorofluoromethane	TM116	ug/kg	<6				6	6	6			6												6	
Vinyl Chloride	TM116	ug/kg	<10	10			10	10	10			10												10	
112-Trichl-122-Trifluoroethane	TM116	ug/kg	<25																						

E11066-1 Bennett Street

Soil Results Screened Against TSVs for Residential End Use with Plant Uptake

				Sample Identity	WS124-CD1	WS125-CD1	WS125-CD1	WS126-CD2	WS128-CD2	WS129-CD1	WS130-CD1	WS131-CD1	WS132-CD1	WS133-CD2	WS135-D1	WS135-D2	WS136-D1	WS137-CD1	WS138-CD2	WS139-CD1	WS140-CD1	WS142-CD1	WS143-CD1	WS145-CD1	BH2 CD1
				Depth (mbgl)	0.50	0.40	0.40	1.00	0.80	0.80	0.60	0.80	0.50	1.00	0.40	2.40	0.50	0.50	1.00	0.50	0.50	0.50	0.80	0.60	0.25
				Date	10/11/2007	10/11/2007	11/11/2007	10/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	11/11/2007	
	Method	Units	Detection Limit	TSV																					
Mercury Low	TM129	mg/kg	<0.4	8	0.4		4.7	1.0	0.4	0.4	1.3	0.6	0.4	0.4	0.4	0.4	0.7	0.4	0.9	0.4	0.4	0.4	0.4	1.1	0.4
Boron Water Soluble	TM129	mg/kg	<3.5		3.5		3.5	3.8	3.6	9.5	3.5	3.5	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Arsenic	TM129	mg/kg	<3.0	20	25		38.0	69.0	8	47	17.0	210.0	13	32	5	21	19.0	22	11.0	130	110	33	29	41.0	13
Cadmium	TM129	mg/kg	<0.3	8	0.3		1.2	0.8	0.3	0.6	0.3	1.4	0.3	0.3	0.7	0.3	0.4	1	0.9	1.8	1.8	0.5	0.6	0.3	1.6
Chromium	TM129	mg/kg	<4.5	130	25		14.0	21.0	21	13	18.0	85.0	33	1300	18	26	23.0	12	16.0	73	66	12	15	15.0	14
Copper	TM129	mg/kg	<6	111	73		190.0	200.0	25	110	150.0	270.0	160	670	94	31	460.0	250	57.0	860	180	210	200	170.0	97
Lead	TM129	mg/kg	<2	450	200		720.0	290.0	43	110	260.0	950.0	210	720	130	42	360.0	93	160.0	910	240	77	190	240.0	180
Nickel	TM129	mg/kg	<0.9	50	46		27.0	49.0	17	46	42.0	38.0	68	19	15	28	35.0	56	18.0	43	100	54	44	46.0	32
Selenium	TM129	mg/kg	<3	35	3		3.0	3.0	3	3	3.0	3.0	3	3	3	3	3.0	3	3.0	3	3	3	3	3.0	3
Vanadium	TM129	mg/kg	<1.5	140	41		41.0	55.0	31	44	46.0	38.0	85	34	23	46	38.0	44	21.0	59	280	53	42	47.0	25
Zinc	TM129	mg/kg	<2.5	330	120		380.0	210.0	51	200	77.0	98.0	410	94	160	51	130.0	130	210.0	740	680	100	3700	160.0	250
Water Soluble Sulphate as SO4 2:1 Extrac	TM098	g/l	<0.003		0.56		0.2	0.1	0.12	1.4	0.2	0.0	0.16	0.21	0.83	0.075	0.1	0.24	0.2	0.051	0.1	0.95	0.19	0.1	0.047
Acid Soluble Sulphide	TM101	mg/kg	<50		50	50		50.0	50	50	50.0	50.0	50	50	60	50	50.0	80	50.0	50	50	50	50	61.0	68
Hexavalent Chromium	TM151	mg/kg	<0.3	130	0.3	0.3		0.3	3	0.3	0.3	0.3	0.3	0.3	0.3	3	0.3	0.3	0.3	0.3	3	0.3	0.3	0.3	3
Phenols Monohydric	TM062	mg/kg	<0.15	150	0.15	0.97		0.2	0.15	0.15	0.2	0.2	0.15	2	0.15	0.15	0.2	0.15	0.2	0.15	0.34	0.15	0.57	0.2	0.15
Total Cyanide	TM153	mg/kg	<1	36	1	1		1.0	1	1	1.0	1.0	1	1	1	1	1.0	1	1.0	1	1	1	1	1.0	1
Free Cyanide	TM153	mg/kg	<1	36	1	1		1.0	1	1	1.0	1.0	1	1	1	1	1.0	1	1.0	1	1	1	1	1.0	1
Complex Cyanide	TM153	mg/kg	<1	36	1	1		1.0	1	1	1.0	1.0	1	1	1	1	1.0	1	1.0	1	1	1	1	1.0	1
Asbestos Presence Screen	TM001	NONE		present	Absent									Absent					Absent		Absent				
pH Value	TM133	pH Units	<1.00	9	9	10.82		8.0	7.88	8.15	8.4	8.9	8.21	8.07	7.82	8.01	6.8	8.01	10.0	8	8.15	8.43	11.3	8.3	7.97
Petroleum Hydrocarbons																									
Gas Range Organics GRO (C4-C12)	TM089	mg/kg	<0.01		4.300			0.110		1.000		0.290		0.010			0.010		0.200		0.140	0.010	3.100	0.037	
MTBE	TM088	mg/kg	<0.01		0.010			0.010		0.010		0.010		0.010			0.010		0.010		0.010	0.010	0.010	0.010	
Benzene	TM089	mg/kg	<0.01	0.05	0.027			0.010		0.010		0.010		0.010			0.010		0.014		0.010	0.010	0.015	0.010	
Toluene	TM089	mg/kg	<0.01	7	0.067			0.016		0.021		0.010		0.010			0.010		0.029		0.015	0.010	0.048	0.010	
Ethyl benzene	TM089	mg/kg	<0.01	21	0.068			0.020		0.034		0.015		0.010			0.010		0.018		0.010	0.010	0.052	0.010	
m & p Xylene	TM089	mg/kg	<0.01	9.8	0.110			0.020		0.057		0.028		0.010			0.010		0.029		0.023	0.010	0.096	0.010	
o Xylene	TM089	mg/kg	<0.01	9.8	0.053			0.010		0.031		0.010		0.010			0.010		0.016		0.010	0.010	0.046	0.010	
Aliphatics C5-C6	TM089	mg/kg	<0.01	14	0.010			0.010		0.010		0.010		0.010			0.010		0.010		0.010	0.010	0.010	0.010	
Aliphatics >C6-C8	TM089	mg/kg	<0.01	35	0.010			0.010		0.010		0.010		0.010			0.010		0.010		0.010	0.010	0.010	0.010	
Aliphatics >C8-C10	TM089	mg/kg	<0.01	8.2	0.180			0.010		0.058		0.010		0.010			0.010		0.010		0.010	0.010	0.230	0.010	
Aliphatics >C10-C12	TM089	mg/kg	<0.01	42	1.400			0.023		0.290		0.093		0.010			0.010		0.036		0.039	0.010	0.910	0.015	
Aliphatics >C12-C16	TM173	mg/kg	<0.1	6500	55.000			12.000		20.000		10.000		7.700			11.000		29.000		49.000	2.100	30.000	18.000	
Aliphatics >C16-C21	TM173	mg/kg	<0.1	190000	87.000			15.000		32.000		11.000		7.800			13.000		68.000		85.000	6.500	39.000	21.000	
Aliphatics >C21-C35	TM173	mg/kg	<0.1	190000	170.000			36.000		65.000		19.000		11.000			22.000		220.000		130.000	36.000	110.000	32.000	
Aromatics C8-C7	TM089	mg/kg	<0.01	0.05	0.027			0.010		0.010		0.010		0.010			0.010		0.014		0.010	0.010	0.016	0.010	
Aromatics >C7-C8	TM089	mg/kg	<0.01	7	0.067			0.016		0.021		0.010		0.010			0.010		0.029		0.015	0.010	0.048	0.010	
Aromatics >EC8-EC10	TM089	mg/kg	<0.01	13	0.510			0.040		0.210		0.054		0.010			0.010		0.071		0.023	0.010	0.540	0.010	
Aromatics >EC10-EC12	TM089	mg/kg	<0.01	72	2.100			0.034		0.430		0.140		0.010			0.010		0.054		0.056	0.010	1.400	0.022	
Aromatics >EC12-EC16	TM173	mg/kg	<0.1	330	330.000			18.000		73.000		6.000		4.600			8.500		110.000		250.000	7.500	110.000	46.000	
Aromatics >EC16-EC21	TM173	mg/kg	<0.1	2100	970.000			35.000		230.000		20.000		3.500			18.000		380.000		1000.000	29.000	280.000	140.000	
Aromatics >EC21-EC35	TM173	mg/kg	<0.1	2100	2600.000			170.000		810.000		62.000		17.000			61.000		1500.000		3200.000	120.000	860.000	560.000	
EPH (DRO) (C10-C40)	TM061	mg/kg	<35		16000		26000.0		200	2300	270.0		1800	210	3000	620	340.0	860		3100			2600		2900
EPH C10-20	TM061	mg/kg	<35		7700		8700.0		57	720	90.0		290	85	260	300	130.0	130		500			890		460
EPH >C20-30	TM061	mg/kg	<35		7800		13000.0		98	1100	110.0		900	73	990	200	130.0	270		1600			1200		1200
EPH >C30-40	TM061	mg/kg	<35		2900		4200.0		48	450	74.0		640	51	1700	120	75.0	270		1000			530		1200
Polycyclic Aromatic Hydrocarbons																									
Acenaphthene	TM142	mg/kg	<0.05	12	59		71.0	0.5	0.71	12	0.1	0.7	2.7	0.05	0.87	0.05	0.1	0.05	16.0	2.7	56	0.89	23	4.3	2.4
Acenaphthylene	TM142	mg/kg	<0.05	1	13		12.0	3.4	0.48	5.8	0.1	0.4	2.2	0.05	2	0.05	0.1	0.05	4.1	7.7	16	0.44	7.6	6.0	3.9
Anthracene	TM142	mg/kg	<0.05	2800	46		75.0	0.8	0.67	16	0.3	0.8	3.9	0.05	1.8	0.05	0.5	0.05	18.0	14	68	1	26	8.1	4
Benz(a)anthracene	TM142	mg/kg	<0.05	7.2	55		98.0	1.7	1.9	21	0.8	1.1	9.5	0.05	8.7	0.05	0.8	0.86	28.0	31	100	1.7	26	18.0	12
Benzo(a)pyrene	TM142	mg/kg	<0.05	1.3	25		81.0	0.1	6.8	22	0.1	0.1	10	5.9	8.9	0.05	0.1	0.05	24.0	17	62	7.6	26	18.0	9.3
Benzo(b)fluoranthene	TM142	mg/kg	<0.05	16	23		48.0	0.9	2.7	28	0.8	0.7	11	0.05	12	0.05	0.8	1.4	18.0	21	85	1.8	8.7	18.0	13
Benzo(ghi)perylene	TM142	mg/kg	<0.05	2100	22		36.0	0.1	1.4	0.05	0.5	0.2	5.4	0.05	0.05	0.05	0.1	0.05	13.0	10	48	1	0.05	6.2	7.5
Benzo(k)fluoranthene	TM142	mg/kg	<0.05	16	45		82.0	1.5	0.32	7.8	0.8	0.9	5.4	0.05	4	0.05	0.6	0.73	23.0	23	70	1.3	31	8.0	7.8
Chrysene	TM142	mg/kg	<0.05	32	53		100.0	1.8	2	19	0.9	1.1	9.2	0.05	6.4	0.05	1.0	0.82	26.0	25	96	1.8	22	18.0	11
Dibenzo(ah)anthracene	TM142	mg/kg	<0.05	1.6	0.05		3.6	0.1	0.17	0.05	0.3	1.2	1.1	0.05	0.05	0.05	0.1	0.05	2.6	1.7	2.7	0.22	0.05	1.7	1.7
Fluoranthene	TM142	mg/kg	<0.05	95	130		280.0	0.1	4.8	55	2.5	3.1	22	0.12	17	0.05	1.9	1.9	74.0	58	290	4.8	72	46.0	29
Fluorene	TM142	mg/kg	<0.05	2600	38		50.0	0.1	0.54	8.7	0.1	2.7	3	45	0.56	0.05	0.1	0.05	13.0	7.7	44	0.6	16	4.6	2.1
Indeno(123cd)pyrene	TM142	mg/kg	<0.05	16	19		36.0	0.1	2.5	0.05	0.4	0.7	5.9	0.05	0.05	0.05	0.1	0.05	13.0	15	44	1	0.05	7.2	8.4
Naphthalene	TM142	mg/kg	<0.05	5.6	93		32.0	2.9	1.7	21	0.1	0.6	6	0.86	2.4	0.05	0.1	0.05	13.0	4.8	13	1	45	5.6	1.4
Phenanthrene	TM142	mg/kg	<0.05	2800	180		330.0	3.6	3.4	60	3.3	5.1	19	0.24	7.4	7.5	3.8	3.1	83.0	50	320	4.7	90	44.0	21
Pyrene	TM142	mg/kg	<0.05	1500	110		230.0	0.1	4.5	48	2.4	3.5	21	0.13	16	0.05	1.9	1.7	64.0	48	260	4.2	57	44.0	26
Semi Volatile Organic Compounds																									
1,2,4-Trichlorobenzene	TM157	ug/kg	<100		2000																2000			1000	
1,2-Dichlorobenzene	TM157	ug/kg	<100		2000																2000			1000	
1,3-Dichlorobenzene	TM157	ug/kg	<100		2000																2000			1000	
1,4-Dichlorobenzene	TM157	ug/kg	<100		2000																2000			1000	
2,3,4,6-Tetrachlorophenol	TM157	ug/kg	<100																						
2,4,5-Trichlorophenol	TM157	ug/kg	<100		2000																2000			1000	
2,4,6-Trichlorophenol	TM157	ug/kg	<100		2000																2000			1000	
2,4-Dichlorophenol	TM157	ug/kg	<100		2000																2000			1000	