Remediation and Enabling Works Strategy
Thompson Street, Manchester

Reference:12-729-R3-2
Date: January 2022

REMEDIATION AND ENABLING WORKS STRATEGY

Thompson Street / Bendix Street
Manchester
M4 5FP

Prepared for:

Mulbury City

Report Ref: 12-729-R3-2
Date Issued: 7th January 2022

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EXECUTIVE SUMMARY

Site Address	Thompson Street, Manchester, M4 5FP
National Grid Reference	E384800, 398870
Site Area	0.14 Hectares
Background	E3P has been instructed by Mulbury City, on behalf of their client to develop a Remediation and Enabling Works Strategy for the proposed residential apartment building with ground floor commercial units at the site located to the northeast of Bendix Street, Manchester. The E3P Remediation and Enabling Earthworks Strategy has been produced in due consideration of the Phase II Geo-Environmental Site Assessment dated November 2020 (Ref: 12-729-R2) and contaminated land assessments previously undertaken by E3P on behalf of the client.

CONTAMINATED LAND RISK ASSESSMENT

Human Health Risk Assessment	A Tier I human health risk assessment has been undertaken using the soil chemical analysis results and comparing to the relevant Tier I criteria. This assessment has identified the presence of elevated heavy metals, non-volatile polycyclic aromatic hydrocarbons (PAH) and asbestos. The chronic risk to human health associated with the elevated concentrations on inorganic heavy metals and non-volatile PAH can be mitigated through the capping of the material by the structure or hardstand, alternatively the installation of a suitable cover system in any landscaping or tree pits. The concentration of total mercury at WS106 is below the target values for methyl and inorganic mercury, however further analysis was required to confirm the concentration of elemental mercury. During a supplementary phase of site works, further samples of the Made Ground were submitted for mercury analysis to assess whether mercury was present within the vicinity of WS106 (namely samples MG301 to MG303). No elevated concentrations of mercury were identified, and the speciation of the sample was not required, therefore it is considered that no vapour risk to human health receptors exists. However, for the avoidance of doubt, the soils from this locality will be retained on site and placed within an area of low sensitivity such as beneath external hardstand. Asbestos in the form of chrysotile has also been identified in the Made Ground in TP104. Asbestos quantification confirms that only trace fibres are present, and no visual signs of ACM were encountered during the ground investigation. Impacted soils should be managed according to the asbestos risk mitigation conceptual site model. The area of the former PFS (now a locksmith) remained active during the initial site investigation works and was therefore not accessible. Upon the client taking ownership of the site, further works have been undertaken to locate the historic fuel tanks and chemically analyse the surrounding soils underlying the current building and former forecourt. Chemical analysis of the soils within the tanks, beneath and surrounding has not recorded any exceedances and therefore this material is suitable for re-use.

Controlled Waters Risk Assessment	The site is not considered to pose an unacceptable level of risk to controlled waters. No soluble phase impacted were identified during the post demolition investigation, associated with the former garage and fuel tanks.
Ground Gas	Ground gas monitoring indicates the site falls under Characteristic Situation 1 and no gas protection measures will be required. Supplementary chemical analysis of the soils underlying the former PFS did not record any volatile compounds, as such, there is no potential for volatilisation to indoor air.
Coal Mining and Historical Workings	The site is not considered to be at risk of subsidence relating to historic mining or quarrying-related issues.
Invasive Plants	No invasive plant species have been observed based on the works to date.
Potable Water Supply	Based on the assessment of current site conditions it is likely that barrier pipe will be required for the proposed development. This will need to be confirmed upon completion of the further chemical analysis via a UK WIR risk assessment.

GEOTECHNICAL ASSESSMENT

Relict Sub-Structures	Relict foundations and sub-structures will underlie the current structure. Furthermore, the presence of historic fuel tanks, filler lines and pumps are likely to underlie the former PFS area of the site. All such features will require removal from beneath proposed structures and infrastructure to the depths and extents as defined within this specification.
Adverse Ground Conditions	All historical features where deleterious/ putrescible material is identified should be located and subject to the necessary remediation works.
Proposed Foundations	The overarching aim of the remediation and enabling earthworks will be the construction of a development platform that will ensure suitability of the site for a residential apartment building constructed on piled foundations. Where structures are to be supported by the use of a pile foundation, all newly placed material will be engineered to ensure no unacceptable long-term consolidation/settlement that would induce negative skin friction and subsidence to external hardstand.
Highways and Infrastructure	All proposed adopted roads, where present, will be constructed in accordance with the geotechnical engineering requirements as defined within the MCHW Series 600. Specific engineering and compaction of materials will be completed in strict accordance with the geotechnical specification contained within this report. All materials outside of structural / infrastructure development will be engineered and compacted to ensure consolidation associated with self-weight settlement is limited to < 50 mm in accordance with the E3P specification.

REMEDIATION AND ENABLING WORKS

Objectives	The remediation and enabling works will be delivered in a manner that will seek to ensure that the site is prepared to deliver the optimum foundation solution for the proposed structures, infrastructure and highways. The structural engineer's drawings should be referenced to determine the proposed foundation solution.
Remediation and Enabling Works	The site remediation and enabling works strategy provides a comprehensive specification for the regeneration of the land to negate identified pollutant linkages and construct a development platform that will be geotechnically suitable for the proposed end use. The salient features of the remediation and enabling works strategy are summarised as follows: • Implementing of all works in strict accordance with UK Environmental Permitting and local planning authority requirements. • Further investigation of mercury hotspots (WS106) with subsequent validation; • Further investigation of possible tanks and hydrocarbon impacted soils associated with historic PFS located adjacent to Oldham Road; • Identification of possible USTs and safe removal; • Removal of all volatile and soluble phase compounds associated with tanks and garage identified in post demolition intrusive works; • Removal of any potentially volatile compounds; • Demolition of existing structures; • Removal of all hardstand, relict foundations and buried features in their entirety. • Removal of all materials considered geotechnically deleterious. • Excavation and processing of Made Ground in a controlled manner with the sorting, processing and segregation of identified deleterious materials to geotechnical specification. • Validation sampling and leachate testing to confirm material retained on site poses no unacceptable risk to the residential end users, controlled waters or wider environ. • Construction of temporary working platform; • Replacement of material in accordance with the E3P enabling specification and engineering requirements.

BUILD PHASE REQUIREMENTS

Summary of Build-Phase Mitigation Requirements	The developer's works will also include the completion of the following additional elements: • Construction of appropriate potable water supply infrastructure; and • Installation of a 300mm chemically suitable cover system and geotextile break layer within any peripheral soft landscaped areas and tree pits (the location of which are to be confirmed).

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DRAWING LIST

12-729-001	Site Location Plan
12-729-002	Proposed Development Plan
12-729-003	Historical Features Plan
12-729-004	Site Features Plan
12-729-005	Exploratory Hole Location Plan
12-729-006	Depth of Made Ground Plan
12-729-018	Contamination Exceedances Plan
12-729-019	Validation Sampling Plan

1. INTRODUCTION

1.1. BACKGROUND

E3P has been instructed by Ridge and Partners LLP, on behalf of their client (Mulbury City), to develop a remediation strategy and enabling works strategy for the proposed residential development at a parcel of land located off Thompson Street / Bendix Street, Manchester; herein referred to as *the site*.

1.2. REPORT OBJECTIVES

- The objectives of this report are to:
- Prepare overview of contaminated land remediation requirements;
- Evaluate feasible remedial technologies;
- Assess the most-appropriate earthworks solution to ensure the delivery of the optimum development platform;
- Define validation criteria to demonstrate the successful implementation of a site remediation and enabling works plan;
- Specify geotechnical engineering performance requirements; and
- Ensure the safe, cost effective and regulatory compliant redevelopment of the site.

1.3. SCOPE OF WORKS

- The development of the risk management strategy for the subject site includes the following tasks:
- Identification of the relevant pollutant linkages;
- Review of site characteristics;
- Identification of geotechnical constraints;
- Development of remedial objectives;
- Selection of appropriate remedial technology; and
- Development of remedial strategy.

1.4. PREVIOUS WORKS

The following phases of geoenvironmental investigations have previously been carried out at the site:

E3P - *Phase I Geo-Environmental Site Assessment*. Ref No: 12-729-R1, dated December 2019. Prepared for Mulbury City; and

E3P - *Phase II Geo-Environmental Site Assessment*. Ref No: 12-729-R2, dated November 2020. Prepared for Mulbury City.

To inform the assessment of the potential risk to contaminated land within the context of the proposed residential development and to inform the preparation of the remediation strategy, the pertinent points from the above report are summarised within Section 2.

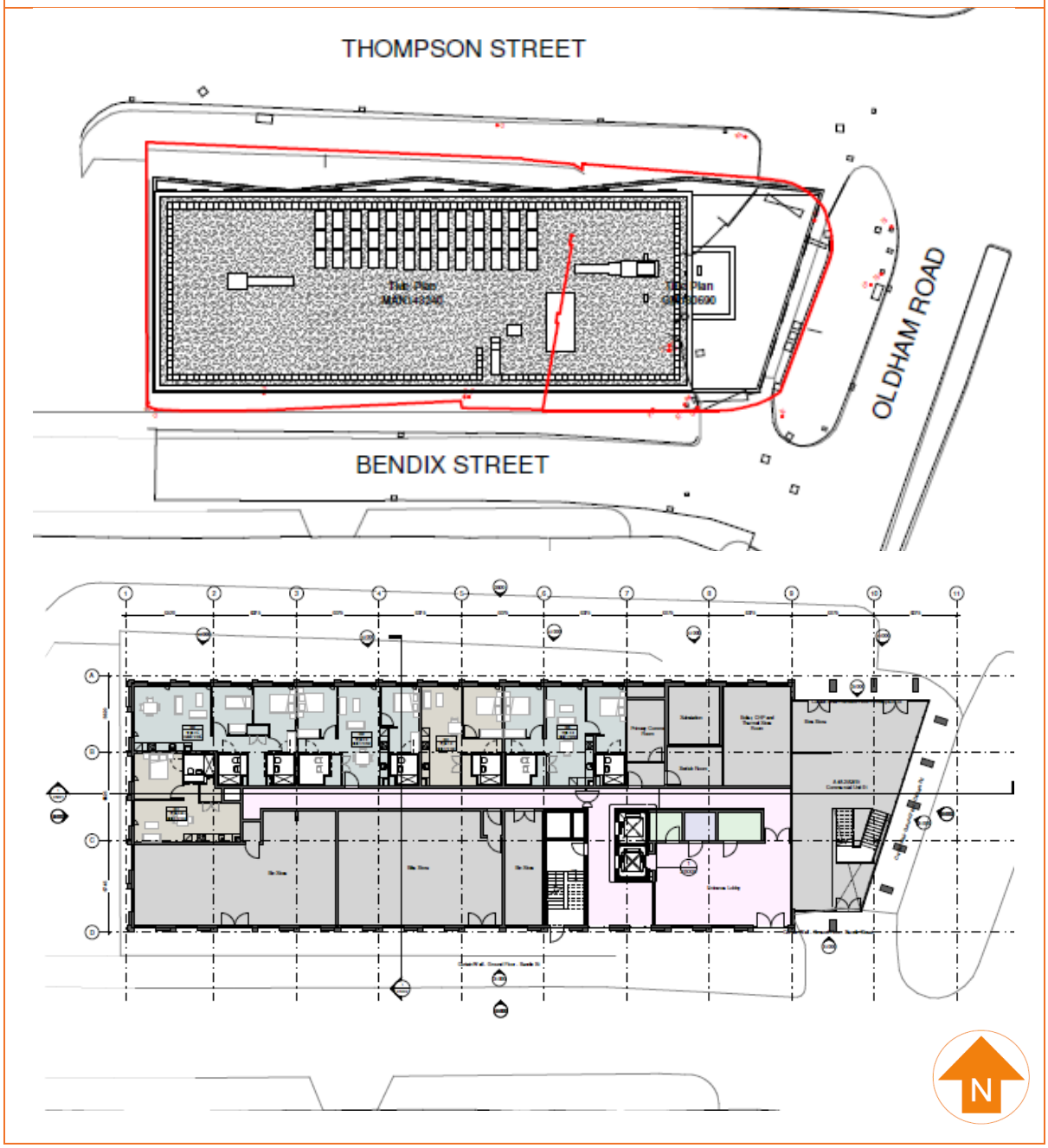
For the avoidance of any doubt, the E3P reports should be read both as a precursor to and in conjunction with this document.

1.5. REDEVELOPMENT PLAN

The scheme will involve the demolition of existing buildings and redevelopment of the site for a 12-storey residential building (Use Class C3) comprising 161 residential units, with ground floor commercial use (Use Class A1, A2, A3, B1, and / or D1 (excluding Places of Worship)), disabled car parking, with highways, landscaping and other associated works.

The proposed development layout is indicated in Figure 1.1 below and Appendix III.

FIGURE 1.1 SNAPSHOT OF PROPOSED DEVELOPMENT



1.6. SUMMARY OF PARTIES INVOLVED

FUNCTION/INTEREST	NAME OF PARTY
Local Planning Authority	Manchester City Council
Developer	Mulbury City
Geoenvironmental Consultant	E3P
Main Contractor	ADM Regeneration
Remediation / Enabling Works Contractor	ADM Regeneration
Human Health Regulator	Manchester City Council
Controlled Waters and Waste Regulator	Environment Agency
Highways Adoption Authority	Manchester City Council

1.7. REGULATORY CORRESPONDENCE

Mulbury City are in the process of submitting a detailed planning application to the local planning authority for the proposed redevelopment of the site for a residential apartment with ground floor commercial units.

It is presumed that as part of the planning approval process, the planning authority will undertake consultation with the pertinent statutory consultees, which will include:

- Environmental health/contaminated land officer at the local authority (or external adviser); and
- Environment Agency planning liaison.

1.8. SITE DETAILS

Site Address	Thompson Street / Bendix Street, Manchester, M4 5FP
National Grid Reference	E384800, 398870
Site Area	0.14 Hectares

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

A Site Location Plan is presented in Appendix III as Drawing 12-729-001.

1.9. SITE SUMMARY

TABLE 1.1 SITE DESCRIPTION AND SETTING

Occupancy / Use	Hardstanding is present across the site and a single storey brick building is present in the southern sector, which is currently utilised as commercial premises (locksmiths). A car park is present in the central and northern sectors of the site. The car park is accessed via an existing site entrance off Thompson Street to the east.	
Environmental Setting	**Drift Geology**	Glacial Till - BGS indicate the presence of Clay.
	Bedrock Geology	Chester Formation - Sandstone.
	Hydrogeology	Superficial – Secondary Undifferentiated Aquifer; Bedrock – Principal Aquifer. The site is not located within a Groundwater Source Protection Zone. The nearest potable groundwater abstraction borehole is located c. 993m west of the site subject site.
	Hydrology	There are no surface watercourses within influencing distance of the site (<250 m radius).
	Flood Risk	The site is classified as being unaffected by flooding from rivers (Flood Zone 1).
	Subsidence Hazard	None identified in the data searches.
Site History	The southern portion of the site has predominantly been occupied by industrial buildings throughout its mapped history, including a garage and smithy. A school in the central sector and terraced housing present across the north of the site were removed by the 1970s. A former PFS occupied the eastern sector of the site with the forecourt fronting onto Oldham Road, as such, there is potential for historic fuel tanks in this area. However, this portion of the site remained active during the intrusive investigation and was not accessible.	
Landfill Sites and Ground Gases	No present or historic landfill sites are recorded within 250 m of the site.	
Radon	Unaffected – No special precaution required.	
Coal Mining / Land Stability	The site is not located within an area deemed to be at risk from ground instability arising from historic coal mining activities.	
Brine Workings	The site is not located within an area deemed to be at risk from ground instability arising from historic brine pumping activities and/or salt extraction.	
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of a residential development have been identified within influencing distance of the subject site.	

1.10. SUMMARY OF REPORTED GROUND CONDITIONS

E3P has prepared a detailed Site Investigation Report (Ref: 12-729-R2, dated November 2020). The summary of reported ground conditions is given in Table 1.2.

The area of the former PFS (now a locksmith) remained active during the site investigation works and was therefore not accessible. Therefore, post demolition works are required to identify possible historic fuel tanks and potential hydrocarbon impacted soils underlying the current building and forecourt.

TABLE 1.2 SUMMARY OF GROUND CONDITIONS

MADE GROUND	**MADE GROUND – 0.0 M BGL TO > 2.45 M BGL** Made Ground deposits were encountered within all exploratory hole locations to depths of between 0.30 m and in excess of 2.45 m bgl although, in general, Made Ground was encountered to a depth of less than 1.00 m bgl. Made Ground deposits generally comprise light brown gravelly fine to medium sand with concrete and sandstone over dark brown gravelly fine to medium sand with brick, sandstone and rare plastic. The greatest depths of Made Ground were encountered in the south east sector, in the vicinity of the existing building. The full thickness could not be proven in TP102, TP103, WS104 AND WS106.
Topsoil	None present.
Drift	**DRIFT – 0.3 m bgl to >21.39 m bgl** Drift deposits were encountered within the majority of exploratory locations with the exception of four locations where the full depth of Made Ground could not be proven. The drift deposits were encountered between 0.30 m and 21.39 m bgl and comprise stiff medium strength to very stiff very high strength orange brown to light grey sandy CLAY. No granular drift deposits have been identified. Soft very low strength brown slightly gravelly silty CLAY was identified in WS105 from 0.30 to 1.50 m bgl.
Bedrock	**SOLID** A red brown SANDTONE was recorded at 26.50 m bgl to a proven termination depth of 35.50 m bgl.
Groundwater	**GROUNDWATER** Groundwater level monitoring (to date) has recorded groundwater at depth of between 0.80 m bgl and 2.80 m bgl.

2. E3P CONTAMINATION RISK ASSESSMENT

2.1. BACKGROUND

E3P has completed a Tier 1 Qualitative Contaminated Land Risk Assessment to determine the potential risk to human health, controlled waters and the wider environ.

This assessment is documented in full within the E3P Geoenvironmental Site Assessment report and, for clarity, is summarised in the following sections of this document.

2.2. HUMAN HEALTH RISK SUMMARY

The E3P Tier 1 Qualitative Human Health Risk Assessment identified concentrations of the following determinants at or above the screening criteria for the assessment of no unacceptable degree of risk to human health:

- Lead;
- Total mercury;
- Benzo(a)Anthracene;
- Chrysene;
- Benzo(b)Fluoranthene;
- Benzo(a)Pyrene;
- Dibenzo(a,h)Anthracene;
- Chrysotile.

The exceedances for all determinants are associated with shallow (<1.00m bgl) Made Ground deposits.

The risk to chronic human health associated with the elevated concentrations on inorganic heavy metals and non-volatile PAH can be mitigated through the capping of the material by the structure or hardstand, alternatively the installation of a suitable cover system in any landscaping and public open space to remove the potential for direct exposure to impacted soils.

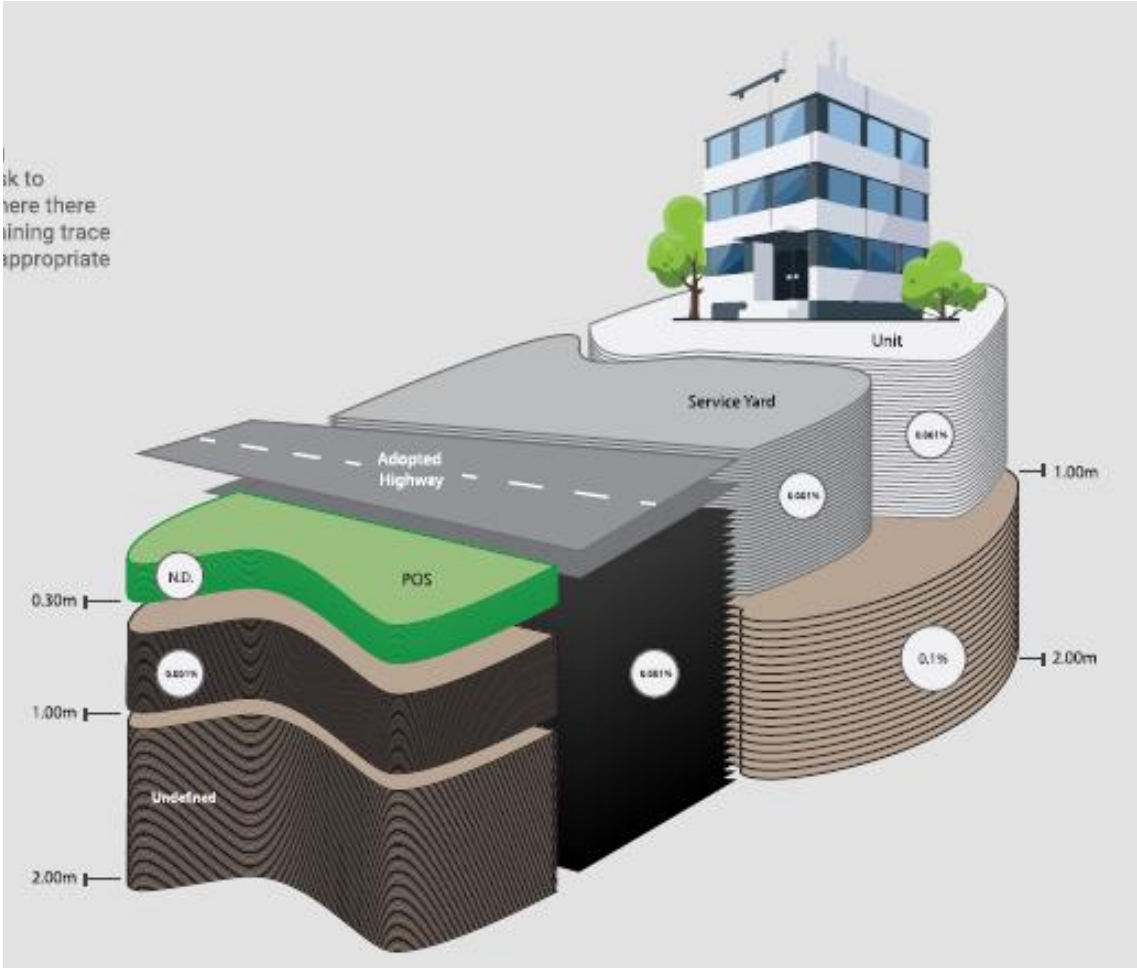
The concentration of total mercury at WS106 is below the target values for methyl and inorganic mercury, however further analysis was required to confirm the concentration of elemental mercury.

During a supplementary phase of site works, further samples of the Made Ground were submitted for mercury analysis to assess whether mercury was present within the vicinity of WS106 (namely samples MG301 to MG303). No elevated concentrations of mercury were identified, and the speciation of the sample was not required, therefore it is considered that no vapour risk to human health receptors exists. However, for the avoidance of doubt, the soils from this locality will be retained on site and placed within an area of low sensitivity such as beneath external hardstand.

Asbestos in the form of chrysotile has been identified in the Made Ground in TP104 at 0.70 m bgl. Asbestos quantification confirms that only trace fibres are present, and no visual signs of ACM were encountered during the ground investigation. I

Asbestos impacted soils should be managed according to the asbestos risk mitigation conceptual site model shown in Figure 2.1 below.

FIGURE 2.1 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.

There are no suitable sources of topsoil available on the site.

Chemical analysis of the natural clay drift deposits suggests that these soils are likely to be acceptable for use as subsoil within any proposed landscaped areas. However, there is no requirement on site for the underlying nature clay drift deposits to be utilised as subsoil. E3P understands that for the soft landscaped planter beds, topsoil will be imported.

If sub-soil is to be removed from site, a U1 Exemption or a CL:AIRE MMP for the direct transfer of naturally occurring soils will be required.

If any material is removed for off-site disposal a WM-3 waste classification will be required.

Further post demolition works were also undertaken between November 2021 and December 2021 to identify the historic fuel tanks and any potential hydrocarbon impacted soils underlying the building and former PFS forecourt. Upon the decommission of the historic fuel tanks, a full removal and validation process was undertaken.

The materials within the tanks were excavated and placed on Visqueen and chemical tested to allow for disposal off site. The tanks were subsequently excavated by ADM Regeneration and removed from site.

An area of approximately 5.00m (length) x 3.00m (wide) to a depth of 3.50m bgl in the vicinity of the tanks underwent a hotspot removal with samples taken of the sidewalls, base (of each tank) and surrounding Made Ground material from the excavation; the area was split into two due to the size of the excavation; Tank 1 and Tank 2.

Results of the further chemical analysis (presented in Appendix VIII) concluded that there were no elevated levels of TPH, VOCs or SVOCs present within any of the samples taken from within the tanks or surrounding excavation. As such, no further delineation of the hotspot was required. The chemical analysis taken from the materials overlying the tanks also indicated no elevated levels of any contaminants of concern and therefore the material was deemed suitable for re-use within the proposed development.

It is therefore concluded that the site will be suitable for the proposed residential end use subject to the completion of the supplementary assessments and the following build-phase mitigation items:

- Use of potable water supply infrastructure that will be compliant with United Kingdom Water Infrastructure Risk (UKWIR) assessment criteria.

2.3. CONTROLLED WATERS CONTAMINATION RISK SUMMARY

The Tier I Controlled Water Risk Assessment indicates that the data exceeds the EQS value for zinc. No DWS is available for zinc, therefore, to be conservative, the value has been compared to the EQS standard.

The zinc exceedances are related to the leachate samples from TP103 and TP105. Leachate analysis is generally considered to be more aggressive and can overstate the risk.

There are no surface watercourses within influencing distance of the site.

Given that there are no potable abstractions within 900 m and the site is underlain by low-permeability, cohesive Glacial Till deposits to depths in excess of 21.0 m bgl, which will afford protection to the underlying Principal Aquifer, there is considered to be a low risk to controlled waters and the wider environ as no complete pollutant linkage can be determined.

It should be noted that no soluble phase impact (such as TPH or VOCs) was identified during the post demolition investigation and therefore was not required to be removed during the remedial works.

2.4. GROUND GAS

Ground gas monitoring indicates the site classification as CS1, and it is considered that gas protection measures will not be required.

E3P completed a total six visits over three months between October 2020 and January 2021, in accordance with CIRIA 665 guidance. This frequency is based on a low ground gas generation potential and a moderate sensitivity (apartments) end use.

A copy of the gas analyser (GFM426) calibration certificate is presented in Appendix VII.

2.5. POTABLE WATER SUPPLY INFRASTRUCTURE

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

This will need to be confirmed upon completion of the further chemical analysis via a UK WIR risk assessment.

3. SITE REMEDIATION AND ENABLING WORKS

3.1. REMEDIATION TECHNOLOGY

Considering the site-specific conditions, including the nature of the identified impacts, the geology and the objectives of the remediation, the most-appropriate soil remedial technologies are:

- Validation of soils to show that all residual soil concentrations are below the site-specific remediation targets site specific remediation targets (SSRT) for the protection of human health, controlled waters and the wider environ;
- Removal of any historic fuel tanks and associated hydrocarbon impacted soils by delineation for off-site disposal;
- Further assessment and possible off-site disposal of potentially volatile compounds identified in a local hotspots within the Made Ground soils;
- Construction of appropriate potable water supply infrastructure; and
- Placement of a chemically suitable 300mm cover system (and geotextile break layer) in landscaped areas and tree pits to mitigate the risk associated with non-volatile / insoluble compounds in the Made Ground.

It is considered that these technologies and methodologies will address the identified active pollutant linkages.

3.2. OVERVIEW OF WORKS

Prior to the commencement of works on site, the contractor must establish all necessary plant, equipment and site welfare facilities as is necessary to complete the contract within the agreed timescales to the rationale as outlined in the following subsections.

For the avoidance of any doubt, the proposed operations as set out herein document the required performance objectives and validation sampling protocols; however, the specific methods of work deployed to ensure the remediation objectives are achieved in a compliant manner on site will be the responsibility of the appointed contractor.

RE-1 – Pre-Commencement Supplementary Site Investigation
The area of the former PFS (now a locksmith) remained active during the site investigation works and was therefore not accessible. Upon the client taking ownership of the site, further works were undertaken to locate the historic fuel tanks and chemically analyse the surrounding soils underlying the current building and former forecourt. Chemical analysis of the soils within the tanks, beneath and surrounding has not recorded any exceedances and therefore this material is suitable for re-use. The chemical analysis results for the further works are presented in Appendix VIII.

RE-2 – Pre-Commencement Regulatory Compliance

Prior to commencement of any works on site, all reports relating to the assessment of risk to contaminated land should be submitted to the regulatory authorities to gain written approval.

All relevant Standard Rules Permits should be registered with the EA.

The LAPC Part B Notification for deployment of mobile crushing plant should be implemented prior to the establishment of equipment on site, if required. However, this is not likely.

If the proposed volume of soils to be reused (excluding crushed materials) exceeds the parameters of the Standard Rules Permit, a CL:AIRE Materials Management Plan (MMP)-qualified declaration should be made by the contractor, having obtained full written approval for the remediation strategy from the LPA and Environment Agency.

It is not anticipated that there will be any requirement to treat any materials on site (such as hydrocarbon-impacted soil or groundwater); however, should any previously unidentified contamination be encountered, the contractor must either notify E3P and, if appropriate, relevant regulators of their intention to complete a minor works operation or arrange for the deployment of the appropriate environmental permit for the specified operation.

RE-3 – Risk to Infrastructure

Site works should be completed in a manner that ensures no risk of disturbance to the adjacent infrastructure.

RE-4 – Delineation, Excavation, Treatment and Disposal of Visual and Olfactory Hydrocarbon-Impacted Material

The post demolition site investigation works have not identified any hydrocarbon impacted soils beneath the former structure and forecourt, that may have represented an unacceptable risk to future site users.

A full depth turnover of all Made Ground in the locality of the former PFS has been undertaken under the supervision of E3P and no evidence of previously unidentified contamination was identified.

A full excavation within the vicinity of TP102 was undertaken in November 2021 to determine the extent of the previously identified hydrocarbon odour and sheen, however, no further evidence of impacted materials were identified. Chemical analysis of the materials within this area indicated no elevated levels of TPH, VOC or SVOC indicative of hydrocarbon impact.

If any previously unidentified material deemed to be impacted through either visual or olfactory observations or as a result of notable PID readings (> 50 ppm) is observed, this material will be excavated and stockpiled on an impermeable membrane. The membrane will be placed upon a clay containment bund and covered to negate the risk of soils leaching and dispersal of any odours and/or vapours.

An E3P engineer will regularly monitored the stockpiled material with a PID to determine the need for boundary monitoring (albeit not required). This material will then be subject to detailed laboratory analysis to determine the suitability for reuse or the requirements for off-site disposal.

Upon completion of the delineation and excavation, the sides and base of the resulting void(s) where impacted material is present will be chemically validated to confirm that no impacted materials remain in situ.

Validation samples will be collected at 10 linear metre centres from the side and base of the excavation.

The results of this validation testing will be directly compared to the site-specific remediation targets (as defined within Appendix IV of this report) to demonstrate that no unacceptable level of risk to human health, controlled waters or the wider environment remains.

RE-5 – Environnent and Nuisance Control

Management of all works is required to ensure that no environmental nuisance is created through dust emissions, noise or vibration levels.

All works are to be completed in a manner so as not to create any structural risk to the adjacent highways.

Temporary works are to be implemented as necessary to support excavations throughout the duration of the works.

If a complaint is made in respect of dust emissions, noise or vibration levels, remedial measures and a programme of ongoing monitoring should be agreed with the local authority and implemented on site.

RE-6 – Identification, Isolation and Treatment of Invasive Plants

No invasive plant species have been identified at the site to date. However, as the growth and spread of invasive species could have occurred since, the enabling works contractor must satisfy themselves with respect to the extent of all species deemed invasive prior to the commencement of works on site.

The contractor shall employ a suitably qualified expert to investigate the presence of invasive plant species on or adjacent to the site. If encountered, these will be treated in strict accordance with an approved method statement to be submitted to the supervising consultant for review prior to the instigation of any works.

Where invasive plant species are identified at the site boundary, a suitable barrier shall be installed to prevent any future reinfestation of the subject site.

Upon completion of the eradication of any and all invasive species, a validation report should be prepared documenting all identified invasive plant species, their location and the treatment methodology. Where materials are removed from site, all waste transfer notes/duty of care certificates should be included within the validation statement.

RE-7 – Site Clearance Operations

Post-demolition general site clearance and provision of welfare, offices and site security are to be determined as per the contract requirements.

The site currently comprises a vacant building and adjoining car park, capped by asphalt and concrete hardstanding. A pre-demolition asbestos survey will be required prior to the demolition works, in order to identify the presence and location of any notifiable asbestos within the building fabric.

RE-8 – Excavation, Breaking and Processing of All Above and Below Ground Structures and Made Ground

Obstructions, relict foundations and infrastructure (apart from live services) are to be removed from the areas of proposed residential development, to include building footprints, peripheral landscaped areas and adopted highway and utilities infrastructure (road box) in their entirety.

It will be the contractor's responsibility to remove all obstructions. Obstructions encountered within the near-surface soils (such as relict foundations) will be chased to their full depth and removed; if not possible, the obstruction must be surveyed with the location communicated to E3P, the client and the developer.

Where natural soils are present at a relatively shallow depth, extreme care should be taken to ensure that the natural cohesive deposits remain undisturbed with a full reduced-level survey to be completed to map the depth of filled/processed material.

RE-9 – Investigation and Removal of Historic USTs

During the post demolition investigation within the area of former PFS, intrusive works were undertaken to confirm the presence and the exact location of any underground storage tanks (USTs). Four USTs were identified within the vicinity of the former PFS, all containing sand and cement.

The tanks were found to be intact, hydraulic shears were utilised to open the tank along the top and peel back the steel, thus rendering the tank an open vessel and no longer a tank form. The tanks were checked for vapours using a lower explosive limit (LEL) meter by ADM Regeneration. When deemed to be free of vapours, a 24-hour certificate was issued, during which time the tanks were rendered unusable (by cold cutting).

The tank backfill material was broken up and removed from the tank structure by excavator until the tank was sufficiently light enough to be lifted and emptied. The removal of any tanks included the filler lines, and pump in proximity to the tanks. All oversize materials was stockpiled and checked for hydrocarbon impact. The material present inside the tanks was disposal off site, in accordance with UK waste management legislation.

The bases of each tank and sidewalls of each excavation were tested to ensure that soils are below the site-specific remedial validation criteria for the protection of human health and controlled waters. E3P can confirm no exceedances for TPH, VOCs or SVOCs were recorded in any of the samples.

The analysis results are presented in laboratory reports 21-25755 and 21-22359 (Appendix VIII).

All waste transfer certificates were retained and will be included within the remediation validation report.

RE-10 – Excavation, Delineation & Validation of Mercury Hotspots

Localised elevated mercury (total) concentrations have been identified in the Made Ground at a depth of 1.20m bgl in WS106. The concentration of total mercury at WS106 is below the target values for methyl and inorganic mercury, however further analysis was required to confirm the concentration of elemental mercury.

During a supplementary phase of site works, further samples of the Made Ground were submitted for mercury analysis to assess whether mercury was present within the vicinity of WS106 (namely samples MG301 to MG303). No elevated concentrations of mercury were identified, and the speciation of the sample was not required, therefore it is considered that no vapour risk to human health receptors exists. However, for the avoidance of doubt, the soils from this locality will be retained on site and placed within an area of low sensitivity such as beneath external hardstand.

The chemical analysis results are presented in laboratory report 21-21003 (Appendix VIII).

Upon completion of these exercises, there will be no unacceptable risk to the future site user by volatilisation to indoor air.

RE-11 – Removal of Deleterious Material

The E3P Ground Investigation identified potentially deleterious wastes associated with the existing structures and historic construction activities.

All potentially deleterious materials will be delineated, stockpiled and removed from site by the contractor to a licensed waste facility.

Prior to the commencement of the main works, the contractor, under the supervision of E3P, will undertake to complete further confirmatory ground investigations to satisfy themselves with regards to the extent of any buried anthropogenic deleterious materials that are unsuitable for retention within a low-rise residential development.

RE-12 – Construction of Temporary Working Platform

The proposed structures are to be prepared in a manner that will facilitate piled foundations, a temporary working platform will be constructed.

The specific design for such a platform should be obtained from E3P; however, as a minimum this will comprise:

- Proof rolling of the subgrade to ensure a California bearing ratio (CBR) > 3%; and
- Temporary Works Platform Design required to confirm the thickness of pile mat.

The platform will require design upon receipt of the piling rig specification and pile layout design to ensure that a suitable platform design is adopted.

RE-13 – Replacement of Materials, Geotechnical Engineering Requirements

Material is to be backfilled in strict compliance with the E3P Geotechnical Engineering Specification as presented in detail within Section 5 of this report, which generally requires the reinstatement and compaction criteria presented in Table 3.1.

The proposed apartment building will be constructed on piled foundations (depth to be confirmed).

TABLE 3.1 GEOTECHNICAL ENGINEERING WORKS SCHEDULE

Land Use	Construction Requirement	Requirement
Footprint of Proposed Structure (2 m on All Elevations)	Pile Foundation	Backfill using general method compaction to CBR of 5%.
Highways	Adopted Estate Road / Drainage	Manual of Contract Documents for Highways Works (MCHW) Series 600 ensuring CBR > 5% in subgrade (engineered fill).
Public Open Space	N/A	Method compaction to ensure no settlement.

RE-14 – Preparation of Peripheral Landscaped Areas for Cover System

Any landscaped areas and tree pits (to be confirmed) will be prepared in a manner that will facilitate the placement of the clean cover system during the development phase of the works.

The preparation of the areas requiring clean cover is critical in ensuring delivery of the site in a manner that will ensure no risk to the proposed end users.

Where Made Ground is placed (or currently present) in landscaped areas, the area will be capped with a 300mm cover system of chemically suitable materials upon a geotextile break layer. Where proposed tree pits are located, the cover system may require deepening to 600mm bgl.

Excavated natural soils (from any cutting excavation) will be stockpiled pending the results of the appropriate validation testing (to be completed in accordance with this specification) prior to reuse.

Made Ground soils will all be placed in areas of no sensitivity or, where necessary, this material will be removed from site in accordance with UK waste management legislation.

The placement of certified subsoil and topsoil will be completed as part of the developer works/build-phase mitigation plan. All landscaped areas where a cover system is required will be subject to independent validation.

RE-15 – Provision of Subsoil

The shallow natural drift deposits (predominantly cohesive soils) are deemed suitable for use within the 300mm clean cover to areas of soft landscaping.

However, there is currently no requirement to recover subsoil to be utilised on site.

RE-16 – Provision of Topsoil

No topsoil deposits are present on site. Therefore, there is a requirement to import suitable material for use within the proposed soft landscaped areas (proposed planter beds) of the development.

Topsoil will require testing in line with the schedule present within Section 3.5 and Table 3.2.

The landscaped areas will require depth validation to satisfy the requirements of the CML in order to demonstrate that the appropriate thickness has been provided.

RE-17 – Independent Validation: Watching Brief

Given the site history and potential contamination sources identified within the ICSM, a degree of uncertainty remains with regard to the potential for as yet unidentified contamination impact within the near-surface soils and groundwater.

It will therefore be necessary to instigate the site-wide remediation and enabling works under the supervision of a suitably qualified and independent specialist. The specialist is required to attend site as and when appropriate to monitor works, record ground conditions and fully investigate all potential sources of as yet unidentified contamination.

RE-18 – Waste Soils Surplus to Requirements

In the event that a surplus of excavation material is present on site, this, in most cases, will be deemed to be a waste in accordance with the Waste Framework Directive (Article 3(1) Waste Framework Directive 2008/98/EE). The waste producer – but ultimately, the landowner – is responsible for the compliant disposal of such materials.

A formal waste classification assessment must be undertaken, irrespective of any future options or considerations for those materials that will removed from site. Waste classification should only be made following the Environment Agency *Technical Guidance WM3 – Guidance on the Classification and Assessment of Waste*.

To remove the surplus material from site it will either need to be sent to a disposal site (landfill), to a permitted treatment facility or, dependent on the waste classification assessment, it may be suitable for use on a permitted land improvement or restoration operation.

The preferred alternative approach would be to locate a site in the locality that requires soils to achieve required development levels. Subject to suitability, these soils can be transferred to the receiving site, subject to an approved permit or materials management plan following guidance in the CL:AIRE *Definition of Waste: Code of Practice*.

RE-19 – Validation of Materials for Potable Water Supply Infrastructure

A contaminant risk assessment will be required this once the further analysis of soil underlying the current structure (currently inaccessible) is undertaken and measured against WIR thresholds in relation to the proposed pipelines depths.

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

All materials where organic hydrocarbon impact is identified at concentrations above the UKWIR assessment criteria for a polyurethane pipe within the proposed locality of potable water supply infrastructure should be delineated and removed by the remediation contractor under the supervision of the geoenvironmental consultant.

Validation sampling should be completed at 10 m chainage at depths of 0.75 m and 1.50 m within the locality of the potable supply pipes where impacted material is removed, with samples analysed for all pertinent volatile and semi-volatile hydrocarbons.

Upon successful remediation of any impacted materials, the post-remediation validation testing will be reviewed by a qualified person to inform an updated UKWIR assessment to be reviewed and approved by the statutory adoption authority.

If unacceptable concentrations remain following remediation, then potable water infrastructure should be constructed in accordance with a suitably robust risk assessment and design compliant with UKWIR.

Where imported material is required to construct the potable water infrastructure pipework, this material will need to comply the requirements of UKWIR pipework thresholds for the specified pipework. For the avoidance of doubt, the PE thresholds are presented in Section 9.3.

Failure to meet the required specification may necessitate further remedial works.

RE-18 – Remedial Verification Report

Collation of information relating to site clearance, chemical testing, remedial works, remedial verification, material movements and waste transfer documentation is required, where appropriate.

Complete remedial validation is to be reported in line with regulatory guidance. This will include a detailed risk assessment.

The report will be submitted to the local authority for approval following completion.

3.3. VALIDATION SAMPLING PROTOCOL

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be subject to movement under the protocols outlined within this remediation and enabling works strategy, or for materials to be imported onto site to facilitate the proposed residential development.

If any hotspots of unsuitable (impacted) Made Ground is to be undertaken, validation samples will be collected from the base (two samples) and sidewalls (four samples) of the excavation to reasonably demonstrate no residual impact to the underlying strata.

Soil samples destined for chemical analysis will be collected at regular intervals in appropriate sampling containers. All samples will subsequently be stored in cooled boxes prior to submission to a UKAS/MCERTS accredited laboratory.

All samples will be collected using appropriate personal protective equipment (PPE) and sampling equipment, which will be cleaned at each sampling location.

A detailed copy of E3P Ltd sampling methodology, QA procedures and laboratory chain of custody forms will be documented within the site records and presented with the final validation report for the site.

Where material is found to contain concentrations of potential contaminants at levels in excess of the site-specific screening criteria (as detailed within Appendix III), E3P will undertake further assessment and recommendations on the appropriate use for the material in question, which may involve the disposal of such materials off site to a suitable waste management facility.

The sampling frequency for materials to be managed under the remediation strategy is presented within Table 3.2 overleaf.

TABLE 3.2 SPECIFICATION OF CHEMICAL VALIDATION LABORATORY ANALYSIS

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Site-Generated		
Site-Generated 6F2	1 Sample per 1000 m^3	A/B/C/D
Site-Won Made Ground General Backfill	1 Sample per 250 m^3	G
Site-Won Made Ground General Backfill	1 Sample per 1000 m^3	A/B/C/D
Site-Won Made Ground General Backfill	1 Sample per 2000 m^3	I
Site-Won Natural Backfill	1 Sample per 2000 m^3	A/B/C/D
Site-Generated Subsoil (450 mm Garden Fill / Cover)	1 Sample per 100 m^3	A/B/C/D
Site-Generated Topsoil Cover (150 mm Garden Cover)	1 Sample per 50 m^3	A/B/C/D
Hotspot Validation Samples	1 Sample per 10 m of linear excavation to base and sidewall	E/G
Imported		
6F2	1 Sample per 1000 m^3	A/B/C/D
Subsoil Greenfield Source (450 mm Garden Fill / Cover)	1 Sample per 200 m^3	A/B/C/D
Subsoil Brownfield Source (450 mm Garden Fill / Cover)	1 Sample per 50 m^3	A/B/C/D
Topsoil Greenfield Source (150 mm Garden Cover)	1 Sample per 200 m^3	A/B/C/D
Topsoil Brownfield Source (150 mm Garden Cover)	1 Sample per 50 m^3	A/B/C/D
General Engineering Fill (Class 1 and 2 Soil)	1 Sample per 1000 m^3	A/B/C/D

Notes
Suites of Analysis:

A. Speciated PAH.
B. Speciated TPH (C5-C35).
C. Asbestos (ID).
D. CLEA Inorganic Heavy Metals.
E. Speciated PAH, Banded TPH and VOCs.
F. SVOC/Speciated TPH.
G. On-Site Screening for VOC Using Calibrated PID.
H. Lechate 2:1 Speciated PAH and Banded TPH.
I. Leachate Analysis of Inorganic Heavy Metals, TPH, Sulphate and PAH.

All analysis prescribed above to be completed by UKAS-accredited laboratory.

3.4. REMEDIATION CONTRACTORS SITE MANAGEMENT AND RESPONSIBILITY

The appointed remediation contractor will take full and overarching responsibility for all methods of work required to complete the site remediation and enabling operations to ensure the delivery of the site and the completion of the objectives in a safe, legislatively compliant manner that ensures no pollution to the subject site or the wider environs.

For individual remediation operations as set out within this performance specification, the contractor will provide site-specific methods of work for individual operations pertaining to the removal and treatment of contaminated liquids and soils. For each and every operation as set out herein, the contractor will provide a written methodology of works to be supplied to the supervising geoenvironmental engineer prior to the instigation of operations on site.

The site manager will be responsible for documentation of each day's activities with a full recorded schedule of works completed and corresponding site-specific method statements that have been utilised to ensure the completion of the task to the required standard.

4. MATERIALS MANAGEMENT AND LEGISLATIVE COMPLIANCE

The processing of recycled aggregates will be completed using LAPC Part B licensed plant with the appropriate deployment notification to the local authority prior to commencement of works. All materials that are recovered as recycled aggregate will be compliant with the requirements of the WRAP protocol and the E3P validation testing requirements and as such would not be deemed to be a waste material.

A U1 Exemption will be registered for the site, which allows the reuse of up to 5000 T of prescribed material within construction, with up to 25,000 T of material permissible to be reused in the construction of roads. It should be noted that only 1000 T of material described as sand, stones or clay soil classified as waste can be reused with a U1.

A T5 Exemption, allowing for the screening and recovery of up to 5000 T of permissible material for subsequent reuse in construction will also be registered.

All materials that are recovered under the WRAP protocol, U1 or T5 exemptions must be analysed to demonstrate that they are both chemically and structurally suitable for use within the context of the development.

The relevant LAPC, U1, T5 and WRAP licences, exemptions and protocols provide the legislative framework for material compliance during the site remediation and enabling works to be completed by the specialist contractor under the supervision or E3P.

Where necessary, operations as outlined within the remediation enabling works rationale summarised in this report may be subject to regulation using the appropriate environmental permit, standard rules exemption and materials management plan, to be created in accordance with version 2 of the CL:AIRE *Definition of Waste: Code of Practice (DoW CoP)*.

It is noted that if material is to be imported utilising the CL:AIRE DoW CoP from an alternative development site, then only chemically certified, clean, naturally occurring material can be transferred.

5. ENVIRONMENTAL MONITORING AND VALIDATION

5.1. SITE MANAGEMENT

The tracking of materials will be based on the following hierarchy:

- The principal contractor will have the responsibility for setting out areas of the site on the basis of the contract specification.
- Operatives will have instructions only to excavate and to emplace materials in specified areas as assigned by the site manager/foreman.
- The site manager (employed by the principal contractor) will issue daily instructions to drivers regarding the placement of materials sourced from specific stockpiles or areas, ensuring that appropriate documentary evidence is collected that details which materials are going where and why.
- An E3P consultant, who will be in attendance as required, will:
    - Inspect the excavation areas and certify that the correct materials are being excavated;
    - Conduct spot checks on loaded vehicles to ensure compliance with this remediation strategy; and
    - Ensure that any loads that fail visual, olfactory or spot checks either remain on the vehicle or, if unloaded, are excavated and set aside. This material will be treated according to the recommendations of the E3P site engineer.
- E3P will conduct an audit of waste consignment notes. All material imported and removed from site will have duty of care/consignment notes, copies of which will be retained on site by the site manager.
- Materials directly reusable will be incorporated into the earthworks, subject to operational conditions and phasing of excavations, in which case they will be stockpiled prior to final placement.

5.2. COMPLETION

Following the completion of the remediation works, a report will be compiled by the environmental consultant detailing all site enabling works undertaken, waste consignment notes, and all site investigations, laboratory test certificates and validation testing undertaken.

A certificate of completion of earthworks should be included within the report which should then be issued to the local authority for their approval.

E3P considers that with the adoption of the above best practices the site can be safely redeveloped. The site enabling works process and presence of any residual contamination (if this is the case) should be recorded for future reference by landowners/occupiers. Future development at the site where this may result in penetration of new areas of hardstanding should be subject to no-less-stringent measures with respect to assessment and, where appropriate, monitoring, than those set out herein.

6. GEOTECHNICAL ENGINEERING SPECIFICATION

6.1. E3P GEOTECHNICAL ENGINEERING SPECIFICATION

The overarching philosophy of the site enabling works will be the delivery of the following:

- Preparation of building footprint (+ 2 m on all elevations) to be suitable for constructions with piled foundations; and
- Engineer all areas of proposed adopted road and private drive to be compliant with the E3P Geotechnical Specification with CBR and elevation defined by the client.

In the event that it is not possible to prepare the site in a manner that will achieve the required foundation solution, the supervising engineer and client should be contacted at the first available opportunity.

The contractor should employ a suitably experienced engineer to be present on site during these earthwork operations to ensure soil suitability, placement, compaction and testing is undertaken in accordance with this specification and to ensure that any unforeseen circumstances, such as adverse weather, do not compromise the earthworks process.

Works should be halted during periods of intermittent or prolonged rainfall to ensure the materials are not placed in a manner that would result in softening of either the formation or the newly placed material. It will be the contractor's responsibility to determine appropriate weather conditions and determine the suitability of works.

Particular attention must be given to variable weather conditions when re-engineering clay soils as a moisture content fluctuation (± 2%) of the tolerable limit will result in an unacceptable degree of compaction loss.

6.2. LOCALLY WON FILL MATERIAL

E3P understand the site will be subject to a reduced level excavation to remove historic obstructions and foundations, in order to allow for piled foundations.

From the site-specific investigations undertaken to date, it is expected that the majority of the soils won from the processing of demolition material will be granular soil matrices with the natural drift being cohesive soils.

Due to climatic weather conditions and variance in long-term differential settlement associated with even well-compacted granular soils, and the need to facilitate future re-engineering using driven piles to support a suspended floor slab, it is essential that the cut-and-fill process is well controlled and materials are placed/compacted in accordance with this specification.

Where site-won materials are to be used as fill to achieve the required development platform, they must be compacted to ensure in-situ densities that are in excess of 95% of the maximum dry density, as determined using a 4.5 kg laboratory Proctor test.

Materials should only be compacted when the actual moisture content is within 2% (±) of the optimum for the soil matrices as determined by laboratory bench testing.

6.3. CLASSIFICATION OF FILL MATERIAL

This specification should be read in conjunction with the following:

The Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, Series 600, Earthworks as amended in February 2016; and

6.4. BS 1377-1:2016 METHODS OF TEST FOR SOILS FOR CIVIL ENGINEERING PURPOSES. GENERAL REQUIREMENTS AND SAMPLE PREPARATION GENERAL CLASSIFICATION

The contractor should ensure that all earthworks materials comply with Clause 601 of the *Specification for Highway Works and* shall fall into one of the following general classifications as defined in Table 6/1 of the *Specification for Highway Works*.

General granular fill (Class 1);

General cohesive fill (Class 2), excluding Class 2A and 2E; or

Selected granular fill (Class 6).

TABLE 6.1 E3P EARTHWORKS GEOTECHNICAL COMPACTION SPECIFICATION

SOIL / MATERIAL TYPE	CLASS	DESCRIPTION	COMPACTION EQUIPMENT	LAYER THICKNESS	ROLLER PASSES
Granular Fill **(Sand and Gravel Matrices)**	1 A	Sandy Gravel with some cobbles	> 5000 kg vibrating roller	225 mm	4
	1 B	Sand or Gravel of same grading size	> 5000 kg vibrating roller	250 mm	10
	1 C	Coarse gravels with many cobbles	> 5000 kg vibrating roller	400 mm	5
Cohesive Fill **(Clay with Minor Sand and Gravel Component)**	2 A	Wet Clay	> 1000 kg vibrating tamping roller (sheep foot only)	100–225 mm	3
	2 B	Dry Clay	> 5000 kg vibrating roller or 1400 kg tamping (trench roller)	225 mm or 125 mm	4 or 12
	2 C	Gravelly Clay	> 5000 kg vibrating roller or 1400 kg tamping (trench roller)	225 mm or 125 mm	4 or 12
	2 D	Silty/Sandy Clay	> 5000 kg vibrating roller or 1400 kg tamping (trench roller)	225 mm or 125 mm	4 or 12
Recycled Aggregate Crush **(< 125 mm Well Graded)**	6F2	Any combination of inert hard materials, other colliery spoil, or rock with substantial amounts of clay-like component	> 5000 kg vibrating roller	250 mm	6

6.4.1. USE OF FILL MATERIALS

In addition to any grading requirement, the maximum particle size of any fill material shall be no more than two-thirds of the compacted layer thickness except that cobbles having an equivalent diameter of more than 150 mm shall not be deposited within the restored surface level unless directed otherwise by the engineer.

Un-burnt colliery spoil, pulverised fuel ash or furnace bottom ash shall not be used as a fill material.

6.5. GENERAL REQUIREMENTS

The contractor shall employ only plant and working methods that are suited to the materials to be handled and traversed. The contractor shall be responsible for maintaining the nature of the acceptable material so that when it is placed and compacted it remains acceptable in accordance with the contract.

For the purposes of this contract, the proposed earthworks requirements have been split into distinct end use categories, with the corresponding requirements for the earthworks specification assigned to individual areas.

TABLE 6.2 COMPACTION / BACKFILL REQUIREMENTS

LAND USE REQUIREMENT	COMPACTION METHODOLOGY AND GENERAL PERFORMANCE CRITERIA
Piled Foundation	All plot footprint (+ 2 m) must be free of any deleterious elements, tree roots and obstructions > 150 mm. Where upfill is proposed, material is to be placed using method compaction specification to achieve a CBR as required by the developer for piling mat construction. Piling mat is to be placed and constructed in accordance with the approved geotechnical engineer's temporary works design.
Adopted Highways (+ 2 m from Back of Footpath)	*Method Compaction – MCHW Specification For Highway Works Series 600* is to be followed, with in-situ validation testing to meet requirement of adoptions authority. A CBR > 5% is required at subgrade formation (prior to placement of capping).
Estate Roads	*Method Compaction – MCHW Specification For Highway Works Series 600* is to be followed to achieve a CBR > 5%.
Gardens, POS and Other External Areas	Material is to be placed in layers not exceeding 300 mm and must be rolled using dedicated plant (no earth moving equipment) and in general compliance with the requirements of *MCHW Specification For Highway Works Series 600.*

Acceptability shall be determined in accordance with Table 6/1 of the *Specification for Highway Works*.

Laboratory testing for the purposes of determining acceptability and compaction requirements will be conducted by the engineer.

Haulage of material to embankments or other areas of fill shall proceed only with sufficient spreading and compaction. Plant is operating at the place of deposition to ensure compliance with Clause 612 of the *Specification for Highway Works*.

No excavated acceptable material or unacceptable material required to be processed, other than surplus to the requirements of the contract, shall be removed from the site.

Where the excavation reveals a combination of acceptable and unacceptable materials, the contractor shall carry out the excavation in such a manner that the acceptable materials are excavated separately for use in the permanent works without contamination by the unacceptable materials. Unless otherwise described in the contract, classes of fill material required to be deposited separately shall be excavated separately without contamination by other classes of material.

The contractor shall make their own arrangements for the stockpiling of acceptable material, and unacceptable material to be processed, and for the provision of site for this purpose.

The contractor shall ensure that they do not adversely affect the stability of excavations or fills by their methods of stockpiling materials, use of plant or siting of temporary buildings or structures.

Topsoil shall, wherever practicable, be used immediately after its stripping and, if not, shall be stored in stockpiles of heights not exceeding 2 m. Topsoil shall not be stockpiled for more than two years. Topsoil shall not be unnecessarily trafficked, either before stripping or when in a stockpile. Stockpiles shall not be surcharged or otherwise loaded and multiple handling shall be kept to a minimum.

Excavations requiring backfilling shall remain open only for the minimum period necessary.

The contractor shall keep earthworks free of water, including:

- Arranging the rapid removal of water:
  - shed on to the earthworks; and
  - entering the earthworks from any source;
- Provide, where necessary, temporary watercourses, drains, pumping and the like;
- Discharge accumulated water and groundwater into the permanent outfalls of the drainage system where practicable; and
- Provide adequate means for trapping silt on temporary systems discharging into permanent drainage systems.

The contractor shall carry out and maintain groundwater lowering or other treatment as required.

Where materials are designated either Class U1B or Class U2 (according to the *Specification for Highway Works*), the contractor shall carry out any special requirements for their handling. Where such materials are encountered during the progress of the works, the contractor shall make all necessary arrangements for their safe handling and disposal after consultation with the appropriate environmental authority.

6.5.1. CONSTRUCTION OF FILLS – HIGHWAYS

All fills shall be constructed:

- In the locations as shown in the contract drawings to the lines and levels stated therein;
- Of classes of material complying with this specification;
- By deposition, as soon as practicable after excavation, in layers to meet the compaction requirements as required for each class of material as specified; and
- To the requirements of this clause and any other requirements for fill in this specification.

Before commencing work on any area of fill, the contractor shall ensure that:

- The base is sound and stable by excavating and removing any topsoil as soft subsoil;
- Base layers are not exposed until the fill layer is ready for placement; and
- Uncompacted material on the side slopes of previously backfilled zones shall be removed and benches of between 1.0 m and 1.5 m height cut in compacted fill immediately prior to deposition of the new fill to ensure that the new backfill placed against the slope is properly integrated.

Whenever fill is to be placed on surfaces inclined at 1 vertical to 7 horizontal or steeper, the surface shall be benched immediately prior to deposition of the fill in order to achieve horizontal basal surfaces. The benches shall be between 1.0 m and 1.5 m in height.

Areas of fill shall, unless otherwise permitted by the engineer, be constructed evenly over their fullest possible extent and the contractor shall carefully control and direct construction plant and other vehicular traffic uniformly over the area of compacted fill. The minimum plan dimensions of any one panel of backfilling shall be properly integrated with areas of previous backfilling. Damage by construction plant and other vehicular traffic shall be made good by the contractor with material having the same characteristics and strength as the material had before it was damaged.

Temporary slopes within compacted and uncompacted backfill shall be formed at gradients that ensure stability.

6.5.2. CONSTRUCTION OF FILLS – ADOPTED HIGHWAYS, ESTATE ROADS AND CAR PARK

The contractor shall carry out compaction upon the materials that require to be compacted, as soon as practicable after deposition.

Compaction shall be either method as required for the classes of fill in Table 6/1 that require to be compacted.

The contractor shall obtain permission from the overseeing organisation before carrying out compaction requirements as listed in Table 6/1 for the class of material being compacted.

Method compaction shall be undertaken using the plant and methods appropriate to the compaction requirements as listed in Table 6/1 for the class of material being compacted.

Earthmoving plant shall not be accepted as compaction equipment nor shall the use of a lighter category of plant to provide any preliminary compaction to assist the use of heavier plant be taken into account when assessing the amount of compaction required for any layer.

If more than one class of material is being used in such a way that it is not practicable to define the areas in which each class occurs, the contractor shall compact with plant operating as if only the material which required the greater compaction effort is being compacted.

If the results of field tests show densities that indicate the state of the compaction to be inadequate, then if this is due to failure of the contractor to comply with requirements of the contract, the contractor shall carry out such further work as is required to comply with the contract.

Refer to Clause 612/10 of the *MCHW Specification for Highway Works* for definition of plant to be used in accordance with these specified works.

The contractor will be responsible for assessing the class of fill in accordance with Table 6/1 of the *Specification for Highway Works*. Table 6/4 of the *Specification for Highway Works* should then be employed to assess the method of compaction to be employed. The test results and method statements shall be submitted to the consulting engineers for approval.

6.5.3. UNACCEPTABLE MATERIAL

The contractor is solely responsible for ensuring full and detailed analysis of all reported ground conditions and areas of risk in terms of the potential for unacceptable material to be present within the proposed earthworks.

Limitations in the available information should be highlighted to the supervising engineer prior to the commencement of earthworks. The contractor is to make full and unequivocal arrangements to investigate the potential presence for unsuitable materials within the earthworks and construction of highway fill. All unsuitable materials are to be identified for removal in accordance with this specification.

Unacceptable material Class U1A shall be:

Material which does not comply with the permitted constituents and material properties of MCHW Table 6/1 and contract specific Appendix 6/1 for acceptable material; and;

Material, or constituents of materials, composed of the following unless otherwise described in contract specific Appendix 6/1:

- Peat, materials from swamps, marshes and bogs;
- Logs, stumps and perishable material;
- Materials in a frozen condition;
- Clay having a liquid limit determined in accordance with BS 1377: Part 2, exceeding 90 or plasticity index determined in accordance with BS 1377: Part 2, exceeding 65; and,
- Material susceptible to spontaneous combustion except unburnt colliery spoil complying with sub-Clause 15 of this Clause;(ii)unacceptable material

Unacceptable material Class U1B shall be:

Contaminated materials, including controlled wastes (as defined in the Environmental Protection Act 1990 Part IIA) whose level of contamination is above that given either in contract specific Appendix 6/14 or in contract specific Appendix 6/15, but excluding all hazardous wastes (as Volume 1 Series 600 Specification for Highway Works Earthworks W2 Amendment – February 2016 defined in the

Hazardous Waste (England and Wales) Regulations 2005) and radioactive wastes (as defined in the Radioactive Substances Act 1993).3(02/16).

Unacceptable material Class U2 shall be:(i) hazardous waste (as defined in the Hazardous Waste (England and Wales) Regulations 2005) and radioactive waste (as defined in the Radioactive Substances Act 1993).4(02/16).

Where required in contract, unacceptable material (other than Class U2) shall be processed by mechanical, chemical or other means to render the material acceptable for use in the permanent works in accordance with the requirements of Table 6/1 and contract specific MCHW Appendix 6/1.

6.6. EARTHWORKS MATERIAL TESTS

Prior testing of the potential sources of fill shall be undertaken by the contractor and submitted to the consulting engineers for approval. This testing shall include, but not necessarily be limited to, the compaction and backfill requirements detailed in Table 6.3.

TABLE 6.3 COMPACTION/BACKFILL REQUIREMENTS

<table>
<tr><th>LAND USE</th><th>COMPACTION METHODOLOGY and GENERAL PERFORMANCE CRITERIA</th></tr>
<tr><td>Liquid and Plastic Limits</td><td>BS 1377: Part 2</td></tr>
<tr><td>Grading</td><td>BS 1377: Part 2</td></tr>
<tr><td>Uniformity Coefficient</td><td>Calculated from grading curve</td></tr>
<tr><td>Moisture Content
Multi-point moisture condition value (MCV) (to assess optimum moisture content).</td><td>BS 1377: Part 2</td></tr>
<tr><td>Organic Matter (Maximum 2.5% Total Organic Content)</td><td>BS 1377: Part 3</td></tr>
<tr><td>Water Soluble Sulphate</td><td>TRL Report 447 Test No 1</td></tr>
<tr><td>Total Sulphate Content</td><td>TRL Report 447 Test No 4</td></tr>
<tr><td>Earthwork In-situ Tests
Subsequent to the filling and compaction of the material, a series of in-situ tests shall be undertaken to confirm the success of the compaction process. This testing shall include, but necessarily be limited to, the following:
<table><tr><th>Test</th><th>Test Method</th></tr><tr><td>Plate Load Tests (Equivalent CBR of 5%)</td><td>BS 1377: Part 9</td></tr></table>
Disposal of Materials
The contractor shall be responsible for the safe disposal of any excess of unsuitable material found on the site.</td><td>Clause 632 (BS 1377: Part 4)</td></tr>
<tr><td>Proctor Compaction Testing</td><td>BS 1377: Part 4</td></tr>
</table>

6.7. CURRENT AND PROPOSED SITE TOPOGRAPHY AND SLOPE INTERACTION

The site is currently flat and no overall changes in elevation are proposed.

7. RECORD-KEEPING AND VERIFICATION

7.1. RECORD-KEEPING

During the course of the remediation and site enabling works, the on-site E3P consultant will undertake the following record-keeping protocols:

- Detailed daily site diary including material movements;
- Sampling register, testing results, photographs, details of locations of hydrocarbon-impacted soils (drawings), details of hotspot removals, details of consignment notes of any hydrocarbon-impacted material that is required to be disposed of off site; and
- Detailed surveys (volumes).

Record-keeping on site, in particular movements and analysis of specific material types, will be in the form of site diaries and a remediation excavation record. This record will remain on site and will be completed by the E3P on-site engineer during the course of the remediation and site enabling works.

7.2. VERIFICATION

The records listed above will then be compiled into a validation report produced by E3P on completion of the remediation and site enabling works, clearly referencing the origin of the materials used and testing carried out to confirm its suitability for use, where required. E3P will also prepare an as-built development drawing clearly detailing the materials present on site to be cross referenced with the supporting validation documentation.

The validation report will include the following:

- Remediation strategy (including copies of confirmation from regulatory authorities agreeing criteria);
- Detailed surveys of all excavations and production of as-built drawings for the earthworks;
- Copy of consignment notes relating to the movement of wastes to a licensed waste management facility;
- Detailed drawings showing all sampling locations for both chemical and geotechnical testing;
- Chemical test results;
- Geotechnical test results;
- Details of qualified persons signed declaration; and
- Monitoring results if undertaken (e.g. asbestos in air, gas water).

8. CONTINGENCY PLAN

8.1. PREVIOUSLY UNIDENTIFIED CONTAMINANTS

Should significantly impacted material be encountered during the development, then it will be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinants.

Once the laboratory analysis of the material is available, an assessment will be undertaken to determine whether it can be retained on site as part of the material management plan or whether it should be disposed of off-site.

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

9. SECOND PHASE MITIGATION AND MANAGEMENT – BUILD PHASE

This document details the construction works that are required to ensure full compliance with the remediation Strategy, Regulatory Authorities, Building Control & Warranty Providers;

The following should be implemented during the build phase of the development:

- Laboratory testing of the imported topsoil and subsoil (if required); and
- Placement and chemical validation of imported topsoil within landscaped POS; and,

The validation protocols are presented within the E3P Remediation and Enabling Works Strategy and are presented below.

9.1. PLACEMENT OF COVER SYSTEM

The Remediation and Enabling Works Strategy for the site, with respect to human health of the future site users includes the provision of a chemically suitable clean material to be installed in all landscaped planter areas; the construction of the clean cover / placement of clean material shall consist of:

- 300mm topsoil cover system, with geotextile membrane (break layer) in all landscaped plots which overlie Made Ground deposits across the site.

The depth of cover system within any the tree pits (planters) may require deepening to 600m bgl.

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be imported or re-used on site to confirm the proposed development will pose no unacceptable risk to human health or the wider environ.

Subsoil and topsoil shall be free of any deleterious materials, such as buildings materials, timber, plastics etc and conform to the requirements of BS 3882:2007.

Initial testing of site won sub-soil to classify its re-use on site has been completed as part of the remediation works undertaken. Therefore, further analysis of sub-soil will be required to achieve the testing frequencies outlined within the remediation strategy and in the event of importation of additional material during construction.

Testing requirements for topsoil and subsoil (if required) are presented in Table 9.1 below.

TABLE 9.1 SPECIFICATION FOR SOIL TESTING

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Subsoil Greenfield Source (450 mm Garden Cover)	1 Sample per 200 m^3	A/B/C/D
Subsoil Brownfield Source(450 mm Garden Cover)	1 Sample per 50 m^3	A/B/C/D
Topsoil Greenfield Source (150 mm Garden Cover)	1 Sample per 200 m^3	A/B/C/D
Topsoil Brownfield Source (150 mm Garden Cover)	1 Sample per 50 m^3	A/B/C/D
General Engineering Fill (Class 1 and 2 Soil)	1 Sample per 1000 m^3	A/B/C/D

9.1.1. PROCEDURE FOR PLACEMENT OF CHEMICALLY SUITABLE COVER SYSTEM

Landscaped areas (likely to be raised planter beds) need to be backfilled with chemically validated topsoil (and subsoil if deepened for tree pits).

Topsoil is required to be confirmed as chemically suitable prior to placement. E3P will be required to return to site and undertake independent validation of the correct placement of topsoil.

The placement of the cover system in landscaped areas will be undertaken during the build phase works of the project.

The placement of topsoil and corresponding validation will be documented within the Garden Validation Letters (to be issued on completion of the contractor's works).

If proposed utilities are to be placed within the cover system, the clean cover should be placed prior to installation of these utilities.

E3P will collect photographic evidence of the placement of certified topsoil and subsoil on completion of construction works.

This element will also be checked by the Building Control Officer as part of the site completion prior to issuing of a CML certificate.

The garden validation procedure is detailed in Table 9.2.

TABLE 9.2 LANDCSPAED VALIDATION PROCEEDURE

PROCEDURE	METHOD
Chemical Validation	Site won subsoils and imported topsoil will need to be chemically analysed to confirm suitability for use with the proposed cover system prior to installation and completion of the landscaped areas. E3P will issue an email to the appropriate party with an assessment of the chemical suitability of both sub-soils and topsoil. If acceptable the materials can be installed to the required depth at which time the plot will be deemed complete following a validation procedure by a suitability qualified E3P engineer.
Trial Holes	Trial holes are deemed necessary to validate the depth of cover system in landscaped areas during the build phase.
Validation	Photographic evidence will be taken by E3P of the topsoil and subsoil placement demonstrating the depth of material and practical completion of works are required for each landscaped area.
Validation Certificate	Once the photographs of the placement of suitable material have been provided, E3P will issue a plot specific validation certificate to demonstrate that the required subsoil and topsoil has been placed in the required landscaped areas along with the chemical analysis.
Completion Report	Upon completion of all landscaped areas within the development, a Completion Report will be issued providing the confirmation that all remediation requirements have been achieved.

Plate 1 provides an example of a landscaped validation photographs that will be required for each area.

PLATE 1 EXAMPLE PLOT COVER SYSTEM VALIDATION

Plot No: 4 (Car Park Landscaping)		
Depth of Strata (m bgl)	0.00-0.30	Validated TOPSOIL
Depth of Cover System Materials	***Depth of Cover System Materials***	

Depth of Cover System at Ground Level and in Relation to Unit / Structure

9.2. POTABLE WATER SUPPLY – CONTAMINANT ASSESSMENT CRITERIA

Table 9.3 provides a summary of the threshold concentrations that must not be exceeded within remediated ground at pipeline depth in order to PE pipe works to be acceptable for the proposed development.

TABLE 9.3 PIPELINE SELECTION PE THRESHOLD CONCENTRATIONS

Contaminant Group	PE-threshold
Total VOC	0.5
Total BTEX And MTBE	0.1
Total SVOCs (Excluding PAH and those substances marked with an *)	2
EC5-EC10 Aliphatic and Aromatic Hydrocarbons	2
EC10-EC16- Aliphatic and Aromatic Hydrocarbons	10
EC16-EC40 Aliphatic and Aromatic Hydrocarbons	500
Phenols (From SVOC Analysis)*	2
Cresols and Chlorinated Phenols (From SVOC Analysis)	2
Ethers*	0.5
Nitrobenzene*	0.5
Ketones*	0.5
Aldehydes*	0.5
Amines	Fail

Upon completion of the remedial works a full UKWIR Risk Assessment should be undertaken.

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 1.2.

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

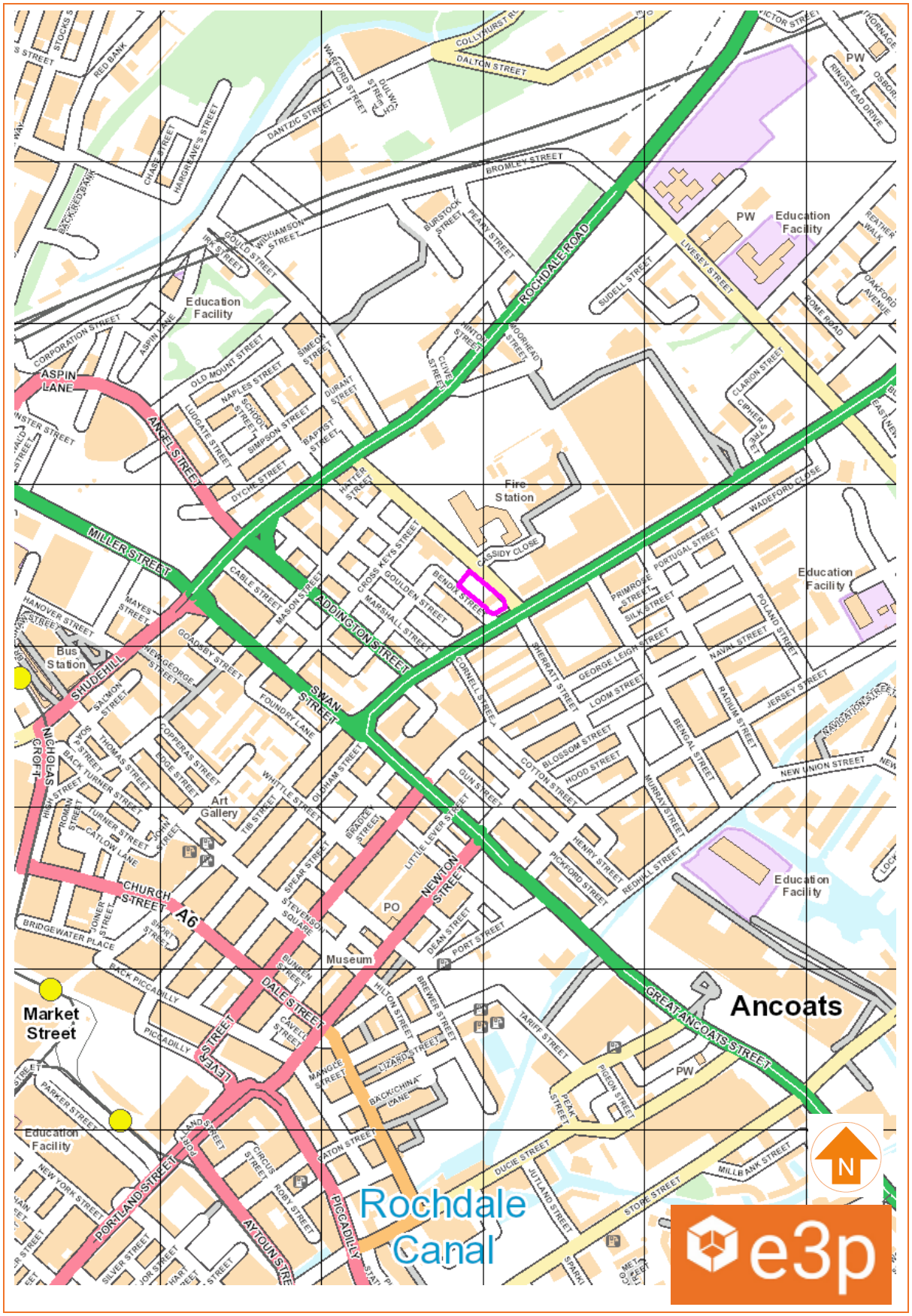
TERMS

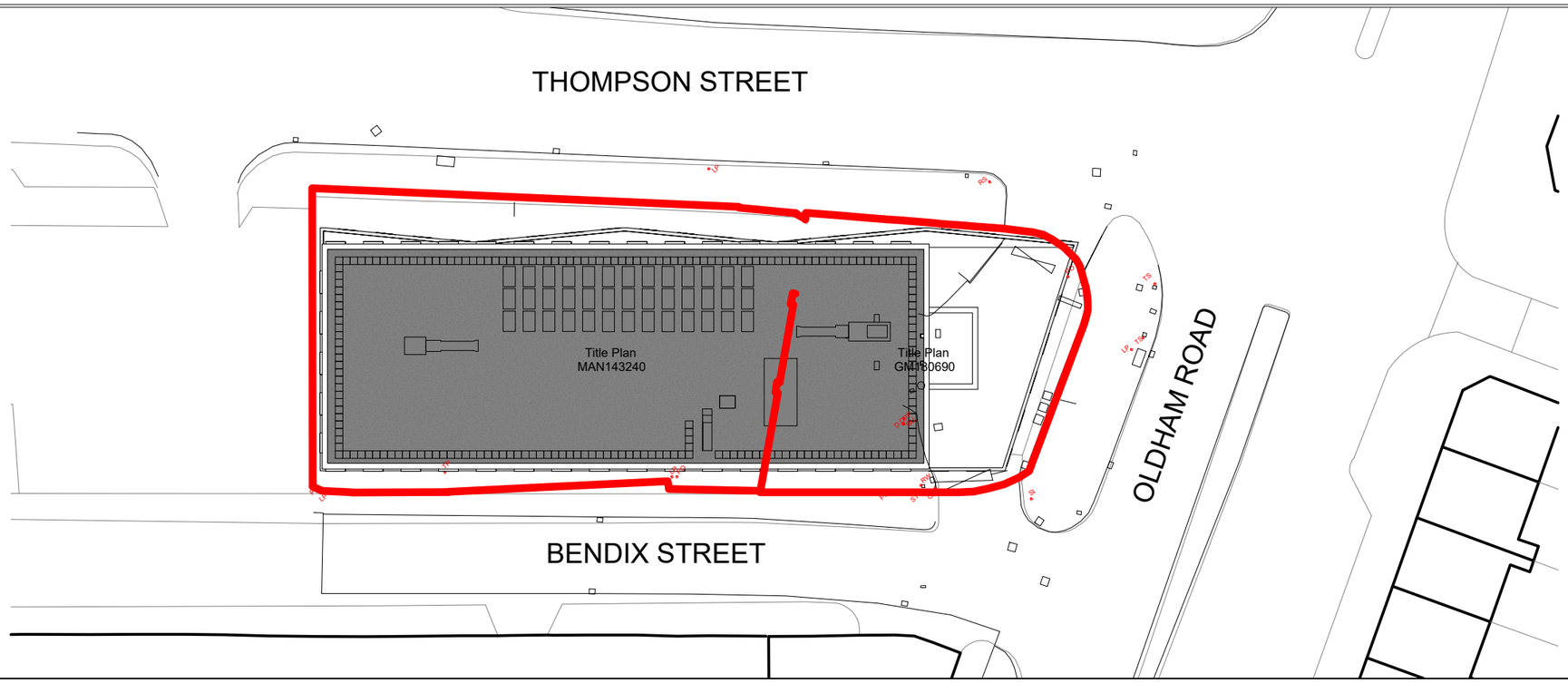
ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement 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**	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 12-730-001 – SITE LOCATION PLAN





Notes:	Client:	Job No:	Date:
	Mulbury	12-729	13.11.2020
		Drawing No: 002	Scale: NTS

Phase	Issue	Date	Drawn	Checked
P1	REVA	13.11.2020	LM	NS

Job Title: Thompson Street

Drawing Title: Proposed Development Plan

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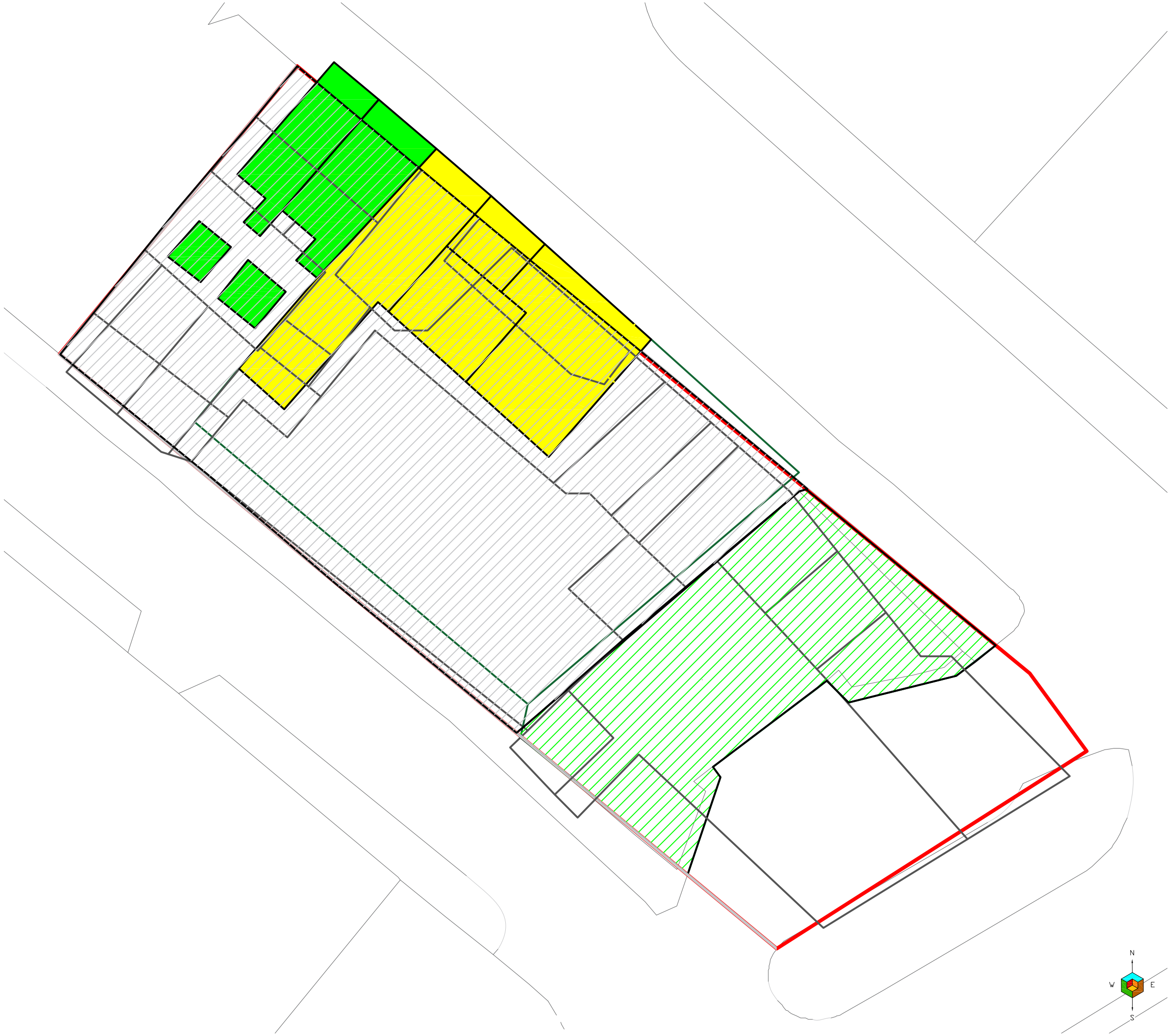

Key:

Historical Features

- Former Buildings (Pre 1893 - Pre 1948)
- Former School Buildings (Pre 1948 - Pre 1990)
- Former Buildings (Pre 1948 - Pre 1990)
- Car Park (Pre 1968 - Present)
- Grass Area (Pre 1948 - Present)

Notes:

Phase	Revision	Date	Issue	Drawn	Authorised
P1	-	18.07.2018	DRAFT	HM	MD

Client: Mulbury Homes	Job No: 12-729	Date: 18.07.2018
	Drawing No: 002	Scale: NTS
Job Title: Thompson Street	Drawing Title: Historic Features Plan	

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Carpark Office Cabin

Carpark

TP104

WS101(MW)

TP105

WS102(MW)

CP101

TP101

TP102

WS104(MW)

Commercial Unit (Locksmiths)

Concrete Access Ramp

TP103

WS103(MW)

WS106(MW)

Concrete Hardstanding

WS105(MW)

N

Location Symbols

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

Site Features

- Carpark
- Commercial Unit (Locksmiths)
- Concrete Hardstanding
- Car Park Office Cabin
- Concrete Access Ramp

Notes:

P1	REVA	14.09.2020	HM	AS
Phase	Issue	Date	Drawn	Checked

Client: Mulbury

Job No: 12-729

Date: 14.09.2020

Drawing No: 004

Scale: NTS

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Job Title: Thompson Street

Drawing Title: Site Features Plan

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Key:

- Hatch indicates pile mat area
- Denotes approximate proposed hoarding line. Design and detail by Contractor
- Denotes services to be abandoned or diverted. Refer to drawing **-***-***-***-***-****-*** for details
- Residual Risk
- Ownership Boundary
- Planning Boundary

CDM 2015: RESIDUAL RISK

Ground conditions may vary across the site as well as the stability of any excavations and batters. Contractor is to be vigilent and seek advice from Geo-technical Engineer should ground conditions be different than expected.

Buried services to be surveyed with GPR. For initial costing refer to STATS plans. There may be other services which may not have been identified during the survey. The contractor to ensure safe working methods are undertaken during the works.

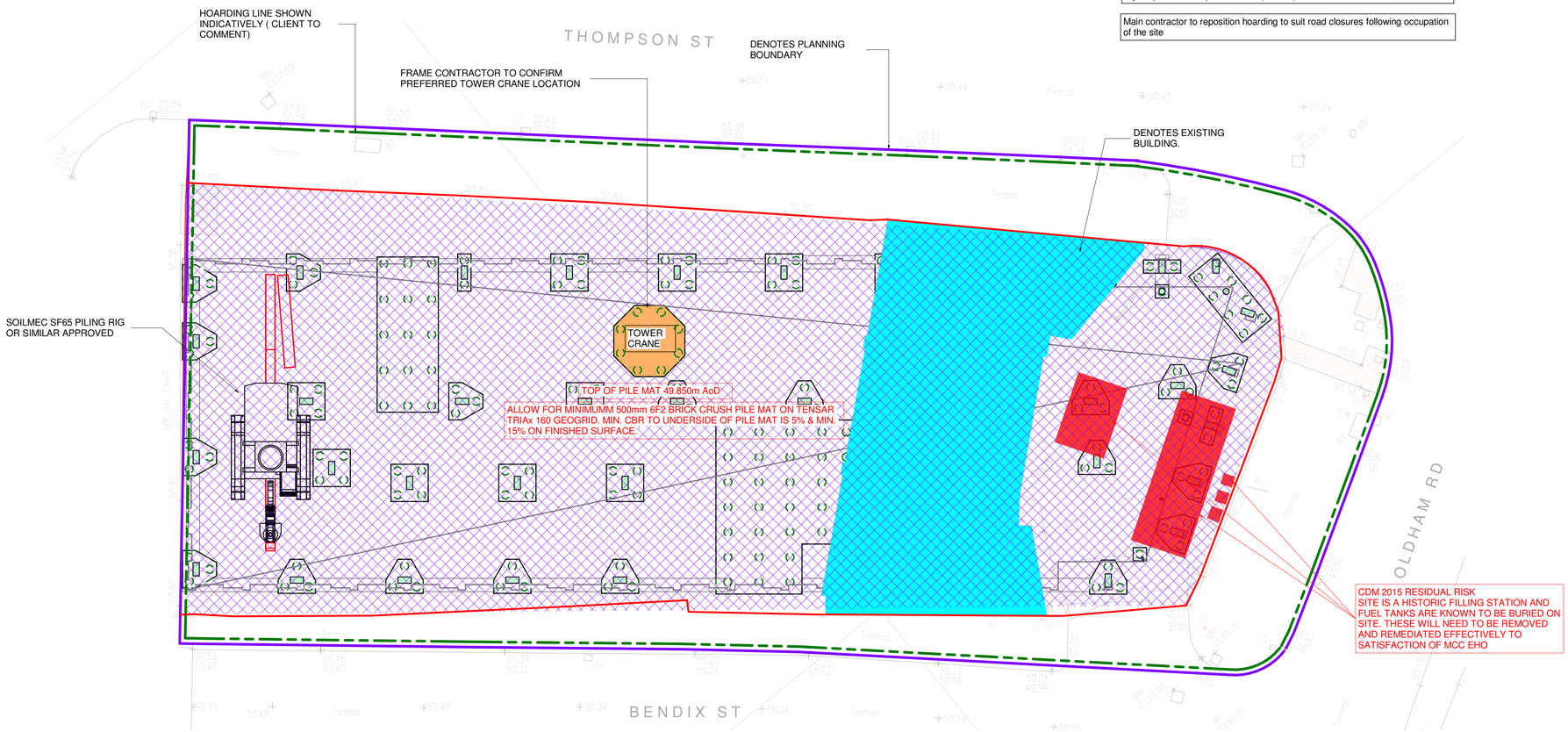
Contractor to liaise and co-ordinate construction works accordingly.

Contractor to ensure existing canal berm structure is not undermined by excavation works.

Note:
All temporary works shown are indicative only. It is the Contractors responsibilty to determine extent of all temporary works and ensure they are suitably designed by a temporary works designer.

Note:
Contractor is to determine existing drainage outfall positions into various highways and survey. record and protect positions for future use.

Main contractor to reposition hoarding to suit road closures following occupation of the site



ENABLING WORKS

1 : 150

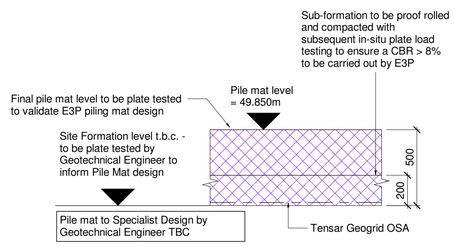
NOTES:

1. For general notes refer to drawing BST-SHD-00-ZZ-DR-S-0001
2. All works to be carried out to E3P Specification Reference t.b.c. Supplementary Site Investigation and Remediation/Enabling works Strategy t.b.c.
3. The nominated earthwork's contractor will be responsible for the reengineering of the sub-stratum in accordance with the E3P Performance specification to ensure delivery of the following key criteria:
   Building Footprint - (+2.0m on all elevations) - remove all relict foundations, infrastructure and oversize material. The resulting excavation to be backfilled with material that will be engineered to ensure suitability as a working platform with nominal Method Compaction;
   External Hardstand - remove all relict foundations and obstructions to a depth of >1.0m from the underside of formation with all voids and potential areas of instability removed to their full depth. Materials will be replaced and compacted to ensure compliance with the E3P Geotechnical specification with a CBR >5% at formation;
   Drainage Infrastructure - locations to be cleared of all relict foundations and infrastructure to a minimum of 1.0m from the underside of invert with material to be backfilled in compliance with E3P geotechnical specification;
   and,
   Placement of a suitable Temporary Works platform (Piling Mat) - to be constructed using graded 6F2 aggregate to a depth as specified by E3P with validation testing.

   This document provides a specification for the regeneration of the land in a manner that will negate identified pollutant linkages and ensure the development is suitable for the proposed end use. The salient features of the Remediation & Enabling Works Strategy are summarised below:

   - Eradication of all invasive plant species;
   - Excavation, and removal of all existing above and below ground structures
   - Beneath the proposed structural foundations;
   - Sorting, processing and segregation of all deleterious materials;
   - Materials deemed unsuitable for retention to be removed from site;
   - Management of any asbestos impacted soils;
   - Validation sampling to confirm all material retained on-site poses no risk to the identified receptors within the context of the CSM;
   - Processing of Made Ground to recycle aggregate as Class 6 Material;
   - Importation of chemically suitable materials (if required) to achieve the required development elevation;
   - Removal of any previously unidentified contamination hotspots;
   - Validation testing of materials placement to confirm suitability;
   - All works to be undertaken in strict accordance with UK Environmental Permitting and Local Planning Authority Requirements.
4. Location of crane base and associated pile locations T.B.C by main Contractor
5. Contractor is to demolish existing structures including any basements and grub up and crush all foundations and slabs. Contractor to allow for temporary slopes to stabilise the surrounding pavements during the works. Contractor to fill any voids, excavations and former basements in line with E3P specification. Site won material should be crushed to 6F2 specification where suitable or engineered to E3P Class 1 and 2 specification and proof rolled in max. 150mm layers up to site formation level. Contractor is to note there is adjacent residential areas, noise and dust must be kept to a minimum and safety of the public ensured at all times during the works.
6. Location of buried services to be determined by GPR survey. Refer to STATS plans for assumed locations.
7. Site to be levelled to a top of pile mat level of 49.850m. Pile mat is to be a minimum of 500mm 6f2 crush over Tensar Geogrid OSA with final design by E3P. Pile mat to be designed by E3P Geotechnical Engineer and installed by Enabling Works Contractor.
8. Contractor to allow for all service diversion to provide a clear site for main contract works.
9. Contractor to provide enabling works handover package detailing all works undertaken. Report to include but not limited to:

   - Details of service diversion, abandonment and any service not currently detailed.
   - As built drawing and CAD survey of site including spot levels across the site on a 5m x 5m grid.
   - Hoarding design and calculations.
   - Details of any obstructions found
   - Geotechnical Engineer to undertake plate testing to verify the final working platform. Geotechnical Engineer to issue report of results.
   - Working platform specification and build-up to specialist sub-contractor design.
   - Any temporary works required to maintain stability during demolition.
   - Details and calculations of all temporary works undertaken.
   - All temporary works to be designed and specified by enabling works Contractor.
   - CCTV drain survey of site connection points
10. Pile mat sub-base to be plate tested by Geotechnical Engineer to inform final design.
11. Locate, seal and protect existing drainage outfall positions into the adjacent sewers and record positions for later use. Drain connection points to be camera surveyed as part of Enabling Works.
12. All fences, knee rails and gates to be removed from the existing site perimeter and temporary site hoarding to be installed to secure the site ahead of permanent hoarding installation by main Contractor.



Typical Pile Mat/Ground Floor Build-up Section

1 : 20

No	DATE	DRAWN	REV'D ENG.	AMENDMENT
P1	03.11.20	KLM	KC	PRELIMINARY ISSUE

STATUS: S2
PURPOSE OF ISSUE: PRELIMINARY

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CLIENT: MULBURY CITY

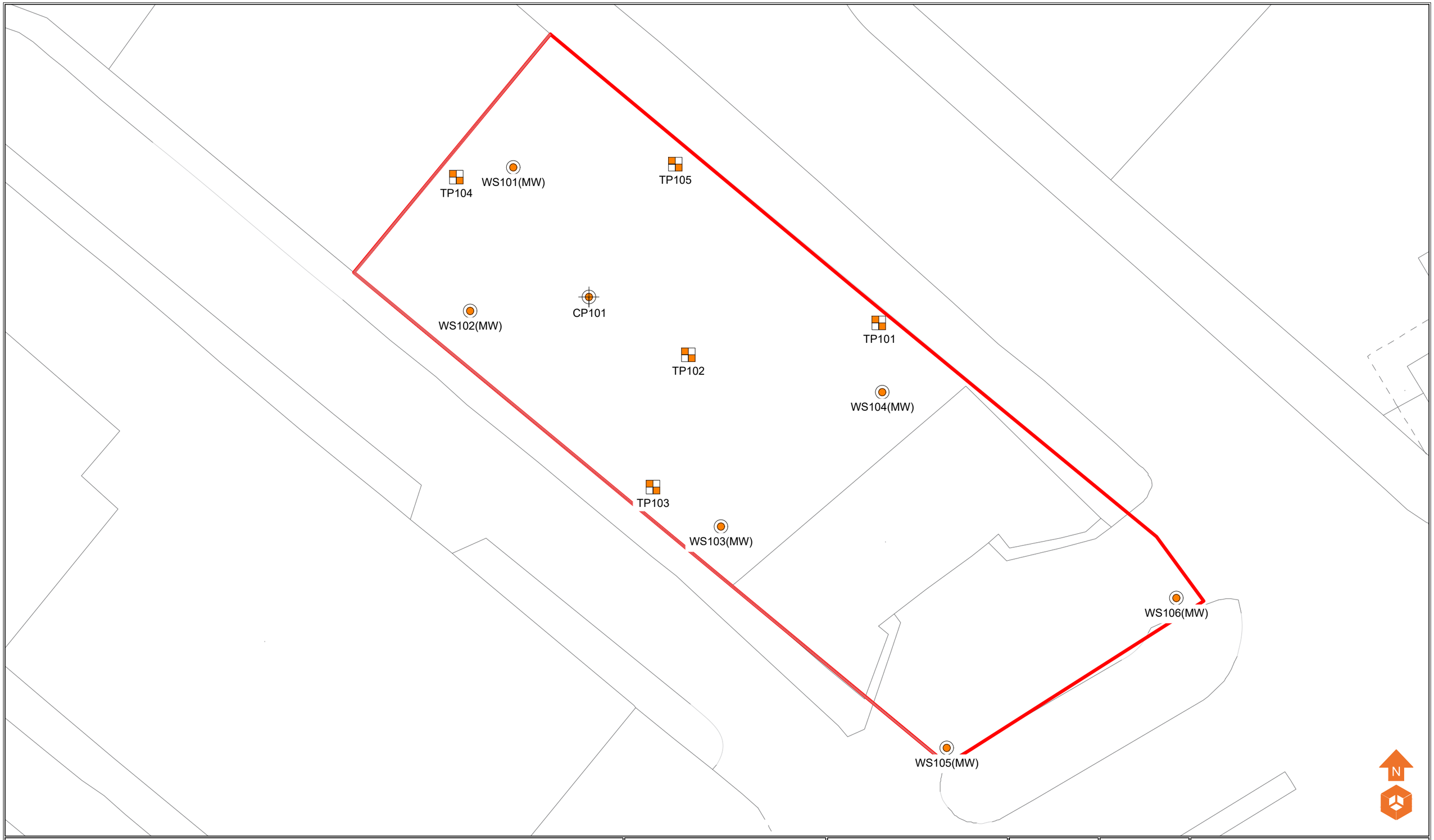
PROJECT: NEW CROSS - BENDIX STREET

DRAFTER: KLM
ENGINEER: OO

Project Reference: 3356

TITLE: ENABLING WORKS

SCALE	SHEET	DRAWING No	AMDT
As indicated	A1	BST-SHD-00-F1-DR-S-0100	P1



Location Symbols

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

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVB	14.09.2020	HM	AS
P1	REVA	17.08.2020	HM	AS

Client: Mulbury

Job No: 12-729

Date: 14.09.2020

Drawing No: 005

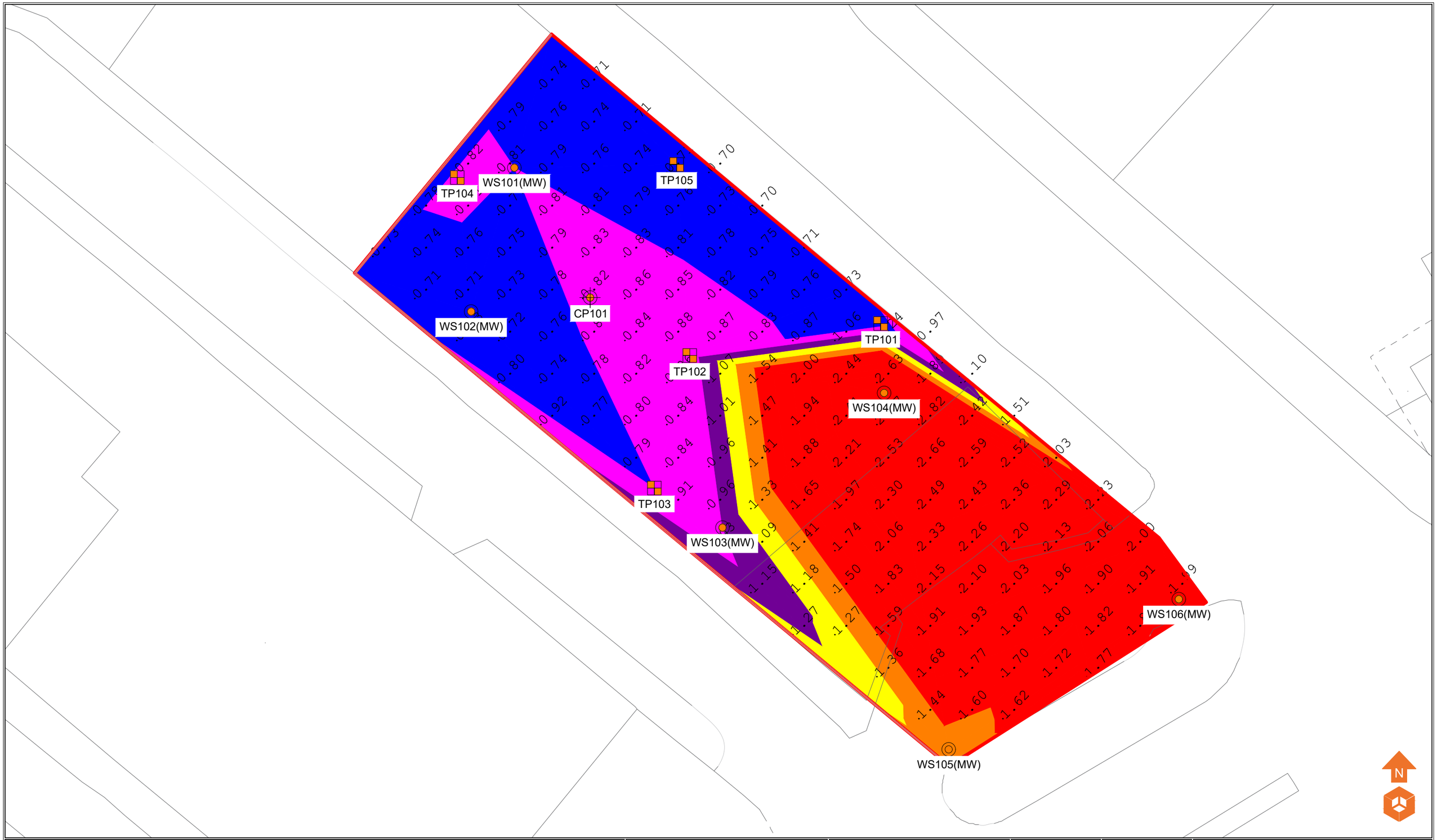
Scale: NTS

Job Title: Thompson Street

Drawing Title: Exploratory Hole Location Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



Location Symbols

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

Made Ground Depth (m)

- Depth of Made Ground 0.00 - 0.19m
- Depth of Made Ground 0.20 - 0.39m
- Depth of Made Ground 0.40 - 0.59m
- Depth of Made Ground 0.60 - 0.79m
- Depth of Made Ground 1.00 - 1.19m
- Depth of Made Ground 1.20 - 1.39m
- Depth of Made Ground 1.40 - 1.59m
- Depth of Made Ground 1.60 - 1.79m
- Depth of Made Ground >1.80m

Notes:

Phase	Issue	Date	Drawn	Checked
P1	REVA	14.09.2020	HM	AS

Client: Mulbury

Job No: 12-729

Date: 14.09.2020

Drawing No: 006

Scale: NTS

Job Title: Thompson Street

Drawing Title: Depth of Made Ground Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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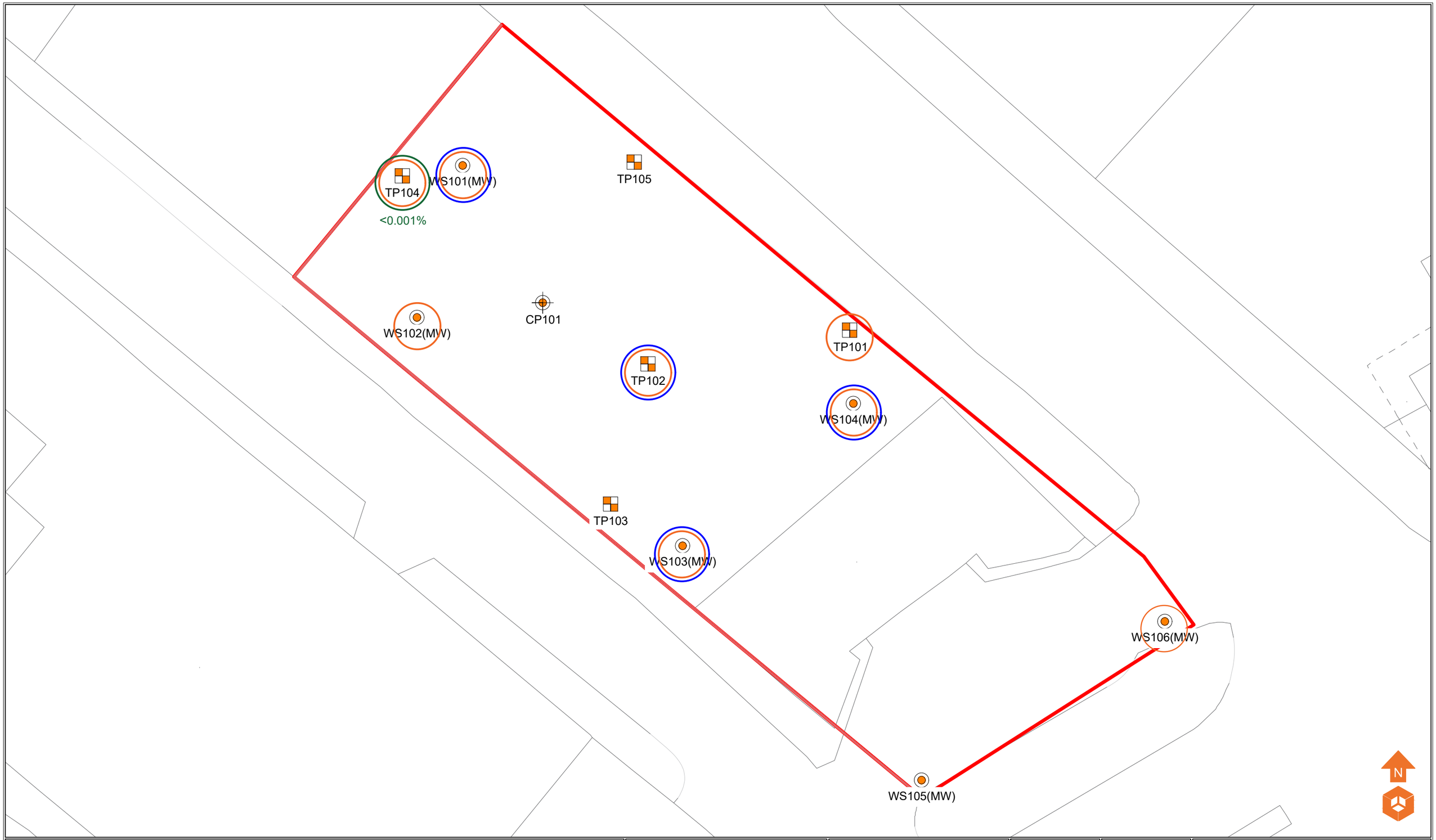

Location Symbols

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

Contamination Exceedances

- Heavy Metals
- Non Volatile PAH
- Asbestos

Notes:

P1	REVA	13.11.2020	LM	NS
Phase	Issue	Date	Drawn	Checked

Client: Mulbury

Job No: 12-729

Date: 13.11.2020

Drawing No: 018

Scale: NTS

Job Title: Thompson Street

Drawing Title: Contamination Exceedances Plan

e3p
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Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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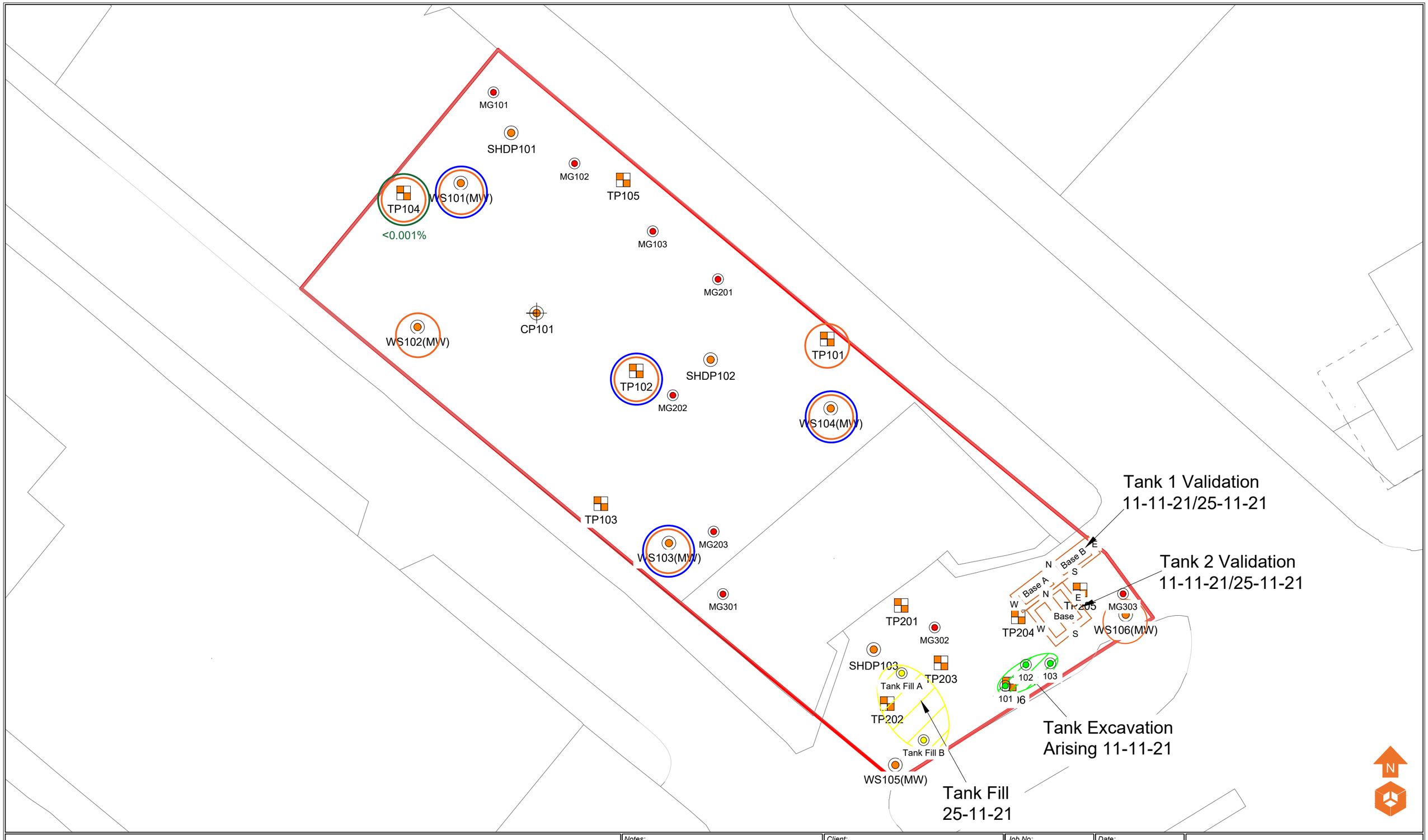

Location Symbols

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

Contamination Exceedances

Heavy Metals	MG101-103 - 04-11-21
Non Volatile PAH	MG201-203 - 25-11-21
Asbestos	MG301-303 - 08-12-21

Notes:

Client: Mulbury

Job No: 12-729

Date: 07.01.2022

Drawing No: 019

Scale: NTS

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Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

Phase	Issue	Date	Drawn	Checked
P1	REVA	07.01.2022	EB	EF

Job Title: Thompson Street

Drawing Title: Validation Sampling Plan

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

APPENDIX IV
E3P REMEDIATION/ VALIDATION CRITERIA

HUMAN HEALTH REMEDIATION TARGETS – RESIDENTIAL END USE

Determinand	Units	Within 600 mm Cover System (Garden)	HardStanding and >600 mm of cover	Public Open Space 300 mm Cover	Public Open Space > 300 mm	Path-way
Arsenic	mg/kg	37[i]	40[ii]	79[iii]	640[iv]	1
Cadmium	mg/kg	11[i]	85[ii]	120[iii]	532[iv]	1
Chromium (Hexavalent)	mg/kg	6[i]	6[ii]	7.7[iii]	220[iv]	1
Lead	mg/kg	210[vi]	330[vii]	760[viii]	760[viii]	1
Elemental Mercury	mg/kg	1.2[i]	1.2[ii]	16[iii]	30[iv]	2
Nickel	mg/kg	180[i]	180[ii]	230[iii]	3400[iv]	1
Selenium	mg/kg	250[i]	430[ii]	1100[iii]	1800[iv]	1
Copper	mg/kg	2400[i]	7100[ii]	12,000[iii]	44,000[iv]	1
Zinc	mg/kg	3700[i]	40,000[ii]	81,000[iii]	170,000[iv]	1
Phenol	mg/kg	280[i][xi]	280[xiv][xi]	760[iii][xi]	760[iv][xi]	2
Naphthalene	mg/kg	2.3[i][xi]	2.3[xiv][xi]	1200[iv][xi]	1200[iv][xi]	2
Acenaphthylene	mg/kg	170[i][xi]	500[v]	15,000[iii][xi]	29,000[iv][xi]	3
Acenaphthene	mg/kg	210[i][xi]	500[v]	15,000[iii][xi]	29,000[iv][xi]	1
Fluorene	mg/kg	170[i][xi]	500[v]	9900[iii][xi]	20,000[iv][xi]	1
Phenanthrene	mg/kg	95[i][xi]	500[v]	3100[iii][xi]	6200[iv][xi]	3
Anthracene	mg/kg	500[i][xi]	500[v]	74,000[iii][xi]	150,000[iv][xi]	3
Fluoranthene	mg/kg	280[i][xi]	500[v]	3100[iii][xi]	6300[iv][xi]	3
Pyrene	mg/kg	500[i][xi]	500[v]	7400[iii][xi]	15,000[iv][xi]	3
Benzo(a)Anthracene	mg/kg	7.2[i][xi]	11[ii][xi]	29[iii][xi]	49[iv][xi]	3
Chrysene	mg/kg	15[i][xi]	30[ii][xi]	57[iii][xi]	93[iv][xi]	3
Benzo(b)Fluoranthene	mg/kg	2.6[i][xi]	3.9[ii][xi]	7.1[iii][xi]	13[iv][xi]	3
Benzo(k)Fluoranthene	mg/kg	77[i][xi]	110[ii][xi]	190[iii][xi]	370[iv][xi]	3
Benzo(a)Pyrene	mg/kg	2.2[i][xi]	3.2[ii][xi]	5.7[iii][xi]	11[iv][xi]	3
Indeno(123-cd)Pyrene	mg/kg	27[i][xi]	45[ii][xi]	82[iii][xi]	150[iv][xi]	3
Dibenzo(a,h)Anthracene	mg/kg	0.24[i][xi]	0.31[ii][xi]	0.57[iii][xi]	1.1[iv][xi]	3

Benzo(ghi)Perylene	mg/kg	320[(i)(xi)]	360[(ii)(xi)]	640[(iii)(xi)]	1400[(iv)(xi)]	3
TPH C_5-C_6 (aliphatic)	mg/kg	42[(i)(xi)]	42[(ii)(xi)]	42[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_6-C_8 (aliphatic)	mg/kg	100[(i)(xi)]	100[(ii)(xi)]	100[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_8-C_{10} (aliphatic)	mg/kg	27[(i)(xi)]	27[(ii)(xi)]	27[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_{10}-C_{12} (aliphatic)	mg/kg	130[(i)(xi)]	130[(ii)(xi)]	130[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_{12}-C_{16} (aliphatic)	mg/kg	1000[(xiv)(xi)]	1000[(xiv)(xi)]	1000[(xiv)(xi)]	10,000[(xiv)(xi)]	1
TPH C_{16}-C_{21} (aliphatic)	mg/kg	1000[(xiv)(xi)]	1000[(xiv)(xi)]	1000[(xiv)(xi)]	10,000[(xiv)(xi)]	1
TPH C_{21}-C_{35} (aliphatic)	mg/kg					1
TPH C_5-C_7 (aromatic)	mg/kg	70[(i)(xi)]	370[(ii)(xi)]	370[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_7-C_8 (aromatic)	mg/kg	130[(i)(xi)]	860[(ii)(xi)]	860[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_8-C_{10} (aromatic)	mg/kg	34[(i)(xi)]	47[(ii)(xi)]	47[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_{10}-C_{12} (aromatic)	mg/kg	74[(i)(xi)]	250[(ii)(xi)]	250[(ii)(xi)]	10,000[(xiv)(xi)]	2
TPH C_{12}-C_{16} (aromatic)	mg/kg	140[(i)(xi)]	1800[(ii)(xi)]	1800[(ii)(xi)]	10,000[(xiv)(xi)]	1
TPH C_{16}-C_{21} (aromatic)	mg/kg	260[(i)(xi)]	1900[(ii)(xi)]	1900[(ii)(xi)]	10,000[(xiv)(xi)]	1
TPH C_{21}-C_{35} (aromatic)	mg/kg	1000[(xiv)(xi)]	1900[(ii)(xi)]	1900[(ii)(xi)]	10,000[(xiv)(xi)]	1
Asbestos	Fibres Volume Weight (%)	NFD	0.001%	NFD	0.001	4

Notes 1

NFD = No Fibres Detected

Asbestos will be screened visually on site by a qualified environmental consultant and where potential ACM is identified, representative samples will be subject to quantitative analysis of % volume by weight.

Should any ACM be identified within the soil matrices, further detailed % assessment would be required when the reported laboratory result exceeds the limit of detection for the analytical method at 0.01% by volume (weight).

Notes 2
Excludes matrices where free product is observed.

Commercial Tier 1 GAC modelled to assume no exposure pathway.

No viable exposure pathway beneath hardstanding and cover system.

Notes 3
Main exposure pathways: 1 = soil ingestion, 2 = vapour inhalation (indoor), 3 = dermal contact and ingestion, 4 = dust inhalation.

Abbreviations: GAC = general assessment criteria, n = number of samples, MC = maximum concentration, N/A = Not Applicable (no exceedance of assessment criteria), Loc of MC = location of exceedances.

i. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use with plant uptake.

ii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use without plant uptake – these levels used below 600 mm cover system within residential gardens as soils will be present within a residential setting yet soils will not be disturbed and garden plants will not reach these soils.
iii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for public open space (POS) residential.
iv. Value derived from LQM Suitable 4 Use Levels (S4ULs) for public open space (POS) park – these levels used below 300 mm POS cover system as soils will not be disturbed by any future site users and exposure to these soils will be similar to a park end use.
v. Value derived from LQM Suitable 4 Use Levels (S4ULs) alongside assessment with WM3 to ensure that materials remaining on site do not exceed the WM3 toxicity criteria for hazardous waste.
vi. Value derived from Category 4 Screening Levels (C4SL) for residential land use with homegrown produce.
vii. Value derived from Category 4 Screening Levels (C4SL) for residential land use without homegrown produce.
viii. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) residential.
ix. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) park.
x. Mercury – based on elemental mercury.
xi. PAH and TPH levels used are for 1% SOM.
xii. Xylenes based on p-xylene (o-xylene 2600 mg/kg, m-xylene 3500 mg/kg) and is capped by its solubility.
xiii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use with plant uptake due to the volatilisation risk.
xiv. BTEX is not SOM-related due to inhalation pathway.

REMEDIATION TARGETS – COMPARISON OF LEACHATE ANALYSIS WITH TIER 1 SCREENING LEVELS

DETERMINAND	UNITS	SCREENING VALUE
Arsenic	µg/l	50[1]
Cadmium	µg/l	5[2]
Chromium	µg/l	2[1]
Copper	µg/l	5[1,3]
Total Cyanide	µg/l	1[1]
Lead	µg/l	4[1]
Mercury	µg/l	1[2]
Nickel	µg/l	50[1]
Selenium	µg/l	100[4]
Zinc	µg/l	10[5]
pH	N/A	6–9
Naphthalene	µg/l	10[1]
Benzo(a)pyrene	µg/l	0.05[7]
benzo[b/k]fluoranthene benzo[g,h,i]perylene and indeno(1,2,3-cd]pyrene	µg/l	0.10[6]
TPH C5-C6 (benzene)	µg/l	30[1]
TPH C6-C8 (toluene)	µg/l	50[1]
TPH C8-C10 (ethyl Benzene)	µg/l	20[1]
TPH C10-C12 (xylene)	µg/l	30[1]
TPH C12-C16 (naphthalene)	µg/l	10#[1]
TPH C16-C35	µg/l	50#

Notes

Solubility < 0.01 µg/l.

1. Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) - List II substances.
2. Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) - List I substances.
3. Surface Waters (River Ecosystem) (Classification) Regulations 1994.
4. WHO Guidelines for Drinking Water Quality. Third edition (2004).
5. Council Directive on the quality of fresh waters needing protection or improvement in order to support fish life (Freshwater Fish Directive).
6. Council Directive on the quality of water intended for human consumption (Drinking Water Directive).
7. Directive establishing a framework for Community action in the field of water policy (Water Framework Directive).

APPENDIX V
E3P MATERIAL IMPORT CRITERIA

SITE OF IMPORTATION ADDRESS		**E3P** TAYLOR ROAD TRAFFORD PARK URMSTON MANCHESTER M41 7JQ +44 (0) 161 707 9612 info@e3p.co.uk
Client		
Main Contractor		
Earthworks Contractor		
Haulier		
Date of Planned Import		

Overview of Planned Material Import	
Material Source (Site of Origin) and Postcode	
Site Investigation Report	**Report Title and Reference:** **Date:** **Information Supplied By:**
Reason for Generation of Excess Material at Site of Origin	
Chemical Test Results for Stockpile at Site of Origin	**Date:** **Laboratory Certificate Ref:** **Organisation Responsible for Stockpile Sampling:**
Geotechnical Material Classification and Testing	**Delete as Appropriate:** Class 1 / Class 2 / Class 6 / Topsoil
Pictures of Material Stockpile Pending Transportation	**Delete as Appropriate:** Yes / No
Person or Organisation Responsible for Ensuring Quality Control at Site of Origin	
Quantity of Material to Be Imported (m^3)	
Proposed Area of Deposition (Site of Reuse)	
Waste Exemption/Permit or CL:AIRE MMP	**Delete as Appropriate:** U1 Standard Rules / CL:AIRE MMP (Direct Transfer) / Bespoke

APPENDIX VI CONTRACTOR PRE-COMMENCEMENT CHECK SHEET

GEOTECHNICAL ENABLING WORKS PRE-START FORM

Prior to the commencement of any site remediation or enabling works, this form will be completed by E3P, in the presence of the appointed contractor, to ensure that all pertinent remediation and enabling works activities are fully discussed and understood.

Activity	Testing Responsibility	Contractors Method Statement Required (Y/N)	Comment/Action
Deployment of Environmental Permit			Ref No:
Deployment of LAPC Part B – Mobile Plant Permit			Ref No:
CL:AIRE MMP and Qualified Person Declaration			Ref No:
Identification of All Invasive Plant Species and Production of Eradication Plan with Appropriate Supervision by Specialist			Appointed specialist:
Removal of All Vegetation			Note disposal location:
Removal of All Root Bulbs and Root Networks			Note disposal location:
Identification of Contamination Hotpots, Removal of Material and Stockpile			Rationale:
Legislatively Compliant Procedure to Deal with Contamination Excavated from Hotspot			Rationale:
Processing and Recycling of Aggregate with Geotechnical and Chemical Validation Testing			Note stockpile location and anticipated volume:
Stockpiling of Subsoil and Certification of Suitability for Reuse			Stockpile location:
Decommission of All Redundant Drainage Infrastructure			

Activity	Testing Responsibility	Contractors Method Statement Required (Y/N)	Comment/Action
Decommission of All Former Interceptors			
Decommission of All Former Above- and Below-Ground Tanks			
Removal of All Asbestos to a Licensed Facility			
Engineering of Plots for Shallow Spread Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers
Engineering of Plots for VSC in Accordance with E3P Geotechnical Specification			Plot Numbers.
Engineering of Plots for Pile Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers
Engineering of Plots for Raft Foundation in Accordance with E3P Geotechnical Specification			Plot Numbers
Stockpiling of Topsoil and Certification of Suitability for Reuse			Stockpile location
Engineering of Highways Bulk Upfill in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Engineering of Highways Subgrade in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Engineering of Highways Capping in Accordance with E3P Specification with Compliant Validation Testing			Upfill specification
Cut-and-Fill the Development Site to Clients' Required Elevation with As-Built Survey			Required formation elevations

APPENDIX VI CONTRACTOR COMPLETION CHECK SHEET

GEOTECHNICAL ENABLING WORKS COMPLETION FORM

Upon completion of all site remediation and enabling works, this form will be completed by E3P, in the presence of the appointed contractor, to ensure that all pertinent geotechnical enabling works activities are complete or, where a deviation from the specification has occurred, all future limitations and issues are documented for the client's records.

Activity	Complete			Signature
	Yes	No	N/A	(initial)
Eradication of all invasive plant species				
Removal of all vegetation				
Removal of all root bulbs and root networks				
Stockpiling of topsoil and certification of suitability for reuse				
Stockpiling of subsoil and certification of suitability for reuse				
Stockpile all recycled aggregate with geotechnical and chemical validation testing				
Removal of all relict foundations and infrastructure in their entirety				
Decommission of all redundant drainage infrastructure				
Decommission of all former interceptors				
Decommission of all former above- and below-ground tanks				
Removal of all waste materials to a licensed facility				
Removal of all asbestos to a licensed facility				
Engineering of all plots for shallow spread foundation in accordance with E3P Geotechnical Specification				
Engineering of all plots for VSC in accordance with E3P Geotechnical Specification				
Engineering of all plots for pile foundation in accordance with E3P Geotechnical Specification				
Engineering of all plots for raft foundation in accordance with E3P Geotechnical Specification				
Engineering of highways bulk upfill in accordance with E3P Specification with compliant validation testing				
Engineering of highways subgrade in accordance with E3P Specification with compliant validation testing				
Engineering of highways capping in accordance with E3P Specification with compliant validation testing				
Cut-and-fill the development site to client's required elevation with as-built survey				

POST-REMEDIATION AND ENABLING LIMITATIONS

All and every deviation from the approved specification for works should be documented by the remediation and enabling works contractor below.

APPENDIX VII
GAS ANALYSER CALIBRATION CERTIFICATE

TEST DATE AND CONDITIONS		
Date	27/05/2020	
Atmospheric Pressure	1018	mB
Ambient Temperature	22.6	°C
Environics Serial No.	5089	

GFM426 Final Inspection & Calibration Check Certificate

GAS DATA LTD
Unit 4, Fairfield Court
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LJ
Tel 02476303311 Fax 02476307711

Customer	Taylor Drilling Services Ltd
Certificate Number	121765
Order Number	325851

Serial Number	12122
Software Version	G426-00.0027/0011

Recalibration DUE Date
27/05/21

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	400	*Accept > 200 cc/min*	Pump Flow @ -200mB	200	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
Sensor	60	60	40.1	40	20.9	20.9
	Accept ±3.0		*Accept ±3.0*		*Accept ±0.5*	
	4.9	5	4.9	5	6	6
	Accept ±0.3		*Accept ±0.3*		*Accept ±0.3*	
Zero Reading 100% N2	0	0	0	0	0	0
	Accept ±0.0		*Accept ±0.0*		*Accept ±0.1*	

Pressure Checks						
Atmospheric Pressure [AP] *(mB)*				Static Pressure [SP] *(mB)*		
Current Atmospheric Pressure *(mB)*	Instrument Atmospheric Pressure Reading *(mB)*			Applied Pressure *(mB)*	Instrument Pressure *(mB)*	
All Ports	*Open Ports*	1017	*Accept ±2.0*	*0.0mB*	0	*Accept ±0.0*
AP Port (Internal)	*+800 mB*	800	*Accept ±5.0*	*+400mB*	*400*	*Accept ±2.0*
AP Port (Internal)	*+1200mb*	1200	*Accept ±5.0*	*-400mB*	*-399*	*Accept ±2.0*

Differential Pressure [DP] (mB)			
Applied Pressure *(mB)*		Instrument DP Reading*(mB)*	
All Ports	*Open Ports*	0	*Accept ±0.02*
DP Port	*+ 25 mB*	25	*Accept ±0.5*
DP Port	*- 25mB*	-25	*Accept ±0.5*

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading °C	
Applied Temperature °C		
-10	-10	*Accept ±2.0*
0	0	*Accept ±1.0*
30	30	*Accept ±1.0*
60	60	*Accept ±1.0*
100	100	*Accept ±1.0*

Technician:	Date Tested:
Jack Rutland	*28/05/2020*

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015. Certificate NQA 8374. Valid until 21/03/2022

APPENDIX VIII
SUPPLEMENTARY CHEMICAL ANALYSIS

Elizabeth Fearn
e3p
Taylor Road
Urmston
Manchester
M41 7JQ

e: efearn@e3p.co.uk

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 21-21003

Project / Site name:	Thompson Street	**Samples received on:**	04/11/2021
Your job number:	12-729	**Samples instructed on/ Analysis started on:**	04/11/2021
Your order number:	12729-EF-M	**Analysis completed by:**	11/11/2021
Report Issue Number:	1	**Report issued on:**	11/11/2021
Samples Analysed:	3 soil samples		

Signed: CCStone

Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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.

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

Analytical Report Number: 21-21003
Project / Site name: Thompson Street
Your Order No: 12729-EF-M

Lab Sample Number				2072698	2072699	2072700
Sample Reference				MG101	MG102	MG103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/11/2021	04/11/2021	04/11/2021
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	8.6	12	7.7
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	9.7	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	2700	3400	2300
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.88	1.2	0.86
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	1800	2400	1700
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	876	1200	856
Sulphide	mg/kg	1	MCERTS	19	21	19
Total Sulphur	mg/kg	50	MCERTS	1200	1600	920
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.2	2.4	2.2

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	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.27	0.56	0.27
Fluorene	mg/kg	0.05	MCERTS	0.24	0.32	0.22
Phenanthrene	mg/kg	0.05	MCERTS	2.2	3.3	2.1
Anthracene	mg/kg	0.05	MCERTS	0.61	0.92	0.66
Fluoranthene	mg/kg	0.05	MCERTS	4.2	5.3	3.3
Pyrene	mg/kg	0.05	MCERTS	3.9	4.7	2.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.2	2.3	1.7
Chrysene	mg/kg	0.05	MCERTS	1.8	2.0	1.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.0	2.2	1.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.0	0.99	0.59
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	1.8	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	1.1	0.86
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.36	0.35	0.28
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	1.3	1.0

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	23.1	27.1	18.2

Analytical Report Number: 21-21003
Project / Site name: Thompson Street
Your Order No: 12729-EF-M

Lab Sample Number				2072698	2072699	2072700
Sample Reference				MG101	MG102	MG103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/11/2021	04/11/2021	04/11/2021
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	21	22	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.7	< 0.2	0.6
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	23	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	120	150	82
Lead (aqua regia extractable)	mg/kg	1	MCERTS	500	530	380
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.8	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	30	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	290	230	160
Petroleum Hydrocarbons						
TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	4.3	4.9	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	7.9	11	14
TPH (C21 - C35)	mg/kg	1	MCERTS	47	62	120
TPH (C35 - C40)	mg/kg	10	MCERTS	57	64	130
TPH Total C5 - C40	mg/kg	10	MCERTS	120	140	260

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 21-21003
Project / Site name: Thompson 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 *
2072698	MG101	None Supplied	None Supplied	Brown clay and sand with gravel.
2072699	MG102	None Supplied	None Supplied	Brown clay and sand with gravel.
2072700	MG103	None Supplied	None Supplied	Brown clay and sand with gravel.

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

Analytical Report Number : 21-21003
Project / Site name: Thompson Street

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

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
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
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 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 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
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
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
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
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
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

Analytical Report Number : 21-21003
Project / Site name: Thompson Street

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

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

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.

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Analytical Report Number : 21-22359

Project / Site name:	Thompson Street	**Samples received on:**	11/11/2021
Your job number:	12-729	**Samples instructed on/ Analysis started on:**	11/11/2021
Your order number:	12729-EF-O	**Analysis completed by:**	18/11/2021
Report Issue Number:	1	**Report issued on:**	18/11/2021
Samples Analysed:	11 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
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.

Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079809	2079810	2079811	2079812	2079813
Sample Reference				Tank Arising 101	Tank Arising 102	Tank Arising 103	Tank 1 N	Tank 1 E
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
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	30
Moisture Content	%	0.01	NONE	15	20	26	14	17
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	0.50	0.50

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8	8.9	8.5	-	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Total Sulphate as SO4	mg/kg	50	MCERTS	1500	800	1600	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.33	0.12	0.69	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	660	250	1400	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	329	125	692	-	-
Sulphide	mg/kg	1	MCERTS	150	12	450	-	-
Total Sulphur	mg/kg	50	MCERTS	2600	760	11000	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.9	1.8	2.3	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.7	0.47	< 0.05	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	1.4	0.51	< 0.05	-	-
Fluorene	mg/kg	0.05	MCERTS	1.3	0.41	< 0.05	-	-
Phenanthrene	mg/kg	0.05	MCERTS	6.3	2.4	< 0.05	-	-
Anthracene	mg/kg	0.05	MCERTS	1.4	0.60	< 0.05	-	-
Fluoranthene	mg/kg	0.05	MCERTS	8.2	3.7	1.1	-	-
Pyrene	mg/kg	0.05	MCERTS	7.5	3.4	1.1	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.1	1.9	0.48	-	-
Chrysene	mg/kg	0.05	MCERTS	3.3	1.5	0.45	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.7	2.0	0.54	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.9	0.84	0.22	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.5	1.7	0.38	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.8	0.92	< 0.05	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.55	0.27	< 0.05	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	1.2	< 0.05	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	49.7	21.9	4.30	-	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	19	14	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.5	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	28	34	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	69	79	75	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	220	320	510	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	33	38	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	180	200	-	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079809	2079810	2079811	2079812	2079813
Sample Reference				Tank Arising 101	Tank Arising 102	Tank Arising 103	Tank 1 N	Tank 1 E
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	< 10	18
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	< 10	21
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	< 10	39
TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
TPH (C6 - C8)	mg/kg	0.1	MCERTS	0.8	< 0.1	1.0	-	-
TPH (C8 - C10)	mg/kg	0.1	MCERTS	14	< 0.1	28	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	9.5	< 2.0	20	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	61	16	66	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	96	28	93	-	-
TPH (C21 - C35)	mg/kg	1	MCERTS	98	35	47	-	-
TPH (C35 - C40)	mg/kg	10	MCERTS	26	< 10	< 10	-	-
TPH Total C5 - C40	mg/kg	10	MCERTS	310	79	260	-	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079809	2079810	2079811	2079812	2079813
Sample Reference				Tank Arising 101	Tank Arising 102	Tank Arising 103	Tank 1 N	Tank 1 E
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
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	ISO 17025	-	-	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 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	MCERTS	-	-	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	0.41
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	0.36
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	0.60	4.4
Anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	0.96
Carbazole	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	0.83	6.6
Pyrene	mg/kg	0.05	MCERTS	-	-	-	0.66	4.9
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	0.41	3.1
Chrysene	mg/kg	0.05	MCERTS	-	-	-	0.44	3.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	0.42	2.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	0.24	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	0.32	2.3

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079809	2079810	2079811	2079812	2079813
Sample Reference				Tank Arising 101	Tank Arising 102	Tank Arising 103	Tank 1 N	Tank 1 E
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	0.22	1.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	0.27	1.5

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079814	2079815	2079816	2079817	2079818
Sample Reference				Tank 1 S	Tank 1 W	Tank 2 N	Tank 2 E	Tank 2 S
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
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	18	17	20	24	21
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	0.50	0.50

Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	-	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	-	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	-	-	-	-
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-	-	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079814	2079815	2079816	2079817	2079818
Sample Reference				Tank 1 S	Tank 1 W	Tank 2 N	Tank 2 E	Tank 2 S
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	3.7	< 1.0	7.6	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	3.5	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	8.2	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	9.4	< 1.0	5.7	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	6.7	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	14	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	21	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	0.004	< 0.001	0.008	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	0.047	< 0.001	0.039	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	12	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	10	12	< 10	14	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	19	21	< 10	26	< 10

TPH (C5 - C6)	mg/kg	1	NONE	-	-	-	-	-
TPH (C6 - C8)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH (C8 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C21 - C35)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C35 - C40)	mg/kg	10	MCERTS	-	-	-	-	-
TPH Total C5 - C40	mg/kg	10	MCERTS	-	-	-	-	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079814	2079815	2079816	2079817	2079818
Sample Reference				Tank 1 S	Tank 1 W	Tank 2 N	Tank 2 E	Tank 2 S
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
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	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.36	< 0.05	0.49	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 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	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.23	< 0.05	0.23	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	1.6	1.2	< 0.05	1.5	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.27	0.27	< 0.05	0.31	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	2.2	1.6	< 0.05	1.6	< 0.05
Pyrene	mg/kg	0.05	MCERTS	2.0	1.6	< 0.05	1.6	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.79	< 0.05	0.82	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.0	0.78	< 0.05	0.79	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	0.97	< 0.05	0.88	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.63	0.51	< 0.05	0.62	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.96	0.89	< 0.05	0.76	< 0.05

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079814	2079815	2079816	2079817	2079818
Sample Reference				Tank 1 S	Tank 1 W	Tank 2 N	Tank 2 E	Tank 2 S
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				11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.52	0.49	< 0.05	0.41	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.67	0.66	< 0.05	0.61	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079819
Sample Reference				Tank 2 W
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/11/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	21
Total mass of sample received	kg	0.001	NONE	0.50

Asbestos in Soil	Type	N/A	ISO 17025	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-
Total Cyanide	mg/kg	1	MCERTS	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-
Sulphide	mg/kg	1	MCERTS	-
Total Sulphur	mg/kg	50	MCERTS	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
Fluorene	mg/kg	0.05	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079819
Sample Reference				Tank 2 W
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/11/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	7.7
Ethylbenzene	µg/kg	1	MCERTS	4.7
p & m-xylene	µg/kg	1	MCERTS	18
o-xylene	µg/kg	1	MCERTS	11
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	0.008
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	0.063
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	19
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	29

TPH (C5 - C6)	mg/kg	1	NONE	-
TPH (C6 - C8)	mg/kg	0.1	MCERTS	-
TPH (C8 - C10)	mg/kg	0.1	MCERTS	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-
TPH (C21 - C35)	mg/kg	1	MCERTS	-
TPH (C35 - C40)	mg/kg	10	MCERTS	-
TPH Total C5 - C40	mg/kg	10	MCERTS	-

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079819
Sample Reference				Tank 2 W
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/11/2021
Time Taken				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	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	0.33
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	< 0.1
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	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2
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	< 0.05
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	0.71
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	1.3
Pyrene	mg/kg	0.05	MCERTS	1.5
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.92
Chrysene	mg/kg	0.05	MCERTS	1.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.39
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.97

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Analytical Report Number: 21-22359
Project / Site name: Thompson Street
Your Order No: 12729-EF-O

Lab Sample Number				2079819
Sample Reference				Tank 2 W
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/11/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.58
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.87

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 21-22359
Project / Site name: Thompson 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 *
2079809	Tank Arising 101	None Supplied	None Supplied	Brown clay and loam.
2079810	Tank Arising 102	None Supplied	None Supplied	Brown clay and loam with gravel.
2079811	Tank Arising 103	None Supplied	None Supplied	Brown clay and loam with gravel.
2079812	Tank 1 N	None Supplied	None Supplied	Brown loam and sand with gravel.
2079813	Tank 1 E	None Supplied	None Supplied	Brown loam and clay with gravel and stones.
2079814	Tank 1 S	None Supplied	None Supplied	Brown loam and clay with gravel.
2079815	Tank 1 W	None Supplied	None Supplied	Brown clay and loam with gravel.
2079816	Tank 2 N	None Supplied	None Supplied	Brown clay.
2079817	Tank 2 E	None Supplied	None Supplied	Brown clay and loam with gravel.
2079818	Tank 2 S	None Supplied	None Supplied	Brown clay and loam with gravel.
2079819	Tank 2 W	None Supplied	None Supplied	Brown clay and loam with gravel.

Analytical Report Number : 21-22359
Project / Site name: Thompson Street

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

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
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
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 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 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
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
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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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	MCERTS

Analytical Report Number : 21-22359
Project / Site name: Thompson Street

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

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

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Analytical Report Number : 21-25755

Project / Site name:	Thompson Street	**Samples received on:**	26/11/2021
Your job number:	12-729	**Samples instructed on/ Analysis started on:**	26/11/2021
Your order number:	12729-EF-P	**Analysis completed by:**	03/12/2021
Report Issue Number:	1	**Report issued on:**	03/12/2021
Samples Analysed:	8 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
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.

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098242	2098243	2098244	2098245	2098246
Sample Reference				MG201	MG202	MG203	TANK 1 FILL A	TANK 1 FILL B
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				25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021
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	16	12	9.7	10
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40	0.40	0.40

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Not-detected	-	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MWI	MWI	MWI		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	7.9	8.4	-	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Total Sulphate as SO4	mg/kg	50	MCERTS	3400	4000	3800	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.88	1.1	1.1	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	1800	2200	2200	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	880	1110	1120	-	-
Sulphide	mg/kg	1	MCERTS	25	38	41	-	-
Total Sulphur	mg/kg	50	MCERTS	1500	1700	1600	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	1.6	1.7	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.54	0.34	0.31	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.30	0.20	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	0.79	0.52	0.48	-	-
Fluorene	mg/kg	0.05	MCERTS	0.63	0.52	0.37	-	-
Phenanthrene	mg/kg	0.05	MCERTS	8.5	5.7	3.8	-	-
Anthracene	mg/kg	0.05	MCERTS	1.5	1.2	0.80	-	-
Fluoranthene	mg/kg	0.05	MCERTS	10	7.8	4.9	-	-
Pyrene	mg/kg	0.05	MCERTS	10	7.7	5.0	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.8	4.1	2.9	-	-
Chrysene	mg/kg	0.05	MCERTS	4.3	3.5	2.4	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.9	3.4	2.8	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.9	2.3	1.7	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.3	3.5	2.3	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.6	2.1	1.5	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.71	0.58	0.48	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.2	2.4	1.8	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	60.2	45.9	31.6	-	-

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098242	2098243	2098244	2098245	2098246
Sample Reference				MG201	MG202	MG203	TANK 1 FILL A	TANK 1 FILL B
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				25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021
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	17	19	18	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	1.0	0.9	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	29	22	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	90	120	110	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	630	630	690	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.9	4.2	2.0	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	35	23	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	340	290	260	-	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	-	-	-	4.4	5.9
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	MCERTS	-	-	-	12	14
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	-	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	-	-	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	-	-	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	MCERTS	-	-	-	< 10	< 10
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	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH (C8 - C10) $_{HS_1D_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH (C10 - C12) $_{EH_CU_1D_TOTAL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH (C12 - C16) $_{EH_CU_1D_TOTAL}$	mg/kg	4	MCERTS	5.2	6.3	7.7	-	-
TPH (C16 - C21) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	22	23	22	-	-
TPH (C21 - C35) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	35	32	32	-	-
TPH (C35 - C40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH Total C5 - C40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	MCERTS	62	62	61	-	-

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

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098242	2098243	2098244	2098245	2098246
Sample Reference				MG201	MG202	MG203	TANK 1 FILL A	TANK 1 FILL B
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				25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021
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	ISO 17025	-	-	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 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	MCERTS	-	-	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	0.33	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Carbazole	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	0.28	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	-	0.29	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098242	2098243	2098244	2098245	2098246
Sample Reference				MG201	MG202	MG203	TANK 1 FILL A	TANK 1 FILL B
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				25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098247	2098248	2098249
Sample Reference				TANK 1 BASE A	TANK 1 BASE B	TANK 2 BASE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				25/11/2021	25/11/2021	25/11/2021
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	14	14	14
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A			

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	-	-
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	-	-
Sulphide	mg/kg	1	MCERTS	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-

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Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098247	2098248	2098249
Sample Reference				TANK 1 BASE A	TANK 1 BASE B	TANK 2 BASE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				25/11/2021	25/11/2021	25/11/2021
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	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
o-xylene	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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	MCERTS	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10

TPH (C5 - C6) $_{HS_1D_TOTAL}$	mg/kg	1	NONE	-	-	-
TPH (C6 - C8) $_{HS_1D_TOTAL}$	mg/kg	0.1	MCERTS	-	-	-
TPH (C8 - C10) $_{HS_1D_TOTAL}$	mg/kg	0.1	MCERTS	-	-	-
TPH (C10 - C12) $_{EH_CU_1D_TOTAL}$	mg/kg	2	MCERTS	-	-	-
TPH (C12 - C16) $_{EH_CU_1D_TOTAL}$	mg/kg	4	MCERTS	-	-	-
TPH (C16 - C21) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	-	-	-
TPH (C21 - C35) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	-	-	-
TPH (C35 - C40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	-	-
TPH Total C5 - C40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	MCERTS	-	-	-

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098247	2098248	2098249
Sample Reference				TANK 1 BASE A	TANK 1 BASE B	TANK 2 BASE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				25/11/2021	25/11/2021	25/11/2021
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	< 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	< 0.05	< 0.05	< 0.05
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	< 0.1	< 0.1	< 0.1
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	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
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	< 0.05	< 0.05	< 0.05
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	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05

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

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

Lab Sample Number				2098247	2098248	2098249
Sample Reference				TANK 1 BASE A	TANK 1 BASE B	TANK 2 BASE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				25/11/2021	25/11/2021	25/11/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-25755
Project / Site name: Thompson Street
Your Order No: 12729-EF-P

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
2098242	MG201		156	Loose Fibres	**Amosite**	< 0.001	**< 0.001**
2098243	MG202		169	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

Analytical Report Number : 21-25755
Project / Site name: Thompson 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 *
2098242	MG201	None Supplied	None Supplied	Brown clay with gravel.
2098243	MG202	None Supplied	None Supplied	Brown clay with gravel.
2098244	MG203	None Supplied	None Supplied	Brown clay with gravel.
2098245	TANK 1 FILL A	None Supplied	None Supplied	Light brown sand with gravel.
2098246	TANK 1 FILL B	None Supplied	None Supplied	Light brown sand with gravel.
2098247	TANK 1 BASE A	None Supplied	None Supplied	Brown clay.
2098248	TANK 1 BASE B	None Supplied	None Supplied	Brown clay.
2098249	TANK 2 BASE	None Supplied	None Supplied	Brown clay.

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

Analytical Report Number : 21-25755
Project / Site name: Thompson 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
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
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 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 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
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
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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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	MCERTS

Analytical Report Number : 21-25755
Project / Site name: Thompson 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
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
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.

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 : 21-27903

Project / Site name:	Thompson Street	**Samples received on:**	08/12/2021
Your job number:	12 729	**Samples instructed on/ Analysis started on:**	08/12/2021
Your order number:	000128	**Analysis completed by:**	15/12/2021
Report Issue Number:	1	**Report issued on:**	15/12/2021
Samples Analysed:	3 soil 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.

Analytical Report Number: 21-27903
Project / Site name: Thompson Street
Your Order No: 000128

Lab Sample Number				2110130	2110131	2110132
Sample Reference				MG301	MG302	MG303
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				08/12/2021	08/12/2021	08/12/2021
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	23	21	21
Total mass of sample received	kg	0.001	NONE	0.30	0.30	0.30

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	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	JSW	JSW	JSW

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	8.2	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1300	1400	760
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.019	0.012	0.033
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	38	25	65
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	19.1	12.4	32.7
Sulphide	mg/kg	1	MCERTS	33	20	20
Total Sulphur	mg/kg	50	MCERTS	980	800	730
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.8	2.2	3.9

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	0.31	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.34	1.4
Acenaphthene	mg/kg	0.05	MCERTS	0.35	0.58	9.8
Fluorene	mg/kg	0.05	MCERTS	0.23	0.60	5.9
Phenanthrene	mg/kg	0.05	MCERTS	3.0	6.9	95
Anthracene	mg/kg	0.05	MCERTS	0.72	1.6	22
Fluoranthene	mg/kg	0.05	MCERTS	6.3	10	170
Pyrene	mg/kg	0.05	MCERTS	6.3	10	180
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.3	4.9	87
Chrysene	mg/kg	0.05	MCERTS	2.9	5.0	87
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.1	5.8	96
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.9	2.0	21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.1	4.9	75
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.5	2.2	36
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.51	0.71	11
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.8	2.7	43

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	35.0	58.9	944

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

Analytical Report Number: 21-27903
Project / Site name: Thompson Street
Your Order No: 000128

Lab Sample Number				2110130	2110131	2110132
Sample Reference				MG301	MG302	MG303
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				08/12/2021	08/12/2021	08/12/2021
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	32	26	30
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	50	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	100	100
Lead (aqua regia extractable)	mg/kg	1	MCERTS	620	490	270
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	0.6	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	34	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300	210	190
Petroleum Hydrocarbons						
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	MCERTS	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) $_{HS_1D_TOTAL}$	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) $_{EH_CU_1D_TOTAL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	13
TPH (C12 - C16) $_{EH_CU_1D_TOTAL}$	mg/kg	4	MCERTS	< 4.0	8.7	80
TPH (C16 - C21) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	20	37	520
TPH (C21 - C35) $_{EH_CU_1D_TOTAL}$	mg/kg	1	MCERTS	35	100	840
TPH (C35 - C40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	< 10	27	85
TPH Total C5 - C40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	MCERTS	56	170	1500

U/S = Unsuitable Sample I/S = Insufficient Sample

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

Analytical Report Number: 21-27903
Project / Site name: Thompson Street
Your Order No: 000128

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
2110132	MG303		131	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

Analytical Report Number : 21-27903
Project / Site name: Thompson 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 *
2110130	MG301	None Supplied	None Supplied	Brown clay and sand with gravel and brick.
2110131	MG302	None Supplied	None Supplied	Brown clay and sand with gravel and brick.
2110132	MG303	None Supplied	None Supplied	Brown clay and sand with gravel.

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

Analytical Report Number : 21-27903
Project / Site name: Thompson 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
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
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 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 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
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
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
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
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
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

Analytical Report Number : 21-27903
Project / Site name: Thompson 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 (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.

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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