

Validation Report

Site: Springside Road, Walmersley

Reference: 13-985-R6-1

Date: January 2025

Client: Morris Homes





E3P

Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

+ 44 (0) 161 707 9612
<https://e3p.co.uk>

Registered in England
CRN: 08725262

QUALITY ASSURANCE

Report reference	13-985-R6
------------------	-----------

REV REF:	DESCRIPTION	AUTHOR	CHECKED	AUTHORISED	DATE
1	First issue	JS	AE	AE	6 Jan 25

This report has been prepared for the sole benefit, use, and information of the client. The liability of Environmental Engineering Partnership Limited T/A E3P with respect to the information contained in the report will not extend to any third party. This report has been prepared by the qualified persons as listed below.

WRITTEN BY	QUALIFICATIONS	POSITION
Jessica Sheridan	MeSci, FGS, MEnvSc	Senior Consultant

REVIEWED BY	QUALIFICATIONS	POSITION
Andrew Edgar	BSc, MSc, PIEMA, MEnvSc, CEnv	Director

AUTHORISED BY	QUALIFICATIONS	POSITION
Andrew Edgar	BSc, MSc, PIEMA, MEnvSc, CEnv	Director



TABLE OF CONTENTS

1. INTRODUCTION	3
1.1. Background	3
1.2. Proposed Development	3
1.3. Summary of Parties Involved	4
1.4. Previous Works	4
1.5. regulatory correspondence	4
2. SUMMARY OF REMEDIATION AND ENABLING WORKS OBJECTIVES	5
3. DETAILED REMEDIATION AND ENABLING WORKS ACTIVITIES	6
RE-1 – Pre-commencement Regulatory Compliance	6
RE-2 – Environment and Nuisance Control	6
RE-3 – Minimise Risk to Infrastructure	7
RE-4 – Identification, Isolation and Treatment of Invasive Plants	7
RE-5 – Site Clearance Operations	7
RE-6 – Recovery of Natural Topsoil	7
RE-8 – Delineation and Excavation of Contaminated Soils	7
RE-9 – Excavation, Breaking and Processing of All Above- and Below-Ground Structures	9
RE-16 – Cut-And-Filling of MADE GROUND to Development Levels	9
RE-18 – Construction of Temporary Working Platform	9
RE-19 – Replacement of Materials, Geotechnical Engineering Requirements	10
RE-21 – Importation of Bulk Fill	10
RE-22 – Preparation of Garden for Cover System	11
RE-23 – Provision of Subsoil	11
RE-24 – Provision of Topsoil	11
RE-25 – Independent Validation: Watching Brief	12
RE-26 – Waste Soils Surplus to Requirements	12
RE-28 – Validation of Materials for Potable Water Supply Infrastructure	12
RE-30 – Remedial Verification Report	13
4. POST REMEDIATION BUILD PHASE REQUIREMENTS	13
5. CONCLUSION	13
APPENDIX I LIMITATIONS	14
APPENDIX II GLOSSARY	20
APPENDIX III DRAWINGS	23
APPENDIX IV CHEMICAL TESTING RESULTS	24
APPENDIX V PHOTOGRAPHS	25
APPENDIX VII CONTRACTOR COMPLETION CHECK SHEET	26
APPENDIX VII TRIAL PIT LOGS	29
APPENDIX VIII UNITED UTILITIES RISK ASSESSMENT	30



Drawings

13-985-001 Site Location Plan
13-985-004 Site Features Plan
13-985-005 Exploratory Hole Location Plan
13-985-006 Depth of Made Ground Plan
13-985-007 Depth of Topsoil Plan
13-985-011 Contamination Exceedances Plan
13-985-015 Development Constraints Plan
13-985-017 Remediation Issues Plan



1. INTRODUCTION

1.1. BACKGROUND

This report details the remediation and enabling works operations that were undertaken by Ruttle Group and Morris Homes to facilitate the preparation of the low-rise residential development on a parcel of land off Springside Road, Walmersley; herein referred to as the site.

E3P was appointed by Morris Homes as independent geoenvironmental consultant for the site remediation, preparation / enabling and validation works and the subsequent production of a suitably detailed report to ensure the satisfaction of the relevant planning conditions and geotechnical engineering requirements for Building Control, warranty providers and the future adoption of infrastructure by the Highways Authority and statutory service providers.

1.2. PROPOSED DEVELOPMENT

Morris Homes are in the process of constructing a low rise residential development comprising 41 residential dwellings with associated gardens and landscaped areas, driveways, estate roads and utility infrastructure.

A snapshot of the proposed development layout is indicated in Figure 1.

Figure 1 Snapshot of Proposed Development





1.3. SUMMARY OF PARTIES INVOLVED

Table 1 Summary of Parties Involved

FUNCTION/INTEREST	NAME OF PARTY
Local Planning Authority	Bury Council
Developer	Morris Homes
Geoenvironmental Consultant	E3P
Main Contractor	Morris Homes
Remediation/Enabling Works Contractor	Ruttle/Morris Homes
Human Health Regulator	Bury Council
Controlled Waters and Waste Regulator	Environment Agency
Highways Adoption Authority	Bury Council

1.4. PREVIOUS WORKS

The following previous phases of site investigation and assessment have been completed at the subject site.

Table 2 Previous Works

Date of SI & Ref	E3P – Geo-Environmental Site Assessment. Ref: 13-985-R1, dated April 2021, Prepared for Morris Homes. E3P – Ground Gas Addendum Report. Ref: 13-985-R3, dated July 2021, Prepared for Morris Homes.
Date of Remediation Strategy & Ref	E3P – Remediation and Enabling Works Strategy. Ref: 13-985-R4, dated January 2022, Prepared for Morris Homes.
Date of Enabling Works Validation & Ref	To be completed by E3P.

1.5. REGULATORY CORRESPONDENCE

In a Bury Council memo in relation to contaminated land conditions 3 and 4 of the decision notice (8 February 2024, ref: CL1005.080224.1), the Environmental Protection Officer concluded the proposed remediation strategy and validation plan was acceptable.

However, the response also specified that: *in order for this Section to be satisfied that this development does not pose a risk to human health or the environment, the following information needs to be submitted to the Council for approval:*

After completion of site works, a verification report is required to validate that the work undertaken conforms to the remediation proposals received and agreed by this Section.

Condition 4 requires the submission and approval of a verification report.



2. SUMMARY OF REMEDIATION AND ENABLING WORKS OBJECTIVES

The proposed remediation activities were detailed within the E3P Remediation and Enabling Works Strategy (10-557-r1; dated March 2015) and supplementary supporting documents provided by E3P.

This report has been prepared to document the completion of all necessary land remediation and enabling works and to record the presence of any variation in ground conditions or previously unidentified sources of potential contamination, environmental impact or potential nuisance to the wider environ.

The Remediation and Enabling Works elements are summarised below:

- ✦ RE-1 – Pre-commencement Regulatory Compliance
- ✦ RE-2 – Environment and Nuisance Control
- ✦ RE-3 – Minimise Risk to Infrastructure
- ✦ RE-4 – Identification, Isolation and Treatment of Invasive Plants
- ✦ RE-5 – Site Clearance Operations
- ✦ RE-6 – Recovery of Natural Topsoil
- ✦ RE-7 – Delineation and Excavation of Contaminated Soils
- ✦ RE-8 – Excavation, Breaking and Processing of All Above- and Below-Ground Structures
- ✦ RE-9 – Cut-And-Filling to Development Levels
- ✦ RE-10 – Construction of Temporary Working Platform
- ✦ RE-11 – Replacement of Materials, Geotechnical Engineering Requirements
- ✦ RE-12 – Importation of Bulk Fill
- ✦ RE-13 – Preparation of Garden for Cover System
- ✦ RE-14 – Provision of Subsoil
- ✦ RE-15 – Provision of Topsoil
- ✦ RE-16 – Independent Validation: Watching Brief
- ✦ RE-17 – Waste Soils Surplus to Requirements
- ✦ RE-18 – Validation of Materials for Potable Water Supply Infrastructure
- ✦ RE-19 – Remedial Verification Report



3. DETAILED REMEDIATION AND ENABLING WORKS ACTIVITIES

The focus of the remediation and enabling works are to address the contaminant issues previously identified within the site investigations that presented an unacceptable risk to human health following the redevelopment of the site.

For completeness, each of these activities has been discussed below within the context of the actual remediation works that were undertaken on site.

RE-1 – PRE-COMMENCEMENT REGULATORY COMPLIANCE

Date of Works Undertaken	February 2024
Photographs	N/A
Chemical Testing	N/A
Overview of Works	The remediation strategy was approved prior to commencing remedial works on-site. Refer to Section 1.5. An MMP was also prepared for the future importation of clean topsoil for the development.

RE-2 – ENVIRONMENT AND NUISANCE CONTROL

Date of Works Undertaken	Throughout
Photographs	N/A
Chemical Testing	N/A
Overview of Works	During remediation, works were restricted to between 8.00 am and 5.30 pm and heras fencing/hoarding was erected around the site boundary. Deliveries and access/egress via Springside Road during the initial site set-up stages were restricted to certain time windows to limit traffic disruption and noise disturbance. The site access/egress was later relocated to Burnley Road/School Lane. During piling works, E3P undertook continuous vibration monitoring between 1st October and 28th October. The peak vibration level measured is noted to be 28.304 mm/s on 2nd October. This is likely due to works within very close proximity of the monitor and are not representative of the receptor. However, when plotted with the frequency of the wave, the value is below the transient guideline value for the potential for cosmetic damage. The remaining periods has vibration levels of less than 15 mm/s with levels above 10 mm/s noted on only 5 days of the monitoring. Nesting bird checks were also completed by E3P prior to/during clearance. Additional checks for hedgehogs and bats were also undertaken. Toolbox talks were provided to site personnel, with the scope of works, legal limits and working methods communicated to site operatives. One nest was identified, with a buffer established until the young had fledged.



RE-3 – MINIMISE RISK TO INFRASTRUCTURE

Date of Works Undertaken	During piling works and excavation
Photographs	N/A
Chemical Testing	N/A
Overview of Works	During piling works, vibration monitoring was undertaken by E3P to ensure no risk to neighbouring structures or infrastructure. Refer to RE-2. During excavation and piling works, the position of the culvert that crosses the site was marked out and a suitable easement was applied to protect the asset.

RE-4 – IDENTIFICATION, ISOLATION AND TREATMENT OF INVASIVE PLANTS

Date of Works Undertaken	N/A
Photographs	N/A
Chemical Testing	N/A
Overview of Works	No invasive species were identified or reported to E3P.

RE-5 – SITE CLEARANCE OPERATIONS

Date of Works Undertaken	March-May 2024
Photographs	Plate 1-3
Chemical Testing	N/A
Overview of Works	Trees were removed by a specialist contractor, shredded and subsequently removed off-site. A topsoil and vegetation strip was completed across the whole site. Some topsoil (deemed to be physically/visibly suitable) was stockpiled to be used within the garden cover system.

RE-6 – RECOVERY OF NATURAL TOPSOIL

Date of Works Undertaken	May-June 2024
Photographs	Plate 4
Chemical Testing	Chemtest Analysis Report Ref: 24-16349-1
Overview of Works	Following the delineation of unsuitable topsoil in WS104 (refer to RE-7), a topsoil and vegetation strip was completed across the site and physically suitable topsoil to be retained for use in the garden cover system (approximately 250 m ³) was stockpiled in the west of the site. Refer to RE-24 for testing results.

RE-8 – DELINEATION AND EXCAVATION OF CONTAMINATED SOILS

Date of Works Undertaken	22 May 2024
Photographs	Plate 1, 5, 6
Chemical Testing	Chemtest Analysis Report Ref: 24-16349-1
Overview of Works	An E3P engineer attended the site on 22 May 2024 to complete the following:



- ✳ Supervised delineation/excavation of PAH impacted topsoils in the location of WS104.
- ✳ Further trial pitting in the former tennis court area (where PAH/TPH impacted Made Ground is likely to be present beneath the hardstanding as identified in TP105).

Prior to the visit, Morris Homes had marked out the position of WS104 based on coordinates provided by E3P. The excavation around WS104 measured 5.00 m by 5.00 m and was extended by 0.50 m bgl, through the topsoil and into the underlying natural drift deposits.

The three trial pits were advanced in the tennis court area through the Made Ground and into the underlying natural drift deposits.

Hotspot 1 – WS104

The material excavated during the hotspot removal (herein referred to as the arisings), consisted of brown clayey sandy topsoil with roots and rootlets. The base of the hotspot was identified once the aforementioned soils had been excavated and the underlying drift deposits were uncovered, comprising yellowish brown mottled grey silty sandy CLAY.

Arisings were segregated and placed on a visqueen sheet to ensure no cross-contamination of otherwise clean soils.

Validation samples were taken from the sides of the excavation at 0.30 m bgl and the base of the excavation at 0.50 m bgl to ensure all contaminated soils had been removed. Samples were referenced HS1-A (arisings), HS1-B (base), HS1-N, HS1-S, HS1-E and HS1-W.

The results found no exceedance of screening criteria for a residential end use.

Former Tennis Court Area – TP105

Three trial pits were excavated in the tennis court area (TP201-TP203).

Ground conditions were found to be uniform, comprising Made Ground to a depth of circa 0.50 m bgl underlain by natural CLAY. The Made Ground comprised a layer of asphalt at the surface (0.10 m thick) underlain by black sandy (ashy) gravel of coarse angular to subangular asphalt (road planings). Logs are presented in APPENDIX VII.

A sample of the underlying natural clay was taken from each trial pit. As levels in this area of the site are being reduced, the Made Ground deposits will be stripped and removed from the site. Therefore, soils beneath the Made Ground were investigated to ensure contamination is only present within the Made Ground.

The results found no exceedance of screening criteria for a residential end use.

As the Made Ground in this area is to be cut, there is no requirement for a cover system. A 150 mm topsoil growing medium will be placed in all residential gardens overlying verified natural subsoil.



It is anticipated that the Made Ground beneath the tennis courts will contain elevated PAH and TPH concentrations as per the sample from TP105 due to the inclusions of ash and asphalt/road planing material. The Made Ground has therefore been placed in an area of low future sensitivity i.e. at depth in POS.

RE-9 – EXCAVATION, BREAKING AND PROCESSING OF ALL ABOVE- AND BELOW-GROUND STRUCTURES

Date of Works Undertaken	May 2024
Photographs	N/A
Chemical Testing	N/A
Overview of Works	No structures were present on-site, however, an area of asphalt hardstanding was still in-situ in the east of the site (former tennis courts). The hardstanding was carefully removed and segregated for disposal under the strict control of the site manager. Given the lack of historical development, general site-wide turnover to remove obstructions was not required.

RE-16 – CUT-AND-FILLING OF MADE GROUND TO DEVELOPMENT LEVELS

Date of Works Undertaken	Throughout
Photographs	N/A
Chemical Testing	N/A
Overview of Works	Limited cut and fill earthworks was proposed for the development, with areas in the east and north being cut by c. 0.20-0.90 m bgl to generate site won bulk soils to fill the central portion of the site by 0.70-1.90 m. Cut/fill calculations suggested a shortfall of approximately 1530 m³ subsoil/bulk fill, however, to date, no import of fill has been required due to volumes balancing out. Chemical testing was completed on the natural subsoil as part of the E3P Phase I & II Geoenvironmental Site Assessment, Ref: 13-985-R1-1, April 2021. Four samples were tested and confirmed the subsoil to be suitable for use as bulk fill (and in residential gardens), covering 4000 m³ of site-generated bulk fill based on 1 sample per 1000 m³.

RE-18 – CONSTRUCTION OF TEMPORARY WORKING PLATFORM

Date of Works Undertaken	May-June 2024
Photographs	Plate 2, 7
Geotechnical Testing	E3P CBR101-104 and 201-205 Test Certificates



Overview of Works

E3P prepared a temporary working platform design for Roger Bullivant 5.5t Hammer 5000 & 5500 Driven Piling Rig and GEAX EK110 Rotary CFA Rig (011210H110E), which concluded a 310 and 300 mm minimum platform thickness would be required respectively (without geotextile reinforcement). The performance requirement was determined to be <10 mm deformation at 1.5 x working load (197/200 kN/m²) on top of the platform, and CBR >5% on top of the formation (underside of the platform).

E3P was commissioned to carry out CBR tests on the formation for plots 40-41, which achieved CBR values of 7-18%. Tests on top of the pile mat for plots 40-41, 36-38 and 4-5 achieved CBR values between 4-28% with deformation <10 mm at 1.5 x working load.

Tests on other plots are available from Morris Homes on request.

RE-19 – REPLACEMENT OF MATERIALS, GEOTECHNICAL ENGINEERING REQUIREMENTS

Date of Works Undertaken	Throughout
Photographs	N/A
Chemical Testing	N/A
Overview of Works	The foundation zoning plan/schedule indicates plots will either be constructed using strip/trench foundations or driven piles. Given these proposals, only nominal compaction is required in areas of fill. Site won general fill (Class 2 cohesive material) was therefore placed and compacted in c. 250 mm layers. Arisings from the foundation and drainage excavations were also re-used on site to build up levels. Any organic, soft, wet or silty material was segregated and not re-used as fill in areas of roads or plots. CBR test results are available from Morris Homes on request.

RE-21 – IMPORTATION OF BULK FILL

Date of Works Undertaken	N/A
Photographs	N/A
Chemical Testing	N/A
Overview of Works	Cut/fill calculations suggested a shortfall of approximately 1530 m³ subsoil/bulk fill, however, to date, no import of fill has been required due to volumes balancing out. Any material required to be imported e.g. topsoil will be included in the MMP and tested in accordance with the agreed frequencies in the remediation strategy. Results will be reported in an addendum to this report.



RE-22 – PREPARATION OF GARDEN FOR COVER SYSTEM

Date of Works Undertaken	N/A
Photographs	N/A
Chemical Testing	N/A
Overview of Works	There is no requirement for a cover system. A 150 mm topsoil growing medium will be placed in all residential gardens overlying natural subsoil.

RE-23 – PROVISION OF SUBSOIL

Date of Works Undertaken	N/A
Photographs	N/A
Chemical Testing	I2 Analytical Report Ref: 21-58346-1
Overview of Works	There is no requirement for a cover system. A 150 mm topsoil growing medium will be placed in all residential gardens overlying natural subsoil. Chemical testing was completed on the natural subsoil as part of the E3P Phase I & II Geoenvironmental Site Assessment, Ref: 13-985-R1-1, April 2021. Four samples were tested and confirmed the subsoil to be suitable for use in residential gardens.

RE-24 – PROVISION OF TOPSOIL

Date of Works Undertaken	May-October 2024
Photographs	Plate 4
Chemical Testing	I2 Analytical Report Ref: 21-58346-1 I2 Analytical Report Ref: 21-58675-1 Chemtest Analysis Report Ref: 24-16349-1 (TS101-103) Chemtest Analysis Report Ref: 24-34373-1 (IMPTS101-103)
Overview of Works	It is estimated that the development will require c. 500 m³ of topsoil based on 150 mm cover and a typical 9 m² garden area. E3P returned to the site to obtain three samples of stockpiled site-won material (TS101-TS103), which confirmed the material to be suitable for use in residential gardens. Based on a required sampling frequency of 1 per 200 m³ for a greenfield site, the above testing is considered sufficient. It is also considered reasonable that previous test data from the original ground investigation (six topsoil samples) can be used to confirm suitability, which would account for a further 1200 m³. If the site were to be considered brownfield, the testing completed would be sufficient to cover 450 m³ of topsoil based on 1 sample per 40 m³. Approximately 85 m³ of topsoil was also purchased from Cheshire Soils and Aggregates (originally sourced from Redrow Homes developments in Ledsham and Daresbury) for use in the show home/marketing suite area – plots 1 to 4. E3P obtained three samples of the material prior to its placement (IMPTS101-103), which confirmed the material to be suitable for use in residential gardens.



RE-25 – INDEPENDENT VALIDATION: WATCHING BRIEF

Date of Works Undertaken	May-July (Part-Time)
Photographs	Plate 1-8
Chemical Testing	N/A
Overview of Works	During drainage excavation works, soft/organic clays were encountered in the central portion of the site, in proximity of the route of the culvert, extending to up to 4.00 m bgl. Materials were inspected by E3P and confirmed to be geotechnically unsuitable to support the proposed new drainage routes. Materials were excavated and brought to the required invert level using 6F2/crush to mitigate the risk of future settlement.

RE-26 – WASTE SOILS SURPLUS TO REQUIREMENTS

Date of Works Undertaken	Throughout
Photographs	N/A
Chemical Testing	N/A
Overview of Works	Mixed general waste and timber/vegetation were removed to a licensed waste facility. A topsoil/vegetation strip was completed across the whole site between 4–6th June 2024. Any poor quality/physically unsuitable topsoil was stockpiled and subsequently removed off-site. Geotechnically unsuitable material excavated from the site was also temporarily stockpiled and subsequently removed. Waste tickets are available on request from Morris Homes.

RE-28 – VALIDATION OF MATERIALS FOR POTABLE WATER SUPPLY INFRASTRUCTURE

Date of Works Undertaken	May 2024
Photographs	N/A
Chemical Testing	I2 Analytical Report Ref: 21-58346-1
Overview of Works	E3P completed a United Utilities risk assessment for water pipelines (APPENDIX VIII), which concluded PE water pipelines would be suitable for adoption at the site.



RE-30 – REMEDIAL VERIFICATION REPORT

Date of Works Undertaken	Throughout
Photographs	N/A
Chemical Testing	N/A
Overview of Works	This validation report covers all remediation and enabling works completed up to the date of issue. Supplementary interim validation letters pertaining to any outstanding remediation and enabling works, as well as the validation of imported materials post-December 2024 will be provided under separate cover.

4. POST REMEDIATION BUILD PHASE REQUIREMENTS

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 future topsoil and/or subsoil imports, if applicable;

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

Table 3 **Specification for Soil Testing**

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Subsoil Greenfield Source	1 Sample per 200 m ³	A/B/C/D
Subsoil Brownfield Source	1 Sample per 50 m ³	A/B/C/D
Topsoil Greenfield Source	1 Sample per 200 m ³	A/B/C/D
Topsoil Brownfield Source	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

Material sampled at above frequency / minimum 3 samples per source.

Suites of Analysis:

- A. Speciated PAH.
- B. Speciated TPH (C5-C35).
- C. Asbestos (ID).
- D. CLEA Inorganic Heavy Metals.

5. CONCLUSION

The elements identified within the approved Remediation and Enabling Works Strategy have been completed with validation testing confirming that the works have been completed to the required standard.

END OF REPORT

APPENDIX I

LIMITATIONS





GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P "Terms of Business" or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

5. Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.
6. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
7. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
8. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.



9. 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 does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.
10. E3P does not warrant work/data undertaken/provided by others.

INTRUSIVE INVESTIGATION REPORTS

11. Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental And Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and, Geotechnical Risk Register.
12. The investigation has been undertaken to provide information concerning either:
 - I. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - II. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
13. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
14. Unless otherwise specified in the scope of works, any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.
15. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
16. For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
17. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.



18. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
19. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.
20. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.
21. Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work.
22. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.
23. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
24. Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.
25. The results of the asbestos testing are factually reported and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.
26. If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.



EUROCODE 7: GEOTECHNICAL DESIGN

27. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
28. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

29. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.
30. The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
31. Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.
32. E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

33. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.



MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

34. These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.
35. The data is presented and will be compared with assessment criteria.

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
MRA	Mining Remediation 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/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	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

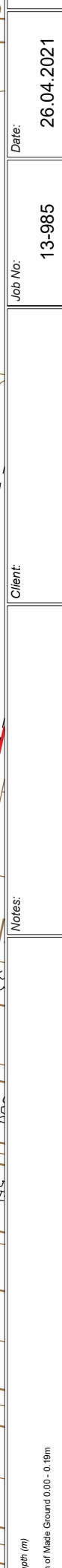
APPENDIX III

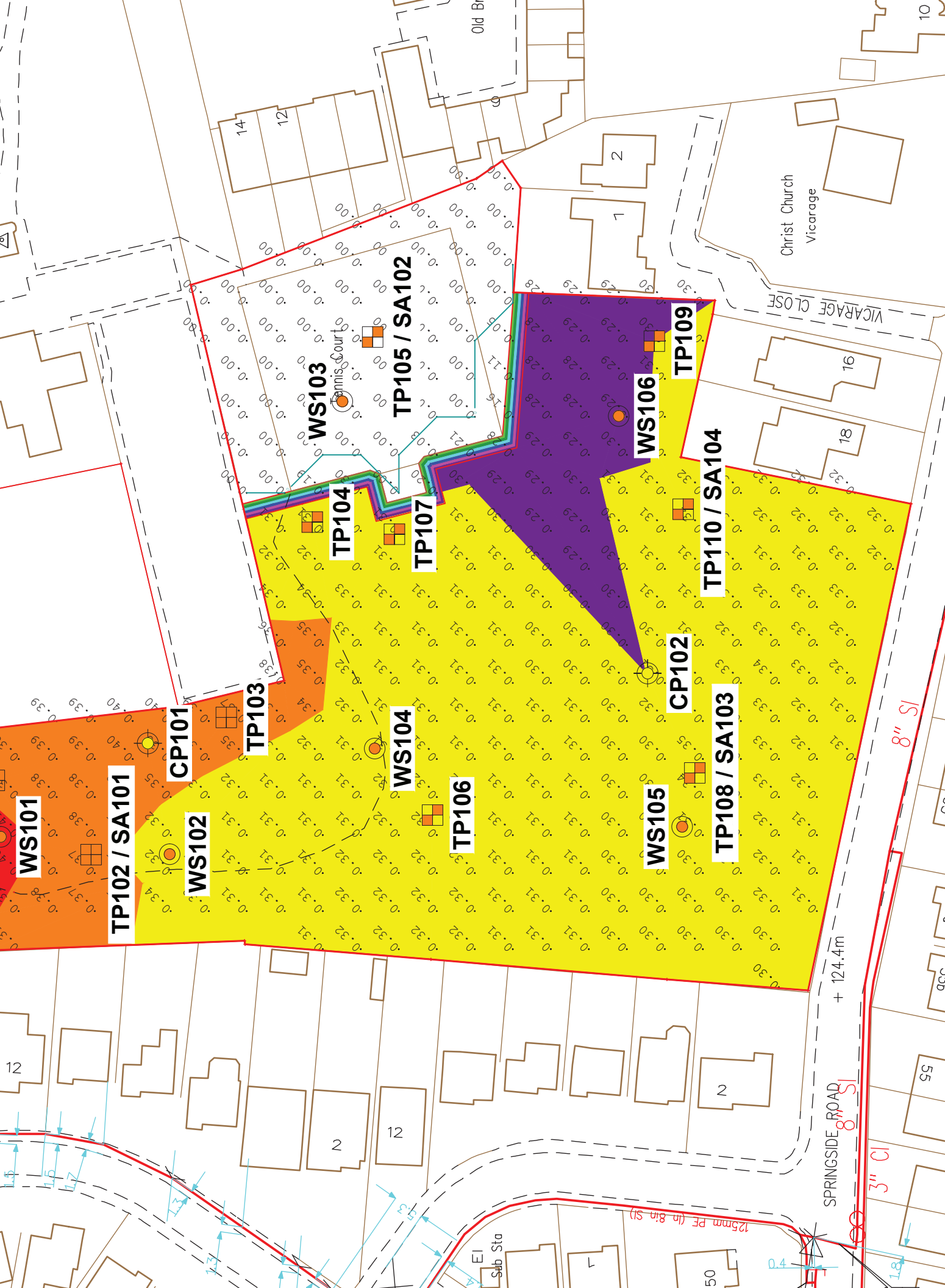
DRAWINGS



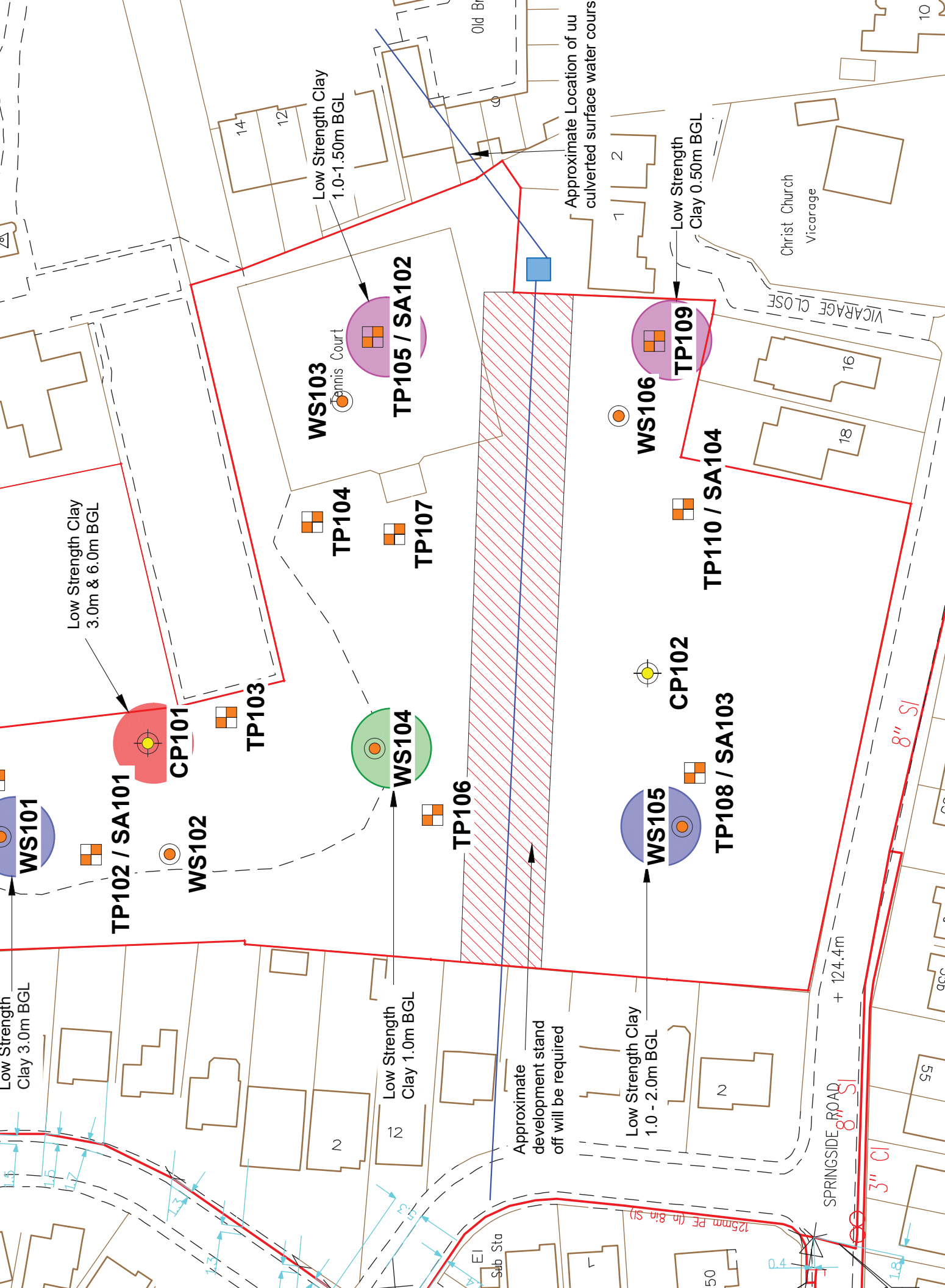


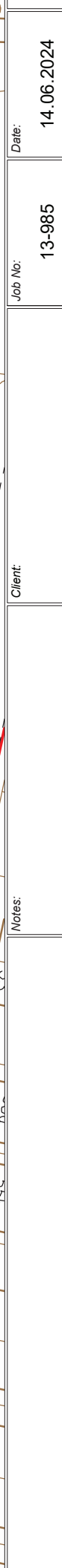












APPENDIX IV

CHEMICAL TESTING

RESULTS





2183



Final Report

Report No.: 24-16349-1

Initial Date of Issue: 10-Jun-2024

Re-Issue Details:

Client E3P

Client Address: Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contact(s): jbeer@e3p.co.uk; jsheridan@e3p.co.uk

Project Springside Road

Quotation No.: Q23-31421

Date Received: 23-May-2024

Order No.:

Date Instructed: 23-May-2024

No. of Samples: 12

Turnaround (Wkdays): 5

Results Due: 30-May-2024

Date Approved: 10-Jun-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: Springside Road

Client: E3P	Chemtest Job No.:		24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349
	Chemtest Sample ID.:	Chemtest Sample ID.:	1811893	1811894	1811895	1811896	1811897	1811898	1811899	24-16349	24-16349
Quotation No.: Q23-31421	Client Sample Ref.:	Client Sample Ref.:	HS1-A	HS1-B	HS1-N	HS1-S	HS1-E	HS1-W	1811899		
Order No.:		Client Sample ID.:	HS1-A	HS1-B	HS1-N	HS1-S	HS1-E	HS1-W	TP201		
		Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
		Top Depth (m):	0.3	0.5	0.3	0.3	0.3	0.3	0.8		
		Date Sampled:	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024		
		Time Sampled:	12:00	12:00	12:00	12:00	12:00	12:00	12:00		
		Asbestos Lab:	DURHAM								
Determinand	HWOL Code	Accred.	SOP	Units	LOD						
ACM Type		U	2192		N/A						
Asbestos Identification		U	2192		N/A	No Asbestos Detected					
Moisture		N	2030	%	0.020	38					
Soil Colour		N	2040		N/A	Brown	45	27	22	25	24
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones
Soil Texture		N	2040		N/A	Clay	Clay	Clay	Clay	Clay	Clay
pH at 20C		M	2010		4.0	5.3					6.6
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010					0.020
Total Sulphur		U	2175	%	0.010	0.071					0.027
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50					< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	2.3					6.9
Sulphate (Total)		U	2430	%	0.010	0.17					0.028
Arsenic		M	2455	mg/kg	0.5	11					7.4
Cadmium		M	2455	mg/kg	0.10	0.10					< 0.10
Chromium		M	2455	mg/kg	0.5	12					24
Copper		M	2455	mg/kg	0.50	23					11
Mercury		M	2455	mg/kg	0.05	0.14					0.05
Nickel		M	2455	mg/kg	0.50	8.6					14
Lead		M	2455	mg/kg	0.50	73					17
Selenium		M	2455	mg/kg	0.25	0.80					0.72
Zinc		M	2455	mg/kg	0.50	38					32
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50					< 0.50
Organic Matter		M	2625	%	0.40	14					1.6
Total Organic Carbon		M	2625	%	0.20	8.2					0.92
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0					< 1.0
Total TPH >C6-C40	EH_1D_Total	M	2670	mg/kg	10	< 10					< 10
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: Springside Road

Client: E3P	Chemtest Job No.:		24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349	24-16349
Quotation No.: Q23-31421	Chemtest Sample ID.:		1811893	1811894	1811895	1811896	1811897	1811898	1811899	24-16349	24-16349
Order No.:	Client Sample Ref.:		HS1-A	HS1-B	HS1-N	HS1-S	HS1-E	HS1-W	TP201		
	Client Sample ID.:		HS1-A	HS1-B	HS1-N	HS1-S	HS1-E	HS1-W	TP201		
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
	Top Depth (m):		0.3	0.5	0.3	0.3	0.3	0.3	0.8		
	Date Sampled:		22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024		
	Time Sampled:		12:00	12:00	12:00	12:00	12:00	12:00	12:00		
	Asbestos Lab:		DURHAM								
Determinand	HWOL Code	Accred.	SOP	Units	LOD						
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	0.44	< 0.10	0.94	< 0.10	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.80	< 0.10	0.99	< 0.10	< 0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	0.70	< 0.10	0.83	< 0.10	< 0.10	< 0.10
Benzof[alanthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzof[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzof[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzof[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzof[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0	< 2.0	2.9	< 2.0	< 2.0	< 2.0
Total Phenols		M	2920	mg/kg	0.10	0.10					< 0.10

Results - Soil

Project: Springside Road

Client: E3P	Chemtest Job No.:		24-16349	24-16349	24-16349	24-16349	24-16349
	Chemtest Sample ID.:		1811900	1811901	1811902	1811903	24-16349
Quotation No.: Q23-31421	Client Sample Ref.:		TP202	TP203	TS101	TS102	1811904
Order No.:	Client Sample ID.:		TP202	TP203	TS101	TS102	TS103
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):		0.8	0.8			
	Date Sampled:		22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024
	Time Sampled:		12:00	12:00	12:00	12:00	12:00
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
ACM Type		U	2192		N/A	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	26	27
Soil Colour		N	2040		N/A	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots
Soil Texture		N	2040		N/A	Clay	Clay
pH at 20C		M	2010		4.0	6.2	5.4
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.040	< 0.010
Total Sulphur		U	2175	%	0.010	0.031	0.057
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	2.9	3.0
Sulphate (Total)		U	2430	%	0.010	0.047	0.13
Arsenic		M	2455	mg/kg	0.5	7.8	13
Cadmium		M	2455	mg/kg	0.10	< 0.10	0.27
Chromium		M	2455	mg/kg	0.5	25	16
Copper		M	2455	mg/kg	0.50	28	34
Mercury		M	2455	mg/kg	0.05	0.06	0.15
Nickel		M	2455	mg/kg	0.50	25	14
Lead		M	2455	mg/kg	0.50	35	86
Selenium		M	2455	mg/kg	0.25	0.70	0.84
Zinc		M	2455	mg/kg	0.50	64	74
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	1.8	7.7
Total Organic Carbon		M	2625	%	0.20	1.0	4.5
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	1.3
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	13
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	15
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	65
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	19
Total TPH >C6-C40	EH_1D_Total	M	2670	mg/kg	10	< 10	110
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10

Results - Soil

Project: Springside Road

Client: E3P	Chemtest Job No.:		24-16349	24-16349	24-16349	24-16349	24-16349	24-16349
	Chemtest Sample ID.:		1811900	1811901	1811902	1811903	1811904	
	Client Sample Ref.:	TP202	TP203	TS101	TS102	TS103		
		TP202	TP203	TS101	TS102	TS103		
	Client Sample ID.:	SOIL	SOIL	SOIL	SOIL	SOIL		
		Sample Type:	0.8	0.8				
	Top Depth (m):	Date Sampled:	22-May-2024	22-May-2024	22-May-2024	22-May-2024	22-May-2024	
		Time Sampled:	12:00	12:00	12:00	12:00	12:00	
	Asbestos Lab:			DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	1.3
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.27
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.80	1.8
Pyrene		M	2800	mg/kg	0.10	< 0.10	0.80	1.5
Benzof[a]anthracene		M	2800	mg/kg	0.10	< 0.10	0.42	0.73
Chrysene		M	2800	mg/kg	0.10	< 0.10	0.35	0.63
Benzof[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.62	0.92
Benzof[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.19	0.29
Benzof[a]pyrene		M	2800	mg/kg	0.10	< 0.10	0.47	0.76
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	0.32	0.54
Dibenz[a,h]Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzof[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	0.31	0.41
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0	4.7	9.2
Total Phenols		M	2920	mg/kg	0.10	< 0.10	0.10	0.10

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Isabella McQuillan

e3p
Taylor Road
Urmston
Manchester
M41 7JQ

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

t: 01923 225404

f: 01923 237404

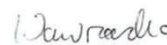
e: reception@i2analytical.com

e: imcquillan@e3p.co.uk

Analytical Report Number : 21-58346

Project / Site name:	Springside Road	Samples received on:	22/02/2021
Your job number:	13-985	Samples instructed on/ Analysis started on:	22/02/2021
Your order number:	14684 IM D	Analysis completed by:	01/03/2021
Report Issue Number:	1	Report issued on:	01/03/2021
Samples Analysed:	1 leachate sample - 10 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

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.

Analytical Report Number: 21-58346
Project / Site name: Springside Road
Your Order No: 14684 IM D

Lab Sample Number				1778925	1778926	1778927	1778928	1778929
Sample Reference				TP101	WS101	TP102	WS104	TP104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	1.00	0.20	0.20	0.20
Date Sampled				18/02/2021	18/02/2021	18/02/2021	18/02/2021	18/02/2021
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	12	17	19	21	22
Total mass of sample received	kg	0.001	NONE	0.4	0.5	0.4	0.4	0.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.6	6.3	6.2	5.4	6.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	420	130	450	480	450
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.017	0.018	0.022	0.0067	0.015
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	34	36	44	13	30
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	16.9	17.8	21.9	6.7	15.1
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphur	mg/kg	50	MCERTS	260	120	380	250	380
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.7	0.7	-	-	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
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
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.33	1
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.25
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.44	1.8
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.39	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.25	0.85
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.15	0.62
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.94
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.34
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.79
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.35
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	< 0.05	< 0.05	< 0.05	< 0.05	0.42

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	1.56	9.01
-----------------------------	-------	-----	--------	--------	--------	--------	------	------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	2.2	14	10	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	35	24	23	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	25	46	21	43
Lead (aqua regia extractable)	mg/kg	1	MCERTS	46	16	55	33	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	30	27	21	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	53	84	72	120

Analytical Report Number: 21-58346
 Project / Site name: Springside Road
 Your Order No: 14684 IM D

Lab Sample Number				1778925	1778926	1778927	1778928	1778929
Sample Reference				TP101	WS101	TP102	WS104	TP104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	1.00	0.20	0.20	0.20
Date Sampled				18/02/2021	18/02/2021	18/02/2021	18/02/2021	18/02/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	4.9	14
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	6.1	27
TPH (C35 - C40)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH Total C5 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	13	44

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

Analytical Report Number: 21-58346
Project / Site name: Springside Road
Your Order No: 14684 IM D

Lab Sample Number				1778930	1778931	1778932	1778933	1778934
Sample Reference				TP104	TP105	TP108	WS104	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.20	0.30	0.40
Date Sampled				18/02/2021	18/02/2021	18/02/2021	18/02/2021	18/02/2021
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	12	15	19	16	16
Total mass of sample received	kg	0.001	NONE	0.4	0.9	0.4	0.4	0.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.8	7.4	5.5	7.5	6.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	150	520	690	260	370
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.028	0.027	0.01	0.013	0.012
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	56	53	21	26	23
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	28.1	26.6	10.4	13.1	11.7
Sulphide	mg/kg	1	MCERTS	< 1.0	5.4	< 1.0	< 1.0	2.3
Total Sulphur	mg/kg	50	MCERTS	1200	820	540	170	220
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.9	3.7	3.4	-	2.2

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	2	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	2	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	6.2	< 0.05	0.23	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	4.1	< 0.05	0.19	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	65	0.36	4.8	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	24	0.12	1.4	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	180	0.75	8.8	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	150	0.71	7.4	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	87	0.46	3.6	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	62	0.31	2.2	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	81	0.56	3.6	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	31	0.14	1	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	56	0.46	2.9	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	29	< 0.05	1.2	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	10	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	31	< 0.05	1.3	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	819	3.87	38.5	< 0.80
-----------------------------	-------	-----	--------	--------	-----	------	------	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.4	24	13	8.9	4.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	20	19	23	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	150	25	12	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	44	95	23	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	64	14	13	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	83	120	56	27	69

Analytical Report Number: 21-58346
 Project / Site name: Springside Road
 Your Order No: 14684 IM D

Lab Sample Number				1778930	1778931	1778932	1778933	1778934
Sample Reference				TP104	TP105	TP108	WS104	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.20	0.30	0.40
Date Sampled				18/02/2021	18/02/2021	18/02/2021	18/02/2021	18/02/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	37	< 4.0	< 4.0	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	< 1.0	810	10	21	11
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0	1400	43	18	12
TPH (C35 - C40)	mg/kg	10	MCERTS	< 10	130	30	< 10	< 10
TPH Total C5 - C40	mg/kg	10	MCERTS	< 10	2400	85	41	26

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

Analytical Report Number: 21-58346
Project / Site name: Springside Road

Your Order No: 14684 IM D

Lab Sample Number				1778935
Sample Reference				TP105
Sample Number				None Supplied
Depth (m)				0.30
Date Sampled				18/02/2021
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

General Inorganics

pH	pH Units	N/A	ISO 17025	7.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	2.1
----------------------------	------	---	-----------	-----

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.44
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	0.21
Anthracene	µg/l	0.01	ISO 17025	0.2
Fluoranthene	µg/l	0.01	ISO 17025	0.87
Pyrene	µg/l	0.01	ISO 17025	0.81
Benzo(a)anthracene	µg/l	0.01	ISO 17025	0.37
Chrysene	µg/l	0.01	ISO 17025	0.31
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	0.36
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	0.15
Benzo(a)pyrene	µg/l	0.01	ISO 17025	0.2
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	0.12
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	0.15

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	4.2
-------------------	------	-----	------	-----

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.8
Copper (dissolved)	µg/l	0.7	ISO 17025	12
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	4.3
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	21

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10

Analytical Report Number: 21-58346
Project / Site name: Springside Road

Your Order No: 14684 IM D

Lab Sample Number				1778935
Sample Reference				TP105
Sample Number				None Supplied
Depth (m)				0.30
Date Sampled				18/02/2021
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10
------------------	------	----	------	------

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10

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

Analytical Report Number : 21-58346

Project / Site name: Springside Road

* 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 *
1778925	TP101	None Supplied	0.15	Brown clay and loam with vegetation and gravel
1778926	WS101	None Supplied	1	Light grey clay.
1778927	TP102	None Supplied	0.2	Brown loam and clay with vegetation and gravel
1778928	WS104	None Supplied	0.2	Brown loam and clay with gravel and vegetation.
1778929	TP104	None Supplied	0.2	Brown loam and clay with gravel and vegetation.
1778930	TP104	None Supplied	0.4	Brown clay and sand with gravel.
1778931	TP105	None Supplied	0.3	Black clay and sand with gravel and coal.
1778932	TP108	None Supplied	0.2	Brown loam and clay with gravel and vegetation.
1778933	WS104	None Supplied	0.3	Brown clay and sand with gravel.
1778934	TP109	None Supplied	0.4	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 21-58346
Project / Site name: Springside Road

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
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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

Analytical Report Number : 21-58346
Project / Site name: Springside Road

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
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
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Isabella McQuillan

e3p
Taylor Road
Urmston
Manchester
M41 7JQ

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: imcquillan@e3p.co.uk

Analytical Report Number : 21-58675

Project / Site name:	Springside Road	Samples received on:	18/02/2021
Your job number:	13-985	Samples instructed on/ Analysis started on:	24/02/2021
Your order number:	14684-IM-D	Analysis completed by:	03/03/2021
Report Issue Number:	1	Report issued on:	03/03/2021
Samples Analysed:	2 soil samples		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 21-58675
 Project / Site name: Springside Road
 Your Order No: 14684-IM-D

Lab Sample Number				1781036	1781037
Sample Reference				TP107	TP110
Sample Number				None Supplied	None Supplied
Depth (m)				0.15	0.20
Date Sampled				18/02/2021	18/02/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	32
Total mass of sample received	kg	0.001	NONE	0.4	0.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.0	5.4
Total Cyanide	mg/kg	1	MCERTS	2.0	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1000	840
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.0088	0.012
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	18	24
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	8.8	12.2
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphur	mg/kg	50	MCERTS	610	580
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	6.9

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.24	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.35	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.42	< 0.05
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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.01	< 0.80
-----------------------------	-------	-----	--------	------	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.0	1.0
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46	42
Lead (aqua regia extractable)	mg/kg	1	MCERTS	84	65
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84	95

Analytical Report Number: 21-58675
 Project / Site name: Springside Road
 Your Order No: 14684-IM-D

Lab Sample Number				1781036	1781037
Sample Reference				TP107	TP110
Sample Number				None Supplied	None Supplied
Depth (m)				0.15	0.20
Date Sampled				18/02/2021	18/02/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	9.0	1.7
TPH (C21 - C35)	mg/kg	1	MCERTS	140	48
TPH (C35 - C40)	mg/kg	10	MCERTS	28	< 10
TPH Total C5 - C40	mg/kg	10	MCERTS	180	52

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

Analytical Report Number : 21-58675

Project / Site name: Springside Road

* 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 *
1781036	TP107	None Supplied	0.15	Brown loam and clay with gravel and vegetation.
1781037	TP110	None Supplied	0.2	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 21-58675
Project / Site name: Springside Road

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
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 diphenylcarbazine 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 : 21-58675
Project / Site name: Springside Road

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.



Final Report

Report No.: 24-34373-1

Initial Date of Issue: 29-Oct-2024

Re-Issue Details:

Client E3P

Client Address: Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contact(s): jsheridan@e3p.co.uk

Project 13-985 Springside Road, Walmersley

Quotation No.: **Date Received:** 23-Oct-2024

Order No.: 009760 **Date Instructed:** 23-Oct-2024

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 29-Oct-2024

Date Approved: 29-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: 13-985 Springside Road, Walmersley

Client: E3P		Chemtest Job No.:				24-34373	24-34373	24-34373
Quotation No.:		Chemtest Sample ID.:				1884647	1884648	1884649
		Client Sample ID.:				IMPTS101	IMPTS102	IMPTS103
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				22-Oct-2024	22-Oct-2024	22-Oct-2024
		Time Sampled:				12:00	12:00	12:00
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
ACM Type		U	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	14	14	15
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones	Stones
Soil Texture		N	2040		N/A	Clay	Clay	Clay
pH at 20C		M	2010		4.0	7.0	7.0	7.1
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Total Sulphur		U	2175	%	0.010	0.020	0.020	0.020
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.6	1.9	2.3
Sulphate (Total)		U	2430	%	0.010	0.077	0.058	0.12
Arsenic		M	2455	mg/kg	0.5	12	9.7	12
Cadmium		M	2455	mg/kg	0.10	0.26	0.22	0.26
Chromium		M	2455	mg/kg	0.5	29	22	27
Copper		M	2455	mg/kg	0.50	29	25	29
Mercury		M	2455	mg/kg	0.05	0.13	0.11	0.13
Nickel		M	2455	mg/kg	0.50	22	17	20
Lead		M	2455	mg/kg	0.50	48	37	45
Selenium		M	2455	mg/kg	0.25	0.67	0.51	0.65
Zinc		M	2455	mg/kg	0.50	72	57	70
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	2.0	1.8	1.7
Total Organic Carbon		M	2625	%	0.20	1.2	1.1	1.0
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	< 10	< 10	< 10
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.13

Results - Soil

Project: 13-985 Springside Road, Walmersley

Client: E3P			Chemtest Job No.:	24-34373	24-34373	24-34373
Quotation No.:			Chemtest Sample ID.:	1884647	1884648	1884649
			Client Sample ID.:	IMPTS101	IMPTS102	IMPTS103
			Sample Type:	SOIL	SOIL	SOIL
			Date Sampled:	22-Oct-2024	22-Oct-2024	22-Oct-2024
			Time Sampled:	12:00	12:00	12:00
			Asbestos Lab:	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Anthracene		M	2800	mg/kg	0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.15
Pyrene		M	2800	mg/kg	0.10	0.15
Benzoflanthracene		M	2800	mg/kg	0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10
Benzofbfluoranthene		M	2800	mg/kg	0.10	< 0.10
Benzokfluoranthene		M	2800	mg/kg	0.10	< 0.10
Benzofajpyrene		M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10
Benzofg,h,ijperylene		M	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0
Total Phenols		M	2920	mg/kg	0.10	< 0.10

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX V

PHOTOGRAPHS



PLATE 1 TREE CLEARANCE AND WS104 – HOTSPOT 1



PLATE 2 GENERAL SITE OVERVIEW AND TEMPORARY WORKS PLATFORM



PLATE 3 GENERAL SITE OVERVIEW POST CLEARANCE



PLATE 4 STOCKPILED TOPSOIL AND SUBSOIL



PLATE 5 STOCKPILED ARISING FROM WS104 – HOTSPOT 1



PLATE 6 TRIAL PITS AROUND TP105 – TENNIS COURTS

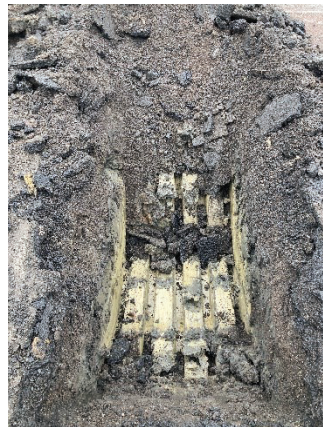


PLATE 7 PILE MAT AND PILE INSTALLATION



PLATE 8 SOFT CLAY ENCOUNTERED DURING DRAINAGE EXCAVATIONS



PLATE 9 SOFT/ORGANIC CLAY ENCOUNTERED DURING DRAINAGE EXCAVATIONS



PLATE 10 SEGREGATED VEGETATION AND SCRAP MATERIALS



APPENDIX VII CONTRACTOR COMPLETION CHECK SHEET





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				TBC
Cut-and-fill the development site to client's required elevation with as-built survey	✓			



POST-REMEDATION 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

TRIAL PIT LOGS



Project Name: Springside Road	Project No. 13985	Co-ords: - Level:	Date 22/05/2024
Location: Walmersley	Dimensions (m): 2.00 0.80 1.50		Scale 1:30
Client: Morris Homes			Logged J.Beer

[illegible]

Trial Pit Photographs



Trial Pit 201

Remarks: 1. Complete.

Stability: Stable

Project Name: Springside Road	Project No. 13985	Co-ords: - Level:	Date 22/05/2024
Location: Walmersley	Dimensions (m): 2.00 0.80 1.40		Scale 1:30
Client: Morris Homes			Logged J.Beer

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.80	ES		0.10			MADE GROUND: Asphalt.	1 2 3 4
							MADE GROUND: Black sandy gravel. Gravel is fine to coarse angular to subangular of asphalt and ash.	
							Firm to stiff brownish orange mottled grey sandy CLAY.	
							Firm to stiff orange brown mottled grey gravelly very sandy CLAY.	
							End of Pit at 1.40m	

Trial Pit Photographs



Trial Pit 202

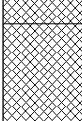
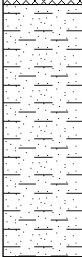


Trial Pit 202 Spoil

Remarks: 1. Complete.

Stability: Stable

Project Name: Springside Road	Project No. 13985	Co-ords: - Level:	Date 22/05/2024
Location: Walmersley		Dimensions (m):	Scale 1:30
Client: Morris Homes		Depth 1.50	Logged J.Beer

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.80	ES		0.10			MADE GROUND: Asphalt.	1
				0.50			MADE GROUND: Black sandy gravel. Gravel is fine to coarse angular to subangular of asphalt and ash.	
				1.50			Soft to firm yellowish grey sandy CLAY.	
								2
								3
								4

Trial Pit Photographs



Trial Pit 203



Trial Pit 203 Spoil

Remarks: 1. Complete.

Stability:	Stable
------------	--------

APPENDIX VIII

UNITED UTILITIES RISK ASSESSMENT



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

Introduction

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

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

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

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

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

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

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

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through

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

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

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

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067

Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

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

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

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

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

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

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

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

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

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

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

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

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

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

Detection Limits

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

Protective Measures

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

- a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or
- b) more suitable pipe materials; or
- c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

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

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

References

BS10175: 2011

“Investigation of Potentially Contaminated Sites Code of Practice”

CLAIRE/CIEH

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

Department of the Environment Contaminated Land Research Report

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

Environment Agency

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

Environment Agency

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

Environment Agency P5-080/TR3

“The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils”, 2005

UK Water Industry Research (UKWIR)

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

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03

“Laying Pipes in Contaminated Land” 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate

choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water

Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

Risk assessment for water pipes (RA)

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

If you need any help completing the form please call us on **0345 072 6067**.

Section 1: Development details	
Development name <i>(if it has one)</i>	Springside Road, Walmersley
Development address	Land off Springside Road, Walmersley, BL9 5JE
OS Grid reference <i>(mid point)</i>	E380410, N413600
Developer's name	Morris Homes (North) Ltd
UUW reference number <i>(for UU use only)</i>	
Please provide details below of the current and historical use of the site and adjacent sites. <i>If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.</i> The subject site is an irregular shaped parcel of land located to the north of Springside Road in Walmersley, Bury and is currently used for recreational purposes/playing fields. The site is covered by grass with tennis courts in the east of the site. A review of the pertinent Ordnance Survey mapping dating from circa 1893 to the present day indicated the site to have remained predominantly undeveloped other than the construction of tennis courts and a pavillion in the east of the site.	
Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☒ Yes ☐ No
If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i> N/A	

Section 3: Intrusive site investigation																									
Have you completed any intrusive site investigation?	☒ Yes ☐ No																								
Have you completed any none intrusive site investigation?	☐ Yes ☒ No																								
Date(s) when the site investigation(s) undertaken	<table><tr><td>1</td><td>8</td><td>0</td><td>2</td><td>2</td><td>0</td><td>2</td><td>1</td></tr><tr><td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td></tr><tr><td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td></tr></table>	1	8	0	2	2	0	2	1	D	D	M	M	Y	Y	Y	Y	D	D	M	M	Y	Y	Y	Y
1	8	0	2	2	0	2	1																		
D	D	M	M	Y	Y	Y	Y																		
D	D	M	M	Y	Y	Y	Y																		
At what level has groundwater been encountered?	<table><tr><td></td><td>metres below ground level or</td></tr><tr><td colspan="2">☒ Not encountered</td></tr></table>		metres below ground level or	☒ Not encountered																					
	metres below ground level or																								
☒ Not encountered																									
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing. <i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i>																									
S/VOCs, ethers, amines, ketones, aldehydes etc have not been tested for due to absence of credible source.																									
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>																									
There are no elevated concentrations at the proposed pipeline depth.																									
Section 4: Site remediation																									
Please provide details below of any site remediation (which may include a change in site levels) already completed. <i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i>																									
N/A																									
Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☒ No ☐ N/A																								
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. <i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i>																									
Exceedances of human health GAC values have been encountered in WS104 (topsoil 0.3 m) and TP105 (shallow made ground beneath hardstanding 0.3 m). There will be removal of the hardstanding cover and impacted soils in the area of the former tennis courts in the east of the site where PAH exceedances have been encountered. A PAH exceedance in the topsoil at WS104 will also be delineated and removed as a hotspot.																									

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

None - proposed residential end use.

What water pipe materials are intended to be used on site?

☒ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B

Other (please specify): x

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes

Alex Smith (Associate Director) - BSc(Hons), FGS, MEnvSc, CEng 

Name and address of risk assessor's company

E3P, Taylor Road, Trafford Park, Urmston, M41 7JQ

Date risk assessment performed

3 1 0 5 2 0 2 4

Section 8: Declaration

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

Name

Company

E3P

Telephone

0161 707 9612

Date

D D M M Y Y Y Y

Please email the completed form and supporting information to DeveloperServicesWater@uuplc.co.uk or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.



About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?		☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials							
All concentrations in mg/kg									
Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold	
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	-	-	-	-	-	
Total BTEX & MTBE		0.1	Pass	-	-	-	-	-	
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	-	-	-	-	-	
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.1 - 1.0	Y	<2.0	<2.0	N/A	
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	2.0 - 4.0	Y	<6.0	<8.5	N/A	
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	1.0 - 10.0	Y	<10.0	213	N/A	
Phenols* (from SVOC analysis)		2	Pass	0.1	Y	<1.0	<1.0	N/A	
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	-	-	-	-	-	
Ethers*	Only where identified	0.5	Pass	-	-	-	-	-	
Nitrobenzene*		0.5	Pass	-	-	-	-	-	
Ketones*		0.5	Pass	-	-	-	-	-	
Aldehydes*		0.5	Pass	-	-	-	-	-	
Amines		Fail	Pass	-	-	-	-	-	
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	-	-	pH 7.1	pH 5.7 - 7.1	-	

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

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

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