

Interim Validation Report

Site: Phase 1 Area - Castleton Sidings, Rochdale

Reference: 14-768-R7-A-4

Date: July 2026

Client: Kellen Homes





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4	Update to RE-23	HM	JS	MDD	31/7/26

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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
1.5.1. Planning Approval.....	4
2. SUMMARY OF REMEDIATION AND ENABLING WORKS OBJECTIVES	5
3. REMEDIATION AND ENABLING WORKS ACTIVITIES	6
RE-1 – Pre-commencement Regulatory Compliance	6
RE-2 – Environment and Nuisance Control	6
RE-3 – Risk to Infrastructure	6
RE-4 – Identification, Isolation and Treatment of Invasive Plants	7
RE-5 – Site Clearance Operations	7
RE-6 – Delineation, Excavation and Treatment of Identified Asbestos Impact	7
RE-7 – Further Investigation and Remediation of NapHthalene & TPH Impact	8
RE-8 – Delineation, Excavation and Treatment of Elemental Mercury Hotspots.....	9
RE-9 – Excavation, Breaking and Processing of All Above- and Below-Ground Structures	9
RE-10 – Delineation and Excavation of Identified Peat	11
RE-11 – Delineation, Excavation and Treatment of Infilled Reservoir	11
RE-12 – Removal of Deleterious Material.....	11
RE-13 – Investigation of Historic Tanks	12
RE-15 – Cut-And-Filling of Made Ground to Development Levels.....	12
RE-16 – Construction of Temporary Working Platform	14
RE-17 – Replacement of Materials, Geotechnical Engineering Requirements	15
RE-18 – Importation of Bulk Fill	16
RE-19 – Preparation of Garden for Cover System	16
RE-20 – Provision of Subsoil	16
RE-21 – Provision of Topsoil.....	16
RE-22 – Independent Validation: Watching Brief	17
RE-23 – Waste Soils Surplus to requirements	17
RE-24 – Validation of Materials for Potable Water Supply Infrastructure	17
RE-25 – Remedial Verification Report	18
4. POST REMEDIATION BUILD PHASE REQUIREMENTS – PHASE 1	18
4.1. Cover System.....	18
4.2. Ground Gas Protection Measures	22
4.3. Potable Water Supply	22



5. CONCLUSION.....	22
APPENDIX I LIMITATIONS.....	23
APPENDIX II GLOSSARY	29
APPENDIX III DRAWINGS	32
APPENDIX IV CHEMICAL TESTING RESULTS	33
APPENDIX V PHOTOGRAPHS	34
APPENDIX VI GEOTECHNICAL TESTING RESULTS.....	35
APPENDIX VII CONTRACTOR COMPLETION CHECK SHEET	36
APPENDIX VIII IN SITE TESTING RESULTS	38
APPENDIX IX WASTE TICKETS.....	39

DRAWING LIST:

14-768-001 – Site Location Plan
14-768-003 – Historical Features Plan
14-768-105 – Exploratory Hole Location Plan
14-768-106 – Depth of Made Ground Plan
14-768-124 – Contamination Issues Plan
14-768-025 – CBR 35 m Grid Validation Plan
14-768-026 – In-Situ Density Grid Validation Plan
14-768-031 – Mercury Sample Plan
14-768-032 – Hotspot Sample Plan
14-768-033 – Made Ground Sample Plan
14-768-034 – Crush Sample Plan
Urban Regen 405-001-001 Asbuilt Topographical Survey and Constraints (Sheet 1 of 8)
Urban Regen 405-001-002 Asbuilt Topographical Survey and Constraints (Sheet 2 of 8)
Urban Regen 405-002-001 Base of Excavation Depth of Engineered Ground (Sheet 1 of 8)
Urban Regen 405-002-002 Base of Excavation Depth of Engineered Ground (Sheet 2 of 8)



1. INTRODUCTION

1.1. BACKGROUND

This report details the remediation and enabling works operations that were undertaken by Urban Regen for the Phase 1 area only under the supervision of E3P to facilitate the future construction of a low-rise residential development on the land known as Castleton Sidings, off Heywood Road, Rochdale; herein referred to as the Site.

E3P was appointed by Kellen Homes as an 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.

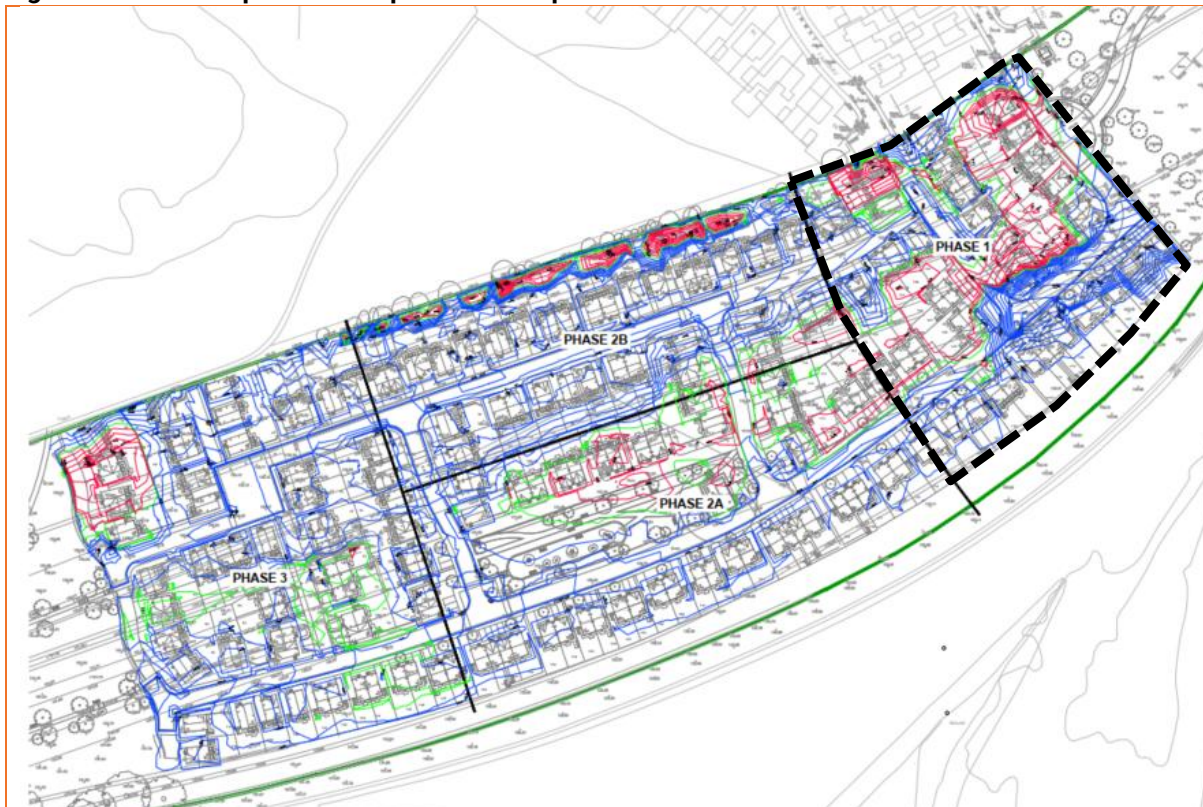
This report provides validation of works completed for the Phase 1 area only. Subsequent phases will be reported separately, with a final report issued on completion of the development.

1.2. PROPOSED DEVELOPMENT

Kellen Homes intend to construct 191 low-rise residential dwellings with associated access, landscaping, open space together with the erection of a sub-station and foul water pump station. The remediation and enabling works will be completed in four phases, referenced Phase 1, 2A, 2B and 3.

A snapshot of the proposed development and each of the development phases is shown in Figure 1, with Phase 1 indicated by the dashed boundary.

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	Rochdale Borough Council
Developer	Kellen Homes
Geoenvironmental Consultant	E3P
Main Contractor	Kellen Homes
Remediation/Enabling Works Contractor	Urban Regen Ltd
Human Health Regulator	Rochdale Borough Council
Controlled Waters and Waste Regulator	Environment Agency
Highways Adoption Authority	Rochdale Borough Council

1.4. PREVIOUS WORKS

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

- ✳ E3P – Phase I & II Geoenvironmental Site Assessment. Ref: 14-768-R4, dated November 2023.
- ✳ E3P – Supplementary Ground Investigation. Ref: 14-768-L4-2, dated March 2023.
- ✳ E3P - Geoenvironmental Assessment – Network Rail Land. Ref: 14-768-L2-2, dated March 2023.
- ✳ E3P – Geoenvironmental Assessment – Public Open Space. Ref: 14-768-L3-2, dated March 2023.
- ✳ E3P – Remediation Strategy. Ref: 14-768-R4-3, dated September 2024.
- ✳ E3P – Geotechnical Performance Specification. Ref: 14-768-R3-4, dated October 2024.
- ✳ E3P – Piling Risk Assessment. Ref: 14-768-R5-1, dated March 2024.

1.5. REGULATORY CORRESPONDENCE

1.5.1. PLANNING APPROVAL

A planning application was submitted to Rochdale Borough Council under reference 23/00431/HYBR and planning permission was granted on the 9th of August 2024.

The following conditions were placed on the development, relating to contaminated land and remediation:

Condition 11 – In the event of unsuspected / unanticipated contamination being encountered then a review and revision to the previously approved documents identified above, demonstrating to the Local Planning Authority that there is no resultant unacceptable risk to groundwater, shall be submitted to and approved by the Local Planning Authority. The development shall thereafter be completed in accordance with the revised documents.



Condition 12 – Pursuant to condition 11 and prior to first use or occupation of any phase of development a verification report, which validates that all remedial works undertaken on Site as part of that phase of development were completed in accordance with those agreed with the Local Planning Authority, shall be submitted to and approved in writing by the Local Planning Authority.

This report forms part of the overall verification report to be submitted to the Local Planning Authority.

2. SUMMARY OF REMEDIATION AND ENABLING WORKS OBJECTIVES

The proposed remediation activities were detailed within the E3P Remediation and Enabling Works Strategy (14-768-4-3, dated September 2024).

This report has been prepared to document the completion of all necessary land remediation and enabling works for the Phase 1 development area 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 environment.

The remediation and enabling works elements for the Site as a whole are summarised below. It should be noted that not all are applicable to the Phase 1 development area and/or may not have yet been completed.

-  RE-1 – Pre-commencement Regulatory Compliance
-  RE-2 – Environment and Nuisance Control
-  RE-3 – Risk to Infrastructure
-  RE-4 – Identification, Isolation and Treatment of Invasive Plants
-  RE-5 – Site Clearance Operations
-  RE-6 – Delineation, Excavation and Treatment of Identified Asbestos Impact
-  RE-7 – Further Investigation and Remediation of Naphthalene & TPH Impact
-  RE-8 – Delineation, Excavation and Treatment of Elemental Mercury Hotspots
-  RE-9 – Excavation, Breaking and Processing of All Above- and Below-Ground Structures
-  RE-10 – Delineation and Excavation of Identified Peat
-  RE-11 – Delineation, Excavation, Treatment of Infilled Reservoir
-  RE-12 – Removal of Deleterious Material
-  RE-13 – Investigation and Removal of Historic Tanks
-  RE-15 – Cut-And-Filling of Made Ground to Development Levels
-  RE-16 – Construction of Temporary Working Platform
-  RE-17 – Replacement of Materials, Geotechnical Engineering Requirements
-  RE-18 – Importation of Bulk Fill
-  RE-19 – Preparation of Garden for Cover System
-  RE-20 – Provision of Subsoil
-  RE-21 – Provision of Topsoil
-  RE-22 – Independent Validation: Watching Brief
-  RE-23 – Waste Soils Surplus to Requirements



-  RE-24 – Validation of Materials for Potable Water Supply Infrastructure
-  RE-25 – Remedial Verification Report

3. REMEDIATION AND ENABLING WORKS ACTIVITIES

The focus of the remediation and enabling works is 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.

The remediation & Site enabling works within Phase 1 commenced in October 2024 and were completed by January 2025.

RE-1 – PRE-COMMENCEMENT REGULATORY COMPLIANCE

Date of Works Undertaken	Prior to the commencement of remediation works
Overview of Works	Planning application reference 23/00431/HYBR was granted on the 9th of August 2024 with conditions. A CL:AIRE MMP was prepared for the Site ahead of commencing works, allowing for re-use of materials on-site and direct transfer.

RE-2 – ENVIRONMENT AND NUISANCE CONTROL

Date of Works Undertaken	Throughout works
Photographs	Plate 1
Overview of Works	During remediation, works were restricted to between 8.00 am and 5.30 pm. Heras fencing was erected around the site boundary with appropriate health and safety signage. A street sweeper was employed when necessary to ensure no site debris was transferred to Heywood Road.

RE-3 – RISK TO INFRASTRUCTURE

Date of Works Undertaken	Throughout works
Overview of Works	Site works were completed under RAMS from Urban Regen as principle contractor in a safe and compliant manner, which ensured no risk of disturbance to the adjacent infrastructure (highways, services, surrounding residential property, signal box or railway infrastructure). The TRGM Safeguarding Boundary along the southern boundary of the Site was adhered to throughout works with heras fencing placed to ensure works would not enter the safeguarding zone.



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

Date of Works Undertaken	N/A
Overview of Works	No invasive species were identified during the works.

RE-5 – SITE CLEARANCE OPERATIONS

Date of Works Undertaken	October–November 2024
Photographs	Plate 2–4, 13, 26–28
Overview of Works	No buildings were present on-site prior to remediation works, however a partial former rail platform remained in the south east of the Phase 1 area, together with concrete slabs, asphalt hardstanding and rail tracks. Rail tracks were pulled up with metal tracks and timber sleepers segregated and stockpiled for removal. The former rail platform was broken out and found to have deep reinforced foundations. Metal reinforcement was segregated and concrete retained for crushing. Concrete and asphalt slabs were broken out, with asphalt segregated and stockpiled for removal. A topsoil and vegetation strip were completed before E3Ps first visit to the Site. The vegetation and topsoil were stockpiled and subsequently removed off-site. Trees and shrubs were removed by a specialist contractor, shredded and temporarily stockpiled within the west of the Site in the area proposed to be retained as POS. Throughout the enabling works, scrap metal and general waste were separated from demolition materials and placed into allocated skips and stockpiles for subsequent disposal off-site.

RE-6 – DELINEATION, EXCAVATION AND TREATMENT OF IDENTIFIED ASBESTOS IMPACT

Date of Works Undertaken	November 2024
Photographs	Plate 5
Chemical Testing	Eurofins Report 24-33890 (MG BF 101–110) Eurofins Report 24-36173 (MG BF 111–112) Eurofins Report 24-39281 (MG BF 113–114) Eurofins Report 24-40956 (MG BF 115–116)
Overview of Works	During remedial works within Phase 1, a visual inspection of the Made Ground identified ACM fragments within a small area along the southern boundary (between proposed plots 26–29). The Made Ground soil was excavated and stockpiled within the west of the Site on an area of hardstanding. The stockpile was handpicked with all visible ACM fragments removed. Asbestos fragments recovered were bagged sealed and placed within a skip for appropriate disposal. The residual soils remain stockpiled in the POS for re-use elsewhere in the development.



No further visible ACM has been identified within Phase 1. Asbestos fibres have not been identified within any Made Ground samples analysed to date.

RE-7 – FURTHER INVESTIGATION AND REMEDIATION OF NAPHTHALENE & TPH IMPACT

Date of Works Undertaken	Throughout works
Photographs	Plate 6–8
Chemical Testing	Eurofins Report 24-35916 (MG 201–Visually/Olfactory Impacted MG) Eurofins Report 24-33890 (MG BF 101–110) Eurofins Report 24-36173 (MG BF 111–112) Eurofins Report 24-39281 (MG BF 113–114) Eurofins Report 24-40956 (MG BF 115–116)
Overview of Works	E3P provided part-time supervision of the general turnover works, with Urban Regen providing a full-time watching brief. During general turnover works of the Site in proximity to WS112 a small area of visually impacted Made Ground with a hydrocarbon odour was encountered and reported to E3P by Urban Regen. The visually/olfactory impacted materials were excavated and placed on an area of hardstanding in the west of the Site (proposed POS). A PID was used to screen the stockpiled arisings to detect VOCs. PID readings were recorded to be 0.0 ppm. A sample taken from the stockpile identified exceedances of heavy metals and several S/VOCs. The material will ultimately be placed within the POS area (reduced sensitivity). Throughout the general turnover works, a PID was used, with readings recorded to be between 0.00–0.20 ppm (negligible). Other than the soils around WS112, no visual or olfactory evidence of contamination was encountered in the Phase 1 area. However, exceedances of naphthalene (semi-volatile) have been encountered within MGBF 101, MGBF 102, MG BF104, MG BF 111, MG BF 112, MG BF 114 and MG BF 116 when compared to GAC values for residential end use with plant uptake and conservative 1% SOM. However, these samples all have a SOM above 6% and therefore, a GAC value of 13 mg/kg is applicable. This leaves only one sample with naphthalene in exceedance (MG BF 102, 110 mg/kg). It is understood that plots will be installed with a Juta GP5 Gas Barrier (resistant to carbon dioxide, methane, radon and organic vapours/VOCs to mitigate vapour intrusion risk). Exceedances of TPH C16–C21 (MG BF 101, MG BF 111 and MG BF 114), TPH C21–C25 (MG BF 109) and TPH C25–C35 (MG BF 101 and MG BF 109) have also been encountered. The main pollutant pathway for these contaminants is dermal contact and ingestion. The material was placed >1.00 m below ground level and will be covered by hardstanding or a cover system, therefore removing the risk to end users.



Exceedances of TPH C10–C12 (MG BF 101) and TPH C12–C16 (MG BF 101 and MG BF 109) have been encountered when compared to GAC values for residential end use with plant uptake and conservative 1% SOM. However, the SOM for these samples is above 6%; therefore, increased GAC values are applicable, which leaves no exceedances.

RE-8 – DELINEATION, EXCAVATION AND TREATMENT OF ELEMENTAL MERCURY HOTSPOTS

Date of Works Undertaken	Throughout works
Photographs	Plate 9
Chemical Testing	I2 Analytical Report 24-049982 (Hotspot 1) Eurofins Report 24-33890 (MG BF 101–110) I2 Analytical Report 24-051134 (MG BF 104, 109, 110 speciation) I2 Analytical Report 24-052735 (Mercury 111–114) I2 Analytical Report 24-056801-2 (Mercury 115–116) I2 Analytical Report 24-059202 (Mercury 117–118)
Overview of Works	Ground investigations identified elevated elemental (volatile) mercury above the site-specific screening remediation target value (SSSRTV) of 1.73 mg/kg within WS112 at 1.00 m bgl in the Phase 1 area (and other locations across the wider Site). The remediation strategy requires testing for mercury at a frequency of 1 sample per 1000 m³ of material, in addition to hotspot delineation where exceedances have been encountered. A hotspot removal within the vicinity of WS112 (Hotspot 1) was undertaken on the 21st of October 2024. Concentrations of elemental (volatile) mercury were below 1.73 mg/kg and therefore further excavation was not required. The arisings were placed on hardstanding within the POS in the west of the Site and are awaiting placement within the POS. The Made Ground has been tested for mercury at 1 per 1000 m³, in accordance with the remediation and enabling works strategy. Any samples where total mercury exceeded 1.73 mg/kg were then speciated. MG BF 104, MG BF 109, MG BF 110, Mercury 111, Mercury 115, and Mercury 116 contained total mercury at concentrations >1.73 mg/kg. However, speciation results showed no exceedances of elemental mercury.

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

Date of Works Undertaken	Throughout works
Photographs	Plate 10–13
Chemical Testing	Eurofins Report 24-36556 (SW 6F 101) Eurofins Report 24-37744 (SW 6F 102–103) Eurofins Report 24-41129 (SW 6F 104–106)
Geotechnical Testing	MRN 24005-310 (SW 6F 101) MRN 24005-319 (SW 6F 102–103) MRN 25005-13 (SW 6F 104–105)



Overview of Works

No buildings were present on-site prior to remediation works, however a partial former rail platform remained in the south east of the Phase 1 area, together with concrete slabs, asphalt hardstanding and rail tracks.

Rail tracks were pulled up with metal tracks and timber sleepers were segregated and stockpiled for removal.

The former rail platform was broken out and found to have deep reinforced foundations. Metal reinforcement was segregated and concrete retained for crushing.

Concrete and asphalt slabs were broken out, with asphalt segregated and stockpiled for removal.

The Site was subject to a 3.00–4.00 m turnover to ensure the full removal and excavation of all below-ground obstructions. This process allowed for the removal of any oversized materials from the areas of the proposed residential development, including plot footprints, rear gardens, private driveway, adopted highways and utility infrastructure (road box) as well as the identification of any previously unidentified areas of contamination.

Urban Regen have produced A Base of Dig Excavation Drawing (405-002-001 and 405-002-002) presented in APPENDIX III.

During the removal of obstructions, oversized materials and concrete were stockpiled prior to crushing/processing to nominal 6F2 grading. Any steel reinforcements present within the concrete hardstanding, or waste in the form of wood, scrap metal, or plastic were removed prior to crushing of demolition material stockpiles and allocated to skips for subsequent disposal.

The remediation contractor (Urban Regen) maintained a full-time watching brief during the turning and processing of Made Ground to inspect materials turned over and identify any previously unidentified obstructions or contamination hotspots. E3P maintained a part-time watching brief.

Chemical analysis of Site won crush/6F2 was undertaken in accordance with the agreed sampling frequency of 1 sample per 1000 m³. Prior to placement, stockpiled arisings were sampled for chemical and geotechnical analysis to confirm suitability. Six samples were taken to cover an approximate volume of 5000 m³ of material. A Crush (Stockpile) Sample Plan is presented as drawing 14-768-034 in APPENDIX III.

Within three samples (SW 6F 104–106) elevated lead and several elevated PAHs were encountered. The main exposure pathway for these determinants is dermal contact and ingestion, therefore the pathway will be broken as the material will be placed beneath hard standing and will therefore not pose a risk to future end users.

Slightly elevated total mercury (1.4 mg/kg) was encountered within SW 6F 106. The site-specific screening remediation target value (SSSRTV) for mercury is 1.73 mg/kg. Using this value there is no exceedance and therefore no further action is required.



The 6F2 material is to be used within a sacrificial temporary pile mat which will be removed once works have finished. Any residual crush left behind in external areas will either be covered by hardstanding (roads, drives) or a validated clean cover system (garden/POS).

Particle size distribution (PSD) testing was also completed, which confirmed the material grading to be compliant with the 6F2 in accordance with the Specification for Highways Works.

RE-10 – DELINEATION AND EXCAVATION OF IDENTIFIED PEAT

Date of Works Undertaken	Throughout works
Photographs	Plate 14–16
Overview of Works	Previous investigations identified compressible peat deposits across the majority of the development area, albeit most prevalent in future development phases (Phase 2A, 2B and 3). In accordance with the E3P Geotechnical Performance Specification (ref: 14-768-R3-4), all organic/peaty soils require complete excavation. During the general turnover for Phase 1, organic deposits and peat were encountered within the south of the area. This material was excavated and stockpiled in the west of the Site in the area of proposed POS. E3P maintained a part-time watching brief to confirm when all unsuitable material had been suitably excavated.

RE-11 – DELINEATION, EXCAVATION AND TREATMENT OF INFILLED RESERVOIR

Date of Works Undertaken	N/A
Overview of Works	To be completed. The mapped historical reservoir identified in Drawing 14-768-103 is located within Phase 2B/3, and will therefore be reported under separate cover.

RE-12 – REMOVAL OF DELETERIOUS MATERIAL

Date of Works Undertaken	Throughout works
Overview of Works	Refer to RE-7 and RE-10. Previous ground investigations on-site had identified possible deleterious materials within Made Ground. All deleterious materials encountered within the Made Ground were separated and stockpiled for off-site disposal. During the Made Ground turnover, Urban Regen maintained full-time supervision with E3P attending part-time.



RE-13 – INVESTIGATION OF HISTORIC TANKS

Date of Works Undertaken	N/A
Overview of Works	No historical tanks have been identified within the Phase 1 area from historical mapping or during the general Made Ground turnover.

RE-15 – CUT-AND-FILLING OF MADE GROUND TO DEVELOPMENT LEVELS

Date of Works Undertaken	Throughout
Photographs	Plates 17–21
Chemical Testing	Eurofins Report 24-33890 (MG BF 101–110) Eurofins Report 24-36173 (MG BF 111–112) Eurofins Report 24-39281 (MG BF 113–114) Eurofins Report 24-40956 (MG BF 115–116)
Geotechnical Testing	MRN 24005-268 (MG BF 101–110) MRN 24005-309 (MG BF 111–112) MRN 25005-3 (MG BF 113–114) MRN 25005-12 (MG BF 115–116)

Overview of Works

To achieve the proposed enabling works levels (EWLs), Urban Regen undertook a process of cut/fill works whereby a general Made Ground turnover was completed to remove obstructions and organic soils and subsequently re-engineer and compact suitable site-won materials. The turnover depth ranged from c. 1.50 m in the north of the Phase 1 area to >6.00 m in the south where organic soils requiring removal were encountered at depth. Urban Regen Base of Excavation drawings (405-002-001 and -002) are presented in APPENDIX III.

To complete the turnover and cut/fill, adjacent 'cells' or 'blocks' were excavated, with obstructions and artificially hard materials removed, then the resultant void backfilled with site-won Made Ground from the neighbouring block. Works were carried out under the full-time supervision of Urban Regen and part-time supervision of E3P.

Prior to placement, stockpiled Made Ground arisings were obtained for geotechnical analysis to confirm suitability. Sixteen samples from Phase 1 were tested by E3P to achieve the required testing frequency of 1 per 2000 m³ based on an estimated turnover volume of 36,000 m³ (12,000 m² area x average turnover depth of 3.00 m). A summary of the geotechnical testing results is presented below.

SAMPLE REFERENCE	CLASSIFICATION	MAXIMUM DRY DENSITY (mg/m ³)	OPTIMUM MOISTURE CONTENT (%)	NATURAL MOISTURE CONTENT (%)	% FINES <0.063 MM
MGBF 101	2C	1.42	20	21.2	17
MGBF 102	2C	1.54	16	22.5	21
MGBF 103	2C	1.32	19	21.0	19
MGBF 104	2C	1.54	16	24.6	22
MGBF 105	2C	1.53	17	17.6	18



SAMPLE REFERENCE	CLASSIFI- CATION	MAXIMUM DRY DENSITY (mg/m ³)	optimum moisture content (%)	natural moisture content (%)	% fines <0.063 mm
MG BF 106	2C	1.43	20	19.6	25
MG BF 107	2C	1.42	20	24.7	18
MG BF 108	2C	1.31	20	30.7	25
MG BF 109	2C	1.33	18	24.6	21
MG BF 110	2C	1.34	18	20.4	40
MG BF 111	2C	1.40	20	15.2	18
MG BF 112	2C	1.40	19	17.5	18
MG BF 113	2C	1.39	15	18.2	22
MG BF 114	2C	1.43	15	24.5	22
MG BF 115	2C	1.48	19	18.0	28
MG BF 116	2C	1.61	12	15.1	27
Average	-	1.44	17.94	20.8	20.77

The results indicated the material to be 2C (cohesive) with fines content generally <30% (except MG BF 110). The average as dug/natural moisture content overall for the full dataset was found to be within +/- 3% of the optimum, with some samples being greater or less than. Notably wet or soft (geotechnically unsuitable) soils were segregated at the time of turnover.

The material was placed in approximately 275 mm layers and compacted to >90% of the maximum dry density using a smooth-wheeled vibratory roller in accordance with Specification for Highways Works Method 2 for a Class 2C material to create a uniformly engineered development platform. All plots are to be constructed using piled foundations; therefore 95% compaction was not required.

Chemical testing was also completed on a 1 per 2000 m³ frequency with 16 samples obtained for analysis.

Within the majority of Made Ground backfill samples, heavy metal and PAH concentrations in the exceedance of residential end-use GACs were noted. The main exposure for these determinants is dermal contact and ingestion, therefore the pathway will be broken as the material will be placed either beneath hardstanding or a clean cover system and will therefore not pose a risk to end users. Exceedances of potentially volatile elevated naphthalene and TPH are discussed in RE-7.

A Made Ground Sample Plans is presented as drawing 14-768-033 in APPENDIX III.

In-situ testing was completed on layers throughout the upfill, together with CBR tests at formation (underside pile mat/engineered capping layer) by Murray Rix under the instruction and supervision of Urban Regen. Results are summarised in RE-17.



RE-16 – CONSTRUCTION OF TEMPORARY WORKING PLATFORM

Date of Works Undertaken	December 2024–January 2025																																
Photographs	Plates 22–23																																
Chemical Testing	Refer to RE-9																																
Geotechnical Testing	Refer to RE-9																																
In-situ Testing	MRN 25005-1 (Plot 126, Plot 130, Plot 177) MRN 24005-324 (Plot 4, Plot 190, Road 1 [1], Road 1 [2], Road 1 [3], Road 1 [4]) MRN 25005-330 (Plot 10, Plot 15, Road 1 [5] Road 1 [6], Road 2 [1], Road 2 [2]) Approximately 5000 m³ of site-won crushed aggregate (6F2) was generated throughout the works. Chemical and geotechnical analyses were completed (refer to RE-9), which found the material to be suitable for retention beneath hardstanding and to be compliant with 6F2 grading. A temporary works design was prepared by E3P for a (driven) piling rig (Juttan PM20 J1 Short Leader 4T), which required a 300 mm platform without geotextile reinforcement with CBR testing completed to confirm <10 mm settlement at 1.5 x working rig load (151 kN/m²) on the top of the platform using a 300 mm plate. The working platform was constructed in accordance with the design using site-won 6F2. Plate load tests were completed by Murray Rix at a rate of c. 1 per 7 plots and at regular intervals along highways under the instruction and supervision of Urban Regen. Test locations are shown on Urban Regen As Built Topographic Survey and Constraints drawings (405-001-001 and -002) in APPENDIX III. Results are summarised below and in APPENDIX VIII.																																
Overview of Works	<table border="1"> <thead> <tr> <th>TEST REFERENCE</th><th>CBR %</th></tr> </thead> <tbody> <tr><td>Plot 4</td><td>11.5</td></tr> <tr><td>Plot 10</td><td>11.1</td></tr> <tr><td>Plot 15</td><td>9.4</td></tr> <tr><td>01 – Plot 126</td><td>10.4</td></tr> <tr><td>02 – Plot 130</td><td>13.2</td></tr> <tr><td>03 – Plot 177</td><td>13.3</td></tr> <tr><td>Plot 190</td><td>15.9</td></tr> <tr><td>Road 1 (1)</td><td>20.9</td></tr> <tr><td>Road 1 (2)</td><td>19.5</td></tr> <tr><td>Road 1 (3)</td><td>19.5</td></tr> <tr><td>Road 1 (4)</td><td>20.0</td></tr> <tr><td>Road 1 (5)</td><td>23.1</td></tr> <tr><td>Road 1 (6)</td><td>25.4</td></tr> <tr><td>Road 2 (1)</td><td>26.9</td></tr> <tr><td>Road 2 (2)</td><td>29.7</td></tr> </tbody> </table> Results indicate the CBR on top of the temporary works platform to be generally >10%. Tests on roads also achieved CBR values generally >20%.	TEST REFERENCE	CBR %	Plot 4	11.5	Plot 10	11.1	Plot 15	9.4	01 – Plot 126	10.4	02 – Plot 130	13.2	03 – Plot 177	13.3	Plot 190	15.9	Road 1 (1)	20.9	Road 1 (2)	19.5	Road 1 (3)	19.5	Road 1 (4)	20.0	Road 1 (5)	23.1	Road 1 (6)	25.4	Road 2 (1)	26.9	Road 2 (2)	29.7
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Road 2 (1)	26.9																																
Road 2 (2)	29.7																																



RE-17 – REPLACEMENT OF MATERIALS, GEOTECHNICAL ENGINEERING REQUIREMENTS

Date of Works Undertaken	Throughout
Photographs	Plates 24–25
Chemical Testing	Refer to RE-15
Geotechnical Testing	Refer to RE-15
In-situ Testing	<u>NNDGs</u> MRN 24005-292 MRN 24005-260 MRN 24005-262 MRN 24005-264 MRN 24005-267 MRN 24005-269 MRN 24005-271 MRN 24005-278 MRN 24005-292 MRN 24005-294 MRN 24005-296 MRN 24005-304 MRN 24005-313 MRN 24005-324 <u>CBRs</u> MRN 24005-324 MRN 24005-328 MRN 24005-330
Overview of Works	The following specification was required for placement and compaction of upfill materials: • Compaction of Made Ground / engineered fill material to >90% of the Maximum Dry Density (MDD) and <10% air voids. • CBR >5% at formation/underside of pile mat. Removal of shrinkable clay soils was not required given the proposed foundation solution being driven piles. Plasticity analysis of MG BF 101-116 has also confirmed the material to be non-plastic. Testing on natural soils has not been undertaken. The thickness of Made Ground re-engineered was variable depending on the extent of Made Ground, as shown on Urban Regen Base of Excavation drawings (405-002-001 and -002) presented in APPENDIX III. Geotechnical testing of the Made Ground fill material was undertaken prior to placement and is summarised in RE-15. In-situ SRD and NDG testing was completed by Murray Rix every third layer (c. 900 mm of fill) on a 25 m linear grid under the instruction and supervision of Urban Regen. Prior to each visit, the test engineer was provided with up-to-date MDD/OMC values from the corresponding soil test results to calibrate the tests. A referenced test grid is presented as drawing 14-768-026 and Urban Regen drawings in APPENDIX III, with each in-situ test referenced as per the grid. Full results are presented in APPENDIX VIII.



The tests confirmed that the compaction generally exceeds the required 90% of the MDD. It is therefore considered the Site has been sufficiently re-engineered in accordance with the specification.

CBR tests were also undertaken at formation (underside of pile mat/engineered capping layer) and referenced as per the grid. Results were generally >5% in accordance with the specification. Results are presented within APPENDIX VIII.

RE-18 – IMPORTATION OF BULK FILL

Date of Works Undertaken	N/A
Overview of Works	No materials (bulk fill or aggregate) were required to be imported to the Site during the remediation and enabling works for Phase 1. All materials used were site-won.

RE-19 – PREPARATION OF GARDEN FOR COVER SYSTEM

Date of Works Undertaken	Throughout works.
Overview of Works	All gardens have been prepared to 600 mm below the finished level to allow the placement of a 600 mm clean cover system. Levels of the gardens will be brought to the intended finished garden level following the importation of validated subsoil and topsoil. The placement of the garden cover system is currently outstanding. Interim validation letter reports pertaining to cover system validations will be reported under separate cover.

RE-20 – PROVISION OF SUBSOIL

Date of Works Undertaken	To be completed.
Overview of Works	There is no source of site-won subsoil on-site therefore subsoil will be required to be imported for cover systems. The provision of subsoil is currently outstanding and will be reported in subsequent phases/under separate cover.

RE-21 – PROVISION OF TOPSOIL

Date of Works Undertaken	To be completed
Overview of Works	There is no source of site-won topsoil on-site therefore topsoil will be required to be imported for cover systems. The provision of subsoil is currently outstanding and will be reported in subsequent phases/under separate cover.



RE-22 – INDEPENDENT VALIDATION: WATCHING BRIEF

Date of Works Undertaken	Throughout
Overview of Works	Throughout the remediation and enabling works Urban Regen maintained full-time supervision with E3P providing part-time supervision. Communication was maintained between parties throughout the works to allow for the project to progress and inform of any ongoing change. Regular site diaries were kept by E3P and Urban Regen with progress meetings between E3P and Urban Regen to communicate any changes to the programme.

RE-23 – WASTE SOILS SURPLUS TO REQUIREMENTS

Date of Works Undertaken	Throughout
Photographs	Plate 26–29
Overview of Works	Mixed general waste including scrap metal and timber have been removed to a licensed waste facility. Visible ACM was handpicked and bagged for removal off-site. Waste tickets for the asbestos removal are presented in APPENDIX IX. During the general site strip, vegetation and subsequent chippings were segregated from the soil portion (Plate 29) and stockpiled in the west of the site together with geotechnically unsuitable material excavated from the Phase 1 area. The vegetation (green waste) was removed from site. Waste tickets for the removal are presented in APPENDIX IX. The geotechnically unsuitable material will be retained within the proposed POS. Waste tickets for future disposals (if applicable) will be provided in subsequent validation reports for future phases and on completion of the development.

RE-24 – VALIDATION OF MATERIALS FOR POTABLE WATER SUPPLY INFRASTRUCTURE

Date of Works Undertaken	N/A
Overview of Works	Based on the original ground conditions and analysis of Made Ground materials used in the general turn over within Phase 1, barrier pipe has been installed throughout the development. Post-remedial assessment of materials is therefore not required.



RE-25 – REMEDIAL VERIFICATION REPORT

Date of Works Undertaken	Throughout
Overview of Works	This validation report covers all remediation and enabling works completed within Phase 1 up until January 2025. Supplementary interim validation reports/letters pertaining to any outstanding remediation and enabling works for future phases, as well as the validation of garden cover systems and gas membrane installations will be provided under separate cover.

4. POST REMEDIATION BUILD PHASE REQUIREMENTS – PHASE 1

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 imported topsoil/subsoil at the correct volume by frequency.
- ✳ Installation of validated clean cover system in gardens and soft landscaped areas.
- ✳ Installation of vapour resistant/CS₂ gas protection measures. (A design statement for the installation of gas protection measures will be provided under separate cover).
- ✳ Installation of suitable (barrier) water supply pipe network in accordance with the completed UKWIR assessment.

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

4.1. COVER SYSTEM

The remediation and enabling works strategy for the Site, concerning the health of the future site users, includes the provision of a chemically suitable clean material to be installed in all garden and soft landscaped areas.

The construction of the clean cover/placement of clean material shall be in accordance with Table 2.

Table 2 Construction and Validation of Cover System

SOFTSCAPE TYPE	DEPTH		BREAK LAYER Y/N/TYPE	VALIDATION FREQUENCY	TESTING SUITE	VALIDATION DOCUMENTATION
	TOPSOIL	SUBSOIL				
Back Garden	150	450	N	1 per plot	A/B/C/D	Letter
POS	Minimum 300 mm clean cover		N	1 per 2000 m ²	A/B/C/D	Letter

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be imported or re-used on-site.



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

Testing requirements for topsoil and subsoil are presented in Table 3.

Table 3 Specification for Soil Testing

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Site-Generated		
Site-Generated Subsoil	1 Sample per 250 m ³	A/B/C/D
Site-Generated Topsoil Cover	N/A	N/A
Imported		
Subsoil Greenfield Source	1 Sample per 250 m ³	A/B/C/D
Subsoil Brownfield Source	1 Sample per 250 m ³	A/B/C/D
Topsoil Greenfield Source	1 Sample per 250 m ³	A/B/C/D
Topsoil Brownfield Source	1 Sample per 50 m ³	A/B/C/D

Notes

Minimum 3 samples per source or the frequency stated, whichever is the greater number.

Suites of Analysis:

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

Garden and landscaped areas need to be backfilled with validated subsoil, and topsoil overlaying this in line with Table 3. Topsoil and subsoil are required to be confirmed as chemically suitable prior to placement

The placement of clean material in soft landscaping will be undertaken during the build phase works of the project. Levels have been left suitably low to accommodate the correct thickness of cover in gardens and landscaped areas.

The placement of subsoil and corresponding validation will be documented within the Garden Validation Letters (to be issued on completion of the contractor's works). If proposed utilities are to be placed within the cover system, the clean cover should be placed prior to installation of these utilities.

E3P will collect photographic evidence of the placement of 150 mm of certified topsoil and 450 mm of subsoil on completion of construction works. This element will also be checked by the Building Control Officer as part of the site completion prior to issuing of a CML certificate.

The garden validation procedure is detailed in Table 4.



Table 4 Garden Validation Procedure

PROCEDURE	METHOD
Chemical Validation	Subsoils and topsoils will need to be chemically analysed to confirm suitability for use with the proposed cover system prior to installation and completion of the garden systems. E3P will issue an email to the client with an assessment of the chemical suitability of both subsoils and topsoils. If acceptable the materials can be installed to the required depth at which time the plot will be deemed complete following a validation procedure by a suitability qualified E3P engineer.
Trial Holes	Trial holes are deemed necessary for all plots and in landscaped areas at the frequencies specified in Table 3.
Validation	Photographic evidence will be taken by E3P of the topsoil placement demonstrating the depth of topsoil and practical completion of works are required for each and every plot.
Validation Certificate	Once the photographs of the placement of topsoil (over the clean material) have been provided, E3P will issue a plot specific validation certificate to demonstrate that the required subsoil and topsoil has been placed in the required garden plots along with the chemical analysis.
Completion Report	Upon completion of all garden and landscaped areas within the development, a Completion Report will be issued providing the confirmation that all remediation requirements have been achieved.

Figure 2 provides an example of a garden validation photographs that will be required for each plot.



Figure 2 Example of Plot Cover System Validation

<u>Plot Validation</u>		20 / 20 (100%)
Plot Validation 1		5 / 5 (100%)
Plot Number		117
Is Plot Ready		Yes
Installation Standard		Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)		1000
  Photo 1 Photo 2		
Depth of Topsoil (mm)		150
Depth of Subsoil (mm)		850
Depth of Cover System at Ground Level (Photo)		☒
 Photo 3 		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)		☒
 Photo 4 		
Soil suitable		Yes
Geotextile membrane present		N/A



4.2. GROUND GAS PROTECTION MEASURES

The validation of ground gas mitigations should be completed in line with the corresponding Gas Protection Design Report (*to be completed*).

4.3. POTABLE WATER SUPPLY

A United Utilities Risk Assessment for Water Pipes will be required to determine the pipeline requirements post-remediation. Based on the original ground conditions and analysis of Made Ground materials used in the general turn over within Phase 1, barrier pipe will be required.

5. CONCLUSION

The remediation elements identified within the approved Remediation and Enabling Works Strategy **for Phase 1** have been completed with validation testing confirming that the works have been completed to the required standard.

As part of the on-going construction works the developer will be required to construct and validate the items listed below in strict accordance with the requirements of the regulatory authorities as documented in detail within this report.

- ✳ Installation of validated clean cover system with break layer in gardens and soft landscaped areas.
- ✳ Installation of vapour resistant/CS2 gas protection measures. (A design statement for the installation of gas protection measures will be provided under separate cover).
- ✳ Installation of suitable (barrier) water supply pipe network in accordance with the completed UKWIR assessment.

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

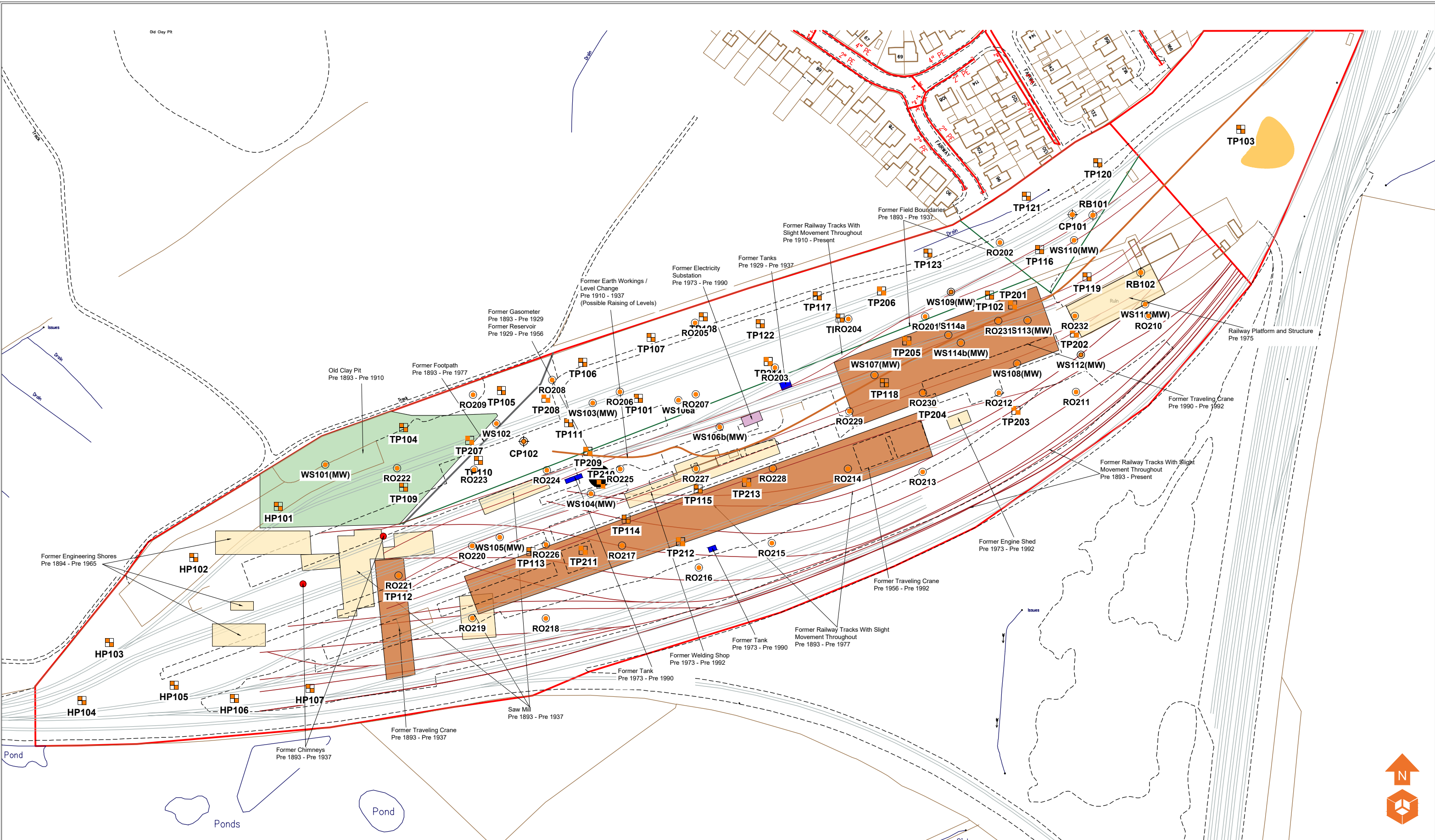


m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts 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

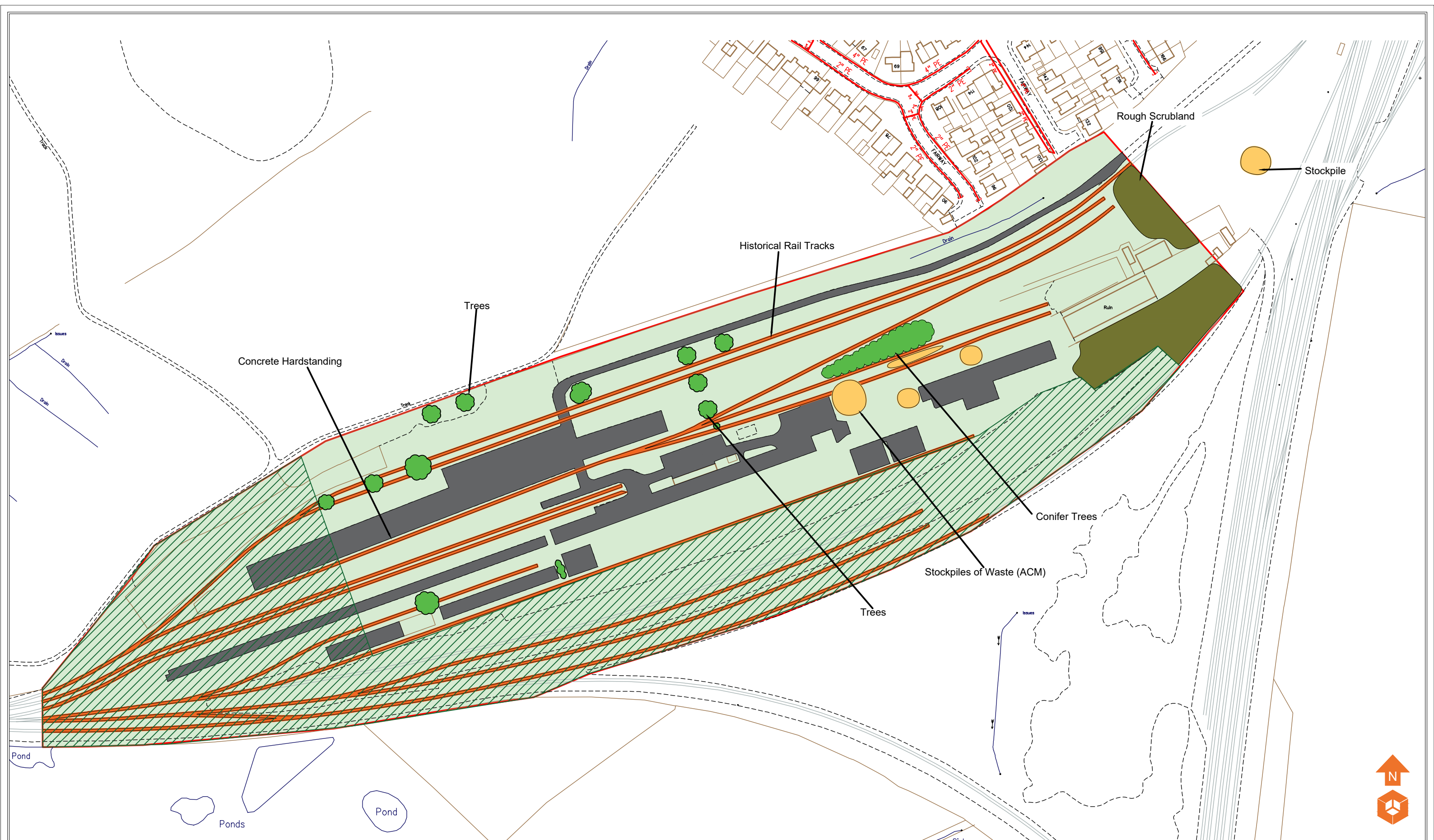
DRAWINGS





Historical Features Former Commercial Buildings / Structures Former Traveling Cranes Old Clay Pit Former Tanks Former Gasometer / Reservoir Former Footpath Former Field Boundaries Former Railway Tracks Former Earth Workings Former Chimneys Former Electricity Substation	Location Symbols Approximate Window Sample Probehole Location (March 2021) Approximate Window Sample Probehole Location with Install (March 2021) Approximate Trial Pit Location (March 2021) Approximate Rotary Borehole Location (March 2021) Approximate Trial Pit Location (June 2021) Approximate Rotary Borehole Location (July 2021) Approximate Hand Dug Pit Location (July 2021) Approximate Stockpile Sample Location (July 2021)	Notes:					Client: Kellen Homes		Job No: 14-768	Date: 25.03.2022	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk	
									Drawing No: 003	Scale: NTS @ A3		
		P1 P1	REVB REVA	25.03.2022 31.03.2021	EB EB	JS EF	Job Title: Heywood Road, Castleton		Drawing Title: Historical Features Plan			The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

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Site Features

- Overgrown Trees
- Concrete Hardstanding
- Rough Scrubland
- Trees
- Stockpiles of Waste (Possible ACM)
- Historical Rail Tracks

Notes:

P1	REVB	11.03.2022	HM	JS
P1	REVA	15.04.2021	EB	EF
Phase	Issue	Date	Drawn	Checked

Client:

Kellen Homes

Job Title:

Heywood Road,
Castleton

Job No:

14-768

Drawing No:

004

Date:

11.03.2022

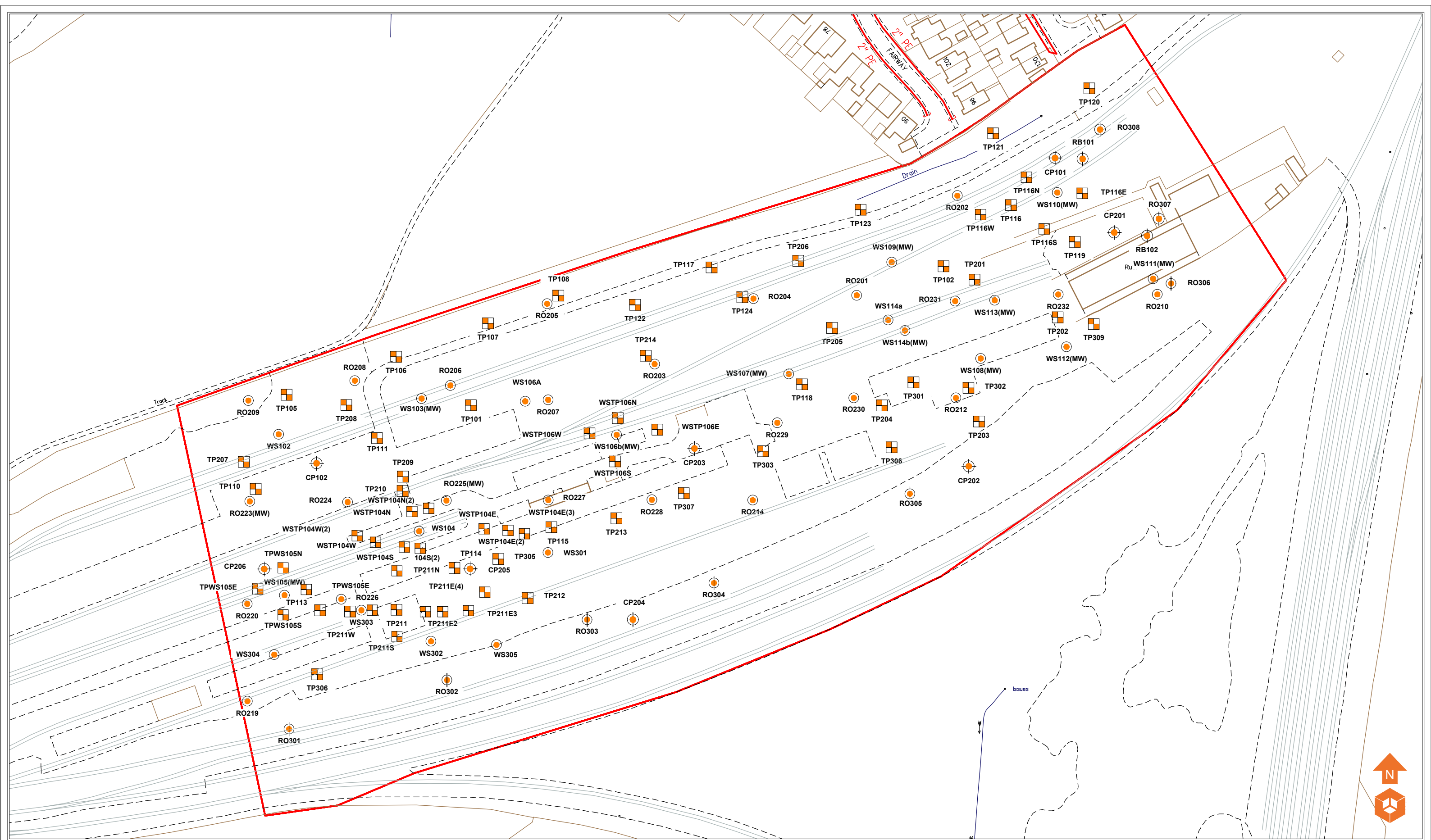
Scale:

NTS @ A3



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Partnership Ltd
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Urmston, Manchester, M41 7JQ
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E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Location Symbols

	Approximate Window Sample Probehole Location (March 2021)		Approximate Cable Percussive Borehole Location (March 2021)
	Approximate Window Sample Probehole Location with Install (March 2021)		Approximate Cable Percussive Borehole Location (June 2023)
	Approximate Trial Pit Location (March 2021)		Approximate Window Sample Probehole Location (December 2023)
	Approximate Rotary Borehole Location (March 2021)		
	Approximate Trial Pit Location (June 2021)		
	Approximate Rotary Borehole Location (July 2021)		
	Approximate Hand Dug Pit Location (July 2021)		
	Approximate Stockpile Sample Location (July 2021)		
	Approximate Location of Rotary Borehole		

Notes:					
P1	REVI	14.12.2023	OW	JS	
P1	REVG	29.08.2023	LM	JS	
P1	REVG	30.01.2023	EB	JS	
P1	REVI	16.01.2023	HM	JS	
P1	REVE	12.12.2022	HM	EC	
P1	REVD	19.10.2022	HM	EC	
P1	REVC	30.03.2022	EB	JS	
P1	REVB	11.03.2022	HM	JS	
P1	REVA	25.03.2021	EB	EF	
Phase	Issue	Date	Drawn	Checked	

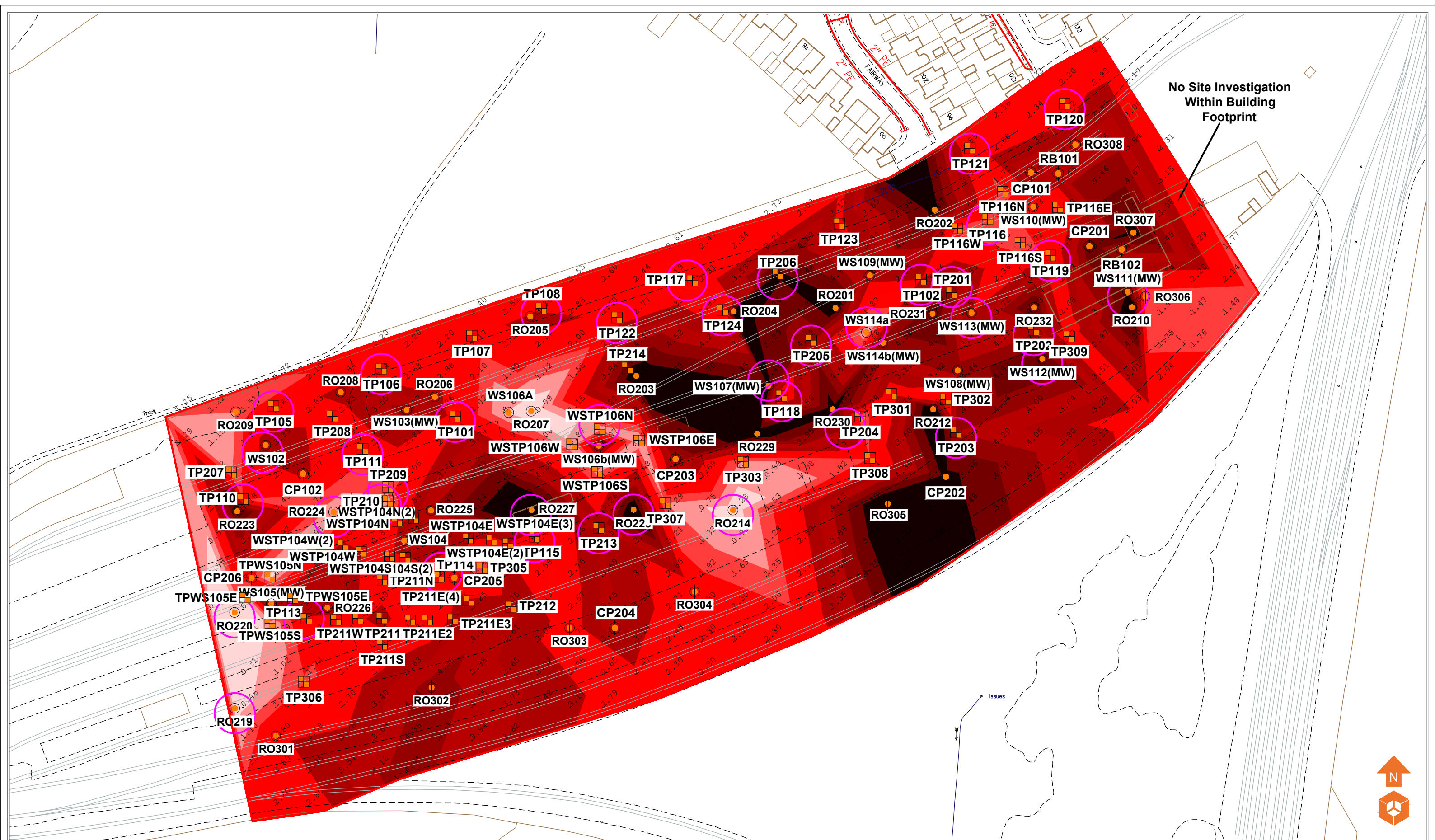
Client:	
Kellen Homes	
Job Title:	
Heywood Road, Castleton	

Job No:
14-768
Drawing No:
005

Date:
14.12.2023
Scale:
NTS @ A3

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E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Location Symbols

Approximate Window Sample Probehole Location (March 2021)

Approximate Window Sample Probehole Location with Install (March 2021)

Approximate Trial Pit Location (March 2021)

Approximate Rotary Borehole Location (March 2021)

Approximate Trial Pit Location (June 2021)

Approximate Rotary Borehole Location (July 2021)

Approximate Hand Dug Pit Location (July 2021)

Approximate Stockpile Sample Location (July 2021)

Approximate Location of Rotary Borehole

Approximate Cable Percussive Borehole Location (March 2021)

Approximate Cable Percussive Borehole Location (June 2023)

Made Ground Depth (m)

Depth of Made Ground 0.00 - 0.49m

Depth of Made Ground 0.50 - 0.99m

Depth of Made Ground 1.00 - 1.49m

Depth of Made Ground 2.00 - 2.49m

Depth of Made Ground 2.50 - 2.99m

Depth of Made Ground 3.00 - 3.49m

Depth of Made Ground >3.50m

Depth of Made Ground 2.50 - 2.99m

Depth of Made Ground 3.00 - 3.49m

Depth of Made Ground 3.00 - 3.49m

Base of Made Ground Not Proven

Notes:					
P1	REVG	30.08.2023	LM	JS	
P1	REVF	31.01.2023	EB	JS	
P1	REVE	13.12.2022	HM	EC	
P1	REVD	30.03.2022	EB	JS	
P1	REVC	11.03.2022	HM	JS	
P1	REVB	07.05.2021	EB	JS	
P1	REVA	31.03.2021	EB	EF	
Phase	Issue	Date	Drawn	Checked	

Client:

Kellen Homes

Job Title:

Heywood Road, Castleton

Job No:

14-768

Drawing No:

106

Date:

30.08.2023

Scale:

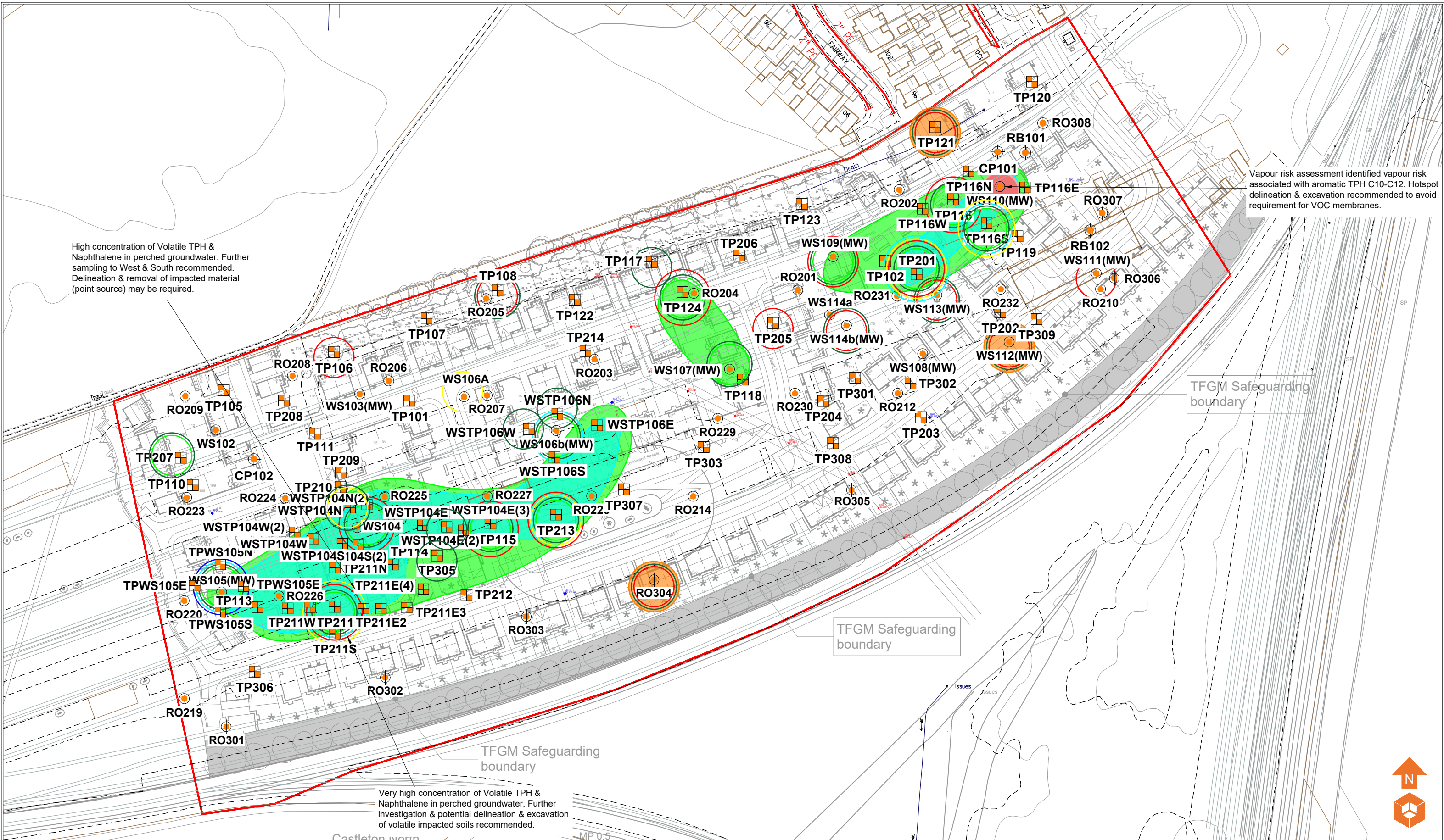
NTS @ A3

Drawing Title:

Depth Of Made Ground Plan

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

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Location Symbols

WS101

WS101

Approximate Window Sample Probehole Location (March 2021)

WS101

WS101

Approximate Window Sample Probehole Location with Install (March 2021)

TP101

TP101

Approximate Trial Pit Location (March 2021)

RB101

RB101

Approximate Rotary Borehole Location (March 2021)

TP101

TP101

Approximate Trial Pit Location (June 2021)

RB101

RB101

Approximate Rotary Borehole Location (July 2021)

TP101

TP101

Approximate Hand Dug Pit Location (July 2021)

SP101

SP101

Approximate Stockpile Sample Location (July 2021)

RO101

RO101

Approximate Location of Rotary Borehole

CP101

CP101

Approximate Cable Percussive Borehole Location

Heavy metals

Mercury (volatile)

Asbestos (chrysotile <0.001% wt/wt)

Napathalene (volatile)

Non-volatile PAH

TPH C10-C16 (volatile)

TPH C16-C21 (non-volatile)

Volatile TPH & Naphthalene in Groundwater Sample

Vapour Risk (TPH C10-C12 Aromatic)

Napathalene Impacted Soils

TPH Impacted Soils

Volatile Mercury

Notes:

P1

REVA

23.08.2023

EB

JS

Phase

Issue

Date

Drawn

Checked

Client:

Kellen Homes

Job No:

14-768

Drawing No:

024

Job Title:

Heywood Road, Castleton

Date:

23.08.2023

Scale:

NTS @ A3

Drawing Title:

Contamination Issues Plan and Proposed Development Plan

e3p

Environmental Engineering Partnership Ltd

Taylor Road, Trafford Park

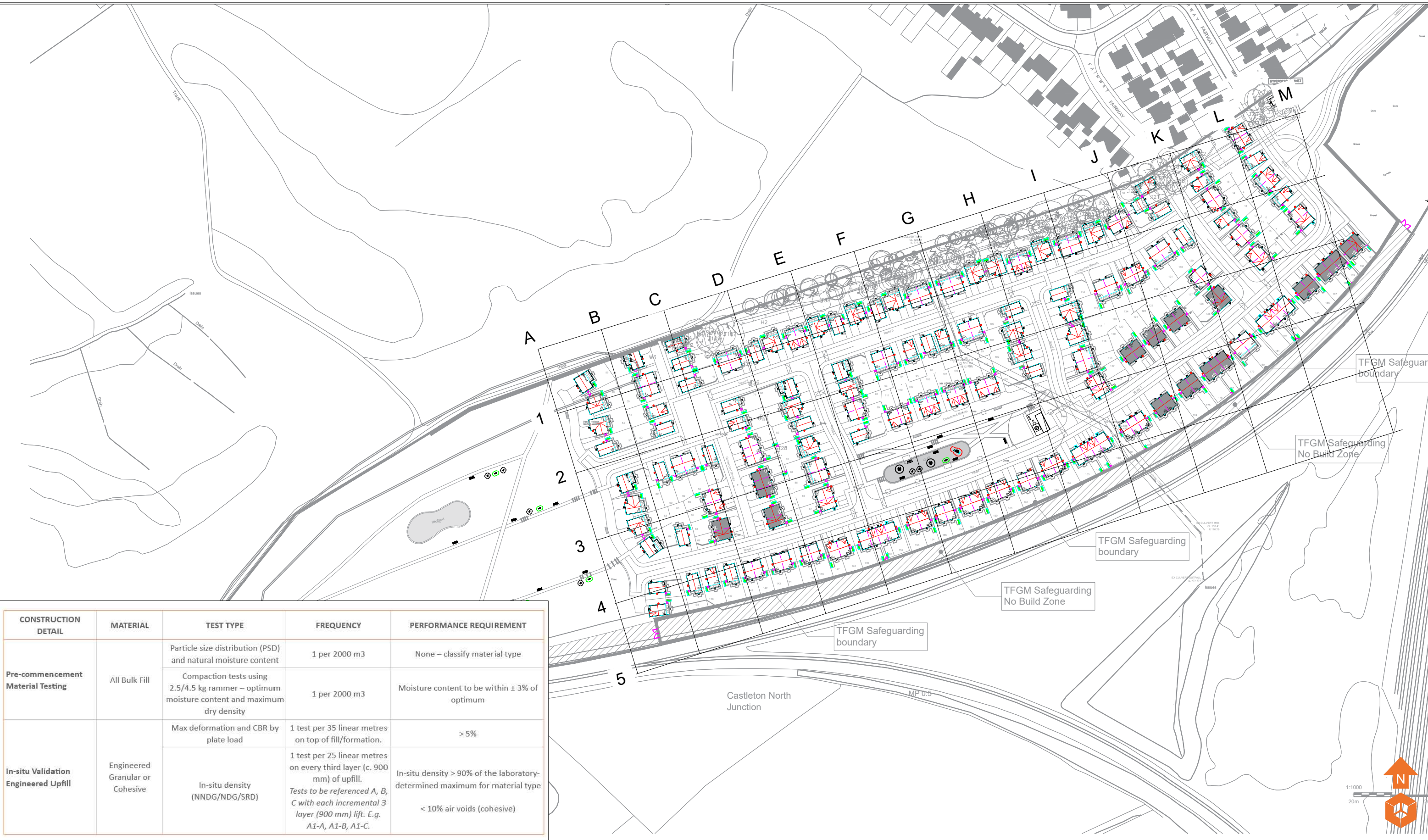
Urmston, Manchester, M41 7JQ

Tel: 0161 707 9612

E-mail: info@e3p.co.uk

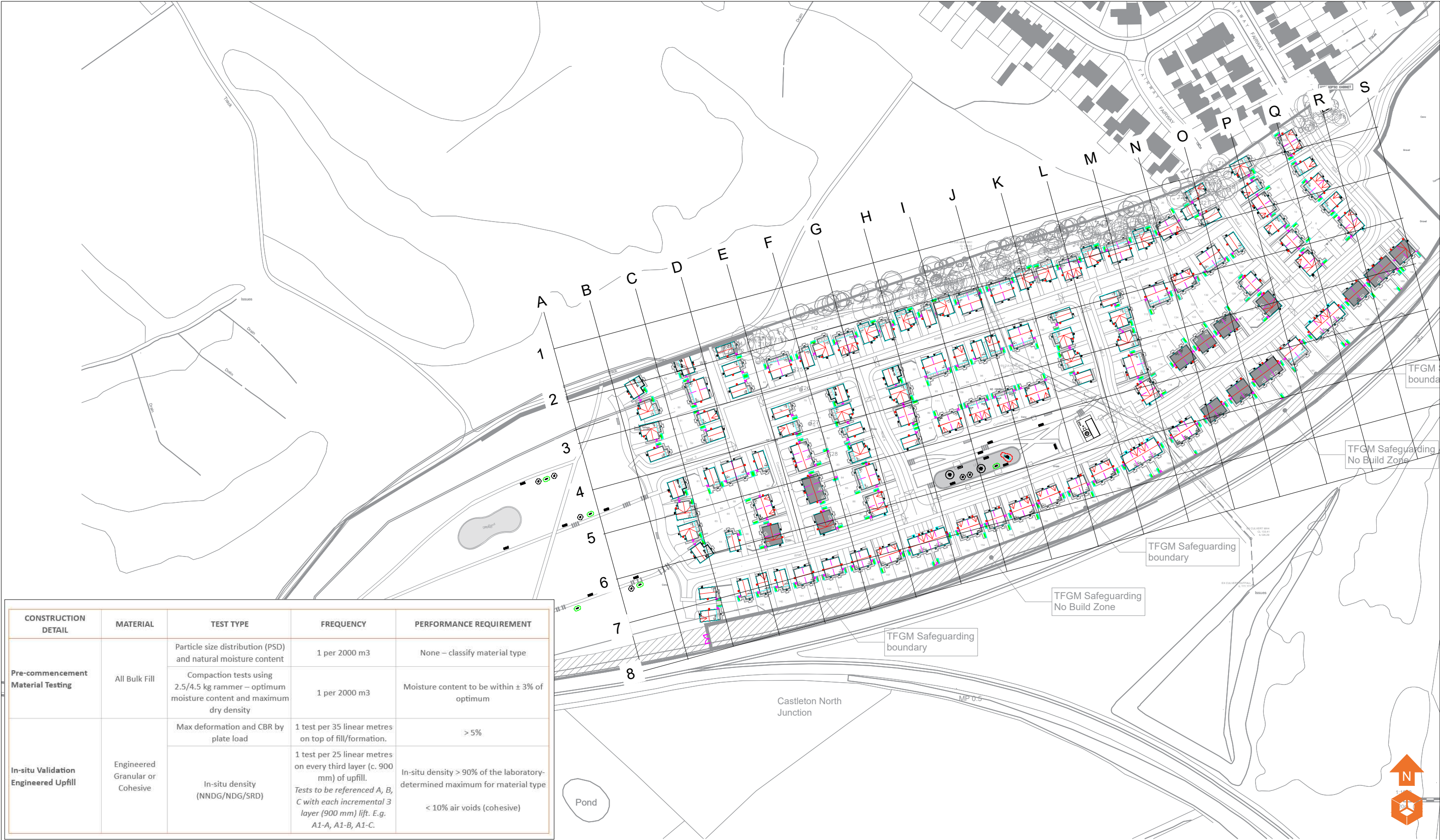
Website: www.e3p.co.uk

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CONSTRUCTION DETAIL	MATERIAL	TEST TYPE	FREQUENCY	PERFORMANCE REQUIREMENT
Pre-commencement Material Testing	All Bulk Fill	Particle size distribution (PSD) and natural moisture content	1 per 2000 m3	None – classify material type
		Compaction tests using 2.5/4.5 kg rammer – optimum moisture content and maximum dry density	1 per 2000 m3	Moisture content to be within ± 3% of optimum
In-situ Validation Engineered Uphill	Engineered Granular or Cohesive	Max deformation and CBR by plate load	1 test per 35 linear metres on top of fill/formation.	> 5%
		In-situ density (NNDG/NDG/SRD)	1 test per 25 linear metres on every third layer (c. 900 mm) of uphill. Tests to be referenced A, B, C with each incremental 3 layer (900 mm) lift. E.g. A1-A, A1-B, A1-C.	In-situ density > 90% of the laboratory-determined maximum for material type < 10% air voids (cohesive)

Notes:	Client: Kellen Homes	Job No: 14-768	Date: 14.10.2024	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk
P1 REVA 14.10.2024 OW JS PhaseIssueDateDrawnChecked	Job Title: Heywood Road, Castleton	Drawing No: 025	Scale: NTS @ A3	Drawing Title: CBR 35m Grid Validation Plan The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



CONSTRUCTION DETAIL	MATERIAL	TEST TYPE	FREQUENCY	PERFORMANCE REQUIREMENT
Pre-commencement Material Testing	All Bulk Fill	Particle size distribution (PSD) and natural moisture content	1 per 2000 m3	None – classify material type
		Compaction tests using 2.5/4.5 kg rammer – optimum moisture content and maximum dry density	1 per 2000 m3	Moisture content to be within ± 3% of optimum
In-situ Validation Engineered Upfill	Engineered Granular or Cohesive	Max deformation and CBR by plate load	1 test per 35 linear metres on top of fill/formation.	> 5%
		In-situ density (NNDG/NDG/SRD)	1 test per 25 linear metres on every third layer (c. 900 mm) of upfill. <i>Tests to be referenced A, B, C with each incremental 3 layer (900 mm) lift. E.g. A1-A, A1-B, A1-C.</i>	In-situ density > 90% of the laboratory-determined maximum for material type < 10% air voids (cohesive)

Notes:

P1

REVA

14.10.2024

OW

JS

Phase

Issue

Date

Drawn

Checked

Client:

Kellen Homes

Job Title:

Heywood Road, Castleton

Job No:

14-768

Drawing No:

026

Job Title:

In Situ Density (25m Grid) Validation Plan

Date:

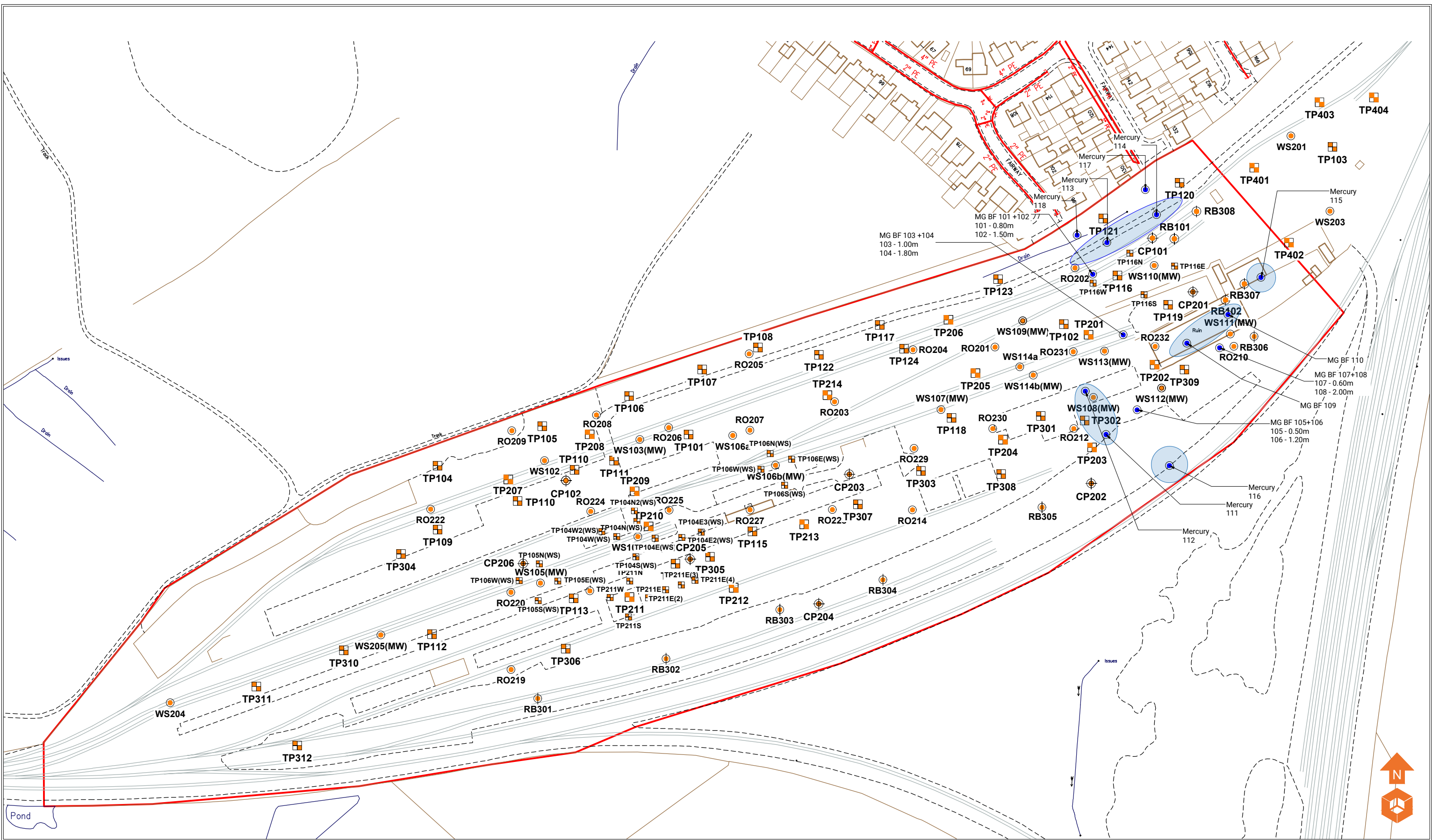
14.10.2024

Scale:

NTS @ A3

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Website: www.e3p.co.uk

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Location Symbols

Approximate Window Sample Probehole Location (March 2021)

Approximate Window Sample Probehole Location with Install (March 2021)

Approximate Trial Pit Location (March 2021)

Approximate Rotary Borehole Location (March 2021)

Approximate Trial Pit Location (June 2021)

Approximate Rotary Borehole Location (July 2021)

Approximate Hand Dug Pit Location (July 2021)

Approximate Stockpile Sample Location (July 2021)

Key

Sample Location

Stockpile

Notes:

P1	REVA	24.01.2025	TG	HM	HM
Phase	Issue	Date	Drawn	Checked	PM

Client:

Kellen Homes

Job Title:

Heywood road, Castleton

Job No:

14-768

Drawing No:

031

Job Title:

Mercury Sample Plan

Date:

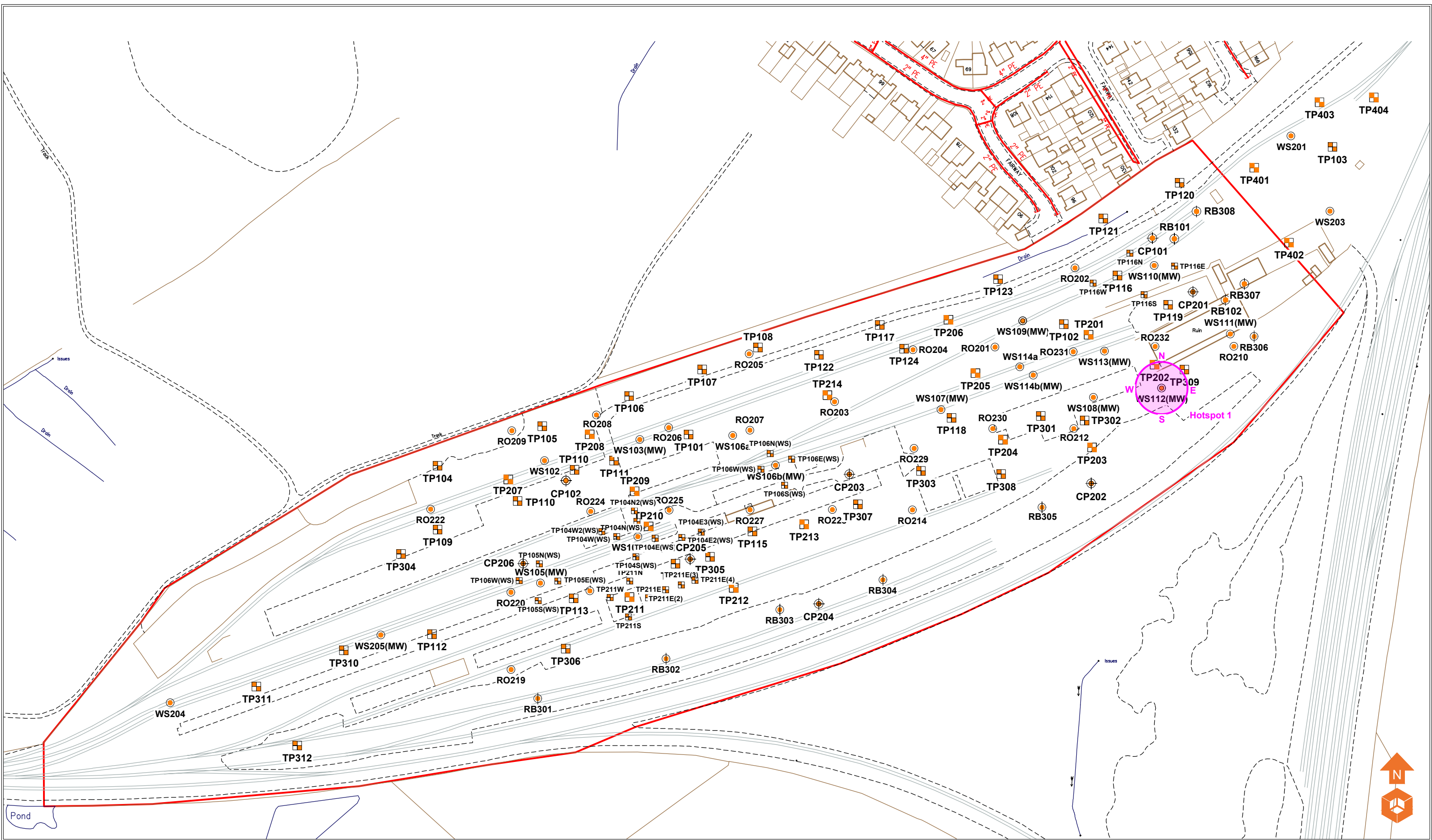
24.01.2025

Scale:

NTS

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

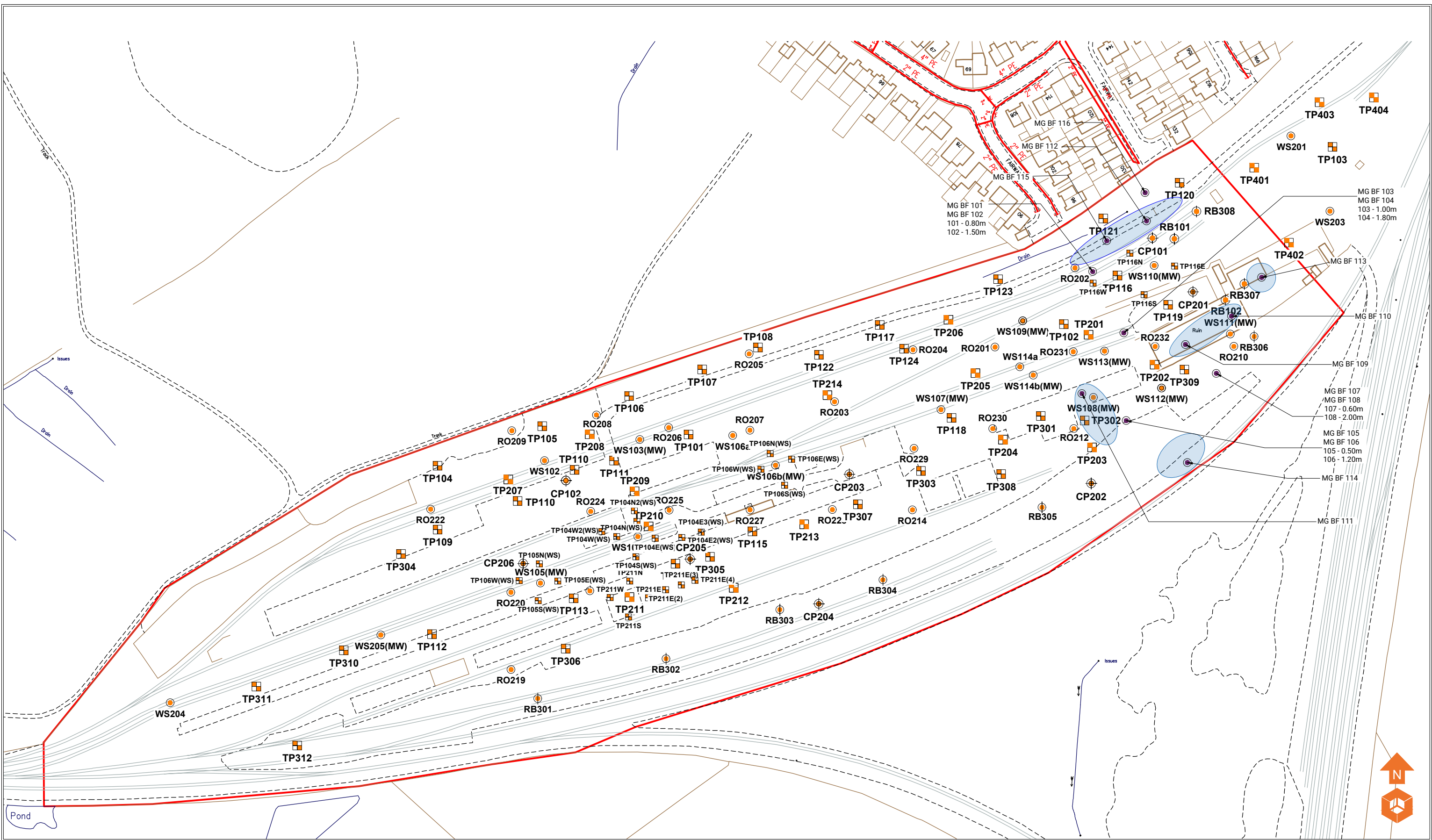
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Location Symbols WS101 Approximate Window Sample Probehole Location (March 2021) WS102(MW) Approximate Window Sample Probehole Location with Install (March 2021) TP101 Approximate Trial Pit Location (March 2021) RO101 Approximate Rotary Borehole Location (March 2021) TP102 Approximate Trial Pit Location (June 2021) RO103 Approximate Rotary Borehole Location (July 2021) CP101 Approximate Hand Dug Pit Location (July 2021) RB101 Approximate Stockpile Sample Location (July 2021)
--

Key

Hotspot



Location Symbols

Approximate Window Sample Probehole Location (March 2021)

Approximate Window Sample Probehole Location with Install (March 2021)

Approximate Trial Pit Location (March 2021)

Approximate Rotary Borehole Location (March 2021)

Approximate Trial Pit Location (June 2021)

Approximate Rotary Borehole Location (July 2021)

Approximate Hand Dug Pit Location (July 2021)

Approximate Stockpile Sample Location (July 2021)

Key

Sample Location

Stockpile

Notes:

P1	REVA	24.01.2025	TG	HM	HM
Phase	Issue	Date	Drawn	Checked	PM

Client:

Kellen Homes

Job Title:

Heywood road, Castleton

Job No:

14-768

Drawing No:

033

Job Title:

Made Ground Sample Plan

Date:

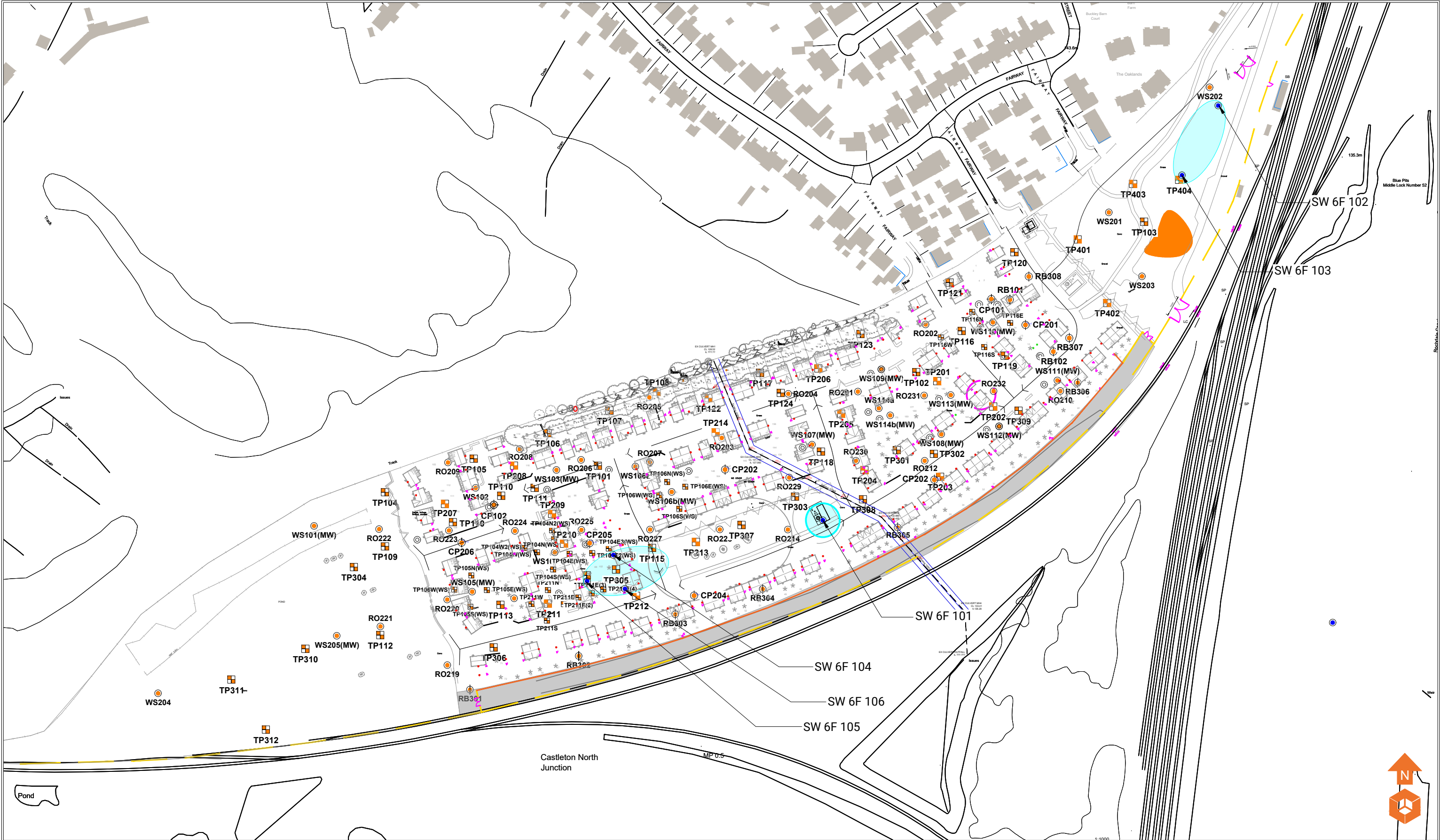
24.01.2025

Scale:

NTS

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

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- Location Symbols**
- WS101 (MW) Approximate Window Sample Probehole Location (March 2021)
 - WS102 (MW) Approximate Window Sample Probehole Location with Install (March 2021)
 - TP101 Approximate Trial Pit Location (March 2021)
 - RO101 Approximate Rotary Borehole Location (March 2021)
 - TP102 Approximate Trial Pit Location (June 2021)
 - RO102 Approximate Rotary Borehole Location (July 2021)
 - TP103 Approximate Hand Dug Pit Location (July 2021)
 - WS104 (MW) Approximate Stockpile Sample Location (July 2021)
 - RO104 (MW) Approximate Location of Attempted Rotary Borehole (July 2021 - Not Completed Due to Access Limitations)
 - Sample Location
 - Stockpile Location

Notes:

P1	REVA	29.01.2025	TG	HM	JS
Phase	Issue	Date	Drawn	Checked	PM

Client:

Kellen Homes

Job Title:

Heywood Road, Castleton

Job No:

14-768

Drawing No:

034

Date:

29.01.2025

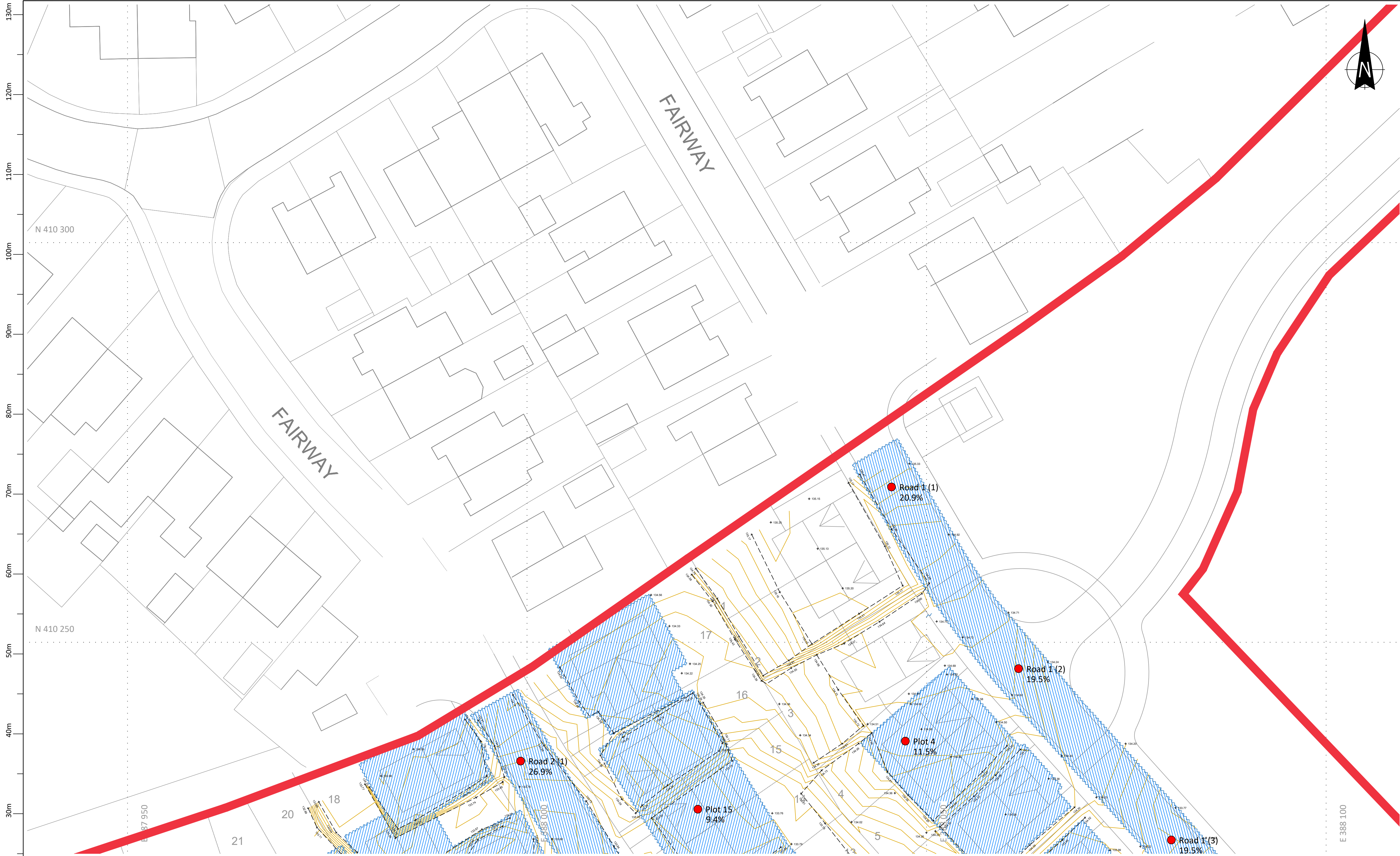
Scale:

NTS



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Website: www.e3p.co.uk

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Legend

- Site boundary
- Spot level
- Top/bottom of bank/break of slope
- Contour - As built (0.1m interval)
- 6F2/6F5 piling mats/road box (approximate extent only)
- CBR location, reference, and value
- Retained piles (see Note 7)
- Shared drive - Trim Specification

Notes

- This plan is to be read in conjunction with all other associated reports/drawings/information.
- The development layout depicted on this drawing was extracted from drawing 'Planning Layout - Rev H.dwg' supplied digitally by the Client.
- The required foundation solution is as detailed on drawing 'Remediation Trim Specification.pdf' provided digitally by the Client.
- The site trim specification is as specified/agreed by/with the Client; and as detailed.
- Due to the potential for live services and issues associated with withdrawal of support; remediation works have been carried out to within circa 1m of the site boundary (unless otherwise stated).
- The location of services as detailed are approximate only (unless otherwise stated).
- Piles encountered were broken off below natural ground level. All piles were European I-beam with a parallel flange. With a depth of 200mm and a top and bottom width of 100mm.

Client responsibilities post handover

To minimise any impact to the constructed landform, the site is to be suitably managed with the following recommendations considered prior to/during construction activities:

- Up-fill/made-ground/6F2/6F5 materials will degrade if trafficked when saturated, or during wet weather conditions. Any degradation of the materials is likely to require maintenance.
- Due to the potential degradation of materials from trafficking/wet weather, pile mats should be re-assessed to inform temporary works requirements, prior to use.
- When trafficking the site, vehicle movements should be restricted to designated haul routes i.e., site roads.
- To facilitate drainage/drying of the site, any standing water is to be pumped to non-construction areas, or discharged to surface water/drain. Any discharge into surface waters is to be in accordance with Regulatory Position Statement 261 'Temporary de-watering from excavations to surface water', or an associated discharge permit.
- When ponding waters have been removed, the site is to be left for a suitable period of time to allow residual moistures to drain through the materials.
- Excavated materials should be well managed, with different materials stored separately on areas not prone to ponding; the materials being sealed to minimise moisture ingress.

Survey Information:

Co-ord System:	Co-ord Type:	Primary Survey Control:	Secondary Survey Control:
Local	Grid	SmartNet	Site

Rev	Date	Amendment	Drawn	Checked

**Urban Regen**
ESTABLISHED 2001

Client:

Kellen Homes

Project:

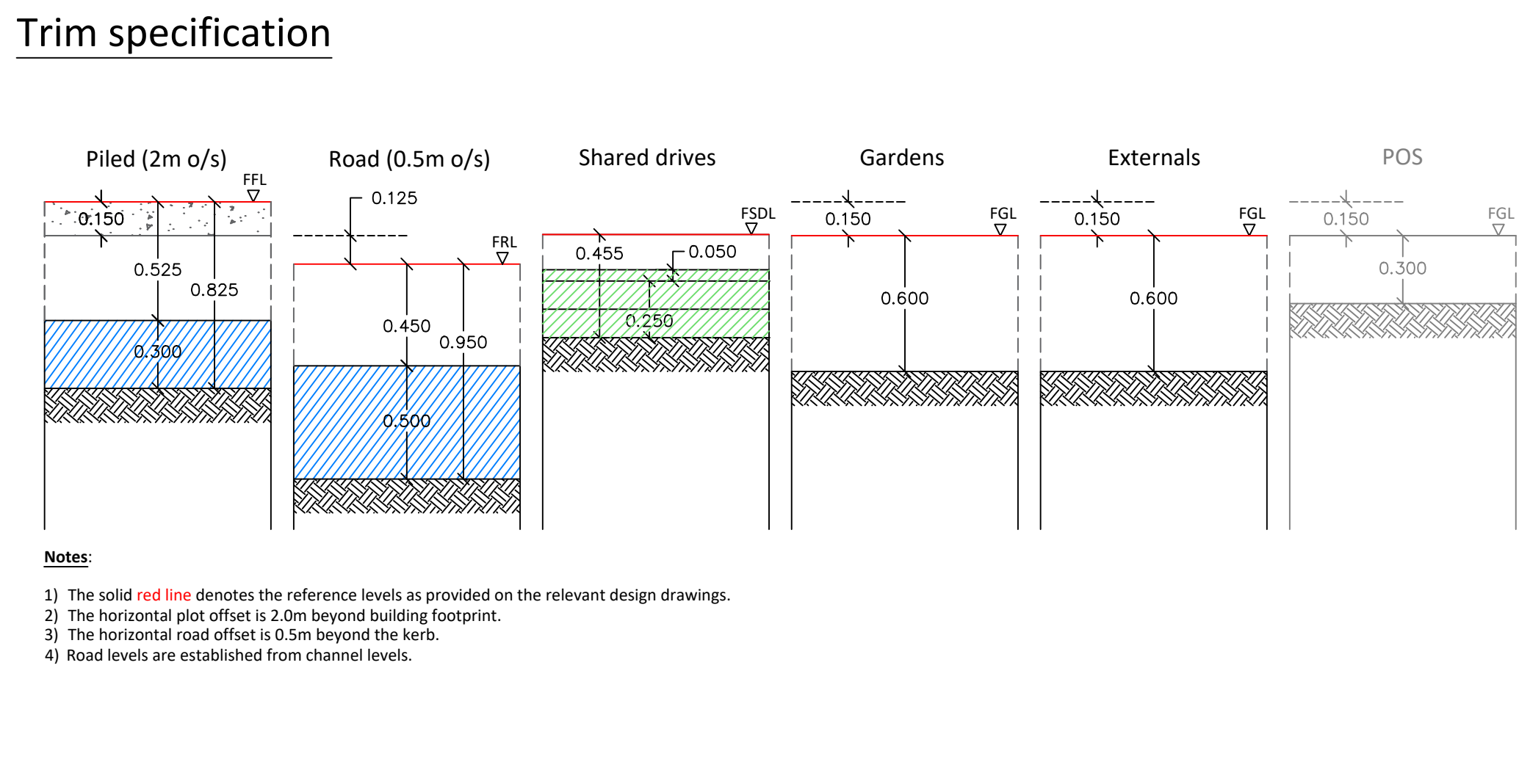
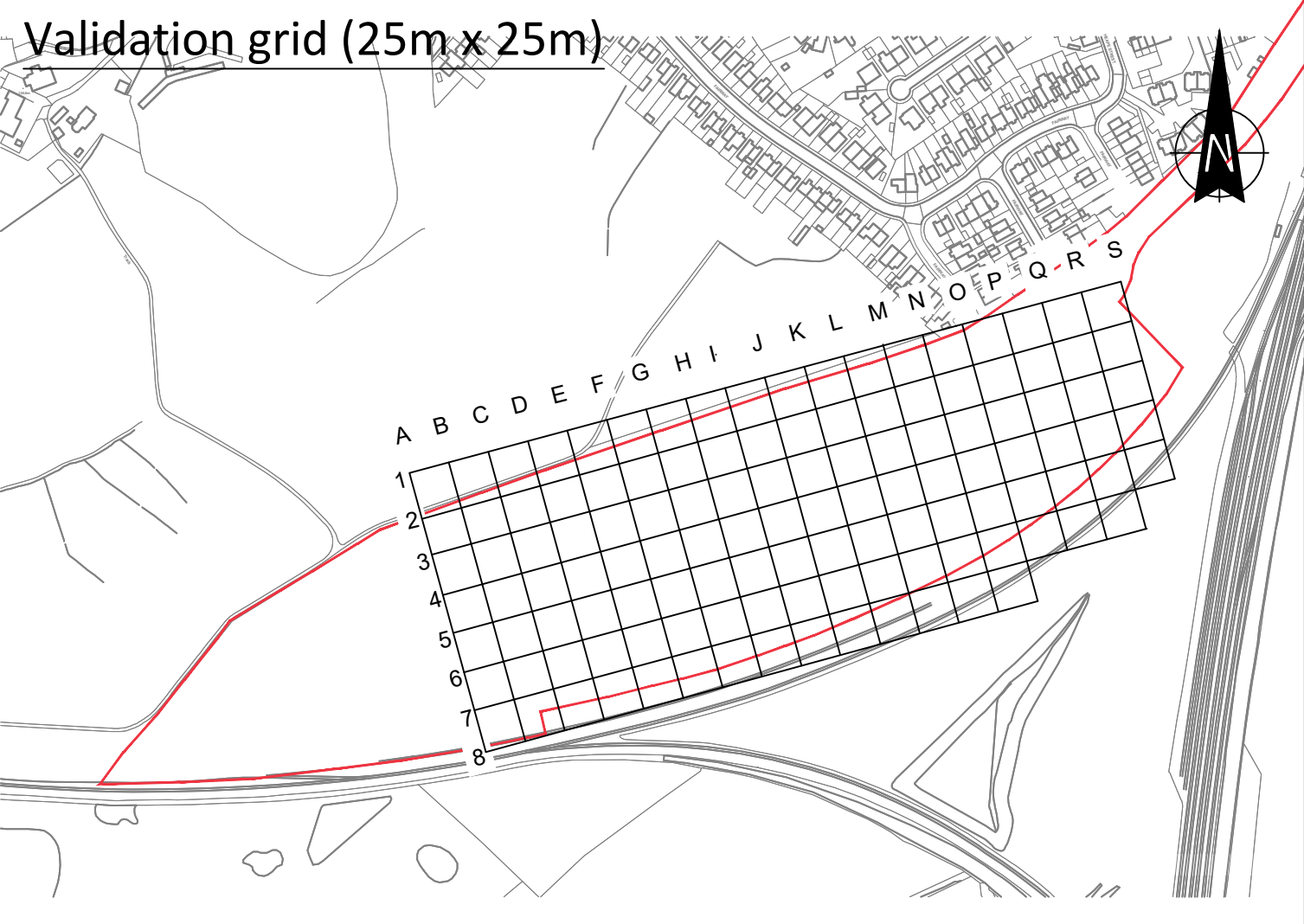
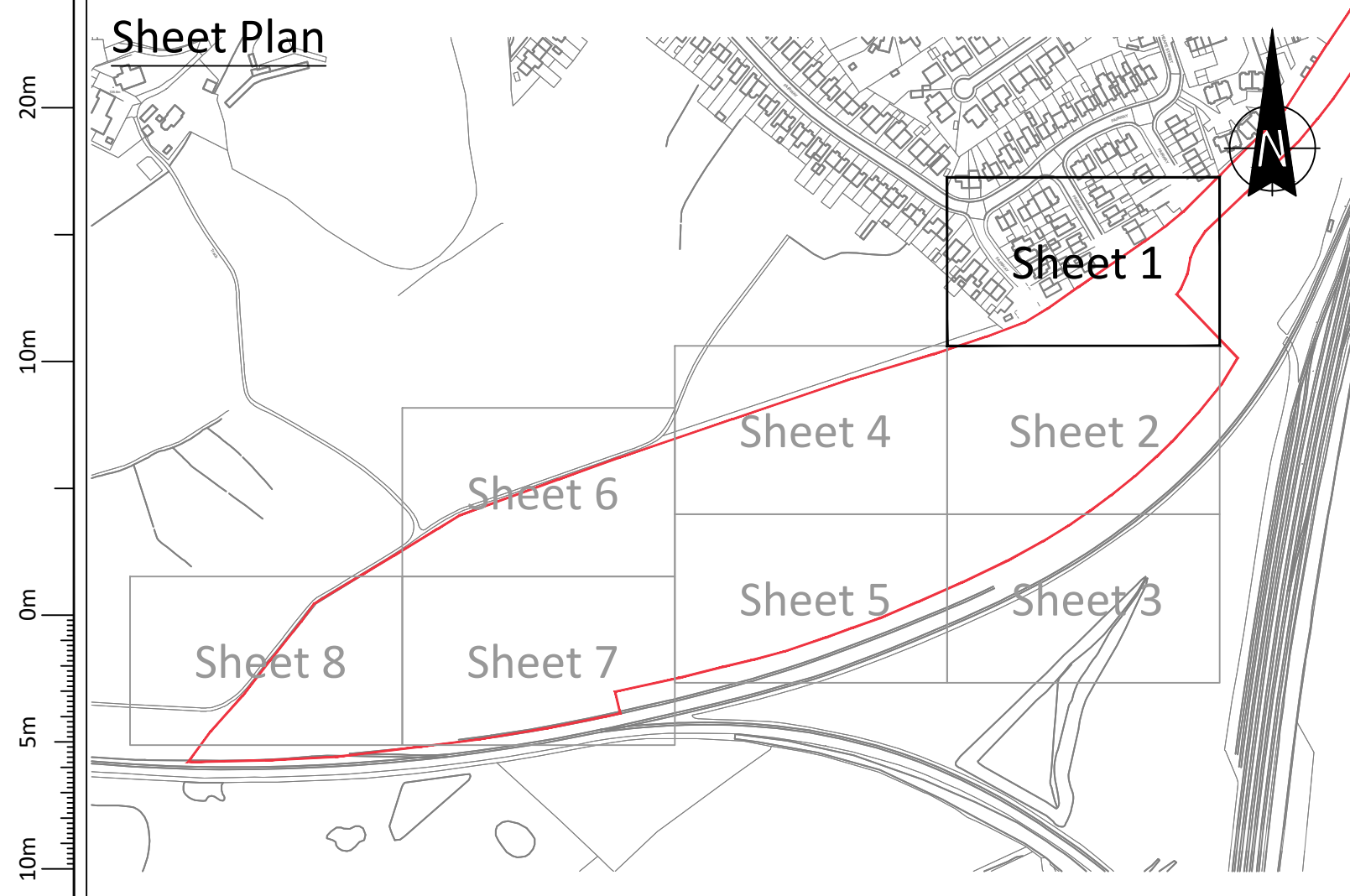
Castleton Sidings
Rochdale

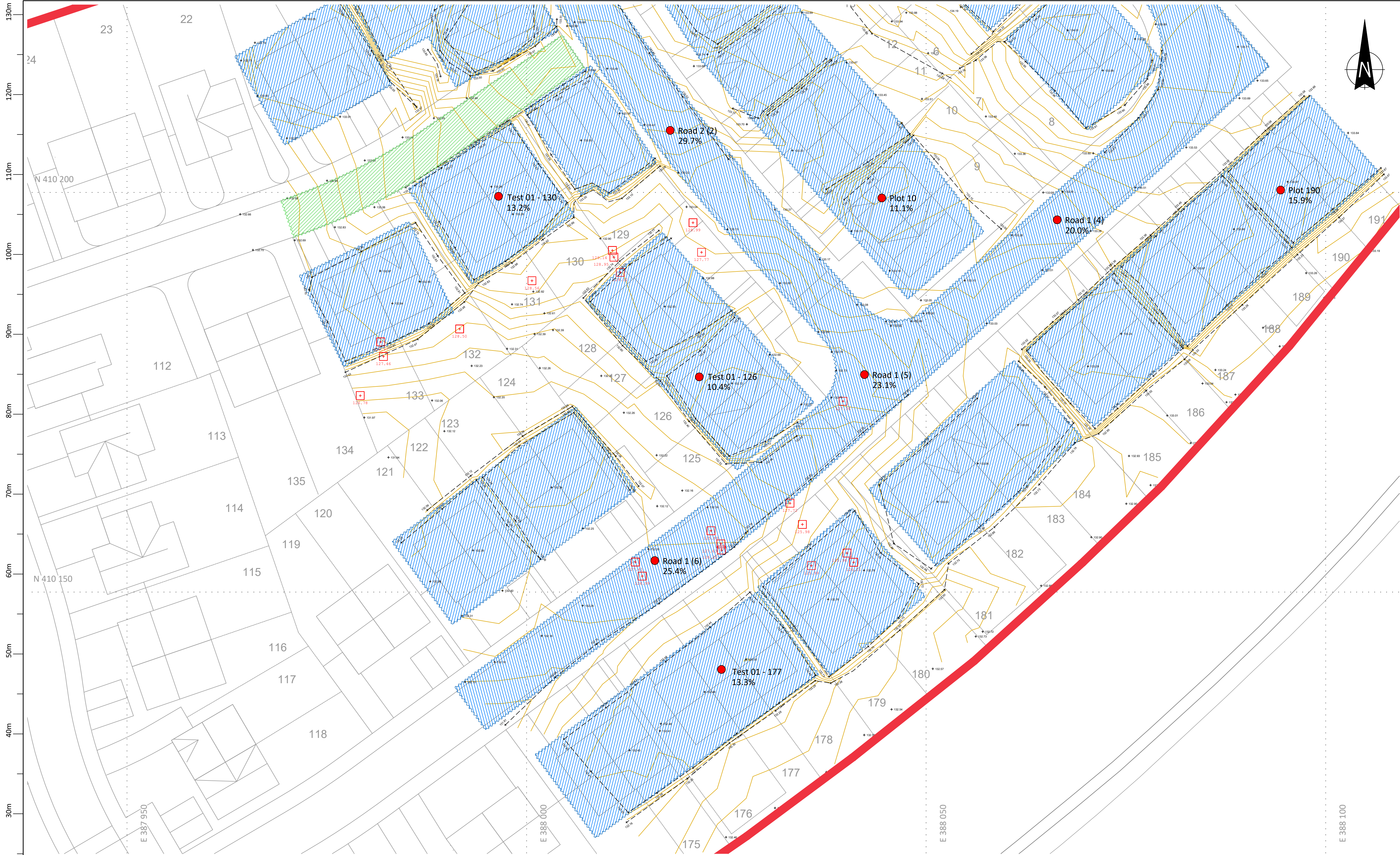
Title:

As built topographic survey
and constraints (Sheet 1 of 8)

Scale:	First Issue:	Drawn:	Checked:
1:250 @ A1	7th Feb 2024	R.B.Woodrow	M.Hamed

Drawing No:	Revision:
405-001-001	





Legend

Site boundary

Spot level

Top/bottom of bank/break of slope

Contour - As built (0.1m interval)

6F2/6F5 piling mats/road box (approximate extent only)

CBR location, reference, and value

Retained piles (see Note 7)

Shared drive - Trim Specification

13.00

10.00

10.00

10.00

10.00

10.00

10.00

Notes

1. This plan is to be read in conjunction with all other associated reports/drawings/information .

2. The development layout depicted on this drawing was extracted from drawing 'Planning Layout - Rev H.dwg' supplied digitally by the Client.

3. The required foundation solution is as detailed on drawing 'Remediation Trim Specification.pdf' provided digitally by the Client.

4. The site trim specification is as specified/agreed by/with the Client; and as detailed.

5. Due to the potential for live services and issues associated with withdrawal of support; remediation works have been carried out to within circa 1m of the site boundary (unless otherwise stated).

6. The location of services as detailed are approximate only (unless otherwise stated).

7. Piles encountered were broken off below natural ground level. All piles were European I-beam with a parallel flange. With a depth of 200mm and a top and bottom width of 100mm.

Client responsibilities post handover

To minimise any impact to the constructed landform, the site is to be suitably managed with the following recommendations considered prior to/during construction activities:

• Up-fill/made-ground/6F2/6F5 materials will degrade if trafficked when saturated, or during wet weather conditions. Any degradation of the materials is likely to require maintenance.

• Due to the potential degradation of materials from trafficking/wet weather, pile mats should be re-assessed to inform temporary works requirements, prior to use.

• When trafficking the site, vehicle movements should be restricted to designated haul routes i.e., site roads.

• To facilitate drainage/drying of the site, any standing water is to be pumped to non-construction areas, or discharged to surface water/drain. Any discharge into surface waters is to be in accordance with Regulatory Position Statement 261 'Temporary de-watering from excavations to surface water', or an associated discharge permit.

• When ponding waters have been removed, the site is to be left for a suitable period of time to allow residual moistures to drain through the materials.

• Excavated materials should be well managed, with different materials stored separately on areas not prone to ponding; the materials being sealed to minimise moisture ingress.

Survey Information:

Co-ord System:	Co-ord Type:	Primary Survey Control:	Secondary Survey Control:	
Local	Grid	SmartNet	Site	
Rev	Date	Amendment	Drawn	Checked

**Urban Regen**

ESTABLISHED 2001

Client:

Kellen Homes

Project:

Castleton Sidings Rochdale

Title:

As built topographic survey and constraints (Sheet 2 of 8)

Scale:	1:250 @ A1	First Issue:	7th Feb 2024	Drawn:	R.B.Woodrow	Checked:	M.Hamed
Drawing No:	405-001-002						Revision:

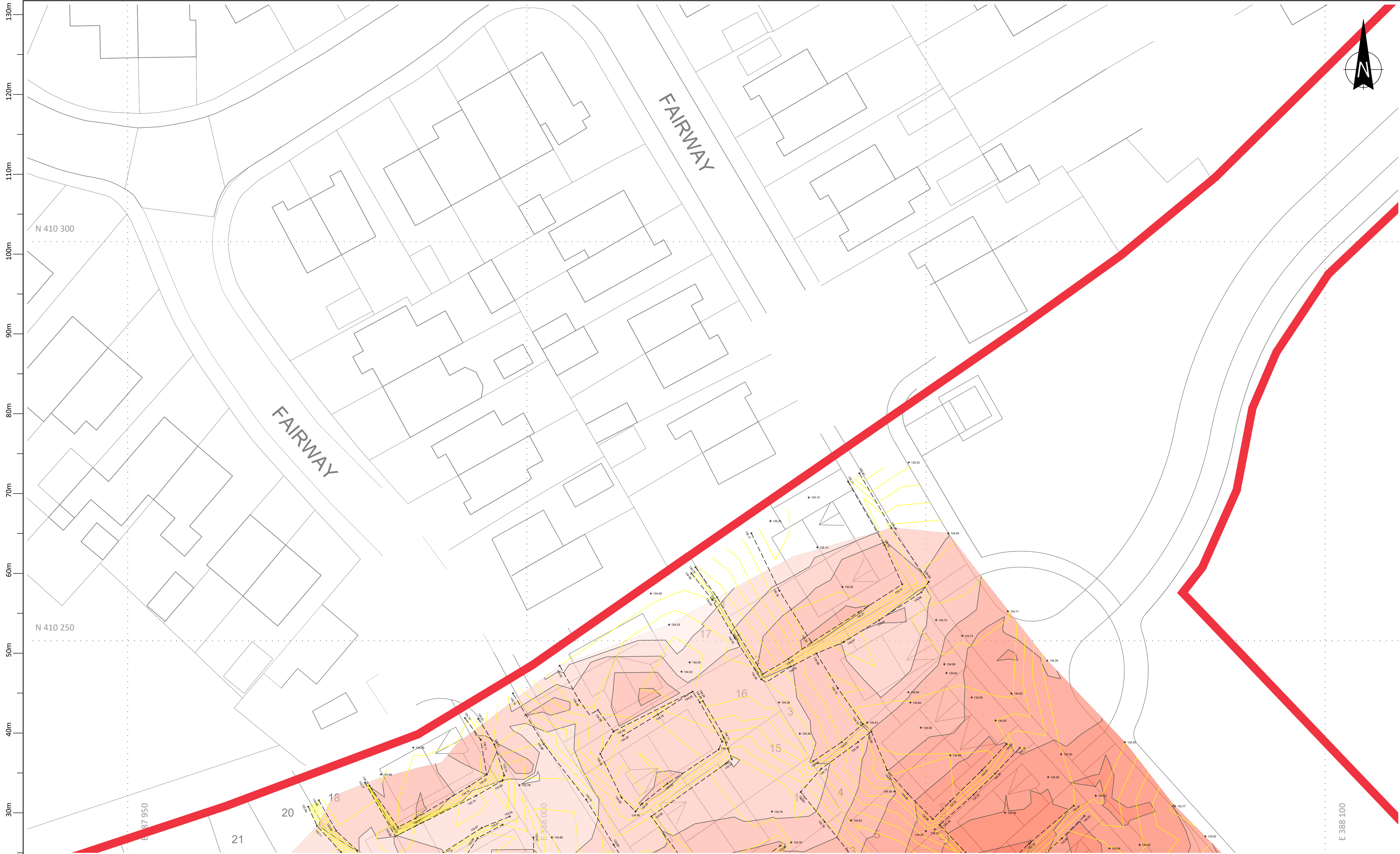
Notes:

1) The solid red line denotes the reference levels as provided on the relevant design drawings.

2) The horizontal plot offset is 2.0m beyond building footprint.

3) The horizontal road offset is 0.5m beyond the kerb.

4) Road levels are established from channel levels.



Legend

Site boundary
Spot level - As built
Top/bottom of bank/break of slope
Contour - As built (0.1m interval)
Contour - Base of excavation (0.5m interval)
Sub-grade (base of excavation)
6F2/6F5 pile mat/sub-base
Shared drive / stone and MOT

Depth of turnover/engineered ground

0.00m
-0.50m
-1.00m
-1.50m
-2.00m
-2.50m
-3.00m
-3.50m
-4.00m
-4.50m
-5.00m
-5.50m
-6.00m
-6.50m
-7.00m
-7.50m

Notes

1. This plan is to be read in conjunction with all other associated reports/drawings/information .
2. The development layout depicted on this drawing was extracted from drawing 'Planning Layout - Rev H.dwg' supplied digitally by the Client.
3. The required foundation solution is as detailed on drawing 'Remediation Trim Specification.pdf' provided digitally by the Client.
4. The site trim specification is as specified/agreed by/with the Client; and as detailed.
5. Layer 0 represents the average sub-grade/base of excavation level.
6. The spot levels and associated contours detailed on this drawing represent the sub-grade/base of excavation as surveyed.
7. The thickness of turnover/engineered ground isopachytes detailed on this drawing are referenced from the base of excavation as detailed, and the as built surface as surveyed.

Survey Information:

Co-ord System: Local	Co-ord Type: Grid	Primary Survey Control: SmartNet	Secondary Survey Control: Site
Rev	Date	Amendment	Drawn Checked

**Urban Regen**
ESTABLISHED 2001

Client:

Kellen Homes

Project:

Castleton Sidings
Rochdale

Title:

Base of excavation/depth of
engineered ground (Sheet 1 of 8)

Scale:
1:250 @ A1

First Issue:

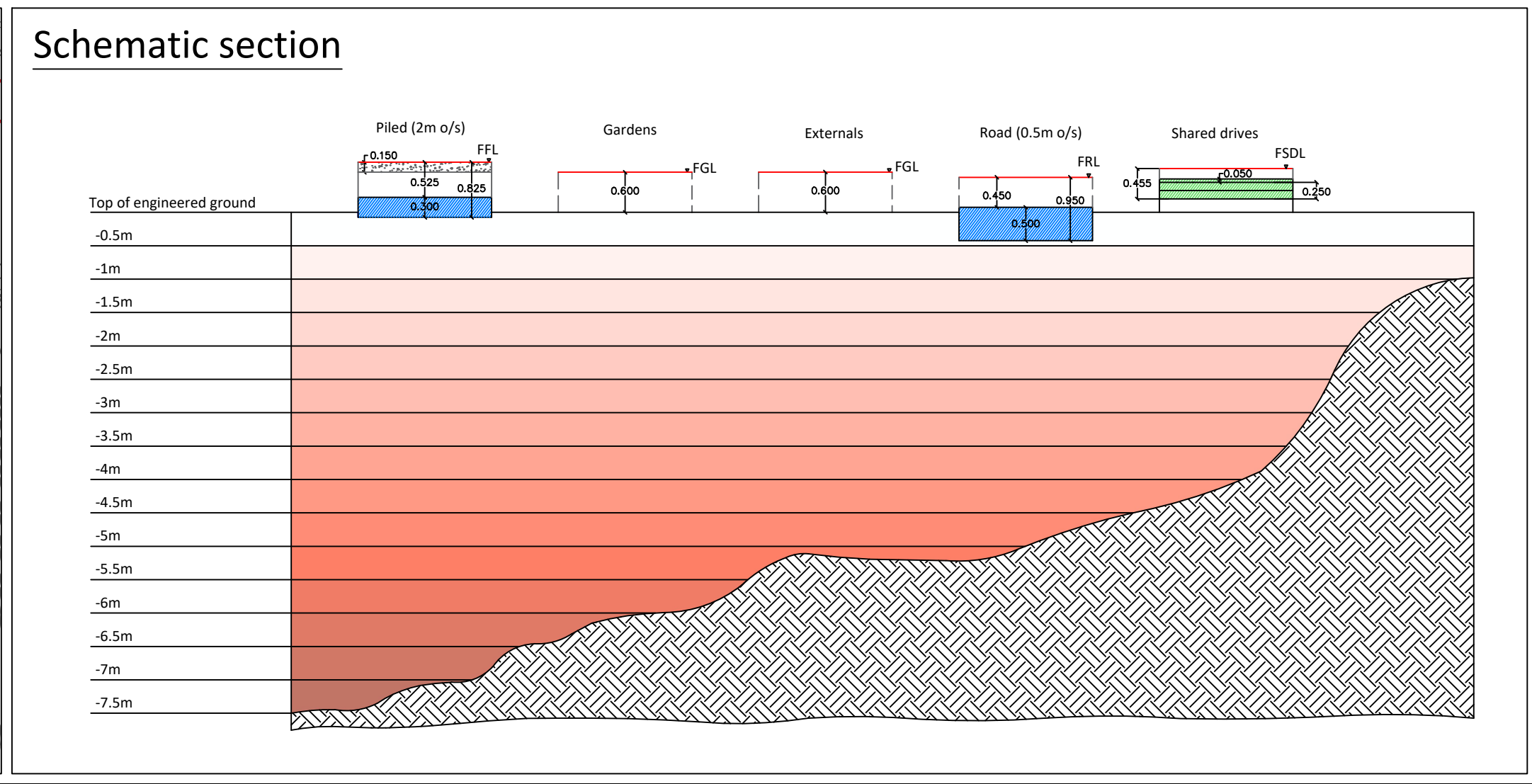
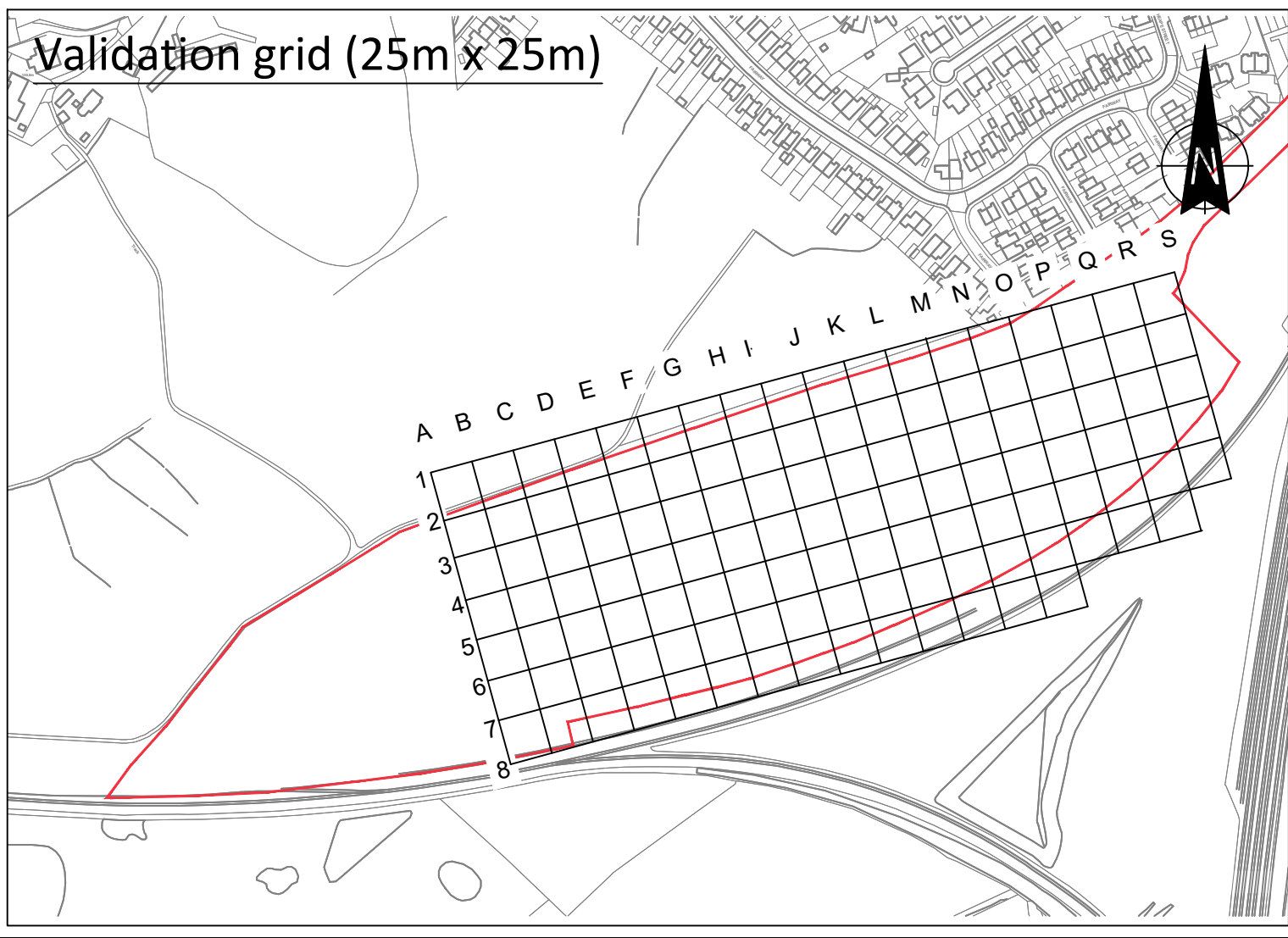
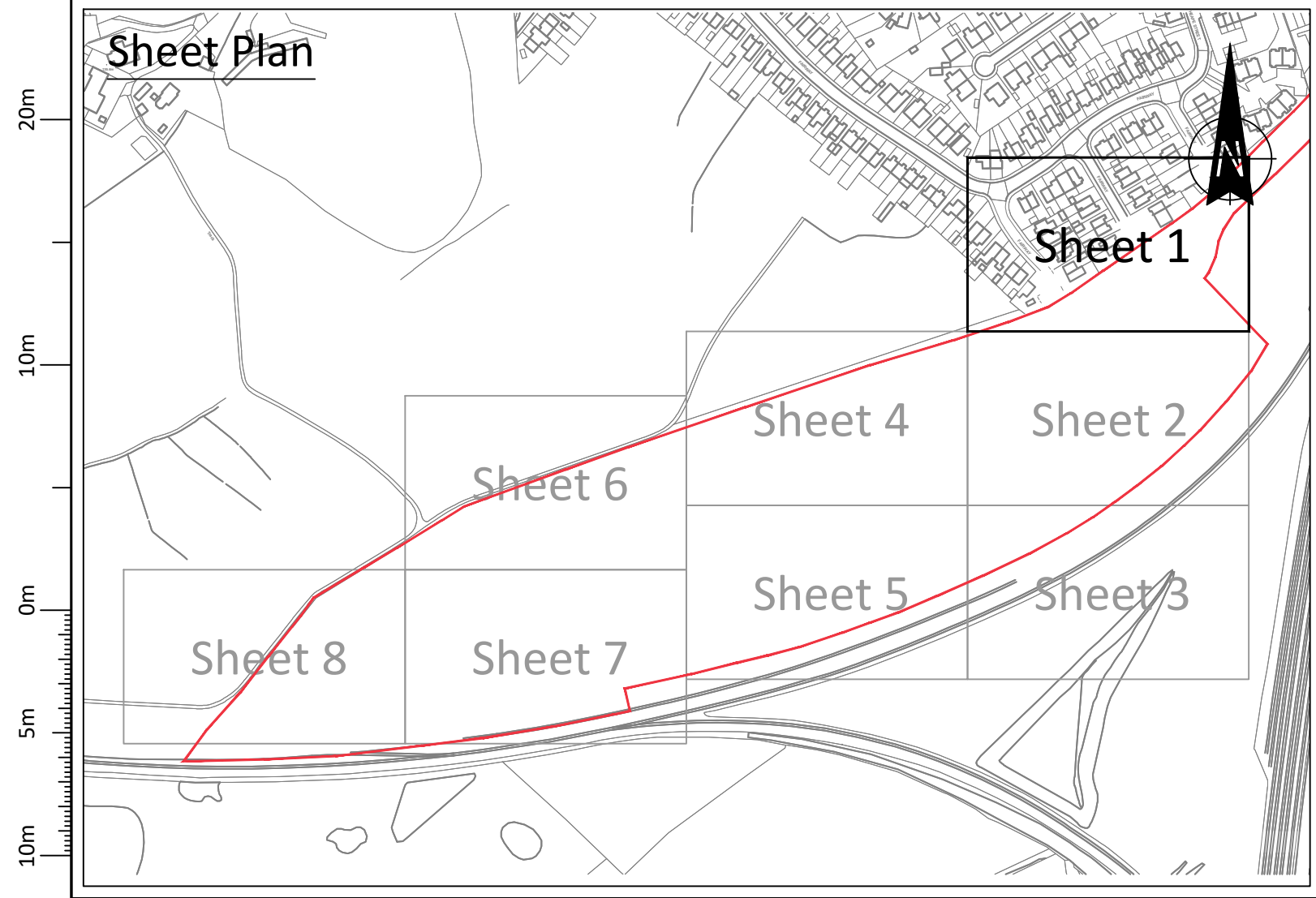
Drawn:
R.B.Woodrow

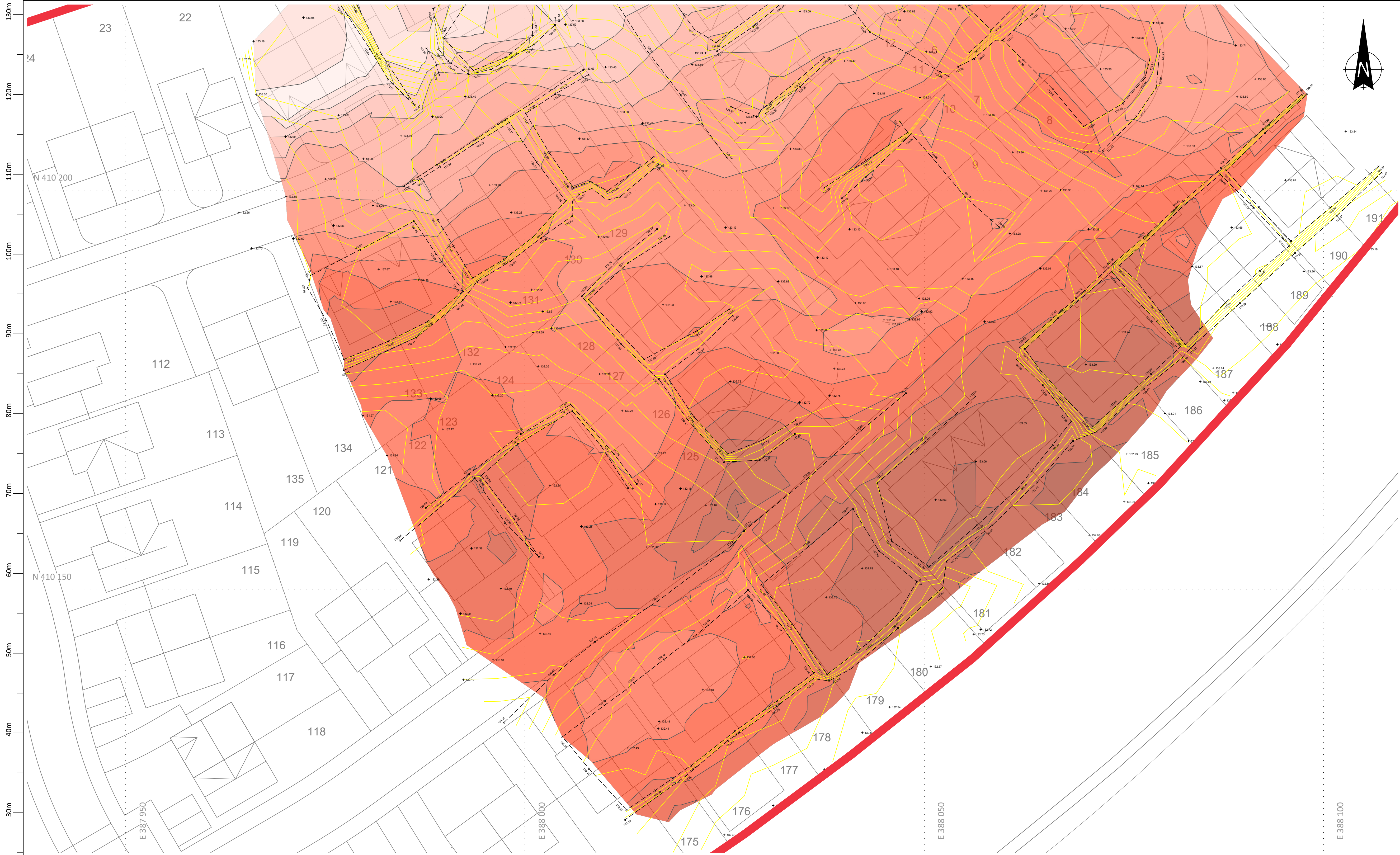
Checked:
M.Hamed

Drawing No:

405-002-001

Revision:





Legend

Site boundary
Spot level - As built
Top/bottom of bank/break of slope
Contour - As built (0.1m interval)
Contour - Base of excavation (0.5m interval)
Sub-grade (base of excavation)
6F2/6F5 pile mat/sub-base
Shared drive / stone and MOT

Depth of turnover/engineered ground

0.00m
-0.50m
-1.00m
-1.50m
-2.00m
-2.50m
-3.00m
-3.50m
-4.00m
-4.50m
-5.00m
-5.50m
-6.00m
-6.50m
-7.00m
-7.50m

Notes

- This plan is to be read in conjunction with all other associated reports/drawings/information.
- The development layout depicted on this drawing was extracted from drawing 'Planning Layout - Rev H.dwg' supplied digitally by the Client.
- The required foundation solution is as detailed on drawing 'Remediation Trim Specification.pdf' provided digitally by the Client.
- The site trim specification is as specified/agreed by/with the Client; and as detailed.
- Layer 0 represents the average sub-grade/base of excavation level.
- The spot levels and associated contours detailed on this drawing represent the sub-grade/base of excavation as surveyed.
- The thickness of turnover/engineered ground isopachytes detailed on this drawing are referenced from the base of excavation as detailed, and the as built surface as surveyed.

Survey Information:			
Co-ord System:	Co-ord Type:	Primary Survey Control:	Secondary Survey Control:
Local	Grid	SmartNet	Site
Rev	Date	Amendment	Drawn/Checked

Urban Regen
ESTABLISHED 2001

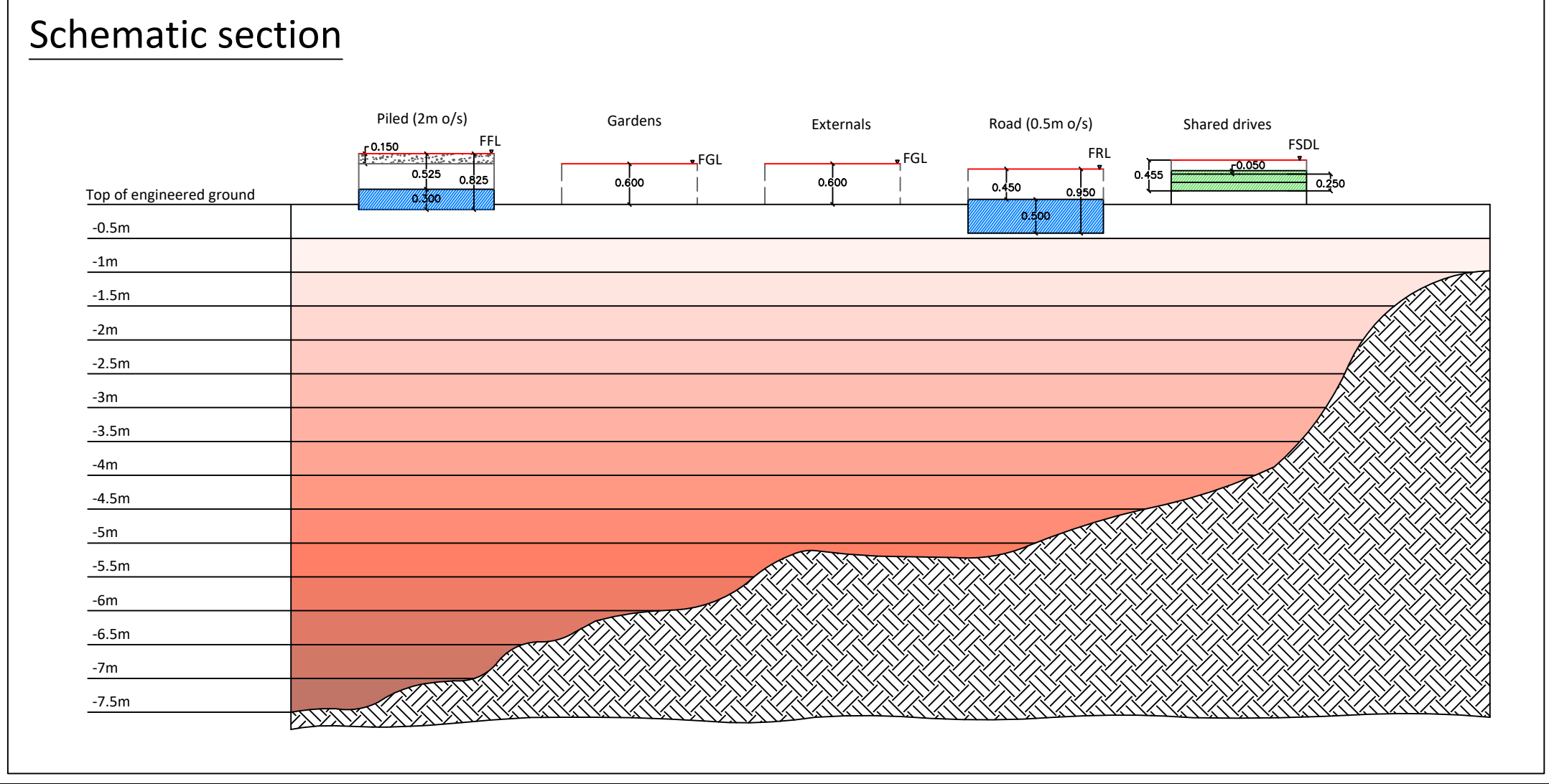
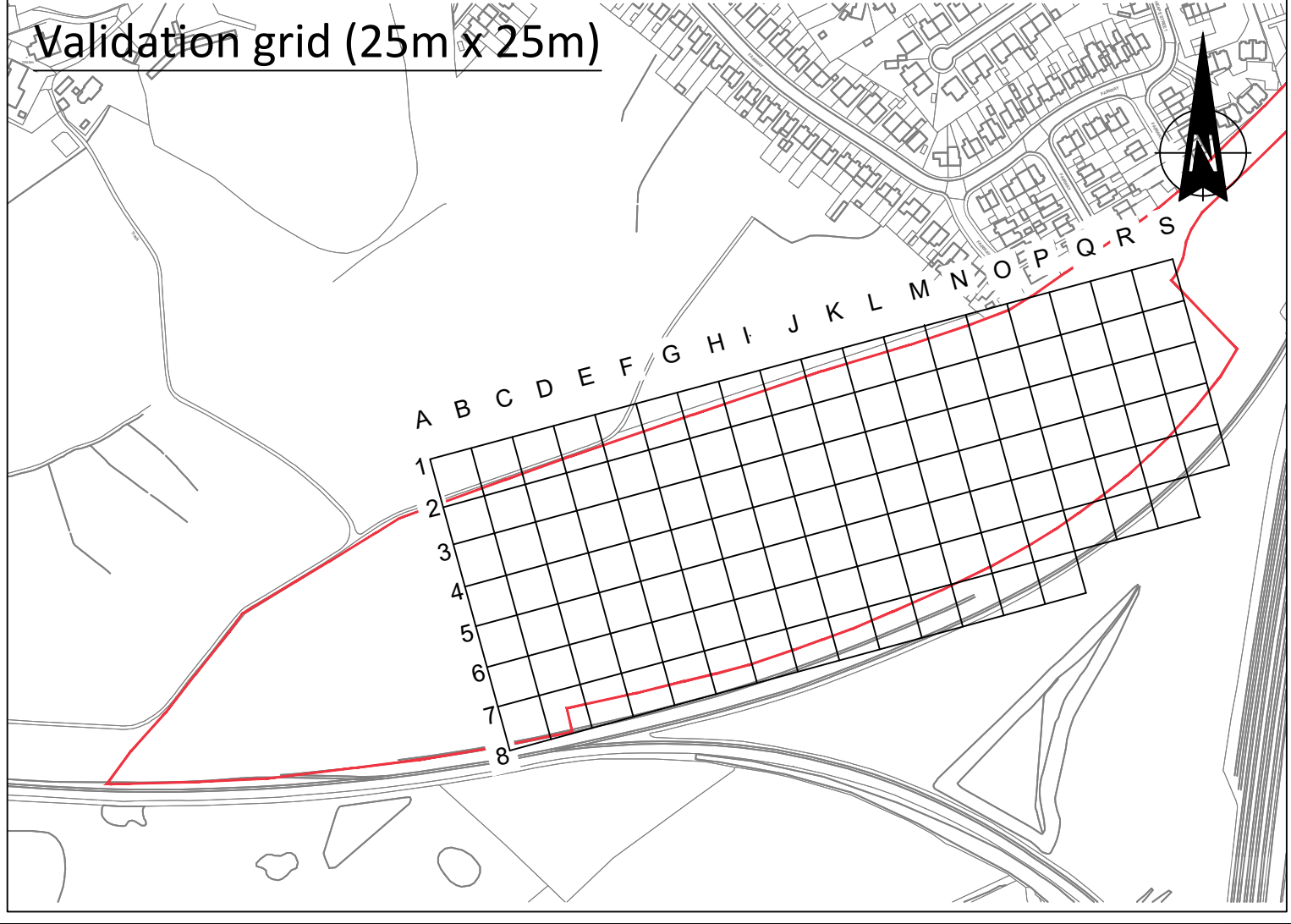
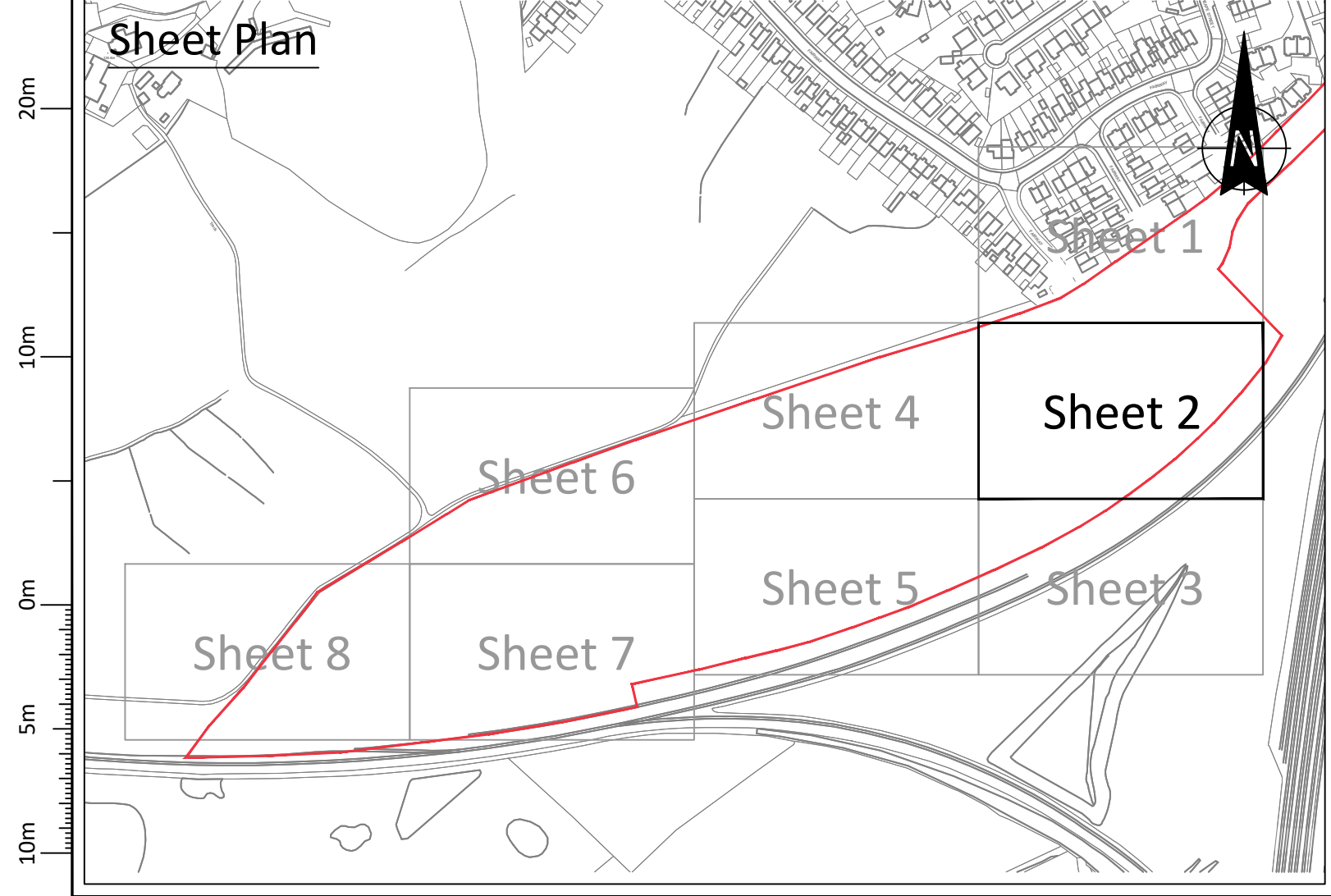
Client: Kellen Homes

Project: Castleton Sidings Rochdale

Title: Base of excavation/depth of engineered ground (Sheet 2 of 8)

Scale: 1:250 @ A1 First Issue: Drawn: R.B.Woodrow Checked: M.Hamed

Drawing No: 405-002-002 Revision:



APPENDIX IV

CHEMICAL TESTING RESULTS





Final Report

Report No.: 24-33890-1

Initial Date of Issue: 24-Oct-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings - MG BF

Quotation No.: Q23-31421

Date Received: 18-Oct-2024

Order No.: 009790

Date Instructed: 18-Oct-2024

No. of Samples: 10

Turnaround (Wkdays): 5

Results Due: 24-Oct-2024

Date Approved: 24-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 - Leachate

Project: 14-768 Castleton Sidings - MG BF

Client: E3P	Chemtest Job No.:					24-33890	24-33890	24-33890	24-33890	24-33890
Quotation No.: Q23-31421	Chemtest Sample ID.:					1882913	1882915	1882917	1882919	1882921
	Client Sample ID.:					MG BF 102	MG BF 104	MG BF 106	MG BF 108	MG BF 110
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:					18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024
	Time Sampled:					12:00	12:00	12:00	12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD					
pH at 20C	U	1010	2:1		4.0	8.5	8.4	7.9	7.9	7.8
Cyanide (Total) Low-Level	N	1300	2:1	mg/l	0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.68	0.67	0.42	2.4	0.64
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	0.94	0.67	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	4.2	8.5	2.2	2.7	3.3
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	0.73	0.96	0.77	0.52	1.8
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	86	15	< 0.50	1.2	20
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	0.84	< 0.50	< 0.50	0.85	0.73
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	11	13	< 2.5	< 2.5	11
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20	< 20	< 20	< 20	< 20
C2 Aliphatic TPH >C5-C6	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C6-C8	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
C2 Aromatic TPH >C5-C7	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C7-C8	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	40	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Total Aromatic Hydrocarbons	N	1675	2:1	µg/l	5.0	40	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	2:1	µg/l	10	40	< 10	< 10	< 10	< 10
Benzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	1800	2:1	µg/l	0.10	66	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1800	2:1	µg/l	0.10	4.0	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1800	2:1	µg/l	0.10	13	< 0.10	< 0.10	< 0.10	< 0.10

Results - Leachate

Project: 14-768 Castleton Sidings - MG BF

Client: E3P	Chemtest Job No.:					24-33890	24-33890	24-33890	24-33890	24-33890
Quotation No.: Q23-31421	Chemtest Sample ID.:					1882913	1882915	1882917	1882919	1882921
	Client Sample ID.:					MG BF 102	MG BF 104	MG BF 106	MG BF 108	MG BF 110
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:					18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024
	Time Sampled:					12:00	12:00	12:00	12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD					
Fluorene	U	1800	2:1	µg/l	0.10	3.2	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1800	2:1	µg/l	0.10	6.8	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1800	2:1	µg/l	0.10	2.7	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1800	2:1	µg/l	0.10	2.4	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	2:1	µg/l	2.0	98	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: 14-768 Castleton Sidings - MG BF

Client: E3P		Chemtest Job No.:		24-33890	24-33890	24-33890	24-33890	24-33890	24-33890	24-33890	24-33890	24-33890
Quotation No.: Q23-31421		Chemtest Sample ID.:		1882912	1882913	1882914	1882915	1882916	1882917	1882918		
		Client Sample ID.:		MG BF 101	MG BF 102	MG BF 103	MG BF 104	MG BF 105	MG BF 106	MG BF 107		
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
		Date Sampled:		18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024		
		Time Sampled:		12:00	12:00	12:00	12:00	12:00	12:00	12:00		
		Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	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	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	29	36	39	28	37	22	51
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones, Roots and Glass	Stones and	Stones, Glass and	Stones, and Roots	Stones, Roots and	Stones and
Soil Texture		N	2040		N/A	Other	Clay	Other	Clay	Other	Loam	Other
pH at 20C		M	2010		4.0	8.5	8.3	7.7	7.8	8.1	7.4	7.6
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.016	0.044	0.010	0.055	< 0.010	0.053	< 0.010
Total Sulphur		U	2175	%	0.010	0.32	0.19	0.49	0.34	0.38	0.34	0.31
Cyanide (Total)		M	2300	mg/kg	0.50	6.6	3.7	1.2	0.70	< 0.50	5.8	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	2.9	3.2	3.3	2.8	2.4	2.2	3.1
Sulphate (Total)		U	2430	%	0.010	0.52	1.6	0.28	0.38	0.37	0.42	0.39
Arsenic		M	2455	mg/kg	0.5	34	59	80	37	30	39	390
Cadmium		M	2455	mg/kg	0.10	0.99	0.40	0.64	0.90	1.0	0.20	12
Chromium		M	2455	mg/kg	0.5	43	44	19	67	20	17	24
Copper		M	2455	mg/kg	0.50	180	180	890	870	420	240	180
Mercury		M	2455	mg/kg	0.05	0.55	1.4	0.44	41	9.3	6.4	1.3
Nickel		M	2455	mg/kg	0.50	51	33	44	42	29	34	71
Lead		M	2455	mg/kg	0.50	6000	4400	450	5600	940	400	3300
Selenium		M	2455	mg/kg	0.25	1.8	1.4	1.8	2.5	0.85	1.4	2.7
Zinc		M	2455	mg/kg	0.50	480	260	290	560	160	160	960
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	90	19	100	16	43	43	38
Total Organic Carbon		M	2625	%	0.20	52	11	60	9.2	25	25	22
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	16	3.4	< 1.0	2.5	< 1.0	< 1.0	15
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	110	38	< 1.0	49	< 1.0	< 1.0	52
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	350	100	11	98	31	20	72
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	810	310	51	290	85	47	83
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	620	350	27	220	160	83	29
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	1200	550	99	280	150	65	55
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	330	59	11	44	15	9.7	11
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	3400	1400	200	990	440	220	320
Naphthalene		M	2800	mg/kg	0.10	44	110	2.0	6.4	1.7	2.0	2.8
Acenaphthylene		N	2800	mg/kg	0.10	13	< 0.10	0.11	0.12	< 0.10	< 0.10	0.10
Acenaphthene		M	2800	mg/kg	0.10	37	74	0.38	1.3	1.0	0.36	0.56
Fluorene		M	2800	mg/kg	0.10	30	38	0.35	0.98	0.63	0.30	0.36

Results - Soil

Project: 14-768 Castleton Sidings - MG BF

Client: E3P		Chemtest Job No.:				24-33890	24-33890	24-33890	24-33890	24-33890	24-33890	24-33890
Quotation No.: Q23-31421		Chemtest Sample ID.:				1882912	1882913	1882914	1882915	1882916	1882917	1882918
		Client Sample ID.:				MG BF 101	MG BF 102	MG BF 103	MG BF 104	MG BF 105	MG BF 106	MG BF 107
		Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Date Sampled:				18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024	18-Oct-2024
		Time Sampled:				12:00	12:00	12:00	12:00	12:00	12:00	12:00
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD							
Phenanthrene		M	2800	mg/kg	0.10	200	200	3.7	9.2	6.4	3.5	3.6
Anthracene		M	2800	mg/kg	0.10	52	36	0.79	1.7	0.91	0.60	0.70
Fluoranthene		M	2800	mg/kg	0.10	150	180	5.4	12	6.8	4.2	3.1
Pyrene		M	2800	mg/kg	0.10	120	180	5.2	11	6.9	4.0	3.1
Benzo[a]anthracene		M	2800	mg/kg	0.10	54	72	2.1	5.2	2.9	2.0	1.7
Chrysene		M	2800	mg/kg	0.10	55	88	2.4	5.7	4.0	2.4	2.1
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	59	87	2.6	6.8	3.8	3.2	2.4
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	21	30	0.85	2.1	1.4	1.1	0.89
Benzo[a]pyrene		M	2800	mg/kg	0.10	37	71	1.9	5.5	3.0	2.7	2.0
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	27	39	1.3	3.2	1.7	2.3	1.4
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	9.3	0.23	0.61	0.45	0.40	0.32
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	27	44	1.3	3.2	2.0	2.4	1.5
Total Of 16 PAH's		N	2800	mg/kg	2.0	930	1300	31	75	44	32	27
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 14-768 Castleton Sidings - MG BF

Client: E3P		Chemtest Job No.:				24-33890	24-33890	24-33890
Quotation No.: Q23-31421		Chemtest Sample ID.:				1882919	1882920	1882921
		Client Sample ID.:				MG BF 108	MG BF 109	MG BF 110
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				18-Oct-2024	18-Oct-2024	18-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	38	15	36
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and	Stones and	Stones and
Soil Texture		N	2040		N/A	Sand	Other	Other
pH at 20C		M	2010		4.0	7.9	7.8	7.9
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010	0.13	0.13
Total Sulphur		U	2175	%	0.010	0.46	0.45	0.75
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	4.3	2.2
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.0	4.8	2.9
Sulphate (Total)		U	2430	%	0.010	0.43	0.74	0.77
Arsenic		M	2455	mg/kg	0.5	59	47	52
Cadmium		M	2455	mg/kg	0.10	0.57	0.67	0.70
Chromium		M	2455	mg/kg	0.5	17	27	24
Copper		M	2455	mg/kg	0.50	380	330	560
Mercury		M	2455	mg/kg	0.05	5.4	12	36
Nickel		M	2455	mg/kg	0.50	48	47	49
Lead		M	2455	mg/kg	0.50	1000	3200	4100
Selenium		M	2455	mg/kg	0.25	3.0	2.0	1.7
Zinc		M	2455	mg/kg	0.50	230	320	410
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	72	29	53
Total Organic Carbon		M	2625	%	0.20	42	17	31
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	3.6
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	50	42
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	27	610	65
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	87	3100	140
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	130	2200	180
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	130	3800	250
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	20	1000	36
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	390	11000	710
Naphthalene		M	2800	mg/kg	0.10	2.1	3.4	2.0
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	0.15
Acenaphthene		M	2800	mg/kg	0.10	0.21	0.91	0.79
Fluorene		M	2800	mg/kg	0.10	0.20	0.78	0.58

Results - Soil

Project: 14-768 Castleton Sidings - MG BF

Client: E3P		Chemtest Job No.:						24-33890	24-33890	24-33890
Quotation No.: Q23-31421		Chemtest Sample ID.:						1882919	1882920	1882921
		Client Sample ID.:						MG BF 108	MG BF 109	MG BF 110
		Sample Type:						SOIL	SOIL	SOIL
		Date Sampled:						18-Oct-2024	18-Oct-2024	18-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					
Phenanthrene		M	2800	mg/kg	0.10	2.7	7.1	6.0		
Anthracene		M	2800	mg/kg	0.10	0.47	1.6	1.2		
Fluoranthene		M	2800	mg/kg	0.10	4.6	10	9.2		
Pyrene		M	2800	mg/kg	0.10	4.4	10	9.1		
Benzo[a]anthracene		M	2800	mg/kg	0.10	2.6	5.7	4.6		
Chrysene		M	2800	mg/kg	0.10	3.2	6.8	5.2		
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	3.9	7.0	6.1		
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.4	3.2	2.3		
Benzo[a]pyrene		M	2800	mg/kg	0.10	3.0	5.7	4.9		
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	2.0	3.9	3.1		
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.54	1.5	0.74		
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	2.3	4.0	3.1		
Total Of 16 PAH's		N	2800	mg/kg	2.0	34	72	59		
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10		

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW FW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters 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	Pentane extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
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-diphenylcarbazine.	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

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



Final Report

Report No.: 24-36173-1

Initial Date of Issue: 14-Nov-2024

Re-Issue Details:

Client E3P

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

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

Project 14768 Castleton sidings

Quotation No.: Q23-31421

Date Received: 07-Nov-2024

Order No.: 009965

Date Instructed: 07-Nov-2024

No. of Samples: 2

Turnaround (Wkdays): 5

Results Due: 13-Nov-2024

Date Approved: 14-Nov-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 - Leachate

Project: 14768 Castleton sidings

Client: E3P	Chemtest Job No.:				24-36173	24-36173
Quotation No.: Q23-31421	Chemtest Sample ID.:				1891298	1891299
	Client Sample ID.:				MG BF 111	MG BF 112
	Sample Type:				SOIL	SOIL
	Date Sampled:				05-Nov-2024	05-Nov-2024
	Time Sampled:				12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD	
pH at 20C	U	1010	2:1		4.0	7.8
Cyanide (Total) Low-Level	N	1300	2:1	mg/l	0.0050	< 0.0050
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	1.4
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	4.6
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	3.1
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	2.0
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	12
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20
C2 Aliphatic TPH >C5-C6	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C6-C8	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0
C2 Aromatic TPH >C5-C7	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C7-C8	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10
C2 Total Aromatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	2:1	µg/l	10	< 10
Benzene	U	1760	2:1	µg/l	1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	2:1	µg/l	1.0	< 1.0
Naphthalene	U	1800	2:1	µg/l	0.10	< 0.10
Acenaphthylene	U	1800	2:1	µg/l	0.10	< 0.10
Acenaphthene	U	1800	2:1	µg/l	0.10	< 0.10

Results - Leachate

Project: 14768 Castleton sidings

Client: E3P	Chemtest Job No.:					24-36173	24-36173
Quotation No.: Q23-31421	Chemtest Sample ID.:					1891298	1891299
	Client Sample ID.:					MG BF 111	MG BF 112
	Sample Type:					SOIL	SOIL
	Date Sampled:					05-Nov-2024	05-Nov-2024
	Time Sampled:					12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD		
Fluorene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	2:1	µg/l	2.0	< 2.0	< 2.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: 14768 Castleton sidings

Client: E3P		Chemtest Job No.:				24-36173	24-36173
Quotation No.: Q23-31421		Chemtest Sample ID.:				1891298	1891299
		Client Sample ID.:				MG BF 111	MG BF 112
		Sample Type:				SOIL	SOIL
		Date Sampled:				05-Nov-2024	05-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				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	17	13
Soil Colour		N	2040		N/A	Brown	Black
Other Material		N	2040		N/A	Stones	Roots and Stones
Soil Texture		N	2040		N/A	Sand	Sand
pH at 20C		M	2010		4.0	7.9	8.6
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.14	0.26
Total Sulphur		U	2175	%	0.010	0.35	0.56
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	11
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.0	12
Sulphate (Total)		U	2430	%	0.010	0.29	1.2
Arsenic		M	2455	mg/kg	0.5	36	26
Cadmium		M	2455	mg/kg	0.10	0.50	0.40
Chromium		M	2455	mg/kg	0.5	25	27
Copper		M	2455	mg/kg	0.50	120	170
Mercury		M	2455	mg/kg	0.05	0.72	0.45
Nickel		M	2455	mg/kg	0.50	27	41
Lead		M	2455	mg/kg	0.50	940	1600
Selenium		M	2455	mg/kg	0.25	1.2	2.0
Zinc		M	2455	mg/kg	0.50	280	180
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	36	22
Total Organic Carbon		M	2625	%	0.20	21	13
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	58	7.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	140	36
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	370	140
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	330	150
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	610	250
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	150	56
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	1700	640
Naphthalene		M	2800	mg/kg	0.10	5.7	3.3
Acenaphthylene		N	2800	mg/kg	0.10	0.41	0.40
Acenaphthene		M	2800	mg/kg	0.10	8.8	2.8
Fluorene		M	2800	mg/kg	0.10	5.8	1.3

Results - Soil

Project: 14768 Castleton sidings

Client: E3P		Chemtest Job No.:				24-36173	24-36173
Quotation No.: Q23-31421		Chemtest Sample ID.:				1891298	1891299
		Client Sample ID.:				MG BF 111	MG BF 112
		Sample Type:				SOIL	SOIL
		Date Sampled:				05-Nov-2024	05-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
Phenanthrene		M	2800	mg/kg	0.10	58	17
Anthracene		M	2800	mg/kg	0.10	13	3.9
Fluoranthene		M	2800	mg/kg	0.10	71	25
Pyrene		M	2800	mg/kg	0.10	61	25
Benzo[a]anthracene		M	2800	mg/kg	0.10	30	13
Chrysene		M	2800	mg/kg	0.10	32	14
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	38	16
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	13	6.8
Benzo[a]pyrene		M	2800	mg/kg	0.10	32	13
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	18	8.7
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	4.7	3.9
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	18	8.6
Total Of 16 PAH's		N	2800	mg/kg	2.0	410	160
Total Phenols		M	2920	mg/kg	0.10	0.30	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW FW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters 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	Pentane extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
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-diphenylcarbazine.	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

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



Final Report

Report No.: 24-39281-1

Initial Date of Issue: 09-Dec-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings

Quotation No.: Q23-31421

Date Received: 29-Nov-2024

Order No.: 010146

Date Instructed: 29-Nov-2024

No. of Samples: 2

Turnaround (Wkdays): 5

Results Due: 05-Dec-2024

Date Approved: 09-Dec-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 - Leachate

Project: 14-768 Castleton Sidings

Client: E3P	Chemtest Job No.:				24-39281	24-39281
Quotation No.: Q23-31421	Chemtest Sample ID.:				1903188	1903189
	Client Sample ID.:				MGBF 113	MGBF114
	Sample Type:				SOIL	SOIL
	Date Sampled:				28-Nov-2024	28-Nov-2024
	Time Sampled:				12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD	
pH at 20C	U	1010	2:1		4.0	8.4
Cyanide (Total) Low-Level	N	1300	2:1	mg/l	0.0050	< 0.0050
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.77
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	0.61
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	4.6
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	1.3
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	0.57
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	1.4
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	5.7
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20
C2 Aliphatic TPH >C5-C6	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C6-C8	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aliphatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0
C2 Aromatic TPH >C5-C7	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C7-C8	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10
C2 Aromatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10
C2 Total Aromatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	2:1	µg/l	10	< 10
Benzene	U	1760	2:1	µg/l	1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	2:1	µg/l	1.0	< 1.0
Naphthalene	U	1800	2:1	µg/l	0.10	< 0.10
Acenaphthylene	U	1800	2:1	µg/l	0.10	< 0.10
Acenaphthene	U	1800	2:1	µg/l	0.10	< 0.10

Results - Leachate

Project: 14-768 Castleton Sidings

Client: E3P	Chemtest Job No.:					24-39281	24-39281
Quotation No.: Q23-31421	Chemtest Sample ID.:					1903188	1903189
	Client Sample ID.:					MGBF 113	MGBF114
	Sample Type:					SOIL	SOIL
	Date Sampled:					28-Nov-2024	28-Nov-2024
	Time Sampled:					12:00	12:00
Determinand	Accred.	SOP	Type	Units	LOD		
Fluorene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	2:1	µg/l	2.0	< 2.0	< 2.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:				24-39281	24-39281
Quotation No.: Q23-31421		Chemtest Sample ID.:				1903188	1903189
		Client Sample ID.:				MGBF 113	MGBF114
		Sample Type:				SOIL	SOIL
		Date Sampled:				28-Nov-2024	28-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				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
Moisture		N	2030	%	0.020	13	21
Soil Colour		N	2040		N/A	Black	Black
Other Material		N	2040		N/A	Stones and Roots	Stones and Wood
Soil Texture		N	2040		N/A	Sand	Loam
pH at 20C		M	2010		4.0	8.0	8.1
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.088	0.21
Total Sulphur		U	2175	%	0.010	1.3	0.54
Cyanide (Total)		M	2300	mg/kg	0.50	5.7	4.4
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	1.8	6.7
Sulphate (Total)		U	2430	%	0.010	0.46	1.3
Arsenic		M	2455	mg/kg	0.5	46	69
Cadmium		M	2455	mg/kg	0.10	0.74	1.2
Chromium		M	2455	mg/kg	0.5	57	32
Copper		M	2455	mg/kg	0.50	400	5400
Mercury		M	2455	mg/kg	0.05	2.2	20
Nickel		M	2455	mg/kg	0.50	84	60
Lead		M	2455	mg/kg	0.50	870	3200
Selenium		M	2455	mg/kg	0.25	2.2	3.2
Zinc		M	2455	mg/kg	0.50	310	980
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	19	48
Total Organic Carbon		M	2625	%	0.20	11	28
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	5.1
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	3.7	50
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	18	95
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	64	390
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	49	270
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	87	430
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	10	49
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	230	1300
Naphthalene		M	2800	mg/kg	0.10	1.1	3.2
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	0.86
Acenaphthene		M	2800	mg/kg	0.10	0.52	0.47
Fluorene		M	2800	mg/kg	0.10	0.50	1.1

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:				24-39281	24-39281
Quotation No.: Q23-31421		Chemtest Sample ID.:				1903188	1903189
		Client Sample ID.:				MGBF 113	MGBF114
		Sample Type:				SOIL	SOIL
		Date Sampled:				28-Nov-2024	28-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
Phenanthrene		M	2800	mg/kg	0.10	5.2	8.7
Anthracene		M	2800	mg/kg	0.10	1.1	2.2
Fluoranthene		M	2800	mg/kg	0.10	6.9	7.4
Pyrene		M	2800	mg/kg	0.10	6.4	6.5
Benzo[a]anthracene		M	2800	mg/kg	0.10	3.0	2.9
Chrysene		M	2800	mg/kg	0.10	3.5	3.0
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	3.7	3.3
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.4	1.2
Benzo[a]pyrene		M	2800	mg/kg	0.10	2.7	2.4
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.6	1.6
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	0.39
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	1.6	1.5
Total Of 16 PAH's		N	2800	mg/kg	2.0	39	47
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW FW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters 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	Pentane extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
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-diphenylcarbazine.	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

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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

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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



Final Report

Report No.: 24-40956-1

Initial Date of Issue: 20-Dec-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings

Quotation No.: Q23-31421

Date Received: 12-Dec-2024

Order No.: 010220

Date Instructed: 12-Dec-2024

No. of Samples: 2

Turnaround (Wkdays): 5

Results Due: 18-Dec-2024

Date Approved: 20-Dec-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: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:				24-40956	24-40956
Quotation No.: Q23-31421		Chemtest Sample ID.:				1909124	1909125
		Client Sample ID.:				MG BF 115	MG BF 116
		Sample Type:				SOIL	SOIL
		Date Sampled:				11-Dec-2024	11-Dec-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				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	12	12
Soil Colour		N	2040		N/A	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones
Soil Texture		N	2040		N/A	Sand	Sand
pH at 20C		M	2010		4.0	8.1	8.0
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.030	0.068
Total Sulphur		U	2175	%	0.010	0.14	0.13
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.0	2.0
Sulphate (Total)		U	2430	%	0.010	0.21	0.27
Arsenic		M	2455	mg/kg	0.5	8.8	24
Cadmium		M	2455	mg/kg	0.10	0.21	0.34
Chromium		M	2455	mg/kg	0.5	59	20
Copper		M	2455	mg/kg	0.50	42	70
Mercury		M	2455	mg/kg	0.05	0.17	0.14
Nickel		M	2455	mg/kg	0.50	20	17
Lead		M	2455	mg/kg	0.50	90	95
Selenium		M	2455	mg/kg	0.25	0.60	0.70
Zinc		M	2455	mg/kg	0.50	64	70
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	22	11
Total Organic Carbon		M	2625	%	0.20	13	6.4
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	7.9	9.7
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	15	26
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	19	110
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	30	89
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	52	150
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	5.5	20
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	130	400
Naphthalene		M	2800	mg/kg	0.10	0.47	2.4
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:				24-40956	24-40956
Quotation No.: Q23-31421		Chemtest Sample ID.:				1909124	1909125
		Client Sample ID.:				MG BF 115	MG BF 116
		Sample Type:				SOIL	SOIL
		Date Sampled:				11-Dec-2024	11-Dec-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
Phenanthrene		M	2800	mg/kg	0.10	1.2	6.1
Anthracene		M	2800	mg/kg	0.10	0.52	1.6
Fluoranthene		M	2800	mg/kg	0.10	2.1	8.5
Pyrene		M	2800	mg/kg	0.10	2.0	7.5
Benzo[a]anthracene		M	2800	mg/kg	0.10	1.5	4.1
Chrysene		M	2800	mg/kg	0.10	1.3	4.3
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	1.7	5.2
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.97	2.2
Benzo[a]pyrene		M	2800	mg/kg	0.10	1.3	4.0
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.2	2.7
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.73	0.74
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	1.2	2.7
Total Of 16 PAH's		N	2800	mg/kg	2.0	16	52
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

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-diphenylcarbazine.	
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.	

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Final Report

Report No.: 24-35916-1

Initial Date of Issue: 11-Nov-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings

Quotation No.: Q23-31421

Date Received: 05-Nov-2024

Order No.: 009924

Date Instructed: 05-Nov-2024

No. of Samples: 1

Turnaround (Wkdays): 5

Results Due: 11-Nov-2024

Date Approved: 11-Nov-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: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-35916		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1890274		
		Client Sample ID.:		MG 201		
		Sample Type:		SOIL		
		Date Sampled:		01-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		NEW-ASB		
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	31
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones and Roots
Soil Texture		N	2040		N/A	Loam
pH at 20C		M	2010		4.0	7.2
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.24
Total Sulphur		U	2175	%	0.010	0.46
Cyanide (Total)		M	2300	mg/kg	0.50	19
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.8
Sulphate (Total)		U	2430	%	0.010	1.4
Arsenic		M	2455	mg/kg	0.5	45
Cadmium		M	2455	mg/kg	0.10	1.0
Chromium		M	2455	mg/kg	0.5	24
Copper		M	2455	mg/kg	0.50	220
Mercury		M	2455	mg/kg	0.05	1.9
Nickel		M	2455	mg/kg	0.50	38
Lead		M	2455	mg/kg	0.50	330
Selenium		M	2455	mg/kg	0.25	1.2
Zinc		M	2455	mg/kg	0.50	180
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL #1	M	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL #1	M	2690	mg/kg	1.00	15
Aliphatic EPH >C16-C21 MC	EH_2D_AL #1	M	2690	mg/kg	2.00	9.1
Aliphatic EPH >C21-C35 MC	EH_2D_AL #1	M	2690	mg/kg	3.00	24
Aliphatic EPH >C35-C40 MC	EH_2D_AL #1	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL #1	M	2690	mg/kg	5.00	49
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL #1	N	2690	mg/kg	10.00	49
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-35916		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1890274		
		Client Sample ID.:		MG 201		
		Sample Type:		SOIL		
		Date Sampled:		01-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	32
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	95
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	240
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	120
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	45
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	490
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	530
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	540
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	580
Organic Matter		M	2625	%	0.40	28
Total Organic Carbon		M	2625	%	0.20	16
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	14
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	67
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	180
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	110
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	190
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	24
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	590
Dichlorodifluoromethane		U	2760	µg/kg	1.0	< 1.0
Chloromethane		M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride		M	2760	µg/kg	1.0	< 1.0
Bromomethane		M	2760	µg/kg	20	< 20
Chloroethane		U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane		M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene		M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene		M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane		M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene		M	2760	µg/kg	1.0	< 1.0
Bromochloromethane		U	2760	µg/kg	5.0	< 5.0
Trichloromethane		M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane		M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane		M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene		U	2760	µg/kg	1.0	< 1.0
Benzene		M	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane		M	2760	µg/kg	2.0	< 2.0

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-35916		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1890274		
		Client Sample ID.:		MG 201		
		Sample Type:		SOIL		
		Date Sampled:		01-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Trichloroethene		N	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane		M	2760	µg/kg	1.0	< 1.0
Dibromomethane		M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane		M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene		N	2760	µg/kg	10	< 10
Toluene		M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene		N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane		M	2760	µg/kg	10	< 10
Tetrachloroethene		M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane		U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane		U	2760	µg/kg	10	< 10
1,2-Dibromoethane		M	2760	µg/kg	5.0	< 5.0
Chlorobenzene		M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane		M	2760	µg/kg	2.0	< 2.0
Ethylbenzene		M	2760	µg/kg	1.0	3.3
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0
Styrene		M	2760	µg/kg	1.0	< 1.0
Tribromomethane		U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene		M	2760	µg/kg	1.0	< 1.0
Bromobenzene		M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane		N	2760	µg/kg	50	< 50
N-Propylbenzene		U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene		M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene		M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene		U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene		U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene		M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene		U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene		M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene		U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene		M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene		U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene		M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene		M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene		N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene		U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-35916		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1890274		
		Client Sample ID.:		MG 201		
		Sample Type:		SOIL		
		Date Sampled:		01-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
N-Nitrosodimethylamine		M	2790	mg/kg	0.50	< 0.50
Phenol		M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol		N	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether		M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene		M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene		N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene		M	2790	mg/kg	0.50	< 0.50
2-Methylphenol		M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether		M	2790	mg/kg	0.50	< 0.50
Hexachloroethane		N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine		M	2790	mg/kg	0.50	< 0.50
4-Methylphenol		M	2790	mg/kg	0.50	< 0.50
Nitrobenzene		N	2790	mg/kg	0.50	< 0.50
Isophorone		M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol		N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol		N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane		M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol		N	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene		M	2790	mg/kg	0.50	< 0.50
Naphthalene		M	2790	mg/kg	0.50	2.2
4-Chloroaniline		N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene		M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol		N	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene		M	2790	mg/kg	0.50	1.0
4-Nitrophenol		N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol		N	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol		N	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene		M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline		N	2790	mg/kg	0.50	< 0.50
Acenaphthylene		M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate		M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene		N	2790	mg/kg	0.50	< 0.50
Acenaphthene		M	2790	mg/kg	0.50	3.6
3-Nitroaniline		N	2790	mg/kg	0.50	< 0.50
Dibenzofuran		M	2790	mg/kg	0.50	1.5
4-Chlorophenylphenylether		M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene		N	2790	mg/kg	0.50	< 0.50
Fluorene		M	2790	mg/kg	0.50	1.8
Diethyl Phthalate		M	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-35916		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1890274		
		Client Sample ID.:		MG 201		
		Sample Type:		SOIL		
		Date Sampled:		01-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
4-Nitroaniline		N	2790	mg/kg	0.50	< 0.50
Azobenzene		M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether		M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene		M	2790	mg/kg	0.50	< 0.50
Phenanthrene		M	2790	mg/kg	0.50	8.5
Anthracene		M	2790	mg/kg	0.50	2.5
Carbazole		M	2790	mg/kg	0.50	0.84
Di-N-Butyl Phthalate		N	2790	mg/kg	0.50	< 0.50
Fluoranthene		M	2790	mg/kg	0.50	15
Pyrene		M	2790	mg/kg	0.50	14
Butylbenzyl Phthalate		N	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene		M	2790	mg/kg	0.50	6.7
Chrysene		M	2790	mg/kg	0.50	7.1
Bis(2-Ethylhexyl)Phthalate		N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate		N	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene		M	2790	mg/kg	0.50	6.9
Benzo[k]fluoranthene		M	2790	mg/kg	0.50	2.5
Benzo[a]pyrene		M	2790	mg/kg	0.50	5.0
Indeno(1,2,3-c,d)Pyrene		N	2790	mg/kg	0.50	2.2
Dibenz(a,h)Anthracene		N	2790	mg/kg	0.50	0.84
Benzo[g,h,i]perylene		M	2790	mg/kg	0.50	2.6
Naphthalene		M	2800	mg/kg	0.10	3.9
Acenaphthylene		N	2800	mg/kg	0.10	0.59
Acenaphthene		M	2800	mg/kg	0.10	4.7
Fluorene		M	2800	mg/kg	0.10	4.5
Phenanthrene		M	2800	mg/kg	0.10	14
Anthracene		M	2800	mg/kg	0.10	4.7
Fluoranthene		M	2800	mg/kg	0.10	24
Pyrene		M	2800	mg/kg	0.10	21
Benzo[a]anthracene		M	2800	mg/kg	0.10	10
Chrysene		M	2800	mg/kg	0.10	11
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	12
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	4.5
Benzo[a]pyrene		M	2800	mg/kg	0.10	8.7
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	5.7
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	1.6
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	5.9
Total Of 16 PAH's		N	2800	mg/kg	2.0	140
Total Phenols		M	2920	mg/kg	0.10	< 0.10

Test Methods

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-diphenylcarbazine.	
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	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8–C10 Aromatics: >C5–C7,>C7–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS	
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

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Analytical Report Number : 24-049982

Project / Site name:	Castleton Sidings	Samples received on:	24/10/2024
Your job number:	14-768	Samples instructed on/ Analysis started on:	25/10/2024
Your order number:	009823	Analysis completed by:	08/11/2024
Report Issue Number:	1	Report issued on:	08/11/2024
Samples Analysed:	6 soil samples		

Signed:



Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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: 24-049982
Project / Site name: Castleton Sidings
Your Order No: 009823

Lab Sample Number				359554	359555	359556	359557	359558
Sample Reference				HS1 NORTH	HS1 EAST	HS1 SOUTH	HS1 WEST	HS1 BASE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				21/10/2024	21/10/2024	21/10/2024	21/10/2024	21/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

Stone Content	%	0.1	NONE	< 0.1	< 0.1	29.6	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	16	16	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.1	3.4	2.1	0.4	1.4
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Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	1.996	1.815	1.092	-	1.031
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.013	0.028	0.018	-	0.008
Elemental Mercury	mg/kg	0.005	NONE	0.013	0.028	< 0.005	-	0.008

F1 - Water soluble	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	-	< 0.005
F2 - Weak acid	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	-	< 0.005
F3 - Organo- complexed	mg/kg	0.005	NONE	0.013	0.028	0.018	-	0.008
F4 - Strongly complexed	mg/kg	0.005	NONE	0.005	0.192	< 0.005	-	0.005
F5 - Mineral bound	mg/kg	0.005	NONE	1.994	1.809	1.09	-	1.03

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



Analytical Report Number: 24-049982
Project / Site name: Castleton Sidings
Your Order No: 009823

Lab Sample Number				359559
Sample Reference				HS1 ARISINGS
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				21/10/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	15
Total mass of sample received	kg	0.1	NONE	0.8

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	8.3
----------------------------------	-------	-----	--------	-----

Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	4.687
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.014
Elemental Mercury	mg/kg	0.005	NONE	0.006

F1 - Water soluble	mg/kg	0.005	NONE	< 0.005
F2 - Weak acid	mg/kg	0.005	NONE	< 0.005
F3 - Organo- complexed	mg/kg	0.005	NONE	0.014
F4 - Strongly complexed	mg/kg	0.005	NONE	0.006
F5 - Mineral bound	mg/kg	0.005	NONE	4.686

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



Analytical Report Number : 24-049982
Project / Site name: Castleton Sidings

* 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 *
359554	HS1 NORTH	None Supplied	None Supplied	Brown sand with coal and vegetation
359555	HS1 EAST	None Supplied	None Supplied	Brown sand with coal and vegetation
359556	HS1 SOUTH	None Supplied	None Supplied	Brown sand with coal and vegetation
359557	HS1 WEST	None Supplied	None Supplied	Brown sand with coal
359558	HS1 BASE	None Supplied	None Supplied	Brown sand with coal and vegetation
359559	HS1 ARISINGS	None Supplied	None Supplied	Brown sand with coal and vegetation

Analytical Report Number : 24-049982
Project / Site name: Castleton Sidings

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Speciated Mercury in soil by PSA Millenium	Determination of Speciated Mercury in soil by PSA Millenium	In-house method	L085B	D	NONE

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

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

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Analytical Report Number : 24-051134

Project / Site name:	Castleton Sidings, Heywood	Samples received on:	30/10/2024
Your job number:	14 768	Samples instructed on/ Analysis started on:	30/10/2024
Your order number:	009891	Analysis completed by:	13/11/2024
Report Issue Number:	1	Report issued on:	14/11/2024
Samples Analysed:	3 soil samples		


Signed:

Matthew O'Connell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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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: 24-051134
 Project / Site name: Castleton Sidings, Heywood
 Your Order No: 009891

Lab Sample Number	365532	365533	365534
Sample Reference	MG-BF-104	MG-BF-109	MG-BF-110
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	24.6	33.5	18
Moisture Content	%	0.01	NONE	22	25	29
Total mass of sample received	kg	0.1	NONE	0.3	0.2	0.3

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	3.8	9.9	15
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Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	2.163	6.333	12.2
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.136	0.144	0.182
Elemental Mercury	mg/kg	0.005	NONE	0.261	0.496	0.852

F1 - Water soluble	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005
F2 - Weak acid	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005
F3 - Organo- complexed	mg/kg	0.005	NONE	0.136	0.144	0.182
F4 - Strongly complexed	mg/kg	0.005	NONE	0.261	0.496	0.852
F5 - Mineral bound	mg/kg	0.005	NONE	2.16	6.33	12.19

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

Analytical Report Number : 24-051134

Project / Site name: Castleton Sidings, Heywood

* 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 *
365532	MG-BF-104	None Supplied	None Supplied	Brown loam and gravel with clinker and stones
365533	MG-BF-109	None Supplied	None Supplied	Brown loam and gravel with clinker and stones
365534	MG-BF-110	None Supplied	None Supplied	Brown loam and gravel with clinker and stones

Analytical Report Number : 24-051134
Project / Site name: Castleton Sidings, Heywood

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Speciated Mercury in soil by PSA Millenium	Determination of Speciated Mercury in soil by PSA Millenium	In-house method	L085B	D	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 24-051134

Project / Site name: Castleton Sidings, Heywood

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
MG-BF-104	N/A	S	365532	a	Metals in soil by ICP-OES	L038B	a
MG-BF-104	N/A	S	365532	a	Speciated Mercury in soil by PSA Millenium	L085B	a
MG-BF-109	N/A	S	365533	a	Metals in soil by ICP-OES	L038B	a
MG-BF-109	N/A	S	365533	a	Speciated Mercury in soil by PSA Millenium	L085B	a
MG-BF-110	N/A	S	365534	a	Metals in soil by ICP-OES	L038B	a
MG-BF-110	N/A	S	365534	a	Speciated Mercury in soil by PSA Millenium	L085B	a

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Analytical Report Number : 24-052735

Project / Site name:	Castleton Sidings	Samples received on:	08/11/2024
Your job number:	14-768	Samples instructed on/ Analysis started on:	08/11/2024
Your order number:	009986	Analysis completed by:	22/11/2024
Report Issue Number:	1	Report issued on:	22/11/2024
Samples Analysed:	4 soil samples		


Signed:

Trevor Hill
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 24-052735
 Project / Site name: Castleton Sidings
 Your Order No: 009986

Lab Sample Number				373566	373567	373568	373569
Sample Reference				MERCURY 111	MERCURY 112	MERCURY 113	MERCURY 114
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	40.8
Moisture Content	%	0.01	NONE	18	16	17	11
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.6	0.7

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.9	< 0.3	< 0.3	< 0.3
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Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	1.492	-	-	-
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.029	-	-	-
Elemental Mercury	mg/kg	0.005	NONE	0.22	-	-	-

F1 - Water soluble	mg/kg	0.005	NONE	< 0.005	-	-	-
F2 - Weak acid	mg/kg	0.005	NONE	< 0.005	-	-	-
F3 - Organo- complexed	mg/kg	0.005	NONE	0.029	-	-	-
F4 - Strongly complexed	mg/kg	0.005	NONE	0.22	-	-	-
F5 - Mineral bound	mg/kg	0.005	NONE	1.489	-	-	-

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

Analytical Report Number : 24-052735

Project / Site name: Castleton Sidings

* 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 *
373566	MERCURY 111	None Supplied	None Supplied	Brown sand with gravel
373567	MERCURY 112	None Supplied	None Supplied	Brown sand with gravel
373568	MERCURY 113	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
373569	MERCURY 114	None Supplied	None Supplied	Brown sand with gravel and stones

Analytical Report Number : 24-052735

Project / Site name: Castleton Sidings

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Speciated Mercury in soil by PSA Millenium	Determination of Speciated Mercury in soil by PSA Millenium	In-house method	L085B	D	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 24-052735

Project / Site name: Castleton Sidings

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
MERCURY 111	N/A	S	373566	a	Metals in soil by ICP-OES	L038B	a
MERCURY 111	N/A	S	373566	a	Speciated Mercury in soil by PSA Millenium	L085B	a
MERCURY 112	N/A	S	373567	a	Metals in soil by ICP-OES	L038B	a
MERCURY 113	N/A	S	373568	a	Metals in soil by ICP-OES	L038B	a
MERCURY 114	N/A	S	373569	a	Metals in soil by ICP-OES	L038B	a

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Analytical Report Number : 24-056801

Replaces Analytical Report Number: 24-056801, issue no. 1
Client references/information amended.
Sample ID Amended for sample 395126 as per clients request

Project / Site name:	Castleton Sidings	Samples received on:	29/11/2024
Your job number:	14-768	Samples instructed on/ Analysis started on:	29/11/2024
Your order number:	010147	Analysis completed by:	12/12/2024
Report Issue Number:	2	Report issued on:	18/12/2024
Samples Analysed:	2 soil samples		



Signed:

Arslaan Saleem
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-056801
Project / Site name: Castleton Sidings
Your Order No: 010147

Lab Sample Number				395126	395127
Sample Reference				MERCURY 116	MERCURY 115
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				None Supplied	None Supplied
Date Sampled				28/11/2024	28/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	48.7	58.8
Moisture Content	%	0.01	NONE	18	18
Total mass of sample received	kg	0.1	NONE	0.7	0.7

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2	13
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Speciated Mercury (Dry Weight)

Inorganic Mercury	mg/kg	0.005	NONE	2.931	12.64
Organo-Mercury Species (including Methyl Hg)	mg/kg	0.005	NONE	0.353	0.241
Elemental Mercury	mg/kg	0.005	NONE	0.159	0.301

F1 - Water soluble	mg/kg	0.005	NONE	< 0.005	< 0.005
F2 - Weak acid	mg/kg	0.005	NONE	< 0.005	< 0.005
F3 - Organo- complexed	mg/kg	0.005	NONE	0.353	0.241
F4 - Strongly complexed	mg/kg	0.005	NONE	0.159	0.301
F5 - Mineral bound	mg/kg	0.005	NONE	2.929	12.64

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

Analytical Report Number : 24-056801

Project / Site name: Castleton Sidings

* 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 *
395126	MERCURY 116	None Supplied	None Supplied	Brown gravelly sand with stones
395127	MERCURY 115	None Supplied	None Supplied	Brown gravelly sand with stones

Analytical Report Number : 24-056801

Project / Site name: Castleton Sidings

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Speciated Mercury in soil by PSA Millenium	Determination of Speciated Mercury in soil by PSA Millenium	In-house method	L085B	D	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

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Analytical Report Number : 24-059202

Project / Site name:	Castleton Sidings	Samples received on:	12/12/2024
Your job number:	14 768	Samples instructed on/ Analysis started on:	12/12/2024
Your order number:	010221	Analysis completed by:	18/12/2024
Report Issue Number:	1	Report issued on:	18/12/2024
Samples Analysed:	2 soil samples		


Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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



Analytical Report Number: 24-059202
Project / Site name: Castleton Sidings
Your Order No: 010221

Lab Sample Number				406902	406903
Sample Reference				MERCURY 117	MERCURY 118
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				None Supplied	None Supplied
Date Sampled				11/12/2024	11/12/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	36.4	9.8
Moisture Content	%	0.01	NONE	14	12
Total mass of sample received	kg	0.1	NONE	0.7	0.6

Heavy Metals / Metalloids

Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-059202
Project / Site name: Castleton Sidings

* 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 *
406902	MERCURY 117	None Supplied	None Supplied	Brown loam with gravel and stones
406903	MERCURY 118	None Supplied	None Supplied	Brown loam and sand with gravel and stones



Analytical Report Number : 24-059202
Project / Site name: Castleton Sidings

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS

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

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



Final Report

Report No.: 24-36556-1

Initial Date of Issue: 14-Nov-2024

Re-Issue Details:

Client E3P

Client Address: Taylor Road
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Urmston
Manchester
M41 7JQ

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

Project 14-768 Castleton Sidings - SW 6F

Quotation No.: Q23-31421

Date Received: 08-Nov-2024

Order No.: 009982

Date Instructed: 08-Nov-2024

No. of Samples: 1

Turnaround (Wkdays): 5

Results Due: 14-Nov-2024

Date Approved: 14-Nov-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: 14-768 Castleton Sidings - SW 6F

Client: E3P		Chemtest Job No.:		24-36556		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1892824		
		Client Sample ID.:		SW 6F 101		
		Sample Type:		SOIL		
		Date Sampled:		07-Nov-2024		
		Time Sampled:		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	5.6
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones and Roots
Soil Texture		N	2040		N/A	Sand
pH at 20C		M	2010		4.0	> 12.0
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.21
Total Sulphur		U	2175	%	0.010	0.13
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	5.5
Sulphate (Total)		U	2430	%	0.010	0.32
Arsenic		M	2455	mg/kg	0.5	5.4
Cadmium		M	2455	mg/kg	0.10	0.44
Chromium		M	2455	mg/kg	0.5	29
Copper		M	2455	mg/kg	0.50	29
Mercury		M	2455	mg/kg	0.05	0.41
Nickel		M	2455	mg/kg	0.50	18
Lead		M	2455	mg/kg	0.50	67
Selenium		M	2455	mg/kg	0.25	0.41
Zinc		M	2455	mg/kg	0.50	64
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Organic Matter		M	2625	%	0.40	4.3
Total Organic Carbon		M	2625	%	0.20	2.5
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	6.8
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	12
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	28
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	15
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	110
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	44
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	210
Naphthalene		M	2800	mg/kg	0.10	0.70
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	0.38
Fluorene		M	2800	mg/kg	0.10	0.30

Results - Soil

Project: 14-768 Castleton Sidings - SW 6F

Client: E3P		Chemtest Job No.:		24-36556		
Quotation No.: Q23-31421		Chemtest Sample ID.:		1892824		
		Client Sample ID.:		SW 6F 101		
		Sample Type:		SOIL		
		Date Sampled:		07-Nov-2024		
		Time Sampled:		12:00		
		Asbestos Lab:		DURHAM		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Phenanthrene		M	2800	mg/kg	0.10	2.8
Anthracene		M	2800	mg/kg	0.10	0.64
Fluoranthene		M	2800	mg/kg	0.10	3.5
Pyrene		M	2800	mg/kg	0.10	3.3
Benzo[a]anthracene		M	2800	mg/kg	0.10	1.5
Chrysene		M	2800	mg/kg	0.10	1.8
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	2.2
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.75
Benzo[a]pyrene		M	2800	mg/kg	0.10	1.9
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.2
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	1.4
Total Of 16 PAH's		N	2800	mg/kg	2.0	22
Total Phenols		M	2920	mg/kg	0.10	0.10

Test Methods

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-diphenylcarbazine.	
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

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

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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



Final Report

Report No.: 24-37744-1

Initial Date of Issue: 26-Nov-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings - SW 6f 102 -
103

Quotation No.: Q23-31421

Date Received: 18-Nov-2024

Order No.: 010048

Date Instructed: 18-Nov-2024

No. of Samples: 2

Turnaround (Wkdays): 5

Results Due: 22-Nov-2024

Date Approved: 26-Nov-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: 14-768 Castleton Sidings - SW 6f 102 - 103

Client: E3P		Chemtest Job No.:				24-37744	24-37744
Quotation No.: Q23-31421		Chemtest Sample ID.:				1897050	1897051
		Client Sample ID.:				SW 6F 102	SW 6F 103
		Sample Type:				SOIL	SOIL
		Date Sampled:				15-Nov-2024	15-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				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	1.1	1.5
Soil Colour		N	2040		N/A	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones
Soil Texture		N	2040		N/A	Other	Other
pH at 20C		M	2010		4.0	10.9	11.3
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.23	0.13
Total Sulphur		U	2175	%	0.010	0.12	0.10
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	1.9	2.0
Sulphate (Total)		U	2430	%	0.010	0.35	0.26
Arsenic		M	2455	mg/kg	0.5	4.6	7.2
Cadmium		M	2455	mg/kg	0.10	0.25	0.24
Chromium		M	2455	mg/kg	0.5	18	18
Copper		M	2455	mg/kg	0.50	19	36
Mercury		M	2455	mg/kg	0.05	0.05	0.13
Nickel		M	2455	mg/kg	0.50	18	16
Lead		M	2455	mg/kg	0.50	21	56
Selenium		M	2455	mg/kg	0.25	0.41	0.40
Zinc		M	2455	mg/kg	0.50	63	83
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	1.1	4.7
Total Organic Carbon		M	2625	%	0.20	0.61	2.7
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	5.3	< 1.0
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	6.9	< 1.0
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	6.7	< 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	U	2670	mg/kg	10	19	< 10
Naphthalene		M	2800	mg/kg	0.10	0.11	0.14
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	0.45	0.35

Results - Soil

Project: 14-768 Castleton Sidings - SW 6f 102 - 103

Client: E3P		Chemtest Job No.:				24-37744	24-37744
Quotation No.: Q23-31421		Chemtest Sample ID.:				1897050	1897051
		Client Sample ID.:				SW 6F 102	SW 6F 103
		Sample Type:				SOIL	SOIL
		Date Sampled:				15-Nov-2024	15-Nov-2024
		Time Sampled:				12:00	12:00
		Asbestos Lab:				DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
Anthracene		M	2800	mg/kg	0.10	0.14	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.58	0.60
Pyrene		M	2800	mg/kg	0.10	0.52	0.58
Benzo[a]anthracene		M	2800	mg/kg	0.10	0.24	< 0.10
Chrysene		M	2800	mg/kg	0.10	0.23	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	2.3	< 2.0
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

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-diphenylcarbazine.	
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.	

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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.

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Sample Deviation Codes

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- C - Sample not received in appropriate containers
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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
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Report Information

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HWOL Acronym System

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EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
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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

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customerservices@chemtest.com



Final Report

Report No.: 24-41129-1

Initial Date of Issue: 23-Dec-2024

Re-Issue Details:

Client E3P

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

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

Project 14-768 Castleton Sidings

Quotation No.: Q23-31421

Date Received: 13-Dec-2024

Order No.: 010242

Date Instructed: 13-Dec-2024

No. of Samples: 3

Turnaround (Wkdays): 5

Results Due: 19-Dec-2024

Date Approved: 23-Dec-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: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:				24-41129	24-41129	24-41129
Quotation No.: Q23-31421		Chemtest Sample ID.:				1909808	1909809	1909810
		Client Sample ID.:				SW 6F 104	SW 6F 105	SW 6F 106
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				12-Dec-2024	12-Dec-2024	12-Dec-2024
		Time Sampled:				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	No Asbestos Detected
Moisture		N	2030	%	0.020	6.7	9.5	8.4
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones, Roots and	Stones, Roots, Wood and	Stones, Roots and
Soil Texture		N	2040		N/A	Sand	Sand	Sand
pH at 20C		M	2010		4.0	12.0	11.5	11.1
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.17	0.32	0.98
Total Sulphur		U	2175	%	0.010	0.080	0.24	0.31
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.3	1.5	3.5
Sulphate (Total)		U	2430	%	0.010	0.44	0.53	0.72
Arsenic		M	2455	mg/kg	0.5	15	18	25
Cadmium		M	2455	mg/kg	0.10	0.75	0.76	0.76
Chromium		M	2455	mg/kg	0.5	30	31	45
Copper		M	2455	mg/kg	0.50	100	120	130
Mercury		M	2455	mg/kg	0.05	0.47	0.61	1.4
Nickel		M	2455	mg/kg	0.50	28	31	48
Lead		M	2455	mg/kg	0.50	240	240	240
Selenium		M	2455	mg/kg	0.25	0.75	0.81	1.2
Zinc		M	2455	mg/kg	0.50	110	170	230
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	7.6	12	7.4
Total Organic Carbon		M	2625	%	0.20	4.4	7.1	4.3
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	2.1
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	2.1	4.7	8.7
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	10	24	50
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	13	21	50
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	19	69	110
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	3.1	11	16
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	47	130	230
Naphthalene		M	2800	mg/kg	0.10	0.64	0.96	0.54
Acenaphthylene		N	2800	mg/kg	0.10	0.13	0.13	0.10
Acenaphthene		M	2800	mg/kg	0.10	0.12	0.69	0.41

Results - Soil

Project: 14-768 Castleton Sidings

Client: E3P		Chemtest Job No.:		24-41129	24-41129	24-41129
Quotation No.: Q23-31421		Chemtest Sample ID.:		1909808	1909809	1909810
		Client Sample ID.:		SW 6F 104	SW 6F 105	SW 6F 106
		Sample Type:		SOIL	SOIL	SOIL
		Date Sampled:		12-Dec-2024	12-Dec-2024	12-Dec-2024
		Time Sampled:		12:00	12:00	12:00
		Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Fluorene		M	2800	mg/kg	0.10	0.36
Phenanthrene		M	2800	mg/kg	0.10	3.0
Anthracene		M	2800	mg/kg	0.10	1.1
Fluoranthene		M	2800	mg/kg	0.10	4.8
Pyrene		M	2800	mg/kg	0.10	5.5
Benzo[a]anthracene		M	2800	mg/kg	0.10	3.4
Chrysene		M	2800	mg/kg	0.10	3.7
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	5.0
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.8
Benzo[a]pyrene		M	2800	mg/kg	0.10	5.1
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	3.8
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.69
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	4.5
Total Of 16 PAH's		N	2800	mg/kg	2.0	44
Total Phenols		M	2920	mg/kg	0.10	< 0.10

Test Methods

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-diphenylcarbazine.	
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*; Dibenzo[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 Heras Fencing and Site Signage



Plate 2 Tree/Vegetation Stockpile



Plate 3 Waste Materials Awaiting Removal



Plate 4 Vegetation Clearance Stockpile



Plate 5 Stockpile Containing Visible ACM Fragments Awaiting Handpicking



Plate 6 Stockpiled Visual/Olfactory Impacted Arisings



Plate 7 PID Screening of Odorous Soils



Plate 8 PID Screening of Odorous Soils



Plate 9 Hotspot 1 (WS112) Southern and Western Walls



Plate 10 Oversize Material Stockpiled for Crushing



Plate 11 Crusher Producing 6F2



Plate 12 Crush/6F2 Stockpile



Plate 13 Obstruction Being Removed



Plate 14 Excavation of Organic Deposits/Peat



Plate 15 Stockpiled Organic Material/Peat in POS Area



Plate 16 Stockpiled Organic Material/Peat in POS Area



Plate 17 Made Ground Turnover



Plate 18 Made Ground Turnover



Plate 19 Upfill of Made Ground



Plate 20 Paused Earthworks During Wet Weather



Plate 21 Placement of Final Layer (Formation)



Plate 22 Placement of Pile Mat



Plate 23 Placement of Pile Mat



Plate 24 Placement of Made Ground



Plate 25 Replacement of Made Ground



Plate 26 Timber For Off Site Disposal



Plate 27 Scrap Metal For Off Site Disposal



Plate 28 Vegetation Chippings for Off-Site Disposal



Plate 29 Segregated Soil (LHS) and Green Waste (RHS) from Site Strip



APPENDIX VI

GEO TECHNICAL TESTING RESULTS



TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 24005/310
Date of Issue 29 November 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
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Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

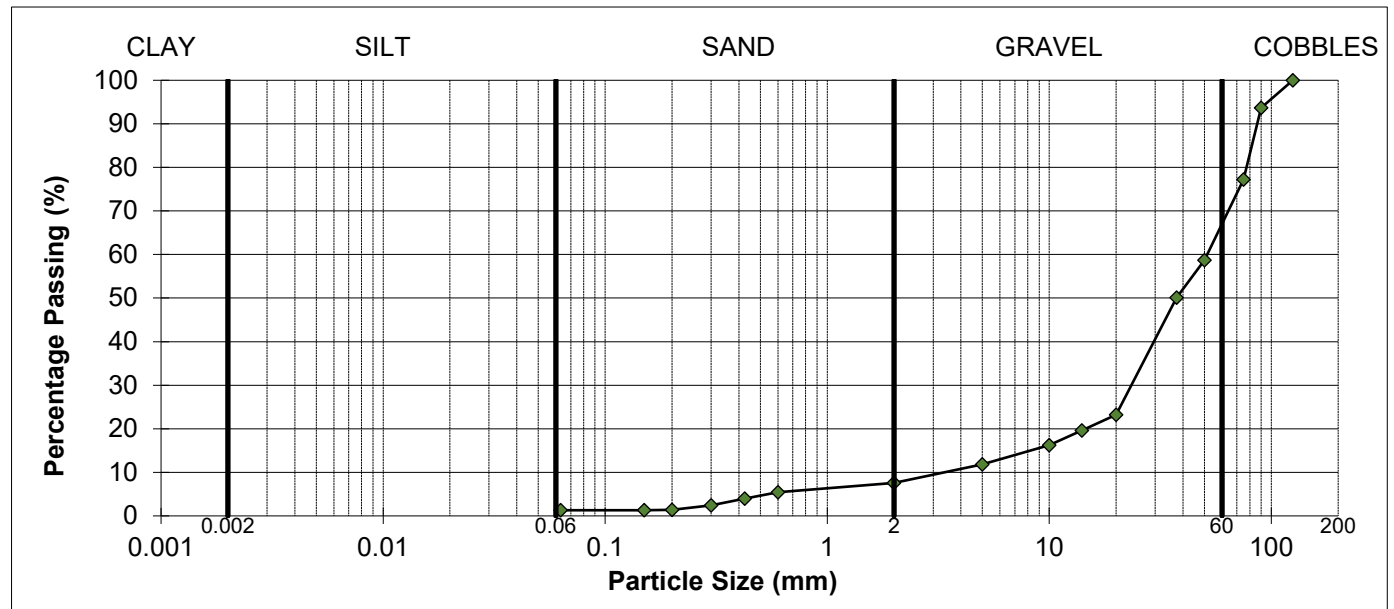
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/310

SAMPLE LABEL	SW 6F 101	DATE SAMPLED	Not advised
LAB SAMPLE No	596201	DATE RECEIVED	07-Nov-24
DATE TESTED	15-Nov-24	SAMPLED BY	Client

MATERIAL	Crush
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	12	10-45
90	94	80-100	2	8	
75	77	65-100	0.6	5	0-25
50	59		0.425	4	
37.5	50	45-100	0.3	2	
20	23		0.2	1	
14	20		0.15	1	
10	16	15-60	0.063	1	0-12



SOIL FRACTIONS			
COBBLES	32%	SAND	6%
GRAVEL	60%	SILT / CLAY	1%
As received water content		6.4%	

REMARKS

Sample complies with the advised grading specification for a 6F2 material (SHW, Feb 2017)

SIGNED 
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 29-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 24005/319
Date of Issue 11 December 2024
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

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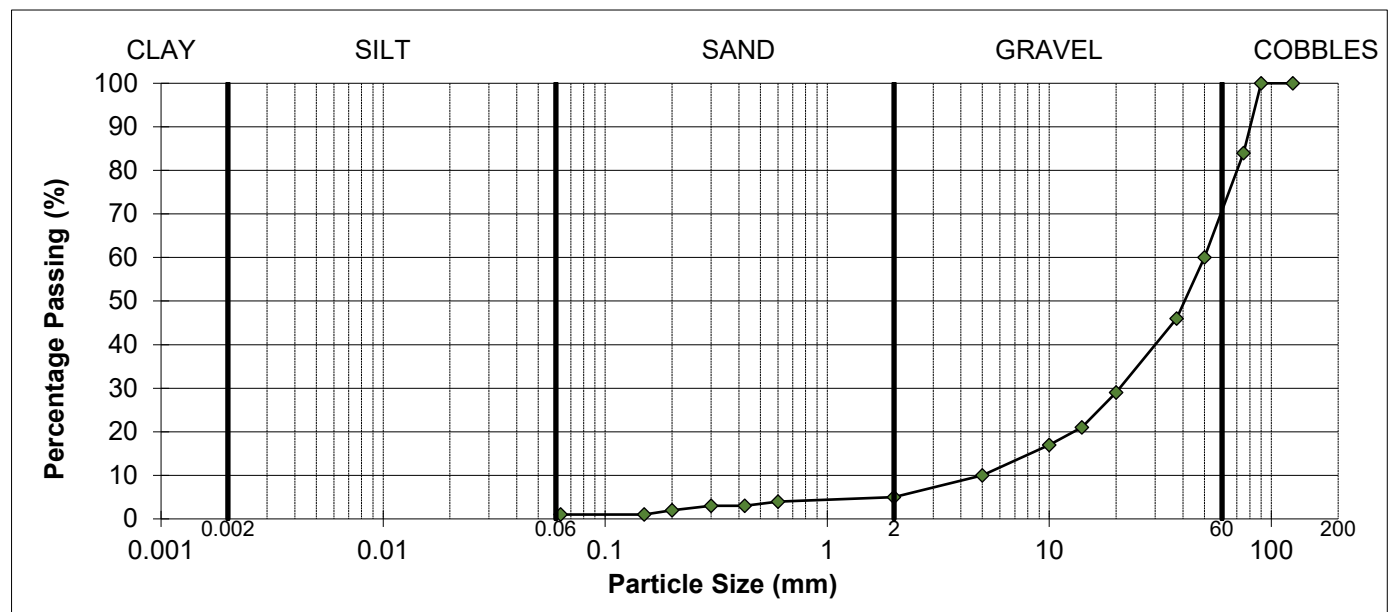
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/319

SAMPLE LABEL	SW 6F2 102	DATE SAMPLED	Not advised
LAB SAMPLE No	600201	DATE RECEIVED	20-Nov-24
DATE TESTED	21-Nov-24	SAMPLED BY	Client

MATERIAL	Recycled Crush
ADVISED SOURCE	Site won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	10	10-45
90	100	80-100	2	5	
75	84	65-100	0.6	4	0-25
50	60		0.425	3	
37.5	46	45-100	0.3	3	
20	29		0.2	2	
14	21		0.15	1	
10	17	15-60	0.063	1	0-12



SOIL FRACTIONS			
COBBLES	28%	SAND	4%
GRAVEL	67%	SILT / CLAY	1%
As received water content		6.0%	

REMARKS

Sample complies with the advised grading specification for a 6F2 material (SHW, Feb. 2017)

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

11-Dec-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

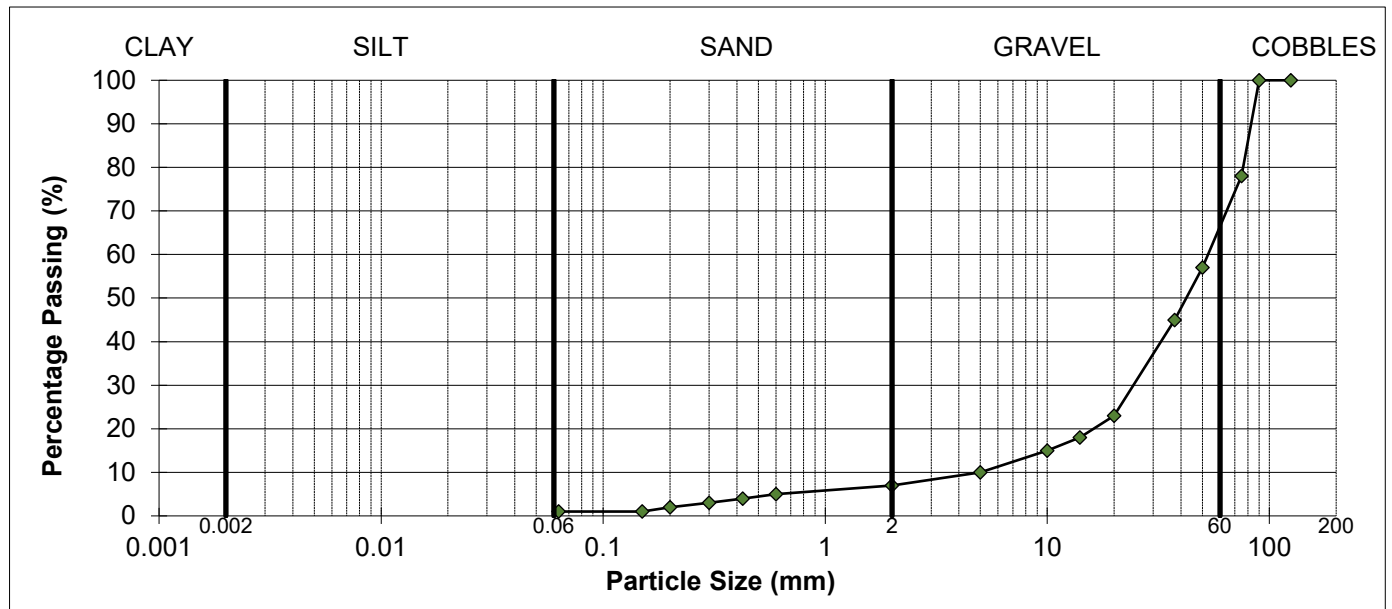
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/319

SAMPLE LABEL	SW 6F2 103	DATE SAMPLED	Not advised
LAB SAMPLE No	600201	DATE RECEIVED	20-Nov-24
DATE TESTED	21-Nov-24	SAMPLED BY	Client

MATERIAL	Recycled Crush
ADVISED SOURCE	Site won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	10	10-45
90	100	80-100	2	7	
75	78	65-100	0.6	5	0-25
50	57		0.425	4	
37.5	45	45-100	0.3	3	
20	23		0.2	2	
14	18		0.15	1	
10	15	15-60	0.063	1	0-12



SOIL FRACTIONS			
COBBLES	33%	SAND	6%
GRAVEL	61%	SILT / CLAY	1%
As received water content		5.8%	

REMARKS

Sample complies with the advised grading specification for a 6F2 material (SHW, Feb. 2017)

SIGNED 

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

11-Dec-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 25005/13
Date of Issue 20 January 2025
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

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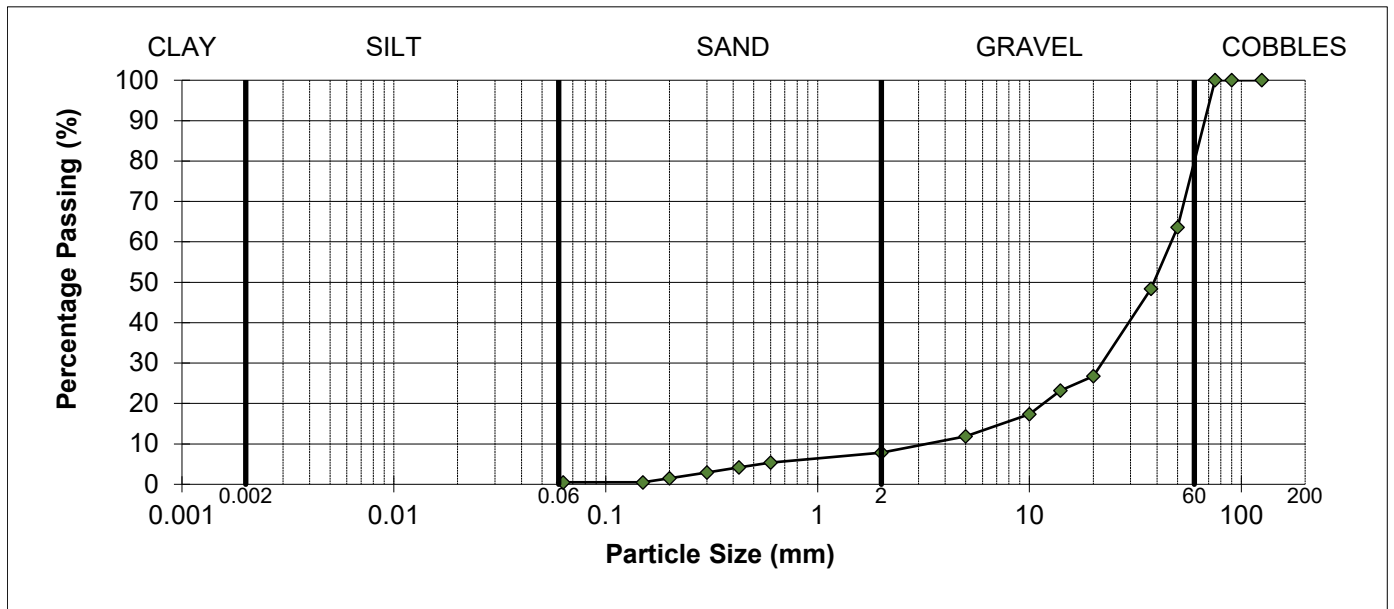
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/13

SAMPLE LABEL	SW 6F 104	DATE SAMPLED	12-Dec-24
LAB SAMPLE No	618201	DATE RECEIVED	18-Dec-24
DATE TESTED	19-Dec-24	SAMPLED BY	Client

MATERIAL	Crush
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	12	10-45
90	100	80-100	2	8	
75	100	65-100	0.6	5	0-25
50	64		0.425	4	
37.5	48	45-100	0.3	3	
20	27		0.2	2	
14	23		0.15	1	
10	17	15-60	0.063	1	0-12



REMARKS

Sample complies with the advised grading specification for a 6F2 material (SHW, Feb. 2017)

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

20-Jan-25

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

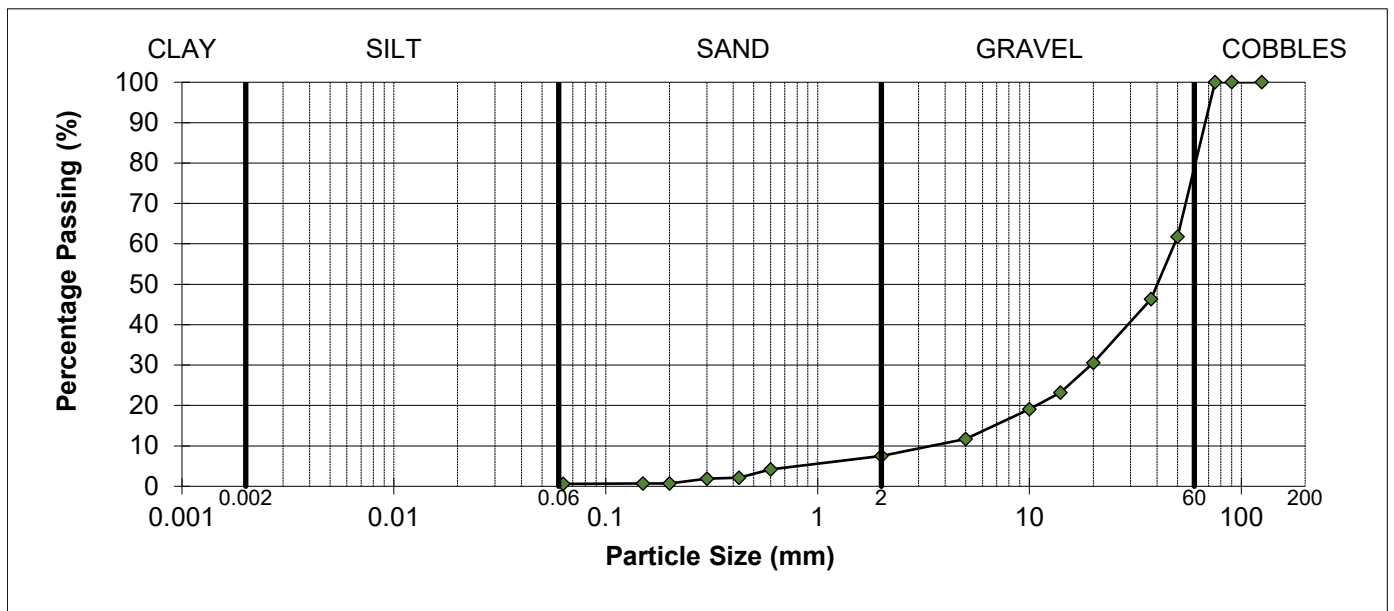
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/13

SAMPLE LABEL	SW 6F 105	DATE SAMPLED	12-Dec-24
LAB SAMPLE No	618202	DATE RECEIVED	18-Dec-24
DATE TESTED	19-Dec-24	SAMPLED BY	Client

MATERIAL	Crush
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	12	10-45
90	100	80-100	2	8	
75	100	65-100	0.6	4	0-25
50	62		0.425	2	
37.5	46	45-100	0.3	2	
20	31		0.2	1	
14	23		0.15	1	
10	19	15-60	0.063	1	0-12



REMARKS

Sample complies with the advised grading specification for a 6F2 material (SHW, Feb. 2017)

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

20-Jan-25

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768
Castleton Sidings

Job Number MRN 24005/268
Date of Issue 01 November 2024
Page 1 of 11

Approved Signatories

S J Hutchings, O P Davies

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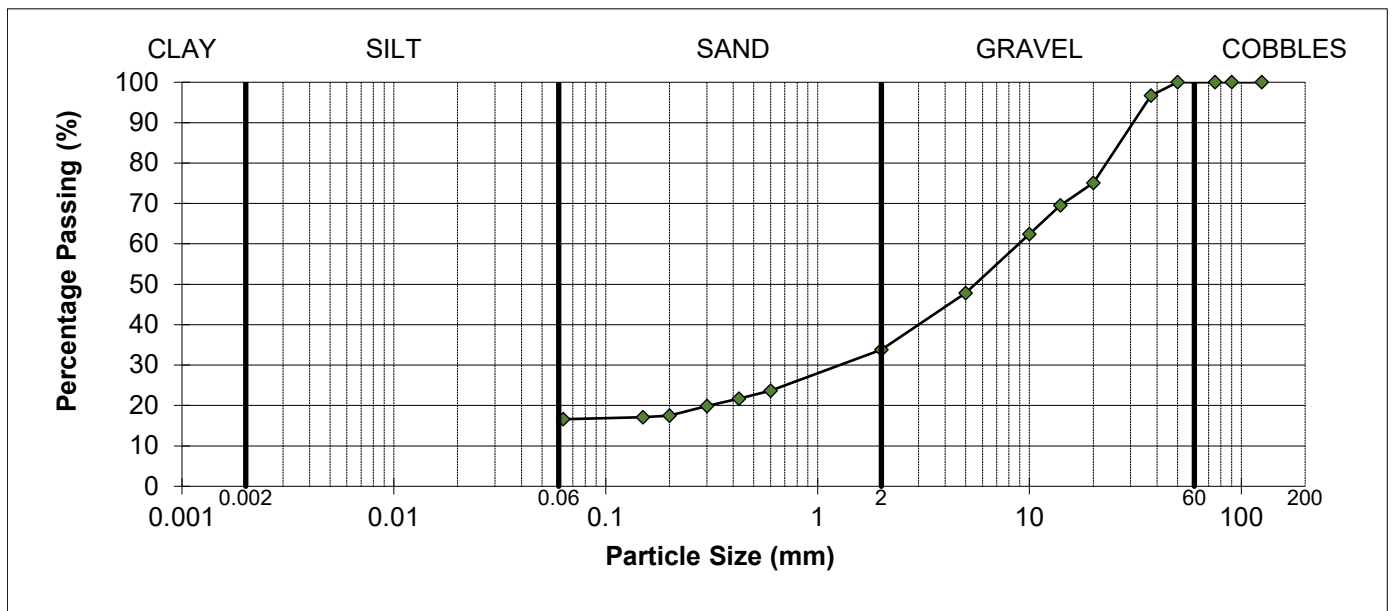
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 101	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577201	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	48	
90	100		2	34	15-80
75	100		0.6	24	
50	100		0.425	22	
37.5	97		0.3	20	
20	75		0.2	18	
14	70		0.15	17	
10	62		0.063	17	15-80



REMARKS

As received water content = 21.2%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

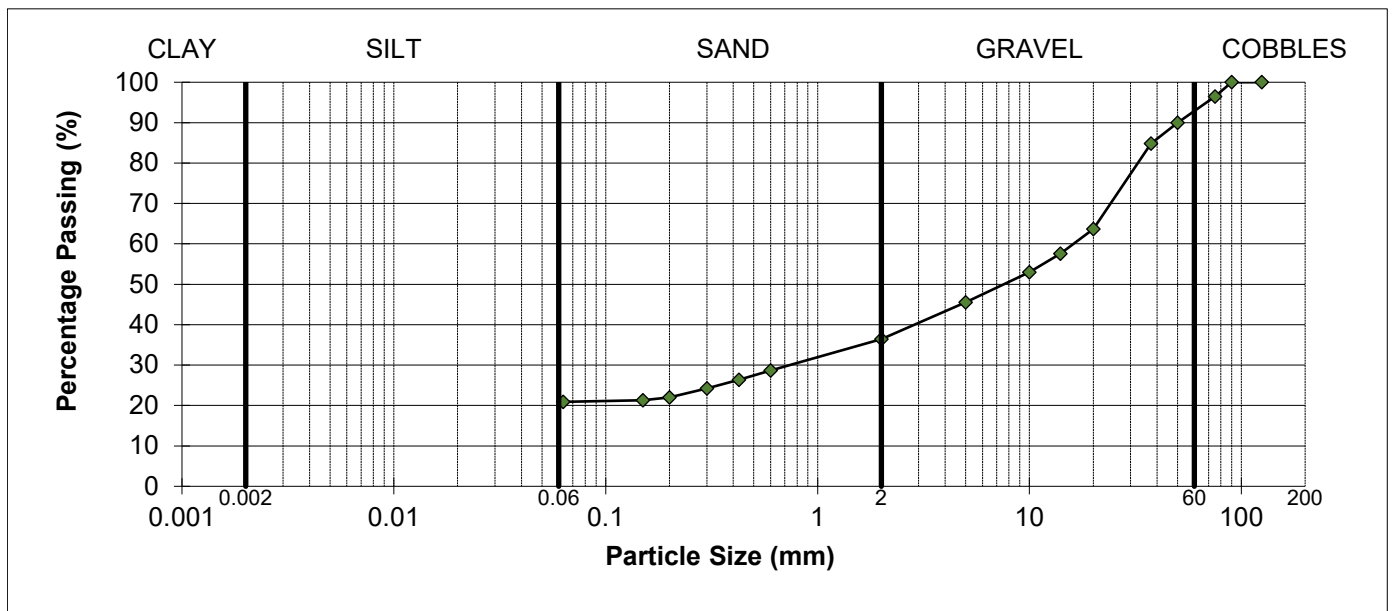
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 102	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577202	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	46	
90	100		2	36	15-80
75	97		0.6	29	
50	90		0.425	26	
37.5	85		0.3	24	
20	64		0.2	22	
14	58		0.15	21	
10	53		0.063	21	15-80



REMARKS

As received water content = 22.5%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

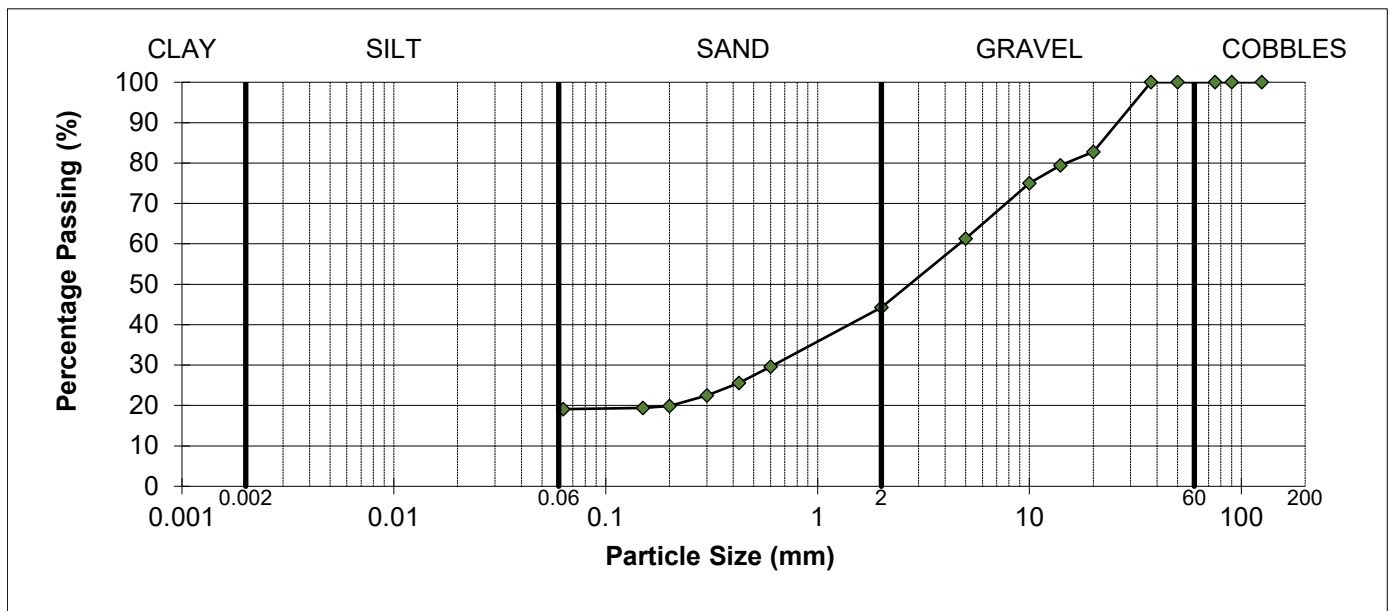
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 103	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577203	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	61	
90	100		2	44	15-80
75	100		0.6	30	
50	100		0.425	26	
37.5	100		0.3	23	
20	83		0.2	20	
14	79		0.15	19	
10	75		0.063	19	15-80



REMARKS

As received water content = 21.0%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

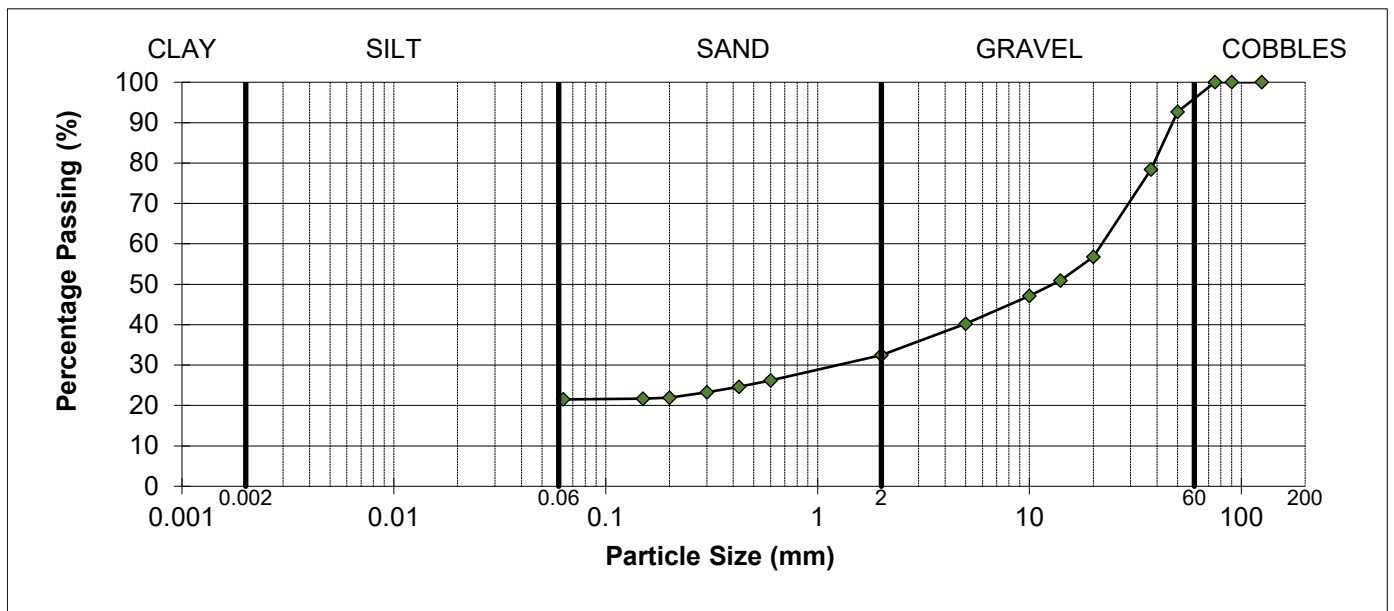
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 104	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577204	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	40	
90	100		2	33	15-80
75	100		0.6	26	
50	93		0.425	25	
37.5	78		0.3	23	
20	57		0.2	22	
14	51		0.15	22	
10	47		0.063	22	15-80



REMARKS

As received water content = 24.6%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

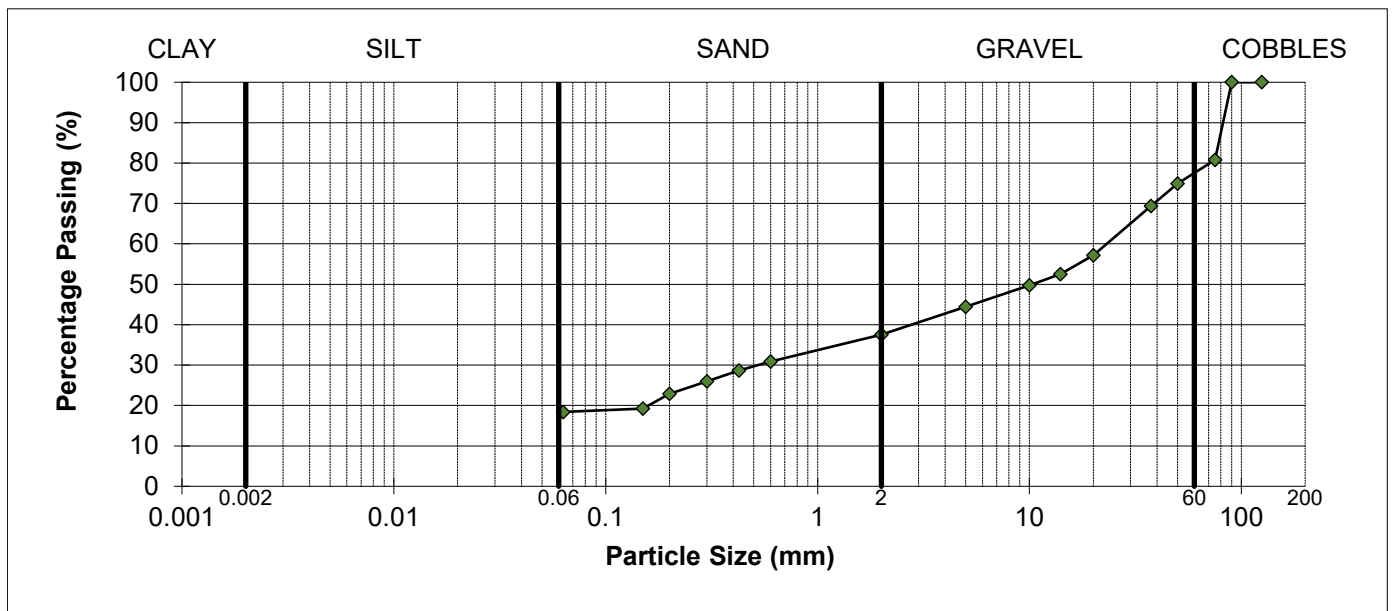
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 105	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577205	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	44	
90	100		2	38	15-80
75	81		0.6	31	
50	75		0.425	29	
37.5	69		0.3	26	
20	57		0.2	23	
14	53		0.15	19	
10	50		0.063	18	15-80



REMARKS

As received water content = 17.6%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

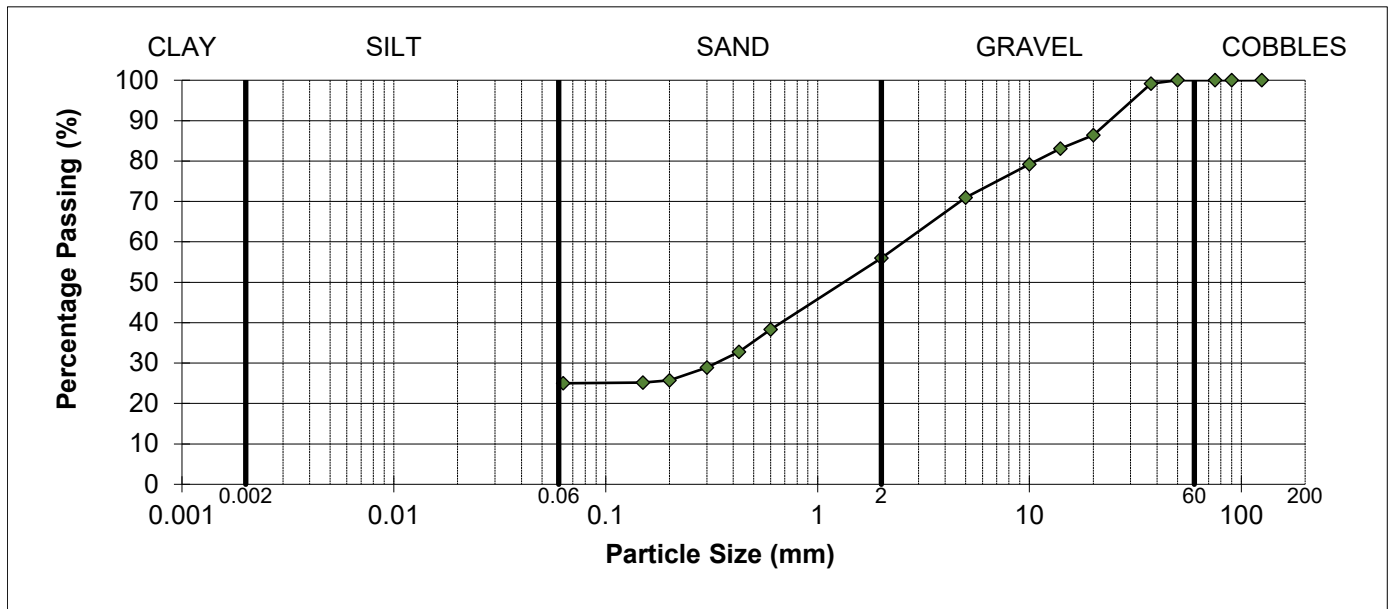
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 106	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577206	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	71	
90	100		2	56	15-80
75	100		0.6	38	
50	100		0.425	33	
37.5	99		0.3	29	
20	86		0.2	26	
14	83		0.15	25	
10	79		0.063	25	15-80



REMARKS

As received water content = 19.6%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

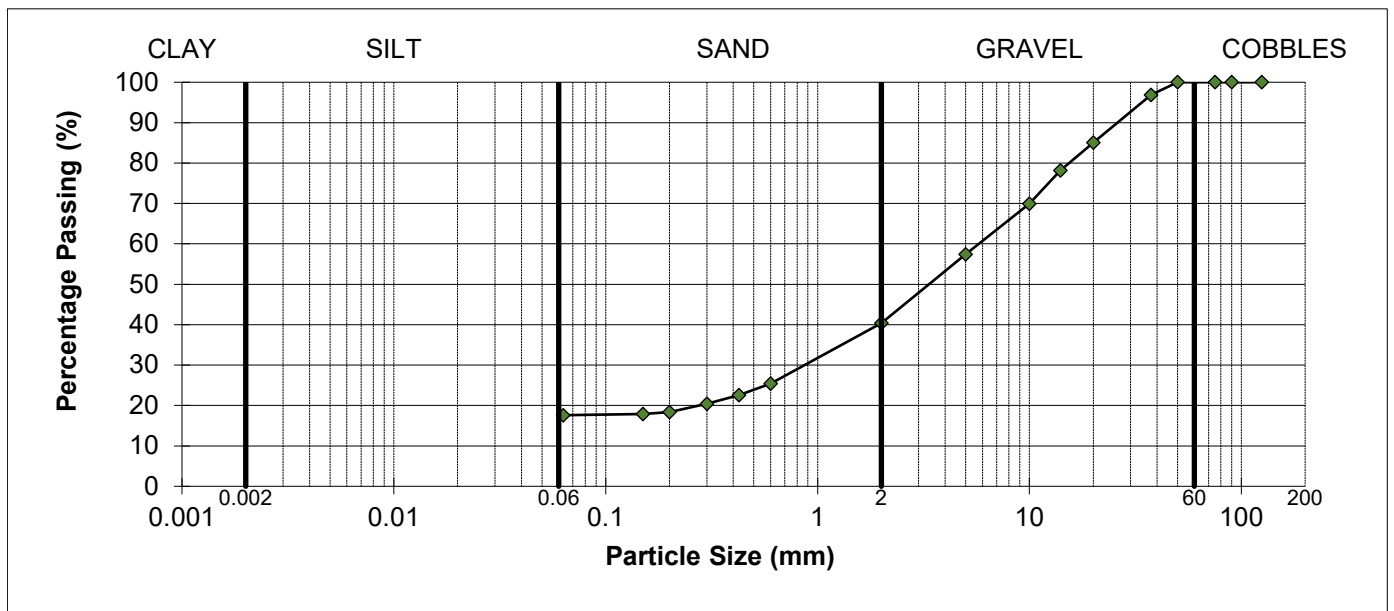
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 107	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577207	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	57	
90	100		2	40	15-80
75	100		0.6	25	
50	100		0.425	23	
37.5	97		0.3	20	
20	85		0.2	18	
14	78		0.15	18	
10	70		0.063	18	15-80



REMARKS

As received water content = 24.7%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

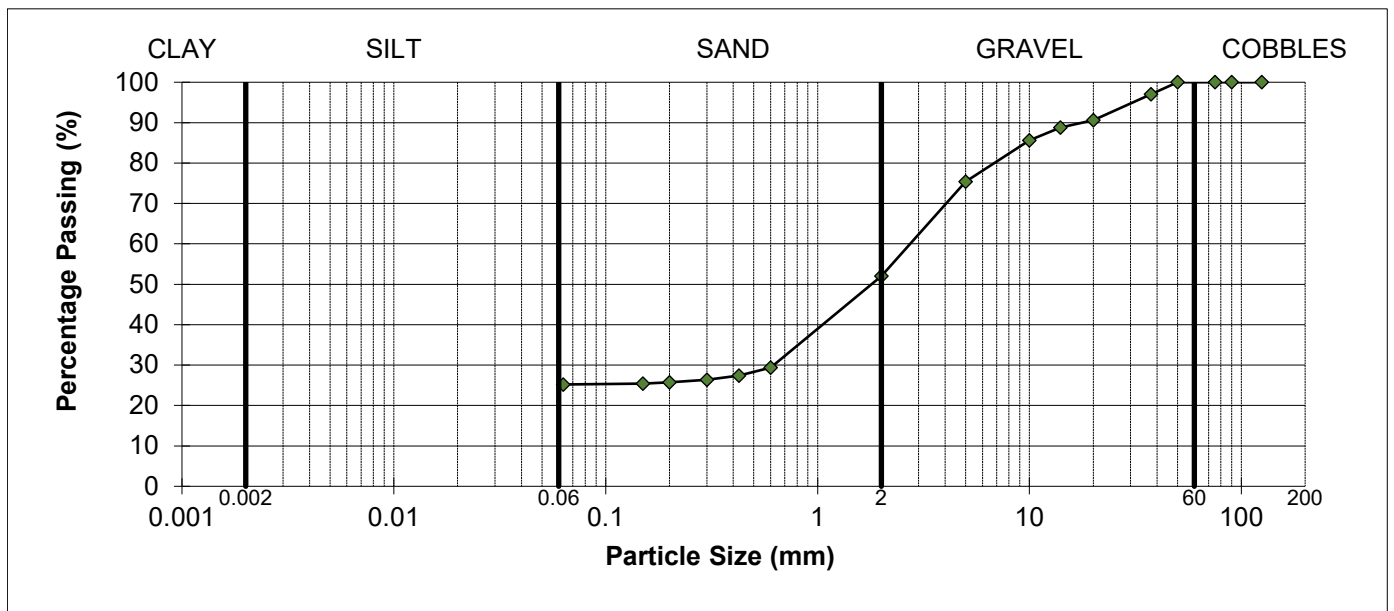
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 108	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577208	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	75	
90	100		2	52	15-80
75	100		0.6	29	
50	100		0.425	27	
37.5	97		0.3	26	
20	91		0.2	26	
14	89		0.15	25	
10	86		0.063	25	15-80



REMARKS

As received water content = 30.7%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

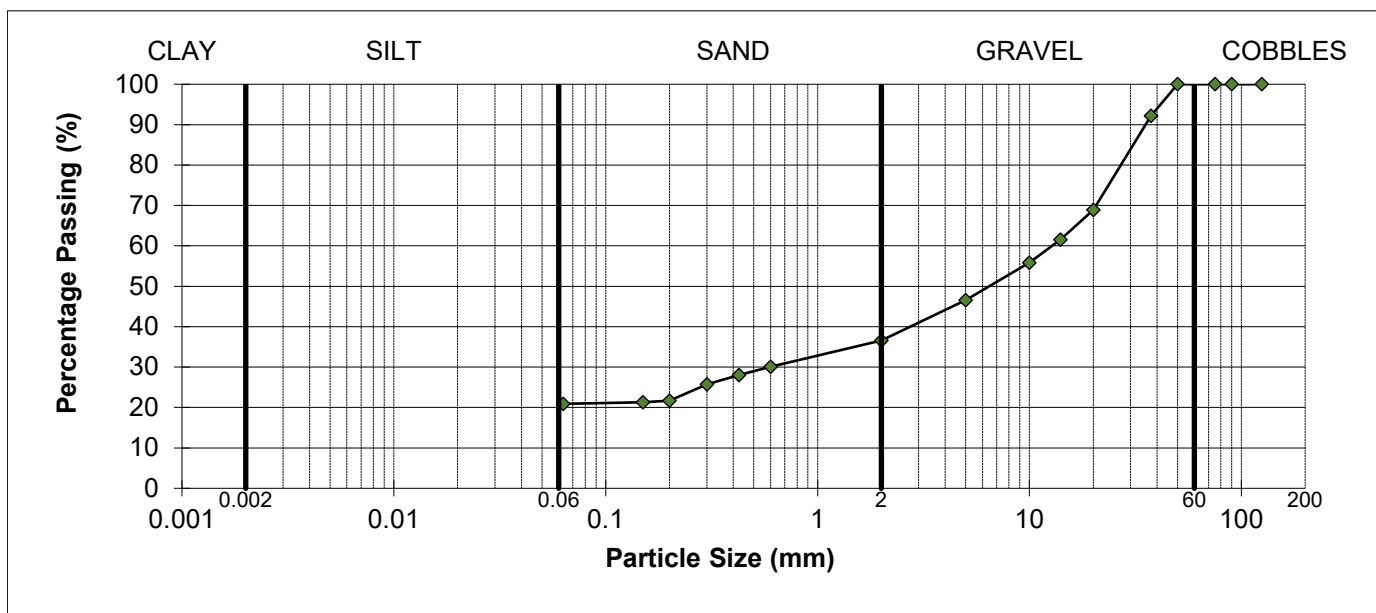
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 109	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577209	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	47	
90	100		2	37	15-80
75	100		0.6	30	
50	100		0.425	28	
37.5	92		0.3	26	
20	69		0.2	22	
14	62		0.15	21	
10	56		0.063	21	15-80



REMARKS

As received water content = 24.6%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

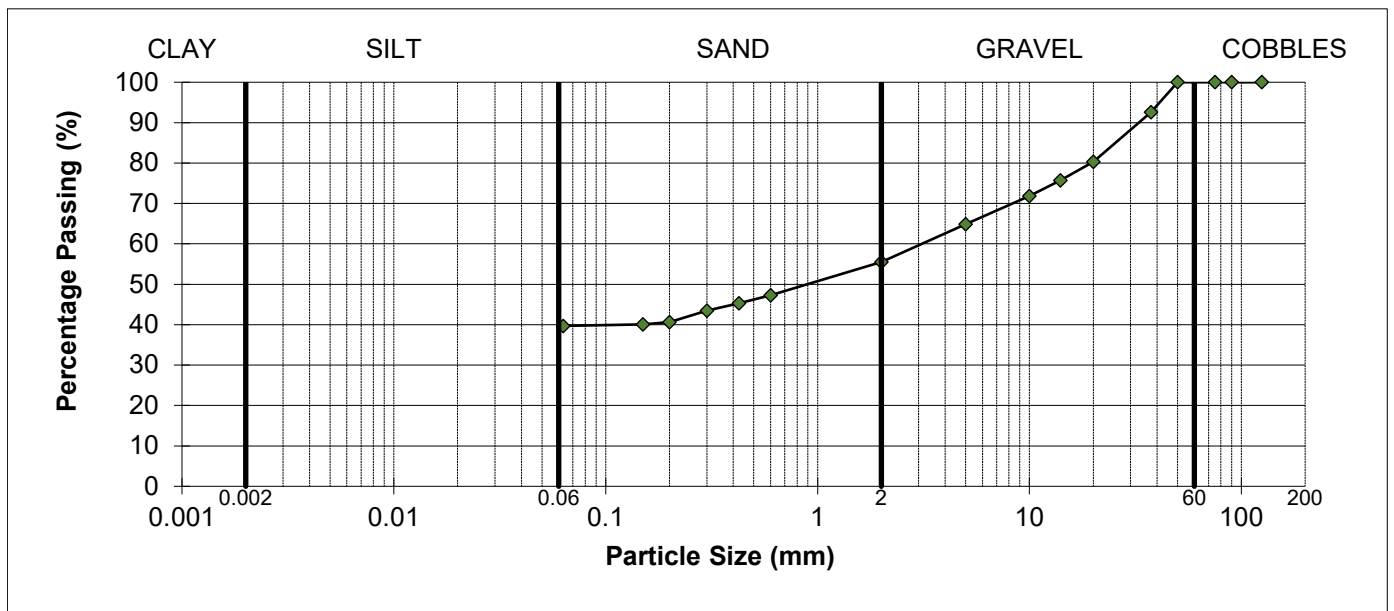
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 Castleton Sidings
JOB NUMBER	MRN 24005/268

SAMPLE LABEL	MG BF 110	DATE SAMPLED	16-Oct-24
LAB SAMPLE No	577210	DATE RECEIVED	18-Oct-24
DATE TESTED	23-Oct-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	As client and site above

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	65	
90	100		2	56	15-80
75	100		0.6	47	
50	100		0.425	45	
37.5	93		0.3	44	
20	80		0.2	41	
14	76		0.15	40	
10	72		0.063	40	15-80



REMARKS

As received water content = 20.4%

Sample complies with the grading specification for a 2C material in accordance with the SHW (Feb 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

01-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 24005/309
Date of Issue 29 November 2024
Page 1 of 7

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

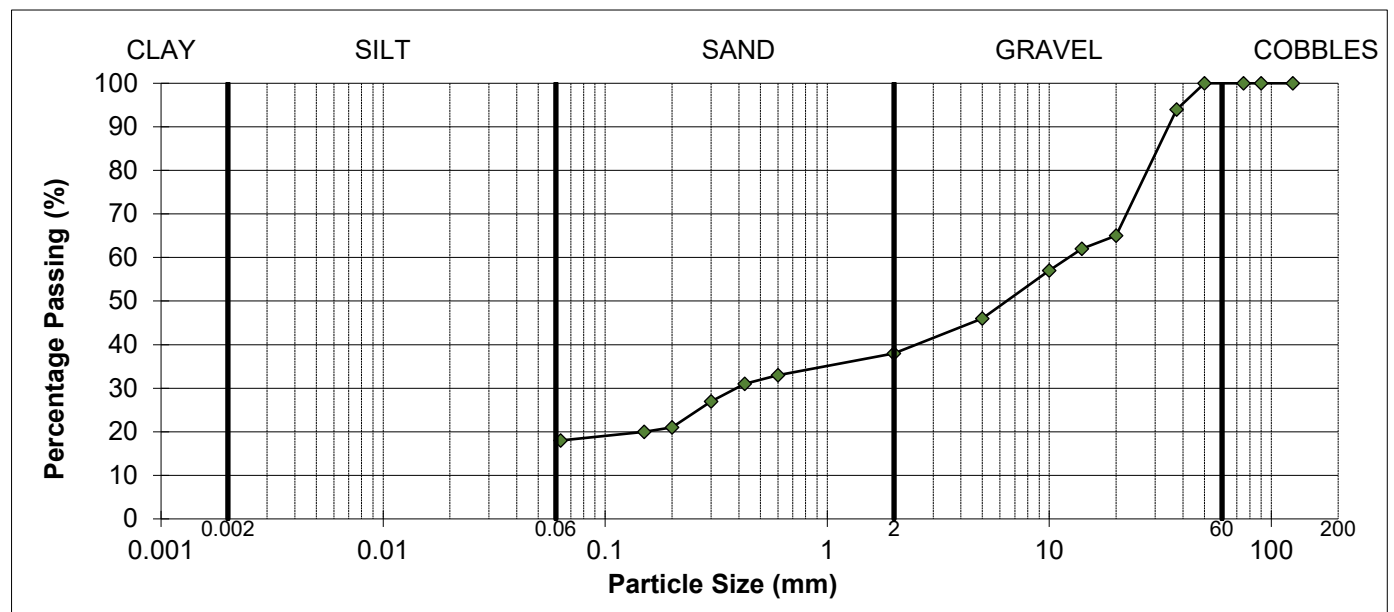
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 111	DATE SAMPLED	Not advised
LAB SAMPLE No	596101	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	46	
90	100		2	38	15-80
75	100		0.6	33	
50	100		0.425	31	
37.5	94		0.3	27	
20	65		0.2	21	
14	62		0.15	20	
10	57		0.063	18	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	20%
GRAVEL	62%	SILT / CLAY	18%
As received water content		15.2%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED 
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 29-Nov-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

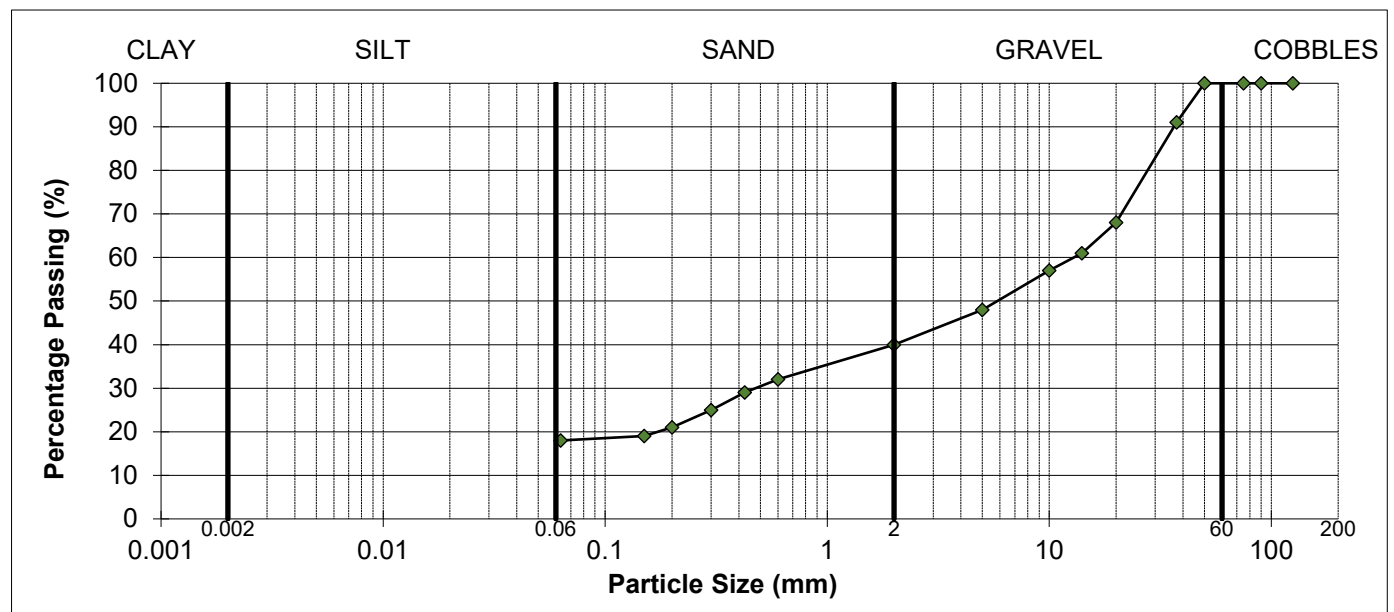
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 112	DATE SAMPLED	Not advised
LAB SAMPLE No	589402	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	48	
90	100		2	40	15-80
75	100		0.6	32	
50	100		0.425	29	
37.5	91		0.3	25	
20	68		0.2	21	
14	61		0.15	19	
10	57		0.063	18	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	22%
GRAVEL	60%	SILT / CLAY	18%
As received water content		17.5%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED 
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 29-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

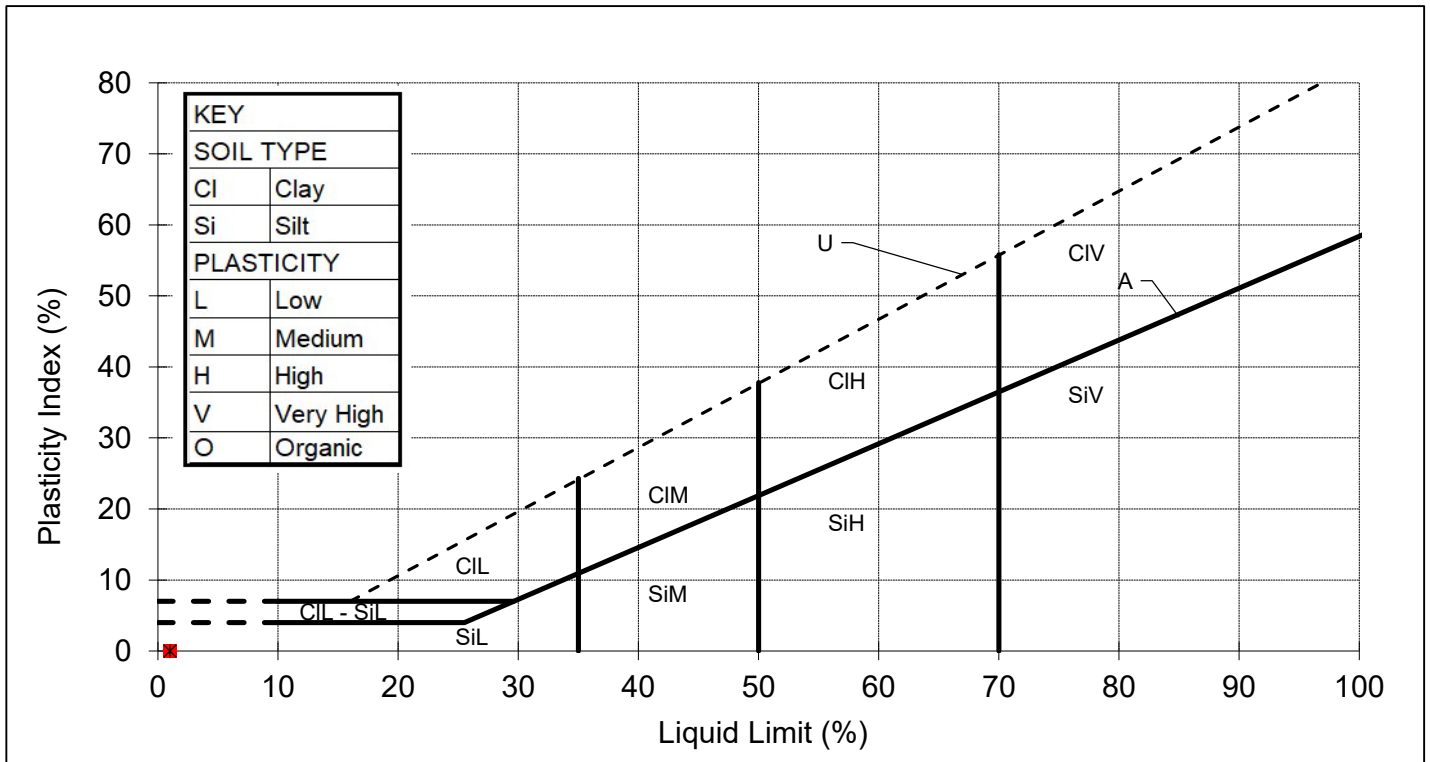
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 111	DATE SAMPLED	Not advised
SAMPLE No.	596101	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.2	N/A	Non Plastic	N/A	31



REMARKS

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

29-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

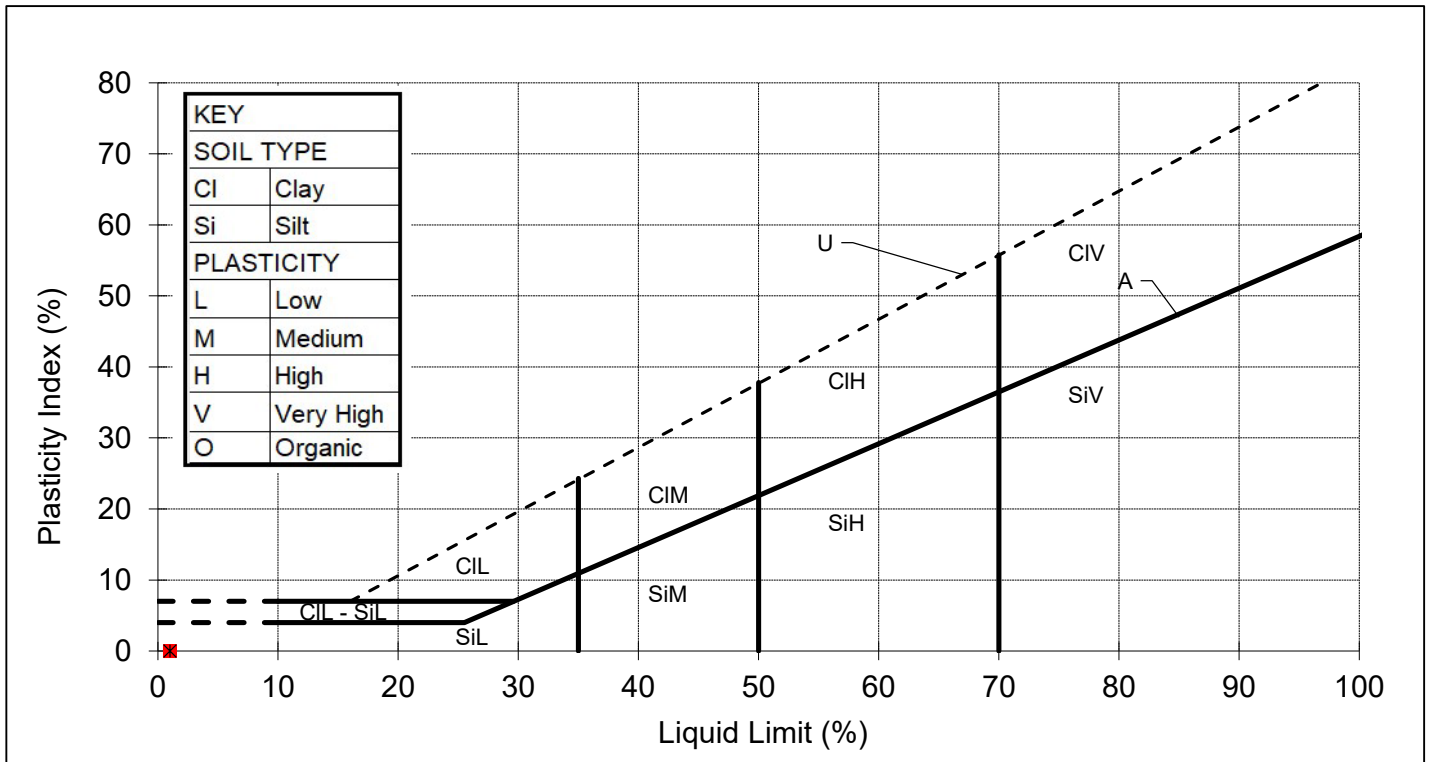
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 112	DATE SAMPLED	Not advised
SAMPLE No.	589402	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
17.5	N/A	Non Plastic	N/A	29



REMARKS

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

29-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

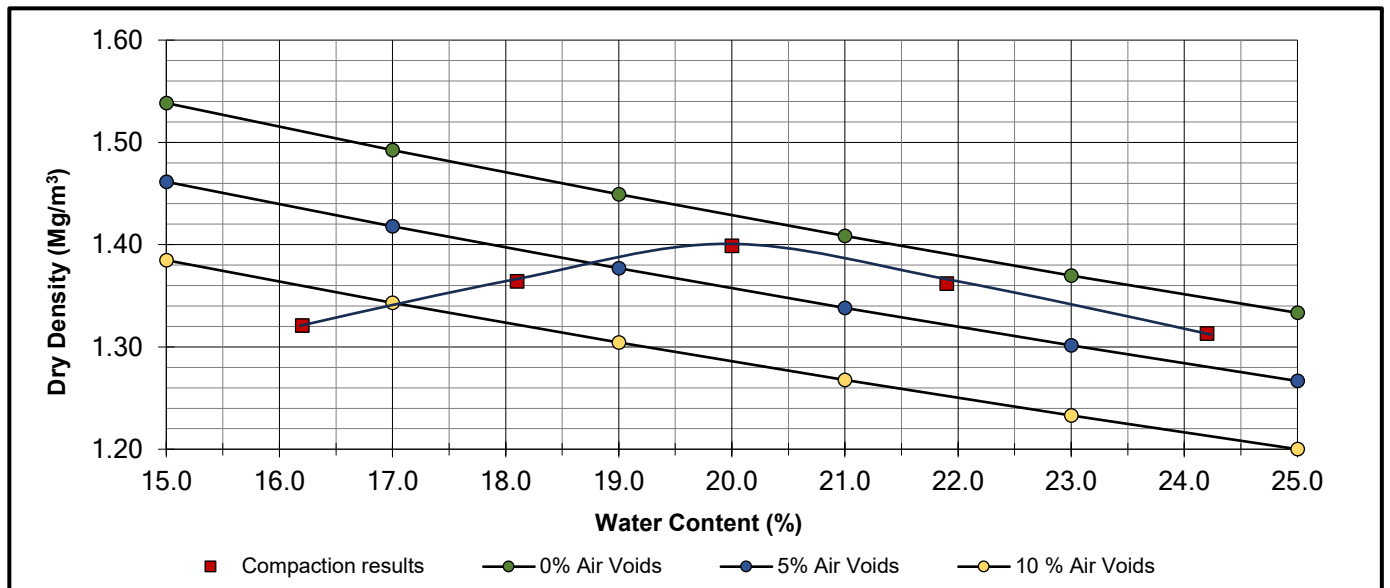
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 111	DATE SAMPLED	Not advised
SAMPLE NUMBER	596101	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	6 %	GRADING ZONE	Zone X
RETAINED 20mm	35 %	PARTICLE DENSITY	2.00 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	16.2	1.321
2	18.1	1.364
3	20.0	1.399
4	21.9	1.362
5	24.2	1.313



OPTIMUM WATER CONTENT	20	(%)
MAXIMUM DRY DENSITY	1.40	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 29-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

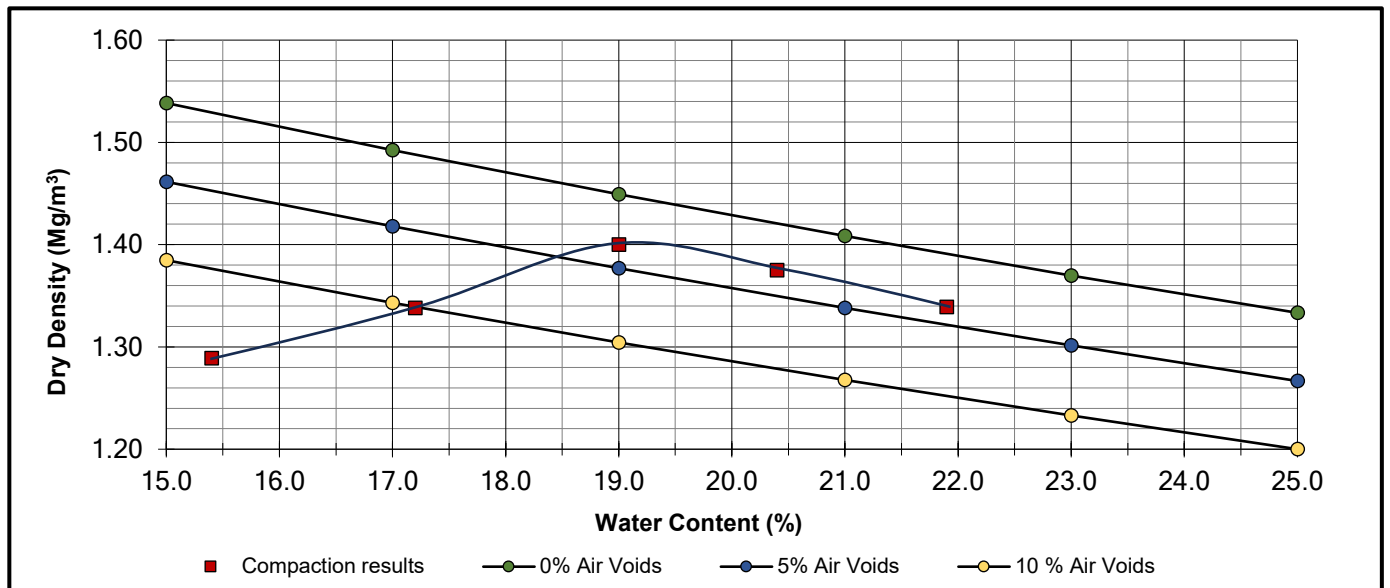
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 24005/309

SAMPLE LABEL	MG BF 112	DATE SAMPLED	Not advised
SAMPLE NUMBER	589402	DATE RECEIVED	06-Nov-24
DATE TESTED	07-Nov-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	9 %	GRADING ZONE	Zone X
RETAINED 20mm	32 %	PARTICLE DENSITY	2.00 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	15.4	1.289
2	17.2	1.338
3	19.0	1.400
4	20.4	1.375
5	21.9	1.339



OPTIMUM WATER CONTENT	19	(%)
MAXIMUM DRY DENSITY	1.40	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 29-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 25005/3
Date of Issue 06 January 2025
Page 1 of 7

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

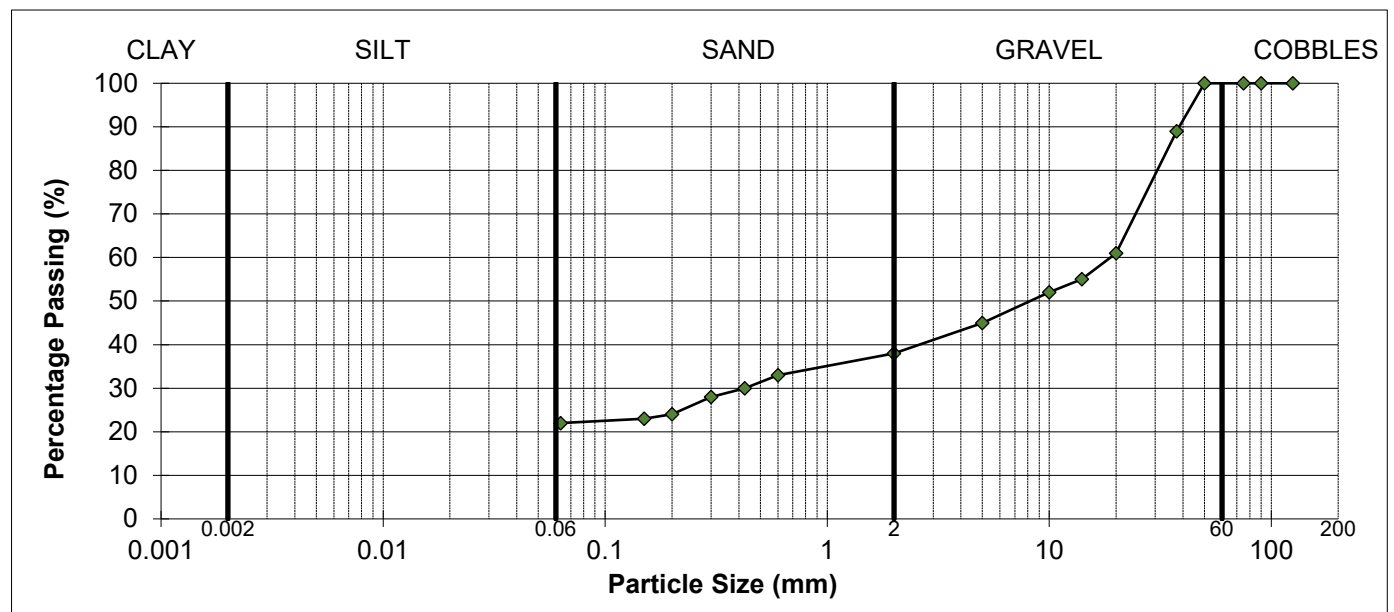
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 113	DATE SAMPLED	27-Nov-24
LAB SAMPLE No	609301	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	45	
90	100		2	38	15-80
75	100		0.6	33	
50	100		0.425	30	
37.5	89		0.3	28	
20	61		0.2	24	
14	55		0.15	23	
10	52		0.063	22	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	16%
GRAVEL	62%	SILT / CLAY	22%
As received water content		18.2%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

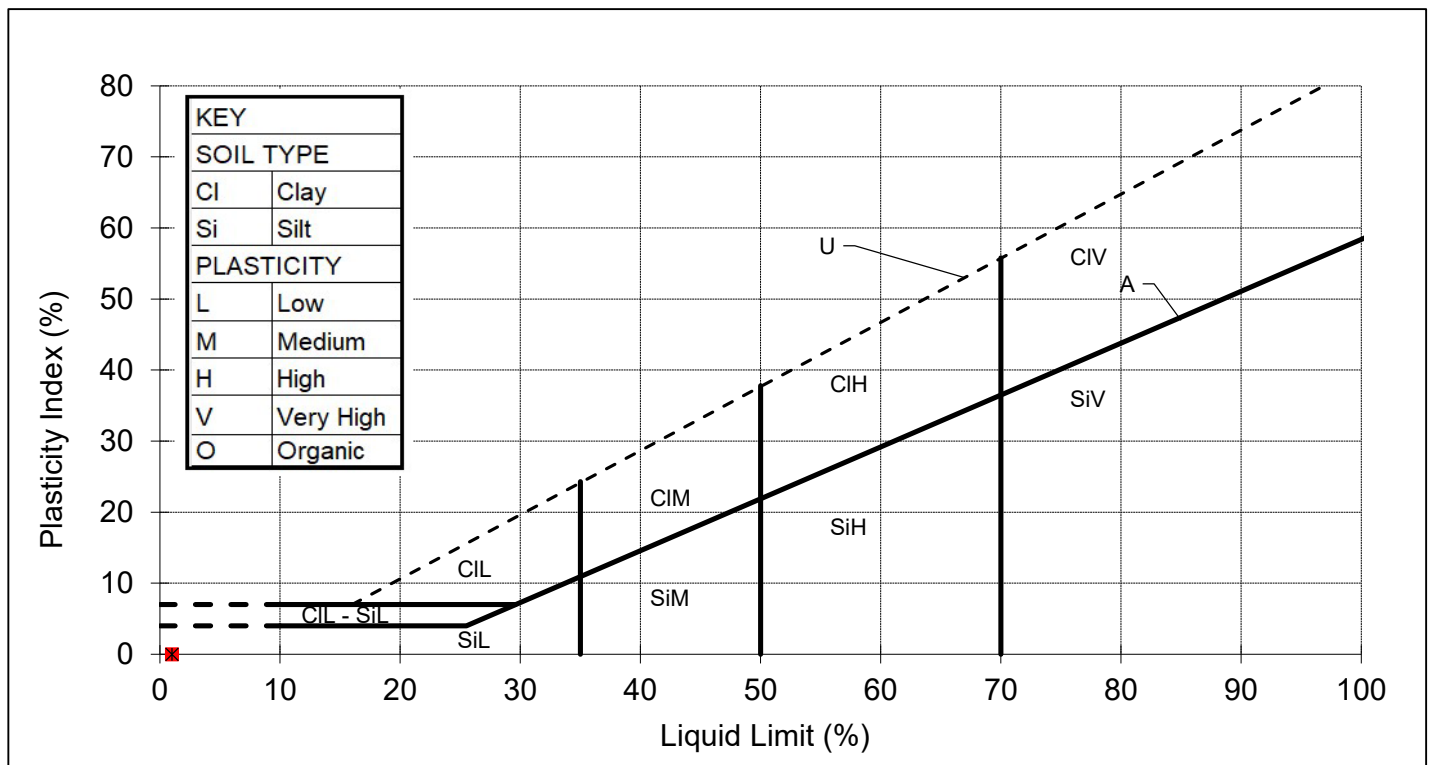
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 113	DATE SAMPLED	27-Nov-24
SAMPLE No.	609301	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18.2	N/A	Non Plastic	N/A	30



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

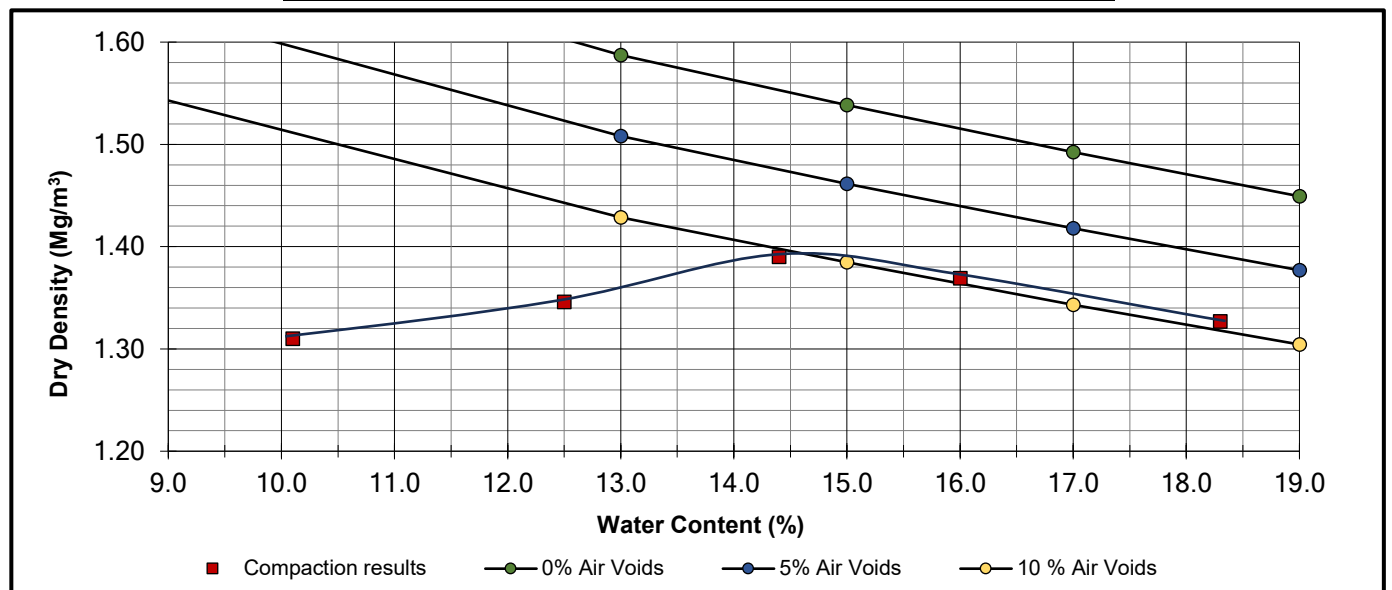
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 113	DATE SAMPLED	27-Nov-24
SAMPLE NUMBER	609301	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	11 %	GRADING ZONE	Zone X
RETAINED 20mm	39 %	PARTICLE DENSITY	2.00 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	10.1	1.310
2	12.5	1.346
3	14.4	1.390
4	16.0	1.369
5	18.3	1.327



OPTIMUM WATER CONTENT	15	(%)
MAXIMUM DRY DENSITY	1.39	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 06-Jan-25

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

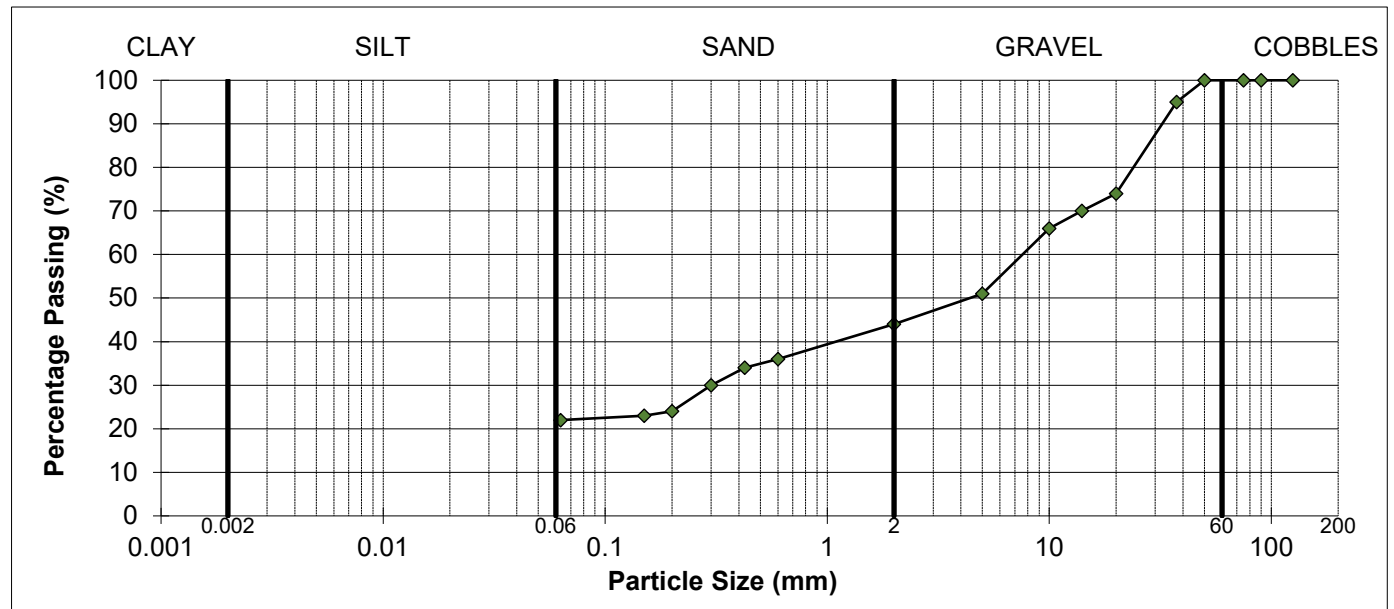
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 114	DATE SAMPLED	27-Nov-24
LAB SAMPLE No	609302	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	51	
90	100		2	44	15-80
75	100		0.6	36	
50	100		0.425	34	
37.5	95		0.3	30	
20	74		0.2	24	
14	70		0.15	23	
10	66		0.063	22	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	22%
GRAVEL	56%	SILT / CLAY	22%
As received water content		24.5%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED 
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 06-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

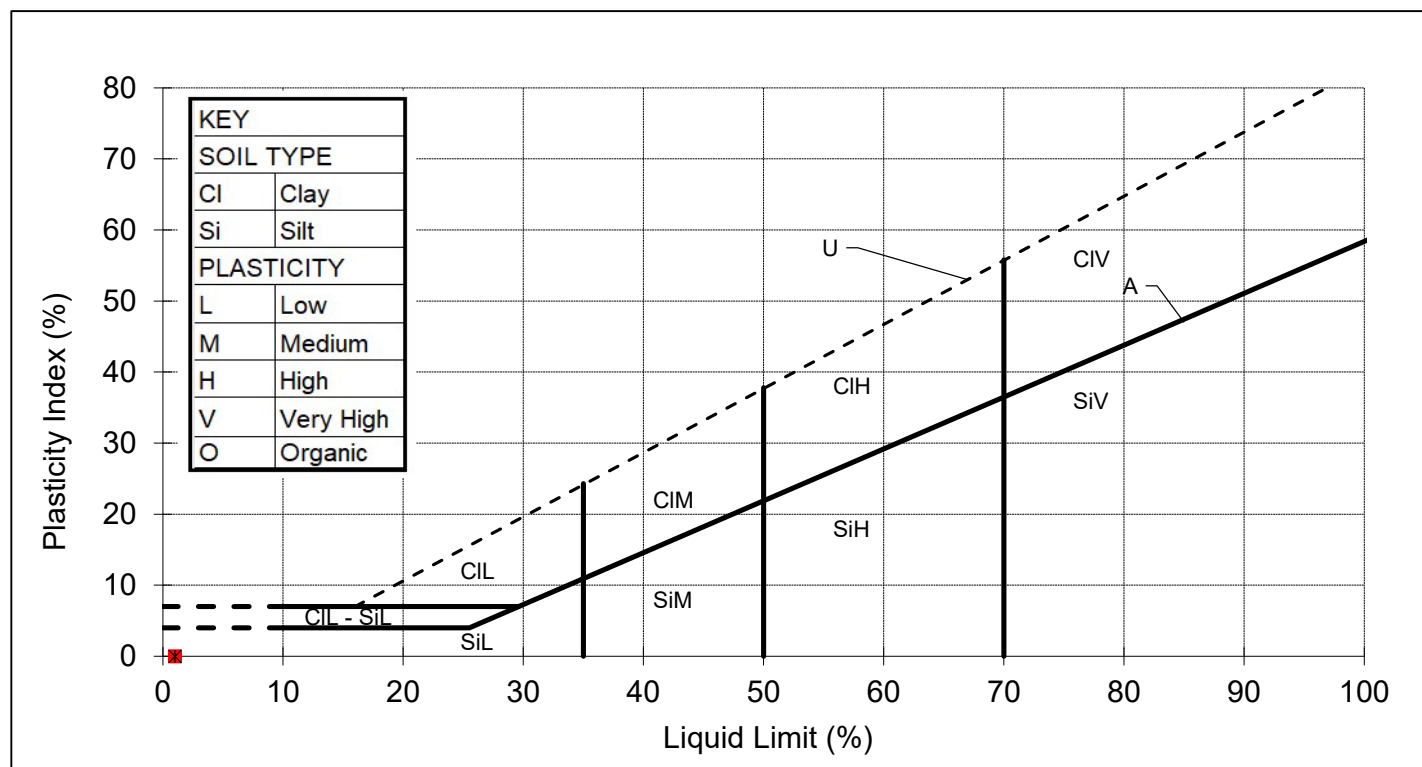
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 114	DATE SAMPLED	27-Nov-24
SAMPLE No.	609302	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
24.5	N/A	Non Plastic	N/A	34



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

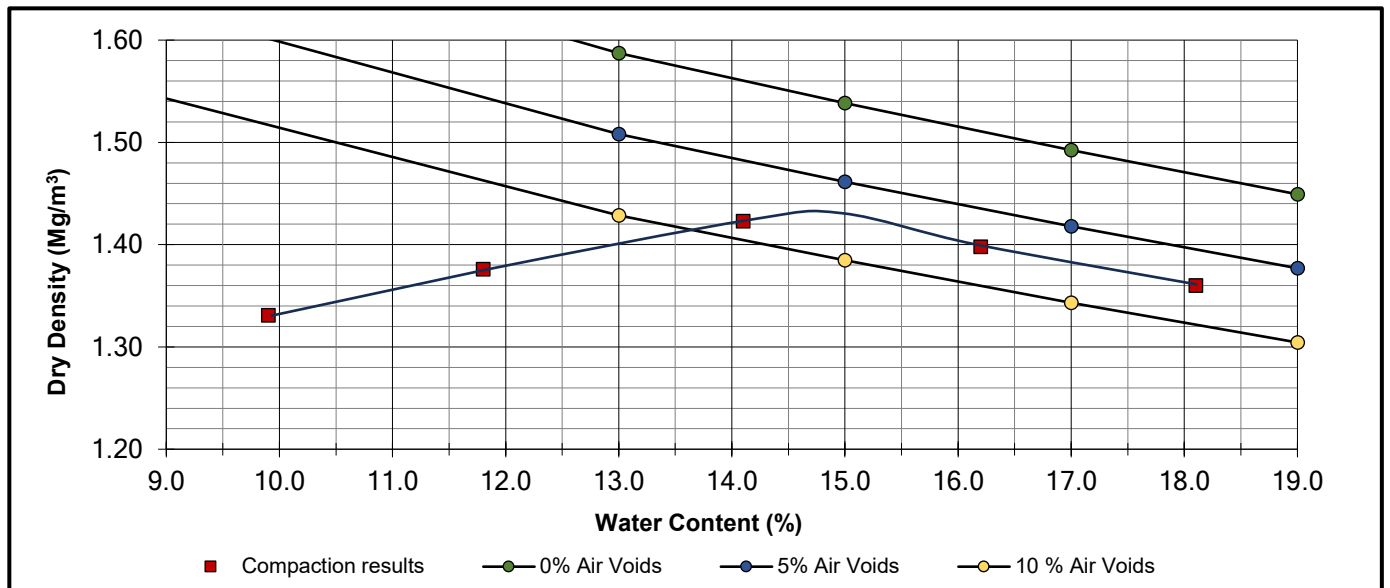
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/3

SAMPLE LABEL	MG BF 114	DATE SAMPLED	27-Nov-24
SAMPLE NUMBER	609302	DATE RECEIVED	04-Dec-24
DATE TESTED	09-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Won
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	5 %	GRADING ZONE	Zone 4
RETAINED 20mm	26 %	PARTICLE DENSITY	2.00 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	9.9	1.331
2	11.8	1.376
3	14.1	1.423
4	16.2	1.398
5	18.1	1.360



OPTIMUM WATER CONTENT	15	(%)
MAXIMUM DRY DENSITY	1.43	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 06-Jan-25

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 14-768 -
Castleton Sidings

Job Number MRN 25005/12
Date of Issue 16 January 2025
Page 1 of 7

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

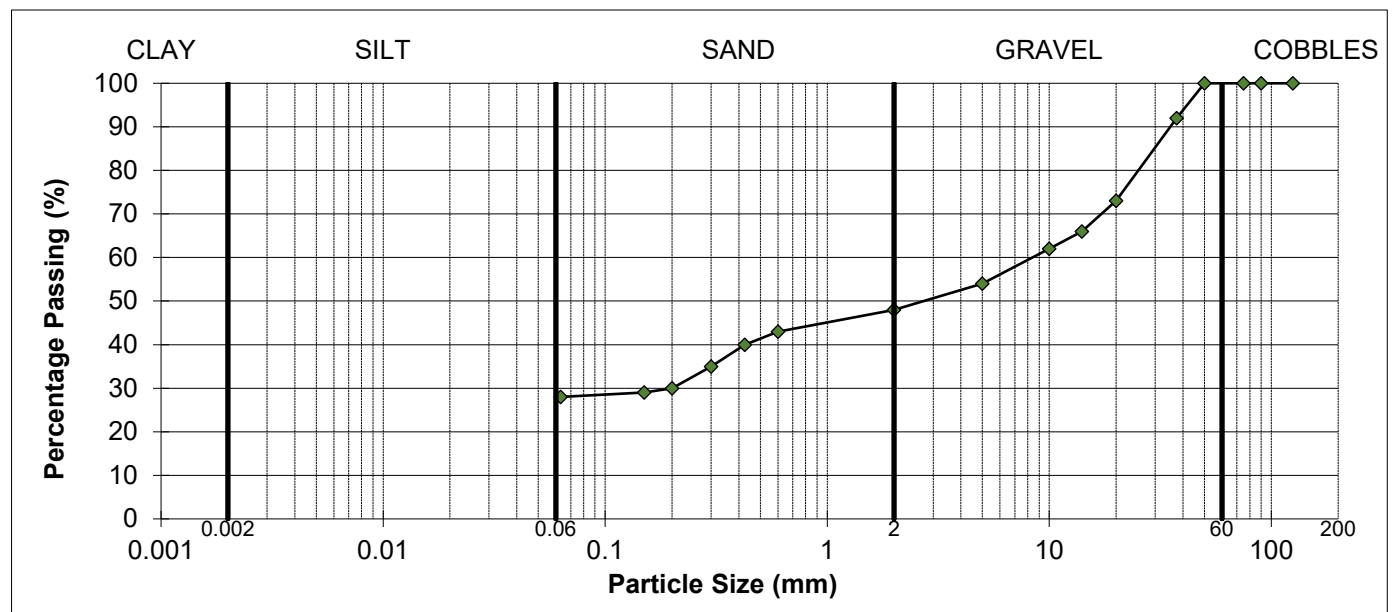
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 115	DATE SAMPLED	Not advised
LAB SAMPLE No	613801	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	54	
90	100		2	48	15-80
75	100		0.6	43	
50	100		0.425	40	
37.5	92		0.3	35	
20	73		0.2	30	
14	66		0.15	29	
10	62		0.063	28	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	20%
GRAVEL	52%	SILT / CLAY	28%
As received water content		18.0%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

16-Jan-25

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016

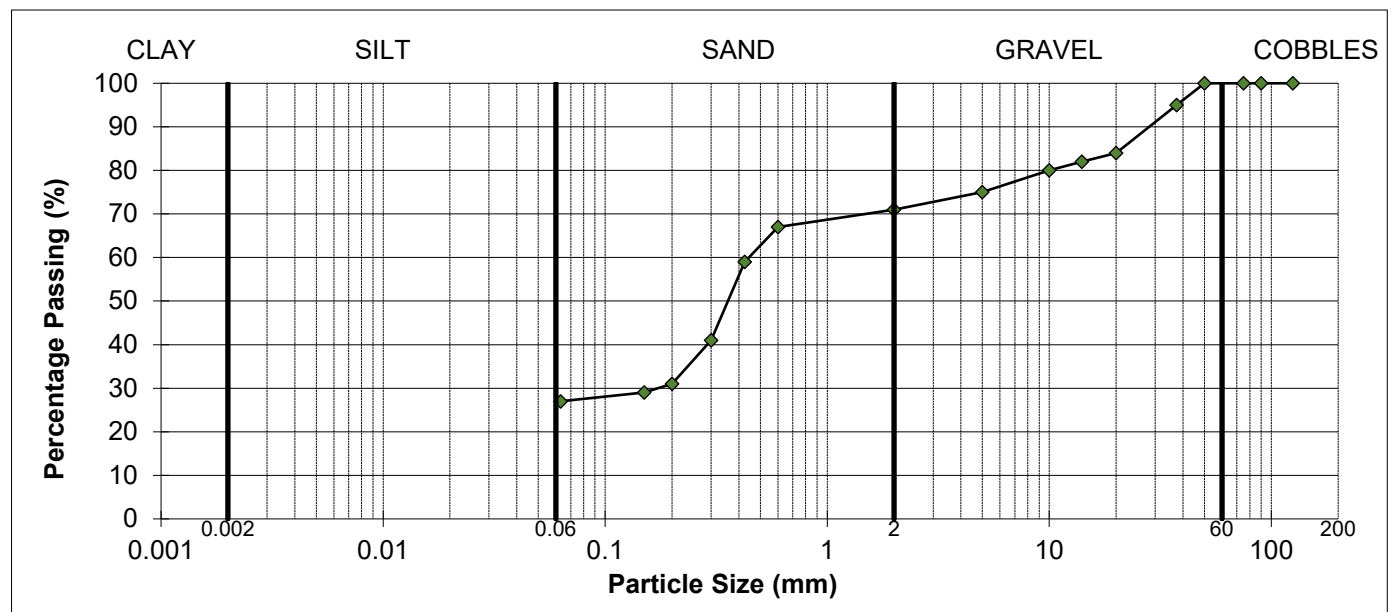
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 116	DATE SAMPLED	Not advised
LAB SAMPLE No	613802	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	75	
90	100		2	71	15-80
75	100		0.6	67	
50	100		0.425	59	
37.5	95		0.3	41	
20	84		0.2	31	
14	82		0.15	29	
10	80		0.063	27	15-80



SOIL FRACTIONS			
COBBLES	0%	SAND	44%
GRAVEL	29%	SILT / CLAY	27%
As received water content		15.1%	

REMARKS

Sample complies with the advised grading specification for a 2C material (SHW, Feb 2017)

SIGNED 
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

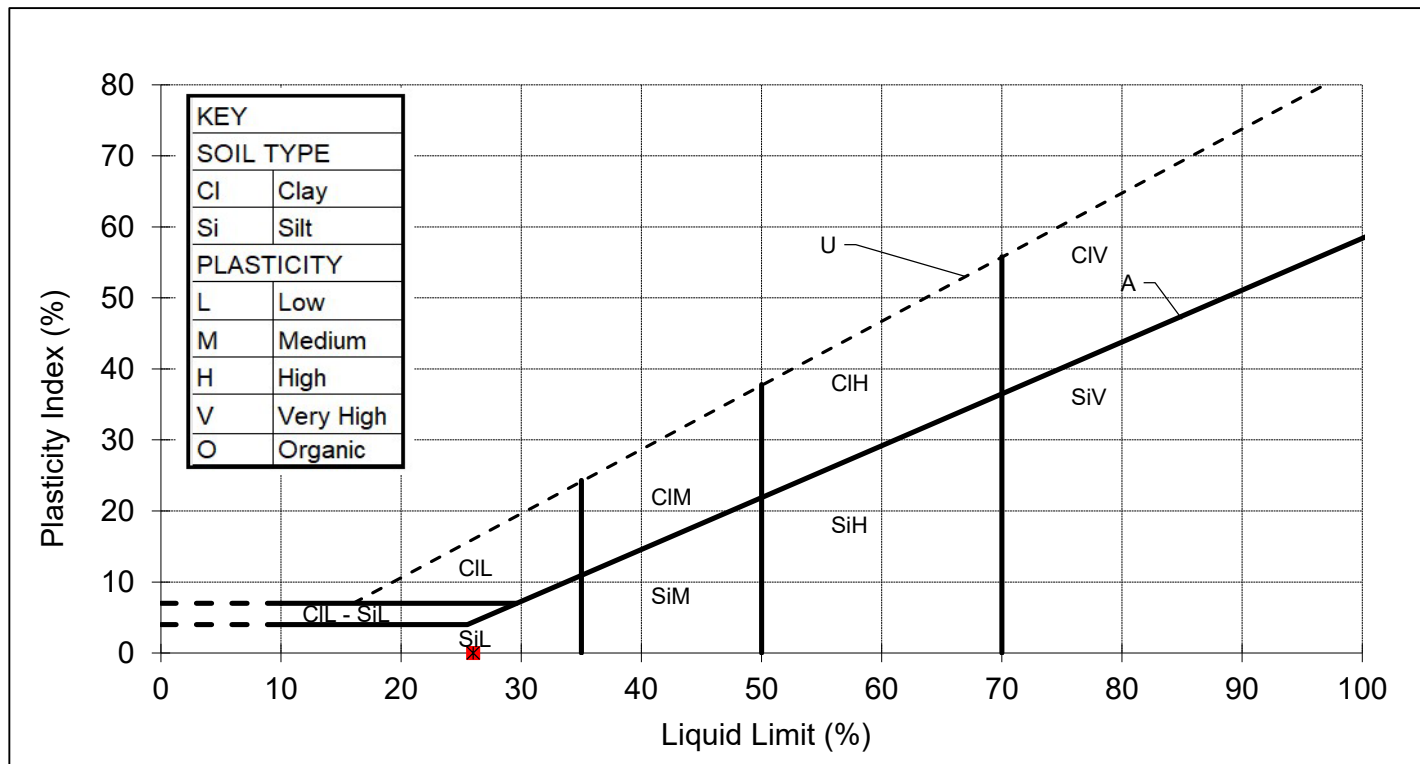
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 115	DATE SAMPLED	Not advised
SAMPLE No.	613801	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	N/A	1.000	
Determination 2 (avg)	20.0	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18.0	26	Non Plastic	#VALUE!	40



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

16-Jan-25

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

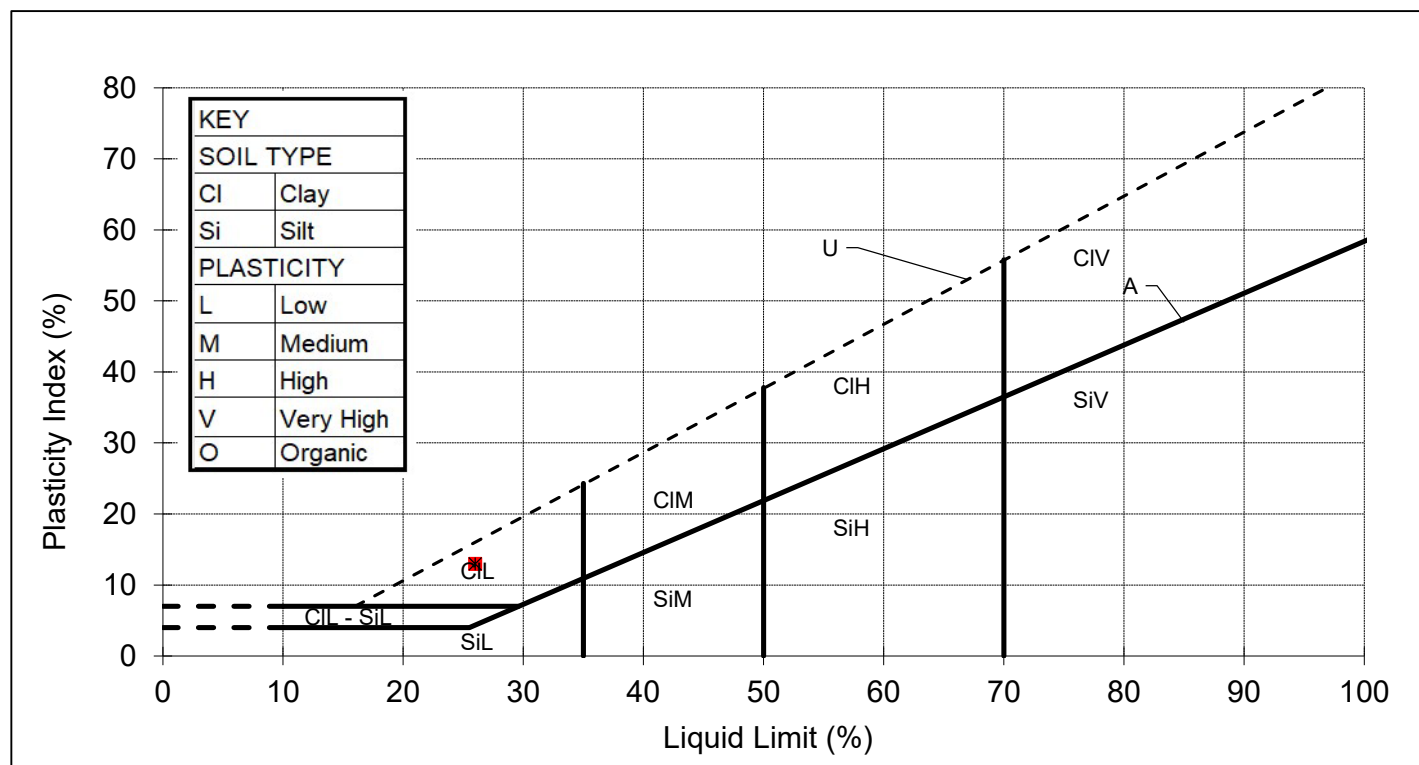
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 116	DATE SAMPLED	Not advised
SAMPLE No.	613802	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	25.6	1.000	
Determination 2 (avg)	20.0	25.4		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.1	26	13	13	59



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

16-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

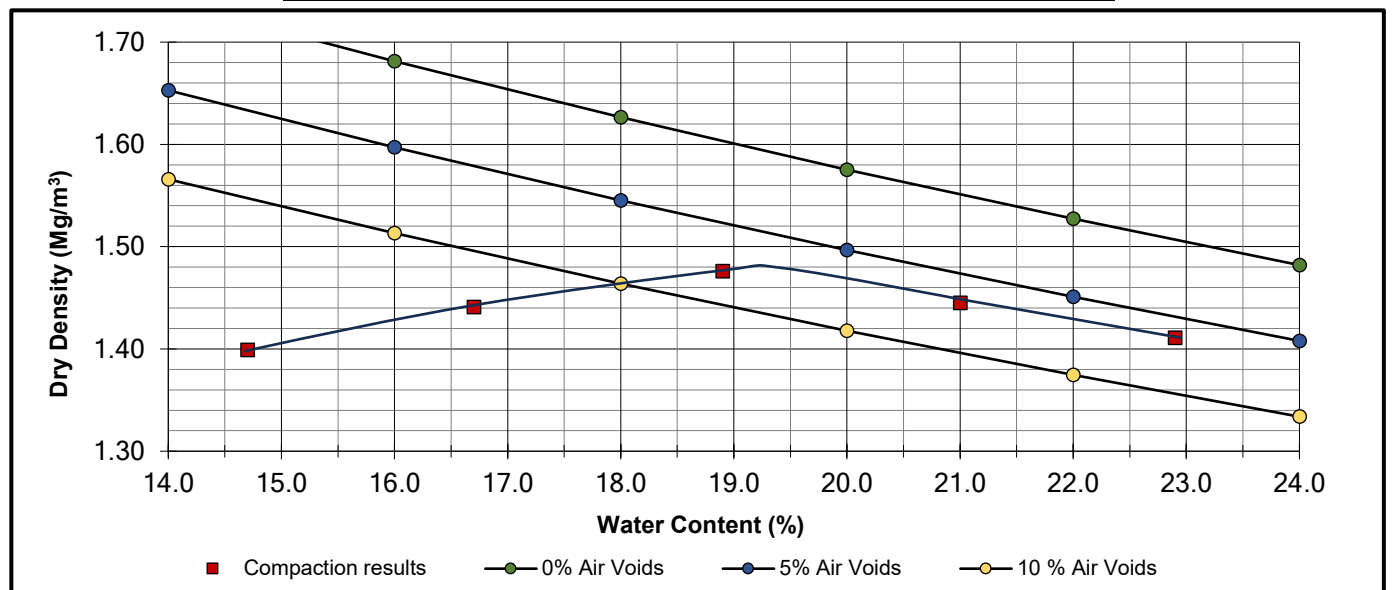
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 115	DATE SAMPLED	Not advised
SAMPLE NUMBER	613801	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	8 %	GRADING ZONE	Zone 5
RETAINED 20mm	27 %	PARTICLE DENSITY	2.30 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	14.7	1.399
2	16.7	1.441
3	18.9	1.476
4	21.0	1.445
5	22.9	1.411



OPTIMUM WATER CONTENT	19 (%)
MAXIMUM DRY DENSITY	1.48 (Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 16-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

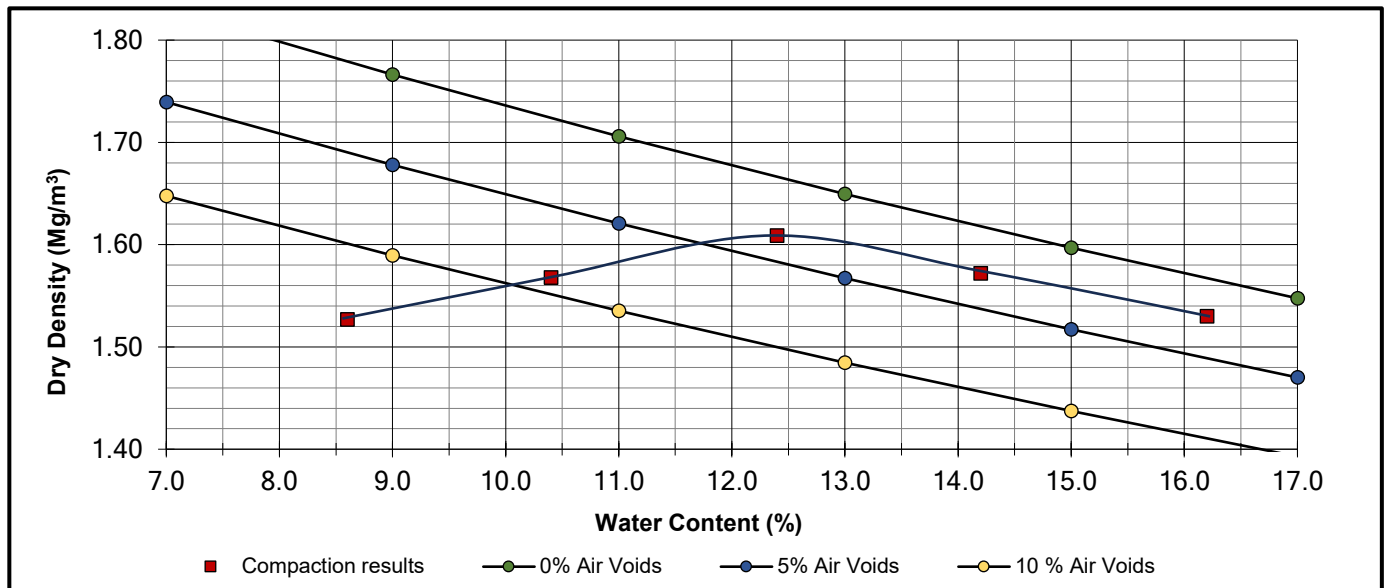
CLIENT	e3p
SITE	14-768 - Castleton Sidings
JOB NUMBER	MRN 25005/12

SAMPLE LABEL	MG BF 116	DATE SAMPLED	Not advised
SAMPLE NUMBER	613802	DATE RECEIVED	11-Dec-24
DATE TESTED	16-Dec-24	SAMPLED BY	Client

MATERIAL	Made Ground
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	5 %	GRADING ZONE	Zone 4
RETAINED 20mm	16 %	PARTICLE DENSITY	2.10 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	8.6	1.527
2	10.4	1.568
3	12.4	1.609
4	14.2	1.572
5	16.2	1.530



OPTIMUM WATER CONTENT	12	(%)
MAXIMUM DRY DENSITY	1.61	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 16-Jan-25

APPENDIX VII CONTRACTOR COMPLETION CHECK SHEET





GEOTECHNICAL ENABLING WORKS COMPLETION FORM – PHASE 1

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 (INITIAL)
	YES	NO	N/A	
Eradication of all invasive plant species			✓	
Removal of all vegetation	✓			HM/JS
Removal of all root bulbs and root networks	✓			HM/JS
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	✓			HM/JS
Removal of all relict foundations and infrastructure in their entirety	✓			HM/JS
Decommission of all redundant drainage infrastructure	✓			HM/JS
Decommission of all former interceptors			✓	
Decommission of all former above- and below-ground tanks			✓	
Removal of all waste materials to a licensed facility	✓			HM/JS
Removal of all asbestos to a licensed facility	✓			HM/JS
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	✓			HM/JS
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	✓			HM/JS
Engineering of highways subgrade in accordance with E3P Specification with compliant validation testing	✓			HM/JS
Engineering of highways capping in accordance with E3P Specification with compliant validation testing	✓			HM/JS
Cut-and-fill the development site to client's required elevation with as-built survey	✓			HM/JS

APPENDIX VIII

IN SITU TESTING RESULTS



TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 25005/1
Date of Issue 03 January 2025
Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
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Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

TEST CERTIFICATE

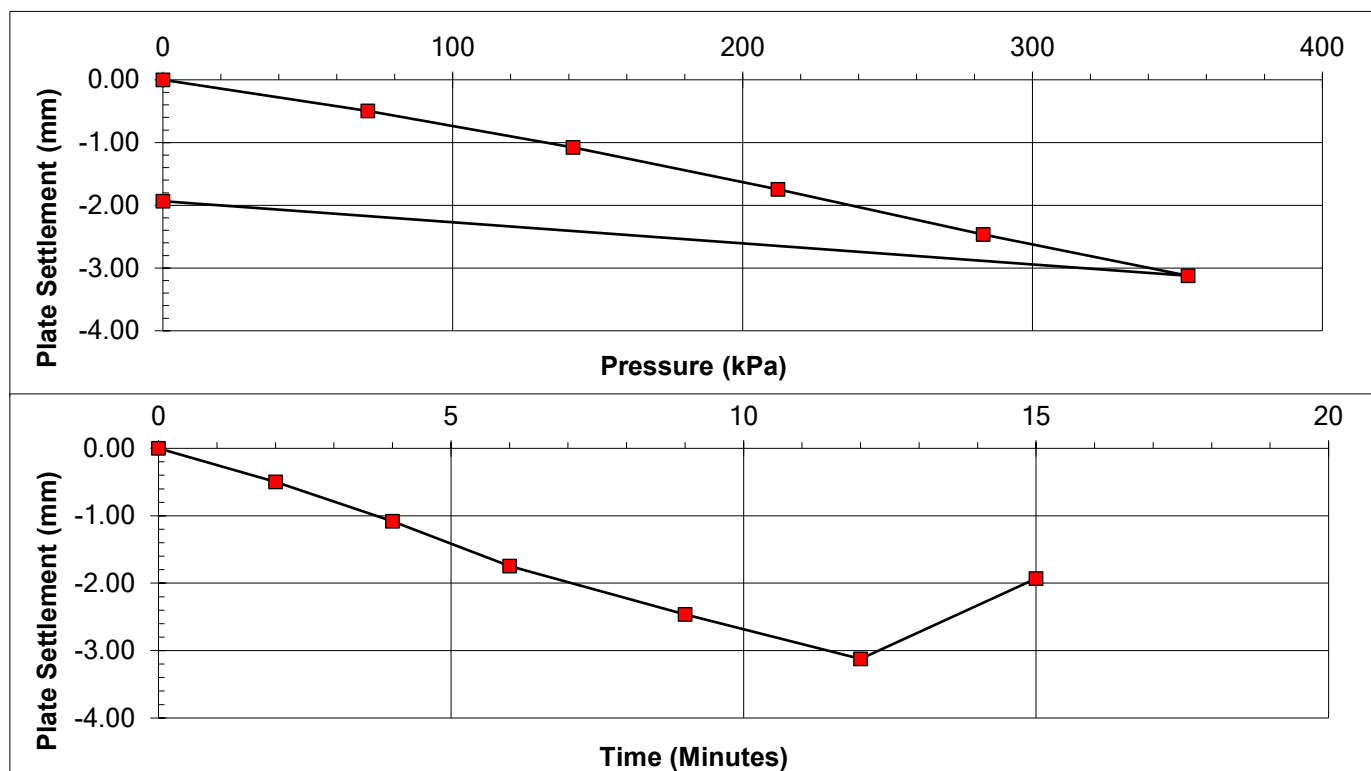
PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



CLIENT	e3p						
SITE	Castleton Sidings						
JOB NUMBER	MRN 25005/1						
TEST LOCATION	Test 01 - 126		LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Jan-25		PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface		REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST		Crush			MOISTURE CONTENT		Not Required

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3161	2138	2512	2604	0.00	0.00	0.0
3112	2092	2458	2554	-0.50	5.00	70.7
3051	2031	2405	2496	-1.08	10.00	141.5
2961	2011	2315	2429	-1.75	15.00	212.2
2871	1943	2258	2357	-2.46	20.00	282.9
2801	1872	2201	2291	-3.12	25.00	353.7
2918	1998	2315	2410	-1.93	0.00	0.0



Pressure at 1.25 mm deflection =	160 kPa
Modulus of subgrade reaction (k) =	128 MPa/m
Equivalent 762 mm plate reaction =	56 MPa/m
Equivalent CBR =	10.4 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 03-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

TEST CERTIFICATE

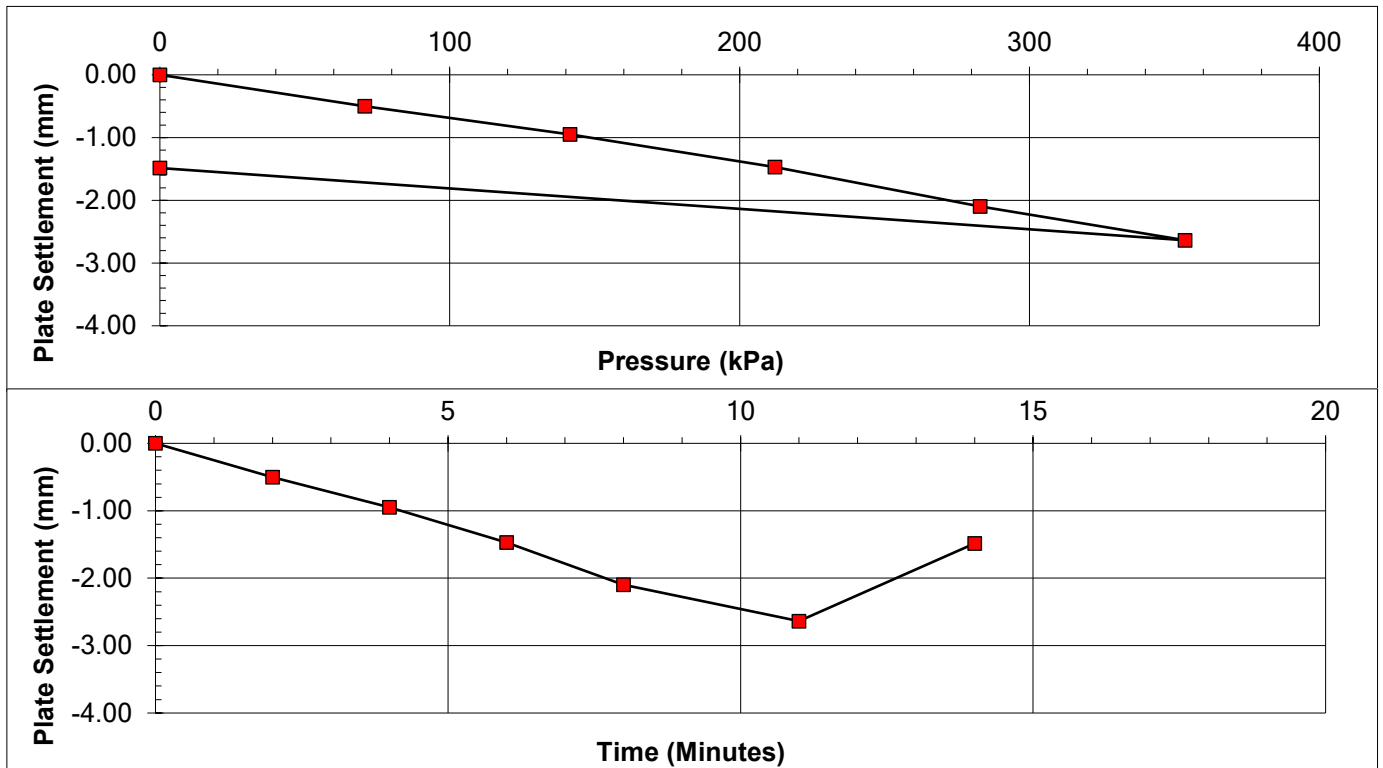
PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 25005/1					
TEST LOCATION	Test 02 - 130	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Jan-25	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST		Crush		MOISTURE CONTENT	Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3465	4278	4632	4125	0.00	0.00	0.0
3411	4241	4572	4075	-0.50	5.00	70.7
3361	4211	4518	4030	-0.95	10.00	141.5
3301	4152	4481	3978	-1.47	15.00	212.2
3231	4092	4423	3915	-2.10	20.00	282.9
3161	4042	4381	3861	-2.64	25.00	353.7
3271	4161	4498	3977	-1.48	0.00	0.0



Pressure at 1.25 mm deflection =	182 kPa
Modulus of subgrade reaction (k) =	146 MPa/m
Equivalent 762 mm plate reaction =	64 MPa/m
Equivalent CBR =	13.2 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 03-Jan-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

TEST CERTIFICATE

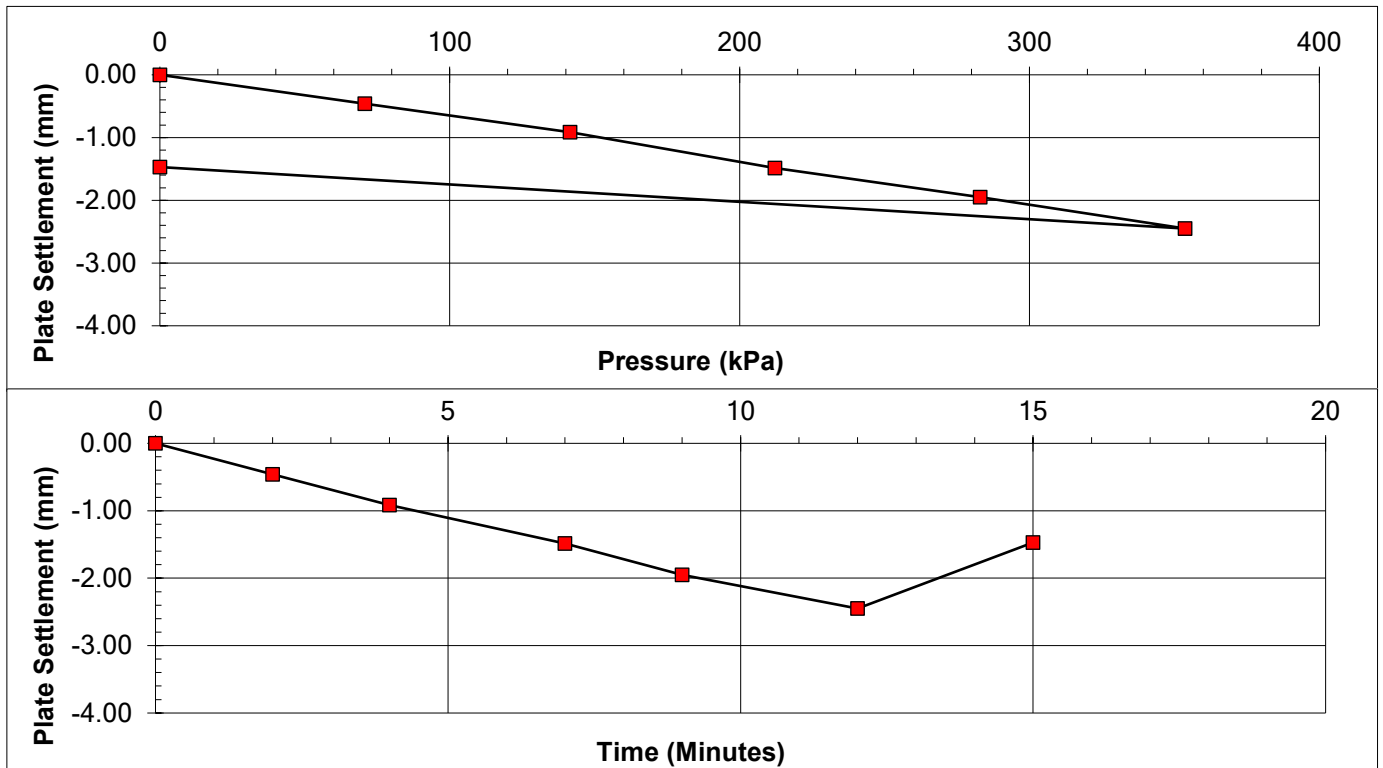
PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 25005/1					
TEST LOCATION	Test 03 - 177	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	03-Jan-25	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST		Crush		MOISTURE CONTENT	Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2598	4243	4828	3890	0.00	0.00	0.0
2558	4201	4772	3844	-0.46	5.00	70.7
2501	4161	4732	3798	-0.92	10.00	141.5
2442	4101	4681	3741	-1.48	15.00	212.2
2401	4052	4631	3695	-1.95	20.00	282.9
2351	4011	4572	3645	-2.45	25.00	353.7
2465	4095	4668	3743	-1.47	0.00	0.0



Pressure at 1.25 mm deflection =	183 kPa
Modulus of subgrade reaction (k) =	146 MPa/m
Equivalent 762 mm plate reaction =	65 MPa/m
Equivalent CBR =	13.3 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 03-Jan-25

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/324

Date of Issue 12 December 2024

Page 1 of 8

Approved Signatories

S J Hutchings, O P Davies

Notes

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Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	11-Dec-24	JOB NUMBER	MRN 24005/324
MATERIAL	Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	P1	250	1.69	1.37	24	97.6	N/A
2	Q1	250	1.69	1.37	23	97.8	N/A
3	R1	250	1.71	1.38	24	98.5	N/A
Maximum Dry Density (Mg/m3)					1.40	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					No		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 12-Dec-24

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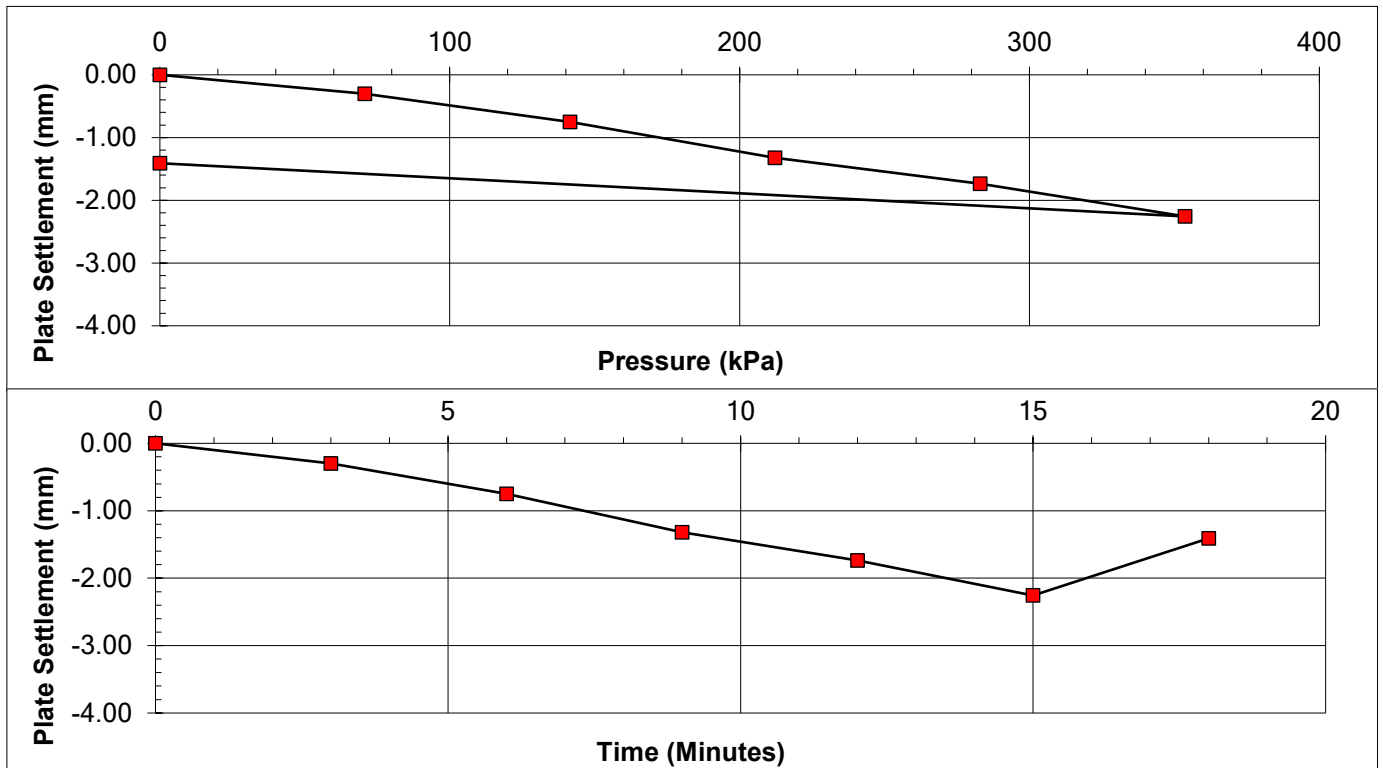
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/324					
TEST LOCATION	Plot 190	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	11-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST		Crush		MOISTURE CONTENT		Not Required

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3223	4165	4613	4000	0.00	0.00	0.0
3188	4131	4592	3970	-0.30	5.00	70.7
3141	4092	4543	3925	-0.75	10.00	141.5
3092	4021	4492	3868	-1.32	15.00	212.2
3058	3972	4450	3827	-1.74	20.00	282.9
3011	3921	4392	3775	-2.26	25.00	353.7
3095	4015	4468	3859	-1.41	0.00	0.0



Pressure at 1.25 mm deflexion =	204 kPa
Modulus of subgrade reaction (k) =	163 MPa/m
Equivalent 762 mm plate reaction =	72 MPa/m
Equivalent CBR =	15.9 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 12-Dec-24

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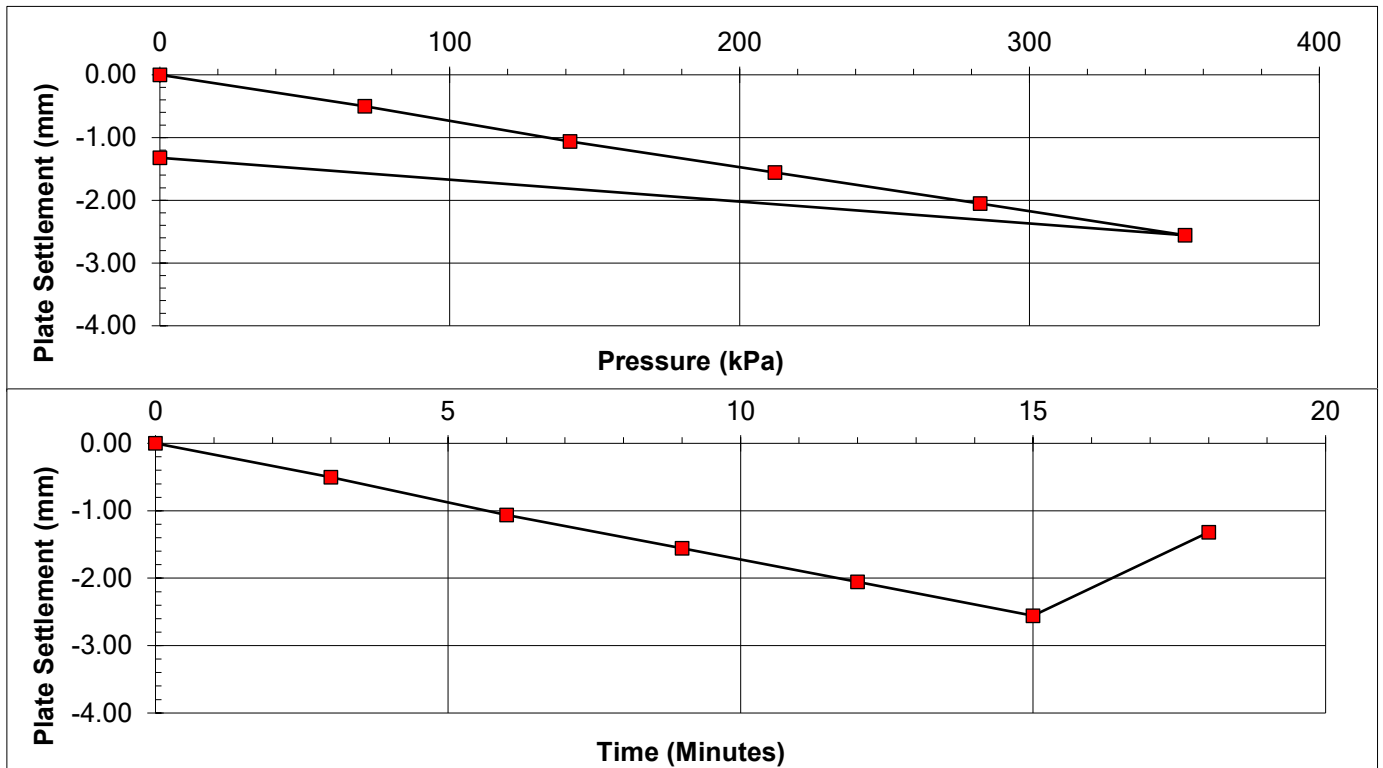
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p				
SITE	Castleton Sidings				
JOB NUMBER	MRN 24005/324				
TEST LOCATION	Plot 4	LOADING DEVICE	20 Tonne Enerpac Jack		
TEST DATE	11-Dec-24	PLATE SIZE (mm)	300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant		
MATERIAL UNDER TEST	Crush	MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3161	2268	3598	3009	0.00	0.00	0.0
3112	2213	3551	2959	-0.50	5.00	70.7
3061	2152	3495	2903	-1.06	10.00	141.5
3008	2101	3451	2853	-1.56	15.00	212.2
2952	2058	3401	2804	-2.05	20.00	282.9
2901	2001	3358	2753	-2.56	25.00	353.7
3038	2121	3472	2877	-1.32	0.00	0.0



Pressure at 1.25 mm deflexion = 168 kPa
Modulus of subgrade reaction (k) = 135 MPa/m
Equivalent 762 mm plate reaction = 59 MPa/m
Equivalent CBR = 11.5 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

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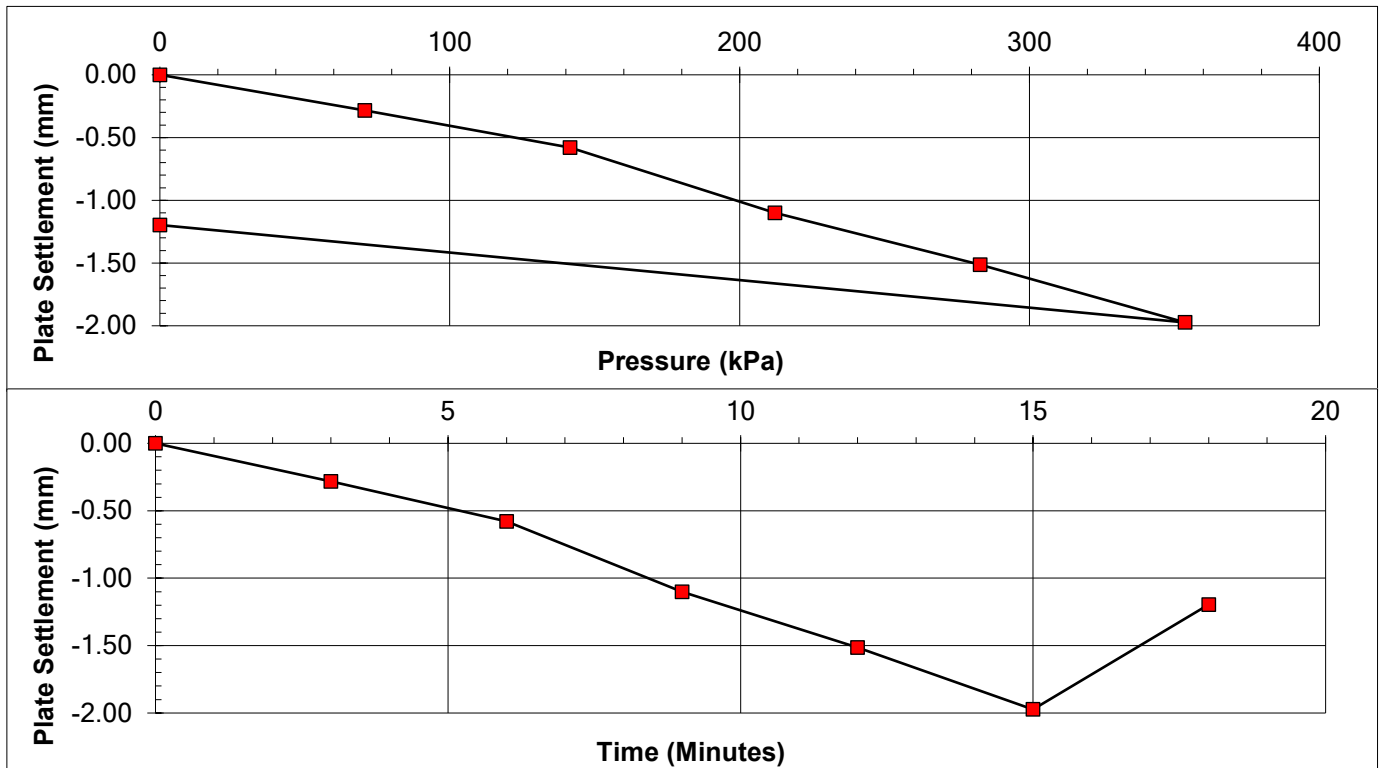
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/324					
TEST LOCATION	Road 1 (1)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	11-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2623	3132	3653	3136	0.00	0.00	0.0
2592	3110	3621	3108	-0.28	5.00	70.7
2561	3081	3592	3078	-0.58	10.00	141.5
2515	3021	3542	3026	-1.10	15.00	212.2
2472	2981	3501	2985	-1.51	20.00	282.9
2431	2942	3443	2939	-1.97	25.00	353.7
2518	3013	3518	3016	-1.20	0.00	0.0



Pressure at 1.25 mm deflexion = 238 kPa
Modulus of subgrade reaction (k) = 190 MPa/m
Equivalent 762 mm plate reaction = 84 MPa/m
Equivalent CBR = 20.9 %

REMARKS

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NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

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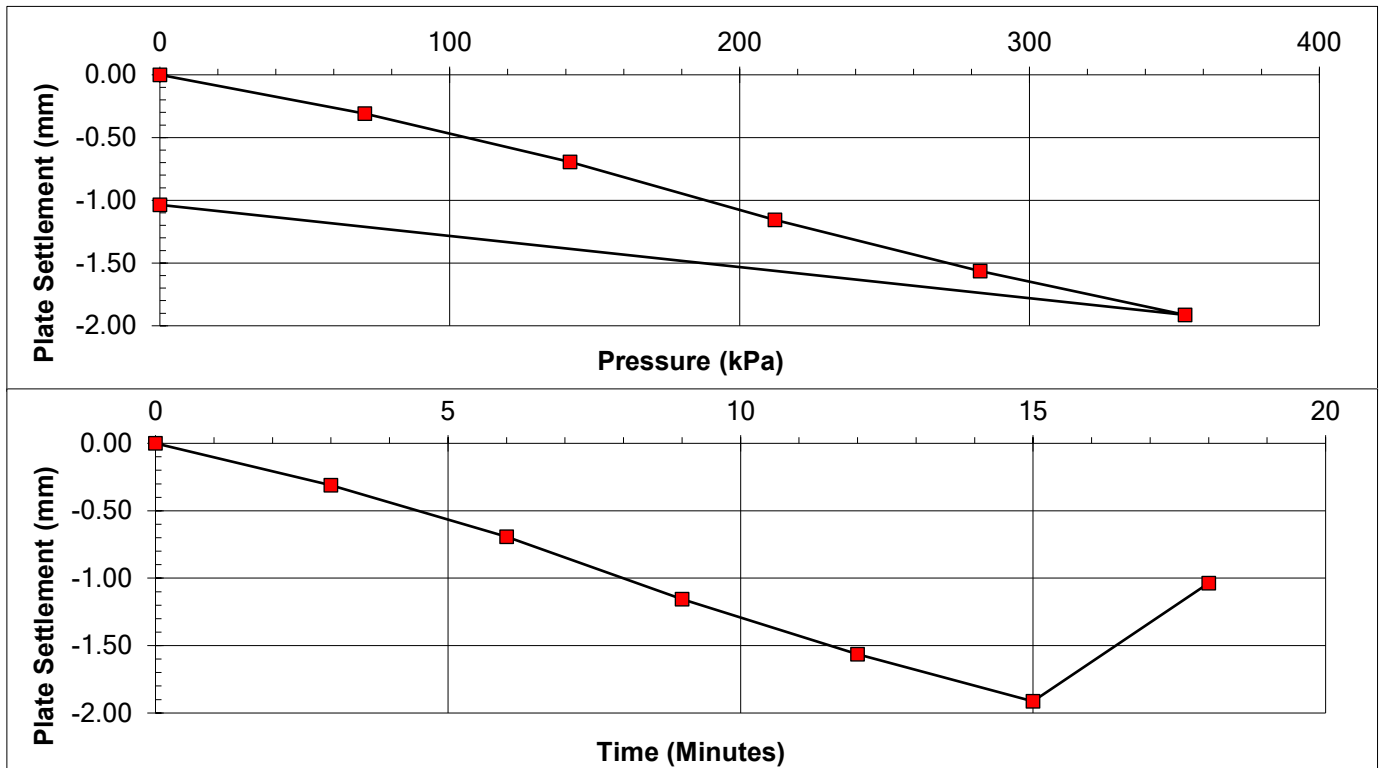
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/324					
TEST LOCATION	Road 1 (2)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	11-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3143	4223	3598	3655	0.00	0.00	0.0
3118	4192	3561	3624	-0.31	5.00	70.7
3080	4158	3518	3585	-0.69	10.00	141.5
3028	4108	3481	3539	-1.16	15.00	212.2
2981	4072	3442	3498	-1.56	20.00	282.9
2951	4038	3401	3463	-1.91	25.00	353.7
3021	4121	3511	3551	-1.04	0.00	0.0



Pressure at 1.25 mm deflexion =	228 kPa
Modulus of subgrade reaction (k) =	183 MPa/m
Equivalent 762 mm plate reaction =	81 MPa/m
Equivalent CBR =	19.5 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

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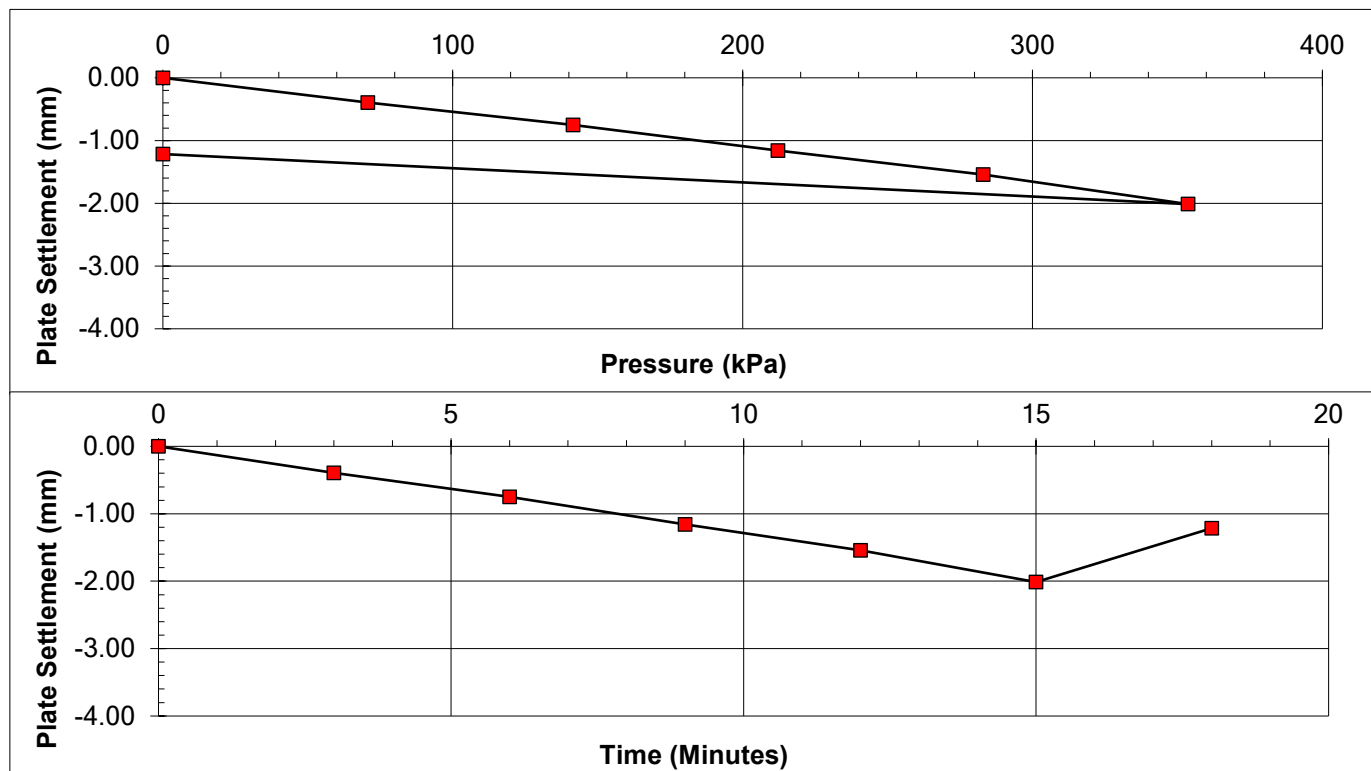
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PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/324					
TEST LOCATION	Road 1 (3)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	11-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2623	3183	3061	2956	0.00	0.00	0.0
2592	3145	3012	2916	-0.39	5.00	70.7
2558	3112	2972	2881	-0.75	10.00	141.5
2505	3072	2942	2840	-1.16	15.00	212.2
2472	3031	2901	2801	-1.54	20.00	282.9
2431	2981	2851	2754	-2.01	25.00	353.7
2521	3051	2931	2834	-1.21	0.00	0.0



Pressure at 1.25 mm deflexion =	229 kPa
Modulus of subgrade reaction (k) =	183 MPa/m
Equivalent 762 mm plate reaction =	81 MPa/m
Equivalent CBR =	19.5 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 12-Dec-24

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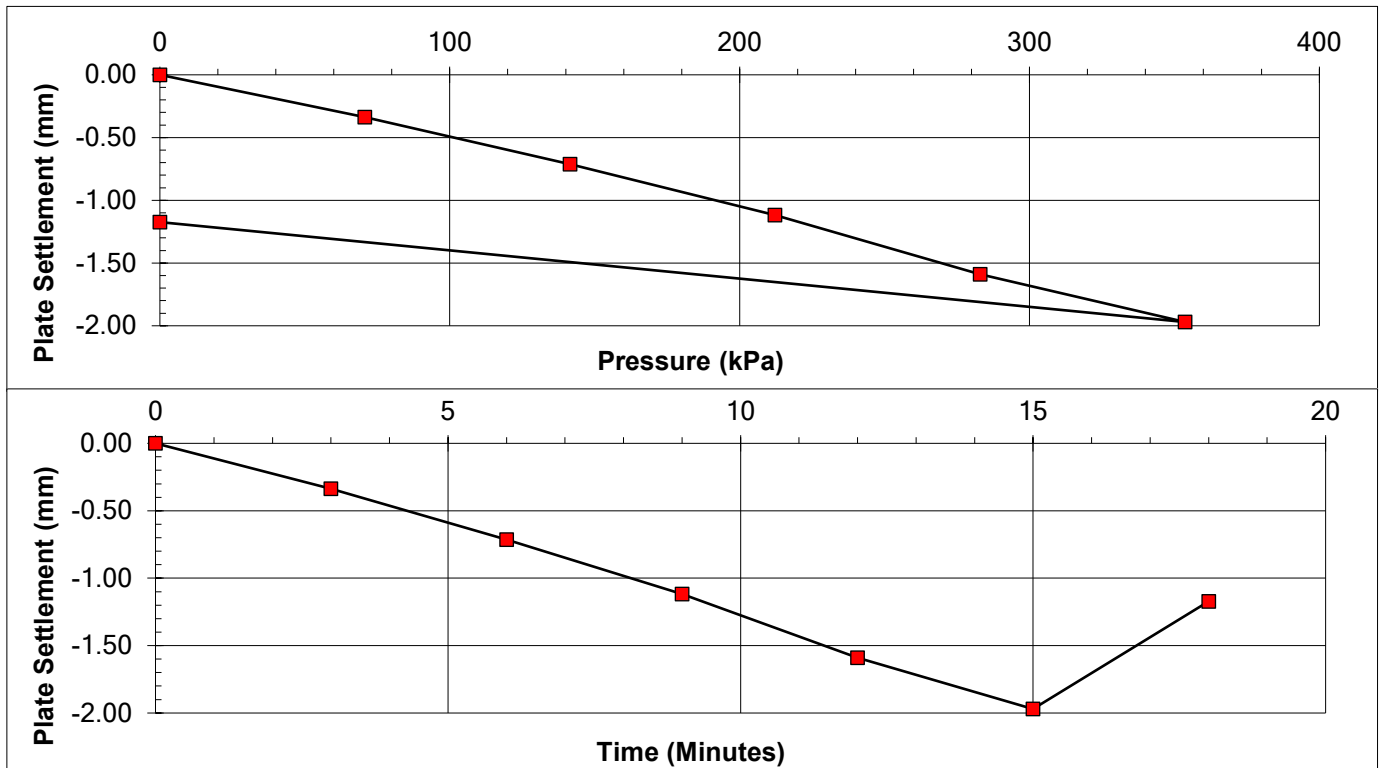
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PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/324					
TEST LOCATION	Road 1 (4)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	11-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2243	3523	3045	2937	0.00	0.00	0.0
2210	3492	3008	2903	-0.34	5.00	70.7
2181	3451	2965	2866	-0.71	10.00	141.5
2130	3415	2931	2825	-1.12	15.00	212.2
2081	3361	2892	2778	-1.59	20.00	282.9
2058	3311	2851	2740	-1.97	25.00	353.7
2121	3392	2946	2820	-1.17	0.00	0.0



Pressure at 1.25 mm deflexion =	232 kPa
Modulus of subgrade reaction (k) =	186 MPa/m
Equivalent 762 mm plate reaction =	82 MPa/m
Equivalent CBR =	20.0 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 12-Dec-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/330
Date of Issue 18 December 2024
Page 1 of 8

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
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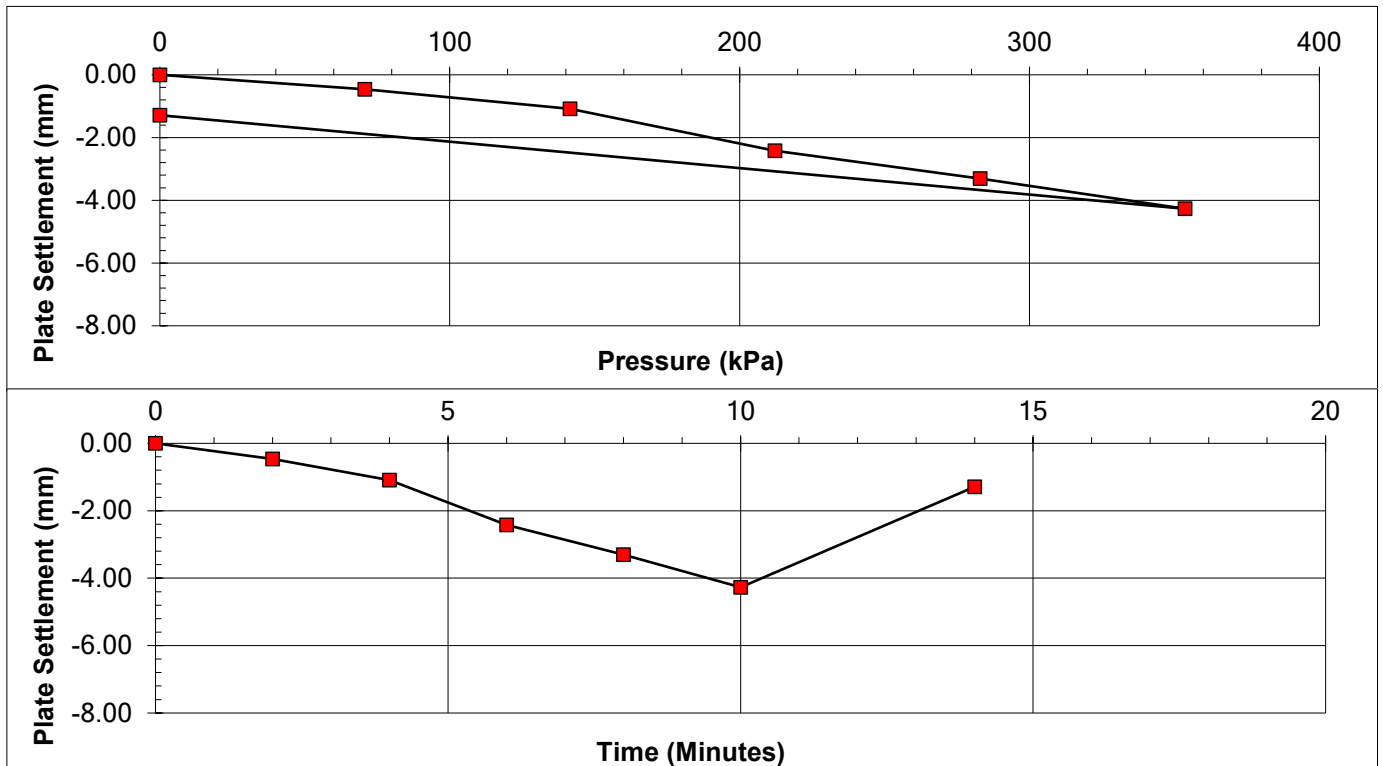
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Plot 15	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	17-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST		Crush		MOISTURE CONTENT		Not Required

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4450	4691	4488	4543	0.00	0.00	0.0
4404	4646	4441	4497	-0.46	5.00	70.7
4341	4584	4378	4434	-1.09	10.00	141.5
4209	4450	4245	4301	-2.42	15.00	212.2
4121	4362	4154	4212	-3.31	20.00	282.9
4026	4264	4058	4116	-4.27	25.00	353.7
4390	4528	4324	4414	-1.29	0.00	0.0



Pressure at 1.25 mm deflection =	150 kPa
Modulus of subgrade reaction (k) =	120 MPa/m
Equivalent 762 mm plate reaction =	53 MPa/m
Equivalent CBR =	9.4 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 18-Dec-24

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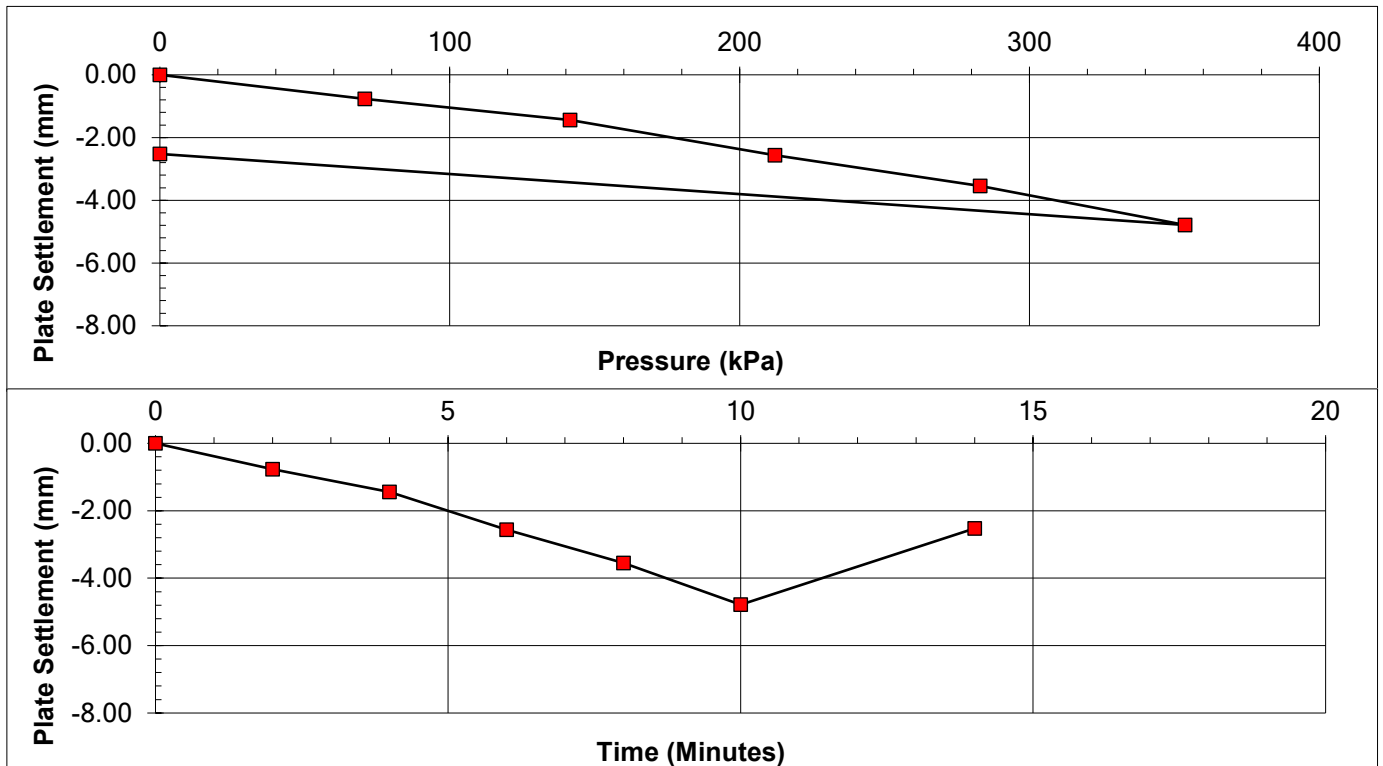
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p		
SITE	Castleton Sidings		
JOB NUMBER	MRN 24005/330		
TEST LOCATION	J1	LOADING DEVICE	20 Tonne Enerpac Jack
TEST DATE	17-Dec-24	PLATE SIZE (mm)	300 diameter
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant
MATERIAL UNDER TEST	Ash Fill	MOISTURE CONTENT	Not Required

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4349	4480	4221	4350	0.00	0.00	0.0
4274	4397	4149	4273	-0.77	5.00	70.7
4219	4324	4075	4206	-1.44	10.00	141.5
4108	4210	3962	4093	-2.57	15.00	212.2
4012	4109	3865	3995	-3.55	20.00	282.9
3883	3990	3741	3871	-4.79	25.00	353.7
4108	4216	3968	4097	-2.53	0.00	0.0



Pressure at 1.25 mm deflection =	122 kPa
Modulus of subgrade reaction (k) =	97 MPa/m
Equivalent 762 mm plate reaction =	43 MPa/m
Equivalent CBR =	6.5 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 18-Dec-24

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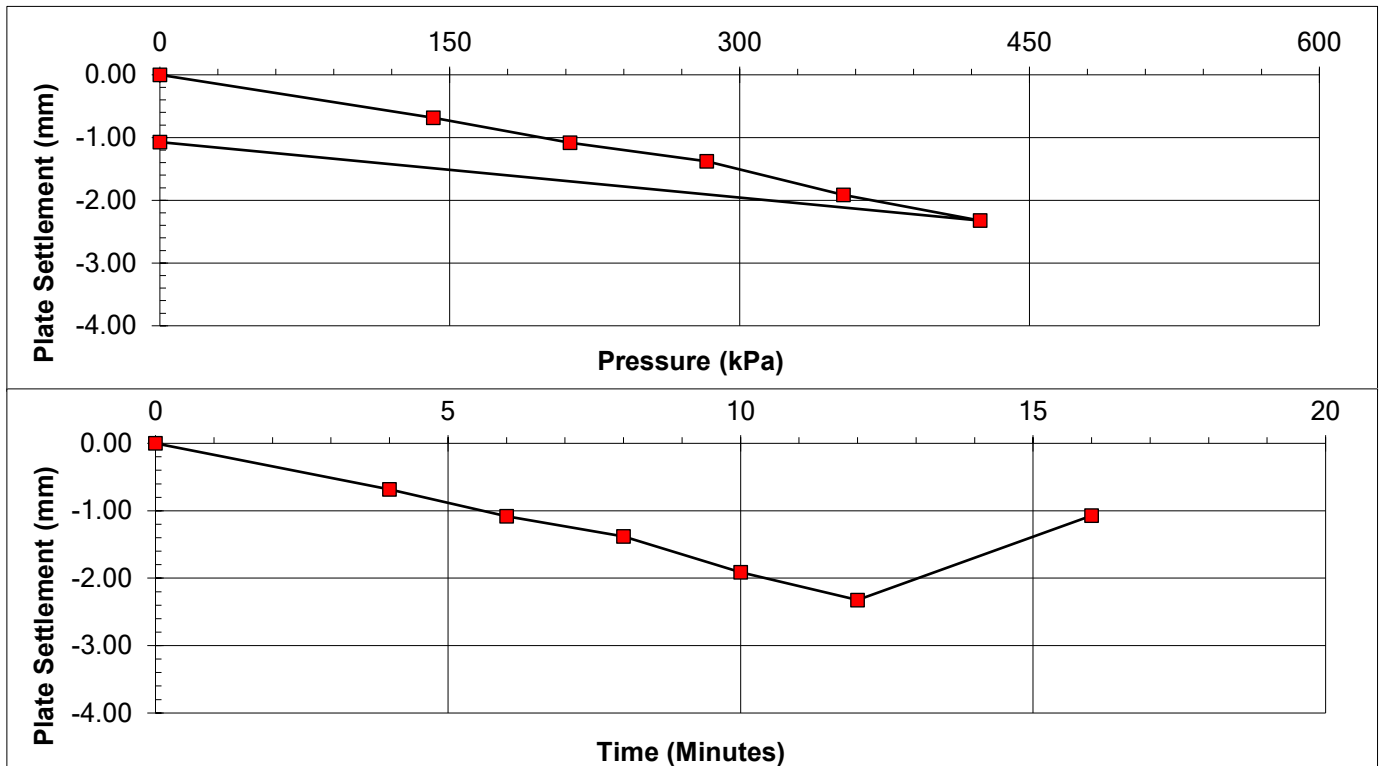
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Road 1 (5)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	17-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4433	4344	4295	4357	0.00	0.00	0.0
4362	4273	4232	4289	-0.68	10.00	141.5
4318	4234	4195	4249	-1.08	15.00	212.2
4294	4202	4162	4219	-1.38	20.00	282.9
4241	4150	4107	4166	-1.91	25.00	353.7
4205	4107	4063	4125	-2.32	30.00	424.4
4329	4233	4188	4250	-1.07	0.00	0.0



Pressure at 1.25 mm deflection = 252 kPa
Modulus of subgrade reaction (k) = 202 MPa/m
Equivalent 762 mm plate reaction = 89 MPa/m
Equivalent CBR = 23.1 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

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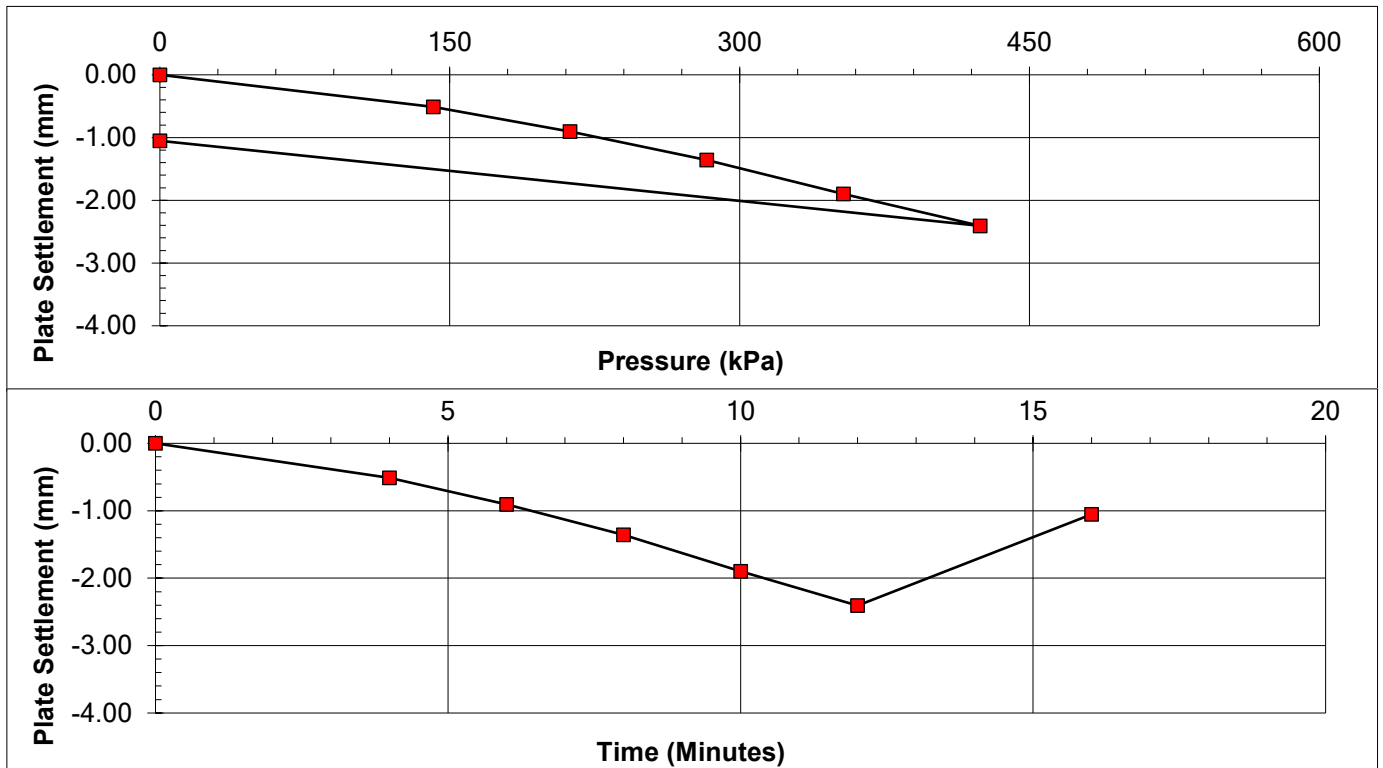
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PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Road 1 (6)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	17-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4456	4579	4547	4527	0.00	0.00	0.0
4407	4526	4496	4476	-0.51	10.00	141.5
4362	4488	4460	4437	-0.91	15.00	212.2
4317	4444	4414	4392	-1.36	20.00	282.9
4264	4391	4357	4337	-1.90	25.00	353.7
4211	4347	4302	4287	-2.41	30.00	424.4
4346	4483	4437	4422	-1.05	0.00	0.0



Pressure at 1.25 mm deflection =	266 kPa
Modulus of subgrade reaction (k) =	213 MPa/m
Equivalent 762 mm plate reaction =	94 MPa/m
Equivalent CBR =	25.4 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
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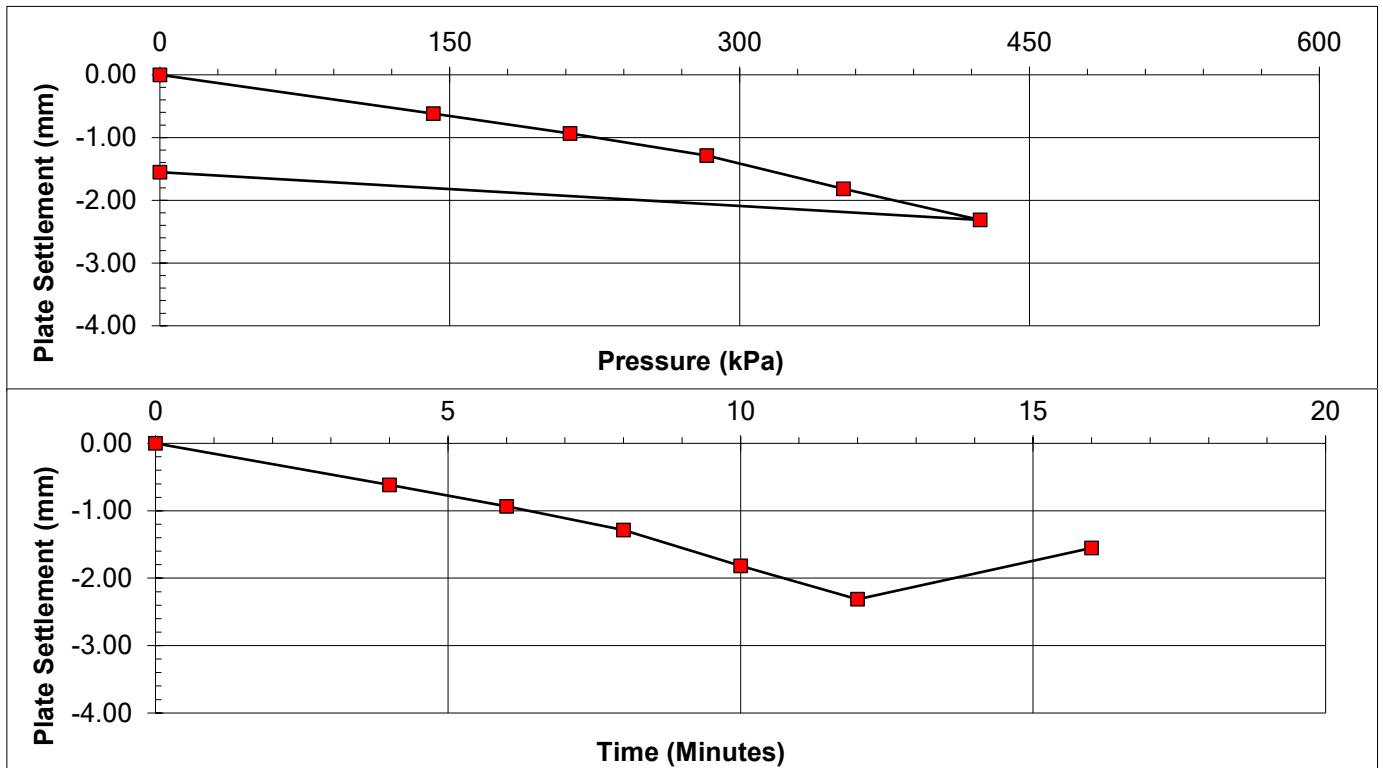
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PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Road 2 (1)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	17-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4609	4425	4490	4508	0.00	0.00	0.0
4546	4354	4439	4446	-0.62	10.00	141.5
4514	4324	4406	4415	-0.93	15.00	212.2
4477	4302	4359	4379	-1.29	20.00	282.9
4424	4249	4306	4326	-1.82	25.00	353.7
4371	4201	4258	4277	-2.31	30.00	424.4
4446	4276	4337	4353	-1.55	0.00	0.0



Pressure at 1.25 mm deflection =	276 kPa
Modulus of subgrade reaction (k) =	220 MPa/m
Equivalent 762 mm plate reaction =	97 MPa/m
Equivalent CBR =	26.9 %

REMARKS

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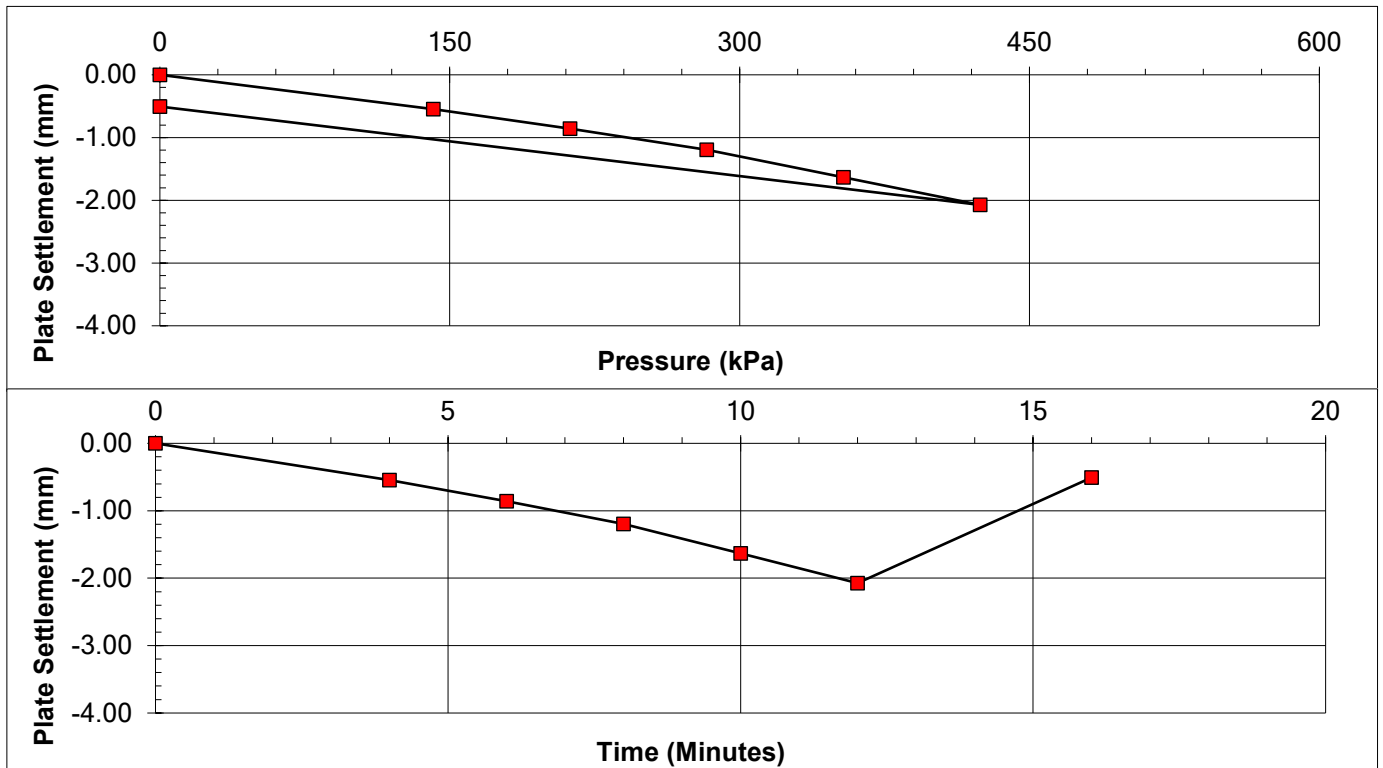
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PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Road 2 (2)	LOADING DEVICE	20 Tonne Enerpac Jack			
TEST DATE	17-Dec-24	PLATE SIZE (mm)	300 diameter			
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant			
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT	Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4403	4698	4312	4471	0.00	0.00	0.0
4341	4649	4259	4416	-0.55	10.00	141.5
4307	4621	4227	4385	-0.86	15.00	212.2
4273	4587	4194	4351	-1.20	20.00	282.9
4231	4542	4150	4308	-1.63	25.00	353.7
4187	4499	4105	4264	-2.07	30.00	424.4
4344	4655	4262	4420	-0.51	0.00	0.0



Pressure at 1.25 mm deflection = 292 kPa
Modulus of subgrade reaction (k) = 233 MPa/m
Equivalent 762 mm plate reaction = 103 MPa/m
Equivalent CBR = 29.7 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 18-Dec-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



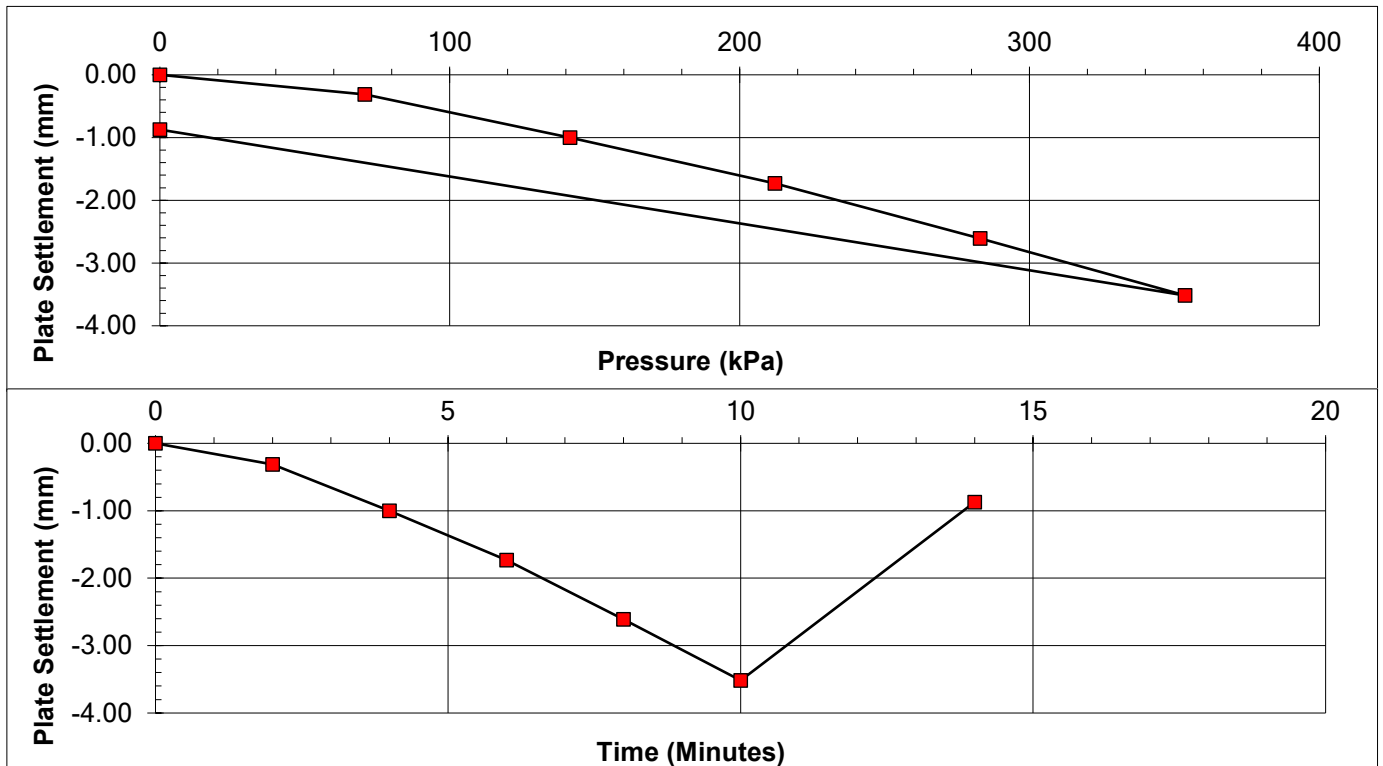
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/330					
TEST LOCATION	Plot 10	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	17-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Crush		MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
4478	4521	4487	4495	0.00	0.00	0.0
4447	4490	4455	4464	-0.31	5.00	70.7
4382	4417	4386	4395	-1.00	10.00	141.5
4309	4344	4314	4322	-1.73	15.00	212.2
4221	4256	4226	4234	-2.61	20.00	282.9
4124	4176	4131	4144	-3.52	25.00	353.7
4388	4440	4396	4408	-0.87	0.00	0.0



Pressure at 1.25 mm deflection =	165 kPa
Modulus of subgrade reaction (k) =	132 MPa/m
Equivalent 762 mm plate reaction =	58 MPa/m
Equivalent CBR =	11.1 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 18-Dec-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/328
Date of Issue 16 December 2024
Page 1 of 9

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



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Also at: London: 020 8523 1999

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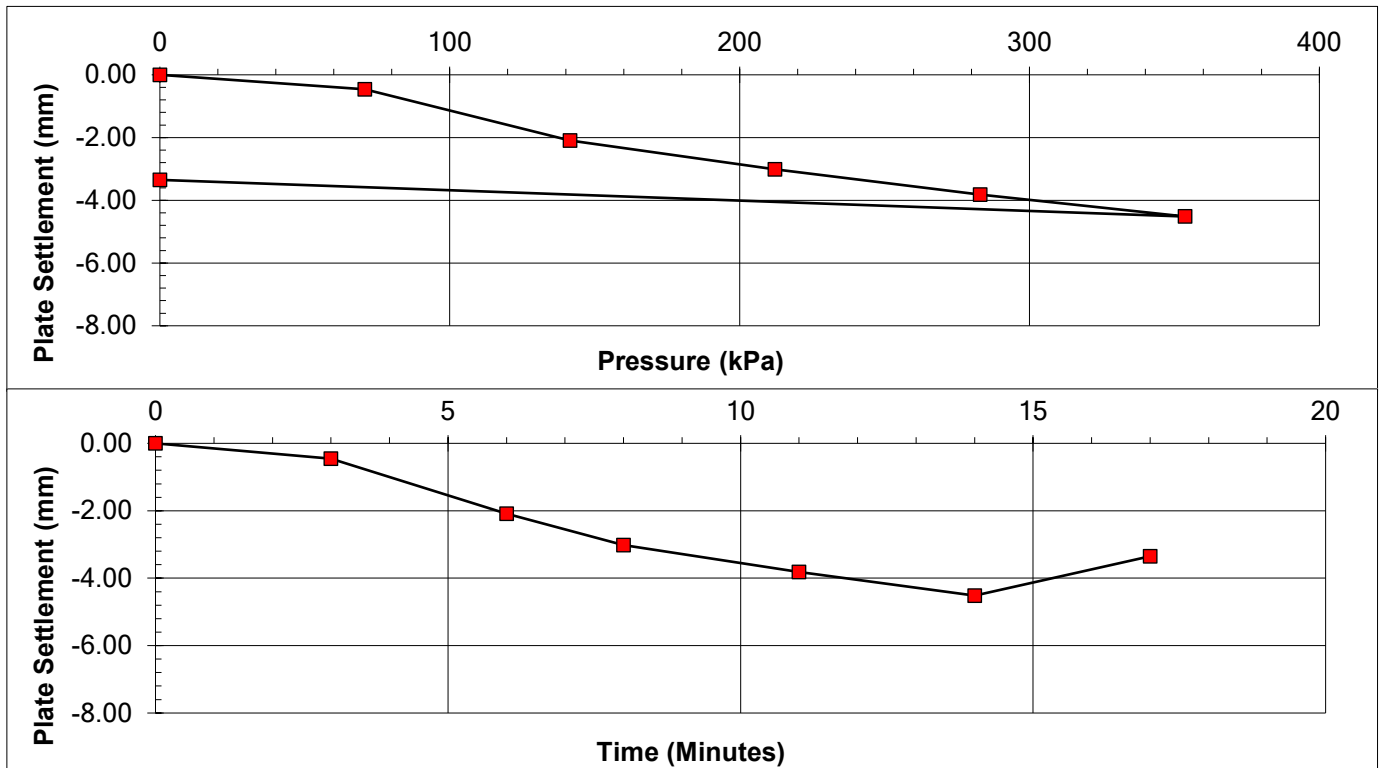
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p		
SITE	Castleton Sidings		
JOB NUMBER	MRN 24005/328		
TEST LOCATION	L2	LOADING DEVICE	20 Tonne Enerpac Jack
TEST DATE	13-Dec-24	PLATE SIZE (mm)	300 diameter
TEST DEPTH	Surface	REACTION LOAD USED	Site Plant
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT	Not Required

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2532	3115	2243	2630	0.00	0.00	0.0
2481	3071	2201	2584	-0.46	5.00	70.7
2318	2910	2035	2421	-2.09	10.00	141.5
2241	2801	1943	2328	-3.02	15.00	212.2
2181	2691	1872	2248	-3.82	20.00	282.9
2110	2613	1812	2178	-4.52	25.00	353.7
2212	2732	1942	2295	-3.35	0.00	0.0



Pressure at 1.25 mm deflection =	105 kPa
Modulus of subgrade reaction (k) =	84 MPa/m
Equivalent 762 mm plate reaction =	37 MPa/m
Equivalent CBR =	5.1 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

MURRAY RIX

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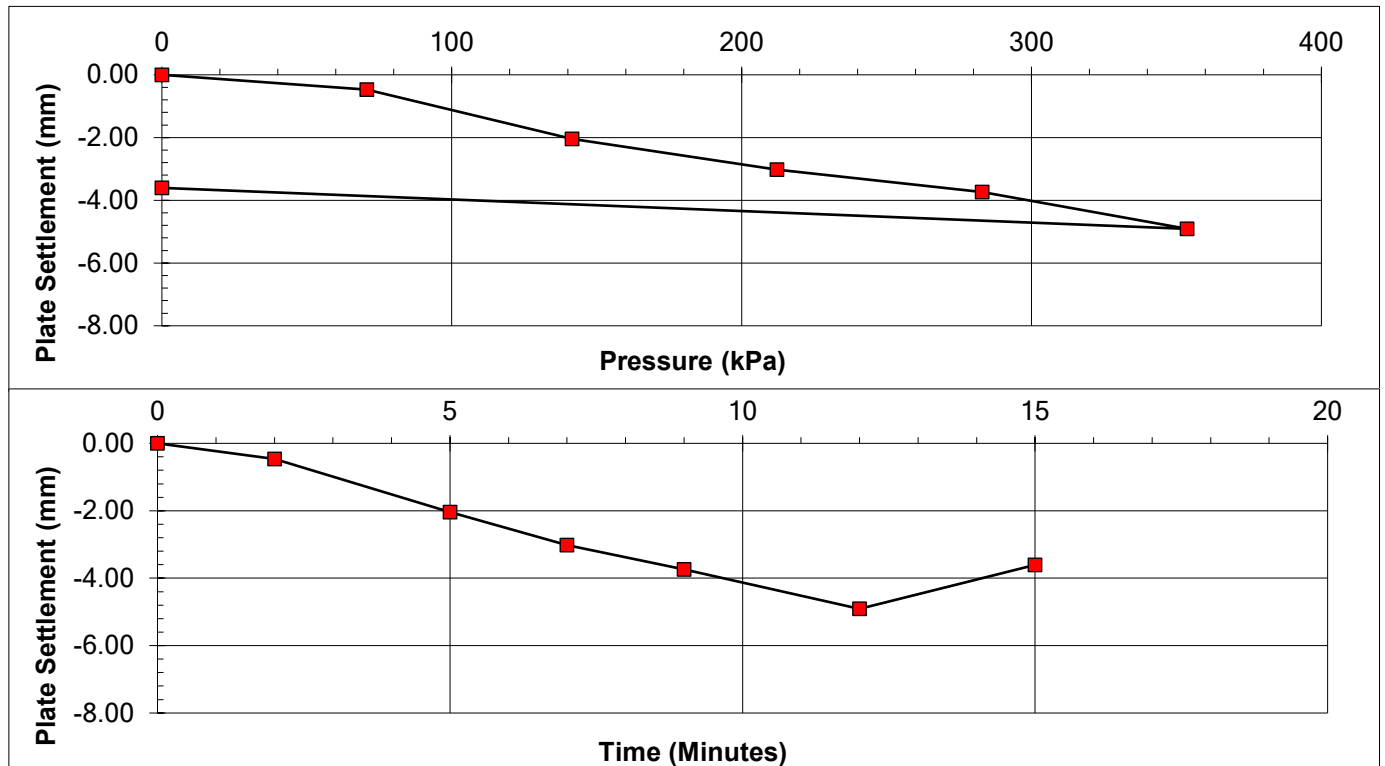
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	K3	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash		MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2461	3596	2143	2733	0.00	0.00	0.0
2401	3558	2101	2687	-0.47	5.00	70.7
2248	3395	1945	2529	-2.04	10.00	141.5
2120	3302	1872	2431	-3.02	15.00	212.2
2045	3231	1803	2360	-3.74	20.00	282.9
1913	3131	1683	2242	-4.91	25.00	353.7
2042	3265	1812	2373	-3.60	0.00	0.0



Pressure at 1.25 mm deflection =	106 kPa
Modulus of subgrade reaction (k) =	85 MPa/m
Equivalent 762 mm plate reaction =	37 MPa/m
Equivalent CBR =	5.1 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

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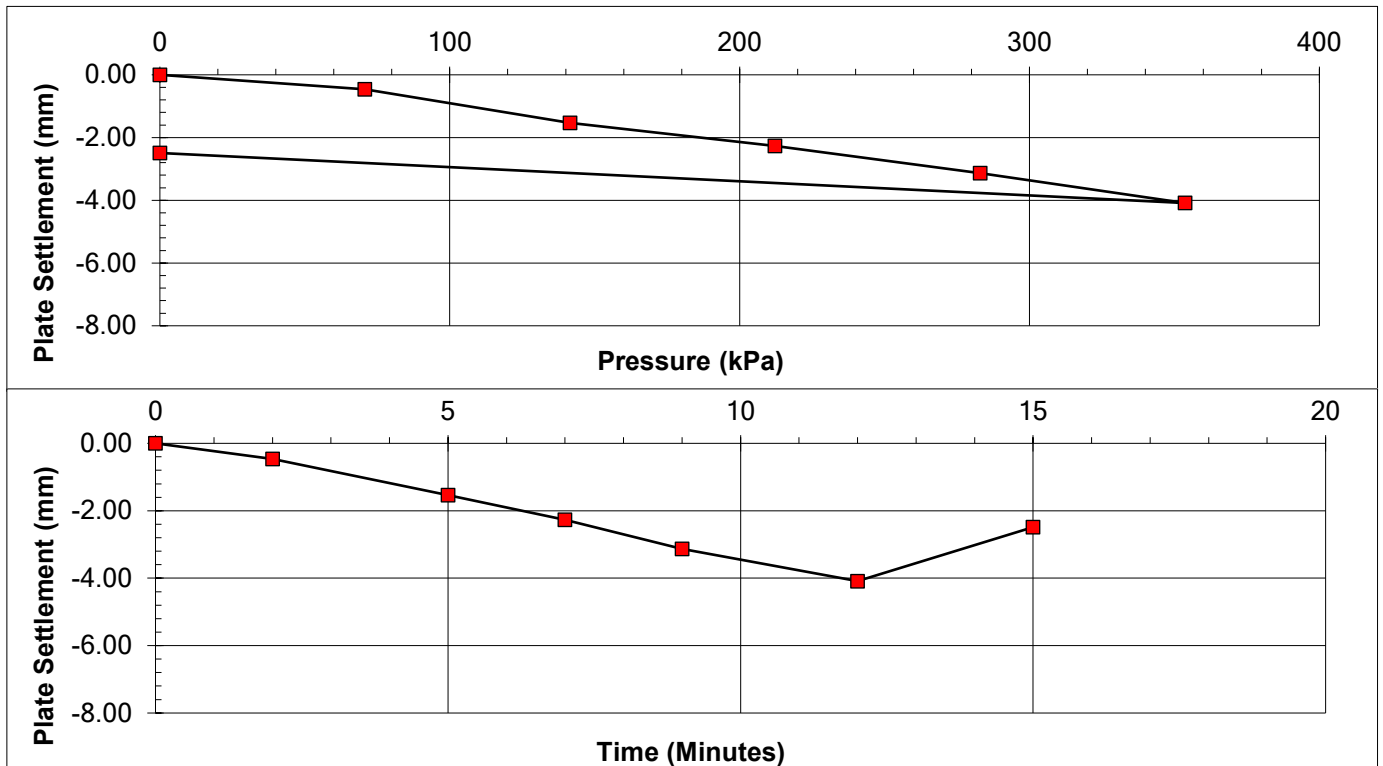
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	K1	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2236	4596	3523	3452	0.00	0.00	0.0
2183	4545	3488	3405	-0.46	5.00	70.7
2072	4442	3381	3298	-1.53	10.00	141.5
2012	4361	3301	3225	-2.27	15.00	212.2
1911	4292	3212	3138	-3.13	20.00	282.9
1843	4165	3121	3043	-4.09	25.00	353.7
1992	4311	3305	3203	-2.49	0.00	0.0



Pressure at 1.25 mm deflection =	123 kPa
Modulus of subgrade reaction (k) =	98 MPa/m
Equivalent 762 mm plate reaction =	43 MPa/m
Equivalent CBR =	6.6 %

REMARKS

SIGNED
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX

TEL 0161 475 0870

TEST CERTIFICATE

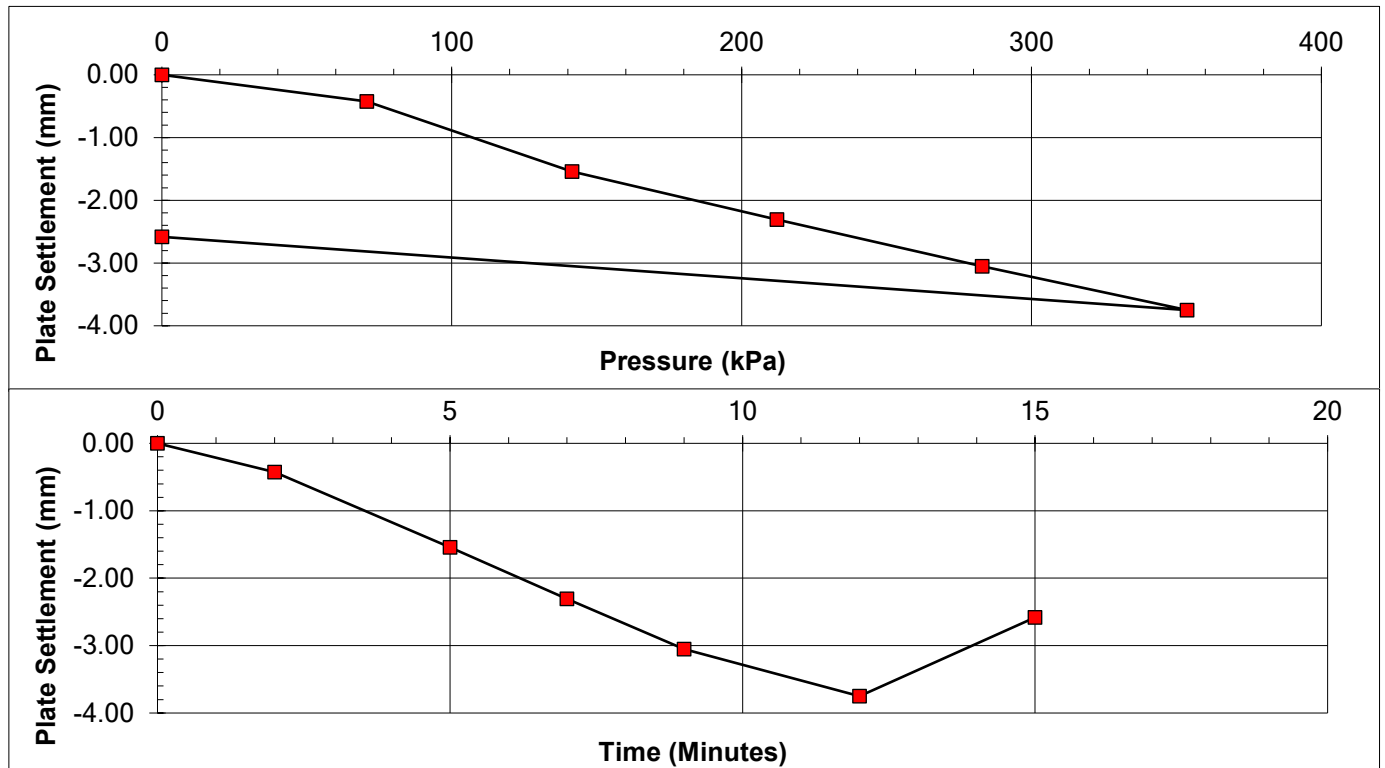
PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)



CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	L1	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3145	3538	4603	3762	0.00	0.00	0.0
3108	3492	4558	3719	-0.43	5.00	70.7
3001	3381	4442	3608	-1.54	10.00	141.5
2921	3301	4372	3531	-2.31	15.00	212.2
2842	3221	4308	3457	-3.05	20.00	282.9
2781	3152	4228	3387	-3.75	25.00	353.7
2898	3268	4345	3504	-2.58	0.00	0.0



Pressure at 1.25 mm deflection =	123 kPa
Modulus of subgrade reaction (k) =	98 MPa/m
Equivalent 762 mm plate reaction =	43 MPa/m
Equivalent CBR =	6.7 %

REMARKS

SIGNED
NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
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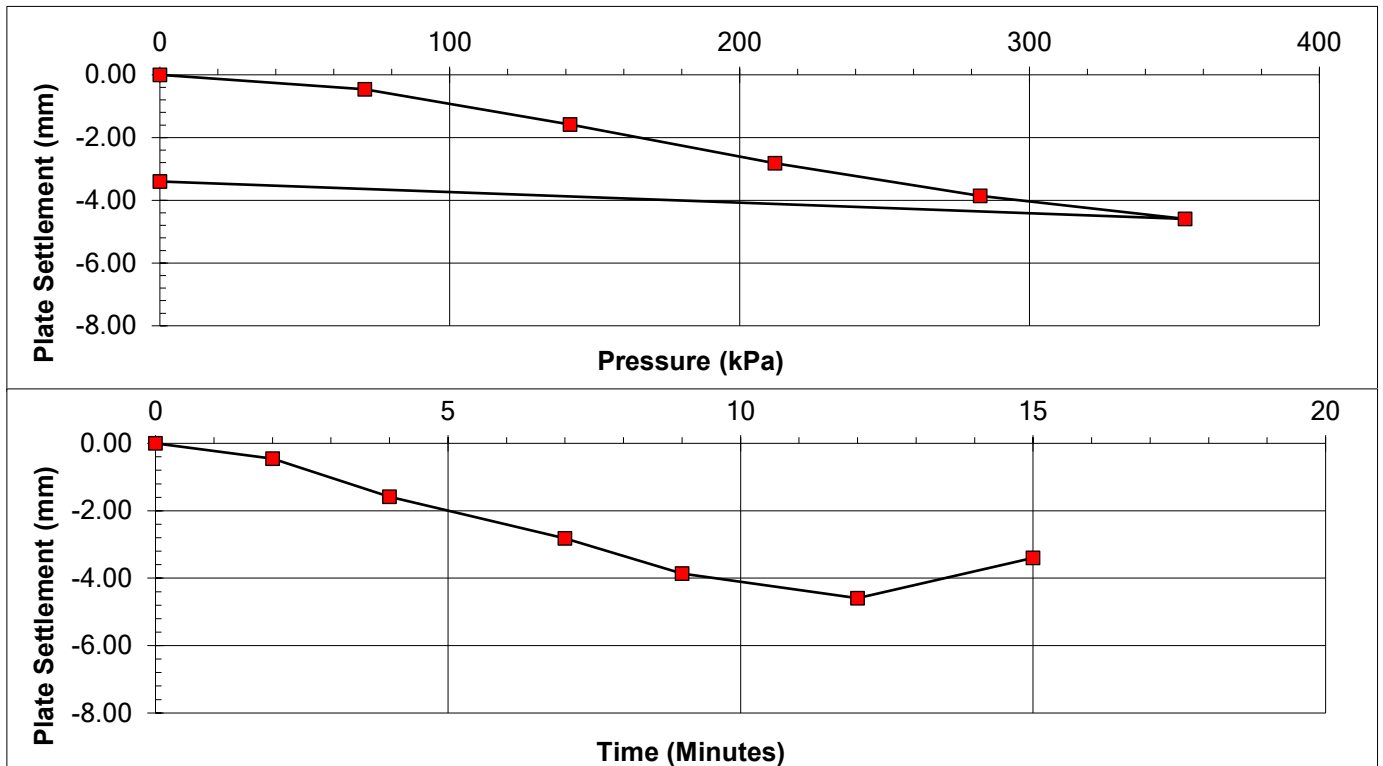
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	J2	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash		MOISTURE CONTENT		Not Required	

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3461	2123	3038	2874	0.00	0.00	0.0
3412	2081	2992	2828	-0.46	5.00	70.7
3308	1971	2868	2716	-1.58	10.00	141.5
3201	1851	2723	2592	-2.82	15.00	212.2
3132	1721	2611	2488	-3.86	20.00	282.9
3051	1651	2542	2415	-4.59	25.00	353.7
3168	1773	2661	2534	-3.40	0.00	0.0



Pressure at 1.25 mm deflection =	121 kPa
Modulus of subgrade reaction (k) =	96 MPa/m
Equivalent 762 mm plate reaction =	43 MPa/m
Equivalent CBR =	6.4 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

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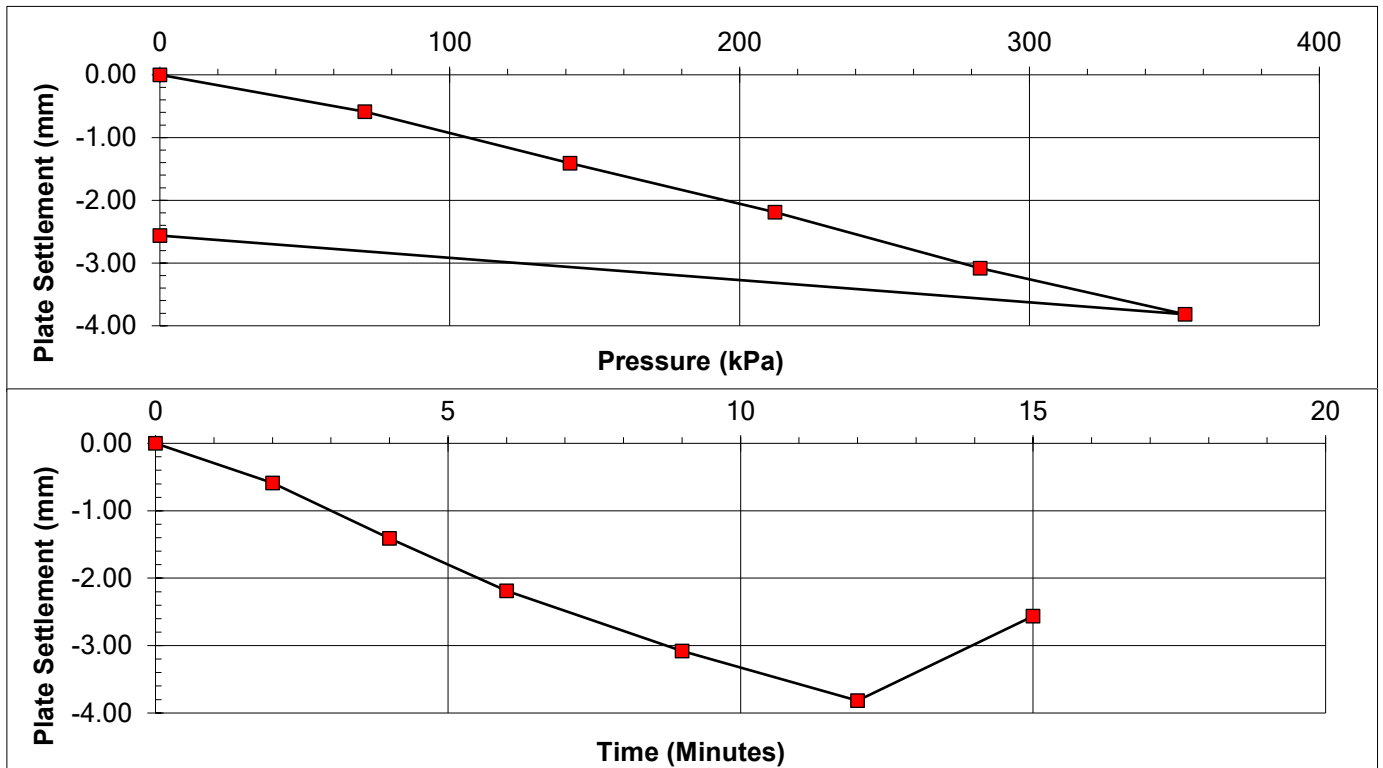
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	K2	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
2613	3131	3473	3072	0.00	0.00	0.0
2551	3065	3425	3014	-0.59	5.00	70.7
2481	2982	3331	2931	-1.41	10.00	141.5
2401	2901	3258	2853	-2.19	15.00	212.2
2311	2821	3161	2764	-3.08	20.00	282.9
2228	2772	3072	2691	-3.82	25.00	353.7
2361	2895	3192	2816	-2.56	0.00	0.0



Pressure at 1.25 mm deflection =	128 kPa
Modulus of subgrade reaction (k) =	102 MPa/m
Equivalent 762 mm plate reaction =	45 MPa/m
Equivalent CBR =	7.1 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

MURRAY RIX

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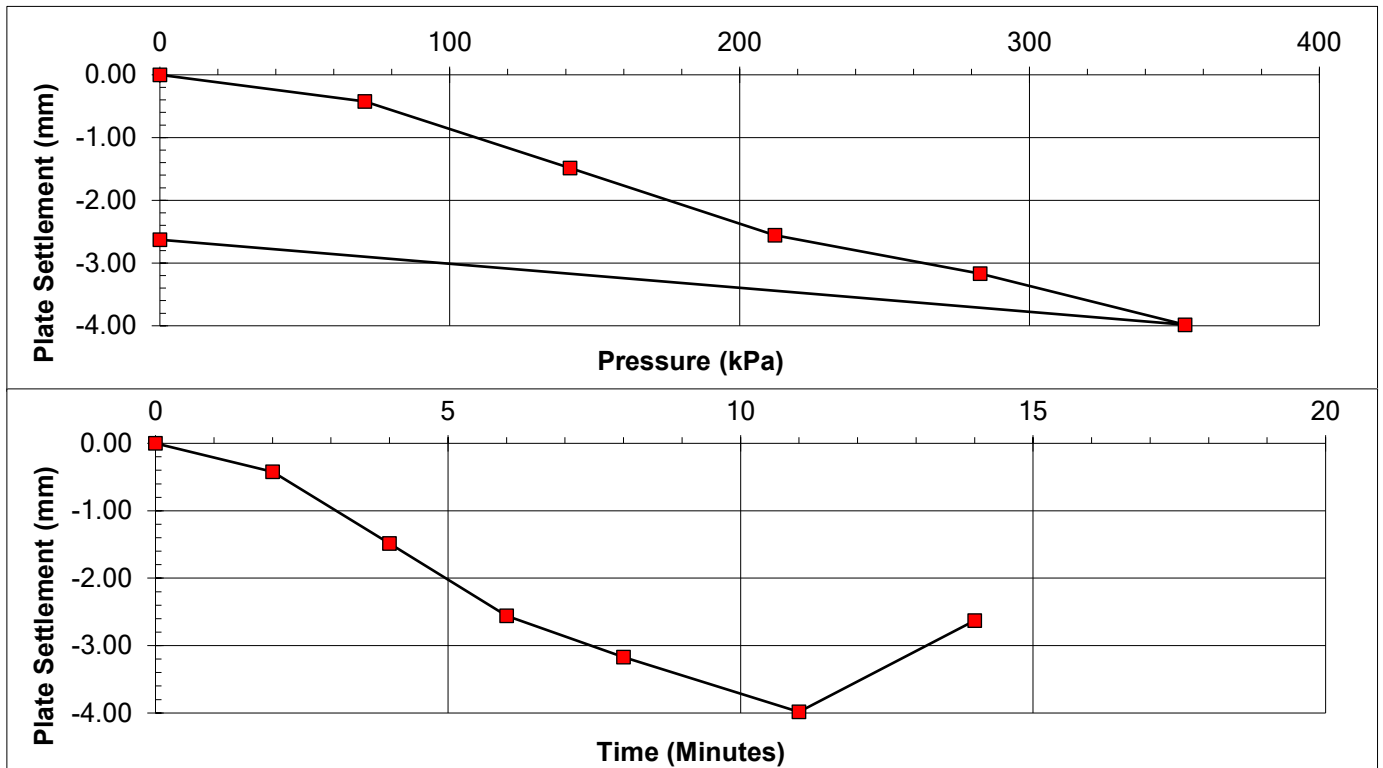
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	M2	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3161	3598	2298	3019	0.00	0.00	0.0
3110	3560	2260	2977	-0.42	5.00	70.7
3011	3442	2158	2870	-1.49	10.00	141.5
2901	3351	2038	2763	-2.56	15.00	212.2
2842	3291	1973	2702	-3.17	20.00	282.9
2751	3210	1901	2621	-3.98	25.00	353.7
2892	3345	2031	2756	-2.63	0.00	0.0



Pressure at 1.25 mm deflection =	126 kPa
Modulus of subgrade reaction (k) =	101 MPa/m
Equivalent 762 mm plate reaction =	44 MPa/m
Equivalent CBR =	6.9 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

MURRAY RIX

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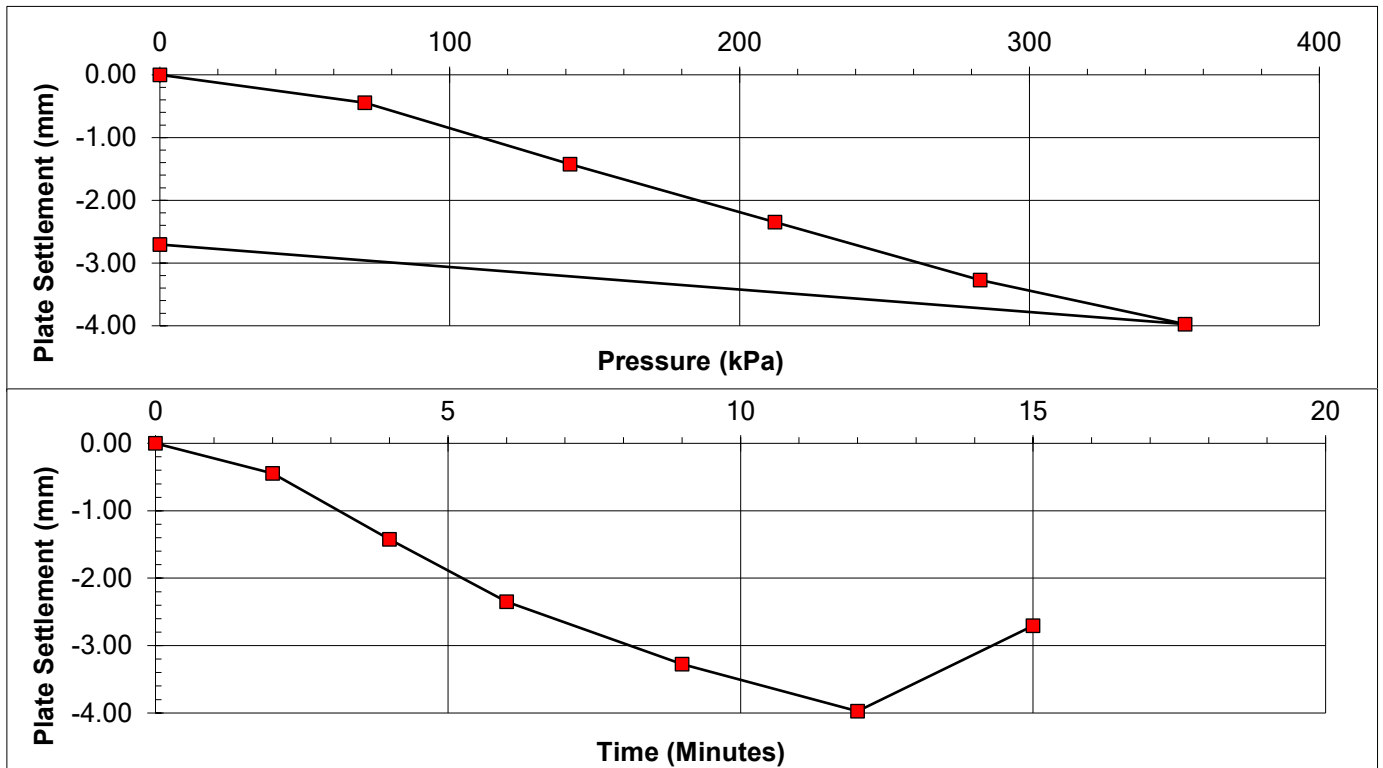
TEST CERTIFICATE

PLATE INCREMENTAL LOAD TEST

BS 1377 : PART 9 : CL 4.1 and IAN 73/06 Rev 1 (2009)

CLIENT	e3p					
SITE	Castleton Sidings					
JOB NUMBER	MRN 24005/328					
TEST LOCATION	L3	LOADING DEVICE		20 Tonne Enerpac Jack		
TEST DATE	13-Dec-24	PLATE SIZE (mm)		300 diameter		
TEST DEPTH	Surface	REACTION LOAD USED		Site Plant		
MATERIAL UNDER TEST	Fill/Ash	MOISTURE CONTENT		Not Required		

Dial Gauge 1 (mmx100)	Dial Gauge 2 (mmx100)	Dial Gauge 3 (mmx100)	Mean Gauge (mmx100)	Mean Deflection (mm)	Load (kN)	Pressure (kPa)
3452	3252	3634	3446	0.00	0.00	0.0
3401	3212	3592	3402	-0.44	5.00	70.7
3301	3118	3492	3304	-1.42	10.00	141.5
3201	3031	3401	3211	-2.35	15.00	212.2
3112	2931	3313	3119	-3.27	20.00	282.9
3042	2873	3231	3049	-3.97	25.00	353.7
3165	2993	3368	3175	-2.71	0.00	0.0



Pressure at 1.25 mm deflection =	129 kPa
Modulus of subgrade reaction (k) =	103 MPa/m
Equivalent 762 mm plate reaction =	46 MPa/m
Equivalent CBR =	7.2 %

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE 16-Dec-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/260

Date of Issue 23 October 2024

Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
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Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

CALIBRATION OF NUCLEAR DENSITY GAUGE
BY DIRECT COMPARISON WITH SAND REPLACEMENT DENSITY TESTS

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/260
MATERIAL	Ash Fill
ADVISED SOURCE	Site Won

Date of Test	21 October 2024
--------------	-----------------

Gauge Number	24958
Gauge Type	Troxler 3440

Sand Replacements			Nuclear Density Gauge (NDG)			Difference	
Test No.	Wet Density	Moisture	Test No.	Wet Density	Moisture	Wet Density	Moisture
1	1.954	20.4	1	1.749	28.3	0.205	7.9
2	1.896	21.6	2	1.763	25.6	0.134	4.0
3	1.917	20.4	3	1.711	25.8	0.206	5.4
4	1.926	20.9	4	1.691	27.2	0.235	6.3
5	1.838	20.8	5	1.700	23.6	0.138	2.8

Adjustment Required to Nuclear Density Gauge Reading	
Wet Density	Add 0.184 Mg/m ³ to the NDG Result
Moisture Content	Subtract 5.3% from the NDG Result

(Wet Density results expressed as Mg/m³, Moisture Content results expressed as % of Dry Mass)

COMMENT / ANOMALIES

NDG results reported are the average of 4 readings, Correction calculated as an average

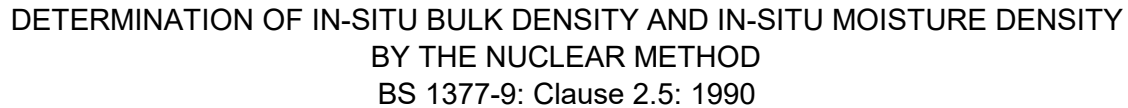
SIGNED

(Deputy Radiation Protection Supervisor)

NAME O.P. Davies BA (Hons)
(Laboratory Manager / DPRS)

DATE 23-Oct-24

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/262
Date of Issue 25 October 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

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DUKINFIELD, CHESHIRE SK16 4QX
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TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	23-Oct-24	JOB NUMBER	MRN 24005/262
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	P3 L1	250	1.92	1.57	22	100.3	N/A
2	P4 L1	250	1.86	1.49	24	95.2	N/A
3	O3 L1	250	1.87	1.50	25	95.3	N/A
4	O4 L1	250	1.91	1.60	20	101.7	N/A
5	R3 L2	250	1.90	1.52	25	96.7	N/A
6	Q3 L2	250	1.91	1.56	22	99.6	N/A
7	R2 L2	250	1.93	1.64	18	104.7	N/A
8	Q2 L2	250	1.88	1.59	18	101.3	N/A
9	R3 L3	250	1.90	1.55	23	98.4	N/A
10	Q3 L3	250	1.91	1.56	23	99.5	N/A
11	R2 L2	250	1.89	1.54	23	98.2	N/A
12	Q2 L3	250	1.97	1.60	24	101.7	N/A
13	P3 L2	250	1.90	1.50	27	95.6	N/A
14	P4 L2	250	1.91	1.50	28	95.6	N/A
Maximum Dry Density (Mg/m3)					1.57	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME S.J Hutchings
(Director)

SIGNED

DATE 25-Oct-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/264

Date of Issue 28 October 2024

Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

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Also at: London: 020 8523 1999

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	25-Oct-24	JOB NUMBER	MRN 24005/264
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	P2 L3	200	1.89	1.50	26	95.7	N/A
2	P3 L2	200	1.90	1.56	22	99.6	N/A
3	P4 L3	200	1.92	1.54	25	98.3	N/A
4	Q3 L4	200	1.86	1.47	26	93.8	N/A
5	R3 L4	200	1.87	1.52	23	97.0	N/A
6	O3 L2	200	1.92	1.54	25	98.2	N/A
7	O4 L2	200	1.98	1.55	28	98.6	N/A
8	Q4 L1	200	1.96	1.59	23	101.6	N/A
9	R4 L1	200	1.89	1.54	23	97.8	N/A
10	O3 L3	200	2.00	1.58	27	100.4	N/A
11	O4 L4	200	1.93	1.58	22	100.6	N/A
12	R3 L4	200	1.98	1.56	27	99.6	N/A
Maximum Dry Density (Mg/m3)					1.57	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME S.J Hutchings
(Director)

SIGNED

DATE 28-Oct-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/264

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	25-Oct-24
DATE OF TEST	25-Oct-24	SAMPLED BY	Murray Rix
DATE TESTED	28-Oct-24	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
581401	Test 01	Ash Fill	1.91	1.49	28	94.6	N/A
581402	Test 02	Ash Fill	2.06	1.71	21	108.6	N/A
Maximum Dry Density (Mg/m ³)				1.57	(Advised by client)		
Particle Density (Mg/m ³)				N/A	(Not Advised)		

COMMENT / ANOMALIES

NAME S.J Hutchings
(Director)

SIGNED

DATE 28-Oct-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/267
Date of Issue 31 October 2024
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

Notes

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MURRAY RIX

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TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	29-Oct-24	JOB NUMBER	MRN 24005/267
MATERIAL	Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	Q4 L2	250	1.86	1.51	23	96.5	N/A
2	Q4 L3	250	1.89	1.55	22	98.8	N/A
3	Q4 L4	250	1.86	1.53	22	97.2	N/A
4	R4 L2	250	1.85	1.50	23	95.6	N/A
5	R4 L3	250	1.85	1.50	24	95.4	N/A
6	R4 L4	250	1.85	1.50	23	95.8	N/A
7	Q5 L1	250	1.92	1.60	20	102.1	N/A
8	Q5 L2	250	1.91	1.54	25	97.8	N/A
9	Q5 L3	250	1.89	1.55	22	98.4	N/A
Maximum Dry Density (Mg/m3)					1.57	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME S.J Hutchings
(Director)

SIGNED

DATE 31-Oct-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/267

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	29-Oct-24
DATE OF TEST	29-Oct-24	SAMPLED BY	Murray Rix
DATE TESTED	30-Oct-24	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
584801	Q4 L2	Fill	1.86	1.51	23	96.2	N/A
584802	Q5 L1	Fill	1.92	1.60	20	102.1	N/A
Maximum Dry Density (Mg/m ³)				1.57	(Advised by client)		
Particle Density (Mg/m ³)				N/A	(Not Advised)		

COMMENT / ANOMALIES

NAME S.J Hutchings
(Director)

SIGNED

DATE 31-Oct-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/269
Date of Issue 07 November 2024
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

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TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	31-Oct-24	JOB NUMBER	MRN 24005/269
MATERIAL	Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	P5 L1	300	1.95	1.53	28	106.0	N/A
2	P5 L2	300	1.98	1.53	30	106.0	N/A
3	O5 L1	300	1.96	1.55	26	107.5	N/A
4	O5 L2	300	1.96	1.57	25	109.4	N/A
5	O6 L1	300	1.97	1.64	20	113.9	N/A
6	O6 L2	300	1.96	1.62	21	112.2	N/A
7	P3 L3	300	1.97	1.62	22	112.4	N/A
8	P3 L3	300	1.97	1.62	22	112.6	N/A
9	P3 L4	300	1.96	1.61	22	111.7	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 07-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/269

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	31-Oct-24
DATE OF TEST	31-Oct-24	SAMPLED BY	Murray Rix
DATE TESTED	01-Nov-24	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
586601	SRD 01	Fill	1.94	1.61	21	111.5	N/A
586602	SRD 02	Fill	1.92	1.59	21	110.1	N/A
Maximum Dry Density (Mg/m ³)				1.44	(Advised by client)		
Particle Density (Mg/m ³)				N/A	(Not Advised)		

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 07-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/271
Date of Issue 07 November 2024
Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

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MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	05-Nov-24	JOB NUMBER	MRN 24005/271
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	O2 L1	200	1.80	1.44	25	100.0	N/A
2	O2 L2	200	1.79	1.42	26	98.3	N/A
3	O5 L3	200	1.77	1.41	25	98.1	N/A
4	P5 L3	200	1.80	1.42	27	98.7	N/A
5	O5 L4	200	1.74	1.42	23	98.3	N/A
6	P5 L4	200	1.77	1.44	23	100.1	N/A
7	P4 L4	200	1.81	1.45	25	100.6	N/A
8	O4 L4	200	1.75	1.42	23	98.6	N/A
9	P5 L5	200	1.71	1.40	22	97.5	N/A
10	Q5 L5	200	1.80	1.44	25	100.1	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 07-Nov-24

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/271

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	05-Nov-24
DATE OF TEST	05-Nov-24	SAMPLED BY	Murray Rix
DATE TESTED	06-Nov-24	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
588401	SRD 01	Fill	1.79	1.48	21	102.8	N/A
588402	SRD 02	Fill	1.76	1.45	21	100.5	N/A
Maximum Dry Density (Mg/m ³)				1.44	(Advised by client)		
Particle Density (Mg/m ³)				N/A	(Advised by client)		

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED

DATE 07-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/278

Date of Issue 07 November 2024

Page 1 of 3

Approved Signatories

S J Hutchings, O P Davies

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

INSITU DENSITY, SAND REPLACEMENT METHOD

BS 1377 : Part 9 : Clause 2.2

MOISTURE CONTENT METHOD BS 1377 : Part 2 CLAUSE 3.2 : 1990 (OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/278

TEST METHOD	Large Pouring Cylinder	DATE RECEIVED	06-Nov-24
DATE OF TEST	06-Nov-24	SAMPLED BY	Murray Rix
DATE TESTED	07-Nov-24	MATERIAL SOURCE	Site Won

Laboratory Sample Number	Test Location	Material	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Moisture Content (%)	Compaction (%)	Air Voids (%)
588601	SRD 01	Ash Fill	1.80	1.47	23	101.9	N/A
588602	SRD 02	Ash Fill	1.96	1.56	25	108.7	N/A
Maximum Dry Density (Mg/m ³)				1.44	(Advised by client)		
Particle Density (Mg/m ³)				N/A	(Not Advised)		

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 07-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/292

Date of Issue 11 November 2024

Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

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TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	08-Nov-24	JOB NUMBER	MRN 24005/292
MATERIAL	Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	22848
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	N2 L3	250	1.82	1.46	25	101.4	N/A
2	N3 L3	250	1.81	1.46	24	101.2	N/A
3	N4 L1	250	1.85	1.50	23	104.1	N/A
4	N4 L2	250	1.80	1.46	23	101.7	N/A
5	O2 L3	250	1.75	1.39	26	96.9	N/A
6	N5 L1	250	1.78	1.43	25	99.1	N/A
7	N5 L2	250	1.86	1.47	26	102.3	N/A
8	N6 L1	250	1.86	1.46	28	101.1	N/A
9	N6 L2	250	1.91	1.48	29	102.8	N/A
10	P4 L5	250	1.93	1.53	26	106.2	N/A
11	Q4 L5	250	1.87	1.48	26	102.6	N/A
12	R4 L5	250	1.79	1.40	28	97.3	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					Yes		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 11-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/294
Date of Issue 14 November 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

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TEL 0161 475 0870



TEST CERTIFICATE

MOISTURE CONTENT DETERMINATION

BS 1377 : Part 2 : 1990
(OVEN DRY)

CLIENT	e3p
SITE	Castleton Sidings
JOB NUMBER	MRN 24005/294

DATE SAMPLED	11-Nov-24	DATE RECEIVED	11-Nov-24
DATE TESTED	12-Nov-24	SAMPLED BY	Client

Laboratory Sample Number	Site Reference	Material	Sample Location	Moisture Content (%)
591701	C-01	Clay Fill	C-01	18.6
591702	C-02	Clay Fill	C-02	18.9
591703	C-03	Clay Fill	C-03	18.7
591704	C-04	Clay Fill	C-04	20.4
591705	C-05	Clay Fill	C-05	19.6
591706	C-06	Clay Fill	C-06	18.8
591707	C-07	Clay Fill	C-07	20.1

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

A handwritten signature in black ink, appearing to be 'O.P. Davies', written over a horizontal line.

DATE 14-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/296
Date of Issue 18 November 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	15-Nov-24	JOB NUMBER	MRN 24005/296
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	24958
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	N6 L3	250	1.77	1.40	27	96.9	N/A
2	N6 L4	250	1.80	1.40	28	97.5	N/A
3	O6 L3	250	1.77	1.38	28	95.9	N/A
4	O6 L4	250	1.81	1.43	27	99.0	N/A
5	N5 L4	250	1.80	1.42	27	98.7	N/A
6	N4 L5	250	1.78	1.38	29	95.8	N/A
7	O4 L5	250	1.82	1.42	28	98.7	N/A
8	N5 L5	250	1.80	1.41	28	97.8	N/A
9	O5 L5	250	1.78	1.38	29	96.1	N/A
10	N6 L5	250	1.80	1.40	29	97.2	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					No		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 18-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/304
Date of Issue 28 November 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
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ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	26-Nov-24	JOB NUMBER	MRN 24005/304
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	22848
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	S3 L3	200	1.73	1.43	21	99.0	N/A
2	S3 L4	200	1.75	1.44	22	99.8	N/A
3	Q3 L5	200	1.78	1.46	22	101.2	N/A
4	R3 L5	200	1.73	1.41	23	97.7	N/A
5	S3 L5	200	1.78	1.45	23	101.0	N/A
6	S4 L3	200	1.73	1.42	22	98.6	N/A
7	S4 L4	200	1.77	1.45	22	100.5	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					No		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED



DATE 28-Nov-24

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Castleton Sidings

Job Number MRN 24005/313
Date of Issue 02 December 2024
Page 1 of 2

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DETERMINATION OF IN-SITU BULK DENSITY AND IN-SITU MOISTURE DENSITY
BY THE NUCLEAR METHOD
BS 1377-9: Clause 2.5: 1990

CLIENT	e3p
SITE	Castleton Sidings

DATE	29-Nov-24	JOB NUMBER	MRN 24005/313
MATERIAL	Ash Fill		
NDG MODEL	Troxler 3440	SERIAL NUMBER	22848
MODE OF OPERATION	Direct Transmission	MEASUREMENT APPLICATION	Compliance tests for compacted material

Test No.	Test Chainage / Location	Test Depth (mm)	Wet Density (Mg/m3)	Dry Density (Mg/m3)	Moisture Content (%)	Percentage Compaction (%)	Air Voids (%)
1	N3 L5	250	1.76	1.44	22	100.3	N/A
2	O3 L5	250	1.74	1.43	22	99.2	N/A
3	O6 L5	250	1.76	1.43	23	99.5	N/A
4	O6 L6	250	1.78	1.45	23	100.9	N/A
5	P5 L6	250	1.79	1.46	22	101.7	N/A
6	P6 L5	250	1.73	1.41	23	97.6	N/A
7	P6 L6	250	1.75	1.43	22	99.2	N/A
8	Q5 L6	250	1.76	1.45	22	100.6	N/A
9	R4 L6	250	1.75	1.43	22	99.0	N/A
Maximum Dry Density (Mg/m3)					1.44	(Advised by client)	
Particle Density (Mg/m3)					N/A	(Not Advised)	
Results corrected for NDG calibration/correlation to site materials					No		

REMARKS/ABNORMALITIES

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED

DATE 02-Dec-24

APPENDIX IX

WASTE TICKETS





Urban Regen
ESTABLISHED 2001

URBAN REGEN LTD

Langley Road, Pendlebury, Salford M6 6FG

Tel: 0161 710 1930

Email: info@urbanregen.co.uk

Web: www.urbanregen.co.uk

The Hazardous Waste Regulations 2005:

Consignment Note

No. 0036

PART A Notification details

- 1 Consignment note code: **URBANR / 01035**
- 2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):
**Kellen homes castleton
Siding Rochdale
OL11 3AU**
- 3 The waste will be taken to (name, address and postcode):
**URBAN REGEN ASBESTOS SOLUTIONS
Langley Road Pendlebury
Salford M6 6FG**
- 4 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):
AS per 2

PART B Description of the waste

If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Removal**
- 2 SIC (2007) for the process giving rise to the waste: **45.251**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Cement	170605	3000	CHRYSOLE	15%	SOLID	HY	DB
Sheets							

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2590	White	9	II	DB

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

/

- 1 Carrier name: **JOSEF ANTOLEK**
On behalf of (name, address, postcode, telephone, e-mail, facsimile):
**Urban Regen Ltd
Langley Road, Salford M6 6FG**
- 2 Carrier registration no./reason for exemption:
CBDU328363
- 3 Vehicle registration no. (or mode of transport, if not road):
YT24FBY

Signature **[Signature]**

Date **23/02/2024** Time **1700**

PART D Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

- 1 Consignor name: **J ANTOLEK**
On behalf of (name, address, postcode, telephone, e-mail, facsimile):

**Urban Regen Ltd
Langley Road, Pendlebury, Salford M6 6FG**

Signature **[Signature]**

Date **23/02/2024** Time **1700**

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	Approx 300kg	Accepted	D

- 1 I received this waste at the address given in A3 on: Date **24/02/2024** Time **0800**

- 2 Vehicle registration no. (or mode of transport if not road): **YT24FBY**

- 3 Where waste is rejected please provide details: **NO**

I certify that waste permit/exempt waste operation number:

NWFD EXEMPT

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are: **N/A**

Name: **M RAMSDEN**
On behalf of (name, address, postcode, telephone, e-mail, facsimile):

URBAN REGEN ASBESTOS SOLUTIONS
Langley Road Pendlebury
Salford M6 6FG

Signature **[Signature]**

Date **24/02/2024** Time **0800**



Urban Regen
ESTABLISHED 2001

URBAN REGEN LTD

Langley Road, Pendlebury, Salford M6 6FG

Tel: 0161 710 1930

Email: info@urbanregen.co.uk

Web: www.urbanregen.co.uk

The Hazardous Waste Regulations 2005: Consignment Note

No. 0045

PART A Notification details

1 Consignment note code: **URBANR / 01044**

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):

**Kellen Homes Castleton
Siding Rochdale
OL13AU**

3 The waste will be taken to (name, address and postcode):

URBAN REGEN ASBESTOS SOLUTIONS

Langley Road Pendlebury

4 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):

AS 2

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: **Removal**

2 SIC (2007) for the process giving rise to the waste: **45.25 /**

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Cement	070605	500kg	CHALISOTILE	15%	SOLID	4Y	DB

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
070605	2500	white	9	II	DB

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

/

1 Carrier name: **J ANTALSKA**

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

**Urban Regen Ltd
Langley Road, Salford M6 6FG**

2 Carrier registration no./reason for exemption:

CBDU328363

3 Vehicle registration no. (or mode of transport, if not road):

56 YTZ4 FBY

Signature

Date **26/11/2024** Time **1300**

PART D Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: **J ANTALSKA**

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

**Urban Regen Ltd
Langley Road, Pendlebury, Salford M6 6FG**

Signature

Date **26/11/2024** Time **1300**

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
070605	A Prox 500 kg	Accepted	D

1 I received this waste at the address given in A3 on:

Date **26/11/2024** Time **1700**

2 Vehicle registration no. (or mode of transport if not road):

YTZ4 FBY

3 Where waste is rejected please provide details:

NO

I certify that waste permit/exempt waste operation number:

NWFD EXEMPT

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

NA

Name: **M RAMSDEN**

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

URBAN REGEN ASBESTOS SOLUTIONS

Langley Road Pendlebury

Salford M6 6FG

Signature

Date **26/11/2024** Time **1700**

PART A Notification details

- 1 Consignment note code: **URBANR/01051**
- 2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):
**Kelen homes Castleton
 Siding Roundale
 OL11 3AU**
- 3 The waste will be taken to (name, address and postcode):
**URBAN REGEN ASBESTOS SOLUTIONS
 Langley Road Pendlebury
 Salford M6 6FG**
- 4 The waste producer (name, address, postcode, telephone, e-mail, facsimile):
AS per 2

PART B Description of the waste

 If continuation sheet used, tick here ☐

- 1 The process giving rise to the waste(s) was: **Removal**
- 2 SIC (2007) for the process giving rise to the waste: **45.25.1**
- 3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
CEMENT SACKS	170605	400kg	CHRYSOE	15%	SOLID	H4	DB

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements
170605	2990	White	9	II	DB

PART C Carrier's certificate
PART D Consignor's certificate

 (If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

/

- 1 Carrier name: **JOZEF ANTOLEK**
 On behalf of (name, address, postcode, telephone, e-mail, facsimile):
**Urban Regen Ltd
 Langley Road, Salford M6 6FG**
- 2 Carrier registration no./reason for exemption:
CBDU328363
- 3 Vehicle registration no. (or mode of transport, if not road):
YT24FBY

Signature

 Date **13/12/2024** Time **1600**

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

- 1 Consignor name: **JOZEF ANTOLEK**
 On behalf of (name, address, postcode, telephone, e-mail, facsimile):

**Urban Regen Ltd
 Langley Road, Pendlebury, Salford M6 6FG**

Signature

 Date **13/12/2024** Time **1600**
PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	APPROX 400KG	Accepted	D

- 1 I received this waste at the address given in A3 on: Date **13/12/2024** Time **1700**

- 2 Vehicle registration no. (or mode of transport if not road):
YT24FBY

- 3 Where waste is rejected please provide details:

NO

I certify that waste permit/exempt waste operation number:

NWFO EXEMPT

authorises the management of the waste described in B at the address given in A3.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

MA

 Name: **M RAMSDEN**

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

URBAN REGEN ASBESTOS SOLUTIONS
Langley Road Pendlebury
Salford M6 6FG

Signature

 Date **13/12/2024** Time **1700**

Duty of Care - Controlled Waste Transfer Note		Serial No. DHI/ 00-2410	
		SIC Code: 41.20/2	Official use only
A Description of the waste	1. How is the waste contained? ☒ Loose ☐ Skips ☐ Sacks ☐ Drums ☐ Other (Specify): 2. Describe the waste being transferred GREENWASTE Classification Code: 200201 3. QUANTITY: 300 ☐ kg ☒ Tonnes ☐ m3 Group number: 4. The Landfill Tax (Qualifying Material) Order Schedule 2011 ☐ Applicable		
B Producer Details	1. Full name (print): KELLEN HOMES LIMITED 2. Company Name, Address and Postcode: 1ST FLOOR, 103 DALTON AVENUE, BIRCHWOOD PARK, WARRINGTON, WA3 6YE 3. Which of the following are you? (Please tick one or more boxes) A☒ Waste Producer ☐ Soil Producer ☐ Waste collection/disposal authority ☐ Broker B☐ Holder of Disposal/Management Licence ☐ Exempt from carrier Licence / Carrier number(S) Issued by: C☐ Exempt from licensing requirements ☐ Exempt from carrier registration Reason:		
C Carrier Details	1. Full Name (print) DHI EXCAVATIONS LTD 2. Company Name, Address and Postcode: 11-13 CHURCH STREET, FARNWORTH, BOLTON, BL4 8AG ☒ Registered Carrier (give number): CBDU181466 We have fulfilled our obligation with regards to the Waste Heirachy Regulations 12 of Waste (England and Wales) Regulations 2011		
D First Transfer	1. Place of Transfer: HAWKES VIEW - CASTLETON, ROCHDALE, OL11 3BZ 2. Date of Transfer: 27/06/2025-27/09/2025 (for multiple transfer give between dates, see notes) 3. Name and address of broker arranging transfer (if applicable): WCL No. 4. Producers representativesName (print): JOHN JONES Sign: [Signature] Carriers representativesName (print): NEIL WILLIAMS Sign: [Signature]		
E Disposer Details	1. Full Name (print) PARK HOUSE SERVICES NW LIMITED 2. Company Name, Address and Postcode: 366 HOLCOMBE ROAD, GREENMOUNT, BURY, BL8 4DT 3. Which of the following are you? (Please tick one or more boxes) ☒ Holder of waste disposal / management licence (give number): EPR/WE3118AA Issued by: EA ☐ Exempt from licence requirements (give reason):.....		
F Second Transfer	1. Place of Transfer: PARK HOUSE, PARK ROAD, BURY, BL9 5BQ 2. Date of Transfer: 27/06/2025-27/09/2025 (for multiple consignments give between dates) 3. Name and address of broker arranging transfer (if applicable):..... 4. Carriers RepresentativesName (print): NEIL WILLIAMS Sign: [Signature] Company name: DHI EXCAVATIONS LTD Disposers RepresentativesName (print): JAMES BROWN Sign: [Signature] Company name: PARK HOUSE SERVICES NW LIMITED		