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Ground Investigation Report

Proposed Commercial Development

Rhodes Business Park, Middleton

January 2023



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Drawing Register

Title	Produced by	Date	Reference
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Proposed Site Plan – Option 03	Oxenwood Real Estate	August 2023	4694-005-P01
Exploratory Hole Location Plan	Soiltechnics	December 2023	STV6211-D01-A

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Non-technical Summary

Topic	Commentary
Site description	The site is currently utilised as a lorry trailer parking area with surrounding soft landscaping, within the wider industrial Rhodes Business Park. The River Irk lies directly adjacent to the southern and eastern boundary of the site. The site is surfaced in asphalt, with soft landscaping to the northern/western boundary of the site.
Development proposals	The scheme will comprise the construction of a single industrial unit with associated hardstanding utilised as a storage yard and for vehicular parking. There are 2 No. proposed layout options currently under consideration, Option 02 and Option 03, with the industrial building in Option 02 having a marginally smaller footprint than Option 03.
Ground conditions	Made Ground was encountered across the site comprising surficial soft topsoil or asphalt hardstanding with sub-base overlying Made Ground of clay, sand and gravel including brick, clinker, ash, glass and concrete to depths of between 1.4-2.2m bgl. Underlying natural superficial deposits comprised soft/loose sands and silts of Alluvium to 8.6m depth, overlying very stiff gravelly clay of Devensian Till.
Mining Risk	The site lies within a Coal Mining Reporting area however outside a Development High Risk area. No coal mining legacy issues have been identified beneath the site therefore the risk from ground instability associated with past mining is very low.
Foundation and slab solution	Due to the depth of Made Ground recorded and the soft/loose nature of shallow Alluvium deposits, shallow spread foundations (strips, pads, rafts) are not considered feasible beneath the site without ground improvement. We understand ground improvement is being pursued at this stage, which will require specialist input. It is assumed that ground conditions are considered amenable to improvement and shallow foundations/ground bearing floor slab can be adopted for the development. Piled foundations extending into the underlying Devensian are feasible and pile resistances are presented in Section 8.
Drainage potential	Shallow groundwater (1.3-2.7m bgl) and deep Made Ground has been recorded beneath the site, which contains potentially leachable contamination. Therefore, sustainable surface water drainage systems should not be used beneath the site.
Chemical contamination and remedial requirements	Overall, the proposed industrial development is of relatively low sensitivity and whilst potential risks have been highlighted, these are typical of most brownfield sites. Potential contaminant linkages have been identified regarding trace quantities of asbestos identified in shallow Made Ground soils which could impact the proposed end users of the site. It should be noted that the site is to be largely covered in building and hardstanding. Whilst considered low risk, as a precaution we recommend clean soils are placed in all proposed soft landscaping areas which should act as a cover system to future receptors, at least 150mm in thickness.
Radon, gas risk and protection measures	Marginally elevated carbon dioxide has been recorded beneath the site however this is likely a result of aerobic respiration and oxidation of organic matter. Such processes are typically low risk and gas generation volumes are low. minimal flow rates been recorded to date at low atmospheric pressure events. A CS-1 designation applies to the site.
Waste characterisation	Two waste streams were identified within the Made Ground, one containing potential lime waste and one without. The Made Ground with the potential lime waste is indicated to be hazardous waste suitable for disposal to a hazardous landfill (due to elevated zinc and arsenic) and the Made Ground without lime waste as non-hazardous waste (due to elevated total organic carbon and antimony). Made Ground should be reused on site where at all possible. Landfill operators should be contacted at the earliest opportunity as exceedance of the arsenic WAC threshold is marginal may be accepted as SNRHW. Subbase material below existing asphalt should be excavated segregated and reused within the proposed development. Observations from the fieldwork indicate that the underlying natural soils (Alluvium and Devensian Till) are not impacted by contamination. However, laboratory test data indicates the Alluvium contains locally high concentrations of zinc, which would be classified as hazardous. It is recommended that arisings of all natural Alluvium soils generated from the development (if any) are reused in landscaped areas onsite but not are not considered suitable from a geotechnical perspective.
Recommendation for further works	A preliminary UXO desk study to support the whole construction phase.

Topic	Commentary
	Suitable testing of Topsoil/reworked Topsoil from existing landscaped areas if proposals are to reuse such soils. A Remediation Strategy and subsequent Verification Report relating to cover system and Topsoil test requirements. A Materials Management Plan to facilitate the reuse of Made Ground materials on site where necessary.

1 Introduction

1.1 Scheme Outline

1.1.1 The scheme will comprise the construction of a single industrial unit with associated hardstanding utilised as a storage yard and for vehicular parking. There are 2 No. proposed layout options currently under consideration, presented within Appendix A, difference being overall unit size (1,684 sqm compared to 1,856 sqm).

1.1.2 The report is based on the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

1.2 Brief

1.2.1 This report has been prepared following instructions received from Belshaw Building Consultancy Ltd, on behalf of our mutual Client, OLF1 PROPCO2 S.A.R.L. The overall brief of works is to:

i) Undertake a ground investigation at the site to establish the prevailing ground conditions and identify potential abnormal development constraints.
ii) Support the planning application by assessing the potential risks from contamination at the site.
iii) Determine geotechnical parameters and provide a geotechnical appraisal for the scheme.

1.2.2 The objectives of this report are outlined below:

iv) Summarise the intrusive investigation works undertaken and associated laboratory testing.
v) Present a ground model summarising the ground and groundwater conditions at the site including relevant geotechnical parameters.
vi) Provide a geotechnical appraisal for the project and highlight key geotechnical issues that may impact upon the proposed scheme.
vii) Undertake a land contamination Tier 2 generic quantitative risk assessment.
viii) Provide recommendations to inform an Options Appraisal and Remediation Strategy, should they be required.
ix) Provide a waste characterisation assessment of soils at the site for potential disposal to landfill.

1.2.3 Soiltechnics have previously completed a Tier 1 Preliminary Risk Assessment for the site (ref STV6211-R01 dated October 2023). We have presented the information in Sections 2 to 4 of this report for completeness.

1.3 Definition of Scope

1.3.1 The phasing and scope of the ground investigation works is broadly defined by the following documents.

Title	Document Reference	Publisher	Investigation Scope
Code of practice for ground investigations	BS 5930: 2015	British Standards Institution	Phase 1: Desk study Phase 2: Preliminary investigation
Eurocode 7 — Geotechnical design Part 2: Ground investigation and Testing	BS EN 1997-2: 2007	British Standards Institution	Preliminary Investigation
Investigation of potentially contaminated sites – Code of practice	BS 10175: 2011+A2:2017	British Standards Institution	Preliminary Investigation (desk study) Exploratory Investigation
Land contamination risk management	Online resource, updated April 2021	Environment Agency	Stage 1 Risk Assessment: Tier 1: Preliminary risk assessment Tier 2: Generic quantitative risk assessment

Table 1-A: Definition of Investigation Scope

1.4 Limitations

1.4.1 Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

2 Desk Study

2.1 Sources of information

2.1.1 Reference has been made to the following sources of information:

- An Envirocheck Report and historical map records, presented as Appendix O.
- British Geological Survey (BGS) GeoIndex – Onshore database.
- BGS Sheet 85 (Scale 1:50 000) – Manchester (2010).
- Ordnance Survey OpenData.
- Coal Authority Development and Specific Risk databases.
- Environment Agency open-source databases.
- Google mapping services.
- Interrogation of search engines for anecdotal information on the site history and other readily available online resources.
- Historic ground investigation reports.

2.2 Site Description

2.2.1 The proposed development lies within Middleton, approximately 1.15km southwest of the town centre. The post code for the site is M24 4NE. The site is accessed from Silburn Way which lies adjacent to the site's north-western boundary.

2.2.2 An aerial image showing the approximate site boundary is presented below, followed by a table summarising the key site features. Photographic records of the site are presented in Appendix C.



Figure 2-A: Aerial photograph and approximate site boundary

Theme	Feature
Current site use	The site is currently utilised as a lorry trailer parking area with surrounding soft landscaping.
Local area land use	Commercial/light industrial units associated with the wider Rhodes Business Park are present beyond the northern and western boundary of the site and include a natural stone supplier, a homeware store, and a boiler supplier. To the south and east is Alkrington Woods Nature Reserve beyond the River Irk, the channel of which forms the south-eastern boundary of the site.
Topography	The topography of the surrounding area generally falls to the south, towards the River Irk. The on-site hardstanding area appears relatively level. The soft landscaping to the north dips gently from the northern boundary towards the south. A small section of sheet piled retaining wall is present in the southeast of the site on the bank of the river.
Buildings, surfacing and other permanent features	Approximately two-thirds of the site is surfaced in hardstanding which is utilised as a lorry trailer park. The remainder of the site is covered by tended grass. There are no permanent structures on the site.
Boundary features	The southern and eastern site boundaries are defined by palisade fencing with the River Irk beyond. The western and northern boundaries are defined by Silburn Way.
Vegetation	A bank of mature trees is present beyond the boundary fencing adjacent to the site's southern and eastern boundaries. Trees are also present in the south-western part of the site. There is a singular patch of shrubs some 2m in height in the north centre of the site.
On-site / adjacent surface water features	The River Irk is located just beyond the site's southeastern boundary.
Environmental Designations	The site is not reported to be within an area of designated sensitive land use, such as a Ramsar Site, Site of Special Scientific Interest (SSSI), or Special Area of Conservation however it does lie within a Nitrate Vulnerable Zone. Alkrington Woods is designated as a Local Nature Reserve and is located 38m northeast.
Injurious and invasive weeds	None observed.
ACMs on site	No suspected ACMs were observed in any surface debris.
Potential sources of contamination	None observed.
Evidence for ground instability	None observed.

Table 2-A: Site Description

2.2.3 The observations provided above are made by a Geo-environmental Engineer, who is not a specialist in asbestos surveying or invasive weed identification. Any associated comments are intended for use by this report only, and not for any other purpose.

2.3 Planning Records

2.3.1 A search of online planning records held for the site by Rochdale Borough Council indicates two planning applications are present for properties located within Rhodes Business Park. These include an application for two fascia signs and the demolition of part of a building and changes to the elevations of the building. These were received in 2017 and 2010 respectively, and no pertinent ground investigation information is available for review.

2.4 Previous Reports

2.4.1 Through consultation with the client, the following reports have been identified in relation to the site. These are further discussed within Section 3.

Author	Document Title	Date & Document Reference	Report Context
George Hutchinson Associates (GHA)	Factual Report on Ground Investigation at Rhodes Business Park, Middelton	October 2003 03/2499	Summarises a ground investigation that covers the site and wider Rhodes Business Park located to the north of the site.
Fletcher Bennett/ GHA	Technical Note - Desk Top Study, Contamination Investigation and Gas Monitoring	September 2005 D424450	Phase 1 Desktop Study and summary of previous ground investigation findings across the site and wider area.
WSP	Geo-Environmental Assessment	July 2014 10160	Summarises a ground investigation that covers the site and wider area, including Rhodes Business Park located to the north of the site.

Table 2-B: Summary of previous reports

2.5 Site History

2.5.1 From the mid-1800s the site was recorded as part of the Calico Print Works and Union Cotton Mills which extend beyond the northern and western boundary of the site. Filter beds, a disposal pit and tanks were present on site until the 1950s when the site was left undeveloped. In the late 1990s hardstanding and soft landscaping similar to the present day configuration was present across the site.

2.5.2 An extract of the 1909 mapping is presented in Figure 2-B below.

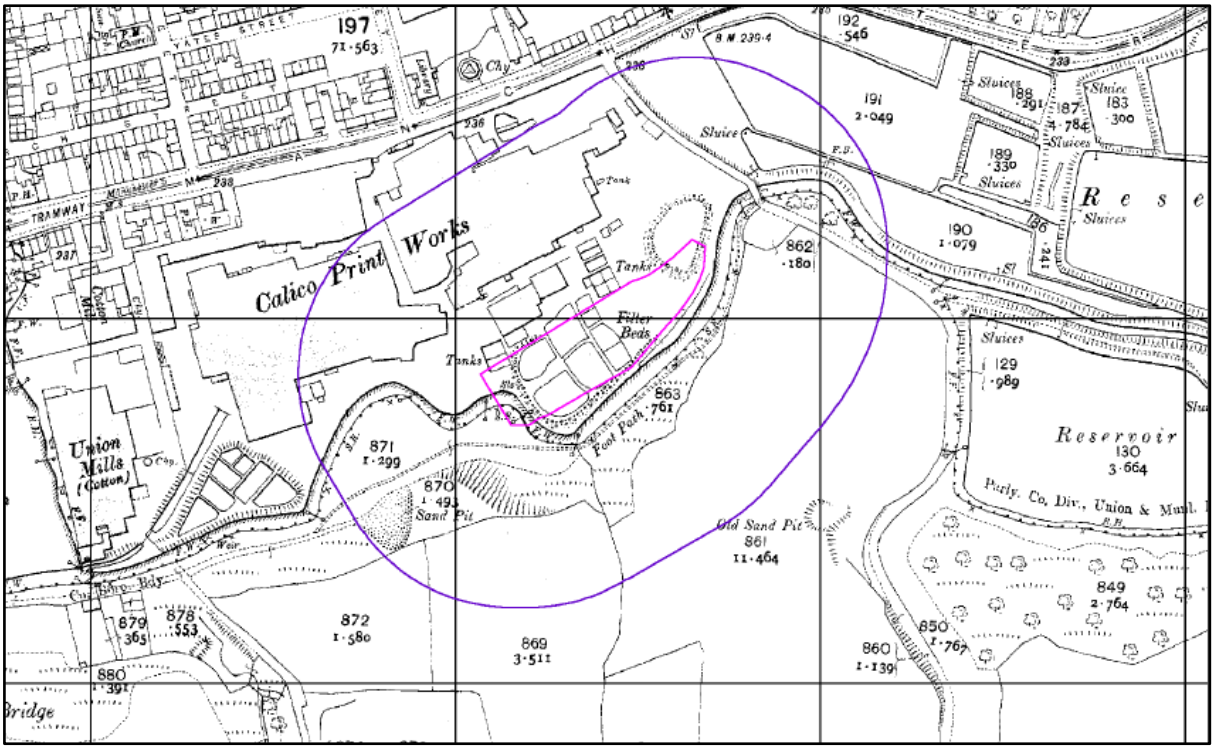


Figure 2-B: 1909 historical mapping extract

2.5.3 A chronological summary of the site's history is provided below.

Date	On-site	Off-site
Mid-late 1800s	The site is located within the grounds of the Calico Print Works with the edge of a small	Calico Print Works extends off-site to the north and northwest by up to 200m.

Date	On-site	Off-site
	building impinging onto the north-western corner of the site. The course of the River Irk crosses the south-western corner of the site.	Union Mills (Cotton) are located 200m west of the site including a deep artificial water channel 150m west. There are a large number of reservoirs located 80-250m northeast of the site as well as 150m east. Sand pits are located 30m south, 80m southwest and 125m southeast.
Early 1900s	Seven filter beds surrounded by a bund to the west and south are shown across the south-western half of the site. It is understood that the filter beds were used for the washing of cotton. A pit is shown in the north-eastern corner of the site by this time. The pit was used for the disposal of boiler ash. The small building in the north-western corner is labelled as 'tanks' at this time.	Tanks associated with the Calico Print Works are located immediately north of the site. The on-site disposal pit extends 30m northeast of the site. Seven additional filter beds are located 125m west of the site at this time. Sand pits to the south and southwest have expanded by this time.
Mid-1900s	All filter beds and most of the disposal pits on site are shown as infilled by 1952 with only the tank in the northwest corner and the bund previously surrounding the filter beds remaining on site. The River Irk channel in the southwest of the site has been infilled and diverted, now flowing on current course immediately south of the site.	The Print Works have been renamed Rhodes Print Works by 1952. Most of the tanks and off-site filter beds are no longer shown. The artificial channel 150m west has been backfilled. Old sand pit 125m southeast shown as backfilled, however expansion of the sand pits to the south and southwest has continued. Electrical sub-station shown 45m north in 1952.
Late-1900s	The bund has been removed and the remainder of the pit in the northeast has been infilled. The soft landscaping in the north of the site is shown as per current configuration.	By 1984 both the Print Works and cotton mills are no longer shown and the electrical sub-station has been removed, replaced by various unclassified works (in largely the same configuration as present day). Some smaller reservoirs to the northeast have been backfilled by 1984. Backfilling of the old sand pits to the southwest and south started in the mid-1980s and appears to have been completed by 2000.
2000 - present	Hardstanding present across the side, used as vehicle parking.	All Works north of the site now renamed Rhodes Business Park.

Table 2-C: Summary of site history

2.6 Regulatory Enquiries

2.6.1 Soiltechnics have contacted the Local Authority Contaminated Land department to request any pertinent information they may hold for the site or surrounding area. The Local Authority have requested a fee to undertake a search of their records. As an Envirocheck Report has already been obtained which includes searches of several regulatory databases, commissioning the Local Authority search is not considered necessary to complete the desk study and preliminary risk assessment in this instance.

2.7 Anticipated Geology

2.7.1 Based on a review of available records, the site is anticipated to be underlain by the following geological units, in order of sequence, Alluvium, Devensian Till and Pennine Lower Coal Measures Formation.

2.7.2 In addition, due to historical earthworks/infilling and development occurring at the site, Soiltechnics anticipate that a Made Ground is likely to be present across the entire site footprint, of varying thickness.

2.7.3 A summary of the anticipated geology underlying the site is summarised as follows:

Stratum	Bedrock / superficial	Anticipated thickness (m)	Typical description
Made Ground	-	1-4m	Cohesive and granular including brick, concrete and ash (from previous GI)
Alluvium	Superficial	4-6m	Silty sand, gravel and soft clay (from previous GI)
Devensian Till	Superficial	4-6m	Stiff gravelly clay (from previous GI)
Pennine Lower Coal Measures Formation	Bedrock	650m	Mudstone, siltstone, sandstone and coal (not encountered in previous GI)

Table 2-D: Summary of anticipated geology at the site

2.8 Hydrogeology and Groundwater Sensitivity

2.8.1 The general hydrogeological profile of the site is provided in the table below.

Stratum	Aquifer Designation	Stratum Thickness (m)	Groundwater commentary
Alluvium	Secondary A Aquifer	4-6m	Local borehole records suggest groundwater is at approximately 4m below ground level (likely in hydraulic continuity with adjacent River Irk water level).
Devensian Till	Secondary A Aquifer	4-6m	Likely to be present within granular horizons.
Pennine Lower Coal Measures Formation	Secondary A Aquifer	650m	No pertinent information could be gathered from reviewing publicly available borehole data.

Table 2-E: Preliminary Hydrogeological Model

2.8.2 The site is not located within a Source Protection Zone.

2.8.3 There are no recorded potable abstraction licenses and no active groundwater abstraction licenses associated with industrial processes within 1km of the site.

2.9 Hydrology and Surface Water Sensitivity

2.9.1 The nearest water feature is the River Irk located adjacent to the southern site boundary. The River Irk is River Quality Grade E (poor).

2.9.2 There are two active surface water abstraction licenses down-gradient (west/southwest) of the site. The nearest abstraction point is some 449m west of the site. Both licenses relate to abstractions for dust suppression and spray irrigation on building sites.

2.10 Flood Risk

2.10.1 The site is recorded within a Flood Zone 3, associated with flooding from rivers or the sea and the southwest of the site is in an area designated as benefiting from flood defences.

2.10.2 The majority of the site is recorded in an area with the potential for surface water flooding during a 1 in 1000 year flood event, however the southwest of the site is located within an area with the potential for surface water flooding during a 1 in 30 year flood event.

2.10.3 The site is recorded in an area shown to have a potential for groundwater flooding at surface.

2.10.4 It should be noted that this information does not constitute a site-specific Flood Risk Assessment and one may be required for the scheme.

2.11 Non-Mining Ground Instability Hazard

2.11.1 The Envirocheck Report includes hazard ratings due to natural ground instability, which have been derived by the BGS. These hazards have been summarised in the table below.

Hazard	Hazard Potential	Discussions
Collapsible ground	No hazard	N/A
Compressible ground	Moderate	Due to the presence of potentially compressible Alluvium.
Ground dissolution	No hazard	N/A
Landslide	Very low	High Risk 34m SW due to reinstated quarry workings, beyond channel of river.
Running sand	Low	N/A
Shrinking or swelling clay	Very low	N/A

Table 2-F: Non-Mining Ground Stability Hazards

2.12 Quarrying and Mining

2.12.1 The site is located within a Coal Mining Reporting Area, but outside of a Development High Risk Area. On this basis a Consultants Coal Mining Report has been obtained from the Coal Authority and a copy is presented as Appendix K.

2.12.2 The report indicates no record of historic shallow mining beneath the site, and there is no evidence to suggest unrecorded probable workings could be present. There are no records of opencast mining, coal mining subsidence or mine gas within 50m of the site, and no mine entries recorded within 100m of the site.

2.12.3 On review of the data, the site is not considered to be at a significant instability or subsidence risk from the historical coal mining legacy in the area.

2.12.4 There are several former pits located in the wider site area. The closest of which lies approximately 30m from the southern boundary of the site. It is anticipated that the pits were for the extraction of sand and gravel aggregate.

2.12.5 There are five BGS Recorded Mineral Sites located within 500m of the site. The closest is situated 72m southwest of the site within the Glaciofluvial Deposits related to Rhodes Sand Pit.

2.13 Landfill and infilled ground

2.13.1 There is a registered historic landfill site 66m northeast of the site relating to a former reservoir on Manchester Old Road accepting inert waste only. Last recorded input is not provided, however backfilling of the reservoir was noted by 1984 on historical mapping.

2.13.2 No further historical landfills are located within 250m of the site.

2.13.3 The following table summarises mineral sites and infilled ground records within 250m from the site to the site.

Name	Distance from site (m)	Type of record	Waste deposited / resource extracted	Further information
-	On-site	Infilled land	-	Infilled historic filter beds/disposal pit
-	54m N	Infilled land	-	Unknown infilled water feature (reservoir)
-	71m W	Infilled land	-	Unknown infilled water feature (filter beds)
Rhodes Sand Pit	72m SW	BGS Recorded Mineral Site	Sand	Has now ceased and shown as backfilled
-	115m W	Infilled land	-	Unknown infilled water feature
-	117m SE	Infilled land	-	Unknown infilled land
-	133m W	Infilled land	-	Unknown infilled water feature
Light Alders Sand Pit	140m SE	BGS Recorded Mineral Site	Sand	Has now ceased and shown as backfilled

Table 2-G: Summary of landfill, mineral sites and infilled ground records

2.14 Recent industrial activity

2.14.1 There are no Integrated Pollution Controls (IPC) or Integrated Pollution Prevention Controls (IPPC) recorded within 250m of the site. However, there is one Authority Pollution Prevention Control (LAPPC) located 137m northwest of the site associated with the manufacturing of timber and wood-based products (Bernstein Group Plc).

2.14.2 There are no Contemporary Trade Directory entries associated with site itself, and 15 are held within 250m. There are 3 records within Rhodes Business Park within 100m of the site, associated with recycling services 42m west, textile manufacturing 69m northwest (inactive), and a distribution and haulage business 70m northwest.

2.14.3 There are also records of unspecified works (3No. records 45m north, 51m north and 92m west), tanks (2No. records 37m northwest and 84m west) and one record relating to Rhodes Business Park.

2.14.4 The site lies adjacent to the River Irk, upstream there are 3 recorded pollution incidents and 5 discharge consents to surface waters within 100m, as follows.

Discharge Type	Distance from site (m)	Description
Pollution Incident	0	Minor incident to water (Category 3) involving sewage debris due to inadequate design/capacity recorded on 6th February 1995.
Pollution Incident	60m N	Minor incident to water (Category 3) involving release of unknown pollutant
Pollution Incident	64m N	Minor incident to water (Category 3) involving release of unknown pollutant.
Discharge Consent	39-70m N & NE	5x consents for storm sewage overflow into the River Irk.

Table 2-H: Summary of pollution incidents

2.15 Radon

2.15.1 The site is in an area where the above ground radon Affected Area status is classed as a Lower Probability Radon Area. No radon protection measures are required for new buildings.

2.16 Underground Infrastructure

2.16.1 Copies of all utility plans obtained are presented as Appendix L. The plans are provided for information only and should not be relied upon to be accurate. In addition, it is worth noting that the public utility plans provided by the asset owners typically exclude private service runs.

2.16.2 The plans do not show any mains services to cross the site, although drainage covers were noted during the site walkover suggesting the presence of localised land drains.

2.17 Unexploded Ordnance (UXO) Hazard Screen

2.17.1 A preliminary risk review has been undertaken by a UXO specialist to assess the risk of encountering UXO during ground investigation works undertaken by Soiltechnics only and to identify any precautionary measures required. It should be noted that the risk assessment has not been carried out fully in accordance with CIRIA report C785 'Unexploded Ordnance (UXO) A guide for the construction Industry'.

2.17.2 The risk review concluded that there was not a credible risk of encountering UXO during the ground investigation. It should be noted that this preliminary risk review does not consider risks to the construction phase.

3 Previous Report Summary

3.1 George Hutchinson Associates (GHA) – Factual Report on Ground Investigation (October 2003)

3.1.1 A ground investigation was undertaken across the wider Rhodes Business Park and former Calico Print Works/Union Cotton Mill.

3.1.2 Within the subject site, two deep boreholes (BH11 and BH12) were undertaken within the area of the former filter beds in the south-western half of the site. In addition, three shallow windowless sampler boreholes were completed in the proposed building footprint. Copies of logs are presented in Appendix B, and locations are presented in Appendix A.

3.1.3 Ground conditions encountered comprise between 1.5-3.6m of Made Ground comprising gravels and clays including brick, concrete, ash, wood and plastic, overlying clay, silt, sand and gravel of natural Alluvium deposits to depths of 5.1-5.4m bgl.

3.1.4 Underlying Alluvium deposits stiff gravelly clays of Devensian Till were encountered to the maximum exploratory depth of 15m bgl.

3.1.5 No geochemical testing was undertaken on the subject site.

3.2 Fletcher Bennett/GHA – Technical Note (September 2005)

3.2.1 This comprised a summary of the previous investigation findings and therefore no additional pertinent information is contained in the report.

3.3 WSP – Geo-environmental Assessment (July 2014)

3.3.1 A geo-environmental ground investigation was undertaken across the wider Rhodes Business Park and former Calico Print Works/Union Cotton Mill.

3.3.2 Within the subject site itself, one cable percussion borehole (BH01) and three windowless sampler boreholes (WS01, WS06 and WS08) were undertaken. BH01 and WS06 targeted the former area of the filter beds in the southwest of the site, WS01 targeted the former disposal pit in the northeast corner and WS08 targeted the former channel of the River Irk close to the south-western boundary. Copies of logs are presented in Appendix B, and locations are presented in Appendix A.

3.3.3 Within WS01 (former disposal pit), 1.3m depth of Made Ground was encountered comprising ash, plastic, ceramic, slag and clinker. Within WS06 and BH01 (former filter beds), granular Made Ground comprising sand and gravel of brick, concrete and ash was encountered to depths of 1.1m and 2.8m respectively. WS08 (former River Irk channel) contained deep Made Ground to depths in excess of 4.0m (base not intersected), comprising dominantly granular Made Ground with a hydrocarbon sheen and odour noted in soils between depths of 3.5-4.0m.

3.3.4 In BH01, Alluvium (granular) was recorded to 8.0m depth underlain by stiff gravelly clay of Devensian Till to the base of the borehole (12.0m).

3.3.5 Asbestos was detected within BH01 at 0.4m depth (amosite) in granular Made Ground soils. Quantification of asbestos returned as ‘trace’.

3.3.6 An exceedance of commercial GAC of mercury (26mg/kg) was recorded within WS08 at 1.5-1.6m (36.8mg/kg) within Made Ground soils.

3.3.7 Subsequent ground gas monitoring in BH01 on site recorded a maximum flow rate of 30.7 l/hr, quickly decreasing to 0.5 l/hr. Methane was not recorded above the limit of detection (0.1% v/v) and the maximum concentration of carbon dioxide recorded was 6.9% v/v in WS01. Only one round of gas monitoring was completed on site.

3.3.8 Elevated arsenic was recorded within groundwater samples taken from monitoring wells in all four boreholes across the subject site. Elevated arsenic was also recorded in Made Ground soils in BH01 and WS08, measured between 441-618mg/kg, although this is not in exceedance of the commercial GAC values adopted at the time. Marginally elevated concentrations of aliphatic and aromatic hydrocarbons in WS08 were also recorded in groundwater.

4 Tier 1 Preliminary Contamination Risk Assessment

4.1 Objectives

4.1.1 The objective of this preliminary risk assessment (PRA) is to determine the suitability of the site for the proposed redevelopment and end users, in terms of the risk from contamination. The assessment comprises the following steps:

- Identify potential contaminant linkages (PCLs) between sources, pathways and receptors.
- To provide data to assist in the design of potential exploratory and detailed intrusive investigations and to give an early indication of possible remedial requirements, if necessary.

4.2 Evaluation Criteria

4.2.1 The following assessment is undertaken within the legislative framework of the planning system. Therefore, the assessment needs to identify if land contamination could pose an unacceptable risk to human health or the environment, within the context of the proposed development site. In the context of the existing site use, as a minimum, land should not be capable of being determined as 'contaminated land' under Part IIA of the Environmental Protection Act 1990.

4.2.2 The risk criteria for the proposed development is based on a 'minimal risk' approach, whereas under the existing land use a designation of 'contaminated land' would only apply if there is a significant possibility of significant harm (SPOSH).

4.3 Methodology

4.3.1 The objectives listed above are achieved by utilising the information presented within the desk study to develop an initial conceptual site model (iCSM) and identification of potential unacceptable risks. Depending upon the outcome of the Tier 1 assessment, it may be necessary to undertake a Tier 2 generic quantitative risk assessment (GQRA).

4.3.2 An iCSM relies upon the identification and assessment of PCLs. A contaminant linkage comprises of three key components:

- Source – a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution.
- Pathway – Current and post-development routes by which a receptor is, or could be, affected by a contaminant.
- Receptor – Something that could be adversely affected by a contaminant, for example a person (current and proposed end users or neighbours), controlled waters and ecosystems.

4.3.3 The Tier 1 risk assessment has been produced with reference to the following guidance:

- 'Land contamination risk management' (EA, 2021).
- BS 10175:2011+A2:2017 'Investigation of potentially contaminated sites – Code of Practice'.
- CIRIA C552 'Contaminated land risk assessment- a guide to good practice', 2001.
- BS EN ISO 21365:2020 'Soil quality – Conceptual site models for potentially contaminated sites'
- BS 8576:2013 'Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOC)'.

4.4 Source Assessment

4.4.1 The table below summarises identified sources based on the findings of the desk study. Where appropriate, further discussion has been provided in the paragraphs which follow.

Potential Sources	Contaminant(s) of concern	Detail	Viable source?
On-site sources			
Calico Print Works	Metals, various organic and inorganic compounds (inc solvents, VOCs) and asbestos	Site was part of the wider Calico Print Works and Union Cotton Mill. Washing of cotton likely to have occurred in filter beds.	Y
Unknown Made Ground used to backfill former filter beds, River Irk Channel and disposal pit	Metals, polycyclic aromatic hydrocarbons (PAH), solvents, VOCs asbestos	Source of material used for fill unknown and may have been derived from print works/mill or surrounding industry.	Y
	Permanent ground gases (CH4 and CO2)	The historical pit/beds may have been infilled with organic rich materials. Infilling occurred in the 1950s (over 70 years ago), and the labile organic matter is likely to have significantly depleted.	Y
Former tanks recorded on site	Petroleum hydrocarbons (TPH), volatile organics compounds (VOC)	The structure of these tanks is not known, therefore leaks may have leached into underlying soils.	Y
Alluvium	Permanent ground gases (CH4 and CO2)	Elevated concentrations of ground gases generated over time and trapped within the underlying soils.	Y
Radon	Radon	The site is recorded as being in a Lower Probability Radon Area.	N
On-site pollution incident	Sewage/biological contaminants	Incident took place in February 1995 and any pollution is anticipated to have quickly entered the River Irk and dispersed away from site.	N
Underlying coal measures	Oxygen Depletion	There are no recorded or likely unrecorded workings underlying the site and no records of mine gas within 50m.	N
	Permanent Ground Gases (CH_4, CO_2 & CO)		
Aggressive ground conditions due to historical industrial activities	Acids	The risk of aggressive ground affecting concrete is to be considered under the geotechnical investigation and has been excluded from further consideration.	N
Aggressive ground conditions due to potentially pyritic ground	Pyrite and sulphates		N
Off-site sources			
Print works located immediately north of the site	Metals, various organic and inorganic compounds (inc solvents, VOCs) and asbestos	Similar contaminants expected from on-site past usage, so unlikely to increase risk any further.	N
Infilled land to the south, west and northeast of the site, including recorded historic landfill 66m northeast.	Permanent ground gases (CH4 and CO2)	Landfill was last recorded by 1984 at the latest. Site lies directly on granular deposits of Alluvium therefore migration of off-site gases through permeable strata possible.	Y
Historic and current 'works' located immediately north of the site	Various inorganic compounds, metals, fuels and oils PAHs, solvents, VOCs	Unknown activities carried out historically, potentially creating a wide range of contaminants.	Y

Potential Sources	Contaminant(s) of concern	Detail	Viable source?
Off-site pollution incidents and discharge consents	Metals, various organic and inorganic compounds, biological contamination	Any pollutants discharged into the River Irk are expected to be significantly diluted by the time they migrate beneath the site itself however presence beneath site cannot be ruled out at this stage.	Y
Pre-1976 electrical substation shown 45m north	PCBs	PCBs have low mobility and any contamination plume likely to be very localised to former site of sub-station.	N

Table 4-A: Contamination source assessment

4.5 Receptor Assessment

4.5.1 The following table summarises the identified receptors based on current site conditions and our understanding of the proposed end use:

Receptor Category	Principal Receptor	Receptor present?	Detail
Human health	Users of the current site	Yes	Currently used for vehicle parking.
	End user of the developed site	Yes	Proposed commercial/industrial use.
	Construction operatives and other site investigators	Yes	Site to be developed.
	Adjacent site users and off-site members of the public	Yes	Public footpath present adjacent to site.
Controlled waters	Surface waters	Yes	The River Irk is adjacent to south and east of the site.
	Groundwater	Yes	Site over superficial Secondary A Aquifer.
Sensitive ecosystems and species	Current site	No	Alkrington Woods is designated as a Local Nature Reserve and lies 38m northeast of the site. Given the location of the River Irk and associated shallow groundwater any onwards migration of contaminants beyond the river is unlikely
	Developed site	No	
Property	Soft landscaping (current)	Yes	Soft landscaping present in north and west of the site.
	Soft landscaping (proposed)	Yes	Soft landscaping proposed in north, south and west of the site.
	Building materials	No	Concrete classification to be assessed under the geotechnical investigation.

Table 4-B: Receptor assessment

4.6 Pathway Assessment

4.6.1 The following table summarises the generic human health pathway assessment for the site, assuming a range of contaminant sources within the underlying soils. Source-specific pathways are considered within the iCSM in subsequent report sections.

Human Health Exposure Pathway	Commercial land use with soft landscaping (current)	Commercial land use with soft landscaping (proposed)	Construction operatives	Adjacent Site Users
Ingestion, inhalation and dermal contact with soils and dusts	✓	✓	✓	✓ *(inhalation only)*
Ingestion, inhalation and dermal contact with site derived dusts indoors	×	✓	✓	×
Ingestion of home-grown vegetables	×	×	×	×
Inhalation of vapours in outside spaces	✓	✓	✓	✓
Intrusion and inhalation of vapours indoors	×	✓	✓	×
Accumulation and Inhalation of ground gas in enclosed structures	×	✓	✓	×
Permeation into below-ground drinking water pipes	×	✓	×	×

Table 4-C: Generic pathway assessment

4.6.2 The following table summarises generic pathways for the site which could be viable for the identified controlled water receptors, given our understanding of the hydrogeological model and assuming a range of contaminants in the sub-surface.

Controlled Water Exposure Pathways	Current Setting	Proposed Setting	Mechanism
Site characteristics			
Leaching via infiltration through unsurfaced areas, and surface run-off	✓	✓	Mobilisation
Leaching via infiltration through cracks/joints in hardstanding areas and drainage infrastructure	✓	✓	Mobilisation
Leaching via saturation from groundwater flooding and shallow/perched groundwater bodies	✓	✓	Mobilisation
Infiltration through sustainable drainage systems	×	✓	Mobilisation
Preferential lateral pathways (e.g. underground services)	×	✓	Migration
Preferential vertical pathways (e.g. piling, vibro-stone columns)	×	✓	Migration
Hydrogeological characteristics			
Vertical migration through permeable strata into shallow aquifers and perched groundwater bodies	✓	✓	Migration
Vertical migration through permeable strata into sensitive aquifers at depth	✓	✓	Migration
Lateral migration within shallow and perched groundwater bodies into surface waters	✓	✓	Migration

Table 4-D: Generic pathway assessment

4.7 Initial Conceptual Site Model (iCSM)

4.7.1 The table below presents our approach to the assessment of risks associated with PCLs. The categories below are based upon the definitions within CIRIA C552 (2001), with the addition of a 'negligible likelihood' scenario, which is to be used where there is no realistic scenario in which harm could occur.

4.7.2 The initial conceptual site model (iCSM) is presented within the following tables overleaf.

		Consequence of harm			
		Severe	**Medium**	**Mild**	**Minor**
Probability of harm	**High likelihood**	**Risk: Very high** (high – severe)	**Risk: High** (high – medium)	**Risk: Moderate** (high – mild)	**Risk: Moderate/Low** (high – minor)
	Likely	**Risk: High** (likely – severe)	**Risk: Moderate** (likely – medium)	**Risk: Moderate/Low** (likely – mild)	**Risk: Low** (likely - minor)
	Low Likelihood	**Risk: Moderate** (low – severe)	**Risk: Moderate/Low** (low – medium)	**Risk: Low** (low – mild)	**Risk: Very low** (low – minor)
	Unlikely	**Risk: Moderate/Low** (unlikely – severe)	**Risk: Low** (unlikely – medium)	**Risk: Very low** (unlikely – mild)	**Risk: Very low** (unlikely – minor)
	Negligible Likelihood	**Risk: Low** (negligible– severe)	**Risk: Very Low** (negligible– medium)	**Risk: Very Low** (negligible– mild)	**Risk: Negligible** (negligible– minor)

Table 4-E: iCSM Risk Ratings

RECEPTOR: PROPOSED END USERS

Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Historical Calico Print Works and Union Cotton Mill	Metals, various organic and inorganic compounds (inc solvents, VOCs) and asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Moderate** (likely – medium)	Site was part of the wider Calico Print Works and Union Cotton Mill. Washing of cotton likely to have occurred in filter beds. Previous site investigation has recorded elevated arsenic and mercury in soils on site.
Unknown Made Ground used to backfill former filter beds, River Irk Channel and disposal pit	Metals, PAHs, TPH, phenol	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Moderate** (likely – medium)	Elevated levels of inorganic and organic contaminants could be present in the Made Ground deposits due to its origin and composition (e.g. potentially containing industrial waste and uncontrolled demolition materials).
	Permanent ground gases (CH4 and CO2)	Migration through the sub-surface into enclosed spaces	**Risk: Moderate** (likely – medium)	Infilling occurred in the 1950s (over 70 years ago), and the labile organic matter is likely to have significantly depleted. In excess of 4.0m of Made Ground was recorded within the former River Irk channel and a peak flow rate of 30.7 l/hr in the former filter beds during previous gas monitoring round undertaken by others (only 1No. round undertaken in total). Carbon dioxide concentrations of 6.9% recorded within former disposal pit.
	Asbestos	Inhalation of dusts	**Risk: Moderate** (likely – medium)	Trace asbestos was recorded within a sample of Made Ground taken from the location of the former filter beds during previous GI.
Former tanks recorded on site	Petroleum hydrocarbons (TPH), volatile organics compounds (VOC)	Inhalation of vapours	**Risk: Moderate/Low** (low – medium)	Vapours arising from gross hydrocarbon contamination could intrude into proposed buildings however significantly elevated hydrocarbon concentrations not recorded during previous GI works.
Ground gases generated from underlying Alluvium	Permanent Ground Gases (CH_4 & CO_2)	Migration through the sub-surface into enclosed spaces	**Risk: Low** (negligible– severe)	Whilst elevated concentrations can be detected in monitoring wells, the overall gas generation potential is low as the labile organic material has been exhausted over time. A literature review has shown no evidence of ground gas incidents from Alluvium in above ground buildings. No organic peats recorded in Alluvium in previous GI investigations.
Off-site: Infilled land to the south, west and northeast of the site, including recorded historic landfill 66m northeast.	Permanent Ground Gases (CH_4 & CO_2)	Migration through the sub-surface into enclosed spaces	**Risk: Moderate** (low – severe)	Landfill was last recorded by 1984 at the latest. Site lies directly on granular deposits of Alluvium therefore migration of off-site gases and leachates through permeable strata possible. On-site sources likely to present more of a risk to future receptors however risks from off-site receptors cannot be fully discounted at this stage.

RECEPTOR: PROPOSED END USERS				
Off-site: Historic and current 'works' located immediately north of the site	Various inorganic compounds, metals, fuels and oils PAHs, solvents, VOCs	Lateral migration through the sub-surface into enclosed spaces	**Risk: Moderate/Low** (unlikely – medium)	Migration of off-site migration on groundwater is likely to be towards the southwest in line with flow direction of the River Irk. Most contamination plumes from industry to the north unlikely to travel beneath the site however cannot be fully discounted at this stage.
Off-site pollution incidents and discharge consents	Metals, various organic and inorganic compounds, biological contamination	Migration of contamination along River Irk precipitating beneath subject site	**Risk: Moderate/Low** (unlikely – medium)	Any pollutants discharged into the River Irk are expected to be significantly diluted by the time they migrate beneath the site itself however presence beneath site cannot be ruled out at this stage.

Table 4-F: iCSM – Proposed End Users

RECEPTOR: CONSTRUCTION WORKERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	**Risk: Moderate** (likely – medium)	Asbestos has previously been recorded on site and can present an acute risk to construction workers, particularly during the enabling works phases. Very low and trace concentrations often pose a low risk if appropriate controls are put in place.
All other contamination sources, excluding asbestos	Metals, PAHs, TPHs	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Moderate/Low** (low – medium)	Gross contamination of high-risk contaminants not anticipated but Print Works historically used Trichloroethylene (TCE) which can degrade to vinyl chloride. No vinyl chloride was recorded during previous investigation works. Standard PPE and hygiene protocols for working on brownfield sites are likely to be sufficient to the mitigate risk from lower-risk contaminants however elevated mercury and arsenic has been previously recorded on site.

Table 4-G: iCSM – Acute Exposure to Construction Workers

RECEPTOR: ADJACENT SITE USERS FOLLOWING COMPLETION				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
All identified potential contaminant sources	Metals, PAHs, TPH, (S)VOCs, Asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (unlikely – medium)	Based on the exposure pathways that would be present from the developed site, and on the anticipated levels of contamination, it is considered unlikely that a pollutant linkage could pose an unacceptable risk to off-site receptors.

Table 4-H: iCSM – Chronic Exposure to Adjacent Site Users

RECEPTOR: ADJACENT SITE USERS DURING THE CONSTRUCTION PHASE				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Asbestos fibres and ACMs within the Made Ground	Asbestos	Inhalation of dusts	**Risk: Moderate/Low** (low – medium)	Potential risk associated with generation of air-borne asbestos fibres and dust during construction main earthworks phase. Whilst there is a low likelihood of harm occurring due to the effect of fresh-air dilution, the risk cannot be discounted at this stage.
Transporting and storing contaminants if found during construction	Hydrocarbons, other organic compounds, inorganic compounds	Ingestion, inhalation and contact with vapours	**Risk: Moderate/Low** (low – medium)	Unexpected contamination sources could be identified during the construction phase. These contaminants will need to stored and transported before being removed from the site.
All other potential contaminant sources	Metals, PAHs, TPH	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (unlikely – medium)	Unlikely to pose a viable risk to off-site receptors (commercial).

Table 4-I: iCSM – Acute Exposure to Adjacent Site Users

RECEPTOR: PROPOSED PLANTING				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Contaminants within topsoil and the shallow sub-surface (hardstanding areas)	Metals, pH and inorganics	Direct contact and root uptake	**Risk: Negligible** (negligible– minor)	No current soil resources are present on site, therefore a suitable growing medium will need to be imported for any proposed landscaping scheme.

RECEPTOR: PROPOSED PLANTING				
Contaminants within topsoil and the shallow sub-surface (current soft landscaping area)	Metals, pH and inorganics	Direct contact and root uptake	**Risk: Very low** (low – minor)	Topsoil and shallow soils may have been impacted by the deposition of lead and other contaminants due to the site's location in an urban environment. Elevated levels of phytotoxic contaminants may be present; however significant barren areas, signs of poor growth, or evidence of significant vegetative stress was not observed during site walkover.

Table 4-J: iCSM – Phytotoxic Risk to Proposed Planting Scheme

RECEPTOR: CONTROLLED WATERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
All potential contaminant sources outlined above	Various	Leaching and lateral migration (Surface water – River Irk)	**Risk: Moderate** (likely – medium)	Potential leachable contaminants within the Made Ground. There is a potential for contaminants to be mobilised through the infiltration of rainwater and groundwater flooding and discharge from surface directly into the adjacent River Irk. Previous investigation recorded elevated arsenic and petroleum hydrocarbons within groundwater in exceedance of surface water EQS values (from 2014).
All potential contaminant sources identified	Various	Leaching and vertical migration (Groundwater)	**Risk: Moderate/Low** (low – medium)	Contaminants within shallow aquifer expected to quickly discharge into the adjacent River Irk. Previous investigation recorded elevated arsenic and petroleum hydrocarbons within groundwater in exceedance of surface water EQS values (from 2014). Elevated soil bound arsenic was also recorded on site potentially suggesting the presence of an on-site source of arsenic (likely derived from print works where arsenious acids are historically known to have been used).

Table 4-K: iCSM – Controlled Waters Risk

4.7.3 The risk to identified receptors from the proposed developments under the planning regime are assessed under a 'minimal risk' approach. Whereas, the risk to receptors under the current and continued use of the site is dealt with under the regulatory framework of the Part IIA regime, where Soiltechnics consider if there is a reasonable chance of a 'significant potential of significant harm' (SPOSH) occurring. This is not equivalent to a due diligence assessment for the continued use of the site to aid in determining potential contaminated land liabilities or land valuations.

4.7.4 The following table sets out the risk to current users considering a SPOSH approach:

Receptor	Potential Source	Contaminants of Concern	Pathway	Preliminary Assessment: Is their reasonable evidence of SPOSH?	Discussion
Human Health (Current and adjacent site users)	All potential contaminant sources identified above	Various Contaminants	Inhalation, ingestion and contact with soils, dusts and vapours.	**No**	Whilst potential contamination sources have been identified, Soiltechnics have not encountered any evidence which indicates there could be a significant possibility of significant harm to human health occurring from contamination on site.
Controlled Waters (Surface water and groundwater)	All potential contaminant sources identified above	Various Contaminants	Mobilisation and migration	**No**	Whilst potential contamination sources have been identified, Soiltechnics have not encountered any evidence which indicates there could be a significant possibility of significant harm to controlled waters occurring from contamination on site.
Ecosystems	All potential contaminant sources identified above	Various Contaminants	Direct contact and root uptake	**No**	The site falls within the vicinity of Local Nature Reserve (Alkrington Woods); however, a precursory review of aerial and street view imagery does not show any significant barren areas, signs of poor growth, or significant vegetative stress.
Property	All potential contaminant sources identified above	Various Contaminants	Various pathways	**No**	Through undertaking the desk study, no evidence of potentially significant harm occurring to property has been identified.

Table 4-L: iCSM – Current Site Risks (Part IIA)

4.8 Preliminary Risk Assessment Conclusions and Recommendations

4.8.1 In summary, the PRA has not highlighted any potential contaminant linkages (PCL) which could pose a significant possibility of significant harm under the current land use. In terms of the proposed development scheme, a minimal risk approach applies, and PCLs have been identified which require further consideration.

4.8.2 In particular, the industrial heritage of the site and potential for Made Ground deposits could give rise to a wide range of contaminants. Further intrusive investigation works are recommended to further refine the assessment and to determine if any remedial measures are necessary.

4.8.3 Overall, each PCL identified as posing a risk of 'Moderate/Low' or higher should be considered as part of an intrusive Tier 2 generic quantitative risk assessment (GQRA). The following table summarises the principal receptors at risk which require further investigation to support the proposed development.

Receptor Category	Principal Receptor	PCL Present Requiring Further Investigation?
Human health	Current site users	No
	Proposed site users (soils, dusts, and vapour)	Yes
	Proposed site users (permanent ground gas)	Yes
	Proposed site users (radon)	No
	Adjacent site users and off-site members of the public (during the long-term use of the site)	No
	Adjacent site users and off-site members of the public (during the construction phase)	Yes
	Construction operatives	Yes
Controlled waters	Surface waters	Yes
	Groundwater	Yes
Property	Soft landscaping (current)	No
	Soft landscaping (proposed)	Yes
	Potable infrastructure	Yes
	Building materials	To be considered by the specifier

Table 4-M: Receptors at Risk Under The Proposed Scheme

5 Ground Investigation

5.1 Objectives

5.1.1 The ground investigation scope and location of exploratory holes was determined by Soiltechnics Ltd, based upon our overall brief outlined in Section 1.

5.1.2 The objectives of the fieldwork were to:

i) Establish ground and groundwater conditions at the site.
ii) Obtain samples for subsequent laboratory testing.
iii) Install gas and groundwater monitoring wells and undertake a programme of monitoring visits.

5.2 Fieldwork summary

5.2.1 Fieldwork was undertaken on 12th October 2023.

5.2.2 A summary of the works completed is set out in the table below, along with the location of the exploratory logs. The exploratory hole location plan is presented within Appendix A.

Exploratory Hole Logs	Method	Qty	Final Depth Range (m bgl)	Comments
Appendix B	Dynamic windowless sampling boreholes	5	3.00 – 5.45	WS01 – WS05 Boreholes terminated at scheduled depth.
Appendix B	Cable percussion boreholes	1	15.27	CP01 Borehole terminated at target depth.
Appendix D	Dynamic Cone Penetrometer (DCP)	8	0.62 – 0.96	DCP01-DCP09. Terminated at target depth.
		3	0.30 – 0.36	DCP03, DCP10A&B Terminated shallow depth due to competent ground/obstruction.
Appendix E	Cone Penetration Tests (CPTs)	7	0.51-1.49	CPT01, CPT01A, CPT02, CPT02A, CPT12, CPT12A, CPT12B Tests terminated due to competent ground/obstruction.
		11	4.99-5.00	CPT03-CPT11 (exc CPT10), CPT13-CPT15 Tests terminated at target depth.
		1	N/A	CPT10 Not completed due to time constraints.

Table 5-A: Summary of fieldwork undertaken

5.2.3 All soils encountered were described in accordance with BS EN ISO 14688 “Identification and Classification of soil”.

5.3 Unexploded Ordnance (UXO)

5.3.1 In the absence of a UXO Risk Assessment in accordance with CIRIA C681, Soiltechnics commissioned a UXO specialist to undertake a preliminary risk review for the purpose of the ground investigation works phase only.

5.3.2 The review concluded that the UXO risk to the ground investigation works is low within the site boundary and therefore no special precautions were required.

5.4 Sampling

5.4.1 During the fieldwork, sampling of soil, rock and groundwater for geotechnical purposes has been undertaken in accordance with BS EN ISO 22475-1 *"Geotechnical Investigation and testing – sampling by drilling and excavation and groundwater measurements".*

5.4.2 Samples collected for chemical analysis have been taken and handled in accordance with BS ISO 18400-105:2017 *"Soil quality — Sampling Part 105: Packaging, transport, storage and preservation of samples".*

5.4.3 Various sampling and sub-sampling methodologies have been adopted as appropriate, with the primary aim of obtaining the highest quality sample class practicable.

5.4.4 Untested chemical and geotechnical samples will be held for a period of 4 weeks from the date of the first report issue, after which they will be disposed of.

5.5 In-situ Testing

5.5.1 The following table summarises the field testing carried out. The results are summarised on individual exploratory hole logs where appropriate and detailed within the Appendices indicated.

Tests	Qty	Applicable standard / guidance	Location of Results
Standard penetration test (SPT)	40	BS EN ISO 22476-3	Included within logs Detailed in Appendix D
Pocket penetrometer	2	Manufacturer's instructions	Included within logs
Dynamic cone penetrometer (DCP) using TRL probe	11	DMRB: CS229	Appendix D

Table 5-B: Summary of field testing undertaken

5.6 Monitoring Installations

5.6.1 Instrumentation installed within exploratory holes during the fieldwork are shown on the logs within Appendix B and are summarised below:

Installation type	Target Stratum	Qty	Exploratory hole ID
Combined gas and groundwater well	Made Ground/Alluvium	6	CP01, WS01-WS05

Table 5-C: Summary of monitoring installations

5.7 Monitoring visits and groundwater sampling

5.7.1 A summary of the gas and groundwater spot monitoring visits undertaken is outlined in the table below. Results of the post fieldwork monitoring are presented in Appendix G.

5.7.2 Overall, four ground gas monitoring visits were undertaken over a period of 1-2 months.

Date	Purpose
19/10/2023	Gas and groundwater spot monitoring.
02/11/2023	Gas and groundwater monitoring, including groundwater and surface water sampling.
16/11/2023	Gas and groundwater spot monitoring.
30/11/2023	

Table 5-D: Summary of post fieldwork spot monitoring

5.7.3 Groundwater sampling undertaking during the return visits is summarised below.

Date	Purge Method	Sampling Method	Locations Sampled
02/11/2023	Low-flow peristaltic pump (stabilisation)	Peristaltic pump (low volume, low flow)	CP01, WS02, WS03

Table 5-E: Summary of groundwater sampling undertaken

5.7.4 In addition, two 'grab' samples of the River Irk, one upstream (SW01) and one downstream (SW02) of the site, were obtained to determine receptor-specific geochemical parameters for bioavailability assessment and subsequent contamination assessments.

5.8 Investigation Constraints

5.8.1 The table below outlines restrictions and constraints to the investigation methods which either limited the design of the original scope of work or resulted in a deviation from the agreed scope.

Detail	Impact
Fieldwork constraints	
Location WS03 was repositioned due to a parked trailer in the proposed location. The borehole was re-located approximately 10m west.	No discernible impact.

Table 5-F Table of site restrictions

6 Laboratory testing

6.1 Overview

6.1.1 Samples obtained from exploratory holes were sent to independent accredited laboratories for geotechnical and chemical testing.

6.2 Geotechnical Testing

6.2.1 The geotechnical testing schedule was prepared by Soiltechnics using a targeted and judgemental approach, based upon the scheme proposals and our initial understanding of the ground conditions.

6.2.2 Geotechnical laboratory test results are presented in Appendix F, and the total number of geotechnical tests undertaken is summarised below:

Qty	Test
3	Moisture content
3	Atterberg limits
12	Particle size distribution (coarse)
4	Particle size distribution (by hydrometer)
3	Dry density/moisture content relationship
6	BRE SD1 Suite D

Table 6-A: Summary of geotechnical laboratory testing

6.3 Chemical Testing

6.3.1 The chemical testing schedule was prepared by Soiltechnics using a targeted and judgemental approach, based upon the initial conceptual site model and fieldwork observations. This is further elaborated on within subsequent report sections.

6.3.2 Chemical laboratory test results are presented in Appendix H, and the total number of chemical tests undertaken is summarised below:

Sample Type	Qty	Testing	Suite Name
Soil	2	*Comprehensive Contamination Suite* [metals, cyanides, PAHs, TPH CWG, (S)VOCs & inorganics]	ST Suite 17
	8	*Basic Classification Suite* [metals, cyanides, PAHs, phenol, banded TPH & asbestos]	Basic Classification Suite
	2	Asbestos screening	-
	1	Asbestos Quantification (gravimetry)	-
Leachates	2	Full WAC Suite (2-stage leachate)	-
Water	3	*Basic Contamination Suite* (metals, cyanides, PAHs, phenol, inorganics & pH)	ST Suite 3
	2	*Comprehensive Contamination Suite* [metals, cyanides, PAHs, TPH CWG, (S)VOCs & inorganics]	ST Suite 17
	2	*M-BAT Suite* [DOC, pH, calcium & hardness]	M-BAT Suite

Table 6-B: Summary of chemical laboratory testing

7 Ground Investigation Findings

7.1 Ground Model

7.1.1 Ground conditions encountered were relatively consistent across the site and were broadly in line with those anticipated from the desk study.

7.1.2 The tables below present our generalised interpretation of geological and hydrogeological conditions at the site. Unless otherwise stated in subsequent interpretive report sections, this represents the adopted ground model.

7.1.3 Further detail about the ground conditions encountered is provided in the relevant sub-sections below.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Soft and hard surfacing	Topsoil in north of site comprising dark brown sand with rootlets. Asphalt surfacing with granular sub-base.	G.L	G.L.	0.15 – 0.2 0.2 – 0.3
Made Ground	Clayey gravelly sand and sandy gravel including brick, concrete, clinker, coal, glass and ash.	0.15 – 0.3	0.3	1.2 - 2.05
Alluvium	Very loose to loose gravelly silty sand and localised very soft to soft sandy silt/silty clay. Becoming medium dense and dense silty sand below depths of 4.0-5.8m.	1.4 – 2.2	1.9 top of unit 5.0 to competent sands	6.9
Devensian Till (CP01 only)	Stiff to very stiff sandy gravelly clay	8.6	8.6	>6.67

Table 7-A: Ground Model

Type	Stratum	Groundwater depth and range	Comments
Groundwater strike	Made Ground/Alluvium	1.0-3.0m	Groundwater level remained stable once encountered.

Table 7-B: Hydrogeological Model

7.2 Soft and Hardstanding

7.2.1 Topsoil comprising dark brown gravelly sand was encountered in within the soft landscaping area towards the north and southwest of the site in boreholes WS01 and WS02. The base of the unit varied between 0.15m and 0.2m thick.

7.2.2 Elsewhere surfacing comprised asphalt overlying granular sub-base to depth of between 0.2-0.3m. The asphalt was typically 50-70mm thick and underlain by a sandy gravel containing limestone, brick and concrete.

7.3 Made Ground

7.3.1 Made Ground was encountered in all boreholes across site underlying surfacing to depths of between 1.4m (WS04) and 2.2m (WS01).

7.3.2 Made Ground generally comprised clayey gravelly sand including brick, concrete, clinker, glass and coal. Within the vicinity of CP01 & WS03 (former river channel/filter bed infill) and WS05 (former disposal pit) a clayey gravel of clinker, ash, brick and potential lime waste was noted between depths of 0.29-1.6m bgl. Potential white lime waste was also noted within WS04 at depths between 0.5-1.4m bgl.

7.3.3 A photograph of the Made Ground encountered at WS01 is presented below.



Figure 7-A: Made Ground from WS01

7.4 Alluvium

7.4.1 Natural deposits of Alluvium were encountered in all boreholes and all positions terminated within the deposit with the exception of the deep borehole CP01.

7.4.2 Alluvium was typically recovered as a very loose to loose silty sand or very soft to soft sandy silt/silty clay, with more competent medium dense to dense deposits noted at depths of 4.0m in WS01 and WS02, 5.0m in WS03 and 5.8m in CP01.

7.4.3 In the CPT testing, positions undertaken beneath the footprint of the proposed building (CPT01-CPT09 and CPT11, includign CPT01A and CPT02A) generally correlate with the findings from borehole investigations. The top of the competent material (medium dense to dense sands or the underlying Till) was generally recorded between depths of 3-5m bgl in the CPT positions.

7.4.4 A photograph of the Alluvium encountered in WS01 is presented below.



Figure 7-B: Alluvium from WS01

7.5 Devensian Till

7.5.1 Devensian Till deposits comprising stiff to very stiff gravelly clay was encountered in deep borehole CP01 only from a depth of 8.6m bgl. CP01 terminated within the Devensian Till deposits at a depth of 15.27m.

7.6 Groundwater

7.6.1 A summary of the groundwater level data obtained during the fieldworks phase is presented below.

Exploratory hole ID	Groundwater observation
CP01, WS01-WS05	Groundwater struck at depths between 1-3m bgl

Table 7-C: Summary of groundwater observations during the fieldworks

7.6.2 A summary of the groundwater level data obtained during the monitoring phase is presented below and is detailed within Appendix G.

Targeted strata / Aquifer	Exploratory hole ID	Instrument Type(s)	Range during monitoring period
			Water depth (m bgl)
Made Ground	WS01, WS03, WS04, WS05	Well	1.3 – 2.15 (only within WS03 and WS05)
Alluvium	WS02, CP01	Well	1.52 – 2.7

Table 7-D: Summary of groundwater monitoring visits

7.6.3 On review of the available groundwater level data from the surrounding area, groundwater was occasionally encountered at shallower depths, which suggests that the both the Made Ground and Alluvium strata are water bearing, and may lead shallow water strikes being encountered at depths up to 1.3m bgl.

7.6.4 Perched groundwater is expected to be present in the Made Ground across site, overlying the Alluvium. During the investigation and monitoring phase, perched water was observed in boreholes between depths of 1m and 3m, and is expected to vary significantly in response to weather events.

7.6.5 The groundwater table within the Alluvium was observed to be around 1.52-2.7m depth.

7.7 Evidence of Possible Contamination

7.7.1 The table below summarises the potential contamination noted during the ground investigation works.

Exploratory hole ID / Area	Depth of observation (m bgl)	Stratum	Description
WS04, WS05	0.5-1.6m	Made Ground	Inclusions of suspected lime waste

Table 7-E: Summary of potential contamination noted during the investigation works

7.7.2 No other significant visual or olfactory evidence of contamination was noted, except for the presence of anthropogenic materials contained within the Made Ground (ash, brick, concrete, clinker-like material).

7.8 Obstructions and Instability

7.8.1 The table below summarises the obstructions and instability encountered that affected the progress of the investigation works.

Strata / Area	Depth range (m bgl)	Issue	Description
Made Ground	0.51-1.49	Obstructions	CPT01, CPT01A, CPT02, CPT02A, CPT12, CPT12A, CPT12B

Table 7-F: Summary of obstructions encountered during the investigation works

8 Geotechnical Discussion

8.1 Scheme Overview

8.1.1 The following assessments are made on the investigatory data presented in the preceding sections of this report and are made with reference to the specific nature of the development. Should scheme proposals change then it is recommended that the validity of the conclusions of this report in relation to the revised scheme are checked.

8.1.2 The project will comprise the construction of a single industrial unit within the southwest of the stie, with associated hardstanding utilised as a storage yard and for vehicular parking to the northeast. Two development options are currently under consideration, with the unit varying in size.

8.1.3 In view of the scheme proposals, the geotechnical elements considered in this report are outlined below:

- Building foundations
- Drainage
- Pavement
- Floor slab
- Earthworks

8.2 Geotechnical Category

8.2.1 In accordance with BS EN1997-1:2004 + A1:2013 (Eurocode 7), the project is designated as Geotechnical Category 2. This category includes projects with *conventional types of structures and foundations with no exceptional risk, or difficult ground or loading conditions*. Furthermore, *routine design procedures* are appropriate.

8.2.2 It should be noted that this Report does not constitute a Geotechnical Design Report (GDR) as defined in Eurocode 7. Accordingly, a GDR should be prepared by the designer during the detailed design phase.

8.3 Key Geotechnical Issues

8.3.1 In view of the ground conditions, the following list summarises the key geotechnical issues that may impact the scheme and will therefore need to be appropriately managed during the lifecycle of the project:

- Low strength soils and Made Ground
- Groundwater
- Trees and other vegetation

8.4 Low Strength Soils and Made Ground

8.4.1 The near surface Made Ground and Alluvium deposits are unsuitable for supporting concentrated foundation loads due to their variable composition, low strength/density and compressible nature. Accordingly, foundations should extend, as a minimum, through such deposits into more competent strata at depth.

8.4.2 As more competent natural deposits are typically present below depths of 3.0m across the site, traditional spread foundations and raft foundations are not considered feasible for the proposed development without ground improvement.

8.5 Groundwater

8.5.1 It is anticipated that groundwater will be encountered during foundation excavations, with groundwater likely to be standing at approximately 1.3-2.7m below ground level.

8.5.2 Groundwater levels are expected to vary seasonally and in response to weather events.

8.5.3 The inflow of groundwater into excavations may lead to instability and excavation collapse.

8.6 Trees and Vegetation

8.6.1 There are a number of trees within close proximity to the west and southeast of the proposed development, which may impact upon the foundation design. It is recommended that a suitably qualified arboriculturist is appointed to undertake a survey such that building foundations can be designed appropriately. The survey should include the location, species, height (and mature height) and water demand of each tree and major vegetation.

8.6.2 Any future planting schemes should consider the effect that the new trees could have on foundations when they reach maturity.

8.7 Building Foundation Strategy

8.7.1 In view of the key geotechnical issues discussed above and anticipated loadings the following foundation types are considered suitable for the project;

- Piles
- Ground improvement

8.8 Geotechnical Parameters

8.8.1 Characteristic values of geotechnical parameters have been derived, in accordance with Eurocode 7. The following tables present the recommended characteristic values for the strata encountered:

Variable	Characteristic value	Derivation
Weight density above water table, γ_b (kN/m³)	16	BS8004:2015 Figure 1
Weight density below water table, γ_{sat} (kN/m³)	16 above 5m 18 below 5m	BS8004:2015 Figure 2
Undrained shear strength, c_u (kN/m²)	20	In situ testing. Only localised deposits present.
Critical state angle of shearing resistance, ϕ_{cv} (°)	28 above 5m 32 below 5m	BS8004:2015 Equation 4 CPT test data

Table 8-A: Summary of characteristic geotechnical parameters – Alluvium

Variable	Characteristic value	Derivation
Weight density above water table, γ_{sat} (kN/m^3)	20	BS8004:2015 Figure 1
Undrained shear strength, c_u (kN/m^2)	200	In situ testing
Undrained deformation modulus, E_u (MN/m^2)	120	E_u/c_u = 600 from Jamiolkowski et al (1979)

Table 8-B: Summary of characteristic geotechnical parameters – Devensian Till

8.9 Pile Resistance

8.9.1 A preliminary assessment of single pile capacity has been undertaken to assist the foundation designer in establishing a foundation layout who will also retain design responsibility. The assessment has been undertaken in accordance with BS EN1997-1:2004 + A1:2013 and BS 8004:2015. It is recommended that the design and installation of the piles are determined by a specialist piling contractor who has experience in pile installation in these or similar ground conditions.

8.9.2 It is assumed that the piles will be installed using replacement piling techniques; i.e. bored piles.

8.9.3 The calculations have been undertaken with the aid of PILE, a specialist geotechnical software programme developed by OASYS. The analyses have been undertaken without explicit verification of serviceability limit state. Accordingly, set R4 partial factors have been adopted for Combination 2. However, as a general guide, the settlement of a single pile at working loads (factor of safety > 2) is typically of the order of 1% of the pile diameter.

8.9.4 A model factor of 1.4 has been adopted in the analyses. The value may be reduced to 1.2 If the resistance is verified by a maintained load test taken to the required, unfactored ultimate resistance.

8.9.5 Shaft resistance within any Made Ground and Alluvium above depths of 5m bgl is assumed to be zero. It is further assumed that such deposits will not cause downdrag on the pile.

8.9.6 Unit base and shaft resistances within cohesive Devensian Till have been derived using a total stress approach, adopting the variables detailed in Table 8-C. Due to softening and polishing effects during installation, the unit shaft resistance within the Devensian Till has been capped at 110kN/m^2.

Stratum	Variable	Value	Derivation
Devensian Till	Adhesion factor, α	0.4	BS 8004:2015 – Eqn 41
	Bearing pressure coefficient, N_c	9	BS 8004:2015 – Eqn 44

Table 8-C: Variables used for determining pile resistance - cohesive strata

8.9.7 Unit base and shaft resistance within the granular Alluvium strata have been derived using an effective stress approach, adopting the variables detailed in Table 8-D. When deriving unit base resistance, a bearing pressure coefficient has been adopted based on the relationship suggested by Berezantsev (1961).

Stratum	Variable	Value	Derivation
Alluvium	Earth pressure coefficient, K_s	0.7	BS 8004:2015 – Table 8
	Angle of interface friction, δ (°)	32 below 5m	BS 8004:2015 – Eqn 36

Table 8-D: Variables used for determining pile resistance - granular strata

8.9.8 The variation of single pile resistance in relation to pile toe level is presented below for three different pile diameters. It should be noted that the resistance of a single pile is reduced in the vicinity of other piles. Accordingly, detailed design of the piled foundation arrangement should take into account spacing between piles and pile group effects.

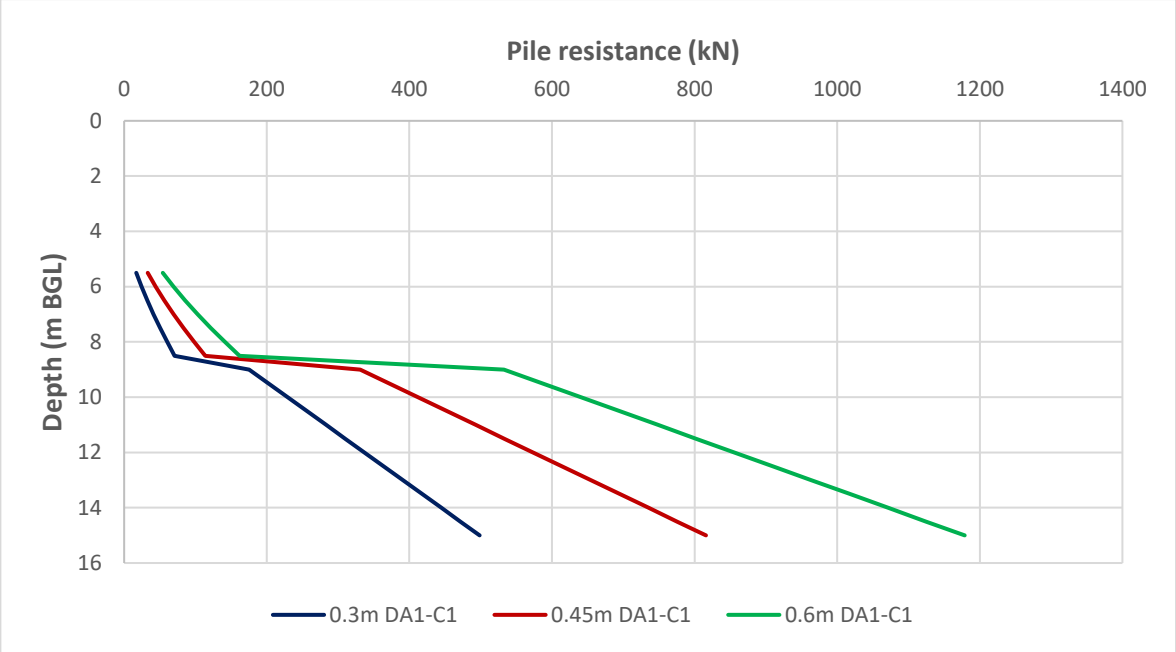


Figure 8-A: Pile resistance versus depth (Combination 1)

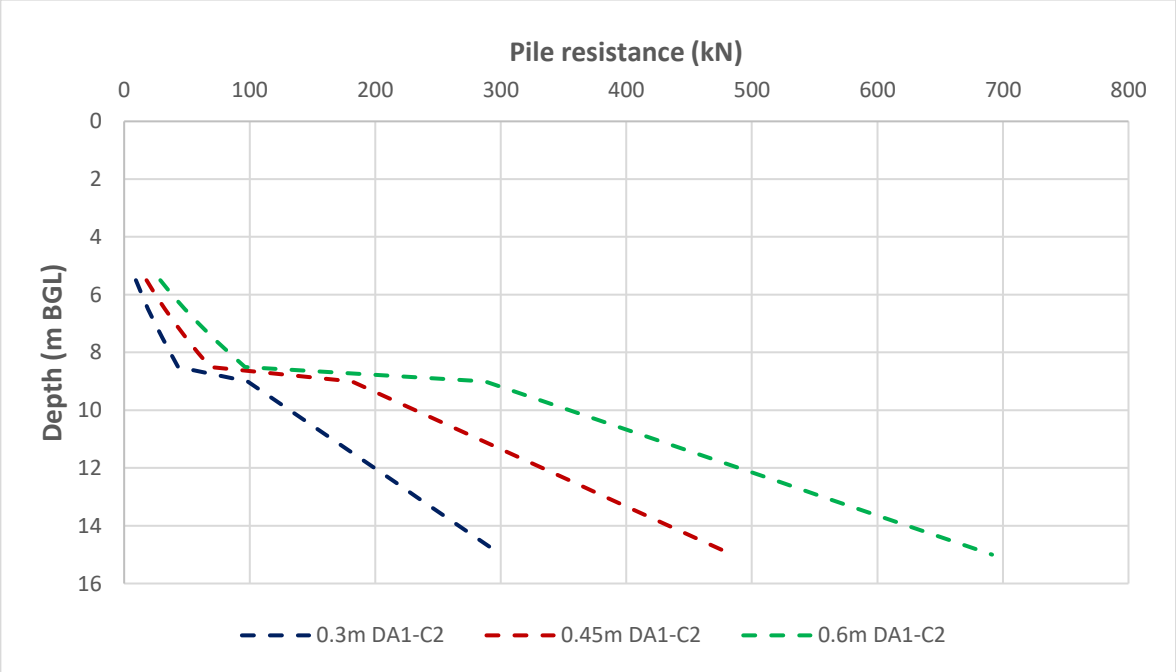


Figure 8-B: Pile resistance versus depth (Combination 2)

8.10 Ground Improvement

8.10.1 It is understood that ground improvement is the preferred foundation solution for the development.

8.10.2 Ground improvement is typically associated with increasing the strength and stiffness of the ground, thereby leading to increased bearing capacity and lower settlement. This has the consequential benefit that foundation designs can be leaner, economical and more sustainable.

8.10.3 There are many techniques associated with ground improvement and consultation with specialist contractors should be undertaken. The following table summarises the common techniques adopted and the relative advantages and disadvantages of each:

Technique	Overview	Advantages	Disadvantages
Dynamic compaction	Repeated dropping of large weights (10-20t) from a notable height (e.g. 10-20m).	Tried and tested technique. Can compact circa 5-6m.	Unsuitable for clayey soils. Induces notable ground vibration.
Vibro-compaction	Insertion of a poker into the ground which vibrates leading to settlement of overlying fill.	Densifies granular soils. Reduces risk of liquefaction and collapse settlement.	Unsuitable in clay soils Induces vibration.
Surcharging	Application of additional load to induce settlement before main construction phase.	Effects the soil uniformly. Applicable to all soil types.	Time consuming (weeks and months) but can be sped up through inclusion of vertical drains. Volume of surcharge material removed needs a receptor.
Controlled modulus columns	Installation of low strength concrete columns.	Effective up to tens of metres. Alternative option to driven piles.	Tight spacing required in very soft soils.
Soil mixing	A stabilising agent is (typically lime / cement) is mixed with the in situ soils to lower the water content	Effective up to 20m Can render unacceptable materials acceptable for use in earthworks.	Unsuitable in sulphide rich material due to formation of ettringite and consequential heave.
Grouting	Cement or polymer based grout is injected into the ground.	Minimal surface footprint required – can repair existing problems in situ.	Less suitable in clayey soils.
Excavate and recompact	Excavate existing soft deposits, condition if required (dry out) and place back in compacted layers.	Straightforward with no specialist plant required	Can be time consuming as material is conditioned.

Table 8-E: Summary of common ground improvement techniques

8.11 Industrial Floor Slab

8.11.1 It is understood that a ground bearing slab will be utilised internally and externally. At present, the near surface Made Ground and Alluvium is not considered capable of supporting concentration slab loadings (assumed a typical industrial floor/external slab stress requirement of 30-50kN/m^2) without promoting excessive levels of total (>25mm) and differential (>15mm) settlement.

8.11.2 We understand near surface soils will be subject to ground improvement to reduce levels of total and differential settlement to acceptable limits, allowing adoption of a ground bearing slab. Consultation with specialist contractors should be undertaken based on the findings presented in this report.

8.11.3 Once formation levels are achieved it is recommended that the formation is rolled using a heavy roller to identify any soft/loose areas and indeed compact near surface soils which may have been disturbed by excavation processes. Any 'soft/loose' areas will require excavation to locate more stable soils. It is recommended that a blanket of good quality compacted granular material be placed prior to construction of the slabs.

8.12 Aggressiveness of the Ground to Buried Concrete

8.12.1 The aggressiveness of the ground with respect to buried concrete has been assessed in accordance with Building Research Establishment Special Digest 1: Concrete in Aggressive Ground Third Edition (2005).

8.12.2 The site is interpreted to be a brownfield site where pyrite is likely to be present.

8.12.3 Laboratory testing has been undertaken on soil samples obtained from the investigation works.

8.12.4 The proposed foundations will extend into previously undisturbed soils that contain pyrite. Excavating to form a foundation does not create 'disturbed' ground as defined in BRE SD-1. However any arisings resulting from foundation excavation or replacement piling for example would be classified as 'disturbed' ground. Accordingly, the amount of oxidizable sulphides has also been considered when categorising the strata.

8.12.5 The classification of the strata is tabulated below:

Stratum	Disturbed / Undisturbed	Design sulphate class	Aggressive chemical environment for concrete class
Made Ground	Disturbed	DS-2	AC-2
Alluvium	Disturbed	DS-1	AC-1
	Undisturbed	DS-1	AC-1
Devensian Till	Disturbed	DS-1	AC-1s
	Undisturbed	DS-1	AC-1s
Groundwater	-	DS-1	AC-1

Table 8-F: Summary of the aggressiveness of the ground to buried concrete

8.12.6 It should be noted that where concrete is in contact with more than one soil type then the most onerous DS and ACEC classification should be adopted.

8.13 Drainage

8.13.1 There is extensive Made Ground across the site. Soakaways would promote leaching of contaminants within the Made Ground soil. Additionally, groundwater was encountered at shallow depth within the Made Ground/Alluvium (c.1.5m bgl). Typically, a minimum of 1m clearance between the base of the soakaway and the maximum groundwater level is required, taking into account seasonal variations, to prevent rising groundwater from reducing the available storage capacity within the soakaway, to ensure a sufficient depth of unsaturated material, and to protect the groundwater from contamination.

8.13.2 Based on the above, in addition to the high fines content of the near surface Alluvium which is likely yield very low infiltration rates (10^{-7} to 10^{-9} m/s), the use of SUDS at the site is not considered viable, and alternative drainage solutions will need to be considered.

8.13.3 The River Irk is located immediately southeast of the site which may be suitable for discharge of surface water, subject to obtaining relevant permissions/consents.

8.13.4 Alternatively, surface water could be discharged to the local drainage network with the wider industrial estate, again subject to obtaining relevant permissions/consents and overall capacity of the system.

8.14 Pavement Foundation

8.14.1 As part of the scheme development, it is understood that site levels may change and existing sub-base/subgrade materials subject to re-use and re-engineering. Accordingly, ground conditions at formation level will be dependent upon fill material type and degree of compaction achieved.

8.14.2 In-situ CBR testing has been undertaken on existing soils and are therefore considered to be representative of the material currently present at formation level. A CBR value of 15% for existing granular sub-base materials and a CBR value of 6% for sub-grade materials (granular Made Ground) is considered appropriate. It should be noted that CBR values in near surface Made Ground were highly variable.

8.14.3 It is recommended that the design values are validated with in situ testing immediately prior to construction. Furthermore, it is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600.

8.14.4 The Made Ground deposits soils are considered frost susceptible and this may override the CBR criteria for pavement foundation design purposes.

8.14.5 The silty nature of the Made Ground deposits will render them moisture susceptible with small increases in moisture content giving rise to a rapid loss of support to construction plant. It is therefore recommended that the sub-base is laid as soon as practicable following establishment of formation.

8.15 Preliminary Earthworks Classification

8.15.1 It is anticipated that the project will include a notable volume of bulk excavation. The excavated material will dominantly comprise Made Ground and potentially shallow Alluvium.

8.15.2 Laboratory testing was undertaken on samples retrieved from the materials that are anticipated to be excavated.

8.15.3 Classification has been undertaken in accordance with the limits defined in the Specification for Highway Work Series 600 Table 6/2. Further refinement of the Class has been carried out where appropriate using the plastic limit of the soil and the in-situ moisture content at time of testing.

Exploratory Hole ID	Depth (m BGL)	Stratum	Earthworks Classification
CP01	0.05 - 0.3	Made Ground Sub-base	1B – Dry Granular Fill or 6F1
WS02, WS03, WS04	0.3 – 1.4	Made Ground	2A – Wet Cohesive Fill
CP01, WS01, WS02, WS04	1.4 – 4.0	Alluvium	2A – Wet Cohesive Fill

Table 8-G: Summary of earthworks classification testing

8.15.4 Made Ground (subbase and general granular Made Ground) is likely to be suitable for reuse based on measured moisture contents (presented in Appendix H) and compaction data (presented in Appendix F). We do not recommend reusing cohesive/granular deposits of Alluvium, or cohesive Made Ground.

8.16 Constructability

8.16.1 Under most standard contracts it is the responsibility of the Contractor to design, construct and maintain temporary works. Accordingly, the following discussion is provided for information only.

8.16.2 Shallow groundwater is anticipated to be encountered during excavations. Flow rates are anticipated to major and will likely cause instability of the excavation sides. It is likely that dewatering will be required to control groundwater and therefore maintain stability of the excavation.

8.16.3 It is difficult to predict the stability of service trench sides from borehole investigations. In general, there is a risk of some over break/instability in the Made Ground and more granular deposits although it is unlikely that groundwater will be encountered unless the trenches exceed 1.5m depth. On this basis the risk of significant instability is considered to be moderate.

8.16.4 Other items to consider in constructability:

- Obstructions for piling
- Spatial constraints
- Sequencing of construction

9 Tier 2 Generic Quantitative Risk Assessment

9.1 Objectives

9.1.1 The objective of this generic quantitative risk assessment (GQRA) is to further assess the potential contaminant linkages (PCLs) identified by the preliminary risk assessment using the following:

- The findings of the intrusive site investigation and resulting site specific ground and hydrogeological model.
- Laboratory analysis of soils and groundwater.
- Monitoring of ground gases and vapours.

9.2 Fieldwork Observations

9.2.1 Fieldwork observations on the potential for contamination and the underlying ground conditions did not identify any new contaminant sources or significant pathway alterations to the anticipated ground model. Therefore, no PCL additions or amendments are required to be made to the CSM at this stage.

9.3 Laboratory Testing Rationale

9.3.1 Laboratory testing has been scheduled by targeting potential contaminant linkages identified within the iCSM and observations made during fieldworks. The sampling and testing strategy is based on a judgemental approach.

9.3.2 The testing of the general Made Ground deposits was undertaken across various locations to gain spatial coverage over the site and to characterise the strata encountered. Testing included a broad suites of analysis due to the potential for unknown contamination to be present, particularly based on findings of previous investigations and site history.

9.4 Generic Assessment Criteria

9.4.1 Assessment of laboratory test data has been carried out using published generic assessment criteria (GACs). The GACs act as screening values to provide a 'trigger' to an assessor that soil concentrations above these limits might present an unacceptable risk.

9.4.2 Various GAC sources are used within this report. Key assumptions are made in the derivation of screening values in regard to their use and application, and exposure modelling is based on precautionary national scenarios. This generic approach can result in an overly conservative assessment; therefore, the assessor is required to review the outcome of the GQRA screening in the context of the site specific CSM and identified potential contaminant linkages.

9.4.3 Asbestos does not currently have published GACs which can be used for generic assessment purposes, at this stage a present / absent trigger limit has been adopted.

9.4.4 Specific details regarding the published GAC sources chosen and any parameter refinements made are summarised within Appendix I, along with the order of preference where multiple GAC sources are available. The exposure models adopted are discussed in the relevant sections below.

9.5 Human Health GQRA (soils and vapour)

9.5.1 The results of the human health screening assessment for soils and vapours are detailed in Appendix I. The following table outlines the exposure models adopted, along with summarising the outcome of each screening assessment.

Receptor	Exposure Model	Outcome
All human health receptors	Presence of asbestos	Loose asbestos fibres detected in 1 of 10 tests, quantified at 0.006% by weight.
Proposed users (commercial)	Commercial/Industrial	No exceedances.
Construction operatives	Acute occupational exposure (assumed no PPE worn)	No exceedances.
Adjacent site users and the public	Acute off-site public exposure during construction phase	No exceedances.

Table 9-A: Human health GQRA models and outcomes

9.6 Proposed Site Users Risk Assessment (soils and vapour)

9.6.1 Only 1 out of 10 soil samples analysed returned a positive identification for loose fibres of chrysotile asbestos. This was within WS01 between depths of 0.2-0.6m in the north centre of the site. Subsequent quantification analysis recorded a concentration 0.006% by weight asbestos. During the previous WSP 2014 investigation, asbestos was recorded in 'trace' amounts in 1 out of 3 samples analysed on the subject site.

9.6.2 As asbestos was only recorded in 2 out of 13 samples from both investigations at very low concentrations, it is considered likely that the asbestos recorded relates to sporadic occurrences, and the concentration of asbestos across the site as a whole is likely to be <0.001% (trace concentrations).

9.6.3 Given the majority of the site is to be reprofiled, subject to ground improvement and covered in hardstanding (with the exception of soft landscaping around the site boundaries) it is likely that soils from the area of WS01 will be excavated and mixed with other soils across the site, further diluting the concentration of asbestos in this area. Whilst considered to be a low risk, as a precaution, we recommend that all proposed landscaping areas have a capping layer of at least 150mm of clean Topsoil to reduce the production of dust and prevent potential airborne release of asbestos fibres.

9.6.4 All other reported concentrations of contaminants are below the relevant generic assessment criteria for human health receptors.

9.6.5 VOC/SVOC analysis undertaken on two samples (WS03 and WS04) from the area of the historic filter beds did not recorded any volatile compounds in exceedance of the laboratory limit of detection. Subsequent VOC monitoring during ground gas monitoring recorded very low VOC concentrations in the monitoring wells, with a maximum of 2.4ppm measured in WS03.

9.6.6 In addition, the fieldwork observations did not detect areas of suspected contamination which require further assessment, and the overall coverage of the site is considered to have adequately targeted the PCLs identified within the iCSM.

9.6.7 With the exception of the asbestos fibres recorded in WS01, no further relevant contaminant linkages have been identified.

9.7 Construction Workers Risk Assessment

9.7.1 Asbestos was largely absent across the site, however, it was detected within one sample from WS01 at depths of 0.2-0.6m at very low concentrations (0.006%). The 9No. other samples returned negative results for the presence of asbestos.

9.7.2 A risk assessment has been undertaken using the JIWG Decision Support Tool (see Appendix N). As discussed in paragraph 9.6.2, it is considered likely that the asbestos recorded across the site to date relates to sporadic occurrences, and the concentration of asbestos across the site as a whole is likely to be <0.001% (trace concentrations).

9.7.3 At these concentrations, there is not considered to be a significant risk to construction workers at the site. However, as with any brownfield site, there is the potential to encounter further asbestos containing materials, and a discovery strategy should be in place as standard.

9.8 Adjacent Site Users Risk Assessment

9.8.1 One of the 10 samples tested detected asbestos fibres at 0.006% and 1 out of 3 samples analysed during a previous 2014 investigation detected 'trace' concentrations of asbestos. Based upon our current understanding of the site as a whole, this represents trace levels of asbestos. A risk assessment has been undertaken using the JIWG Decision Support Tool (see Appendix N), and at these concentrations, therefore is not considered to be a significant risk to off-site receptors, and no special precautions are required.

9.9 Controlled Waters GQRA

9.9.1 Two surface water samples of the adjacent watercourse, the River Irk, have been obtained and analysed to determine its bioavailability parameters. This has been inputted into the UKTAG Metals Bioavailability Assessment Tool to derive site specific (PNEC) values for surface water assessment. The output is presented within our in-house screening sheets.

9.9.2 The results of the GQRA screening for controlled waters are detailed in Appendix I. The following table outlines the exposure models adopted, along with the outcome of each assessment.

Receptor	Exposure Model	Outcome
Surface waters	Environmental Quality Standards	3 groundwater and 2 leachate tests undertaken. Exceedances of EQS criteria for arsenic, cadmium, nickel, zinc, and phenol within one groundwater sample (WS03). Single exceedances also detected in two leachate samples and one groundwater sample.

Table 9-B: Controlled water GQRA models and outcomes

9.9.3 The table below summarises the contaminants exceeding the generic screening criteria.

Receptor	Sample Origin	Contaminant	Locations & Depths	Test Result (µg/l)	EQS/PNEC (µg/l)
Surface water	Made Ground Leachate	Arsenic	WS04 at 0.6-1.0m	230	50
		Mercury	WS01 at 0.2-0.6m	0.12	0.07
	Groundwater (Alluvium)	Arsenic	WS03 at 1.6m	530	50
		Cadmium		1	0.15
		Nickel		13	9.73

Receptor	Sample Origin	Contaminant	Locations & Depths	Test Result (µg/l)	EQS/PNEC (µg/l)
		Zinc		270	32.21
		Phenol		43	7.7
		Cadmium	WS02 at 2.30m	0.55	0.15

Table 9-C: Controlled waters GQRA exceedances

9.10 Controlled Waters Risk Assessment

9.10.1 All but one of the groundwater exceedances recorded were from WS03.

9.10.2 The groundwater sample from WS02, and soil leachates from WS01 and WS04 only showed exceedances of single contaminants, cadmium, mercury and arsenic, respectively.

9.10.3 Elevated mercury and cadmium concentrations recorded in the leachate data from Made Ground soils were not reflected within groundwater samples.

9.10.4 With the exception of concentrations of arsenic within WS03 (560µg/l compared to an EQS of 50µg/l), all other exceedances were within one order of magnitude of the EQS value. The surface water EQS values are derived for concentrations within the water body, and are therefore highly conservative for leachate and groundwater, which will disperse and attenuate along the migration route, even with a water course in close proximity. Therefore, with the exception of arsenic in WS03, no other exceedances of metals are considered further.

9.10.5 Phenol was recorded in groundwater within WS03 in exceedance of the EQS values. However, as phenol was not recorded above the detection limit in soils across the site and no gross hydrocarbon contamination or free oil phase (NAPL) was encountered, it is likely that this relates to an isolated occurrence and is unlikely to present significant risk to controlled waters.

9.10.6 The arsenic exceedance within the WS03 groundwater sample requires further consideration. WS03 is located within the footprint of the former filter beds. CP01 and WS02 were also located within the footprint of the filter beds; however, arsenic was recorded at concentrations below the EQS value in both of these groundwater samples. This suggests the elevated arsenic within WS03 relates to an isolated occurrence, rather than being widespread throughout the area of the former filter beds.

9.10.7 A review of the total soil concentrations of arsenic provides further evidence to substantiate this, as the arsenic recorded within the WS03 Made Ground soil sample is at least 50% higher than all other samples tested.

9.10.8 As the total and leachate soil testing and groundwater analysis suggests arsenic is not a contaminant of concern across other areas of the site, including areas with the same historical background and contaminant source potential, it can be concluded that the exceedance is localised and not reflective of the overall risk posed by soils/groundwater to controlled water receptors.

9.10.9 The previous investigation works undertaken in 2014 by WSP across the wider area also concluded that arsenic does not pose an unacceptable risk to controlled water receptors.

9.10.10 Surface water samples taken from the River Irk upstream and downstream of the site also recorded very similar levels of arsenic to each other. The upstream sample showed marginally higher concentrations. This indicates the site is having a very limited or negligible impact to the river water quality as it passes the site. In addition, as outlined in paragraph 2.9.1, the River Irk is also rated River Quality Grade E (poor).

9.10.11 Regarding the risk to groundwater receptors, the cohesive Devensian Till across the site would act as an effective aquitard to the vertical migration of shallow contaminants into the deeper Secondary A aquifer of the Pennine Lower Coal Measures.

9.10.12 All other compounds were below their relevant criteria (including VOCs/SVOCs), in the context of the sensitivity of the site, the CSM, and the stringency of the screening values available, Soiltechnics do not consider the soil or groundwater conditions encountered to present an unacceptable contamination risk to controlled waters.

9.11 Ground Gas Monitoring Rationale

9.11.1 Ground gas sources which were identified in the iCSM as potentially posing an unacceptable risk to development were as follows:

- Deep, organic-rich Made Ground in historical filter beds and disposal pit.

9.11.2 6No. gas monitoring wells were installed at the site, and a total of 4No. visits were undertaken over a period of 1-2 months.

9.11.3 All gas monitoring wells were installed within the Made Ground and underlying Alluvium.

9.12 Ground Gas Monitoring Results

9.12.1 A summary of the gas monitoring results follows, with the full results detailed within Appendix G.

- Gas flow rates were generally detected between 0.2 and 0.4l/hr.
- Steady concentrations of methane were recorded at between 0.1% and 0.4% v/v.
- Steady concentrations of carbon dioxide were in the range of 0.1% to a 10.9%, the latter recorded on one occasion in WS03. Steady concentrations very marginally exceeded 5% in WS01 on one occasion (5.5%), WS02 on one occasion (7.6%) and WS04 on two occasions (5.5%).
- Steady concentrations of oxygen were depleted within all boreholes with a minimum concentration of 2.0% recorded in WS03.

9.13 Updated Ground Gas Risk Assessment

9.13.1 The concentration of methane was recorded at a maximum of 0.4% within WS03 at a maximum flow rate of 0.4l/hr. Therefore, the ground gas risk from methane beneath the site is considered very low.

9.13.2 Elevated levels of CO_2 in excess of 5.0% v/v (the threshold at which a CS-2 designation for the site should be considered) and depleted oxygen have been detected in all ground gas monitoring wells except WS05 and CP01. Based on a review of the exploratory hole logs and the CSM, this is considered to be associated with aerobic biological respiration oxidising organic matter, associated with clinker/ash deposits in Made Ground and potentially the underlying Alluvium.

9.13.3 Where aerobic biological respiration oxidises organic material, oxygen is consumed and as the oxygen concentration reduces, the carbon dioxide concentration increases in the same proportion.

9.13.4 Historically, a disposal pit is recorded in the northeast corner of the site and filter beds were present in the centre/southwest of the site, however the contents were generally noted to be granular and significant levels of organic matter were not recorded.

9.13.5 The rate of gas generation via the respiration process is very low and due to the absence of a significant actively generating ground gas source (no other significant areas of infilled land nearby and a landfill which accepted inert waste), with monitoring completed during a series of low pressure events and minimal flow recorded, it is considered very unlikely that ground gases could migrate into the proposed structures on site at sufficient speed and volume to pose any viable risk. In addition, the nature of the proposed building (large, well-ventilated unit with reinforced ground bearing floor slab), will offer some protection against any residual gas generation which may occur at the site. Therefore, a CS-1 classification applies to the site.

9.14 Risks to Soft Landscaping Vegetation

9.14.1 To help determine the risk to vegetation from potentially phytotoxic contaminants, screening values presented within the British Standard 'Specification for Topsoil' (BS 3882:2015), and the Environment Agency online guidance 'Sewage Sludge in Agriculture: Code of Practice' have been adopted.

9.14.2 Analysis (refer to Appendix I) indicates that the near-surface soils may contain metal concentrations (arsenic, cadmium, lead, mercury, nickel and zinc) at levels which could pose a potentially phytotoxic risk to vegetation in the proposed planting scheme. Exceedances in themselves don't necessarily constitute a requirement for remedial action, instead it is recommended that a landscape consultant is provided with the results to consider the potential impact on the proposed planting scheme and determine whether or not the materials could provide a suitable growing medium.

9.14.3 Deposits of Topsoil/reworked Topsoil along the northern boundary of the site have not been tested to date. Such deposits could be suitable for reuse within proposed areas of landscaping, and should be subjected to a suitable testing regime if proposals are to reuse such soils.

9.15 Water Supply Pipes

9.15.1 A full site investigation as set out in the UK Water Industry Research (UKWIR) document *'Guidance for the selection of Water supply pipes to be used in Brownfield sites'* has not been undertaken.

9.15.2 The UKWIR document advises a trigger concentration of 0.125mg/kg for the 'extended VOC (volatile organic compounds) suite', which includes the PAH (polycyclic aromatic hydrocarbons) suite that has been included in the soil analysis during this investigation.

9.15.3 The maximum summed concentration of PAH congeners from individual samples obtained from the site at likely pipe depths (0.50m to 1.50m bgl) exceeds the trigger concentration of 0.125mg/kg in 2 out of 5 samples, and on this basis the installation of protective barrier-pipes in below ground water infrastructure is recommended as a precaution, unless service trenches are over-dug and backfilled with suitable clean materials.

9.15.4 In all instances, it is advised to consult the water company for advice to determine if protective pipe is necessary or if further assessment and investigation works are warranted. Irrespective of the assessment made here, water companies may insist on barrier pipe being installed. Once the initial consultation has taken place, Soiltechnics can support you in any further assessments that may be required.

9.16 Updated Conceptual Site Model (uCSM)

9.16.1 Following on from the discussions above, an updated conceptual site model has been tabulated overleaf.

9.16.2 The table below presents our approach to the assessment of risks associated with potential contaminant linkages. The categories are based upon the definitions within CIRIA C552 (2001), with the addition of a 'negligible likelihood' scenario, which is to be used where there is no realistic scenario in which harm could occur.

		Consequence of harm			
		Severe	**Medium**	**Mild**	**Minor**
Probability of harm	**High likelihood**	**Risk: Very high** (high – severe)	**Risk: High** (high – medium)	**Risk: Moderate** (high – mild)	**Risk: Moderate/Low** (high – minor)
	Likely	**Risk: High** (likely – severe)	**Risk: Moderate** (likely – medium)	**Risk: Moderate/Low** (likely – mild)	**Risk: Low** (likely - minor)
	Low Likelihood	**Risk: Moderate** (low – severe)	**Risk: Moderate/Low** (low – medium)	**Risk: Low** (low – mild)	**Risk: Very low** (low – minor)
	Unlikely	**Risk: Moderate/Low** (unlikely – severe)	**Risk: Low** (unlikely – medium)	**Risk: Very low** (unlikely – mild)	**Risk: Very low** (unlikely – minor)
	Negligible Likelihood	**Risk: Low** (negligible– severe)	**Risk: Very Low** (negligible– medium)	**Risk: Very Low** (negligible– mild)	**Risk: Negligible** (negligible– minor)

Table 9-D: CSM Risk Ratings

RECEPTOR: PROPOSED END USERS				
Potential Source	**Contaminants of Concern**	**Pathway**	**Tier 2 Risk Assessment** (probability of harm x consequence)	**Discussion**
Historical Calico Print Works and Union Cotton Mill	Metals, various organic and inorganic compounds (inc solvents, VOCs) and asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (low – mild)	Concentrations of all inorganic and organic contaminants where below the adopted GAC values.
Unknown Made Ground used to backfill former filter beds, River Irk Channel and disposal pit Historical Calico Print Works and Union Cotton Mill	Metals, PAHs, TPH, phenol	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (low – mild)	Concentrations of all inorganic and organic contaminants where below the adopted GAC values.
	Permanent ground gases (CH4 and CO2)	Migration through the sub-surface into enclosed spaces	**Risk: Low** (unlikely – medium)	Localised elevated carbon dioxide concentrations (>5%) where recorded across the site however they were accompanied by low oxygen concentrations. Analysis indicates concentrations are consistent with aerobic respiration of organic matter, which is characterised by low volume gas generation with low flow rates. Overall, a CS-1 classification applies to the development.
	Asbestos	Inhalation of dusts	**Risk: Moderate/Low** (likely – mild)	Asbestos fibres at 0.006% by weight was recorded in 1 out of 10 samples. Trace asbestos has also been recorded during previous investigation. Whilst considered to be low risk, we recommend clean soils should be used within soft landscaping areas which should act as a cover system (at least 150mm thickness) to prevent airborne release of potential shallow asbestos fibres in Made Ground.
Former tanks recorded on site	Petroleum hydrocarbons (TPH), volatile organics compounds (VOC)	Inhalation of vapours	**Risk: Low** (low – mild)	No hydrocarbon contamination was noted during the investigation and VOC concentrations during subsequent vapour monitoring within monitoring wells recorded a maximum VOC concentration of 2.4ppm.
Off-site: Infilled land to the south, west and northeast of the site, including recorded historic landfill 66m northeast.	Permanent Ground Gases (CH_4 & CO_2)	Migration through the sub-surface into enclosed spaces	**Risk: Low** (unlikely – medium)	A CS-1 classification applies to the development.

RECEPTOR: PROPOSED END USERS				
Off-site: Historic and current 'works' located immediately north of the site	Various inorganic compounds, metals, fuels and oils PAHs, solvents, VOCs	Lateral migration through the sub-surface into enclosed spaces	**Risk: Low** (low – mild)	Elevated concentrations of metals and phenols compared to surface water EQS guideline values were recorded, however very low vapour concentrations were recorded in monitoring wells which is the principal risk to human health receptors. Concentrations of all inorganic and organic contaminants in soil were below the adopted GAC values.
Off-site pollution incidents and discharge consents	Metals, various organic and inorganic compounds, biological contamination	Migration of contamination along River Irk precipitating beneath subject site	**Risk: Very Low** (unlikely – mild)	Surface water testing of the River Irk recorded low contaminant concentrations.

Table 9-E: uCSM – Proposed End Users

RECEPTOR: CONSTRUCTION WORKERS				
Potential Source	**Contaminants of Concern**	**Pathway**	**Tier 2 Risk Assessment** (probability of harm x consequence)	**Discussion**
Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	**Risk: Low** (low – mild)	Asbestos has been recorded on site in 1 out of 10 samples and can present an acute risk to construction workers, particularly during the enabling works phases. Very low and trace concentrations pose a low risk if appropriate controls are put in place such as PPE, hygiene protocols and asbestos watching briefs.
All other contamination sources, excluding asbestos	Metals, PAHs, TPHs	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (low – mild)	Gross contamination of high-risk contaminants not anticipated but Print Works historically used Trichloroethylene (TCE) which can degrade to vinyl chloride. No vinyl chloride was recorded during recent or previous investigation works. Standard PPE and hygiene protocols for working on brownfield sites are likely to be sufficient to the mitigate risk from lower-risk contaminants however elevated mercury and arsenic has been previously recorded on site.

Table 9-F: uCSM – Acute Exposure to Construction Workers

RECEPTOR: ADJACENT SITE USERS DURING THE CONSTRUCTION PHASE				
Potential Source	**Contaminants of Concern**	**Pathway**	**Tier 2 Risk Assessment** (probability of harm x consequence)	**Discussion**
Asbestos fibres and ACMs within the Made Ground	Asbestos	Inhalation of dusts	**Risk: Low** (low – mild)	Potential risk associated with generation of air-borne asbestos fibres and dust during construction main earthworks phase however given trace amounts recorded and the effect of fresh-air dilution, the risk can be discounted.
Transporting and storing contaminants if found during construction	Hydrocarbons, other organic compounds, inorganic compounds	Ingestion, inhalation and contact with vapours	**Risk: Low** (low – mild)	Unexpected contamination sources could be identified during the construction phase however none were recorded during the site investigation.
All other potential contaminant sources	Metals, PAHs, TPH	Ingestion, inhalation and contact with soils, dusts and vapours	**Risk: Low** (unlikely – medium)	Unlikely to pose a viable risk to off-site receptors (commercial).

Table 9-G: uCSM – Acute Exposure to Adjacent Site Users

RECEPTOR: PROPOSED PLANTING				
Potential Source	**Contaminants of Concern**	**Pathway**	**Tier 2 Risk Assessment** (probability of harm x consequence)	**Discussion**
Contaminants within topsoil and the shallow sub-surface (hardstanding areas)	Metals, pH and inorganics	Direct contact and root uptake	**Risk: Moderate/Low** (low – medium)	Made Ground unsuitable growing medium (TBC by specialist) however, areas of reworked Topsoil not tested to date could be reused, subject to suitable testing regime. Likely that further suitable growing medium will need to be imported for proposed landscaping scheme.

Table 9-H: uCSM – Phytotoxic Risk to Proposed Planting Scheme

RECEPTOR: CONTROLLED WATERS				
Potential Source	**Contaminants of Concern**	**Pathway**	**Tier 2 Risk Assessment** (probability of harm x consequence)	**Discussion**
All potential contaminant sources outlined above	Various	Leaching and lateral migration (Surface water – River Irk)	**Risk: Low** (low – mild)	Exceedances of EQS values from Made Ground leachate and groundwater samples within the filter beds indicated marginally elevations of metals (and phenol in one sample) however all bar one arsenic result is less than an order of magnitude above EQS values. The one arsenic result in WS03 groundwater is expected to relate to an isolated occurrence as elevated arsenic was not widespread within other groundwater samples taken from the former filter bed areas. Surface water sample taken downstream of the site from the River Irk did not indicate the presence of elevated metal or phenol concentrations compared to a surface water sample taken from upstream. Sustainable drainage systems should not be used to limit leachate generation beneath the site.
All potential contaminant sources identified	Various	Leaching and vertical migration (Groundwater)	**Risk: Low** (low – mild)	Contaminants within shallow Alluvium aquifer expected to quickly discharge into the adjacent River Irk. Superficial Devensian Till likely to act as a barrier to vertical migration of leachable contamination.

Table 9-I: uCSM – Controlled Waters Risk

9.17 Risk Assessment Conclusions

9.17.1 The updated CSM has identified potential contaminant linkages which exceed the low-risk threshold and require further investigation, mitigation, or remediation. These are discussed in further detail below.

Contaminant Source	Receptor	Recommended Action	Discussion
Asbestos in Made Ground	Proposed end users	Remediation	Clean soils should be used in areas of soft landscaping (at least 150mm thickness).
Asbestos in Made Ground	Construction workers	Mitigation	The risk to construction workers should be noted and included in risk assessments for the development of the site, with appropriate protective measures included in method statements for all activities where ground is broken.
Elevated organic contaminants within the Made Ground	Drinking water infrastructure	Remediation	There is a requirement for installation protective barrier pipes for drinking water.
Topsoil/reworked Topsoil	End users/vegetation	Testing	Deposits along the northern boundary of the site have not been tested to date. Such deposits could be suitable for reuse within proposed areas of landscaping, and should be subjected to a suitable testing regime if proposals are to reuse such soils.

Table 9-J: GQRA Risk Assessment Conclusions

9.17.2 It is recommended a Remediation Strategy is established to detail the measures to be taken within soft landscaping areas, including the verification plan for all necessary works. It would be prudent to test Topsoil resources onsite to determine suitability for reuse in the proposed scheme.

9.17.3 Once all investigations and remedial works are completed, a Verification Report will then be required. It is anticipated two Verification Reports will be required, one to cover the demolition and enabling works phase, and a subsequent report to cover the construction works phase.

9.17.4 The following items are considered to be outside the formal scope of a Remediation Strategy and subsequent verification works, and must be controlled by the developer and their Principal Contractor. It will be their responsibility to satisfy the appropriate regulatory bodies that mitigation works have been carried out appropriately.

- The installation of protective barrier pipe for potable infrastructure.

9.18 Unexpected and Previously Unencountered Contamination

9.18.1 With the development of any site, there is a residual risk of contamination being found that is unexpected or has not been encountered during investigation or other siteworks.

9.18.2 Should any previously unencountered and unexpected contamination be encountered, works should be temporarily halted and Soiltechnics informed. The Consultant should then assess the situation to determine what remedial action is required and inform the Local Authority at the earliest opportunity.

9.18.3 It is often a requirement of Local Authority planning conditions that the building/demolition contractor has a contamination discovery/contingency strategy in place for dealing with unexpected contamination. Soiltechnics are pleased to provide advice on such a strategy if required.

10 Soil and Waste Management

10.1 Sustainability

10.1.1 Where possible, disposal of soils to landfill should be avoided in preference for more sustainable alternatives. Such alternatives are set out below and rely on appropriate planning and design.

10.1.2 Soiltechnics can provide additional support and guidance to assist in overall material management and soil waste minimisation upon request.

10.2 Waste Hierarchy

10.2.1 Under the Waste Regulations, there is a requirement to apply (where reasonable) the waste management hierarchy, which is summarised below. Within the hierarchy, soil disposal to landfill should be limited to the necessary minimum.

Stage (in order of preference)	Example application
Prevention / Reduce	Design, planning, Site Waste Management Plans (SWMP).
Reuse	Reuse of soils under exemption, permit or Materials Management Plan (MMP), sorting at the point of excavation, screening of excavated material.
Recycling	Recycling aggregate, waste segregation, screening and sorting.
Recovery	Remediation works, transfer to a Soil Treatment Facility
Pre-treatment	Non-hazardous and hazardous soils do not need to be treated, where such treatment would not reduce the volume of waste.
Disposal	If the waste hierarchy steps outline above are followed, the remaining waste can be disposed of to a landfill without any further treatment.

Table 10-A: Waste management hierarchy

10.3 Liability Of Waste Management

10.3.1 Part III of the Finance Act was amended in 2018 to extend the scope of landfill tax to cover any site (not exclusively landfills) operating without an appropriate environmental permit, exemption, or MMP.

10.3.2 These changes have given HMRC the powers to work with the Environment Agency to identify non-compliant sites and pursue and penalise the person(s) illegally disposing of waste, and anyone who knowingly facilitates the disposal. This includes sites filling site-won soils which are surplus to requirement.

10.4 Materials Management

10.4.1 In terms of the development, where reasonably practicable, landfill disposal should be minimised through the reuse of site-won materials on site, or off-site transfer of surplus soils to other development schemes or Soil Treatment Facilities. Early consideration of the site's overall material balance at the design stage is also critical in reducing the need for off-site disposal, limiting costs, and increasing the overall sustainability of the development.

10.4.2 Where Made Ground soils are to be reused onsite or materials transferred between sites, a Materials Management Plan (MMP) or Waste Exemption is recommended.

10.4.3 The process of an MMP allows soils that are suitable for reuse and have a certainty of use to not be considered a waste, and therefore not fall under the waste regulations. This scheme is self-regulated within the industry and is supported in principle by the Environment Agency.

10.5 Waste Characterisation governance

10.5.1 The classification of soils for disposal to landfill is undertaken in accordance with WM3 (v1.2GB), and a Waste Acceptance Criteria assessment (WAC) undertaken in accordance with the limits in Annex II of the Landfill Directive (Directive 1999/31/EC).

10.6 Waste Populations

10.6.1 Based on the site observations, development proposals and laboratory results, the following potential waste populations have been identified for preliminary assessment purposes:

Potential Waste Population	Description
Made Ground without potential lime waste	Clay, sand and gravel with brick, ask, clinker, glass and concrete.
Made Ground with potential lime waste	Clay, sand and gravel with soft white inclusions
Clean naturally occurring soils	Natural, uncontaminated clays and sands.

Table 10-B: Potential waste populations

10.7 Sampling And Testing

10.7.1 The hazardous waste classification assessment has been undertaken by adopting the maximum recorded concentration of each compound from all the samples tested within the identified waste population, as outlined in WM3, Approach D.

10.7.2 For the Waste Acceptance Criteria (WAC) assessment, representative composite samples were obtained by combining soils from multiple exploratory holes. These are as follows:

- WAC01: Made Ground without lime waste (WS01 0.2-0.6m)
- WAC02: Made Ground with lime waste (WS04 0.6-1.0m)

10.7.3 The rate of testing has been chosen to provide a preliminary waste categorisation only. Lime waste was encountered in Made Ground soils in the area of WS04 and WS05 only.

10.7.4 We have excluded total concentrations of chemical contaminants measured in subbase material in CP01 at 0.05-0.3m depth (gravel of limestone and brick). This is on the assumption that once asphalt is removed from site, such material would be excavated segregated and reused within the proposed development. It is also out opinion, based on visual and olfactory evidence, the relatively high concentrations of TPH measured in such material (2300mg/kg) is indicative of cross contamination with the overlying asphalt, and is not representative of concentrations in the gravel itself.

10.8 Waste Characterisation

10.8.1 Where testing has been carried out, the waste classification assessment sheets are enclosed within Appendix J, and a summary of the findings is presented in the table below.

10.8.2 Observations from the fieldwork indicate that the underlying natural soils (Alluvium and Devensian Till) are not impacted by contamination. However, laboratory test data indicates the Alluvium contains locally high concentrations of zinc (3100mg/kg), which may have leached from overlying Made Ground soils over time based on historic use of the site. At such concentrations, natural Alluvium in the area of WS03 would be classified as hazardous.

10.8.3 It is recommended that arisings of all natural Alluvium soils generated from the development (if any) are reused onsite as subsoil in areas of landscaping below Topsoil capping where possible. Such soils would be unsuitable for reuse below structures/hardstanding requiring support (not considered suitable from a geotechnical perspective).

Potential Waste Population	Hazardous Classification (LoW code)	Landfill Classification	Comments
Made Ground without lime waste (WAC01)	Non-hazardous (17-05-04)	Non-hazardous landfill site	Exceeds inert threshold due to elevated Total Organic Carbon (TOC) and Antimony.
Made Ground with lime waste (WAC02)	Hazardous (17-05-03*)	Hazardous	Only exceeds stable non-reactive hazardous waste cell in a non-hazardous landfill due to marginally elevated arsenic (2.2 mg/kg recorded compared to 2.0mg/kg threshold) so may be accepted at landfill operators discretion as Stable Non-Reactive Hazardous Waste (SNRHW).

Table 10-C: Waste characterisation summary

10.9 Managing Reclaimed Asphalt

10.9.1 The 2019 ADEPT guidance 'Managing Reclaimed Asphalt –Highways and Pavements' should be read in full to provide further information on the reuse, treatment, recycling, and disposal of the material.

10.9.2 Given the age of the current asphalt onsite (c.2000), it is highly unlikely to contain coal tar.

10.10 Application Of Advice

10.10.1 Where assessments have been carried out of soils currently in-situ at the time of investigation and not of stockpiled waste soils, they should be treated as provisional only.

10.10.2 Additional investigation works and testing may help to identify and segregate different waste populations on site, including inert materials, and therefore reduce costs.

10.10.3 There is no obligation on any waste operator to accept our waste characterisation assessments. Landfill operators may consider your waste to fall under a different classification and/or may require additional testing of waste soils prior to acceptance. It is therefore recommended that this report along with the chemical results is provided to the preferred facility to confirm (or otherwise) it can accept the waste. It is strongly recommended to do this at the earliest opportunity for any soils which contain asbestos fibres at concentrations below hazardous waste levels, as some waste operators insist on disposal to an asbestos waste cell on a presence/absence basis, which deviates from the approaches outlined in WM3.

10.10.4 It should be noted that there remains the potential for unexpected or previously unencountered contamination to be encountered. Any such materials intended for waste disposal should be segregated and tested to determine the appropriate classification and disposal route.

10.11 Minimising Hazardous Waste

10.11.1 Due to the high costs associated with disposal of hazardous wastes / asbestos containing wastes, Soiltechnics recommend that the development is designed with a view to limiting as far as possible the removal of these materials. Often, there is the potential to reuse such materials in low-risk areas of the development, such as below hardstanding.

10.12 Further Recommendations

10.12.1 Given the history of the site and inherent variability of Made Ground deposits, it is possible that previously unencountered contamination may be present, including asbestos containing materials (ACMs). Therefore, it is advisable to provide a watching brief during excavation works to identify and segregate any soils at the point of excavation with visual or olfactory evidence of contamination, in order to minimise the overall volume of any impacted material. Any such materials, if encountered, are likely to require further testing to determine the appropriate disposal route.

10.12.2 If a large volume of soils are likely to be reused onsite, it is recommended that the works are controlled under an MMP in accordance with the CL:AIRE DoW CoP. An effective MMP should help increase the sustainability of a development by reducing the requirement for landfill disposal and will serve to reduce the overall liability the developer holds over managing waste and site-won soil arisings.

10.12.3 As the waste classifications provided are preliminary only and based on limited sampling of soils in-situ, additional sampling and testing during the construction works could be undertaken to fully characterise the waste soils intended for disposal. The overall frequency of testing should be dependent upon the composition, volume and variability of the material excavated.

11 Recommendations for further works

11.1.1 The Principal Contractor should have a discovery strategy in place in the event of exposing unexpected or previously unencountered contamination. Soiltechnics should be informed at the earliest opportunity to undertake an assessment of the material, and to inform the Local Authority as appropriate.

11.1.2 The following table summarises the additional works which should be undertaken prior to commencement of any construction works and in support of the planning conditions.

Aspect	Delivered By	Description	Necessity
Discovery Strategy	Principal Contractor	The Principal Contractor should have a discovery strategy in place in the event of exposing unexpected or previously unencountered contamination. Soiltechnics should be informed at the earliest opportunity to undertake an assessment, and to inform the Local Authority as appropriate.	**REQUIRED**
Remediation Strategy	Soiltechnics	A Remediation Strategy should be established to provide the testing and verification requirements for the import of soft landscaping soils to ensure they are suitable for use.	**REQUIRED**
Onsite Topsoil testing	Soiltechnics	Deposits of Topsoil/reworked Topsoil along the northern boundary of the site have not been tested to date. Such deposits could be suitable for reuse within proposed areas of landscaping, and should be subjected to a suitable testing regime if proposals are to reuse such soils.	**RECOMMENDED**
Preliminary UXO Risk Assessment Study	3rd Party	The UXO hazard screen identified low risk to the site investigation phase. A study should be commissioned for the construction phase to confirm, or otherwise, such classification.	**RECOMMENDED**
Materials Management Plan	Soiltechnics	Once the overall designs and cut-and-fill requirements for the scheme have been finalised, and before excavation works commence, an MMP is recommended to facilitate the reuse of soils on site and the transfer of materials on or off-site.	**RECOMMENDED**
Further WAC testing and landfill classification	Soiltechnics	Further soil analysis and WAC testing could be undertaken to further assess and refine classification of existing waste streams.	**OPTIONAL**

Table 11-A: Recommended Further Works (Pre-Commencement)

11.1.3 The following table summarises the additional works which should be undertaken during the enabling and construction works phases to support the safe development of the site.

Aspect	Delivered By	Description	Necessity
Undertaking remedial works	3rd Party	Undertaking the works, as specified within the Remediation Strategy. Remedial works are expected to comprise of the installation of a clean cover system within proposed landscaping.	**REQUIRED**
Verification of remedial works	Soiltechnics	All remedial works must be witnessed and evidenced by a geoenvironmental consultant to demonstrate compliance to the Remediation Strategy, with a Verification Report produced to demonstrate compliance.	**REQUIRED**
Installation barrier pipe	3rd Party	The Principal Contractor should liaise with the statutory undertaker to confirm the requirement for barrier pipe installation and associated verification.	**REQUIRED**

Aspect	Delivered By	Description	Necessity
Verification of the MMP	Soiltechnics	If a Materials Management Plan is undertaken, the earthworks and material movements on site must be witnessed and evidenced by a geoenvironmental consultant, with a Verification Report produced to demonstrate compliance.	**RECOMMENDED**

Table 11-B: Recommended Further Works (Enabling Works & Construction Phase)

Appendix A Drawings



KEY

Red Line Boundary Area : 1.22 Acres / 0.4951 Hectares

Schedule of Accommodation

UNIT 1	sqm	sqft
Warehouse (GIA)	1,684	18,124
Office Area	112	1,205
Total Area	**1,796**	**19,329**

2No. x Level Access Doors

17 Car Parking Spaces (Inc. 2 DDA & 2 EV Spaces)
10 Cycle Spaces
1 Motorcycle Space
(Car parking shown to LPA car parking standards 1:100sqm)

Separate Carpark

10 Car Parking Spaces (Inc. 1 DDA & 2 EV Spaces)
1 Motorcycle Space
(Car parking shown to LPA parking standards,10% DDA and 2.5% PTW of total parking)

NOTE

Drawing is based on Topographical survey : SiteScan Number P16158 Revision A, dated 04.06.16.

The red line boundary is indicative and based on site survey information. Actual site boundary to be confirmed with Land Registry Title Plan.

All trees are shown indicatively and an Arboricultural Survey will need to carried out to confirm tree sizes,location and species. TPO search information and also (RPA) tree root protection areas to be confirmed, to ascertain the full extent of development area.

Extent of River Irk is shown indicatively for illustrative purposes and a more detailed site survey would be required to confirm the River Irk boundary and extent.

Environmental Agency Information indicates the site is located within Flood Zone 3.

Revisions:
P01: Initial Concept 02. 10.08.23 DM

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PROPOSED SITE PLAN
OPTION 02

Status	PRELIMINARY
Drawn by : DM	Checked by : RM
Date	08/08/2023

Document Number:
Project Code | Zone | Level-Info | Type | Role | Job No. | Drg.No. | Revision
XXX-PHP-ZZ-ZZ-DR-A-4694-004-P01

Scale@ A3 1:500
0 10m 20m

N

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KEY

Red Line Boundary Area : 1.22 Acres / 0.4951 Hectares

Schedule of Accommodation

UNIT 1	sqm	sqft
Warehouse (GIA)	1,856	19,973
Office Area	112	1,205
Total Area	**1,968**	**21,183**

2No. x Level Access Doors

19 Car Parking Spaces (Inc. 2 DDA & 2 EV Spaces)
10 Cycle Spaces
1 Motorcycle Space
(Car parking shown to LPA car parking standards 1:100sqm)

Separate Carpark

8 Car Parking Spaces (Inc. 1 DDA & 2 EV Spaces)
1 Motorcycle Space
(Car parking shown to LPA parking standards,10% DDA and 2.5% PTW of total parking)

NOTE

Drawing is based on Topographical survey : SiteScan Number P16158 Revision A, dated 04.06.16.

The red line boundary is indicative and based on site survey information. Actual site boundary to be confirmed with Land Registry Title Plan.

All trees are shown indicatively and an Arboricultural Survey will need to carried out to confirm tree sizes,location and species. TPO search information and also (RPA) tree root protection areas to be confirmed, to ascertain the full extent of development area.

Extent of River Irk is shown indicatively for illustrative purposes and a more detailed site survey would be required to confirm the River Irk boundary and extent.

Environmental Agency Information indicates the site is located within Flood Zone 3.

Revisions:
P01: Initial Concept 03. 10.08.23 DM

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PROPOSED SITE PLAN
OPTION 03

Status	PRELIMINARY
Drawn by : DM	Checked by : RM
Date	08/08/2023

Document Number:

Project Code	Zone	Level-Info	Type	Role	Job No.	Drg.No.	Revision
XXX	PHP	ZZ	ZZ	DR	A	4694-005	P01

Scale@ A3 1:500
0 10m 20m

N

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Key:

Installs

- Monitoring Well Installation

Site Features

- Site Boundary
- Approximate extent of proposed building footprint

Exploratory Holes

- Cable Percussive Borehole
- Windowless Sampling
- DCP
- CPT
- CC Geotechnical Historic Boreholes
- WSP Historic Boreholes

Notes

1) Base image provided by Google.

2) All drawn features are approximate.

Contains OS data © Crown copyright [and database right] [2023]
Map data © 2023 Google

REV	DATE	COMMENT ON VARIATION
A	Nov 2023	First issue

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PROJECT
Rhodes Business Park, Middleton

TITLE
Exploratory Hole Location Plan

DRAWING No.
STV6211-D01-A

Appendix B Exploratory Hole Logs: Boreholes

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Key to legends

Composite materials, soils and lithology							
	Topsoil		Made Ground		Boulders		Chalk
	Clay		Coal		Cobbles		Concrete
	Gravel		Limestone		Mudstone		Peat
	Sand		Sandstone		Silt		Siltstone

Note: Composite soil types are signified by combined symbols.

Key to 'test results' and 'sampling' columns

Test result		
Depth	Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)	
Result	PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m^2) by applying a factor of 50. SV – Hand held shear vane result reported as an undrained shear strength (kN/m^2). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.	
	SPT – Standard Penetration Test result (N value) (uncorrected)[1,2,3] SPT(c) – Standard Penetration Test result (solid cone) (N value) (uncorrected)[1,2,3]	
	UT – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample	

Sampling		
From (m) To (m)	Records depth of sampling	
Type	D	Disturbed sample
	B	Bulk disturbed sample
	ES	Environmental sample
	W	Water sample
	U	Undisturbed thick-walled sample 100mm diameter sampler
	UT	Undisturbed thin walled sample 100mm diameter sampler
	UTF	Failed undisturbed sample

Note 1: Seating blows recorded in brackets.

Note 2: Casing depth records depth of casing when SPT or SPT(c) was carried out.

Note 3: Water depth records depth of water when SPT or SPT(c) was carried out.

Water observations

Described at foot of log and shown in the 'water strike' column.

Water level observed after specified delay in drilling

Water strike

Installation details

	Gravel filter		Bentonite
	Slotted pipe		Unslotted pipe
	Arisings		Grout
	Extensometer magnet		Vibrating wire piezometer

Density

Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	ASPHALT.	0.05										0.05	0.30	B
	(ASPHALT)											0.05	0.30	ES
	Brown very sandy fine to coarse angular GRAVEL of limestone and brick.	0.30										0.30	1.00	B
	(MADE GROUND)											0.30	1.00	ES
	Loose dark grey sandy GRAVEL of fine to coarse angular to subangular brick, concrete, clinker and glass.													
	(MADE GROUND)													
	...from 1m depth, becoming clayey.											1.00	1.70	B
						C 1.20 - 1.65	(4) 8					1.00	1.70	ES
												1.70	2.00	B
						C 2.00 - 2.45	(3) 4					1.70	2.00	ES
	Very loose to loose dark grey and dark brown clayey silty fine to medium SAND with occasional wood fragments. Gravel is fine to medium subangular to subrounded sandstone.	2.00												
	(ALLUVIUM)													
						S 3.00 - 3.45	(0)					3.00	3.45	B
												3.00	4.45	ES
						S 4.00 - 4.45	(0)					4.00	4.45	B
						C 5.00 - 5.45	(2) 8							
												5.45		B
		5.80										5.80		D

CONTINUED ON NEXT SHEET

Notes
Inspection pit excavated to 1.2m depth.

Groundwater observations
Strata damp from 1.7m depth, groundwater strike at 3m depth.

Chiselling details		Drilling details	
Depth (m)	Duration (hh:mm)	Diameter	Base depth (m)
		150	15.00

Water added details		Casing details	
Depth (m)	Water Added (l)	Diameter	Base depth (m)
		170	15.00

Title
Borehole record

Date(s)
02/11/2023

Method
Cable tool percussion

Logged by
CB

Sheet number
Sheet 1 of 3

Level (m OD)
-

Compiled by
KD

Revision
A

Co-ordinates
-

Checked by
DH

CP01

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INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Medium dense to dense brown silty fine to medium SAND. (ALLUVIUM)					S 6.00 - 6.45	(6) 30					6.00 6.00	 6.45	ES B
						S 7.00 - 7.45	(10) 37					7.00 7.00		B D
						S 8.00 - 8.45	(7) 29					8.00 8.00	 8.45	D B
		8.60										8.60		B
	Stiff to very stiff brown silty sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to rounded sandstone, quartzite and coal. (DEVENSIAN TILL)											8.60		ES
						S 9.00 - 9.44	(17) 50/285mm					9.00	9.45	B
						C 10.00 - 10.39	(16) 50/240mm					10.00	10.45	B
						C 11.00 - 11.37	(19) 50/220mm					11.00		B

CONTINUED ON NEXT SHEET

Notes
Inspection pit excavated to 1.2m depth.

Groundwater observations
Strata damp from 1.7m depth, groundwater strike at 3m depth.

Chiselling details		Drilling details	
Depth (m)	Duration (hh:mm)	Diameter	Base depth (m)
		150	15.00

Water added details		Casing details	
Depth (m)	Water Added (l)	Diameter	Base depth (m)
		170	15.00

Title
Borehole record

Date(s)
02/11/2023

Method
Cable tool percussion

Logged by
CB

Sheet number
Sheet 2 of 3

Level (m OD)
-

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Revision
A

Co-ordinates
-

Checked by
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INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
						C 12.00 - 12.33	(22) 50/180mm					12.00		B
						C 13.00 - 13.33	(26) 50/180mm					13.00	13.45	B
						C 14.00 - 14.31	(25/145mm) 50/165mm					14.00		B
						C 15.00 - 15.27	(22) 50/120mm							
	BOREHOLE TERMINATED AT 15.27m	15.27												

Notes	Chiselling details		Drilling details		Title		Date(s)
Inspection pit excavated to 1.2m depth.	Depth (m)	Duration (hh:mm)	Diameter	Base depth (m)	Borehole record		02/11/2023
			150	15.00	**Method** Cable tool percussion	**Logged by** CB	**Sheet number** Sheet 3 of 3
Groundwater observations	**Water added details**		**Casing details**		**Level (m OD)** -	**Compiled by** KD	**Revision** A
Strata damp from 1.7m depth, groundwater strike at 3m depth.	Depth (m)	Water Added (l)	Diameter	Base depth (m)	**Co-ordinates** -	**Checked by** DH	**CP01**
			170	15.00			

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Key to legends

Composite materials, soils and lithology							
	Topsoil		Made Ground		Boulders		Chalk
	Clay		Coal		Cobbles		Concrete
	Gravel		Limestone		Mudstone		Peat
	Sand		Sandstone		Silt		Siltstone

Note: Composite soil types are signified by combined symbols.

Key to 'test results' and 'sampling' columns

Test result		
Depth		Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)
Result		PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m^2) by applying a factor of 50. SV – Hand held shear vane result reported as an undrained shear strength (kN/m^2). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.
		SPT – Standard Penetration Test result (N value) (uncorrected)[1,2,3] SPT(c) – Standard Penetration Test result (solid cone) (N value) (uncorrected)[1,2,3]
		UT – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample

Sampling		
From (m) To (m)		Records depth of sampling
Type	D	Disturbed sample
	B	Bulk disturbed sample
	ES	Environmental sample
	W	Water sample
	U	Undisturbed thick-walled sample 100mm diameter sampler
	UT	Undisturbed thin walled sample 100mm diameter sampler
	UTF	Failed undisturbed sample

Water observations

Described at foot of log and shown in the 'water strike' column.

Water level observed after specified delay in drilling

Water strike

Installation details

	Gravel filter		Bentonite
	Slotted pipe		Unslotted pipe
	Arisings		Grout
	Extensometer magnet		Vibrating wire piezometer

Density

Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT RESULT	SPT CASING DEPTH (m)	SPT WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass over dark brown fine to medium SAND with occasional rootlets. (MADE GROUND - REWORKED TOPSOIL)	0.15										0.20	0.60	ES
	Dark brown gravelly silty fine to medium SAND. Gravel is fine to coarse angular to subangular brick and concrete. (MADE GROUND)				▼	S 1.00 - 1.45	(9) 22		WET					
	Medium dense reddish brown clayey gravelly fine to medium SAND with low cobble content of brick. Gravel is fine to coarse angular brick and concrete. (MADE GROUND)	1.10										1.20	1.70	B
	...from 1.92m depth, becoming slightly gravelly.					S 2.00 - 2.45	(9) 16		WET					
	Loose becoming dense and very dense brown clayey fine to medium SAND with occasional bands of clay. (ALLUVIUM)	2.20										2.30 2.30	3.00 3.00	B ES
	...between 2.74m and 2.94m depth, band of sandy clay.					S 3.00 - 3.45	(2) 4		WET					
										PP 3.80	PP=25	3.75	3.90	D
						S 4.00 - 4.45	(7) 32		WET			4.00	5.00	B
						S 4.80 - 5.06	(16) 50/105mm		WET					
	BOREHOLE TERMINATED AT 5.06m	5.06												

Notes
Borehole terminated due to SPT refusal.

Groundwater observations
Groundwater strike at 1m depth.

Title
Dynamic Windowless Sampling record

Recovery details

Range (m)	Recovery (%)
1.00 - 2.00	100
2.00 - 3.00	90
3.00 - 4.00	100
4.00 - 5.00	100

Method
Windowless sampler

Logged by
CB

Level (m OD)
-

Compiled by
KD

Co-ordinates
-

Checked by
DH

Date(s)
12/10/2023

Sheet number
Sheet 1 of 1

Revision
A

WS01

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT RESULT	SPT CASING DEPTH (m)	SPT WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass over dark brown gravelly fine to medium SAND with occasional rootlets. Gravel is fine to medium angular brick and concrete. (MADE GROUND - REWORKED TOPSOIL)	0.20										0.00	0.20	ES
	Dark brown gravelly silty fine to coarse SAND with low cobble content of brick. Gravel is fine to coarse angular to subangular brick, concrete and clinker. (MADE GROUND)	0.40										0.30	0.60	B
												0.30	0.60	ES
	Medium dense dark brown and dark grey very silty fine SAND. (MADE GROUND)				▼	S 1.00 - 1.45	(16) 22		WET			0.90	1.30	B
												0.90	1.30	ES
	Brown and reddish brown sandy fine to medium subangular to rounded GRAVEL quartzite and brick. (MADE GROUND)	1.60										1.70	1.90	B
	Very loose to loose dark brown and dark grey very silty fine SAND. (ALLUVIUM)	1.90				S 2.00 - 2.45	(2)		WET					
												2.50	3.00	B
						S 3.00 - 3.45	(2) 4		WET					
	Medium dense to very dense dark brown gravelly silty fine to medium SAND. Gravel is fine to medium subangular to subrounded siltstone. (ALLUVIUM)	4.00				S 4.00 - 4.45	(6) 23		WET					
						S 4.80 - 5.07	(17) 50/115mm		WET			4.70	5.00	D
	BOREHOLE TERMINATED AT 5.07m	5.07												

Notes
Borehole terminated due to SPT refusal.

Groundwater observations
Groundwater strike at 1m depth.

Title
Dynamic Windowless Sampling record

Recovery details	
Range (m)	Recovery (%)
1.00 - 2.00	100
2.00 - 3.00	60
3.00 - 4.00	50
4.00 - 5.00	30

Method
Windowless sampler

Logged by
CB

Level (m OD)
-

Compiled by
KD

Co-ordinates
-

Checked by
DH

Date(s)
02/11/2023

Sheet number
Sheet 1 of 1

Revision
A

WS02

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT RESULT	SPT CASING DEPTH (m)	SPT WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	ASPHALT.	0.07												
	(ASPHALT)													
	Dark grey ashy very gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular brick, concrete, clinker and glass.	0.29										0.30	1.20	B
	(MADE GROUND)											0.30	1.20	ES
	Medium dense brown very sandy silty fine to coarse angular to subangular GRAVEL with low cobble content of brick. Gravel is brick, coal and clinker.													
	(MADE GROUND)					S 1.00 - 1.45	(10) 10							
	Very soft dark brown and dark grey very sandy SILT.	1.60										1.70	2.00	B
	(ALLUVIUM)											1.70	2.00	ES
						S 2.00 - 2.45	(4) 4							
												2.20	2.70	B
						S 3.00 - 3.45	(0)		WET					
						S 4.00 - 4.45	(0)		WET					
	Medium dense dark brown very silty fine to medium SAND.	4.20												
	(ALLUVIUM)											4.50	5.00	B
						S 5.00 - 5.45	(8) 29		WET					
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Groundwater observations
Groundwater strike at 2.5m depth.

Title
Dynamic Windowless Sampling record

Date(s)
02/11/2023

Recovery details		Method	Logged by	Sheet number
Range (m)	Recovery (%)	Windowless sampler	CB	Sheet 1 of 1
1.00 - 2.00	60	Level (m OD)	Compiled by	Revision
2.00 - 3.00	70	-	KD	A
3.00 - 4.00	0	Co-ordinates	Checked by	
4.00 - 5.00	90	-	DH	**WS03**

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INSTALL	STRATA: DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING: TYPE / DEPTH (m)	SPT TESTING: RESULT	SPT TESTING: CASING DEPTH (m)	SPT TESTING: WATER LEVEL (m)	OTHER IN SITU TESTING: TYPE / DEPTH (m)	OTHER IN SITU TESTING: RESULT	SAMPLING: FROM (m)	SAMPLING: TO (m)	SAMPLING: TYPE
	ASPHALT.	0.07												
	(ASPHALT)	0.20										0.25	0.45	B
	Brown very sandy fine to coarse angular GRAVEL of limestone and brick. (MADE GROUND)											0.25	0.45	ES
	(MADE GROUND)	0.50										0.60	1.00	ES
	Dark brown gravelly clayey fine to coarse SAND. Gravel is fine to coarse angular to subangular brick, concrete and glass. (MADE GROUND)													
	Medium dense dark grey and dark brown with white very gravelly clayey fine to coarse SAND. Gravel is fine to coarse angular to subangular clinker and lime. (MADE GROUND)					S 1.00 - 1.45	(5) 10							
		1.40										1.40	2.00	B
	Very loose to loose yellowish brown clayey fine to medium SAND. (ALLUVIUM)					S 2.00 - 2.45	(2) 4					2.00	3.00	B
	...between 2.8m and 3m depth, becoming sandy clay.					S 3.00 - 3.45	(0) 2		WET					
						S 4.00 - 4.45	(1) 1		WET					
	Very loose dark brown and grey very silty fine SAND. (ALLUVIUM)	4.60										4.60		D
						S 5.00 - 5.45	(2) 3		WET					
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Groundwater observations
Groundwater strike at 2.5m depth.

Title
Dynamic Windowless Sampling record

Date(s)
12/10/2023

Recovery details: Range (m)	Recovery details: Recovery (%)
1.00 - 2.00	50
2.00 - 3.00	90
3.00 - 4.00	0
4.00 - 5.00	80

Method
Windowless sampler

Logged by
CB

Sheet number
Sheet 1 of 1

Level (m OD)
-

Compiled by
KD

Revision
A

Co-ordinates
-

Checked by
DH

WS04

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INSTALL	STRATA: DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING: TYPE / DEPTH (m)	SPT TESTING: RESULT	SPT TESTING: CASING DEPTH (m)	SPT TESTING: WATER LEVEL (m)	OTHER IN SITU TESTING: TYPE / DEPTH (m)	OTHER IN SITU TESTING: RESULT	SAMPLING: FROM (m)	SAMPLING: TO (m)	SAMPLING: TYPE
	ASPHALT. (ASPHALT)	0.07												
	Brown very sandy fine to coarse angular GRAVEL of limestone and brick. (MADE GROUND)	0.30												
	Dark brown gravelly clayey fine to coarse SAND. Gravel is fine to coarse angular to subangular brick, concrete and glass. (MADE GROUND)	0.50										0.60	1.00	B
	Loose dark grey with white inclusions sandy very clayey fine to coarse angular to subangular GRAVEL of clinker, brick, glass and lime. (MADE GROUND)					S 1.00 - 1.45	(3) 7							
	Very loose dark brown silty fine to medium SAND. (ALLUVIUM)	1.50										1.60	2.00	B
												1.60	2.00	ES
						S 2.00 - 2.45	(2) 3		WET					
	Very loose dark brown very silty fine to medium SAND. (ALLUVIUM)	2.60										2.60	3.00	B
						S 3.00 - 3.45	(0)		WET					
	Very soft dark brown very sandy silty CLAY. (ALLUVIUM)	4.00				S 4.00 - 4.45	(0)		WET					
												4.50	4.70	D
										PP 4.80	PP=0	4.70	5.00	D
						S 5.00 - 5.45	(0) 4		WET					
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Groundwater observations
Groundwater strike at 2m depth.

Title
Dynamic Windowless Sampling record

Date(s)
12/10/2023

Recovery details: Range (m)	Recovery details: Recovery (%)
0.00 - 1.00	40
1.00 - 2.00	40
2.00 - 3.00	100
3.00 - 4.00	0
4.00 - 5.00	60

Method
Windowless sampler

Logged by
CB

Sheet number
Sheet 1 of 1

Level (m OD)
-

Compiled by
KD

Revision
A

Co-ordinates
-

Checked by
DH

WS05

CC Geotechnical	Tel: 0151-523-0202 Fax: 0151-523-0252	BOREHOLE LOG	HOLE NO. BH11 Sheet 1 of 2

CLIENT	SITE
GHA	RHODES BUSINESS PARK, MANCHESTER

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
06/10/03-06/10/03	1:50	69.95m aOD SEE LOCATION PLAN	CT	AW	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
				TARMAC ON SUBBASE (0.40)			
0.50	BULK			Medium dense MADE GROUND comprising of gravel and cobbles of brick and concrete with some timber (3.20)	0.40	69.55	
1.00 - 1.45	SPT	11					
1.50	BULK						
2.00 - 2.45	SPT	15					
2.50	BULK						
3.00 - 3.45	SPT	17					1
3.50	BULK						1
				Loose grey silty fine to medium SAND (0.50)	3.60	66.35	
4.00 - 4.45	SPT	9					
				Medium dense brown SAND & GRAVEL (1.30)	4.10	65.85	
4.50	BULK						
5.00 - 5.45	SPT	13					
				Firm brown silty sandy CLAY (3.90)	5.40	64.55	
6.00	BULK						
6.50 - 6.95	SPT	16					
7.50	BULK						
8.00 - 8.45	SPT	17					
9.00	BULK						
9.50 - 9.95	U100	(243)		Very stiff brown silty sandy gravelly CLAY	9.30	60.65	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.60	3.60	20MINS	3.00	5.60	

BORING METHOD AND REMARKS

DANDO 150
1HR CHISELLING IN MADE GROUND

All dimensions are in metres unless otherwise stated

CC Geotechnical	Tel: 0151-523-0202 Fax: 0151-523-0252	BOREHOLE LOG	HOLE NO. BH11 Sheet 2 of 2

CLIENT	SITE
GHA	RHODES BUSINESS PARK, MANCHESTER

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
06/10/03-06/10/03	1:50	69.95m aOD SEE LOCATION PLAN	CT	AW	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
				CONTINUED BORING IN SAME STRATUM			
10.50	BULK						
11.00-11.45	U100	(129)					
12.00	BULK						
12.50-12.95	SPT	21					
13.50-13.95	U100	(130*)					
14.00-14.45	U100	(144)					
				BOREHOLE TERMINATED	15.00	54.95	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.60	3.60	20MINS	3.00	5.60	

BORING METHOD AND REMARKS

DANDO 150
1HR CHISELLING IN MADE GROUND

All dimensions are in metres unless otherwise stated

CC Geotechnical	Tel: 0151-523-0202 Fax: 0151-523-0252	BOREHOLE LOG	HOLE NO. BH12 Sheet 1 of 2

CLIENT	SITE
GHA	RHODES BUSINESS PARK

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
10/10/03-10/10/03	1:50	69.85m aOD SEE LOCATION PLAN	CT	CB	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
				TARMAC ON SUBBASE (0.40)			
0.50	BULK			Medium dense MADE GROUND comprising brick, concrete, sand, ash, wood, plastic (1.60)	0.40	69.45	
1.00 - 1.45	SPT	13					
1.50	BULK						
2.00 - 2.45	SPT	11					
				Firm brown very sandy silty CLAY (1.00)	2.00	67.85	1
2.50	BULK						
3.00 - 3.45	SPT	10					
				Medium dense silty SAND & GRAVEL (2.10)	3.00	66.85	1
3.50	BULK						
4.00 - 4.45	SPT	12					
4.50	BULK						
5.00 - 5.45	SPT	14					
				Firm brown silty sandy CLAY (1.10)	5.10	64.75	
6.00	BULK						
				Medium dense silty medium to corase SAND (1.30)	6.20	63.65	2
6.50 - 6.95	SPT	17					
7.50	BULK						
				Medium dense clayey silty SAND interbedded with thin clay bands (2.40)	7.50	62.35	
8.00 - 8.45	SPT	16					
9.00	BULK						
9.50 - 9.95	SPT	19					
					9.90	59.95	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.10	3.10	20MINS	2.10	3.50	
6.20	6.29	20MINS	6.20	10.80	

BORING METHOD AND REMARKS

DANDO 150

All dimensions are in metres unless otherwise stated

CC Geotechnical
Tel: 0151-523-0202
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BOREHOLE LOG

HOLE NO. BH12
Sheet 2 of 2

CLIENT	SITE
GHA	RHODES BUSINESS PARK

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
10/10/03-10/10/03	1:50	69.85m aOD SEE LOCATION PLAN	CT	CB	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
				Firm brown silty sandy CLAY			
10.50-10.95	U100	(381)					
11.00	BULK						
12.00-12.45	U100	(324)					
13.50	BULK						
14.00-14.45	U100	(370)					
				BOREHOLE TERMINATED	15.00	54.85	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.10	3.10	20MINS	2.10	3.50	
6.20	6.29	20MINS	6.20	10.80	

BORING METHOD AND REMARKS

DANDO 150

All dimensions are in metres unless otherwise stated

CC Geotechnical
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BOREHOLE LOG

HOLE NO. PBT16
Sheet 1 of 1

CLIENT	SITE
GHA	RHODES BUSINESS PARK

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
26/09/03-26/09/03	1:25	69.94m aOD SEE LOCATION PLNA	PF	CB	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
0.00 - 0.60	U90			TARMAC (0.05) MADE GROUND of brick, sand, concrete	0.05	69.89	
				TERMINATED ON REFUSAL	0.60	69.34	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
NS					BOREHOLE DRY

BORING METHOD AND REMARKS

DAND TERRIER

All dimensions are in metres unless otherwise stated

CC Geotechnical	Tel: 0151-523-0202 Fax: 0151-523-0252	BOREHOLE LOG	HOLE NO. PBT17 Sheet 1 of 1

CLIENT	SITE
GHA	RHODES BUSINESS PARK

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
26/09/03-26/09/03	1:25	70.21m aOD SEE LOCATION PLAN	PF	CB	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
0.00 - 1.00	U90			TARMAC (0.05) MADE GROUND comprising brick, concrete, sand, gravel, ash (1.75)	0.05	70.16	
1.00 - 2.00	U80						
				Black sandy SILT	1.80	68.41	
2.00 - 3.00	U70						
				BOREHOLE TERMINATED	3.00	67.21	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
NS					BOREHOLE DRY

BORING METHOD AND REMARKS

DANDO TERRIER

All dimensions are in metres unless otherwise stated

CC Geotechnical	Tel: 0151-523-0202 Fax: 0151-523-0252	BOREHOLE LOG	HOLE NO. PBT18 Sheet 1 of 1

CLIENT	SITE
GHA	RHODES BUSINESS PARK

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
26/09/03-26/09/03	1:50	70.63m aOD SEE LOCATION PLAN	PF	CB	03/2499

SAMPLE RECORD DEPTH	TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	REDUCED LEVEL	LEGEND
0.00 - 1.00	U90			TARMAC (0.05) MADE GROUND of brick, concrete, sand, gravel, ash (1.45)	0.05	70.58	
1.00 - 2.00	U80						
				Loose to medium dense brown silty clayey SAND	1.50	69.13	
2.00 - 3.00	U70						
				BOREHOLE TERMINATED	3.00	67.63	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
NS					BOREHOLE DRY

BORING METHOD AND REMARKS

DANDO TERRIER

All dimensions are in metres unless otherwise stated

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WINDOW SAMPLE LOG

Hole No. **WS01**

Project: Rhodes Business Park

Sheet: 1 of 1

Job No: 70004162

Client: Rhodes Business Park Limited

Date: 19-06-14 19-06-14

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Dynamic Sampling	Compact 210 series	J Kinchington	E 385512.300 N 405220.190	69.970

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. 50 mm
0.00-0.00	GW	.					69.87	0.10	TARMAC.			TARMAC	
							69.57	(0.30) 0.40	MADE GROUND: Grey slightly sandy medium and coarse subangular gravel of limestone (SUB BASE).			GMG	
0.50-0.60	ES	.	0					(0.80)	MADE GROUND: Black fine and medium subangular gravel of ash with plastic, ceramic, slag and clinker.			GMG	
							68.77	1.20					
1.20-1.30	ES	.					68.67	1.30	MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular of glass ash and brick.			CMG	
1.80-2.00	ES	.						(2.30)	Brownish grey silty fine to coarse SAND.			ALV	
2.60-2.80	ES	.				▼1							
							66.37	3.60					
							66.17	3.80	Light brown coarse SAND			ALV	
							65.87	(0.30) 4.10	Dark greyish brown silty fine to coarse SAND.			ALV	
4.60-4.60	ES	.	0					(0.90)	Dark grey fine to coarse SAND and fine and medium rounded GRAVEL of various lithologies with occasional fragments of fibrous peat. 4.50 m bgl; sand becoming coarse.			ALV	
							64.97	5.00					
									Window sample complete at 5.00m bgl.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								2.60			

General Remarks

Window sample complete at 5.00m bgl. Hole handpitted to 1.20m bgl. Groundwater encountered at 2.60m bgl. No visual or olfactory evidence of contamination encountered. Hole installed upon completion.

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG CP LOGS COMPILED UPDATED.GPJ WSPETEMPLATE1.03.GDT 8/7/14

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WINDOW SAMPLE LOG

Hole No. **WS06**

Project: Rhodes Business Park

Sheet: 1 of 1

Job No: 70004162

Client: Rhodes Business Park Limited

Date: 19-06-14 19-06-14

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Dynamic Sampling	Compact 210 series	J Kinchington	E 385451.290 N 405194.600	69.480

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. 50 mm
0.00-0.00	GW	.										
0.10-0.30	ES	.					69.18	(0.30) 0.30	Grass over dark brown slightly clayey gravelly SAND. Gravel is fine to coarse angular to subrounded of brick, concrete and various lithologies including slate (TOPSOIL).		TS	
							68.68	(0.50) 0.80	Dark brown gravelly SAND. Gravel is fine to coarse angular to subrounded of brick, concrete and various lithologies including slate.		GMG	
0.80-1.00	ES	.					68.38	(0.30) 1.10	MADE GROUND: Black GRAVEL of ash and clinker.		GMG	
1.20-1.40	ES	.							Dark greyish brown silty fine to coarse SAND.			
								(1.70)			ALV	
							66.68	2.80	2.50 m bgl; becoming brown slightly clayey.			
						1		(0.50)	Light brown fine and medium SAND.		ALV	
3.10-3.30	ES	.					66.18	3.30				
								(0.70)	Brownish pale grey coarse SAND and medium and coarse rounded GRAVEL.		ALV	
							65.48	4.00	3.80 m bgl; gravel becoming coarse			
									Window sample terminated at 4.00m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								3.10			

General Remarks

Window sample refusal at 4.00m bgl.. Hole handpitted to 1.20m bgl. Groundwater encountered at 3.10m bgl. No visual or olfactory evidence of contamination encountered. Hole installed upon completion.

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG CP LOGS COMPILED UPDATED.GPJ WSPETEMPLATE1.03.GDT 8/7/14

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WINDOW SAMPLE LOG

Hole No. **WS08**

Project: Rhodes Business Park

Sheet: 1 of 1

Job No: 70004162

Client: Rhodes Business Park Limited

Date: 19-06-14 19-06-14

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Dynamic Sampling	Compact 210 series	J Kinchington	E 385423.950 N 405161.390	70.680

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. 50 mm
0.00-0.00 0.10-0.30	GW ES	. .					70.38	(0.30) 0.30	Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine and medium angular to rounded of brick and various lithologies. (TOPSOIL)			TS	
							69.28	(1.10) 1.40	MADE GROUND: Soft dark brown slightly sandy slightly gravelly CLAY with occasional cobbles of brick and concrete. Gravel is fine to coarse angular to rounded of brick and various lithologies.			CMG	
							69.18	1.50	MADE GROUND: Light grey sandy medium and coarse GRAVEL of concrete.			GMG	
1.50-1.60	ES	.					68.88	(0.30) 1.80	MADE GROUND: Dark brown streaked black slightly sandy gravelly CLAY. Gravel is fine to coarse, angular to subrounded of brick and concrete.			CMG	
							68.18	(0.70) 2.50	MADE GROUND: Dark brown clayey slightly gravelly SAND. Gravel is fine to coarse angular to subrounded of brick, glass, sandstone and concrete.			GMG	
							67.98	2.70	MADE GROUND: Black GRAVEL of ash and clinker.			GMG	
2.80-3.00	ES	.					67.18	(0.80) 3.50	MADE GROUND: Purpleish brown fiberous peat with organic remains including wood and rootlets (RELICT TOPSOIL).			GMG	
3.70-3.90	ES	.				▼1	66.68	(0.50) 4.00	MADE GROUND: Dark grey silty SAND with fragments of pottery and brick. 3.60 m bgl; Hydrocarbon sheen and odour			GMG	
									Window sample terminated at 4.00m bgl due to blowing sand.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								3.60			

General Remarks

Window sample refusal at 4.00m bgl due to blowing sand. Hole handpitted to 1.20m bgl. Groundwater encountered at 3.60m bgl. Possible hydrocarbon sheen and odour at 3.60m bgl. Hole installed upon completion.

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG CP LOGS COMPILED UPDATED.GPJ WSPETEMPLATE1.03.GDT 8/7/14

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BOREHOLE LOG

Hole No. **BH01**

Project: Rhodes Business Park

Sheet: 1 of 2

Job No: 70004162

Client: Rhodes Business Park Limited

Date: 16-06-14 16-06-14

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
			E 385466.050 N 405159.440	70.200

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. mm
0.00-0.00	GW						70.14	0.06	TARMAC		TARMAC	
							69.84	0.36	MADE GROUND: Grey, sub-angular, fine to coarse GRAVEL of limestone (SUB BASE)		GMG	
0.40-0.60	ES		5					(0.64)	MADE GROUND: Black, slightly sandy, slightly clayey, fine and medium, angular to subrounded GRAVEL of ash and brick.		GMG	
							69.20	1.00	0.40 - 1.00 Slight odour within Made Ground.			
						1		(1.80)	MADE GROUND: Blackish grey, gravelly, silty fine to coarse SAND. Gravel is fine and medium of various lithologies including ash and brick.		GMG	
							67.40	2.80				
2.80-3.00	ES		0					(1.70)	Blackish grey silty fine to coarse SAND.		ALV	
							65.70	4.50				
4.50-4.70	ES		0			2	65.30	4.90	Greyish brown silty fine to coarse SAND.		ALV	
							65.00	5.20	Brown, slightly sandy fine and medium, subrounded and rounded GRAVEL of various lithologies.		ALV	
5.30-5.50	ES		0						5.00 - 5.20 Gravel becoming coarser with depth, occasional cobbles. Brown, silty fine SAND with rare fine and medium, angular gravel.			
								(2.70)			ALV	
							62.20	8.00				
8.00-8.20	ES		0						Firm, dark brown, sandy, slightly gravelly CLAY. Gravel is fine and medium, angular to subrounded of predominantly mudstone and various lithologies. Frequent sand and gravel bands.		GT	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
		1.90 4.90	20 00		

General Remarks

Borehole complete at 12m bgl. Slight odour encountered within the Made Ground between 0.36 and 1m bgl. Groundwater encountered at 4.9m bgl. Hole installed upon completion.

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG CP LOGS COMPILED UPDATED.GPJ WSPETEMPLATE1.03.GDT 8/7/14

WSP Environment & Energy
The Victoria, 150-182 The Quays, Salford M50 3SP
Telephone: +44 (0) 161 886 2400
Fax: +44 (0) 161 886 2401

BOREHOLE LOG

Hole No. **BH01**

Project: Rhodes Business Park

Sheet: 2 of 2

Job No: 70004162

Client: Rhodes Business Park Limited

Date: 16-06-14 16-06-14

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
			E 385466.050 N 405159.440	70.200

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. mm
								(4.00)	Firm, dark brown, sandy, slightly gravelly CLAY. Gravel is fine and medium, angular to subrounded of predominantly mudstone and various lithologies. Frequent sand and gravel bands. *(continued)*		GT		
							58.20	12.00					

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Borehole complete at 12m bgl. Slight odour encountered within the Made Ground between 0.36 and 1m bgl. Groundwater encountered at 4.9m bgl. Hole installed upon completion.

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG CP LOGS COMPILED UPDATED.GPJ WSPETEMPLATE1.03.GDT 8/7/14

Appendix C Photographic Records



Photograph 1 - Photograph looking southeast from the northwest of site.



Photograph 2 - Photograph looking west along the northern boundary of the site



Photograph 3 - Photograph looking northwest from the southeast of site



Photograph 4 – Photograph towards the southern boundary form the centre of the site



Photograph 5 - Photograph showing the small retaining wall in the southeast of the site



Photograph 6 - Photograph looking at the overgrown area in the southwest corner of the site.

Appendix D In Situ Test Results

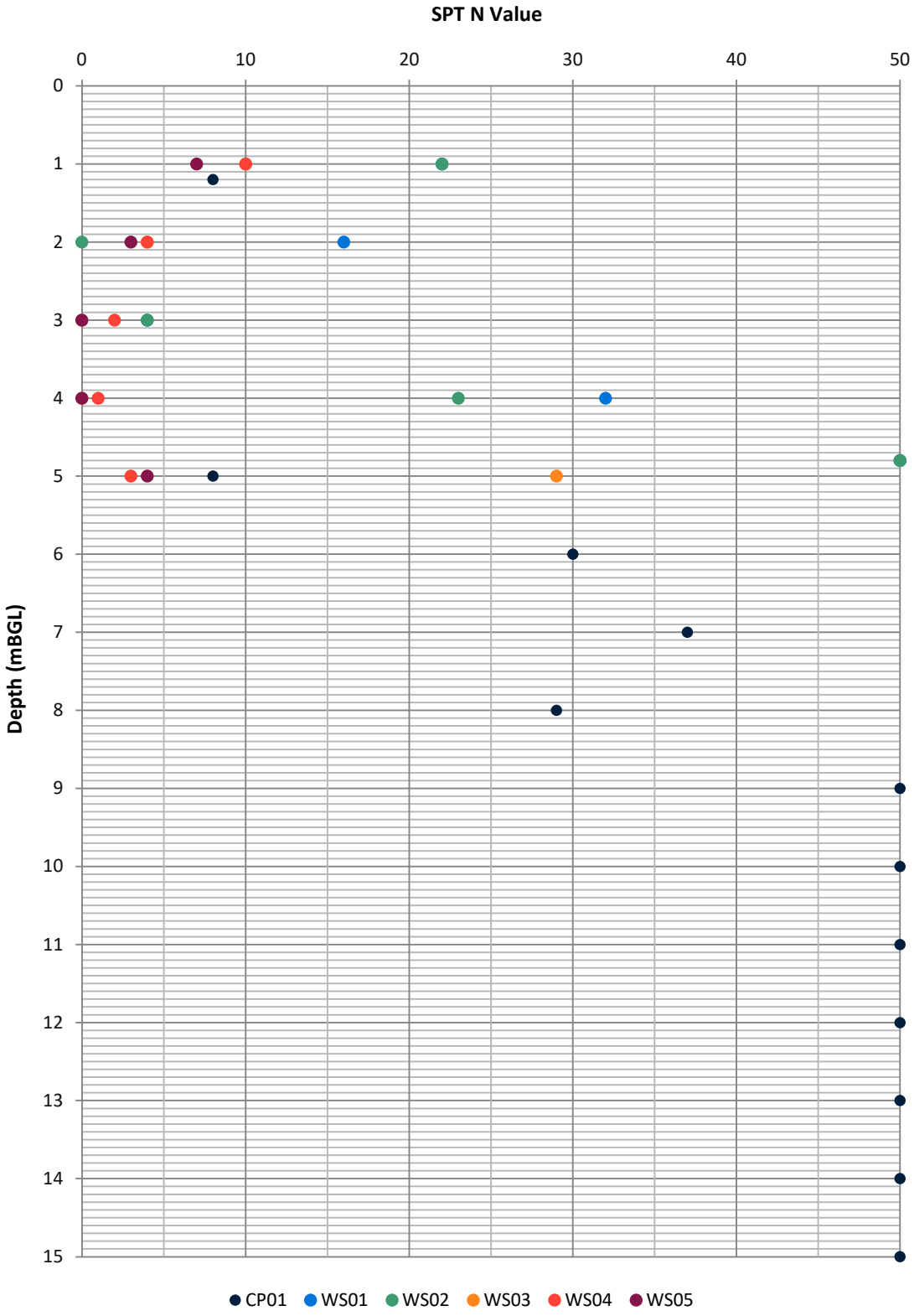
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Table summarising Standard Penetration Test (SPT) results

Location	Start Depth (m)					Penetration (mm)	
		Seating 1-2	Main 1-4	Total Seating	Total Main	Total Seating	Total Main
CP01	1.20	2/2	3/2/1/2	4	8	150	300
CP01	2.00	1/2	2/1/1/0	3	4	150	300
CP01	3.00	0/0	0/0/0/0	0	0	150	300
CP01	4.00	0/0	0/0/0/0	0	0	150	300
CP01	5.00	1/1	2/2/2/2	2	8	150	300
CP01	6.00	3/3	4/9/7/10	6	30	150	300
CP01	7.00	4/6	7/8/11/11	10	37	150	300
CP01	8.00	2/5	5/7/8/9	7	29	150	300
CP01	9.00	7/10	13/14/13/10	17	50	150	285
CP01	10.00	6/10	12/16/20/2	16	50	150	240
CP01	11.00	8/11	15/17/18	19	50	150	220
CP01	12.00	9/13	17/21/12	22	50	150	180
CP01	13.00	7/19	18/20/12	26	50	150	180
CP01	14.00	12/13	21/24/5	25	50	145	165
CP01	15.00	8/14	22/28	22	50	150	120
WS01	1.00	4/5	5/6/5/6	9	22	150	300
WS01	2.00	4/5	4/4/4/4	9	16	150	300
WS01	3.00	1/1	1/1/1/1	2	4	150	300
WS01	4.00	3/4	7/8/8/9	7	32	150	300
WS01	4.80	8/8	12/38	16	50	150	105
WS02	1.00	6/10	7/5/5/5	16	22	150	300
WS02	2.00	1/1	0/0/0/0	2	0	150	300
WS02	3.00	1/1	1/1/1/1	2	4	150	300
WS02	4.00	3/3	4/4/6/9	6	23	150	300
WS02	4.80	8/9	11/39	17	50	150	115
WS03	1.00	5/5	3/3/2/2	10	10	150	300
WS03	2.00	2/2	1/1/1/1	4	4	150	300
WS03	3.00	0/0	0/0/0/0	0	0	150	300
WS03	4.00	0/0	0/0/0/0	0	0	150	300
WS03	5.00	4/4	5/5/8/11	8	29	150	300
WS04	1.00	2/3	3/3/2/2	5	10	150	300
WS04	2.00	1/1	1/1/1/1	2	4	150	300
WS04	3.00	0/0	0/0/1/1	0	2	150	300
WS04	4.00	1/0	0/1/0/0	1	1	150	300
WS04	5.00	1/1	1/1/0/1	2	3	150	300
WS05	1.00	1/2	2/2/2/1	3	7	150	300
WS05	2.00	1/1	1/1/1/0	2	3	150	300
WS05	3.00	0/0	0/0/0/0	0	0	150	300
WS05	4.00	0/0	0/0/0/0	0	0	150	300
WS05	5.00	0/0	1/1/1/1	0	4	150	300

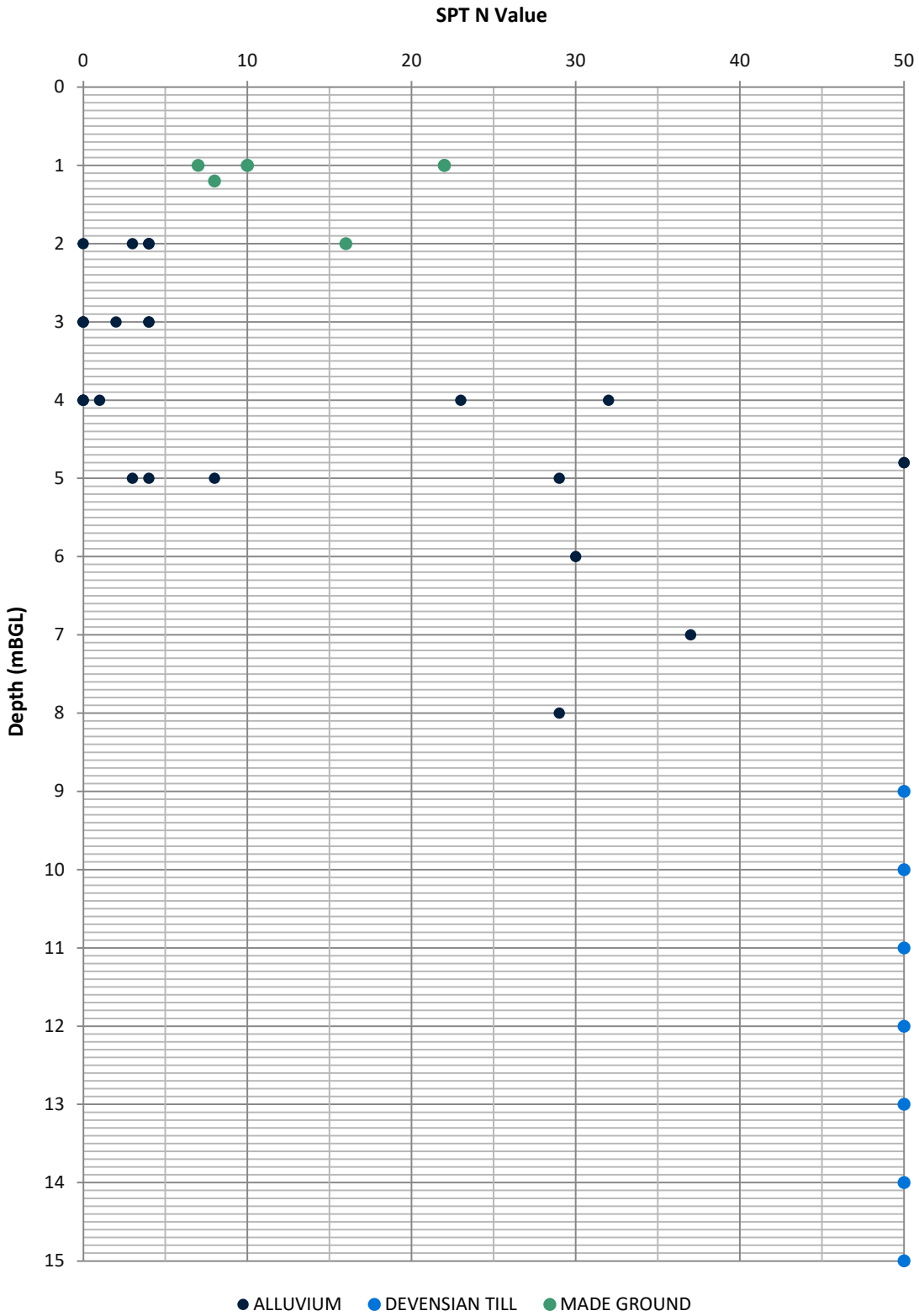
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Plot summarising Standard Penetration Test (SPT) results versus depth filtered by location



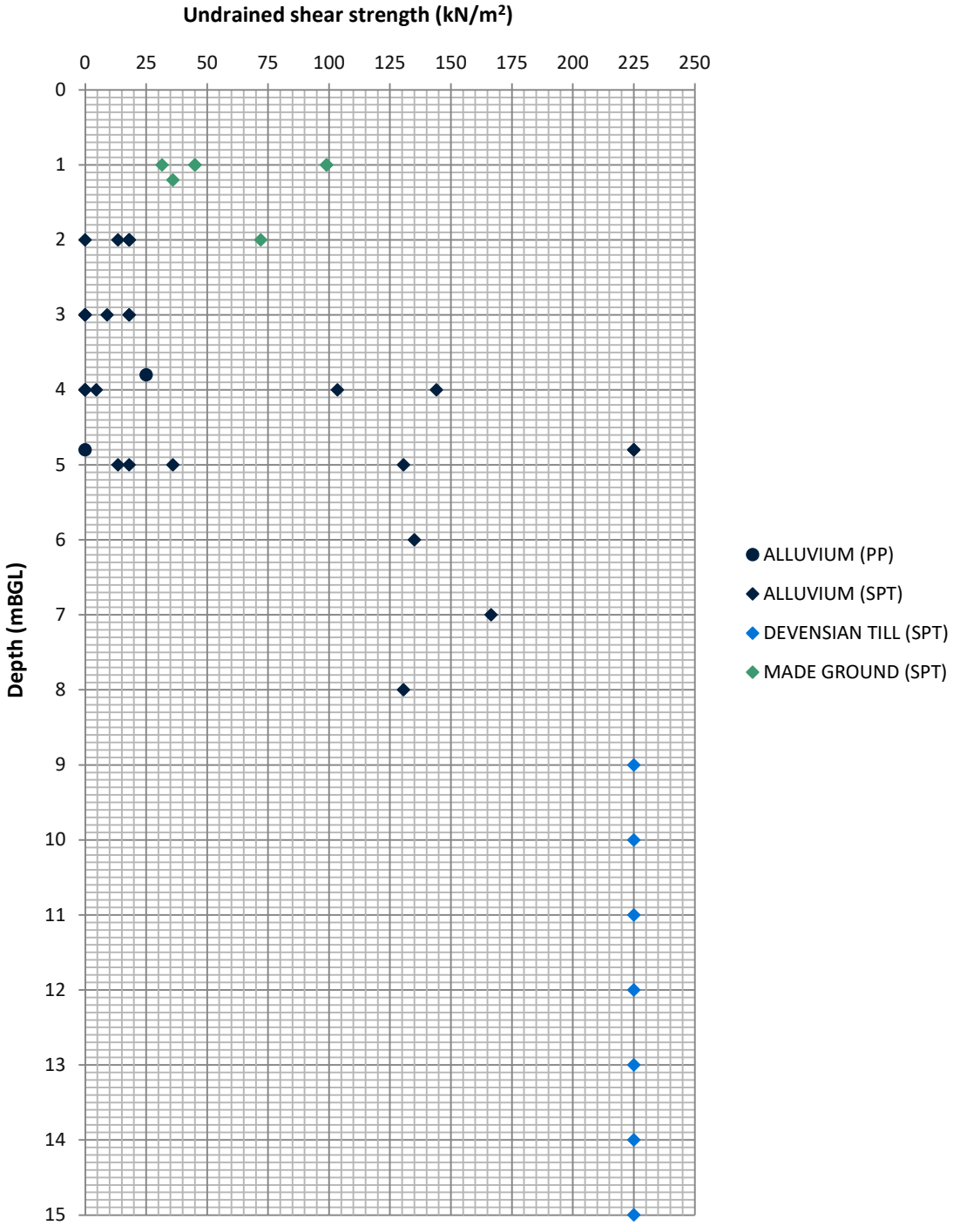
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Plot summarising Standard Penetration Test (SPT) results versus depth filtered by geology



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Plot summarising results of combined insitu testing data by geology (mBGL)



Notes

1) Alluvium SPT 'N' values converted using a factor of 4.5 following Stroud and Butler.
2) Devensian Till SPT 'N' values converted using a factor of 4.5 following Stroud and Butler.
3) Made Ground SPT 'N' values converted using a factor of 4.5 following Stroud and Butler.

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Dynamic Cone Penetrometer (DCP) summary

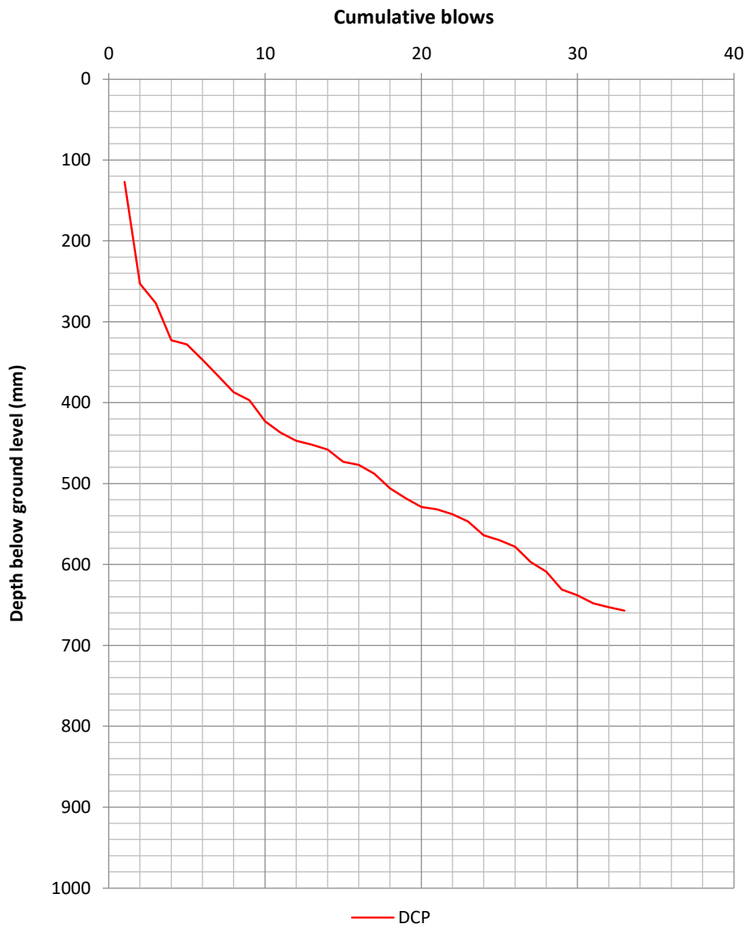
Location	Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
DCP01	1	1.8	250	0	250
DCP01	2	19.1	400	250	650
DCP02	1	2.0	350	0	350
DCP02	2	9.8	480	350	830
DCP03	1	25.3	250	50	300
DCP04	1	29.7	270	70	340
DCP04	2	8.8	170	340	510
DCP04	3	4.8	450	510	960
DCP05	1	20.3	290	90	380
DCP05	2	19.9	310	380	690
DCP06	1	15.5	520	80	600
DCP06	2	20.7	160	600	760
DCP07	1	3.4	280	70	350
DCP07	2	27.5	270	350	620
DCP08	1	34.1	140	50	190
DCP08	2	6.8	730	190	920
DCP09	1	27.0	420	10	430
DCP09	2	10.0	430	430	860
DCP10A	1	37.6	270	90	360
DCP10B	1	28.5	240	90	330

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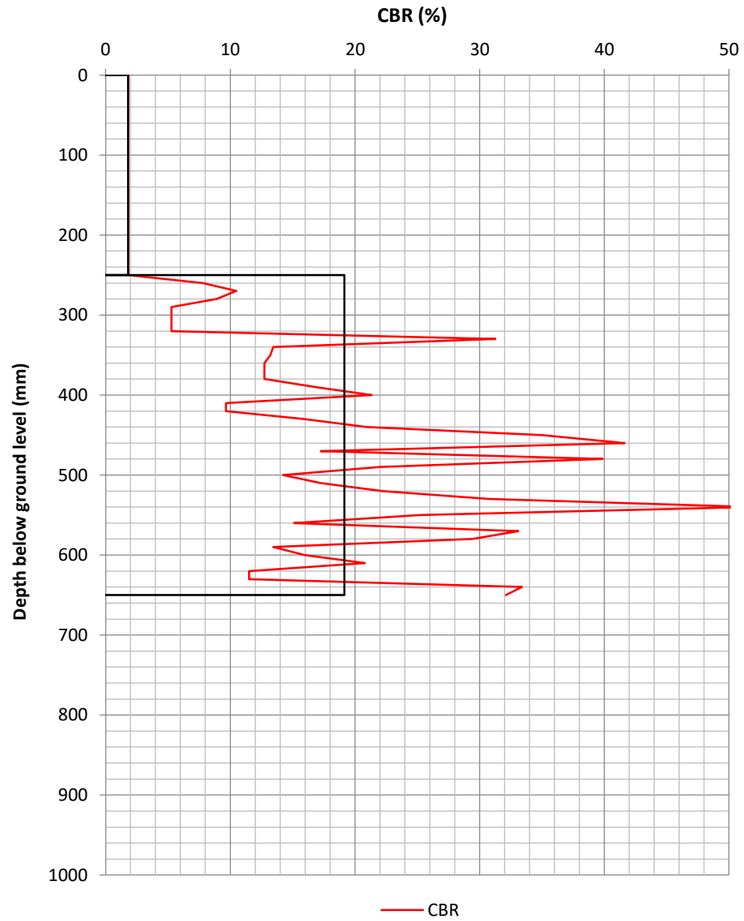
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP01	12/10/2023	0	103	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**1.8**	250	0	250
2	**19.1**	400	250	650

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

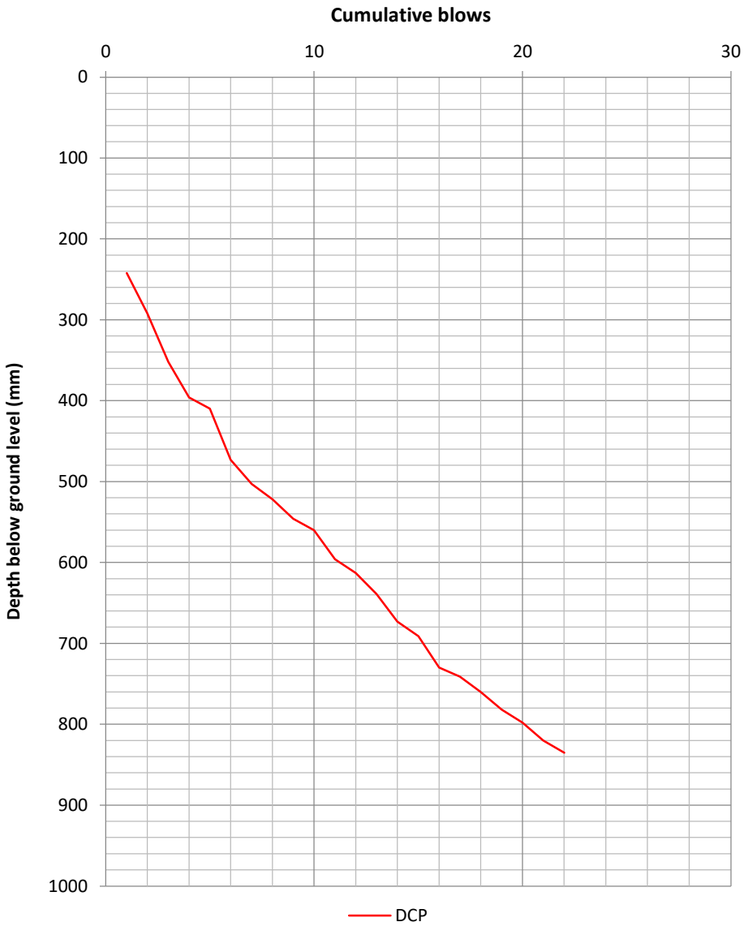
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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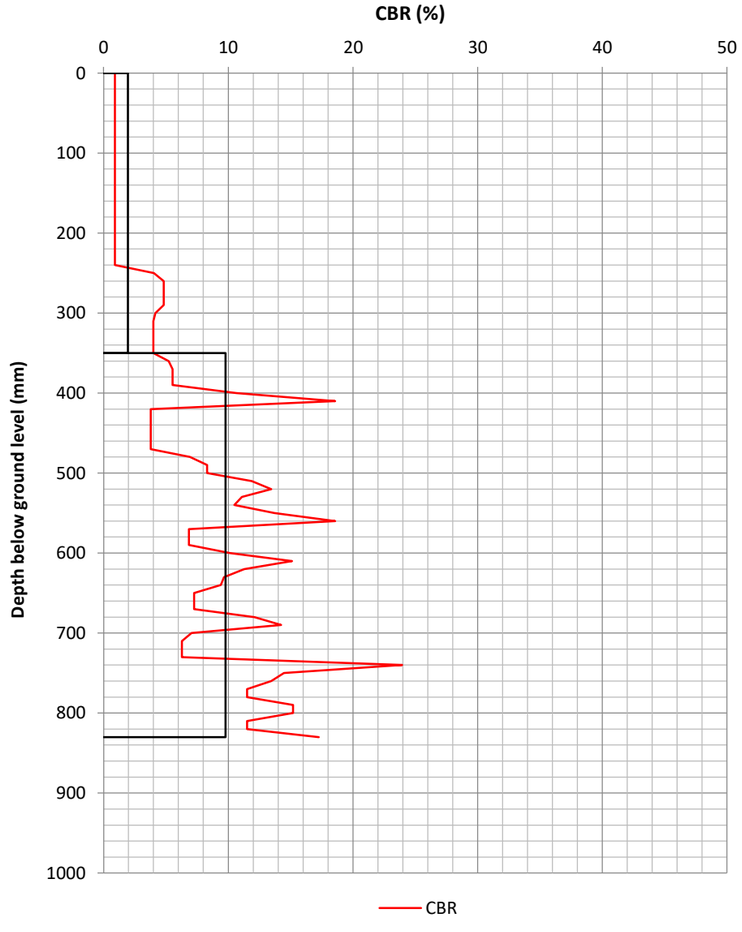
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02	12/10/2023	0	90	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**2.0**	350	0	350
2	**9.8**	480	350	830

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

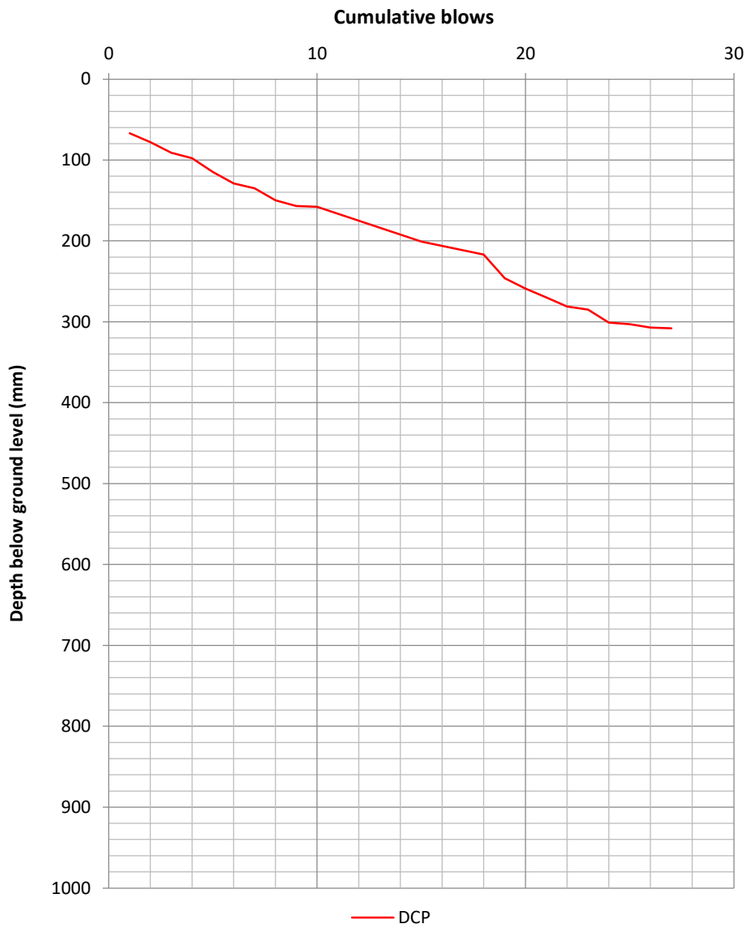
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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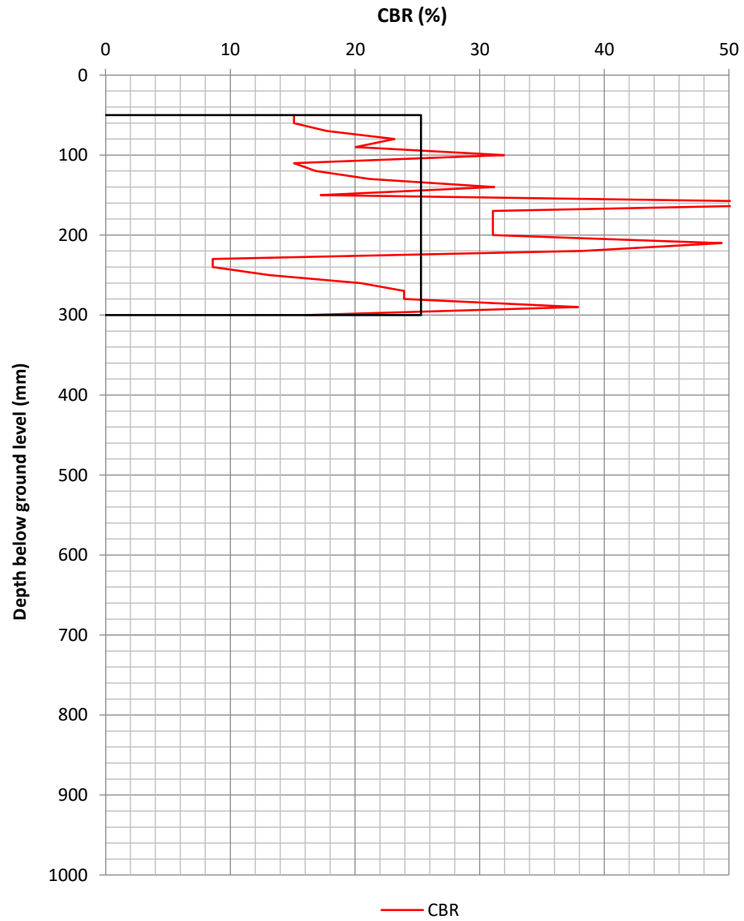
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03	12/10/2023	50	65	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**25.3**	250	50	300

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

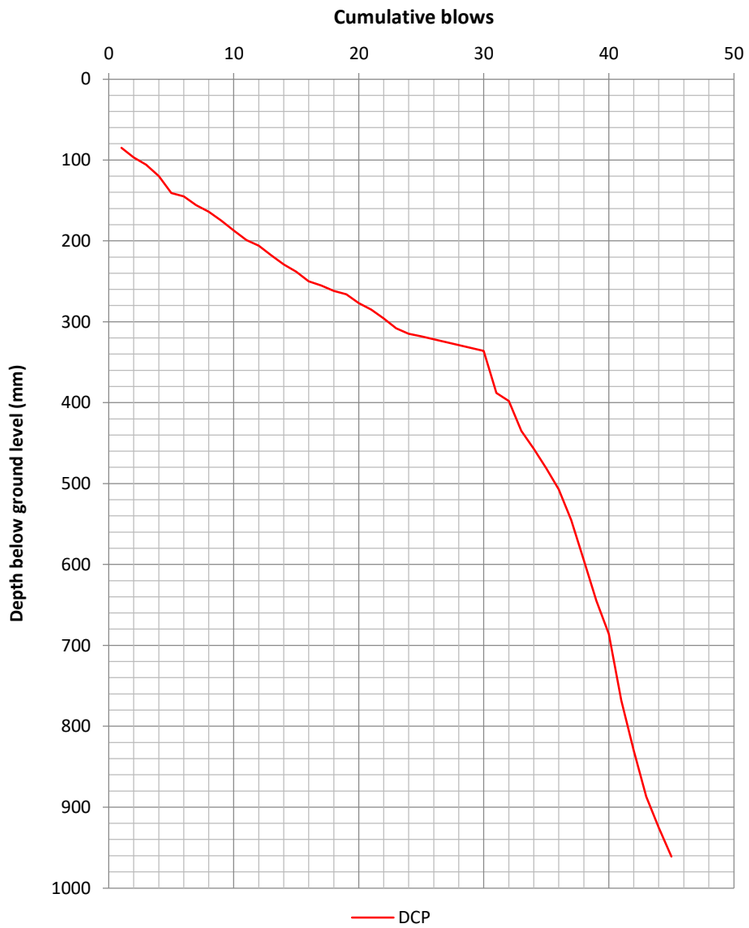
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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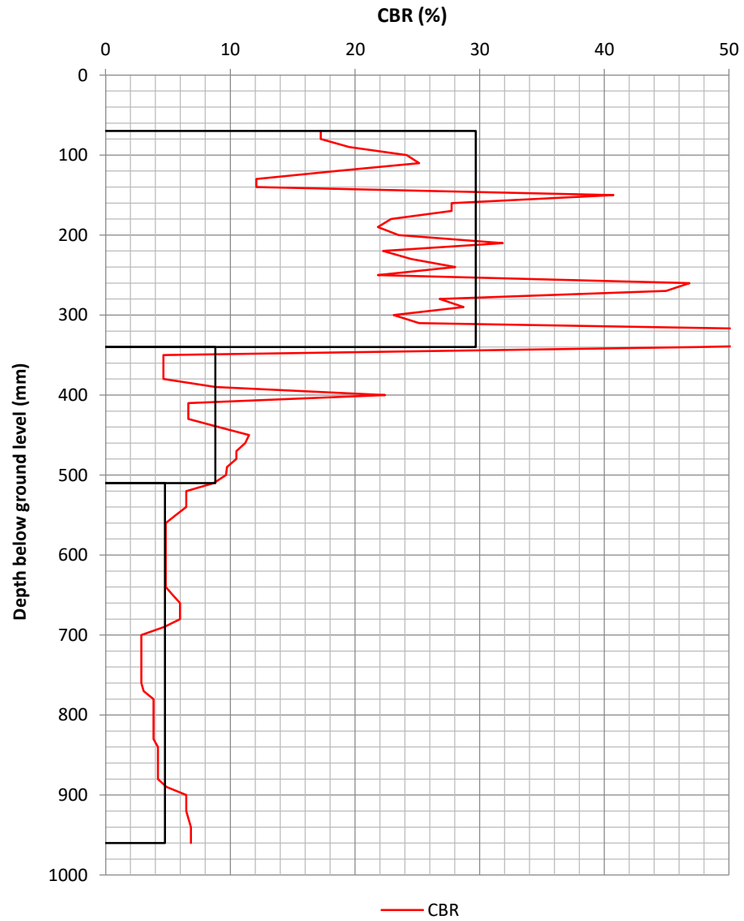
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04	12/10/2023	70	45	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**29.7**	270	70	340
2	**8.8**	170	340	510
3	**4.8**	450	510	960

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

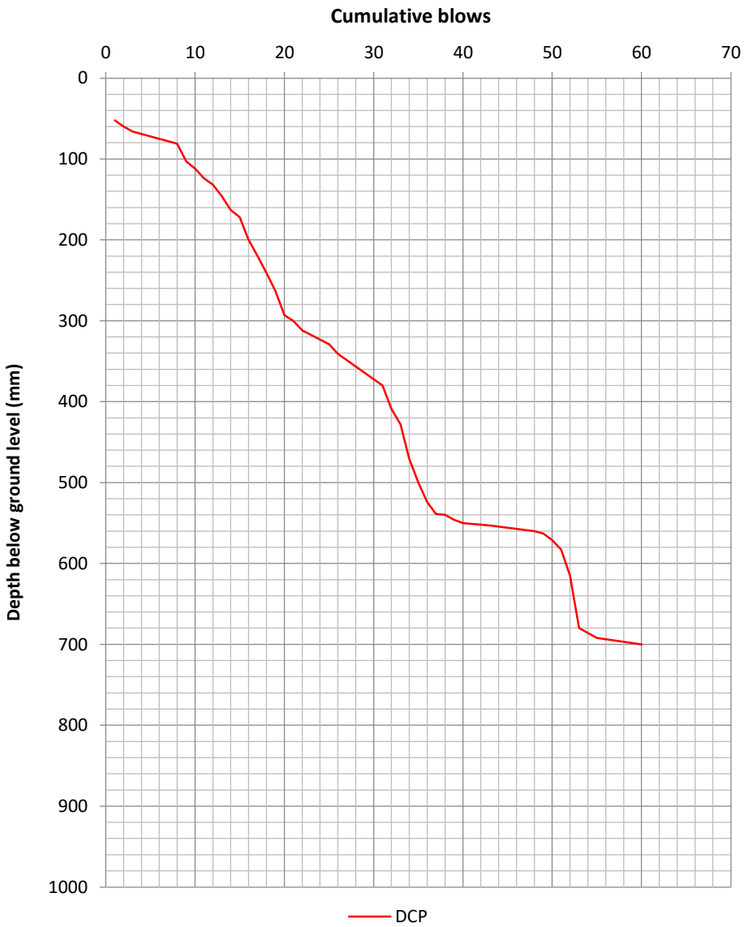
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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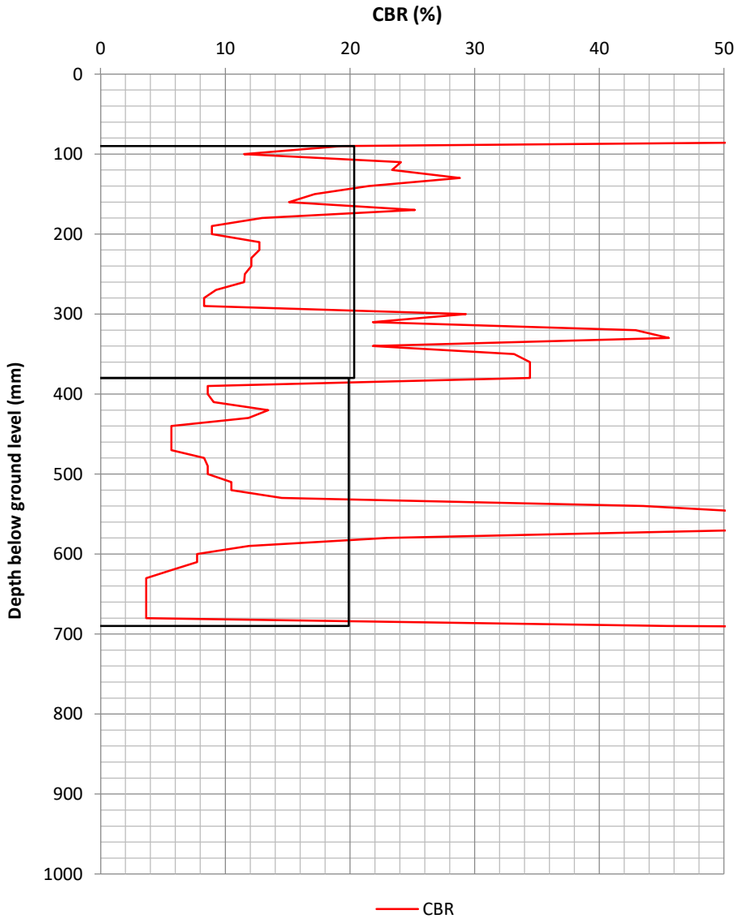
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP05	12/10/2023	50	50	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**20.3**	290	90	380
2	**19.9**	310	380	690

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

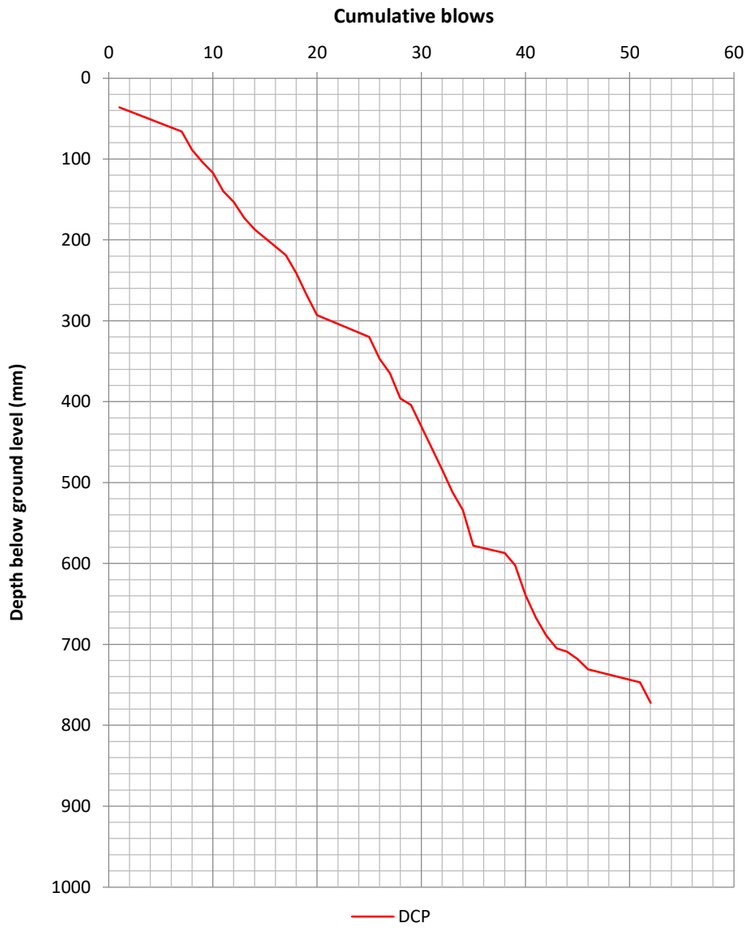
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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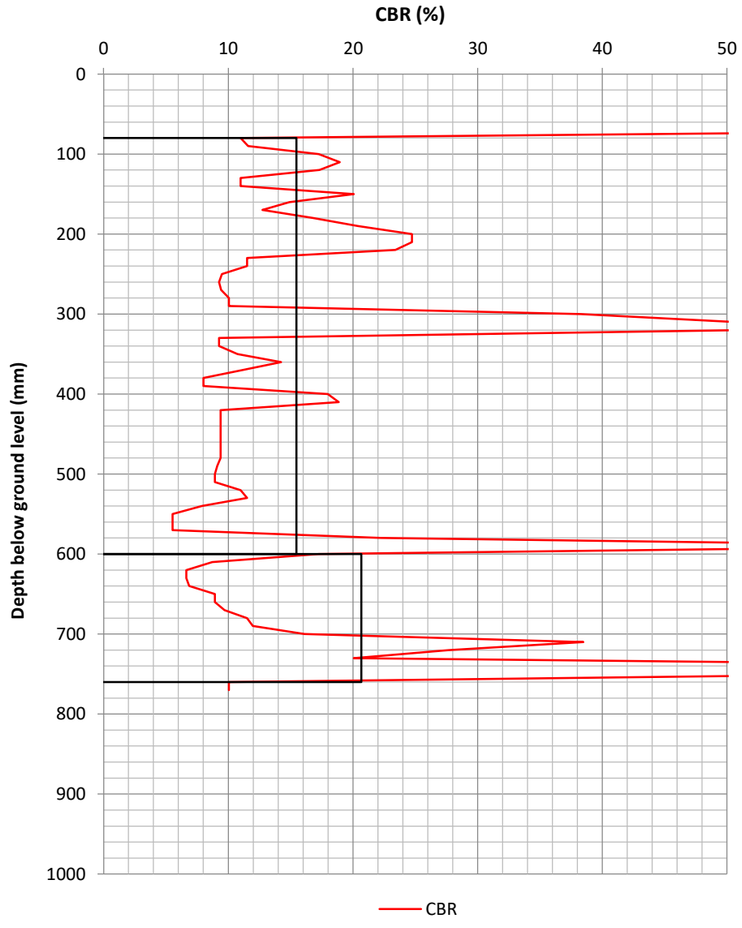
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP06	12/10/2023	50	70	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**15.5**	520	80	600
2	**20.7**	160	600	760

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

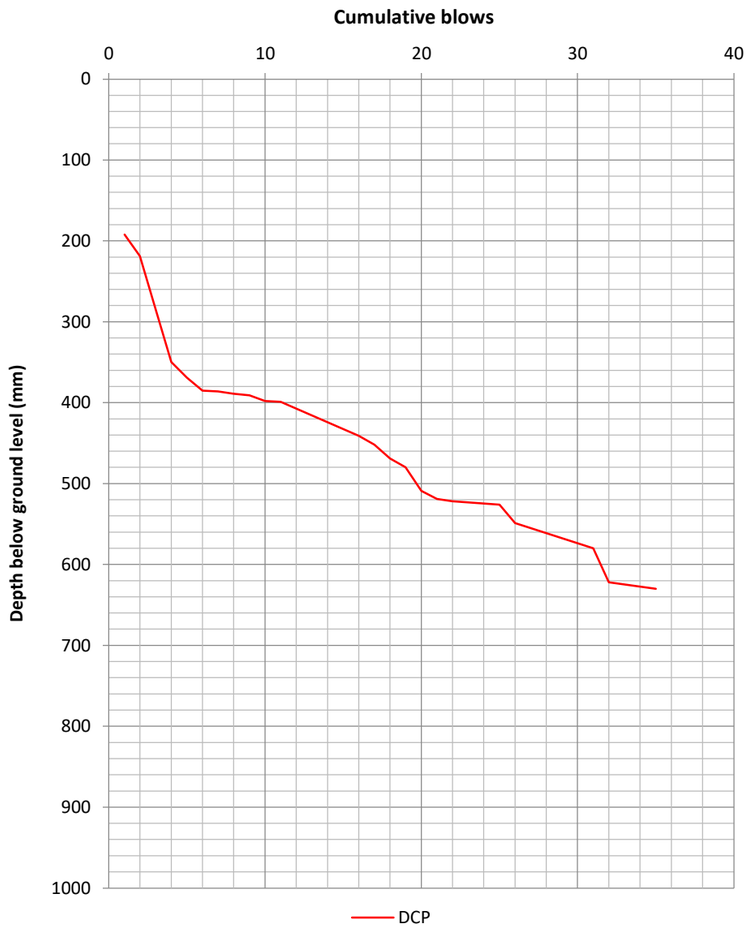
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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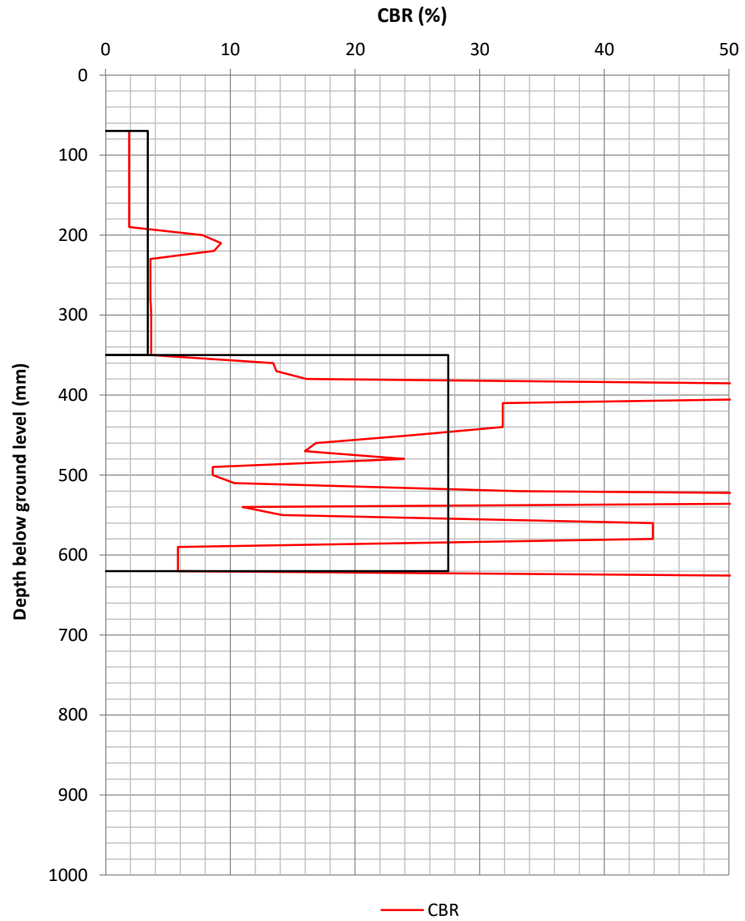
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP07	12/10/2023	70	41	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**3.4**	280	70	350
2	**27.5**	270	350	620

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

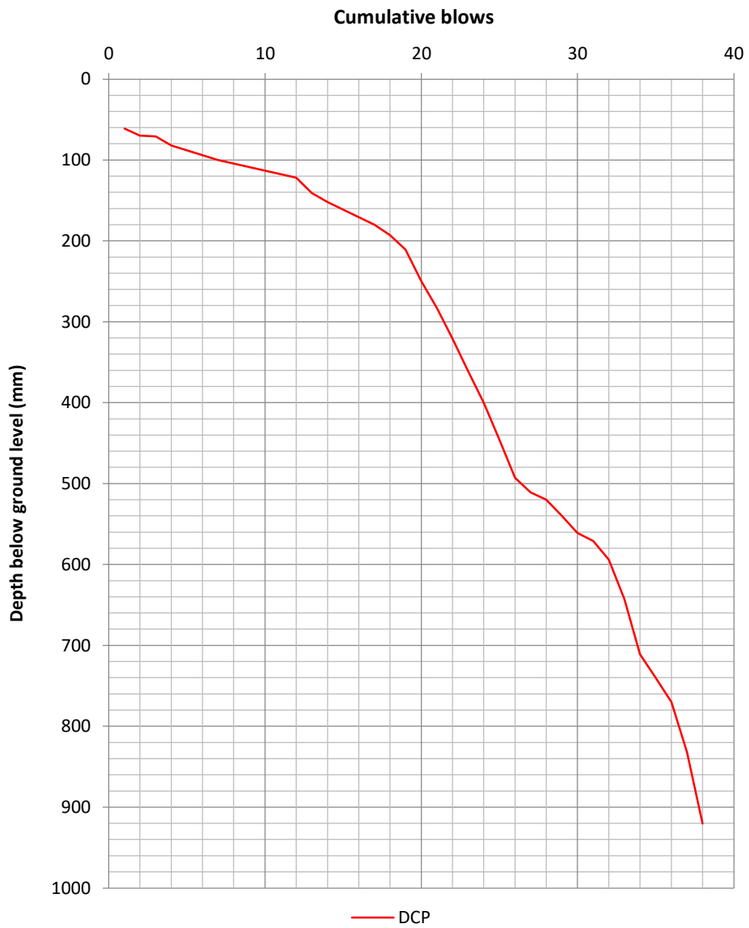
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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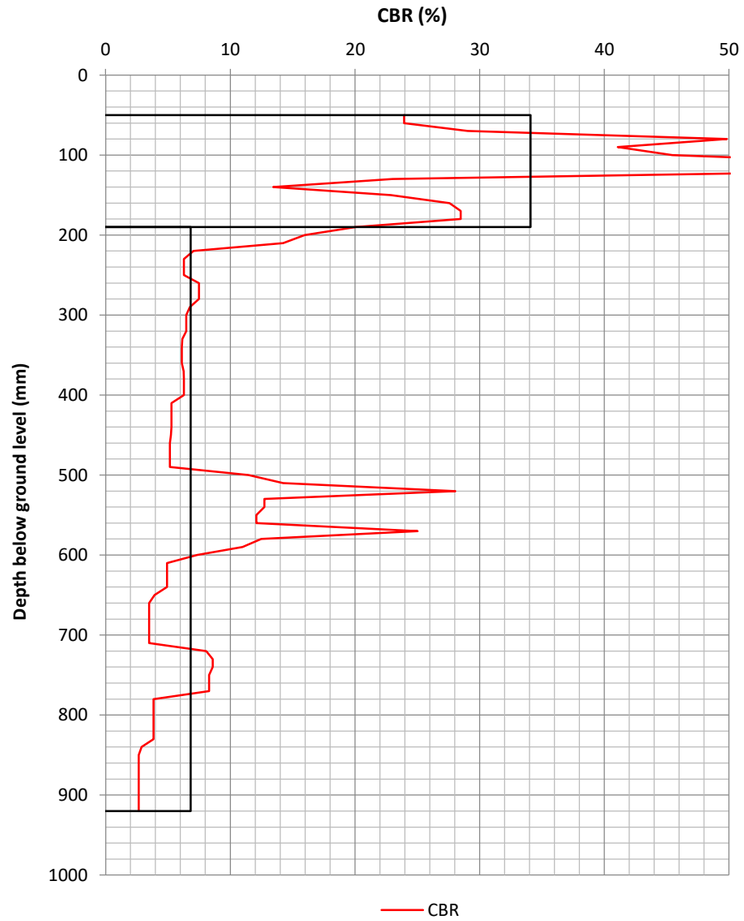
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP08	12/10/2023	50	60	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**34.1**	140	50	190
2	**6.8**	730	190	920

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

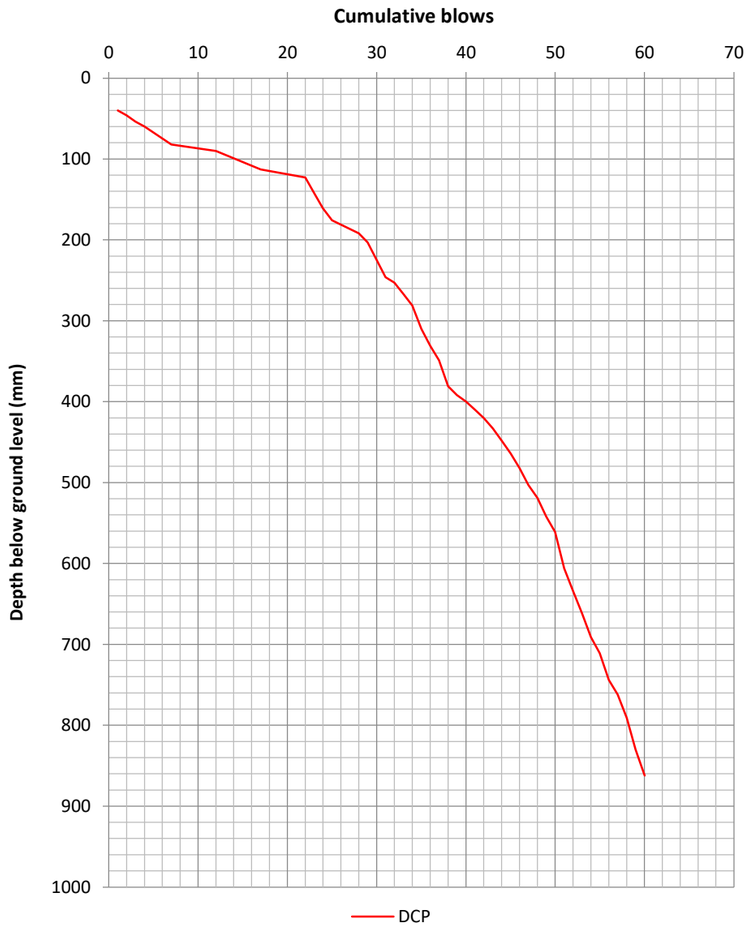
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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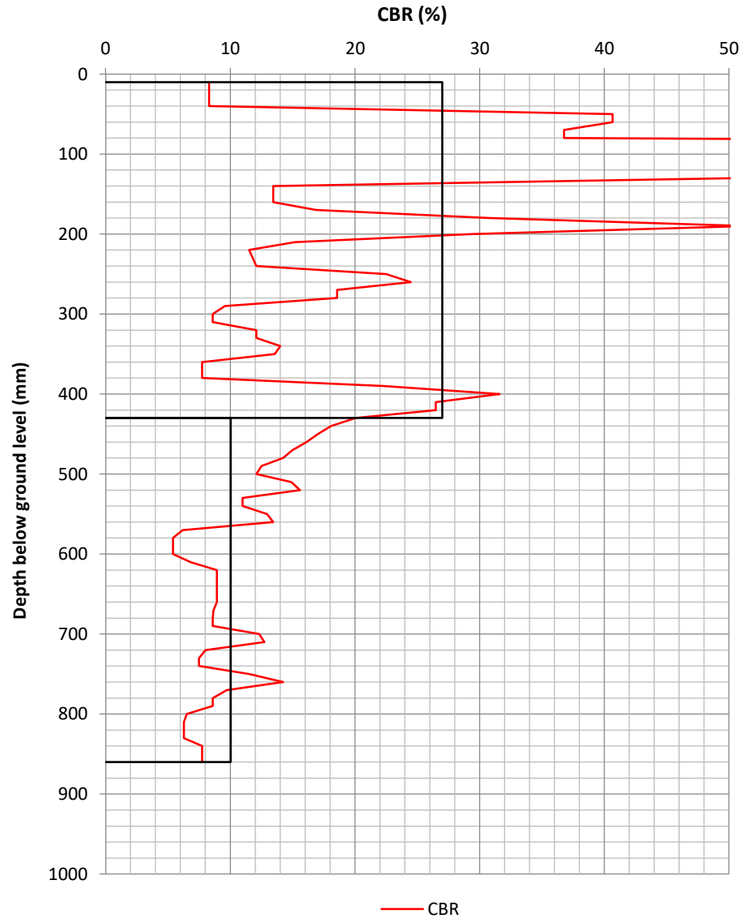
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP09	12/10/2023	10	80	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**27.0**	420	10	430
2	**10.0**	430	430	860

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

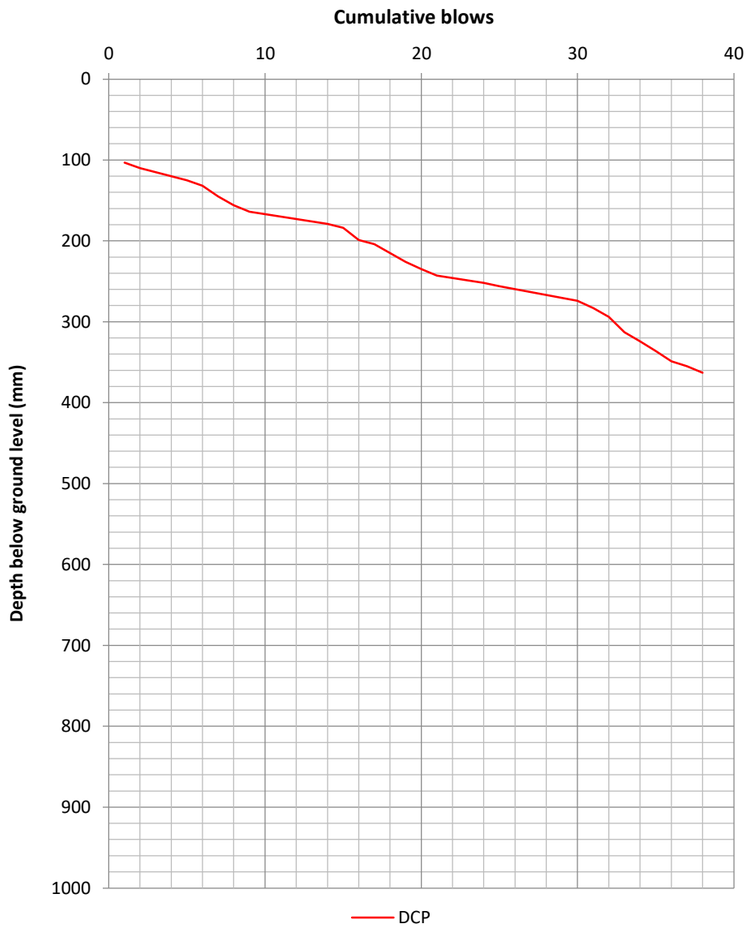
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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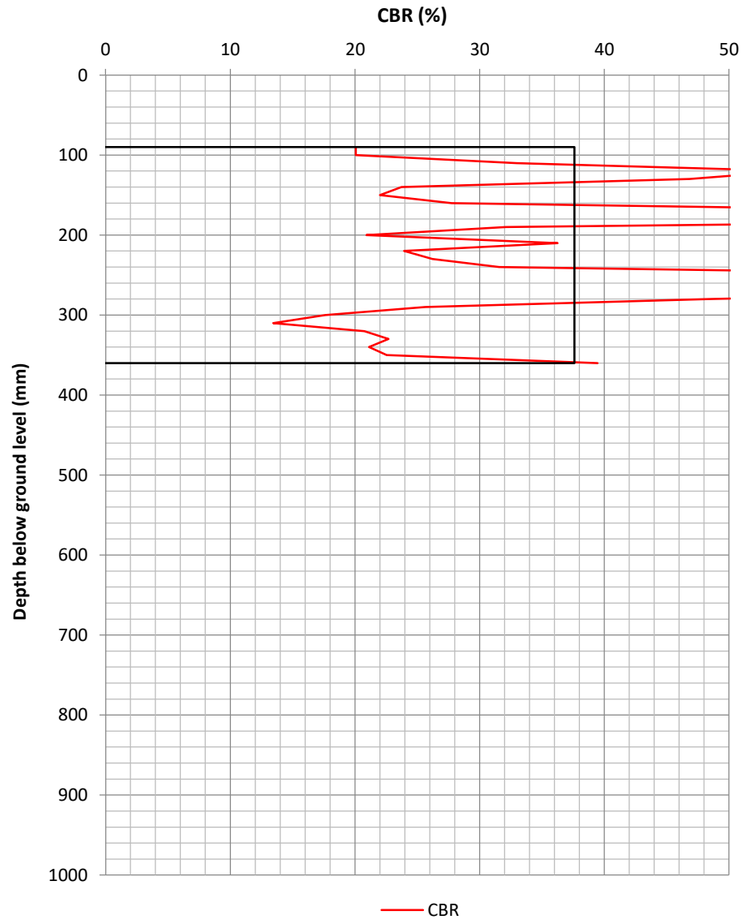
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP10A	12/10/2023	90	47	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**37.6**	270	90	360

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

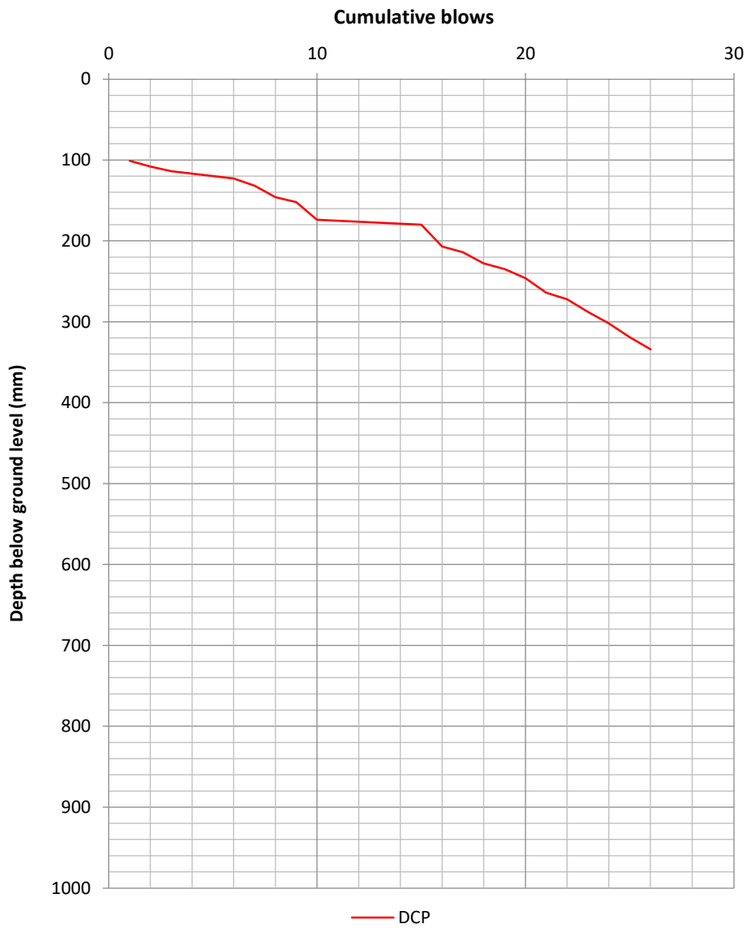
Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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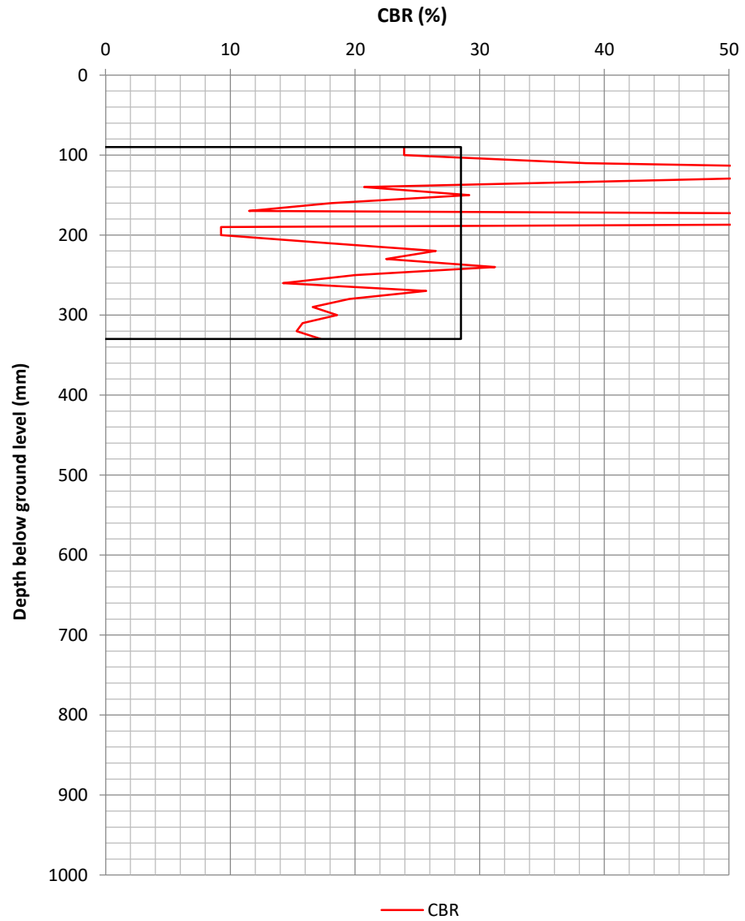
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP10B	12/10/2023	90	50	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**28.5**	240	90	330

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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Appendix E CPT Testing Report

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT: Soiltechnics

PROJECT: Rhodes Business Park, Middleton

Project	**Rhodes Business Park, Middleton**
Project No.	**1230412**
Client	**Soiltechnics**
Address	**Unit 9, Clarence Avenue, Enterprise Business Park, Trafford Park, M17 1QS**

Attention: Ms Lauren Wenham

Dear Ms Wenham,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,
In Situ Site Investigation Limited

Darren Ward
Director

Report Issue

Issue	Date	Prepared	Sign	Checked	Sign	Approved	Sign
01	18/10/2023	Chloe Donovan		Darren Ward		Darren Ward	

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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Rhodes Business Park at the request of Soiltechnics. The site investigation consisted of completing 18 Static Piezocone Penetration Tests (CPTU), to provide information on the soil conditions and derived geotechnical parameters at:

Rhodes Business Park
Silburn Way
Middleton
Manchester
M24 4NE

All test locations were provided by the client. A site map is included in the end of Appendix A of this report (if provided by the client). The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in the *Project Summary Table* in *Appendix A.1* and on each CPTU log included in Appendix B of this report.

The fieldwork was carried out on 12th October 2023 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *ISO 22476-1:2022(E)*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Pete Dougherty
Date Started	12th October 2023
Date Finished	12th October 2023
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Connor Birch

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.2*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT007	20 Tonne Track Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2022*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15-CFIP.1867	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.3*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
18 CPTU to a maximum depth of 5.00m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters & AGS data file.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2022(E)* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.4*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test ISO 22476-1:2022(E)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.1*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 20 mm/s ± 5 mm/s except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B*.

2.1.6 In Situ Pore Pressure (u_0)

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. For this report, the groundwater level is assumed at 0.5m below ground surface, for calculation purposes. The in situ pore pressure, u_0 values are presented on the pore pressure plot, on *CPT Log 01,* which is included in *Appendix B*.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *ISO 22476-1:2022(E)*, *Lunne et al. (1997)* and *Robertson (2015)*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al. (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *CPT Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *CPT Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

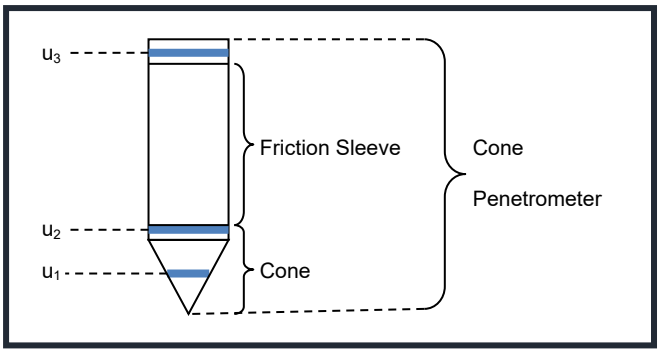


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The friction

ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et al. (1986)*, which is shown in Figure 3.2. The results are presented on *CPT Log 01*, in *Appendix B*.

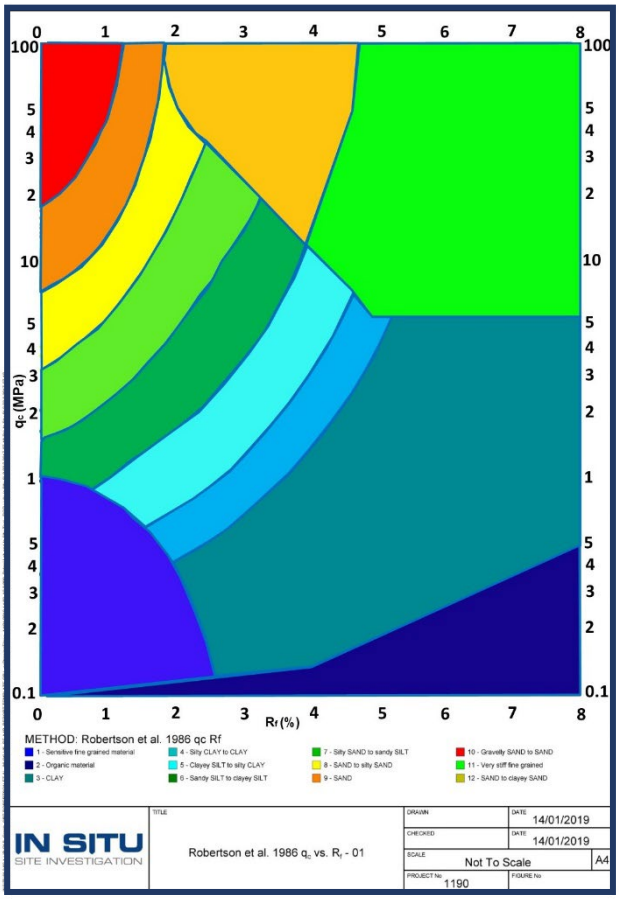


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ‘‘unequal area effect’’ due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone area ratio used for this project is stated on both the cone calibration certificate and the data footer. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2022*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *CPT Log 02* and *CPT Log 03* in *Appendix B*.

Please, note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A5* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, *(Lunne et al., 1997)*.

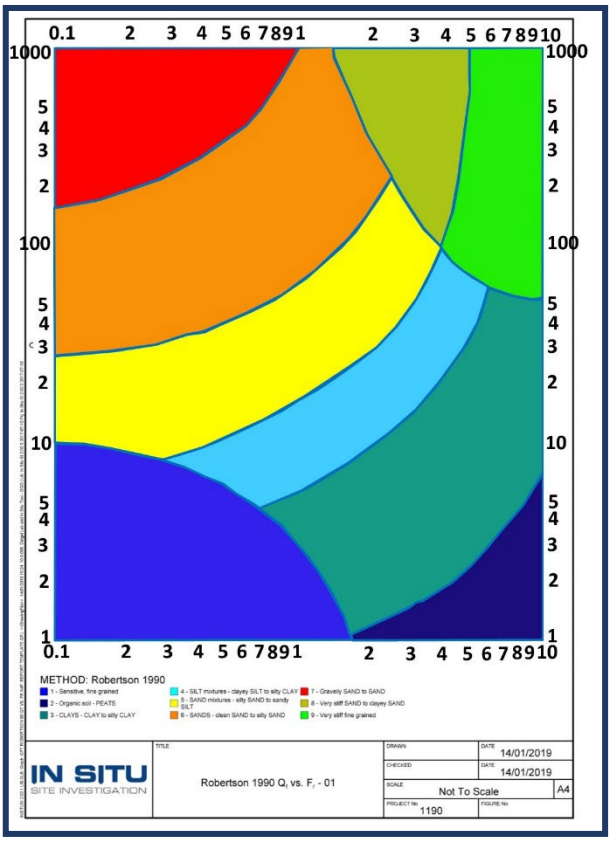


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily over consolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT,* N_{60}, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)*, *Jefferies and Davies (1998)* and Robertson (2012):

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferies and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

3) *Robertson (2012)*

$$N_{60} = \frac{\frac{q_c}{p_a}}{10^{1.1268 - 0.2817 I_C}}$$

where

q_c is the cone resistance
p_a is the atmospheric pressure equal to *100 kPa*
I_c is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that these methods provide a better estimation of the N_{60} value than the actual measured *N*, due to the poor repeatability of SPT test. However, in fine grained soil with high sensitivity these methods may overestimate N_{60} *(Jefferies and Davies, 1991).* The third method suggested by *Robertson (2012)* provides improved estimates of N_{60} for insensitive clays.

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamiolkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, ≤*1.0* for high compressible soils and carbonate or calcareous sands and ≥*-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ*', is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot \left[0.256 + 0.336 \cdot B_q + logQ_t\right]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Robertson and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily over consolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility, the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al. (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$
$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$
$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al. (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)
σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear in the direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log\left(f_s\right) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*

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APPENDIX A

APPENDIX A1 – Project Summary Sheet

Piezocone Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPT01	1.49	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT01A	0.71	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT02	0.51	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT02A	0.51	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT03	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT04	4.99	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT05	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT06	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT07	4.99	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT08	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT09	4.99	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT11	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT12	0.60	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT12A	0.64	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT12B	0.60	12/10/2023	S15-CFIP.1867	Test refused on total pressure.
CPT13	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT14	5.00	12/10/2023	S15-CFIP.1867	Test completed at target depth.
CPT15	4.99	12/10/2023	S15-CFIP.1867	Test completed at target depth.

APPENDIX A2 – CPT Rig Datasheet

RIGS

20 TONNE CPT TRACK MOUNTED RIG (CPT007)

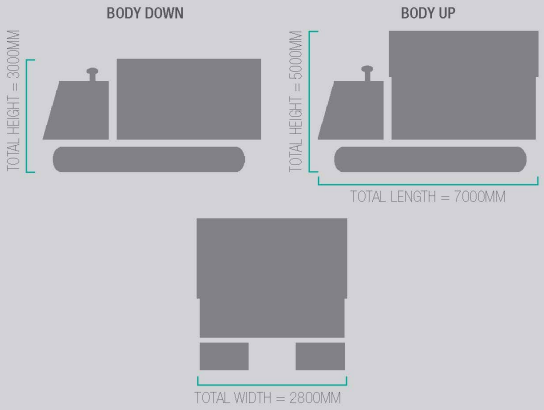
We have a variety of rigs giving us the capacity to meet our clients' needs and specifications for each individual project.

This rubber tracked rig weighs 20 tonnes and is able to push up to a depth of 40 metres, depending on the ground conditions. It has low ground bearing pressure and is ideal for soft, boggy sites which are inaccessible for our wheeled rigs.

CPT RIG DETAILS

DRIVE SYSTEM	RUBBER TRACKED
TOTAL WEIGHT	20 TONNES
GROUND BEARING PRESSURE	35KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M OF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	SOFT BOGGY SITES, THE RIG HAS LOW GROUND BEARING PRESSURE.

CPT RIG DIMENSIONS



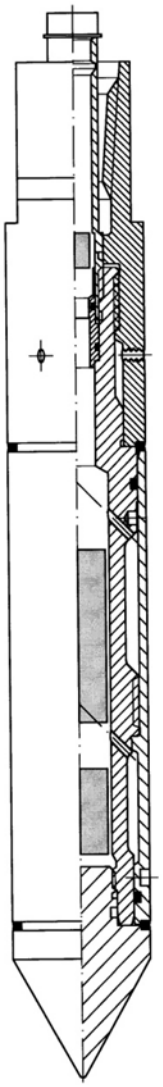

Burnley


Glasgow


BRE

APPENDIX A3 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A4 – Cone Calibration Certificate

Eijkelkamp GeoPoint SoilSolutions
Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands
T +31 71 301 9251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com

Cone Calibration Certificate

Certificate:	**GS-1867-003**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	1867	
Calibration date:	07-06-2023	
Client:	In Situ	
Calibrated by:	A.Verhart	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
NMi certificate	2461165.00501	
Calibration conditions		
Ambient temperature:	24.6	°C
Atmospheric pressure:	1024	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	100	kN
Friction sleeve area:	22500	mm2
Load tip + local friction (nom.):	100	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0213		0266		0188			
	0	0	0	0	0	0	0	2477	2266
	5	0304	5	0315	0.4	1714	-20	0515	0238
	10	0611	10	0629	0.8	3428	20	4497	4229
	15	0915	15	0944	1.2	5128			
	20	1224	20	1261	1.6	6824			
	25	1529	25	1578	2	8524			
	30	1835	30	1895					
	35	2140	35	2209					
	40	2447	40	2526					
	45	2753	45	2842					
	50	3059	50	3159					
	75	4590	75	4741					
	100	6117	100	6319					

Max. eror, abs. qc:	35 kPa
Max. error, abs. fs:	5 kPa
Max. error, abs. u2:	10 kPa
Max. error, abs. I:	1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by: R. Mosterd
Date: 07-06-2023

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149
IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

APPENDIX A5 – Symbol List

English

a	is area ratio of the cone ($= {}^{A_n}/_{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {}^{(u_2 - u_0)}/_{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {}^{f_s}/_{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {}^{G}/_{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {}^{\sigma'_{h0}}/_{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	is measured cone resistance
q_e	is effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)
q_t	is corrected cone resistance ($= q_c - (1 - a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {}^{q_t - \sigma_{v0}}/_{\sigma'_{v0}}$)

R_f	is friction ratio ($= \left({}^{f_t}/_{q_t}\right) x100\%$ or alternatively $= \left({}^{f_t}/_{q_t}\right) x100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\ \%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ_h'	is horizontal stress (total, effective)
σ_v, σ_v'	is horizontal stress (total, effective)
σ_{v0},σ_{v0}'	is overburden stress (total, effective)
τ_{av}	is average cyclic shear stress
τ_{cy}	is cyclic shear stress
φ'	is effective friction angle

APPENDIX A6 – Abbreviations

ASTM	American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Over consolidated
OCR	Over consolidation Ratio
PL	Limit Pressure
SCPT	Seismic Cone Penetration
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non-dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, *u*
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {F_s}/{A_s}$

APPENDIX A8 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX B

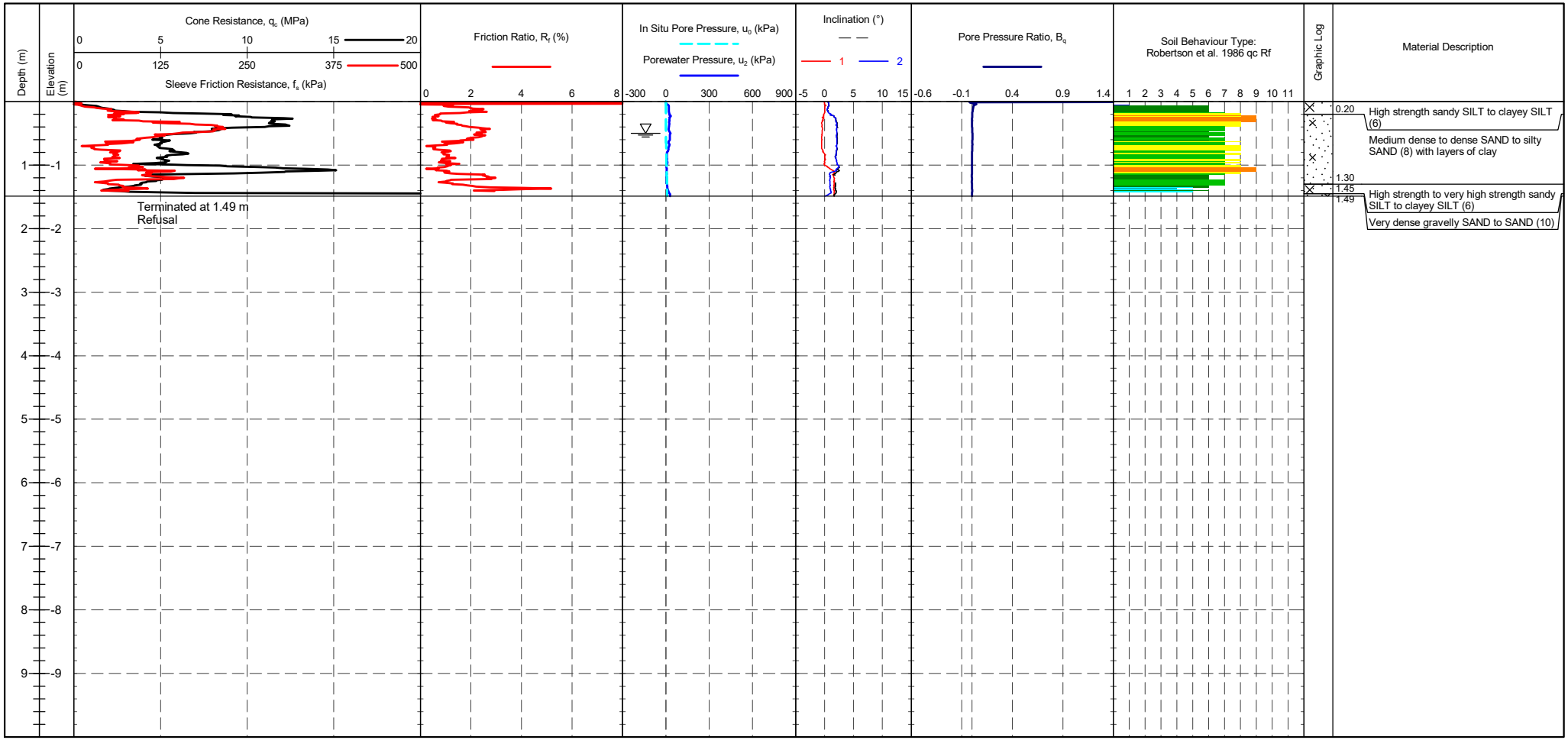
Cone Penetration Measured Parameters and Geotechnical Derived Parameters

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT01**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	249 mV	252 mV	0.033 MPa
Sleeve	305 mV	307 mV	0.001 kPa
Pore Pressure 2	217 mV	201 mV	-0.004 kPa
X-Y Inclinometer	2474 mV	2474 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

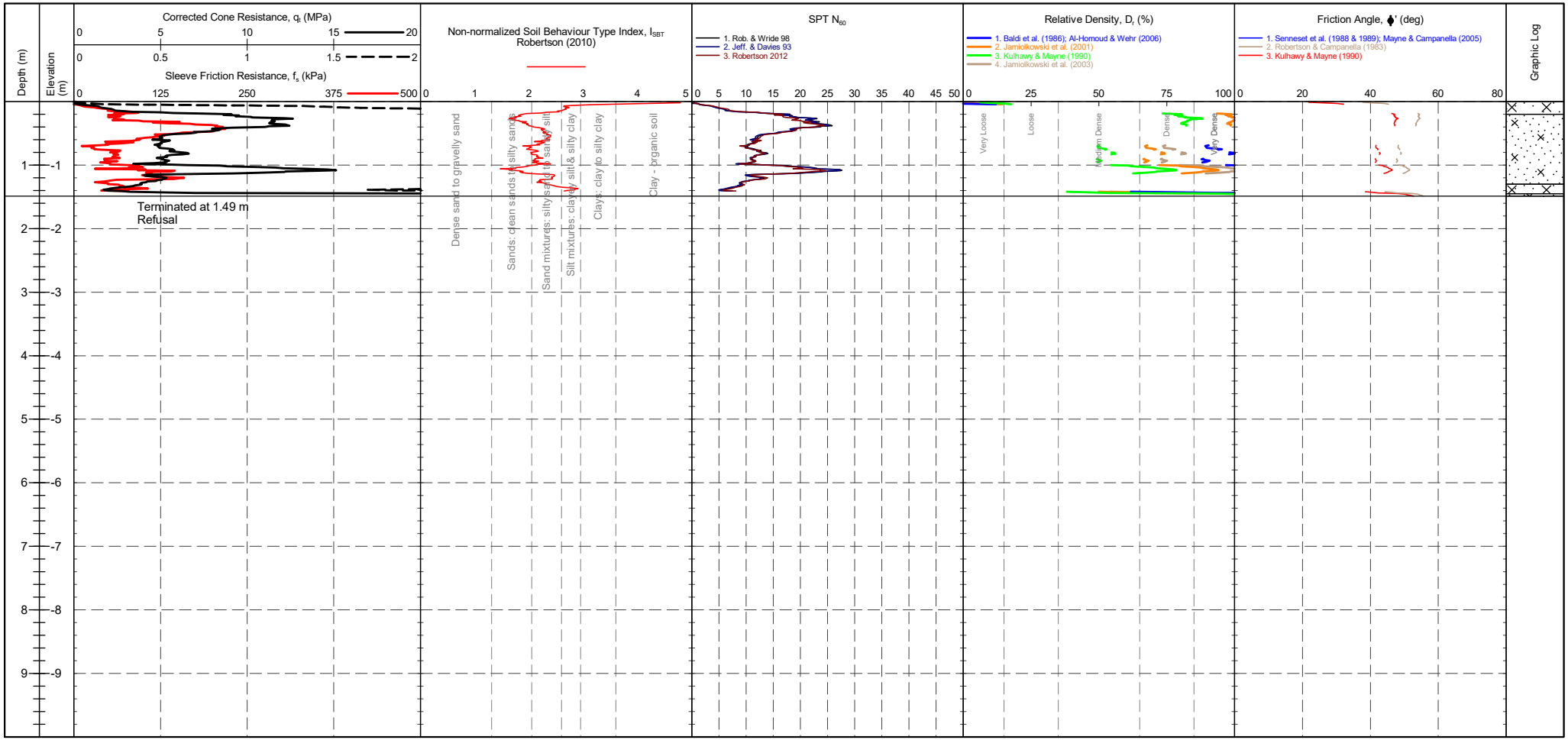
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT01**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	252 mV
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	307 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	217 mV	201 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2474 mV	2474 mV

Transducer	Difference
Tip	0.033 MPa
Sleeve	0.001 kPa
Pore Pressure 2	-0.004 kPa
X-Y Inclinometer	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

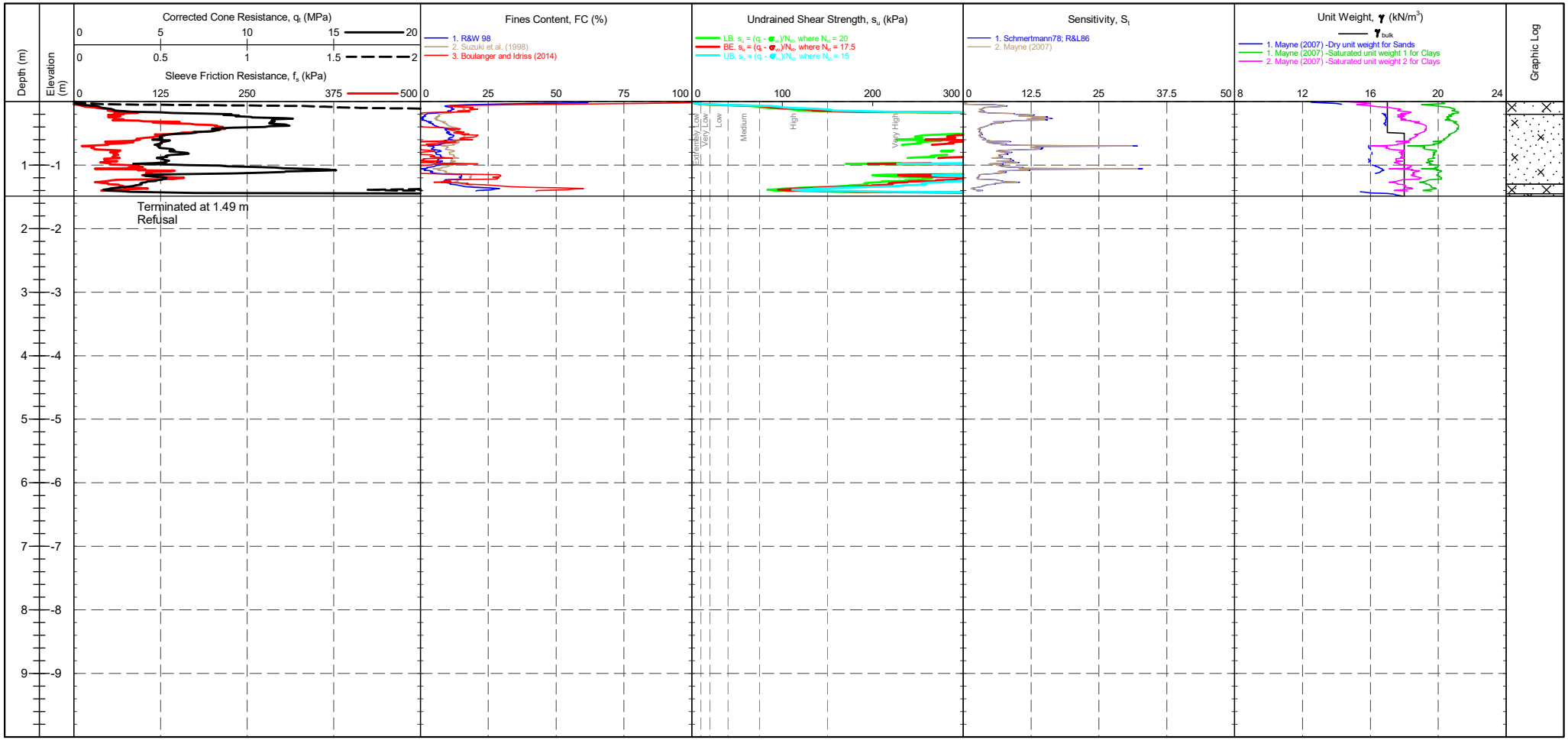
PointID **CPT01**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



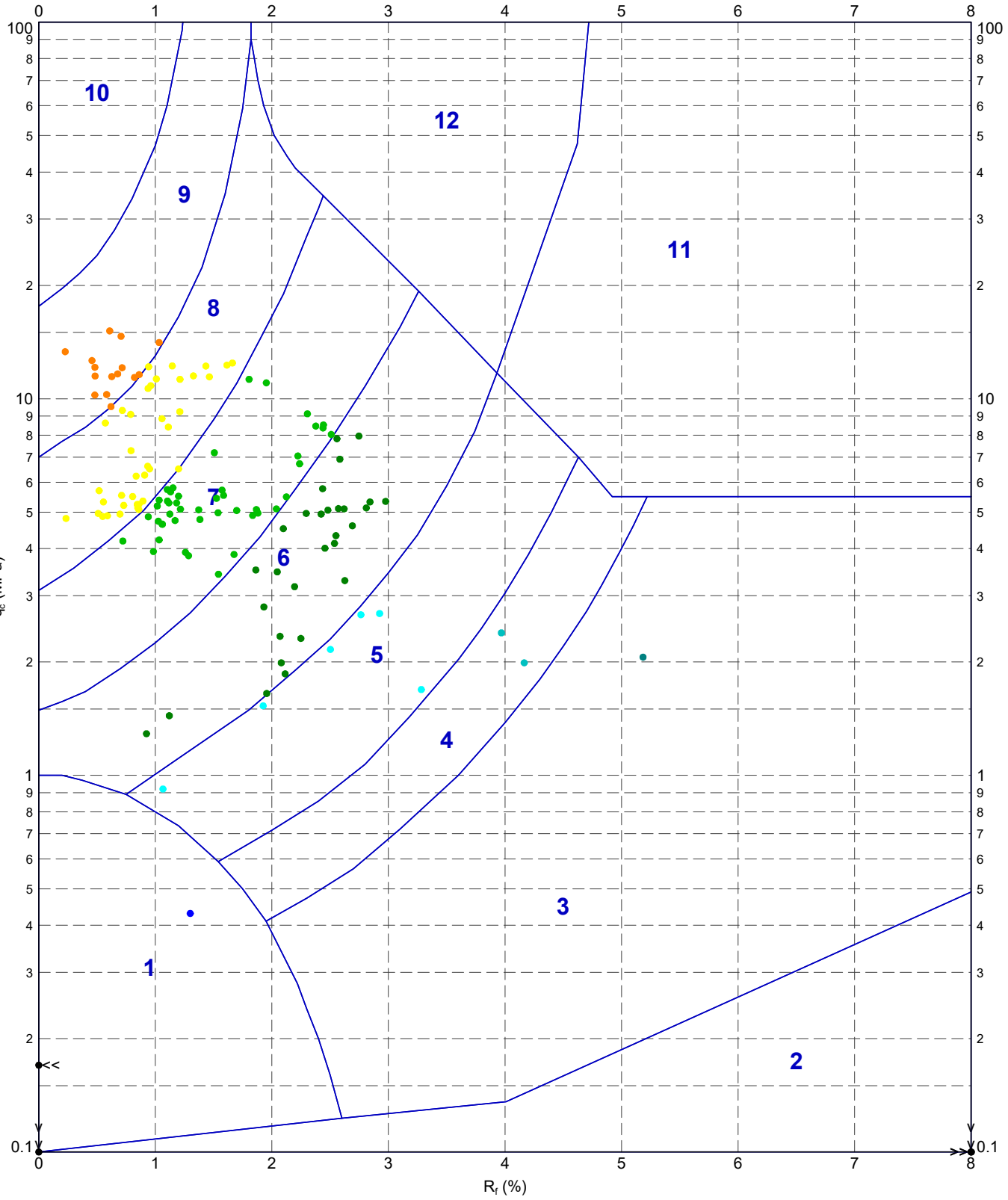
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	252 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	307 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	217 mV	201 mV	-0.004 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2474 mV	2474 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT01

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

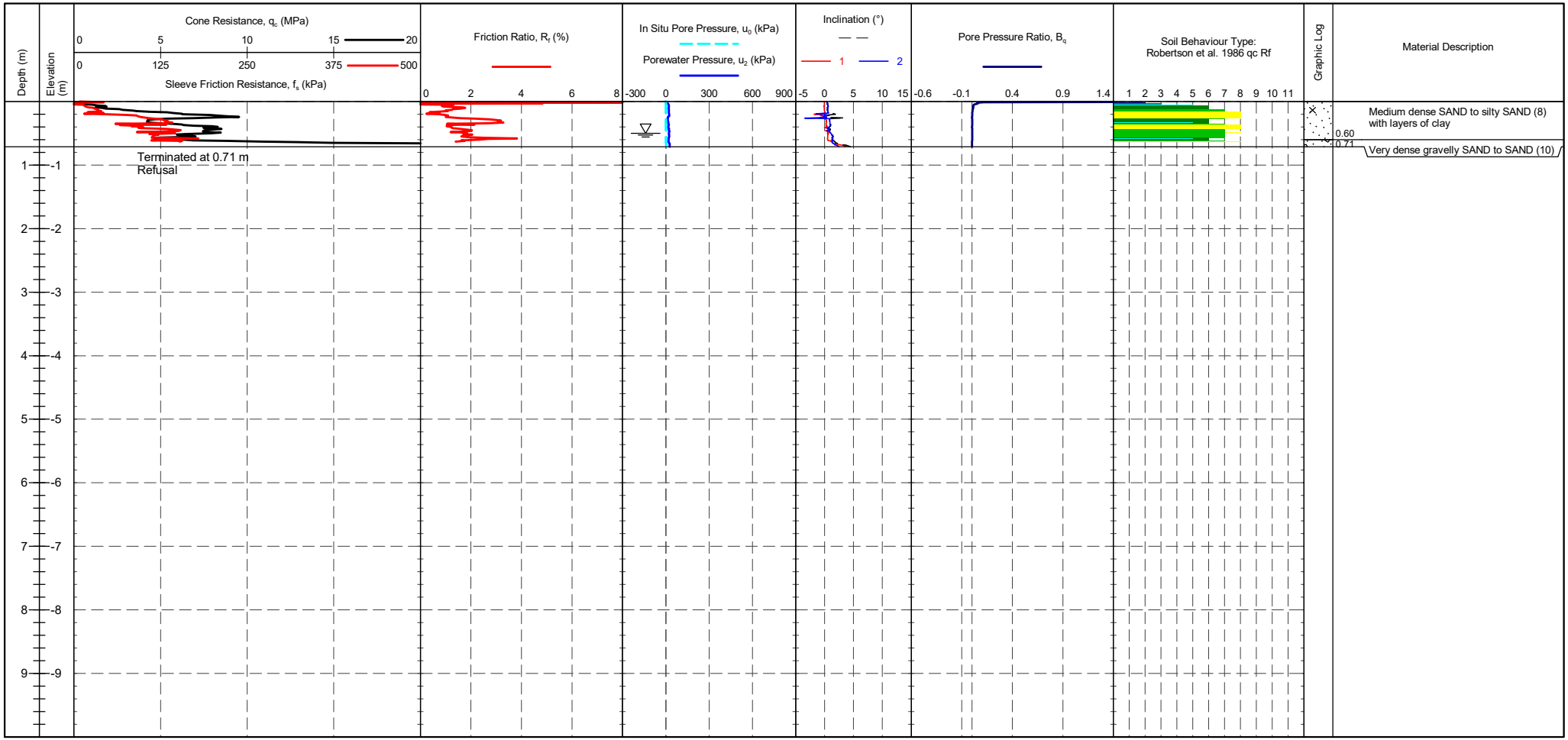
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:55 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT01A**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	251 mV	250 mV	-0.011 MPa
Sleeve	307 mV	305 mV	-0.001 kPa
Pore Pressure 2	201 mV	199 mV	0 kPa
X-Y Inclinometer	2472 mV	2478 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

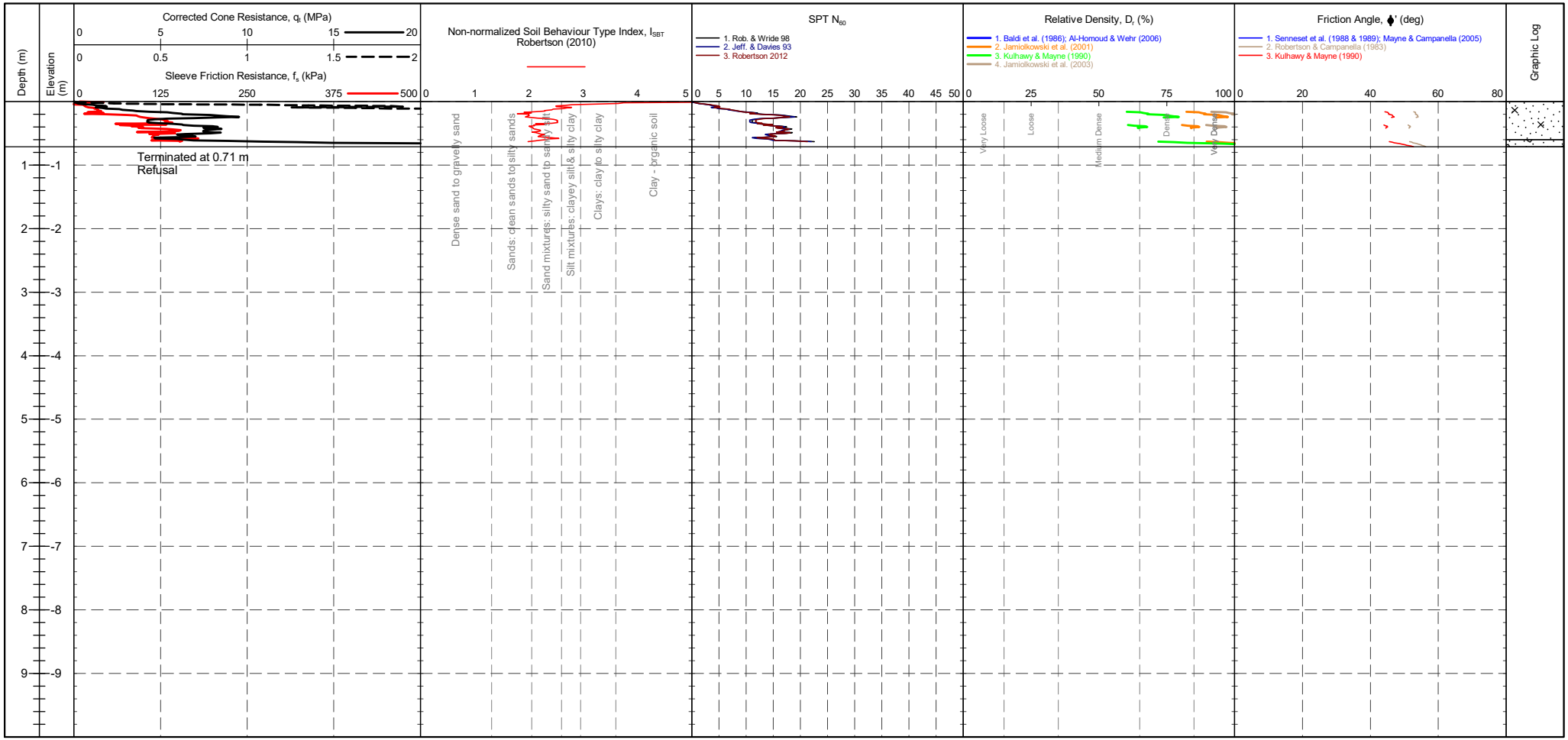
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT01A**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	251 mV	250 mV
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	305 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	201 mV	199 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2478 mV

Transducer	Difference
Tip	-0.011 MPa
Sleeve	-0.001 kPa
Pore Pressure 2	0 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

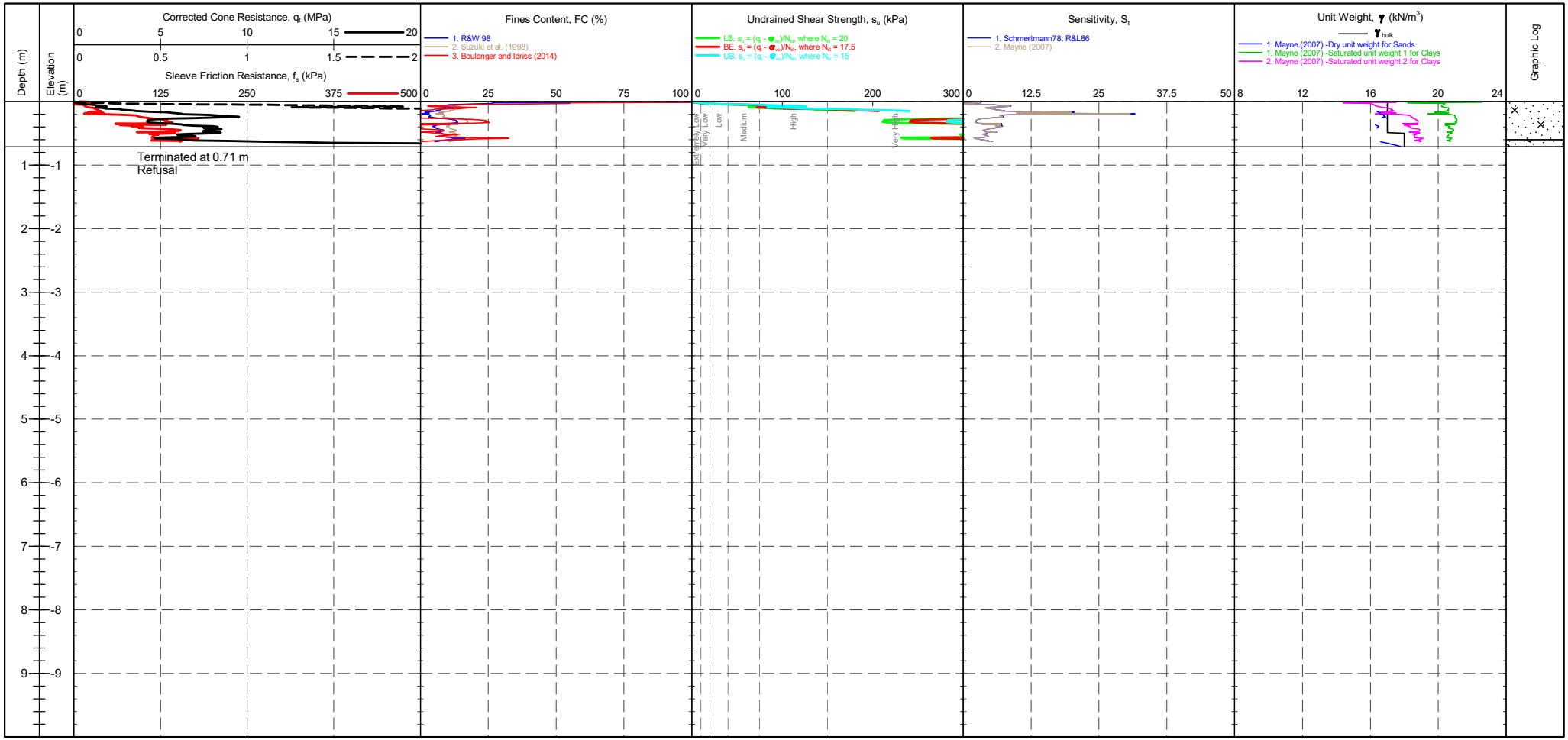
PointID **CPT01A**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



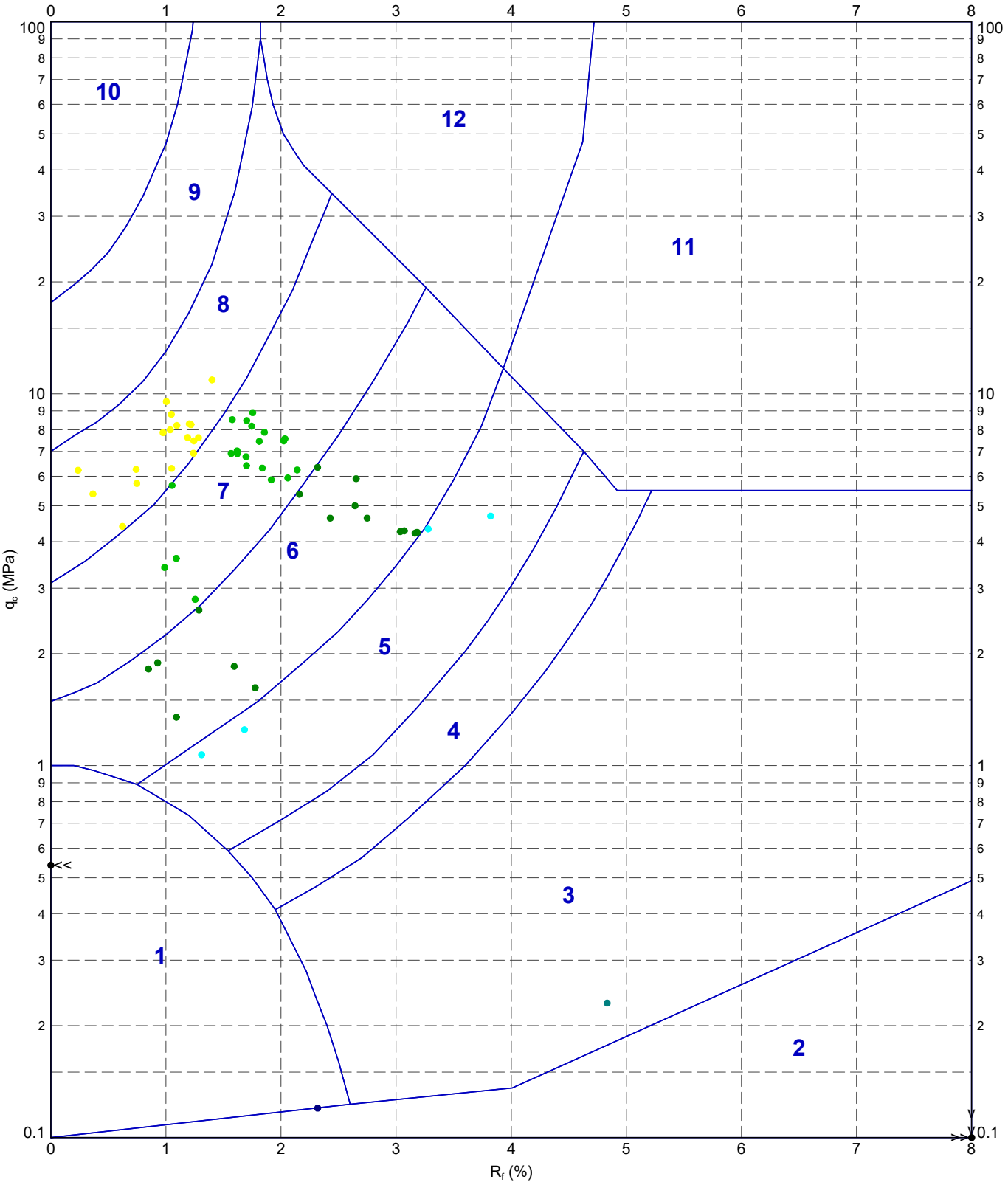
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	251 mV	250 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	305 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	201 mV	199 mV	0 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2478 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT01A

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

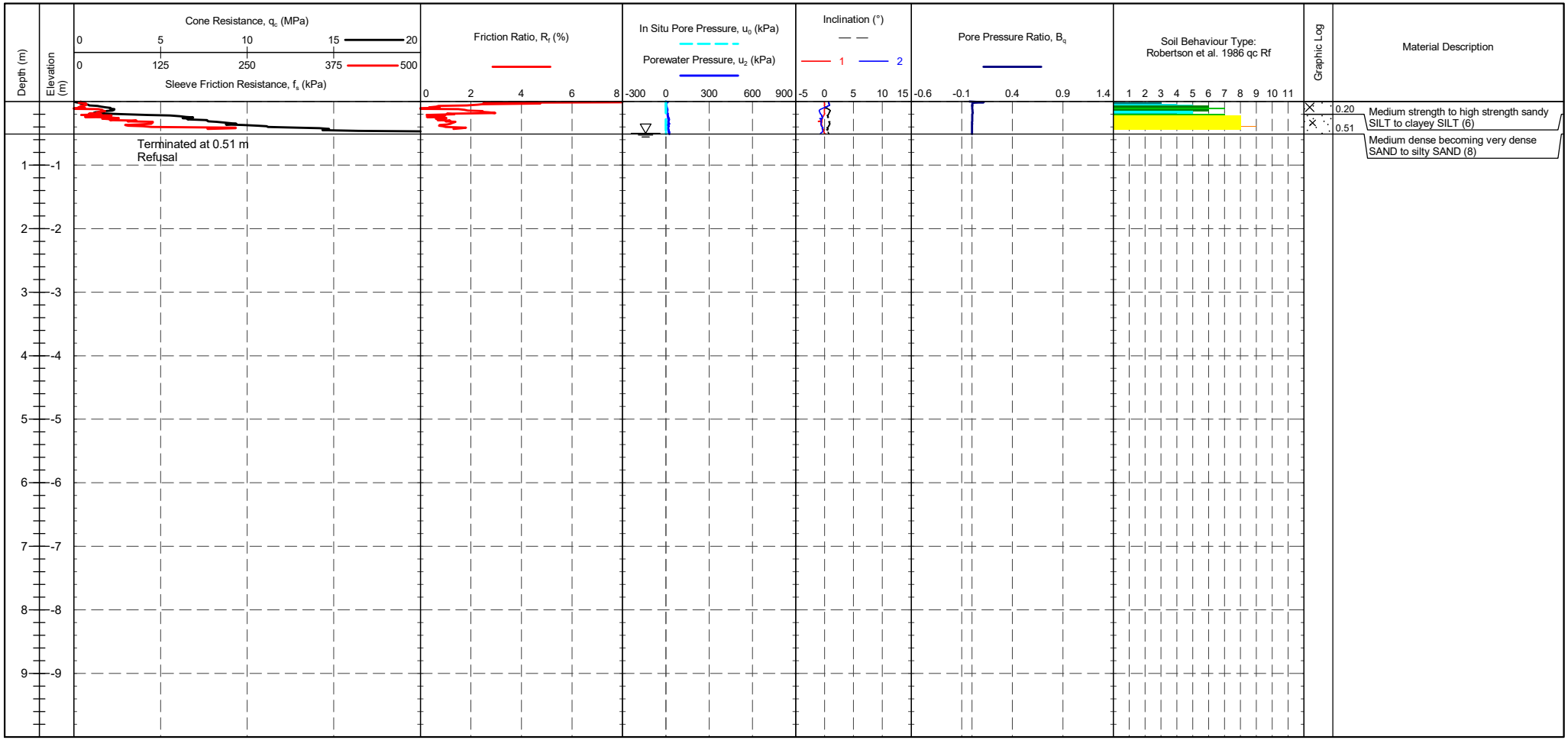
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:56 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT02**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	250 mV	253 mV	0.033 MPa
Sleeve	306 mV	307 mV	0.001 kPa
Pore Pressure 2	216 mV	215 mV	0 kPa
X-Y Inclinometer	2473 mV	2473 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

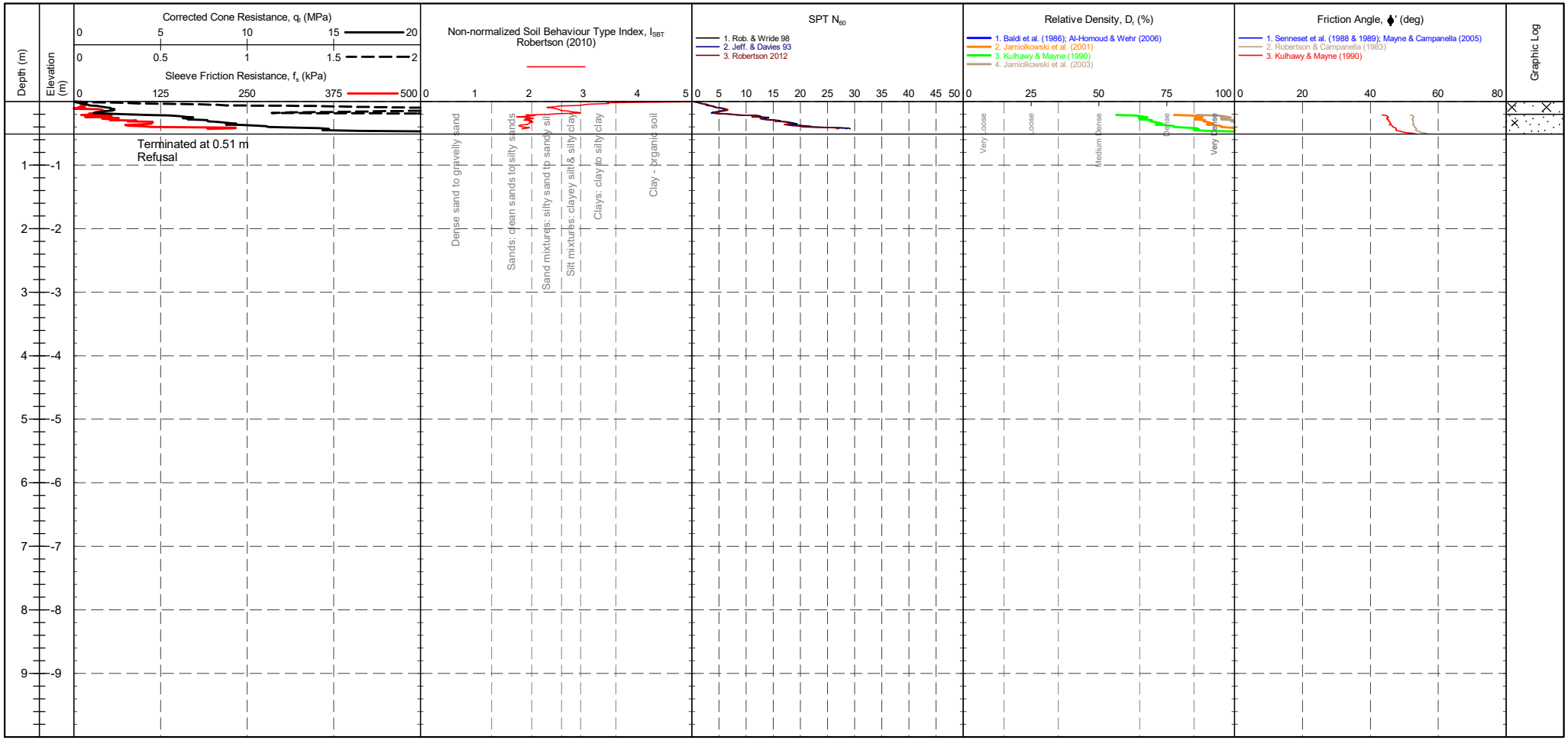
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT02**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	250 mV	253 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	307 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	216 mV	215 mV	0 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2473 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

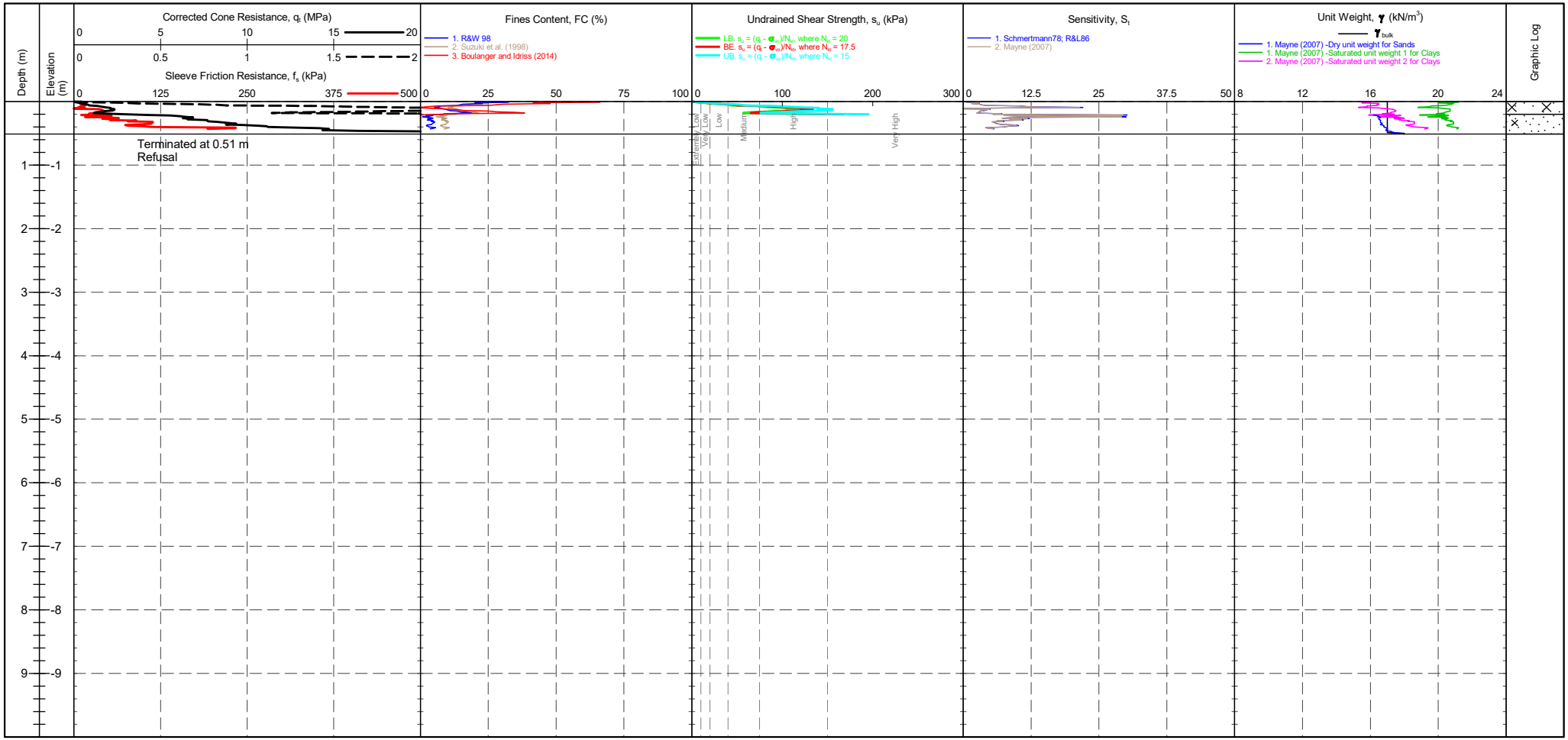
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID **CPT02**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

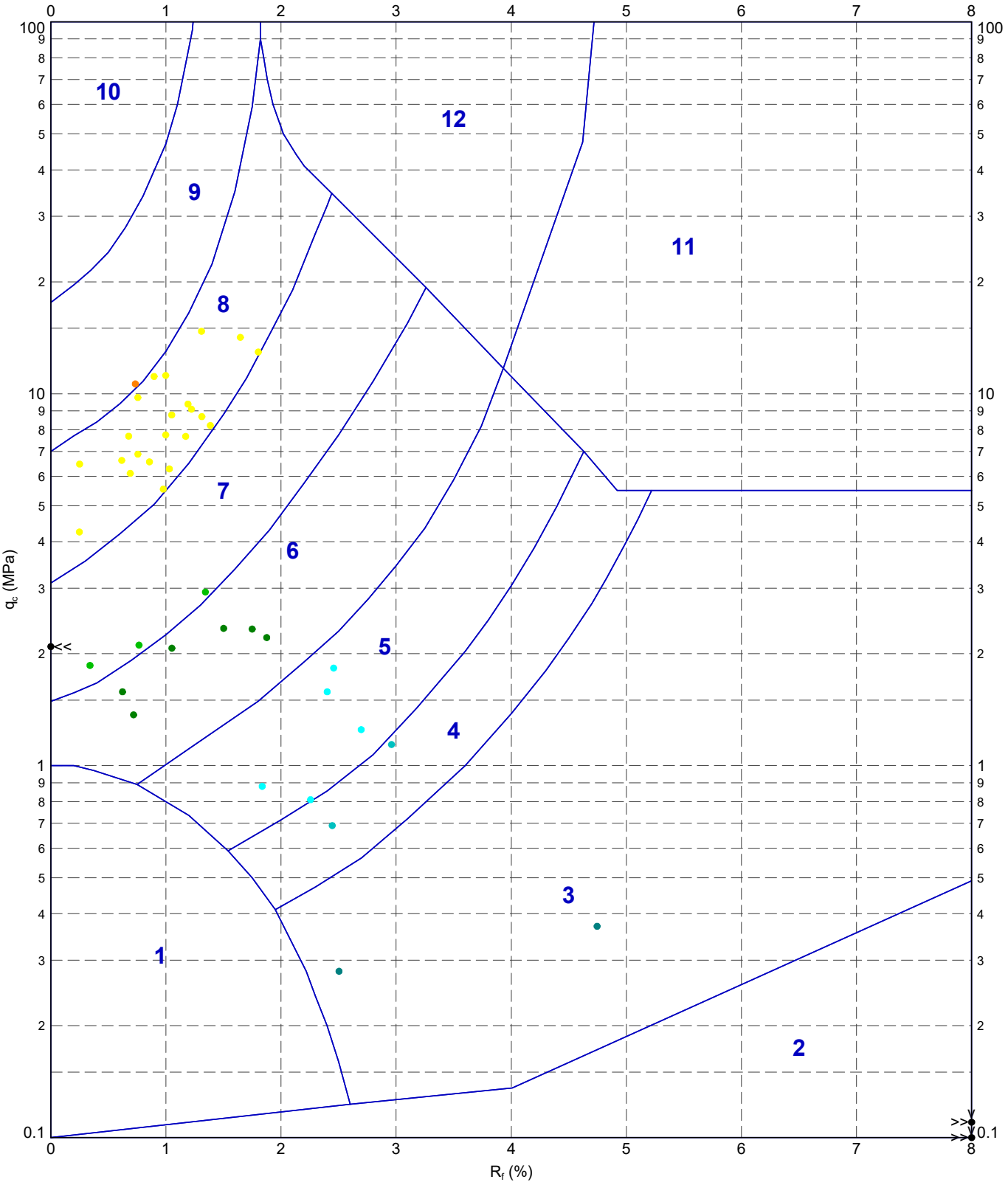
Transducer	Pre	Post	Difference
Tip	250 mV	253 mV	0.033 MPa
Sleeve	306 mV	307 mV	0.001 kPa
Pore Pressure 2	216 mV	215 mV	0 kPa
X-Y Inclinometer	2473 mV	2473 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)
Extremely low strength	<10
Very low strength	10-20
Low strength	20-40
Medium strength	40-75
High strength	75-150
Very high strength	150-300
Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT02

DRAWN		DATE	17/10/2023
CHECKED		DATE	17/10/2023
SCALE	Not To Scale		A4
PROJECT No	1230412	FIGURE No	

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:56 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

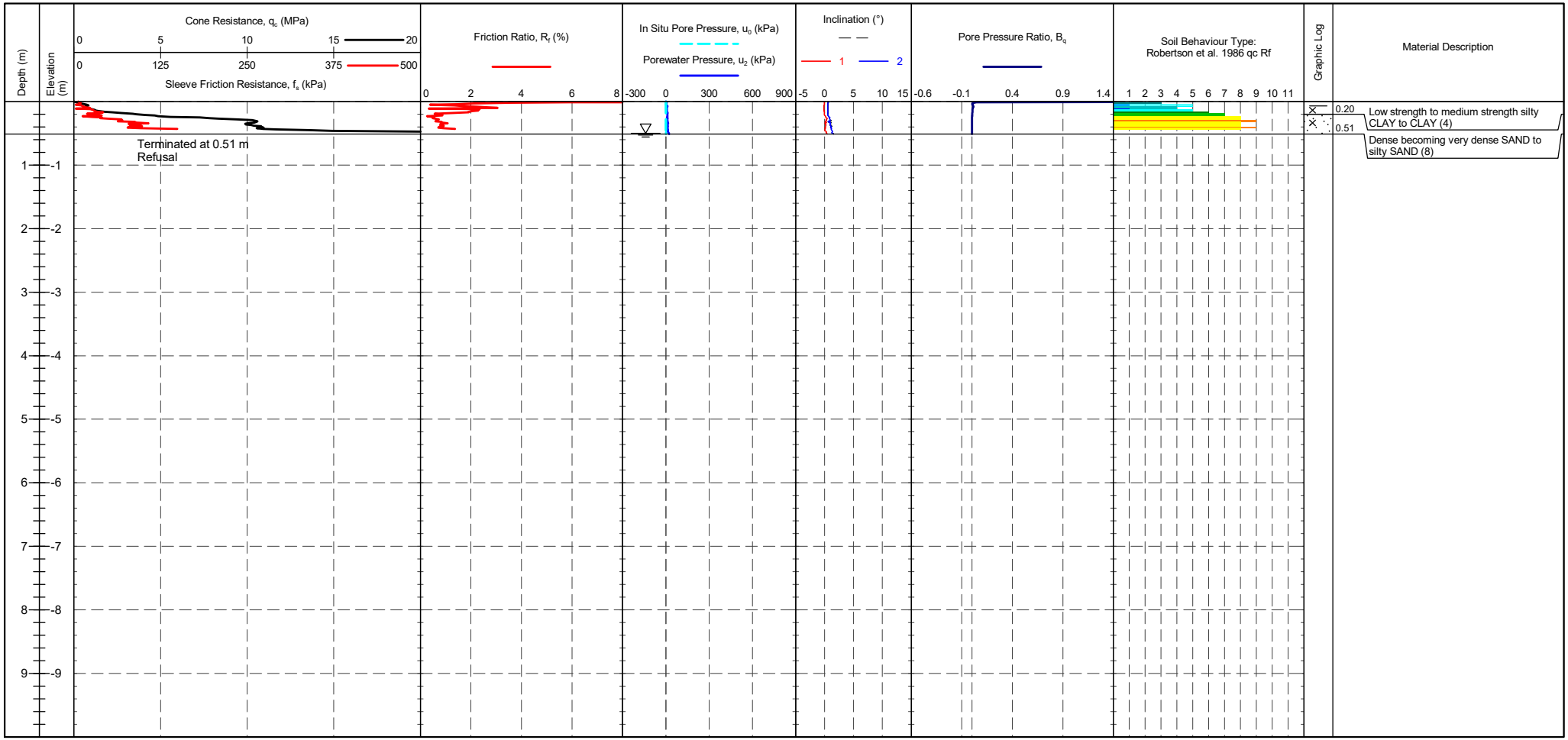
PointID: **CPT02A**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	251 mV	254 mV	0.033 MPa
Sleeve	306 mV	308 mV	0.001 kPa
Pore Pressure 2	211 mV	203 mV	-0.002 kPa
X-Y Inclinometer	2478 mV	2478 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

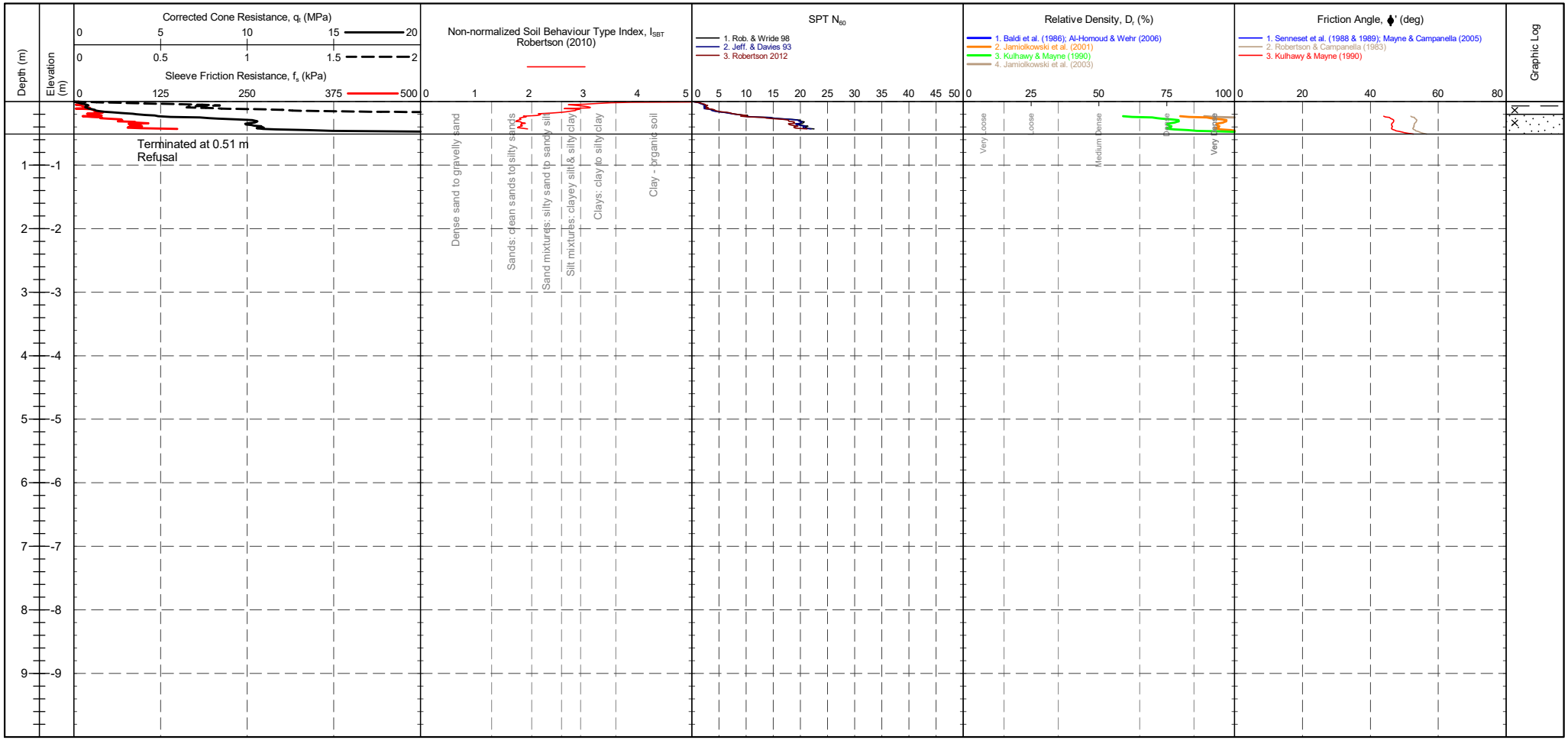
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT02A**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	251 mV	254 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	308 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	211 mV	203 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2478 mV	2478 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

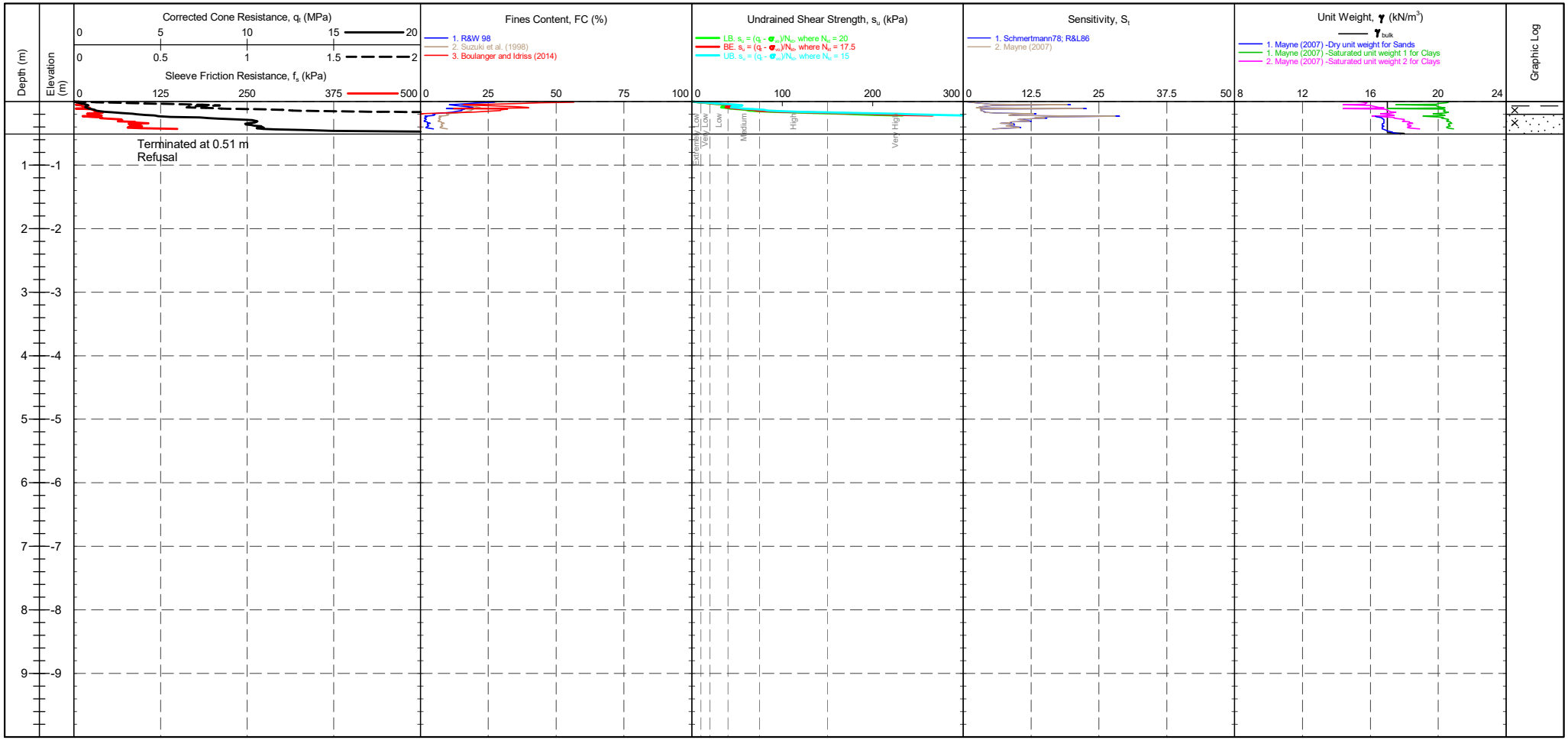
PointID **CPT02A**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

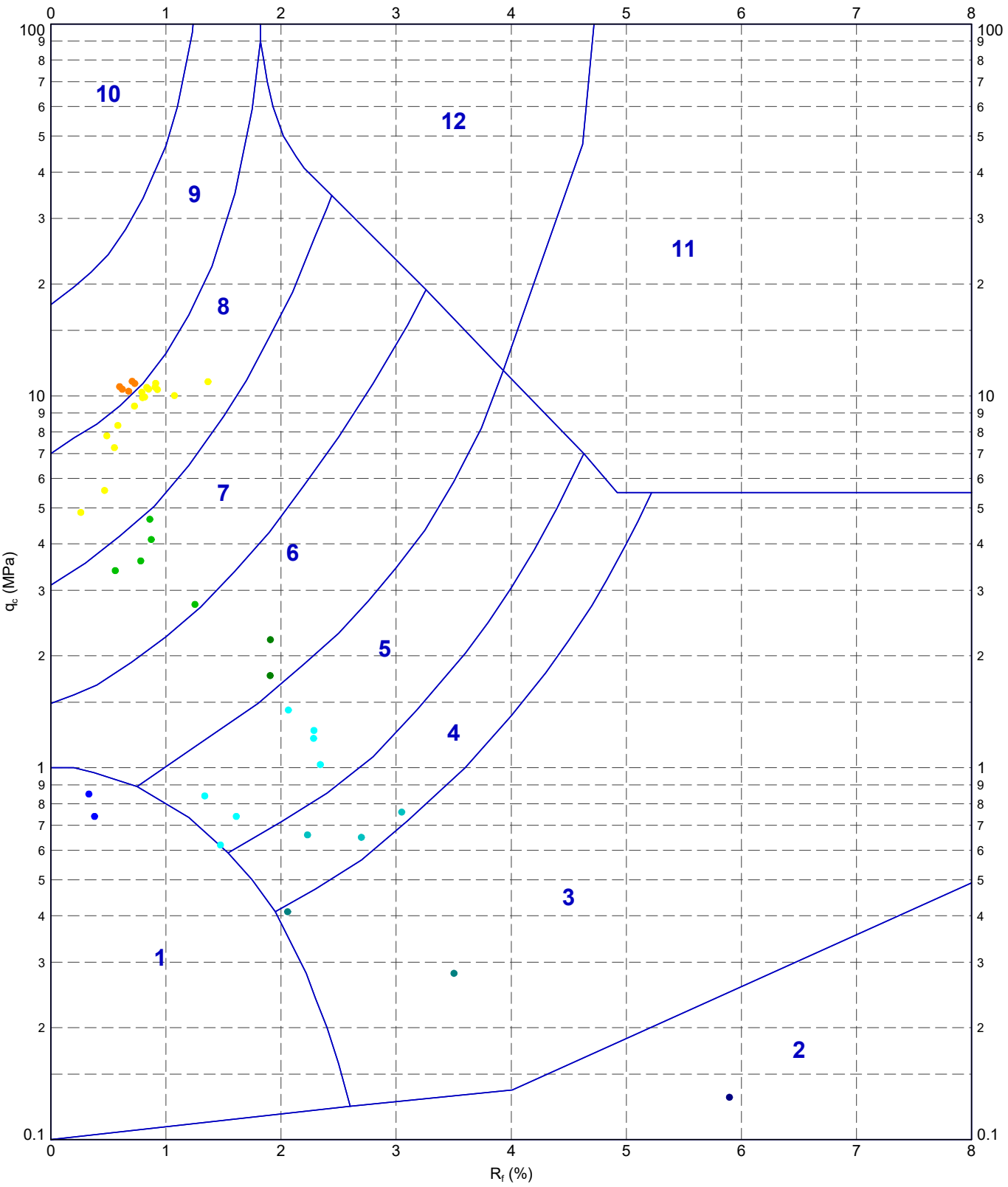
Transducer	Pre	Post	Difference
Tip	251 mV	254 mV	0.033 MPa
Sleeve	306 mV	308 mV	0.001 kPa
Pore Pressure 2	211 mV	203 mV	-0.002 kPa
X-Y Inclinometer	2478 mV	2478 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)
Extremely low strength	<10
Very low strength	10-20
Low strength	20-40
Medium strength	40-75
High strength	75-150
Very high strength	150-300
Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT02A

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

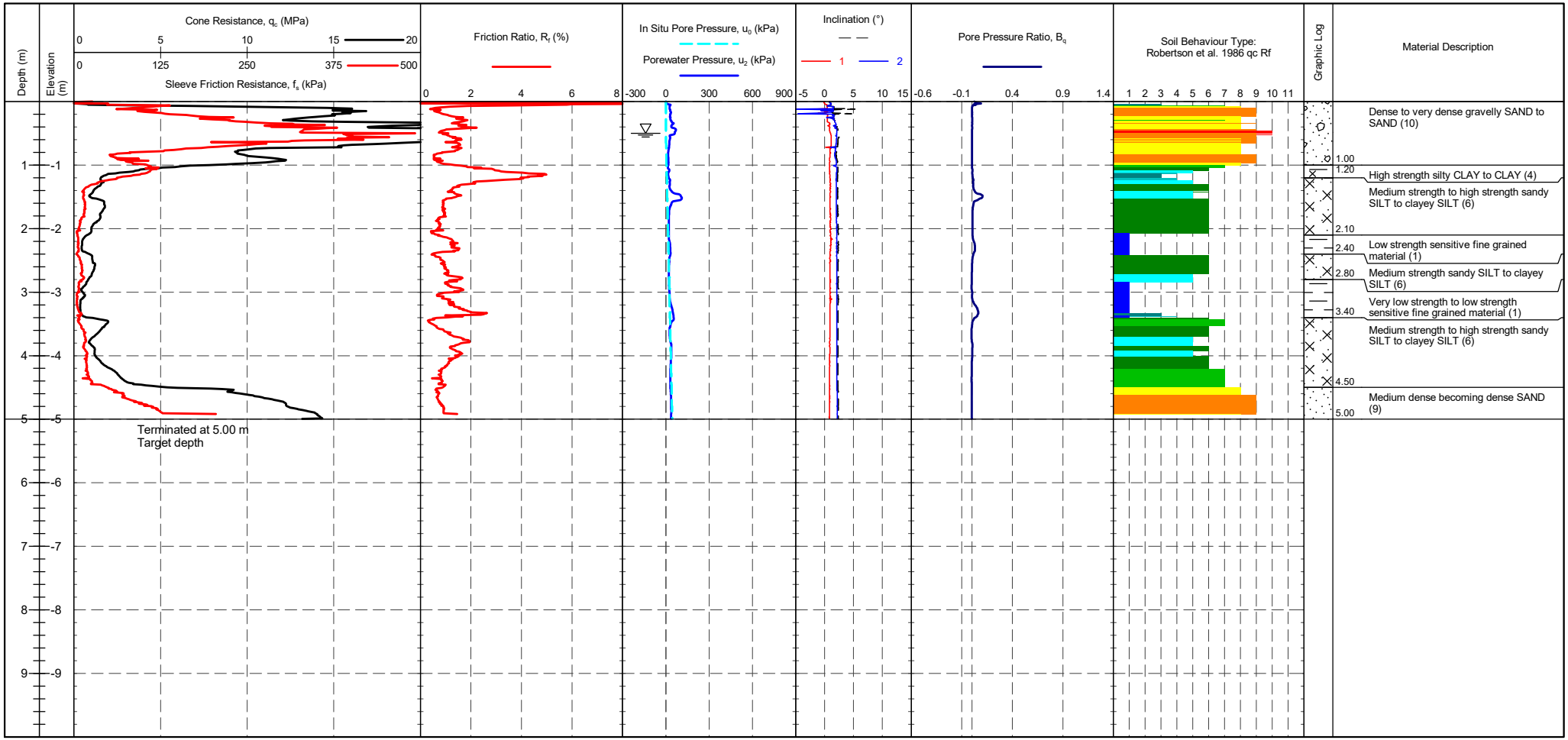
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:57 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT03**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	247 mV	256 mV	0.098 MPa
Sleeve	305 mV	313 mV	0.006 kPa
Pore Pressure 2	220 mV	254 mV	0.008 kPa
X-Y Inclinometer	2405 mV	2451 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

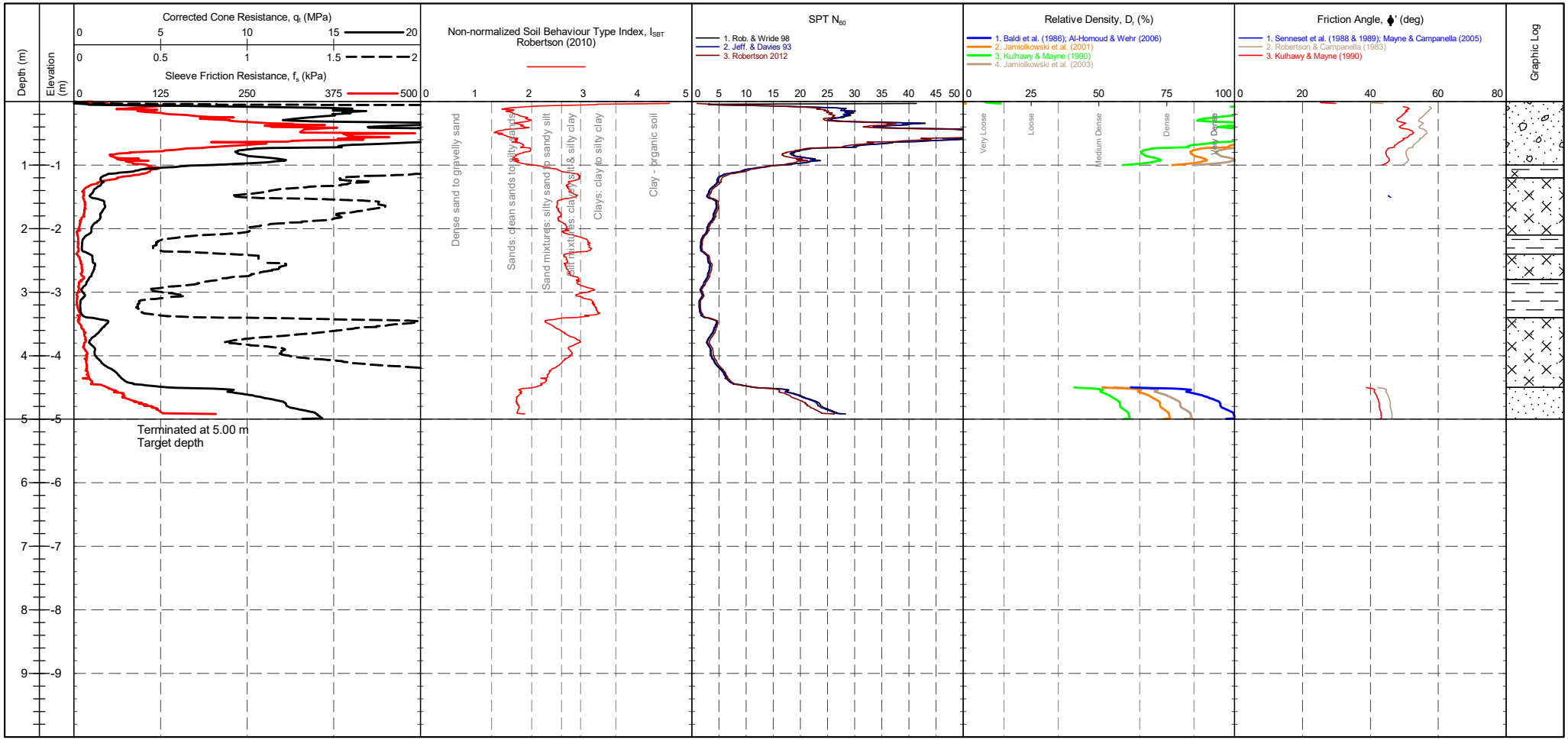
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT03**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	247 mV	256 mV
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	313 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	220 mV	254 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2405 mV	2451 mV

Transducer	Difference
Tip	0.098 MPa
Sleeve	0.006 kPa
Pore Pressure 2	0.008 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

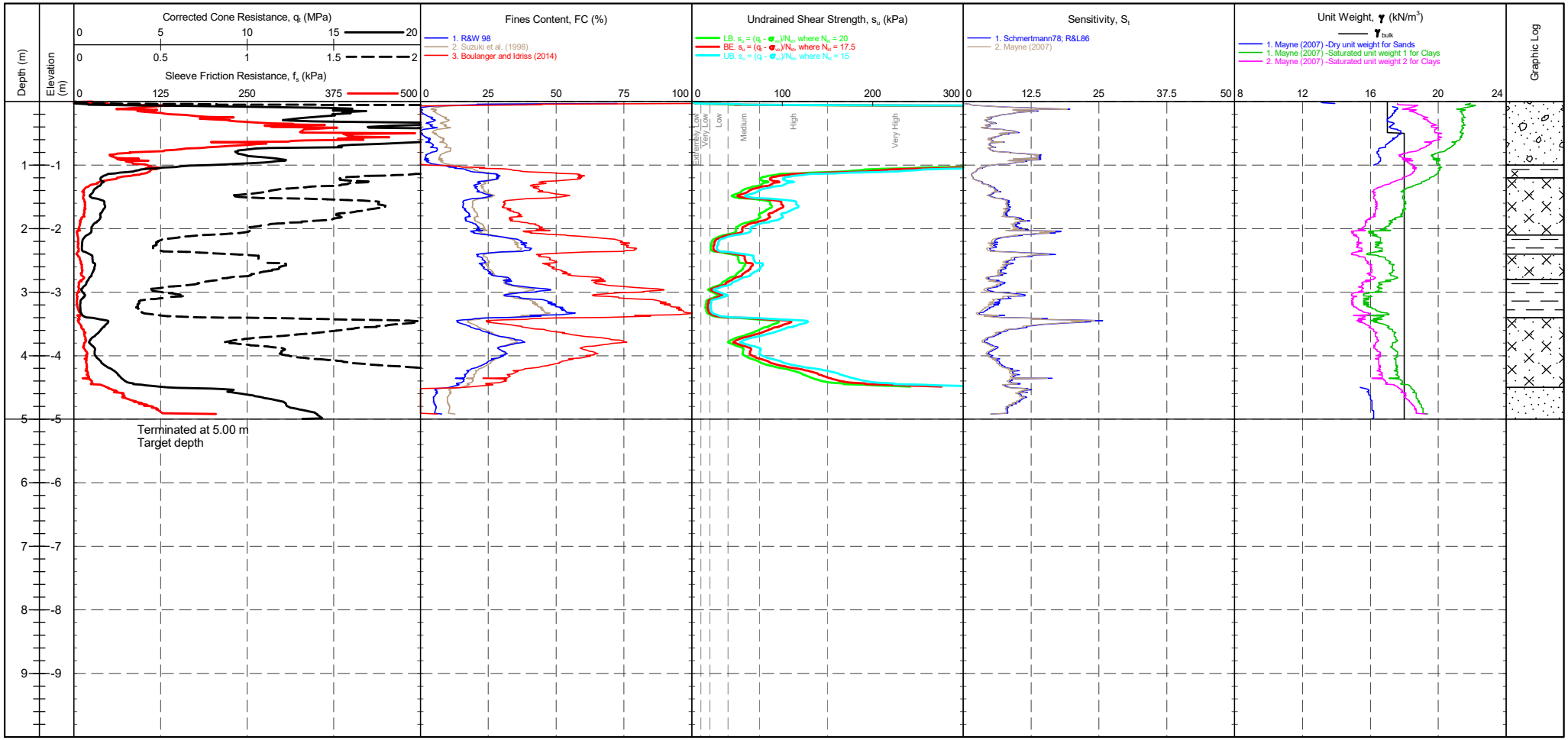
Dissipation Test

CPT LOG 03

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

PointID: **CPT03**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



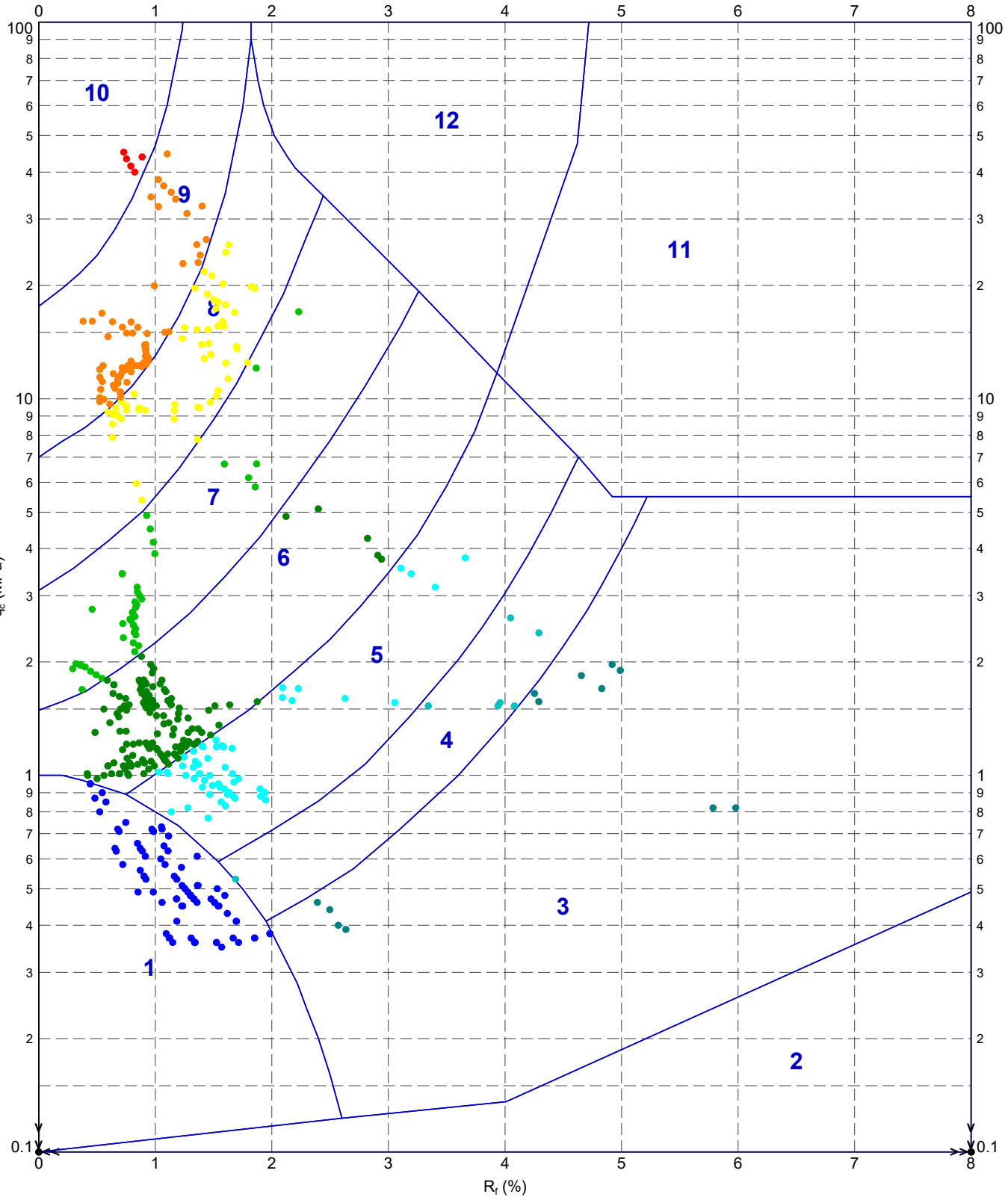
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	247 mV	256 mV	0.098 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	313 mV	0.006 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	220 mV	254 mV	0.008 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2405 mV	2451 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT03

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

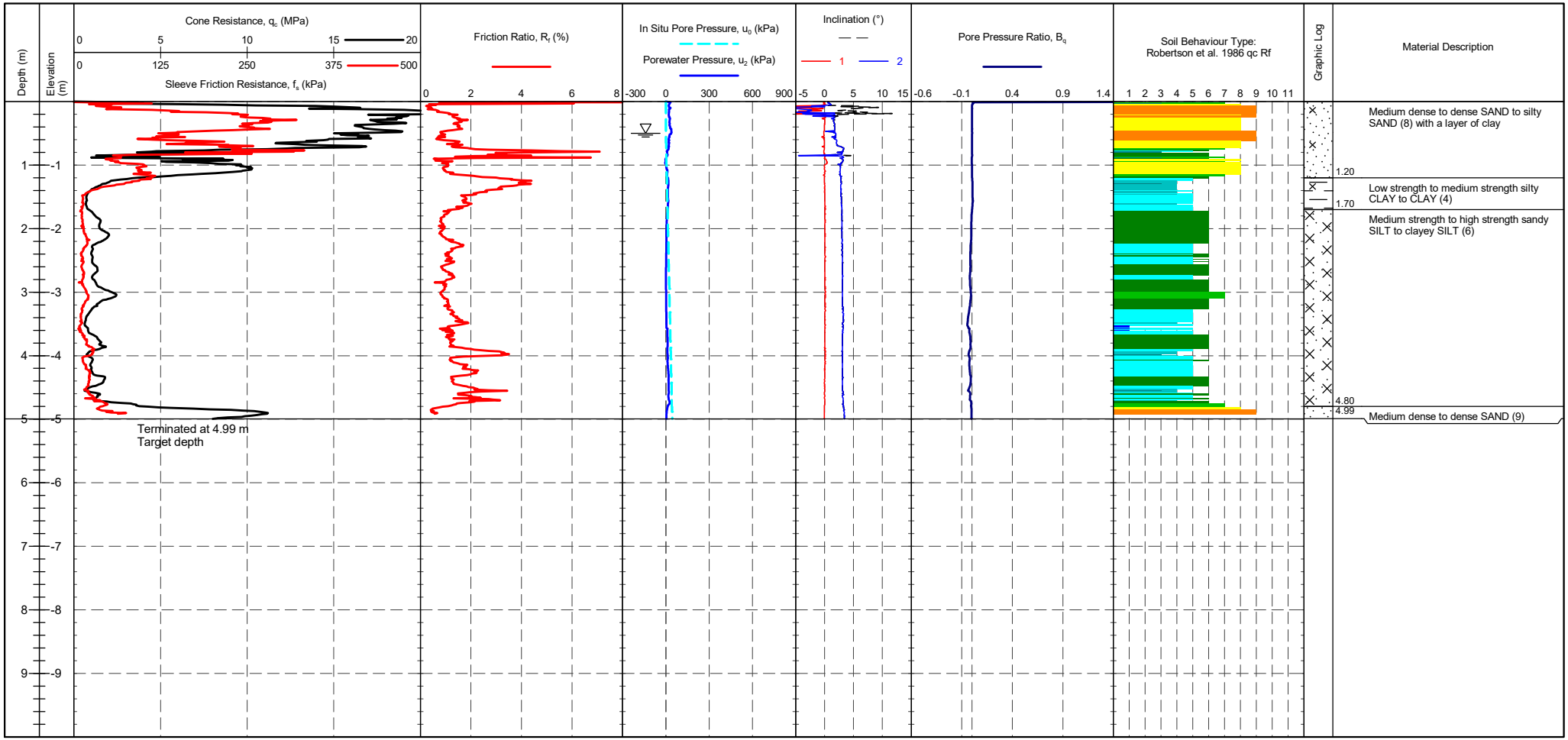
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:57 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT04**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	250 mV	251 mV	0.011 MPa
Sleeve	308 mV	309 mV	0.001 kPa
Pore Pressure 2	232 mV	249 mV	0.004 kPa
X-Y Inclinometer	2469 mV	2442 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

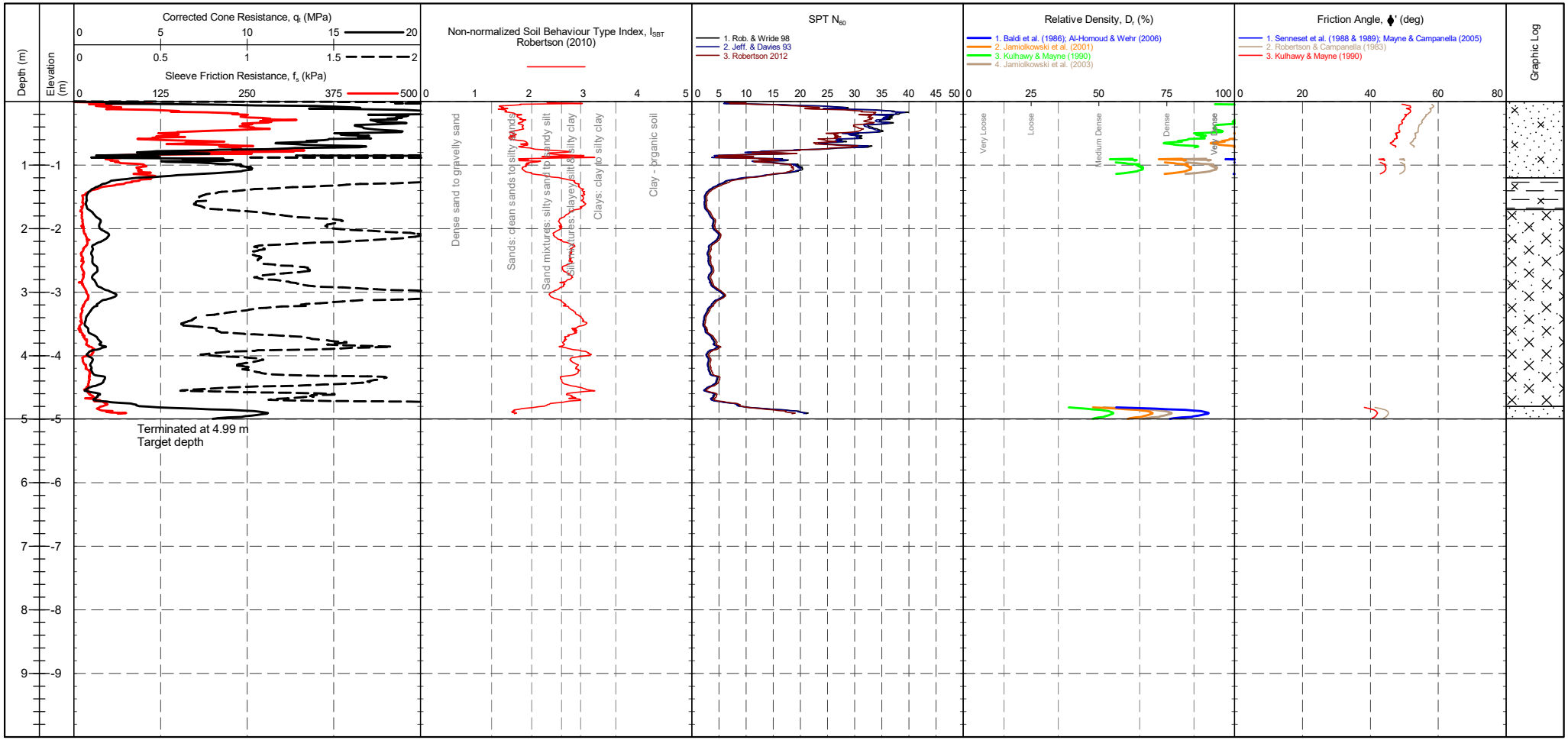
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT04**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	250 mV	251 mV
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	308 mV	309 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	232 mV	249 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2442 mV

Difference											
0.011 MPa											
0.001 kPa											
0.004 kPa											

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

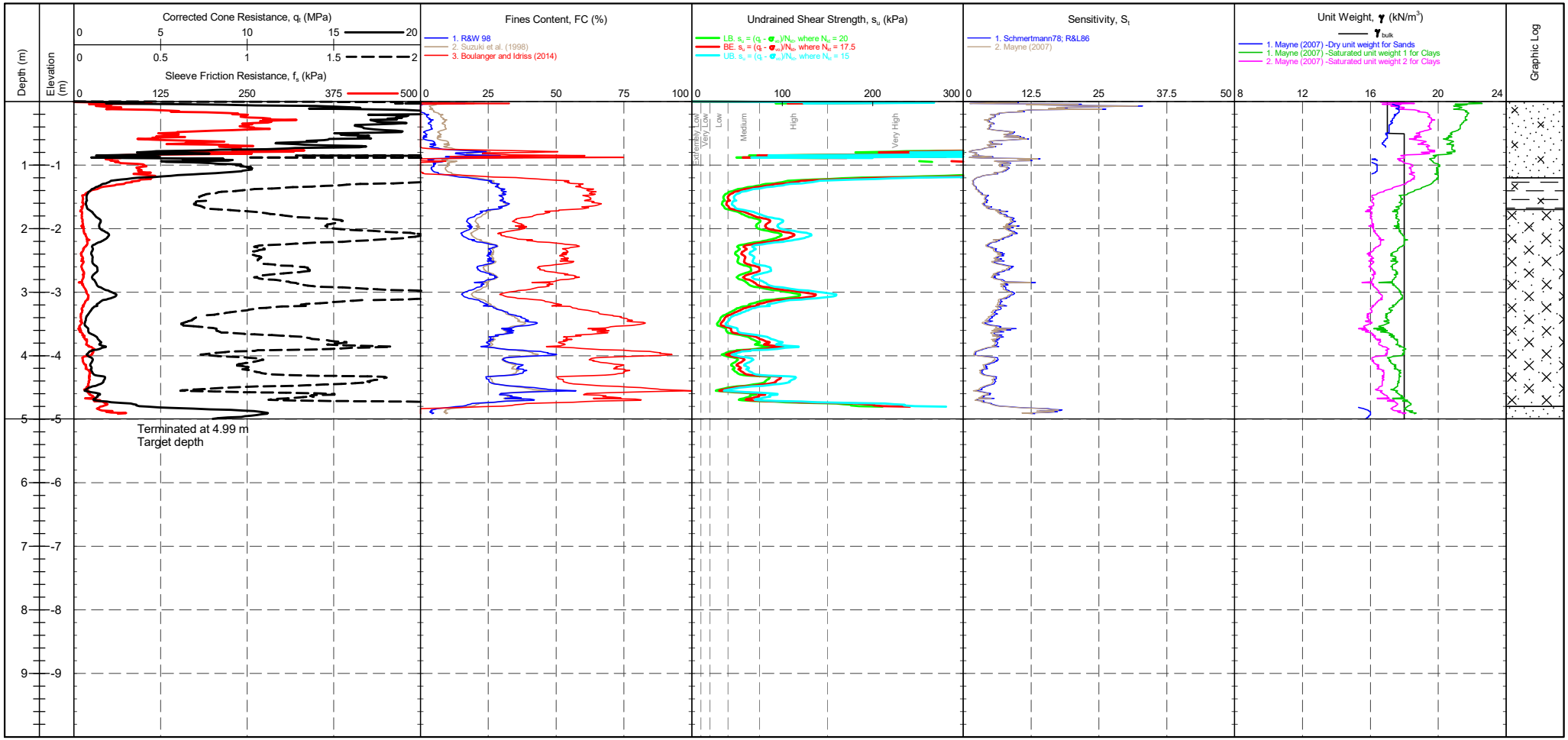
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID **CPT04**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



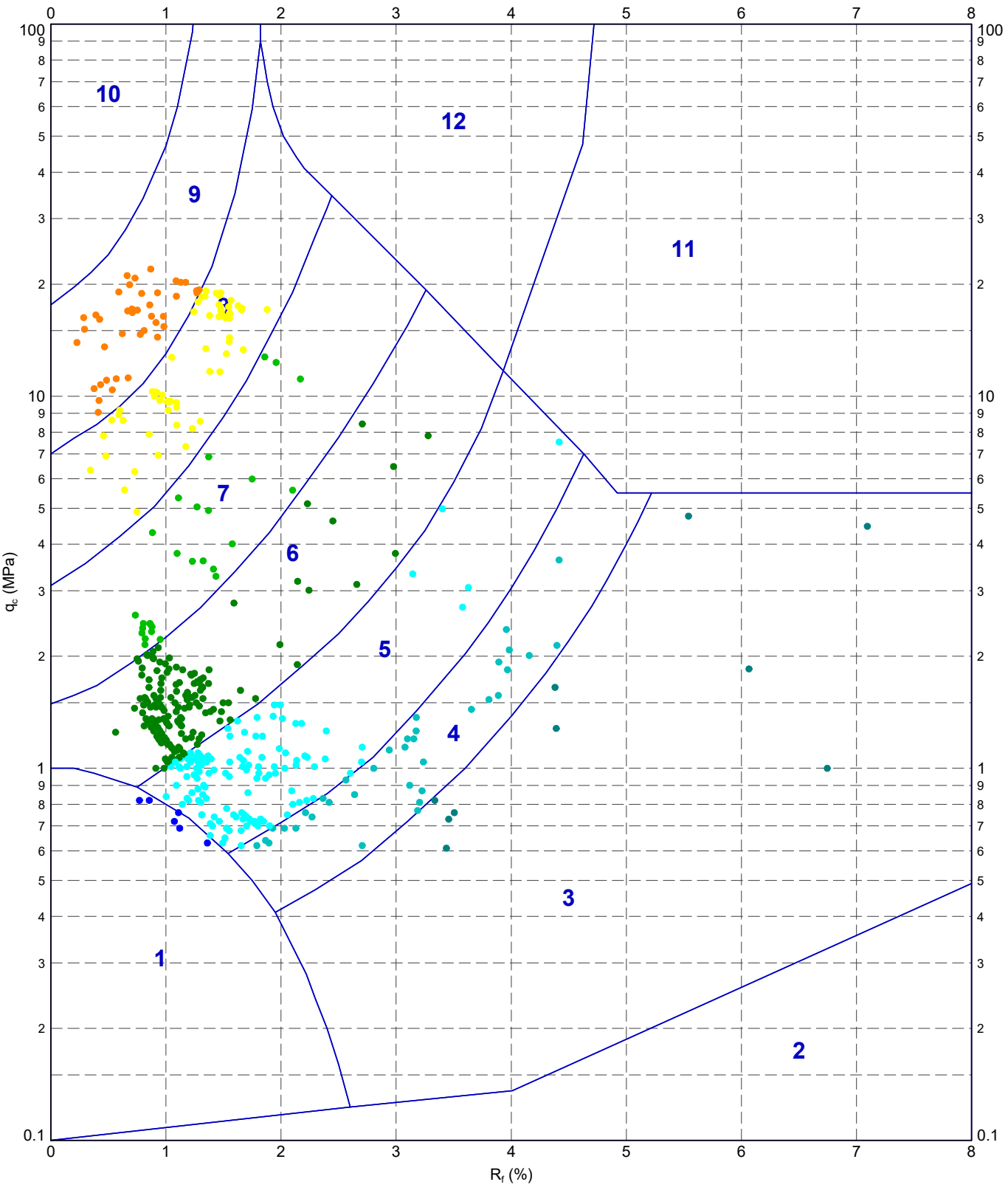
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	250 mV	251 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	308 mV	309 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	232 mV	249 mV	0.004 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2442 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT04

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

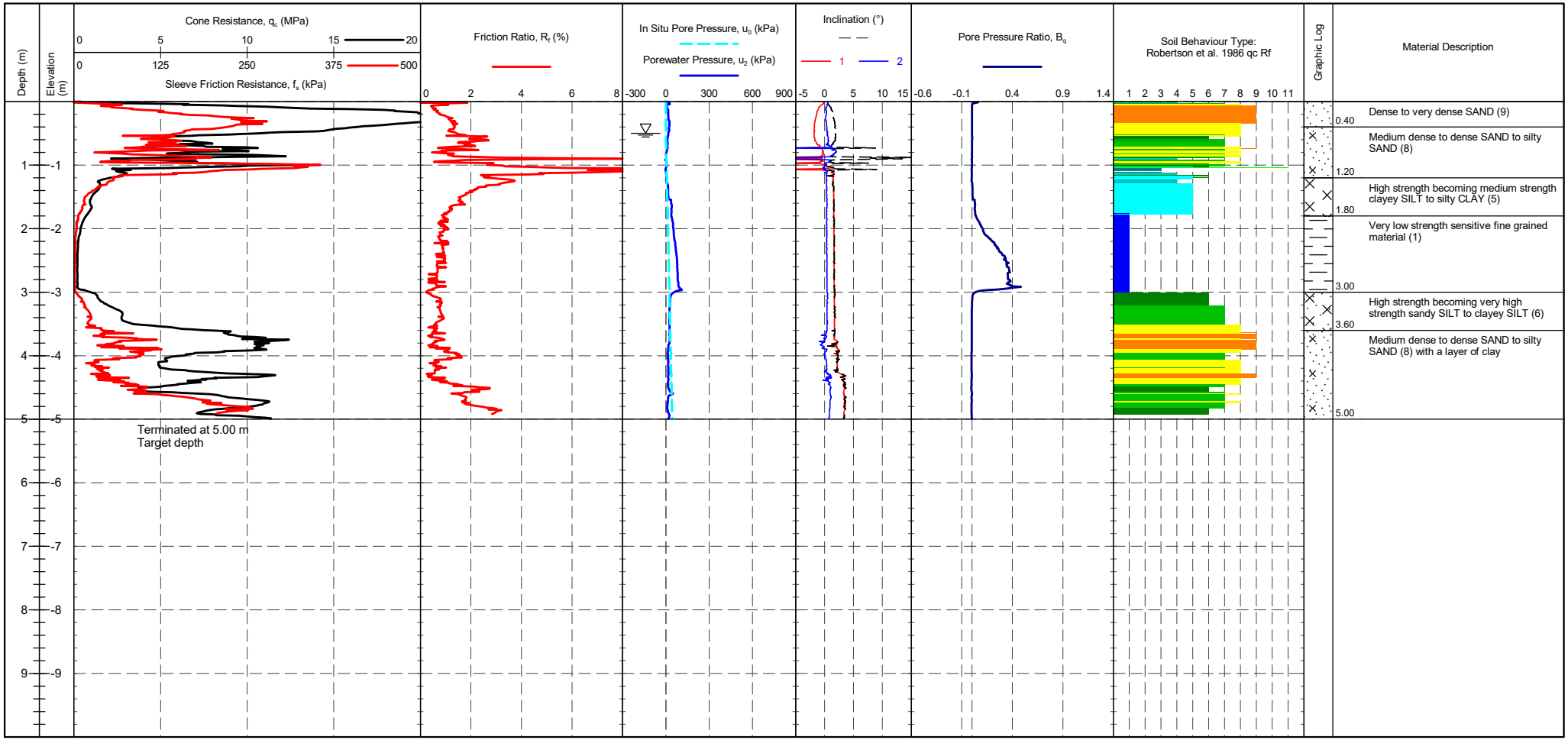
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:58 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT05**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	247 mV	248 mV	0.011 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	235 mV	208 mV	-0.006 kPa
X-Y Inclinometer	2473 mV	2482 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

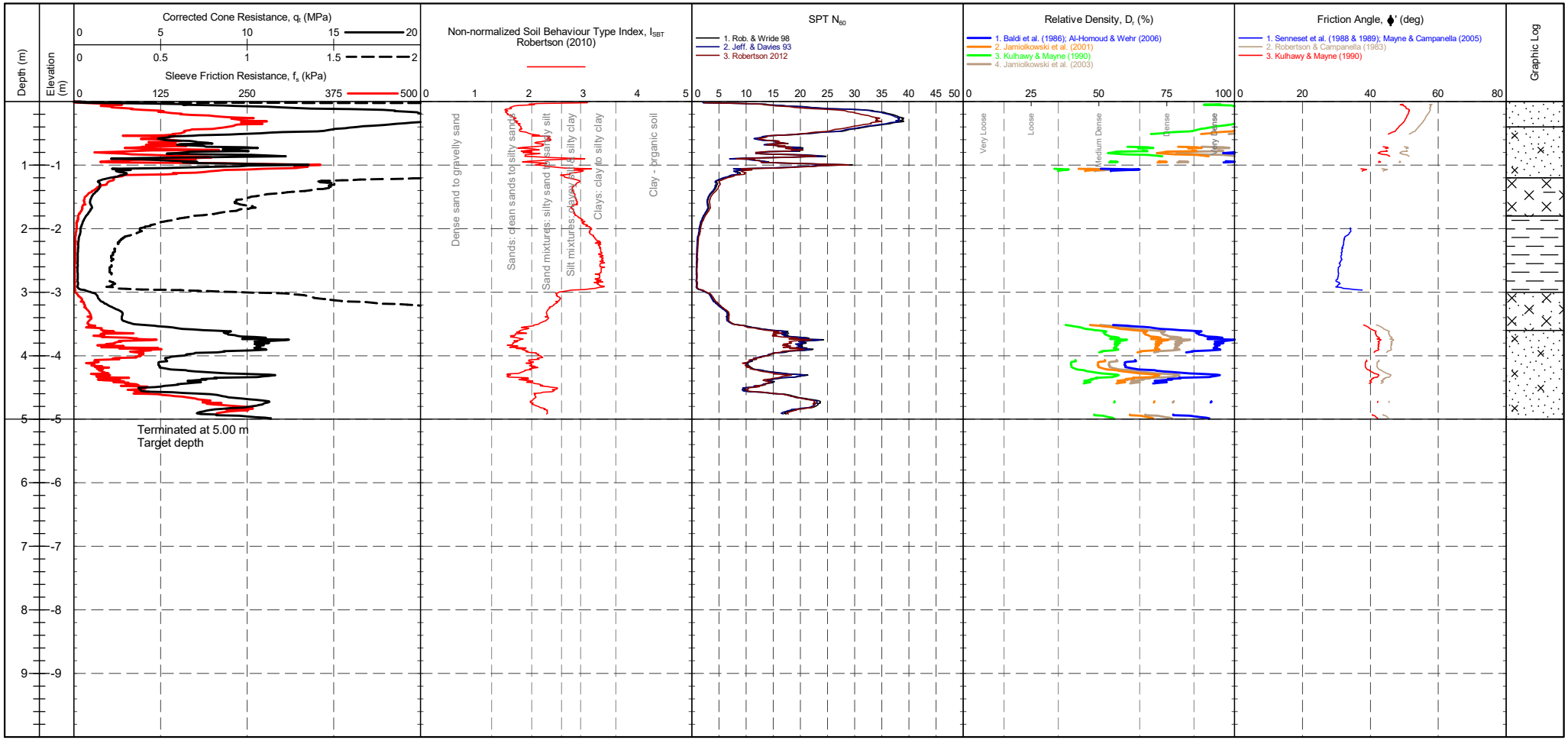
PointID **CPT05**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	247 mV	248 mV	0.011 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	235 mV	208 mV	-0.006 kPa
X-Y Inclinometer	2473 mV	2482 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

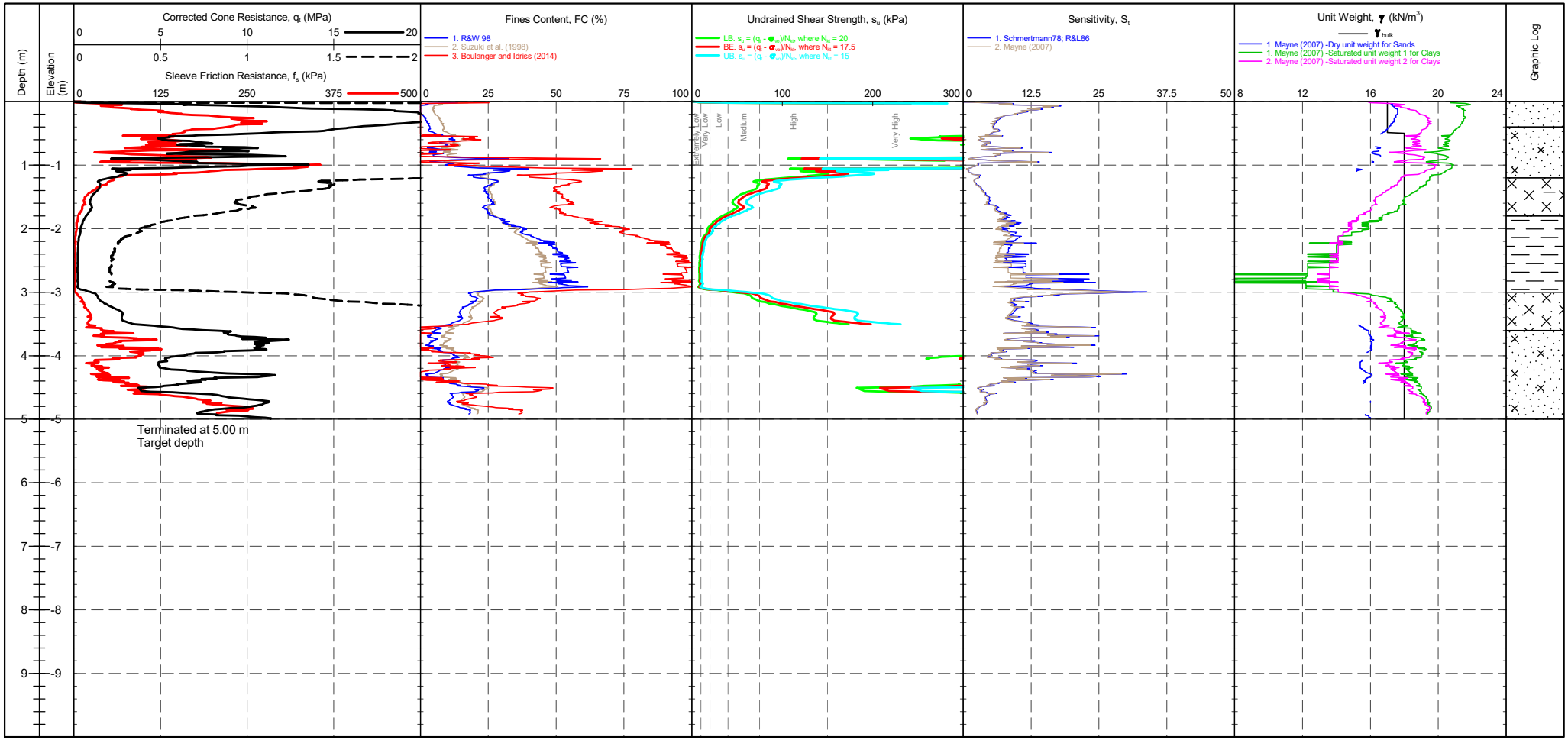
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID: **CPT05**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



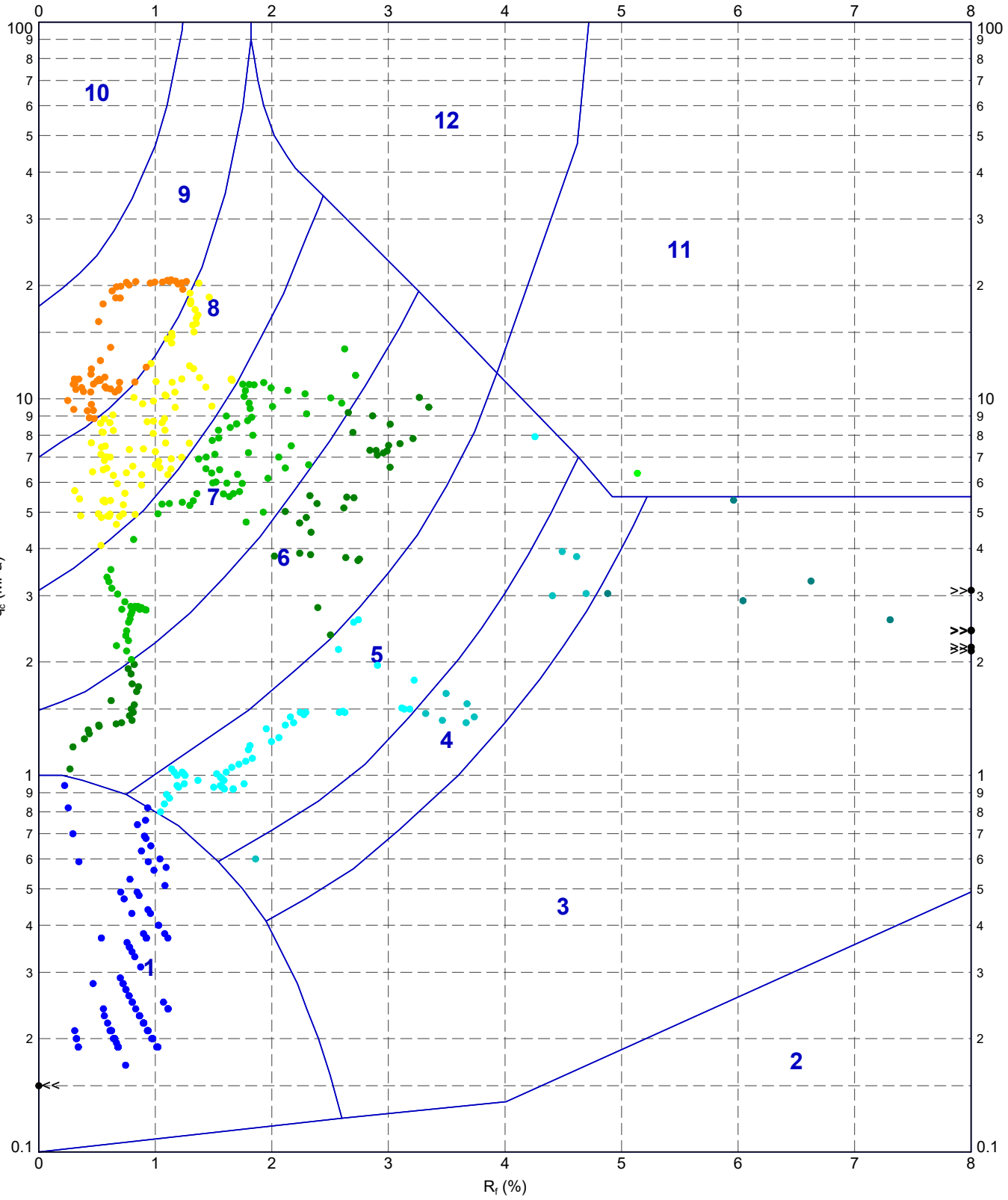
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	247 mV	248 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	306 mV	0 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	235 mV	208 mV	-0.006 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2482 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT05

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

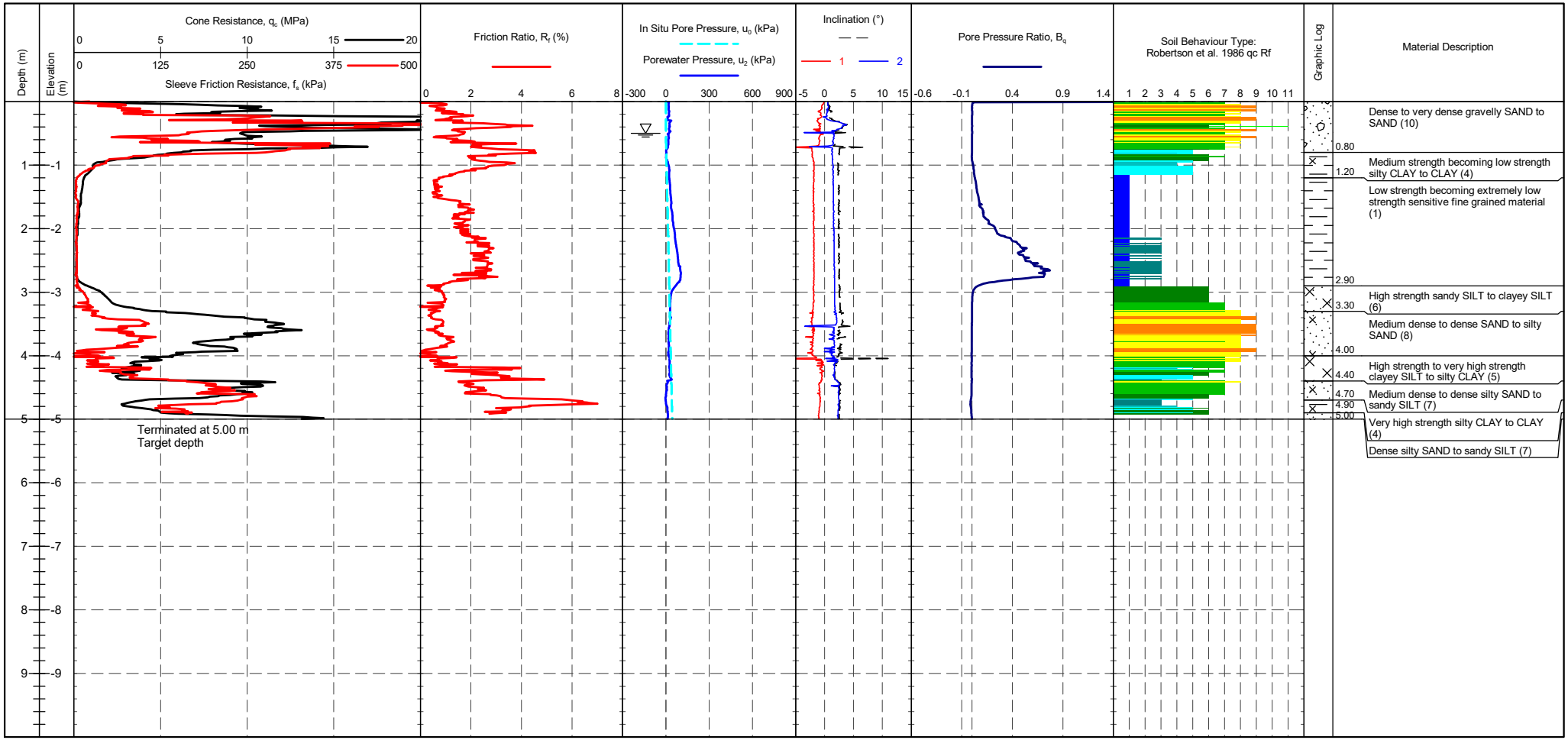
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 16:59 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT06**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	248 mV	-0.011 MPa
Sleeve	305 mV	306 mV	0.001 kPa
Pore Pressure 2	223 mV	214 mV	-0.002 kPa
X-Y Inclinometer	2477 mV	2472 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

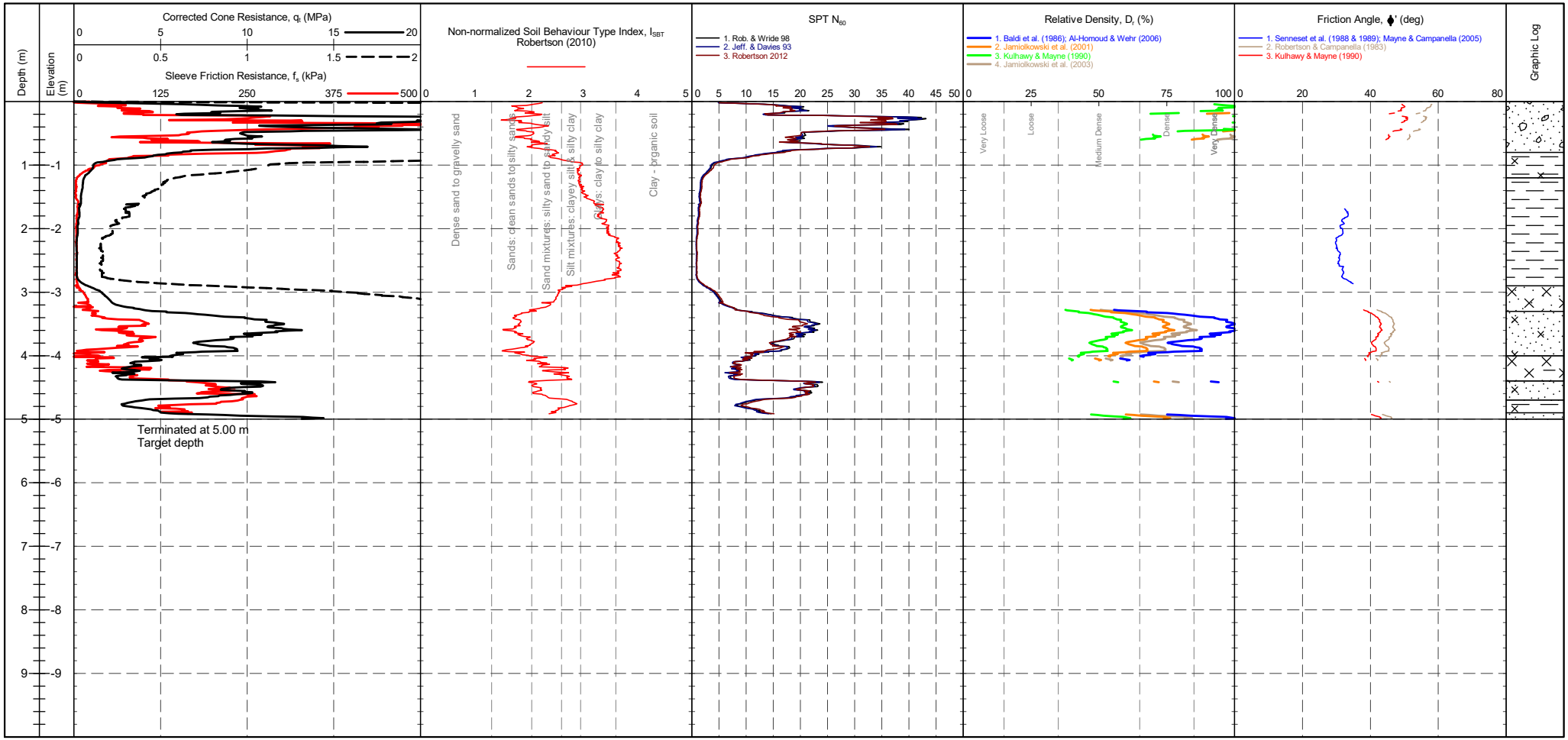
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CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	248 mV	-0.011 MPa
Sleeve	305 mV	306 mV	0.001 kPa
Pore Pressure 2	223 mV	214 mV	-0.002 kPa
X-Y Inclinometer	2477 mV	2472 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

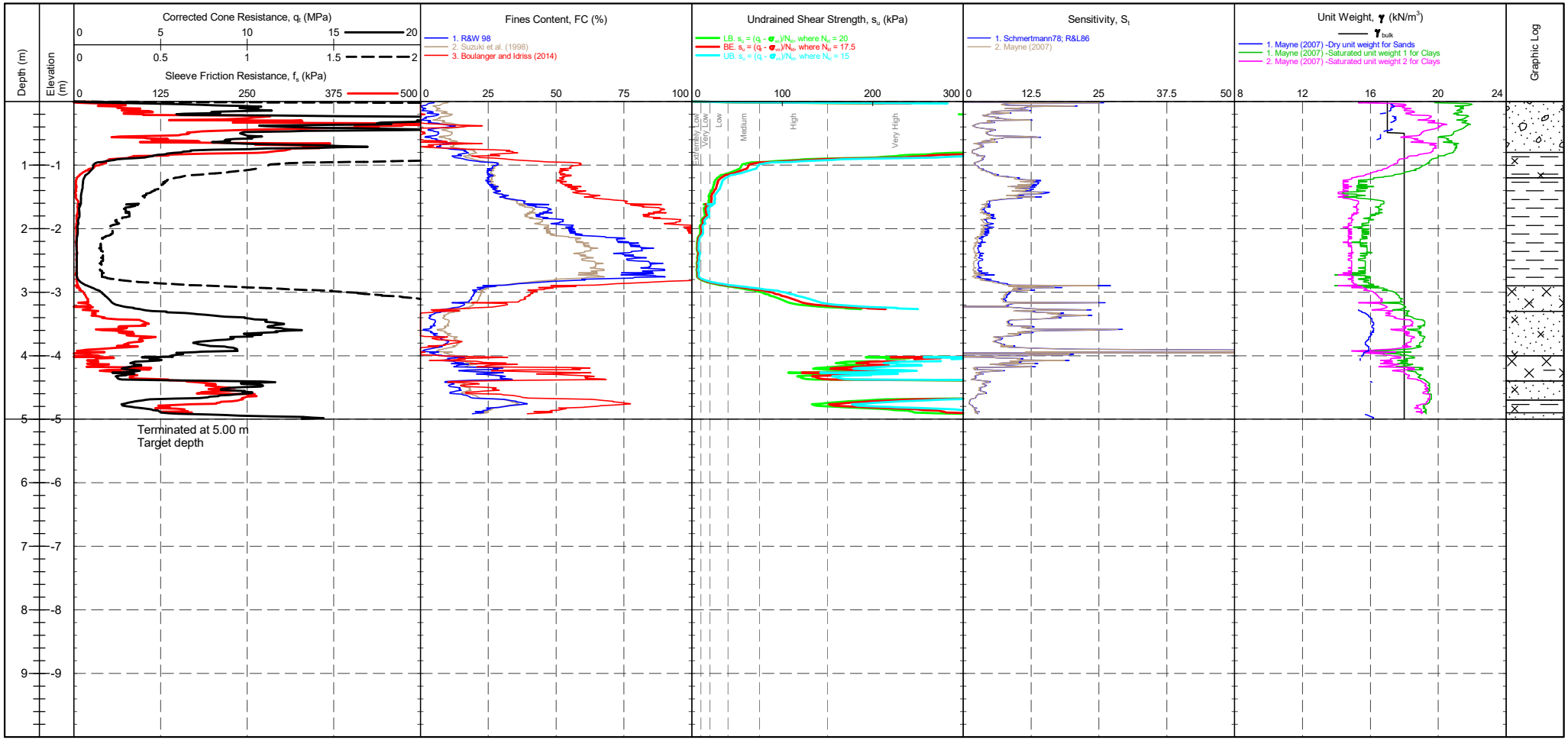
PointID: **CPT06**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



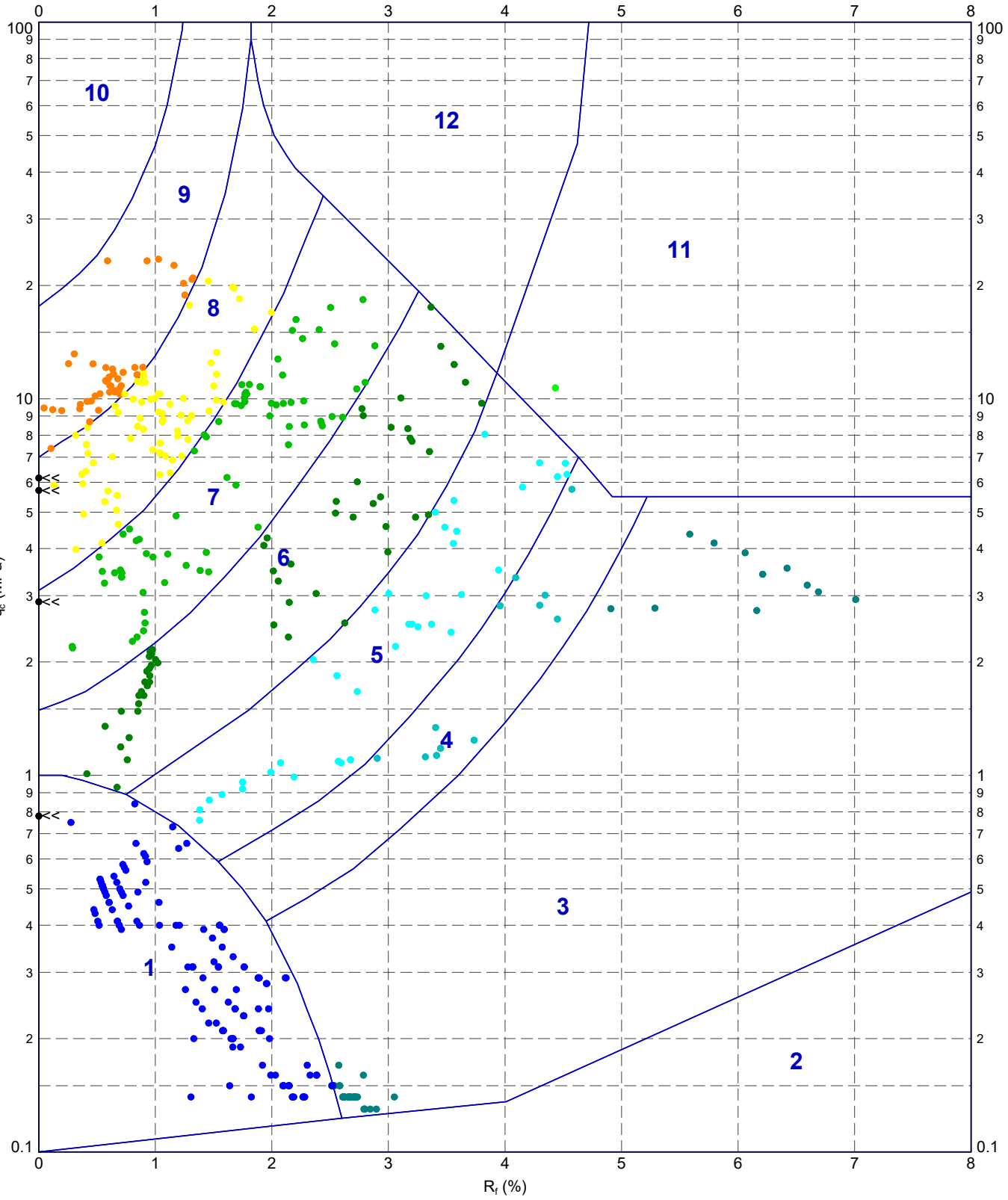
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	248 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	306 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	223 mV	214 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2477 mV	2472 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT06

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

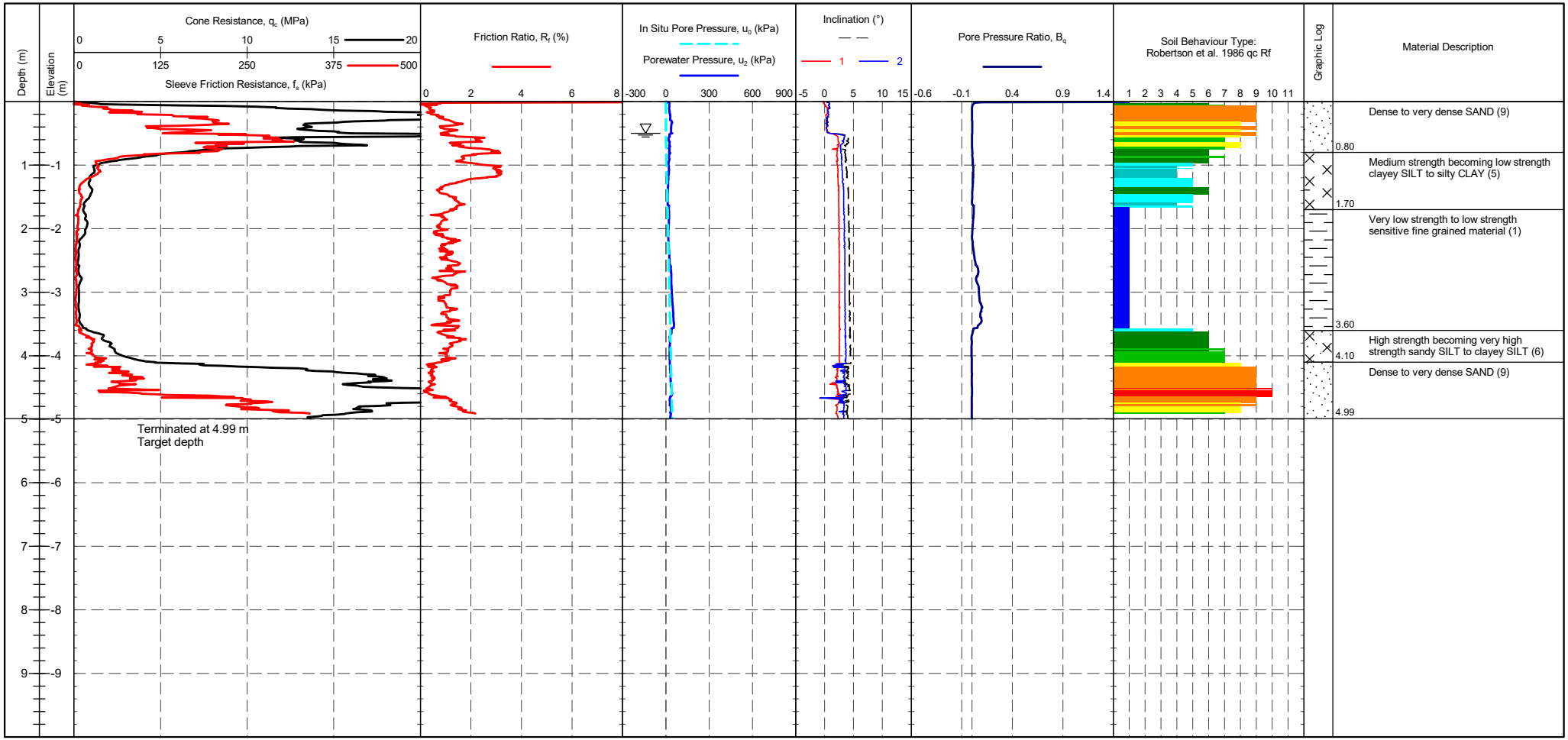
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:00 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT07**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867	TEST TYPE : TE2		
CALIBRATION DATE : 07/06/2023	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 007 - Morooka		
CONE AREA : 15cm²	OPERATOR : PD		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Overcast & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Supplied from the onsite drillers.		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	248 mV	249 mV	0.011 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	218 mV	211 mV	-0.002 kPa
X-Y Inclinometer	2472 mV	2482 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

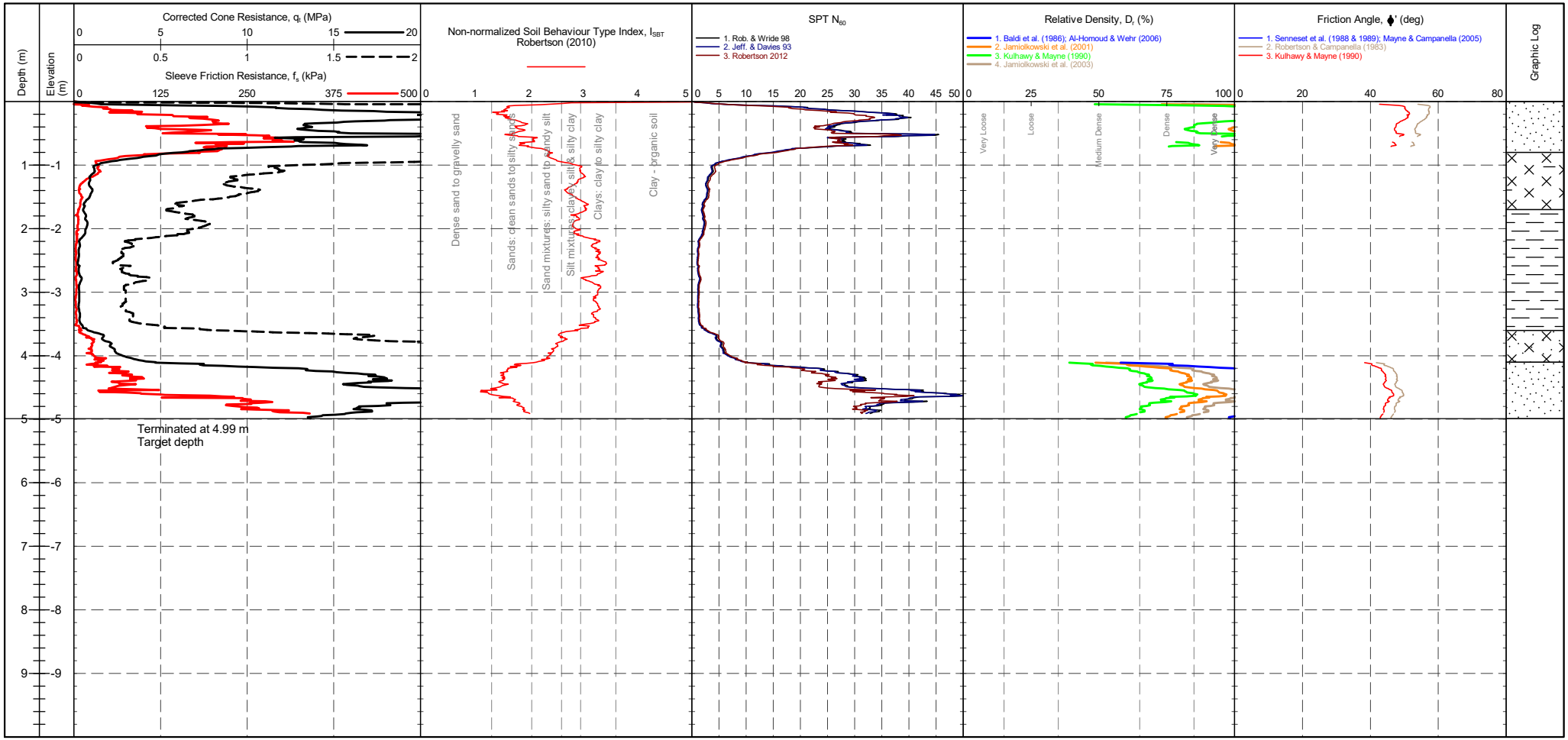
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT07**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	248 mV	249 mV	0.011 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	218 mV	211 mV	-0.002 kPa
X-Y Inclinometer	2472 mV	2482 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

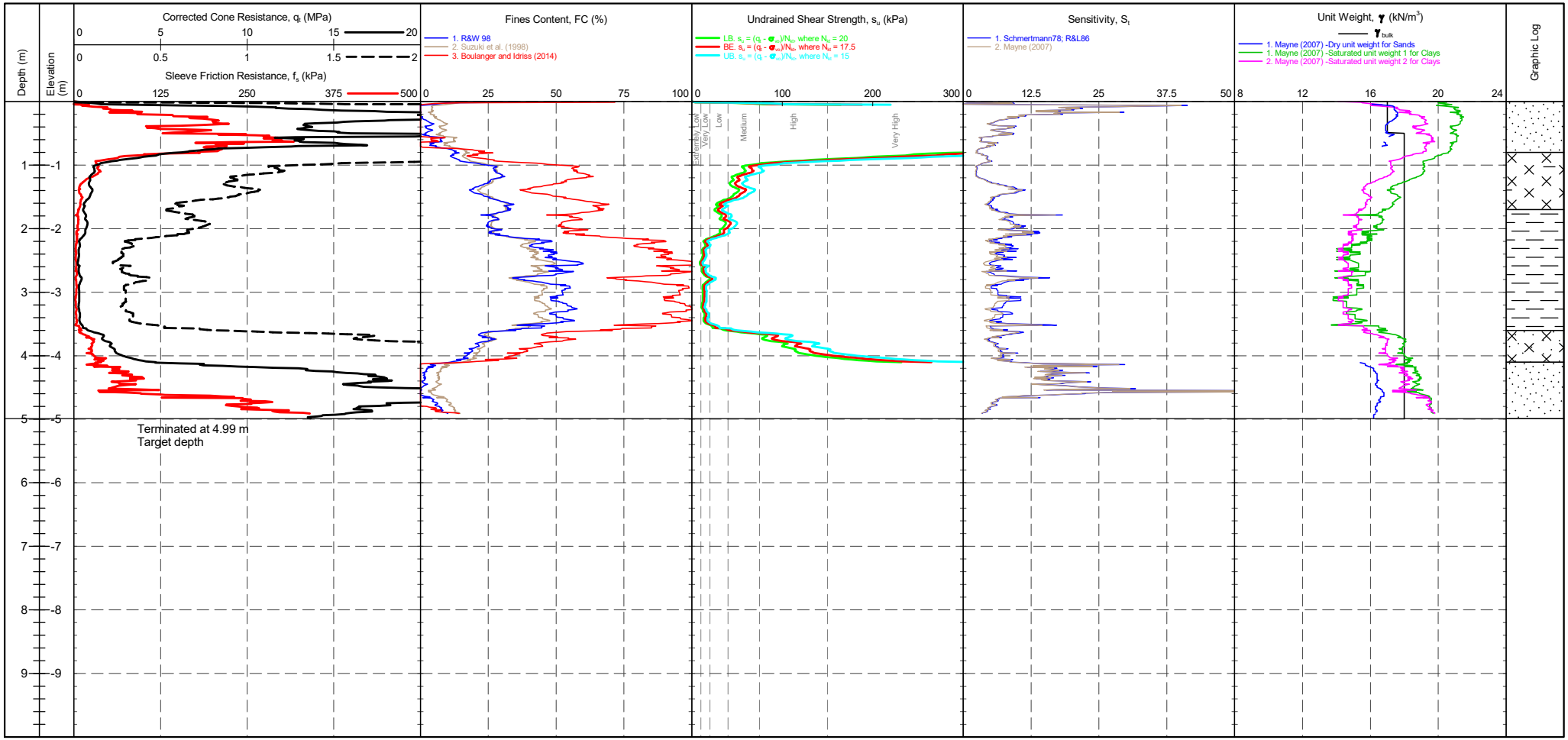
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID: **CPT07**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



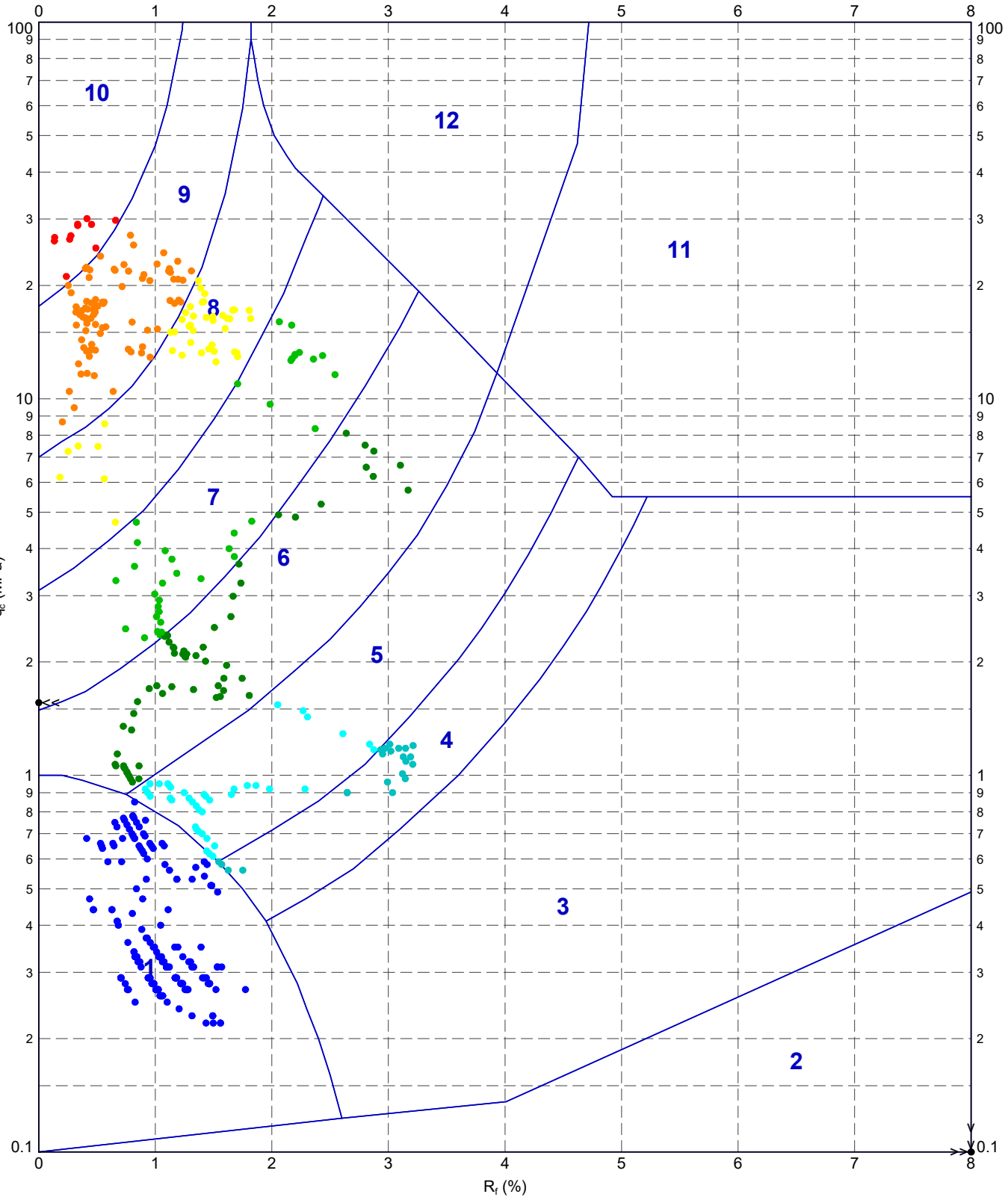
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	248 mV	249 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	306 mV	0 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	218 mV	211 mV	-0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2482 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT07

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

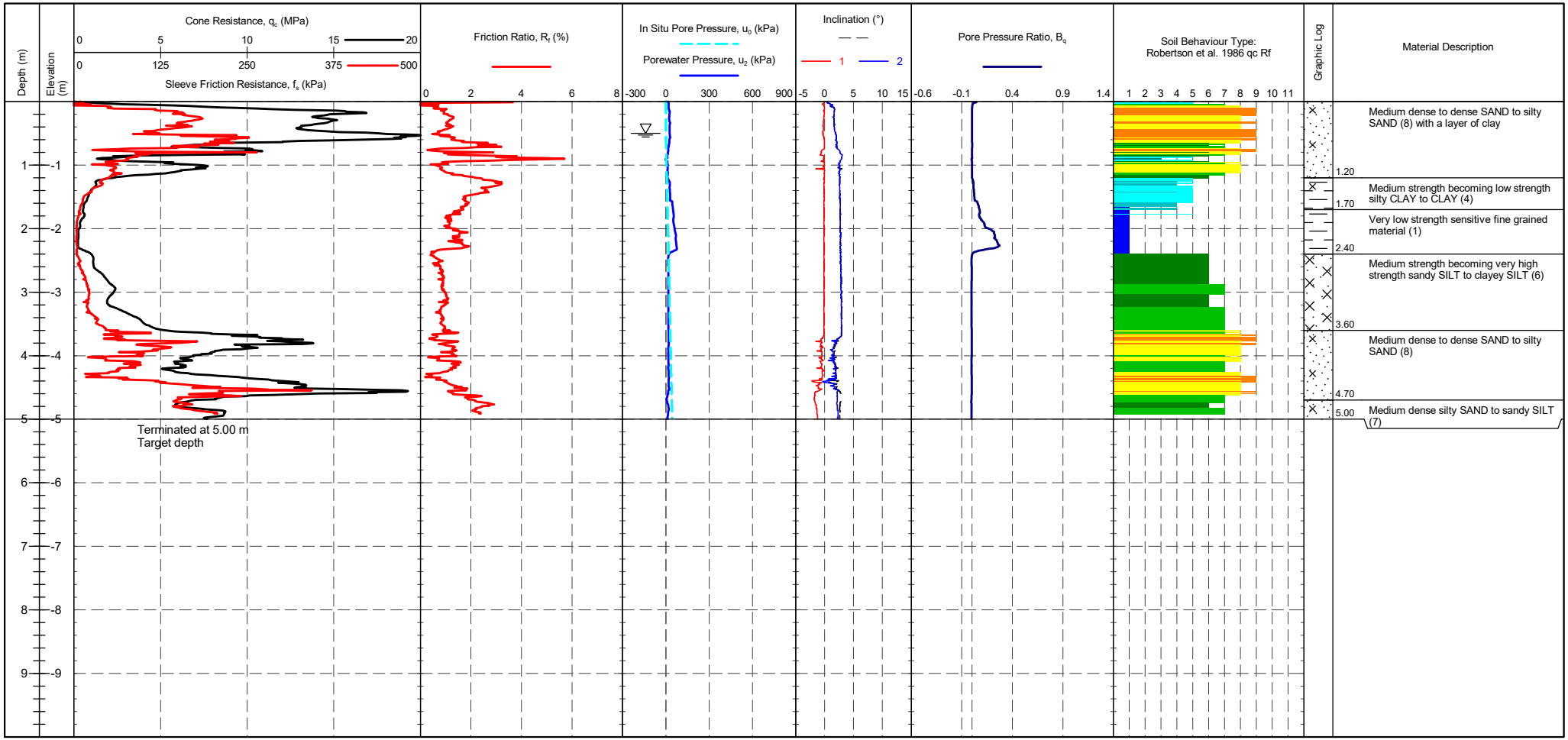
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IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT08**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	248 mV	250 mV	0.022 MPa
Sleeve	305 mV	307 mV	0.001 kPa
Pore Pressure 2	217 mV	203 mV	-0.003 kPa
X-Y Inclinometer	2472 mV	2482 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

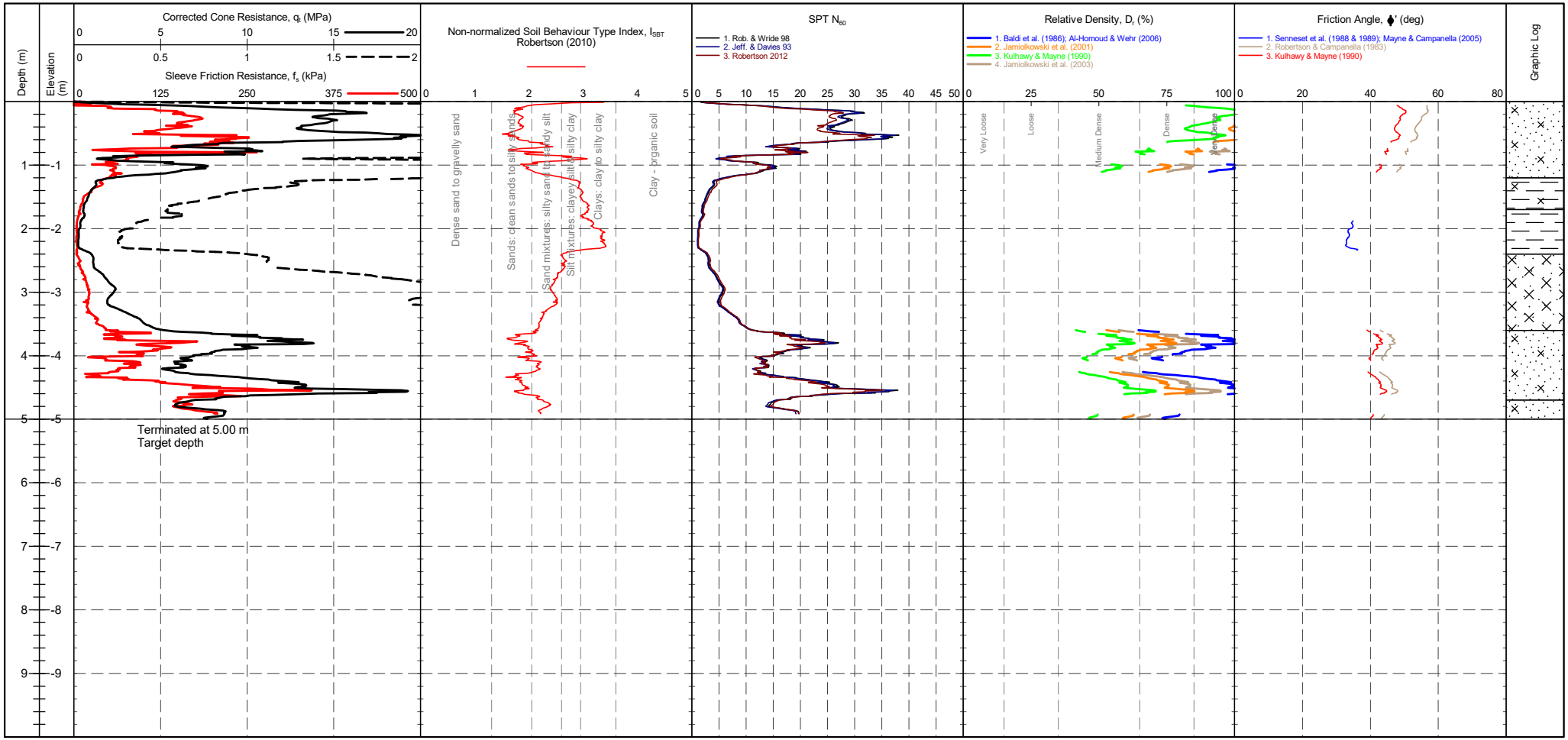
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT08**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	248 mV	250 mV	0.022 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	307 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	217 mV	203 mV	-0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2482 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

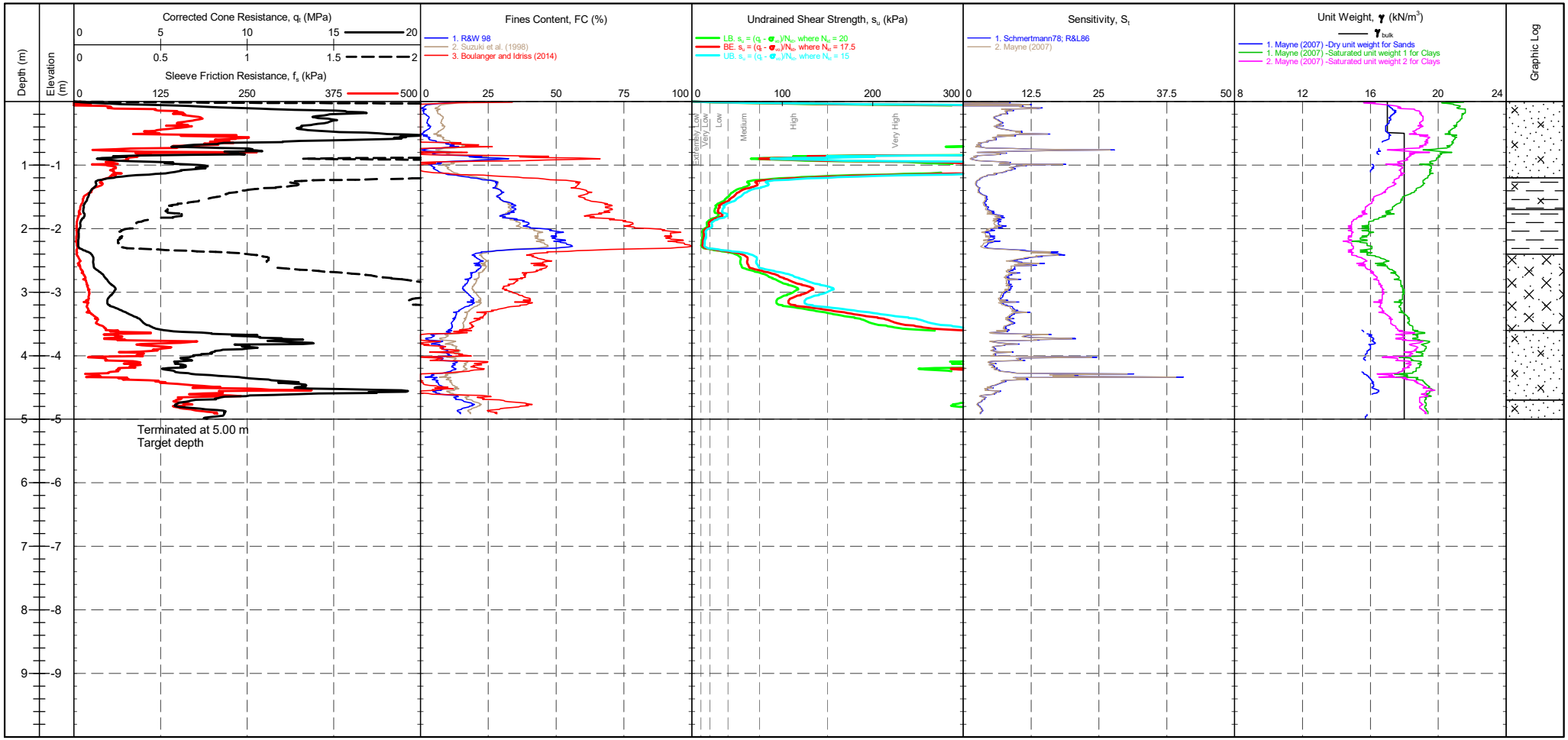
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID: **CPT08**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



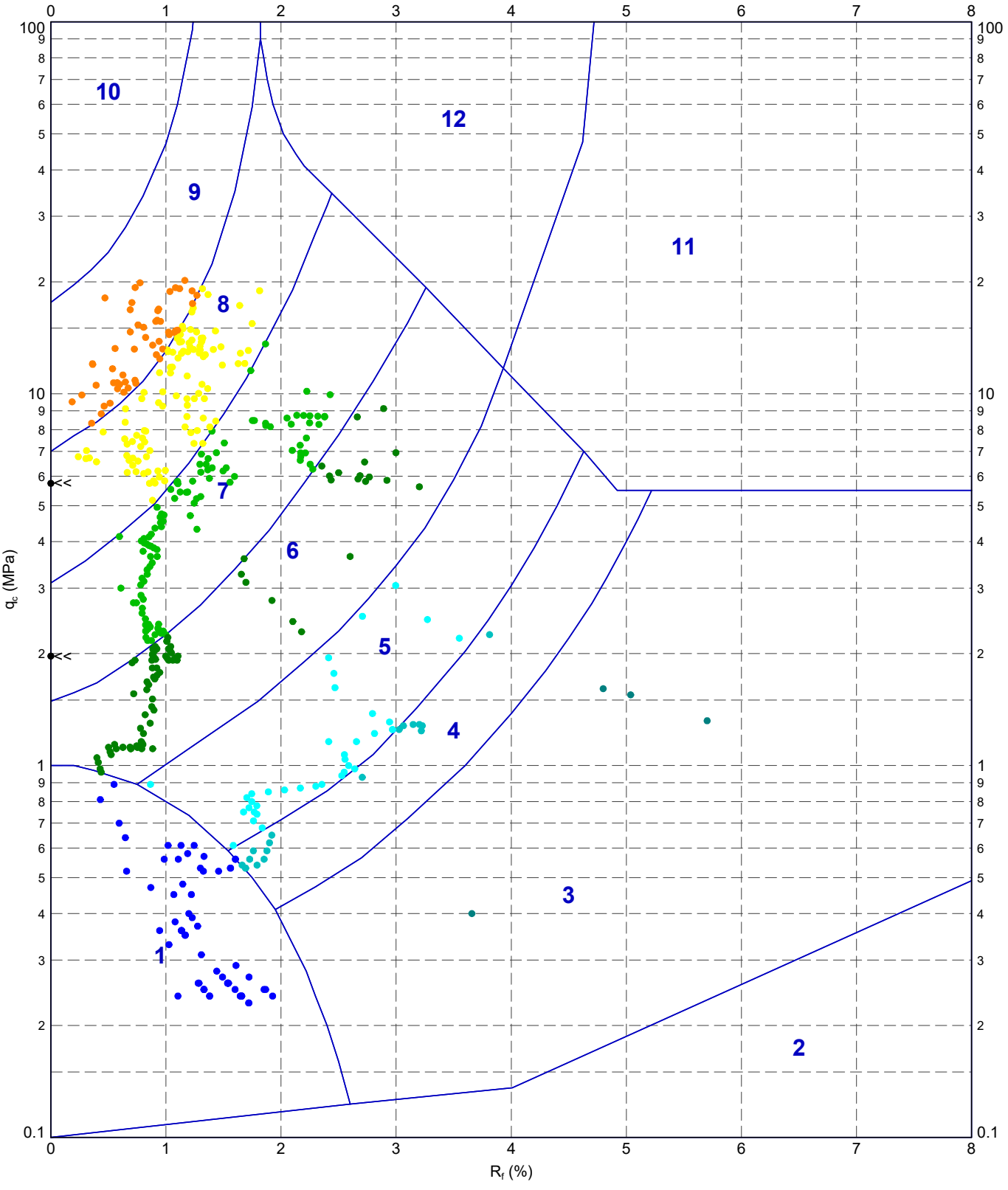
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	248 mV	250 mV	0.022 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	307 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	217 mV	203 mV	-0.003 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2482 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT08

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

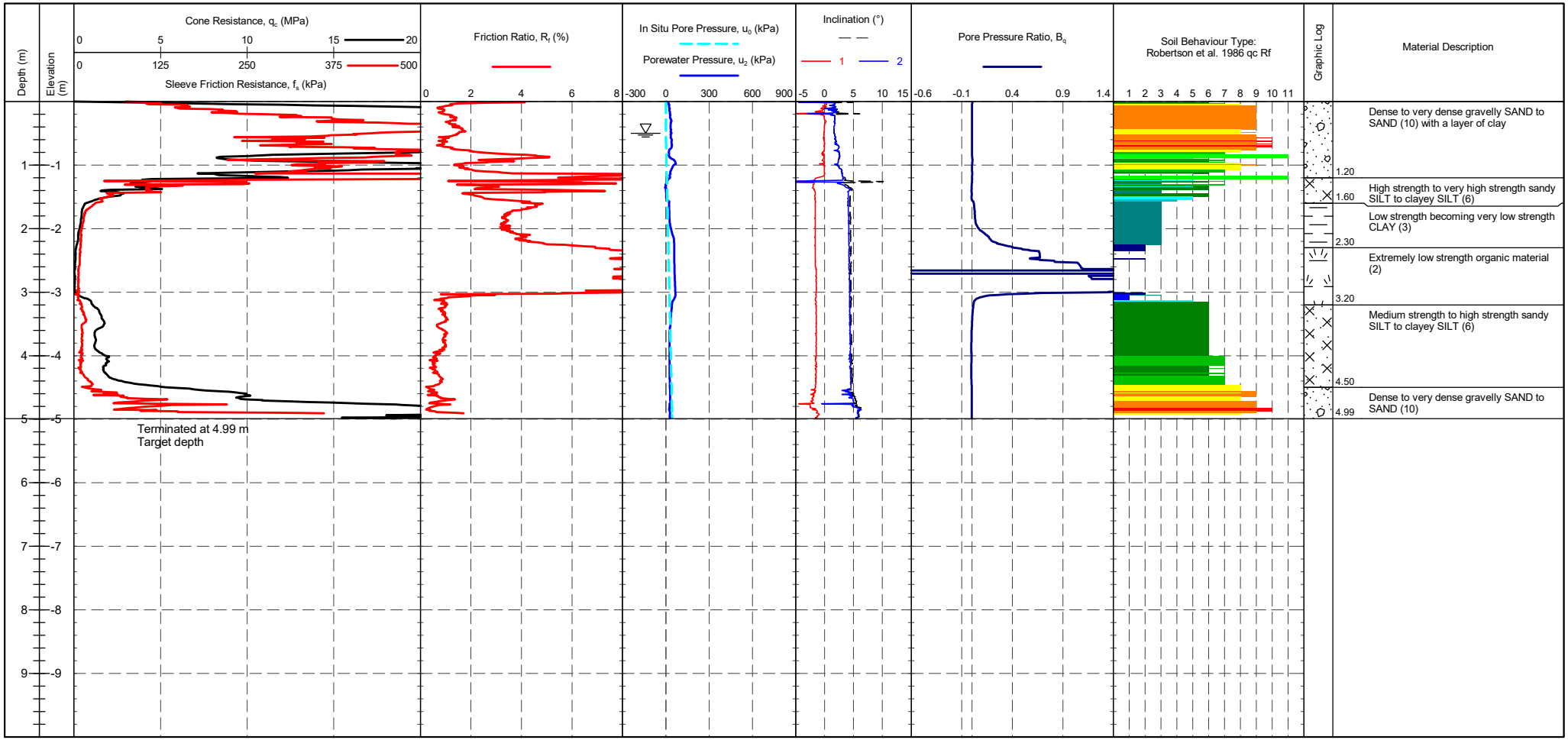
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:01 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT09**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	253 mV	0.044 MPa
Sleeve	306 mV	310 mV	0.003 kPa
Pore Pressure 2	203 mV	239 mV	0.008 kPa
X-Y Inclinometer	2482 mV	2473 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

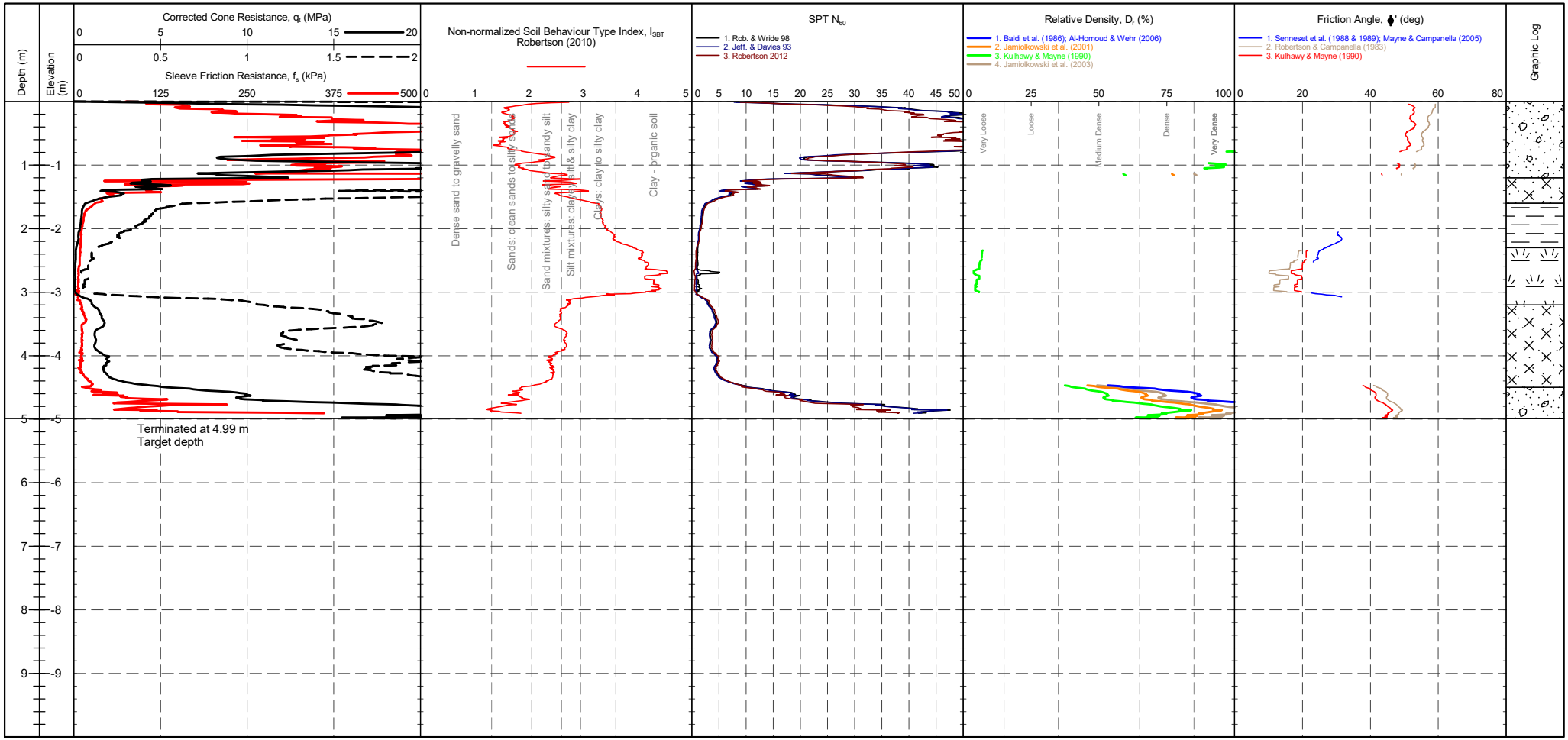
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT09**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	253 mV	0.044 MPa
Sleeve	306 mV	310 mV	0.003 kPa
Pore Pressure 2	203 mV	239 mV	0.008 kPa
X-Y Inclinometer	2482 mV	2473 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

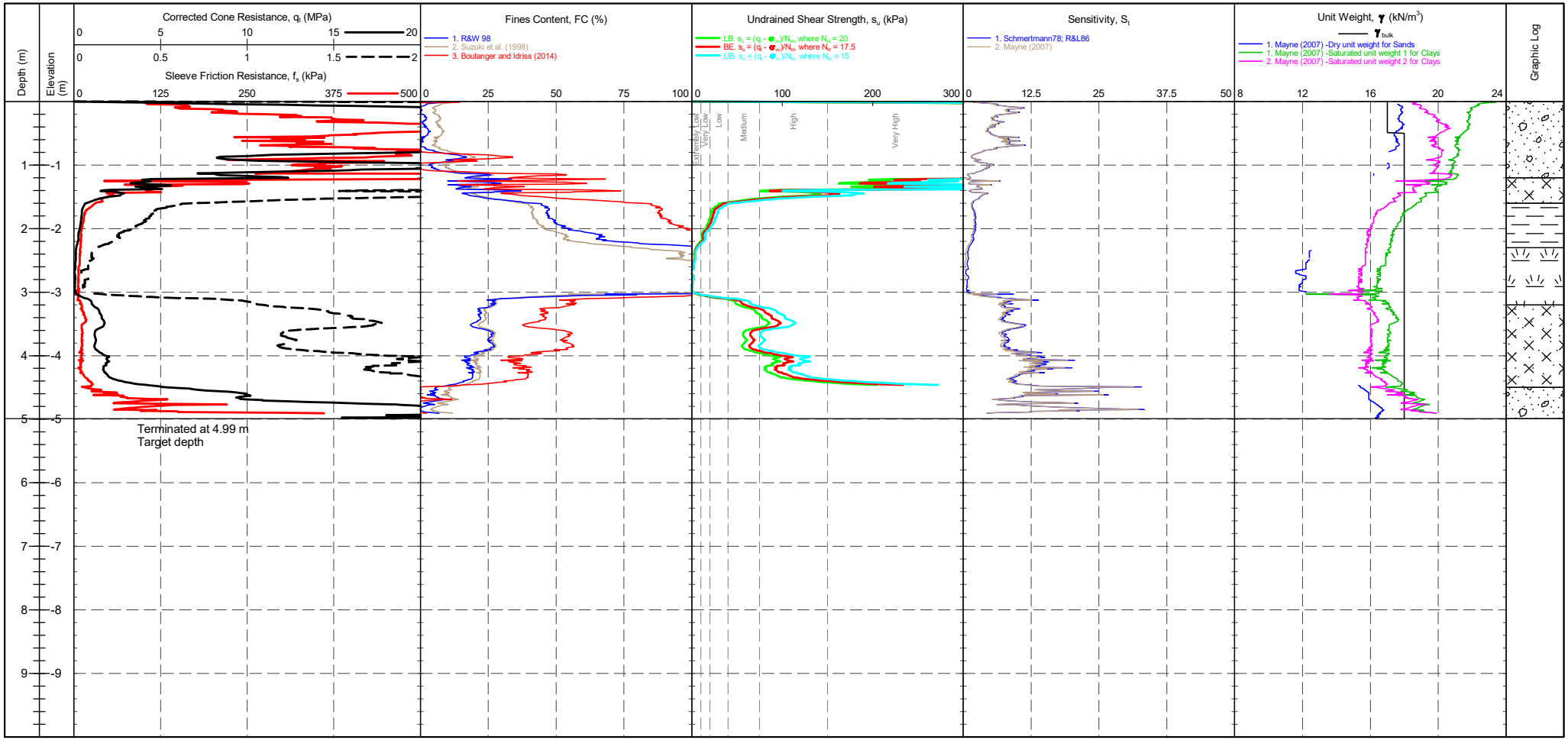
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID **CPT09**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



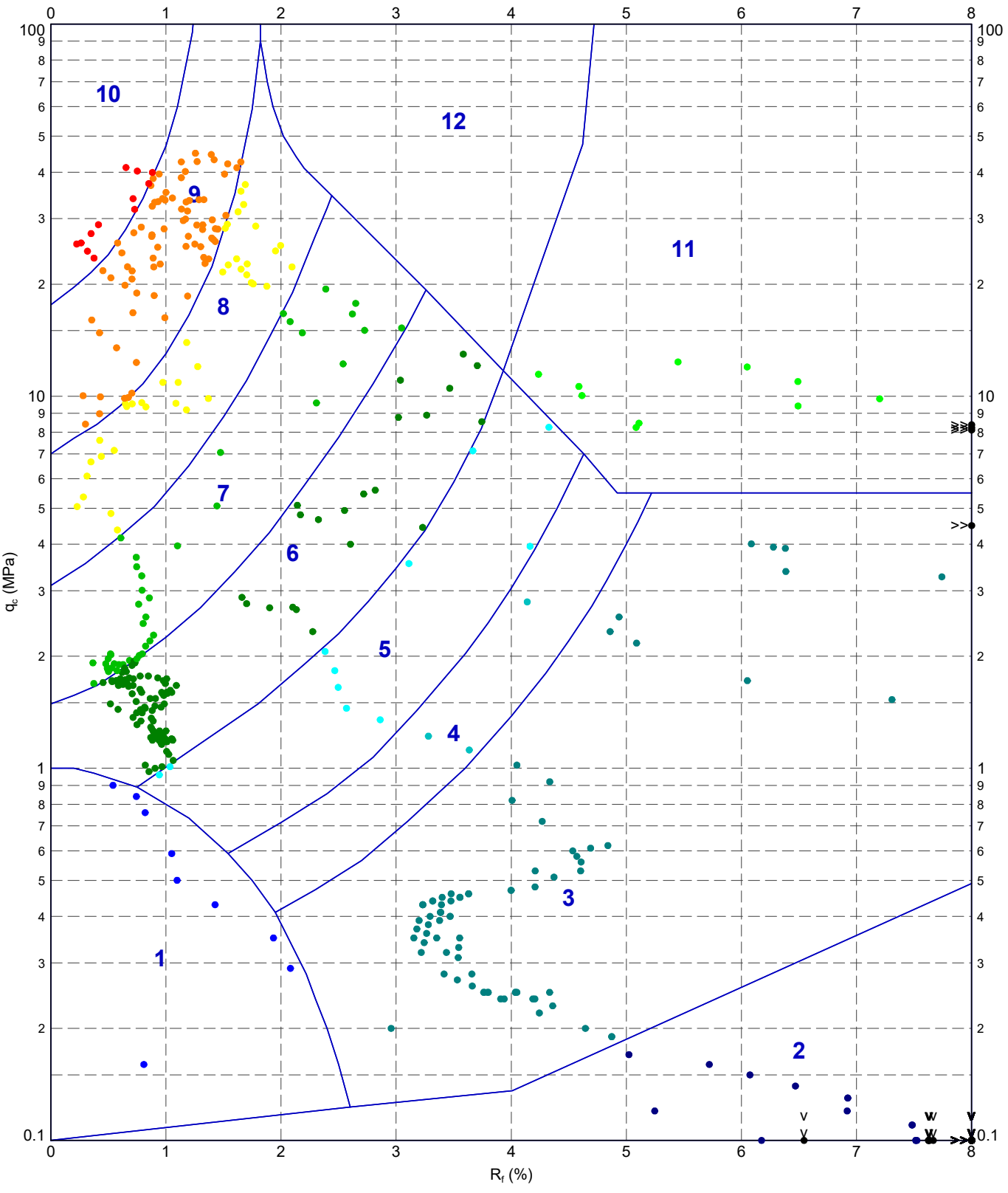
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	253 mV	0.044 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	310 mV	0.003 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	203 mV	239 mV	0.008 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2482 mV	2473 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT09

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

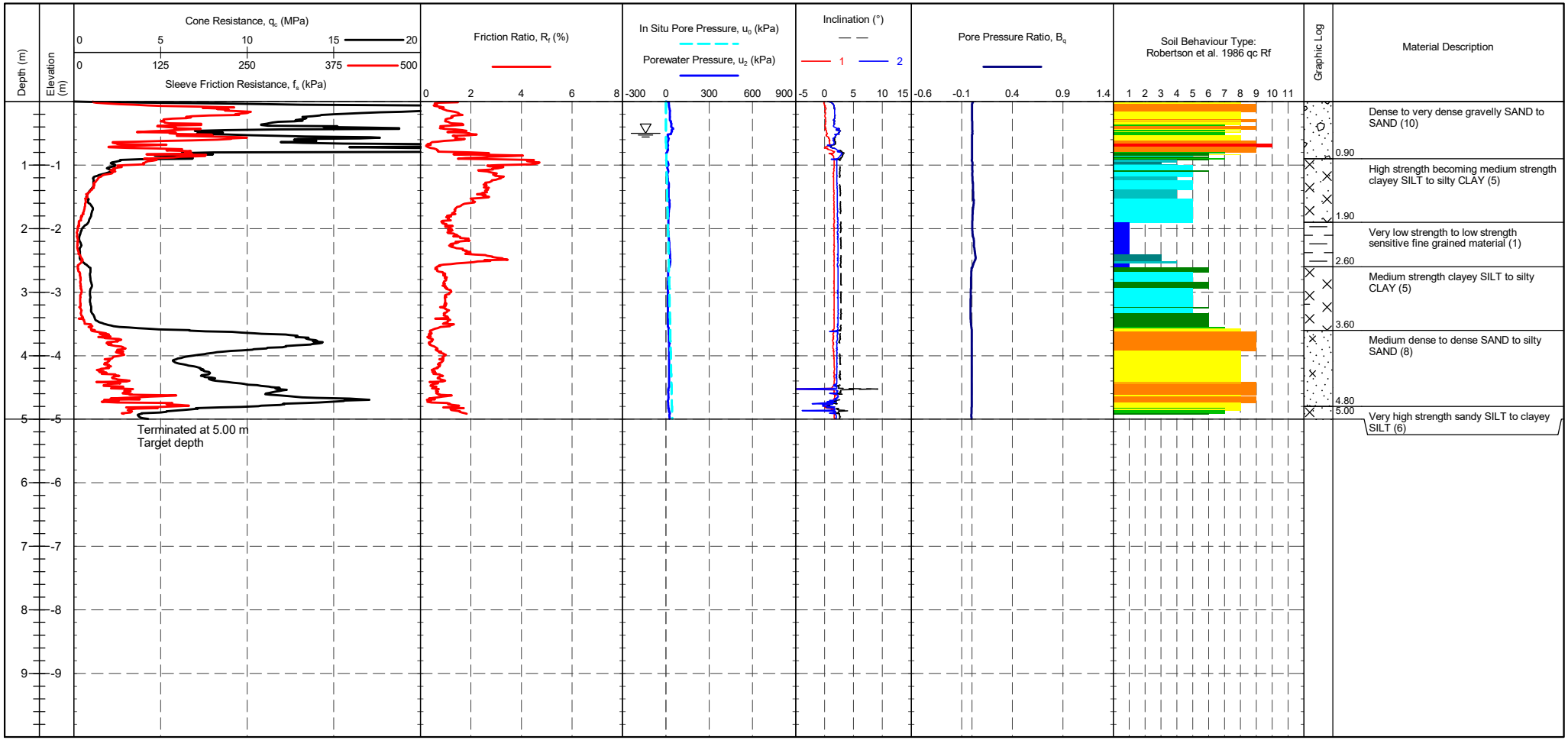
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:02 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT11**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2		
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka		
CONE AREA	: 15cm^2	OPERATOR	: PD		
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None		
FILTER POSITION	: u2	WEATHER	: Overcast & Mild		
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	250 mV	0.011 MPa
Sleeve	306 mV	308 mV	0.001 kPa
Pore Pressure 2	237 mV	268 mV	0.007 kPa
X-Y Inclinometer	2215 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

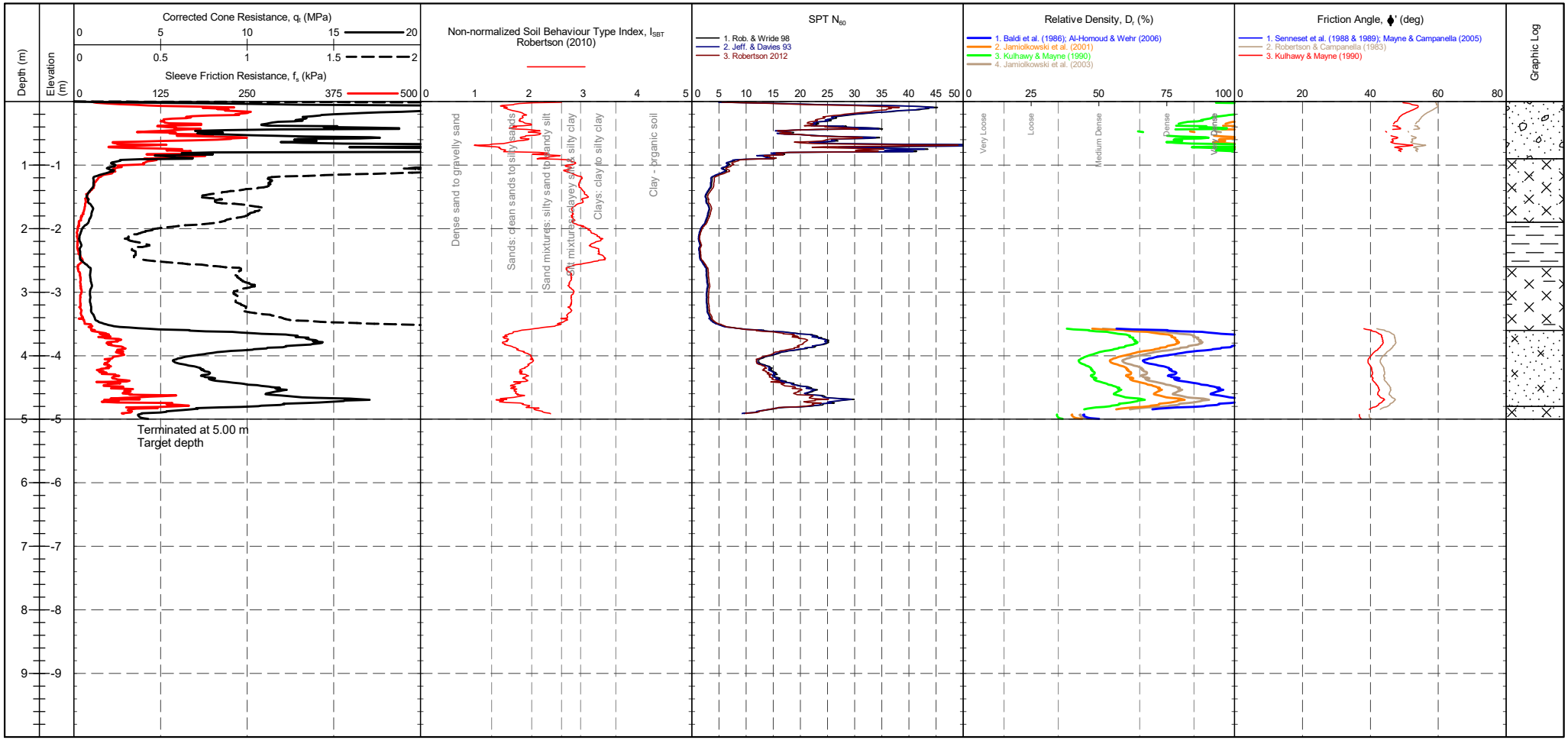
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT11**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	250 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	308 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	237 mV	268 mV	0.007 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2215 mV	2486 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

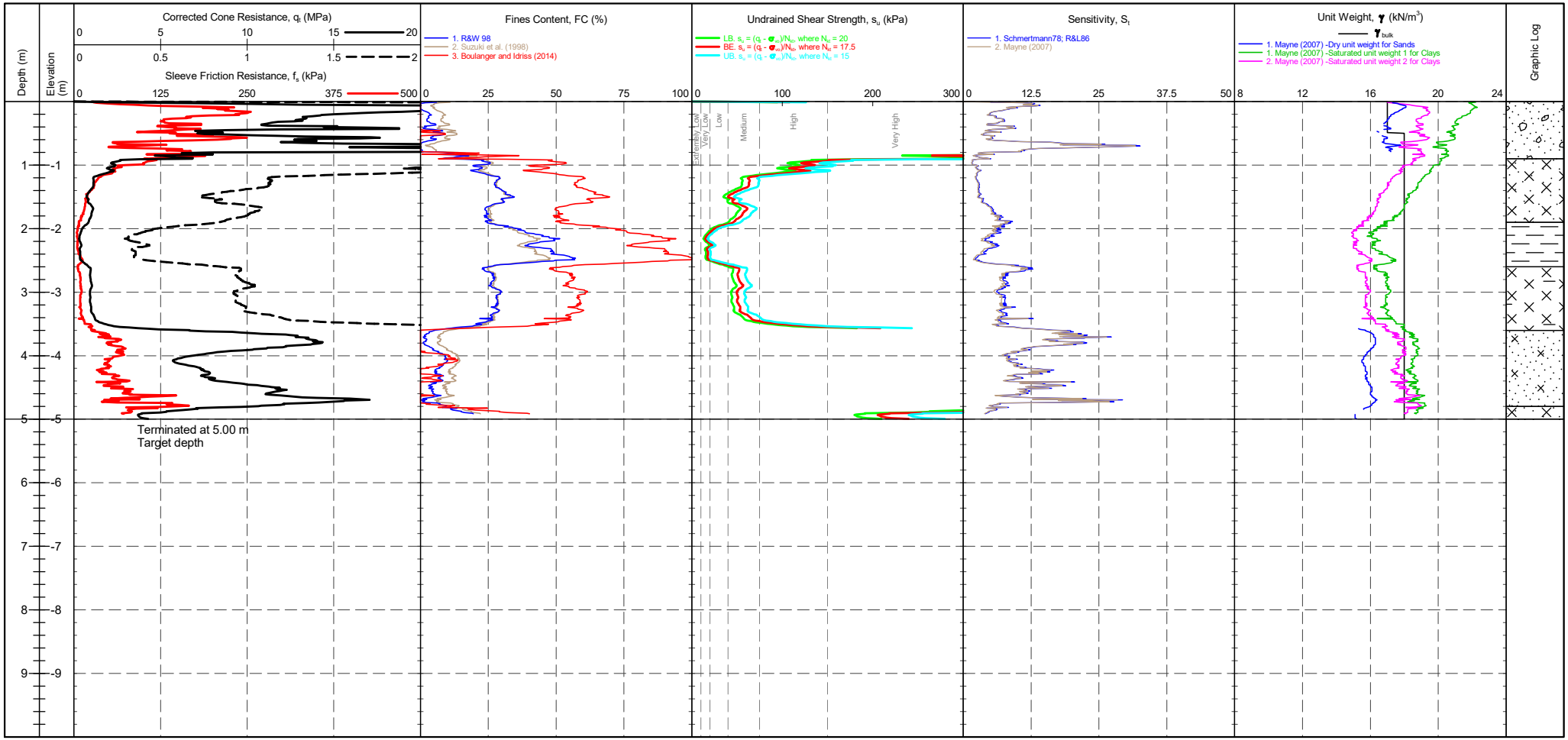
PointID: **CPT11**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



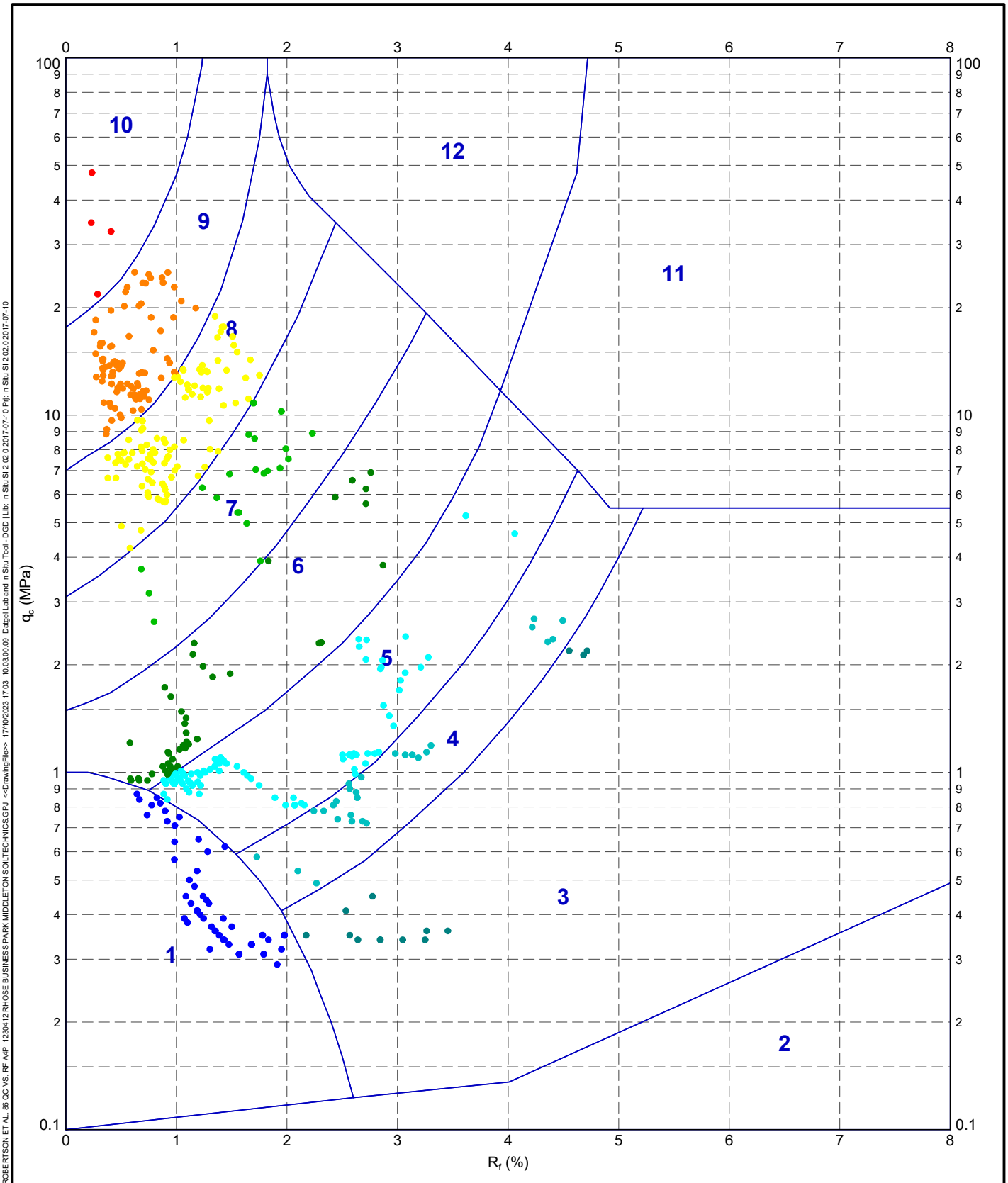
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	250 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	308 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	237 mV	268 mV	0.007 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2215 mV	2486 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT11

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

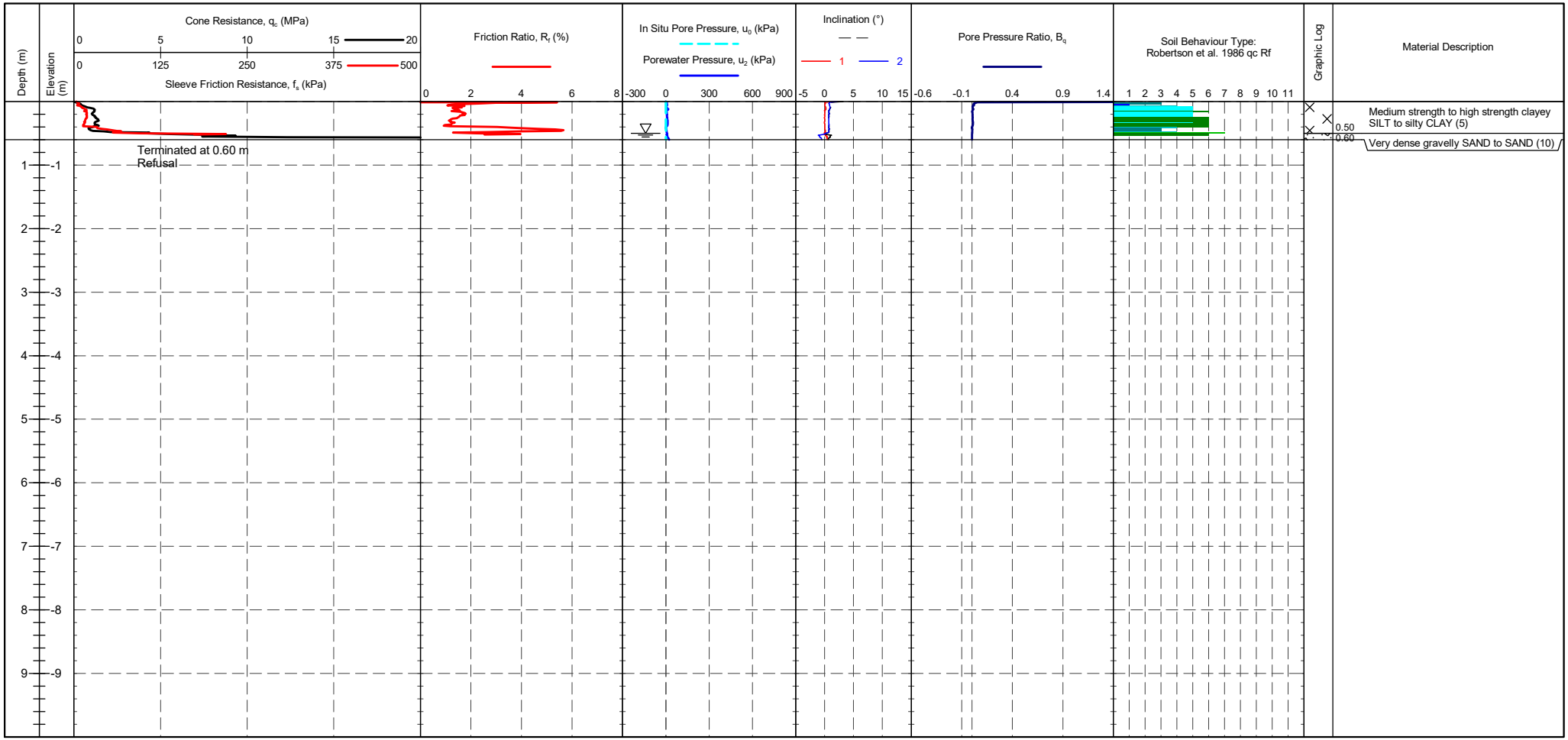
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID: **CPT12**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	251 mV	254 mV	0.033 MPa
Sleeve	307 mV	308 mV	0.001 kPa
Pore Pressure 2	242 mV	211 mV	-0.007 kPa
X-Y Inclinometer	2718 mV	2492 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

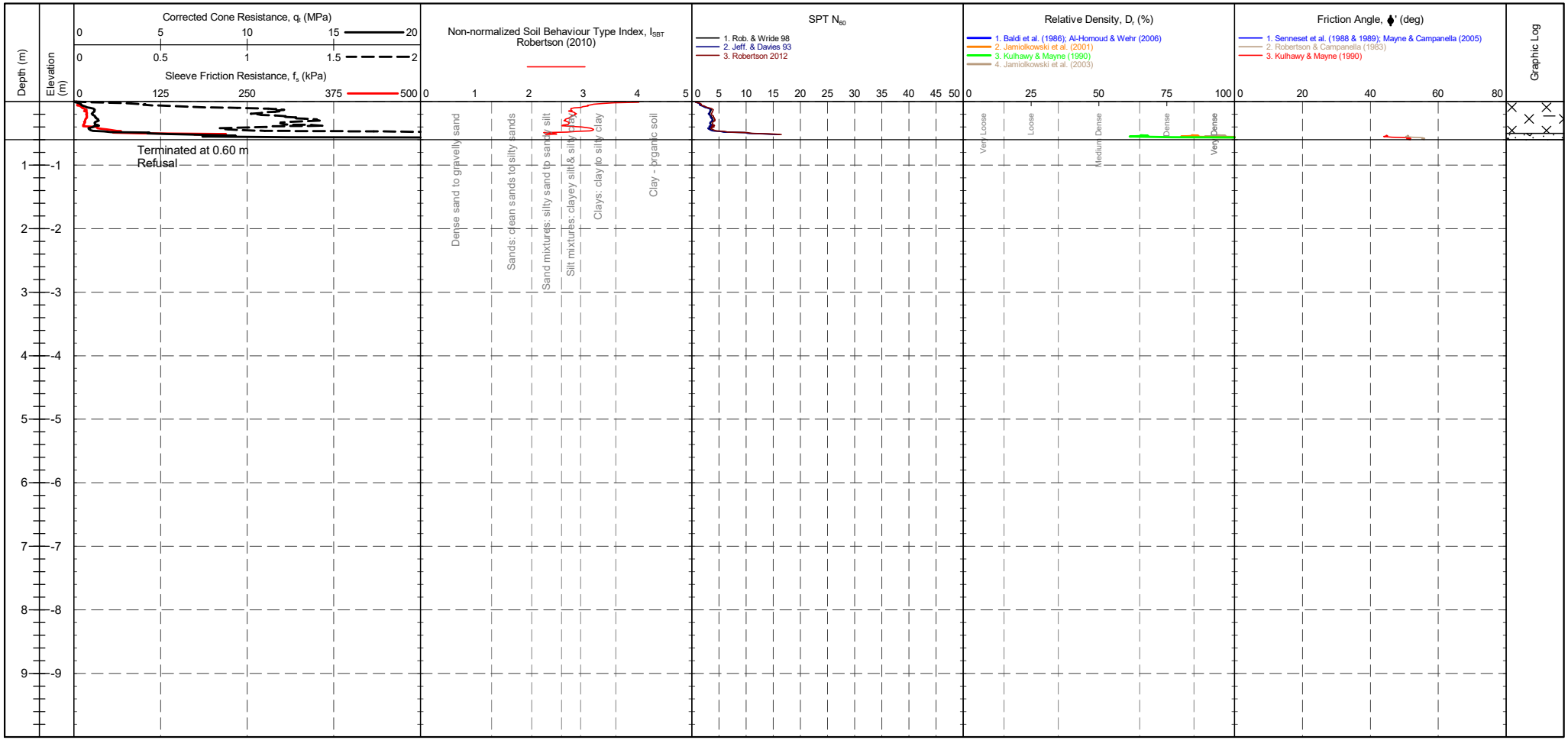
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT12**

CLIENT : Soiltechnics PROJECT : Rhodes Business Park LOCATION : Middleton PROJECT No. : 1230412	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 12/10/2023 PLOT DATE : 17/10/2023 METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	251 mV	254 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	308 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	242 mV	211 mV	-0.007 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2718 mV	2492 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

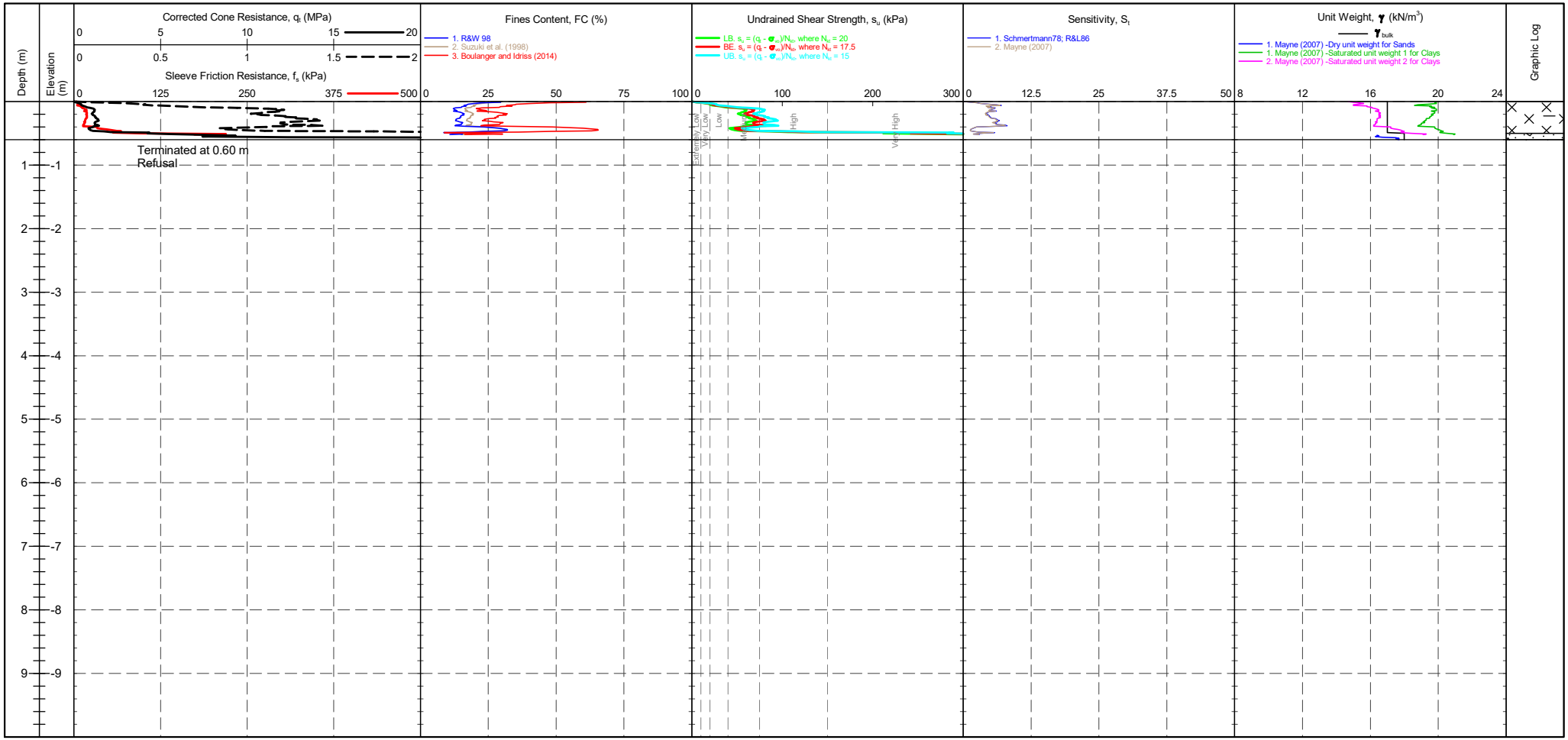
PointID: **CPT12**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



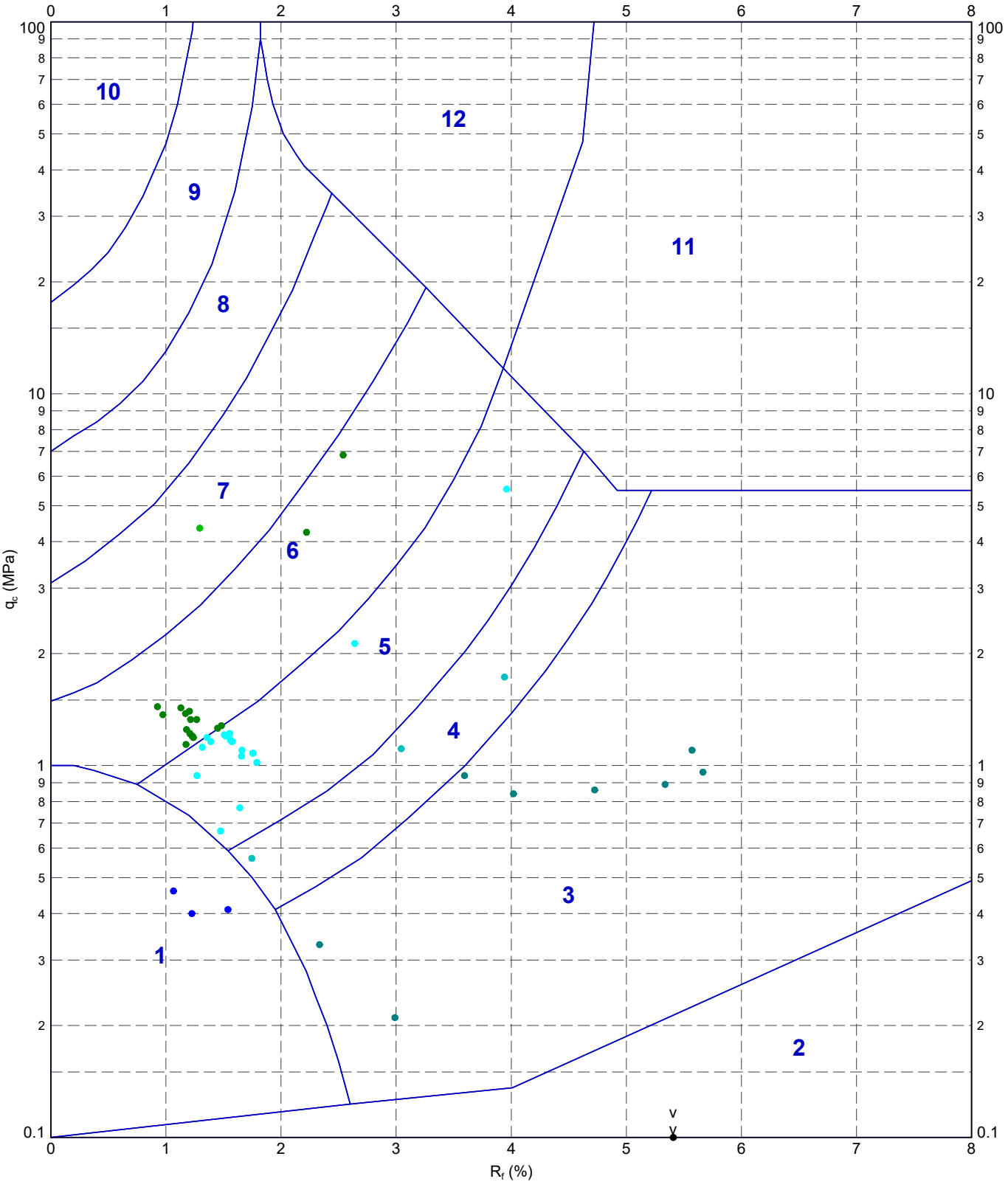
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	251 mV	254 mV	0.033 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	308 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	242 mV	211 mV	-0.007 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2718 mV	2492 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT12

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

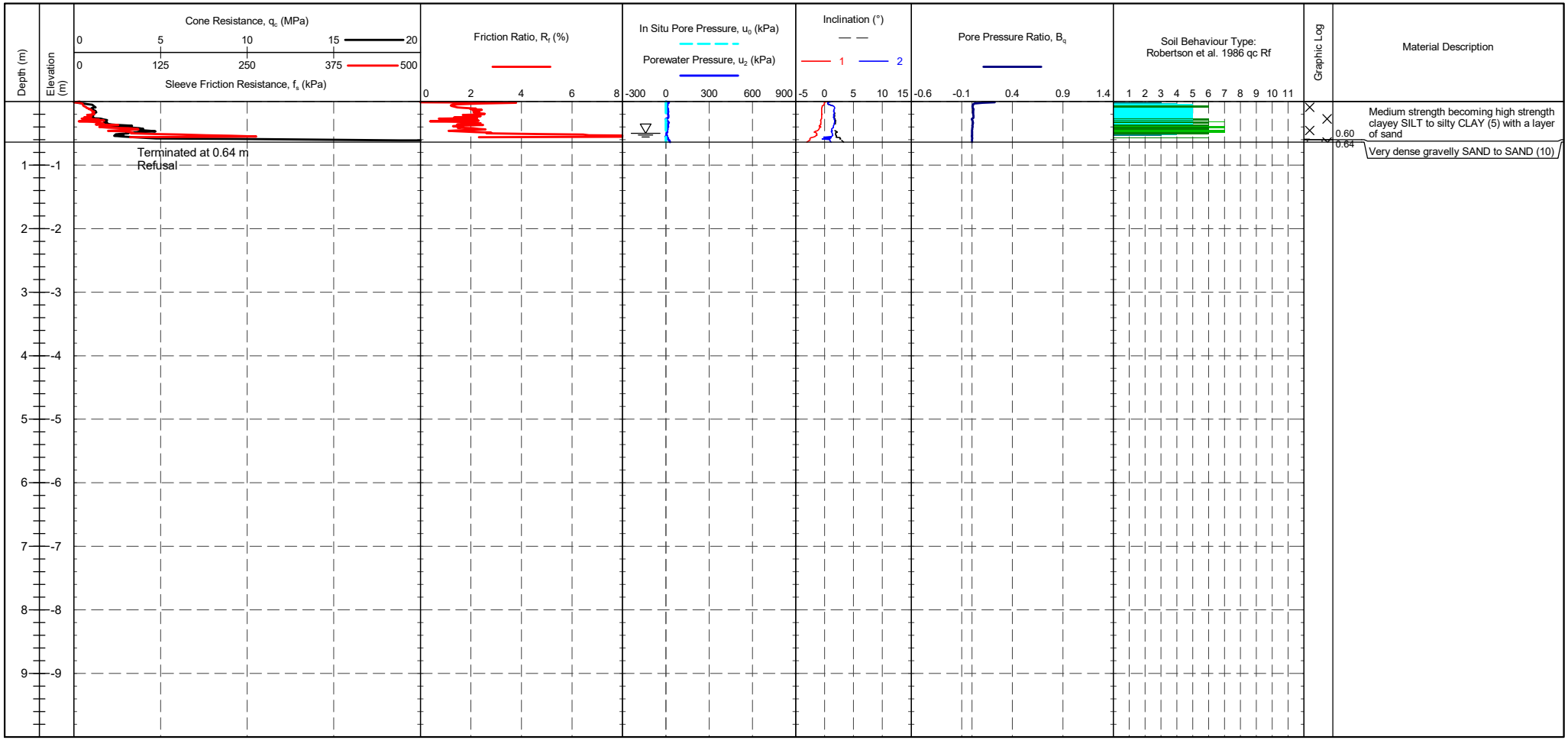
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT12A**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	252 mV	252 mV	0 MPa
Sleeve	307 mV	307 mV	0 kPa
Pore Pressure 2	214 mV	221 mV	0.002 kPa
X-Y Inclinometer	2519 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

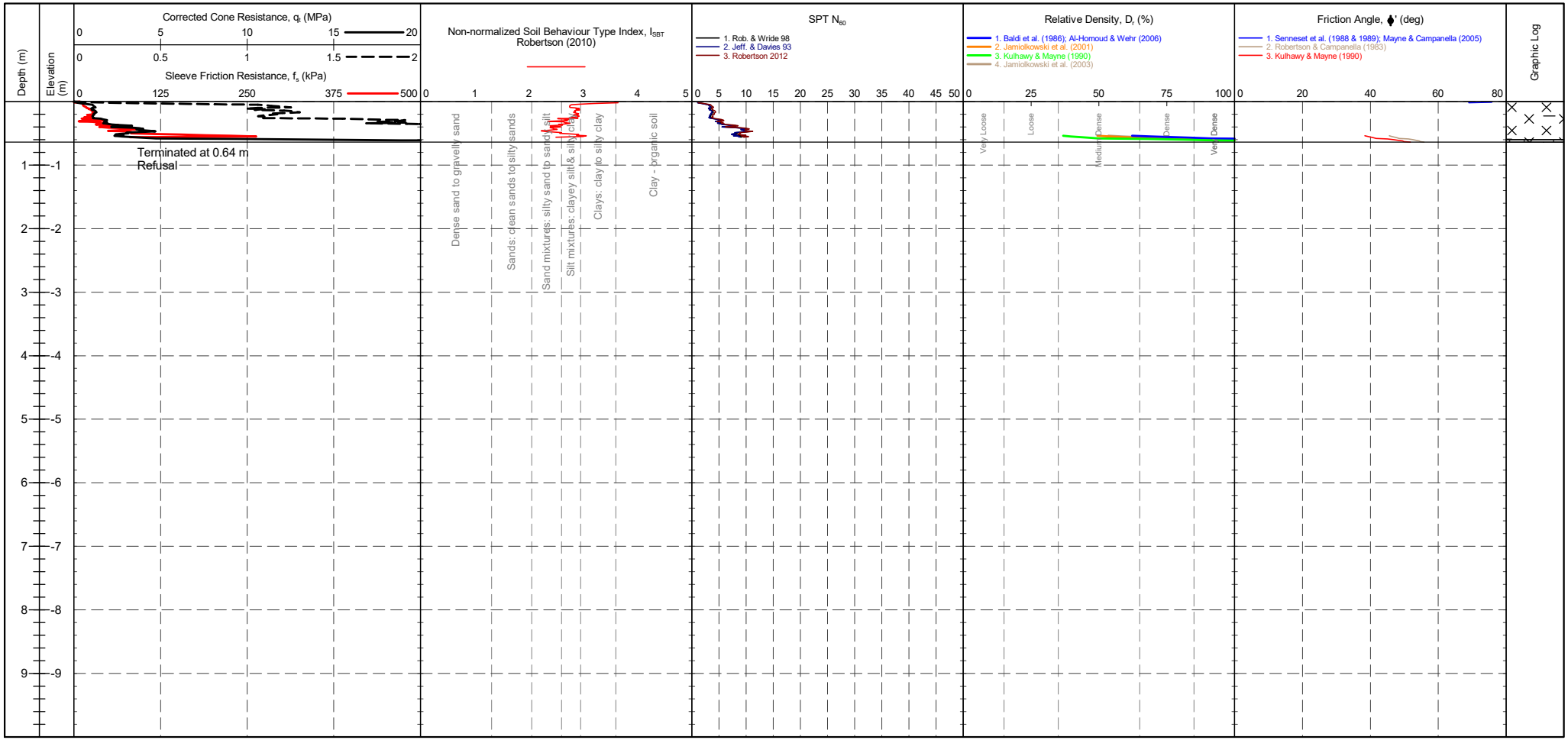
PointID **CPT12A**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	252 mV	252 mV	0 MPa
Sleeve	307 mV	307 mV	0 kPa
Pore Pressure 2	214 mV	221 mV	0.002 kPa
X-Y Inclinometer	2519 mV	2486 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

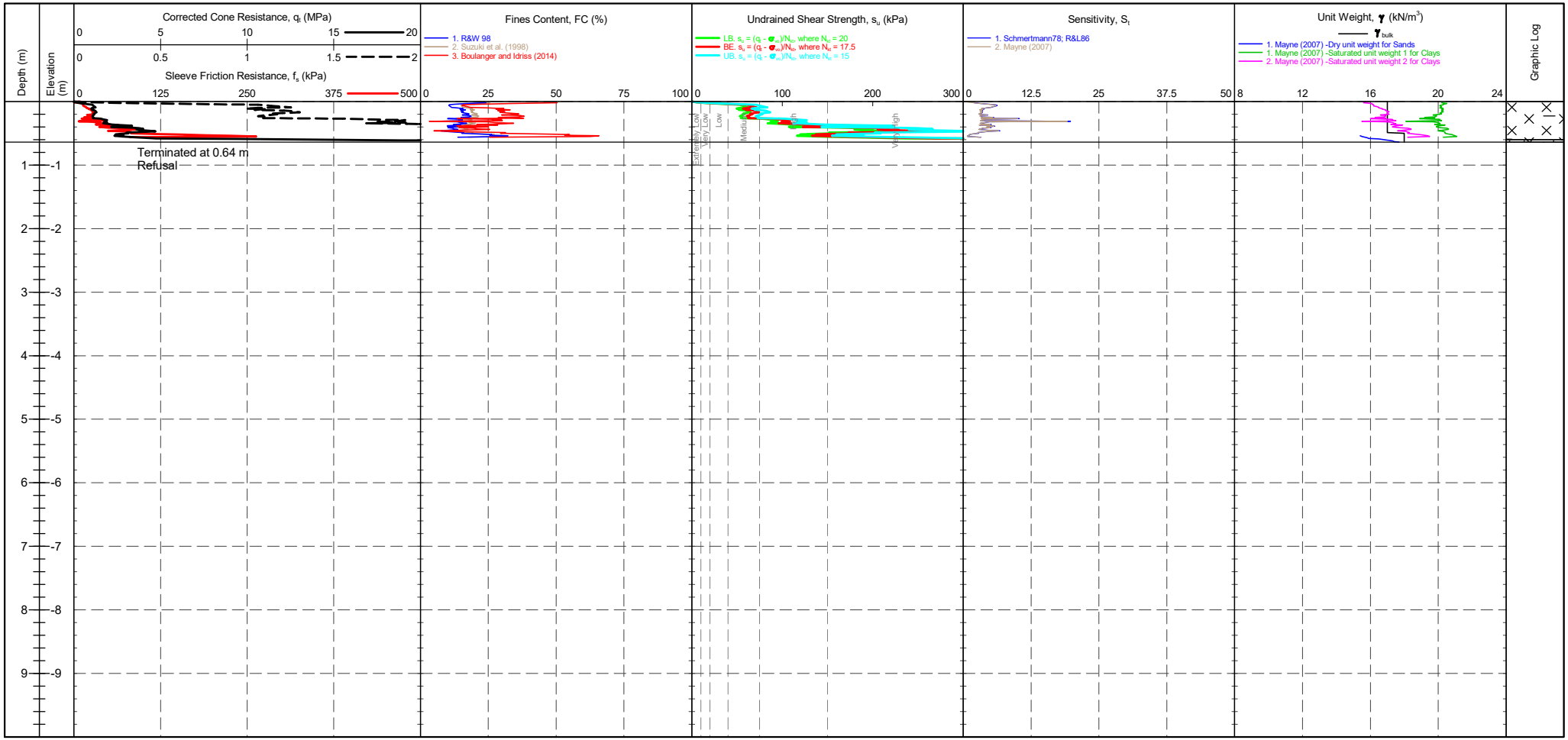
PointID **CPT12A**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



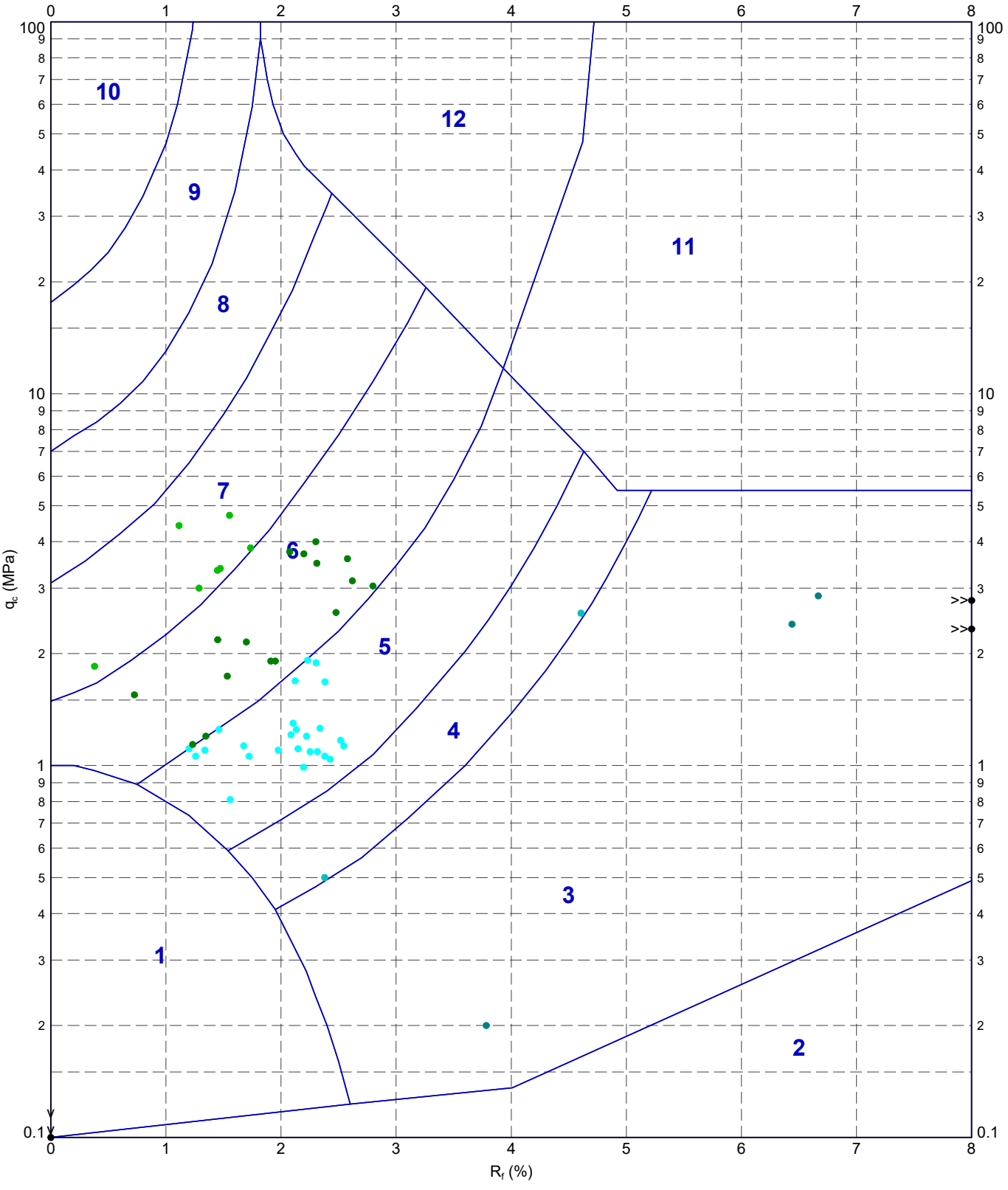
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	252 mV	252 mV	0 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	307 mV	0 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	214 mV	221 mV	0.002 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2519 mV	2486 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT12A

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

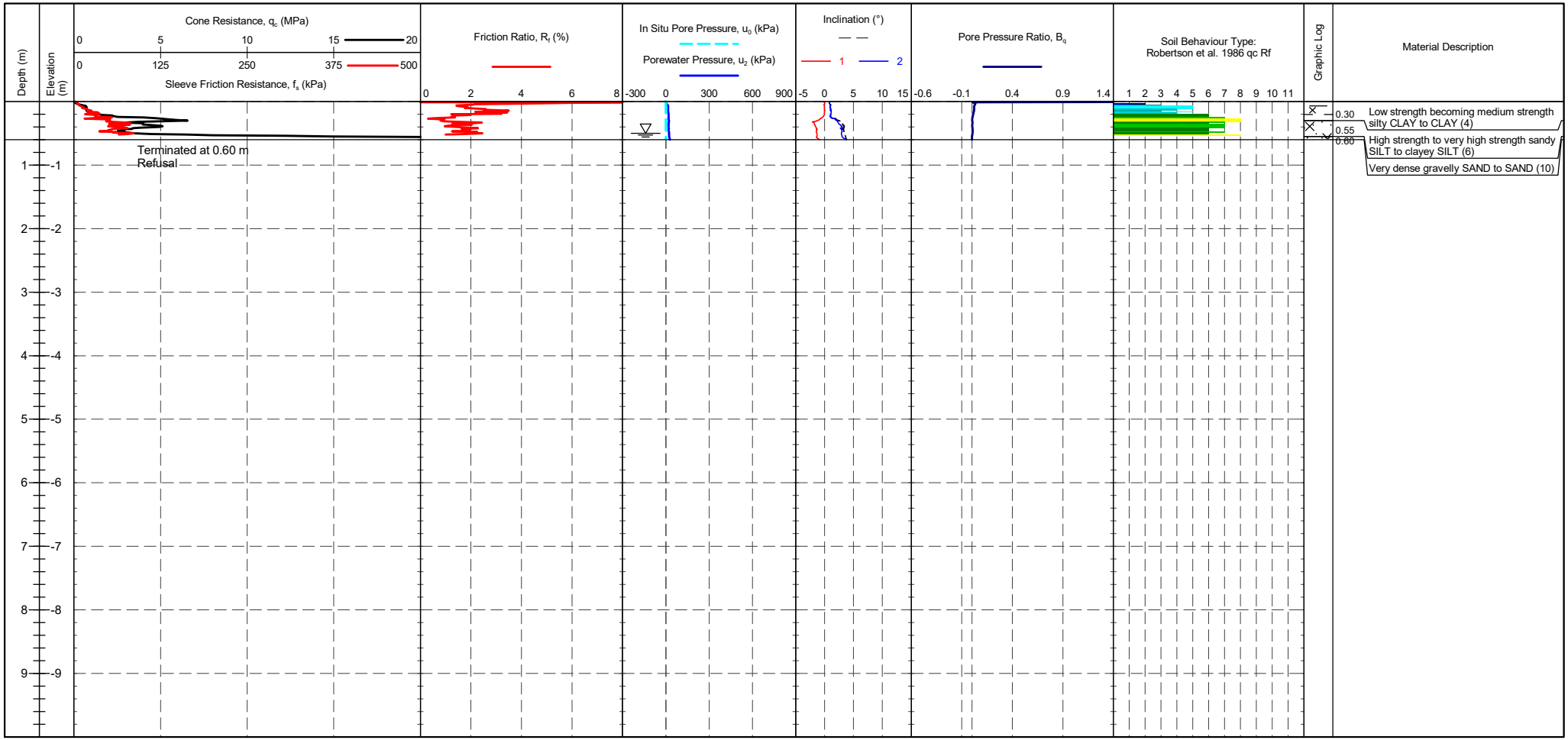
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:04 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT12B**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	250 mV	0.011 MPa
Sleeve	307 mV	306 mV	-0.001 kPa
Pore Pressure 2	252 mV	213 mV	-0.009 kPa
X-Y Inclinometer	2472 mV	2463 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

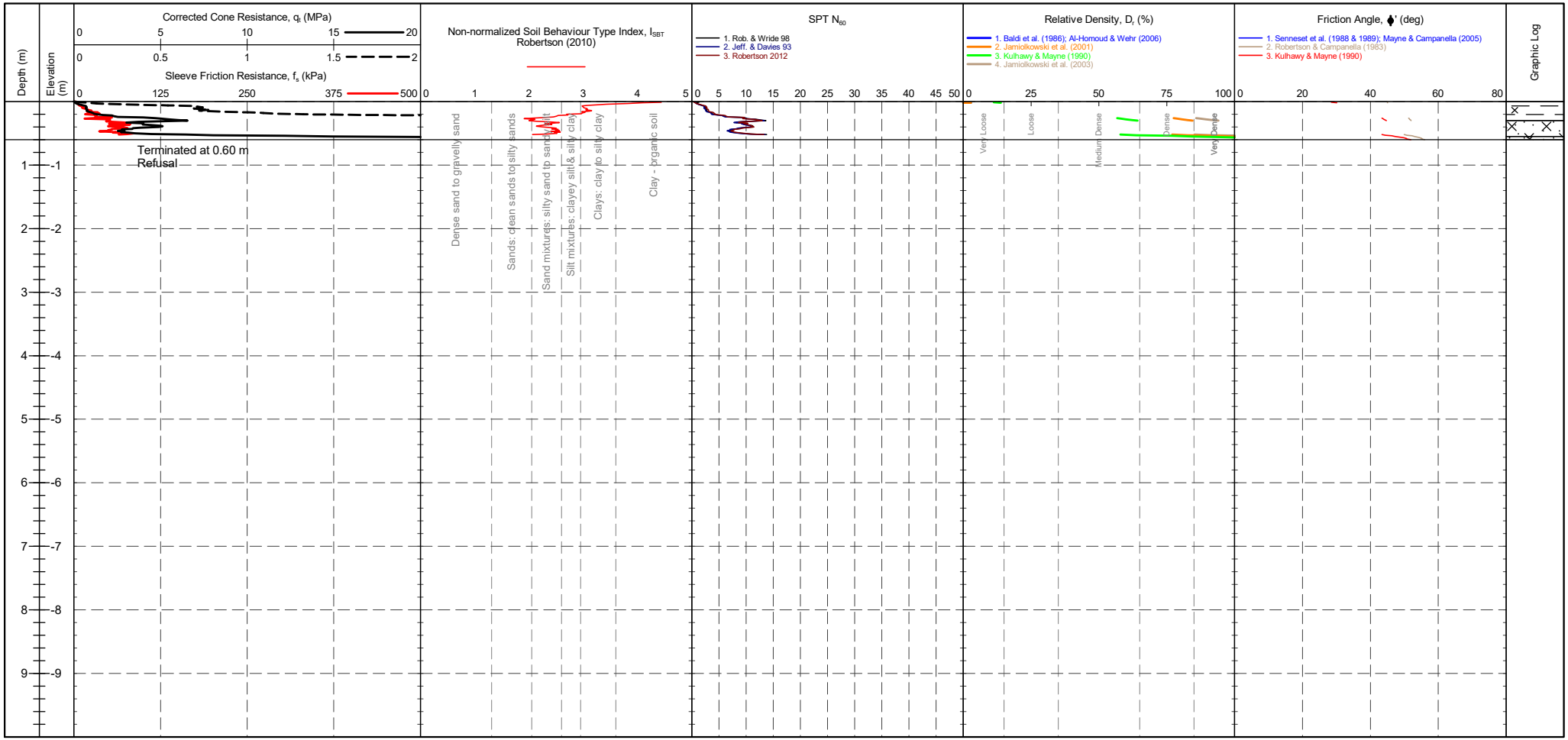
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID **CPT12B**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	250 mV	0.011 MPa
Sleeve	307 mV	306 mV	-0.001 kPa
Pore Pressure 2	252 mV	213 mV	-0.009 kPa
X-Y Inclinometer	2472 mV	2463 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

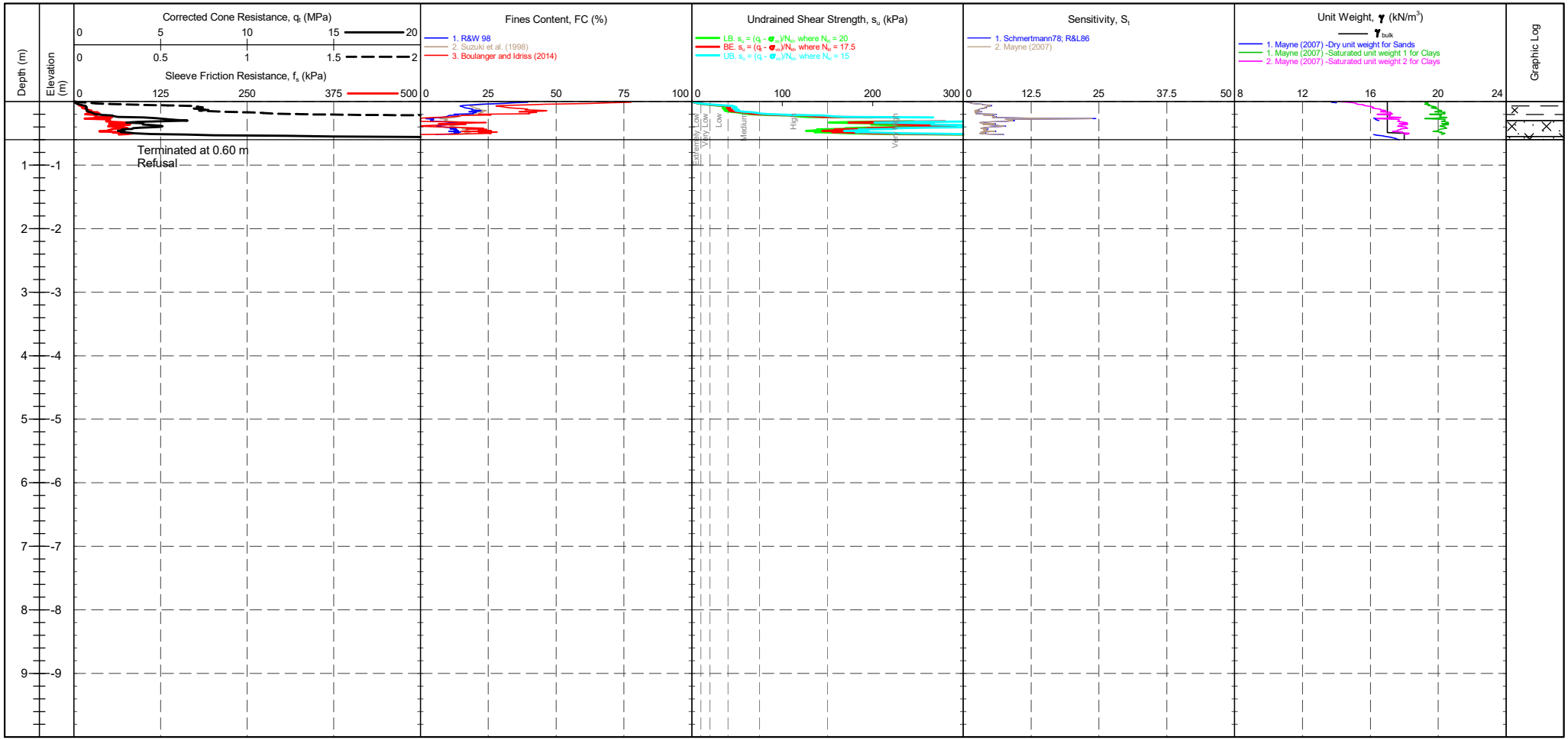
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID **CPT12B**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test refused on total pressure.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



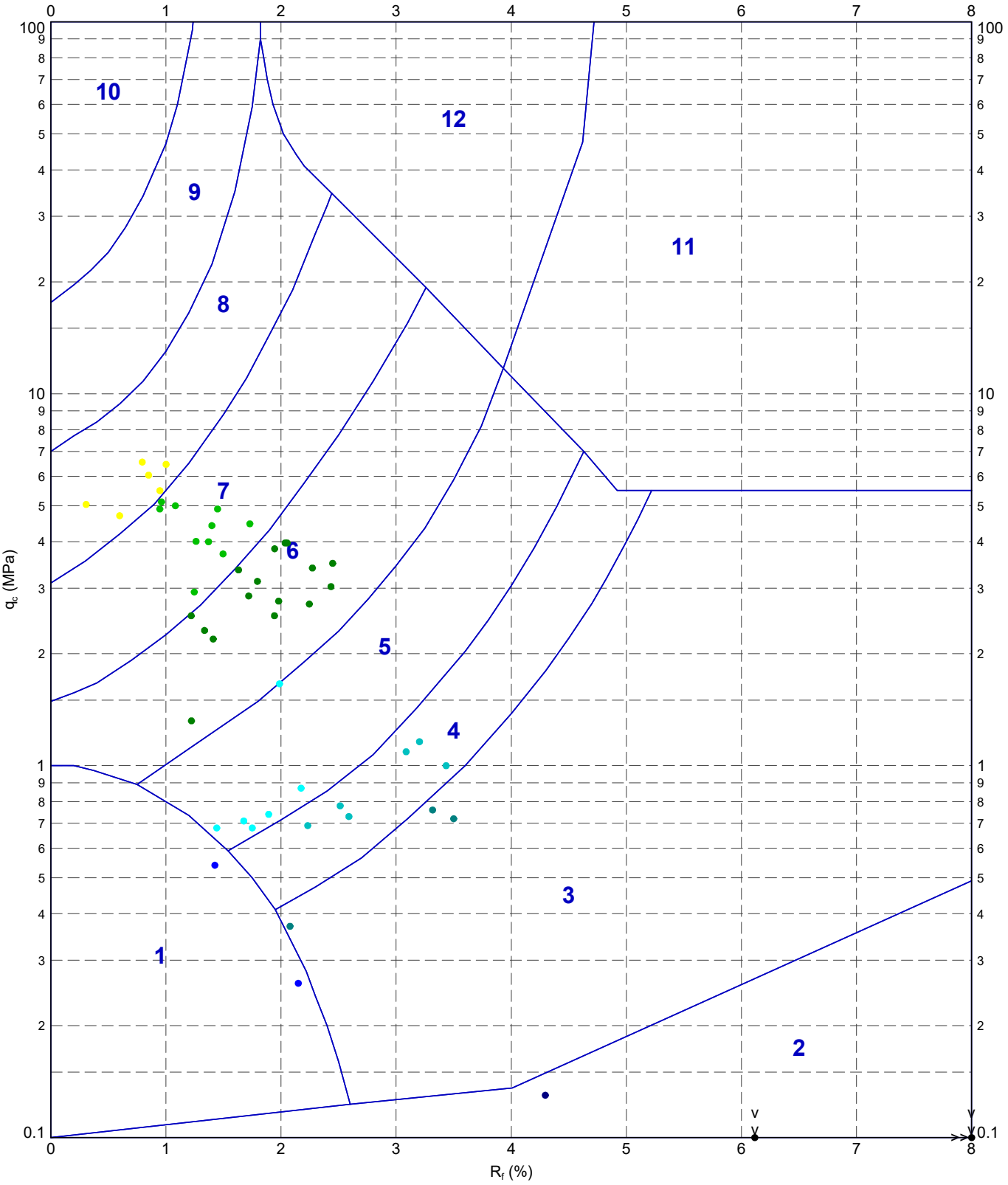
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	250 mV	0.011 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	252 mV	213 mV	-0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2463 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT12B

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

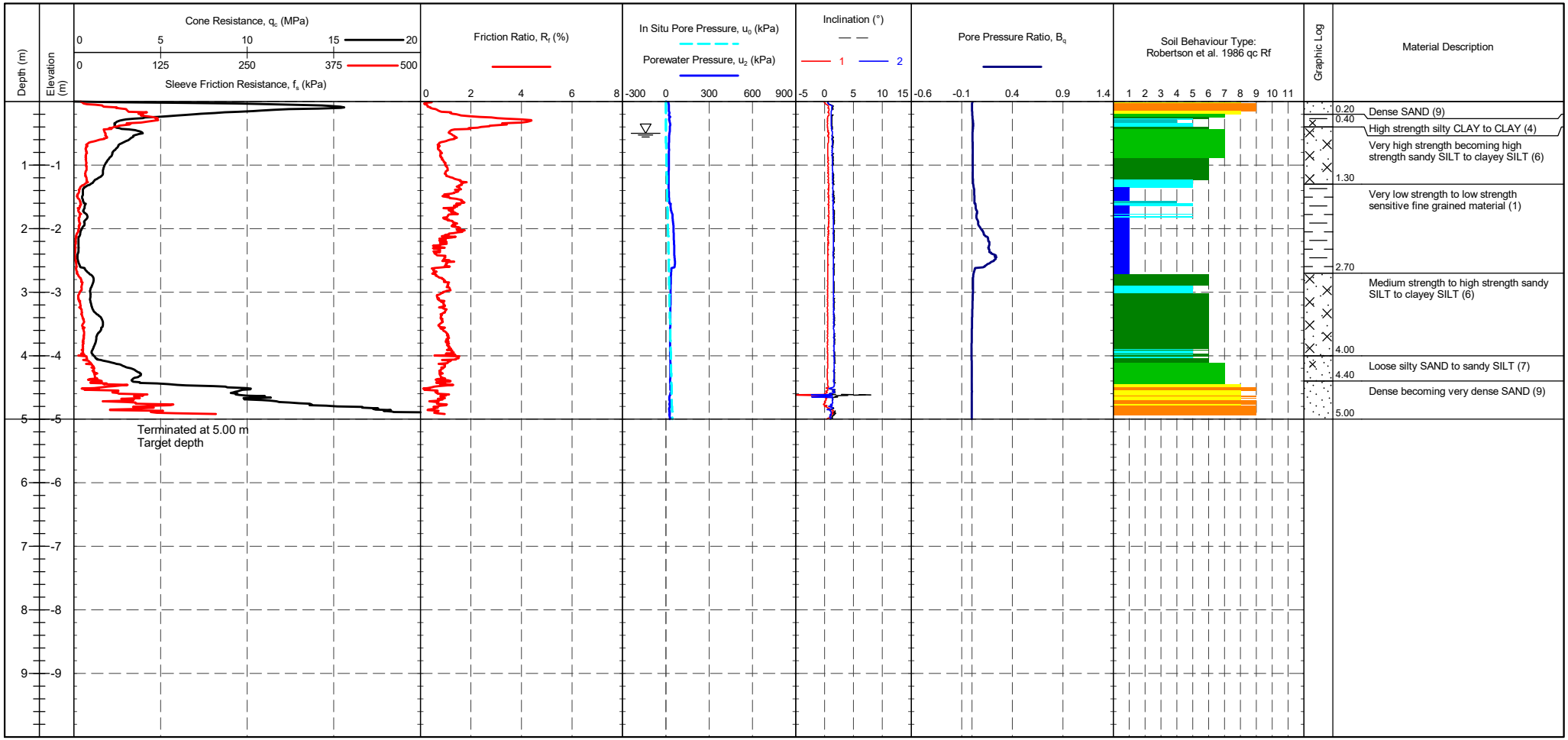
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:05 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT13**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	249 mV	0 MPa
Sleeve	305 mV	307 mV	0.001 kPa
Pore Pressure 2	223 mV	263 mV	0.009 kPa
X-Y Inclinometer	2472 mV	2498 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

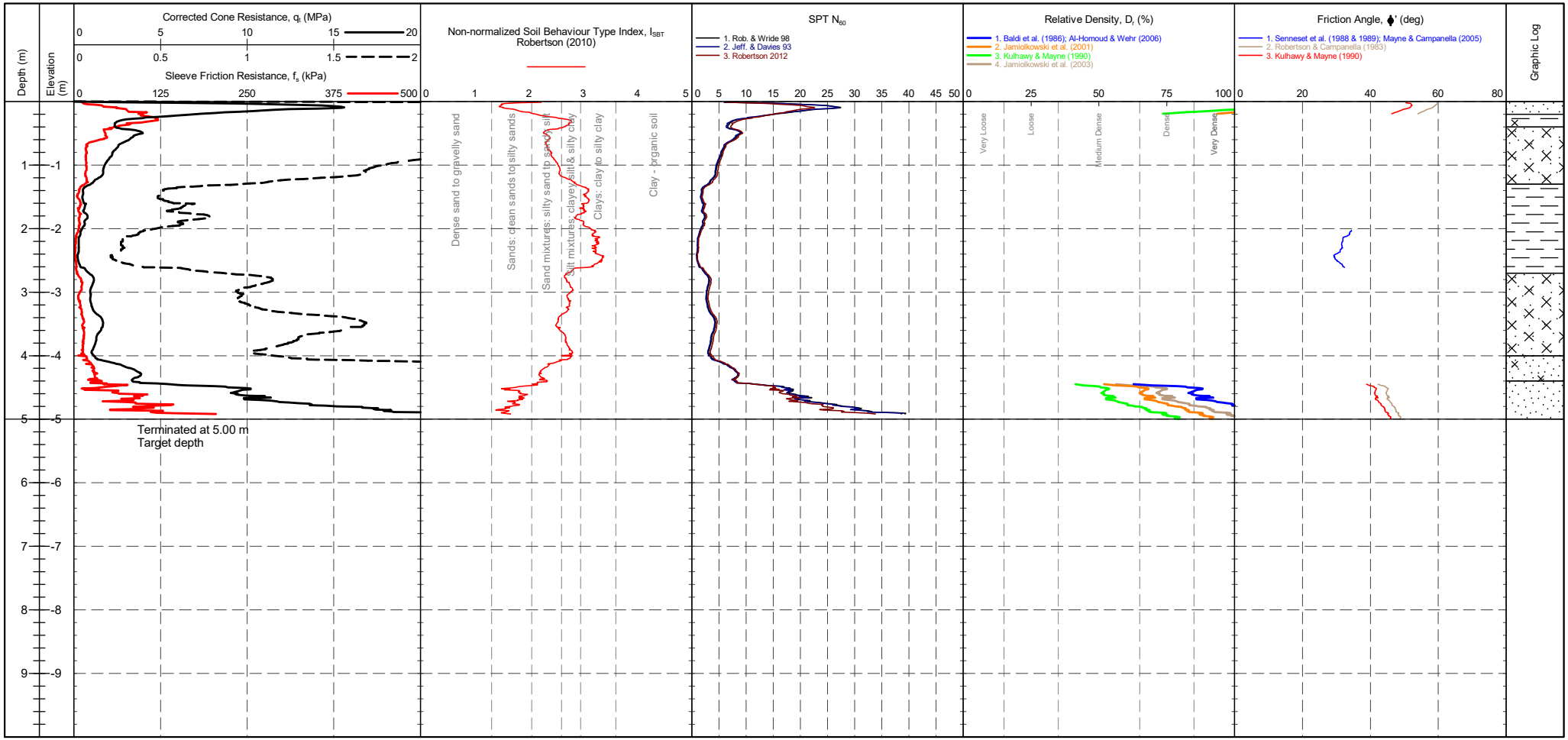
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT13**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	249 mV	0 MPa
Sleeve	305 mV	307 mV	0.001 kPa
Pore Pressure 2	223 mV	263 mV	0.009 kPa
X-Y Inclinometer	2472 mV	2498 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

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Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

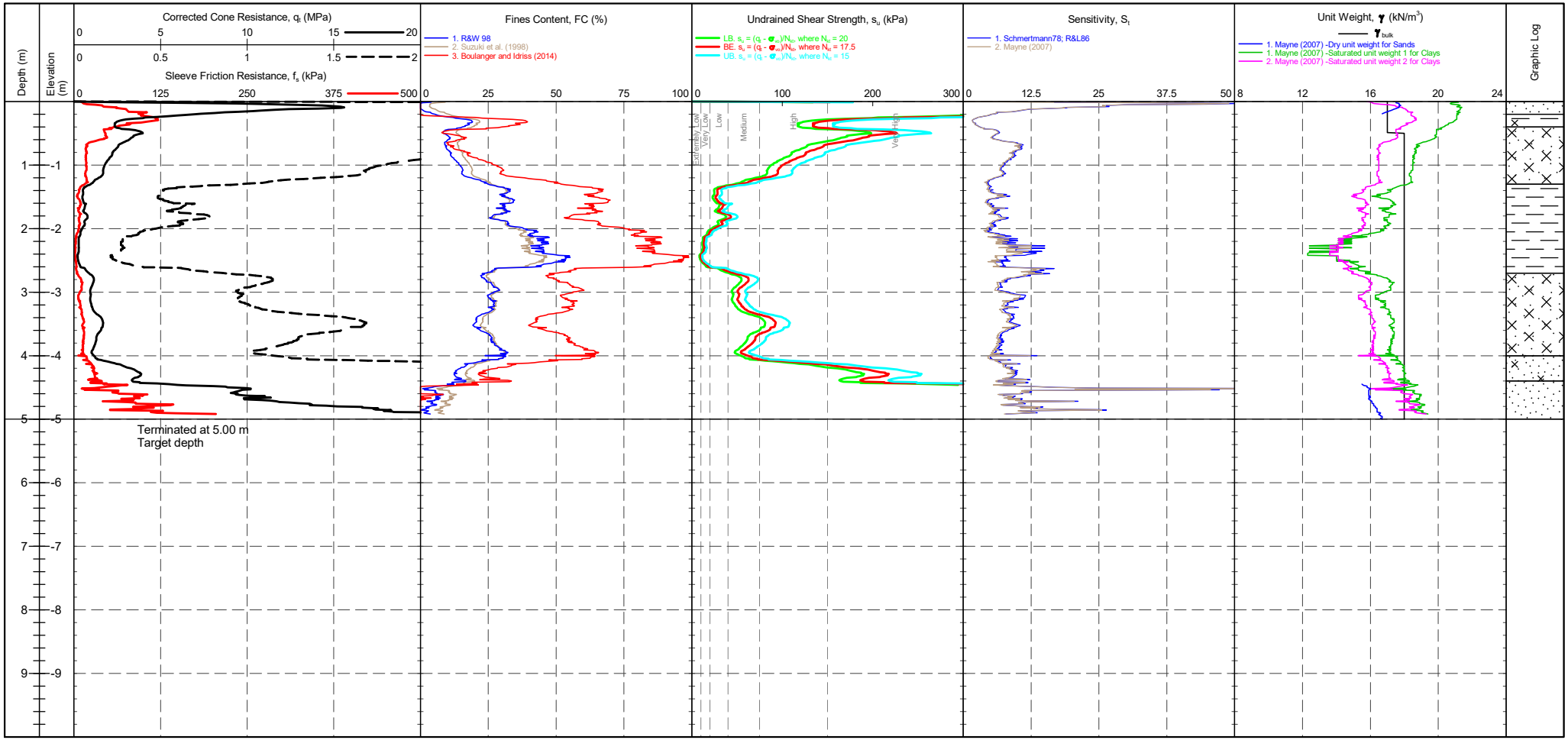
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID: **CPT13**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



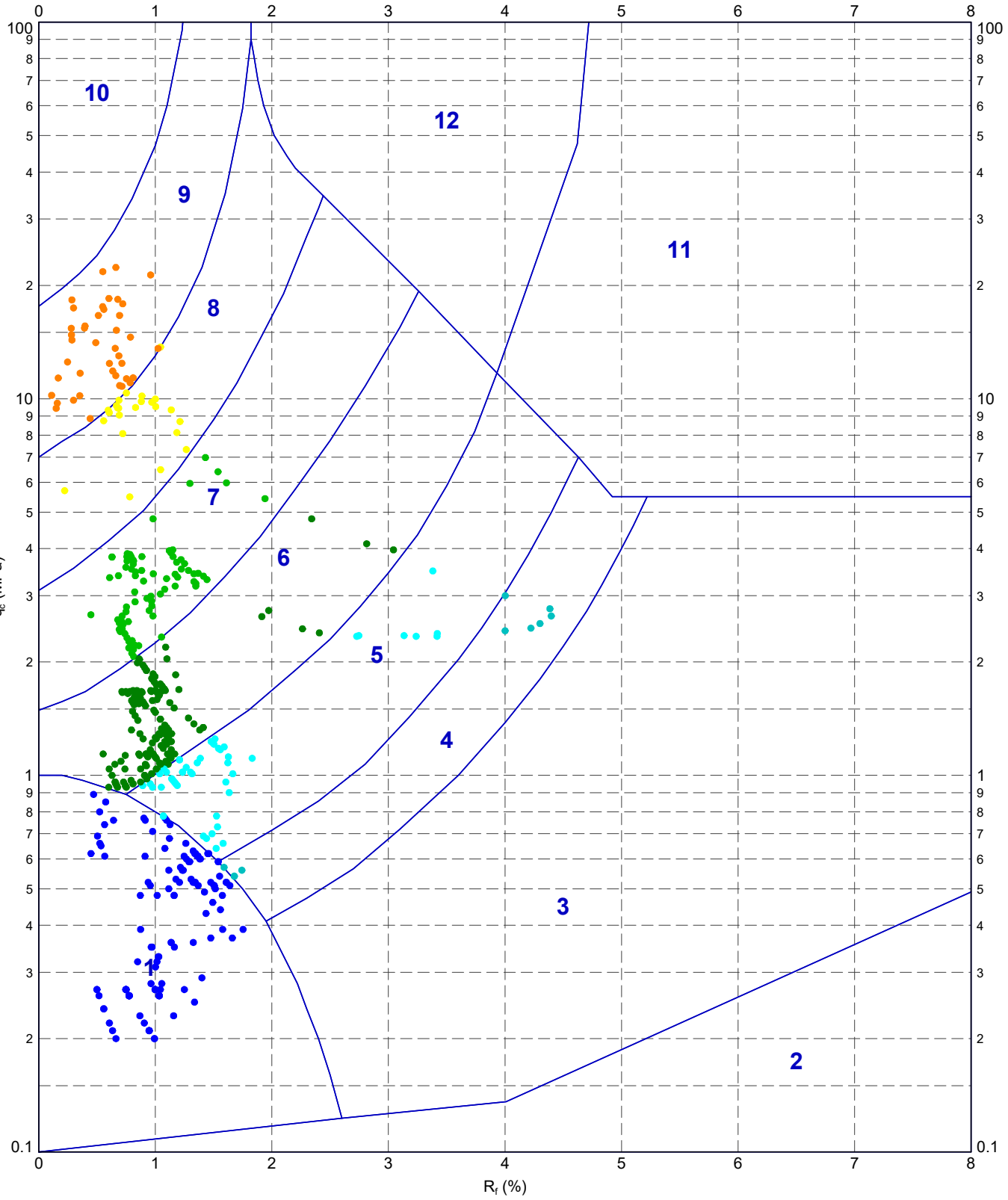
CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	249 mV	249 mV	0 MPa
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	305 mV	307 mV	0.001 kPa
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	223 mV	263 mV	0.009 kPa
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2472 mV	2498 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT13

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

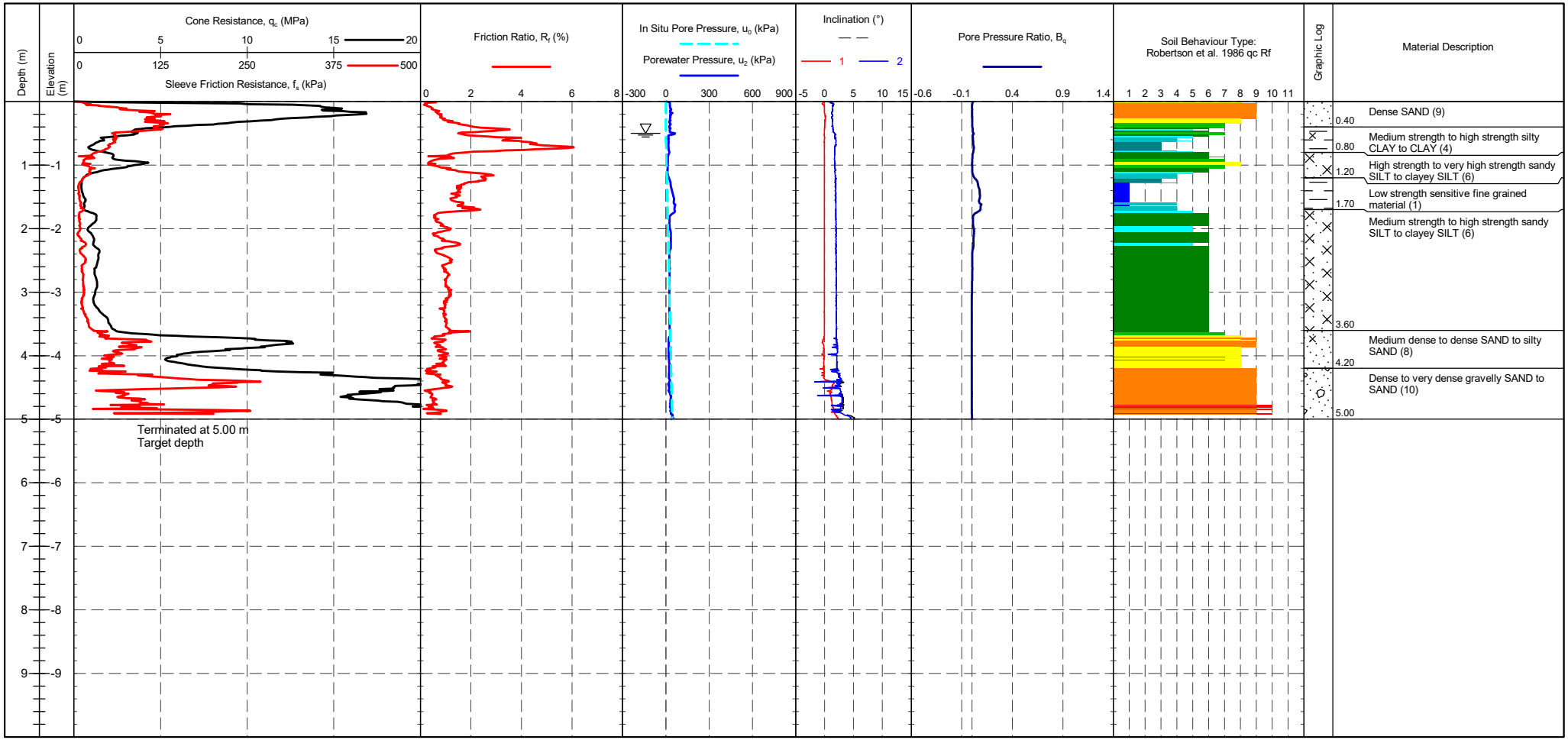
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:05 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT14**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	247 mV	-0.022 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	217 mV	216 mV	0 kPa
X-Y Inclinometer	2488 mV	2440 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

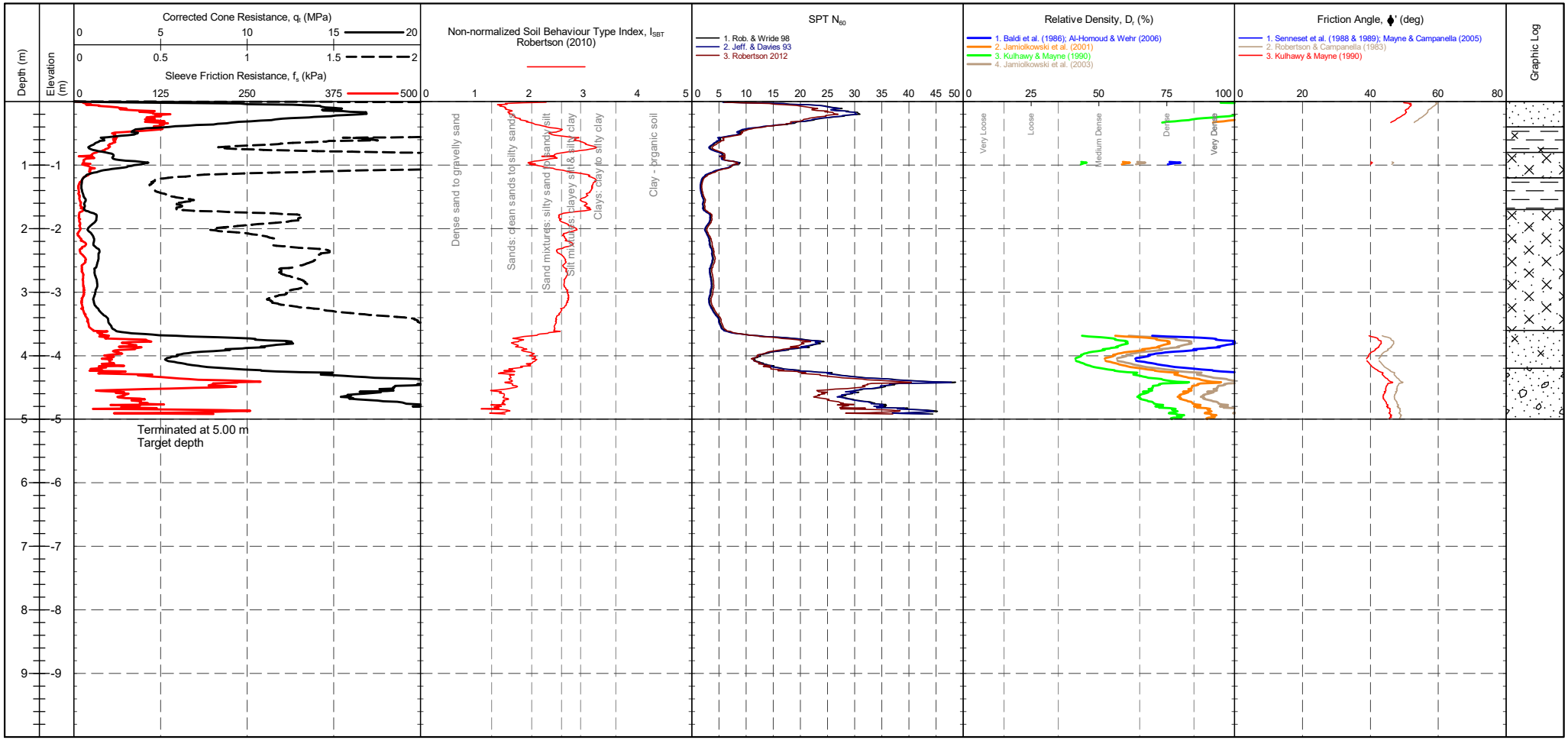
PointID **CPT14**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	249 mV	247 mV	-0.022 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	217 mV	216 mV	0 kPa
X-Y Inclinometer	2488 mV	2440 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

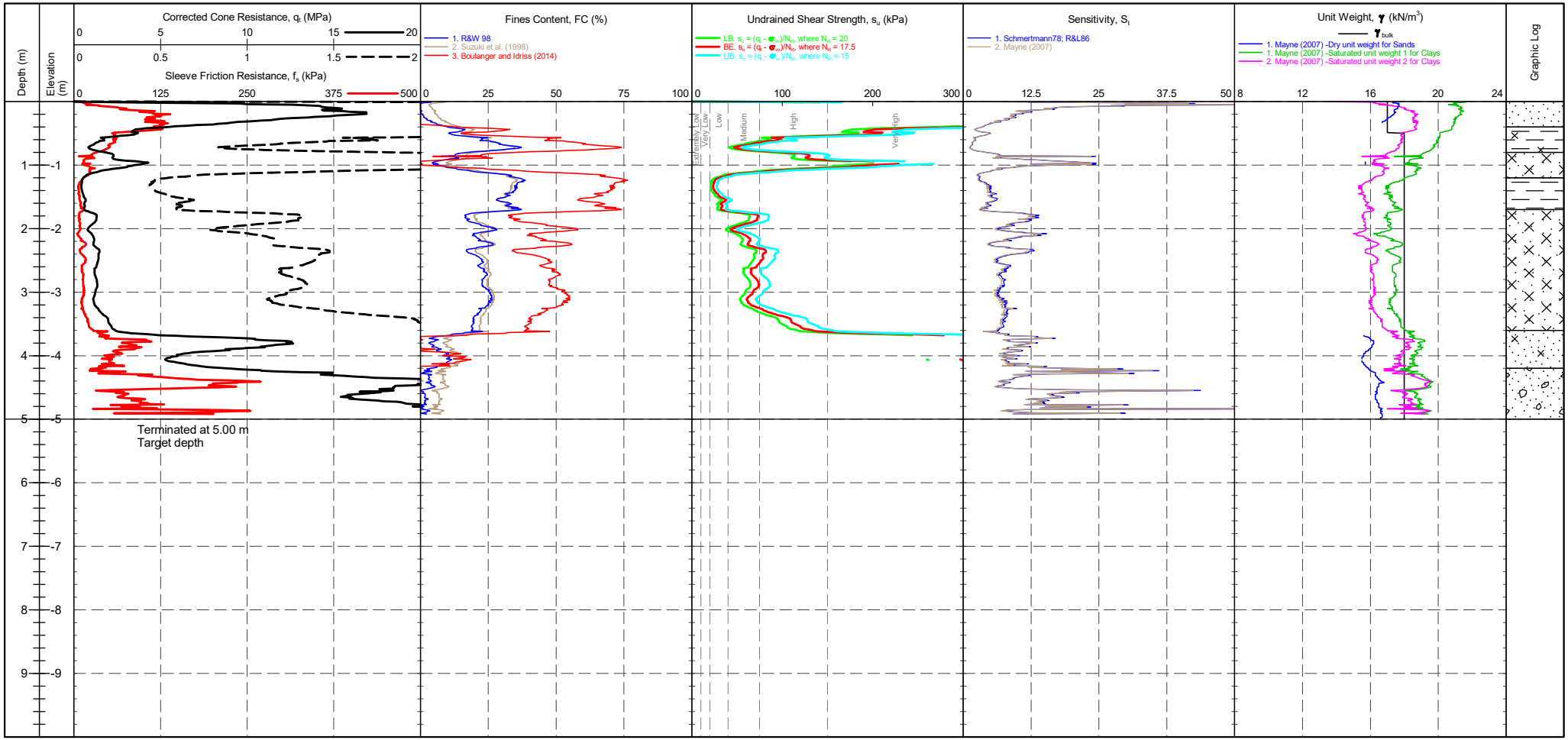
PointID: **CPT14**

CLIENT : Soiltechnics
PROJECT : Rhodes Business Park
LOCATION : Middleton
PROJECT No. : 1230412

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
Test completed at target depth.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 12/10/2023
PLOT DATE : 17/10/2023
METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka		
CONE AREA RATIO	: 0.79	OPERATOR	: PD		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

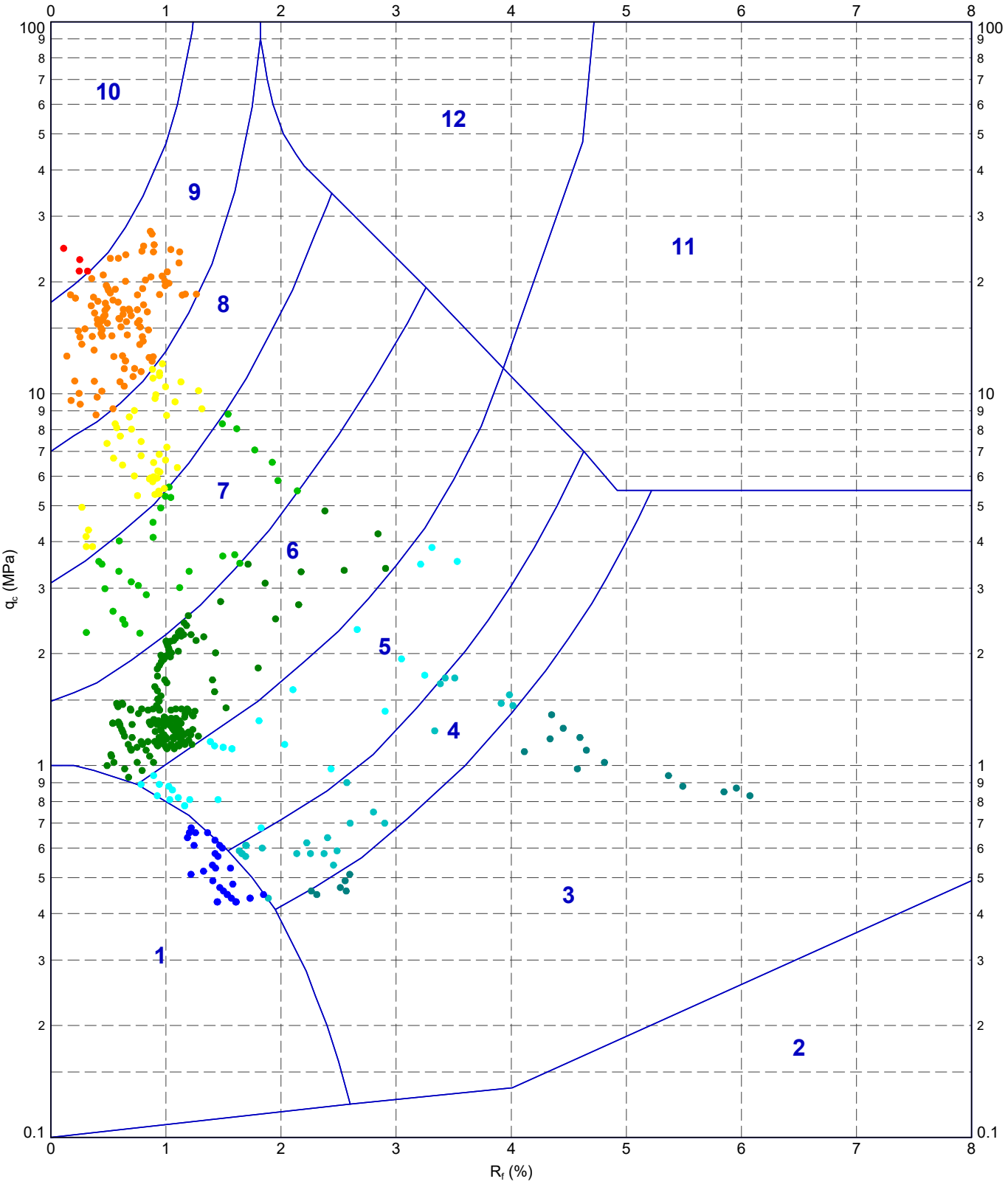
Transducer	Pre	Post	Difference
Tip	249 mV	247 mV	-0.022 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	217 mV	216 mV	0 kPa
X-Y Inclinometer	2488 mV	2440 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT14

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

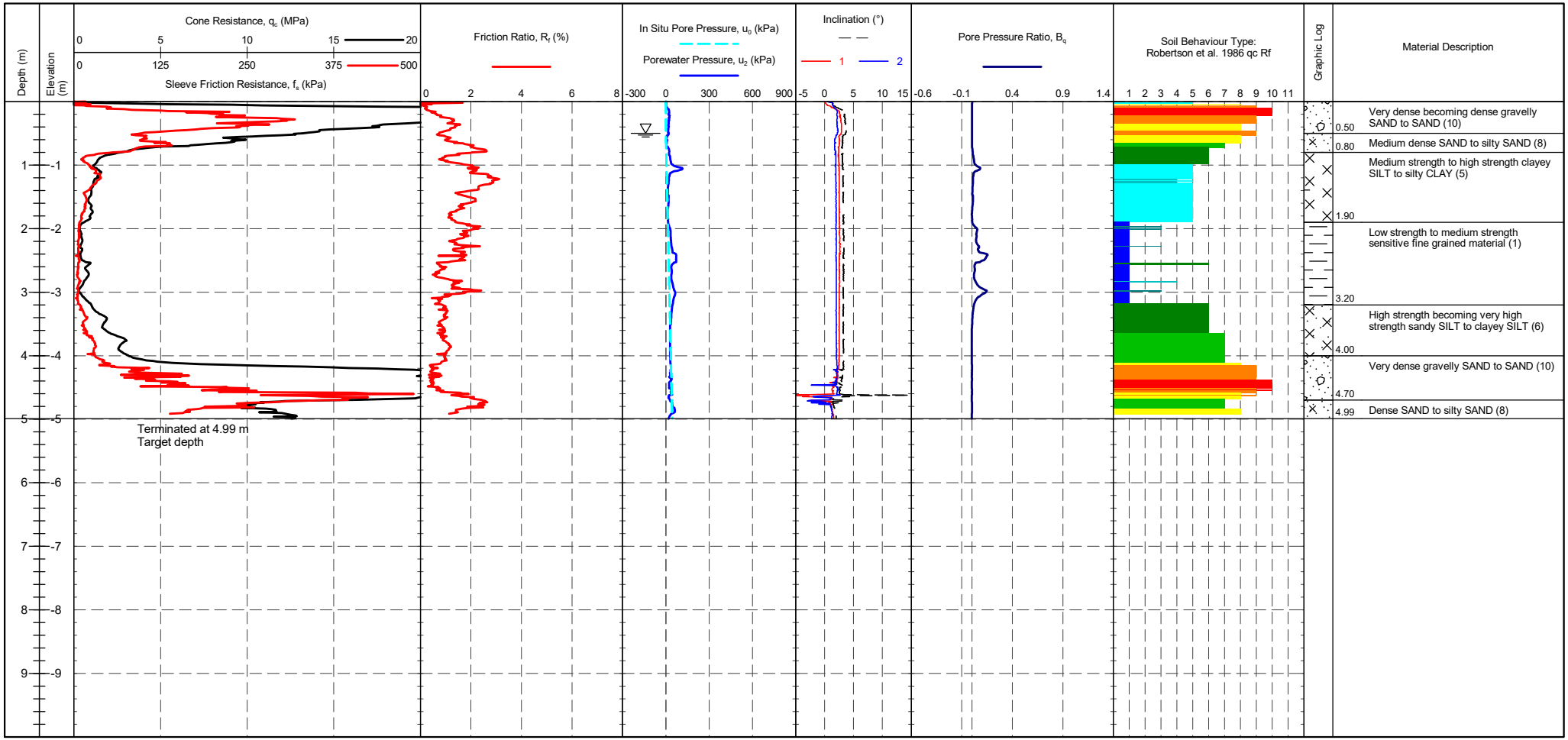
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:06 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 01

PointID **CPT15**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2
CALIBRATION DATE	: 07/06/2023	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 007 - Morooka
CONE AREA	: 15cm^2	OPERATOR	: PD
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Overcast & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Supplied from the onsite drillers.

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	250 mV	249 mV	-0.011 MPa
Sleeve	306 mV	306 mV	0 kPa
Pore Pressure 2	208 mV	226 mV	0.004 kPa
X-Y Inclinometer	2490 mV	2473 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

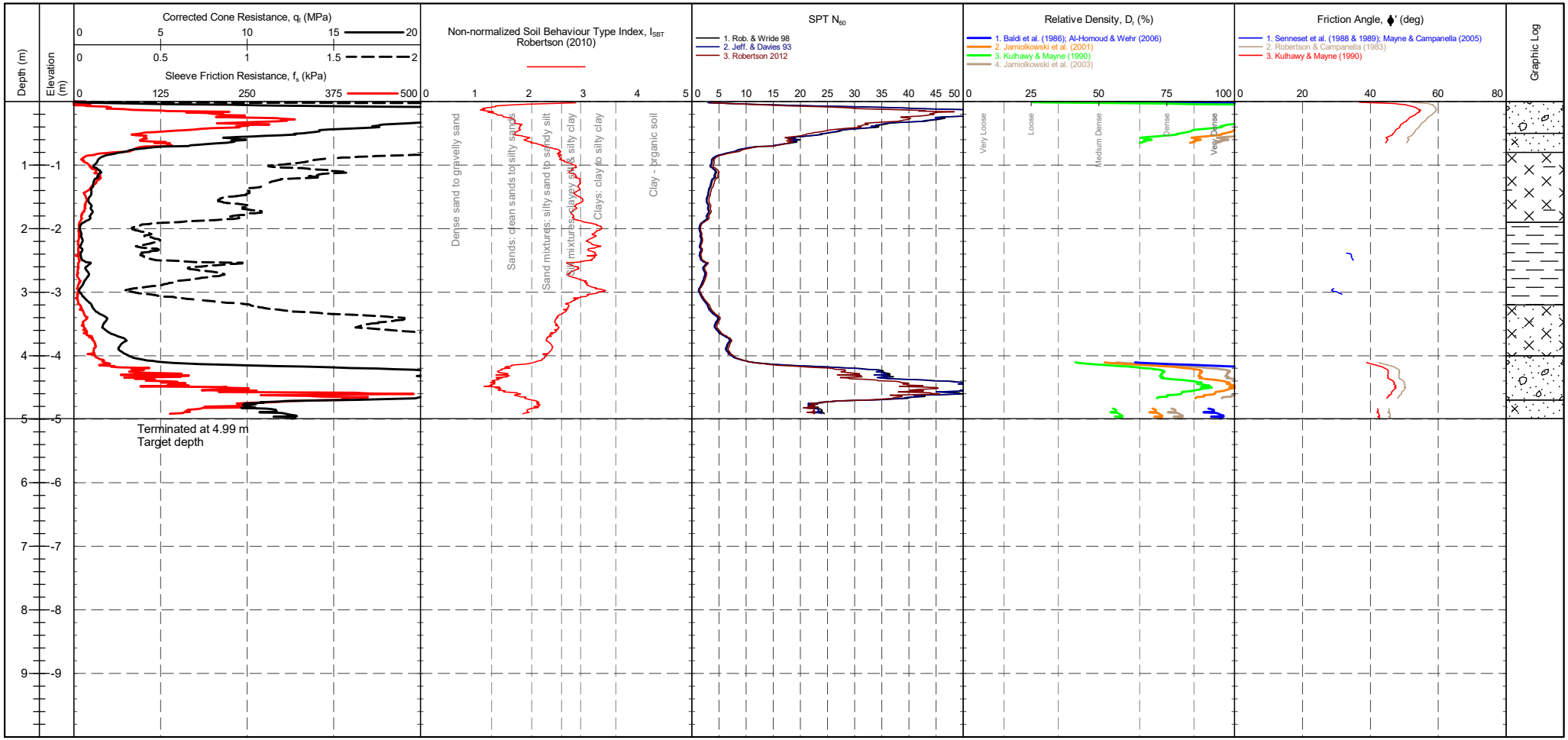
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 02

PointID: **CPT15**

CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	250 mV	249 mV
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	306 mV
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	208 mV	226 mV
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2490 mV	2473 mV

Transducer	Difference
Tip	-0.011 MPa
Sleeve	0 kPa
Pore Pressure 2	0.004 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

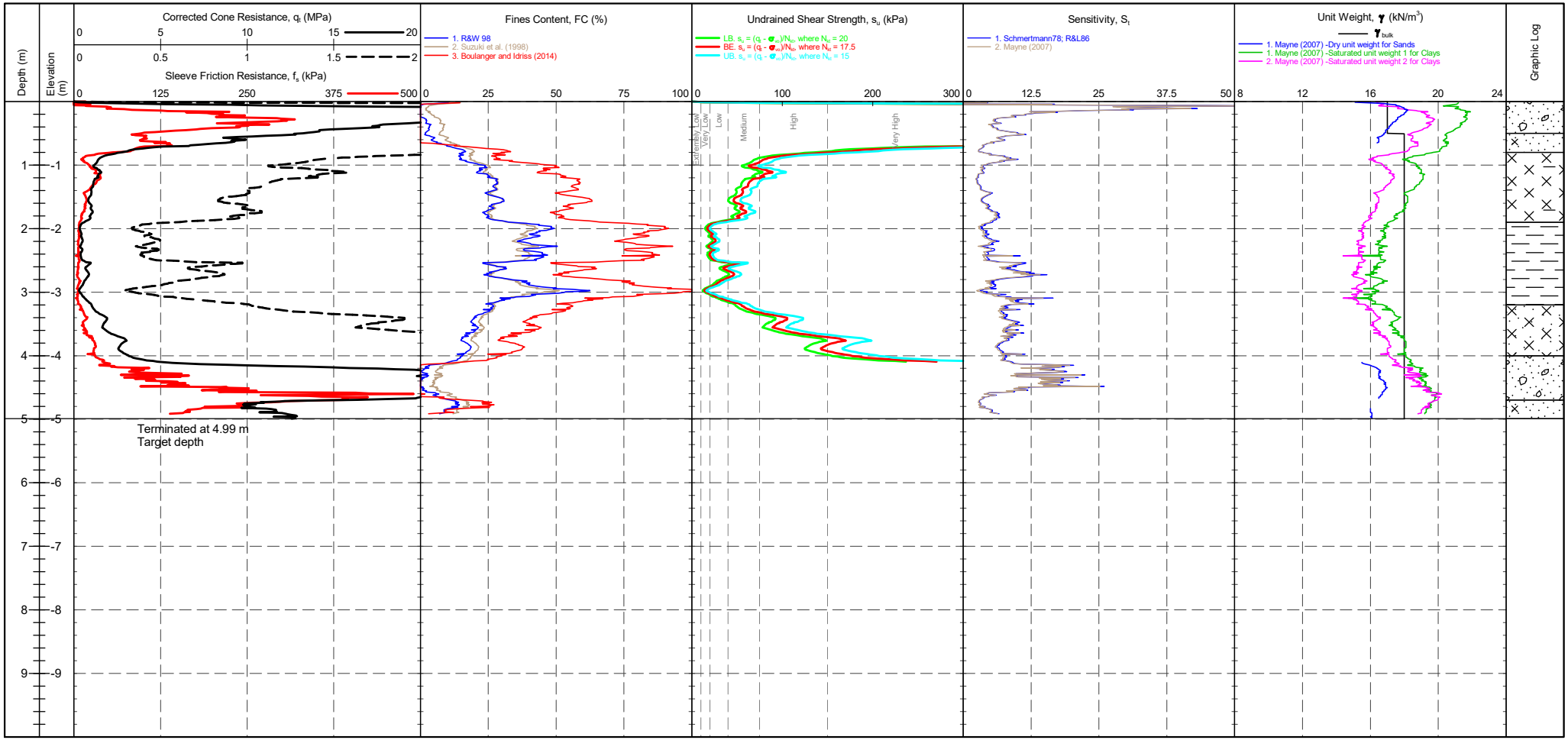
Dissipation Test

IN SITU SITE INVESTIGATION Working with: soiltechnics environmental and geotechnical consultants

CPT LOG 03

PointID **CPT15**

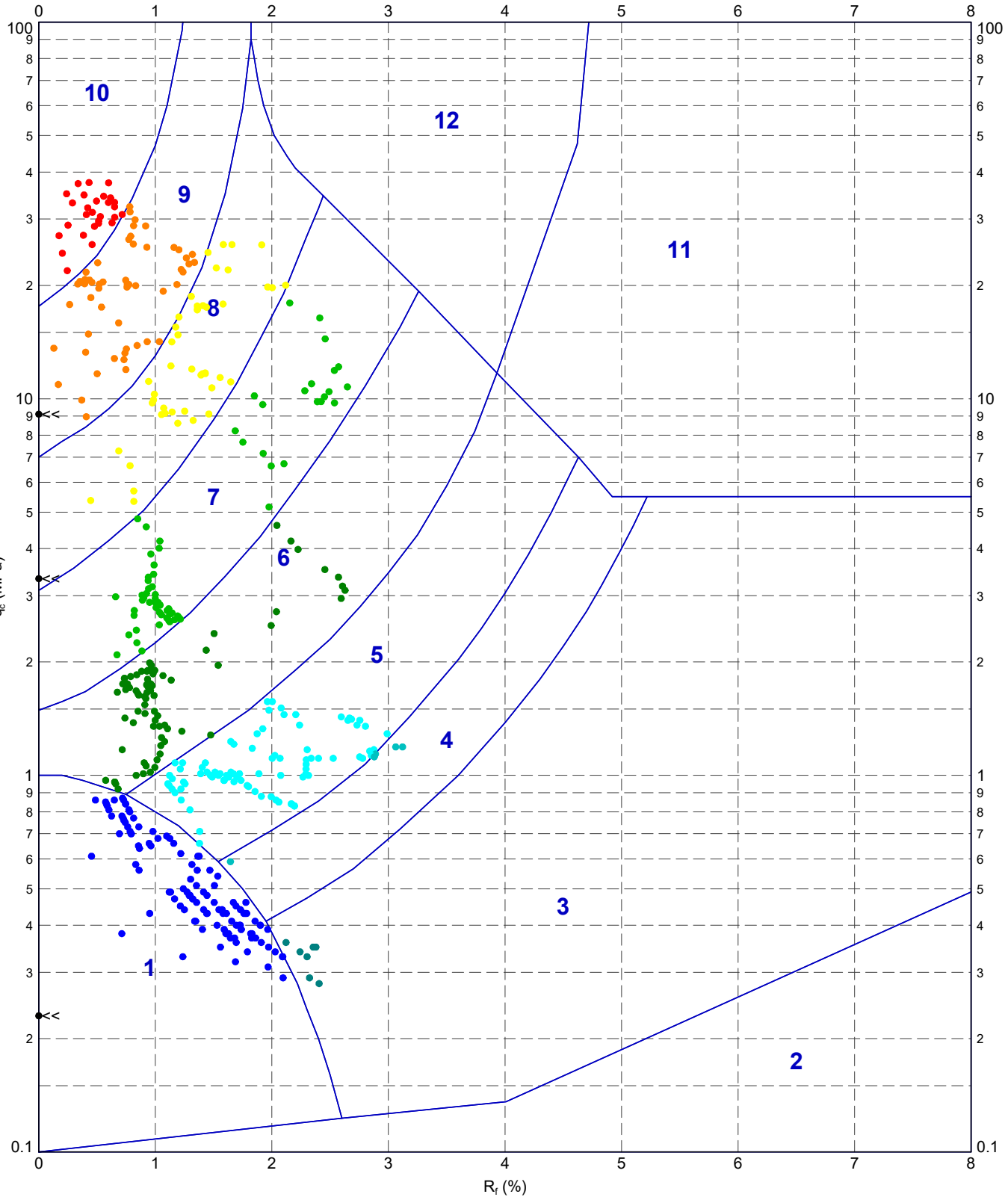
CLIENT : Soiltechnics	EASTING : 0.000 m	Remark:	SHEET : 1 OF 1
PROJECT : Rhodes Business Park	NORTHING : 0.000 m	Test completed at target depth.	STATUS : Final
LOCATION : Middleton	ELEVATION : 0.000 m OD		TEST DATE : 12/10/2023
PROJECT No. : 1230412	CHECKED BY : DW		PLOT DATE : 17/10/2023
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.1867	TEST TYPE	: TE2	CPTU ZERO VALUES				COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
CONE AREA	: 15cm^2	RIG	: CPT 007 - Morooka	Tip	250 mV	249 mV	-0.011 MPa	Extremely low strength	<10	Medium strength	40-75
CONE AREA RATIO	: 0.79	OPERATOR	: PD	Sleeve	306 mV	306 mV	0 kPa	Very low strength	10-20	High strength	75-150
FILTER POSITION	: u2	FRICTION REDUCER	: None	Pore Pressure 2	208 mV	226 mV	0.004 kPa	Low strength	20-40	Very high strength	150-300
FILTER TYPE	: HDPE	WEATHER	: Overcast & Mild	X-Y Inclinometer	2490 mV	2473 mV				Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Soiltechnics
Middleton
Rhodes Business Park
Robertson et al. 1986 q_c vs. R_f - CPT15

DRAWN	DATE 17/10/2023
CHECKED	DATE 17/10/2023
SCALE Not To Scale	A4
PROJECT No 1230412	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230412 RHOSE BUSINESS PARK MIDDLETON SOILTECHNICS.GPJ <<DrawingFile>> 17/10/2023 17:07 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation
Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

soiltechnics
environmental ▪ geotechnical ▪ building fabric

Appendix F Geotechnical Laboratory Test Results

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

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

4041

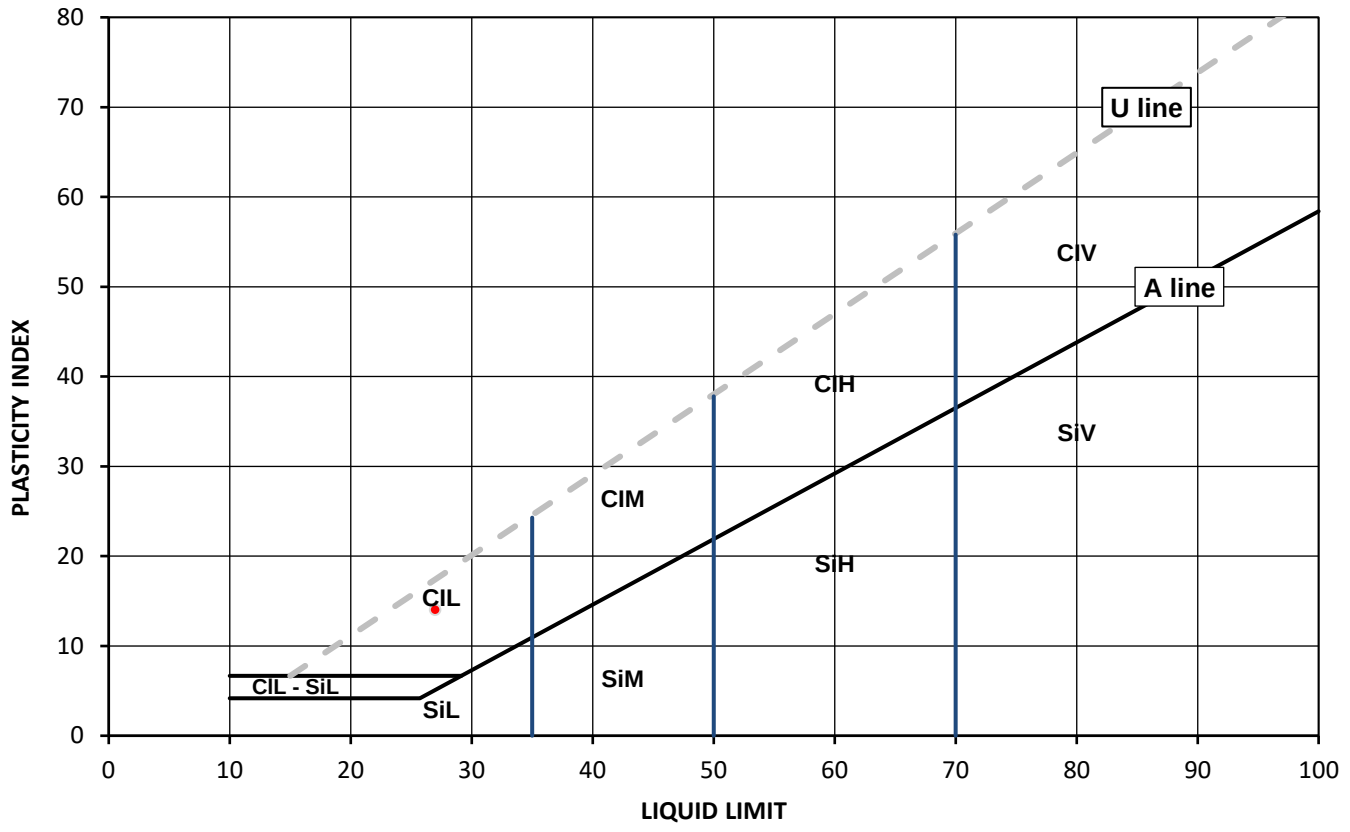
Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849050	Depth Top [m]:	9.00
Hole No.:	CP01	Depth Base [m]:	9.45
Sample Reference:	CP019.0022	Sample Type:	B
Sample Description:	Brownish grey slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after washing to remove >425 µm		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
12	27	13	14	82



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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

Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 232.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

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

4041

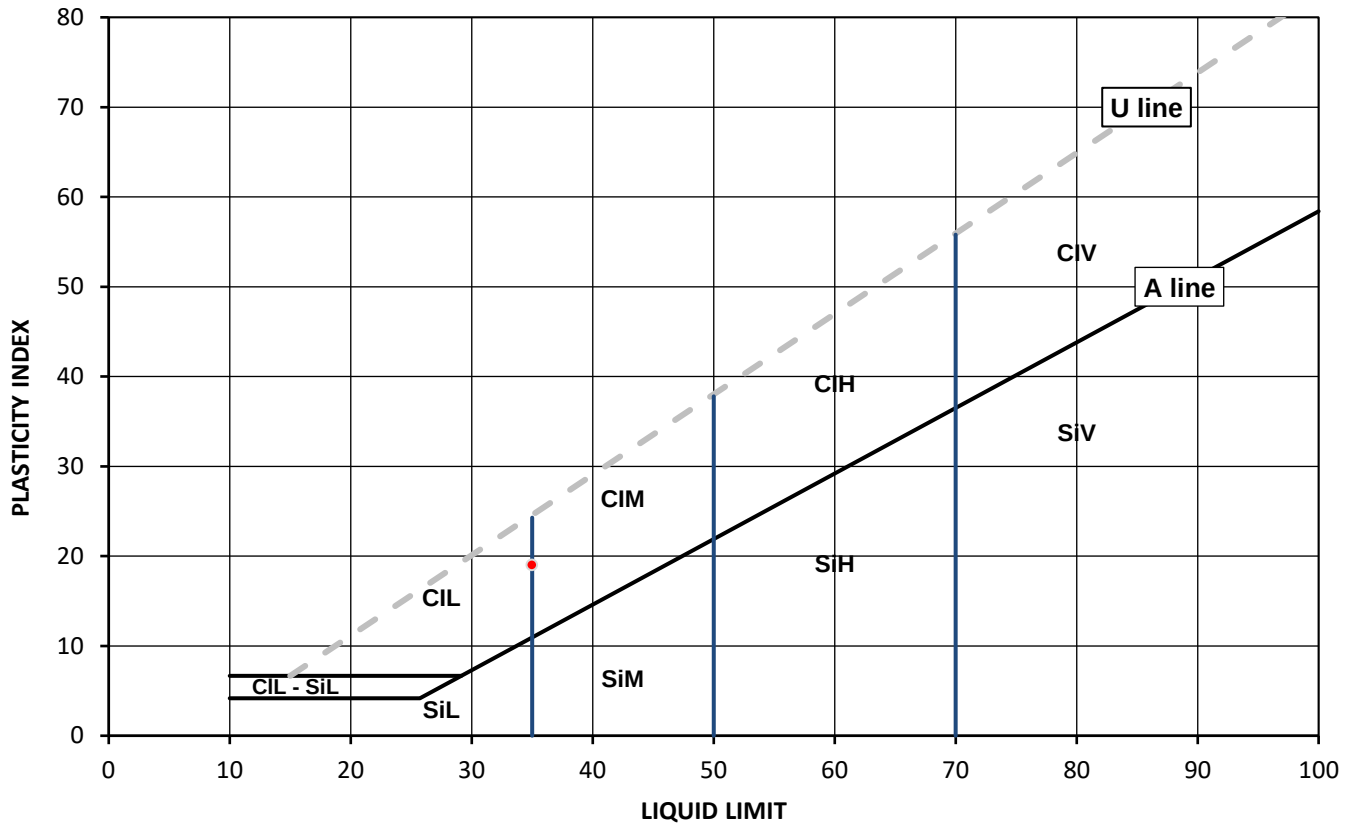
Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849052	Depth Top [m]:	13.00
Hole No.:	CP01	Depth Base [m]:	13.45
Sample Reference:	CP0113.0026	Sample Type:	B
Sample Description:	Dark brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425 µm		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
12	35	16	19	95



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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

Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 232.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

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

4041

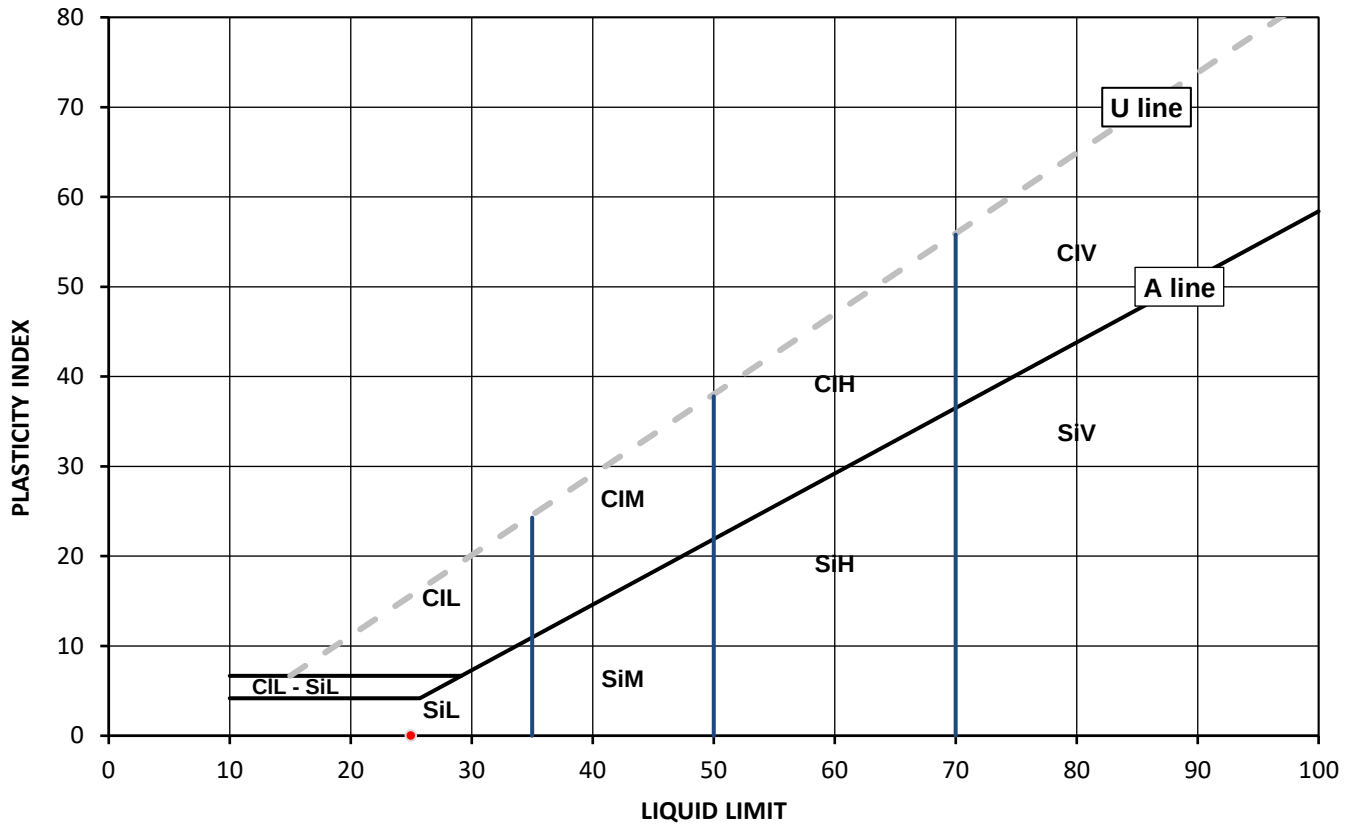
Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849057	Depth Top [m]:	1.40
Hole No.:	WS04	Depth Base [m]:	2.00
Sample Reference:	WS041.404	Sample Type:	B
Sample Description:	Yellowish brown clayey SAND		
Sample Preparation:	Tested after >425 µm removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	25	NP	NP	97



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP - non plastic

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

Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 232.13

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

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

4041

Client: Soiltechnics Limited

Client Address: Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY

Contact: Admin

Site Address: Rhodes Business Park, Middleton

Client Reference: STV6211
Job Number: 23-63246-1
Date Sampled: 12/10/2023
Date Received: 17/10/2023
Date Tested: 31/10/2023
Sampled By: Not Given

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-1 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2849050	CP01	CP019.0022	9.00	9.45	B	Brownish grey slightly gravelly very sandy CLAY	Atterberg 1 Point	12		82	27	13	14						
2849052	CP01	CP0113.0026	13.00	13.45	B	Dark brown slightly gravelly sandy CLAY	Atterberg 1 Point	12		95	35	16	19						
2849057	WS04	WS041.404	1.40	2.00	B	Yellowish brown clayey SAND	Atterberg 1 Point	18		97	25	NP	NP						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Date Reported: 16/11/2023

GF 234.16

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

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

4041

Client: Soiltechnics Limited

Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY

Contact: Admin

Site Address: Rhodes Business Park, Middleton

Client Reference: STV6211
Job Number: 23-63246-1
Date Sampled: 12/10/2023
Date Received: 17/10/2023
Date Tested: 31/10/2023
Sampled By: Not Given

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2849050	CP01	CP019.0022	9.00	9.45	B	Brownish grey slightly gravelly very sandy CLAY		12	Sample was quartered, oven dried at 107.3 °C			
2849052	CP01	CP0113.0026	13.00	13.45	B	Dark brown slightly gravelly sandy CLAY		12	Sample was quartered, oven dried at 107.3 °C			
2849057	WS04	WS041.404	1.40	2.00	B	Yellowish brown clayey SAND		18	Sample was quartered, oven dried at 108.8 °C			

Comments:

Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Date Reported: 16/11/2023

GF 099.17

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

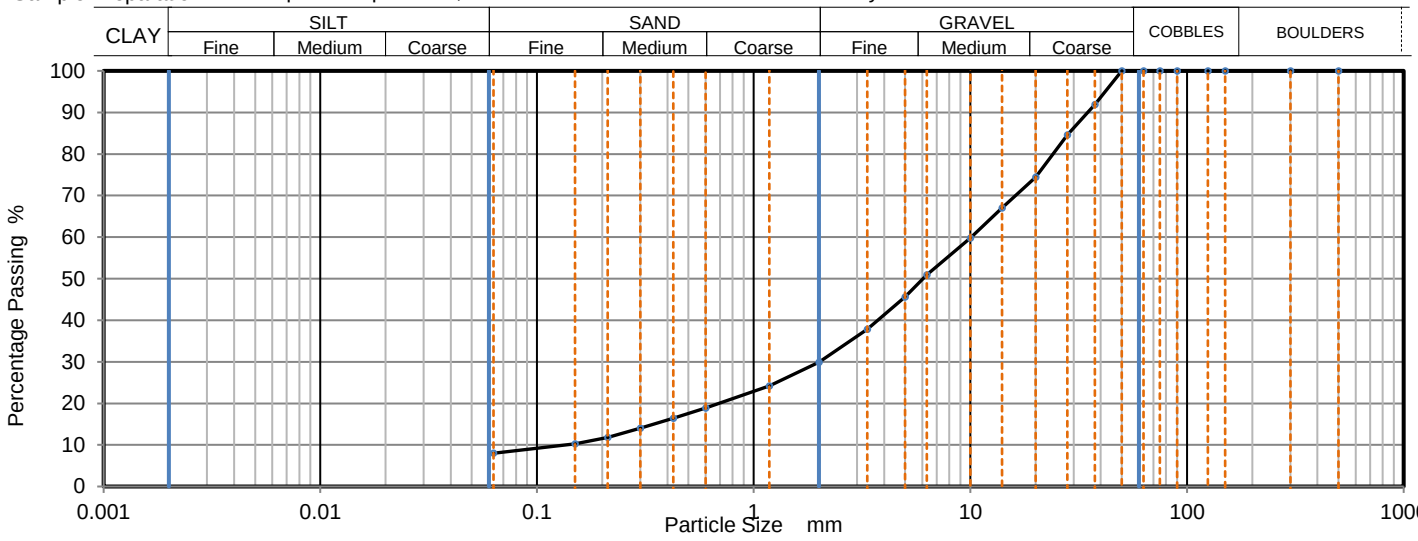
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849044	Depth Top [m]:	0.05
Hole No.:	CP01	Depth Base [m]:	0.30
Sample Reference:	CP010.051	Sample Type:	B
Sample Description:	Greyish brown sandy GRAVEL		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	92		
28	85		
20	74		
14	67		
10	60		
6.3	51		
5	46		
3.35	38		
2	30		
1.18	24		
0.6	19		
0.425	16		
0.3	14		
0.212	12		
0.15	10		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	70
Sand	22
Fines <0.063mm	8

Grading Analysis		
D100	mm	50
D60	mm	10.1
D30	mm	2.01
D10	mm	0.134
Uniformity Coefficient		75
Curvature Coefficient		3

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
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Northampton NN4 7EB

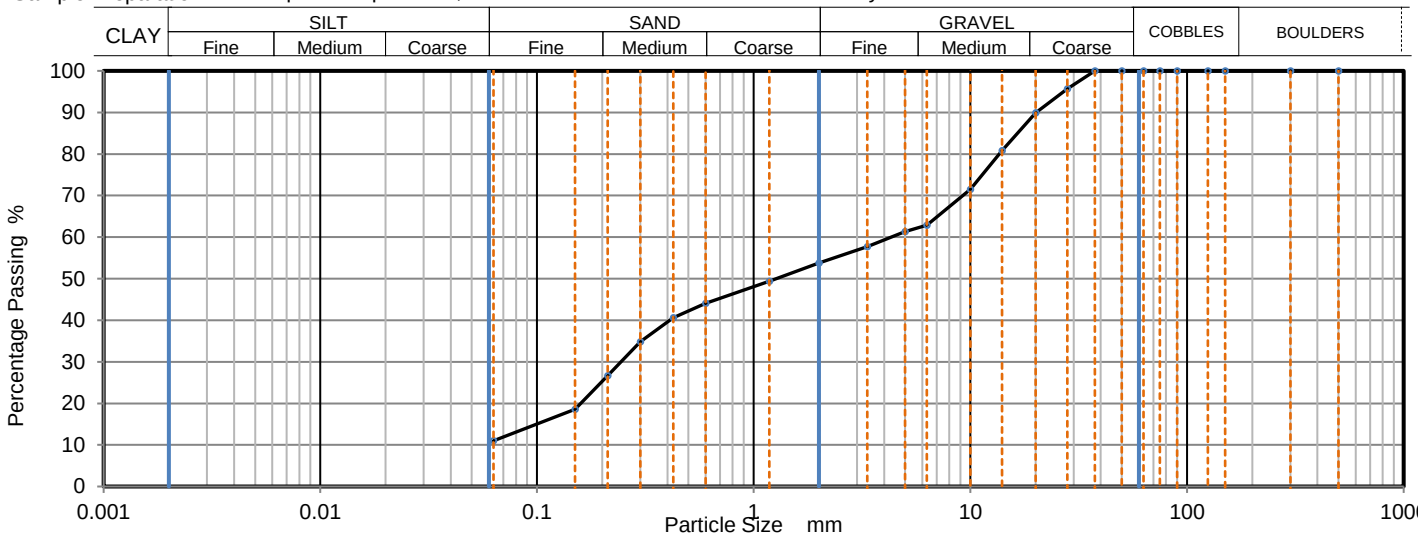
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849045	Depth Top [m]:	0.30
Hole No.:	CP01	Depth Base [m]:	1.00
Sample Reference:	CP010.303	Sample Type:	B
Sample Description:	Black sandy GRAVEL		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	90		
14	81		
10	72		
6.3	63		
5	61		
3.35	58		
2	54		
1.18	49		
0.6	44		
0.425	41		
0.3	35		
0.212	27		
0.15	19		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	46
Sand	42
Fines <0.063mm	12

Grading Analysis		
D100	mm	37.5
D60	mm	4.32
D30	mm	0.244
D10	mm	
Uniformity Coefficient		> 69
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

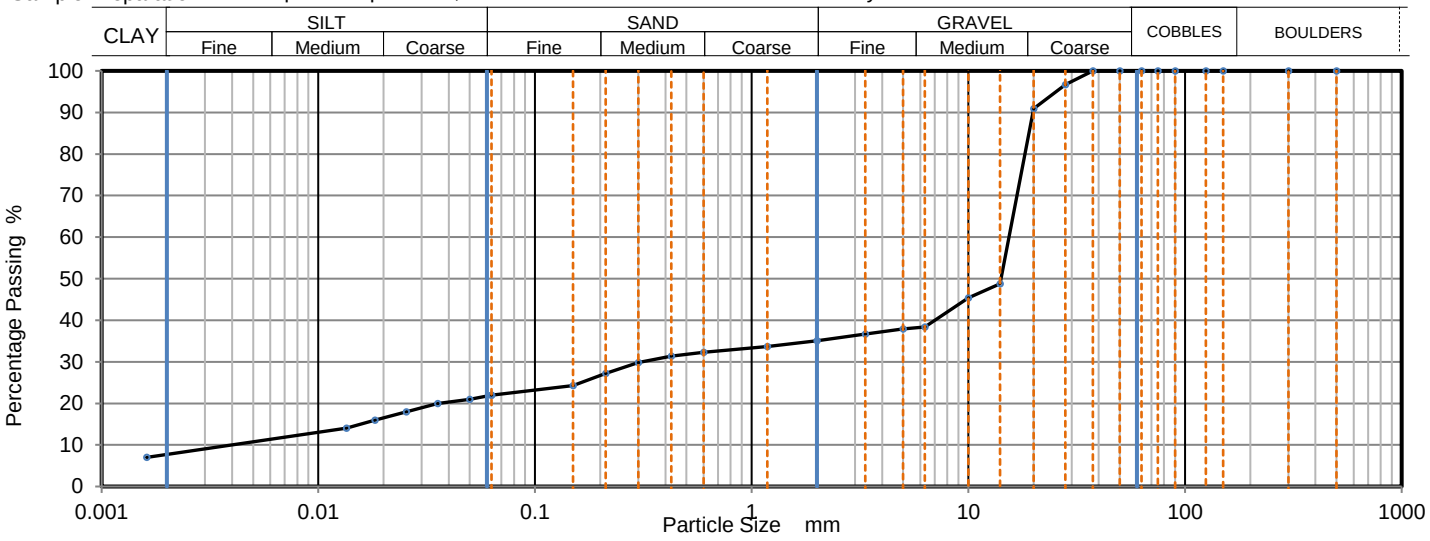
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849046	Depth Top [m]:	1.70
Hole No.:	CP01	Depth Base [m]:	2.00
Sample Reference:	CP011.707	Sample Type:	B
Sample Description:	Dark brown clayey GRAVEL with fragments of brick		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	22
300	100	0.0499	21
150	100	0.0355	20
125	100	0.0254	18
90	100	0.0182	16
75	100	0.0135	14
63	100	0.0016	7
50	100		
37.5	100		
28	97		
20	91		
14	49		
10	45		
6.3	38		
5	38		
3.35	37	Particle density	(assumed)
2	35	2.65	Mg/m3
1.18	34		
0.6	32		
0.425	31		
0.3	30		
0.212	27		
0.15	24		
0.063	22		

Sample Proportions	% dry mass
Very coarse	0
Gravel	65
Sand	14
Silt	13
Clay	8

Grading Analysis		
D100	mm	37.5
D60	mm	15.4
D30	mm	0.316
D10	mm	0.00373
Uniformity Coefficient		4100
Curvature Coefficient		1.7

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Date Reported: 16/11/2023

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
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Brackmills Industrial Estate
Northampton NN4 7EB

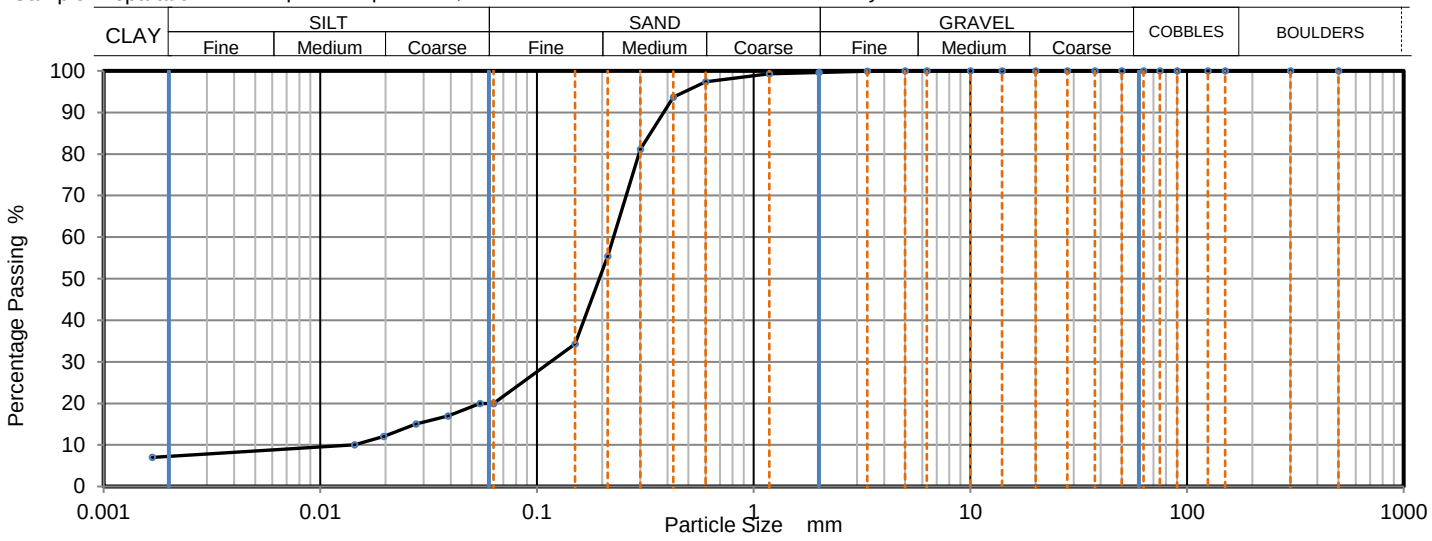
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849047	Depth Top [m]:	4.00
Hole No.:	CP01	Depth Base [m]:	4.45
Sample Reference:	CP014.0011	Sample Type:	B
Sample Description:	Dark grey clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	20
300	100	0.0546	20
150	100	0.0388	17
125	100	0.0276	15
90	100	0.0196	12
75	100	0.0144	10
63	100	0.0017	7
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100	Particle density	(assumed)
2	100	2.65	Mg/m3
1.18	99		
0.6	97		
0.425	94		
0.3	81		
0.212	55		
0.15	34		
0.063	20		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	80
Silt	12
Clay	8

Grading Analysis		
D100	mm	5
D60	mm	0.226
D30	mm	0.116
D10	mm	0.0146
Uniformity Coefficient		15
Curvature Coefficient		4.1

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

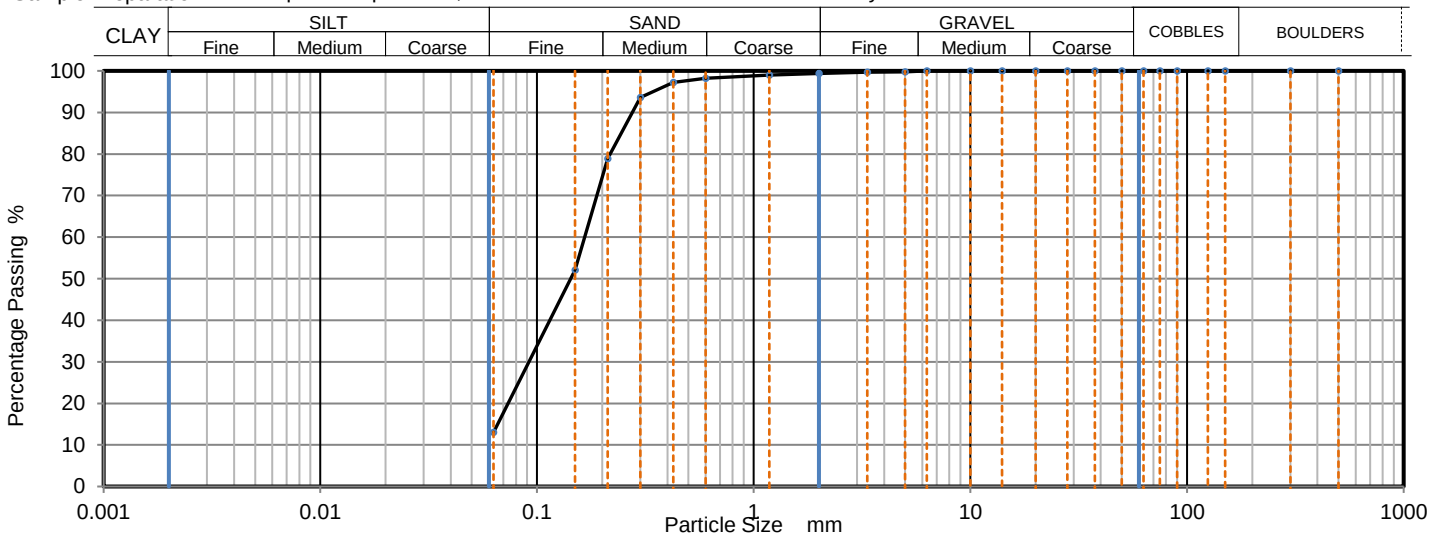
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849048	Depth Top [m]:	6.00
Hole No.:	CP01	Depth Base [m]:	6.45
Sample Reference:	CP016.0015	Sample Type:	B
Sample Description:	Brown SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	97		
0.3	94		
0.212	79		
0.15	52		
0.063	14		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	86
Fines <0.063mm	14

Grading Analysis		
D100	mm	6.3
D60	mm	0.166
D30	mm	0.091
D10	mm	
Uniformity Coefficient		> 2.6
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

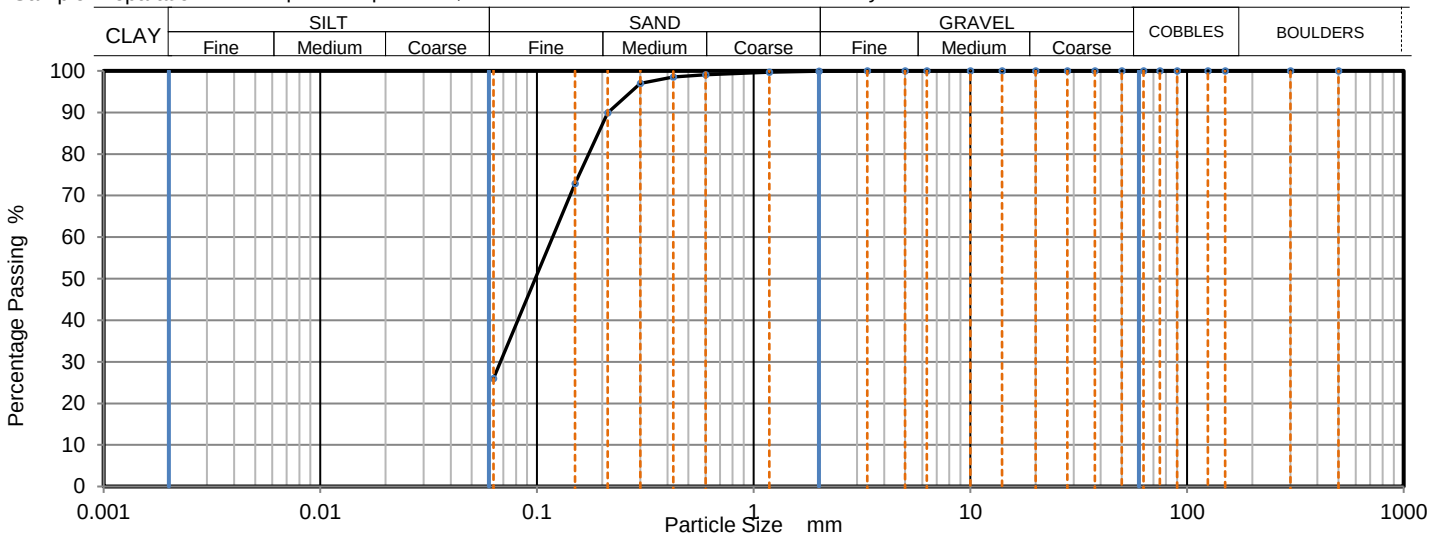
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849049	Depth Top [m]:	8.00
Hole No.:	CP01	Depth Base [m]:	8.45
Sample Reference:	CP018.0019	Sample Type:	B
Sample Description:	Orangish brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	97		
0.212	90		
0.15	73		
0.063	27		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	73
Fines <0.063mm	27

Grading Analysis		
D100	mm	3.35
D60	mm	0.118
D30	mm	0.0669
D10	mm	
Uniformity Coefficient		> 1.9
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
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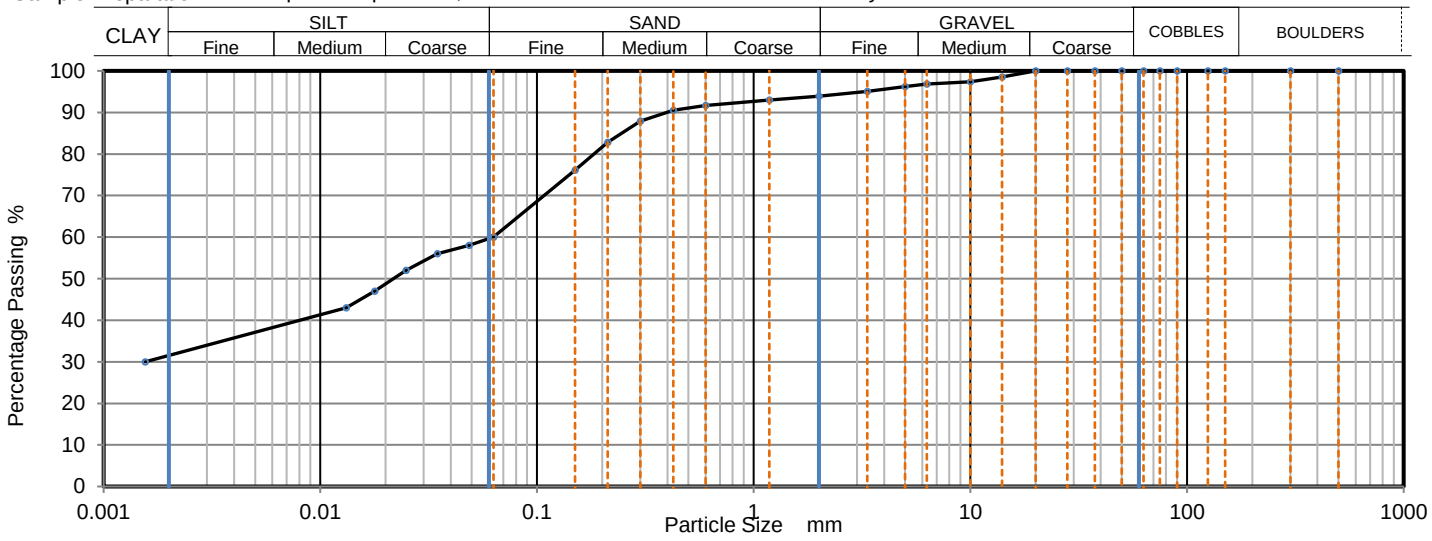
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849051	Depth Top [m]:	10.00
Hole No.:	CP01	Depth Base [m]:	10.45
Sample Reference:	CP0110.0023	Sample Type:	B
Sample Description:	Brownish grey sandy CLAY		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	60
300	100	0.0487	58
150	100	0.0346	56
125	100	0.0248	52
90	100	0.0178	47
75	100	0.0132	43
63	100	0.0016	30
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	97		
5	96		
3.35	95	Particle density	(assumed)
2	94	2.65	Mg/m3
1.18	93		
0.6	92		
0.425	91		
0.3	88		
0.212	83		
0.15	76		
0.063	60		

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	34
Silt	28
Clay	32

Grading Analysis		
D100	mm	20
D60	mm	0.0608
D30	mm	
D10	mm	
Uniformity Coefficient		> 39
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Date Reported: 16/11/2023

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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Northampton NN4 7EB

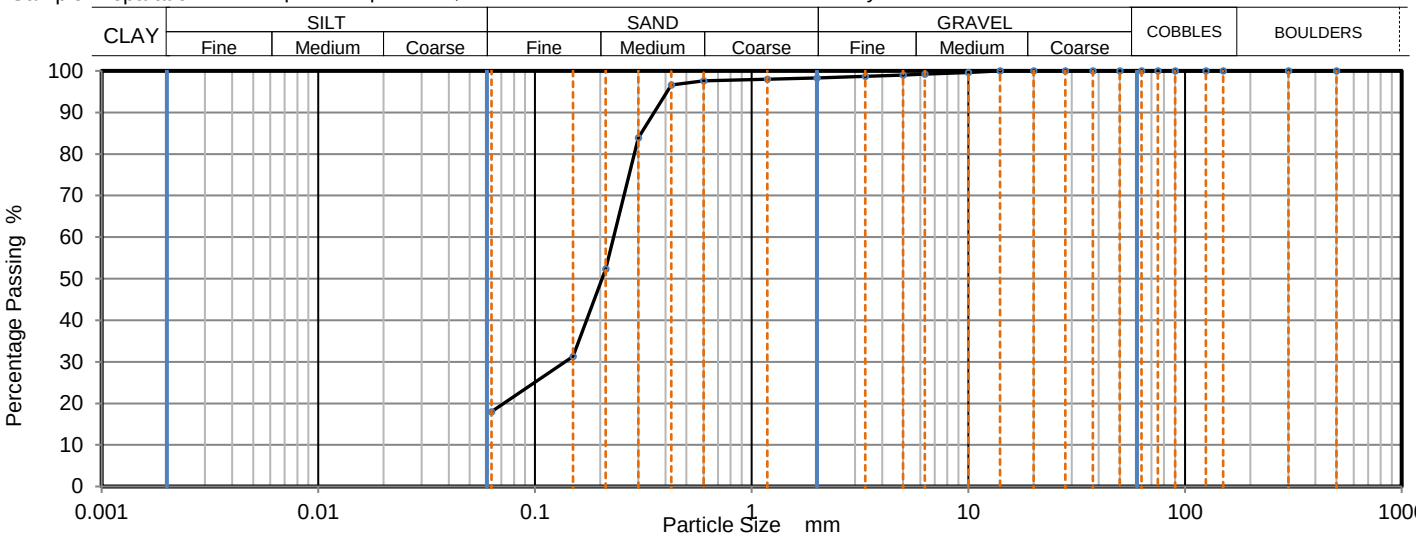
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849053	Depth Top [m]:	2.30
Hole No.:	WS01	Depth Base [m]:	3.00
Sample Reference:	WS012.303	Sample Type:	B
Sample Description:	Brownish grey clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	98		
0.425	97		
0.3	84		
0.212	52		
0.15	31		
0.063	18		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	80
Fines <0.063mm	18

Grading Analysis		
D100	mm	14
D60	mm	0.231
D30	mm	0.137
D10	mm	
Uniformity Coefficient		> 3.7
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

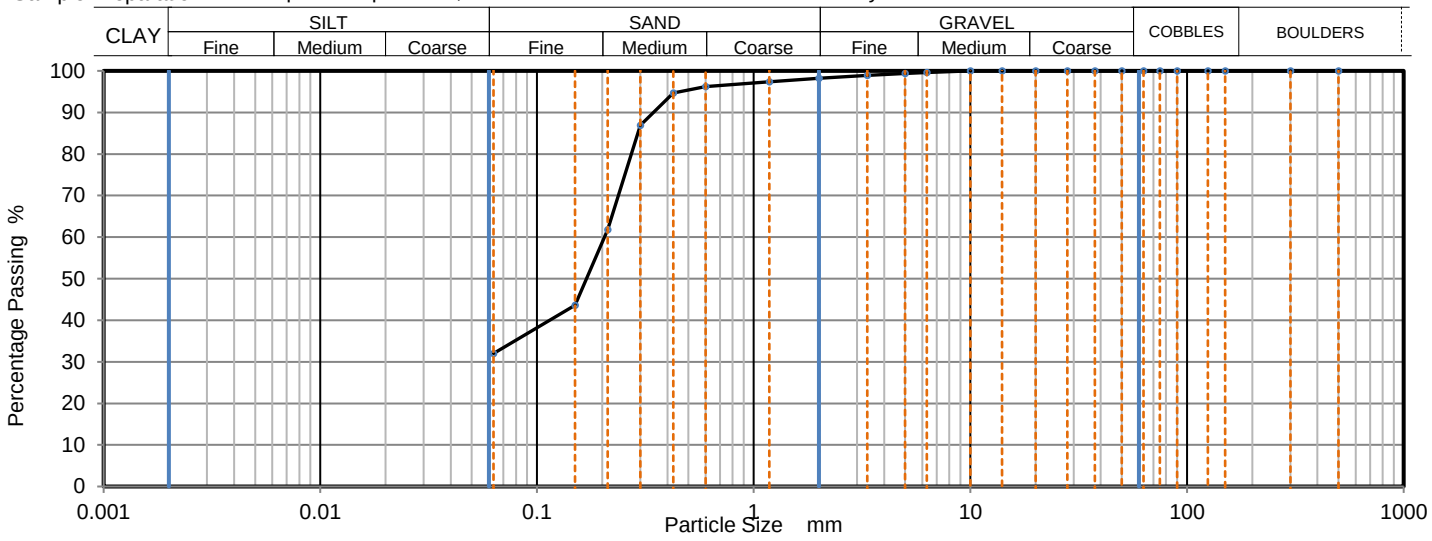
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849054	Depth Top [m]:	0.90
Hole No.:	WS02	Depth Base [m]:	1.30
Sample Reference:	WS020.904	Sample Type:	B
Sample Description:	Greyish brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	96		
0.425	95		
0.3	87		
0.212	62		
0.15	44		
0.063	33		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	65
Fines <0.063mm	33

Grading Analysis		
D100	mm	10
D60	mm	0.205
D30	mm	
D10	mm	
Uniformity Coefficient		> 3.3
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

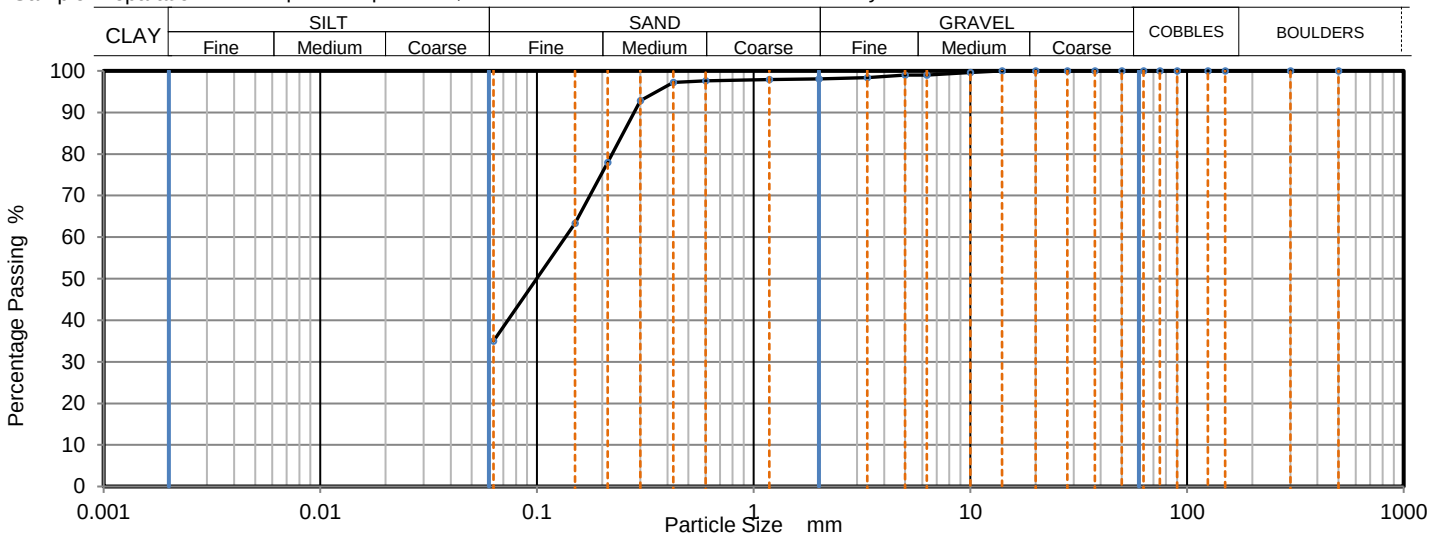
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849055	Depth Top [m]:	2.50
Hole No.:	WS02	Depth Base [m]:	3.00
Sample Reference:	WS022.507	Sample Type:	B
Sample Description:	Brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	98		
0.6	98		
0.425	97		
0.3	93		
0.212	78		
0.15	63		
0.063	36		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	62
Fines <0.063mm	36

Grading Analysis		
D100	mm	14
D60	mm	0.135
D30	mm	
D10	mm	
Uniformity Coefficient		> 2.1
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Date Reported: 16/11/2023

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
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Northampton NN4 7EB

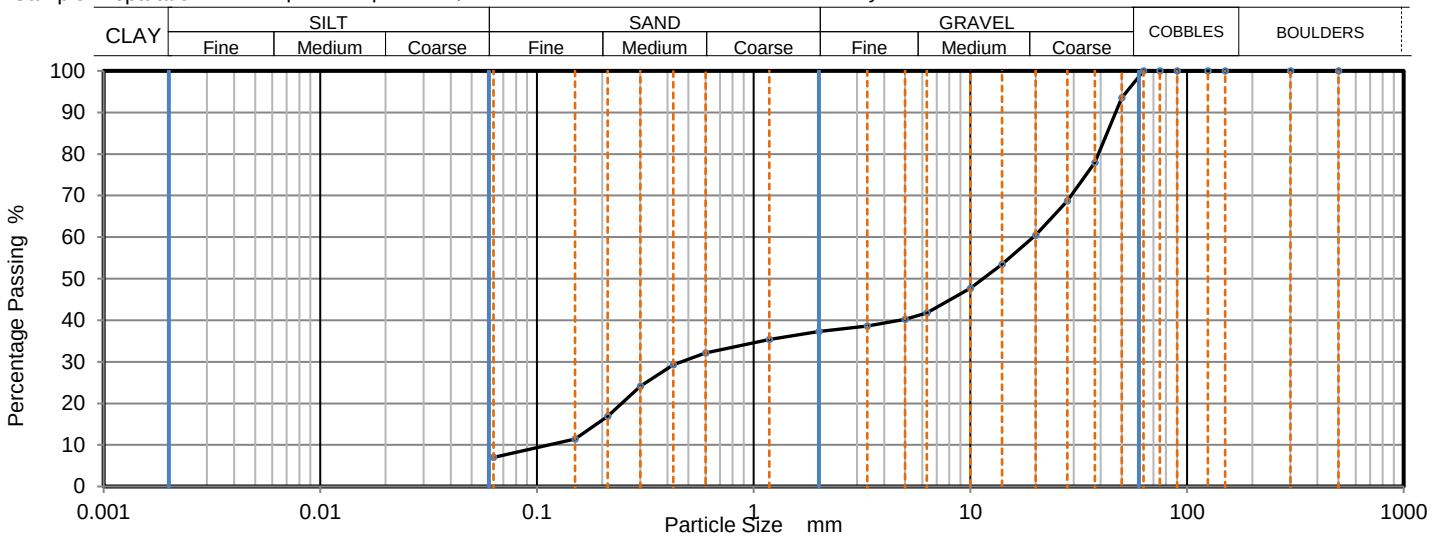
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849056	Depth Top [m]:	0.30
Hole No.:	WS03	Depth Base [m]:	1.20
Sample Reference:	WS030.301	Sample Type:	B
Sample Description:	Dark brown sandy GRAVEL		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	94		
37.5	78		
28	69		
20	61		
14	54		
10	48		
6.3	42		
5	40		
3.35	39		
2	37		
1.18	35		
0.6	32		
0.425	29		
0.3	24		
0.212	17		
0.15	11		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	63
Sand	29
Fines <0.063mm	8

Grading Analysis		
D100	mm	63
D60	mm	19.5
D30	mm	0.464
D10	mm	0.106
Uniformity Coefficient		180
Curvature Coefficient		0.1

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

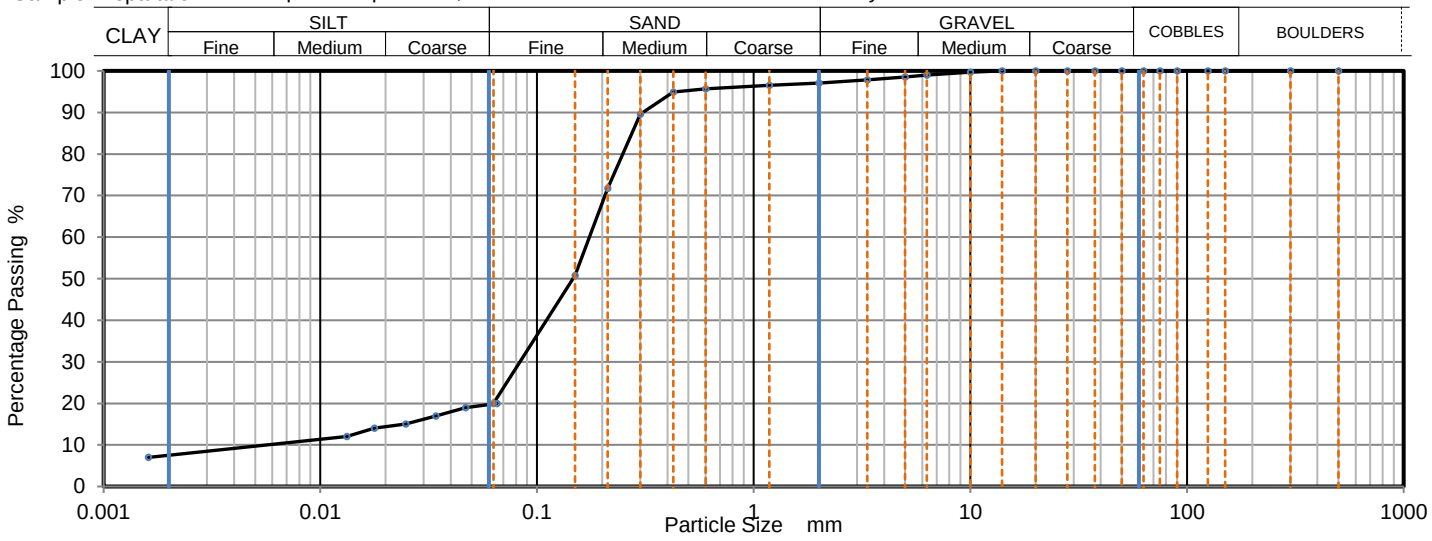
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	31/10/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849057	Depth Top [m]:	1.40
Hole No.:	WS04	Depth Base [m]:	2.00
Sample Reference:	WS041.404	Sample Type:	B
Sample Description:	Yellowish brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 108.8 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0653	20
300	100	0.0469	19
150	100	0.0341	17
125	100	0.0248	15
90	100	0.0178	14
75	100	0.0132	12
63	100	0.0016	7
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98	Particle density	(assumed)
2	97	2.65	Mg/m3
1.18	97		
0.6	96		
0.425	95		
0.3	90		
0.212	72		
0.15	51		
0.063	20		

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	77
Silt	13
Clay	7

Grading Analysis		
D100	mm	14
D60	mm	0.175
D30	mm	0.0831
D10	mm	0.00537
Uniformity Coefficient		33
Curvature Coefficient		7.4

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 100.23

TEST CERTIFICATE

DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP METHOD USING 2.5 KG RAMMER

Tested in Accordance with: BS 1377-4: 1990

4041

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

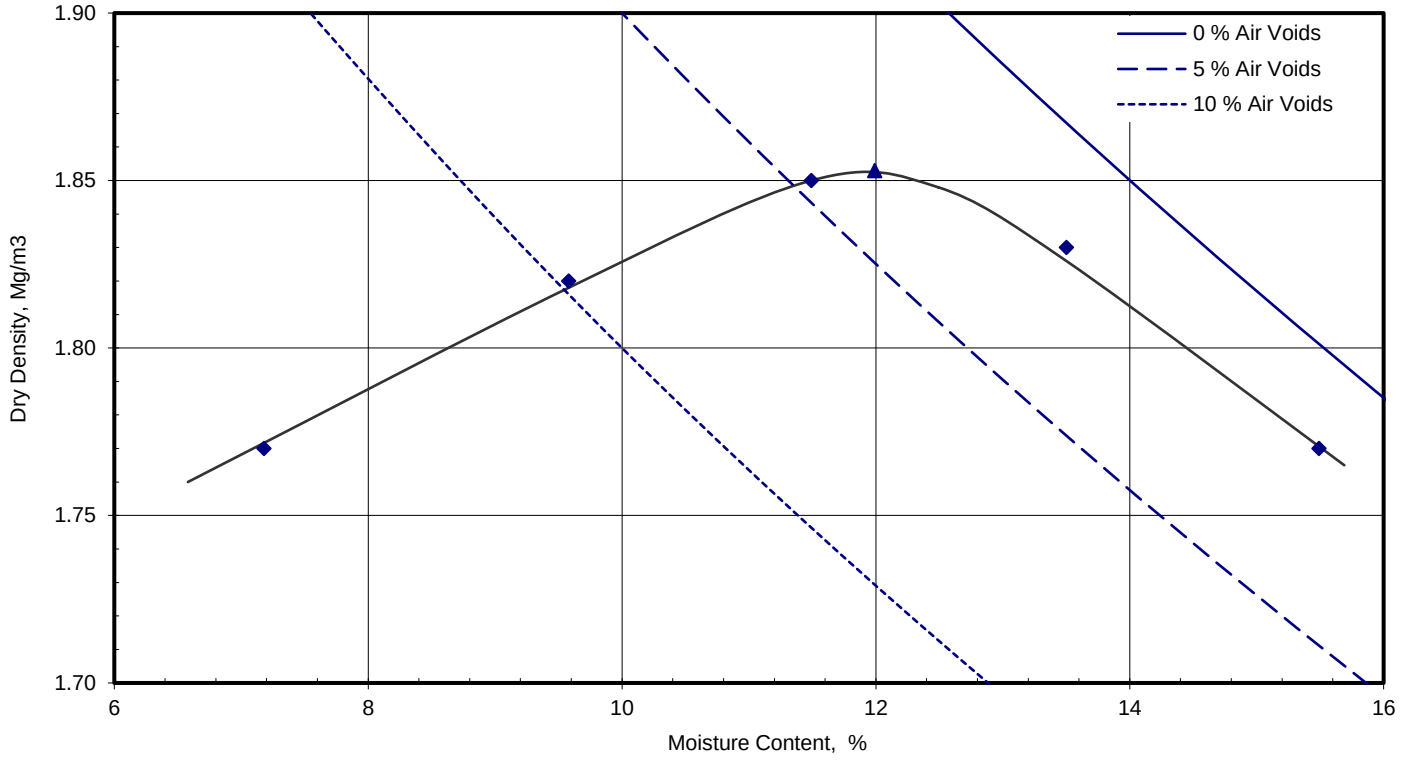
Environmental Science

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	08/11/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849045	Depth Top [m]:	0.30
Hole No.:	CP01	Depth Base [m]:	1.00
Sample Reference:	CP010.303	Sample Type:	B
Sample Description:	Black sandy GRAVEL		
Sample Preparation:	Sample was quartered and broken down by hand. Material used was natural.		



Compaction Point No.		1	2	3	4	5
Moisture Content	%	7.2	9.6	11	14	15
Dry Density	Mg/m³	1.77	1.82	1.85	1.83	1.77

Mould Type		CBR
Samples Used		Single sample tested
Dry Mass Retained on 37.5 mm Sieve	%	0
Dry Mass Retained on 20.0 mm Sieve	%	10
Particle Density - Assumed	Mg/m³	2.50
As received Moisture Content	%	12
Maximum Dry Density	Mg/m³	**1.85**

Optimum Moisture Content	%	**12**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 109.25

TEST CERTIFICATE

DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP METHOD USING 2.5 KG RAMMER

Tested in Accordance with: BS 1377-4: 1990

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

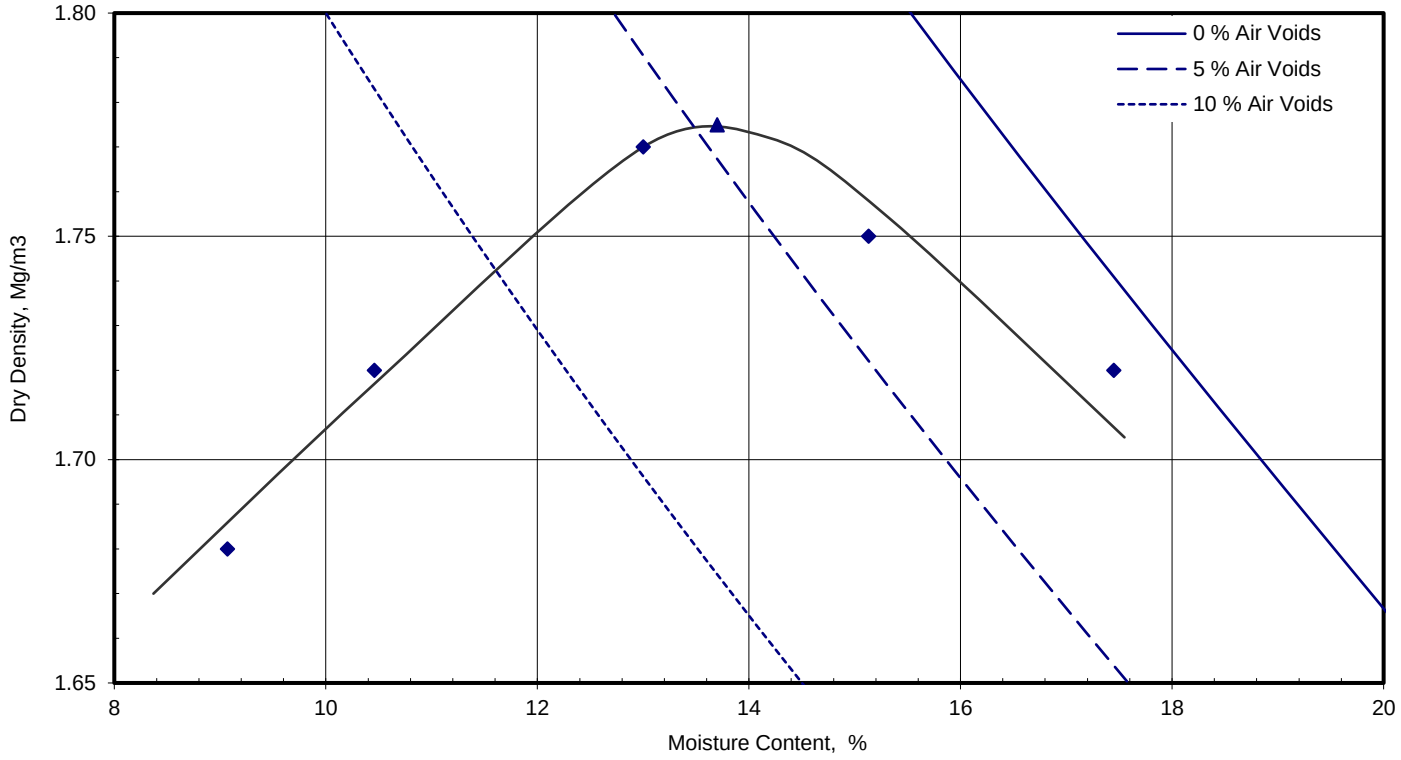
4041

Client:	Soiltechnics Limited	Client Reference:	STV6211
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-63246-1
		Date Sampled:	12/10/2023
		Date Received:	17/10/2023
Contact:	Admin	Date Tested:	08/11/2023
Site Address:	Rhodes Business Park, Middleton	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2849046	Depth Top [m]:	1.70
Hole No.:	CP01	Depth Base [m]:	2.00
Sample Reference:	CP011.707	Sample Type:	B
Sample Description:	Dark brown clayey GRAVEL with fragments of brick		
Sample Preparation:	Sample was quartered and broken down by hand. Material used was natural.		



Compaction Point No.		1	2	3	4	5
Moisture Content	%	9.1	10	13	15	17
Dry Density	Mg/m³	1.68	1.72	1.77	1.75	1.72

Mould Type		CBR
Samples Used		Single sample tested
Dry Mass Retained on 37.5 mm Sieve	%	0
Dry Mass Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.50
As received Moisture Content	%	21
Maximum Dry Density	Mg/m³	**1.78**

Optimum Moisture Content	%	**14**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks:

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Signed: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/11/2023

GF 109.25

Admin
Soiltechnics Limited
Cedar Barn
White Lodge
Walgrave
Northampton
NN6 9PY

e: admin@soiltechnics.net

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

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

Analytical Report Number : 23-63248

Project / Site name:	Rhodes Business Park, Middleton	**Samples received on:**	17/10/2023
Your job number:	STV6211	**Samples instructed on/ Analysis started on:**	17/10/2023
Your order number:	POR016718	**Analysis completed by:**	31/10/2023
Report Issue Number:	1	**Report issued on:**	31/10/2023
Samples Analysed:	6 soil samples		

Signed:

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

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

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

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

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

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

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Analytical Report Number: 23-63248
Project / Site name: Rhodes Business Park, Middleton
Your Order No: POR016718

Lab Sample Number				2849059	2849060	2849061	2849062	2849063
Sample Reference				CP01	WS01	WS02	WS03	WS04
Sample Number				CP013.009	WS011.202	WS020.904	WS032.205	WS040.251
Depth (m)				3.00-3.45	1.20-1.70	0.90-1.30	2.20-2.70	0.25-0.45
Date Sampled				12/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	11	15	22	20
Total mass of sample received	kg	0.001	NONE	0.5	0.4	0.4	0.5	0.4

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.6	9	6.9	7.3	8.1
Total Sulphate as SO4	%	0.005	MCERTS	0.036	0.098	0.078	0.057	0.04
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.144	0.205	0.348	0.209	0.0192
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	144	205	348	209	19.2
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	6.3	4.3	5.3	6.9	1
Total Sulphur	%	0.005	MCERTS	0.092	0.056	0.136	0.117	0.035
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	8.8	8.3	18	13	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	4.4	4.1	9	6.7	< 2.5

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-63248
Project / Site name: Rhodes Business Park, Middleton
Your Order No: POR016718

Lab Sample Number				2849064
Sample Reference				WS05
Sample Number				WS051.602
Depth (m)				1.60-2.00
Date Sampled				12/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	22
Total mass of sample received	kg	0.001	NONE	0.2

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3
Total Sulphate as SO4	%	0.005	MCERTS	0.052
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.143
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	143
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	6
Total Sulphur	%	0.005	MCERTS	0.054
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	8.4
Magnesium (leachate equivalent)	mg/l	2.5	NONE	4.2

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-63248

Project / Site name: Rhodes Business Park, Middleton

* 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 *
2849059	CP01	CP013.009	3.00-3.45	Brown clay.
2849060	WS01	WS011.202	1.20-1.70	Brown sand with brick.
2849061	WS02	WS020.904	0.90-1.30	Brown sand.
2849062	WS03	WS032.205	2.20-2.70	Brown clay and sand.
2849063	WS04	WS040.251	0.25-0.45	Brown clay and sand with gravel.
2849064	WS05	WS051.602	1.60-2.00	Brown sand.

Analytical Report Number : 23-63248
Project / Site name: Rhodes Business Park, Middleton

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
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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.

Admin
Soiltechnics Limited☐
Cedar Barn
White Lodge
Walgrave
Northampton
NN6 9PY

e: admin@soiltechnics.net

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

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 23-75507

Project / Site name:	Rhodes Business Park, Middleton	**Samples received on:**	18/12/2023
Your job number:	STV6211	**Samples instructed on/ Analysis started on:**	18/12/2023
Your order number:	POR017346	**Analysis completed by:**	03/01/2024
Report Issue Number:	1	**Report issued on:**	03/01/2024
Samples Analysed:	1 soil sample		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-75507
Project / Site name: Rhodes Business Park, Middleton
Your Order No: POR017346

Lab Sample Number				2914466
Sample Reference				CP01
Sample Number				CP0111.0024
Depth (m)				11.00
Date Sampled				12/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	9.2
Total mass of sample received	kg	0.001	NONE	0.6

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4
Total Sulphate as SO4	%	0.005	MCERTS	0.039
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.12
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	120
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	4
Total Sulphur	%	0.005	MCERTS	0.058
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	26
Magnesium (leachate equivalent)	mg/l	2.5	NONE	13

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-75507
Project / Site name: Rhodes Business Park, Middleton

* 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 *
2914466	CP01	CP0111.0024	11	Brown clay.

Analytical Report Number : 23-75507
Project / Site name: Rhodes Business Park, Middleton

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
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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.

Sample Deviation Report

Analytical Report Number : 23-75507

Project / Site name: Rhodes Business Park, Middleton

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
CP01	CP0111.0024	S	2914466	c	Chloride, water soluble, in soil	L082-PL	c
CP01	CP0111.0024	S	2914466	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
CP01	CP0111.0024	S	2914466	c	pH in soil (automated)	L099-PL	c

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Appendix G Post Fieldwork Monitoring

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Ground gas and groundwater monitoring results

Notes

1) The instrument limit of detection has been adopted where no gas flows or concentrations have been recorded (indicated in grey italics).
2) Atmospheric temperature (*) data sourced from local weather station data.
3) CH4 = methane; CO2 = carbon dioxide; O2 = oxygen; PPM = parts per million CO = carbon monoxide; H2S = hydrogen sulphide.
4) Gas Screening Values (GSVs) are rounded to 3 decimal places.

								Worst case scenario	0.4	0.4	0.4	11.0	10.9	2.0	2.0	3	0		0.00	0.00	0.04	0.04	ONE	
								Average scenario	0.2	0.2	0.2	3.8	3.4	12.1	13.1	1	0		0.00	0.00	0.01	0.01	ONE	
Date	Time	Location	Install Reference	Install Response Zone		Atmospheric Pressure (mB)	Atmospheric Temperature (°C) *	Depth to Water (m)	Gas Steady Flow	CH_4 (%v/v)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases (PPM)				GSV (CH_4)		GSV (CO_2)		Indicative (steady) CIRIA Characteristic Situation	Notes
				Response Zone (mBGL)	Flooded				l/Hr	Peak	Steady	Peak	Steady	Minimum	Average	CO	H_2S	VOC		Peak	Steady	Peak	Steady		
19/10/2023	10:45	CP01	1	1.00 - 5.80	No	976	17	2.70	0.2	0.3	0.3	3.2	3.2	4.5	4.5	1	0	-	0.001	0.001	0.005	0.005	CS-1	
02/11/2023	10:10	CP01	1	1.00 - 5.80	No	957	10	1.57	0.3	0.2	0.2	3.1	3.1	2.0	2.0	0	0	0.5	0.001	0.001	0.008	0.008	CS-1	
16/11/2023	09:29	CP01	1	1.00 - 5.80	No	1007	6	1.55	0.3	0.2	0.2	0.1	0.1	21.2	21.2	0	0	1.2	0.001	0.001	0.000	0.000	CS-1	
30/11/2023	10:32	CP01	1	1.00 - 5.80	No	1002	3	2.17	0.2	0.2	0.2	1.9	1.8	4.5	4.5	0	0	0.6	0.000	0.000	0.003	0.003	CS-1	
19/10/2023	12:13	WS01	1	0.50 - 2.00	No	975	18	DRY	0.2	0.2	0.1	3.2	3.2	19.2	19.2	0	0	-	0.000	0.000	0.005	0.005	CS-1	
02/11/2023	13:00	WS01	1	0.50 - 2.00	No	958	10	DRY	0.2	0.2	0.2	5.9	5.5	11.2	11.5	1	0	0.4	0.000	0.000	0.010	0.009	CS-1	Elevated carbon dioxide, consider CS-2.
16/11/2023	10:28	WS01	1	0.50 - 2.00	No	1007	6	DRY	0.2	0.3	0.2	6.7	0.7	5.0	19.5	1	0	0.0	0.001	0.000	0.011	0.001	CS-1	Elevated carbon dioxide, consider CS-2.
30/11/2023	10:56	WS01	1	0.50 - 2.00	No	1000	3	DRY	0.3	0.2	0.2	4.2	4.2	17.4	17.4	0	0	0.7	0.001	0.001	0.011	0.011	CS-1	
19/10/2023	11:44	WS02	1	0.50 - 4.00	No	982	18	1.52	0.2	0.2	0.1	0.2	0.1	20.4	20.6	2	0	-	0.000	0.000	0.000	0.000	CS-1	
02/11/2023	10:36	WS02	1	0.50 - 4.00	No	958	10	1.70	0.3	0.2	0.2	0.5	0.1	20.3	21.1	0	0	0.8	0.001	0.001	0.001	0.000	CS-1	
16/11/2023	10:09	WS02	1	0.50 - 4.00	No	1007	6	1.85	0.2	0.4	0.3	7.6	7.6	3.0	3.0	0	0	0.0	0.001	0.001	0.013	0.013	CS-1	Elevated carbon dioxide, consider CS-2.
30/11/2023	10:44	WS02	1	0.50 - 4.00	No	1000	3	2.15	0.3	0.2	0.2	0.6	0.6	19.8	19.8	0	0	0.2	0.001	0.001	0.002	0.002	CS-1	
19/10/2023	11:26	WS03	1	0.60 - 1.60	No	974	18	DRY	0.2	0.3	0.3	4.5	4.5	9.3	9.3	3	0	-	0.001	0.001	0.008	0.008	CS-1	
02/11/2023	10:21	WS03	1	0.60 - 1.60	No	958	10	1.46	0.3	0.4	0.4	11.0	10.9	2.0	2.0	0	0	2.4	0.001	0.001	0.028	0.027	CS-1	Elevated carbon dioxide, consider CS-2.
16/11/2023	09:50	WS03	1	0.60 - 1.60	No	1007	6	1.30	0.2	0.2	0.2	2.2	2.2	12.9	12.9	0	0	2.0	0.000	0.000	0.004	0.004	CS-1	
19/10/2023	12:34	WS04	1	0.40 - 1.40	No	975	18	DRY	0.2	0.1	0.1	4.0	3.9	13.8	13.9	1	0	-	0.000	0.000	0.007	0.007	CS-1	
02/11/2023	13:13	WS04	1	0.40 - 1.40	No	959	10	DRY	0.2	0.2	0.2	5.9	5.5	11.2	11.5	0	0	0.1	0.000	0.000	0.010	0.009	CS-1	Elevated carbon dioxide, consider CS-2.
16/11/2023	10:43	WS04	1	0.40 - 1.40	No	1007	6	DRY	0.3	0.2	0.2	6.3	4.8	9.8	12.7	0	0	0.0	0.001	0.001	0.016	0.012	CS-1	Elevated carbon dioxide, consider CS-2.
30/11/2023	11:06	WS04	1	0.40 - 1.40	No	1000	3	DRY	0.3	0.2	0.2	5.5	5.5	18.5	18.5	0	0	0.6	0.001	0.001	0.014	0.014	CS-1	Elevated carbon dioxide, consider CS-2.
19/10/2023	12:57	WS05	1	0.50 - 1.50	No	975	18	DRY	0.2	0.1	0.1	2.5	2.4	11.1	11.1	1	0	-	0.000	0.000	0.004	0.004	CS-1	
02/11/2023	13:25	WS05	1	0.50 - 1.50	No	959	10	DRY	0.2	0.2	0.2	2.7	2.7	10.4	10.4	1	0	0.2	0.000	0.000	0.005	0.005	CS-1	
16/11/2023	10:51	WS05	1	0.50 - 1.50	No	1007	6	1.43	0.2	0.2	0.2	4.6	3.4	12.9	16.8	1	0	0.3	0.000	0.000	0.008	0.006	CS-1	
30/11/2023	11:21	WS05	1	0.50 - 1.50	No	999	3	DRY	0.4	0.3	0.2	1.5	1.5	18.6	18.6	0	0	-	0.001	0.001	0.005	0.005	CS-1	

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Appendix H Geoenvironmental Laboratory Test Results

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-34484-2		
Initial Date of Issue:	16-Nov-2023	**Date of Re-Issue:**	16-Nov-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-34484-1 in its entirety		
Client	Soiltechnics Limited		
Client Address:	1st Floor Unit 9 Westpoint Enterprise Park Clarence Avenue Trafford Park Manchester M17 1QS		
Contact(s):	Admin		
Project	STV6211 Rhodes Business Park		
Quotation No.:		**Date Received:**	16-Oct-2023
Order No.:	POR016717	**Date Instructed:**	16-Oct-2023
No. of Samples:	10		
Turnaround (Wkdays):	12	**Results Due:**	31-Oct-2023
Date Approved:	16-Nov-2023		
Approved By:			
Details:	Stuart Henderson, TECHINCAL MANAGER		

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	Fibres/Clumps	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001				0.006					
Total Asbestos	U	2192	%	0.001				0.006					
Moisture	N	2030	%	0.020	6.2	17	16	12	19	12	23	21	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones and Roots	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Clay	Sand	Clay	Clay	Loam	Clay	Clay	Clay
pH at 20C	M	2010		4.0	9.1	9.0	9.2	9.1	8.0	8.5	8.3	8.6	8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.45
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010						0.023			0.015
Nitrate (Water Soluble)	N	2220	g/l	0.010						< 0.010			< 0.010
Cyanide (Complex)	M	2300	mg/kg	0.50	0.60	20	0.80	5.3	0.80	140	4.5	14	120
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	0.60	20	0.80	5.3	0.80	140	4.5	14	120
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50						13			24
Arsenic	M	2455	mg/kg	0.5	8.4	160	4.5	58	56	560	100	170	350
Beryllium	U	2455	mg/kg	0.5	< 0.5	0.6	< 0.5	0.7	0.7	1.9	1.2	1.5	1.2
Cadmium	M	2455	mg/kg	0.10	0.27	0.88	< 0.10	1.1	0.55	4.6	5.6	7.7	11
Chromium	M	2455	mg/kg	0.5	16	46	6.5	50	19	140	18	80	260
Copper	M	2455	mg/kg	0.50	11	56	6.7	79	25	130	40	120	140
Mercury	M	2455	mg/kg	0.05	0.29	1.4	< 0.05	3.0	0.33	5.9	0.67	6.8	43
Nickel	M	2455	mg/kg	0.50	14	14	7.6	18	19	34	36	28	32
Lead	M	2455	mg/kg	0.50	33	150	4.6	270	36	460	55	340	710
Selenium	M	2455	mg/kg	0.25	0.33	0.35	< 0.25	0.44	0.57	0.88	0.56	0.79	0.73
Vanadium	U	2455	mg/kg	0.5	16	19	7.4	23	18	41	18	37	33
Zinc	M	2455	mg/kg	0.50	68	290	20	220	160	550	3100	670	1700
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	2.1	5.4	1.6	4.6	1.6		5.0	3.2	
Organic Matter	M	2625	%	0.40	2.9	4.4	0.83	6.3	1.6	13	3.9	7.4	9.1
TPH >C5-C6	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	
TPH >C6-C7	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	
TPH >C7-C8	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	
TPH >C12-C16	N	2670	mg/kg	1.0	8.0	6.0	< 1.0	12	< 1.0		< 1.0	< 1.0	
TPH >C16-C21	N	2670	mg/kg	1.0	34	18	< 1.0	28	< 1.0		< 1.0	15	
TPH >C21-C35	N	2670	mg/kg	1.0	2300	82	< 1.0	150	< 1.0		< 1.0	74	
Total TPH >C5-C35	N	2670	mg/kg	10	2300	110	< 10	190	< 10		< 10	90	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0						61			46
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0						13			< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0						73			46
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0						< 1.0			< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0						< 1.0			330
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0						< 1.0			110
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0						< 5.0			440
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0						73			480
Dichlorodifluoromethane	U	2760	µg/kg	1.0						< 1.0			< 1.0
Chloromethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0						< 1.0			< 1.0
Bromomethane	M	2760	µg/kg	20						< 20			< 20
Chloroethane	U	2760	µg/kg	2.0						< 2.0			< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Bromochloromethane	U	2760	µg/kg	5.0						< 5.0			< 5.0
Trichloromethane	M	2760	µg/kg	1.0						< 1.0			< 1.0

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,1,1-Trichloroethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0						< 1.0			< 1.0
Benzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0						< 2.0			< 2.0
Trichloroethene	N	2760	µg/kg	1.0						< 1.0			< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0						< 1.0			< 1.0
Dibromomethane	M	2760	µg/kg	1.0						< 1.0			< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0						< 5.0			< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10						< 10			< 10
Toluene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10						< 10			< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10						< 10			< 10
Tetrachloroethene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0						< 2.0			< 2.0
Dibromochloromethane	U	2760	µg/kg	10						< 10			< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0						< 5.0			< 5.0
Chlorobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0						< 2.0			< 2.0
Ethylbenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
m & p-Xylene	M	2760	µg/kg	1.0						< 1.0			< 1.0
o-Xylene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Styrene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Tribromomethane	U	2760	µg/kg	1.0						< 1.0			< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Bromobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50						< 50			< 50
N-Propylbenzene	U	2760	µg/kg	1.0						< 1.0			< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0						< 1.0			< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0						< 1.0			< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0						< 1.0			< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0						< 1.0			< 1.0

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,4-Dichlorobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0						< 1.0			< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50						< 50			< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0						< 1.0			< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0						< 1.0			< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0						< 2.0			< 2.0
Carbon Disulphide	N	2760	µg/kg	50						< 50			< 50
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0						< 1.0			< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50						< 0.50			< 0.50
Phenol	M	2790	mg/kg	0.50						< 0.50			< 0.50
2-Chlorophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50						< 0.50			< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50						< 0.50			< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50						< 0.50			< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50						< 0.50			< 0.50
2-Methylphenol	M	2790	mg/kg	0.50						< 0.50			< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50						< 0.50			< 0.50
Hexachloroethane	M	2790	mg/kg	0.50						< 0.50			< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Methylphenol	M	2790	mg/kg	0.50						< 0.50			< 0.50
Nitrobenzene	N	2790	mg/kg	0.50						< 0.50			< 0.50
Isophorone	M	2790	mg/kg	0.50						< 0.50			< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
2,4-Dimethylphenol	M	2790	mg/kg	0.50						< 0.50			< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50						< 0.50			< 0.50
2,4-Dichlorophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Naphthalene	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50						< 0.50			< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50						< 0.50			< 0.50
2,4,6-Trichlorophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
2,4,5-Trichlorophenol	N	2790	mg/kg	0.50						< 0.50			< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50						< 0.50			< 0.50
2-Nitroaniline	N	2790	mg/kg	0.50						< 0.50			< 0.50
Acenaphthylene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50						< 0.50			< 0.50
2,6-Dinitrotoluene	N	2790	mg/kg	0.50						< 0.50			< 0.50
Acenaphthene	M	2790	mg/kg	0.50						< 0.50			< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50						< 0.50			< 0.50
Dibenzofuran	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50						< 0.50			< 0.50
2,4-Dinitrotoluene	N	2790	mg/kg	0.50						< 0.50			< 0.50
Fluorene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Nitroaniline	N	2790	mg/kg	0.50						< 0.50			< 0.50
Azobenzene	M	2790	mg/kg	0.50						< 0.50			< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50						< 0.50			< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Phenanthrene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Anthracene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Carbazole	M	2790	mg/kg	0.50						< 0.50			< 0.50
Di-N-Butyl Phthalate	N	2790	mg/kg	0.50						< 0.50			< 0.50
Fluoranthene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Pyrene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Butylbenzyl Phthalate	N	2790	mg/kg	0.50						< 0.50			< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Chrysene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50						< 0.50			< 0.50
Di-N-Octyl Phthalate	N	2790	mg/kg	0.50						< 0.50			< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.50						< 0.50			< 0.50
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.50						< 0.50			< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50						< 0.50			< 0.50
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.22	< 0.10	0.21	< 0.10		< 0.10	0.54	
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484	23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716793	1716794	1716795	1716796	1716797	1716798	1716799	1716800	1716801
Order No.: POR016717			Client Sample Ref.:		2	6	20	1	5	2	4	2	3
			Client Sample ID.:		CP010.052	CP011.006	CP018.6020	WS010.201	WS020.605	WS030.302	WS031.704	WS040.252	WS040.603
			Sample Location:		CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.05	1.00	8.60	0.20	0.90	0.30	1.70	0.25	0.60
			Bottom Depth (m):		0.30	1.70		0.60	1.30	1.20	2.00	0.45	1.00
			Date Sampled:		12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Acenaphthene	M	2800	mg/kg	0.10	0.18	0.18	< 0.10	0.12	< 0.10		< 0.10	0.22	
Fluorene	M	2800	mg/kg	0.10	0.27	0.29	< 0.10	< 0.10	< 0.10		< 0.10	0.19	
Phenanthrene	M	2800	mg/kg	0.10	3.3	2.5	< 0.10	1.3	< 0.10		< 0.10	1.7	
Anthracene	M	2800	mg/kg	0.10	0.55	0.56	< 0.10	0.35	< 0.10		< 0.10	0.38	
Fluoranthene	M	2800	mg/kg	0.10	5.6	4.5	< 0.10	2.8	< 0.10		< 0.10	2.4	
Pyrene	M	2800	mg/kg	0.10	3.9	3.2	< 0.10	2.4	< 0.10		< 0.10	2.3	
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.2	1.8	< 0.10	1.5	< 0.10		< 0.10	1.3	
Chrysene	M	2800	mg/kg	0.10	2.0	1.5	< 0.10	1.3	< 0.10		< 0.10	1.2	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	2.8	2.2	< 0.10	2.9	< 0.10		< 0.10	1.9	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.1	0.94	< 0.10	0.96	< 0.10		< 0.10	0.64	
Benzo[a]pyrene	M	2800	mg/kg	0.10	2.9	2.1	< 0.10	2.6	< 0.10		< 0.10	1.6	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	1.9	1.4	< 0.10	2.1	< 0.10		< 0.10	1.3	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.33	0.21	< 0.10	0.30	< 0.10		< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.4	0.88	< 0.10	1.4	< 0.10		< 0.10	1.4	
Total Of 16 PAH's	N	2800	mg/kg	2.0	28	23	< 2.0	20	< 2.0		< 2.0	17	
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1	< 0.10	< 0.10	< 0.10
VOC TIC	N	2760	µg/kg	N/A						None Detected			None Detected

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	
Total Asbestos	U	2192	%	0.001	
Moisture	N	2030	%	0.020	28
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Clay
pH at 20C	M	2010		4.0	8.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	
Cyanide (Complex)	M	2300	mg/kg	0.50	48
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	48
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	
Arsenic	M	2455	mg/kg	0.5	220
Beryllium	U	2455	mg/kg	0.5	< 0.5
Cadmium	M	2455	mg/kg	0.10	9.4
Chromium	M	2455	mg/kg	0.5	170
Copper	M	2455	mg/kg	0.50	23
Mercury	M	2455	mg/kg	0.05	34
Nickel	M	2455	mg/kg	0.50	9.5
Lead	M	2455	mg/kg	0.50	450
Selenium	M	2455	mg/kg	0.25	< 0.25
Vanadium	U	2455	mg/kg	0.5	9.2
Zinc	M	2455	mg/kg	0.50	680
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
LOI	M	2610	%	0.10	4.9
Organic Matter	M	2625	%	0.40	3.4
TPH >C5-C6	N	2670	mg/kg	1.0	< 1.0
TPH >C6-C7	N	2670	mg/kg	1.0	< 1.0
TPH >C7-C8	N	2670	mg/kg	1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0	< 1.0
TPH >C16-C21	N	2670	mg/kg	1.0	< 1.0
TPH >C21-C35	N	2670	mg/kg	1.0	< 1.0
Total TPH >C5-C35	N	2670	mg/kg	10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	
Dichlorodifluoromethane	U	2760	µg/kg	1.0	
Chloromethane	M	2760	µg/kg	1.0	
Vinyl Chloride	M	2760	µg/kg	1.0	
Bromomethane	M	2760	µg/kg	20	
Chloroethane	U	2760	µg/kg	2.0	
Trichlorofluoromethane	M	2760	µg/kg	1.0	
1,1-Dichloroethene	M	2760	µg/kg	1.0	
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	
1,1-Dichloroethane	M	2760	µg/kg	1.0	
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	
Bromochloromethane	U	2760	µg/kg	5.0	
Trichloromethane	M	2760	µg/kg	1.0	

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	
Tetrachloromethane	M	2760	µg/kg	1.0	
1,1-Dichloropropene	U	2760	µg/kg	1.0	
Benzene	M	2760	µg/kg	1.0	
1,2-Dichloroethane	M	2760	µg/kg	2.0	
Trichloroethene	N	2760	µg/kg	1.0	
1,2-Dichloropropane	M	2760	µg/kg	1.0	
Dibromomethane	M	2760	µg/kg	1.0	
Bromodichloromethane	M	2760	µg/kg	5.0	
cis-1,3-Dichloropropene	N	2760	µg/kg	10	
Toluene	M	2760	µg/kg	1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	
1,1,2-Trichloroethane	M	2760	µg/kg	10	
Tetrachloroethene	M	2760	µg/kg	1.0	
1,3-Dichloropropane	U	2760	µg/kg	2.0	
Dibromochloromethane	U	2760	µg/kg	10	
1,2-Dibromoethane	M	2760	µg/kg	5.0	
Chlorobenzene	M	2760	µg/kg	1.0	
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	
Ethylbenzene	M	2760	µg/kg	1.0	
m & p-Xylene	M	2760	µg/kg	1.0	
o-Xylene	M	2760	µg/kg	1.0	
Styrene	M	2760	µg/kg	1.0	
Tribromomethane	U	2760	µg/kg	1.0	
Isopropylbenzene	M	2760	µg/kg	1.0	
Bromobenzene	M	2760	µg/kg	1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50	
N-Propylbenzene	U	2760	µg/kg	1.0	
2-Chlorotoluene	M	2760	µg/kg	1.0	
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	
4-Chlorotoluene	U	2760	µg/kg	1.0	
Tert-Butylbenzene	U	2760	µg/kg	1.0	
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	
Sec-Butylbenzene	U	2760	µg/kg	1.0	
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	
4-Isopropyltoluene	U	2760	µg/kg	1.0	

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	
N-Butylbenzene	U	2760	µg/kg	1.0	
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	
Hexachlorobutadiene	N	2760	µg/kg	1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	
Carbon Disulphide	N	2760	µg/kg	50	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	
Phenol	M	2790	mg/kg	0.50	
2-Chlorophenol	N	2790	mg/kg	0.50	
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	
2-Methylphenol	M	2790	mg/kg	0.50	
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	
Hexachloroethane	M	2790	mg/kg	0.50	
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	
4-Methylphenol	M	2790	mg/kg	0.50	
Nitrobenzene	N	2790	mg/kg	0.50	
Isophorone	M	2790	mg/kg	0.50	
2-Nitrophenol	N	2790	mg/kg	0.50	
2,4-Dimethylphenol	M	2790	mg/kg	0.50	
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	
2,4-Dichlorophenol	N	2790	mg/kg	0.50	
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	
Naphthalene	M	2790	mg/kg	0.50	
4-Chloroaniline	N	2790	mg/kg	0.50	
Hexachlorobutadiene	M	2790	mg/kg	0.50	
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.50	
2-Methylnaphthalene	M	2790	mg/kg	0.50	
4-Nitrophenol	N	2790	mg/kg	0.50	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	
2,4,6-Trichlorophenol	N	2790	mg/kg	0.50	

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
2,4,5-Trichlorophenol	N	2790	mg/kg	0.50	
2-Chloronaphthalene	M	2790	mg/kg	0.50	
2-Nitroaniline	N	2790	mg/kg	0.50	
Acenaphthylene	M	2790	mg/kg	0.50	
Dimethylphthalate	M	2790	mg/kg	0.50	
2,6-Dinitrotoluene	N	2790	mg/kg	0.50	
Acenaphthene	M	2790	mg/kg	0.50	
3-Nitroaniline	N	2790	mg/kg	0.50	
Dibenzofuran	M	2790	mg/kg	0.50	
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	
2,4-Dinitrotoluene	N	2790	mg/kg	0.50	
Fluorene	M	2790	mg/kg	0.50	
Diethyl Phthalate	M	2790	mg/kg	0.50	
4-Nitroaniline	N	2790	mg/kg	0.50	
Azobenzene	M	2790	mg/kg	0.50	
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	
Hexachlorobenzene	M	2790	mg/kg	0.50	
Phenanthrene	M	2790	mg/kg	0.50	
Anthracene	M	2790	mg/kg	0.50	
Carbazole	M	2790	mg/kg	0.50	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.50	
Fluoranthene	M	2790	mg/kg	0.50	
Pyrene	M	2790	mg/kg	0.50	
Butylbenzyl Phthalate	N	2790	mg/kg	0.50	
Benzo[a]anthracene	M	2790	mg/kg	0.50	
Chrysene	M	2790	mg/kg	0.50	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	
Di-N-Octyl Phthalate	N	2790	mg/kg	0.50	
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	
Benzo[a]pyrene	M	2790	mg/kg	0.50	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.50	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.50	
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	
Naphthalene	M	2800	mg/kg	0.10	0.54
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10

Results - Soil

Project: STV6211 Rhodes Business Park

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-34484
Quotation No.:			**Chemtest Sample ID.:**		1716802
Order No.: POR016717			Client Sample Ref.:		5
			Client Sample ID.:		WS051.605
			Sample Location:		WS05
			Sample Type:		SOIL
			Top Depth (m):		0.60
			Bottom Depth (m):		1.00
			Date Sampled:		12-Oct-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthene	M	2800	mg/kg	0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.79
Anthracene	M	2800	mg/kg	0.10	0.22
Fluoranthene	M	2800	mg/kg	0.10	1.0
Pyrene	M	2800	mg/kg	0.10	0.84
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	3.4
Total Phenols	M	2920	mg/kg	0.10	< 0.10
VOC TIC	N	2760	µg/kg	N/A	

Test Methods

SOP	Title	Parameters included	Method summary
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 <37°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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememrnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline 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.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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
2680	TPH A/A Split	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	Dichloromethane 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.
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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
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 TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°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

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

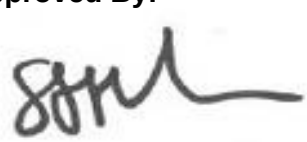
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-36961-1
Initial Date of Issue:	09-Nov-2023
Re-Issue Details:	
Client	Soiltechnics Limited
Client Address:	1st Floor Unit 9 Westpoint Enterprise Park Clarence Avenue Trafford Park Manchester M17 1QS
Contact(s):	Admin
Project	STV6211 Rhodes Business Park, Middleton

Quotation No.:		**Date Received:**	06-Nov-2023
Order No.:	POR016930	**Date Instructed:**	06-Nov-2023
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	10-Nov-2023
Date Approved:	09-Nov-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Water

Project: STV6211 Rhodes Business Park, Middleton

Client: Soiltechnics Limited		**Chemtest Job No.:**			23-36961	23-36961	23-36961	23-36961	23-36961
Quotation No.:		**Chemtest Sample ID.:**			1727088	1727089	1727090	1727091	1727092
Order No.: POR016930		Client Sample Ref.:			1	1	1	1	1
		Client Sample ID.:			CP012.401	SW010.001	SW020.001	WS022.301	WS031.601
		Sample Location:			CP01	SW01	SW02	WS02	WS03
		Sample Type:			WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.40	0.00	0.00	2.30	1.60
		Date Sampled:			02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
pH at 20C	U	1010		N/A	7.6	8.0	8.1	8.3	7.1
Nitrate as NO3	U	1220	mg/l	0.50	< 0.50	18	18	0.63	< 0.50
Sulphate	U	1220	mg/l	1.0	31	44	44	6.0	20
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Complex)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050
Calcium (Dissolved)	U	1455	mg/l	2.00		51	51		
Total Hardness as CaCO3	U	1270	mg/l	15		160	160		
Arsenic (Dissolved)	U	1455	µg/l	0.20	6.8	1.1	1.0	34	530
Boron (Dissolved)	U	1455	µg/l	10.0	46	49	49	13	50
Beryllium (Dissolved)	U	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	0.55	1.0
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	2.8	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	< 0.50	2.7	2.6	9.2	2.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	< 0.50	2.1	2.0	< 0.50	13
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	2.5	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	0.86	0.77	< 0.50	1.2
Vanadium (Dissolved)	U	1455	µg/l	0.50	< 0.50	1.1	1.1	3.3	1.4
Zinc (Dissolved)	U	1455	µg/l	2.5	3.3	15	15	28	270
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20			[B] < 20	
Dissolved Organic Carbon	U	1610	mg/l	2.0		5.9	6.2		
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10			< 0.10	
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0			< 5.0	
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10			< 0.10	

Results - Water

Project: STV6211 Rhodes Business Park, Middleton

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-36961	23-36961	23-36961	23-36961	23-36961
Quotation No.:			**Chemtest Sample ID.:**		1727088	1727089	1727090	1727091	1727092
Order No.: POR016930			Client Sample Ref.:		1	1	1	1	1
			Client Sample ID.:		CP012.401	SW010.001	SW020.001	WS022.301	WS031.601
			Sample Location:		CP01	SW01	SW02	WS02	WS03
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.40	0.00	0.00	2.30	1.60
			Date Sampled:		02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10			< 0.10	
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10			< 0.10	
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0			< 5.0	
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10			< 10	
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
Chloromethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0			< 1.0	
Bromomethane	U	1760	µg/l	5	< 5			< 5	
Chloroethane	U	1760	µg/l	2.0	< 2.0			< 2.0	
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Bromochloromethane	U	1760	µg/l	5	< 5			< 5	
Trichloromethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Benzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0			< 2.0	
Trichloroethene	N	1760	µg/l	1.0	< 1.0			< 1.0	
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0			< 1.0	
Dibromomethane	U	1760	µg/l	10	< 10			< 10	
Bromodichloromethane	U	1760	µg/l	5	< 5			< 5	
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10			< 10	
Toluene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10			< 10	
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10			< 10	
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0			< 2.0	
Dibromochloromethane	U	1760	µg/l	10	< 10			< 10	
1,2-Dibromoethane	U	1760	µg/l	5	< 5			< 5	
Chlorobenzene	N	1760	µg/l	1.0	< 1.0			< 1.0	
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0			< 2.0	
Ethylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
m & p-Xylene	U	1760	µg/l	1.0	< 1.0			< 1.0	
o-Xylene	U	1760	µg/l	1.0	< 1.0			< 1.0	

Results - Water

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Client: Soiltechnics Limited			**Chemtest Job No.:**		23-36961	23-36961	23-36961	23-36961	23-36961
Quotation No.:			**Chemtest Sample ID.:**		1727088	1727089	1727090	1727091	1727092
Order No.: POR016930			Client Sample Ref.:		1	1	1	1	1
			Client Sample ID.:		CP012.401	SW010.001	SW020.001	WS022.301	WS031.601
			Sample Location:		CP01	SW01	SW02	WS02	WS03
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.40	0.00	0.00	2.30	1.60
			Date Sampled:		02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Styrene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Tribromomethane	U	1760	µg/l	1.0	< 1.0			< 1.0	
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Bromobenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50			< 50	
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0			< 1.0	
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50			< 50	
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0			< 1.0	
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0			< 1.0	
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0			< 2.0	
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0			< 1.0	
1,1,2-Trichloro 1,2,2 Trifluoroethane	N	1760	µg/l	2.0	< 2.0			< 2.0	
Bromoform	N	1760	µg/l	10	< 10			< 10	
Carbon Tetrachloride	N	1760	µg/l	10	< 10			< 10	
Chloroform	N	1760	µg/l	10	< 10			< 10	
2,2-Dichloropropane	N	1760	µg/l	50	< 50			< 50	
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50			< 0.50	
Phenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50			< 0.50	
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50			< 0.50	
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50			< 0.50	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50			< 0.50	
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50			< 0.50	

Results - Water

Project: STV6211 Rhodes Business Park, Middleton

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-36961	23-36961	23-36961	23-36961	23-36961
Quotation No.:			**Chemtest Sample ID.:**		1727088	1727089	1727090	1727091	1727092
Order No.: POR016930			Client Sample Ref.:		1	1	1	1	1
			Client Sample ID.:		CP012.401	SW010.001	SW020.001	WS022.301	WS031.601
			Sample Location:		CP01	SW01	SW02	WS02	WS03
			Sample Type:		WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.40	0.00	0.00	2.30	1.60
			Date Sampled:		02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
4-Methylphenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
Nitrobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Isophorone	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Naphthalene	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50			< 0.50	
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50			< 0.50	
Acenaphthylene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Acenaphthene	N	1790	µg/l	0.50	< 0.50			< 0.50	
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50			< 0.50	
Dibenzofuran	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50			< 0.50	
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Fluorene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50			< 0.50	
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
Azobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50			< 0.50	
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Phenanthrene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Anthracene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Carbazole	N	1790	µg/l	0.50	< 0.50			< 0.50	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
Fluoranthene	N	1790	µg/l	0.50	< 0.50			< 0.50	

Results - Water

Project: STV6211 Rhodes Business Park, Middleton

Client: Soiltechnics Limited		**Chemtest Job No.:**			23-36961	23-36961	23-36961	23-36961	23-36961
Quotation No.:		**Chemtest Sample ID.:**			1727088	1727089	1727090	1727091	1727092
Order No.: POR016930		Client Sample Ref.:			1	1	1	1	1
		Client Sample ID.:			CP012.401	SW010.001	SW020.001	WS022.301	WS031.601
		Sample Location:			CP01	SW01	SW02	WS02	WS03
		Sample Type:			WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.40	0.00	0.00	2.30	1.60
		Date Sampled:			02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Pyrene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Chrysene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50			< 0.50	
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50			< 0.50	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50			< 0.50	
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50			< 0.50	
Naphthalene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Acenaphthylene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Acenaphthene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Fluorene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Phenanthrene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Anthracene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Fluoranthene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Pyrene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Benzo[a]anthracene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Chrysene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Benzo[b]fluoranthene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Benzo[k]fluoranthene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Benzo[a]pyrene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Dibenz(a,h)Anthracene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Benzo[g,h,i]perylene	U	1800	µg/l	0.10		< 0.10	< 0.10		< 0.10
Total Of 16 PAH's	U	1800	µg/l	2.0		< 2.0	< 2.0		< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.043

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1727088	1	CP012.401	CP01	02-Nov-2023	B	Coloured Winchester 1000ml
1727088	1	CP012.401	CP01	02-Nov-2023	B	EPA Vial 40ml
1727088	1	CP012.401	CP01	02-Nov-2023	B	Plastic Bottle 1000ml
1727089	1	SW010.001	SW01	02-Nov-2023	B	Coloured Winchester 1000ml
1727089	1	SW010.001	SW01	02-Nov-2023	B	EPA Vial 40ml
1727089	1	SW010.001	SW01	02-Nov-2023	B	Plastic Bottle 1000ml
1727090	1	SW020.001	SW02	02-Nov-2023	B	Coloured Winchester 1000ml
1727090	1	SW020.001	SW02	02-Nov-2023	B	EPA Vial 40ml
1727090	1	SW020.001	SW02	02-Nov-2023	B	Plastic Bottle 1000ml
1727091	1	WS022.301	WS02	02-Nov-2023	B	Coloured Winchester 1000ml
1727091	1	WS022.301	WS02	02-Nov-2023	B	EPA Vial 40ml
1727091	1	WS022.301	WS02	02-Nov-2023	B	Plastic Bottle 1000ml
1727092	1	WS031.601	WS03	02-Nov-2023	B	Coloured Winchester 1000ml
1727092	1	WS031.601	WS03	02-Nov-2023	B	EPA Vial 40ml
1727092	1	WS031.601	WS03	02-Nov-2023	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH at 20°C	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
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).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
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.

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All water samples will be retained for 14 days from the date of receipt
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If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-37887-1
Initial Date of Issue:	22-Nov-2023
Re-Issue Details:	
Client	Soiltechnics Limited
Client Address:	1st Floor Unit 9 Westpoint Enterprise Park Clarence Avenue Trafford Park Manchester M17 1QS
Contact(s):	Admin
Project	STV6211 Rhodes Business Park

Quotation No.:		**Date Received:**	14-Nov-2023
Order No.:	POR016930	**Date Instructed:**	14-Nov-2023
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	22-Nov-2023
Date Approved:	22-Nov-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - 2 Stage WAC

Project: STV6211 Rhodes Business Park

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-37887								
Chemtest Sample ID:	1730874								
Sample Ref:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	WS010.201								
Sample Location:	WS01								
Top Depth(m):	0.20								
Bottom Depth(m):	0.60								
Sampling Date:	12-Oct-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			[B] 7.6	3	5	6
Loss On Ignition	2610	M	%			6.3	--	--	10
Total BTEX	2760	M	mg/kg			[B] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			[B] 250	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			61	100	--	--
pH at 20C	2010	M				8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0050	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.019	0.034	0.035	0.32	0.5	2	25
Barium	1455	U	0.048	0.023	0.087	0.25	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0098	0.0048	0.018	0.053	0.5	10	70
Copper	1455	U	0.0080	0.0045	0.015	0.0098	2	50	100
Mercury	1455	U	0.00012	0.00007	0.00021	0.00077	0.01	0.2	2
Molybdenum	1455	U	0.018	0.0028	0.033	0.045	0.5	10	30
Nickel	1455	U	0.0007	0.0009	0.0013	0.0087	0.4	10	40
Lead	1455	U	0.0014	0.0044	0.0026	0.039	0.5	10	50
Antimony	1455	U	0.020	0.0055	0.036	0.070	0.06	0.7	5
Selenium	1455	U	0.0012	0.0007	0.0021	0.0074	0.1	0.5	7
Zinc	1455	U	0.007	0.007	0.012	0.070	4	50	200
Chloride	1220	U	1.3	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.62	0.18	1.1	2.3	10	150	500
Sulphate	1220	U	28	4.5	51	71	1000	20000	50000
Total Dissolved Solids	1020	N	160	47	290	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	7.5	4.3	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	34

Leachate Test Information	
Leachant volume 1st extract/l	0.260
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.202

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: STV6211 Rhodes Business Park

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-37887								
Chemtest Sample ID:	1730875								
Sample Ref:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	WS040.603								
Sample Location:	WS04								
Top Depth(m):	0.60								
Bottom Depth(m):	1.00								
Sampling Date:	12-Oct-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			[B] 4.1	3	5	6
Loss On Ignition	2610	M	%			8.7	--	--	10
Total BTEX	2760	M	mg/kg			[B] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			[B] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			11	100	--	--
pH at 20C	2010	M				8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0060	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.12	0.23	0.24	2.2	0.5	2	25
Barium	1455	U	0.091	0.053	0.17	0.57	20	100	300
Cadmium	1455	U	0.00023	< 0.00011	0.00043	0.00030	0.04	1	5
Chromium	1455	U	0.58	0.25	1.1	2.9	0.5	10	70
Copper	1455	U	0.0034	0.0029	0.0065	0.0058	2	50	100
Mercury	1455	U	< 0.00005	0.00016	< 0.00005	0.0013	0.01	0.2	2
Molybdenum	1455	U	0.016	0.0026	0.031	0.044	0.5	10	30
Nickel	1455	U	0.0007	< 0.0005	0.0013	0.0009	0.4	10	40
Lead	1455	U	0.0008	0.0059	0.0015	0.052	0.5	10	50
Antimony	1455	U	0.13	0.041	0.26	0.53	0.06	0.7	5
Selenium	1455	U	0.0013	0.0007	0.0024	0.0077	0.1	0.5	7
Zinc	1455	U	0.039	0.022	0.074	0.24	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.43	0.19	< 1.0	2.2	10	150	500
Sulphate	1220	U	51	6.3	97	120	1000	20000	50000
Total Dissolved Solids	1020	N	200	48	380	680	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.8	3.1	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	27

Leachate Test Information	
Leachant volume 1st extract/l	0.285
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.230

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1730874		WS010.201	WS01	12-Oct-2023	B	Amber Glass 250ml
1730874		WS010.201	WS01	12-Oct-2023	B	Plastic Tub 500g
1730875		WS040.603	WS04	12-Oct-2023	B	Amber Glass 250ml
1730875		WS040.603	WS04	12-Oct-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
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).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
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 <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	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-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
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.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
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

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Appendix I Contamination Assessment Screening

GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	x2 scenarios completed	07/12/2023	DH	SCD
Chronic human health risk - Soils	Completed	07/12/2023	DH	SCD
Chronic human health risk - Groundwater vapour	*Not undertaken*			
Controlled waters risk - Surface water	Completed	07/12/2023	DH	SCD
Controlled waters risk - Drinking water	*Not undertaken*			
Controlled waters - Free phase indicator	*Not undertaken*			
Phytotoxicity	Completed	07/12/2023	DH	SCD
Ecotoxicity	*Not undertaken*			

Key

Assessment	Abbr.	GQRA Source (in order of preference)	Last Update
All	NGA	No guideline value available	-
Acute human health risk - Soils	AGAC	Acute Generic Assessment Criteria (SoBRA)	April 2019
	sat.	Contaminant poses a low acute risk unless the soil saturation limit is exceeded and a free oil phase is present.	April 2019
Chronic human health risk - Soils	C4SL	Category 4 Screening Levels (DEFRA)	May 2021
	S4UL	Suitable 4 Use Levels (LQM)	August 2015
	ATK	Atrisk Soil Screening Values (Atkins)	June 2017
	CL:AIRE	Generic Assessment Criteria (CL:AIRE)	Jan 2010
Controlled waters risk - Surface water	PNEC	Predicted no effect concentration. Derived from the Metals Bioavaibiltiy Assessment Tools (M-BAT) (UK TAG)	Nov. 2013 (Cu,Ni,Mn,Zn) March 2015 (Pb)
	AA-EQS	Environmental Quality Standards AA = Annual average (Environment Agency)	August 2021
	EA	Petroleum Hydrocarbons in Groundwater: Supplementary Guidance for Hydrogeological Risk Assessment (Environment Agency)	April 2009
	MAC-EQS	Environmental Quality Standards MAC = Maximum Allowable Concentration (Environment Agency)	August 2021
Phytotoxicity	BSI	BS 3882 - Specification for Topsoil (u = upper limit, l = lower limit for multipurpose topsoil) (British Standards Institute)	April 2015
	SSIA	Potentially Toxic Element. Sewage Sludge in Agriculture: Code of Practice (Environment Agency)	May 2018

Chronic human health risk (soils)

Scenario	
End user	Proposed site user
Receptor	Industrial/Commercial
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04	WS05
				Depth (m)	0.05 - 0.30	1.00 - 1.70	8.60	0.20 - 0.60	0.90 - 1.30	0.30 - 1.20	1.70 - 2.00	0.25 - 0.45	0.60 - 1.00	1.60 - 2.00
				Date	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23
Inorganics - Metals														
Arsenic	C4SL	640	560		8.4	160	4.5	58	56	560	100	170	350	220
Beryllium	S4UL	12	1.9		< 0.5	0.6	< 0.5	0.7	0.7	1.9	1.2	1.5	1.2	< 0.5
Boron	S4UL	240000	0.45		< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.45	< 0.40
Cadmium	C4SL	410	11		0.27	0.88	< 0.10	1.1	0.55	4.6	5.6	7.7	11	9.4
Chromium (III)	S4UL	8600	260		16	46	6.5	50	19	140	18	80	260	170
Chromium (VI)	C4SL	49	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Copper	S4UL	68000	140		11	56	6.7	79	25	130	40	120	140	23
Cyanide - Free	ATK	34	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lead	C4SL	2300	710		33	150	4.6	270	36	460	55	340	710	450
Mercury	S4UL	1100	43		0.29	1.4	< 0.05	3	0.33	5.9	0.67	6.8	43	34
Nickel	S4UL	980	36		14	14	7.6	18	19	34	36	28	32	9.5
Selenium	S4UL	12000	0.88		0.33	0.35	< 0.25	0.44	0.57	0.88	0.56	0.79	0.73	< 0.25
Vanadium	S4UL	9000	41		16	19	7.4	23	18	41	18	37	33	9.2
Zinc	S4UL	730000	3100		68	290	20	220	160	550	3100	670	1700	680
Inorganics - Asbestos														
Asbestos Type		N/A			-	-	-	Fibres/Clumps	-	-	-	-	-	-
Asbestos Screen		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos Quantification (%)		N/A	0.006					0.006						
Inorganics - Soil Parameters														
Organic matter		N/A			2.9	4.4	0.83	6.3	1.6	13	3.9	7.4	9.1	3.4
Organics - PAH & Phenol														
Acenaphthene	S4UL	84000	0.22		0.18	0.18	< 0.10	0.12	< 0.10	< 0.50	< 0.10	0.22	< 0.50	< 0.10
Acenaphthylene	S4UL	83000	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.50	< 0.10	< 0.10	< 0.50	< 0.10
Anthracene	S4UL	520000	0.56		0.55	0.56	< 0.10	0.35	< 0.10	< 0.50	< 0.10	0.38	< 0.50	0.22
Benzo(a)anthracene	S4UL	170	2.2		2.2	1.8	< 0.10	1.5	< 0.10	< 0.50	< 0.10	1.3	< 0.50	< 0.10
Benzo(a)pyrene	C4SL	77	2.9		2.9	2.1	< 0.10	2.6	< 0.10	< 0.50	< 0.10	1.6	< 0.50	< 0.10
Benzo(b)fluoranthene	S4UL	44	2.9		2.8	2.2	< 0.10	2.9	< 0.10	< 0.50	< 0.10	1.9	< 0.50	< 0.10
Benzo(ghi)perylene	S4UL	3900	1.4		1.4	0.88	< 0.10	1.4	< 0.10	< 0.50	< 0.10	1.4	< 0.50	< 0.10
Benzo(k)fluoranthene	S4UL	1200	1.1		1.1	0.94	< 0.10	0.96	< 0.10	< 0.50	< 0.10	0.64	< 0.50	< 0.10
Chrysene	S4UL	350	2		2	1.5	< 0.10	1.3	< 0.10	< 0.50	< 0.10	1.2	< 0.50	< 0.10
Dibenz(a,h)anthracene	S4UL	3.5	0.33		0.33	0.21	< 0.10	0.3	< 0.10	< 0.50	< 0.10	< 0.10	< 0.50	< 0.10
Fluoranthene	S4UL	23000	5.6		5.6	4.5	< 0.10	2.8	< 0.10	< 0.50	< 0.10	2.4	< 0.50	1
Fluorene	S4UL	63000	0.29		0.27	0.29	< 0.10	< 0.10	< 0.10	< 0.50	< 0.10	0.19	< 0.50	< 0.10
Indeno(1,2,3-cd)pyrene	S4UL	500	2.1		1.9	1.4	< 0.10	2.1	< 0.10	< 0.50	< 0.10	1.3	< 0.50	< 0.10
Naphthalene	S4UL	190	0.54		< 0.10	0.22	< 0.10	0.21	< 0.10	< 0.50	< 0.10	0.54	< 0.50	0.54
Phenanthrene	S4UL	22000	3.3		3.3	2.5	< 0.10	1.3	< 0.10	< 0.50	< 0.10	1.7	< 0.50	0.79
Phenol	S4UL	440	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.50	< 0.10	< 0.10	< 0.50	< 0.10
Pyrene	S4UL	54000	3.9		3.9	3.2	< 0.10	2.4	< 0.10	< 0.50	< 0.10	2.3	< 0.50	0.84
Organics - TPH CWG and BTEX														
Benzene	C4SL	98	<LoD							< 0.001			< 0.001	
Toluene	S4UL	56000	<LoD							< 0.001			< 0.001	
Ethylbenzene	S4UL	5700	<LoD							< 0.001			< 0.001	
o-Xylene	S4UL	6600	<LoD							< 0.001			< 0.001	
m & p-xylene	S4UL	5900	<LoD							< 0.001			< 0.001	
Xylenes (sum of)	S4UL	5900	<LoD							< LoD			< LoD	
EC05 - EC06 Aliphatic	S4UL	3200	<LoD							< 1.0			< 1.0	
EC>06 - EC08 Aliphatic	S4UL	7800	<LoD							< 1.0			< 1.0	
EC>08 - EC10 Aliphatic	S4UL	2000	<LoD							< 1.0			< 1.0	
EC>10 - EC12 Aliphatic	S4UL	9700	<LoD							< 1.0			< 1.0	
EC>12 - EC16 Aliphatic	S4UL	59000	<LoD							< 1.0			< 1.0	
EC>16 - EC21 Aliphatic	S4UL	1600000	<LoD							< 1.0			< 1.0	
EC>21 - EC35 Aliphatic	S4UL	1600000	61							61			46	
EC5 - EC7 (benzene)	S4UL	26000	<LoD							< 1.0			< 1.0	
EC7 - >EC8 (toluene)	S4UL	56000	<LoD							< 1.0			< 1.0	
EC>08 - EC10 Aromatic	S4UL	3500	<LoD							< 1.0			< 1.0	
EC>10 - EC12 Aromatic	S4UL	16000	<LoD							< 1.0			< 1.0	
EC>12 - EC16 Aromatic	S4UL	36000	<LoD							< 1.0			< 1.0	
EC>16 - EC21 Aromatic	S4UL	28000	<LoD							< 1.0			< 1.0	
EC>21 - EC35 Aromatic	S4UL	28000	330							< 1.0			330	
EC>35 - EC44 Aromatic	S4UL	28000	110							< 1.0			110	
Organics - Banded TPH (unspeciated)														
EC >5-EC6 (unspeciated)	S4UL	3200	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
EC >6-EC7 (unspeciated)	S4UL	7800	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
EC >7-EC8 (unspeciated)	S4UL	7800	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
EC >08-EC10 (unspeciated)	S4UL	2000	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
EC >10-EC12 (unspeciated)	S4UL	9700	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
EC >12-EC16 (unspeciated)	S4UL	36000	12		8	6	< 1.0	12	< 1.0		< 1.0	< 1.0		< 1.0
EC >16-EC21 (unspeciated)	S4UL	28000	34		34	18	< 1.0	28	< 1.0		< 1.0	15		< 1.0
EC >21-EC35 (unspeciated)	S4UL	28000	2300		2300	82	< 1.0	150	< 1.0		< 1.0	74		< 1.0

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Acute human health risk (soils)

Scenario	Occupational exposure (construction worker)
Critical receptor	Adult female worker
Oral exposure	Ingestion of soil and dusts over a single working day
Demal exposure	Soil being left on the skin for several hours, assumed no PPE worn
Inhalation exposure	30 mins exposure - worker standing adjacent to active excavation (assumed no RPE)

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04	WS05
					Depth (m)	0.05 - 0.30	1.00 - 1.70	8.60	0.20 - 0.60	0.90 - 1.30	0.30 - 1.20	1.70 - 2.00	0.25 - 0.45	0.60 - 1.00	1.60 - 2.00
					Date	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23
Inorganics															
Arsenic	AGAC	Oral	7,000	560		8.4	160	4.5	58	56	560	100	170	350	220
Cadmium	AGAC	Oral	12,000	11		0.27	0.88	*< 0.10*	1.1	0.55	4.6	5.6	7.7	11	9.4
Cyanide - Free	AGAC	Oral & Inhalation	1,400	<LoD		*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*
Organics															
Benzene	AGAC	Inhalation	240	<LoD							*< 0.001*			*< 0.001*	
Phenol	AGAC	**sat.**	**sat.**	<LoD		*< 0.10*	*< 0.10*	*< 0.10*	*< 0.10*	*< 0.10*	*< 0.50*	*< 0.10*	*< 0.10*	*< 0.50*	*< 0.10*
Trichloroethene	AGAC	Inhalation	16,000	<LoD							*< 0.001*			*< 0.001*	
Vinyl Chloride	AGAC	Inhalation	220	<LoD							*< 0.001*			*< 0.001*	

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Acute human health risk (soils)

Scenario	Off-site public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	N/A
Demal exposure	N/A
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04	WS05
					Depth (m)	0.05 - 0.30	1.00 - 1.70	8.60	0.20 - 0.60	0.90 - 1.30	0.30 - 1.20	1.70 - 2.00	0.25 - 0.45	0.60 - 1.00	1.60 - 2.00
					Date	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23
Inorganics															
Arsenic	AGAC	Inhalation	7,000,000	560		8.4	160	4.5	58	56	560	100	170	350	220
Cadmium	AGAC	Inhalation	1,800,000	11		0.27	0.88	*< 0.10*	1.1	0.55	4.6	5.6	7.7	11	9.4
Cyanide - Free	AGAC	Inhalation	380	<LoD		*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*
Organics															
Benzene	AGAC	Inhalation	120	<LoD							*< 0.001*			*< 0.001*	
Phenol	AGAC	**sat.**	**sat.**	<LoD		*< 0.10*	*< 0.10*	*< 0.10*	*< 0.10*	*< 0.10*	*< 0.50*	*< 0.10*	*< 0.10*	*< 0.50*	*< 0.10*
Trichloroethene	AGAC	Inhalation	8,000	<LoD							*< 0.001*			*< 0.001*	
Vinyl Chloride	AGAC	Inhalation	98	<LoD							*< 0.001*			*< 0.001*	

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Controlled waters risk

Scenario	
Receptor	Surface water - Inland freshwater
Hydrometric area	English and Welsh freshwaters
Are bioavailability parameters known?	Yes
Hardness (mg $CaCO_3$/l)	160
DOC (mg/l)	6
pH	8
Calcium (mg Ca/l)	51

					Surface Water		Groundwater			Soil Leachate	
Contaminant	Guideline source	Guideline value (µg/l)	Max value (µg/l)	Location	SW01 (upstream)	SW02 (d/stream)	CP01	WS02	WS03	WS01	WS04
				Depth (m)	0.00	0.00	2.40	2.30	1.60	0.20 - 0.60	0.60 - 1.00
				Type	EW	EW	EW	EW	EW	ES	ES
				Date	02/11/23	02/11/23	02/11/23	02/11/23	02/11/23	12/10/23	12/10/23
Inorganics - Metals											
Arsenic	AA-EQS	50	530		1.1	1	6.8	34	530	19	230
Boron	AA-EQS	2000	50		49	49	46	13	50		
Cadmium	AA-EQS	0.15	1		< 0.11	< 0.11	< 0.11	0.55	1	< 0.11	0.00043
Chromium (total)	NGA	NGA	2.8		<LoD	<LoD	<LoD	2.8	<LoD	0.018	1.1
Chromium (III)	AA-EQS	4.7	2.8		< 0.50	< 0.50	< 0.50	2.8	< 0.50	0.018	1.1
Chromium (VI)	AA-EQS	3.4	<LoD				< 20	< 20			
Copper	PNEC	18.01	9.2		2.7	2.6	< 0.50	9.2	2	8	2.9
Lead	PNEC	7.08	2.5		< 0.50	< 0.50	< 0.50	2.5	< 0.50	1.4	0.0015
Mercury	MAC-EQS	0.07	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05
Nickel	PNEC	9.73	13		2.1	2	< 0.50	< 0.50	13	0.0013	0.0013
Selenium	NGA	NGA	1.2		0.86	0.77	< 0.50	< 0.50	1.2	0.0021	0.7
Vanadium	AA-EQS	20	3.3		1.1	1.1	< 0.50	3.3	1.4		
Zinc	PNEC	32.21	270		15	15	3.3	28	270	7	0.074
Inorganics - Miscellaneous											
pH	NGA	NGA	8.3		8	8.1	7.6	8.3	7.1		
Cyanide - Total	NGA	NGA	<LoD		< 50	< 50	< 50	< 50	< 50		
Cyanide - Free	AA-EQS	1	<LoD		< 50	< 50	< 50	< 50	< 50		
Nitrate (as NO3)	NGA	NGA	18000		18000	18000	< 500	630	< 500		
Chloride	AA-EQS	250000	<LoD							< 10	< 1000
Sulphate	AA-EQS	400000	51000		44000	44000	31000	6000	20000	4500	51000
Organics - PAH & Phenol											
Naphthalene	AA-EQS	2	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Acenaphthylene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Acenaphthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Fluorene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Phenanthrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Anthracene	AA-EQS	0.1	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Fluoranthene	AA-EQS	0.0063	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Pyrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Benzo(a)anthracene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Chrysene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Benzo(b)fluoranthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Benzo(k)fluoranthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Benzo(a)pyrene	AA-EQS	0.00017	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Indeno(1,2,3-cd)pyrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Dibenz(a,h)anthracene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
Benzo(ghi)perylene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.50	< 0.50	< 0.10		
PAH (sum of 4)	NGA	NGA	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD		
Phenol	AA-EQS	7.7	43		< 30	< 30	< 0.50	< 0.50	43	< 0.30	< 30

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Phytotoxicity

Scenario	
Land use	Grassed lawns

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	CP01	CP01	CP01	WS01	WS02	WS03	WS03	WS04	WS04
				Depth (m)	0.05 - 0.30	1.00 - 1.70	8.60	0.20 - 0.60	0.90 - 1.30	0.30 - 1.20	1.70 - 2.00	0.25 - 0.45	0.60 - 1.00
				Date	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23	12/10/23
Soil parameters													
pH	BSI-u	8.5	9.2		9.1	9	9.2	9.1	8	8.5	8.3	8.6	8.5
pH	BSI-l	5.5	8		9.1	9	9.2	9.1	8	8.5	8.3	8.6	8.5
Potentially toxic element													
Arsenic	SSIA	50			8.4	160	4.5	58	56	560	100	170	350
Cadmium	SSIA	3	11		0.27	0.88	*< 0.10*	1.1	0.55	4.6	5.6	7.7	11
Chromium (III)	SSIA	600	260		16	46	6.5	50	19	140	18	80	260
Lead	SSIA	300	710		33	150	4.6	270	36	460	55	340	710
Mercury	SSIA	1.5	43		0.29	1.4	*< 0.05*	3	0.33	5.9	0.67	6.8	43
Selenium	SSIA	5	0.88		0.33	0.35	*< 0.25*	0.44	0.57	0.88	0.56	0.79	0.73
Potentially toxic element (pH >7.0)													
Copper	SSIA	330	140		11	56	6.7	79	25	130	40	120	140
Nickel	SSIA	180	36		14	14	7.6	18	19	34	36	28	32
Zinc	SSIA	300	3100		68	290	20	220	160	550	3100	670	1700

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Phytotoxicity

Scenario	
Land use	Grassed lawns

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	WS05
				Depth (m)	1.60 - 2.00
				Date	12/10/23
Soil parameters					
pH	BSI-u	8.5	9.2		8.7
pH	BSI-l	5.5	8		8.7
Potentially toxic element					
Arsenic	SSIA	50			220
Cadmium	SSIA	3	11		9.4
Chromium (III)	SSIA	600	260		170
Lead	SSIA	300	710		450
Mercury	SSIA	1.5	43		34
Selenium	SSIA	5	0.88		*< 0.25*
Potentially toxic element (pH >7.0)					
Copper	SSIA	330	140		23
Nickel	SSIA	180	36		9.5
Zinc	SSIA	300	3100		680

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Appendix J Waste Characterisation Analysis

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Waste Classification Assessment Summary

Waste population	Made Ground without lime waste
Hazard assessment	Non-hazardous waste
List of waste code	17-05-04
List of waste description	Soil and stones other than those mentioned in 17-05-03

Hazard property	Assessment
HP1 - Explosive	Not hazardous by HP1
HP2 - Oxidising	Not hazardous by HP2
HP3 - Flammable	Not hazardous by HP3
HP4 - Irritant	Not hazardous by HP4
HP5 - STOT & aspiration toxicity	Not hazardous by HP5
HP6 - Acute toxicity	Not hazardous by HP6
HP7 - Carcinogenic	Not hazardous by HP7
HP8 - Corrosive	Not hazardous by HP8
HP9 - Infectious	Not hazardous by HP9
HP10 - Toxic for reproduction	Not hazardous by HP10
HP11 - Mutagenic	Not hazardous by HP11
HP12 - Release of an acute toxic gas	Not hazardous by HP12
HP13 - Sensitising	Not hazardous by HP13
HP14 - Ecotoxic	Not hazardous by HP14

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Waste classification

Overall assessment	
Waste population	Made Ground without lime waste
Hazard assessment	Non-hazardous waste
List of Waste code	17-05-04
List of waste description	Soil and stones other than those mentioned in 17-05-03
Is the statistical approach non-parametric method B utilised?	No
Moisture content correction factor	No correction made

Asbestos assessment		
Query	Value	Assessment
Are bulk ACMs visually identifiable?	No	Non-hazardous
Have free fibres been detected?	Yes	See below
What is the free fibre concentration (%)?	0.01%	Non-hazardous

Flammability assessment	
Comment	Assessment
The waste is not considered flammable as it is a solid waste without a free draining liquid phase, and the TPH concentration and composition is not consdiered to present a likely flammable hazard.	Non-hazardous

Hydrocarbon assessment	
Query	Assessment
Is the origin of the oil contamination known?	Unknown oil
B(a)P : TPH ratio (%)	
B(a)P marker assessment	0.00

pH assessment		
Query	Value	Assessment
Are all substances present in the waste known?	No	See pH assessment below
pH - Min	8.00	Non-hazardous
pH - Max	9.10	Non-hazardous

Oxidising assessment	
Comment	Assessment
Cr (VI) is the only compound with an oxidising hazard statement (H271). On review, the concentration is considered too low to present a viable oxidising hazard in a waste soil	Non-hazardous

Ecotoxic assessment			
Equation	Sum	Criteria	Assessment
WM3. Eq. 2	0.00%	25%	Non-hazardous
WM3 Eq. 3	0.00%	25%	Non-hazardous
WM3 Eq. 4	0.00%	25%	Non-hazardous

Compound hazard assessments

						Hazard Property Description	Irritant			Specific Target Organ Toxicity / Aspiration Toxicity				Acute Toxicity								Carcinogenic		Corrosive	Toxic for reproduction		Mutagenic		Sensitising		Ecotoxic				Substance specific concentration limits					
						Hazard Property	HP4			HP5				HP6										HP7		HP8	HP10		HP11		HP13		HP14				STOT				Carc.	Repr.
						Hazard Statement	H314	H315 and/or H319	H318	H304	H335	H372	H373	H300	H301	H302	H310	H311	H312	H330	H330	H331	H332	H350	H351	H314	H360	H361	H340	H341	H317	H334	H400	H410	H411	H413	H335 (CrO3)	H372 (CdS)	H373 (CdS)	H373 (PbSO4)	H350 (BaP) (DuJvA)	H361 (PbSO4)
Contaminant	Max. concentration (mg/kg)	Realistic worst case compound	Mass conversion factor	MC applied?	Hazard Class / Compound concentration (%)		Skin Corr.1A	Skin Irrit.2 Eye Irrit.2	Eye Dam.1	Asp.Tox.1	STOT SE.3	STOT RE.1	STOT RE.2	Acute Tox.2 (Oral)	Acute Tox.3 (Oral)	Acute Tox.4 (Oral)	Acute Tox.1 (Dermal)	Acute Tox.3 (Dermal)	Acute Tox.4 (Dermal)	Acute Tox.1 (Inhal.)	Acute Tox.2 (Inhal)	Acute Tox.3 (Inhal)	Acute Tox.4 (Inhal)	Carc.1A Carc.1B	Carc.2	Skin Corr.1A Skin Corr.1B	Repr.1A Repr.1B	Repr.2	Muta.1A Muta.1B	Muta 2.	Skin Sens.1	Resp. Sens. 1	Aquatic Acute.1	Aquatic Chronic.1	Aquatic Chronic.2	Aquatic Chronic.4	STOT SE..3	STOT RE.1	STOT RE.2	STOT RE.2	Carc.1B	Repr.2
Cyanide - Total	140.0	Salts of hydrogen cyanide, using sodium cyanide	1.88	N/A	0.026									0.026			0.026			0.026	0.026											0.026	0.026								
Arsenic	560.0	Nickel diarsenide	1.78	N	0.100							0.100												0.100							0.100				0.100	0.100						
Arsenic (secondary)	560.0	Arsenic trioxide	1.32	N	0.074		0.074							0.074												0.074																
Beryllium	1.9	Beryllium oxide	2.78	N	0.001			0.001			0.001	0.001			0.001						0.001	0.001			0.001							0.001										
Cadmium	4.6	Cadmium sulfide	1.29	N	0.001							See specific assessment	See specific assessment			0.001								0.001				0.001		0.001						0.001							
Cadmium (secondary)	4.6	Cadmium oxide	1.14	N	0.001															0.001	0.001											0.001	0.001								
Chromium (III)	140.0	Chromium (III) oxide	1.46	N	0.020			0.020								0.020										0.020					0.020	0.020				0.020						
Chromium (VI)	0.5	Chromium (VI) trioxide	1.92	N/A	0.000		0.000				See specific assessment	0.000			0.000			0.000			0.000	0.000			0.000		0.000		0.000		0.000	0.000					0.000						
Copper	130.0	Copper (I) oxide	1.25	N	0.016																											0.016	0.016								
Copper (secondary)	130.0	Copper(II) oxide	1.13	N	0.015				0.015							0.015							0.015																			
Lead	460.0	Lead compounds, using lead sulphate	1.46	N	0.067								See specific assessment			0.067							0.067		0.067		0.067	See specific assessment												0.067		0.067
Mercury	5.9	Mercury dichloride	1.35	N	0.001		0.001					0.001		0.001												0.001		0.001				0.001	0.001								
Nickel	34.0	Nickel carbonate	2.02	N	0.007			0.007				0.007				0.007							0.007	0.007				0.007		0.007	0.007	0.007	0.007								
Selenium	0.9	Selenium compounds, using selenium dioxide	1.41	N	0.000								0.000		0.000							0.000			0.007							0.000	0.000								
Zinc	550.0	Zinc sulphide	1.49	N	0.082			0.082																						0.082	0.082		0.082								
Vanadium	41.0	Vanadium pentoxide	1.79	N	0.007						0.007	0.007				0.007							0.007				0.007		0.007					0.007							
Naphthalene	0.2	Naphthalene	1	N/A	0.000											0.000								0.000								0.000	0.000								
Acenaphthylene	0.5	Acenaphthylene	1	N/A	0.000			0.000				0.000					0.000	0.000			0.000	0.000																				
Acenaphthene	0.2	Acenaphthene	1	N/A	0.000			0.000																								0.000	0.000								
Fluorene	0.3	Fluorene	1	N/A	0.000			0.000				0.000																				0.000	0.000								
Phenanthrene	2.5	Phenanthrene	1	N/A	0.000											0.000																0.000	0.000								
Anthracene	0.6	Anthracene	1	N/A	0.000			0.000				0.000																		0.000		0.000	0.000								
Fluoranthene	4.5	Fluoranthene	1	N/A	0.000			0.000								0.000																0.000	0.000								
Pyrene	3.2	Pyrene	1	N/A	0.000			0.000				0.000																				0.000	0.000								
Benzo(a)anthracene	1.8	Benzo(a)anthracene	1	N/A	0.000																			0.000								0.000	0.000								
Chrysene	1.5	Chrysene	1	N/A	0.000																			0.000					0.000			0.000	0.000								
Benzo(b)fluoranthene	2.9	Benzo(b)fluoranthene	1	N/A	0.000																			0.000								0.000	0.000								
Benzo(k)fluoranthene	1.0	Benzo(k)fluoranthene	1	N/A	0.000																			0.000								0.000	0.000								
Benzo(a)pyrene	2.6	Benzo(a)pyrene	1	N/A	0.000																			See specific assessment			0.000		0.000		0.000	0.000	0.000							0.000	
Indeno(1,2,3-cd)pyrene	2.1	Indeno(1,2,3-cd)pyrene	1	N/A	0.000																				0.000																	
Dibenz(a,h)anthracene	0.3	Dibenz(a,h)anthracene	1	N/A	0.000																			See specific assessment								0.000	0.000							0.000	
Benzo(ghi)perylene	1.4	Benzo(ghi)perylene	1	N/A	0.000																											0.000	0.000								
Total TPH	190.0	Unknown oil	1	N/A	0.019				0.019				0.019											See specific assessment			0.019	See specific assessment					0.019								
Benzene	0.0	Benzene	1	N/A	0.000			0.000			0.000													0.000				0.000													
Toluene	0.0	Toluene	1	N/A	0.000			0.000					0.000														0.000														
Ethylbenzene	0.0	Ethylbenzene	1	N/A	0.000				0.000				0.000									0.000																				
Xylenes	0.00	Xylenes	1	N/A	0.000			0.000											0.000			0.000																				
Note:																																									
					Cut-off value (%)		1%	1%	1%	N/A	N/A	N/A	N/A	0.1%	0.1%	1%	0.1%	0.1%	1%	0.1%	0.1%	0.1%	1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.1%	0.1%	1%	1%	N/A	N/A	N/A	N/A	N/A	N/A
					Total (or greatest)		**0.00%**	**0.00%**	**0.00%**	**0.02%**	**(0.01%)**	**(0.1%)**	**(0.02%)**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**(0.1%)**	**(0.07%)**	**0.07%**	**(0.07%)**	**(0.02%)**	**(0%)**	**(0.01%)**	**(0.1%)**	**(0.08%)**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**(0%)**	**(0%)**	**(0%)**	**(0.07%)**	**(0%)**	**(0.07%)**
					Hazard threshold		1%	20%	10%	10%	20%	1%	10%	0.25%	5%	25%	0.25%	15%	55%	0.1%	0.5%	3.5%	22.5%	0.1%	1%	5%	0.3%	3%	0.1%	1%	10%	10%	WM3 eq.2	WM3 eq.3 & eq.4		WM3 eq.4	1.0%	10.0%	0.1%	0.5%	0.01%	2.5%
					Hazardous		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N	N

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Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	WS01
				Depth (m)	0.20 - 0.60
				Date	12/10/23
Parameters determined on the waste					
Total organic carbon	3	5	6		7.6
Loss on ignition			10		4.6
BTEX	6				< 0.010
PCBs (7 congeners)	1				< 0.10
Mineral oil	500				250
PAH (17 congeners)	100				61
pH		6			9.1
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.005
Limit values (mg kg^{-1}) for compliance test using BN 12457-3 at L/S 10 l					
Arsenic	0.5	2	25		0.32
Barium	20	100	300		0.25
Cadmium	0.04	1	5		< 0.00011
Chromium (III)	0.5	10	70		0.053
Copper	2	50	100		0.0098
Mercury	0.01	0.2	2		0.00077
Molybdenum	0.5	10	30		0.045
Nickel	0.4	10	40		0.0087
Lead	0.5	10	50		0.039
Antimony	0.06	0.7	5		0.07
Selenium	0.1	0.5	7		0.0074
Zinc	4	50	200		0.07
Chloride	800	15,000	25,000		< 10
Fluoride	10	150	500		2.3
Sulphate	1,000	20,000	50,000		71
Total dissolved solids	4,000	60,000	100,000		590
Phenol	1				< 0.50
Dissolved organic carbon	500	800	1000		< 50
Classifications					
Waste classification					**Non-hazardous**
Landfill type					Non-hazardous

Key Notes:
1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.

2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.

3) In a hazardous waste, either the TOC or LOI must be used.

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Waste Classification Assessment Summary

Waste population	Made Ground with lime waste
Hazard assessment	Hazardous waste*
List of waste code	17-05-03*
List of waste description	Soil and stones containing hazardous substances

Hazard property	Assessment
HP1 - Explosive	Not hazardous by HP1
HP2 - Oxidising	Not hazardous by HP2
HP3 - Flammable	Not hazardous by HP3
HP4 - Irritant	Not hazardous by HP4
HP5 - STOT & aspiration toxicity	Not hazardous by HP5
HP6 - Acute toxicity	Not hazardous by HP6
HP7 - Carcinogenic	Not hazardous by HP7
HP8 - Corrosive	Not hazardous by HP8
HP9 - Infectious	Not hazardous by HP9
HP10 - Toxic for reproduction	Not hazardous by HP10
HP11 - Mutagenic	Not hazardous by HP11
HP12 - Release of an acute toxic gas	Not hazardous by HP12
HP13 - Sensitising	Not hazardous by HP13
HP14 - Ecotoxic	Hazardous by HP14

Waste classification

Overall assessment	
Waste population	Made Ground with lime waste
Hazard assessment	Hazardous waste*
List of Waste code	17-05-03*
List of waste description	Soil and stones containing hazardous substances
Is the statistical approach non-parametric method B utilised?	No
Moisture content correction factor	No correction made

Asbestos assessment		
Query	Value	Assessment
Are bulk ACMs visually identifiable?	No	Non-hazardous
Have free fibres been detected?	No	Non-hazardous
What is the free fibre concentration (%)?	N/A	Non-hazardous

Flammability assessment	
Comment	Assessment
The waste is not considered flammable as it is a solid waste without a free draining liquid phase, and the TPH concentration and composition is not consdiered to present a likely flammable hazard.	Non-hazardous

Hydrocarbon assessment	
Query	Assessment
Is the origin of the oil contamination known?	Unknown oil
B(a)P : TPH ratio (%)	Not required
B(a)P marker assessment	Not required

pH assessment		
Query	Value	Assessment
Are all substances present in the waste known?	No	See pH assessment below
pH - Min	8.50	Non-hazardous
pH - Max	8.60	Non-hazardous

Oxidising assessment	
Comment	Assessment
Cr (VI) is the only compound with an oxidising hazard statement (H271). On review, the concentration is considered too low to present a viable oxidising hazard in a waste soil	Non-hazardous

Ecotoxic assessment			
Equation	Sum	Criteria	Assessment
WM3. Eq. 2	0.10%	25%	Non-hazardous
WM3 Eq. 3	35.72%	25%	HP14
WM3 Eq. 4	0.36%	25%	Non-hazardous

Compound hazard assessments

Contaminant	Max. concentration (mg/kg)	Realistic worst case compound	Mass conversion factor	MC applied?	Hazard Class / Compound concentration (%)	Irritant HP4 H314 Skin Corr.1A	Irritant HP4 H315 and/or H319 Skin Irrit.2 Eye Irrit.2	Irritant HP4 H318 Eye Dam.1	Specific Target Organ Toxicity / Aspiration Toxicity HP5 H304 Asp.Tox.1	HP5 H335 STOT SE.3	HP5 H372 STOT RE.1	HP5 H373 STOT RE.2
Cyanide - Total	120.0	Salts of hydrogen cyanide, using sodium cyanide	1.88	N/A	0.023							
Arsenic	350.0	Nickel diarsenide	1.78	N	0.062						0.062	
Arsenic (secondary)	350.0	Arsenic trioxide	1.32	N	0.046	0.046						
Beryllium	1.2	Beryllium oxide	2.78	N	0.000		0.000			0.000	0.000	
Cadmium	11.0	Cadmium sulfide	1.29	N	0.001						See specific assessment	See specific assessment
Cadmium (secondary)	11.0	Cadmium oxide	1.14	N	0.001							
Chromium (III)	260.0	Chromium (III) oxide	1.46	N	0.038		0.038					
Chromium (VI)	0.5	Chromium (VI) trioxide	1.92	N/A	0.000	0.000				See specific assessment	0.000	
Copper	140.0	Copper (I) oxide	1.25	N	0.018							
Copper (secondary)	140.0	Copper(II) oxide	1.13	N	0.016			0.016				
Lead	710.0	Lead compounds, using lead sulphate	1.46	N	0.104							See specific assessment
Mercury	43.0	Mercury dichloride	1.35	N	0.006	0.006					0.006	
Nickel	32.0	Nickel carbonate	2.02	N	0.006		0.006				0.006	
Selenium	0.7	Selenium compounds, using selenium dioxide	1.41	N	0.000							0.000
Zinc	1700.0	Zinc sulphide	1.49	N	0.253		0.253					
Vanadium	33.0	Vanadium pentoxide	1.79	N	0.006					0.006	0.006	
Naphthalene	0.5	Naphthalene	1	N/A	0.000							
Acenaphthylene	0.5	Acenaphthylene	1	N/A	0.000		0.000			0.000		
Acenaphthene	0.5	Acenaphthene	1	N/A	0.000		0.000					
Fluorene	0.5	Fluorene	1	N/A	0.000		0.000			0.000		
Phenanthrene	0.5	Phenanthrene	1	N/A	0.000							
Anthracene	0.5	Anthracene	1	N/A	0.000		0.000			0.000		
Fluoranthene	0.5	Fluoranthene	1	N/A	0.000		0.000					
Pyrene	0.5	Pyrene	1	N/A	0.000		0.000			0.000		
Benzo(a)anthracene	0.5	Benzo(a)anthracene	1	N/A	0.000							
Chrysene	0.5	Chrysene	1	N/A	0.000							
Benzo(b)fluoranthene	0.5	Benzo(b)fluoranthene	1	N/A	0.000							
Benzo(k)fluoranthene	0.5	Benzo(k)fluoranthene	1	N/A	0.000							
Benzo(a)pyrene	0.5	Benzo(a)pyrene	1	N/A	0.000							
Indeno(1,2,3-cd)pyrene	0.5	Indeno(1,2,3-cd)pyrene	1	N/A	0.000							
Dibenz(a,h)anthracene	0.5	Dibenz(a,h)anthracene	1	N/A	0.000							
Benzo(ghi)perylene	0.5	Benzo(ghi)perylene	1	N/A	0.000							
Total TPH	480.0	Unknown oil	1	N/A	0.048				0.048			0.048
Benzene	0.0	Benzene	1	N/A	0.000		0.000		0.000		0.000	
Toluene	0.0	Toluene	1	N/A	0.000		0.000		0.000			0.000
Ethylbenzene	0.0	Ethylbenzene	1	N/A	0.000				0.000			0.000
Xylenes	0.00	Xylenes	1	N/A	0.000		0.000					
					Cut-off value (%)	1%	1%	1%	N/A	N/A	N/A	N/A
					Total (or greatest)	**0.00%**	**0.00%**	**0.00%**	**0.05%**	**(0.01%)**	**(0.06%)**	**(0.05%)**
					Hazard threshold	1%	20%	10%	10%	20%	1%	10%
					Hazardous	N	N	N	N	N	N	N

Contaminant	Acute Toxicity HP6 H300 Acute Tox.2 (Oral)	H301 Acute Tox.3 (Oral)	H302 Acute Tox.4 (Oral)	H310 Acute Tox.1 (Dermal)	H311 Acute Tox.3 (Dermal)	H312 Acute Tox.4 (Dermal)	H330 Acute Tox.1 (Inhal.)	H330 Acute Tox.2 (Inhal)	H331 Acute Tox.3 (Inhal)	H332 Acute Tox.4 (Inhal)
Cyanide - Total	0.023			0.023			0.023	0.023		
Arsenic										
Arsenic (secondary)	0.046									
Beryllium		0.000					0.000	0.000		
Cadmium			0.001							
Cadmium (secondary)							0.001	0.001		
Chromium (III)			0.038							
Chromium (VI)		0.000			0.000		0.000	0.000		
Copper										
Copper (secondary)			0.016							0.016
Lead			0.104							0.104
Mercury	0.006									
Nickel			0.006							0.006
Selenium		0.000							0.000	
Zinc										
Vanadium			0.006							0.006
Naphthalene			0.000							
Acenaphthylene			0.000	0.000			0.000	0.000		
Acenaphthene										
Fluorene										
Phenanthrene			0.000							
Anthracene										
Fluoranthene			0.000							
Pyrene										
Benzo(a)anthracene										
Chrysene										
Benzo(b)fluoranthene										
Benzo(k)fluoranthene										
Benzo(a)pyrene										
Indeno(1,2,3-cd)pyrene										
Dibenz(a,h)anthracene										
Benzo(ghi)perylene										
Total TPH										
Benzene										
Toluene										
Ethylbenzene										0.000
Xylenes						0.000				0.000
Cut-off value (%)	0.1%	0.1%	1%	0.1%	0.1%	1%	0.1%	0.1%	0.1%	1%
Total (or greatest)	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
Hazard threshold	0.25%	5%	25%	0.25%	15%	55%	0.1%	0.5%	3.5%	22.5%
Hazardous	N	N	N	N	N	N	N	N	N	N

Contaminant	Carcinogenic HP7 H350 Carc.1A Carc.1B	HP7 H351 Carc.2	Corrosive HP8 H314 Skin Corr.1A Skin Corr.1B	Toxic for reproduction HP10 H360 Repr.1A Repr.1B	HP10 H361 Repr.2	Mutagenic HP11 H340 Muta.1A Muta.1B	HP11 H341 Muta 2.	Sensitising HP13 H317 Skin Sens.1	HP13 H334 Resp. Sens. 1
Cyanide - Total									
Arsenic	0.062							0.062	
Arsenic (secondary)			0.046						
Beryllium	0.000							0.000	
Cadmium	0.001				0.001		0.001		
Cadmium (secondary)									
Chromium (III)				0.038				0.038	0.038
Chromium (VI)	0.000		0.000		0.000	0.000		0.000	0.000
Copper									
Copper (secondary)									
Lead		0.104		0.104	See specific assessment				
Mercury			0.006		0.006		0.006		
Nickel	0.006			0.006			0.006	0.006	0.006
Selenium									
Zinc								0.253	0.253
Vanadium					0.006		0.006		
Naphthalene		0.000							
Acenaphthylene									
Acenaphthene									
Fluorene									
Phenanthrene									
Anthracene								0.000	
Fluoranthene									
Pyrene									
Benzo(a)anthracene	0.000								
Chrysene	0.000						0.000		
Benzo(b)fluoranthene	0.000								
Benzo(k)fluoranthene	0.000								
Benzo(a)pyrene	See specific assessment			0.000		0.000		0.000	
Indeno(1,2,3-cd)pyrene		0.000							
Dibenz(a,h)anthracene	See specific assessment								
Benzo(ghi)perylene									
Total TPH	See specific assessment				0.048	See specific assessment			
Benzene	0.000					0.000			
Toluene					0.000				
Ethylbenzene									
Xylenes									
Cut-off value (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total (or greatest)	**(0.06%)**	**(0.1%)**	**0.05%**	**(0.1%)**	**(0.05%)**	**(0%)**	**(0.01%)**	**(0.25%)**	**(0.25%)**
Hazard threshold	0.1%	1%	5%	0.3%	3%	0.1%	1%	10%	10%
Hazardous	N	N	N	N	N	N	N	N	N

Contaminant	Ecotoxic HP14 H400 Aquatic Acute.1	HP14 H410 Aquatic Chronic.1	HP14 H411 Aquatic Chronic.2	HP14 H413 Aquatic Chronic.4	Substance specific concentration limits: STOT HP5 H335 (CrO3) STOT SE.3	STOT HP5 H372 (CdS) STOT RE.1	STOT HP5 H373 (CdS) STOT RE.2	STOT HP5 H373 (PbSO4) STOT RE.2	Carc. HP7 H350 (BaP) (Da,hA) Carc.1B	Repr. HP10 H361 (PbSO4) Repr.2
Cyanide - Total	0.023	0.023								
Arsenic	0.062	0.062								
Arsenic (secondary)										
Beryllium										
Cadmium				0.001		0.001	0.001			
Cadmium (secondary)	0.001	0.001								
Chromium (III)				0.038						
Chromium (VI)	0.000	0.000			0.000					
Copper	0.018	0.018								
Copper (secondary)										
Lead	0.104	0.104						0.104		0.104
Mercury	0.006	0.006								
Nickel	0.006	0.006								
Selenium	0.000	0.000								
Zinc		0.253								
Vanadium			0.006							
Naphthalene	0.000	0.000								
Acenaphthylene										
Acenaphthene	0.000	0.000								
Fluorene	0.000	0.000								
Phenanthrene	0.000	0.000								
Anthracene	0.000	0.000								
Fluoranthene	0.000	0.000								
Pyrene	0.000	0.000								
Benzo(a)anthracene	0.000	0.000								
Chrysene	0.000	0.000								
Benzo(b)fluoranthene	0.000	0.000								
Benzo(k)fluoranthene	0.000	0.000								
Benzo(a)pyrene	0.000	0.000							0.000	
Indeno(1,2,3-cd)pyrene										
Dibenz(a,h)anthracene	0.000	0.000							0.000	
Benzo(ghi)perylene	0.000	0.000								
Total TPH			0.048							
Benzene										
Toluene										
Ethylbenzene										
Xylenes										
Cut-off value (%)	0.1%	0.1%	1%	1%	N/A	N/A	N/A	N/A	N/A	N/A
Total (or greatest)	**0.10%**	**0.36%**	**0.00%**	**0.00%**	**(0%)**	**(0%)**	**(0%)**	**(0.1%)**	**(0%)**	**(0.1%)**
Hazard threshold	WM3 eq.2	WM3 eq.3 & eq.4		WM3 eq.4	1.0%	10.0%	0.1%	0.5%	0.01%	2.5%
Hazardous	N	HP14		N	N	N	N	N	N	N

Note:

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Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	WS04
				Depth (m)	0.60 - 1.00
				Date	12/10/23
Parameters determined on the waste					
Total organic carbon	3	5	6		4.1
Loss on ignition			10		8.7
BTEX	6				< 0.010
PCBs (7 congeners)	1				< 0.10
Mineral oil	500				< 10
PAH (17 congeners)	100				11
pH		6			8.5
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.006
Limit values (mg kg^{-1}) for compliance test using BN 12457-3 at L/S 10 l					
Arsenic	0.5	2	25		2.2
Barium	20	100	300		0.57
Cadmium	0.04	1	5		0.0003
Chromium (III)	0.5	10	70		2.9
Copper	2	50	100		0.0058
Mercury	0.01	0.2	2		0.0013
Molybdenum	0.5	10	30		0.044
Nickel	0.4	10	40		0.0009
Lead	0.5	10	50		0.052
Antimony	0.06	0.7	5		0.53
Selenium	0.1	0.5	7		0.0077
Zinc	4	50	200		0.24
Chloride	800	15,000	25,000		< 10
Fluoride	10	150	500		2.2
Sulphate	1,000	20,000	50,000		120
Total dissolved solids	4,000	60,000	100,000		680
Phenol	1				< 0.50
Dissolved organic carbon	500	800	1000		< 50
Classifications					
Waste classification					**Hazardous**
Landfill type					Hazardous

Key Notes:
1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.

2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.

3) In a hazardous waste, either the TOC or LOI must be used.

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Appendix K Consultants Coal Mining Report

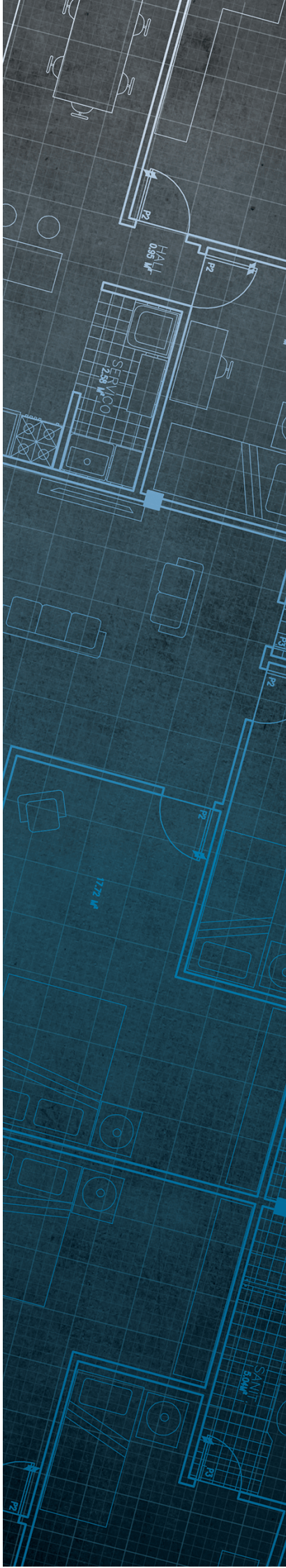
The Coal Authority

Consultants

Coal Mining Report

Unit 4
Rhodes Business Park
Silburn Way
Middleton
Rochdale
M24 4NE

Date of enquiry:	**18 September 2023**
Date enquiry received:	**18 September 2023**
Issue date:	**18 September 2023**
Our reference:	**51003378599001**
Your reference:	**STV6211**



Consultants

Coal Mining Report

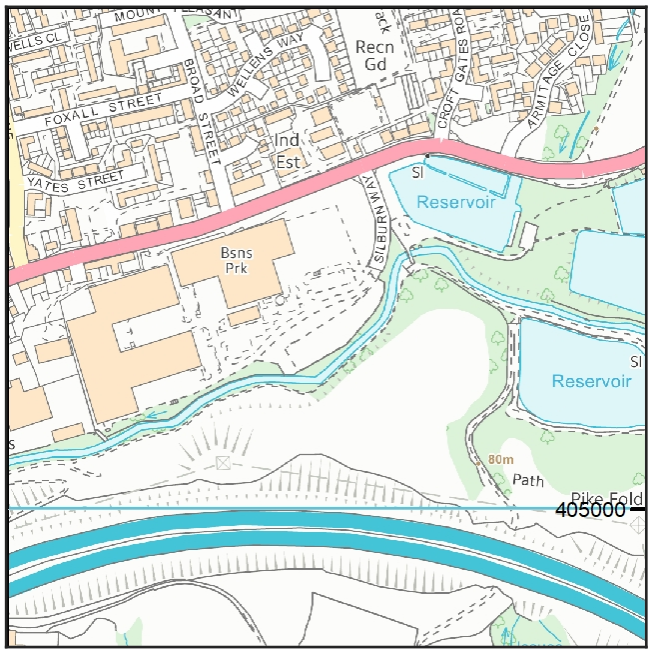
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Soiltechnics Limited

Enquiry address

Unit 4
Rhodes Business Park
Silburn Way
Middleton
Rochdale
M24 4NE



Approximate position of property

Map data

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

16820		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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The Coal Authority

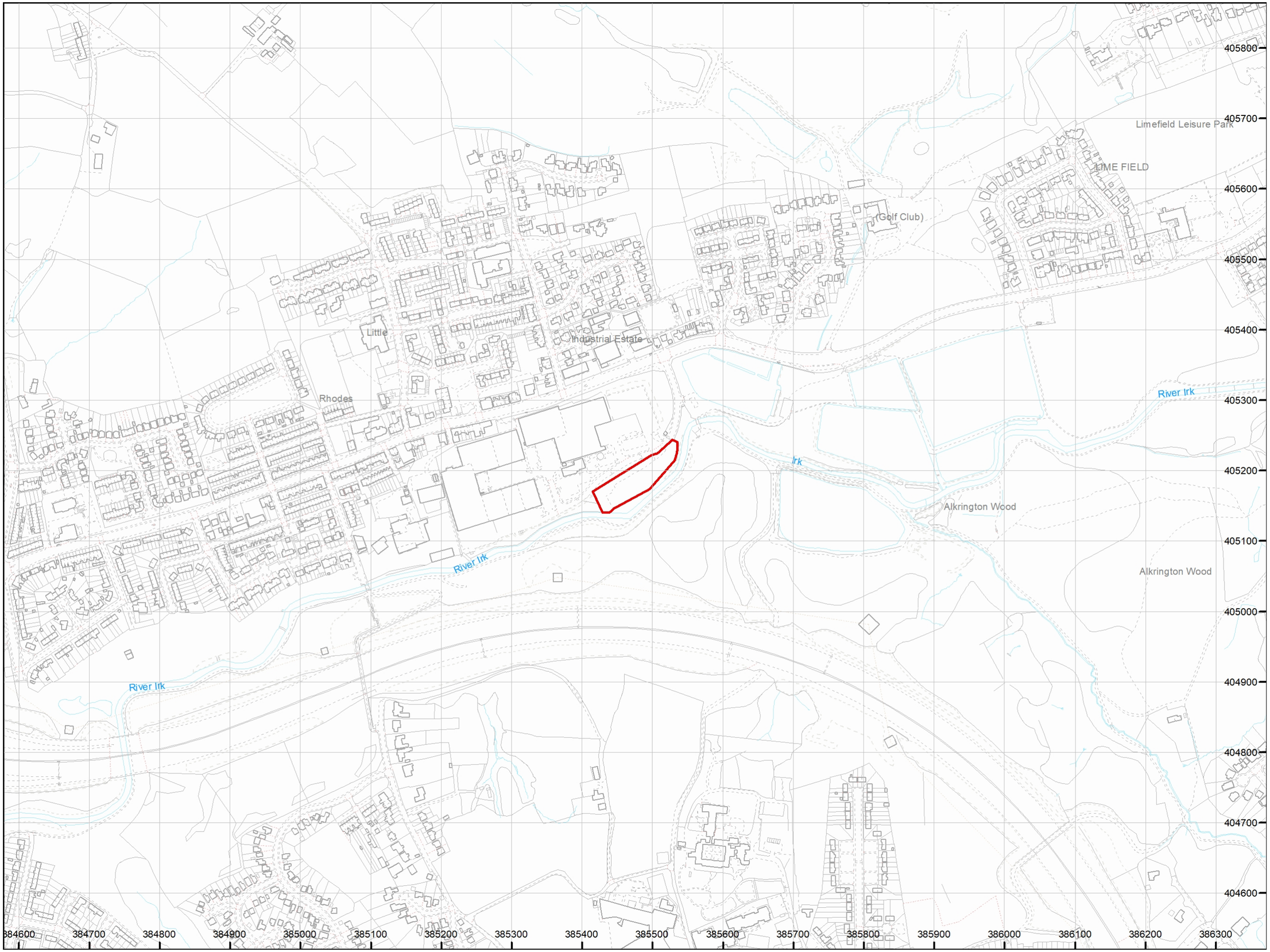
Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

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Appendix L Utility Service Plans

Water for the North West

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Soiltechnics

Soiltechnics
Cedar Barn,
Walgrave,
NN6 9PY

FAO:

Your Ref: STV6211
Our Ref: UUPS-ORD-519413
Date: 19/09/2023

Dear Sirs

Location: UNIT 3 RHODES BUSINESS PARK SILBURN WAY, MIDDLETON, MANCHESTER, M24 4NE

I acknowledge with thanks your request dated 18/09/2023 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. http://www.unitedutilities.com/work-near-asset.aspx .

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Water for the North West

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

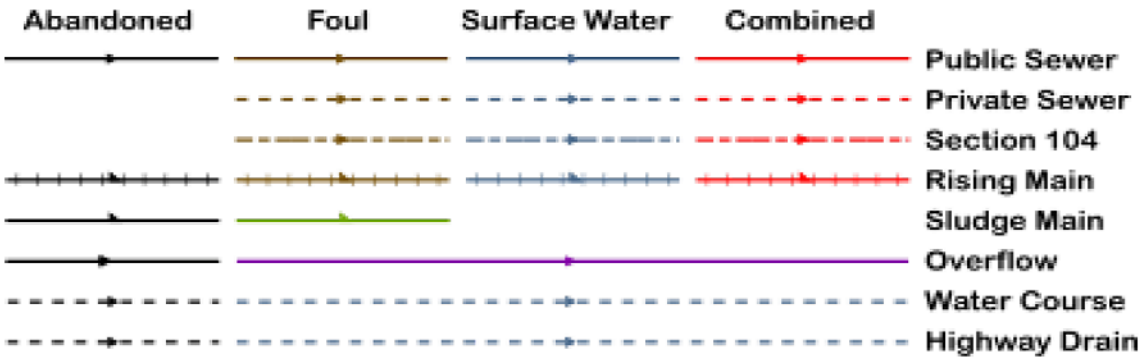
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- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

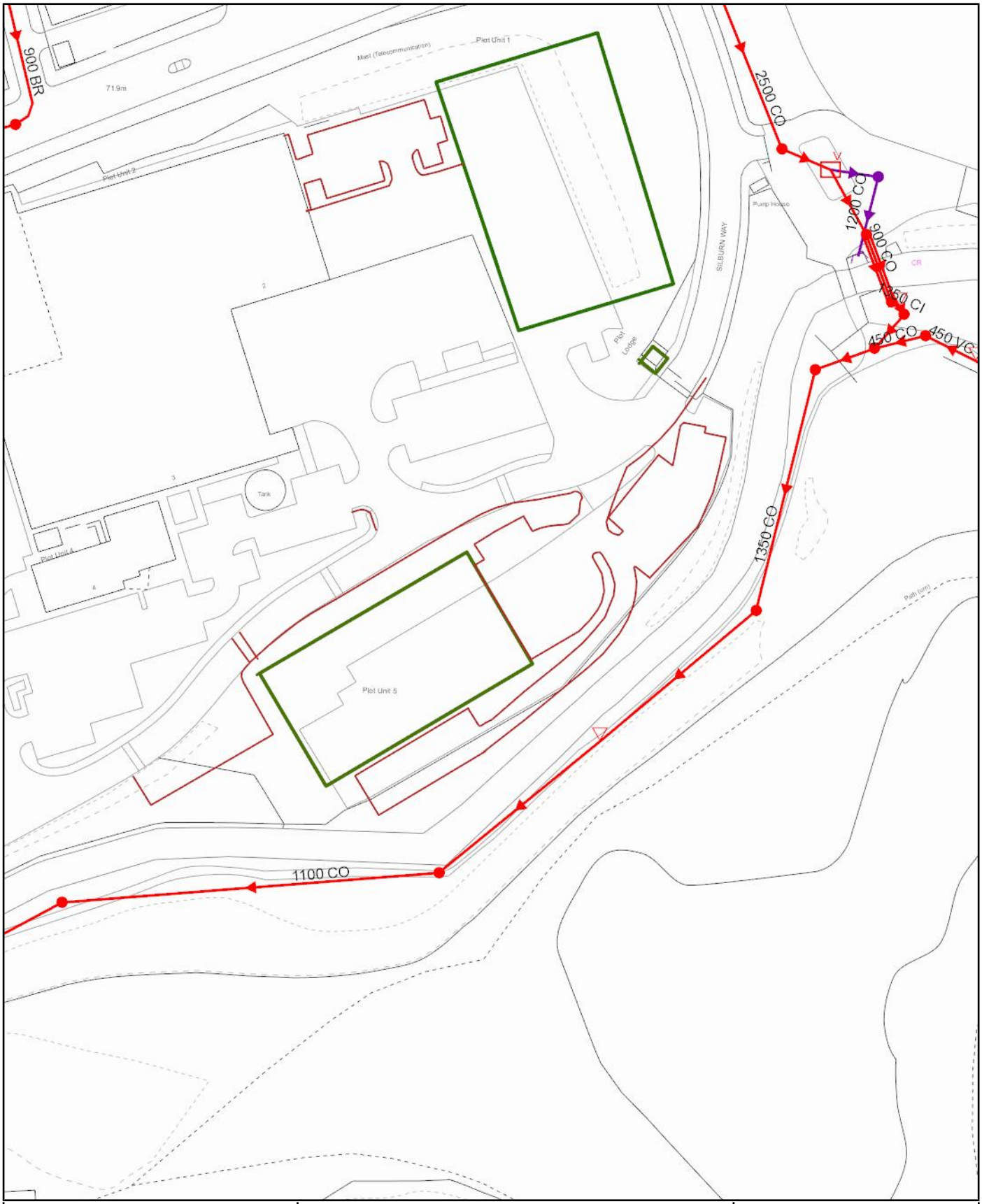
United Utilities
Water for the North West

Wastewater Symbology



All point assets follow the standard colour convention: red – combined, brown - foul, blue – surface water, purple - overflow

- Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- Change of Characteristic



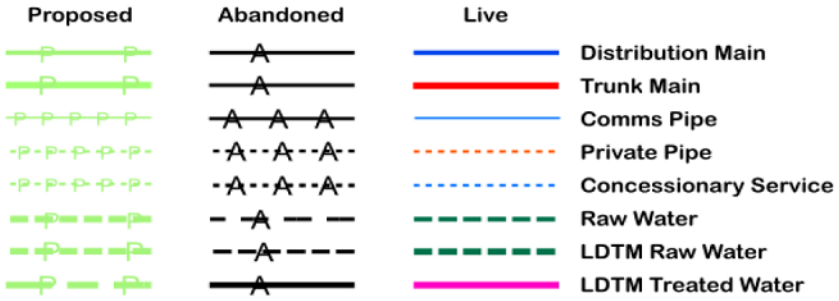
Scale:	1:1250	**SEWER RECORDS**	United Utilities Water for the North West
Date:	19/09/2023		
Address or Site Reference:	UNIT 3 RHODES BUSINESS PARK SILBURN WAY, MIDDLETON, MANCHESTER, M24 4NE		
Printed by:	Property Searches		

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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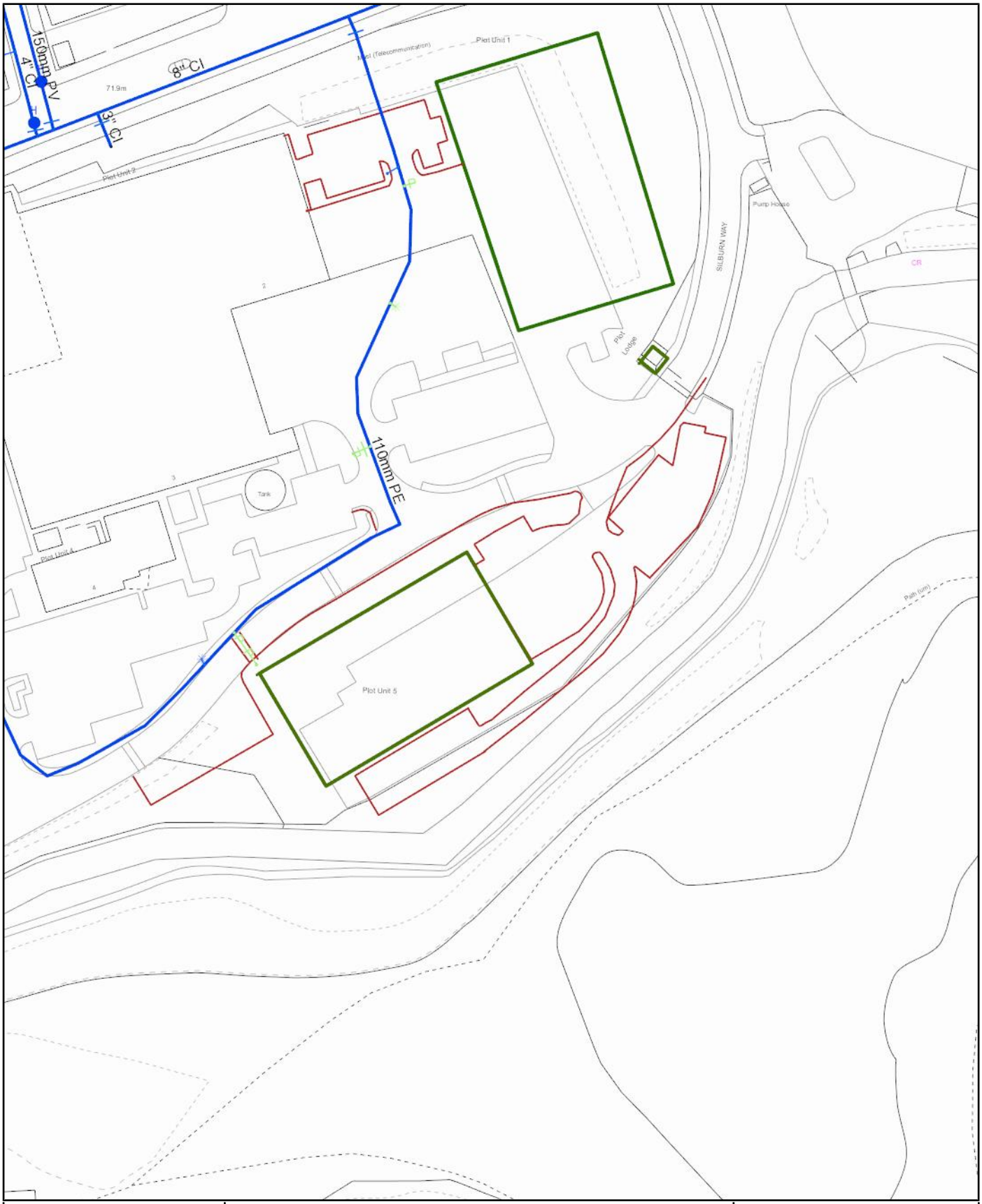
United Utilities
Water for the North West

Clean Water Symbology





Symbology for proposed assets is the same as above, but shown in green
Symbology for abandoned assets is the same as above, but shown in black



Scale:	1:1250
Date:	19/09/2023

WATER MAINS RECORDS

United Utilities
Water for the North West

Address or Site Reference: UNIT 3 RHODES BUSINESS PARK SILBURN WAY, MIDDLETON, MANCHESTER, M24 4NE

Printed by: Property Searches

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Water for the North West

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Soiltechnics

Soiltechnics
Cedar Barn,
Walgrave,
NN6 9PY

FAO:

Your Ref: STV6211
Our Ref: UUPS-ORD-519413
Date: 19/09/2023

Dear Sirs

Location: UNIT 3 RHODES BUSINESS PARK SILBURN WAY, MIDDLETON, MANCHESTER, M24 4NE

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I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Water for the North West

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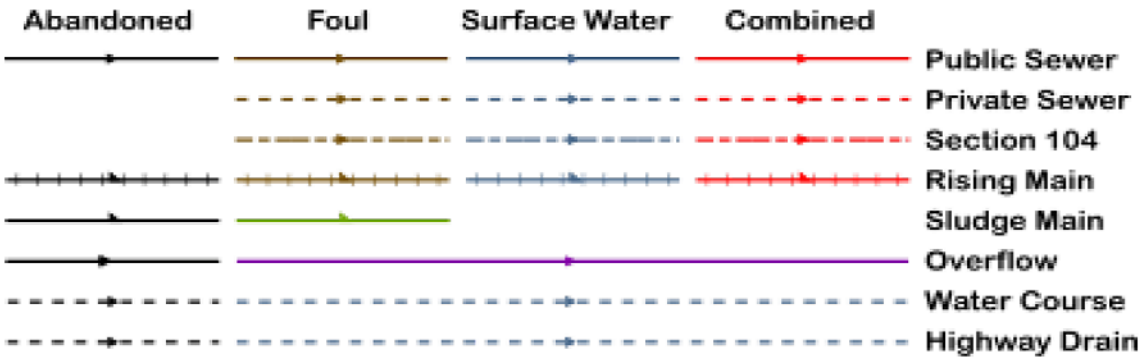
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- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
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Registered Office Haweswater House, Lingley Mere Business Park,
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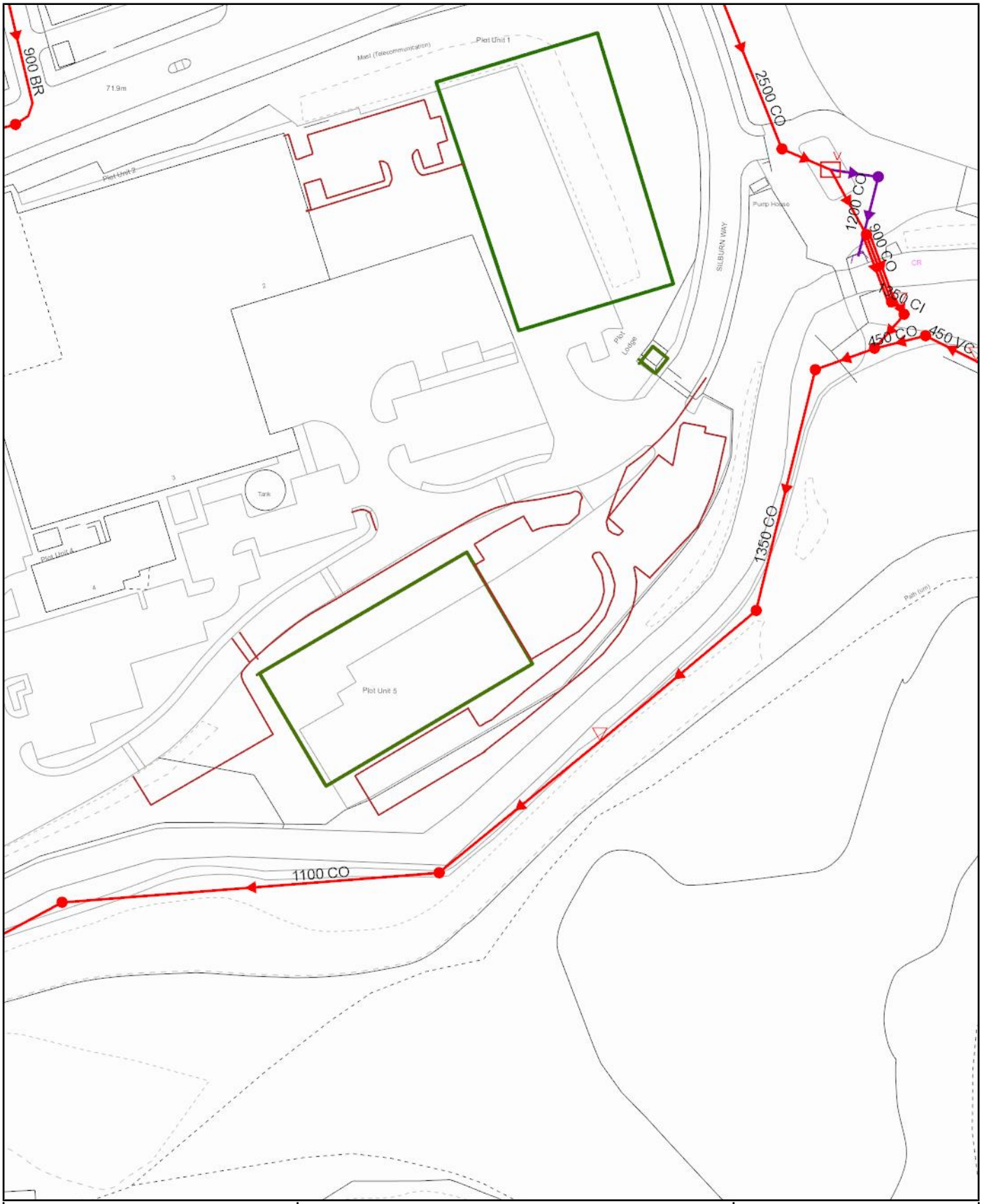
United Utilities
Water for the North West

Wastewater Symbology



All point assets follow the standard colour convention: red – combined, brown - foul, blue – surface water, purple - overflow

- Manhole
- HS Head of System
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- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- Change of Characteristic



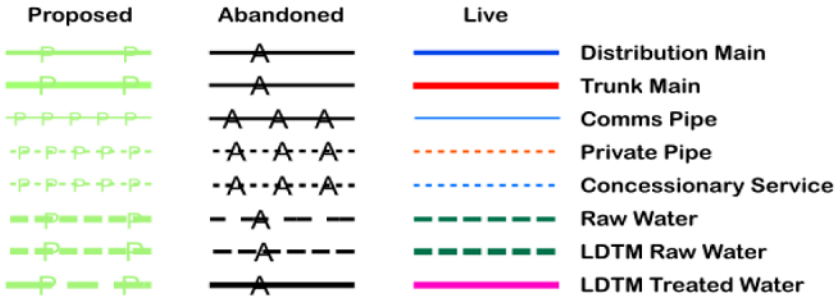
Scale:	1:1250	**SEWER RECORDS**	United Utilities Water for the North West
Date:	19/09/2023		
Address or Site Reference:	UNIT 3 RHODES BUSINESS PARK SILBURN WAY, MIDDLETON, MANCHESTER, M24 4NE		
Printed by:	Property Searches		

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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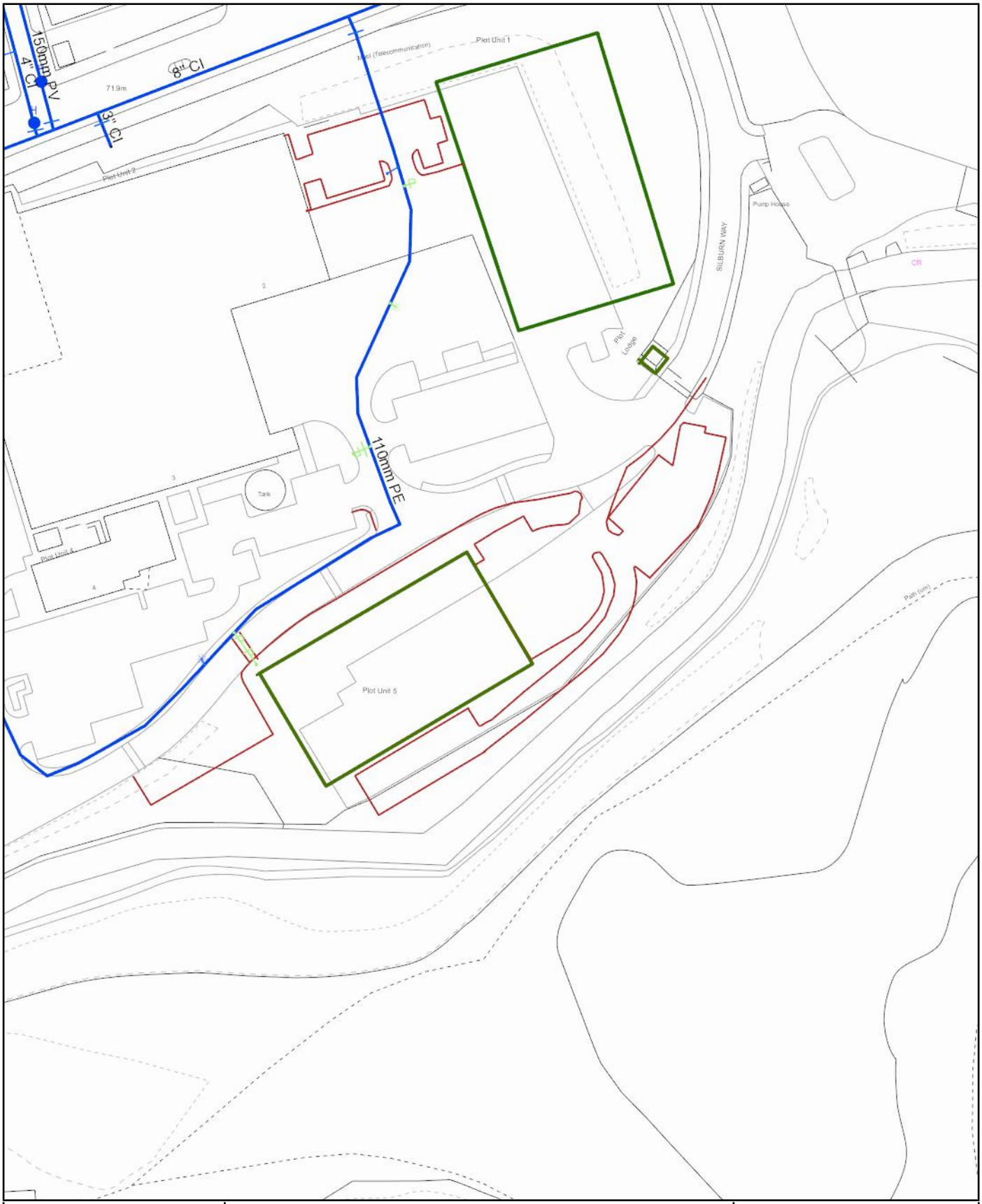
United Utilities
Water for the North West

Clean Water Symbology





Symbology for proposed assets is the same as above, but shown in green
Symbology for abandoned assets is the same as above, but shown in black



Scale:	1:1250
Date:	19/09/2023

WATER MAINS RECORDS

United Utilities
Water for the North West

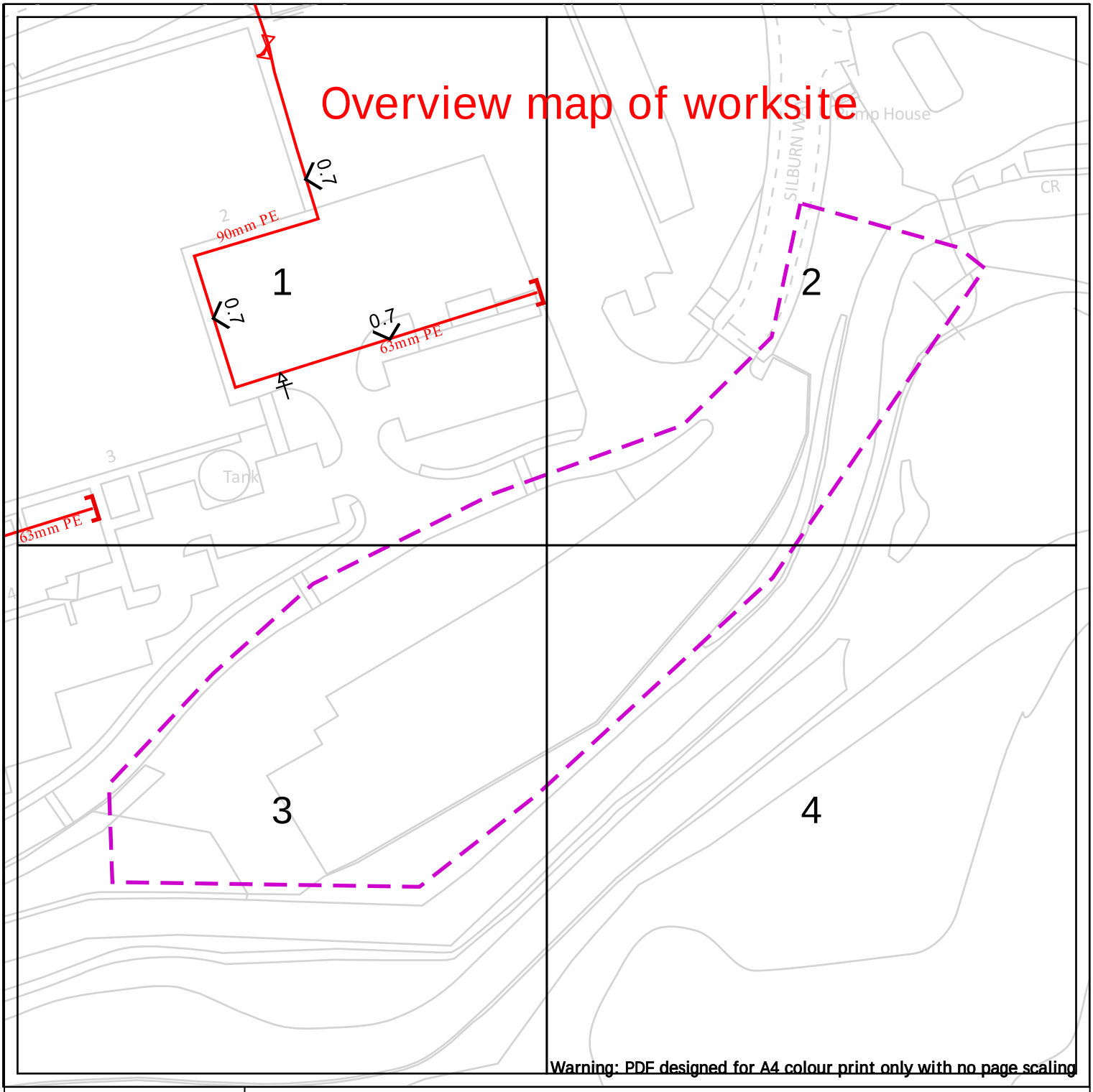
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Overview map of worksite



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Dig Sites Area: Line:

LP Mains
MP Mains
IP Mains
LHP Mains

Valve
Depth of cover
Syphon
Diameter Change
Material Change
Out of Standard Service

Cadent
Your Gas Network

Date Requested: 18/09/2023
Job Reference: 30876892
Site Location: 385477 405217
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV6211

View extent: 100m, 100m

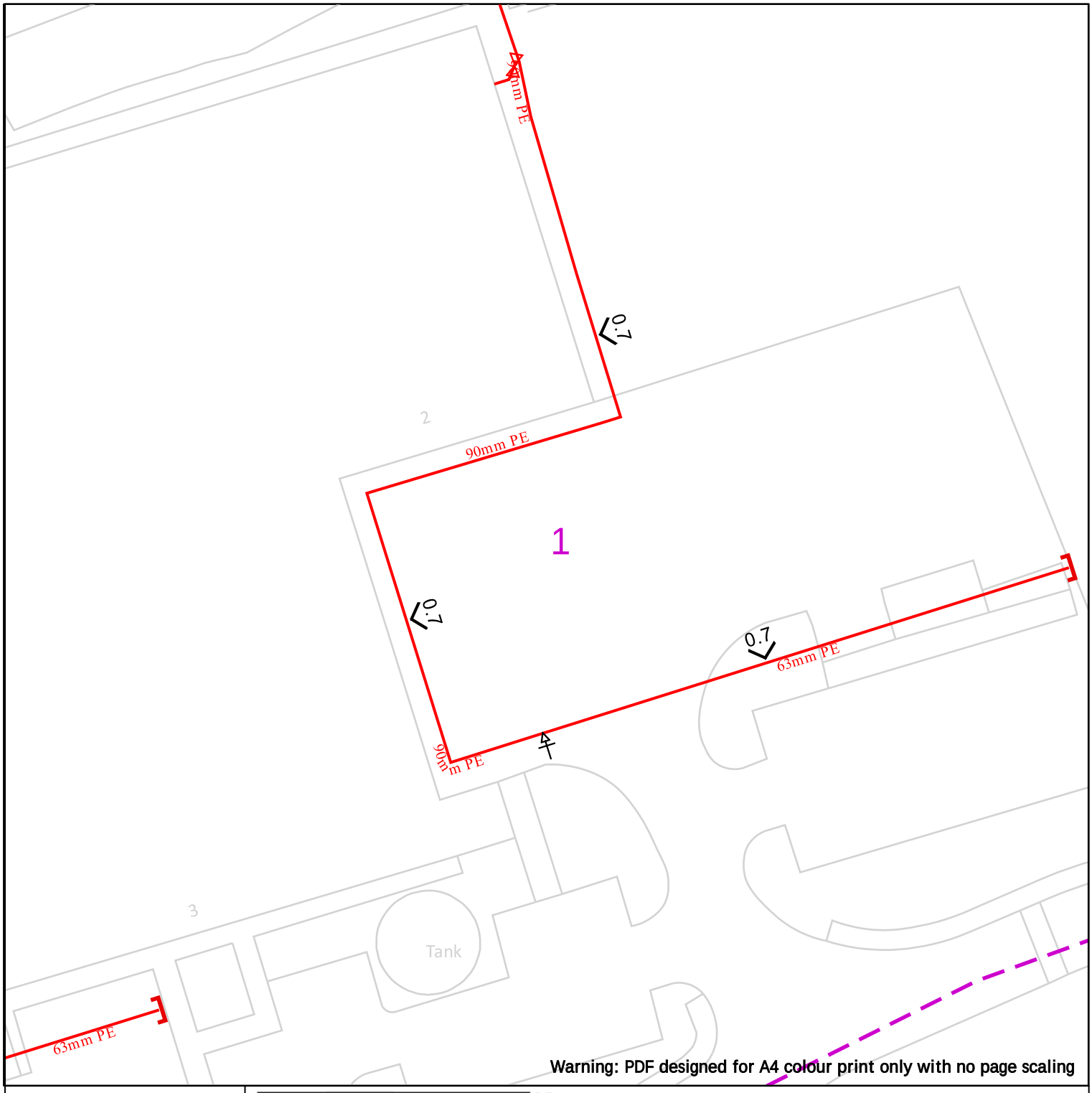
Scale: 1:1025 (When plotted at A4)

IMPORTANT NOTICES

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In case of emergency call - 0800 111 999

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25m

Dig Sites Area: Line:

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MP Mains
IP Mains
LHP Mains

Valve
Depth of cover
Syphon
Diameter Change
Material Change
Out of Standard Service

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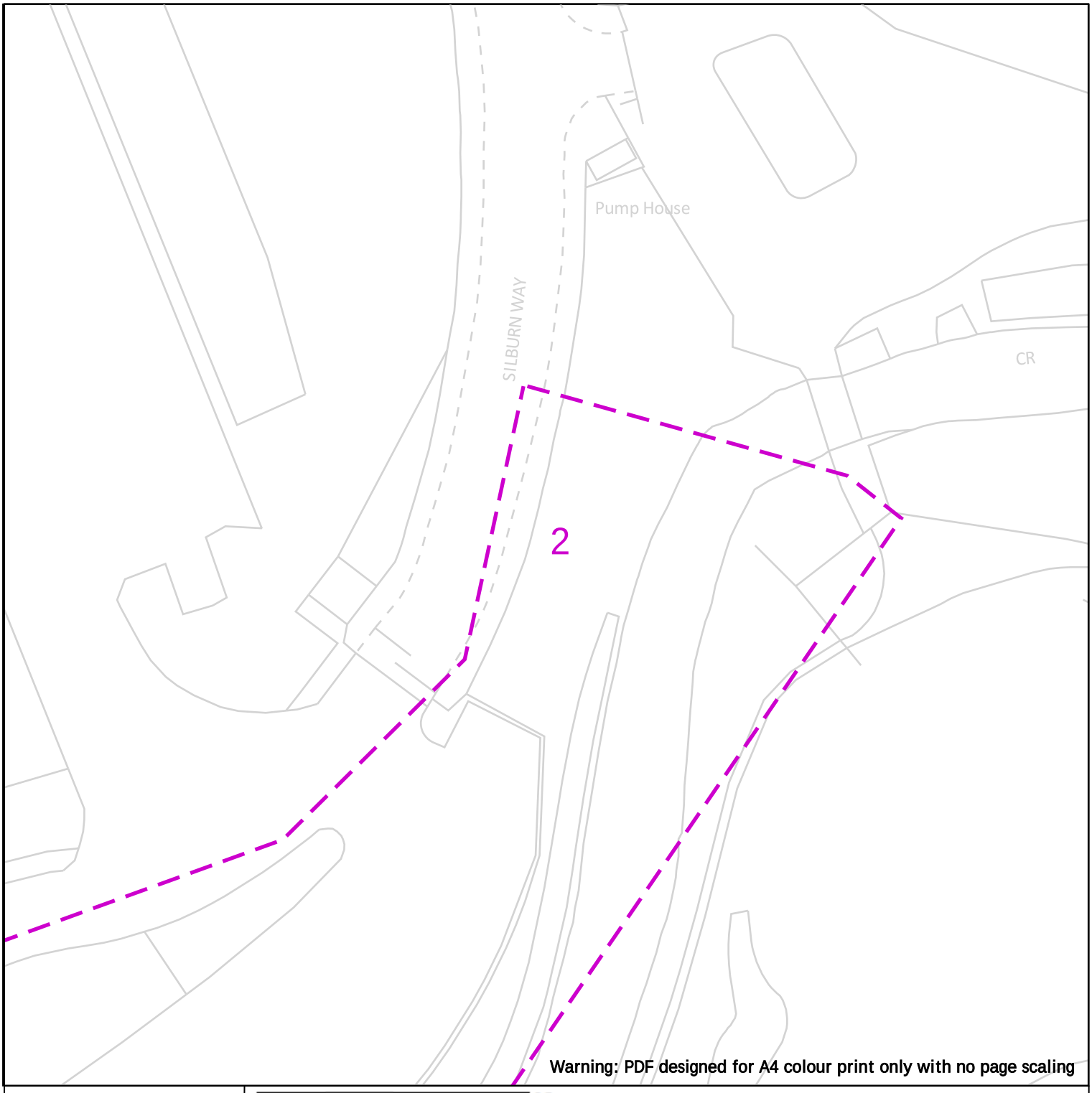
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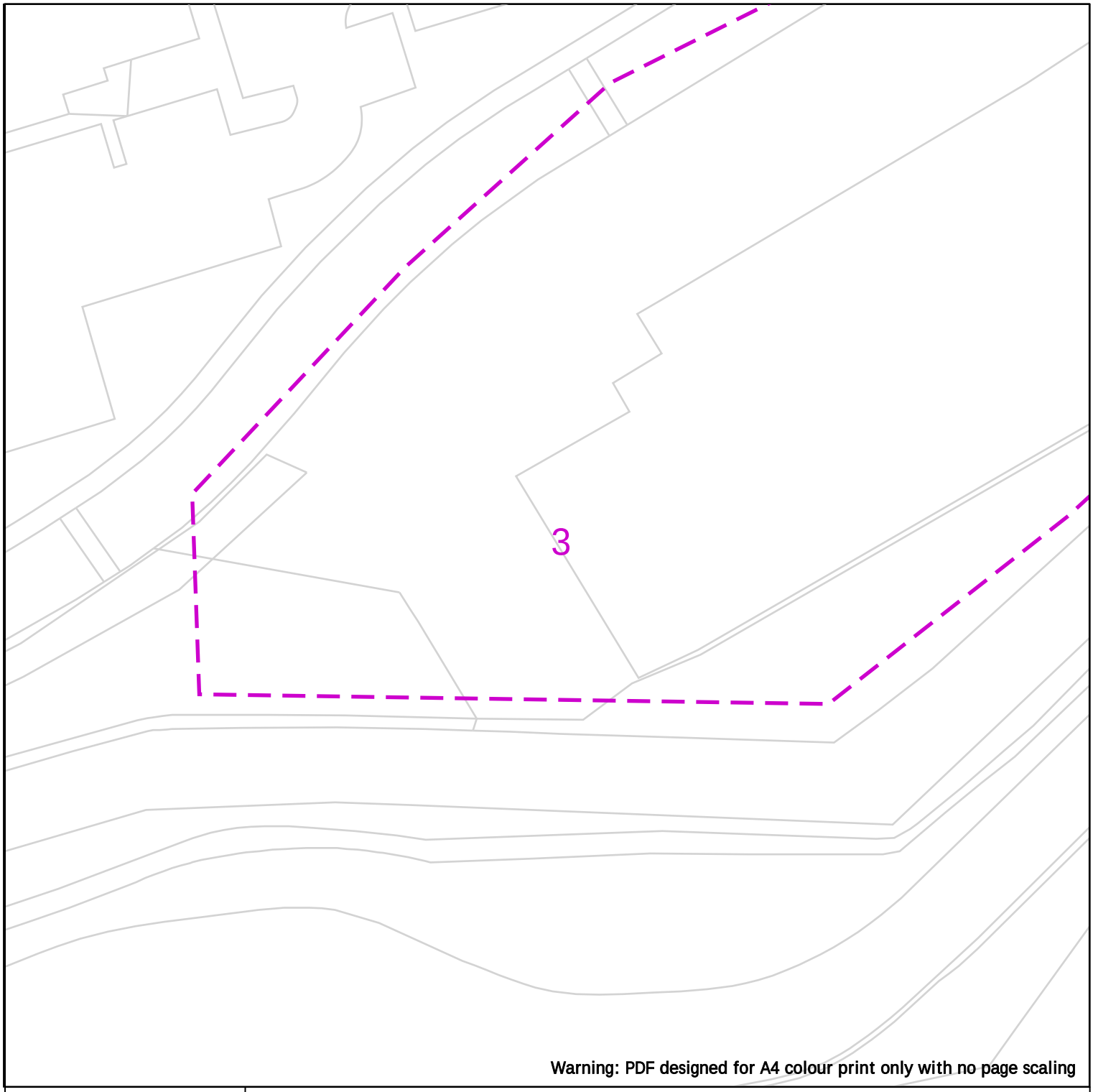
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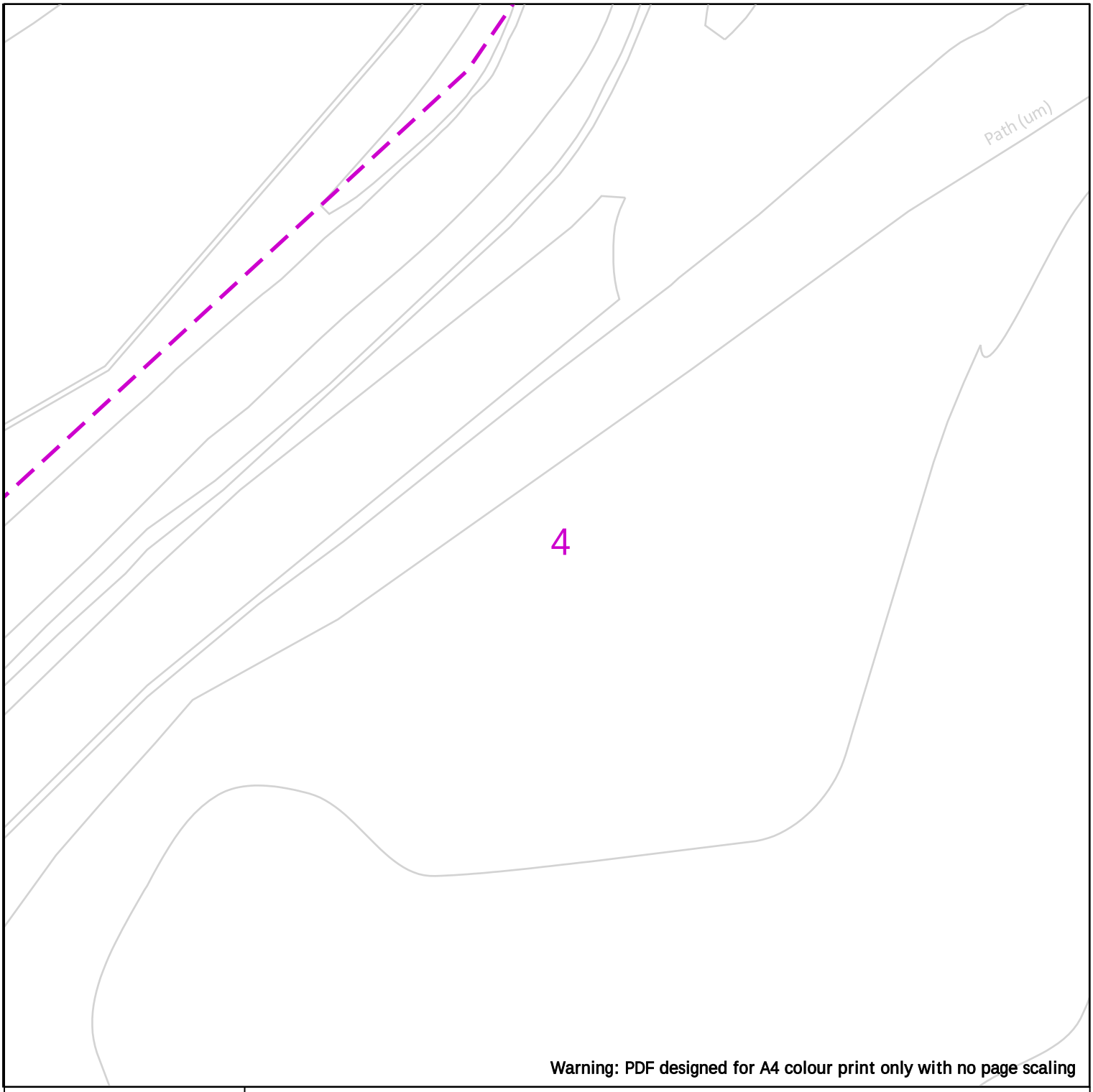
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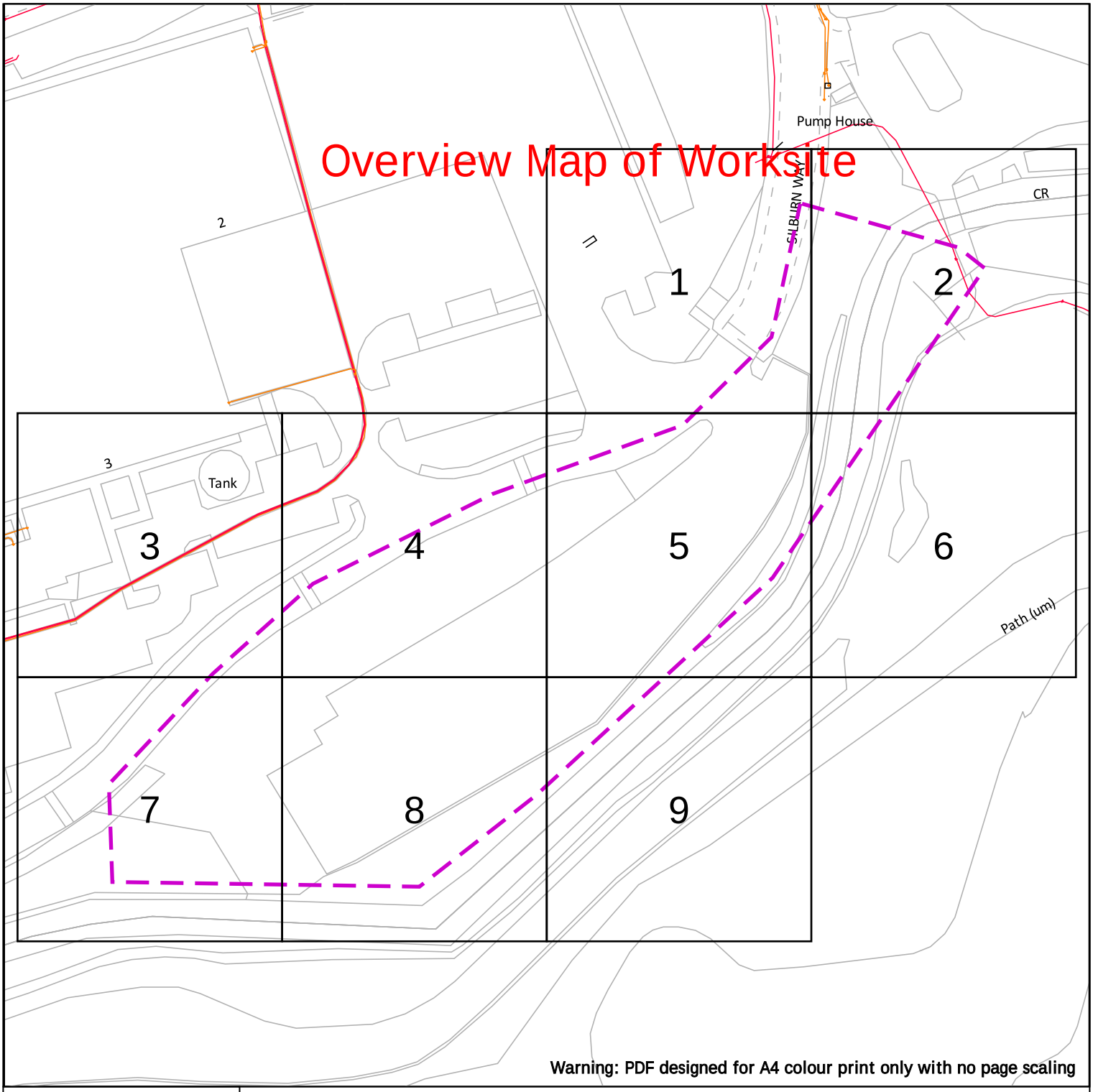
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Overview Map of Worksite



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electricity north west

Data Management
Electricity North West
Linley House
Dickinson Street
Manchester, M1 4LF
Phone: 0800 195 4141
Email: planrequest@enwl.co.uk

Date Requested: 18/09/2023
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Scale: 1:1025 (When plotted at A4)

Operating Voltage	Colour Code	Line Colour
132kV	Black	
33kV	Green	
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11kV	Red	
6kV-6.6kV	Blue	
1kV-6kV	Violet	
LV	Orange	
Unknown Voltage	Brown	

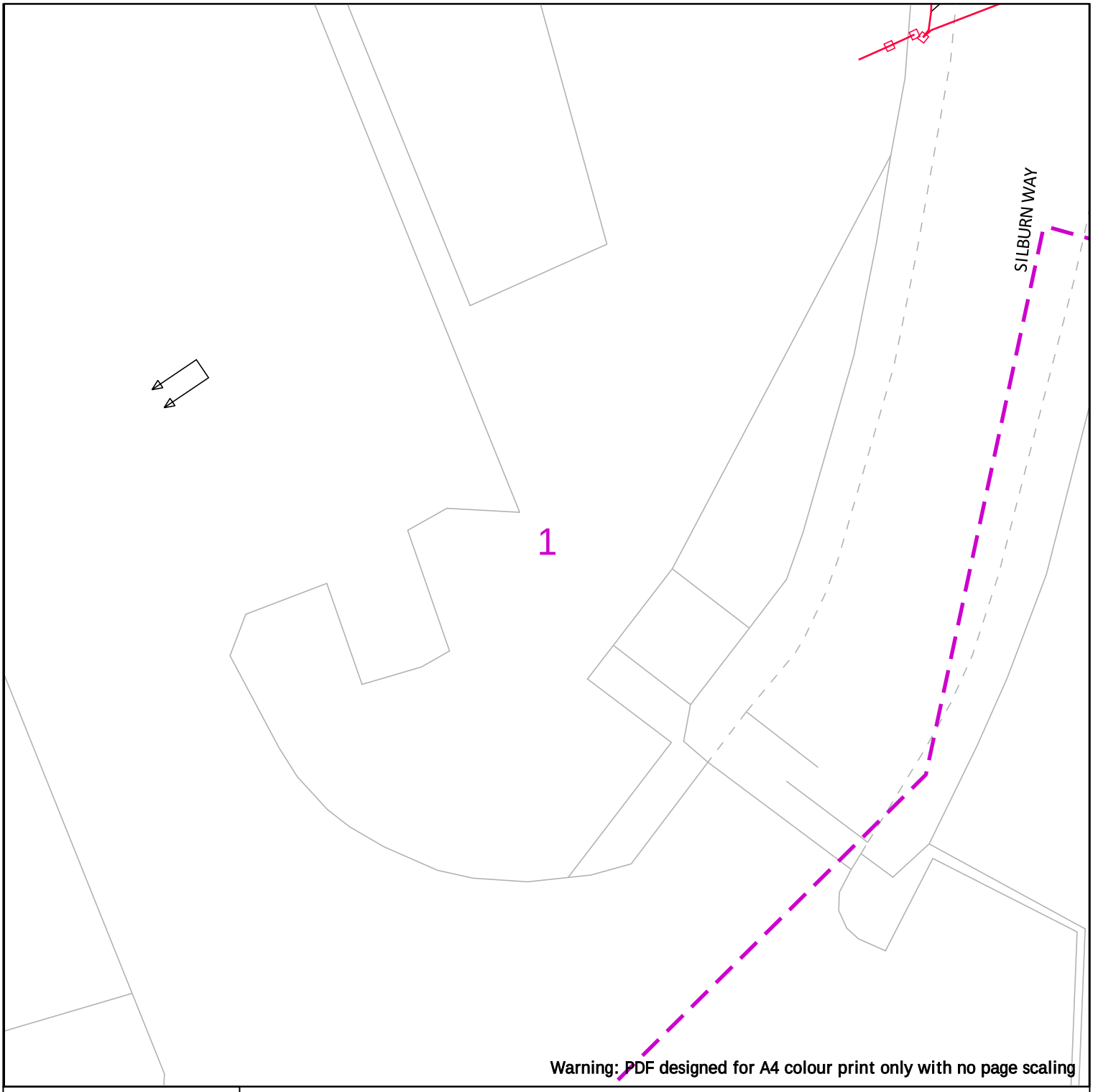
In an emergency call 105, 24 hours a day

Dig Sites
Line:
Area:

IMPORTANT INFO

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electricity north west

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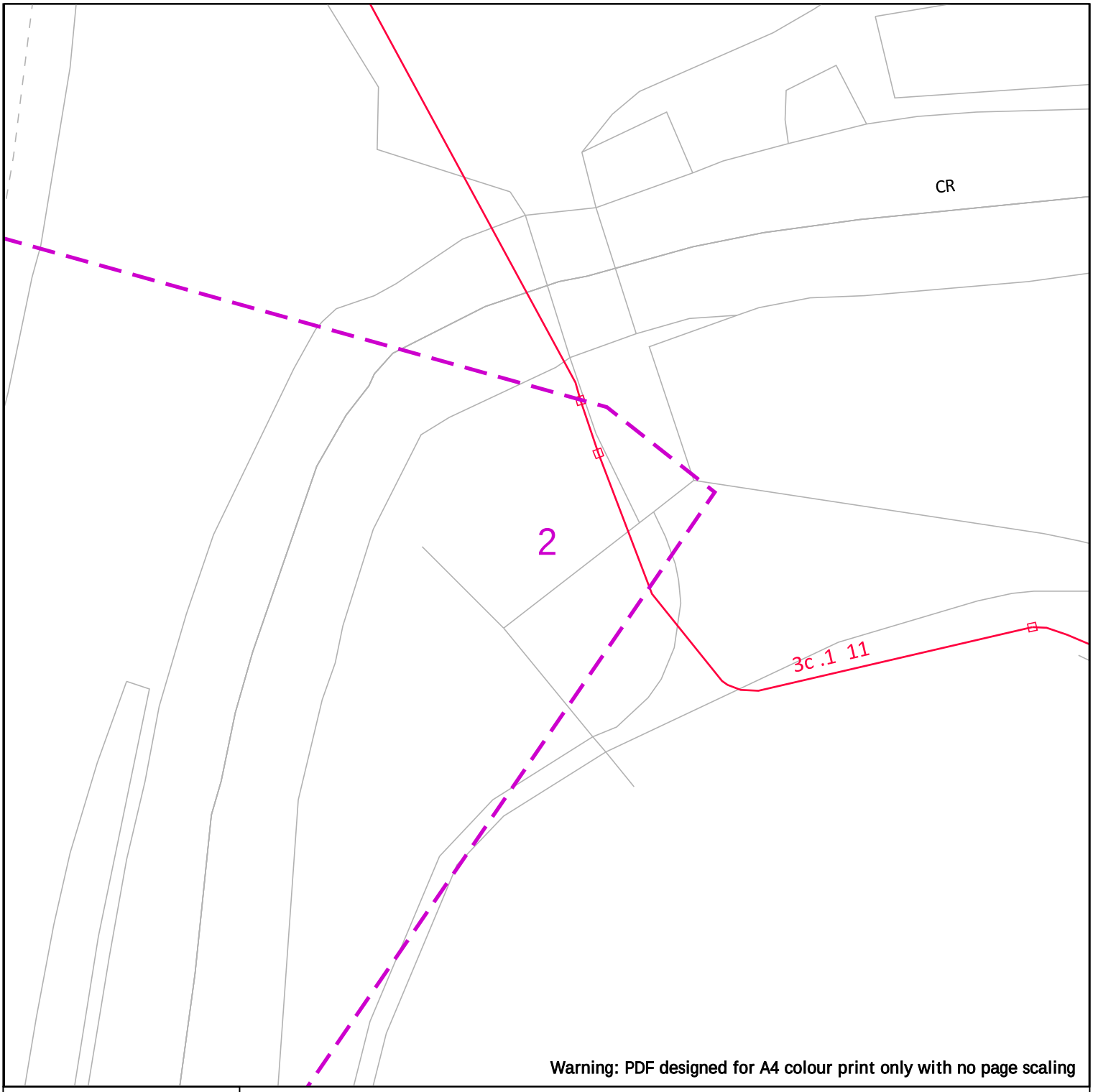
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Dig Sites

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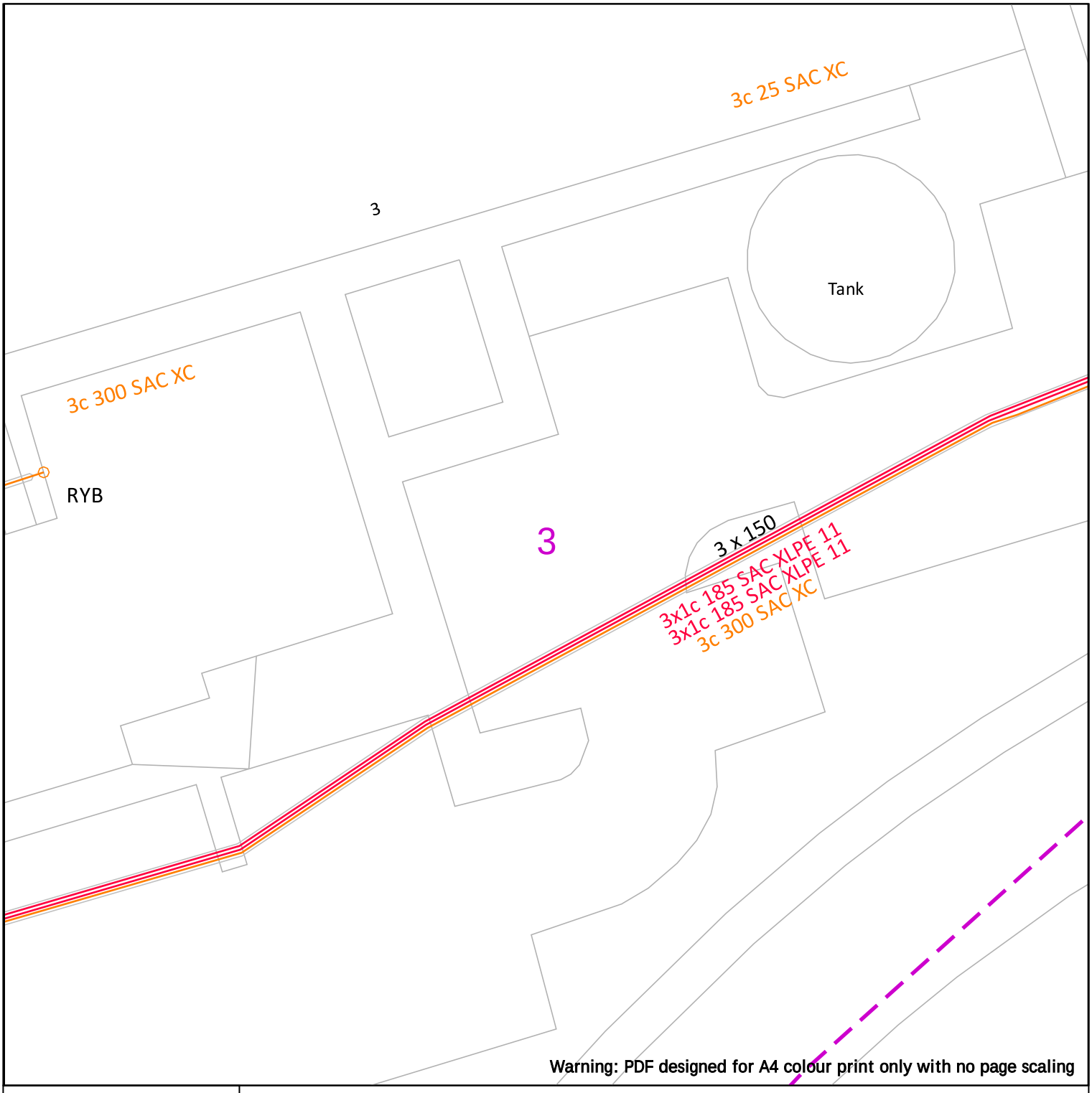
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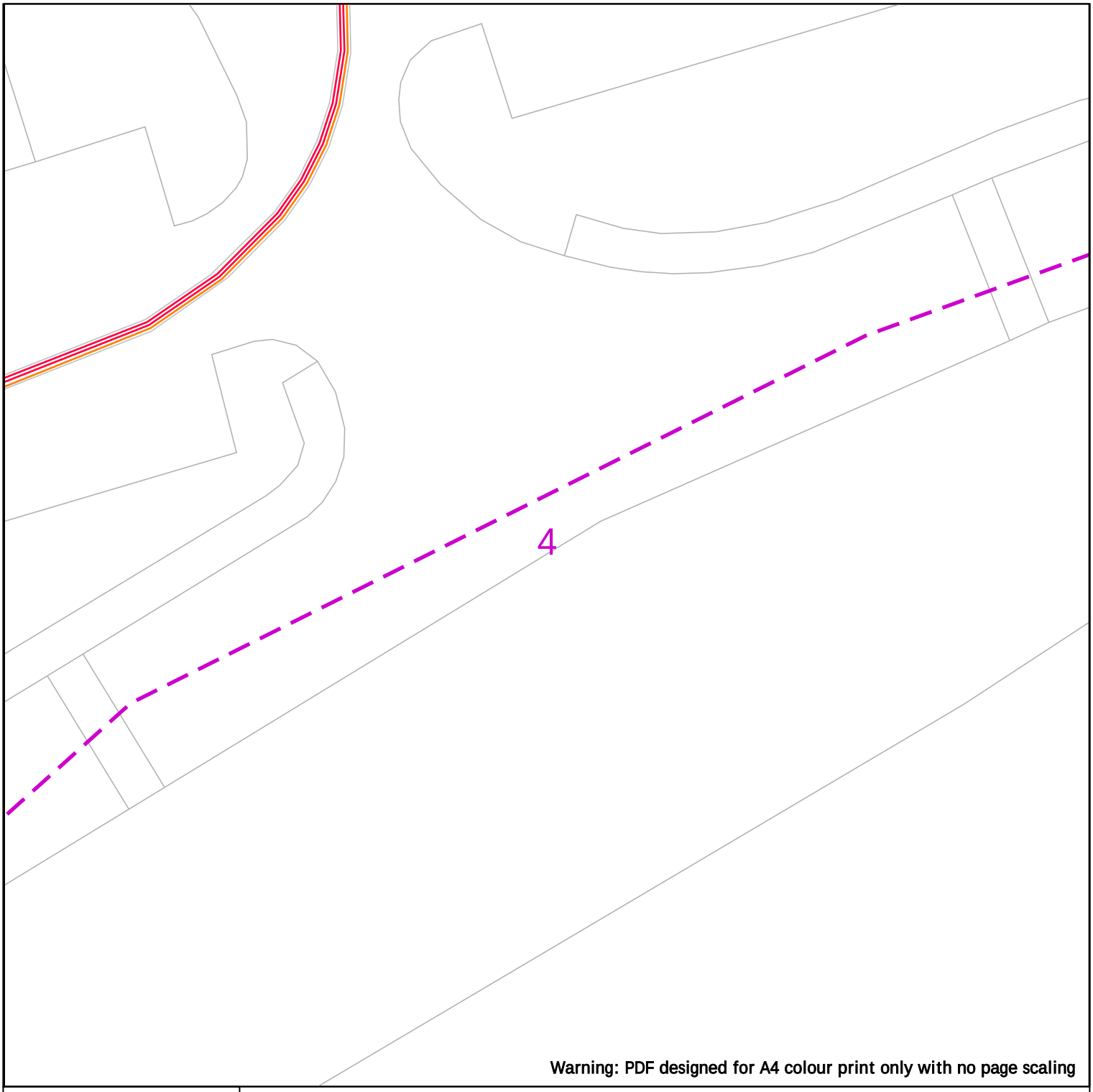
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Dig Sites
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Area:

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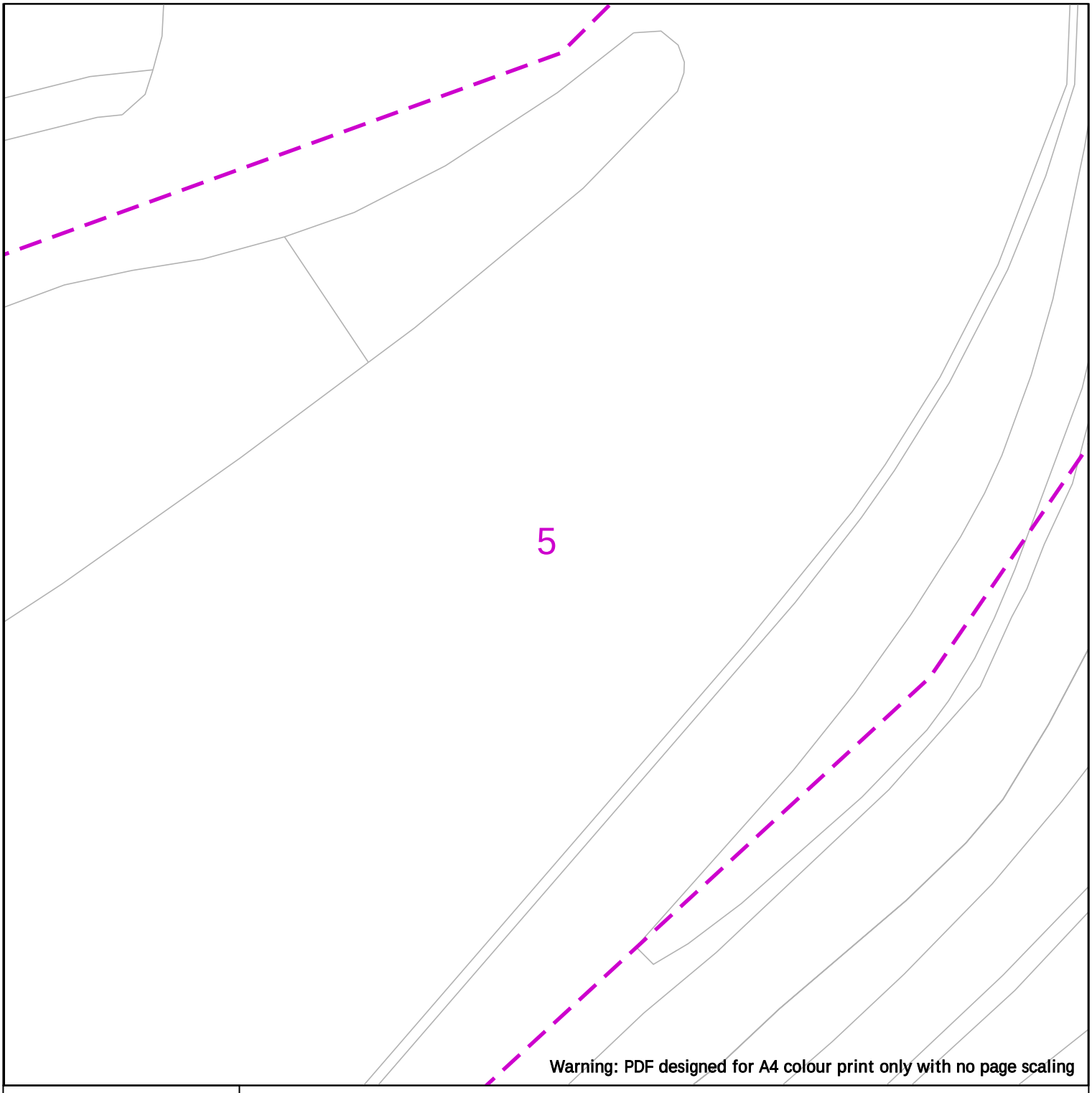
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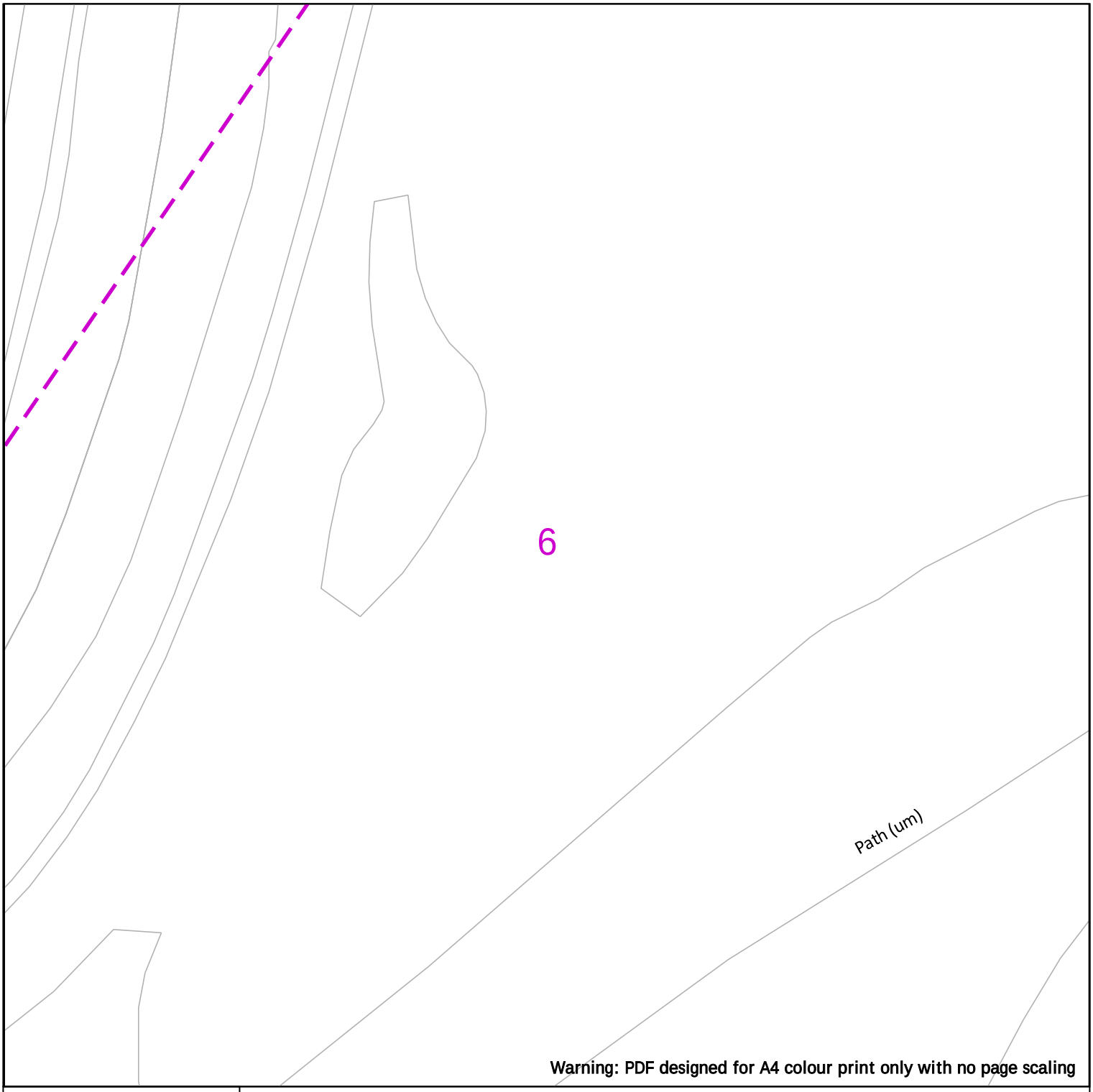
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Data Management
Electricity North West
Linley House
Dickinson Street
Manchester, M1 4LF
Phone: 0800 195 4141
Email: planrequest@enwl.co.uk

Date Requested: 18/09/2023
Job Reference: 30876892
Site Location: 385477 405217
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV6211

Scale: 1:250 (When plotted at A4)

Operating Voltage	Colour Code	Line Colour
132kV	Black	
33kV	Green	
22kV-25kV	Yellow	
11kV	Red	
6kV-6.6kV	Blue	
1kV-6kV	Violet	
LV	Orange	
Unknown Voltage	Brown	

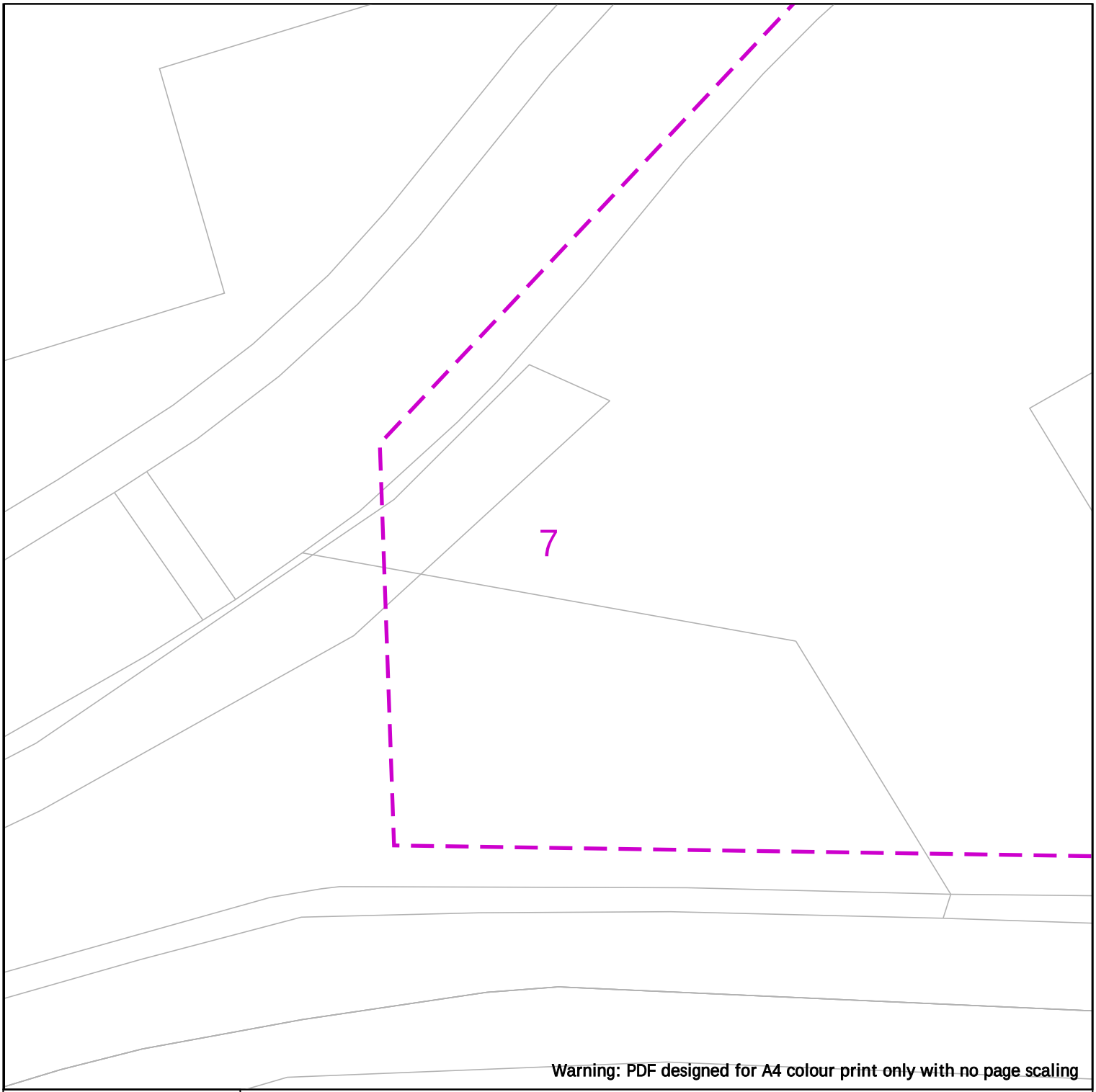
In an emergency call 105, 24 hours a day

Dig Sites
Line:
Area:

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electricity north west

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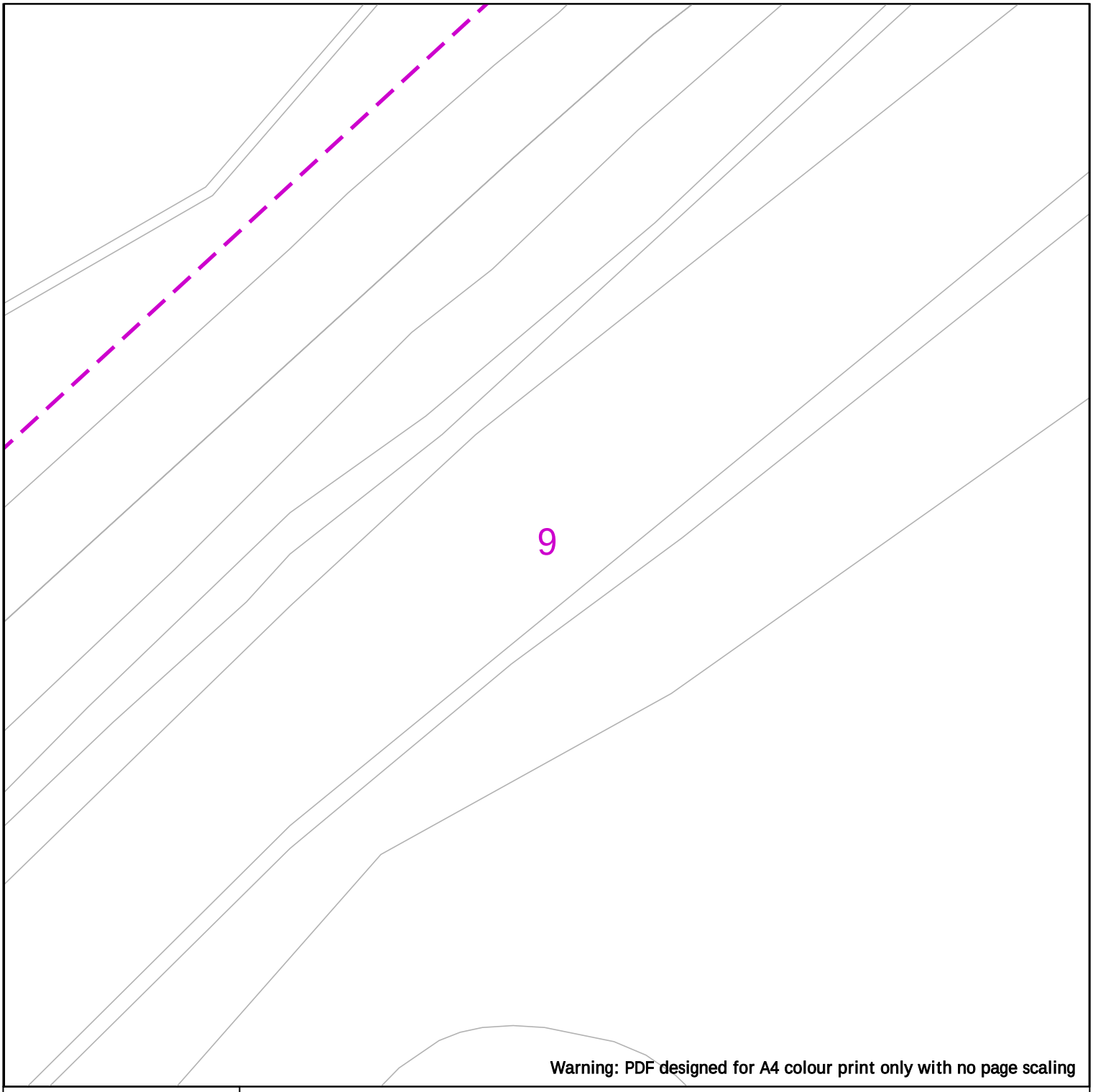
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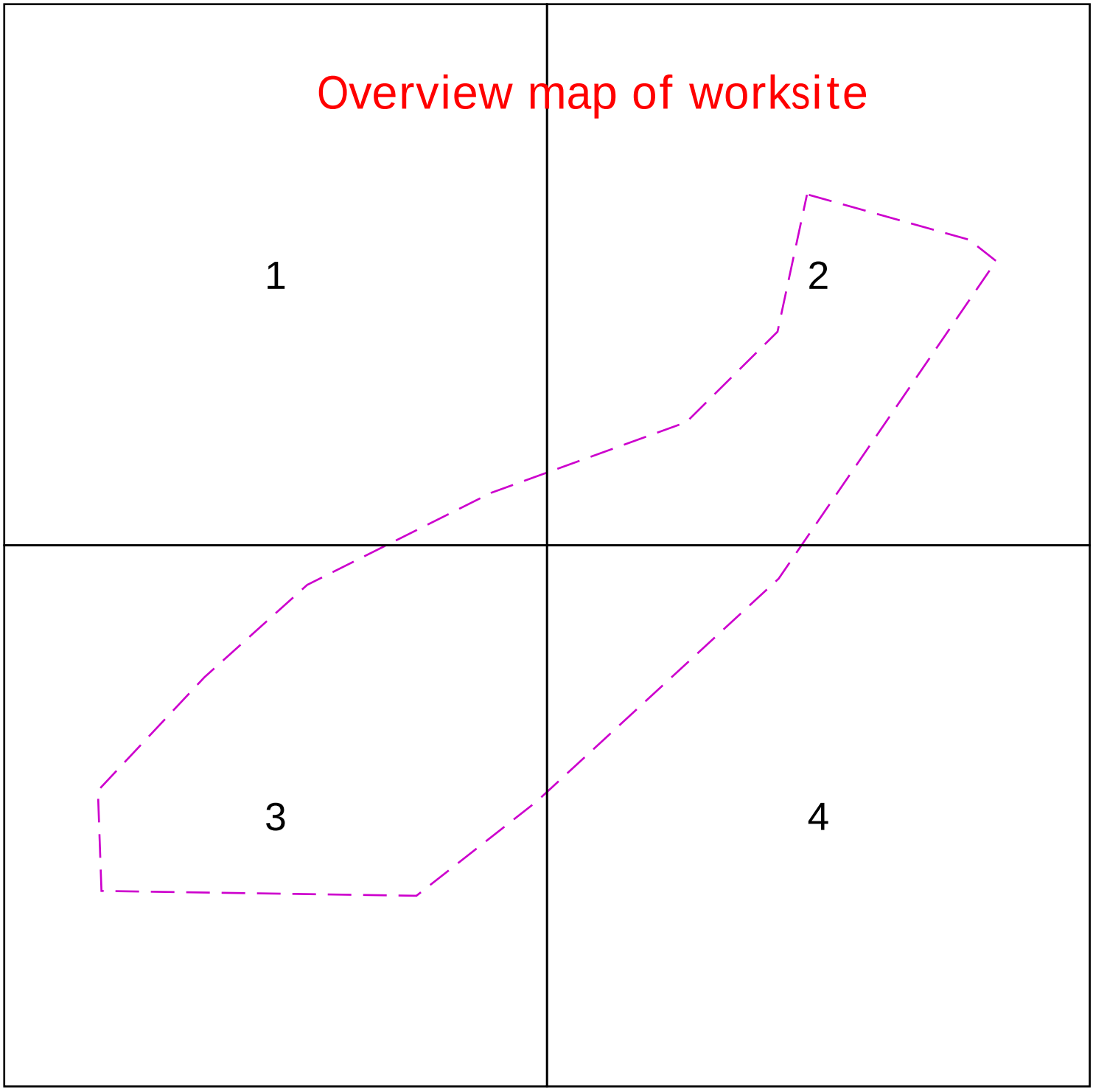
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Overview map of worksite



Last Mile Asset Management Limited
Fenick House, Lister Way
Hamilton International Technology Park
Glasgow G72 0FT
Telephone 03300 587 443

Date Requested: 18/09/2023
Job Reference: 30876892
Site Location: 385477 405217
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV6211

Scale: 1:1025 (When plotted at A4)

ELECTRIC KEY

PROPOSED LV SERVICE	LV STRAIGHT JOINT
PROPOSED LV	LV BREACH JOINT
PROPOSED HV	HV STRAIGHT JOINT
PROPOSED EHV (UG)	HV BREACH JOINT
EXISTING/AS LAID LV SERVICE	STREET LIGHTING C.P
EXISTING/AS LAID LV (UG)	MINI PILLAR
EXISTING/AS LAID HV (UG)	LINK BOX
EXISTING/AS LAID EHV (UG)	EARTH SPIKE
EXISTING LV OVERHEAD	POT END
EXISTING HV OVERHEAD	SERVICE JOINT
EXISTING EHV OVERHEAD	
PROPOSING DISCONNECTED	

Dig Sites

Line:

Area:

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Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of all electrical cables and apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons on or near electrical cables or apparatus. The information included on this plan should not be referred to beyond a period of 3 month from the date of issue.

In an emergency call 105, 24 hours a day

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1



ELECTRIC KEY

PROPOSED LV SERVICE	LV STRAIGHT JOINT
PROPOSED LV	LV BREACH JOINT
PROPOSED HV	HV STRAIGHT JOINT
PROPOSED EHV (UG)	HV BREACH JOINT
EXISTING/AS LAID LV SERVICE	STREET LIGHTING C.P
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EXISTING HV OVERHEAD	SERVICE JOINT
EXISTING EHV OVERHEAD	
PROPOSING DISCONNECTED	

Dig Sites

Line:

Area:

100m

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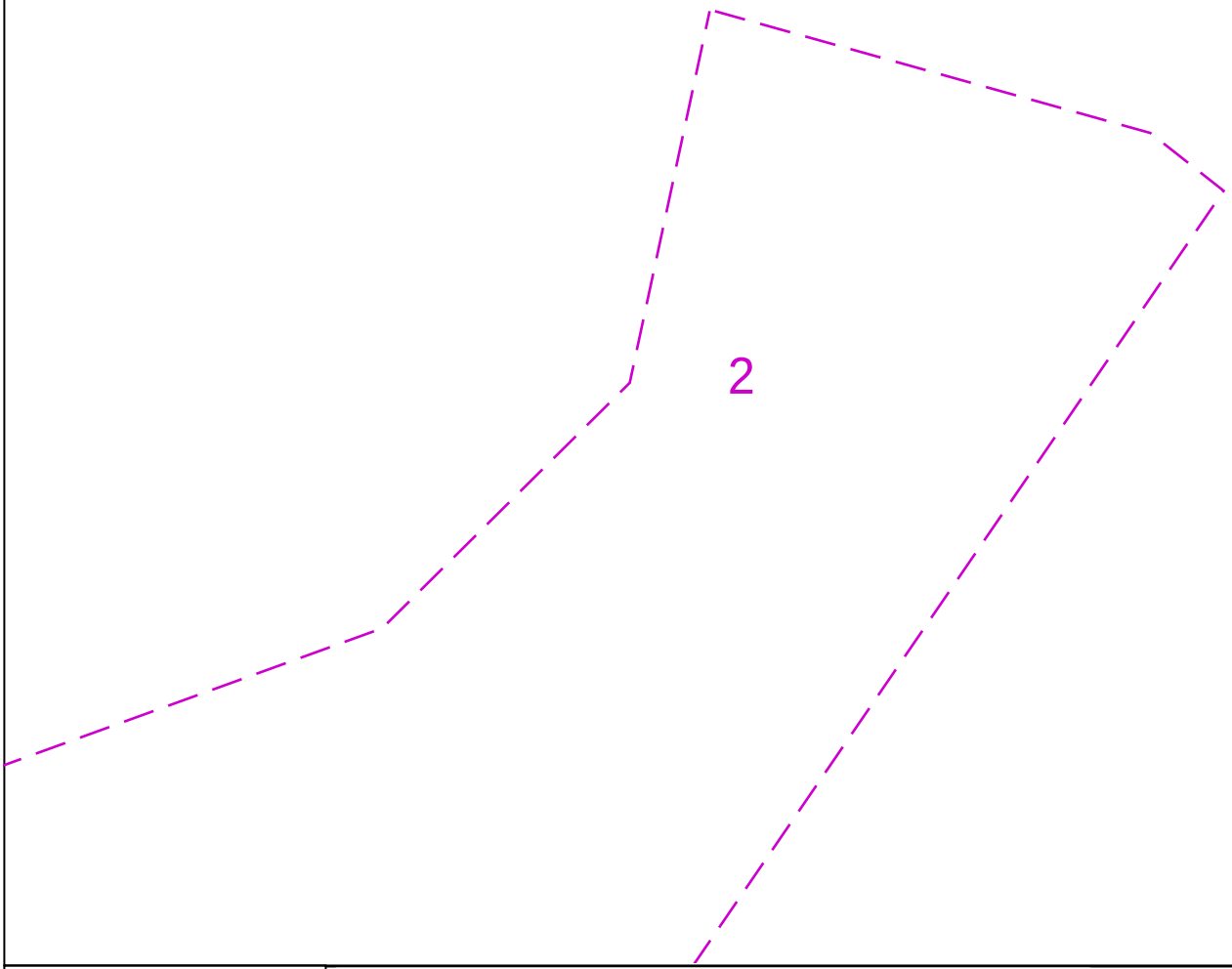
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PROPOSING DISCONNECTED	

Dig Sites

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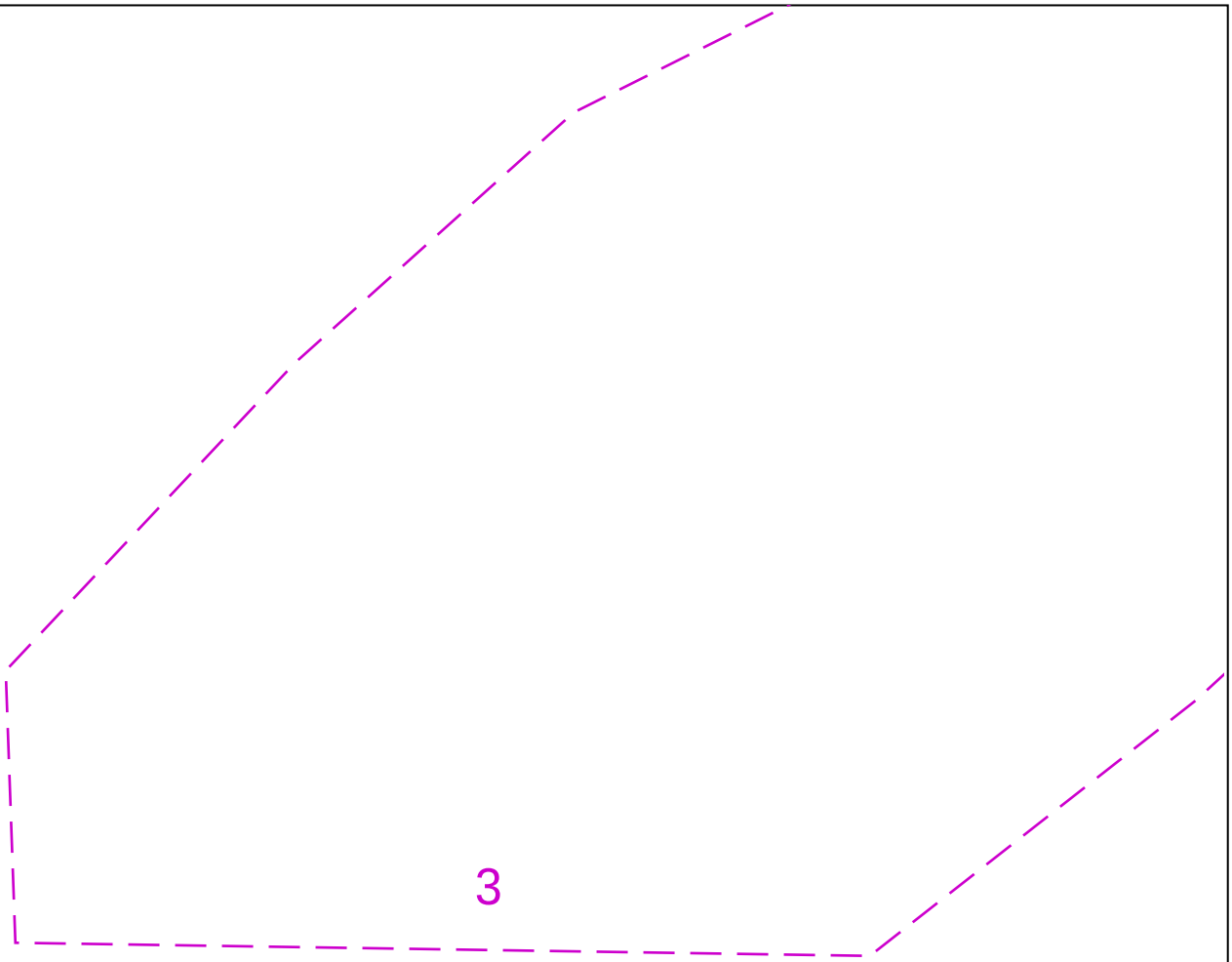
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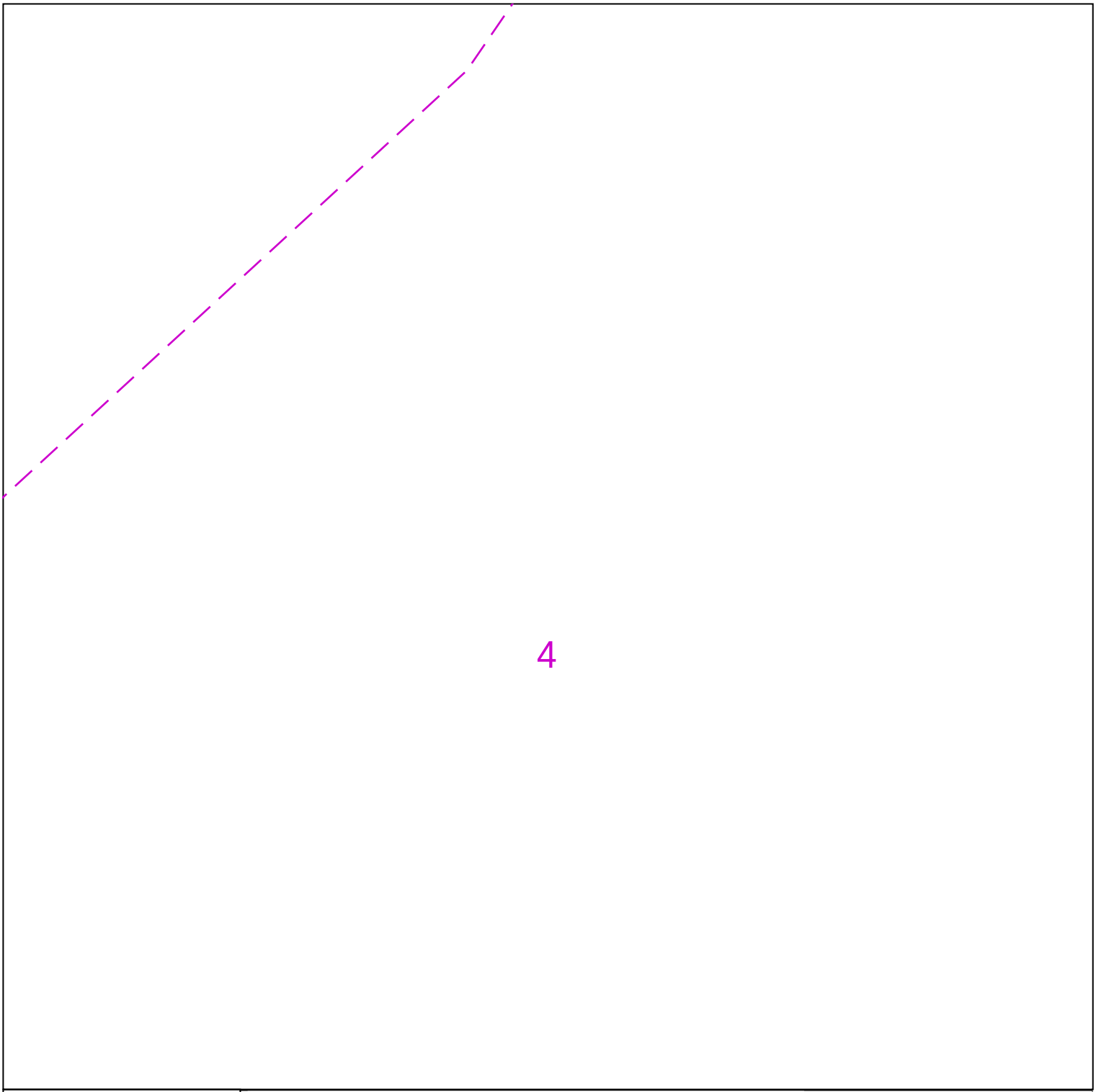
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Enquiry Confirmation

LSBUD Ref: 30876892

Date of enquiry: 18/09/2023
Time of enquiry: 11:45

Enquirer

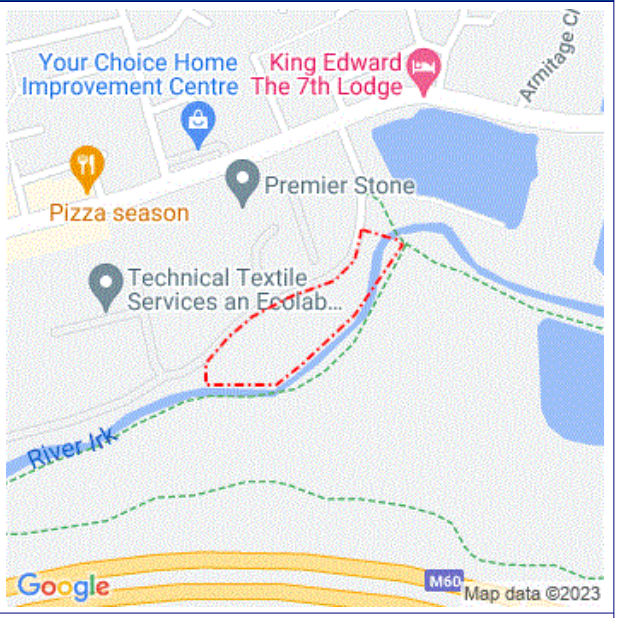
Name	Miss Lauren Wenham	Phone	01604 781877
Company	Soiltechnics Ltd	Mobile	Not Supplied
Address	Cedar Barn Cedar Barn White Lodge Walgrave Northamptonshire NN6 9PY		
Email	admin@soiltechnics.net		

Enquiry Details

Enquiry type	Planned Works
Work category	Development Projects
Work type	Piling
Work type buffer*	150 metres
Start date	20/09/2023
End date	20/09/2023
Scheme/Reference	STV6211
Search location	M24 4NE
Confirmed location	385477 405217
Site size	0 metres square
Site Contact Name	Admin Soiltechnics
Site Phone No.	01604781877
Description of Works	Boreholes

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.

Site Map



Please note that the above map only displays the location of the proposed work site and will not display any of the Members' pipes and cables. It is imperative that this area accurately reflects the proposed work site.

Affected LSBUD members

(LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)

Asset Owner	Phone/Email	Emergency Only	Status
Cadent Gas	0800688588	0800111999	Await response
Electricity North West Limited	08001954141	08001954141	Await response
Last Mile	plantenquiries@lastmile-uk.com	0800111999	Await response
National Grid Electricity Transmission	08000014282	0800404090	Await response

Status explanation

Await Response means that the asset owner will contact you. This is typically by sending the plan response but they may ask for further information before being able to do so, particularly if any payments or authorisations are required.

Email Additional Info means that the asset owner needs further information about your works to assess your enquiry before providing a response. Please provide any details you have available including plans, method statements etc. if available.

Enquiry Confirmation
LSBUD Ref: 30876892

Date of enquiry: 18/09/2023
Time of enquiry: 11:45

Important notices

It is very important that you correctly understand what the service does and the procedures in order for you to work safely. Please refer to the LSBUD Support Page (www.lsbud.co.uk/linesearchbeforeudig-support) for further guidance.
This information includes how to provide additional information to the LSBUD Members who request it to provide a response to your enquiry.
Validity and search criteria. The results of this enquiry are based on the confirmed information you entered and are valid only as at the date and time of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LinesearchbeforeUdig (LSBUD) accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.
Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lsbud.co.uk ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

List of not affected LSBUD members
(LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)

Angus Energy	AWE Pipeline	B & D Energy Limited
Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)	Box Broadband
BP Exploration Operating Company Limited	BPA	Cambridgeshire County Council Climate Change and Energy Services
CATS Pipeline c/o Wood Group PSN	Cemex	Centrica Storage Ltd
CNG Services Ltd	Concept Solutions People Ltd	ConocoPhillips (UK) Teesside Operator Ltd
D.S.Smith	Diamond Transmission Corporation	DIO (MOD Abandoned Pipelines)
DIO (MOD Live Pipelines)	E.ON UK CHP Limited	EDF Energy Renewables Ltd
EirGrid	Eleclink Limited	Energy Assets Networks
ENI & Himor c/o Penspen Ltd	EnQuest NNS Limited	EP Langage Limited
ESB CCGT Power station (Carrington Gas Pipeline)	ESP Utilities Group	ESSAR
Esso Petroleum Company Limited	euNetworks Fiber UK Ltd	EXA Infrastructure
Exolum Pipeline System	Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited
Gamma	Gas Networks Ireland (UK)	Gateshead Energy Company
Gigaclear Ltd	Harbour Energy	Heathrow Airport LTD
Humbly Grove Energy	IGas Energy	INEOS FPS Pipelines
INEOS Manufacturing (Scotland and TSEP)	INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited
Intergen (Coryton Energy or Spalding Energy)	Jurassic Fibre Ltd	Kensa Utilities
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Moray East Offshore Windfarm
MUA Group Limited	National Gas Transmission	National Grid Electricity Distribution
Neos Networks	Northern Gas Networks Limited	Northumbrian Water Group
NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd	NYnet Ltd
Ogi	Oikos Storage Limited	Ørsted
Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)	Petroineos
Phillips 66	Portsmouth Water	Premier Transmission Ltd (SNIP)
Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)	RWEnpower (Little Barford and South Haven)
SABIC UK Petrochemicals	SAS Utility Services Ltd	Scottish and Southern Electricity Networks
Scottish Power Generation	Seabank Power Ltd	SES Water
SGN	Shell	Shell NOP
SP Energy Networks	Spring Fibre Limited	Squire Energy Networks
SSE Generation Ltd	SSE Transmission	SSE Utility Solutions Limited

Enquiry Confirmation
LSBUD Ref: 30876892

Date of enquiry: 18/09/2023
Time of enquiry: 11:45

Storengy	Tata Communications (c/o JSM Construction Ltd)	TfL – London Underground HV Cables (Road Side Cables)
Total Colnbrook Pipelines	Total Finaline Pipelines	Transmission Capital
UK Power Networks	Uniper UK Ltd	University of Cambridge Granta Backbone Network
Vattenfall	Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd
Voneus Limited	VPI Power Limited	Wales and West Utilities
West of Duddon Sands Transmission Ltd	Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd

Non-LSBUD members (Asset owners not registered on LSBUD)
(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.
Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
Arelion UK Ltd	check-network@arelion.com		Not Notified
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
Equans	nrswa.uk@equans.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@ocugroup.com	02087314613	Not Notified
Manchester City Council	https://www.manchester.gov.uk		Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrswa@sky.uk	02070323234	Not Notified
Sota	sota.plantenquiries@ocugroup.com		Not Notified
United Utilities	WastewaterDeveloperServices@uuplc.co.uk	08707510101	Not Notified
Utility assets Ltd	assetrecords@utilityassets.co.uk		Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkinsglobal.com	01454662881	Not Notified

Disclaimer
Please refer to LSBUD's Terms of Use for full terms of use available at www.lsbud.co.uk
The results of this Enquiry are personal to the Enquirer and shall not be shared with or relied upon by any other party. The asset information on which the Enquiry results are based has been provided by LSBUD Members, therefore LSBUD will provide no guarantee that such information is accurate or reliable nor does it monitor such asset information for accuracy and reliability going forward. There may also be asset owners which do not participate in the enquiry service operated by LSBUD, including but not exclusively those set out above. Therefore, LSBUD cannot make any representation or give any guarantee or warranty as to the completeness of the information contained in the enquiry results or accept any responsibility for the accuracy of the mapping images used. LSBUD and its employees, agents and consultants accept no liability (save that nothing in this Enquiry Confirmation excludes or limits our liability for death or personal injury arising from our negligence, or our fraud or fraudulent misrepresentation, or any other liability that cannot be excluded or limited by English law) arising in respect thereof or in any other way for errors or omissions including responsibility to any person by reason of negligence.

National Grid House
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

Electricity Emergency Number:
0800 40 40 90*
*Available 24 hours, 7 days/week.
Calls may be recorded and monitored.
www.nationalgrid.com

Asset Protection
Gas Transmission
National Grid
Warwick
Email: assetprotection@nationalgrid.com

Our Ref: 30876892 STV6211

Monday, 18 September 2023

Lauren Wenham
Cedar Barn Cedar Barn White Lodge

Northamptonshire
NN6 9PY

National Grid Electricity – Moderate Response Letter

Dear Sir/ Madam,

An assessment has been carried out with respect to National Grid Electricity Transmission plc's apparatus and the proposed work location. Based on the location entered into the system for assessment the area has been found to be outside the High Risk zone from National Grid Electricity Transmission plc's apparatus and can proceed. Should the work area change or type of activity being undertaken, a new enquiry must be submitted for assessment.

Please carefully read the guidance notes on the next pages.

You will have received cable route drawings if your enquiry is located within the Medium Risk zone from National Grid Electricity Transmission buried assets. Please familiarise yourself with the location of these assets and should the works location change a new enquiry must be submitted for assessment.

Please note this response and any attached map(s) are valid for 28 days from the date of this letter.

Yours sincerely

Asset Protection Team

National Grid is a trading name for:
National Grid Electricity Transmission plc
Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2366977

Your Responsibilities and Obligations

The "Assessment" Section below outlines the detailed requirements that must be followed when planning or undertaking you activities at this location.

It is your responsibility to ensure that the information you have submitted is accurate and that all relevant documents including links are provided to all persons (either direct labour or contractors) working for you near National Grid Electricity Transmission plc's apparatus, e.g. as contained within the Construction (Design and Management) Regulations.

This assessment solely relates to National Grid Electricity Transmission plc (NGET)

This assessment does **NOT** include:

- National Grid's legal interest (easements or wayleaves) in the land which restricts activity in proximity to National Grid's assets in private land. You must obtain details of any such restrictions from the landowner in the first instance and if in doubt contact Asset Protection.
- Recently installed apparatus
- National Grid Gas plc.
- Apparatus owned by other organisations, e.g. Cadent, other gas distribution operators, local electricity companies, other utilities, etc.

It is **YOUR** responsibility to take into account whether the items listed above may be present and if they could be affected by your proposed activities.

This communication does not constitute any formal agreement or consent for any proposed development work; either generally or with regard to National Grid Electricity Transmission plc easements or wayleaves nor any planning or building regulations applications.

National Grid Electricity Transmission plc or their agents, servants or contractors do not accept any liability for any losses arising under or in connection with this information. This limit on liability applies to all and any claims in contract, tort (including negligence), misrepresentation (excluding fraudulent misrepresentation), breach of statutory duty or otherwise. This limit on liability does not exclude or restrict liability where prohibited by the law nor does it supersede the express terms of any related agreements.

If you require further assistance please contact the Asset Protection team via e-mail (assetprotection@nationalgrid.com) or via the contact details at the top of this response.

GUIDANCE

National Grid Electricity Transmission Network data

- The Network map for National Grid Electricity Transmission assets can be downloaded at the following link in GIS format.

https://www.nationalgrid.com/uk/electricity-transmission/network-and-infrastructure/network-route-maps

Overhead Lines

- National Grid's Overhead Line/s is protected by a Deed of Easement/Wayleave Agreement which provides full right of access to retain, maintain, repair and inspect our asset.

- The submitted proposed design does not change after the date of this letter. Any design change that moves the proposal closer to National Grid Overhead Line Assets shall be submitted for assessment.

- Statutory electrical safety clearances shall be maintained at all times. National Grid recommends that no permanent structures are built directly beneath our overhead lines. These distances are set out in EN 43 – 8 Technical Specification for "Overhead Line Clearances Issue 5 (2019). To purchase & download EN 43 – 8 Technical Specification for "Overhead Line Clearances Issue 5 (2019) go to https://www.ena-eng.org/ENA-Docs/

- Any changes in ground levels which are proposed either beneath or in close proximity to our existing overhead lines would serve to reduce safety clearances. Safety clearances to existing overhead lines must be maintained in all circumstances.

- To view the Development Near Overhead Lines Document. https://www.nationalgridet.com/document/130626/download

- To view the National Grid Third Party Guidance for working near National Grid Electricity Transmission equipment. https://www.nationalgridet.com/sites/et/files/documents/Working%20near%20electricity%20equipment.pdf

- The relevant guidance in relation to working safely near to existing overhead lines is contained within the Health and Safety Executive's (www.hse.gov.uk) Guidance Note GS 6 "Avoidance of Danger from Overhead Electric Lines."

- If a landscaping scheme is proposed as part of the proposal, only slow and low growing species of trees and shrubs shall be planted beneath and adjacent to the existing overhead line to reduce the risk of growth to a height which compromises statutory safety clearances.

- Drilling or excavation works shall not be undertaken if they have the potential to disturb or adversely affect the foundations or "pillars of support" of our towers. These foundations extend beyond the base of the tower. Pillar of Support drawings shall be obtained using the contact details above.

- Due to the scale, bulk and cost of the transmission equipment required to operate at 275kV or 400kV we only support proposals for the relocation of existing high voltage overhead lines where such proposals directly facilitate a major development or infrastructure project of national importance which has been identified as such by government.

- To promote the successful development of sites crossed by existing overhead lines, and the creation of well-designed places, National Grid has produced 'Design guidelines for development near pylons and high voltage overhead power lines', which look at how to create high quality development near overhead lines and offer practical solutions which can assist in avoiding the unnecessary sterilisation of land in the vicinity of high voltage overhead lines.

- Further information regarding our undergrounding policy and development near transmission overhead lines is available on our website at: https://www.nationalgridet.com/network-and-assets/planning-and-development

Buried Cables

- National Grid's underground cables are protected by a Deed of grant; Easement; Wayleave Agreement or the provisions of the New Roads and Street Works Act. Which provide full right of access to retain, maintain, repair and inspect our asset. Hence we require that no permanent structures are to be built over our cables or within the easement strip.

- Ground levels above our cables must not be altered in any way. Any alterations to the depth of our cables will subsequently alter the rating of the circuit and can compromise the reliability, efficiency and safety of our electricity network.

- The supplied detailed route records should not be taken as positive indication of the cable location. This can only be determined by digging trial holes. Where trial holes are dug the concrete and / or polymeric cable protection tiles must not be disturbed.

- The normal recommendation is to keep 2 metres clear either side of the 1 metre wide trench containing the AC cable.

- National Grid should be made aware of the works starting and may put in place a representative to monitor the works. The works should be carried out in accordance with the recommendations in document HS (G) 47 available from the HSE web site.

- The relocation of existing underground cables is not normally feasible on grounds of cost, operation and maintenance and environmental impact and we believe that successful development can take place in their vicinity.

- The information supplied is given in good faith and only as a guide to the location of our underground cables. The accuracy of this information cannot be guaranteed. The physical presence of such cables may also be evident from physical protection measures such as ducts or concrete protection tiles. The person(s) responsible for planning, supervising and carrying out work in proximity to our cable(s) shall be liable to us, as cable(s) owner, as well as to any third party who may be affected in any way by any loss or damage resulting from their failure to locate and avoid any damage to such a cable(s).

- The relevant guidance in relation to working safely near to existing underground cables is contained within the Health and Safety Executive's (www.hse.gov.uk) Guidance HS(G)47 "Avoiding Danger From Underground Services" and all relevant site staff should make sure that they are both aware of and understand this guidance.

- Our cables are normally buried to a depth of 0.9 metres to the protective covers but this depth can vary depending on location (bridges may have cables 100mm below surface level)..The specific cable route record drawings show further details along the route of the particular cable. The cable route drawings are attached to this letter for your information.

- Cables installed in cable tunnels, whilst less likely to be affected by surface or shallow works may be affected by activities such as piling.

- National Grid assets can be adversely affected by vibration and can provide guidance on the acceptable levels of vibration due to piling and other construction related operations in the vicinity of national grid assets

- Ground cover above our cables should not be reduced or increased without consultation with National Grid.

- If a landscaping scheme is proposed as part of the works, we request that no trees and shrubs are planted either directly above or within 3 metres of the existing underground cable, as ultimately the roots may grow to cause damage to the cable.

Cables Tunnels

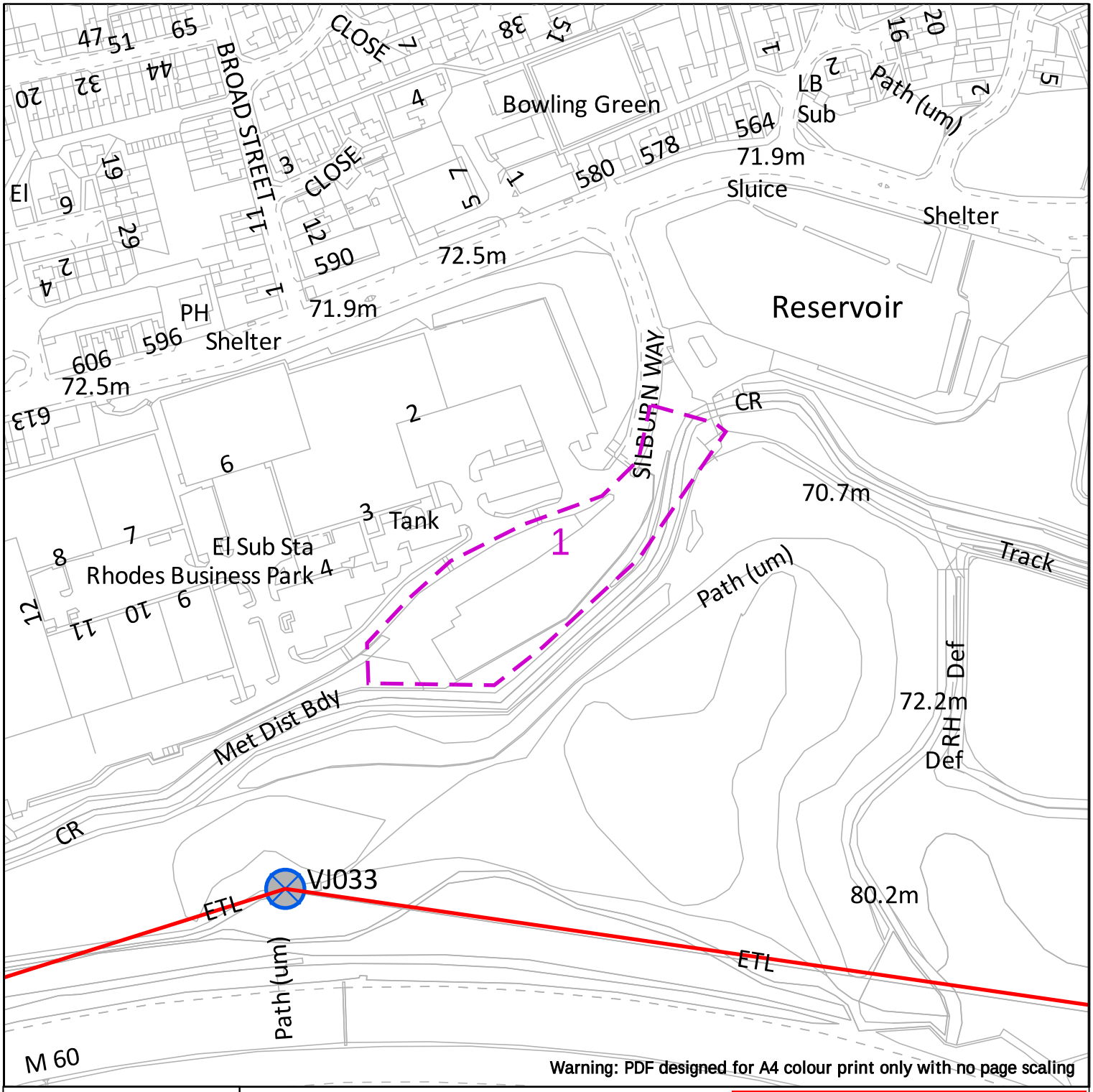
- National Grid's underground cable tunnels are protected by the provisions of a Wayleave/Easement or the New Roads and Street Works Act. This provides full right of access to retain, maintain, repair and inspect our asset.

- Further information and guidance regarding National Grid Cable Tunnels is available on our website at https://www.nationalgrid.com/uk/electricity-transmission/document/121061/download

- National Grid requires that the clearances indicated in the guidance document linked above are maintained at all times. Should it be necessary to enter the exclusion zone discussion/ agreement with National Grid is required to ensure the integrity of their tunnel asset and the high voltage cables is not compromised.

- Ground levels above our cable tunnels must not be altered in any way without prior agreement with National Grid; any alterations to the depth of our tunnels can compromise its integrity which could have an adverse impact on the reliability, efficiency and safety of our electricity network.

- Any works which would create high levels of vibration such as piling would need to be assessed by National Grid to ensure it has limited impact on our cable tunnels. National Grid can advise on acceptable vibration limits.



Warning: PDF designed for A4 colour print only with no page scaling

nationalgrid

NationalGrid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

AssetProtection@NationalGrid.com

0 200

EXTREME CAUTION - HIGH VOLTAGE
RISK OF DEATH OR SERIOUS INJURY

Dig Sites Area: Line:

Underground Cables

Overhead Lines

Fibre Cables

Date Requested: 18/09/2023
Job Reference: 30876892
Site Location: 385477 405217
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV6211

Scale: 1:2500 (When plotted at A4)

IMPORTANT NOTICES

This plan shows those pipes owned by National Grid Electricity Transmission plc in its role as a Licensed Electricity Transporter (ET). Electricity cables owned by other ETs, or otherwise privately owned, may be present in this area. Information with regards to such cables should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Ancillary equipment such as cooling systems and communication cables are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Grid Electricity Transmission plc or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of cables and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near electricity apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

National Grid Electricity Emergency Number: 0800 40 40 90
Available 24 hours, 7 days/week. Calls may be recorded and monitored

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ENQUIRY SUMMARY

Received Date
18/09/2023 10:46

Work Start Date
20/09/2023

Your Reference
STV6211

Location
Centre Point: 385477 405217
X Extent:
Y Extent:
Postcode: M24 4NE

Map Options
Paper Size: A4
Orientation: PORTRAIT
Scale: 1:2500
Real World Extents: 165m x 129m

Enquirer Details
Organisation Name: Soiltechnics Ltd
Contact Name: Lauren Wenham
Email Address: admin@soiltechnics.net
Telephone: 01604 781877
Address: Cedar Barn Cedar Barn White Lodge, , Northamptonshire, NN6 9PY

Enquiry Type
Planned Works

Activity Type
Development Projects

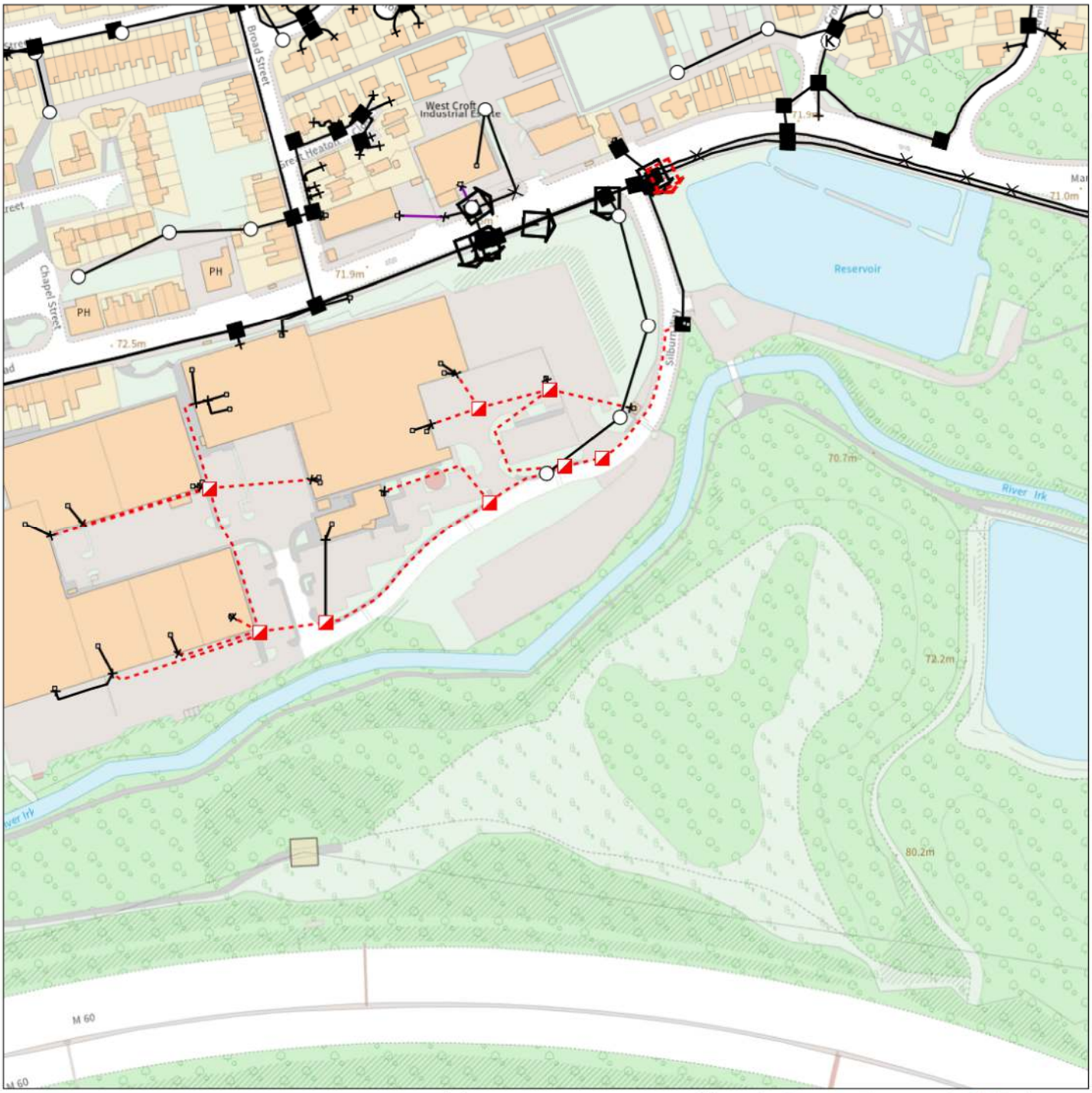
Work Types
Piling

Notes/Works Description (if supplied)
Boreholes

Site Contact Name (if supplied)
Admin Soiltechnics

Site Contact Number (if supplied)
01604781877

Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

openreach

CLICK BEFORE YOU DIG

FOR PROFESSIONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS INCLUDING LOCATE AND MARKING SERVICE

email cbyd@openreach.co.uk

ADVANCE NOTICE REQUIRED
(Office hours: Monday - Friday 08.00 to 17.00)
www.openreach.co.uk/cbyd

Accidents happen

If you do damage any Openreach equipment please let us know by calling 0800 023 2023 (opt 1 + opt 1) and we can get it fixed ASAP

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KEY TO BT SYMBOLS

	Planned	Live
PCP		
Pole		
Box		
Manhole		
Cabinet		

Change Of State	+	Hatchings	
Split Coupling		Built	
Duct Tee		Planned	
Building		Inferred	
Kiosk	K	Duct	

Other proposed plant is shown using dashed lines.
BT Symbols not listed above may be disregarded.
Existing BT Plant may not be recorded.
Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.

	Pending Add	In Place	Pending Remove	Not In Use
Power Cable				
Power Duct				N/A

BT Ref : YUH11574L
Map Reference : (centre) SD8547605189
Easting/Northing : (centre) 385476,405189
Issued : 18/09/2023 11:57:31

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: nnhc@openreach.co.uk

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Appendix M Regulatory Correspondence

Rosie Dean

From: Michael Moore P <Michael.Moore@rochdale.gov.uk>
Sent: 20 October 2023 13:47
To: Lara Henwood
Subject: FW: Review of a site in Middleton
Attachments: RBC Drainage Planning Advice.pdf

Afternoon Lara,

I can only offer advice on contaminated land, the site has not been determined as contaminated in accordance with Part 2A of the 1990 EPA and there are no current plans for any inspection.

I've been provided with the attached from the drainage section.

Hope that helps.

Have a good weekend.

Regards

Michael Moore P
Environmental Health Senior Officer (Environment Prot)
Place

ROCHDALE BOROUGH COUNCIL

01706 924107
07976 059366
michael.moore@rochdale.gov.uk

Rochdale Borough Council
Floor 3, Number One Riverside
Smith Street, Rochdale, OL16 1XU

To access our services go to www.rochdale.gov.uk
For news, events and social media updates go to www.rochdale.gov.uk/newsandevents

Please consider the environment before printing this email.

From: Sharon Hill L <Sharon.Hill@Rochdale.Gov.UK> **On Behalf Of** Development Management
Sent: 18 October 2023 17:28
To: Stephen McCann <Stephen.McCann@Rochdale.Gov.UK>; Michael Moore P <Michael.Moore@rochdale.gov.uk>
Subject: FW: Review of a site in Middleton

Hello

Please see below, is this enquiry something either of you could respond to?

Regards

Sharon Hill L
Team Leader (Planning Support, Data & Innovation)
Planning & Development

ROCHDALE BOROUGH COUNCIL

01706 924305
sharon.hill@rochdale.gov.uk

Rochdale Borough Council
Floor 3, Number One Riverside
Smith Street, Rochdale, OL16 1XU

To access our services go to www.rochdale.gov.uk
For news, events and social media updates go to www.rochdale.gov.uk/newsandevents

Please consider the environment before printing this email.

From: Lara Henwood <Lara.Henwood@soiltechnics.net>
Sent: 18 September 2023 14:32
To: Development Management <development.management@rochdale.gov.uk>
Subject: Review of a site in Middleton

:CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Dear Sir/Madam,

We have been asked to undertake a review of a site in Middleton to support the planning consent for a proposed development.

The postal address for the site is:

Land at Rhodes Business Park
Middleton
M24 4NE

The approximate site location and boundary is shown in the image attached.

As part of our investigation, it is customary to approach the Local Authority to enquire whether they have any knowledge of the local area which might impact the geotechnical design or construction methods. For example are you aware of the typical foundation solutions in the area, any adverse ground conditions, whether soakaways are used etc.

If you have any information that may be helpful to inform a full assessment of the site I would be very grateful.

Please do not hesitate to contact me with any questions.

Kind Regards

Lara Henwood | **Administration Assistant**
t 01604 781877 | w www.soiltechnics.net

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▪ Ground Investigation ▪ Geotechnical Engineering ▪ Contamination Assessments
▪ Remediation and Verification ▪ Coal Mining Risk Assessments ▪ Soil Waste Planning
▪ Land Restoration ▪ Building Fabric Surveys ▪ Environmental Permitting
▪ Industrial Floor Slab Assessments

Northampton | Manchester | Perth | Aberystwyth

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Appendix N JIWG Decision Support Tool

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	STV6211
Site Name	Rhodes Business Park
Client	Belshaw
Run by	OLF1 PROPCO2 S.A.R.L
Date	07.12.2023
Scenario details	

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Trace quantities - <0.0001 to 0.001 %wt/wt	0
Sub-total		**0**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Negligible**

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Version 2, July 2016

Stage 2

Exposure Factors		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.01 fibres/ml	1
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Coarse to Fine Sand	2
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Sub-total		**11**
Exposure ranking		Medium
Combined hazard and exposure ranking	**11**	Low

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	CAR do not apply
RPE*	None
Dust Suppression**	None
Hygiene/Decontamination***	None

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for Receptor Risk Ranking

Stage 1

Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Chrysotile alone	0
Sub-total		**10**
Hazard ranking		**Low**

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	High	4
Activity type and effect on deterioration of ACMs	Low disturbance, minimal deterioration expected	2
Best description of primary host material matrix	Coarse to Fine Sand	2
Sub-total		**9**
Exposure ranking		**Low**

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Commercial/industrial	No score required	
Age of Receptor	Adult (>24 and <60)	1	
Duration of exposure/site occupancy	> 1hr <10 hr daily exposure (e.g. part-time to full time occupational exposure or extended daily recreational exposure)	3	
Receptor ranking		**4**	**Low**
Combined hazard, exposure and receptor ranking			**Low**
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at shallow depth, potential to be disturbed by excavation	C	
Pathway ranking		4C	**Low**
Overall ranking			**Very Low**

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Project Reference	STV6211

Site Name	Rhodes Business Park
Client	OLF1 PROPCO2 S.A.R.L

Run by	DH
Date	07.12.2023
Reviewed by	SCD

Characterisation of scenario being evaluated	

Interpretation of scenario ranking by DST	

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Appendix O Envirocheck Report

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Envirocheck® Report:

Datasheet

Order Details:

Order Number:
317048402_1_1

Customer Reference:
STV6211

National Grid Reference:
385480, 405190

Slice:
A

Site Area (Ha):
0.47

Search Buffer (m):
1000

Site Details:

Rhodes Business Park
Silburn Way
Middleton
Manchester
M24 4NE

Client Details:

Ms S Ltd
Soiltechnics Limited
Cedar Barn
White Lodge
Walgrave
Northampton
NN6 9PY

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Report Section	Page Number
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Waste	33
Hazardous Substances	-
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Data Currency	60
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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 3		9	4	6
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 8		1		2
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature			Yes		
Pollution Incidents to Controlled Waters	pg 8	1	3	14	16
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 14		1		
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 14		1		1
Water Abstractions	pg 14			1	3 (*7)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 17	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 17	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 17	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 17	Yes		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 17	Yes		n/a	n/a
Areas Benefiting from Flood Defences	pg 17	Yes		n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences	pg 18		Yes	n/a	n/a
OS Water Network Lines	pg 18		7	45	75

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites	pg 33				1
Historical Landfill Sites	pg 33		1	2	4
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 34			1	
Licensed Waste Management Facilities (Locations)	pg 34				1
Local Authority Landfill Coverage		1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 35	1	1	5	7
Potentially Infilled Land (Water)	pg 35		4	7	38
Registered Landfill Sites	pg 38				3
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 40	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 40	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 43		2	3	1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 44	Yes	n/a	n/a	n/a
Mining Instability	pg 44	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 44		Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 45	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 45	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 45	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 46	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 47		14	8	23
Fuel Station Entries	pg 51				2
Points of Interest - Commercial Services	pg 51		4	1	4
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 52		12	4	1
Points of Interest - Public Infrastructure	pg 53		2	22	27
Points of Interest - Recreational and Environmental	pg 57				8
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt	pg 59				1
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 59		1		
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 59	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NE (W)	0	1	385477 405193
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	23	1	385500 405150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	25	1	385550 405193
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	42	1	385550 405150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	70	1	385600 405193
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	91	1	385350 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (S)	92	1	385477 405050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	114	1	385650 405250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	118	1	385650 405193
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (S)	142	1	385477 405000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	202	1	385250 405050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	205	1	385700 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	245	1	385200 405050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (E)	248	1	385750 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SE (E)	276	1	385800 405150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	288	1	385400 405500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (E)	293	1	385800 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	300	1	385200 404950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	307	1	385477 405550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	315	1	385600 405550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SW (N)	317	1	385450 405550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	356	1	385350 405550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (N)	357	1	385500 405600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	358	1	385550 405600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (N)	358	1	385477 405600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	368	1	385250 405500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	386	1	385900 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SW (N)	400	1	385350 405600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12SE (SW)	402	1	385050 405000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (SW)	410	1	385100 404900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	412	1	385300 404750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12NE (W)	414	1	385000 405193
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NW)	421	1	385100 405450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SW (NW)	436	1	385200 405550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12SE (W)	448	1	385000 405000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (SW)	451	1	385050 404900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	451	1	385950 405050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NW)	456	1	385100 405500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	457	1	385500 405700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (N)	458	1	385477 405700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NW)	460	1	385050 405450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A18SE (N)	463	1	385600 405700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A14NW (E)	464	1	386000 405200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	465	1	386000 405193

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (SW)	469	1	385000 404950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	471	1	386000 405150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	472	1	385950 405000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	473	1	385650 405700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NW)	474	1	385000 405400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A14SW (E)	482	1	386000 405100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12SE (W)	494	1	384950 405000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (SW)	494	1	385000 404900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A17SE (NW)	494	1	385100 405550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A14SW (E)	497	1	386000 405050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	498	1	384950 405350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (NW)	500	1	385000 405450
1	**Discharge Consents** Operator: United Utilities Water Plc (?) Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall Cso Rhodes Business Park Silburn Way, Middleton, Rochdale, Greater Manchester, M24 4ne Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016982643 Permit Version: 2 Effective Date: 2nd December 1998 Issued Date: 2nd December 1998 Revocation Date: 7th February 2020 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	39	2	385560 405270
1	**Discharge Consents** Operator: United Utilities Water Plc (?) Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall Cso Rhodes Business Park Silburn Way, Middleton, Rochdale, Greater Manchester, M24 4ne Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016982643 Permit Version: 1 Effective Date: 28th November 1994 Issued Date: Not Supplied Revocation Date: 1st December 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A13NE (E)	44	2	385580 405230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall Cso Rhodes Business Park Silburn Way, Middleton, Rochdale, Greater Manchester, M24 4ne Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01ROC0167 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 25th June 1999 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A13NE (E)	44	2	385580 405225
1	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall Cso Rhodes Business Park Silburn Way, Middleton, Rochdale, Greater Manchester, M24 4ne Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016982643 Permit Version: 3 Effective Date: 7th February 2020 Issued Date: 7th February 2020 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	47	2	385565 405276
1	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall, Middleton, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016982643 Permit Version: 3 Effective Date: 7th February 2020 Issued Date: 7th February 2020 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	53	2	385580 405270
1	**Discharge Consents** Operator: United Utilities Water Plc (?) Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall, Middleton, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016982643 Permit Version: 2 Effective Date: 2nd December 1998 Issued Date: 2nd December 1998 Revocation Date: 7th February 2020 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	53	2	385580 405270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Bernstein Group Plc Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Silburn Way Premises, Off Manchester Old Rd, Middleton, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016993118 Permit Version: 1 Effective Date: 23rd May 1996 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A13NE (E)	70	2	385600 405200
2	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Middleton Main Outfall Cso Rhodes Business Park Silburn Way, Middleton, Rochdale, Greater Manchester, M24 4ne Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01ROC0173 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 10th May 2017 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Unknown Receiving Water: Unknown **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	65	2	385560 405300
3	**Discharge Consents** Operator: Littleborough Urban District Council Property Type: WTW/WATER COLLECTION/TREATMENT/SUPPLY Location: Sandy Beach Reservoir, Rhodes, Middleton, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016991145 Permit Version: 1 Effective Date: 1st July 1991 Issued Date: Not Supplied Revocation Date: 1st July 1991 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Lapsed (under Environment Act 1995, Schedule 23)** Positional Accuracy: Located by supplier to within 100m	A13NE (E)	167	2	385700 405200
4	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Boothroyden Road Cso 120m Sw Of 1 Boothroyden Close, Middleton, Manchester, Greater Manchester, M24 4rw Authority: Environment Agency, North West Region Catchment Area: Irk Reference: 01ROC0018 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: 1st January 1995 Revocation Date: 20th July 2005 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	478	2	384980 404970

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Boothroyden Road Cso 120m Sw Of 1 Boothroyden Close, Middleton, Manchester, Greater Manchester, M24 4rw Authority: Environment Agency, North West Region Catchment Area: Irk Reference: 016993590 Permit Version: 3 Effective Date: 9th January 2020 Issued Date: 9th January 2020 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: The River Irk **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	486	2	384977 404957
4	**Discharge Consents** Operator: United Utilities Water Plc (?) Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Boothroyden Road Cso 120m Sw Of 1 Boothroyden Close, Middleton, Manchester, Greater Manchester, M24 4rw Authority: Environment Agency, North West Region Catchment Area: Irk Reference: 016993590 Permit Version: 2 Effective Date: 31st March 2010 Issued Date: 31st March 2010 Revocation Date: 8th January 2020 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: The River Irk **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	496	2	384970 404950
4	**Discharge Consents** Operator: United Utilities Water Plc (?) Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Boothroyden Road Cso 120m Sw Of 1 Boothroyden Close, Middleton, Manchester, Greater Manchester, M24 4rw Authority: Environment Agency, North West Region Catchment Area: Irk Reference: 016993590 Permit Version: 1 Effective Date: 20th July 2005 Issued Date: 20th July 2005 Revocation Date: 30th March 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: The River Irk **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	496	2	384970 404950
5	**Discharge Consents** Operator: Whelmar Homes Ltd Property Type: DOMESTIC PROPERTY (MULTIPLE) (INCL FARM HOUSES) Location: Whelmar Res Development Swo, Boothroyden Road, Blackley, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016991312 Permit Version: 1 Effective Date: 1st November 1994 Issued Date: Not Supplied Revocation Date: 1st November 1994 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A12SW (SW)	747	2	384730 404870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Discharge Consents** Operator: Paul Mcveigh Property Type: DOMESTIC PROPERTY (MULTIPLE) (INCL FARM HOUSES) Location: Litchfield Park Swo, Boothroyd Road, Blackley, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016991234 Permit Version: 1 Effective Date: 18th January 1988 Issued Date: Not Supplied Revocation Date: 9th January 1991 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Uncontam Surface Water; Outfall To Watercourse; Licence Status: Revoked **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A8SW (S)	753	2	385300 404400
7	**Discharge Consents** Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Manchester Old Road Cso 775 Manchester Old Road, Middleton, Manchester, Greater Manchester, M24 4re Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016982916 Permit Version: 3 Effective Date: 23rd March 2020 Issued Date: 23rd March 2020 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	773	2	384646 405085
8	**Discharge Consents** Operator: United Utilities Water Limited Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Kelvin Ave/Lister Rd, Rochdale, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01roc0010 Permit Version: 1 Effective Date: 15th September 1993 Issued Date: Not Supplied Revocation Date: 15th September 1993 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A12SW (W)	852	2	384620 404860
9	**Discharge Consents** Operator: Mr Broxton Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: 241 Heywood Old Road, Middleton, Manchester, M24 4qr Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016992302 Permit Version: 1 Effective Date: 1st October 1996 Issued Date: 1st October 1996 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Surface Water Drain To R Irk **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12NW (W)	943	2	384500 405400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Robert Mcbride Group Property Type: MAKING OF CHEMICALS + CHEMICAL PRODUCTS Location: Robert Mcbride Ltd Swo, Middleton Way, Middleton, Greater Manchester, M24 4dp Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016991141 Permit Version: 1 Effective Date: 1st October 1994 Issued Date: Not Supplied Revocation Date: 1st October 1994 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: River Irk **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A15NW (E)	977	2	386500 405400
11	**Local Authority Pollution Prevention and Controls** Name: Bernstein Group Plc Location: Manchester Old Road, MIDDLETON, Greater Manchester, M24 Authority: Rochdale Metropolitan Borough Council, Environmental Health Department Permit Reference: 52 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products **Status: Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	137	3	385393 405317
12	**Local Authority Pollution Prevention and Controls** Name: Pearl Trading Ltd Location: 717 Manchester Old Road, Rhodes, Middleton, MANCHESTER, Lancashire, M24 4GF Authority: Rochdale Metropolitan Borough Council, Environmental Health Department Permit Reference: 111/10 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	503	3	384913 405131
13	**Local Authority Pollution Prevention and Controls** Name: Middleton Service Station Location: Manchester Old Road, MIDDLETON, Lancashire, M24 4EB Authority: Rochdale Metropolitan Borough Council, Environmental Health Department Permit Reference: Not Given Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	635	3	386117 405496
	Nearest Surface Water Feature	A13SE (SE)	2	-	385498 405169
14	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage Debris/Litter Note: River Irk Incident Date: 6th February 1995 Incident Reference: 95610239 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (E)	0	2	385500 405200
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Not Given Note: River Irk Incident Date: 6th September 1993 Incident Reference: 93611724 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (N)	60	2	385500 405295

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Not Given Note: River Irk Incident Date: 12th August 1993 Incident Reference: 93611588 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (N)	64	2	385500 405300
16	**Pollution Incidents to Controlled Waters** Property Type: Construction Location: Irk, Rhodes Lodges Authority: Environment Agency, North West Region Pollutant: Inert Note: Not Supplied Incident Date: 20th January 1999 Incident Reference: 752 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	175	2	385700 405300
17	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: None Affected; Chlorine Gas Incident Date: 15th August 1996 Incident Reference: 96611806 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (N)	259	2	385500 405500
18	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: River Irk Incident Date: 7th November 1992 Incident Reference: 92611928 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (E)	271	2	385800 405300
19	**Pollution Incidents to Controlled Waters** Property Type: Pollution Found Source Not Determined Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: Tributary Rhodes Lodge Incident Date: 15th October 1992 Incident Reference: 92611848 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	308	2	385700 405500
20	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: River Irk; No Pollution Found Incident Date: 26th October 1995 Incident Reference: 95612634 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	322	2	385100 405100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: River Irk Incident Date: 5th March 1992 Incident Reference: 92610366 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	356	2	385101 405001
21	**Pollution Incidents to Controlled Waters** Property Type: Industrial: Other Location: Booth Royden Road, MIDDLETON Authority: Environment Agency, North West Region Pollutant: Chemicals - Other Inorganic Note: Mercury Metal; Irk; Mercury Metal Incident Date: 13th October 1997 Incident Reference: 97611783 Catchment Area: Irk Receiving Water: Freshwater Stream/River Cause of Incident: Vandalism Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	358	2	385101 404996
22	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Tributary River Irk Incident Date: 17th July 1992 Incident Reference: 92611307 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NE (W)	434	2	385001 405301
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: River Irk Incident Date: 6th June 1995 Incident Reference: 95611337 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	440	2	385006 405006
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Other Note: Empty Paint Cans Incident Date: 24th October 1995 Incident Reference: 95612620 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	442	2	385006 405001
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: River Irk Incident Date: 12th June 1995 Incident Reference: 95611401 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	444	2	385006 404996

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: Wince Brook Incident Date: 8th September 1995 Incident Reference: 95612277 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Treatment System Failure Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	446	2	385001 405001
23	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: Wince Brook Incident Date: 6th December 1995 Incident Reference: 95612934 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	448	2	385001 404996
24	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage Debris/Litter Note: River Irk Incident Date: 3rd February 1995 Incident Reference: 95610216 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: High Flow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (E)	467	2	386000 405295
24	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: River Irk Incident Date: 29th August 1995 Incident Reference: 95612207 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (E)	468	2	386000 405300
25	**Pollution Incidents to Controlled Waters** Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Other Note: Tributary Rhodes Lodges; Kitchen Waste Incident Date: 16th September 1992 Incident Reference: 92611662 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SE (NE)	531	2	385800 405700
26	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: None Affected; None Pollution Found Incident Date: 28th August 1996 Incident Reference: 96611924 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (E)	565	2	386100 405200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Unknown Sewage Note: River Irk Incident Date: 30th March 1992 Incident Reference: 92610520 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	581	2	384900 404900
28	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Unknown Sewage Note: River Irk Incident Date: 11th March 1992 Incident Reference: 92610410 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	636	2	384801 405001
29	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Unknown Sewage Note: Boardman Brook Incident Date: 23rd July 1991 Incident Reference: 91611139 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (SE)	651	2	386100 404900
30	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Unknown Sewage Note: River Irk Incident Date: 17th March 1992 Incident Reference: 92610451 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (SW)	671	2	384800 404900
31	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Unknown Note: River Irk Incident Date: 1st February 1993 Incident Reference: 93610135 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NE (E)	766	2	386300 405295
31	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Treated Effluent Note: River Irk Incident Date: 31st January 1993 Incident Reference: 93610132 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NE (E)	766	2	386300 405300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Storm Sewage Note: Boardman Brook; Sewerage Incident Date: 1st February 1995 Incident Reference: 95610198 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	845	2	386200 404700
33	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: River Irk Incident Date: 7th June 1995 Incident Reference: 95611361 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SW)	894	2	384600 404800
34	**Pollution Incidents to Controlled Waters** Property Type: Office Location: Boardman Brook, MIDDLETON Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Thick Brown Muck From Metres Way Incident Date: 21st July 1998 Incident Reference: SO981307 Catchment Area: Irk Receiving Water: Freshwater Stream/River Cause of Incident: Land Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	926	2	386300 404700
35	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Middleton, MANCHESTER Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: Foam Robert Mcbrides Incident Date: 2nd February 1998 Incident Reference: SO980221 Catchment Area: Irk Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	929	2	384501 405001
36	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: Not Supplied Incident Date: 15th August 1995 Incident Reference: 95612091 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (W)	981	2	384505 404800
36	**Pollution Incidents to Controlled Waters** Property Type: Pollution Found Source Not Determined Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Foam Note: River Irk Incident Date: 24th February 1995 Incident Reference: 95610379 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (W)	983	2	384505 404795

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: River Irk Incident Date: 18th August 1993 Incident Reference: 93612359 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NW (W)	986	2	384500 404800
36	**Pollution Incidents to Controlled Waters** Property Type: Pollution Found Source Not Determined Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: River Irk Incident Date: 28th September 1994 Incident Reference: 94612168 Catchment Area: Irk Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NW (W)	988	2	384500 404795
	River Quality Name: Irk GQA Grade: River Quality E Reach: Wince Bk To Moston Bk Estimated Distance (km): 10.3 Flow Rate: Flow less than 2.5 cumecs Flow Type: River Year: 2000	A13SE (SE)	70	2	385561 405133
37	**Substantiated Pollution Incident Register** Authority: Environment Agency - North West Region, South Area Incident Date: 9th August 2008 Incident Reference: 612193 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Organic Chemicals/Products: Surfactants And Detergents	A13NE (N)	142	2	385480 405376
38	**Substantiated Pollution Incident Register** Authority: Environment Agency - North West Region, South Area Incident Date: 21st January 2005 Incident Reference: 288529 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Sewage Materials: Sludge	A18SE (N)	502	2	385620 405736
39	**Water Abstractions** Operator: Costain Building & Civil Engineering Licence Number: 2569005057 Permit Version: Not Supplied Location: River Irk, Middleton, MANCHESTER Authority: Environment Agency, North West Region Abstraction: Dust Suppression Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 20 Yearly Rate (m3): 4000 Details: Licence Status: Expired Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12SE (W)	449	2	384996 405006

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	**Water Abstractions** Operator: Balfour Beatty Major Projects Licence Number: 2569005059 Permit Version: Not Supplied Location: MIDDLETON, CR7 7XA Authority: Environment Agency, North West Region Abstraction: Dust Suppression Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 240 Yearly Rate (m3): 40000 Details: The River Irk; Construction; Type: Abstraction; Status: Current Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Unknown	A12SE (SW)	583	2	384900 404895
41	**Water Abstractions** Operator: The New North Manchester Golf Club Ltd Licence Number: 2569005055 Permit Version: 101 Location: Reservoir Fed By Surface Drainage At North Manchester Golf C Authority: Environment Agency, North West Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: North Manchester Golf Course Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	587	2	385900 405700
41	**Water Abstractions** Operator: North Manchester Golf Club Licence Number: 2569005055 Permit Version: 100 Location: Reservoir Fed By Surface Drainage At North Manchester Golf Club Authority: Environment Agency, North West Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 45 Yearly Rate (m3): 2273 Details: North Manchester Golf Course Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 21st February 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	587	2	385900 405700
	Water Abstractions Operator: Robert Mcbride Ltd Licence Number: 2569005035 Permit Version: 100 Location: Reservoir Fed By Surface Drainage At Middleton, Manchester(T Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 1091 Yearly Rate (m3): 288671 Details: Premises At Cheetham Street Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A20SW (E)	1123	2	386600 405600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Robert Mcbride Ltd Licence Number: 2569005035 Permit Version: 100 Location: Reservoir Fed By Surface Drainage At Middleton, Manchester(T Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Cheetham Street Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A20SW (E)	1123	2	386600 405600
	Water Abstractions Operator: Oakbest Limited Licence Number: 2569005041 Permit Version: Not Supplied Location: Two Boreholes, Higher Blackley, MANCHESTER Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 1818 Yearly Rate (m3): 181840 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	1166	2	384400 404595
	Water Abstractions Operator: Robert McBride Limited; Middleton Licence Number: 2569005003 Permit Version: Not Supplied Location: Borehole, Leater Street, Middleton , MANCHESTER Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 109 Yearly Rate (m3): 27276 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A20SW (E)	1313	2	386800 405595
	Water Abstractions Operator: B M Coatings Limited Licence Number: 2569005009 Permit Version: Not Supplied Location: Wince Brook At Premises, Tonge Mill, Oldham Road, MIDDLETON Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 14 Yearly Rate (m3): 655 Details: Licence Status: Lapsed Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A20SE (E)	1511	2	387005 405595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Oakbest Ltd Licence Number: 2569005042 Permit Version: Not Supplied Location: Reservoir Fed By Un-Named Tributary, River Irk; Heaton Park, HIGHER BLACKLEY Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: River Daily Rate (m3): 623 Yearly Rate (m3): 109104 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6NW (W)	1681	2	383800 404700
	Water Abstractions Operator: Greater Manchester Council Licence Number: 2569005056 Permit Version: Not Supplied Location: River Irk, Middleton, MANCHESTER Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 118 Yearly Rate (m3): 32504 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(E)	1788	2	387200 405895
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: High Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A13NE (W)	0	4	385477 405193
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (W)	0	4	385477 405193
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (W)	0	4	385477 405193
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NE (W)	0	2	385477 405193
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NE (W)	0	2	385477 405193
	Areas Benefiting from Flood Defences Type: Area Benefiting from Flood Defences Boundary Accuracy: As Supplied	A13SW (SW)	0	2	385436 405158
	Flood Water Storage Areas None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SW (S)	1	2	385465 405141
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 583.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A13SE (SE)	5	5	385501 405167
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 185.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A13NE (E)	156	5	385691 405216
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 161.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (E)	156	5	385691 405216
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 594.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A13SW (SW)	221	5	385222 405060
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 196.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (SW)	221	5	385222 405060
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 160.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NE)	238	5	385734 405371
48	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 90.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (E)	248	5	385761 405122
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 53.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (SW)	322	5	385262 404868
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (E)	330	5	385851 405130

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	333	5	385859 405149
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	333	5	385859 405149
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A14SW (E)	334	5	385861 405152
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	338	5	385862 405141
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 83.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (SE)	341	5	385681 404887
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 46.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (SE)	343	5	385697 404896
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 207.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (SE)	343	5	385697 404896
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (E)	343	5	385865 405135
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	344	5	385866 405135

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	357	5	385277 404820
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.1 Watercourse Level: Underground Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	370	5	385890 405121
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (E)	373	5	385906 405182
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	378	5	385288 404792
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 47.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	379	5	385898 405117
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	380	5	385285 404792
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NE)	381	5	385796 405518
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	381	5	385280 404792
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	383	5	385279 404790

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 277.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A14SW (E)	383	5	385914 405169
70	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 12.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	383	5	385304 404781
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NE (SE)	383	5	385662 404827
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NE (SE)	384	5	385663 404827
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NE)	387	5	385799 405523
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 140.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (S)	392	5	385308 404770
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 92.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	409	5	385801 405550
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 84.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	409	5	385801 405550
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	410	5	385270 404764

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (SW)	410	5	385270 404764
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 137.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	412	5	385885 405005
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 46.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (E)	414	5	385940 405138
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	417	5	385882 404991
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	417	5	385882 404991
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 236.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	418	5	385425 405648
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 150.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	426	5	385942 405100
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	443	5	385907 404982
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	443	5	385907 404982

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 17.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	447	5	385754 405629
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8NW (S)	455	5	385284 404711
89	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	457	5	385746 405645
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (E)	464	5	385990 405135
91	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 136.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Frank's Dam Catchment Name: Mersey Primacy: 1	A18SE (NE)	464	5	385724 405664
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	464	5	385724 405664
93	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 94.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (NE)	478	5	385803 405635
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 47.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (N)	504	5	385611 405740
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	518	5	385974 404948

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	**OS Water Network Lines** Watercourse Form: Marsh Watercourse Length: 170.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SE (N)	519	5	385568 405761
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	524	5	385988 404961
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 70.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	525	5	385991 404962
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 20.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	550	5	386006 404939
100	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	555	5	385331 405761
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 52.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	556	5	386020 404953
102	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	559	5	386047 405001
103	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	566	5	385863 405702
104	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 179.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (E)	567	5	386053 404994

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
105	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 56.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	575	5	385876 405703
106	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 154.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14NW (E)	598	5	386134 405243
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 681.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A14NW (E)	598	5	386134 405243
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 19.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	613	5	385422 405847
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 150.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	613	5	385422 405847
110	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 66.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	620	5	385931 405717
111	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 49.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	620	5	385931 405717
112	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 192.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	624	5	385395 405852
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 32.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	629	5	385407 405859

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	639	5	386067 404868
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 54.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (SE)	657	5	386084 404861
116	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 100.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	660	5	385932 405767
117	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 197.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NE (NW)	664	5	384845 405513
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	673	5	385996 405730
119	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	699	5	386013 405751
120	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18SW (N)	699	5	385215 405867
121	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A14SW (SE)	705	5	386138 404857
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 128.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A9NW (SE)	709	5	386138 404851

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
123	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 75.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NW (SE)	709	5	386126 404829
124	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18NW (N)	711	5	385201 405874
125	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 83.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18NW (N)	714	5	385206 405879
126	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NW (SE)	714	5	386101 404785
127	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 192.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (NE)	718	5	386027 405764
128	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	725	5	384732 405416
129	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 115.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	726	5	384730 405411
130	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 111.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Asker Dam Catchment Name: Mersey Primacy: 1	A19SW (NE)	734	5	385917 405867
131	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 75.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18NE (N)	736	5	385496 405978

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
132	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 79.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18NW (N)	740	5	385265 405934
133	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 108.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14NE (E)	748	5	386284 405221
134	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A7NW (SW)	752	5	384746 404823
135	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 118.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A7NW (SW)	771	5	384757 404765
136	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 96.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	796	5	384639 405350
137	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 91.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	815	5	386346 405137
138	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	818	5	386260 404845
139	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 89.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	826	5	386312 404947
140	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19NW (NE)	829	5	385915 405977

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
141	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	829	5	386230 404771
142	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 88.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A9NE (SE)	829	5	386230 404771
143	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 530.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A8SW (S)	830	5	385191 404347
144	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 10.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	836	5	386357 405077
145	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	838	5	386362 405087
146	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 66.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	839	5	386365 405097
147	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 176.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A18NW (N)	843	5	385228 406030
148	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 80.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	846	5	384629 405484
149	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 137.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7NW (SW)	855	5	384768 404602

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
150	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 179.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	858	5	386275 404790
151	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 97.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	859	5	384585 405393
152	**OS Water Network Lines** Watercourse Form: Marsh Watercourse Length: 23.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	859	5	384592 405415
153	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 282.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	867	5	384557 405300
154	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	867	5	384557 405300
155	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 262.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Irk Catchment Name: Mersey Primacy: 1	A7NW (SW)	875	5	384674 404701
156	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	876	5	384551 405318
157	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 58.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	881	5	386219 404664
158	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	893	5	384538 405343

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
159	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	897	5	386259 404693
160	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	897	5	386259 404693
161	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (SE)	897	5	386259 404693
162	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	901	5	384531 405350
163	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 165.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Boardman Brook Catchment Name: Mersey Primacy: 1	A9NE (SE)	902	5	386271 404701
164	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 206.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (W)	914	5	384521 405363
165	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 126.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A17SW (NW)	920	5	384630 405651
166	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 19.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	936	5	386406 404883
167	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 62.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (E)	949	5	386423 404892

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
168	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 188.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A17SW (W)	978	5	384528 405582

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
169	**BGS Recorded Landfill Sites** Site Name: Manchester Old Road Location: MIDDLETON, Gt Manchester Authority: British Geological Survey, National Geoscience Information Service Ground Water: No threat to ground water Surface Water: No threat to surface water Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A14NW (E)	513	-	386042 405330
170	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Manchester Old Road, Middleton, Manchester, Greater Manchester Name: Former Reservoir Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16143 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: D098	A13NE (NE)	66	2	385581 405287
171	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Boothroyden Road, Higher Blackley, Manchester, Greater Manchester Name: Land at Boothroyden Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16197 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: F047	A8NW (SW)	356	2	385225 404852
172	**Historical Landfill Sites** Licence Holder: The Director Dept Of Transport North West Construction Programme Division Location: Boothroyden Road,,Manchester, Name: Boothroyd Terrace Operator Location: Room D4,Broadway, Broad Street,,Birmingham,West Midlands Boundary Accuracy: As Supplied Provider Reference: EAHLD36103 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Industrial, Commercial and Household Waste EA Waste Ref: 53662 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: Not Supplied	A12SE (SW)	451	2	385068 404874
173	**Historical Landfill Sites** Licence Holder: Rochdale Metropolitan Borough Council Location: Manchester Old Road, Middleton, Manchester, Greater Manchester Name: Land off Manchester Old Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16124 First Input Date: 31st December 1967 Last Input Date: 9th September 1974 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial, Household and Special Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4200/9655 BGS Ref: 2596 Other Ref: D055	A14NW (E)	513	2	386042 405330

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
174	**Historical Landfill Sites** Licence Holder: Heaton Mills Printing Company Limited Location: Rochdale, Greater Manchester Name: Land at Kelvin Avenue Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD18072 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: RD/LIC/133/77/P2,D065	A12SW (W)	858	2	384573 405001
175	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Symond Raod, Blackley, Manchester, Greater Manchester Name: Land to the rear of Symond Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16236 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: F026	A9SW (SE)	913	2	386074 404467
176	**Historical Landfill Sites** Licence Holder: Wills Fabrics Limited Location: Higher Blackley, Manchester, Greater Manchester Name: Land Off Heaton Park Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16216 First Input Date: 31st December 1947 Last Input Date: 31st December 1986 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4200/9032 BGS Ref: Not Supplied Other Ref: F034, RD/LIC/133/77	A7NW (SW)	998	2	384549 404671
177	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Boothroyden Terrace Licence Number: 53662 Location: Boothroyden Road, Manchester, M9 0SB Licence Holder: The Director Dept Of Transport North West Construction Programme Division Authority: Environment Agency - North West Region, South Area Site Category: Household, Commercial And Industrial Waste Landfills Max Input Rate: Not Supplied **Licence Status: Closure** Issued: 7th April 1995 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A12SE (SW)	449	2	385070 404875
178	**Licensed Waste Management Facilities (Locations)** Licence Number: 53662 Location: Boothroyden Road, Manchester, M9 0SB Operator Name: The Director Dept Of Transport North West Construction Programme Division Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Household, Commercial And Industrial Waste Landfills **Licence Status: Surrendered** Issued: 7th April 1995 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 27th November 2020 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	627	2	384940 404751
	Local Authority Landfill Coverage Name: Rochdale Metropolitan Borough Council - Has no landfill data to supply		0	3	385477 405193

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Manchester City Council - Had landfill data but passed it to the relevant environment agency		7	6	385501 405167
	Local Authority Landfill Coverage Name: Bury Metropolitan Borough Council - Has not been able to supply Landfill data		836	7	384579 405216
179	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13NE (NE)	0	-	385509 405227
180	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13SE (SE)	117	-	385592 405105
181	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A13SW (SW)	254	-	385235 404979
182	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A13SW (SW)	281	-	385196 404988
183	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A14SW (E)	362	-	385876 405103
184	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A18SE (NE)	422	-	385704 405627
185	**Potentially Infilled Land (Non-Water)** Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A8NW (S)	451	-	385345 404699
186	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A14NW (E)	528	-	386060 405313
187	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A14SW (SE)	549	-	386020 404968
188	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1983	A12NW (W)	767	-	384661 405315
189	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1983	A12NW (W)	841	-	384653 405527
190	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A9NE (SE)	900	-	386216 404631
191	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1983	A17SW (W)	905	-	384594 405550
192	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1986	A12SW (W)	986	-	384464 404906
193	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (N)	57	-	385459 405268

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
194	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (W)	71	-	385364 405220
195	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (W)	115	-	385312 405224
196	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A13SW (W)	133	-	385281 405165
197	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A18SE (NE)	349	-	385709 405542
198	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14SW (E)	370	-	385895 405138
199	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SW (SE)	403	-	385826 404940
200	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A14SW (SE)	408	-	385861 404976
201	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A14SW (E)	456	-	385956 405050
202	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A14SW (E)	465	-	385982 405094
203	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SW (E)	475	-	385987 405081
204	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A8NW (SW)	535	-	385190 404664
205	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A8NE (SE)	543	-	385781 404711
206	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A14SW (E)	548	-	386021 404972
207	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A14SW (SE)	551	-	386022 404966
208	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8NE (SE)	560	-	385768 404684
209	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A8NE (S)	562	-	385581 404598
210	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12SE (SW)	608	-	384891 404860
211	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A14SW (E)	660	-	386129 404937
212	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A14SW (E)	668	-	386134 404929
213	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A8NE (S)	673	-	385698 404520
214	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A14SE (E)	678	-	386152 404945

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
215	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A8SW (S)	705	-	385422 404437
216	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8SE (S)	708	-	385542 404441
217	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12SW (W)	717	-	384698 405137
218	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12SW (SW)	734	-	384737 404885
219	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A12SW (W)	771	-	384648 405089
220	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A8SE (S)	796	-	385504 404348
221	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NW (SW)	819	-	384782 404642
222	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A9SW (SE)	819	-	385885 404454
223	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SE (E)	841	-	386362 405073
224	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SE (E)	859	-	386364 404999
225	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8SE (S)	859	-	385591 404297
226	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SE (E)	877	-	386373 404967
227	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A7SE (SW)	880	-	384905 404437
228	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SE (E)	881	-	386407 405094
229	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A8SW (S)	893	-	385388 404250
230	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1910	A9SW (SE)	894	-	385991 404429
231	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A7SE (SW)	896	-	385095 404311
232	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A8SW (S)	912	-	385213 404256
233	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1955	A12SW (W)	934	-	384495 405004
234	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8SE (S)	936	-	385546 404212
235	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A12SW (W)	963	-	384489 404903

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
236	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8SE (S)	968	-	385679 404204
237	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A8SE (S)	969	-	385726 404216
238	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1932	A14SE (E)	972	-	386435 404858
239	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A3NW (S)	973	-	385366 404171
240	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A14SE (E)	979	-	386459 404903
241	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1955	A11SE (W)	985	-	384443 405000
242	**Registered Landfill Sites** Licence Holder: Dept Of Transport (N.W. Constr'N Prog) Licence Reference: 00828/M02 Site Location: Rhodes/Higher Blakely, Boothroyden Terrace, Manchester, Greater Manchester Licence Easting: 384900 Licence Northing: 404700 Operator Location: Sunley Tower, Piccadilly Plaza, MANCHESTER, Greater Manchester, M1 4BE Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Status: Site Closed Dated: 7th April 1995 Preceded By Licence: 00828/92 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Gmwda Group 1 - Non/V.Slow Decomp.Wast Gmwda Group 2 - Slow Decomp./Slight So Gmwda Group 3 - Decomp./Sol.Waste = No Max.Waste Permitted By Licence Prohibited Waste: Asbestos Contaminated Soil Explosive Waste Liquid Wastes Press'D Containers Or Waste Therein Sludge Wastes Waste At Higher Than Ambient Temp(30c) Waste In Skips Waste N.O.S Whether/Not Pack./Pre-Trt Waste Reacting Violently With Water Waste With Flash Pt < 30 C Waste With Ph < 2.0 Waste With Ph > 12.0	A7NE (SW)	691	2	384900 404700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
242	**Registered Landfill Sites** Licence Holder: Dept Of Transport (N.W. Constr'N Prog) Licence Reference: 00828/92 Site Location: Rhodes/Higher Blakely, Boothroyden Terrace, Manchester, Greater Manchester Licence Easting: 384900 Licence Northing: 404700 Operator Location: Sunley Tower, Piccadilly Plaza, MANCHESTER, Greater Manchester, M1 4BE Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Record supersededSuperseded Dated: 1st April 1993 Preceded By Licence: Not Given Superseded By Licence: 00828/M02 Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Asbestos Fibre/Powder Asbestos Lagging Asbestos Sheet/Piping Composite Bonded Gmwda Group 1 - Non/V.Slow Decomp.Wast Gmwda Group 2 - Slow Decomp./Slight So Gmwda Group 3 - Decomp./Sol.Waste = No Max.Waste Permitted By Licence Prohibited Waste: Explosive Waste Liquid Wastes Malodorous Waste Mineral Processing Wastes Pressurized Containers/Waste Therein Sludge Wastes Violently Reactive Waste Waste N.O.S. Waste With Flash Pt < 30 C Waste With Ph < 3.0 Waste With Temp. > 30 C	A7NE (SW)	691	2	384900 404700
243	**Registered Landfill Sites** Licence Holder: Wills Fabrics Ltd Licence Reference: 00133/77/M3 Site Location: Heaton Park Road, Higher Blackley, Manchester, Greater Manchester Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: 44 George Street, Manchester, Greater Manchester Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 22nd September 1983 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good Authorised Waste: Construction And Demolition Wastes Prohibited Waste: Liquid/Slurry/Sludge Wastes	A7NW (SW)	952	2	384590 404692

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Pennine Lower Coal Measures Formation And South Wales Lower Coal Measures Formation (Undifferentiated)	A13NE (W)	0	1	385477 405193
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (W)	0	1	385477 405193
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	26	1	385521 405160
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	59	1	385443 405257
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	154	1	385500 404998
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	318	1	385429 405547
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SW)	658	1	385018 404629

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NE (SW)	659	1	385029 404620
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (E)	695	1	386215 405082
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	732	1	386244 405042
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	736	1	386252 405058
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	756	1	386256 405000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	779	1	384684 404898

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (E)	812	1	386292 404931
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NW (SW)	843	1	384711 404703
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SW (W)	924	1	384493 405094
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	936	1	384480 405116
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	945	1	386435 404939
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	951	1	384466 405107

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	959	1	386489 405123
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11SE (W)	978	1	384439 405094
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (E)	986	1	386439 404831
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	991	1	386520 405113
244	**BGS Recorded Mineral Sites** Site Name: Rhodes Sand Pit Location: Rhodes, Middleton, Manchester, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 15043 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	72	1	385405 405075
245	**BGS Recorded Mineral Sites** Site Name: Light Alders Sand Pit Location: Rhodes, Middleton, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96933 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	140	1	385609 405091

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
246	**BGS Recorded Mineral Sites** Site Name: Rhodes Sand Pit Location: Rhodes, Middleton, Manchester, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 15042 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	296	1	385190 404970
247	**BGS Recorded Mineral Sites** Site Name: Rhodes Sand Pit Location: Rhodes, Middleton, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96930 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary, Devensian Geology: Till, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A18SE (N)	389	1	385620 405621
248	**BGS Recorded Mineral Sites** Site Name: Rhodes Sand Pit Location: Rhodes, Middleton, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96931 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A18SE (NE)	494	1	385763 405678
249	**BGS Recorded Mineral Sites** Site Name: Hanging Birch Sand Pit Location: Simister, Middleton, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96895 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A12NW (W)	762	1	384667 405320
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (W)	0	8	385477 405193
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (E)	0	-	385500 405193
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	28	1	385525 405156

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	70	1	385417 405255
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	28	1	385525 405156
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	70	1	385417 405255
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	5	1	385498 405152
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	32	1	385475 405112
	Potential for Landslide Ground Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	34	1	385416 405111
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	38	1	385406 405113
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	96	1	385631 405222
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	153	1	385321 405035
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	186	1	385686 405114
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	235	1	385687 405036
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	28	1	385525 405156
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	32	1	385475 405112

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	70	1	385417 405255
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	28	1	385525 405156
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	70	1	385417 405255
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	142	1	385477 405000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	199	1	385446 404943
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	235	1	385687 405036
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	1	385477 405193

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
250	**Contemporary Trade Directory Entries** Name: Technical Textile Services Ltd Location: Unit 7-8, Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE Classification: Textile Manufacturing **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	69	-	385398 405240
251	**Contemporary Trade Directory Entries** Name: Serco Intergrated Transport Location: Unit 9,Rhodes Business Park,Silburn Way, Middleton, Manchester, Lancashire, M24 4NE Classification: Electronic Engineers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13SW (W)	111	-	385304 405159
252	**Contemporary Trade Directory Entries** Name: E M O Ltd Location: West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, M24 4GJ Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	144	-	385483 405379
252	**Contemporary Trade Directory Entries** Name: Elite Tooling Solutions Ltd Location: 5, West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, M24 4GJ Classification: Plastics - Injection Moulding **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	144	-	385483 405379
252	**Contemporary Trade Directory Entries** Name: Elite Plastic Injection Mould Tooling Ltd Location: West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, M24 4GJ Classification: Plastics - Injection Moulding **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	144	-	385483 405379
252	**Contemporary Trade Directory Entries** Name: Elite Tooling Location: West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, Lancashire, M24 4GJ Classification: Plastics - Injection Moulding **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	144	-	385483 405379
252	**Contemporary Trade Directory Entries** Name: James Thorpe & Son Ltd Location: 8, West Croft Industrial Estate, Manchester Old Road, Middleton, MANCHESTER, M24 4GJ Classification: Joinery Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (N)	164	-	385470 405395
253	**Contemporary Trade Directory Entries** Name: Solar Choice Renewable Energy Systems Location: 590, Manchester Old Road, Middleton, Manchester, M24 4PW Classification: Electricity Generating & Distributing Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	160	-	385390 405342
254	**Contemporary Trade Directory Entries** Name: Lomax Interiors Location: 4, West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, M24 4GJ Classification: Cabinet Makers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (N)	202	-	385428 405417
255	**Contemporary Trade Directory Entries** Name: Bradshaw Lawnmower Engineers Location: 623, Manchester Old Road, Middleton, MANCHESTER, M24 4PN Classification: Lawnmowers & Garden Machinery - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	216	-	385217 405256

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
255	**Contemporary Trade Directory Entries** Name: Northern Handrailing Ltd Location: 625a, Manchester Old Road, Middleton, Manchester, M24 4PN Classification: Staircase, Balustrade & Handrail Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	225	-	385202 405245
255	**Contemporary Trade Directory Entries** Name: Northern Handrailing Location: 625a, Manchester Old Road, Middleton, Manchester, Lancashire, M24 4PN Classification: Staircase, Balustrade & Handrail Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	225	-	385202 405245
255	**Contemporary Trade Directory Entries** Name: Northern Stair Co Ltd Tas Northern Handrailing Location: Factory Brow,Rhodes, Middleton, Manchester, Greater Manchester, M24 4PN Classification: Staircase, Balustrade & Handrail Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NW (W)	225	-	385202 405245
255	**Contemporary Trade Directory Entries** Name: Rhodes Laundrette Location: 2, Chapel Walk, Middleton, Manchester, M24 4QB Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	240	-	385208 405291
256	**Contemporary Trade Directory Entries** Name: Sandhurst Lifting Services Location: 21, Boothroyden Road, Middleton, Manchester, M24 4RY Classification: Lifting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	257	-	385163 405114
256	**Contemporary Trade Directory Entries** Name: Beechfield Motors Location: 21, Boothroyden Road, Middleton, Manchester, M24 4RY Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	257	-	385163 405114
256	**Contemporary Trade Directory Entries** Name: A C Tyres Location: 21, Boothroyden Road, Middleton, Manchester, M24 4RY Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	257	-	385163 405114
257	**Contemporary Trade Directory Entries** Name: Granite 4 Less Location: 639-641, Manchester Old Road, Middleton, Manchester, M24 4PN Classification: Kitchen Furniture Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	270	-	385152 405234
258	**Contemporary Trade Directory Entries** Name: Marlaw Pallet Services Ltd Location: Marlow Pallet Services Ltd, Boothroyden Road, Middleton, M24 4RY Classification: Pallets, Crates & Packing Cases **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	310	-	385114 405091
259	**Contemporary Trade Directory Entries** Name: B N S Fires Location: 7, Boothroyden Close, Middleton, Manchester, Lancashire, M24 4RW Classification: Fireplaces & Mantelpieces **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	383	-	385044 405070
260	**Contemporary Trade Directory Entries** Name: N R G Electrical Engineers Ltd Location: 54, Pool Bank Street, Middleton, Manchester, M24 4RN Classification: Electrical Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	401	-	385013 405155
261	**Contemporary Trade Directory Entries** Name: Revive & Restore F X Location: 11, Mount Pleasant, Middleton, Manchester, M24 4PR Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	412	-	385238 405544

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
262	**Contemporary Trade Directory Entries** Name: Pearl Trading Location: Stuart House Service Station, 717, Manchester Old Road, Middleton, Manchester, M24 4GF Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	504	-	384912 405129
262	**Contemporary Trade Directory Entries** Name: Tommy'S Tyre Repairs Location: Stuart House Service Station, 717, Manchester Old Road, Middleton, Manchester, M24 4GF Classification: Tyre Repairs & Retreading **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	504	-	384912 405129
263	**Contemporary Trade Directory Entries** Name: J A Doyle Location: 34, Schoolside Lane, Middleton, Manchester, M24 4PD Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	542	-	384965 405472
264	**Contemporary Trade Directory Entries** Name: Boothroyden Horse Transport Location: Boothroyden Cottage, Boothroyden Terrace, Manchester, M9 0SB Classification: Horse Boxes & Transporting **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	564	-	385079 404702
265	**Contemporary Trade Directory Entries** Name: Middleton Service Station Location: Manchester Old Road, Middleton, Manchester, M24 4EB Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	635	-	386117 405496
265	**Contemporary Trade Directory Entries** Name: Heatech Location: 8, Limefield Cottages, Manchester Old Road, Middleton, Manchester, M24 4EA Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	664	-	386145 405503
266	**Contemporary Trade Directory Entries** Name: Ace Asphalt Co Location: 34, Gildersdale Drive, Manchester, M9 0SN Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	687	-	385069 404558
266	**Contemporary Trade Directory Entries** Name: Ace Asphalt Ltd Location: 34, Gildersdale Drive, Manchester, M9 0SN Classification: Asphalt & Coated Macadam Laying Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	687	-	385069 404558
266	**Contemporary Trade Directory Entries** Name: Ace Asphalt Co Location: 34, Gildersdale Drive, Manchester, M9 0SN Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	687	-	385069 404558
266	**Contemporary Trade Directory Entries** Name: Ace Asphalt Location: 34, Gildersdale Drive, Manchester, M9 0SN Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	687	-	385069 404558
266	**Contemporary Trade Directory Entries** Name: Ace Asphalt Ltd Location: 34, Gildersdale Drive, Manchester, M9 0SN Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	687	-	385069 404558

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
266	**Contemporary Trade Directory Entries** Name: Harrison Cleaning Specialists Location: 32, Gildersdale Drive, Manchester, M9 0SN Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	695	-	385077 404544
267	**Contemporary Trade Directory Entries** Name: Car Shop Megastore Location: Manchester Old Rd, Middleton, Manchester, Lancashire, M24 4RF Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12SW (W)	749	-	384669 405091
268	**Contemporary Trade Directory Entries** Name: Chubb Fire Ltd Location: Parkfield House, Manchester Old Road, Middleton, Manchester, M24 4DY Classification: Firefighting Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	782	-	386247 405565
268	**Contemporary Trade Directory Entries** Name: Chubb Location: Parkfield House, Manchester Old Road, Middleton, Manchester, M24 4DY Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	782	-	386247 405565
268	**Contemporary Trade Directory Entries** Name: Chubb Fire Ltd Location: Parkfield House, Manchester Old Road, Middleton, Manchester, M24 4DY Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	782	-	386247 405565
268	**Contemporary Trade Directory Entries** Name: T G Products Location: Parkfield House,Manchester Old Road, Middleton, Manchester, Greater Manchester, M24 4RF Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A19SE (NE)	783	-	386252 405557
269	**Contemporary Trade Directory Entries** Name: Pink Laydeez Cleaning Company Location: 27, Charnwood Road, Manchester, M9 6QG Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	841	-	386007 404506
270	**Contemporary Trade Directory Entries** Name: T & D Location: 165, Manchester Old Road, Middleton, Manchester, M24 4DZ Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	882	-	386370 405529
271	**Contemporary Trade Directory Entries** Name: Boots Pharmacy Location: 133-137 Manchester Old Rd, Middleton, Manchester, Lancashire, M24 4DZ Classification: Chemists' & Pharmacists' Suppliers & Wholesalers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A19SE (E)	966	-	386437 405589
272	**Contemporary Trade Directory Entries** Name: J P Forbes & Sons Location: 8, Meadow Road, Middleton, Manchester, M24 1WH Classification: Ceramic Manufacturers, Supplies & Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	971	-	386405 404794
273	**Contemporary Trade Directory Entries** Name: Hawk Appliances Ltd Location: 194, VICTORIA AVENUE, BLACKLEY, MANCHESTER, M9 0RR Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Active** Positional Accuracy: Automatically positioned to the address	A3NW (S)	983	-	385288 404169

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
274	**Contemporary Trade Directory Entries** Name: Craft In Iron Location: 193, Victoria Avenue, Manchester, M9 0RA Classification: Gate Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3NW (S)	983	-	385407 404159
275	**Fuel Station Entries** Name: Stuart House Service Station Location: 717-719, Manchester Old Road , Middleton , Manchester, Greater Manchester, M24 4GF Brand: Unbranded Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	502	-	384914 405132
276	**Fuel Station Entries** Name: Rhodes Service Station Location: Manchester Old Road , Middleton , Manchester, Greater Manchester, M24 4EB Brand: Total Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Located by supplier to within 100m	A14NE (E)	704	-	386202 405467
277	**Points of Interest - Commercial Services** Name: R P S Consultants Location: Unit 4c Rhodes Business Park, Silburn Way, Middleton, M24 4NE Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A13NW (W)	42	9	385387 405202
277	**Points of Interest - Commercial Services** Name: Palletways Location: Unit 2 Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NW (NW)	70	9	385393 405238
278	**Points of Interest - Commercial Services** Name: Airsafe (UK) Location: Parc View House West Croft Industrial Estate, Manchester Old Road, Middleton, Manchester, M24 4GJ Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A13NE (N)	144	9	385483 405379
279	**Points of Interest - Commercial Services** Name: Jf International Ltd Location: 598 Manchester Old Road, Middleton, Manchester, M24 4PW Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NW (NW)	174	9	385305 405304
280	**Points of Interest - Commercial Services** Name: Revive & Restore F X Location: 11 Mount Pleasant, Middleton, M24 4PR Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A18SW (NW)	411	9	385237 405543
281	**Points of Interest - Commercial Services** Name: Stuart House Automotive Centre Location: 717-719 Manchester Old Road, Middleton, Manchester, M24 4GF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A12SE (W)	502	9	384914 405132
281	**Points of Interest - Commercial Services** Name: Pearl Trading Location: Stuart House Service Station 717, Manchester Old Road, Middleton, Manchester, M24 4GF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A12SE (W)	504	9	384912 405129
281	**Points of Interest - Commercial Services** Name: Pearl Trading UK Location: Stuart House Service Station 717, Manchester Old Road, Middleton, Manchester, M24 4GF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A12SE (W)	504	9	384912 405129

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
281	**Points of Interest - Commercial Services** Name: Tommy's Tyre Repairs Location: Stuart House Service Station 717, Manchester Old Road, Middleton, M24 4GF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A12SE (W)	505	9	384911 405129
282	**Points of Interest - Manufacturing and Production** Name: Tank Location: M24 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13NW (NW)	37	9	385426 405220
283	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	45	9	385463 405252
283	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13NE (N)	51	9	385506 405288
284	**Points of Interest - Manufacturing and Production** Name: Tank Location: M24 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	84	9	385334 405144
284	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	92	9	385323 405185
285	**Points of Interest - Manufacturing and Production** Name: Rhodes Business Park Location: M24 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13NW (W)	90	9	385327 405193
285	**Points of Interest - Manufacturing and Production** Name: Tank Location: M24 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13NW (W)	162	9	385285 405267
285	**Points of Interest - Manufacturing and Production** Name: Factory Location: M24 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13NW (W)	217	9	385213 405250
286	**Points of Interest - Manufacturing and Production** Name: West Croft Industrial Estate Location: M24 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	176	9	385434 405390
286	**Points of Interest - Manufacturing and Production** Name: West Croft Industrial Estate Location: M24 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	182	9	385418 405386
287	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	229	9	385185 405165

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
287	**Points of Interest - Manufacturing and Production** Name: Works Location: M24 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	234	9	385180 405164
287	**Points of Interest - Manufacturing and Production** Name: Works Location: M24 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A13SW (W)	267	9	385155 405107
287	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	269	9	385153 405105
287	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	278	9	385141 405119
287	**Points of Interest - Manufacturing and Production** Name: Works Location: M24 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A12SE (W)	283	9	385136 405118
288	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A19SE (E)	993	9	386485 405533
289	**Points of Interest - Public Infrastructure** Name: Sluice Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	139	9	385584 405371
289	**Points of Interest - Public Infrastructure** Name: Sluice Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	141	9	385589 405371
290	**Points of Interest - Public Infrastructure** Name: Sluice Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	290	9	385815 405152
290	**Points of Interest - Public Infrastructure** Name: Sluice Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	294	9	385819 405151
290	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	356	9	385883 405152
290	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	358	9	385886 405153

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
290	**Points of Interest - Public Infrastructure** Name: Old Dam Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	365	9	385890 405141
290	**Points of Interest - Public Infrastructure** Name: Old Dam Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	368	9	385893 405142
291	**Points of Interest - Public Infrastructure** Name: Graveyard Location: M24 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NE (W)	355	9	385094 405323
291	**Points of Interest - Public Infrastructure** Name: Graveyard Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NE (W)	362	9	385085 405321
292	**Points of Interest - Public Infrastructure** Name: Sluices Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	436	9	385747 405621
292	**Points of Interest - Public Infrastructure** Name: Sluices Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	442	9	385756 405623
292	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	457	9	385729 405654
292	**Points of Interest - Public Infrastructure** Name: Frank's Dam Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	469	9	385672 405689
292	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	484	9	385787 405653
292	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	489	9	385796 405653
293	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	444	9	385980 405256
293	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	448	9	385984 405256

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
293	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	509	9	386044 405278
293	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	513	9	386048 405279
294	**Points of Interest - Public Infrastructure** Name: Burial Ground Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	469	9	385685 404742
294	**Points of Interest - Public Infrastructure** Name: Burial Ground Location: M9 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	469	9	385685 404742
295	**Points of Interest - Public Infrastructure** Name: Weir Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SE (SW)	473	9	384985 404972
295	**Points of Interest - Public Infrastructure** Name: Weir Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SE (SW)	475	9	384982 404973
296	**Points of Interest - Public Infrastructure** Name: Outfall Location: M24 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	498	9	385560 405740
296	**Points of Interest - Public Infrastructure** Name: Outfall Location: M24 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	499	9	385565 405740
296	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	513	9	385585 405753
296	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	513	9	385590 405752
296	**Points of Interest - Public Infrastructure** Name: Cobbler's Dam (Disused) Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	528	9	385541 405771
296	**Points of Interest - Public Infrastructure** Name: Cobbler's Dam Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	529	9	385540 405772

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
297	**Points of Interest - Public Infrastructure** Name: Stuart House Service Station Location: Stuart House Service Station 717, Manchester Old Road, Middleton, Manchester, M24 4GF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (W)	502	9	384914 405132
297	**Points of Interest - Public Infrastructure** Name: Stuart House Service Station Location: Stuart House Service Station 717, Manchester Old Road, Middleton, Manchester, M24 4GF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (W)	504	9	384912 405129
298	**Points of Interest - Public Infrastructure** Name: Cobler's Dam (Disused) Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	572	9	385461 405811
299	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	575	9	385876 405703
299	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	582	9	385889 405702
300	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	735	9	385914 405870
300	**Points of Interest - Public Infrastructure** Name: Sluice Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	743	9	385923 405874
300	**Points of Interest - Public Infrastructure** Name: Asker Dam Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	766	9	385920 405902
300	**Points of Interest - Public Infrastructure** Name: Asker Dam Location: M24 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	771	9	385921 405907
301	**Points of Interest - Public Infrastructure** Name: Garden of Remembrance Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A14NE (NE)	738	9	386222 405512
302	**Points of Interest - Public Infrastructure** Name: Weirs Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	761	9	386294 405310

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
302	**Points of Interest - Public Infrastructure** Name: Weirs Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	765	9	386298 405309
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	795	9	386327 405318
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	799	9	386331 405317
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	822	9	386354 405321
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	826	9	386358 405321
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	850	9	386382 405324
302	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	854	9	386386 405323
303	**Points of Interest - Public Infrastructure** Name: Filter Bed (Disused) Location: M24 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	821	9	386109 405827
303	**Points of Interest - Public Infrastructure** Name: Filter Bed (Disused) Location: M24 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	821	9	386109 405827
304	**Points of Interest - Public Infrastructure** Name: Weir Location: M9 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	880	9	386412 405325
305	**Points of Interest - Recreational and Environmental** Name: Play Area Location: M24 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12NW (W)	693	9	384723 405221
306	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SE (NE)	847	9	386300 405605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
306	**Points of Interest - Recreational and Environmental** Name: Playground Location: Nr Manchester Old Road, M24 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A19SE (NE)	849	9	386303 405604
306	**Points of Interest - Recreational and Environmental** Name: Skatepark Location: M24 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SE (NE)	914	9	386362 405632
307	**Points of Interest - Recreational and Environmental** Name: Play Area Location: M24 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SE (NE)	959	9	386387 405682
307	**Points of Interest - Recreational and Environmental** Name: Play Area Location: M24 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SE (NE)	969	9	386372 405730
308	**Points of Interest - Recreational and Environmental** Name: Play Area Location: M9 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7SE (SW)	962	9	385074 404249
309	**Points of Interest - Recreational and Environmental** Name: Play Area Location: M9 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	963	9	385999 404353

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
310	**Areas of Adopted Green Belt** Authority: Bury Metropolitan Borough Council Plan Name: Bury Unitary Development Plan **Status: Adopted** Plan Date: 29th August 1997	A12NW (W)	833	7	384585 405256
311	**Local Nature Reserves** Name: Alkrington Woods Multiple Area: N Area (m2): 493961.05 Source: Natural England Designation Date: 1st January 1987	A13NE (NE)	38	10	385563 405266
312	**Nitrate Vulnerable Zones** Name: River Irk (Moston Brook To River Irwell) Nvz Description: Surface Water Source: Environment Agency, Head Office	A13NE (W)	0	4	385477 405193

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Environment Agency - Head Office	June 2020	Annually
Manchester City Council - Environmental Health Department	October 2017	Annual Rolling Update
Oldham Metropolitan Borough Council - Environmental Health Department	October 2017	Annual Rolling Update
Salford City Council - Environmental Health Department	October 2017	Annual Rolling Update
Rochdale Metropolitan Borough Council - Environmental Health Department	October 2017	Annually
Bury Metropolitan Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - North West Region	July 2023	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North West Region	March 2013	
Integrated Pollution Controls		
Environment Agency - North West Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - North West Region	January 2023	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Salford City Council - Environmental Health Department	December 2020	Variable
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Variable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Oldham Metropolitan Borough Council - Environmental Health Department	March 2015	Variable
Manchester City Council - Environmental Health Department	September 2014	Variable
Local Authority Pollution Prevention and Controls		
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Not Applicable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Annual Rolling Update
Oldham Metropolitan Borough Council - Environmental Health Department	March 2015	Annual Rolling Update
Salford City Council - Environmental Health Department	March 2015	Annual Rolling Update
Manchester City Council - Environmental Health Department	September 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Variable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Oldham Metropolitan Borough Council - Environmental Health Department	March 2015	Variable
Salford City Council - Environmental Health Department	March 2015	Variable
Manchester City Council - Environmental Health Department	September 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	July 2023	
Pollution Incidents to Controlled Waters		
Environment Agency - North West Region	January 2000	
Prosecutions Relating to Authorised Processes		
Environment Agency - North West Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - North West Region	March 2013	
Registered Radioactive Substances		
Environment Agency - North West Region	June 2016	As notified
Environment Agency - Head Office	May 2023	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register		
Environment Agency - North West Region - South Area	July 2023	Quarterly

Data Currency

Agency & Hydrological	Version	Update Cycle
Water Abstractions Environment Agency - North West Region	April 2023	Quarterly
Water Industry Act Referrals Environment Agency - North West Region	October 2017	
Groundwater Vulnerability Map Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Source Protection Zones Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2023	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2023	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2023	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	August 2023	Quarterly
Flood Defences Environment Agency - Head Office	August 2022	Quarterly
OS Water Network Lines Ordnance Survey	July 2023	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	July 2023	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - North West Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - North West Region - South Area	July 2023	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - North West Region - South Area	January 2023	Quarterly
Local Authority Landfill Coverage		
Bury Metropolitan Borough Council	February 2003	Not Applicable
Manchester City Council - Planning Department	February 2003	Not Applicable
Oldham Metropolitan Borough Council	February 2003	Not Applicable
Rochdale Metropolitan Borough Council - Environmental Health Department	February 2003	Not Applicable
Salford City Council - Environmental Health Department	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Bury Metropolitan Borough Council	October 2018	
Manchester City Council - Planning Department	October 2018	
Oldham Metropolitan Borough Council	October 2018	
Rochdale Metropolitan Borough Council - Environmental Health Department	October 2018	
Salford City Council - Environmental Health Department	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - North West Region - South Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - North West Region - South Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - North West Region - South Area	June 2015	
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	March 2023	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Bury Metropolitan Borough Council	February 2016	Variable
Manchester City Council - Planning Department	February 2016	Variable
Oldham Metropolitan Borough Council	February 2016	Variable
Salford City Council	June 2016	Variable
Rochdale Metropolitan Borough Council	May 2023	Variable
Planning Hazardous Substance Consents		
Bury Metropolitan Borough Council	February 2016	Variable
Manchester City Council - Planning Department	February 2016	Variable
Oldham Metropolitan Borough Council	February 2016	Variable
Rochdale Metropolitan Borough Council	February 2016	Variable
Salford City Council	June 2016	Variable

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	June 2023	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	September 2022	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	September 2022	Annually

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	July 2023	Quarterly
Fuel Station Entries Catalist Ltd - Experian	June 2023	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	September 2023	Quarterly
Points of Interest - Education and Health PointX	September 2023	Quarterly
Points of Interest - Manufacturing and Production PointX	September 2023	Quarterly
Points of Interest - Public Infrastructure PointX	September 2023	Quarterly
Points of Interest - Recreational and Environmental PointX	September 2023	Quarterly
Underground Electrical Cables National Grid	February 2023	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	April 2023	Bi-Annually
Areas of Adopted Green Belt		
Bury Metropolitan Borough Council	August 2023	Quarterly
Manchester City Council	August 2023	Quarterly
Oldham Metropolitan Borough Council	August 2023	Quarterly
Rochdale Metropolitan Borough Council	August 2023	Quarterly
Salford City Council	August 2023	Quarterly
Areas of Unadopted Green Belt		
Bury Metropolitan Borough Council	August 2023	Quarterly
Manchester City Council	August 2023	Quarterly
Oldham Metropolitan Borough Council	August 2023	Quarterly
Rochdale Metropolitan Borough Council	August 2023	Quarterly
Salford City Council	August 2023	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	April 2023	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2023	
Forest Parks		
Forestry Commission	May 2023	Not Applicable
Local Nature Reserves		
Natural England	August 2023	Bi-Annually
Marine Nature Reserves		
Natural England	April 2023	Bi-Annually
National Nature Reserves		
Natural England	February 2023	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2023	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	March 2023	Bi-Annually
Ramsar Sites		
Natural England	March 2023	Bi-Annually
Sites of Special Scientific Interest		
Natural England	March 2023	Bi-Annually
Special Areas of Conservation		
Natural England	April 2023	Bi-Annually
Special Protection Areas		
Natural England	April 2023	Bi-Annually

Data Suppliers

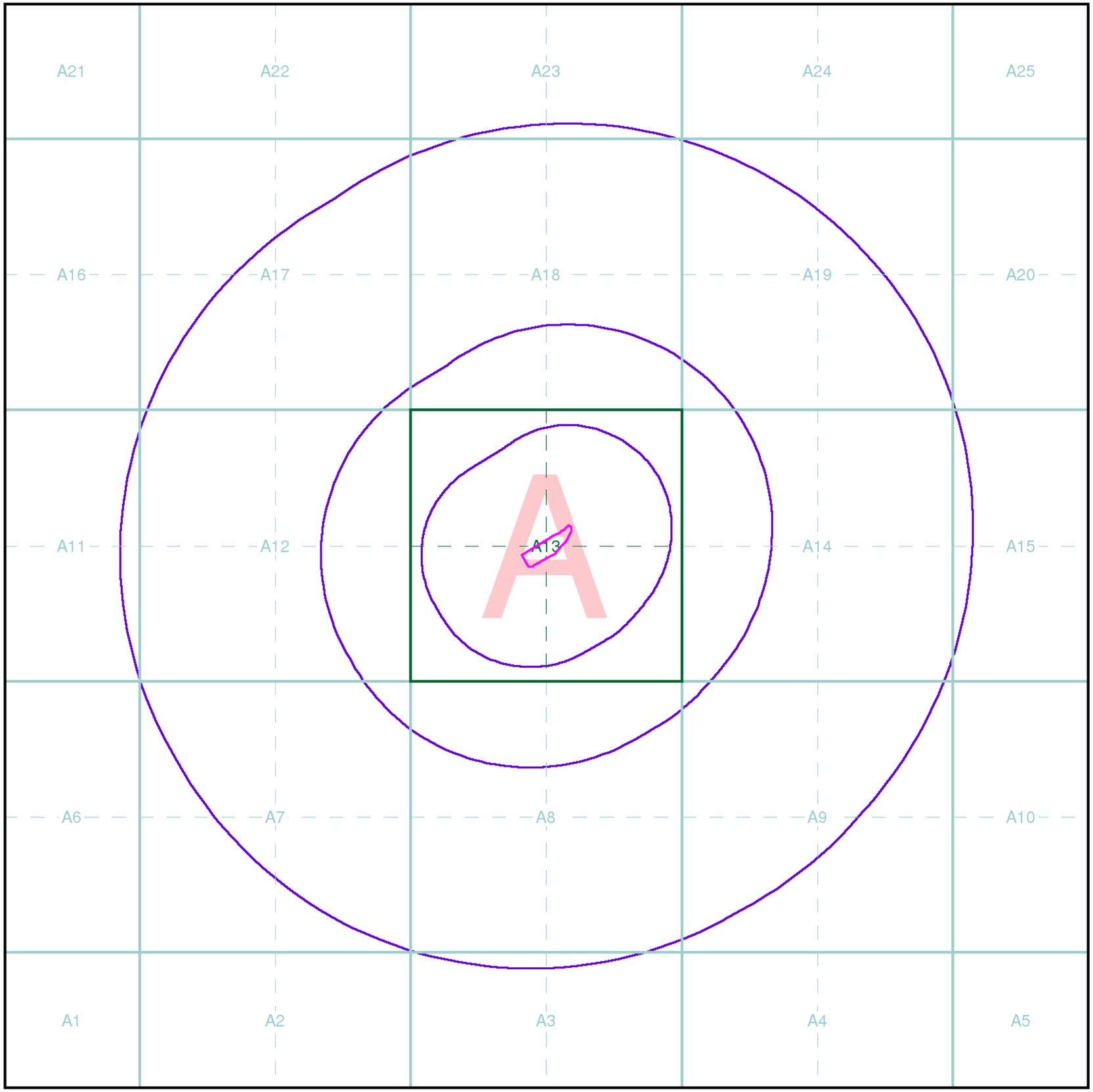
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	The Coal Authority
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Stantec UK Ltd	Stantec

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Rochdale Metropolitan Borough Council - Environmental Health Department** P O Box 32, Telegraph House, Ballie Street, Rochdale, Greater Manchester, OL16 1JH	Telephone: 01706 864139 Fax: 01706 864185 Website: www.rochdale.gov.uk
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**Manchester City Council - Planning Department** Town Hall, Manchester, Greater Manchester, M60 2LA	Telephone: 0161 234 5000 Fax: 0161 234 4508 Website: www.manchester.gov.uk
7	**Bury Metropolitan Borough Council** Craig House, Bank Street, Bury, Lancashire, BL9 0DN	Telephone: 0161 253 5000 Fax: 0161 705 5290 Website: www.bury.gov.uk
8	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
9	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
10	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
11	**Manchester City Council** Town Hall, Albert Square, Manchester, Greater Manchester, M60 2JT	Telephone: 0161 234 5000 Fax: 0161 234 4508 Website: www.manchester.gov.uk
12	**Rochdale Metropolitan Borough Council** PO Box 15, Town Hall, Rochdale, Greater Manchester, OL16 1AB	Telephone: 01706 647474 Fax: 01706 59475 Website: www.rochdale.gov.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



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Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

Client Details

Ms S Ltd, Soiltechnics Limited, Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY

Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

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Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Not Supplied - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	GFSDD	Glaciofluvial Sheet Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	HMGDD	Hummocky (Moundy) Glacial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	GFICD	Glaciofluvial Ice Contact Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	HMGDD	Hummocky (Moundy) Glacial Deposits, Devensian	Diamicton	Not Supplied - Devensian
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	PEAT	Peat	Peat	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	CHES	Chester Formation	Sandstone	Not Supplied - Olenekian
	MM	Manchester Marls Formation	Mudstone	Not Supplied - GUADALUPIAN
	CS	Collyhurst Sandstone Formation	Sandstone	Not Supplied - Cisuralian
	PMCM	Pennine Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	HNC	Huncliffe Rock	Sandstone	Not Supplied - Westphalian
	BAR	Bardsley Rock	Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	BLR	Blenfire Rock	Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	RYSA	Royley Sandstone	Sandstone	Not Supplied - Westphalian
	CHBR	Chamber Rock	Sandstone	Not Supplied - Westphalian
	OL	Old Lawrence Rock	Sandstone	Not Supplied - Westphalian
		Faults		
		Rock Segments		

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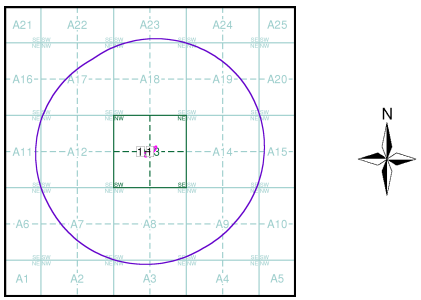
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**085**
Map Name:	**Manchester**
Map Date:	**2010**
Bedrock Geology:	**Available**
Superficial Geology:	**Not Available**
Artificial Geology:	**Not Available**
Faults:	**Not Supplied**
Landslip:	**Not Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



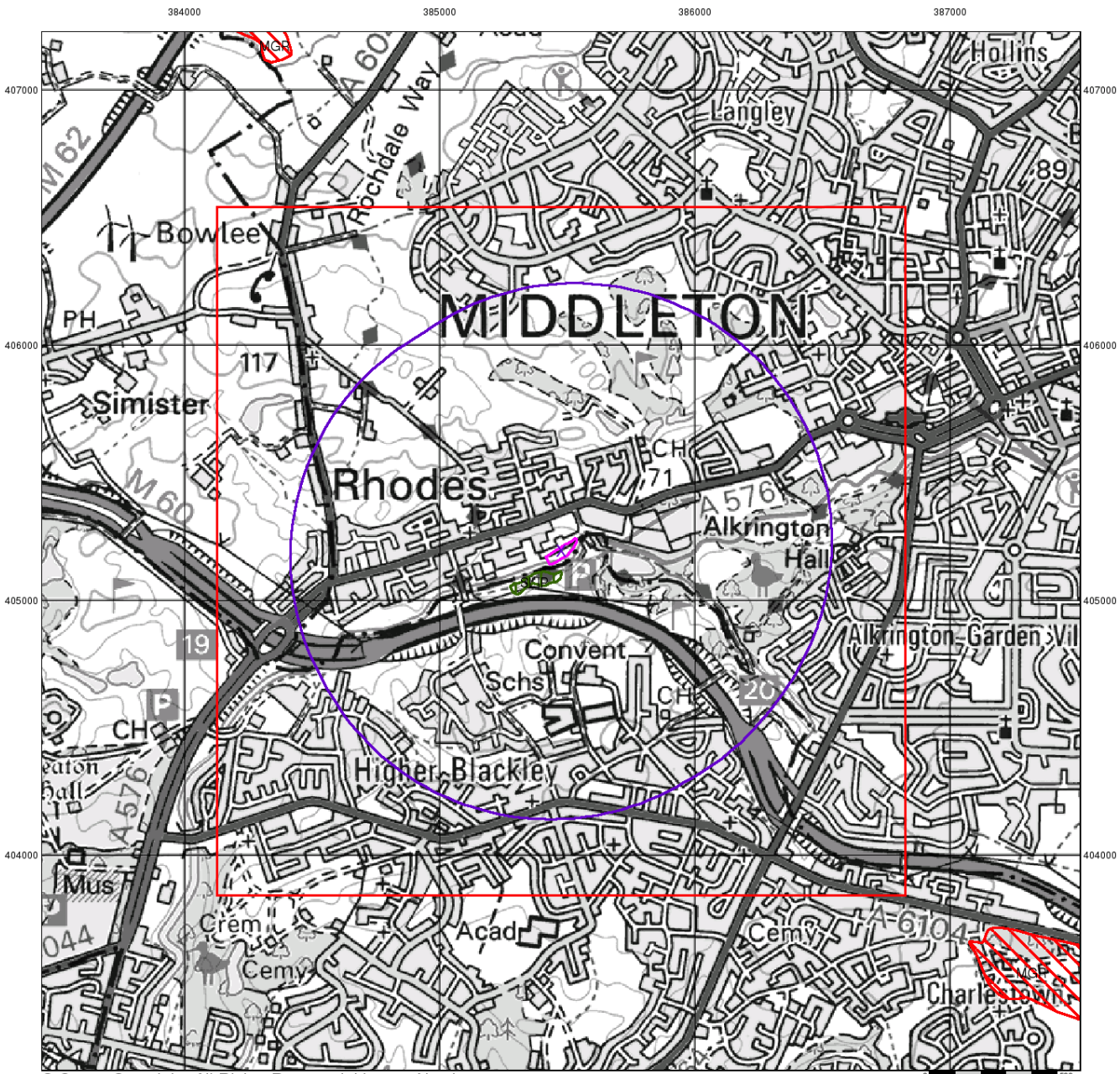
Order Details:

Order Number:	317048402_1_1
Customer Reference:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details:

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

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Artificial Ground and Landslip

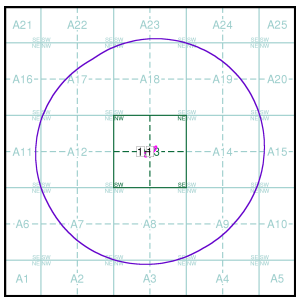
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details:

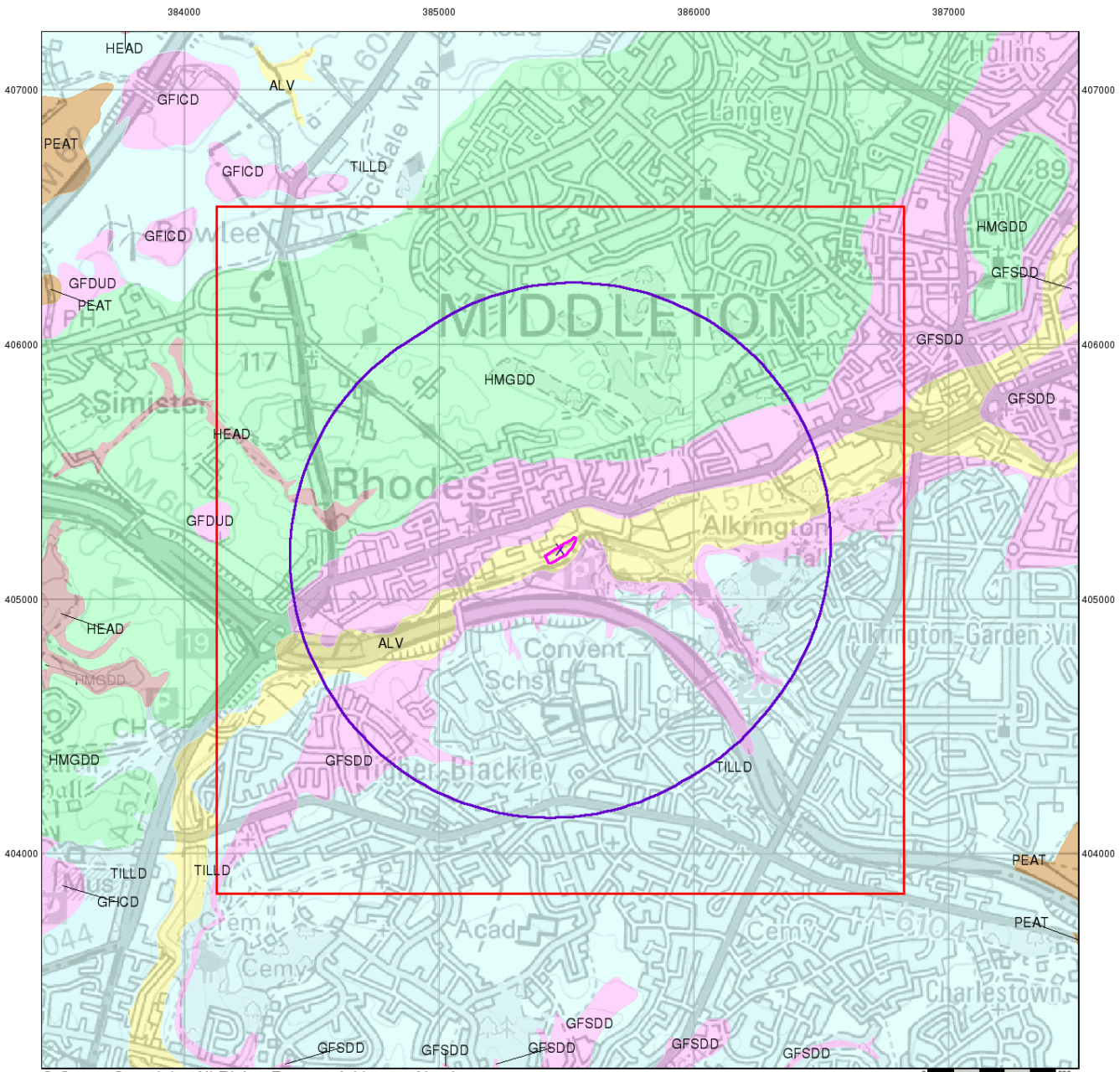
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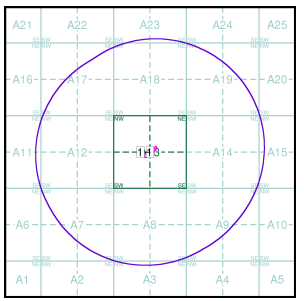
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details:

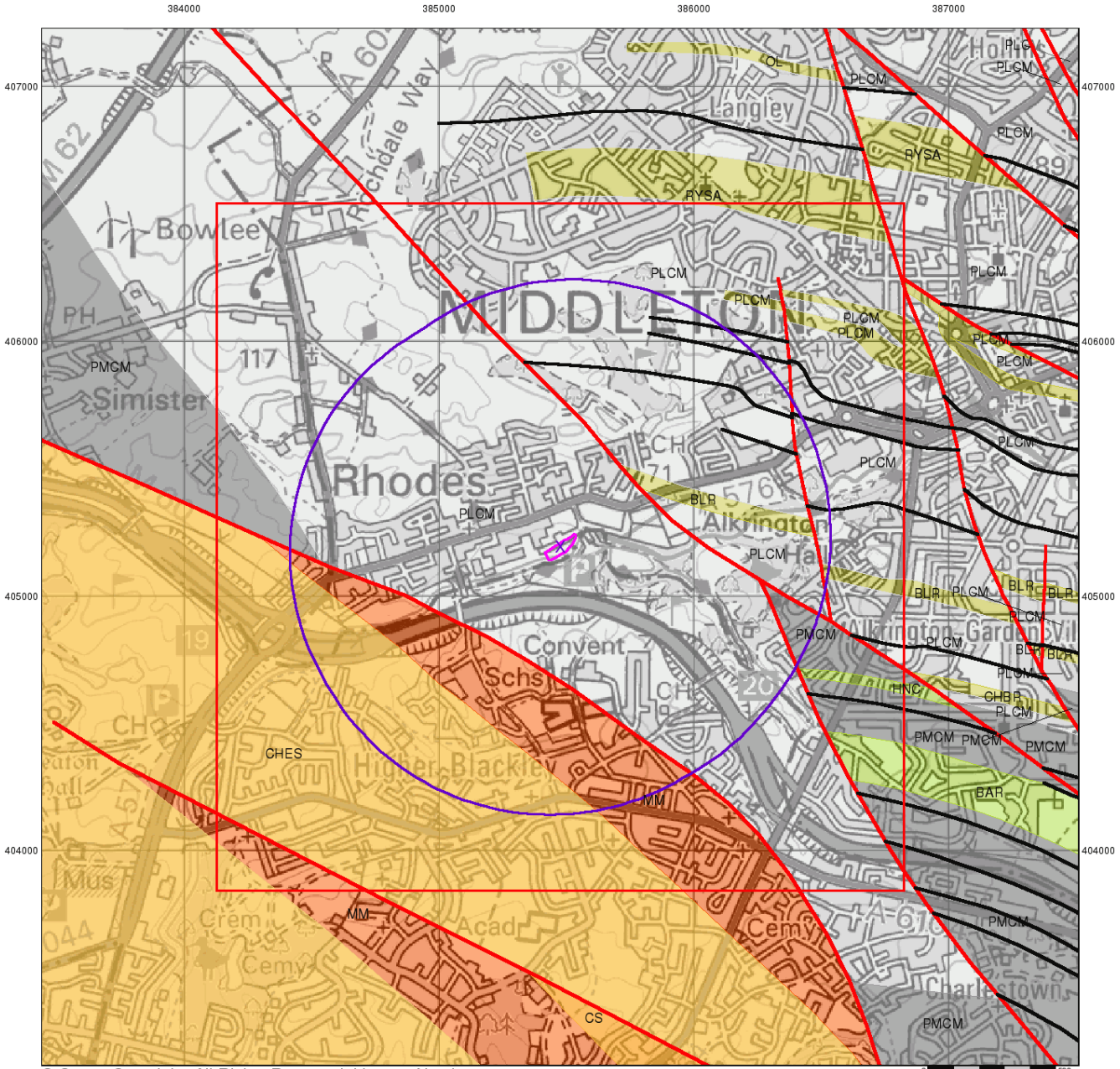
Order Number:	317048402_1_1
Customer Reference:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details:

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Bedrock and Faults

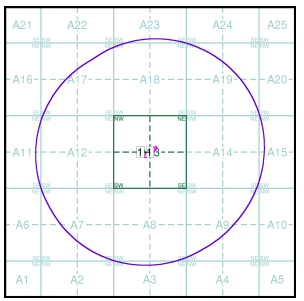
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



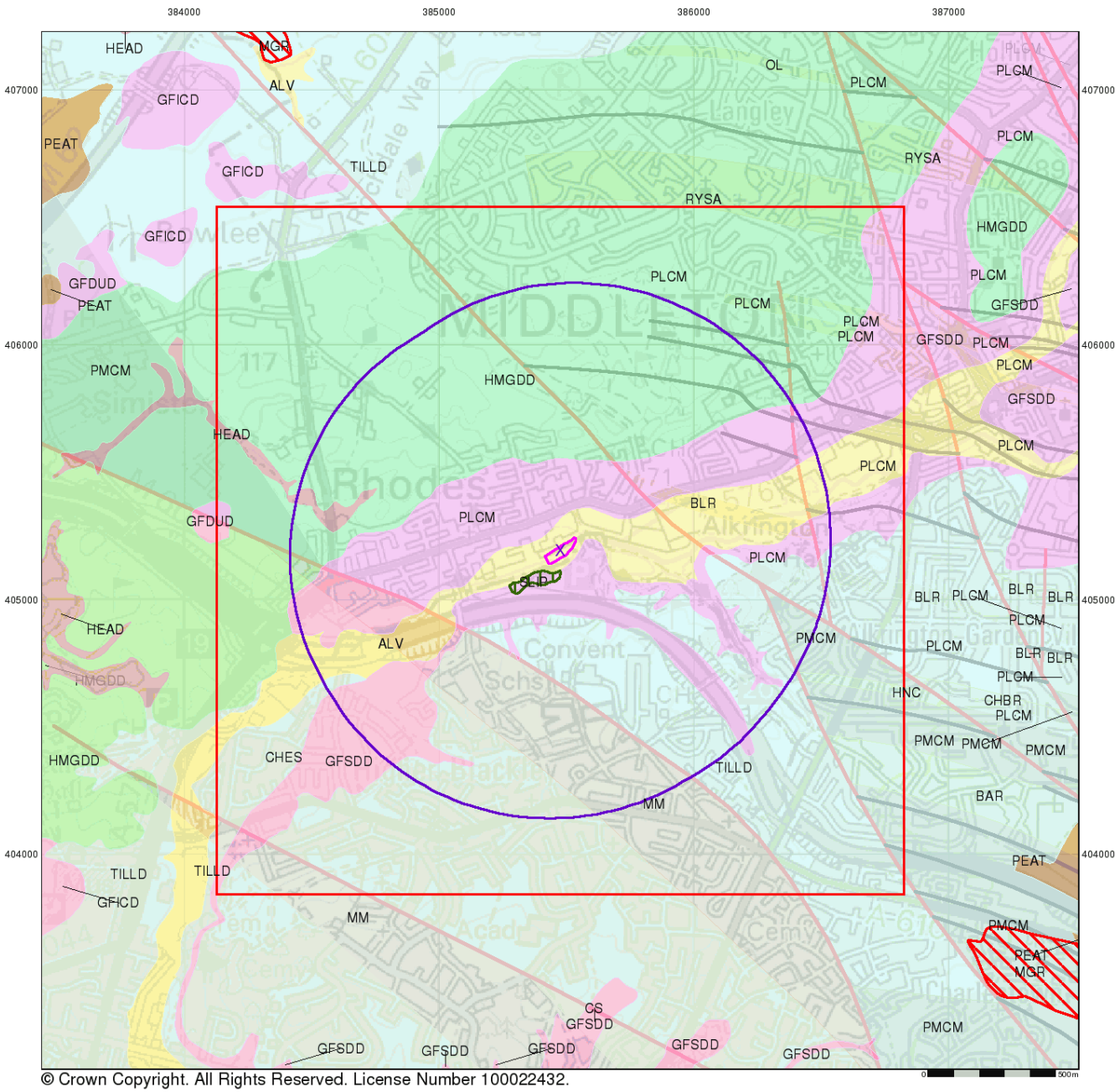
Order Details:

Order Number:	317048402_1_1
Customer Reference:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details:

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

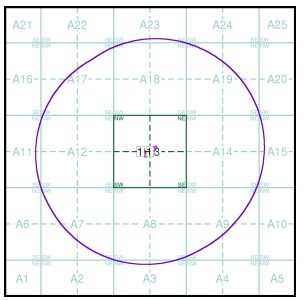
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A

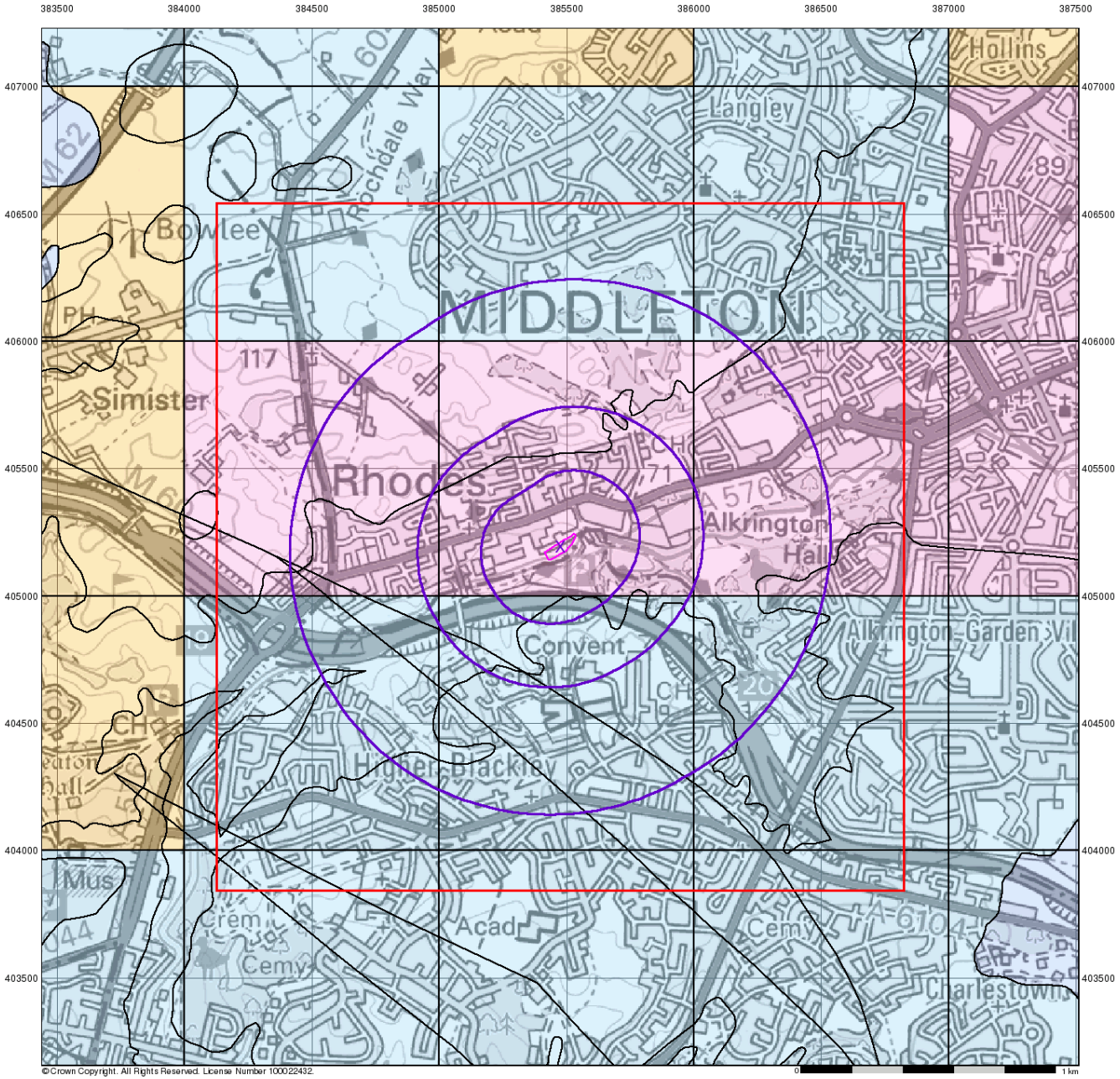


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Groundwater Vulnerability

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

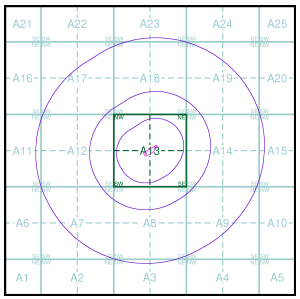
Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

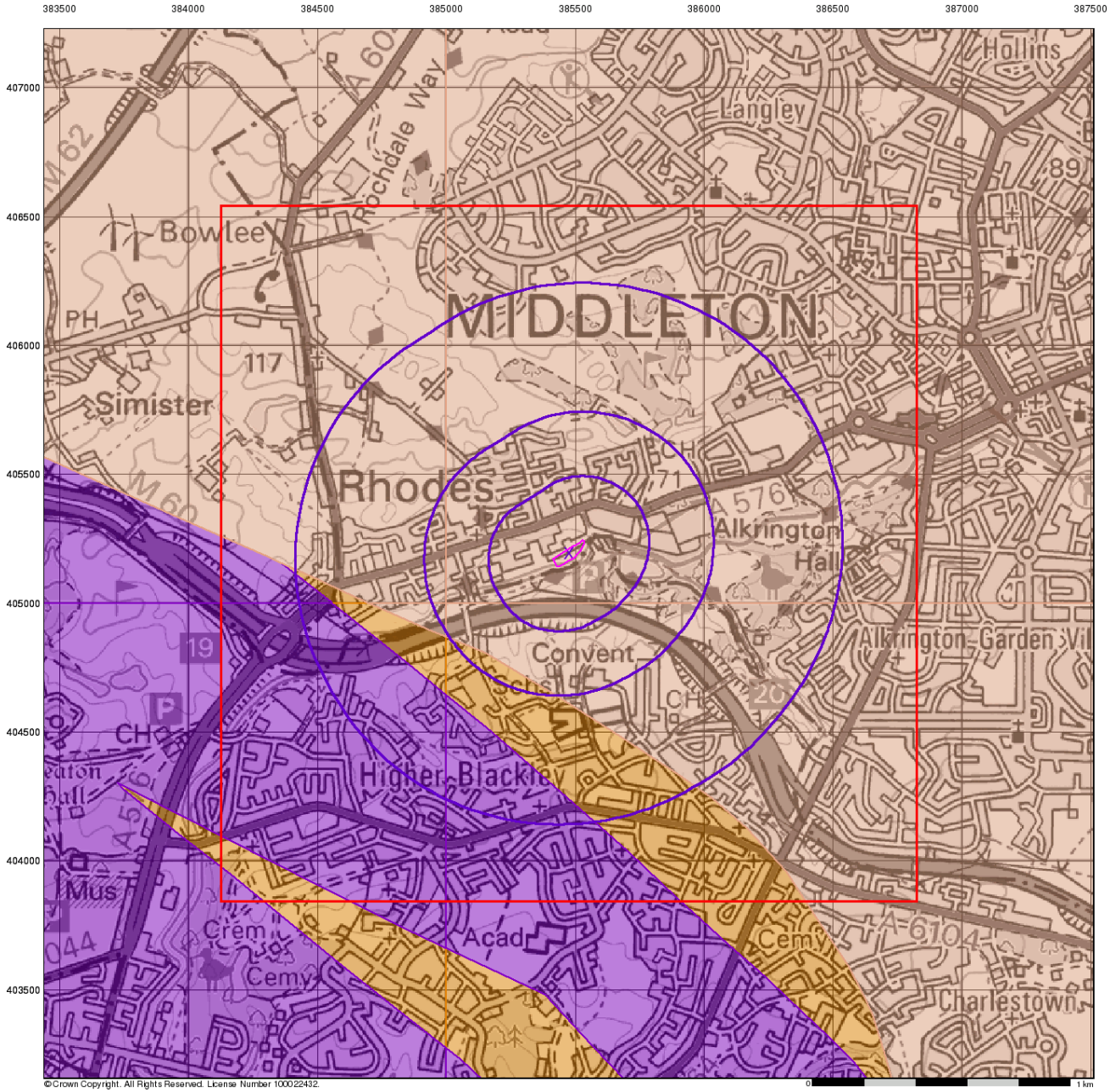
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Bedrock Aquifer Designation

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

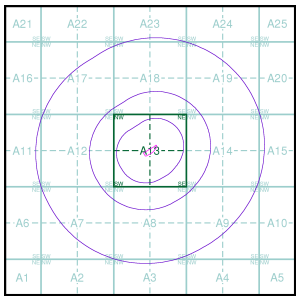
Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

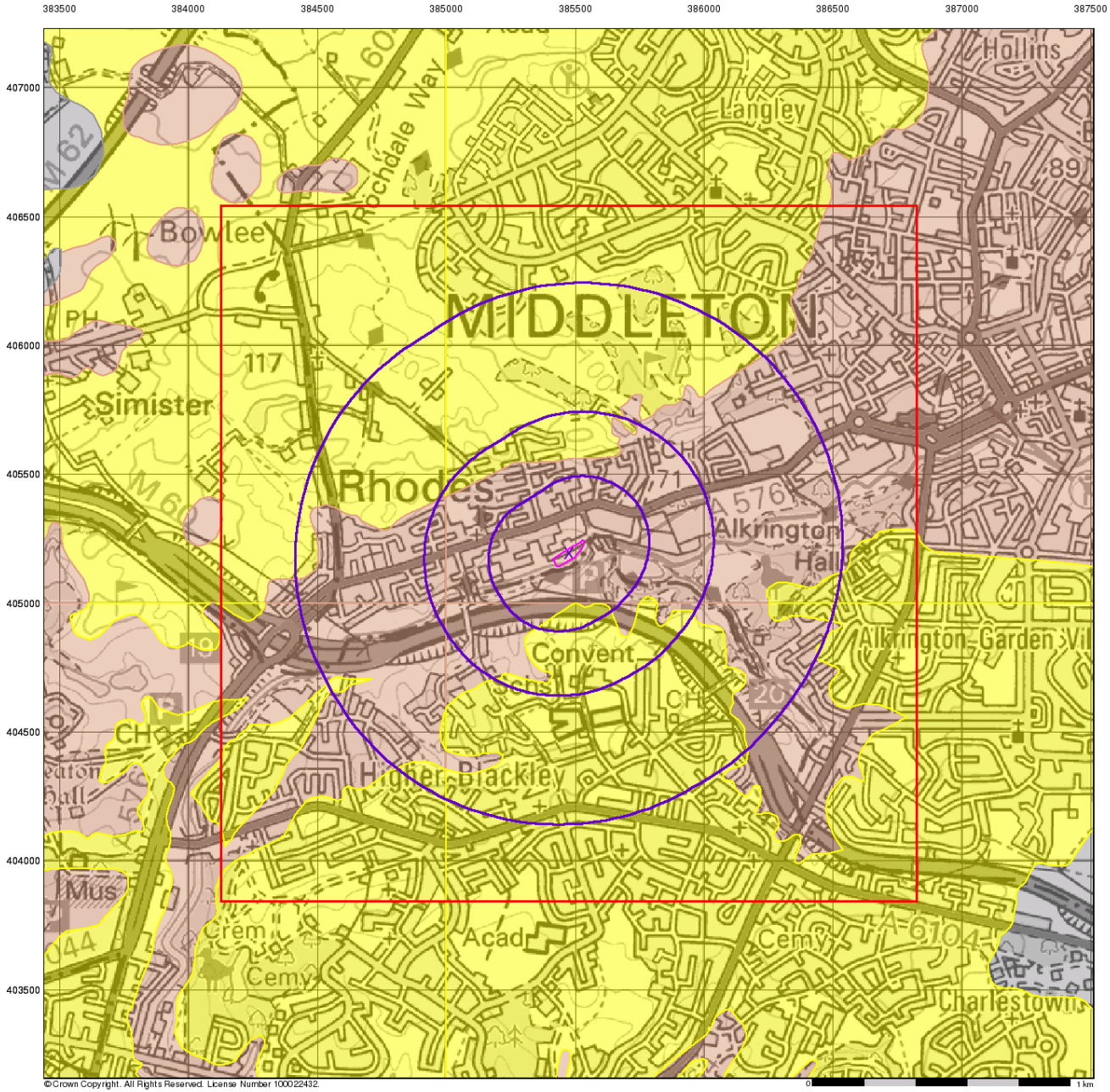
Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
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Superficial Aquifer Designation

General

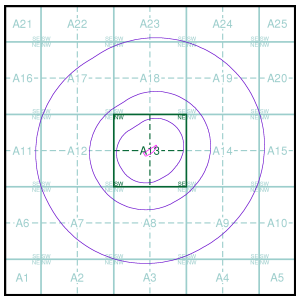
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A

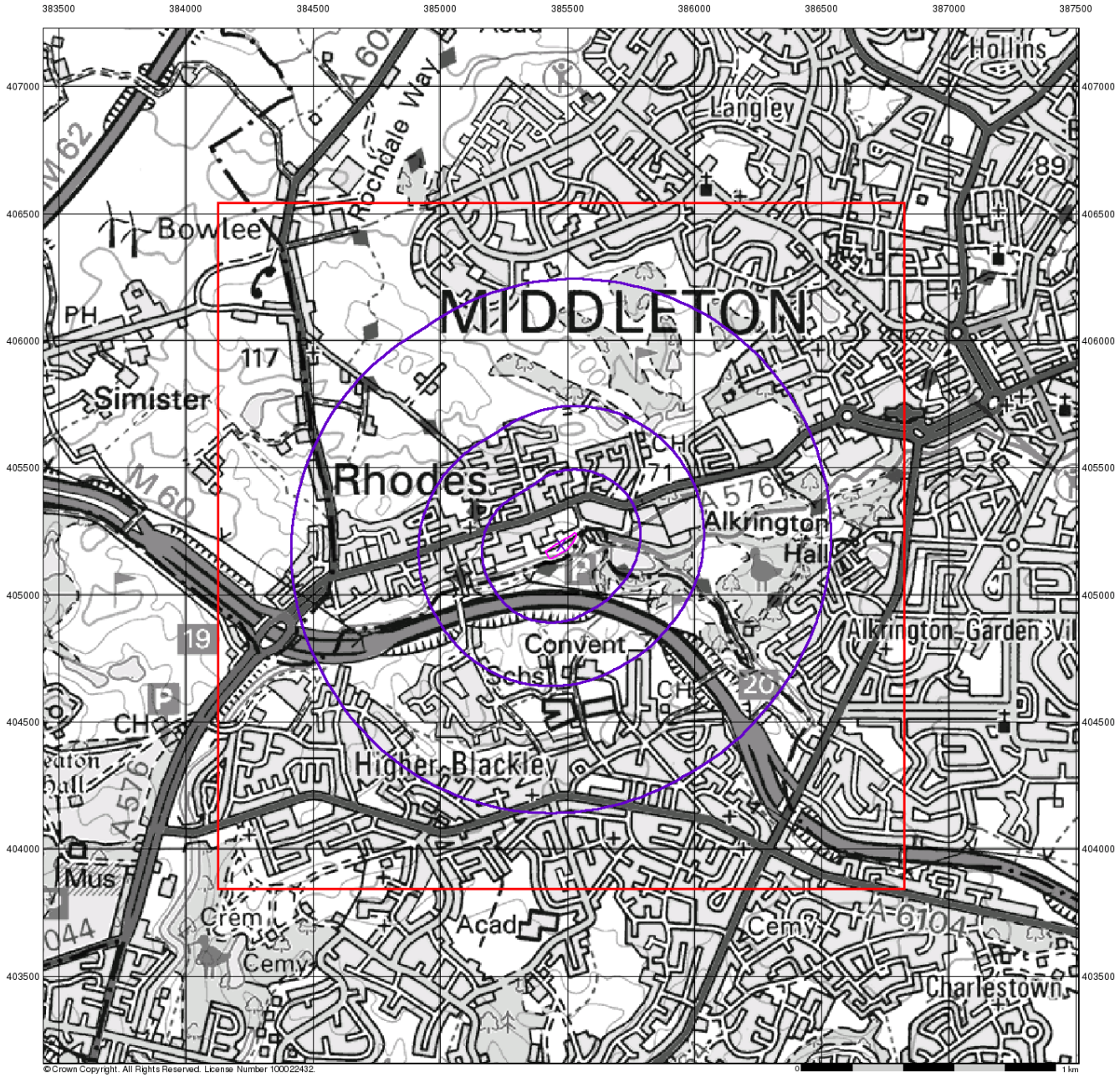


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Source Protection Zones

General

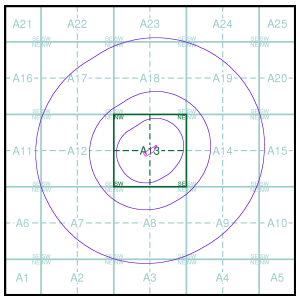
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



Order Details

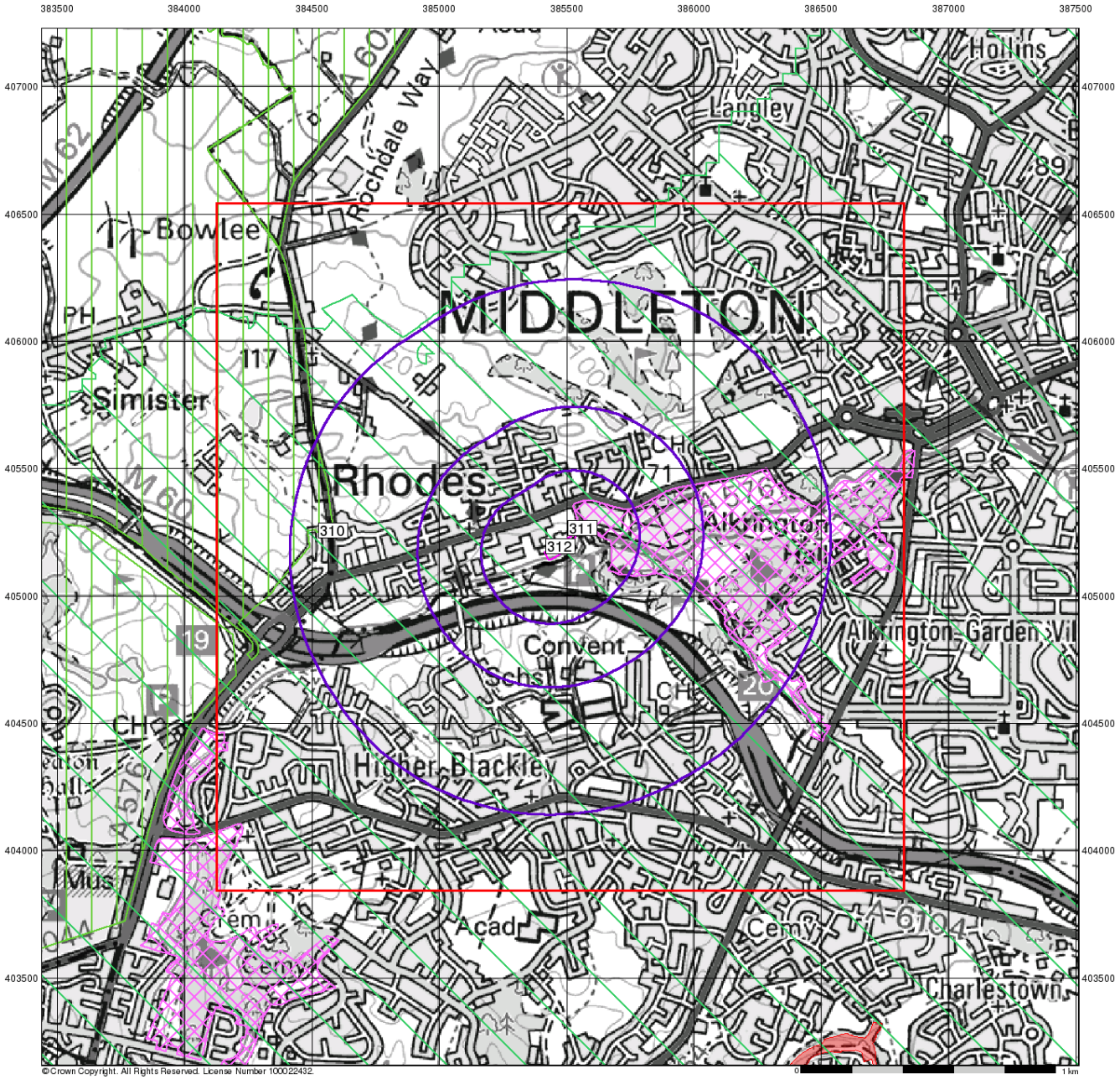
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Sensitive Land Uses

General

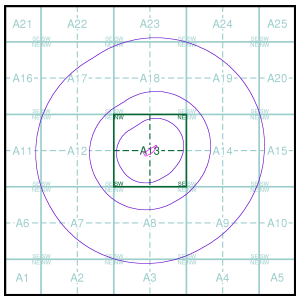
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A



Order Details

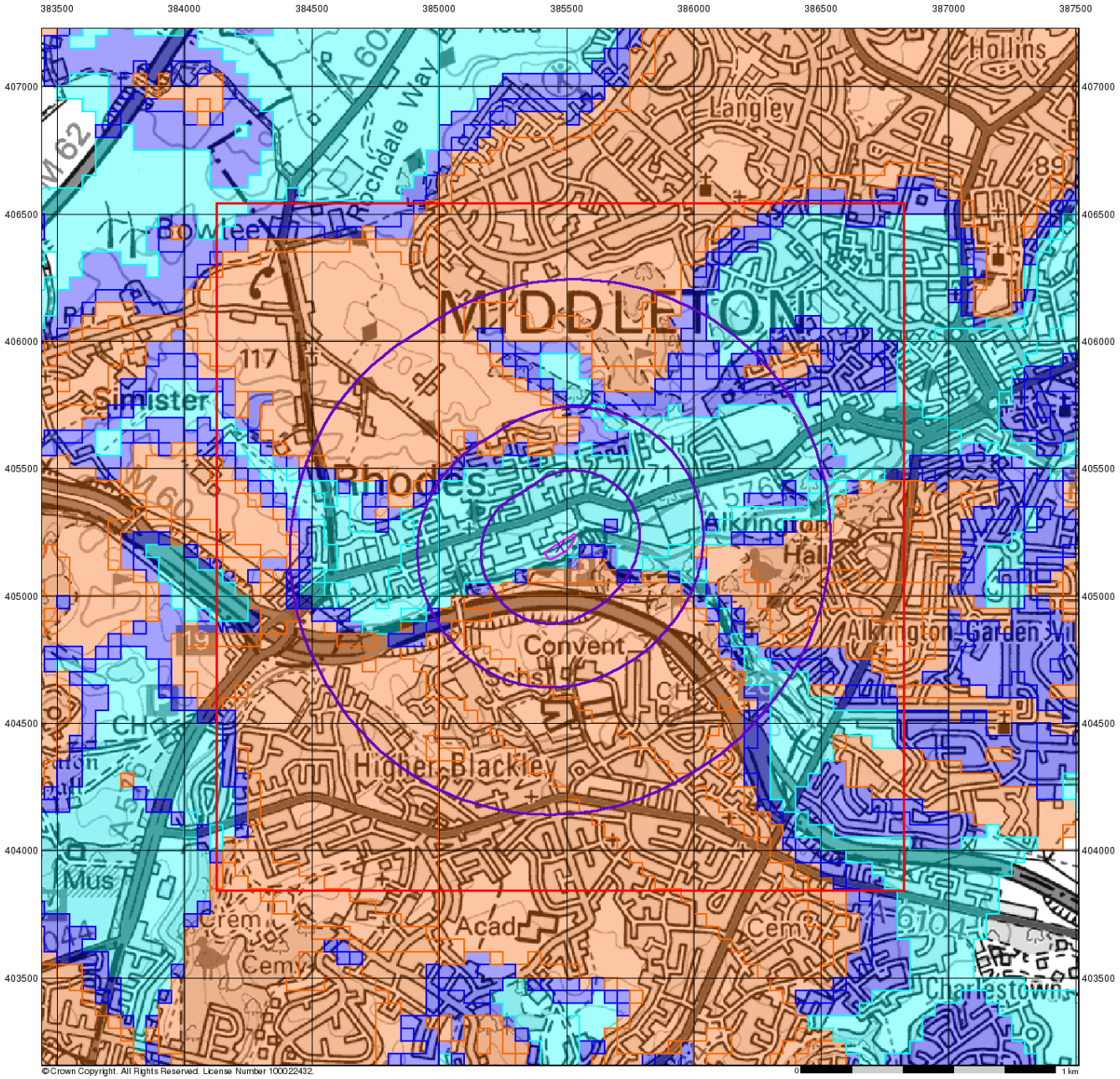
Order Number:	317048402_1_1
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BGS Flood GFS Data

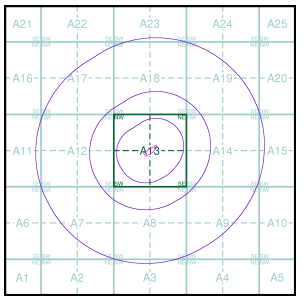
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
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Slice:	A
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Search Buffer (m):	1000

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pylon
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

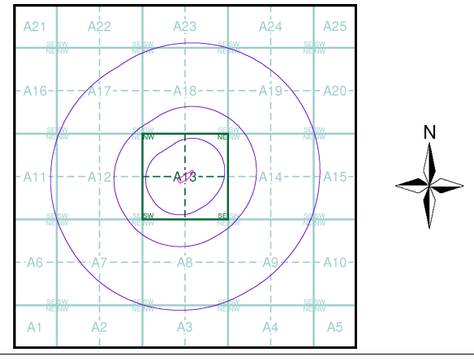
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Mud
Sand
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1848	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1910	5
Lancashire And Furness	1:10,560	1923	6
Lancashire And Furness	1:10,560	1932 - 1933	7
Lancashire And Furness	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1965 - 1968	10
Ordnance Survey Plan	1:10,000	1974 - 1979	11
Manchester	1:25,000	1975	12
Ordnance Survey Plan	1:10,000	1982 - 1986	13
Ordnance Survey Plan	1:10,000	1990	14
10K Raster Mapping	1:10,000	1999	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2023	17

Historical Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
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Search Buffer (m):	1000

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Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 — Values for prominent elevations

186.0 — Numbers for spot elevations, depth soundings, contour lines, etc.

0,2 — Velocity of the current, width of river bed, depth of river

Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney
- Factory or Mill without Chimney
- Mine or Open Pit Mine
- Operating Shaft or Mine
- Non-Operating Shaft or Mine
- Salt Mine
- Tailings Pile
- Pit
- Stone Quarry
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station
- Cemetery
- Burial Mound (height in metres)
- Triangulation Point on Burial Mound
- Triangulation Point
- Bench Mark
- Bench Mark (monumented)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Well
- Water Reservoir or Rain Water Pit
- Spring
- Isobath with value
- Heavy (Index) Contour Line
- Contour Line and Value
- Half Contour Line
- Spot Elevation Value
- Coniferous
- Deciduous
- Mixed
- Scrub

Key to Numbers on Mapping

SD80_Manchester

No.	Description
229	Factory (Textiles)

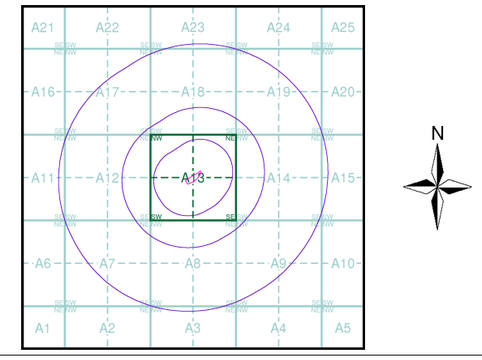
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Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1848	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1910	5
Lancashire And Furness	1:10,560	1923	6
Lancashire And Furness	1:10,560	1932 - 1933	7
Lancashire And Furness	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1965 - 1968	10
Ordnance Survey Plan	1:10,000	1974 - 1979	11
Manchester	1:25,000	1975	12
Ordnance Survey Plan	1:10,000	1982 - 1986	13
Ordnance Survey Plan	1:10,000	1990	14
10K Raster Mapping	1:10,000	1999	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2023	17

Russian Map - Slice A



Order Details

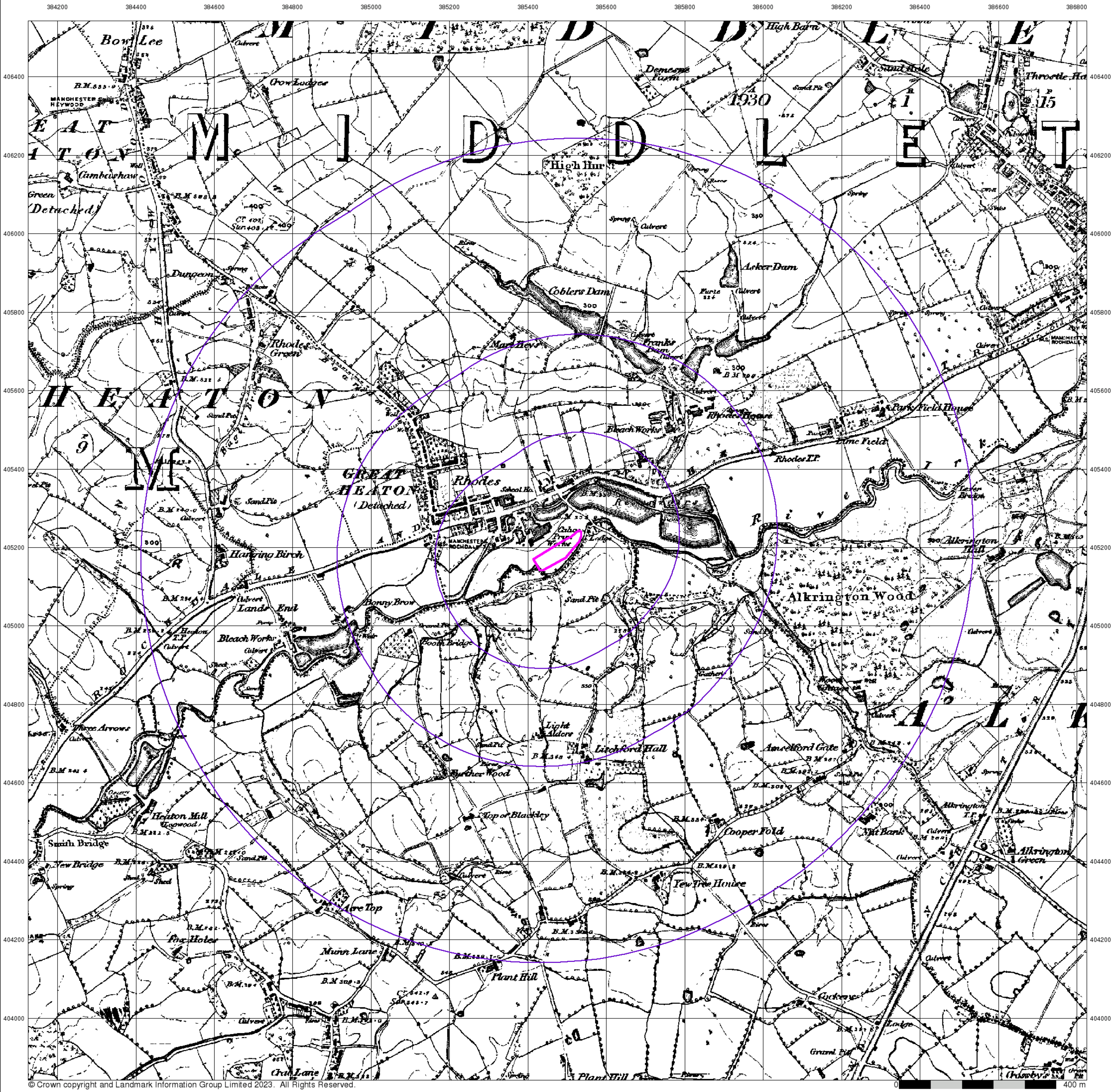
Order Number: 317048402_1_1
Customer Ref: STV6211
National Grid Reference: 385480, 405190
Slice: A
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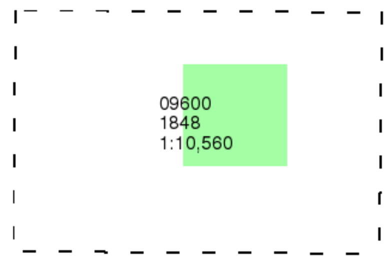
Lancashire And Furness

Published 1848

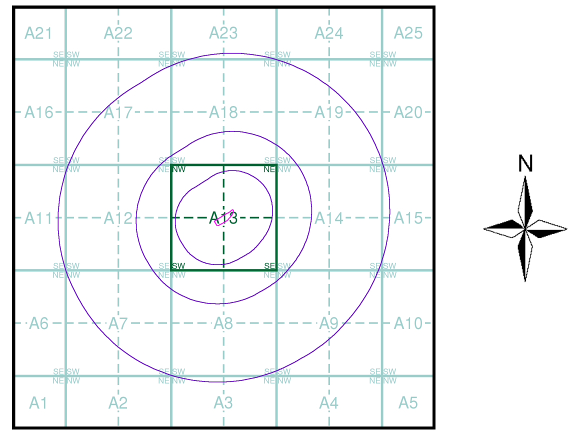
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

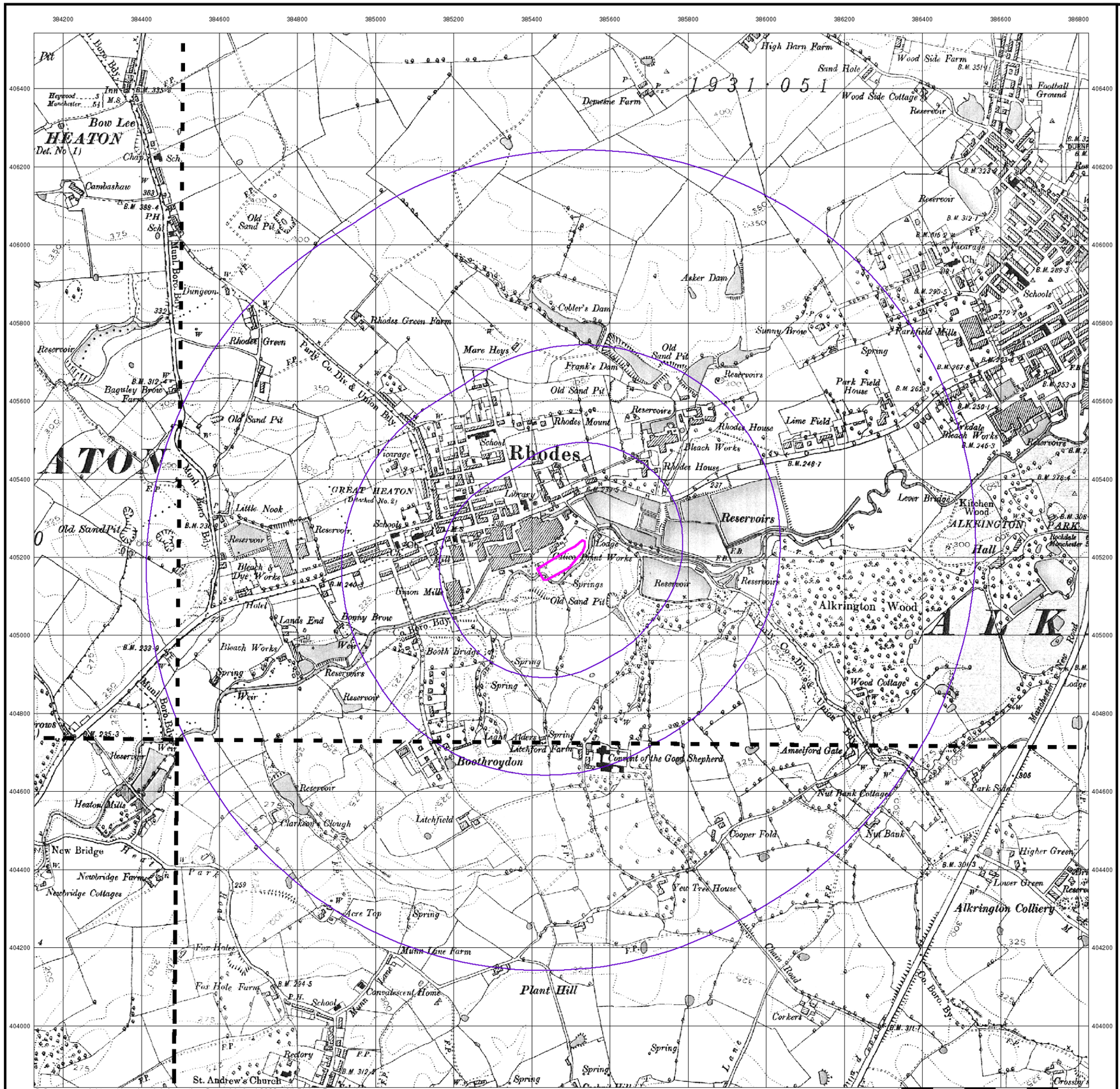
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Customer Ref: STV6211
National Grid Reference: 385480, 405190
Slice: A
Site Area (Ha): 0.47
Search Buffer (m): 1000

Site Details

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Lancashire And Furness

Published 1894

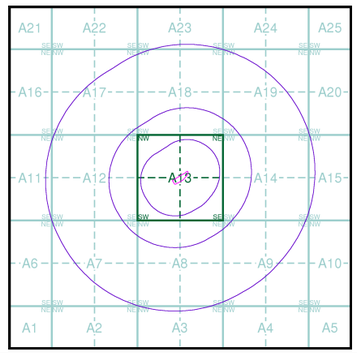
Source map scale - 1:10,560

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Map Name(s) and Date(s)

096NW 1894 1:10,560	096NE 1894 1:10,560
096SW 1894 1:10,560	096SE 1894 1:10,560

Historical Map - Slice A



Order Details

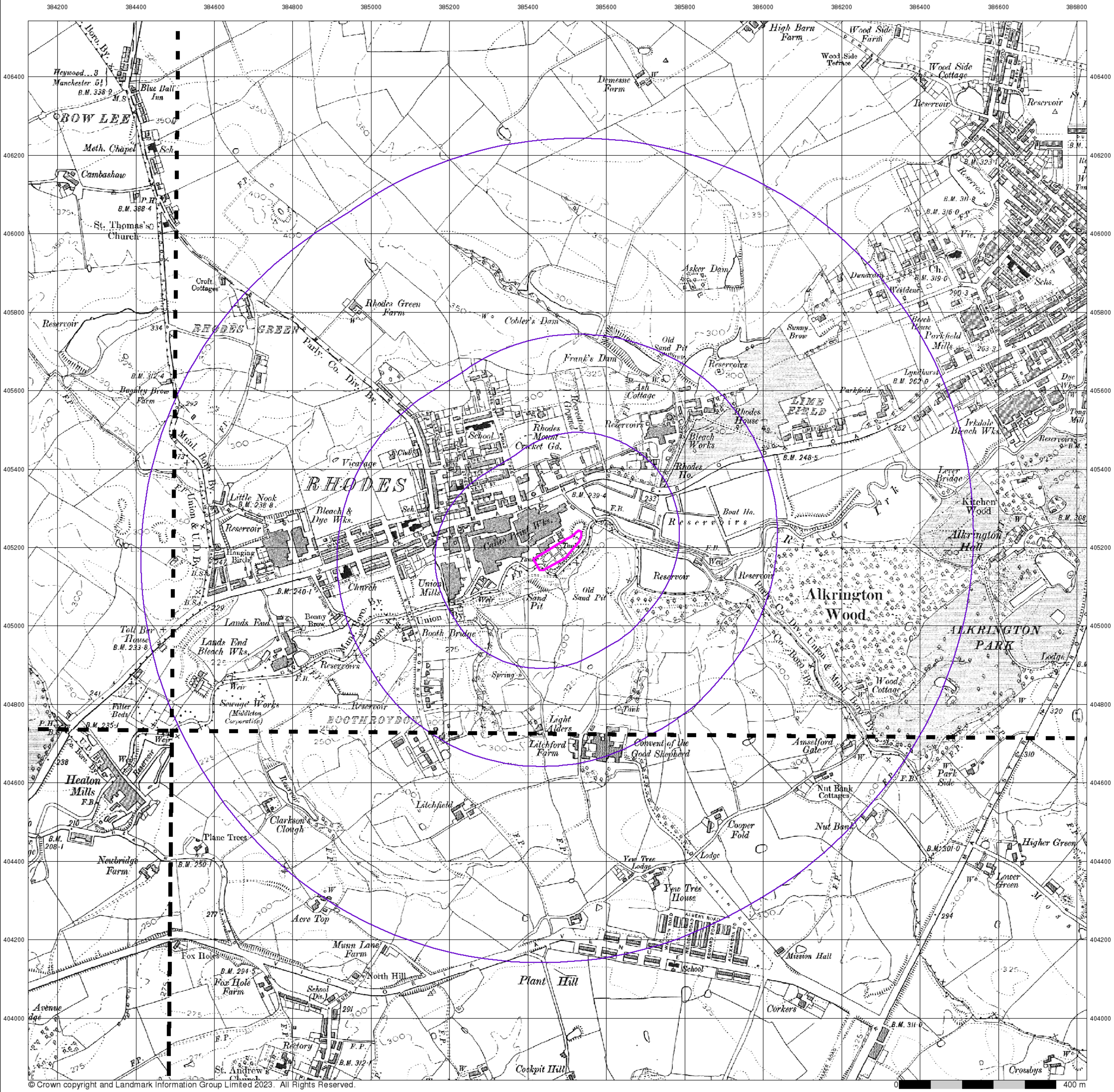
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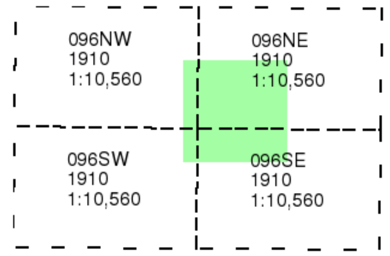
Lancashire And Furness

Published 1910

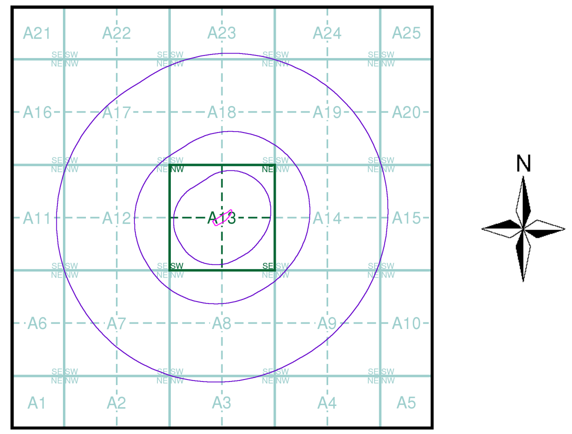
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

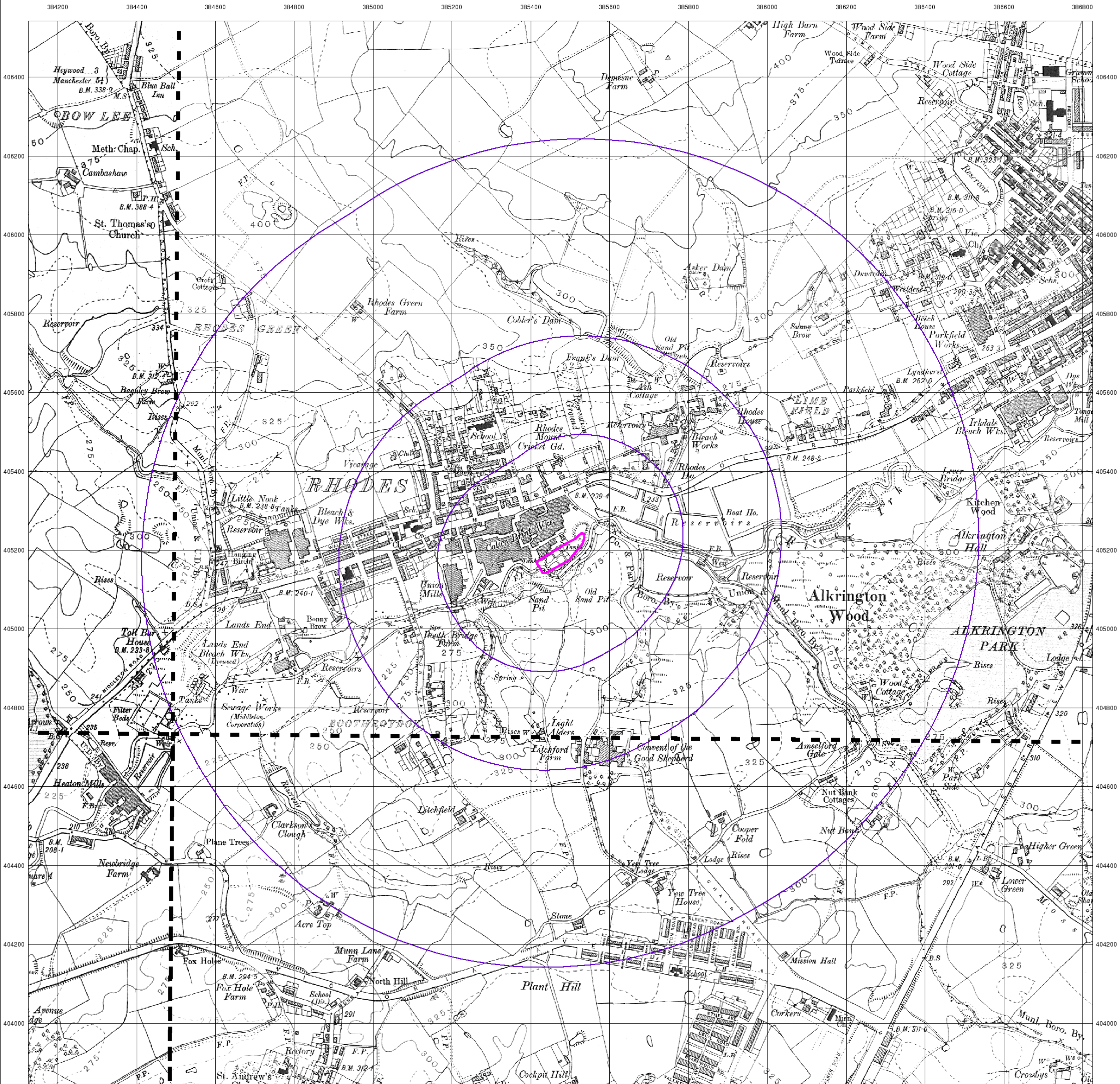
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Customer Ref:	STV6211
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Site Area (Ha):	0.47
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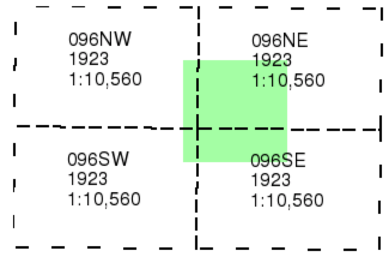
Lancashire And Furness

Published 1923

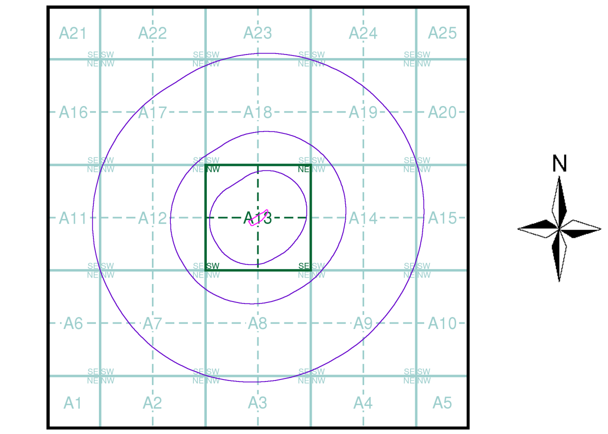
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	317048402_1_1
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National Grid Reference:	385480, 405190
Slice:	A
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Search Buffer (m):	1000

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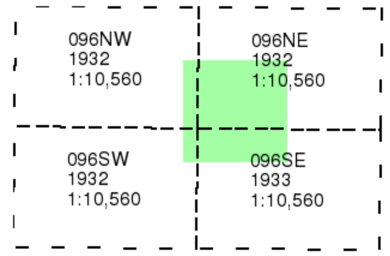
Lancashire And Furness

Published 1932 - 1933

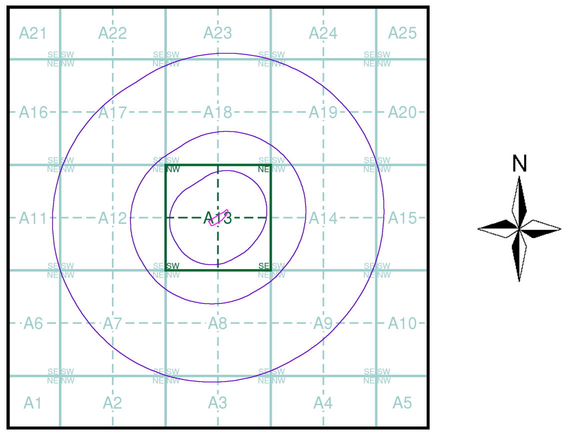
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

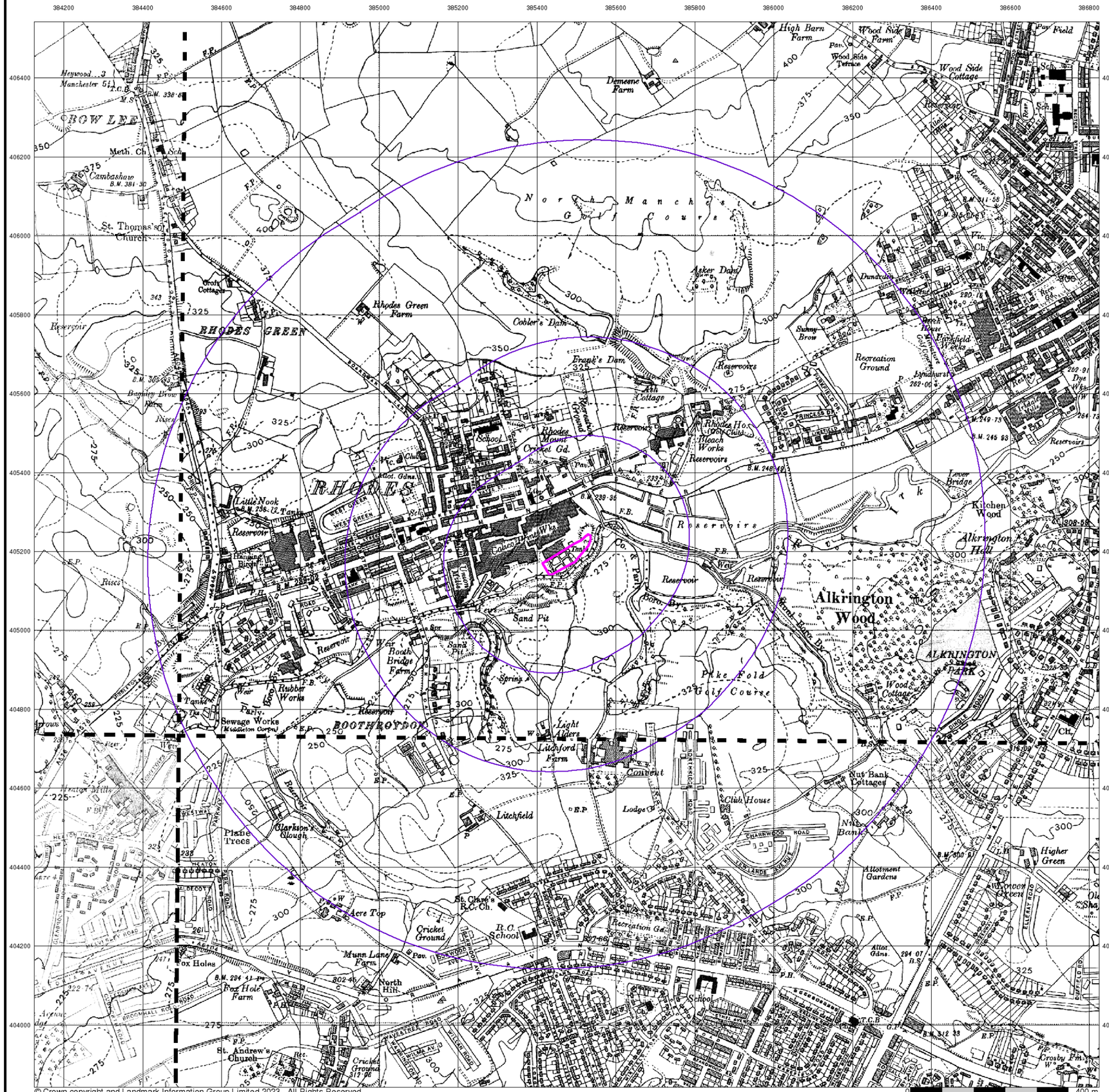
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Site Area (Ha): 0.47
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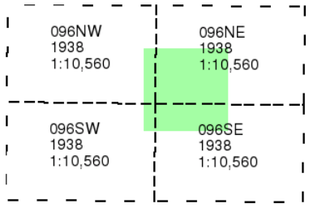
Lancashire And Furness

Published 1938

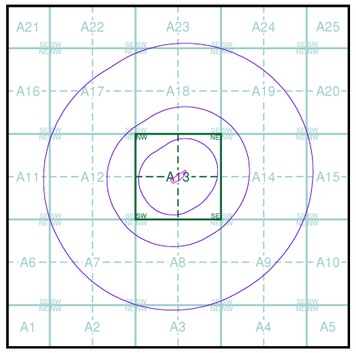
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

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Ordnance Survey Plan

Published 1955 - 1956

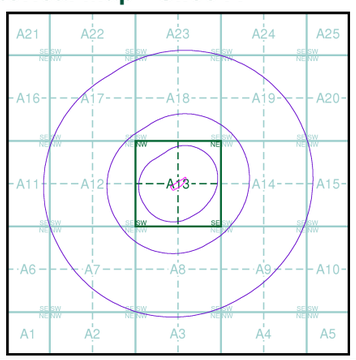
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Map Name(s) and Date(s)

SD80NW 1955 1:10,560	SD80NE 1956 1:10,560
SD80SW 1956 1:10,560	SD80SE 1956 1:10,560

Historical Map - Slice A



Order Details

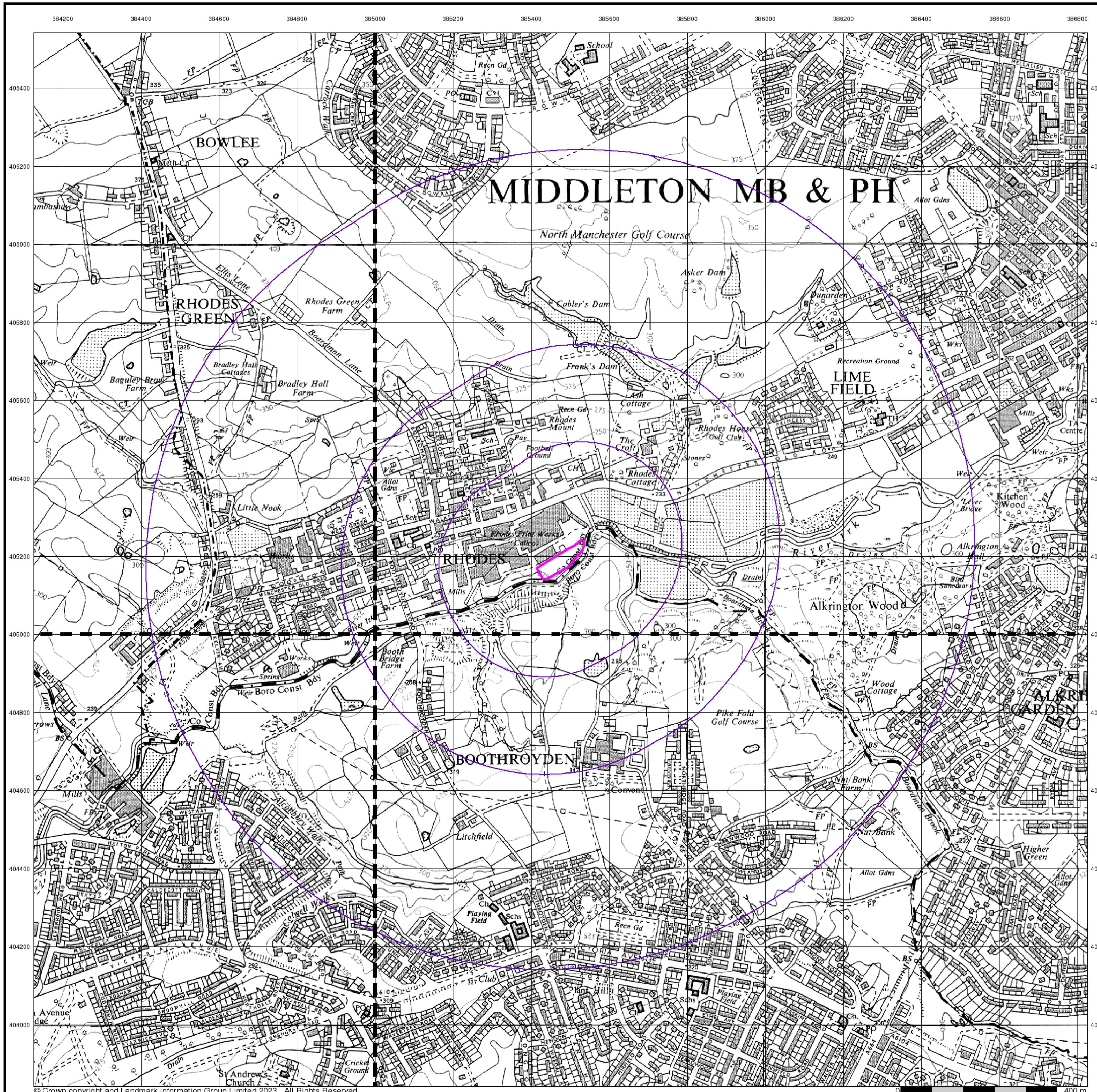
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Search Buffer (m):	1000

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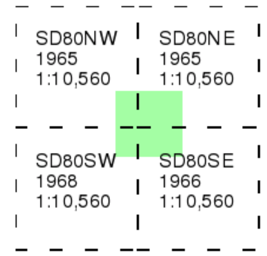
Ordnance Survey Plan

Published 1965 - 1968

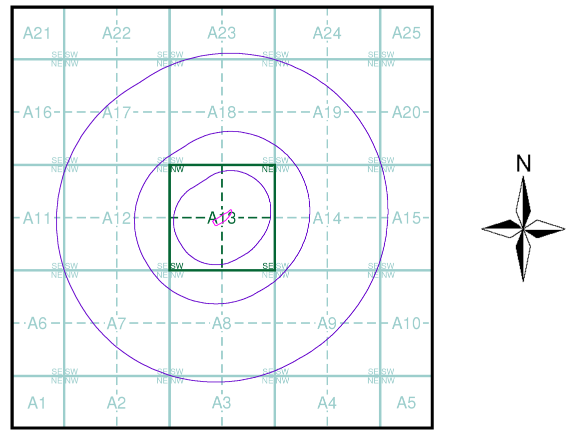
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 317048402_1_1
Customer Ref: STV6211
National Grid Reference: 385480, 405190
Slice: A
Site Area (Ha): 0.47
Search Buffer (m): 1000

Site Details

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Ordnance Survey Plan

Published 1974 - 1979

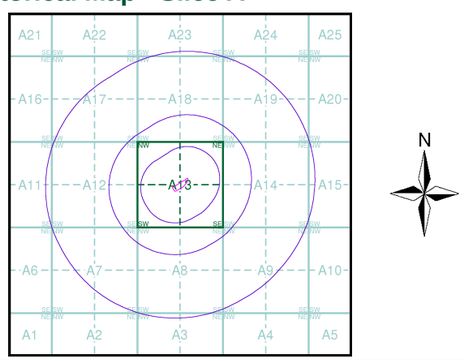
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Map Name(s) and Date(s)

SD80NW 1974 1:10,000	SD80NE 1977 1:10,000
SD80SW 1979 1:10,000	SD80SE 1978 1:10,000

Historical Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
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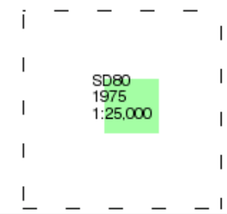
Manchester

Published 1975

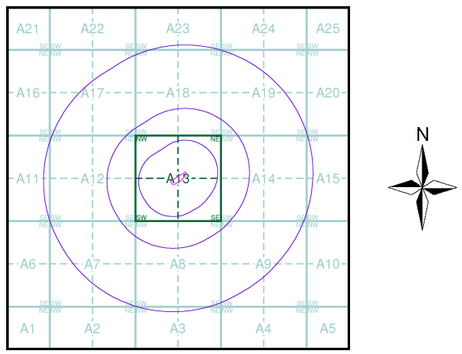
Source map scale - 1:25,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)



Russian Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
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Ordnance Survey Plan

Published 1982 - 1986

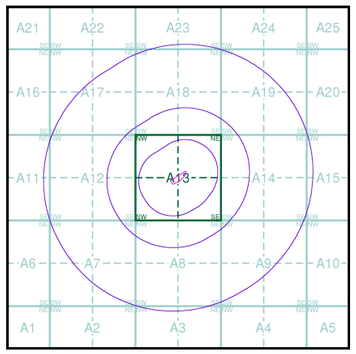
Source map scale - 1:10,000

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Map Name(s) and Date(s)

SD80NW 1983 1:10,000	SD80NE 1984 1:10,000
SD80SW 1986 1:10,000	SD80SE 1982 1:10,000

Historical Map - Slice A



Order Details

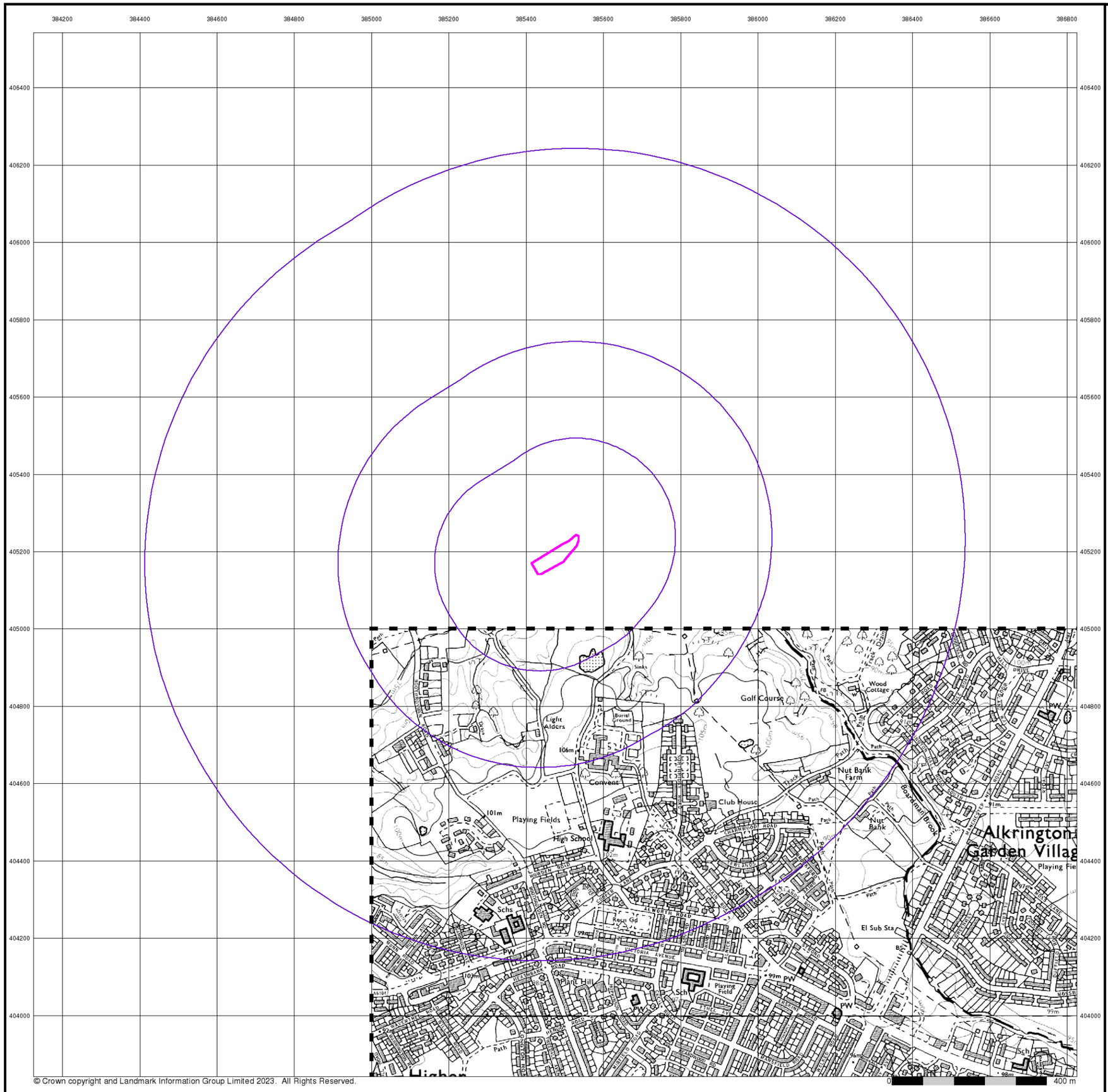
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Site Area (Ha):	0.47
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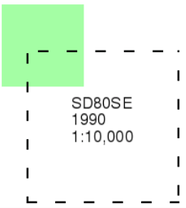
Ordnance Survey Plan

Published 1990

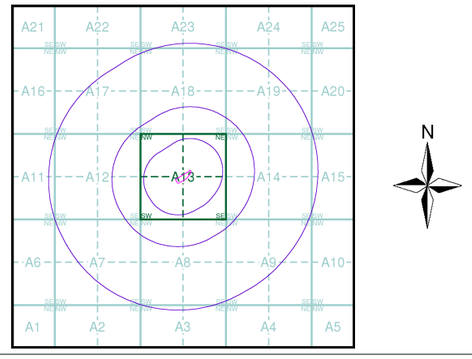
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Historical Map - Slice A



Order Details

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10k Raster Mapping

Published 1999

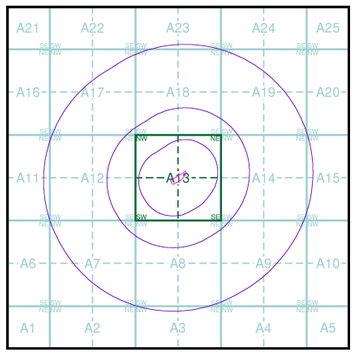
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SD80NW 1999 1:10,000	SD80NE 1999 1:10,000
SD80SW 1999 1:10,000	SD80SE 1999 1:10,000

Historical Map - Slice A



Order Details

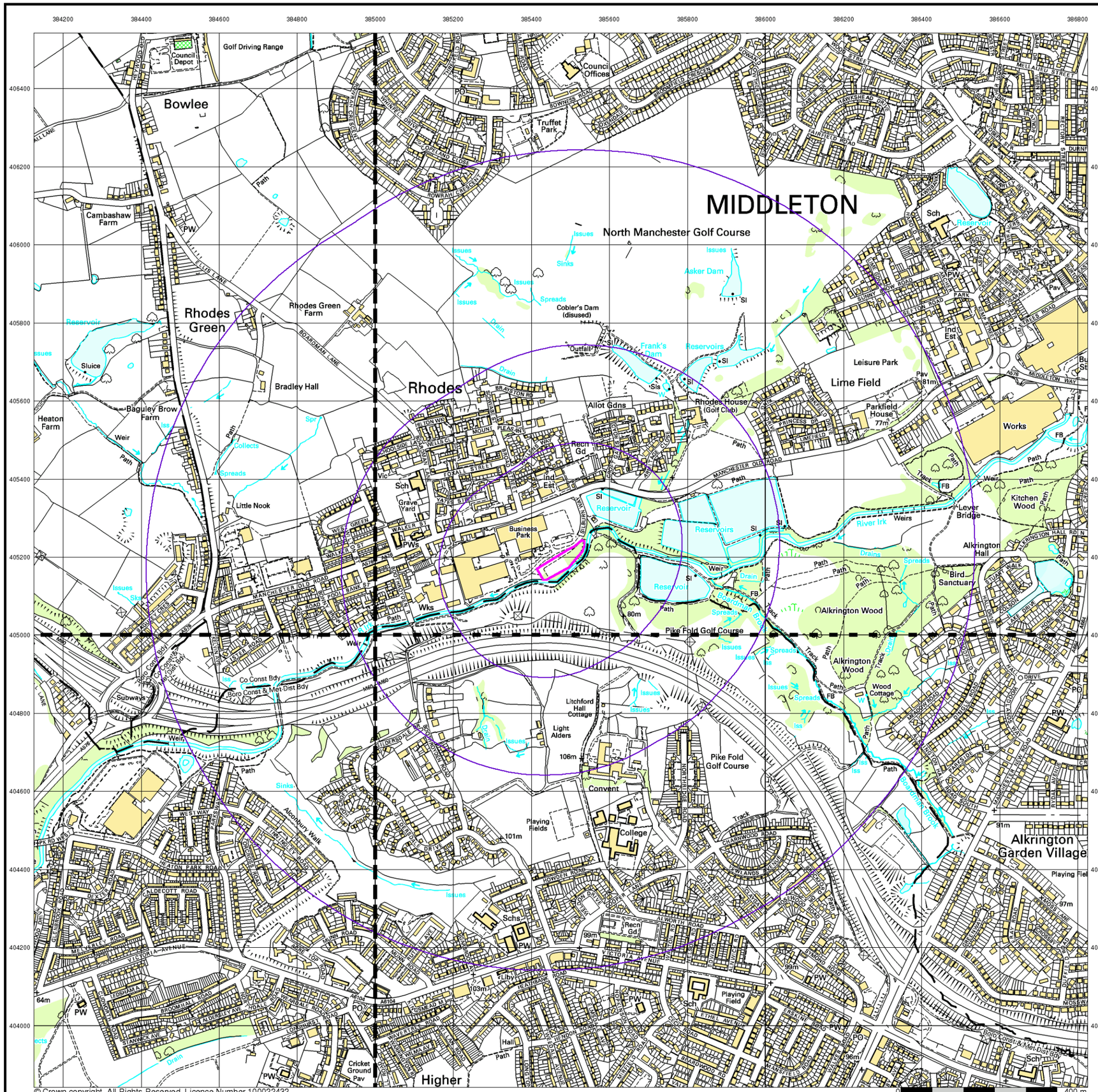
Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

Landmark® INFORMATION GROUP

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10k Raster Mapping

Published 2006

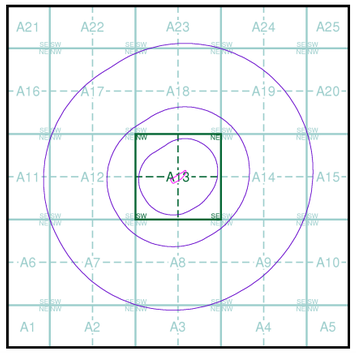
Source map scale - 1:10,000

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Map Name(s) and Date(s)

SD80NW 2006 1:10,000	SD80NE 2006 1:10,000
SD80SW 2006 1:10,000	SD80SE 2006 1:10,000

Historical Map - Slice A



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

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VectorMap Local

Published 2023

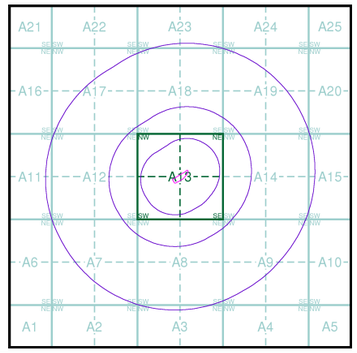
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SD80NW 2023 Variable	SD80NE 2023 Variable
SD80SW 2023 Variable	SD80SE 2023 Variable

Historical Map - Slice A



Order Details

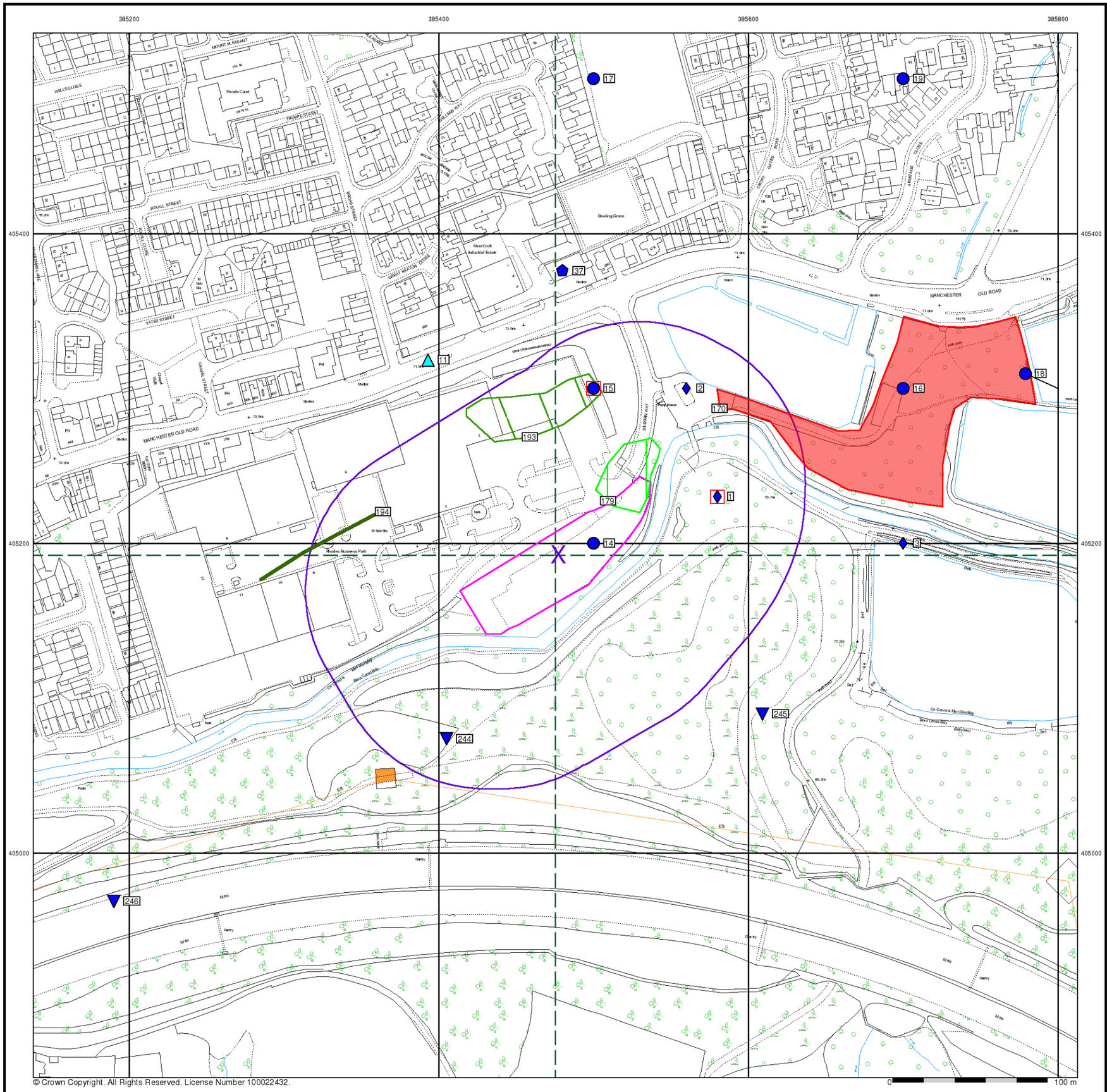
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Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

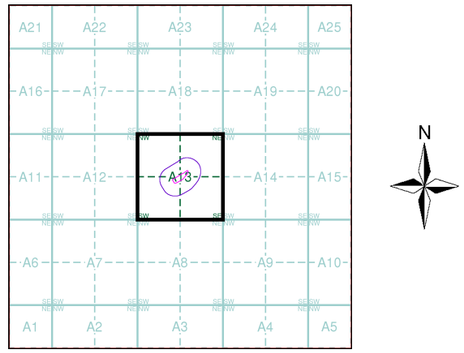
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A13



Order Details

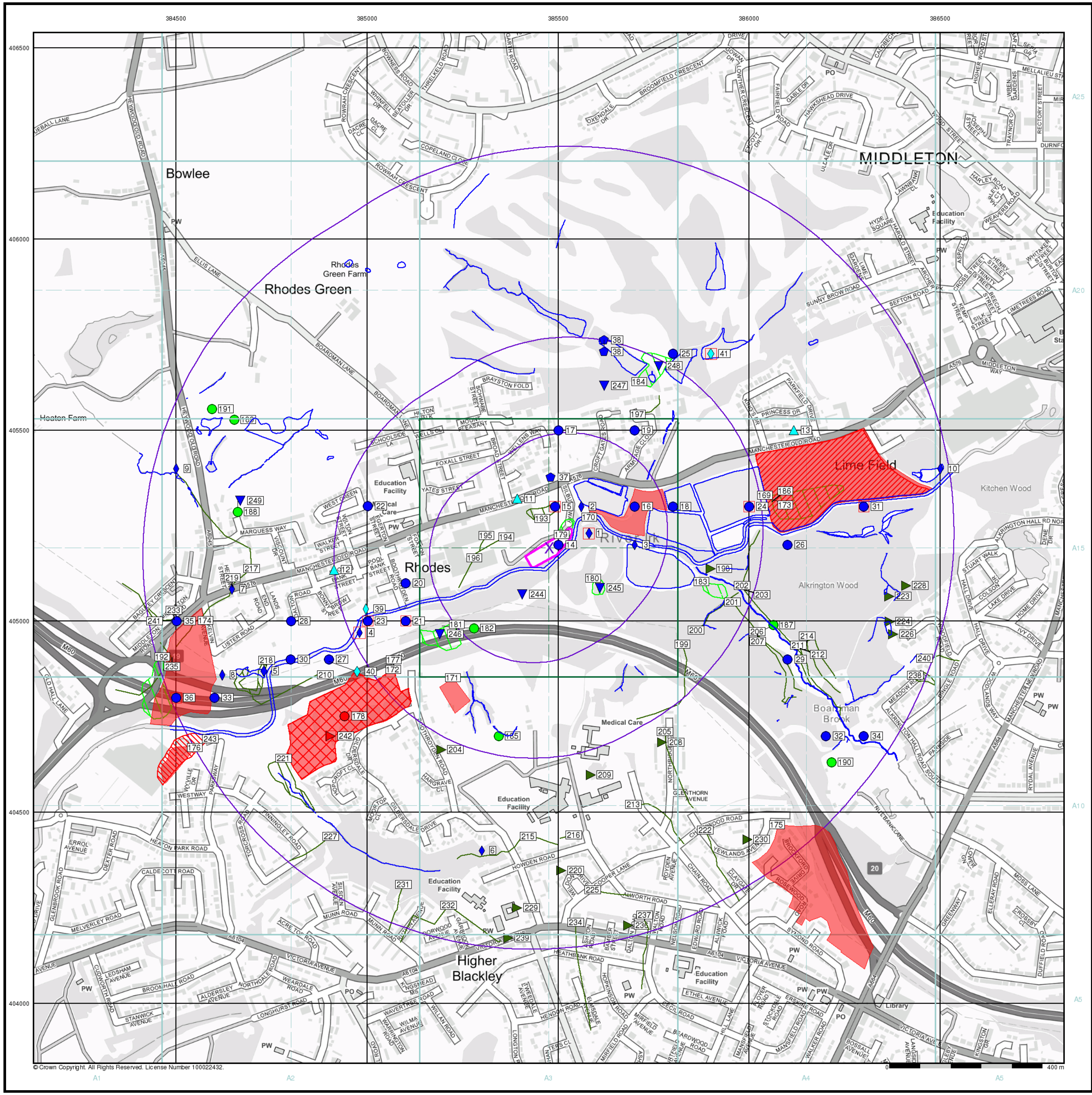
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Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Plot Buffer (m):	100

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
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- Local Authority Recorded Landfill Site
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- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

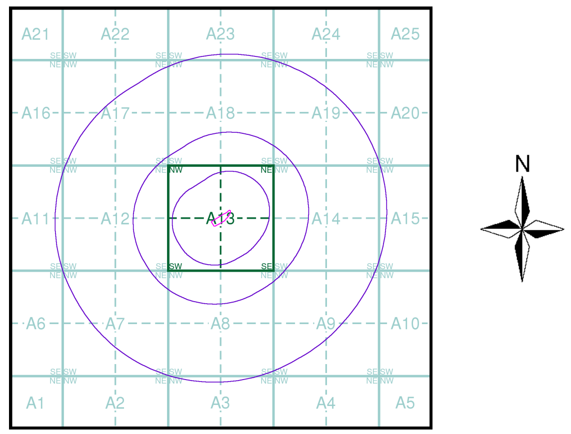
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Recorded Mineral Site

Site Sensitivity Map - Slice A



Order Details

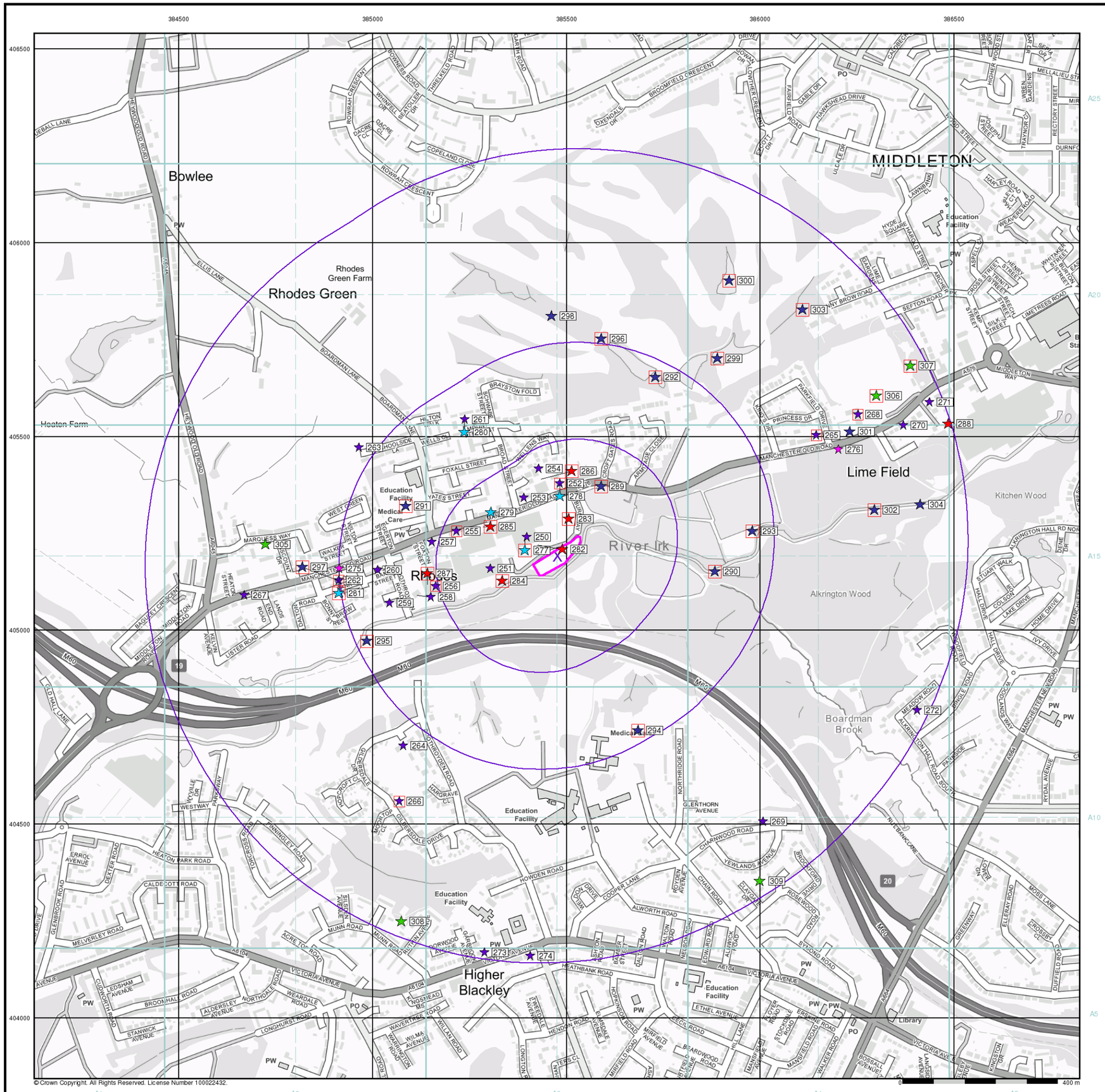
Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

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Industrial Land Use Map

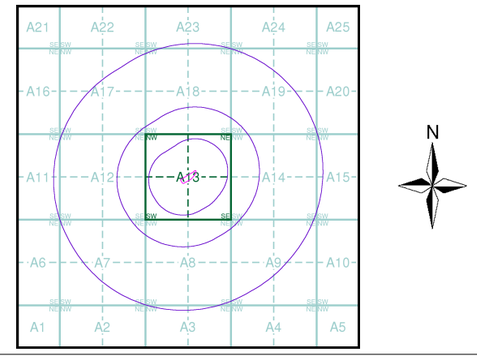
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

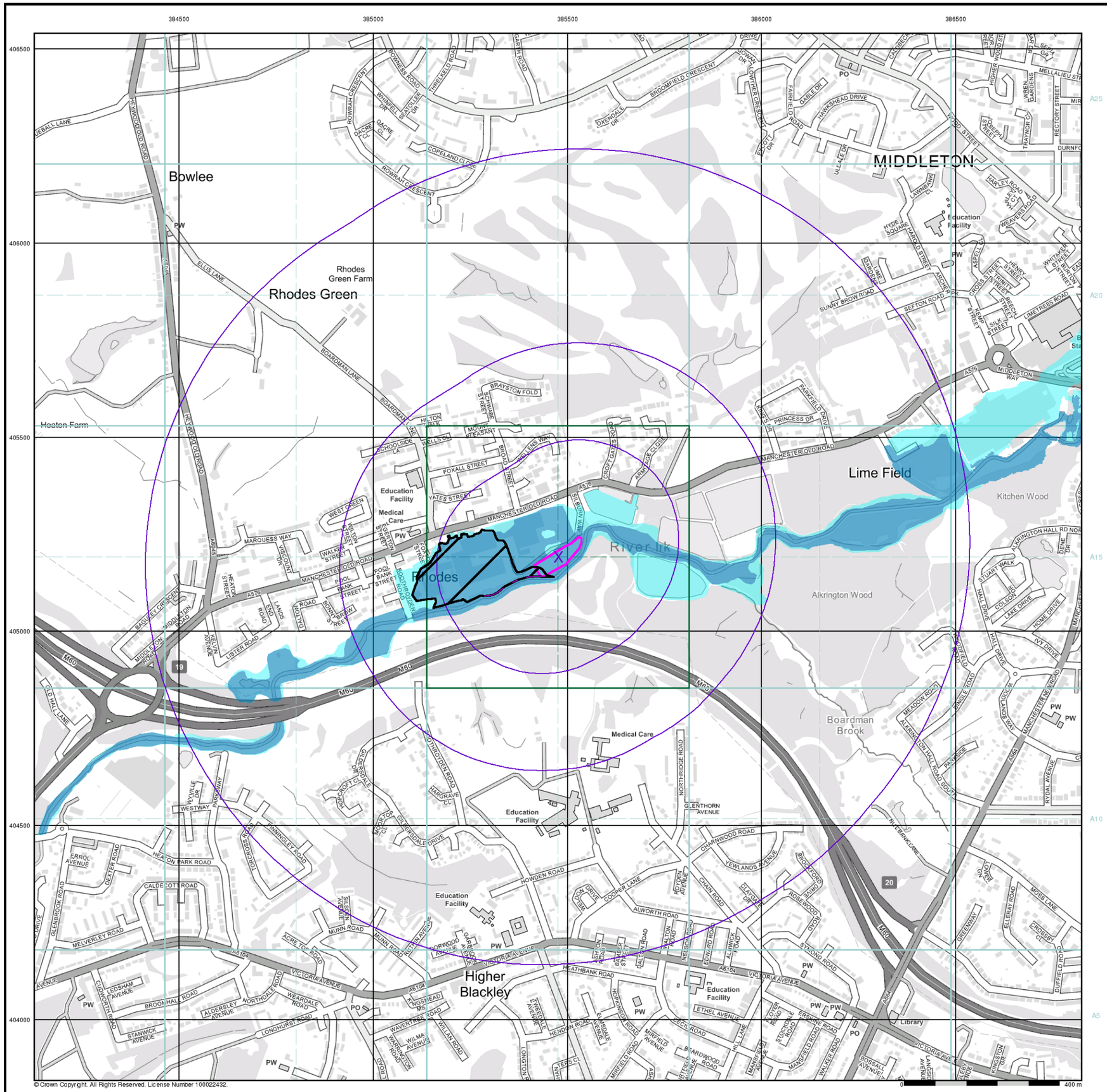
Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
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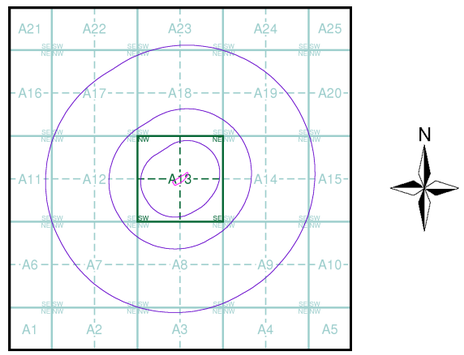
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

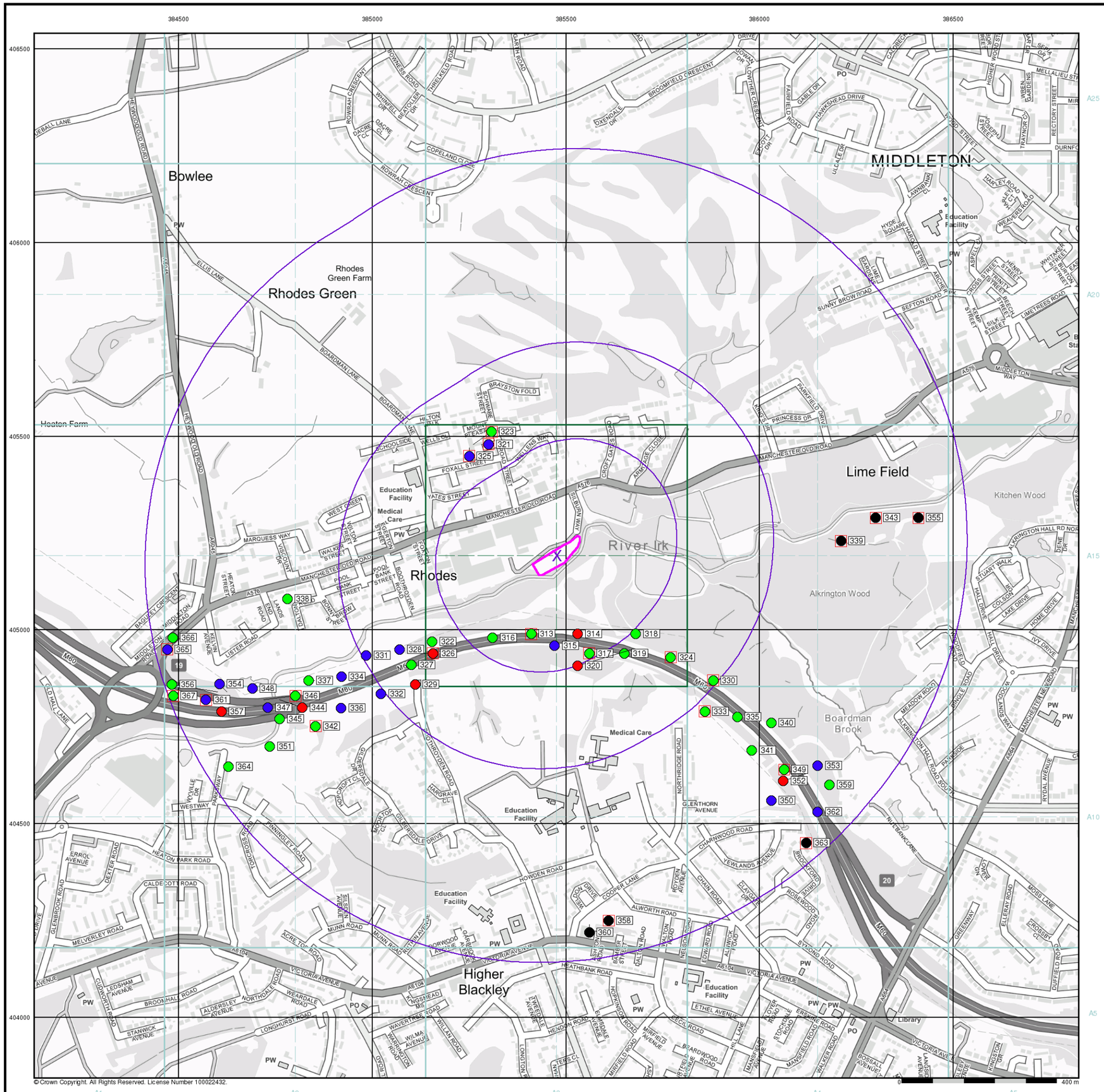
Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

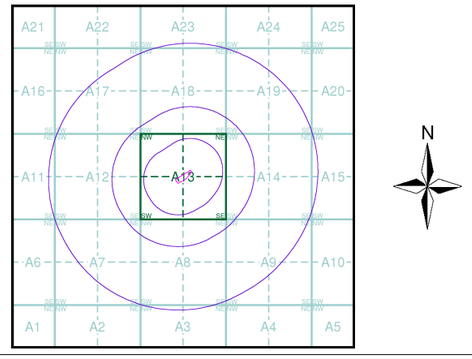
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

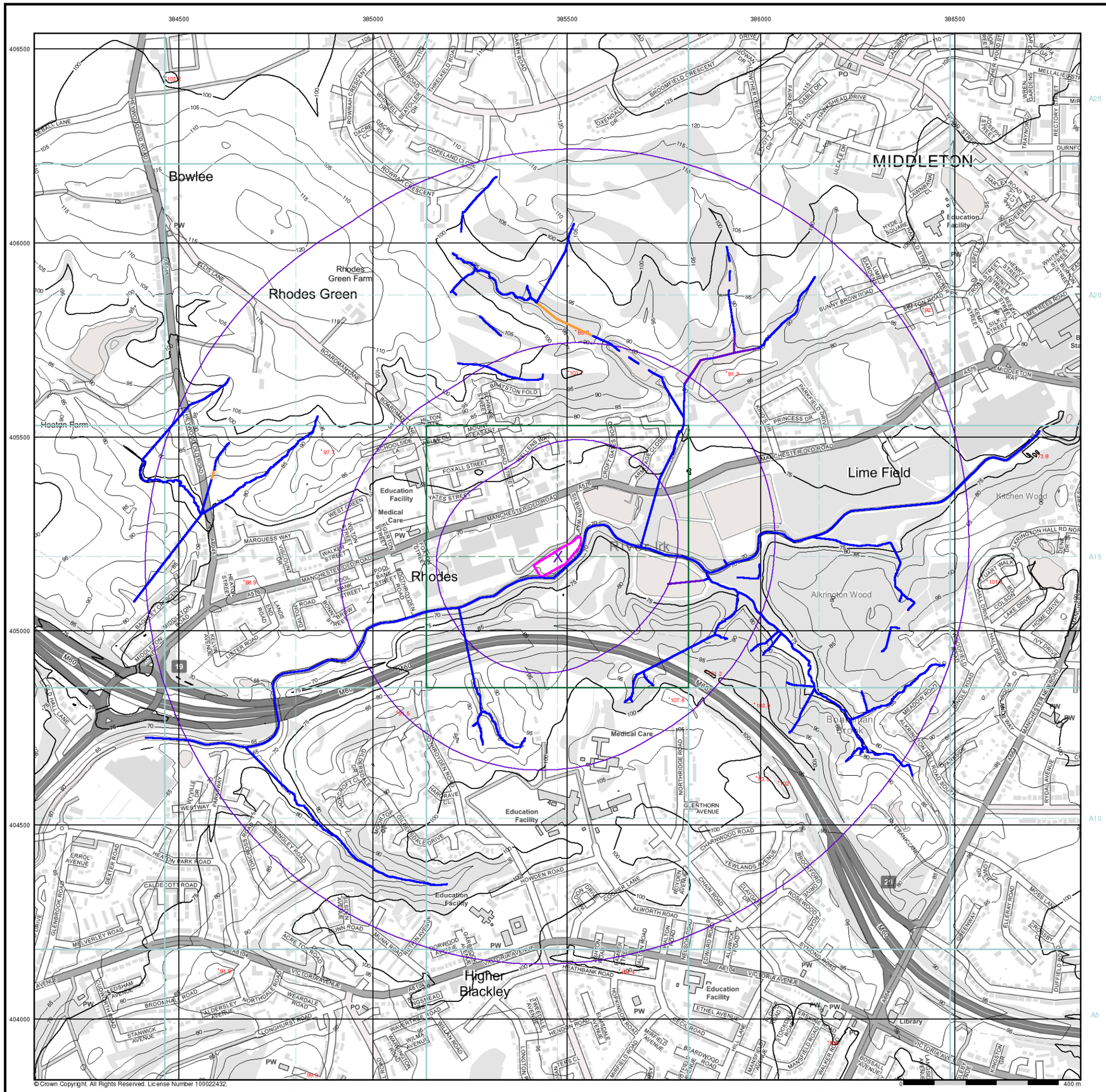
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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

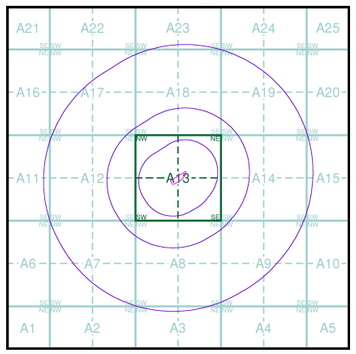
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

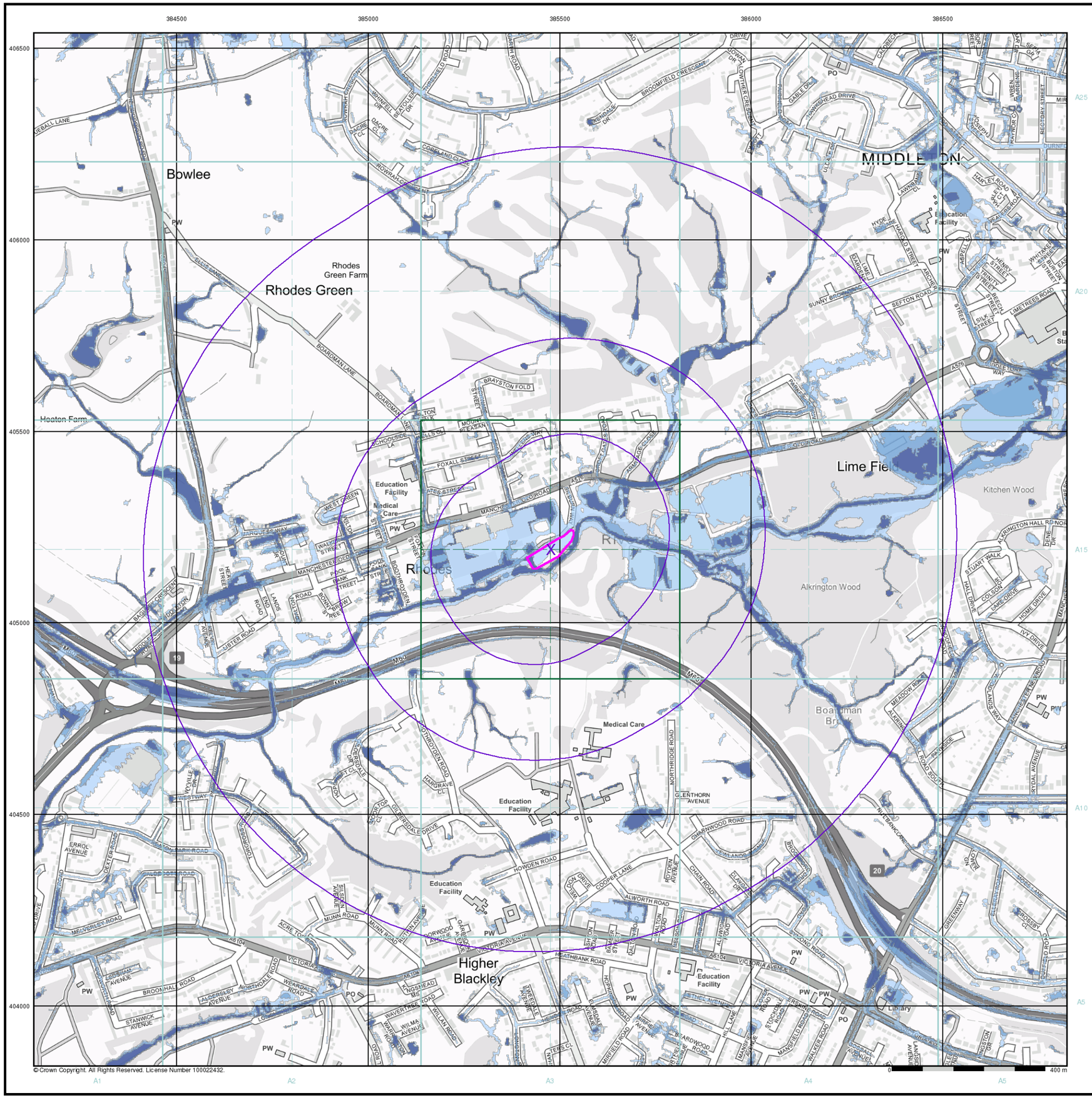
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General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Risk of Flooding from Surface Water

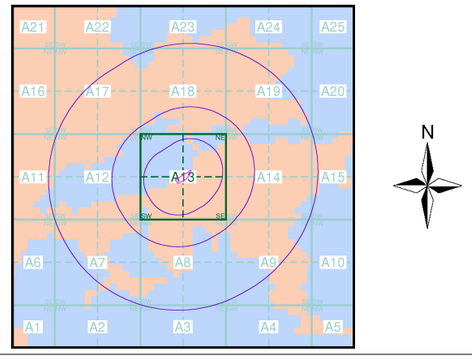
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

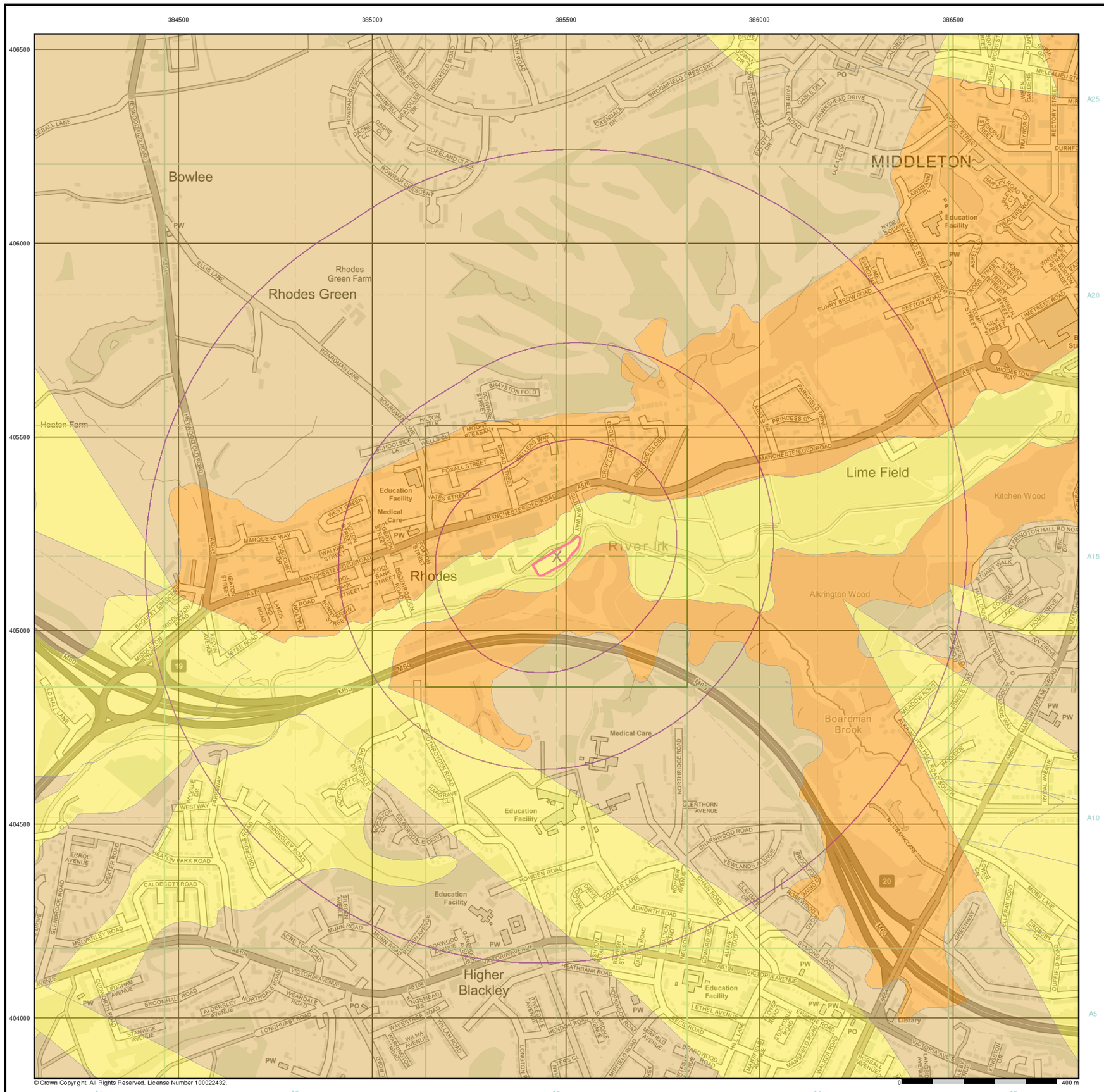
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General

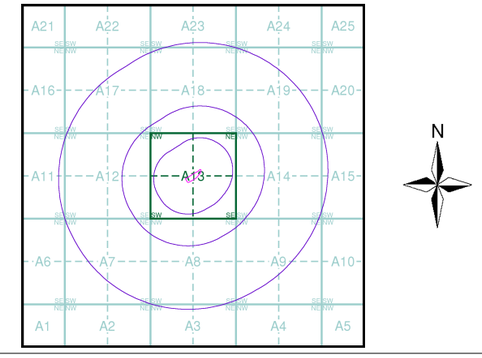
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



Order Details

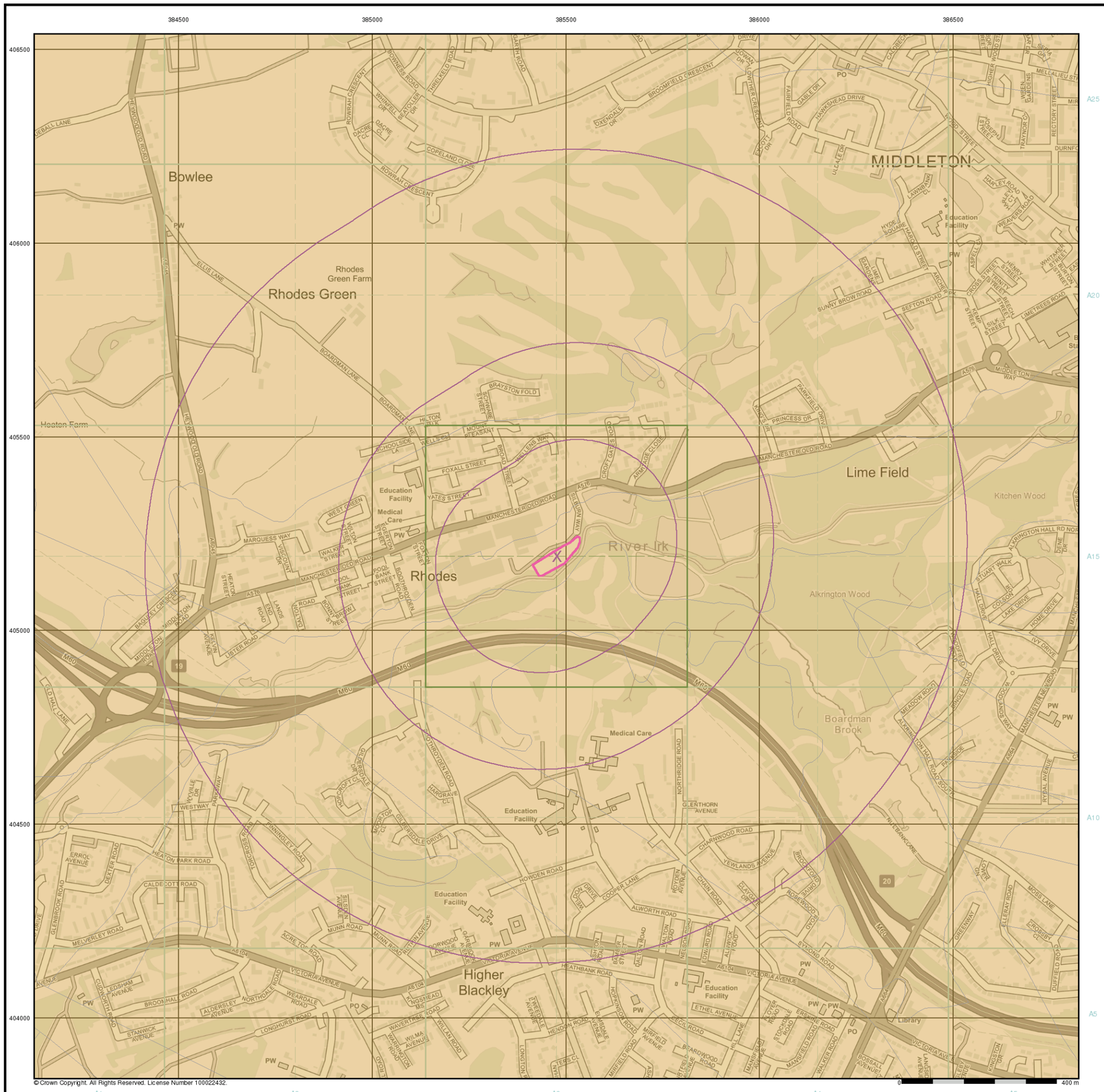
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Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
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General

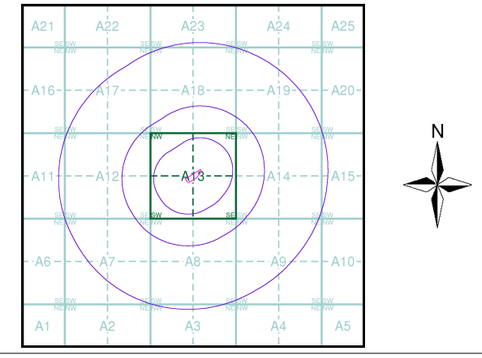
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



Order Details

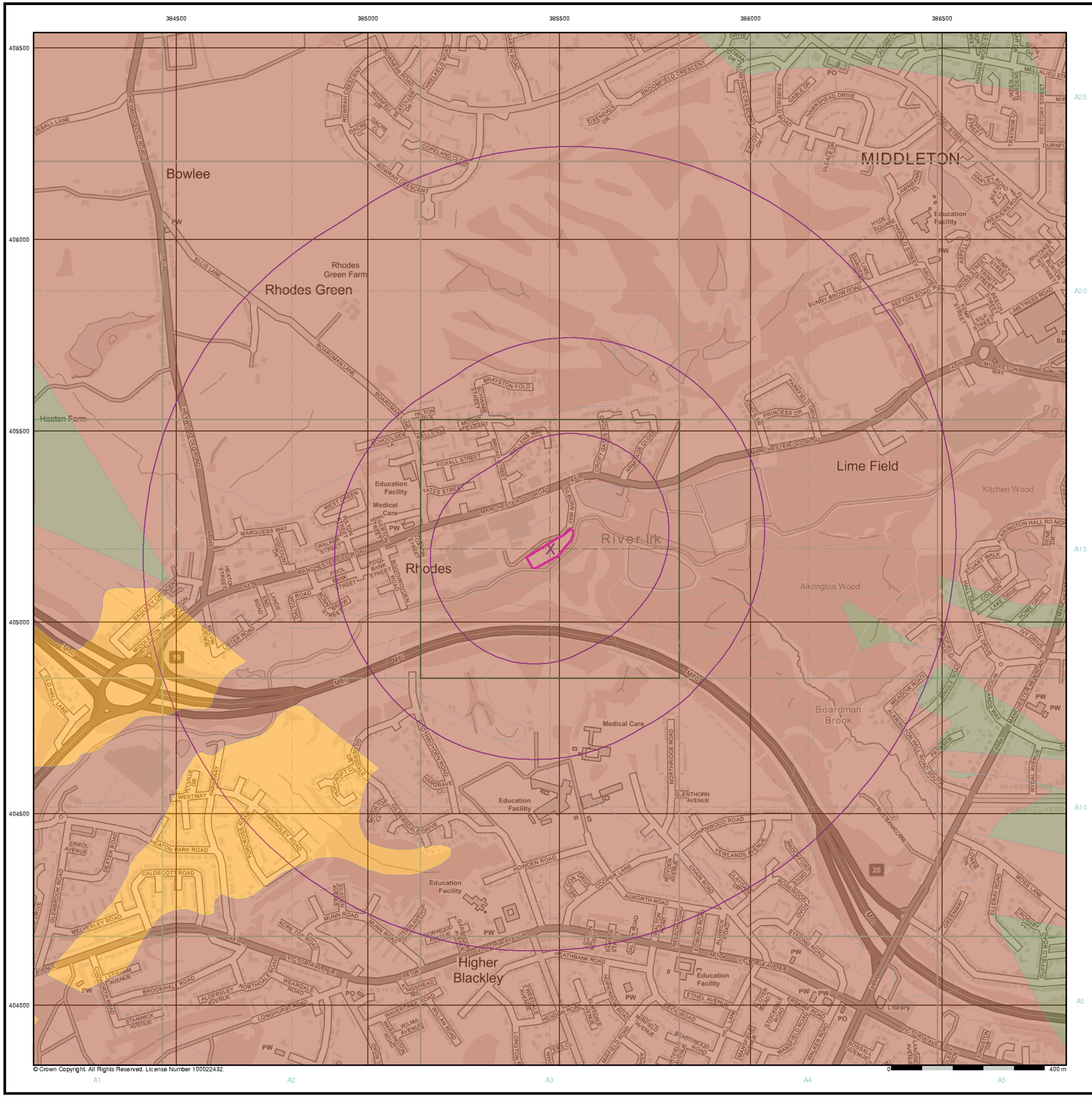
Order Details:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
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General

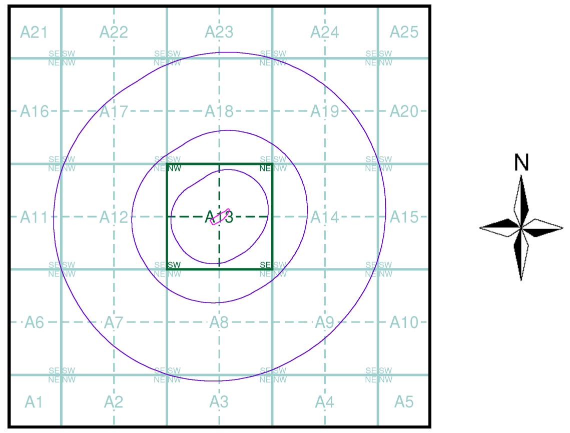
Specified Site — Specified Buffer(s) — X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



Order Details

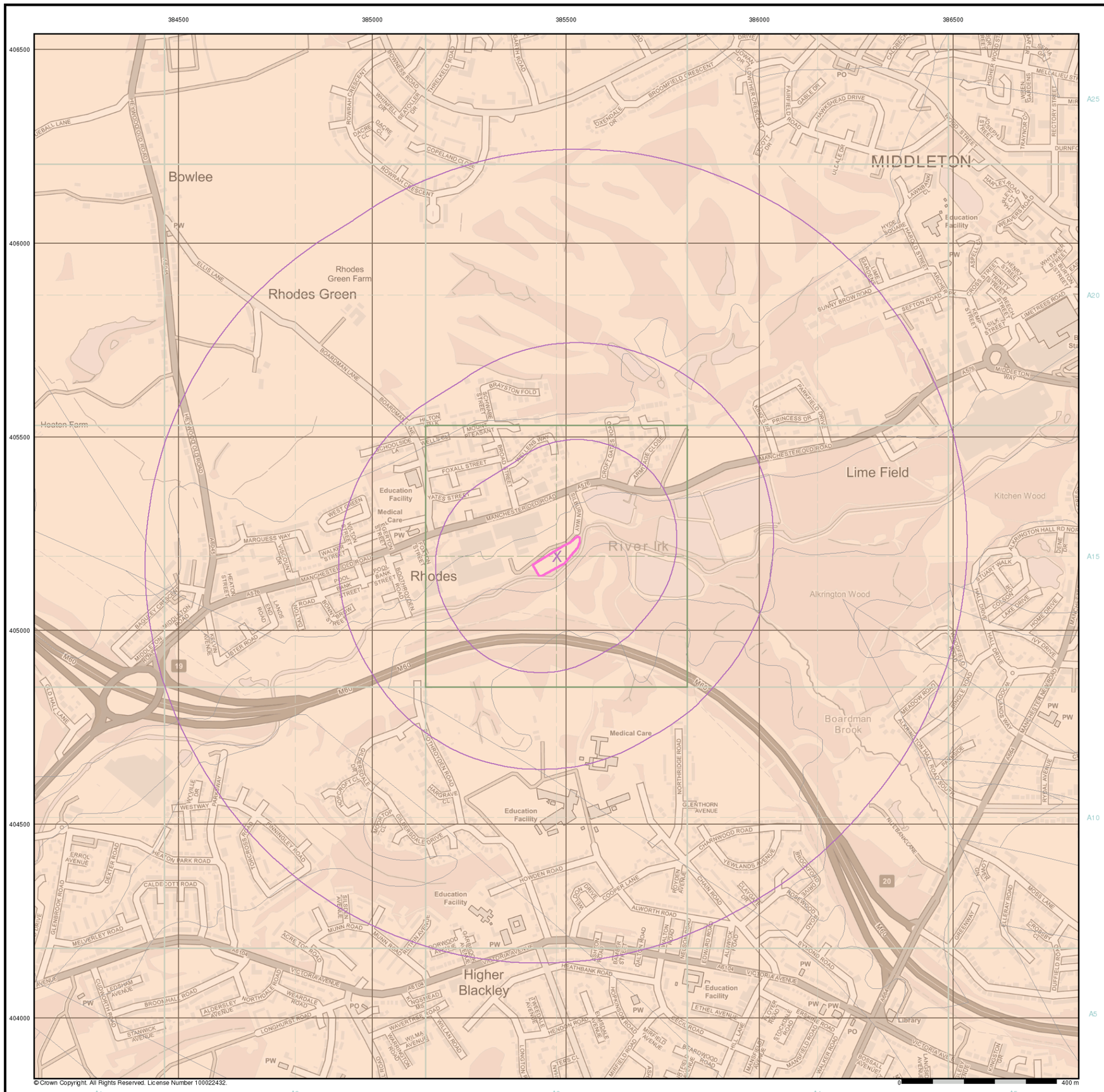
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Customer Ref:	STV6211
National Grid Reference:	385480, 405190
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General

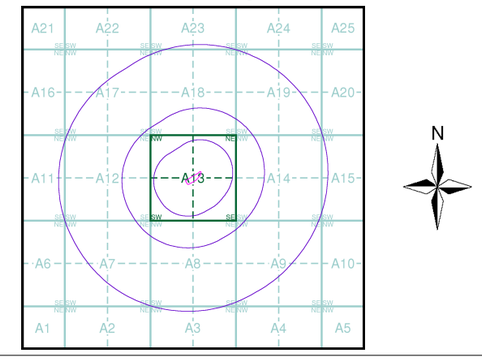
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



Order Details

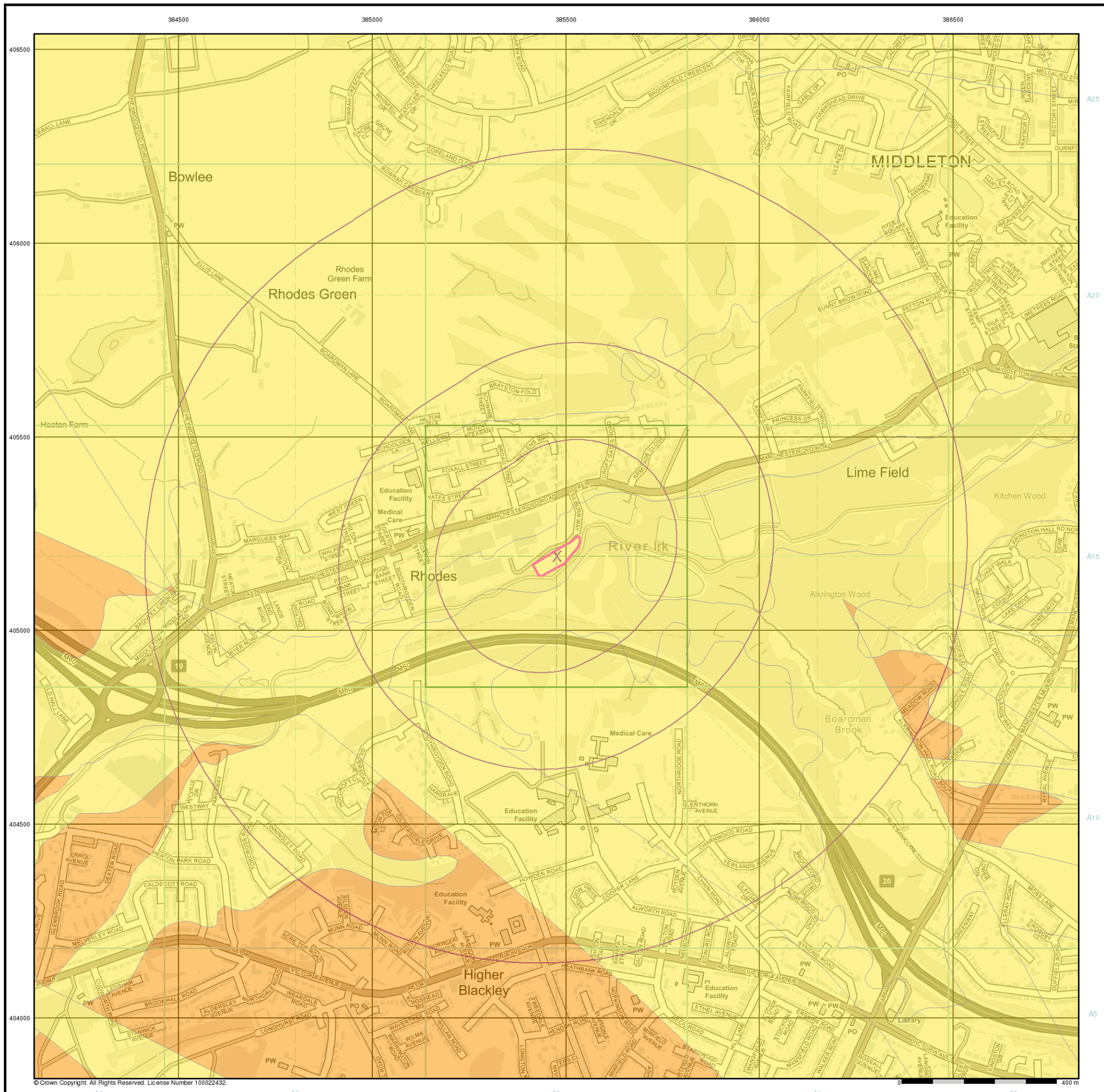
Order Details:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	1000

Site Details

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General

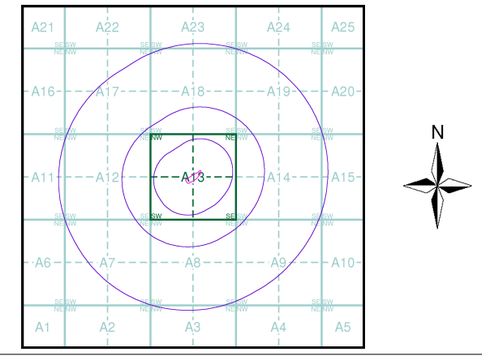
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details:	317048402_1_1
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Site Details

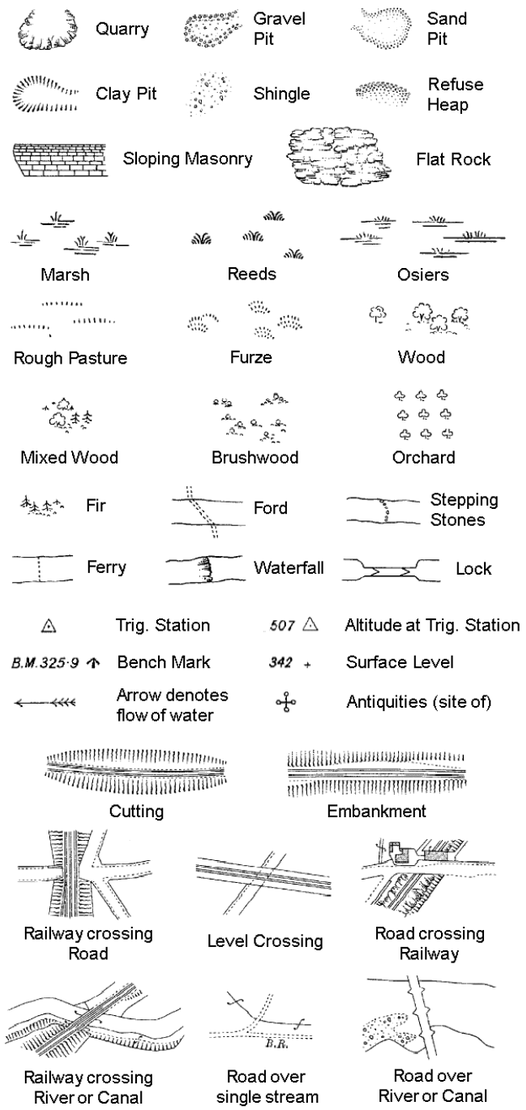
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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

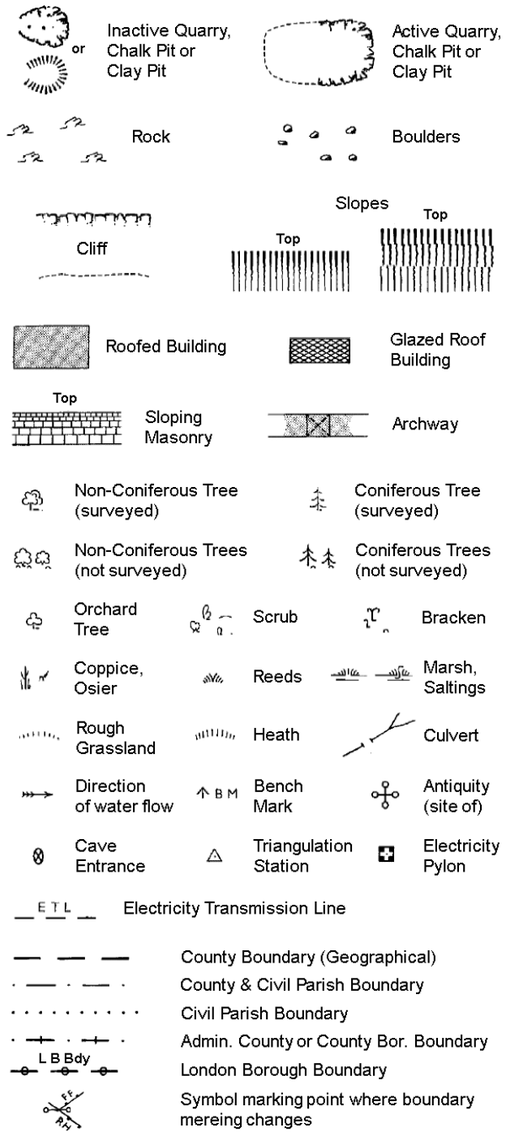
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

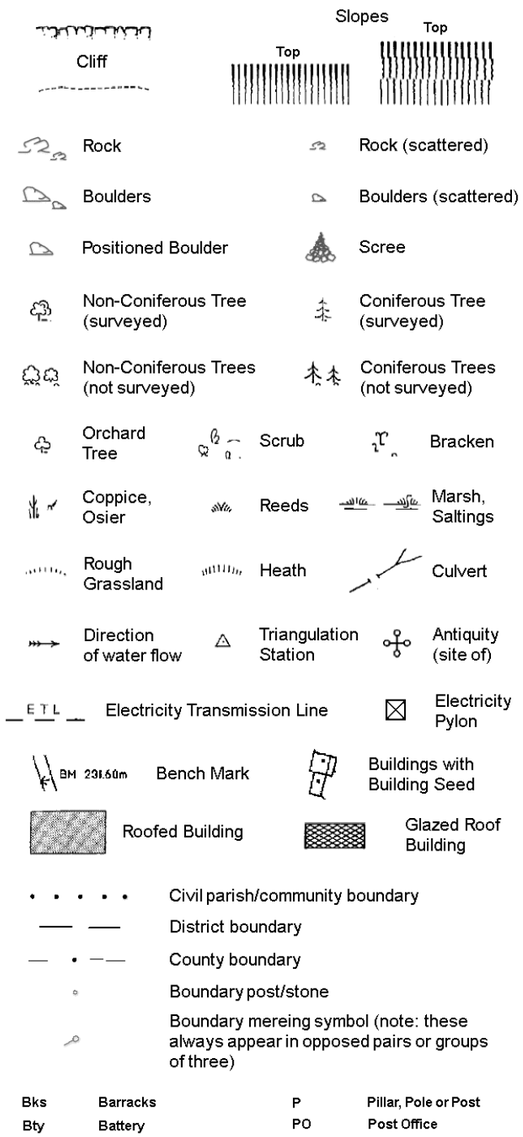
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

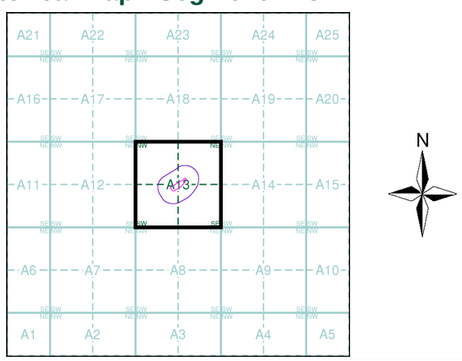
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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1893	2
Lancashire And Furness	1:2,500	1909	3
Lancashire And Furness	1:2,500	1932	4
Ordnance Survey Plan	1:1,250	1952 - 1955	5
Ordnance Survey Plan	1:2,500	1952 - 1955	6
Ordnance Survey Plan	1:1,250	1965 - 1968	7
Ordnance Survey Plan	1:2,500	1969	8
Supply of Unpublished Survey Information	1:1,250	1974 - 1976	9
Supply of Unpublished Survey Information	1:1,250	1975	10
Ordnance Survey Plan	1:1,250	1977	11
Additional SIMs	1:1,250	1984 - 1988	12
Additional SIMs	1:1,250	1985 - 1990	13
Additional SIMs	1:1,250	1991	14
Large-Scale National Grid Data	1:1,250	1992	15
Large-Scale National Grid Data	1:1,250	1994	16
Large-Scale National Grid Data	1:1,250	1996	17
Historical Aerial Photography	1:2,500	2000	18

Historical Map - Segment A13



Order Details

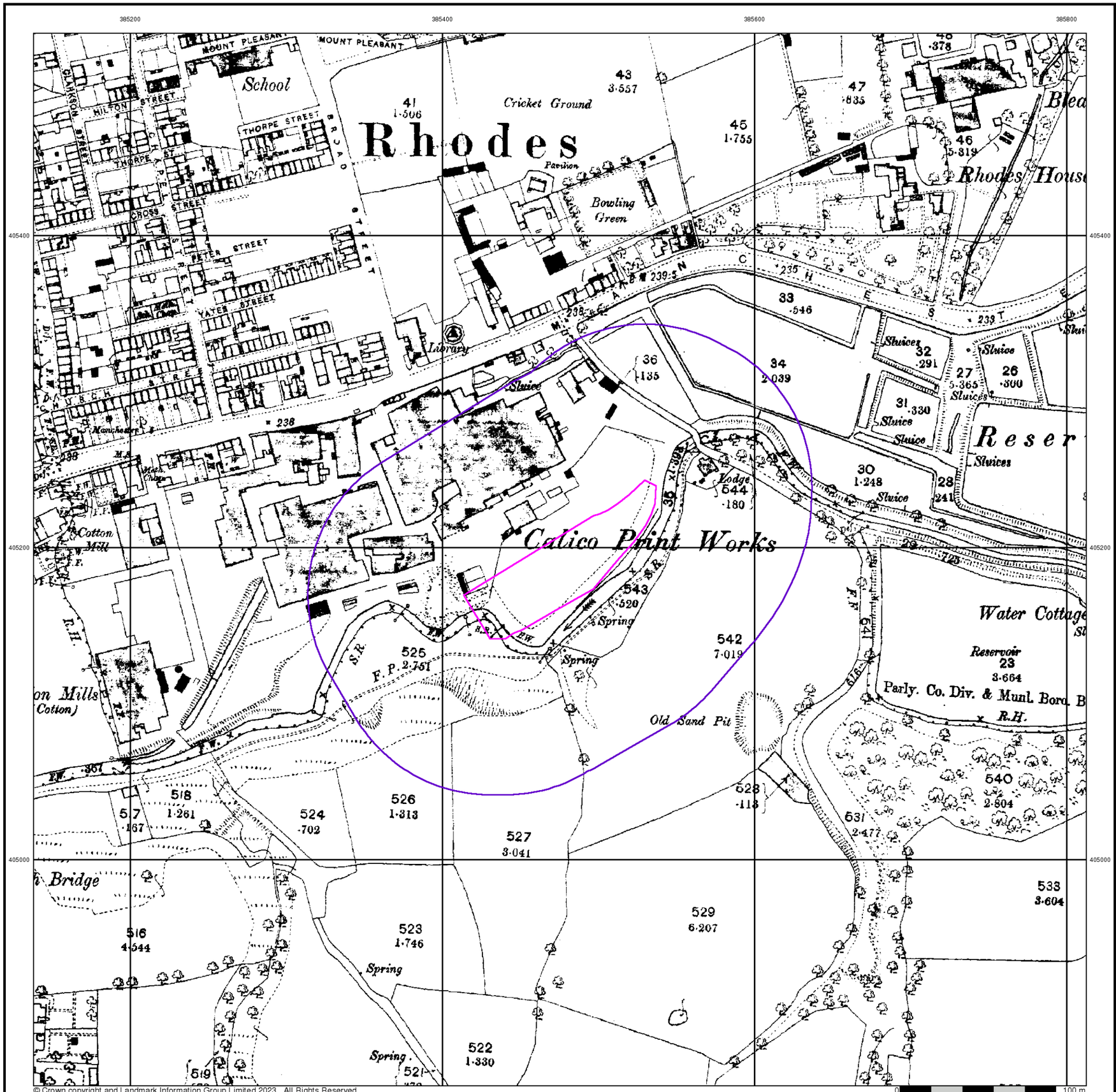
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Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	100

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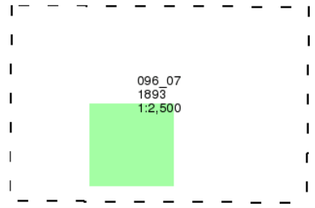
Lancashire And Furness

Published 1893

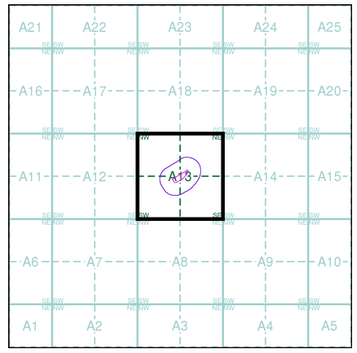
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

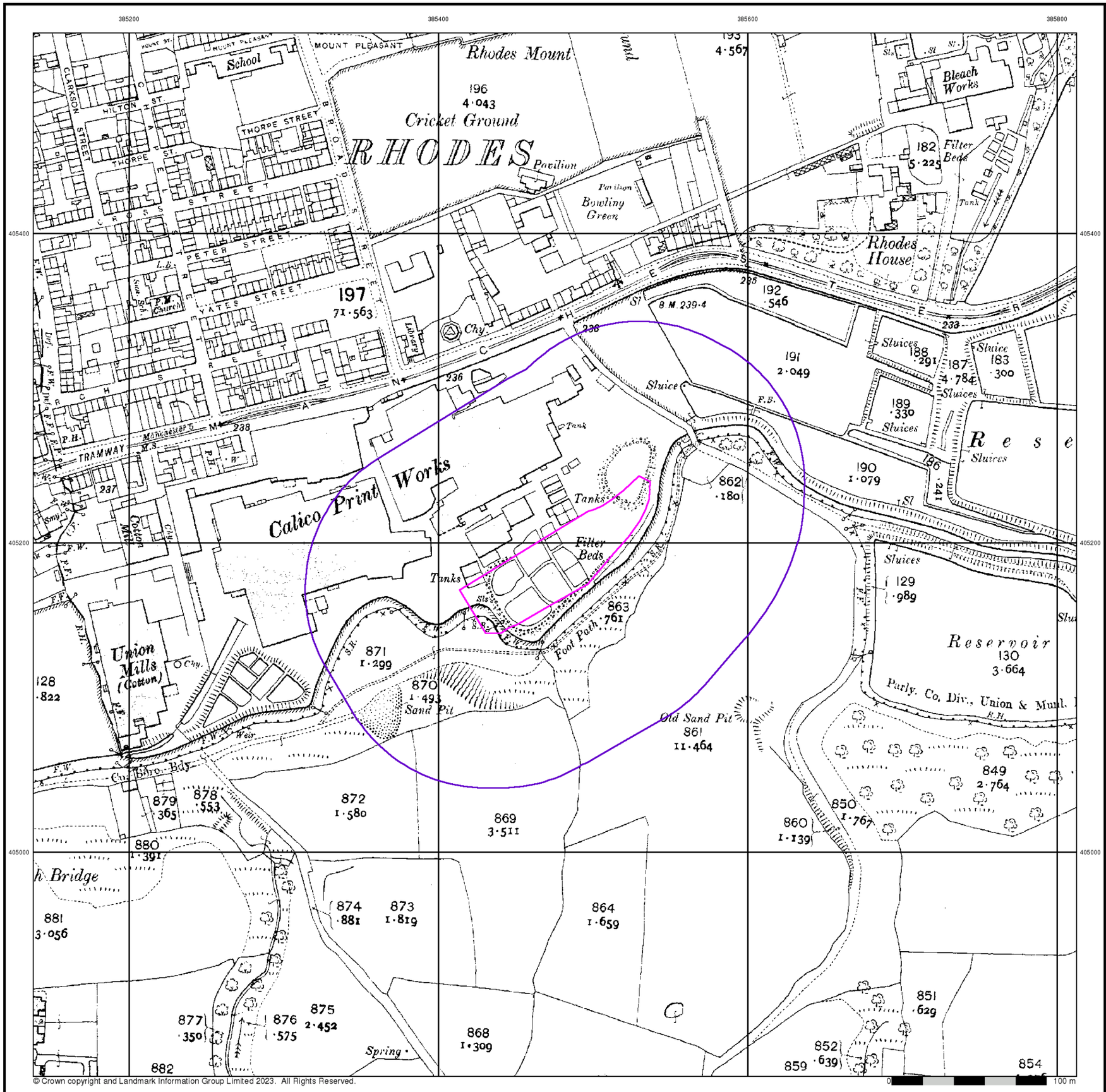
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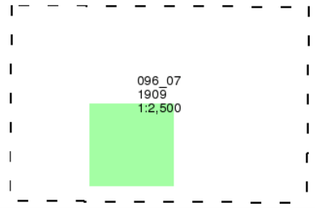
Lancashire And Furness

Published 1909

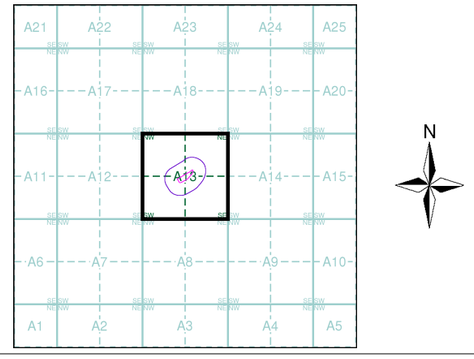
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

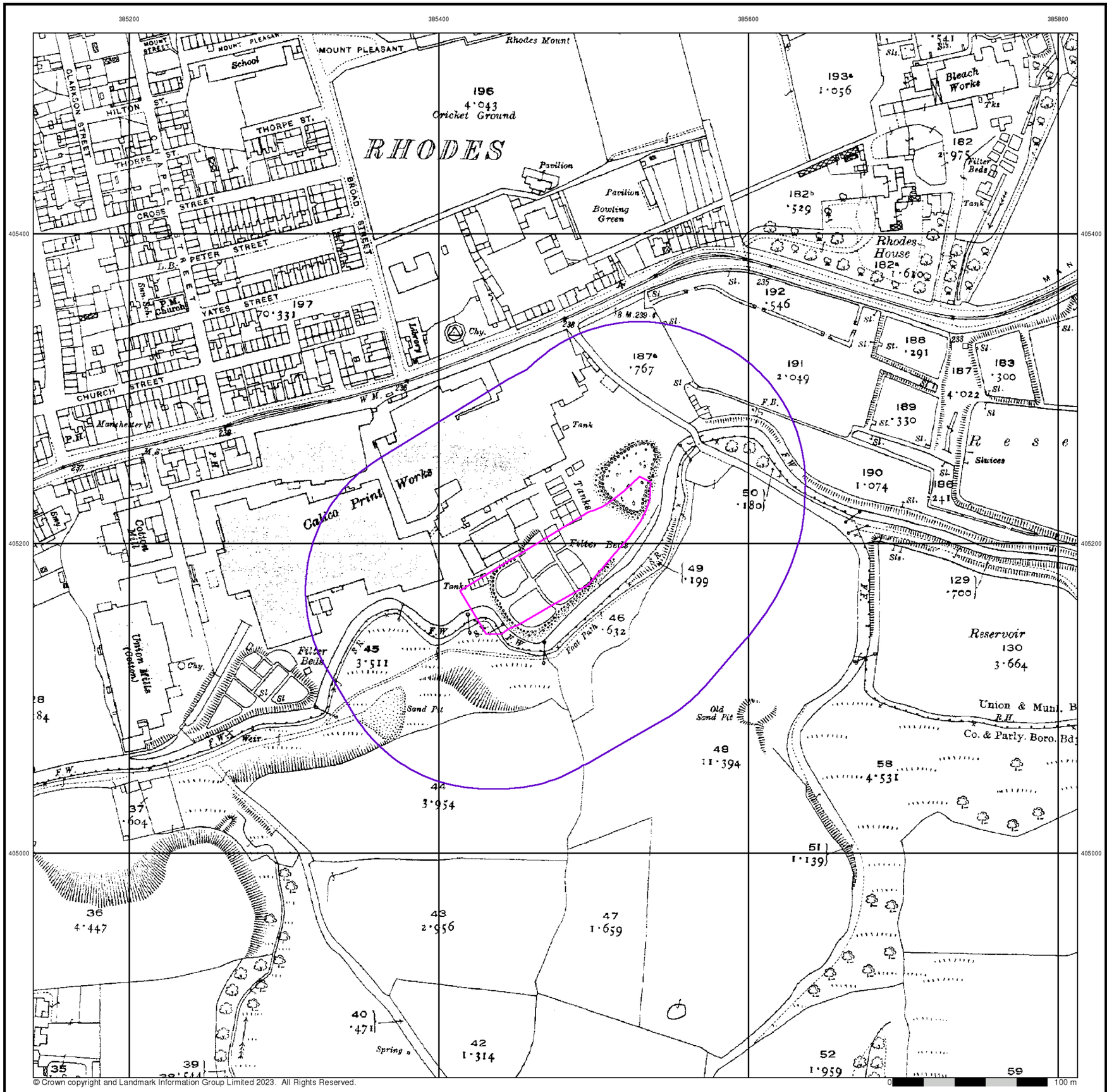
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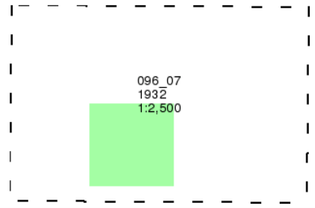
Lancashire And Furness

Published 1932

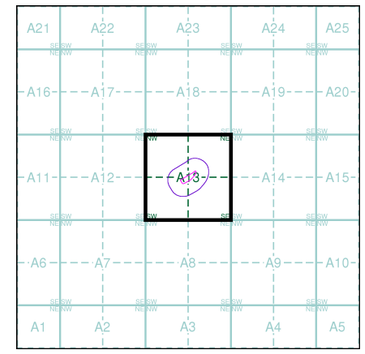
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

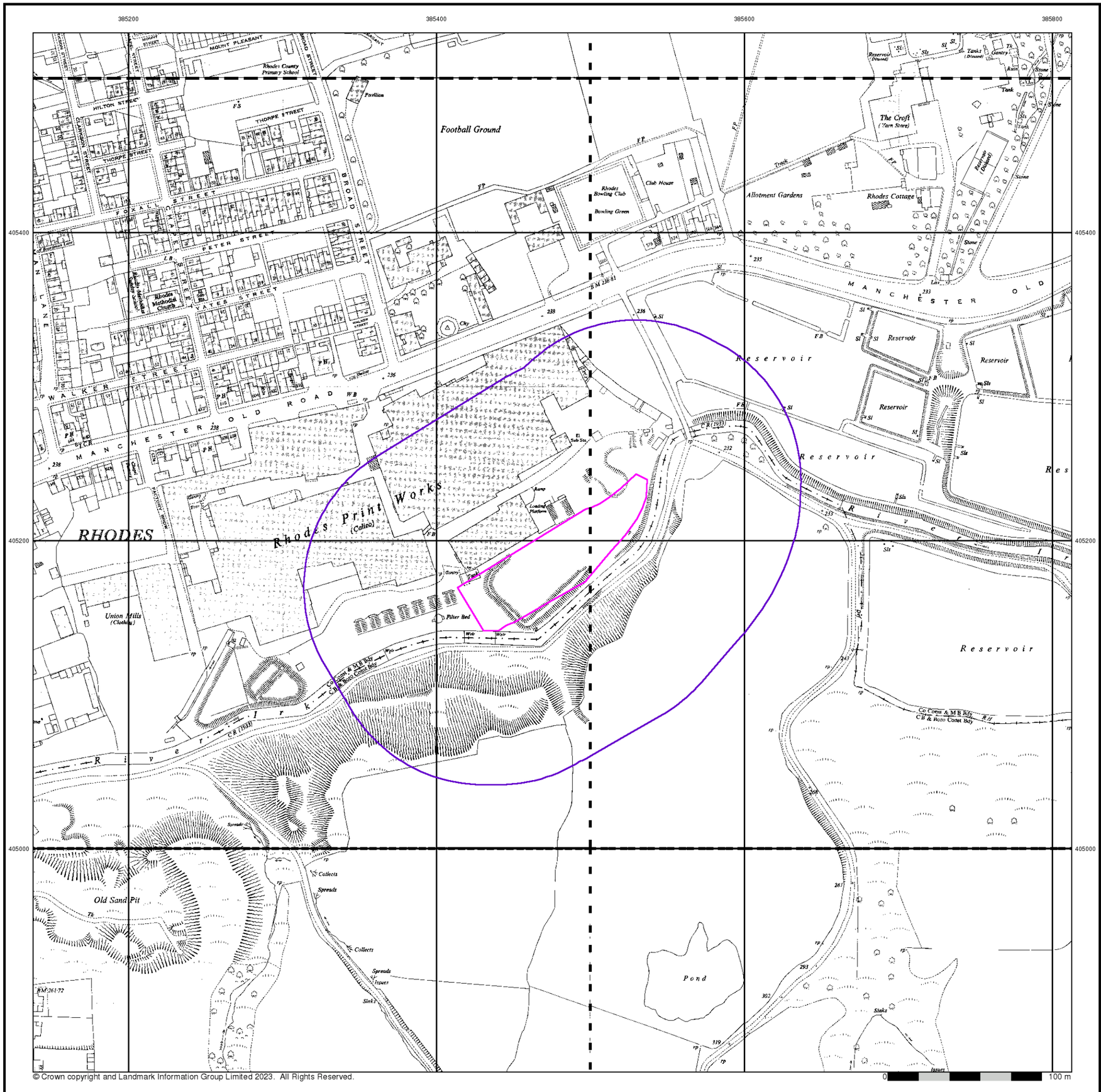
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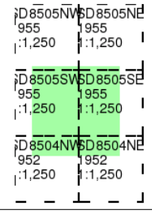
Ordnance Survey Plan

Published 1952 - 1955

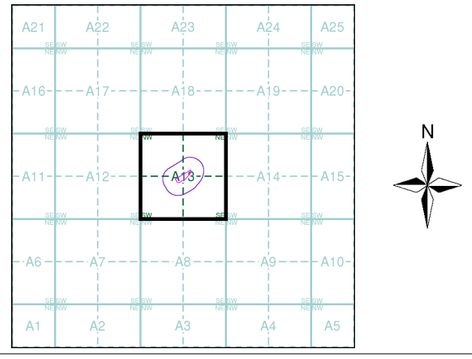
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

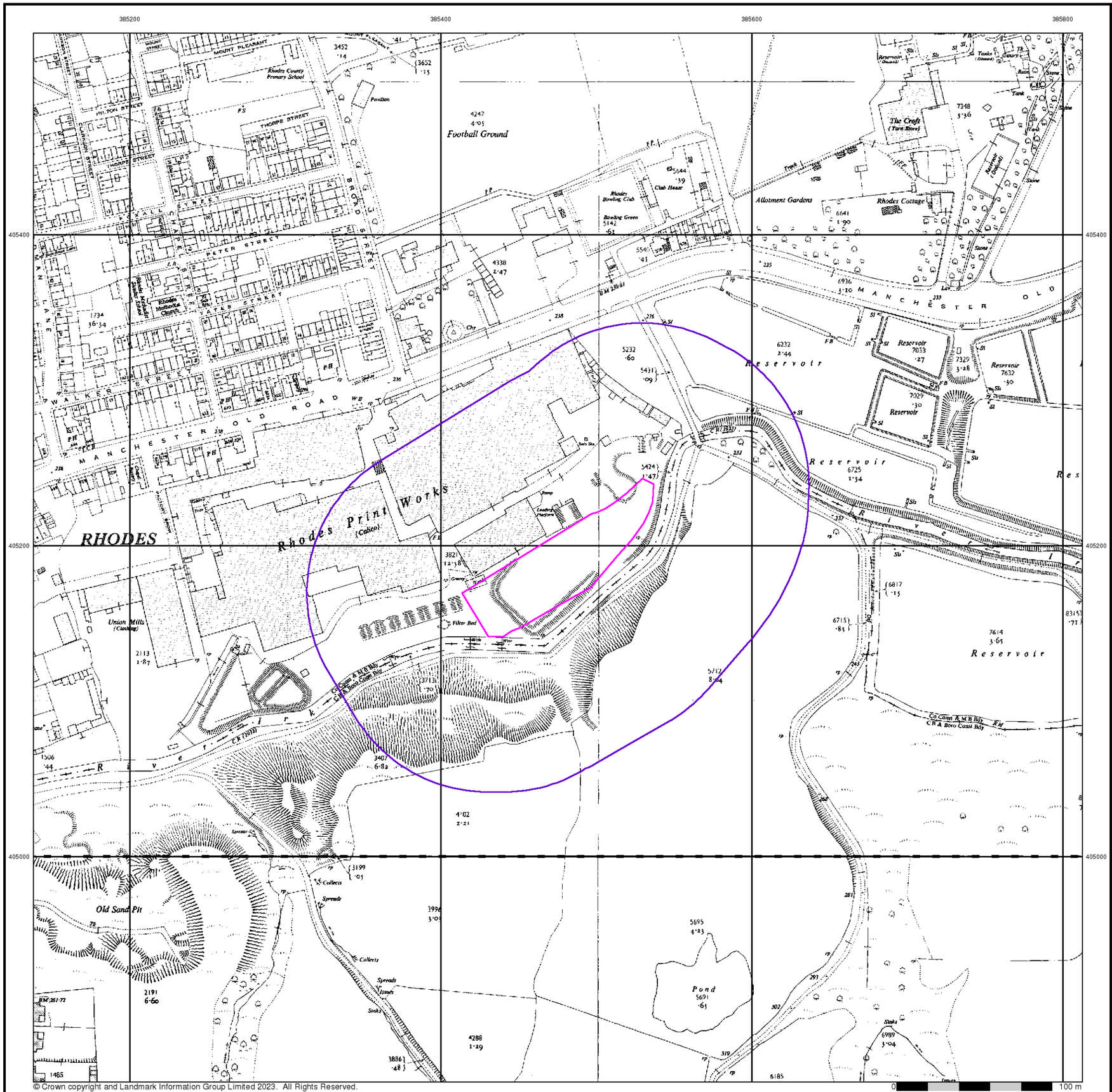
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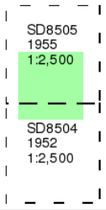
Ordnance Survey Plan

Published 1952 - 1955

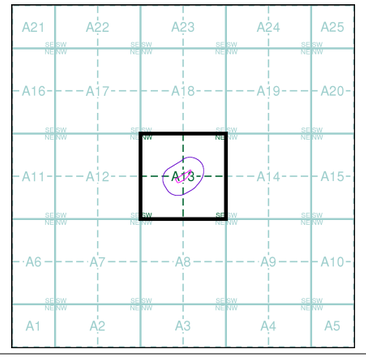
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

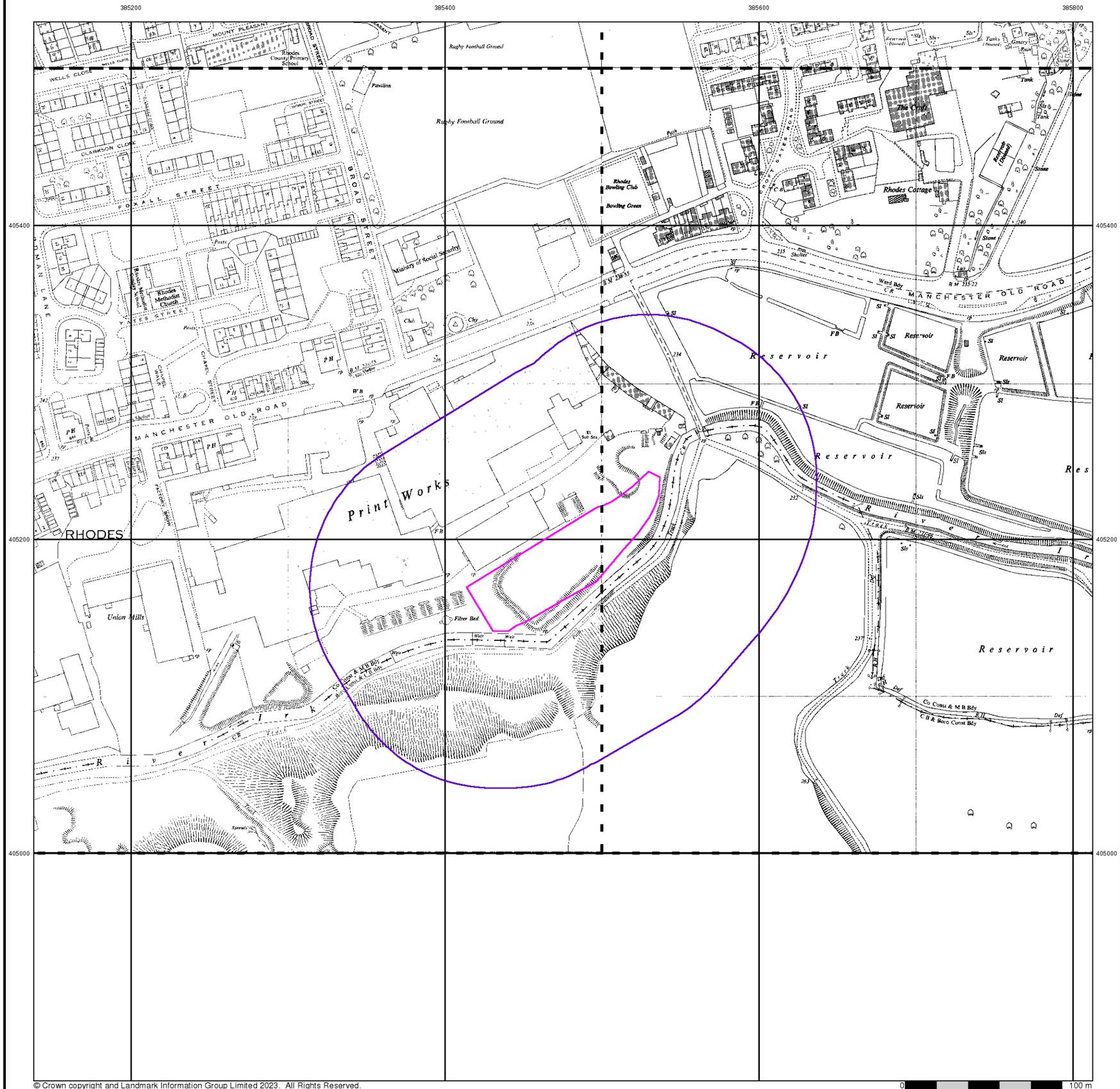
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Ordnance Survey Plan

Published 1965 - 1968

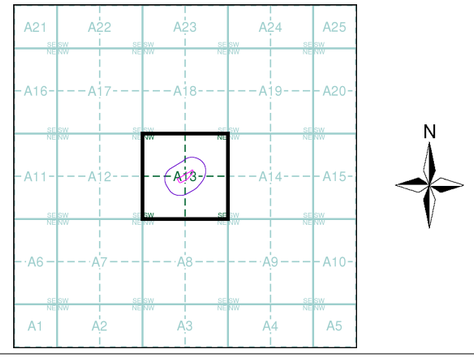
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SD8505NW 1968 1:1,250	SD8505NE 1965 1:1,250
SD8505SW 1968 1:1,250	SD8505SE 1965 1:1,250

Historical Map - Segment A13



Order Details

Order Number:	317048402_1_1
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National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	100

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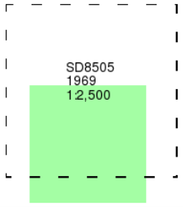
Ordnance Survey Plan

Published 1969

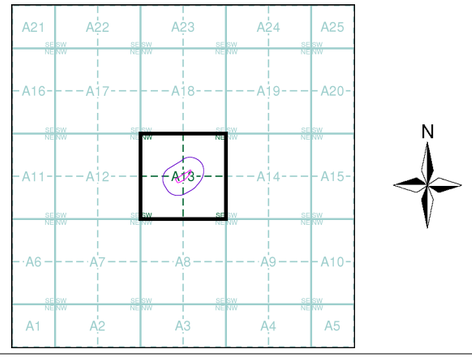
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



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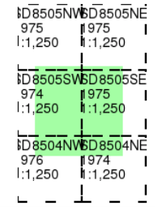
Supply of Unpublished Survey Information

Published 1974 - 1976

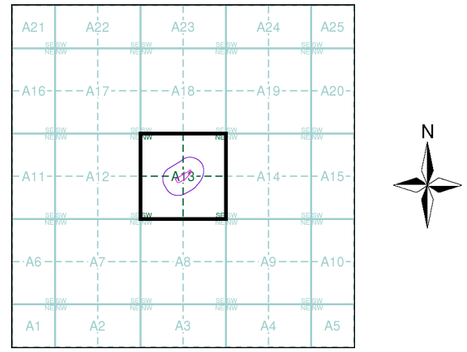
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	317048402_1_1
Customer Ref:	STV6211
National Grid Reference:	385480, 405190
Slice:	A
Site Area (Ha):	0.47
Search Buffer (m):	100

Site Details

Rhodes Business Park, Silburn Way, Middleton, Manchester, M24 4NE

Landmark INFORMATION GROUP

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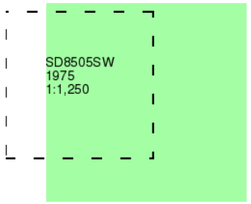
Supply of Unpublished Survey Information

Published 1975

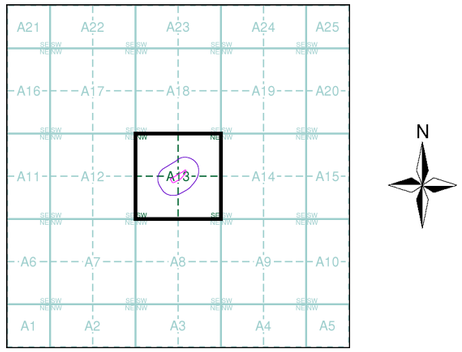
Source map scale - 1:1,250

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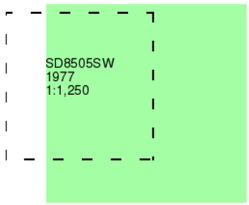
Ordnance Survey Plan

Published 1977

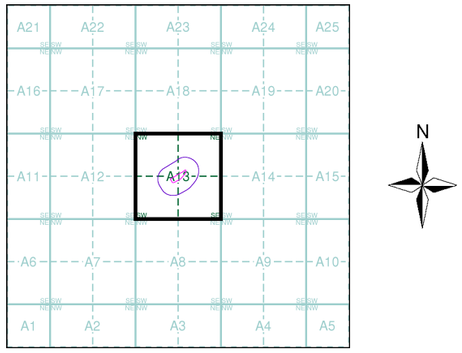
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

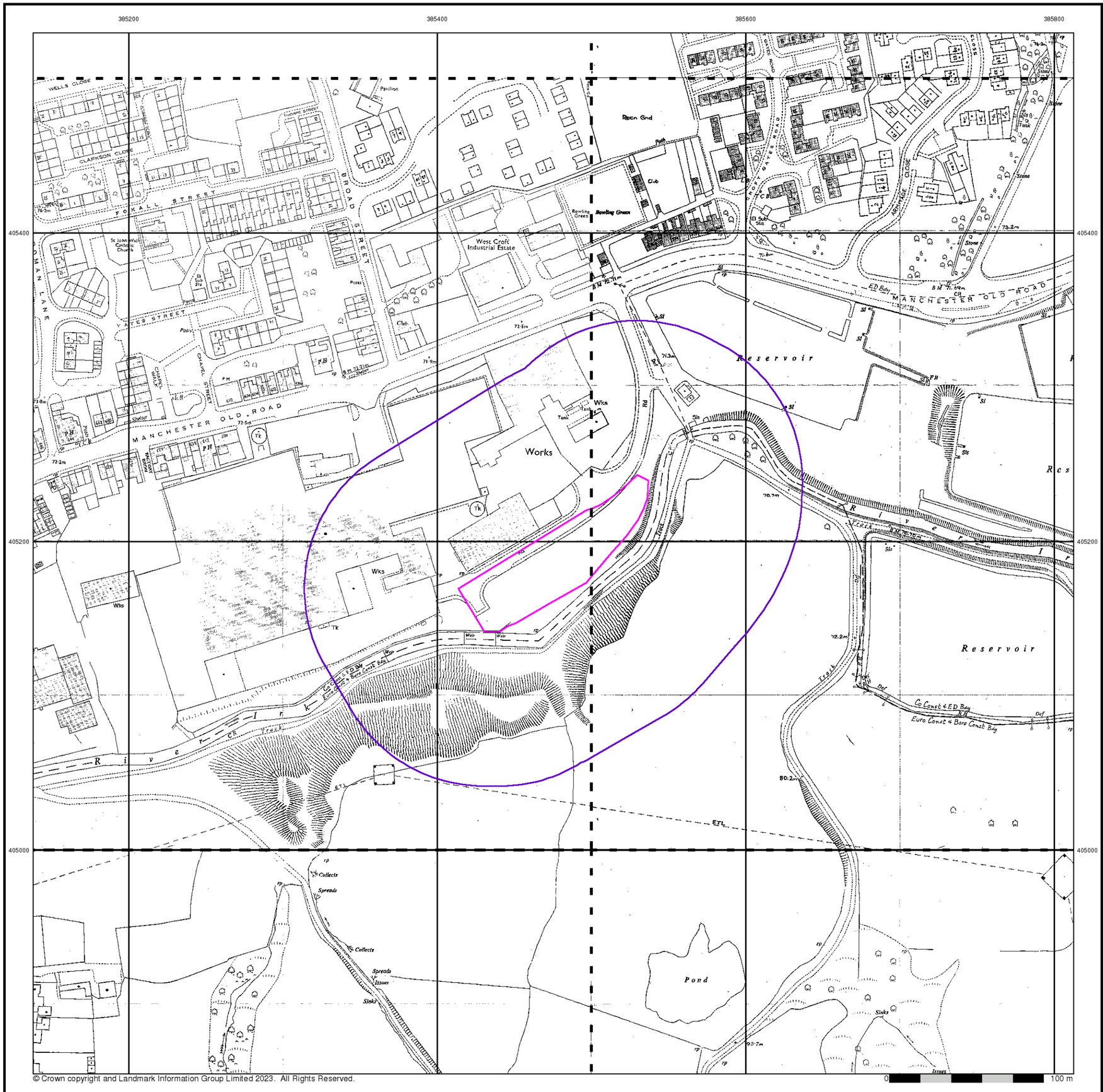
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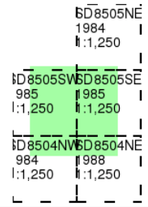
Additional SIMs

Published 1984 - 1988

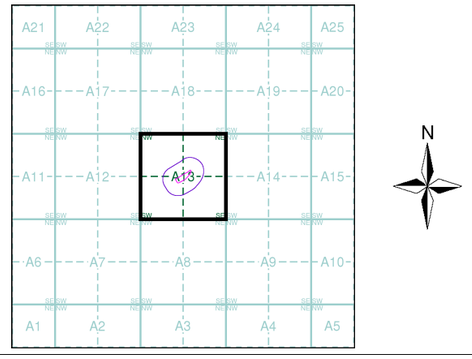
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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Additional SIMs

Published 1985 - 1990

Source map scale - 1:1,250

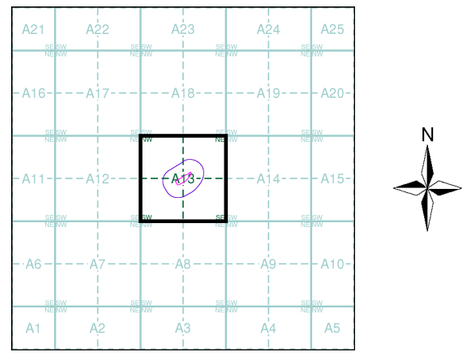
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Map Name(s) and Date(s)

SD8505SW
1985
1:1,250

SD8504NW
1990
1:1,250

Historical Map - Segment A13



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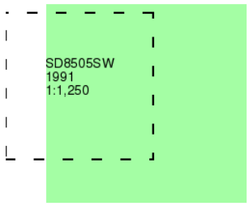
Additional SIMs

Published 1991

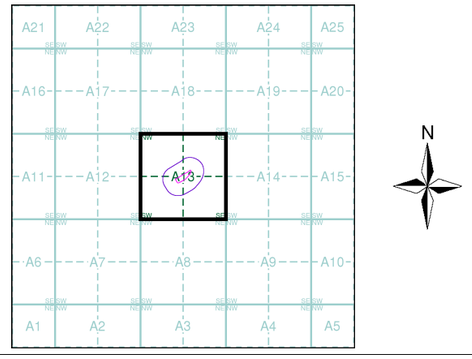
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A13



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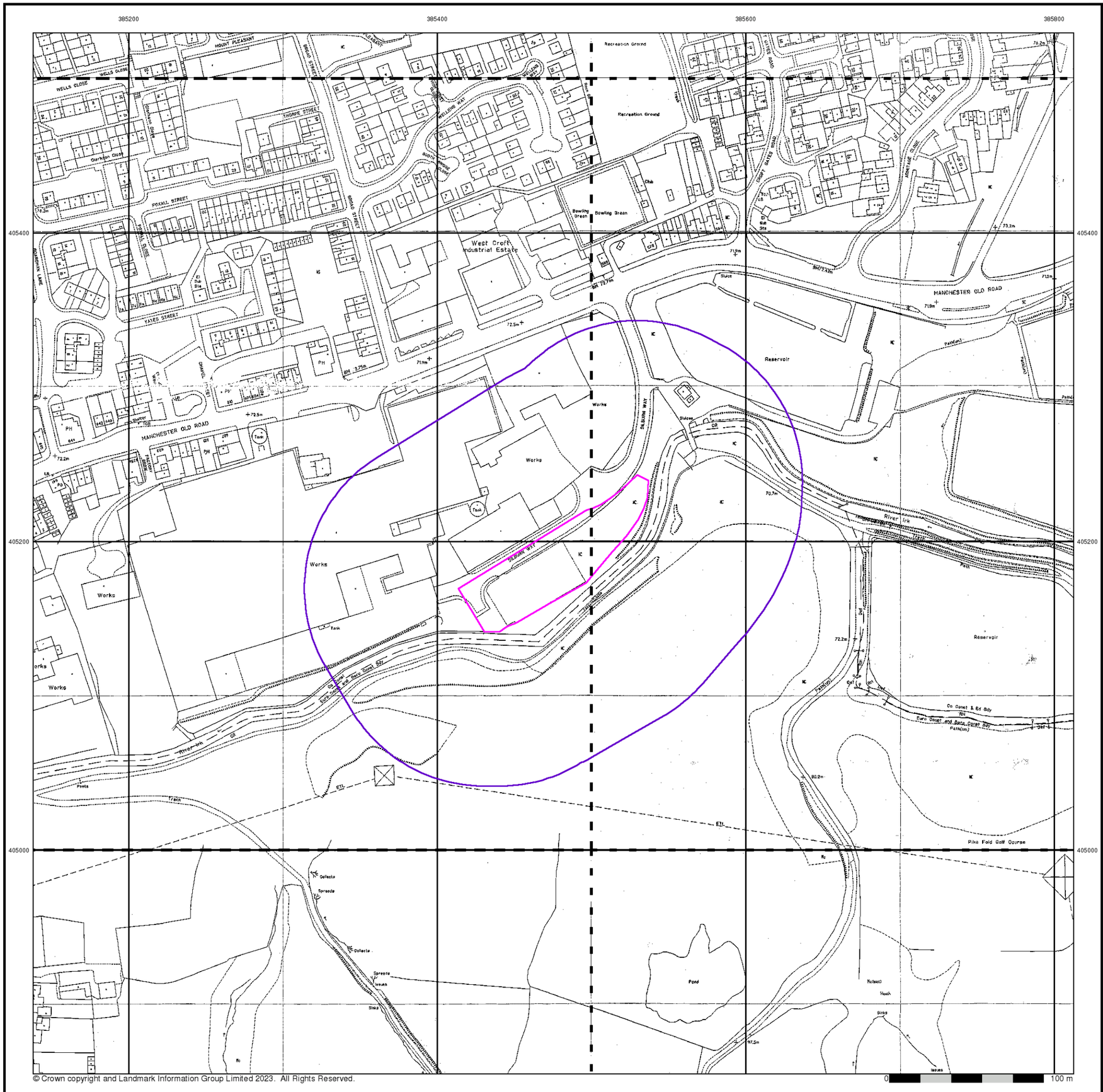
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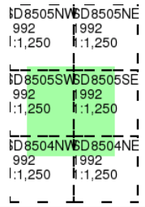
Large-Scale National Grid Data

Published 1992

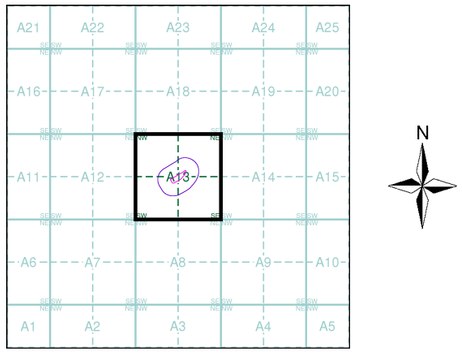
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



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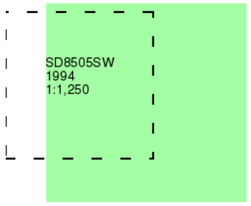
Large-Scale National Grid Data

Published 1994

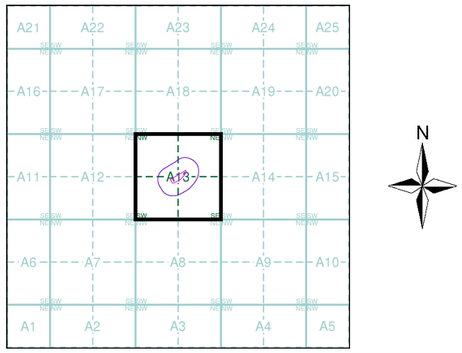
Source map scale - 1:1,250

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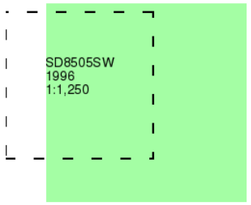
Large-Scale National Grid Data

Published 1996

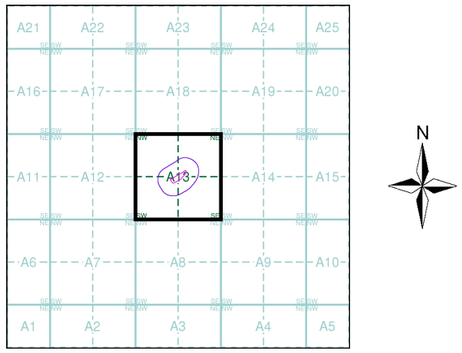
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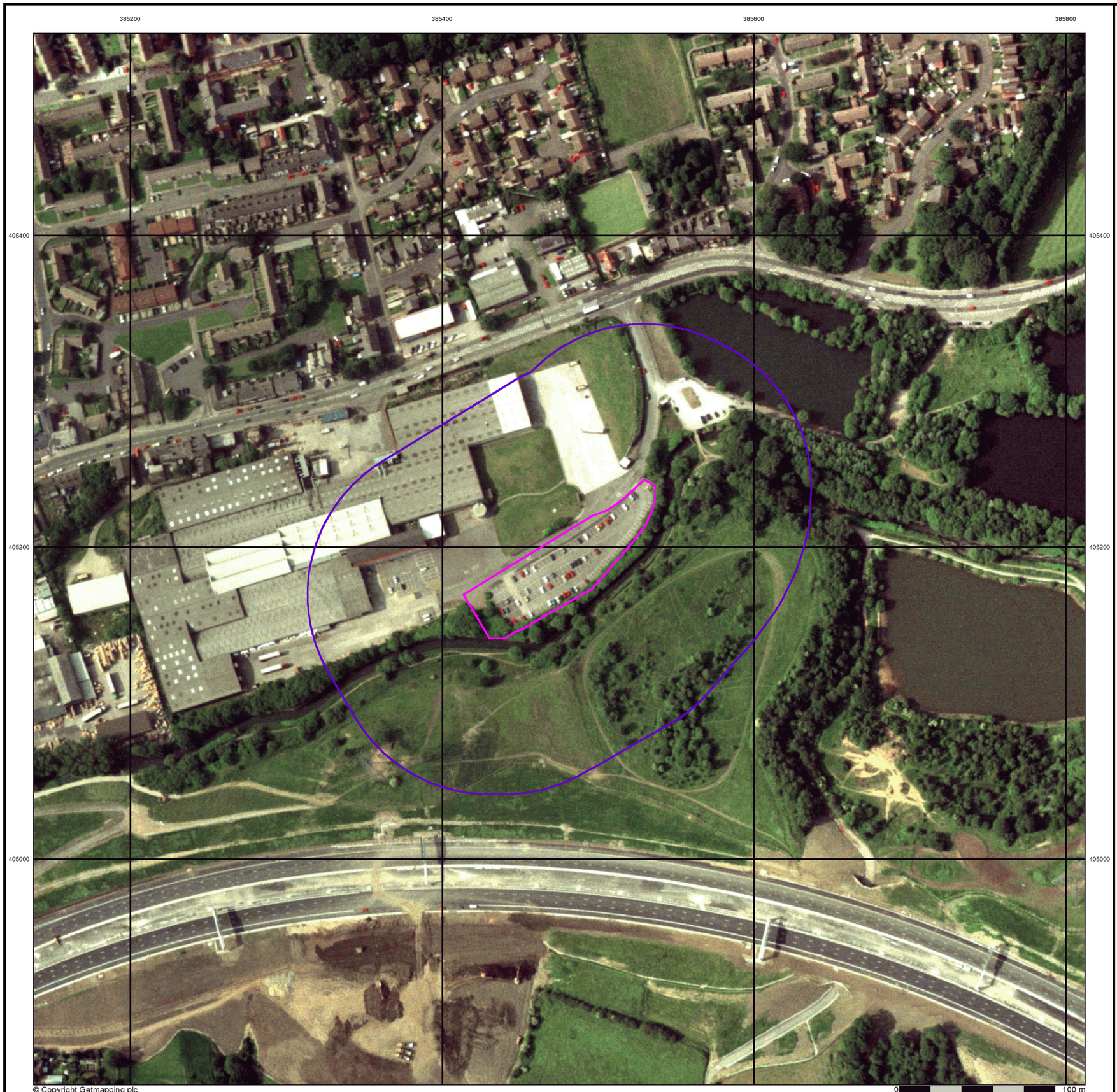
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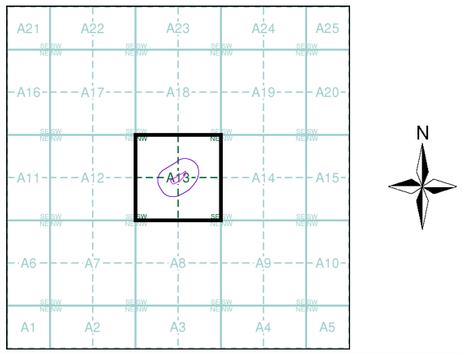
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Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



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