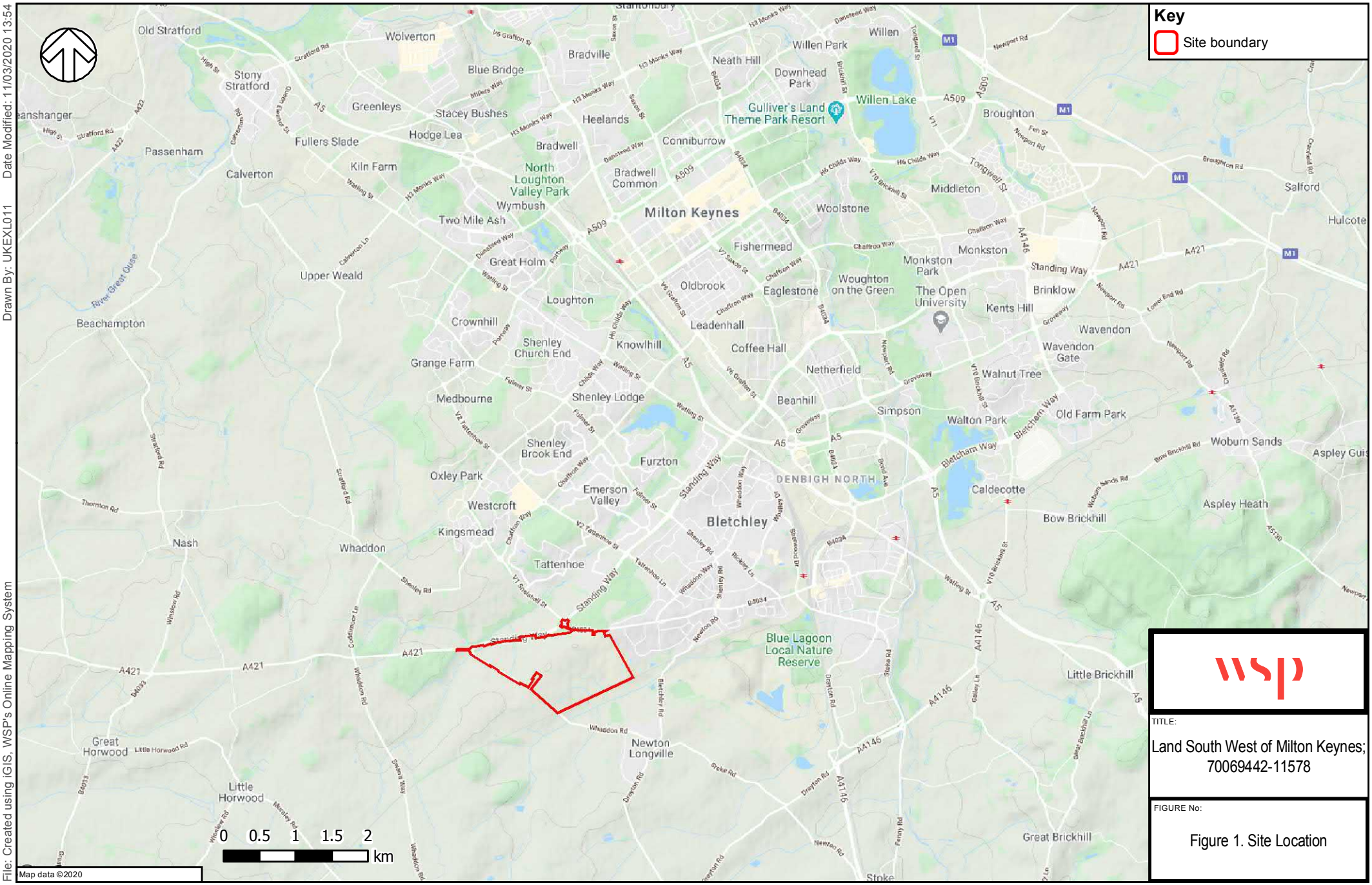
Annex A

FIGURES



wsp

TITLE:

Land South West of Milton Keynes; 70069442-11578

FIGURE No:

Figure 1. Site Location

Drawn By: UKEXL011 Date Modified: 11/03/2020 13:54

File: Created using iGIS, WSP's Online Mapping System

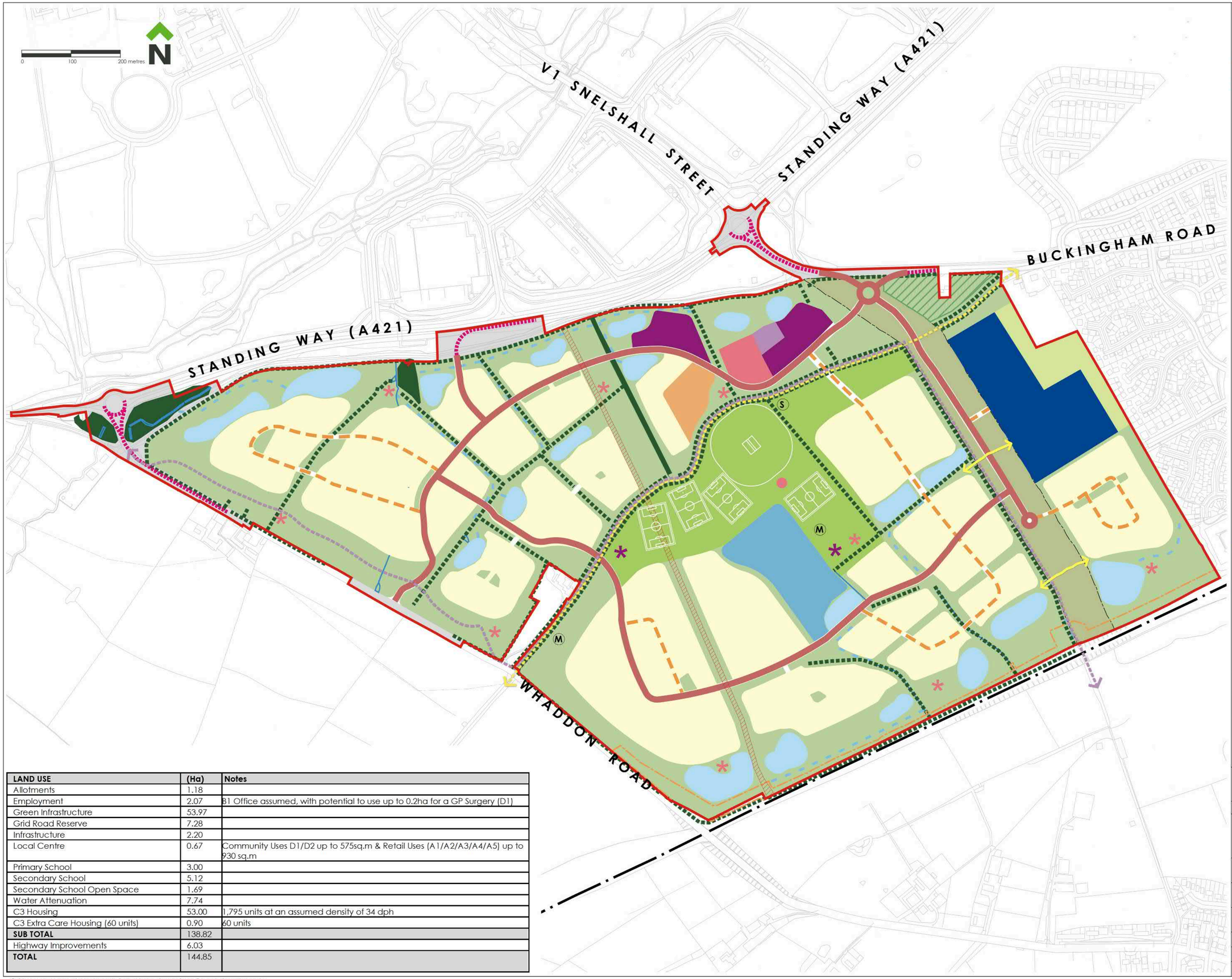
TITLE:

Land South West of Milton Keynes; 70069442-11578

FIGURE No:

Figure 2.. Current site layout

File: Created using iGIS, WSP's Online Mapping System Drawn By: UKEXL011 Date Modified: 11/03/2020 13:55



LAND USE	(Ha)	Notes
Allotments	1.18	
Employment	2.07	B1 Office assumed, with potential to use up to 0.2ha for a GP Surgery (D1)
Green Infrastructure	53.97	
Grid Road Reserve	7.28	
Infrastructure	2.20	
Local Centre	0.67	Community Uses D1/D2 up to 575sq.m & Retail Uses (A1/A2/A3/A4/A5) up to 930 sq.m
Primary School	3.00	
Secondary School	5.12	
Secondary School Open Space	1.69	
Water Attenuation	7.74	
C3 Housing	53.00	1,795 units at an assumed density of 34 dph
C3 Extra Care Housing (60 units)	0.90	60 units
SUB TOTAL	138.82	
Highway Improvements	6.03	
TOTAL	144.85	

Rev	Date	By	Description
K	19.05.20	SG	Road realigned in GRR
J	18.05.20	SG	Grid Road centered in reserve
I	12.05.20	SG	Grid Road Reserve moved east and subsequent changes

CSA environmental
Dixies Barns, High Street,
Ashwell, Hertfordshire SG7 5NT
t 01462 743647
e ashwell@csaenvironmental.co.uk
w csaenvironmental.co.uk

Project	Land at South West Milton Keynes
Title	Development Framework Parameters Plan
Client	Taylor Wimpey UK Ltd, William Davis Ltd, Hallam Land Management Ltd, Bellcross Homes and Connolly Homes
Scale	1:5000 @ A2
Drawn	RC
Date	Feb 2020
Checked	RR
Drawing No.	CSA/4857/100
Rev	K

Annex B

ZETICA UXO REPORTING

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Location: MK17 0EG,
Map Centre: 483114,232242

LEGEND

High: Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.

Moderate: Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.

Low: Areas indicated as having 15 bombs per 1000acre or less.

miltary | **industry** | **UXO find**
transport | **dock** | **Luftwaffe targets**
utilities | **Bombing decoy** | **other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Pre-Desk Study Assessment

Site:	Land South West of Milton Keynes, Buckinghamshire
Client:	WSP
Contact:	Emily Lyons
Date:	19th March 2020
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities. ■ Royal Air Force (RAF) Little Horwood. ■ Military camps and training areas. ■ Anti-Aircraft (AA) and anti-invasion defences.
WWII Bombing Decoys (within 5km of Site)	None.
WWII Bombing	During WWII the Site straddled the boundary between the Urban District (UD) of Bletchley and the Rural District (RD) of Winslow. Bletchley UD officially recorded 29No. High Explosive (HE) bombs with a bombing density of 6.5 bombs per 405 hectares (ha). Winslow RD officially recorded 50No. HE bombs with a bombing density of 1.4 bombs per 405 ha. No readily available records have been found to indicate that the Site was bombed.
Post-WWII Military Activity on or Affecting the Site	None identified.
Recommendation	A detailed desk study, whilst always prudent, is not considered essential in this instance.

This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.

It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.

Annex C

GEG LTD REPORT 2017

GEG | Geo Environmental Group
Geotechnical, Environmental & Ecological Consultants

GEG House, 17 Graham Road, Malvern, WR14 2HR
Tel. 01684 212526 Fax 01684 576917 www.g-eg.co.uk

PHASE I REVIEW & STRATEGIC PHASE II GEO-ENVIRONMENTAL ASSESSMENT

LAND SW MILTON KEYNES
WHADDON ROAD
MILTON KEYNES
MK17 0EG

December 2017

Prepared for:

Bellcross Homes William Davies Ltd

Registered Company - GEG Ltd
Registered in England No 6469985
Registered Office: Granta Lodge, 71 Graham Rd, Malvern, WR14 2JS

REPORT TITLE: PHASE I REVIEW & STRATEGIC PHASE II GEO-ENVIRONMENTAL ASSESSMENT

Site Address:

Land SW Milton Keynes
Whaddon Road
Milton Keynes
MK17 0EG

Performed By:
Geo Environmental Group
GEG House
17 Graham Road
Malvern
WR14 2HR

On Behalf Of:
Hallam Land Management/
Connolly Homes/
Taylor Wimpey Strategic Land/
William Davies Ltd/
Bellcross Homes
(The Consortium)
c/o Brookbanks Consulting Ltd

Written by:

Alan Taylor
BSc(Hons) MSc FGS
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Anthony Marriott
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Managing Director

Project Reference: GEG-17-514

Report Reference: GEG-17-514/PI_PII

Issue Status: FINAL

Date: 14th December 2017

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EXECUTIVE SUMMARY

Current Site Status

The site, which covers an area of 125.9 hectares, is located on the southern side of the A421 approximately 6km to the south west of the centre of Milton Keynes at the approximate National Grid Reference 483499E, 232499N.

It comprised an irregular parcel of land split into approximately 14 No. interconnected fields dissected by Weasel Lane which runs in a north east – south west orientation through its centre.

Geology, Hydrogeology, Hydrology & Landfills

The solid geology comprises the Stewartby Member (of the Oxford Clay Formation) (Unproductive Strata). The solid geology is conjectured to be overlain by Superficial Deposits of Oadby Member which comprises Diamicton (Secondary [Undifferentiated] Aquifer).

3 No. 'unnamed streams' are recorded as being on site, which are located in the north west corner, south west corner and south. Off site, the nearest watercourse is an unnamed secondary river located 20m north.

There is 1 No. recorded landfill within 250m of the site, located 176m south east.

Flooding

According to the Environment Agency, the majority of the site lies within Flood Zone 1, being land that lies outside the 1 in 1000 year (0.1%AEP) flood risk area and hence has a low probability of flood risk. However, a ribbon of Flood Zone 3 crosses the far north western corner of the site associated with a watercourse.

Site History

The Desk Study provided by Brookbanks indicated that since the pre-1900s the site has remained largely undeveloped with the exception of several small farm buildings and in agricultural use, with Weasel Lane running through the site in a north east-south west orientation. By 1968 numerous drainage channels were shown between field boundaries and a pond was indicated towards the north.

The Desk Study shows that from 1882-1898 until 1988 the surrounding area has largely remained agricultural with the railway line present to the immediate south. Post 1988 residential development occurred up to the eastern boundary and commercial/industrial units were constructed to the north.

Intrusive Investigations

The intrusive investigation was undertaken between the 13th and 17th October 2017 and comprised window sample boreholes, CBR testing, machine-excavated trial pitting and infiltration testing.

Ground Conditions

No Made Ground was encountered during the intrusive works.

Typically, brown slightly gravelly SILT/CLAY topsoil was encountered across the majority of the site to depths of 0.15m to 0.30m.

The Oadby Member (Diamicton) was encountered underlying the

topsoil across the site to a maximum drilled depth of 6.45m. It generally comprised (firm to stiff) brown slightly gravelly CLAY with the gravel portion comprising flint, chert and chalk. Below depths of approximately 0.80m to 1.00m the soils became greyish brown and (stiff to very stiff). Localised pockets of sand and chalk cobbles were also encountered within this slightly deeper horizon.

The Stewartby Member (Oxford Clay Formation) was not encountered during the investigation. It is acknowledged that the previous investigation completed by Geosphere Environmental Ltd confirmed the Oadby Member to a maximum drilled depth of 10.00m.

Proposed Development

The illustrative masterplan of the development site comprises approximately 1850 No. residential properties, commercial units and several schools with associated access roads, parking areas, private gardens, attenuation ponds, a public playground and landscaped areas.

Geotechnical Conclusions & Recommendations

Based on the information to date, current site levels and subject to the final layout, it is recommended that foundation loads are transferred onto the firm or stiff CLAY of the Oadby Member (Diamicton) utilising traditional strip/trench fill or pad foundations. An allowable bearing pressure of 100 kN/m² is recommended for the firm CLAY and 150 kN/m² for the stiff CLAY based on total settlements of less than 25mm for 0.60m to 1.00m wide foundations.

As this is considered to be a strategic investigation and as such there are large distances of approximately 200m between the exploratory positions, it is considered essential that further intrusive investigation is undertaken at the detailed design stage in order to confirm consistency of the strata between these positions.

Based on NHBC Chapter 4.2 and the ground conditions encountered a minimum foundation depth of 0.90m is recommended for the cohesive strata (based on medium volume change potential).

Ground bearing floor slabs are considered suitable for the site.

ACEC Class AC-1(Design Class DS-1) conditions are indicated to prevail on site.

A CBR design value of 1%-3% is recommended for the near surface Superficial Deposits based on the in-situ testing and plasticity indices.

It was not possible to calculate soil infiltration rates in the natural strata due to the absence of significant infiltration, which was consistent with the predominantly cohesive strata encountered.

Environmental Risk Assessment & Liabilities

Risks to Site Users

Identified Sources: No significant contamination has been identified on site based on the most sensitive proposed end use (residential with home grown produce).

Potential Risks: End users of the site and construction/maintenance workers are therefore not considered to be at significant risk from the site as no significant contaminant sources have been identified by the chemical analyses undertaken.

Risks to Controlled Waters

Potential Sources: No significant sources have been identified by the desk study and soil analyses.

Potential Risks: Risks to Controlled Waters are unlikely to be significant based on the information available.

Ground Gases

Based on CIRIA C665 the low-rise residential areas of the site have been characterised as NHBC 'Green' and the other (schools and any apartment block etc.) as Characteristic Situation 1. The site is not in a radon affected area. Consequently, no special gas protection measures are deemed necessary for the site.

Remediation

Human Health Remedial Measures

Based on the information available, no specific remedial measures are considered necessary to protect human health.

Protection of Controlled Waters

No remedial measures are considered necessary to protect Controlled Waters from the site itself, based on the information available.

Further Investigation Requirements

As this is considered to be a strategic investigation and as such there are large distances of approximately 200m between the exploratory positions, it would be considered essential that further intrusive investigation is undertaken at the detailed design stage in order to confirm consistency of the strata and delineate any very localised potential contaminated sources between these positions.

This executive summary is intended to provide an outline of the site assessment in relation to ground contamination and geotechnical parameters. It does not provide a definitive analysis of the information obtained.

1. INTRODUCTION

1.1 General

Geo Environmental Group (GEG) were commissioned by Brookbanks Consulting Limited (Brookbanks) on behalf of Hallam Land Management (Hallam), Connolly Homes, Taylor Wimpey Strategic Land, William Davies Ltd and Bellcross Homes to undertake a Phase I Review & Strategic Phase II Strategic Geo-Environmental Assessment of a site known as 'Land SW Milton Keynes' in order to provide relevant information with respect to the proposed development of the site.

The purpose of this report was to determine:

- Potential environmental risks and liabilities associated with any potential soil and shallow groundwater contamination in accordance with current UK guidance (CLR 11) for a future residential end use.
- Geotechnical requirements for foundations, buried concrete, excavations, earthworks and slope stability with respect to the proposed residential development of the site.
- The potential for storm water soakaway drainage.

1.2 Available Information

The following information was supplied by Brookbanks:

- Topographical Survey, Brookbanks.
- 'Illustrative Master Plan' Brookbanks Consulting on behalf of Hallam Land Management, Ref.: 10434-SI-01, dated June 2017.
- 'Site Investigation Location Plan,' Brookbanks Consulting Ltd, Drawing No. 10260-SI-02 Rev. A, dated 07.06.17, scale 1:2,500.
- 'Phase 1 Geo-Environmental Desk Study' Pell Frischmann, Ref.: R53295/G001B, dated October 2014.
- 'Phase 2 – Ground investigation Report' Geosphere Environmental Ltd, Ref.: 796,GI/BG,BF,SG/28-04-14/V3, dated 28th April 2014.
- Various utility company service drawings.

1.3 Proposed Site Development

The illustrative masterplan of the development site comprises approximately 1850 No. residential properties, commercial units and several schools with associated access roads, parking areas, private gardens, attenuation ponds, a public playground and landscaped areas.

1.4 Scope

The works performed by GEG included:

- A Phase I desk study review and preparation of a preliminary risk assessment and outline conceptual model.
- A Phase II intrusive investigation comprising window sample boreholes, machine excavated trial pits, infiltration tests and CBR testing.
- Chemical analysis and geotechnical testing of selected soil samples.
- Gas and groundwater monitoring.
- Development of the conceptual model and generic quantitative human health and qualitative Controlled Waters environmental risk assessments in accordance with CLR11.
- A quantitative ground gas risk assessment in accordance with NHBC and CIRIA guidance.
- A geotechnical assessment (including foundations, floor slabs, buried concrete, road pavement design etc.) and including recommendations for suitability of the site for soakaway drainage.
- Recommendations for further investigation and/or remedial work (if required).
- Provision of a report documenting the above.

Limitations to the scope of the report are outlined in Section 12.

2. SITE SETTING

2.1 Site Location

The site, which covers an area of 125.9 hectares, is located on the southern side of the A421 approximately 6km to the south west of the centre of Milton Keynes at the approximate National Grid Reference 483499E, 232499N.

A section of the 1:25,000 Ordnance Survey (OS) map identifying the site location is shown in Figure 1 of Appendix A. The site layout plan is presented in Figure 2 (Appendix A) and a photographic record is provided in Appendix B.

2.2 Site Description

The site comprised an irregular parcel of land split into approximately 14 No. interconnected fields of which, at the time of the works, the majority had recently been cropped. The site was bisected by Weasel Lane which runs in a north east – south west orientation through its centre.

Access to the site was obtained through numerous gates and gaps in hedgerows along, Weasel Lane, Whaddon Road and an access track to the north. The site and individual fields were generally bound by mature hedge rows, drainage ditches and occasional deciduous mature trees.

Several of the fields contained drainage ditches which were fairly well maintained with slow flowing shallow water.

The site had no significant changes in elevation but was slightly undulating with the highest points along Weasel Lane and the lowest elevations noted to be in the south and south east.

2 No. derelict former farm buildings/stables were located in the north west of the site next to an area of mature deciduous trees. It was noted that 1 No. of these buildings, the most westerly, had potentially asbestos containing cement sheeting on the roof. Within this area of trees a shallow depression existed in the land which was noted to correlate with the location of a pond from historical maps.

A metal structure barn was located in the south west of the site which was well maintained and observed to be in use. This had an electrical climate control system attached to its eastern elevation.

A footpath was noted crossing the east of the site. Evidence of fly tipping on Weasel Lane was observed which generally comprised of timber and other construction material.

Based on supplied drawings and field observations known services on site comprised:

- A British Pipeline Agency (BPA) fuel pipeline running through the centre of the site in a north – south orientation.
- An intermediate pressure gas main running through the east of the site in a north – south orientation.
- High voltage (132kV) overhead cables entering the west of the site traversing to the north via 2 no. metal pylons. This transfers to underground cables at the very northern edge of the site.
- Low voltage overhead cables entering the north west of the site providing power to a derelict stable in the north west.
- High voltage (11kV) underground cables also enter the site from the west supplying a barn and residential property located at the western edge of the site.
- A 225mm PVC foul water pipe runs across the eastern corner of the site in a north east – south west orientation.
- A potable water main follows runs along Weasel Lane with a connection located near the centre of the site leaving the site to the north.

Other services may exist which GEG have been unable to obtain records for such as private services.

No tanks, fuels, oils, electricity sub-stations or other potential sources or evidence of contamination (such as oil staining etc.) were evident on site.

2.3 Adjacent Land Uses

A summary of surrounding land-use in the immediate vicinity of the site including neighbouring properties is provided below.

North	A strip of woodland and an access track with the A421 located beyond. An electricity substation was noted within the wooded area approximately 50m from the site boundary.

East	Residential estates.
South	Active railway lines (mainly along an embankment) located to the immediate south with agricultural land beyond.
West	Beyond Whaddon Road is further agricultural land. To the north west is a privately-operated recycling facility.

3. REVIEW OF AVAILABLE DESK STUDY INFORM ATION

Available information relating to the history of the site, geology, hydrogeology and hydrology is summarised in the following sections extracted from the aforementioned Phase I Desk Study Report.

3.1 Landfills

There are 12 No. records of landfills within 1000m, the closest of these is located 176m south east for a co-disposal landfill site. The next nearest record is located 540m east for a general landfill which closed in 1994 and has since been redeveloped into a sports ground.

3.2 Pollution Controls

Within 500m there are 3 No. records of IPPC Authorised Activities all of which are located 177m north and relate to a food processing facility.

3.3 Pollution Incidents

There are 4 No. records located on site, these all fall along Weasel Lane and are considered to be associated with fly tipping. All 4 No. records are listed as either Category 3 (minor) or Category 4 (no impact) on land, water and air. Within 250m there are 7 No. records off site, the closest of these is located 4m north and is again considered to be fly tipping. All other records are described as either sewage or agricultural materials.

3.4 Hazardous Substances

There are no Control of Major Accident Hazards Sites (COMAH), Notification of Installations Handling Hazardous Substances (NIHHS) or Planning Hazardous Substance Consents within 1000m of the site.

3.5 Fuel Stations

No fuel station entries are recorded within 250m of the site.

3.6 Discharge Consents

There are 9 No. records within 500m, the closest of these is located 84m south west for a farm discharging sewage effluent. The next nearest record is also associated with a farm located 113m south west.

3.7 Contemporary Trade Directory Entries

Potentially contaminative industrial sites within 250m are listed in the table below;

Distance	Direction	Activity
On site	-	2 No. electricity pylons
21m	North	Electricity substation
73m	North east	Vehicle parts retailer
88m	South west	Electricity pylon
101m	West	Waste paper recycling
106m	North	Gas governor
143m	North	Gas governor station
185m	North	Food processing facility
185m	North east	Electricity substation
210m	North	Vehicle distribution
212m	East	Electricity substation

3.8 Historical Information

3.8.1 Site History

The Desk Study indicated that since the pre-1900s the site has remained largely undeveloped with the exception of several small farm buildings and has continued in agricultural use with Weasel Lane running through the site in a north east-south west orientation. By 1968 numerous drainage channels are shown between field boundaries and a pond is indicated towards the north. With the exception of 2 No. electricity pylons built by 1975 in the west, the site has remained undeveloped to the most recent mapping dated 2012.

3.8.2 Site Surroundings

The Desk Study shows that from 1882-1898 until 1988 the surrounding area has largely remained agricultural with the railway line present to the immediate south. By 1975 a 'Bottledump' was present approximately 100m west of the site boundary. Post 1988 residential development occurred up to the eastern boundary and commercial/industrial units were constructed to the north.

3.9 Geology

3.9.1 Published Geology

The site is indicated to be underlain by solid geology consisting of Stewartby Member (of the Oxford Clay Formation) of the Middle Jurassic Period. The formation is described as predominantly pale grey silty, calcareous, poorly fossiliferous, blocky mudstones.

The solid geology is conjectured to be largely overlain by Superficial Deposits of the Oadby Member which comprises Diamicton, grey weathering brown clay with chalk and flint fragments.

No faults are conjectured to intersect the site at the surface.

3.9.2 Potential Geo-Hazards

With the exception of shrinking / swelling of clays, which has been designated a low to moderate hazard rating, there are no other significant hazards identified including those associated with collapsible ground stability, ground dissolution, landslide, or shallow mining.

3.9.3 Mining and Quarrying

The site is not in an area reported to be affected by coal mining.

3.10 Hydrogeology

3.10.1 Groundwater Designation

Environment Agency data indicates that the solid geology beneath the site is designated as Unproductive Strata.

Unproductive Strata - are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The Superficial Deposits are characterised as a Secondary (Undifferentiated) Aquifer.

Secondary (Undifferentiated) Aquifers are assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

3.10.2 Groundwater Source Protection Zone

The site does not lie within a currently defined Groundwater Source Protection Zone (GWSPZ).

3.10.3 Groundwater Abstractions

There is 1 No. record within 1000m which is located 634m west for general farming and domestic purposes.

3.11 Hydrology

3.11.1 Nearest Watercourse

3 No. 'unnamed streams' are recorded as being on site, these are located in the north west corner, south west corner and south. Off site, the nearest watercourse is an unnamed secondary river located 20m north.

3.11.2 Surface Water Abstractions

According to the Environment Agency, there are no surface water abstraction licences within 1000m of the site.

3.11.3 Flooding

According to the Environment Agency, the majority of the site lies within Flood Zone 1, being land that lies outside the 1 in 1000 year (0.1%AEP) flood risk area and hence has a low probability of flood risk. However, a ribbon of Flood Zone 3 crosses the far north western corner of the site associated with a watercourse.

3.12 Radon

According to the Desk Study report, the site is within a low probability area of radon and as such no radon protection measures are required for the construction of new developments.

4. SUMMARY OF PREVIOUS PHASE II INVESTIGATION

4.1 Scope

An intrusive investigation was carried out by Geosphere Environmental Ltd in April 2014 encompassing the present site. The scope comprised 1 No. cable percussive borehole to a maximum depth of 10.00m 17 No. windowless sample exploratory boreholes to maximum depths of 3.00m, 5 No. trial pits to a maximum depth of 3.10m, 3 No. soakage tests, chemical analysis of selected soils and ground gas monitoring.

4.2 Ground Conditions Encountered

4.2.1 Topsoil

The ground conditions indicated that the site (prior to development) was overlain by topsoil to a maximum depth of 0.50m.

4.2.2 Oadby Member - Diamicton

The topsoil was underlain by the Oadby Member – Diamicton which was encountered to depths of at least 10.00m, the upper horizons of which were stiff to very stiff light brown gravelly CLAY with gravel of chalk, flint, chert and siltstone. At approximately 0.90m – 2.50m the strata was noted to become stiffer and dark brown/dark grey.

4.3 Groundwater

Groundwater was only encountered within the borehole at a depth of 8.00m which rose to 7.50m after 20 minutes.

4.4 Chemical Analyses

14 No. soil samples were tested for a range of common contaminants and the results were compared to the available CLEA SGVs, LQM, EIC/AGS/CL:AIRE Generic Assessment Criteria (GAC). With the exception of vanadium all other determinands returned concentrations below the relevant guideline values.

It was considered by Geosphere Environmental Ltd that vanadium was elevated above the GAC for 5 No. samples with the highest recorded at 117mg/kg in the north west of the site.

However, the levels of vanadium recorded are within the normal range in natural UK soils (2.18mg/kg – 544.00mg/kg) as detailed in the EA publication 'UKSHS Report No. 7 Environmental Concentrations of Heavy Metals in UK Soil and Herbage', June 2007. In addition, there are no specific anthropogenic sources of vanadium on site (which tend to be associated with the most toxic vanadium compounds). The adjacent railway lines (which potentially include vanadium to improve the hardness) are located in a cutting which would tend to restrict migration of contaminants to near surface soils on the site. In view of the above, vanadium is not considered to represent a contaminant of concern on the site and as such not considered further.

The remaining determinands were also screened against GEGs criteria and all were confirmed to be below the corresponding thresholds.

4.5 Geotechnical Analyses

Soil samples during the investigation were collected for a number of geotechnical tests including plasticity testing, point load testing, determination of undrained shear strength. Results of this testing confirmed in-situ field observations.

4.6 Ground Gas

Preliminary gas readings indicated no methane and minor concentrations of carbon dioxide (0.4% - 1.7%).

5. ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY

5.1 Regulatory Controls

Contaminated land in England is principally controlled by:

- Part 2A of the Environmental Protection Act (1990) and accompanying Statutory Guidance.
- Planning and Development Controls.

Part 2A relates to contaminated land risks from land in its current condition, whilst the planning and development control essentially is applicable to new developments which fall within the planning regime and applies to the proposed end use of the land.

These two key pieces of legislation are discussed further in the following sections together with other potentially relevant systems.

5.2 Environmental Protection Act - Part 2A

Part 2A of the Environmental Protection Act (1990) [EPA], which was introduced by section 57 of the Environment Act 1995, requires an overall risk-based approach to dealing with contaminated sites, to ensure that they are 'suitable for use'.

DETR Circular 02/2000 'Contaminated Land' which came into force in England on 1st April 2000 provided accompanying regulations and Statutory Guidance. This was superseded by DEFRA Circular 01/2006 'Contaminated Land' which included amendments to address land contaminated by radioactivity.

Definition of Contaminated Land

Contaminated land is defined in section 78A(2) of Part 2A as:

'Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in on or under the land, that –

- Significant harm is being caused or there is a significant possibility of such harm being caused; or
- Pollution of controlled waters is being, or is likely to be caused.'

The Water Act 2003 s86 modified the definition of contaminated land to:

Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in on or under the land, that –

- Significant harm is being caused or there is a significant possibility of such harm being caused; or
- Significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.'

Recent changes to Part 2A require the local authority to use a four category system in order to decide whether or not land is designated as contaminated land.

Category 1 describes land which is clearly problematic e.g. because similar sites are known to have caused a significant problem in the past.

Categories 2 and 3 cover the less straightforward land where detailed consideration is needed before deciding whether it is contaminated land. The test rests on whether or not the Local Authority believes there is a strong case for regulatory action – and thus whether it should be placed into Category 2 (contaminated land) or Category 3 (not contaminated land). The decision basis is initially related to human health risks, and if this is not conclusive due to uncertainty over risks, wider socio-economic factors (e.g. cost, views of local people etc.).

Category 4 describes land that is clearly not contaminated land. The new Category 4 test is particularly important in terms of reducing uncertainty over when land is clearly not contaminated land in the legal sense. Land at or below SGV/GAC levels derived using the CLEA methodology is likely to be well within Category 4. DEFRA are currently in the process of producing Category 4 screening levels. PT2A states that normal levels of contaminants in soil should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise. DEFRA have commissioned BGS to produce a report determining normal levels of contaminants in UK soils.

Once land has been determined as contaminated land, the enforcing authority must consider how it should be remediated and, where appropriate, it must issue a remediation notice to require such remediation. The enforcing authority for the purposes of remediation may be the local authority which determined the land, or the Environment Agency, which takes on responsibility once land has been determined if the land is deemed to be a "special site". The rules on what land is to be regarded as special sites, and various rules on the issuing of remediation notices, are set out in the Contaminated Land (England) Regulations 2006.

'Special Sites'

In certain cases, the Environment Agency is the regulatory authority for the contaminated land legislation. This arises if the site under investigation has been used for certain processes, or if the site is situated on bedrock classed as a Principal Aquifer (i.e. water-bearing strata). In the legislation, these sites are referred to as "Special Sites".

5.3 Planning and Development Controls

The Part 2A contaminated land regime will not normally apply where land is being managed within the normal cycle of land redevelopment and regeneration, where planning and development control will continue to be the primary means of control.

Land contamination, or the possibility of it, is a material consideration for the purposes of town and country planning. Current planning control on contaminated land is set out in **National Planning Policy Framework (England), which replaced PPS23 in March 2012**.

National Planning Policy Framework (England) is intended to complement the pollution control framework under the Pollution Prevention and Control Act 1999 and the PPC Regulations 2000.

In addition to the planning system, the **Building Regulations 1991** (made under the Building Act 1984) may require measures to be taken to protect the fabric of new buildings, and their future occupants, from the effects of contamination. Approved Document Part C (Site Preparation and Resistance to Contaminates and Moisture) 2004 edition gives guidance on these requirements.

5.4 Environmental Protection Act 1990 Part III – Statutory Nuisance

Statutory nuisance provisions will no longer apply where the nuisance arises in relation to land in a 'contaminated state'. However, nuisance provisions could still apply where land gives rise to a nuisance (such as an odour) that is an offence to human senses but which is not covered under the various categories of harm set out in the Contaminated Land Statutory Guidance.

5.5 Permitted Installations

Part 2A will not apply where the Environment Agency or the Local Authority has powers under Integrated Pollution Prevention and Control (IPPC) provisions of the Environmental Permitting Regulations 2007 to take action to remedy contamination resulting from the breach of an installation permit.

Waste Management Licensing (Part II of EPA 1990)

Part 2A will not normally apply where contamination has resulted from land subject to a waste management licence, although it may apply where adverse effects arise from causes other than a breach of licence conditions or from activities that are permitted under the licence. Licences are regulated and issued by the Environment Agency.

Waste management licensing is currently being incorporated into the Environmental Permitting Regulations (see Permitted Installations).

5.6 Water Resources Act (WRA) 1991

Sections 161 to 161D of the Water Resources Act 1991 give the Environment Agency powers to take action to prevent or remedy the pollution of controlled waters. The Agency can serve a 'works notice' on any person who has 'caused or knowingly permitted' potential pollution to be in a place from which it is likely to enter controlled waters, or to have caused or knowingly permitted a pollutant to enter controlled waters. The works notice specifies what actions have to be taken in what time periods. Where urgent action is required or a works notice is not complied with, the Agency has the power to carry out the works itself and recover costs from the appropriate person.

The Water Resources Act may apply where the Part 2A regime does not, for example where there is historical pollution of groundwater.

The Water Act 2003 includes a provision, not yet commenced, to amend the current Part 2A definition of pollution of controlled waters to introduce a 'significance' test. The Government propose to return to this issue when a significance test for radioactive and non-radioactive contamination can be considered together.

5.7 Groundwater Regulations (GWR) 2009

The existing Groundwater Directive (80/68/EEC) aims to protect groundwater from pollution by controlling discharges and disposals of certain dangerous substances to groundwater. In the UK, the directive is implemented through the Groundwater Regulations (GWR) 2009.

Groundwater is protected under these regulations by preventing or limiting the inputs of polluting substances into groundwater. Substances controlled under these regulations fall into two categories:

- **Hazardous** substances are the most toxic and must be prevented from entering groundwater. Substances in this list may be disposed of to the ground, under a permit, but must not reach groundwater. They include pesticides, sheep dip, solvents, hydrocarbons, mercury, cadmium and cyanide. Hazardous substances replace the previous List 1 substances which came under the 1998 GWR.
- **Non-hazardous pollutants** are less dangerous, and can be discharged to groundwater under a permit, but must not cause pollution. Examples include sewage, trade effluent and most wastes.

Non-hazardous pollutants include any substance capable of causing pollution and the list is much wider than the previous List 2 substances. For example, nitrate is included as a pollutant but it was excluded from List 2 in the 1998 GWR.

The existing Groundwater Directive is to be repealed by the Water Framework Directive 2000/60/EC (WFD) in 2013. The GWR 2009 has recently been made law to enact both the WFD and its Daughter Directive 2006/118/EC on the protection of groundwater. This new Groundwater Directive (2006/118/EC) is commonly referred to as the Groundwater Daughter Directive (GWDD).

5.8 Suitable for Use Approach

In practice, most sites with a previous potentially contaminating history are remediated to a condition 'suitable for use' under the planning regime rather than the Part 2A legislation.

The 'suitable for use' approach outlined in DEFRA Circular 01/2006 consists of the following three elements:

- Ensuring that land is suitable for its current use.
- Ensuring that land is made suitable for any new use, as planning permission is given for that new use.
- Limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of land for which planning permission is being sought.

Where new development is taking place, it will be the responsibility of the developer to carry out the necessary remediation. In most cases, the enforcement of any remediation requirements will be through planning conditions and building control, rather than through a remediation notice issued under Part 2A.

5.9 Assessment Methodology

The DEFRA and Environment Agency Contaminated Land Report 11 (CLR11) 'Model Procedures for the Management of Land Contamination' provides a technical framework for structured decision making about land contamination.

Definition of Risk

CLR11 defines risk as:

- A combination of probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence.

The Concept of the 'Pollutant Linkage'

In the context of contaminated land, there are three essential elements to any risk:

- A **contaminant (or source)** – a substance that is in, on or under land and has the potential to cause harm or cause pollution of Controlled Waters.
- A **receptor** - humans, ecological system, water body or property.
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist separately; however, they create a risk only where they are linked together forming a **pollutant linkage**.

Conceptual Site Models

A conceptual site model represents the characteristics of the site in diagrammatic or written form that shows the possible relationships between contaminants, pathways and receptors.

The Tiered Risk Assessment Approach

CLR11 presents a tiered approach to risk:

Tier 1 *Preliminary risk assessment (PRA)*

The purpose of the preliminary risk assessment is to develop an initial conceptual model of the site and to establish whether or not there are potentially unacceptable risks. If potential risks are identified the initial conceptual model is developed in subsequent tiers of the risk assessment process.

Tier 2 *Generic quantitative risk assessment (GQRA)*

The purpose of the generic quantitative risk assessment is to establish whether generic assessment criteria and assumptions are appropriate for assessing the risks and, if so, to apply them to establish whether there are actual or potential unacceptable risks. It also determines whether further detailed quantitative risk assessment is required.

Tier 3 *Detailed quantitative risk assessment (DQRA)*

The purpose of the detailed quantitative risk assessment is to establish and use more detailed site specific information and criteria to decide whether there are unacceptable risks. It may be used as the sole method of quantitative assessments of risks, or it may be used to refine earlier assessments using generic assessment criteria.

6. PRELIMINARY RISK ASSESSMENT AND OUTLINE CONCEPTUAL MODEL

6.1 Potential Contaminants of Concern

Based on the historical and current usage of the site as agricultural land potential **on-site** contamination sources are likely to be limited to:

- Herbicides / pesticides on the agricultural areas.
- Any localised spillages or leakages of fuel or oils from former unrecorded tanks, drums, farm machinery, vehicles etc. associated agricultural usage.
- A potential infilled pond in the north of the site. However, this is considered to have dried up within an area which is now wooded and overgrown.

The potential **off-site** contamination sources are likely to be associated with the following current and historical uses:

- Any spillages or leaks associated with the railway line to the south, although as detailed in Section 4.4, it is mainly located in a cutting which would tend to restrict migration of contaminants to near surface soils on the site.
- Migration of ground gases from the landfill located 176m to the south east.

The electricity substation located approximately 50m to the north of the site boundary is considered sufficiently distant from the site as to not represent a significant risk in view of the relatively low mobility of transformer oils (which formerly contained PCBs). In addition, it is considered that all other previously mentioned potential sources of contamination, including the recycling facility and industry to the north are located at a sufficient distance as to not present a significant risk to the site.

The potential limited contaminants of concern associated with the current and historical land uses outlined above include:

- Herbicides / pesticides (including DDT and dieldrin).
- Petroleum hydrocarbons (TPH) and polyaromatic hydrocarbons (PAHs).
- General contaminants including metals, semi-metals and non-metals, inorganic chemicals, organics and asbestos.
- Ground gases (including methane and carbon dioxide).

A diagrammatic illustration of the outline conceptual model is presented in Figure 3 of Appendix A.

6.2 Preliminary Human Health Conceptual Model

Potential Sources: Potential limited contamination associated with the usage of the site and adjacent land as detailed in Section.

Potential Pathways: Dermal contact with soil and dust, ingestion of home grown produce and attached soil (in residential areas and any school gardens / allotments etc.), inhalation of soil and dust, and the inhalation of indoor and outdoor vapours and ground gases. Potential combustion or explosion of ground gases in confined spaces.

Potential Receptors: Future site users (residents, pupils, site workers, visitors, construction/maintenance workers and potential trespassers) and adjacent residents. Also, site flora and fauna and future buildings/structures and construction materials (e.g. water supply pipes).

6.3 Preliminary Controlled Waters Conceptual Model

Potential Sources: Potential limited localised contamination associated with the usage of the site and adjacent land as detailed in Section 5.1.

Potential Pathways: Infiltration of precipitation through the site's surface and leaching of potential contaminants and subsequent vertical migration to the aquifer or horizontal migration to the watercourse.

Potential Receptors: The 3 No. unnamed on site water courses (considered to be drainage ditches), the secondary river 20m north and the underlying Secondary (Undifferentiated) Aquifer (The groundwater and surface water abstractions are considered too distant from the site to be at significant risk).

6.4 Preliminary Ground Gas Assessment

The potential on site infilled pond (as previously stated based on walkover observations this is considered to have dried up within a wooded portion of the site) and landfill stated as being located 176m to the south east of the site are considered to represent a low to moderate risk from ground gas at this stage.

As previously described, the site is within a low probability area of radon and as such no radon protection measures are required for the construction of new developments.

7. INTRUSIVE INVESTIGATION

The following section outlines the scope of the intrusive investigation carried out by GEG and details the ground conditions encountered and the chemical and geotechnical testing undertaken.

7.1 Site Works

7.1.1 General

The intrusive investigation was undertaken between the 13th and 17th October 2017 in accordance with current British Standard guidance (BS:5930 and BS:10175) and ICE UK Specification for Ground Investigation (2nd Edition 2012) guidelines and comprised window sample boreholes, CBR testing, machine-excavated trial pitting and infiltration testing.

Prior to commencement of the works, service plans were viewed in order to identify the location of all major services and each exploratory hole location was screened with a cable avoidance tool.

The exploratory holes were logged and sampled by an experienced geo-environmental engineer from GEG. The ground conditions encountered were recorded on the exploratory hole logs (Appendix C). Where strengths and relative densities are in brackets on the exploratory hole logs, these are based on visual assessment in accordance with BS:5930, in the absence of in-situ or laboratory tests.

The locations of the exploratory holes are shown on Figure 4 presented in Appendix A.

7.1.1.1 Limitations of the Intrusive Investigation

There were no significant limitations to access across the site for the duration of the intrusive investigation.

7.1.2 Window Sample Holes

7 No. window sample boreholes (WS01-WS07) were drilled using a Premier dynamic sampling rig to a maximum depth of 6.45m. Each window sample borehole was preceded by a hand excavated service pit to a maximum depth of 1.20m below ground level (BGL).

Continuous sampling was undertaken using a liner system and standard penetration tests (SPTs) were carried out in each hole to confirm the strength/relative density.

WS01, WS03, WS05, WS06 and WS07 were installed with 50mm diameter standpipes to depths detailed on the exploratory borehole logs for subsequent gas and groundwater monitoring.

7.1.3 *Trial Pits*

24 No. trial pits (TP01 to TP24) were excavated using a JCB-3CX excavator to a maximum depth of 4.20m to facilitate investigation of the near surface soils. Hand shear vane tests were completed within cohesive soils.

7.1.4 *Reinstatement*

The trial pits were backfilled with arisings and left mounded to allow for subsequent settlement. WS02, WS04 was also backfilled with arisings; boreholes WS01, WS03, WS05, WS06 and WS07, were installed with 50mm diameter gas and groundwater monitoring standpipes and lockable flush cover.

7.1.5 *In-situ CBR Testing*

In-situ CBR testing was undertaken in 7 No. shallow trial pits at a depth of 0.20m bgl in accordance with BS 1377-1:1990. It was not possible to access 1 No. test location with the in-situ testing equipment and as such a shallow soil sample was taken to allow geotechnical laboratory (Atterberg Limit) testing to enable an indicative CBR value to be determined. The results are presented in Table 2 below.

Table 2. In-situ CBR test results

Exploratory Hole	Stratum Description	CBR Value
CBR1	Brown gravelly sandy silty CLAY	1.6%
CBR2	Brown gravelly sandy silty CLAY	1.3%
CBR3	Brown gravelly sandy silty CLAY	1.5%
CBR4	Brown gravelly sandy silty CLAY	2.5-3.0%*
CBR5	Brown gravelly sandy silty CLAY	2.8%
CBR6	Brown gravelly sandy silty CLAY	0.7%
CBR7	Brown gravelly sandy silty CLAY	2.1%
CBR8	Brown gravelly sandy silty CLAY	1.9%

*based on a plasticity index of 35% and HA Interim Advice Note 73/06 Rev01. (2009) as access to undertake an in-situ test was not possible.

7.1.6 *Sampling*

Samples were taken from the exploratory holes for geotechnical and chemical testing as described in Section 7.2 and 7.3 respectively.

7.1.7 *Infiltration Tests*

8 No. infiltration tests in 8 No. trial pits (IT01-IT08) were undertaken in general accordance with BRE Digest 365.

These trial pits were excavated to depths ranging from 1.70m to 2.20m and infiltration tests undertaken in the most permeable strata. Clean water was dispensed from a bowser at a rapid rate to fill each excavation as quickly as possible to the proposed depth of the invert levels and/or the most permeable strata. The excavations took less than 5 minutes to fill to the maximum capacity.

Measurements were then taken of the fall of water at suitable time increments to allow the infiltration rate to be calculated from the time taken for the water level to drop from 75% to 25% effective depth (where possible).

On completion of the measurements, the infiltration pits were backfilled with arisings.

The water level measurements from the infiltration tests are tabulated and graphically depicted on Figures D1 to D7 in Appendix D. The results are summarised in Table 3.

Table 3. Infiltration Test Results

Location	Test No.	Strata	Effective Depth Reached	Time (mins)	Infiltration Rate (m/s)
IT01	1	Oakby Member	100%	306	N/A
IT02	1	Oakby Member	100%	287	N/A
IT03	1	Oakby Member	98%	260	N/A
IT04	1	Oakby Member	98%	232	N/A
IT05	1	Oakby Member	100%	405	N/A
IT06	1	Oakby Member	97%	258	N/A
IT07	1	Oakby Member	98%	309	N/A
IT08	1	Oakby Member	99%	300	N/A

As shown in Table 3, all 8 No. tests showed very little infiltration, consequently, no infiltration rates could be calculated.

Recommendations with respect to potential use of soakaway drainage are presented in Section 9.12.

7.1.8 Gas and Groundwater Monitoring

Gas and groundwater monitoring was undertaken on 2nd, 9th and 22nd November 2017 targeting periods of falling atmospheric pressure where possible. The standpipes were monitored for methane, carbon dioxide, oxygen, hydrogen

sulphide and the borehole gas flow rate using a GA2000 gas analyser. Atmospheric pressure and trend was also recorded.

Table 4. Gas Monitoring Results

Borehole	Date	Atmospheric Pressure (mb)	Atmospheric Pressure Trend	Methane (% Vol.)	Carbon Dioxide (% Vol.)	Oxygen (% Vol.)	Hydrogen Sulphide (ppm)	Borehole Flow (l/hr)
WS01	02/11/17	998	Falling	0.0	1.0	20.5	0	0.4
	09/11/17	1005	Falling	0.1	0.8	20.7	0	0.3
	22/11/17	981	Falling	0.1	0.7	20.9	0	0.1
WS03	02/11/17	996	Falling	0.0	1.4	19.4	0	0.6
	09/11/17	1003	Falling	0.1	1.7	18.7	0	0.3
	22/11/17	980	Falling	0.1	1.9	18.4	0	0.2
WS05	02/11/17	998	Falling	0.0	0.9	20.7	0	0.2
	09/11/17	1004	Falling	0.1	0.7	20.7	0	0.5
	22/11/17	981	Falling	0.1	0.6	21.1	0	0.1
WS06	02/11/17	997	Falling	0.0	1.5	20.3	0	0.7
	09/11/17	1004	Falling	0.1	1.5	20.1	0	0.5
	22/11/17	980	Falling	0.1	1.4	20.4	0	0.1
WS07	02/11/17	998	Falling	0.0	1.6	18.1	0	0.4
	09/11/17	1007	Falling	0.1	1.5	17.9	0	0.1
	22/11/17	981	Falling	0.1	1.5	16.7	0	0.1

The gas monitoring results recorded a maximum methane concentration of 0.1% and carbon dioxide concentrations of 0.6% to 1.9% with a maximum borehole flow rate 0.7 l/hr.

Oxygen was noted to be generally representative of ambient air with a minor depletion noted within WS07 (16.7%).

The water levels were monitored using a dip meter; results are presented in Section 3.

7.2 Geotechnical Laboratory Testing

Selected samples were despatched to Geo Site and Testing Services Limited and scheduled for geotechnical testing. The schedule of testing comprised:

- 13 No. Natural Moisture Contents (BS1377: Part 2: 1990:3.2).
- 13 No. Liquid and Plastic Limits (BS1377: Part 2: 1990:4.2-4.4 & 5.2-5.4).
- 5 No. Dry Density/Moisture Content Relationship, (4.5Kg Rammer Method 1 Litre Mould) (BS1377: Part 4: 1990: 3.5).

The results of the geotechnical testing are presented in Appendix I.

18 No. water soluble sulphate, soluble magnesium, and pH determinations were also undertaken on the natural soils as part of the chemical testing (Section 7.3).

7.3 Chemical Laboratory Testing

7.3.1 Schedule of Analysis

The following representative samples of natural ground were despatched to Concept Life Sciences Limited for chemical analysis:

- 8 No. samples of general natural ground

The schedule of analysis as detailed further in Section 6.3.2 comprised a combination of a range of contaminants commonly identified on brownfield sites, together with specific determinands based on the former and current site and adjacent site uses, as identified below. All soil analysis was MCerts accredited where possible.

Soils

Metals:	Cadmium, chromium (total, III and VI), copper, lead, nickel, zinc, mercury, antimony.
Semi-Metals and Non-Metals:	Arsenic, boron, selenium.
Inorganic Chemicals:	Cyanide (total and free), sulphate (soluble), sulphide.
Others:	pH, soil organic matter.
Organics:	Total phenols, banded petroleum hydrocarbons (TPHs), speciated polycyclic aromatic hydrocarbons (PAHs), SVOC pesticide screen*.

** Selected samples only*

Test certificates are presented in Appendix E.

7.4 Ground Conditions Encountered

The ground conditions encountered are described below and broadly confirmed the published geology. The strength/relative density of the strata is detailed further in the geotechnical assessment in Section 9.1.

7.4.1 Made Ground

No Made Ground was encountered during the intrusive works.

7.4.2 Topsoil

Typically, brown slightly gravelly SILT/CLAY topsoil was encountered across the majority of the site to depths of 0.15m to 0.30m.

7.4.3 *Superficial Deposits*

The Oadby Member (Diamicton) was encountered underlying the topsoil across the site to at least 6.45m. It generally comprised (firm to stiff) brown slightly gravelly CLAY with the gravel portion comprising flint, chert and chalk. Below depths of approximately 0.80m to 1.00m the soils became greyish brown and stiff to very stiff. Localised pockets of sand and chalk cobbles were also encountered within this slightly deeper horizon.

7.4.4 *Solid Geology*

The Stewartby Member (Oxford Clay Formation) was not encountered during the investigation. It is acknowledged that the previous investigation completed by Geosphere Environmental Ltd confirmed the Oadby Member to at least 10.00m.

7.4.5 *Groundwater*

Groundwater was encountered locally in a limited number of locations during the investigation as shown in Table 6A.

Table 6A. Groundwater Depths during the Investigation

Exploratory Hole	Groundwater Depth (m)	Stratum	Nature of Inflow
TP07	2.20-2.40	Oadby Member	Soils wet
TP08	3.30	Oadby Member	Slow seepage
WS02	3.70-6.45	Oadby Member	Soils wet
WS05	3.00-3.30	Oadby Member	Soils wet
WS06	4.50-5.45	Oadby Member	Soils wet

Groundwater levels recorded in the boreholes during the subsequent monitoring visits are summarised in Table 6B.

Table 6B. Groundwater Depths during the Monitoring Visits

Borehole	Date	Depth of Installation (m)	Groundwater Depth (m)
WS01	02/11/17	3.00	1.60
	09/11/17		1.42
	22/11/17		1.25
WS03	02/11/17	3.00	Dry
	09/11/17		Dry
	22/11/17		Dry
WS05	02/11/17	3.00	1.94
	09/11/17		0.95
	22/11/17		1.98
WS06	02/11/17	3.00	1.99

Borehole	Date	Depth of Installation (m)	Groundwater Depth (m)
	09/11/17		0.99
	22/11/17		2.00
WS07	02/11/17	3.00	1.44
	09/11/17		1.40
	22/11/17		1.41

It should be noted that groundwater levels may vary due to seasonal and other effects.

7.4.6 Stability of Trial Pits

The sides of all trial pits were stable during excavation.

7.4.7 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was encountered in any of the exploratory holes undertaken.

8. GENERIC HUMAN HEALTH QUANTITATIVE RISK ASSESSMENT

8.1 Generic Human Health QRA

8.1.1 CLEA

A generic human health quantitative risk assessment has been undertaken primarily using the CLEA software.

Generic assessment criteria (GAC) derived in CLEA, assuming a 'sand' soil type of pH 7 and SOM of 1% were used in the assessment of the Made Ground and natural ground.

The 'residential with home grown produce' for a semi-detached property has been used in the assessment as this is the most sensitive generic land use and building type in the CLEA model applicable to the proposed development.

The exposure pathways used in the CLEA model were:

- Ingestion of soil and dust
- Ingestion of home grown produce and attached soil
- Dermal contact with soil and dust
- Inhalation of soil and dust
- Inhalation of vapours outdoors
- Inhalation of vapours indoors

Generic inhalation health criteria values (IHCVs) have also been derived for volatile compounds using the CLEA software, based on the above criteria. These exclude the inhalation of soil and dust pathway as the source of these PAHs will be protected by an inert capping layer or removed from the garden areas therefore the source of the soil and dust pathway will be removed.

8.1.2 Other Assessment Criteria

The Risk Based Corrective Action (RBCA) Toolkit has been used to derive assessment criteria for organic compounds not covered by the CLEA Model.

A GEG in-house GAC for total cyanide (for all end uses) has been derived based on acute toxicity and a one-time soil ingestion event.

The following contaminants were not assessed as they are not generally considered to represent a significant risk to human health: sulphate and sulphide.

8.1.3 PAH Profiling

PAH profiling has not been undertaken for the site as all benzo(a)pyrene concentrations were below the laboratory detection limit.

8.2 Statistical Analysis of Soil Chemical Data

8.2.1 Methodology

The chemical analysis results for the samples of natural ground from this investigation have been subjected to statistical analysis as detailed in the guidance produced by the Chartered Institute of Environmental Health (CIEH) (CIEH/CL:AIRE, May 2008) where sufficient data is available.

For details of the statistical tests and hypotheses, reference should be made to the aforementioned publication. However, a brief overview is presented below.

In the first instance, a Null Hypothesis (H_0) and Alternative Hypothesis (H_1) are defined as below, in this case based on the Planning Scenario:

H_0 $\mu \geq Cc$ i.e. the true mean concentration (μ) is equal to or greater than the critical concentration (Cc)

H_1 $\mu < Cc$ i.e. the true mean concentration (μ) is less than the critical concentration (Cc)

An outlier test (Grubb's Test) is undertaken to determine whether the soil concentrations for each determinand and averaging area belong to the same or are part of a separate population i.e. represent outliers or 'hot spots'.

A normality test is then undertaken to determine if the data is normally distributed, or otherwise.

A significance test (dependent upon the distribution of the data) is then applied to the data to test H_0 and H_1, and determine the associated level of evidence against H_0.

The GAC are used as critical concentrations in the assessment.

The one sample t-test is undertaken for Normal data and the Chebychev test for Non-normal data. The former derives a single value for the level of evidence against H_o, whereas the latter derives upper and lower bound values.

The ESI Ltd Contaminated Land Statistical Calculator has been used to undertake the aforementioned statistical assessments and the output tables are presented in Appendix G and summarised in the following sections.

8.2.2 Natural Ground

Statistical analysis of the chemical data from the 8 No. samples of natural ground did not identify any outliers or 'hotspots' above the relevant critical concentrations and the upper confidence limits of the true mean were also below the relevant critical concentrations (indicating the absence of widespread contamination) for all determinands including:

- Metals (arsenic, cadmium, total chromium, chromium III, chromium VI, copper, lead, mercury, nickel, zinc and antimony).
- Semi-metals and non-metals (boron and selenium).
- Inorganic chemicals (total and free cyanide).
- Organics (total phenols, C6-C40 banded petroleum hydrocarbons, USEPA 16 polycyclic aromatic hydrocarbons [naphthalene, acenaphthylene, acenaphthene, fluorine, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenzo(ah)anthracene and benzo(ghi)perylene].

8.2.3 SVOC Pesticides

No pesticides were identified in the 5 No. samples of natural ground screened.

8.2.4 Summary of Soil Contamination

No elevated soil contaminants have been identified.

8.3 Generic Controlled Waters Quantitative Risk Assessment

No significant sources of contamination have been identified by the soil analyses undertaken.

8.4 Ground Gas Risk Assessment

The gas monitoring results obtained have been assessed using CIRIA C665 'Assessing risks posed by hazardous ground gas to buildings' for 'low rise traditional housing' for the proposed residential and commercial areas..

Using a maximum concentrations of carbon dioxide and methane of 1.9% and 0.1% respectively and the maximum recorded borehole flow rate of 0.7 l/hr, this corresponds to gas screening values (GSV) of 0.0133 l/hr and 0.0007 l/hr

respectively. Therefore, according to Table 8.7 of CIRIA C665 (for use for low-rise traditional housing) using the GSV the residential areas of the site are characterised as NHBC 'Green'.

Based on Table 8.5 of the aforementioned CIRIA document and typical methane and carbon dioxide levels, it is recommended that the non-residential areas of the site are classified as Characteristic Situation 1.

As previously described, no radon protection measures are required for the site.

In view of the above, no special gas protection measures are anticipated for the proposed development.

9. GEOTECHNICAL CONCLUSIONS AND RECOMMENDATIONS

9.1 Overview

9.1.1 Summary of Strata Encountered

No Made Ground was encountered during the intrusive works.

Typically, brown slightly gravelly SILT/CLAY topsoil was encountered across the majority of the site to depths of 0.15m to 0.30m.

The Oadby Member (Diamicton) was encountered underlying the topsoil across the site to a maximum drilled depth of 6.45m. It generally comprised (firm to stiff) brown slightly gravelly CLAY with the gravel portion comprising flint, chert and chalk. Below depths of approximately 0.80m to 1.00m the soils became greyish brown and (stiff to very stiff). Localised pockets of sand and chalk cobbles were also encountered within this slightly deeper horizon.

The Stewartby Member (Oxford Clay Formation) was not encountered during the investigation. It is acknowledged that the previous investigation completed by Geosphere Environmental Ltd confirmed the Oadby Member to a maximum drilled depth of 10.00m.

9.1.2 Groundwater

Groundwater was encountered at depths of 2.20m to 6.54m during the intrusive investigation as isolated seepages and from depths of 0.99m-2.00m during the subsequent monitoring visits.

9.1.3 Trial Pit Stability

The sides of all trial pits were stable during excavation.

9.1.4 Undrained Shear Strength

In-situ hand shear vane tests recorded undrained shear strengths of 95 kN/m^2 to 193 kN/m^2 from 0.60m to 1.20m in the cohesive strata of the Superficial Deposits as shown on Graph 1 (Appendix I).

A total of 39 No. standard penetration tests (SPTs) were undertaken in the natural cohesive Superficial Deposits, which recorded 'N' values of 10 to 51 at depths of 1.00m to 6.00m, which based on the relationship: Cu = f1 x N after Stroud 1974, where f1 is assumed as 4.5, corresponds to undrained shear strength (Cu) of 45 to 160 kN/m² respectively. The data is shown in Graph 2 (Appendix I).

9.1.5 Plasticity Indices (PI)

The Modified Plasticity Indices and Volume Change Potential of the natural clay are presented in Table 6 below in accordance with NHBC Standards Chapter 4.2.

Table 6. Volume Change Potential

Location / Depth (m)	Plasticity Index (%)	Fraction <0.425mm (%)	Modified Plasticity Index* (%)	Volume Change Potential
IT02/1.50m	17	88	14.96	Low
IT03/0.90m	18	89	16.02	Low
TP06/1.30m	27	91	24.57	Medium
TP07/1.00m	19	87	16.53	Low
TP08/0.90m	18	87	15.66	Low
TP11/2.30m	40	86	34.4	Medium
TP12/1.90m	24	85	20.4	Medium
TP16/0.70m	22	89	19.53	Low
TP18/2.20m	32	88	28.16	Medium
TP21/0.80m	39	90	35.10	Medium
TP22/1.10m	41	85	34.85	Medium
TP23/0.70m	40	84	34	Medium
CBR04	35	88	31	Medium

Notes: *Modified Plasticity Index = Plasticity Index x (% <0.425mm/100)

9.1.6 Proposed Development

As previously described the proposed development comprises up to 1850 No. residential properties, commercial units and several schools with associated access roads, parking areas, private gardens, attenuation ponds, a public playground and landscaped areas.

9.2 Foundations

9.2.1 Geotechnical Constraints

The following potential geotechnical constraints have been identified:

- Localised groundwater encountered at depths from 0.95m.
- Potential desiccation of the cohesive strata with respect to existing trees (Section 9.2.5).
- The high pressure gas pipelines that run beneath the east and centre of the site.

9.2.2 Foundation Types

Based on the information to date, current site levels and subject to the final layout, it is recommended that foundation loads are transferred onto the firm or stiff CLAY of the Oadby Member (Diamicton) utilising traditional strip/trench fill or pad foundations. An allowable bearing pressure of 100 kN/m^2 is recommended for the firm CLAY and 150 kN/m^2 for the stiff CLAY based on total settlements of less than 25mm for 0.60m to 1.00m wide foundations.

As this is considered to be a strategic investigation and as such there are large distances of approximately 200m between the exploratory positions, it is considered essential that further intrusive investigation is undertaken at the detailed design stage in order to confirm consistency of the strata between these positions.

9.2.3 Anticipated Foundation Depths

Based on NHBC Chapter 4.2 and the ground conditions encountered a minimum foundation depth of 0.90m is recommended for the cohesive strata (based on medium volume change potential).

9.2.4 Reinforcement of Foundations

It is unlikely that reinforcement of foundations will be required as the foundation formation is anticipated to be uniform. However, should variation of granular and cohesive strata be identified on the site in the foundation formation, foundations should be suitably reinforced due to the potential for differential settlement across the foundation.

9.2.5 Deepening of Foundations due to Trees

Deepening of foundations with respect to former, current, and proposed trees is likely to be required in sections of the site where cohesive horizons predominate below the founding depth (in accordance with the aforementioned NHBC guidelines). Any foundations deeper than 2.50m will most likely require piling.

9.2.6 Deepening of Foundations due to Made Ground

Deepening of foundations due to Made Ground is unlikely to be required given none was identified during the investigation. However, Made Ground is identified during the proposed further detailed investigation or during subsequent

groundworks, foundations should be founded on the underlying natural competent strata.

9.2.7 Deepening of Foundations due to Soft/Loose Strata

Based on the existing strategic investigation, deepening of foundations due to soft ground is unlikely to be required. However, given that this is a strategic investigation with exploratory positions up to 200m apart, localised soft spots/loose areas may exist between the exploratory positions. Therefore, further investigation is required to confirm the presence/absence of such features.

9.2.8 Inspection of Foundation Excavations

It is recommended that the proposed founding formations are inspected by a suitably qualified geotechnical engineer prior to construction.

9.2.9 Floor Slabs

Ground bearing floor slabs are considered suitable for the site, based on the information available, founding on the natural strata beneath the topsoil. However, where deepening of foundations is required in accordance with NHBC Standards with respect to trees or due to soft/loose spots.

9.2.10 Heave Precautions

Heave precautions should be incorporated in accordance with NHBC Ch. 4.2.

9.3 Chemical Attack on Buried Concrete

On the basis of the maximum soil soluble sulphate concentration for the site of <0.1 g/l (<100mg/l), and most acidic pH of 6.6, ACEC Class AC-1 (Design Class DS-1) conditions are indicated to prevail in the natural ground as defined in BRE Special Digest 1 (2005) for foundations, based on mobile groundwater conditions.

9.4 Flooding

According to the Environment Agency, the majority of the site lies within Flood Zone 1, being land that lies outside the 1 in 1000 year (0.1%AEP) flood risk area and hence has a low probability of flood risk. However, a ribbon of Flood Zone 3 cross the far north western corner of the site associated with a watercourse

9.5 Underground Plastic Services

Special precautions with respect to the protection of underground plastic water mains are not considered necessary for this site.

9.6 Slope Stability and Retaining Walls

Slope stability unlikely to be an issue on this site, however, should significant topographical changes be proposed as part of the development, slope stability should be re-assessed.

9.7 Earthworks

Potential earthworks are unknown at this stage. Subject to further testing, suitable compaction and control of moisture content, the natural cohesive and granular soils are potentially suitable as engineering fill on the site.

9.8 Fault Reactivation

No significant faults are indicated on the site.

9.9 Excavations

Dewatering of excavations is unlikely to be required except during periods of heavy precipitation or if excavations are to remain open for prolonged periods.

9.10 Road Pavement Design

Recorded in-situ CBR values ranged from 0.7% to 2.8%. A CBR design value of 1%-3% is recommended for the near surface Superficial Deposits based on the in-situ testing and plasticity indices.

9.11 Loose/Soft Spots

The formation (of foundations, floor slabs and roads etc.) should be inspected for soft/loose spots by a suitably experienced geotechnical engineer. Soft spots if encountered should be removed and replaced with suitable well compacted granular material/lean mix concrete as deemed appropriate. Soft spots beneath roads may also require the use of additional geotextiles. Any loose soils at formation level may need to be proof rolled to increase their relative density.

9.12 Soakaways

As previously described, it was not possible to calculate soil infiltration rates in the natural strata due to the absence of significant infiltration, which was consistent with the predominantly cohesive strata encountered.

10. ENVIRONMENTAL CONCLUSIONS & RECOMMENDATIONS

Following the findings of the intrusive investigation and generic quantitative risk assessment, the preliminary conceptual site model has been revised as outlined below in Sections 10.1.1 and 10.1.2 and as illustrated in Figures 6A and 6B of Appendix A.

10.1 Revised Conceptual Model

10.1.1 Revised Human Health Conceptual Model

Identified Sources: No significant contamination has been identified on site based on the most sensitive proposed end use (residential with home grown produce).

Potential Risks: End users of the site and construction/maintenance workers are therefore not considered to be at

significant risk from the site as no significant contaminant sources have been identified by the chemical analyses undertaken.

10.1.2 Revised Controlled Waters Conceptual Model

Potential Sources: No significant sources have been identified by the desk study and soil analyses.

Potential Risks: Risks to Controlled Waters are unlikely to be significant based on the information available.

10.2 Ground Gases

Based on CIRIA C665 the low-rise residential areas of the site have been characterised as NHBC 'Green' and the other (schools and any apartment block etc.) as Characteristic Situation 1. The site is not in a radon affected area. Consequently, no special gas protection measures are deemed necessary for the site.

10.3 Risks to Adjacent Land and Third Parties

The information available indicates that risks to adjacent land from the area investigated are not considered to be significant.

10.4 Risks from Adjacent Land and Third Parties

Risks from adjacent land are not considered to be significant based on the information available.

10.5 Potential Geo-Environmental Liabilities

Potential geo-environmental liabilities under Pt2A of the Environmental Protection Act (1990) and the Groundwater Regulations (GWR) 2009, relating to the site in its current condition are not considered to be significant based on the information available. Under the recent Part 2A four category system, the site is likely to fall into Category 3 (not contaminated land).

10.6 Waste Classification

The chemical analysis results indicate that arisings from the ste are likely to be classified as inert waste, however, this should be confirmed with a local waste treatment centre. As such, arisings should be suitable for use as general fill on other development sites or for other infill/cover requirements.

10.7 Re-Use of Topsoil

The chemical analysis undertaken indicates that the topsoil present on site is suitable for re-use.

10.8 Remediation

10.8.1 Human Health Remedial Measures

Based on the information available, no specific remedial measures are considered necessary to protect human health.

10.8.2 Protection of Controlled Waters

No remedial measures are considered necessary to protect Controlled Waters from the site itself, based on the information available.

10.8.3 Unidentified Contamination / Wells etc.

GEG should be contacted if any unidentified contamination or wells etc. area encountered during development, to undertake further assessment and determine the best course of action.

10.9 Further Investigation

The following further work is recommended:

- As this is considered to be a strategic investigation and as such there are large distances of approximately 200m between the exploratory positions, it would be considered essential that further intrusive investigation is undertaken at the detailed design stage in order to confirm consistency of the strata and delineate any very localised potential contaminated sources between these positions.

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12. LIMITATIONS

As with all intrusive site investigations, there is a possibility that localised contamination 'hot spots'/geotechnical features remain undetected on the site. Therefore, as with standard practices, this report does not provide a warranty to cover limited localised contamination 'hot spots'/geotechnical features or any post-investigation importation of contamination.

The conclusions and recommendations stated herein are based on information available at the time of production. These may not necessarily apply if the site is to be utilised for a more or less sensitive purpose in the future, or if operational procedures or management alter over time.

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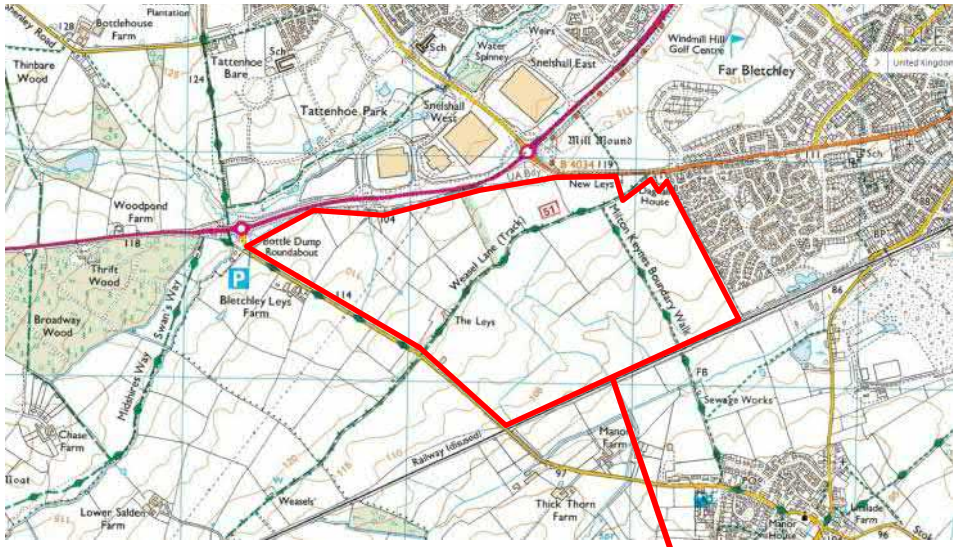
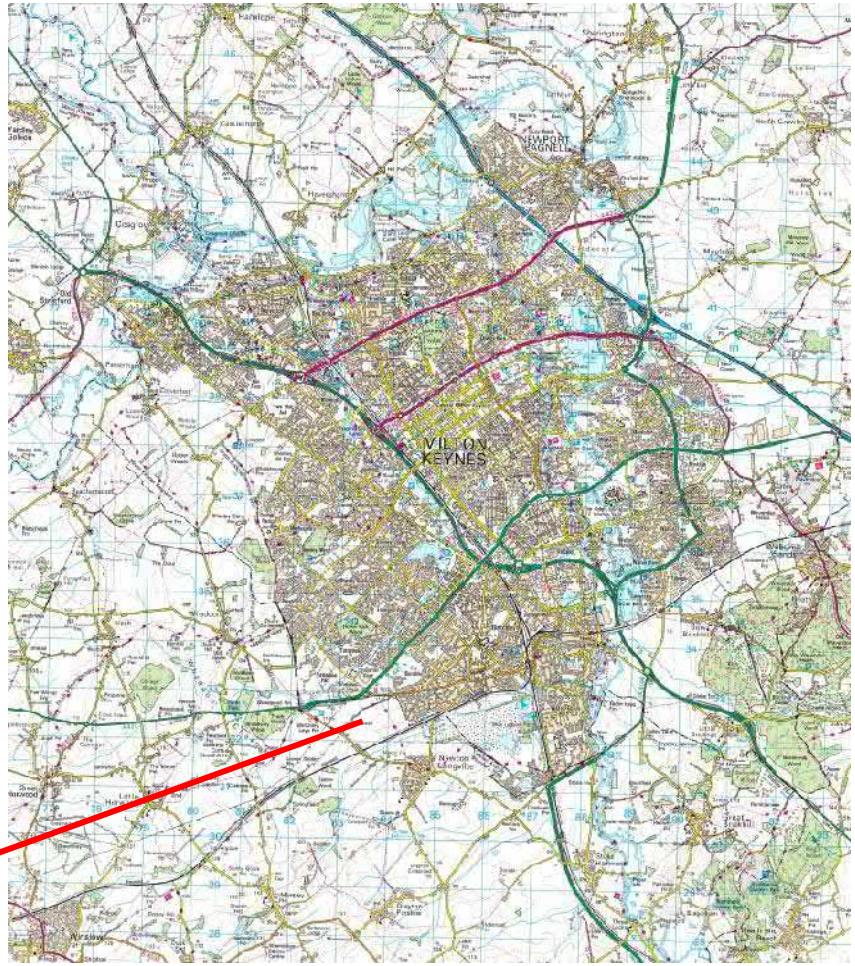
Whilst GEG may identify the presence of potential invasive plant species during the standard geo-environmental walkover and/or investigations, the Client should be aware that ecological issues including an invasive species surveys etc. are beyond the scope of the works and as such no associated liability is accepted by GEG.

APPENDIX A

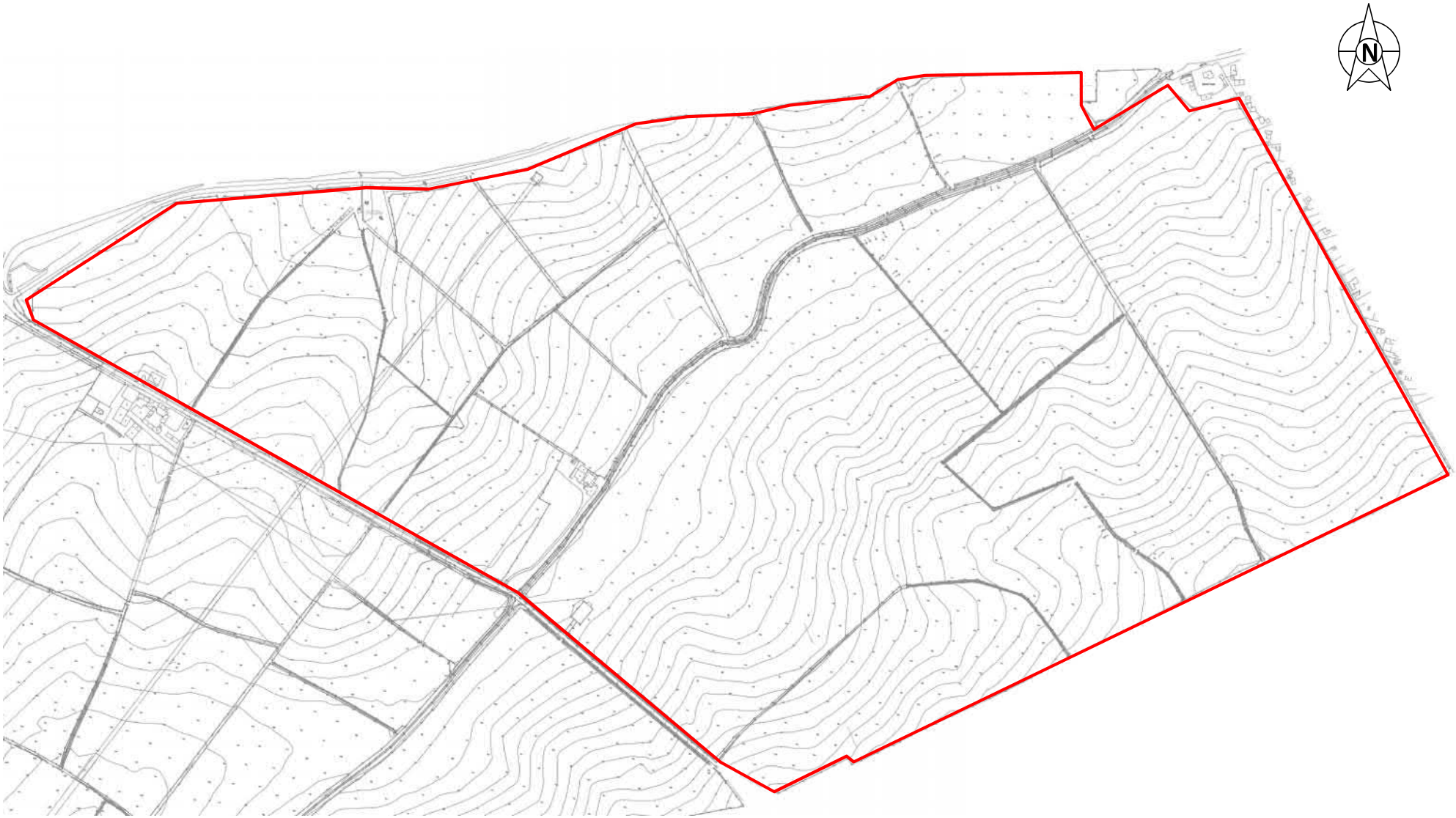
FIGURES AND PLANS





SITE LOCATION

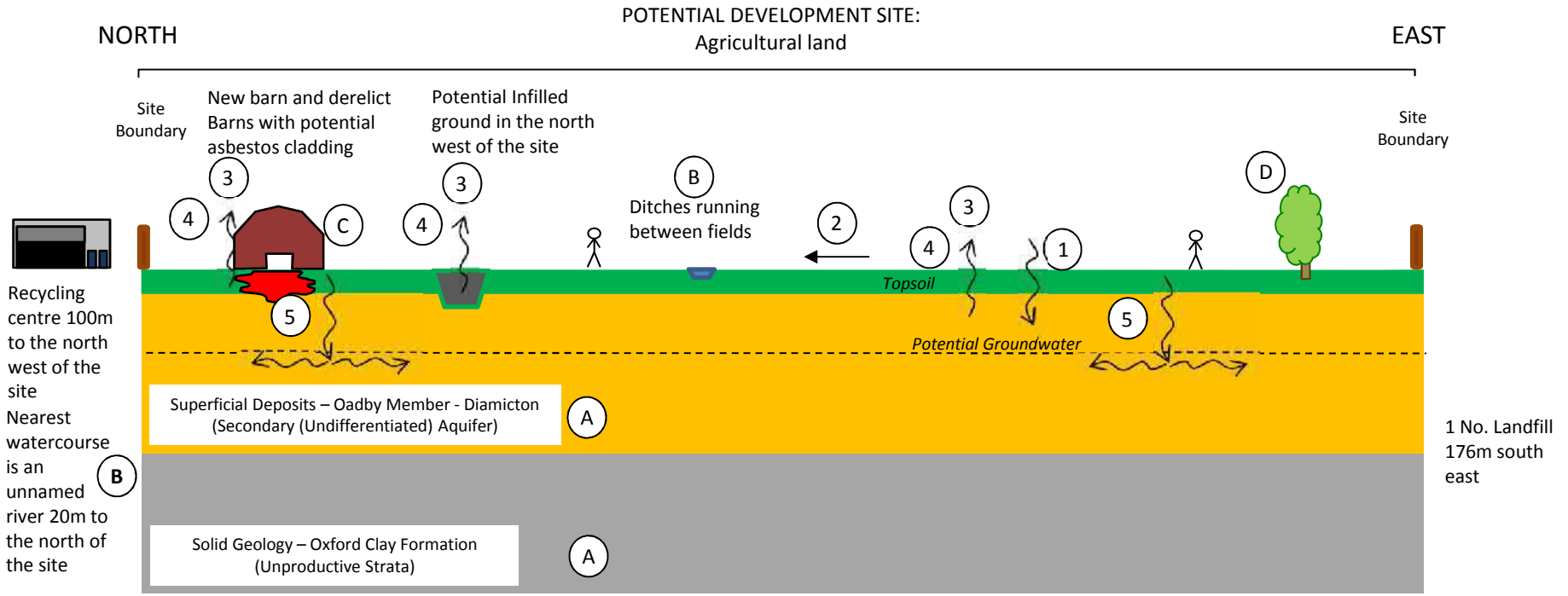
TITLE: FIGURE 1: SITE LOCATION PLAN	**CLIENT:** BROOKBANKS/THE CONSORTIUM		**DRAWN/CHECKED:** AT / MR		GEG House, 17 Graham Road Malvern, WR14 2HR Tel. 01684 212526 Fax 01684 576917 admin@g-eg.co.uk, www.g-eg.co.uk Geo Environmental Group
SITE: LAND SW MILTON KEYNES	**PROJECT No.:** GEG-17-514	**SCALE:** NTS	**DATE:** 14/12/17	**REVISION:** A	



Approximate Scale

0 500m 1000m

TITLE: FIGURE 2: CURRENT LAYOUT PLAN	**CLIENT:** BROOKBANKS / THE CONSORTIUM		**DRAWN/CHECKED:** AT / MR		GEG House, 17 Graham Road Malvern, WR14 2HR Tel. 01684 212526 Fax 01684 576917 admin@g-eg.co.uk, www.g-eg.co.uk
SITE: LAND SW MILTON KEYNES	**PROJECT No.:** GEG-17-514	**SCALE:** As Shown	**DATE:** 14/12/17	**REVISION:** A	Geo Environmental Group



PATHWAYS

1. Infiltration of precipitation
2. Surface water run off
3. Migration of ground gases (methane and carbon dioxide)
4. Potential dermal contact, ingestion of contaminated soil and/or dust and inhalation of gases/vapours
5. Potential leaching/mobilisation of contaminants and lateral and vertical migration

RECEPTORS

- Site users
- A — Aquifer type
- B — Watercourse
- C — Building Materials (including plastic pipes)
- D — Flora and fauna

SIGNIFICANT SOURCES

- Potential sources of contamination associated with historical/current site usage (see text)
- Any potential localised spillages or leakages of fuel or oils from farm machinery/vehicles, as well as asbestos from barn construction materials.

Please refer to the text of the report for further information relating to this diagram.

TITLE: FIGURE 3: PRELIMINARY CONCEPTUAL SITE MODEL	
SITE: LAND SW OF MILTON KEYNES	
CLIENT: THE CONSORTIUM	
PROJECT No.: GEG-17-514	**DRAWN/CHECKED:** NN/ MR
SCALE: NTS	**DATE:** 15/12/17

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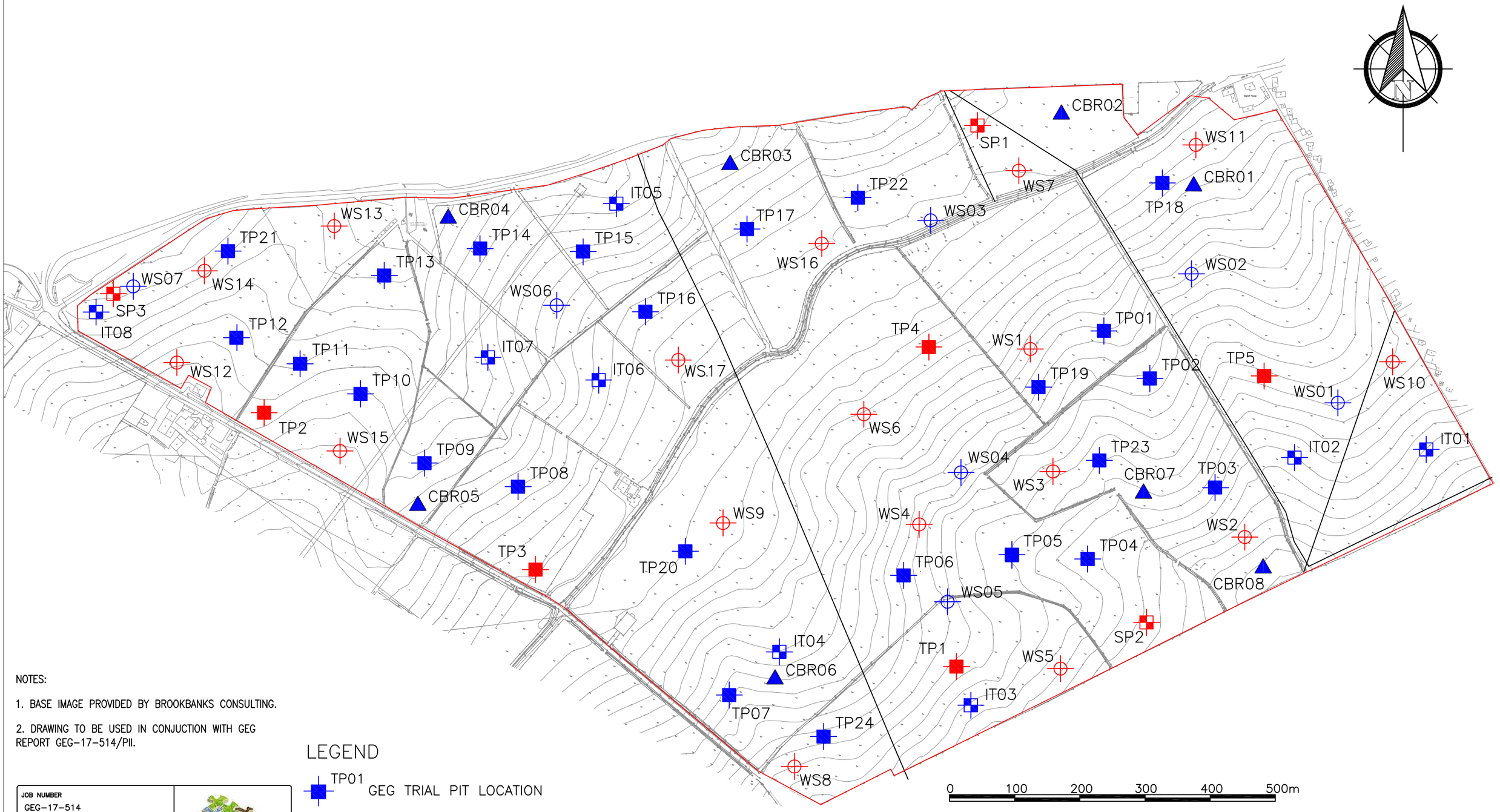

NOTES:

1. BASE IMAGE PROVIDED BY BROOKBANKS CONSULTING.

2. DRAWING TO BE USED IN CONJUCTION WITH GEG REPORT GEG-17-514/PII.

JOB NUMBER: GEG-17-514				
PROJECT TITLE: LAND SW MILTON KEYNES				
DRAWING TITLE: FIGURE 4: EXPLORATORY HOLE LOCATION PLAN			DRAWING NO.: GEG-17-514_001	
CLIENT: BROOKBANKS CONSULTING	REVISION NO.: A	ORIGINAL SIZE: A3	DIMENSIONS: METRES	SCALE: AS SHOWN
DRAWN BY: AT	CHECKED BY: MR	APPROVED BY: AM	ISSUE: FINAL ISSUE	DATE: 06-12-14

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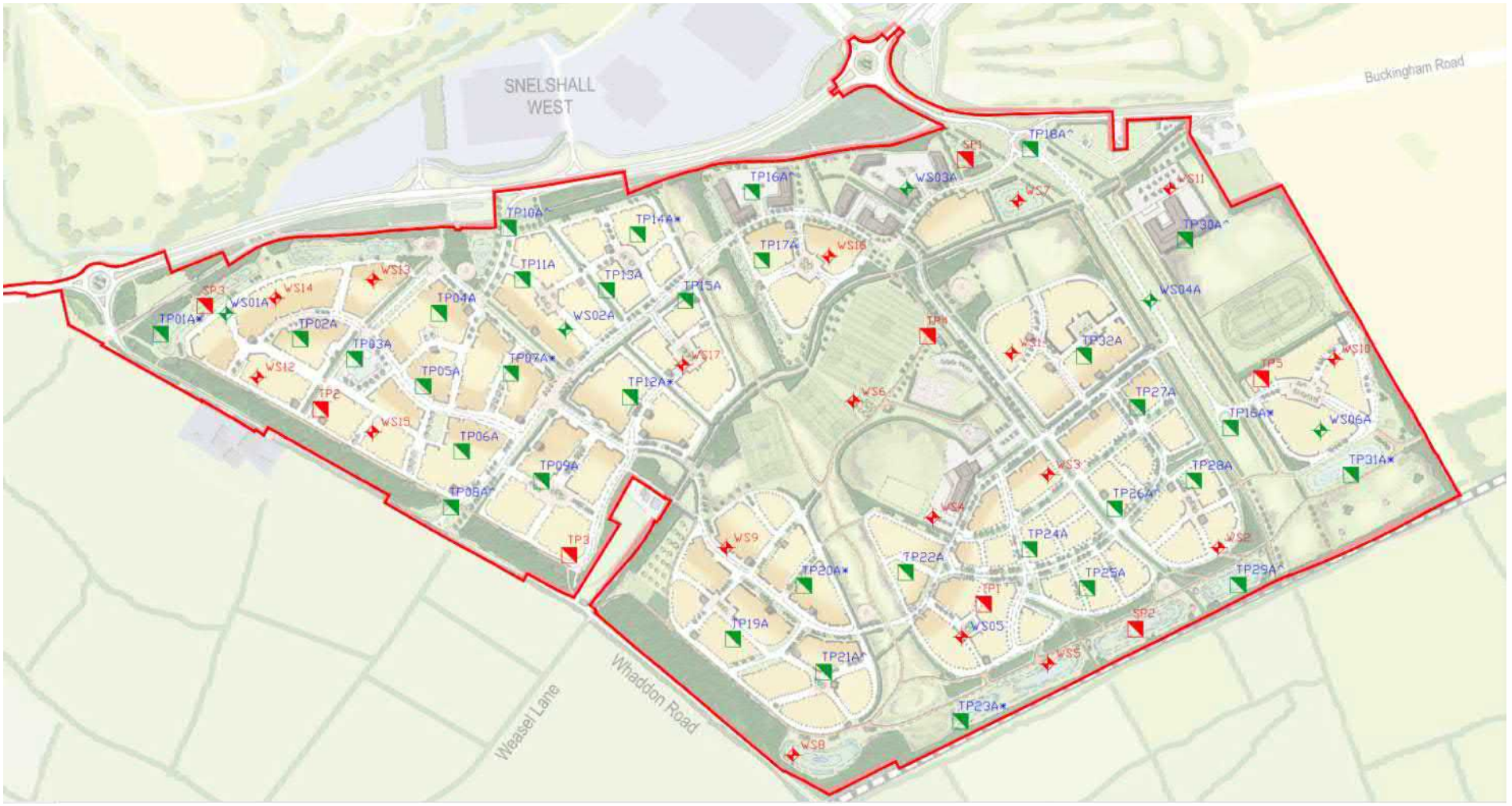
LEGEND

- TP01 — GEG TRIAL PIT LOCATION
- WS01 — GEG WINDOW SAMPLE LOCATION
- IT01 — GEG INFILTRATION TEST LOCATION
- CBR01 — GEG CBR TEST LOCATION
- TP01 — PREVIOUS TRIAL PIT APPROX. LOCATION
- WS01 — PREVIOUS WINDOW SAMPLE APPROX. LOCATION
- IT01 — PREVIOUS INFILTRATION TEST APPROX. LOCATION

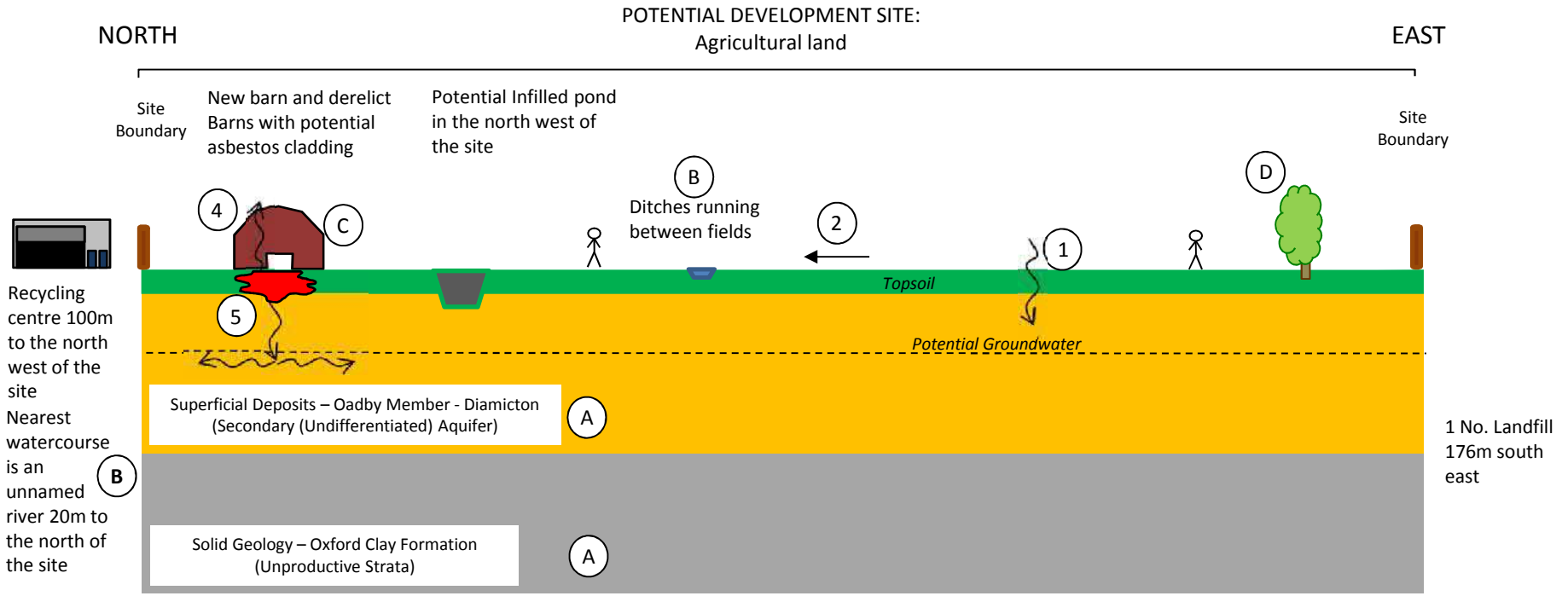


Approximate Scale

0 500m 1000m

Note: all l*ocations show are approximate*

TITLE: FIGURE 5: PROPOSED LAYOUT PLAN	**CLIENT:** BROOKBANKS / THE CONSORTIUM		**DRAWN/CHECKED:** AT / MR		GEG House, 17 Graham Road Malvern, WR14 2HR Tel. 01684 212526 Fax 01684 576917 admin@g-eg.co.uk, www.g-eg.co.uk
SITE: LAND SW MILTON KEYNES	**PROJECT No.:** GEG-17-514	**SCALE:** As Shown	**DATE:** 14/12/17	**REVISION:** A	Geo Environmental Group



PATHWAYS

1. Infiltration of precipitation
2. Surface water run off
3. Migration of ground gases (methane and carbon dioxide)
4. Potential dermal contact, ingestion of contaminated soil and/or dust and inhalation of gases/vapours
5. Potential leaching/mobilisation of contaminants and lateral and vertical migration

RECEPTORS

- Site users
- A — Aquifer type
- B — Watercourse
- C — Building Materials (including plastic pipes)
- D — Flora and fauna

SIGNIFICANT SOURCES

No significant sources of contamination identified

Any potential localised spillages or leakages of fuel or oils from farm machinery/vehicles, as well as asbestos from barn construction materials.

Please refer to the text of the report for further information relating to this diagram.

TITLE: FIGURE 6A: CONCEPTUAL SITE MODEL	
SITE: LAND SW OF MILTON KEYNES	
CLIENT: THE CONSORTIUM	
PROJECT No.: GEG-17-514	**DRAWN/CHECKED:** NN/ MR
SCALE: NTS	**DATE:** 15/12/17

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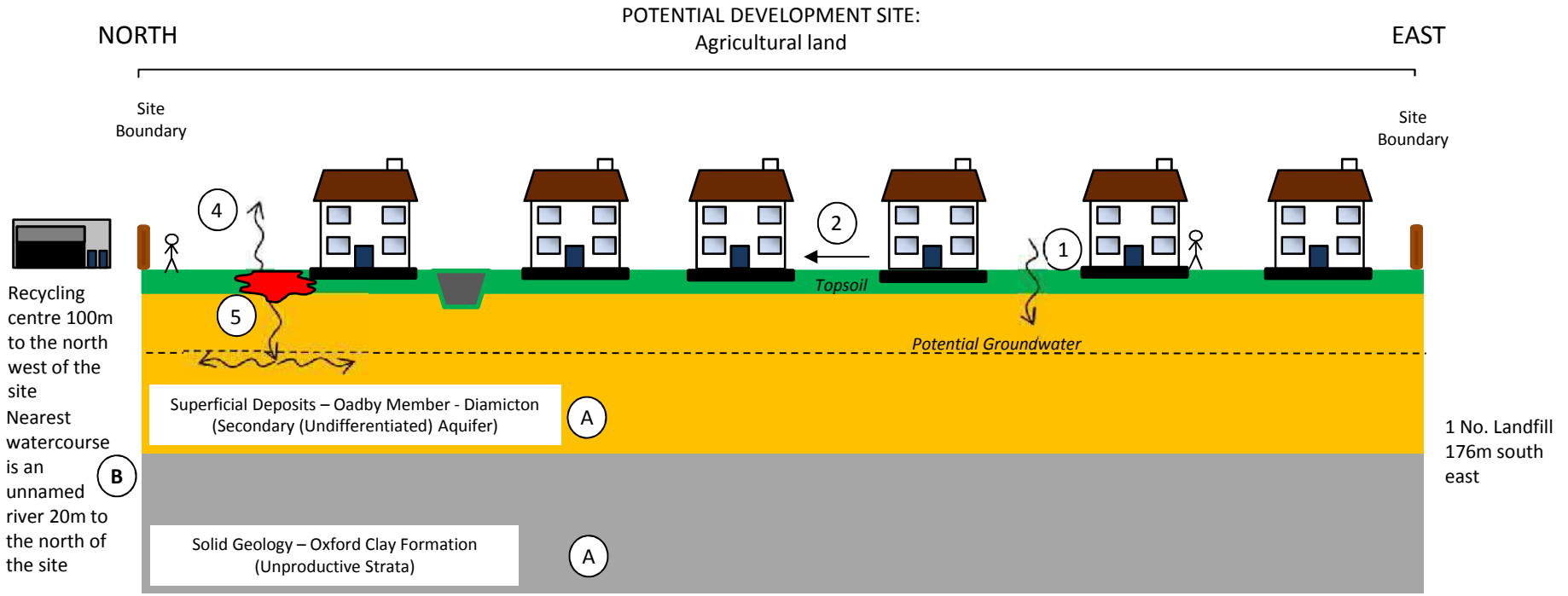

PATHWAYS

1. Infiltration of precipitation
2. Surface water run off
3. Migration of ground gases (methane and carbon dioxide)
4. Potential dermal contact, ingestion of contaminated soil and/or dust and inhalation of gases/vapours
5. Potential leaching/mobilisation of contaminants and lateral and vertical migration

RECEPTORS

- Site users
- A — Aquifer type
- B — Watercourse
- C — Building Materials (including plastic pipes)
- D — Flora and fauna

SIGNIFICANT SOURCES

No significant sources of contamination identified

Any potential localised spillages or leakages of fuel or oils from farm machinery/vehicles, as well as asbestos from barn construction materials.

Please refer to the text of the report for further information relating to this diagram.

TITLE: FIGURE 6B: CONCEPTUAL SITE MODEL (PROPOSED)	
SITE: LAND SW OF MILTON KEYNES	
CLIENT: THE CONSORTIUM	
PROJECT No.: GEG-17-514	**DRAWN/CHECKED:** NN/ MR
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APPENDIX B

PHOTOGRAPHIC RECORD

Photo 1: View east from west of site.

Photo 2: View east along northern edge from west of site.

Photo 3: Derelict farm building in north west of site.

Photo 4: Derelict farm building in north west of site.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

Photo 5: View west from west of site.

Photo 6: Drainage ditch typical of rest of site within the west of the site.

Photo 7: Depression in wooded area considered to be location of historical pond in the north of the site.

Photo 8: View north east from a central field.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

Photo 9: Access onto Weasel Lane from a central field.

Photo 10: Fuel pipeline marker in centre of site.

Photo 11: Railway embankment along southern edge of site.

Photo 12: Fuel pipeline marker with railway beyond on southern edge of site.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

Photo 13: View of southern edge of site from the south west.

Photo 14: View of track leading onto site from the west.

Photo 15: View south of mature trees along hedgerow from centre of site.

Photo 16: View south of barn on western edge of site.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

Photo 17: Drainage ditches in south of site.

Photo 18: View east of track along the norther edge of site.

Photo 19: Pylon located in the north of site.

Photo 20: Grassed field in the east of the site.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

Photo 21: View east along Weasel Lane.

Photo 22: Electricity substation off site to the north.

Photo 23: Excavation of trial pit IT02.

Photo 24: Arisings from trial pit IT02.

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Photo 25: Excavation of trial pit IT03.

Photo 26: Arisings from trial pit IT03.

Photo 27: Excavation of trial pit IT04.

Photo 28: Arisings from trial pit TP05.

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Photo 29: Excavation of trial pit IT05.

Photo 30: Arisings from trial pit IT05.

Photo 31: Excavation of trial pit IT06.

Photo 32: Arisings from trial pit IT06.

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Photo 33: Excavation of trial pit IT07.

Photo 34: Arisings from trial pit IT07.

Photo 35: Excavation of trial pit IT08.

Photo 36: Arisings from trial pit IT08.

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Photo 37: Excavation of trial pit TP01.

Photo 38: Arisings from trial pit TP01.

Photo 39: Excavation of trial pit TP02.

Photo 40: Arisings from trial pit TP02.

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Photo 41: Excavation of trial pit TP03.

Photo 42: Arisings from trial pit TP03.

Photo 43: Excavation of trial pit TP04.

Photo 44: Arisings from trial pit TP04.

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Photo 45: Excavation of trial pit TP05.

Photo 46: Arisings from trial pit TP05.

Photo 47: Excavation of trial pit TP06.

Photo 48: Arisings from trial pit TP06.

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Project: Land SW Milton Keynes

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Photo 49: Excavation of trial pit TP07.

Photo 50: Arisings from trial pit TP07.

Photo 51: Excavation of trial pit TP08.

Photo 52: Arisings from trial pit TP08.

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Photo 53: Excavation of trial pit TP09.

Photo 54: Arisings from trial pit TP09.

Photo 55: Excavation of trial pit TP10.

Photo 56: Arisings from trial pit TP10.

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Photo 57: Excavation of trial pit TP11.

Photo 58: Arisings from trial pit TP11.

Photo 59: Excavation of trial pit TP12.

Photo 60: Arisings from trial pit TP12.

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Photo 61: Excavation of trial pit TP13.

Photo 62: Arisings from trial pit TP13.

Photo 63: Excavation of trial pit TP14.

Photo 64: Arisings from trial pit TP14.

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Project: Land SW Milton Keynes

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Photo 65: Excavation of trial pit TP15.

Photo 66: Arisings from trial pit TP15.

Photo 67: Excavation of trial pit TP16.

Photo 68: Arisings from trial pit TP16.

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Project: Land SW Milton Keynes

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Photo 69: Excavation of trial pit TP17.

Photo 70: Arisings from trial pit TP17.

Photo 71: Excavation of trial pit TP18.

Photo 72: Arisings from trial pit TP.

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Photo 73: Excavation of trial pit TP19.

Photo 74: Arisings from trial pit TP19.

Photo 75: Excavation of trial pit TP20.

Photo 76: Arisings from trial pit TP20.

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Photo 77: Excavation of trial pit TP21.

Photo 78: Arisings from trial pit TP21.

Photo 79: Excavation of trial pit TP22.

Photo 80: Arisings from trial pit TP22.

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Photo 81: Excavation of trial pit TP23.

Photo 82: Arisings from trial pit TP23.

Photo 83: Excavation of trial pit TP24.

Photo 84: Arisings from trial pit TP24.

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Project: Land SW Milton Keynes

Project No.: GEG-17-514

APPENDIX C

EXPLORATORY HOLE LOGS

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	102.20	E 484,249.9 N 232,440.3	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				101.90		0.30	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
				101.40		(0.50) 0.80	(Firm) light brown slightly gravelly CLAY. Gravel is sub-rounded chalk, quartzite and flint. (OADBY MEMBER - DIAMICTON)		
1.00		N12					(Firm to stiff) brown mottled grey slightly gravelly CLAY. Gravel is sub-rounded chalk, flint and chert. (OADBY MEMBER - DIAMICTON) 1.00 - 2.00 Becoming firm		
2.00		N16				(2.70)	2.00 - 3.50 Becoming stiff		
3.00		N24		98.70		3.50			
							Stiff dark grey slightly gravelly CLAY. Gravel is sub-rounded chalk. (OADBY MEMBER - DIAMICTON)		
4.00		N20							
5.00		N25				(2.95)			
6.00		N28							
				95.75		6.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.No groundwater encountered. 2. N=SPT value. 3. 50mm standpipe 3m, response zone 1-3m, bentonite 0.2-1m, cover concreted 0-0.2m.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By NN

AGS3 UK BH GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	108.90	E 484,024.9 N 232,638.2	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				108.60		0.30	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
				108.20		(0.40) 0.70	(Firm) light brown slightly gravelly CLAY. Gravel is sub-angular flint. (OADBY MEMBER - DIAMICTON)		
1.00		N18		107.40		(0.80) 1.50	Stiff brown mottled grey slightly gravelly CLAY. Gravel is sub-rounded chalk, flint and chert. (OADBY MEMBER - DIAMICTON)		
2.00		N15					Firm to stiff dark grey slightly gravelly CLAY. Gravel is sub-rounded chalk with rare gravel sized pockets of sub-angular gravel. (OADBY MEMBER - DIAMICTON)		
3.00		N23					3.00 - 6.00 Becoming stiff		
4.00		N25				(4.95)			
5.00		N24							
6.00		N33					6.00 - 6.45 Becoming very stiff		
				102.45		6.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.Soils damp from 3.70m to base. 2. N=SPT value. 3. Upon completion borehole backfilled with arisings.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By NN

AGS3 UK BH GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS03**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	119.40	E 483,626.2 N 232,714.4	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				119.10		0.30	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
				118.70		(0.40) 0.70	(Stiff) light brown slightly gravelly CLAY. Gravel is sub-angular chalk. (OADBY MEMBER - DIAMICTON)		
1.00		N18					Stiff brown mottled grey slightly gravelly CLAY. Gravel is sub-rounded chalk. (OADBY MEMBER - DIAMICTON)		
2.00		N29							
3.00		N30				(4.75)	3.00 - 5.00 Becoming stiff to very stiff dark grey		
4.00		N30							
5.00		N50/ 295mm					5.00 - 5.45 Becoming very stiff		
				113.95		5.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.No groundwater encountered. 2. N=SPT value. 3. 50mm standpipe 3m, response zone 1-3m, bentonite 0.2-1. cover concreted 0-0.2m.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By NN

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS04**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	107.90	E 483,672.0 N 232,332.4	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				107.70		0.20	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
						(1.20)	(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)		
1.00		N17					1.00 - 1.40 Becoming stiff		
				106.50		1.40			
						(2.10)	(Firm to stiff) brownish grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint, chalk with occasional gravel sized pockets of firm to medium brown sand. (OADBY MEMBER - DIAMICTON)		
2.00		N16					2.00 - 3.00 Becoming stiff		
3.00		N21							
				104.40		3.50			
						(1.95)	Stiff grey slightly gravelly CLAY. Gravel is sub-angular to subrounded fine to coarse chalk. (OADBY MEMBER - DIAMICTON)		
4.00		N23							
5.00		N36					5.00 - 5.45 Becoming very stiff		
				102.45		5.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.No groundwater encountered. 2. N=SPT value. 3. Upon completion borehole backfilled with arisings.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By NN

AGS3 UK BH GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS05**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	105.70	E 483,650.7 N 232,138.8	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				105.50		0.20	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
						(1.30)	Firm brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular flint and sub-rounded chalk and quartzite. (OADBY MEMBER - DIAMICTON) 0.80 - 1.20 Becoming orangish brown		
1.00		N10		104.20		1.50			
							(Firm to stiff) greyish brown slightly gravelly CLAY. Gravel is sub-rounded chalk. (OADBY MEMBER - DIAMICTON)		
2.00		N18					2.00 - 3.00 Becoming stiff		
3.00		N10					2.90 - 3.10 With occasional cobble sized pockets of sand 3.00 - 4.00 Becoming firm		
						(4.95)			
4.00		N18					4.00 - 6.45 Becoming stiff		
5.00		N25							
6.00		N24							
				99.25		6.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.Soils becoming damp within sand pockets from 3-3.3m. 2. N=SPT value. 3. 50mm standpipe 3m, response zone 1-3m, bentonite 0.2-1m, cover concreted 0-0.2m.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By NN

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS06**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	113.60	E 483,051.9 N 232,590.1	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				113.40		0.20	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
						(0.90)	(Firm) brown slightly sandy slightly gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)		
1.00		N13		112.50		1.10			
						(1.90)	Firm greyish brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk, chert and flint. (OADBY MEMBER - DIAMICTON)		
2.00		N13							
				110.60		3.00			
3.00		N15				(1.50)	Firm to stiff brownish grey sandy CLAY with rare sub-angular to sub-rounded fine to coarse chalk gravel. Sand is fine to medium. (OADBY MEMBER - DIAMICTON)		
4.00		N12		109.10		4.50	4.00 - 4.50 Becoming firm		
						(1.95)	(Firm to stiff) brownish grey very sandy CLAY. Sand is fine to coarse. (OADBY MEMBER - DIAMICTON)		
5.00		N18					5.00 - 6.45 Becoming stiff		
6.00		N24		107.15		6.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.Soils wet at 4.5-5m. 2. N=SPT value. 3. 50mm standpipe 3m, response zone 1-3m, bentonite 0.2-1m, cover concreted 0-0.2m.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By AT

AGS3 UK BH GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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BOREHOLE LOG

Project				BOREHOLE No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**WS07**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	103.60	E 482,401.2 N 232,619.3	
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				103.40		0.20	(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)		
						(0.90)	(Firm) light brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)		
1.00		N12		102.50		1.10			
							Firm brownish grey gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk and chert. (OADBY MEMBER - DIAMICTON)		
2.00		N16				(2.10)	2.00 - 3.00 Becoming stiff		
3.00		N16		100.40		3.20			
							Stiff grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk. (OADBY MEMBER - DIAMICTON)		
4.00		N21							
						(3.25)			
5.00		N28							
6.00		N44					6.00 - 6.45 Becoming very stiff		
				97.15		6.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	1.No groundwater encountered. 2. N=SPT value. 3. 50mm standpipe 3m, response zone 1-3m, bentonite 0.2-1m, cover concreted 0-0.2m.

All dimensions in metres Scale 1:43.75	Client Brookbanks	Method/ Plant Used Window Sampling Rig	Logged By AT

AGS3 UK BH GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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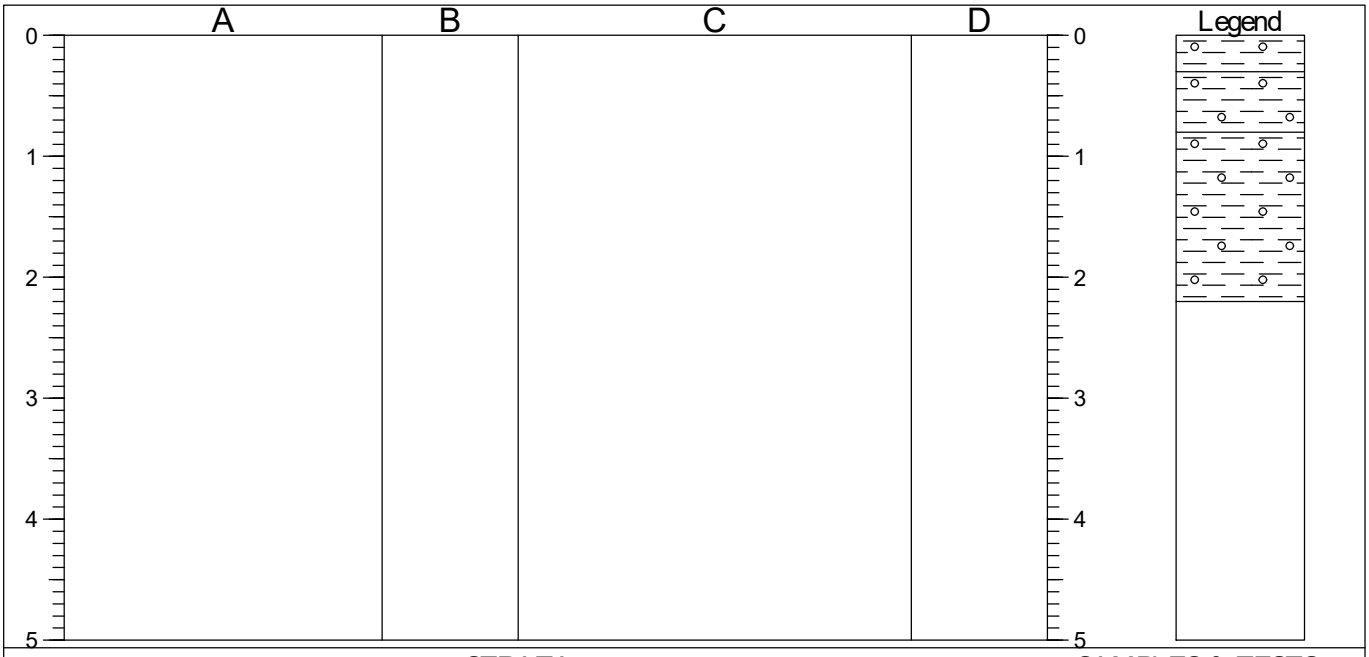
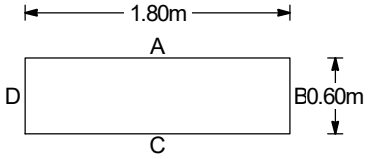
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	95.90	E 484,385.5 N 232,369.0	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.30-0.80		(TOPSOIL)			
		(Firm) light brown slightly gravelly CLAY. Gravel is sub-rounded quartzite and flint.			
0.80-2.20		(OADBY MEMBER - DIAMICTON)			
		(Stiff) grey mottled brown slightly gravelly CLAY. Gravel is sub-rounded siltstone, flint and chert. (OADBY MEMBER - DIAMICTON) 1.50 - 2.20 Occasional gravel sized pockets of brown gravel sand			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By NN

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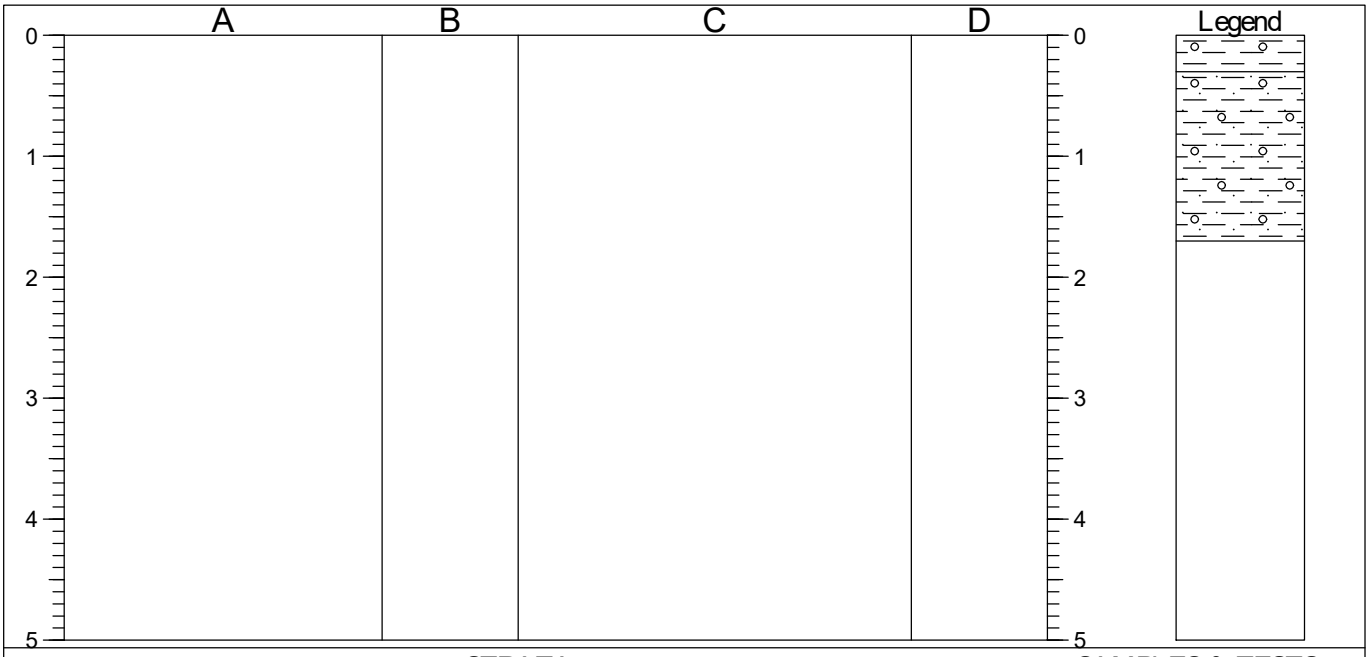
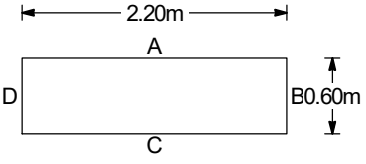
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	97.80	E 484,183.7 N 232,355.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.10	D	
0.30-1.70		(TOPSOIL)			
		(Firm) light brown slighty sandy gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and rare mudstone. (OADBY MEMBER - DIAMICTON)	1.00	HV	152,148,152kPa
		1.00 - 1.70 Becoming stiff to very stiff brown grey mottled	1.20	HV	>193kPa
			1.50	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

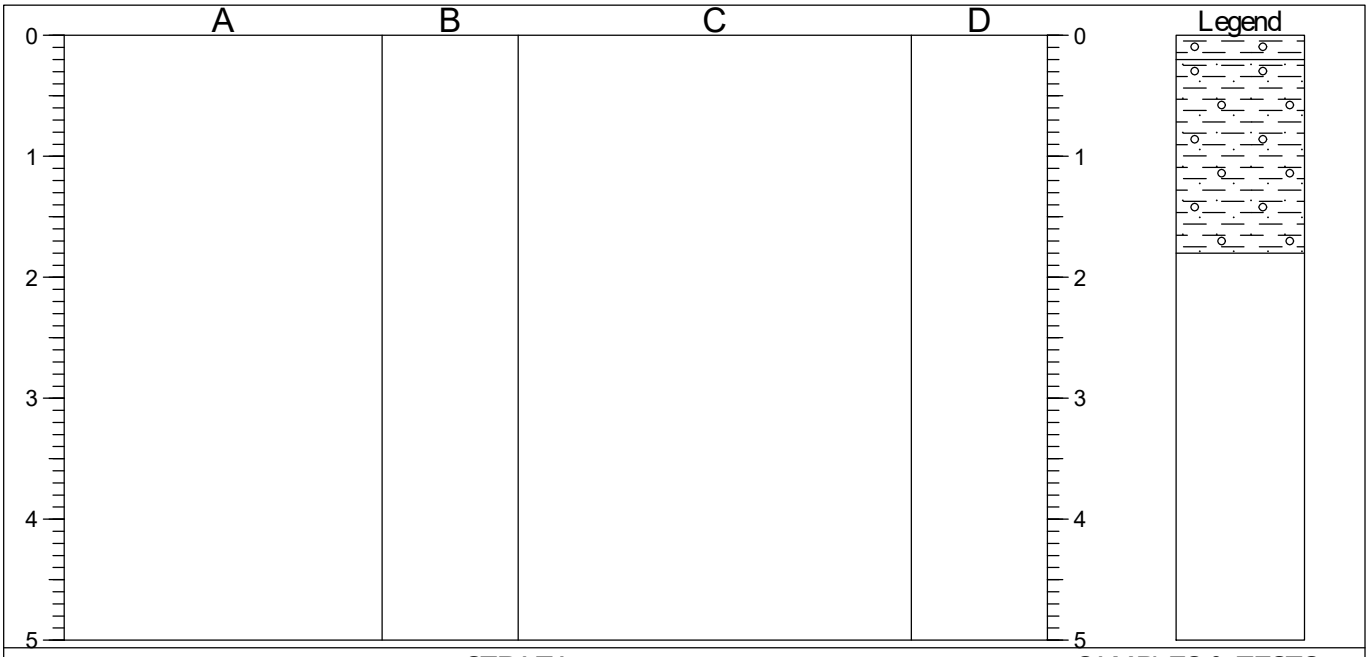
1. No groundwater encountered. 2. HV=Uncorrected Hand Vane measurement. 3. Infiltration test completed in base. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

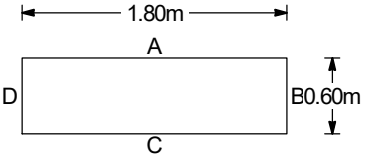
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT03**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	101.70	E 483,688.2 N 231,976.1	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-1.80		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.15	D	
		(Firm to stiff) light brown slightly sandy gravelly CLAY. Sand is fine. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	0.80 0.90	HV D	>193kPa
		1.60 - 1.80 Brown mottled grey with frequent chalk gravel			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. HV=Uncorrected Hand Vane measurement. 3. Infiltration test completed in base. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
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Malvern, WR14 2HR
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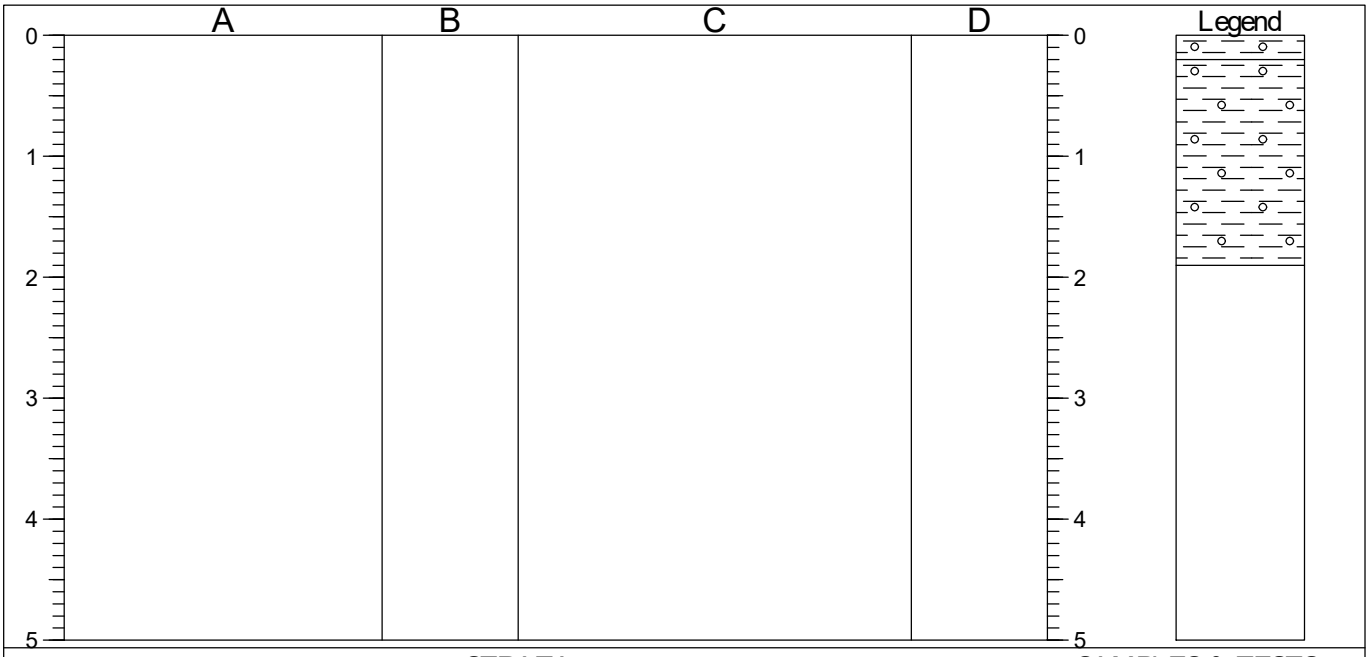
Fax: 01684 576917

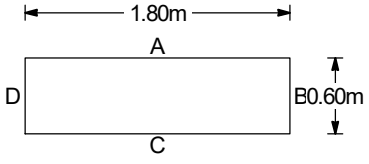
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT04**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	112.90	E 483,393.6 N 232,054.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-1.90		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
		(Firm to stiff) light brown mottled grey gravelly CLAY. Gravel is sub-angular to subrounded fine to coarse chert and flint. (OADBY MEMBER - DIAMICTON) 1.30 - 1.90 Becoming very stiff	1.10 1.70	D D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
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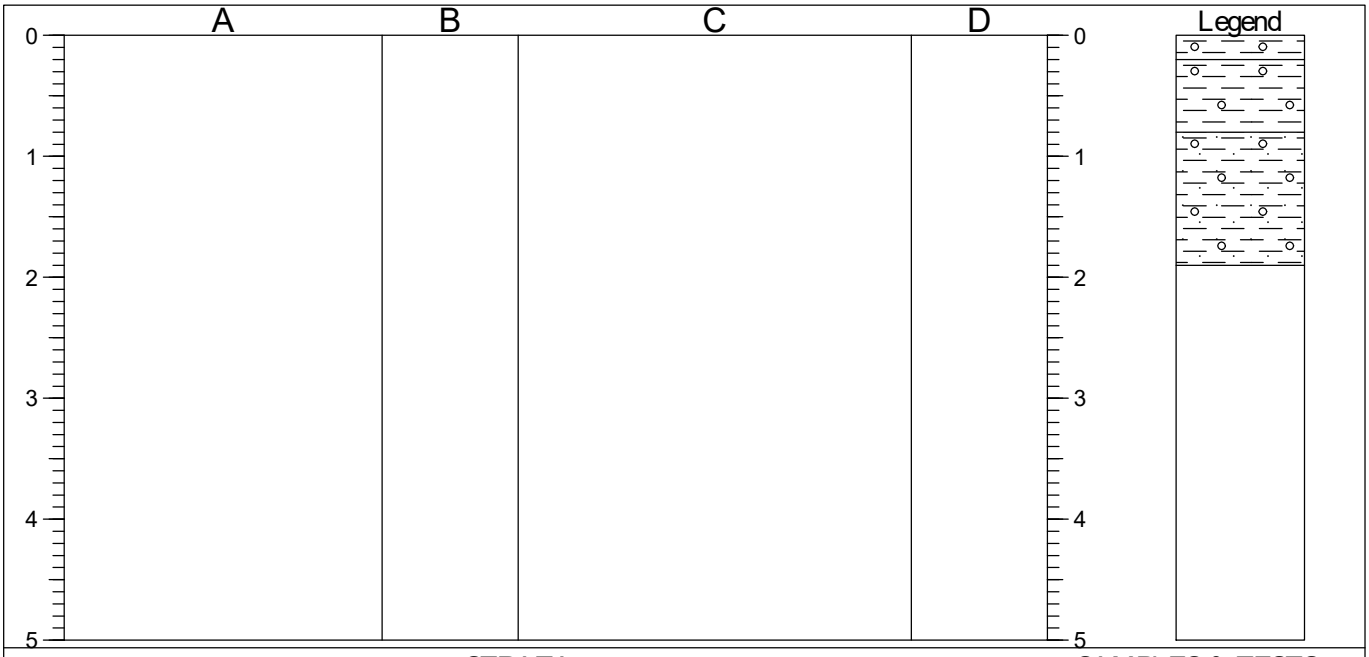
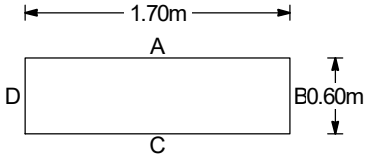
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT05**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	109.30	E 483,142.5 N 232,746.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
0.20-0.80		(Firm) brown slightly gravelly CLAY with occasional coarse sand. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			
0.80-1.90		(Firm to stiff) greyish brown slightly sandy gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
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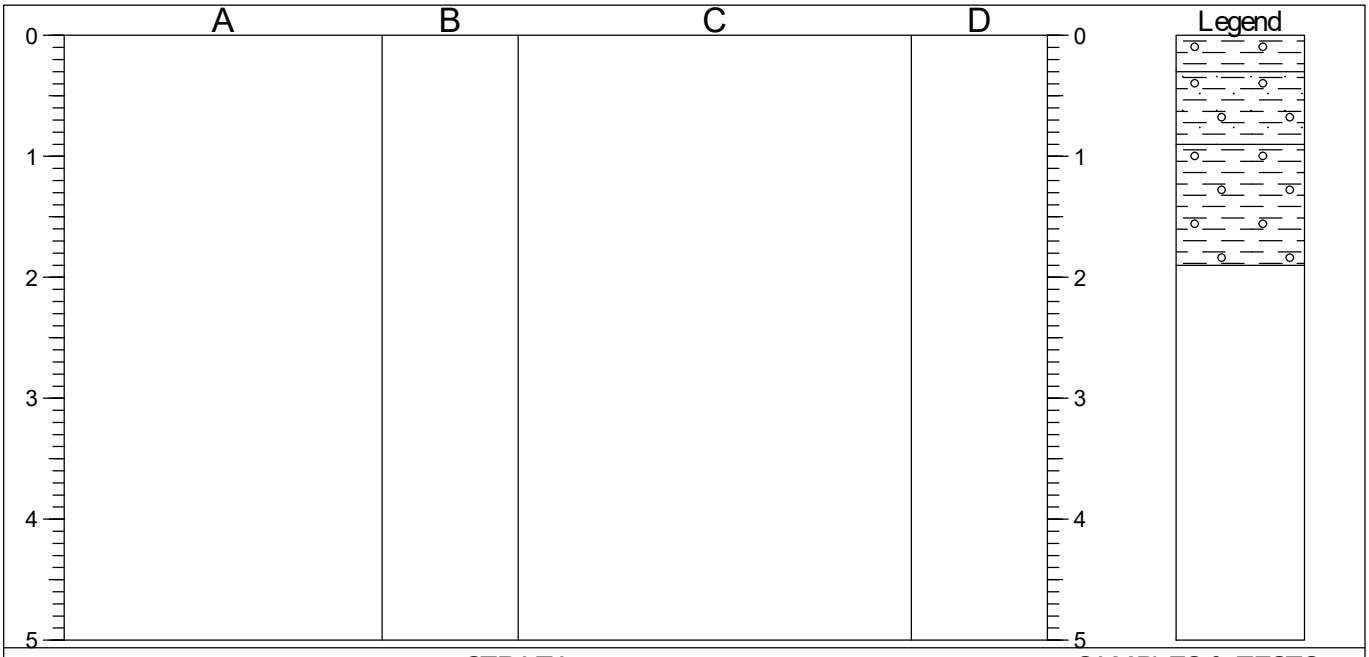
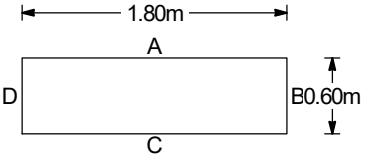
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT06**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	116.40	E 483,115.5 N 232,475.5	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.30-0.90		(TOPSOIL)			
		(Firm) light brown CLAY with rare sub-angular to sub-rounded fine to coarse chert and chalk gravel.			
0.90-1.90		(OADBY MEMBER - DIAMICTON)			
		(Stiff) light brownish grey gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
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Malvern, WR14 2HR
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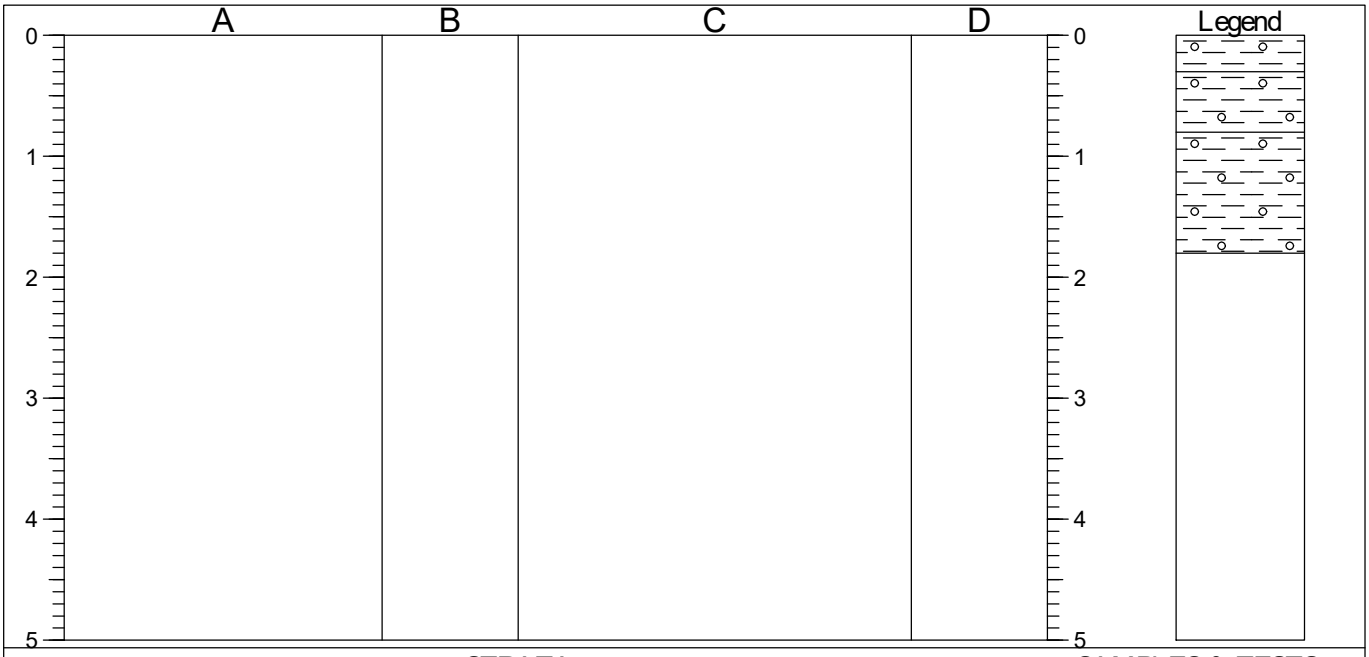
Fax: 01684 576917

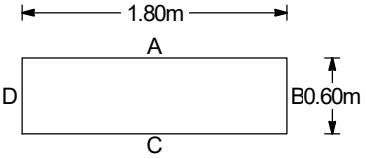
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT07**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	110.30	E 482,945.3 N 232,510.3	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.30-0.80		(TOPSOIL)			
		(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk.	0.60	D	
0.80-1.80		(OADBY MEMBER - DIAMICTON)	0.60	HV	127,109,49kPa
		(Stiff) brownish grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

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Malvern, WR14 2HR
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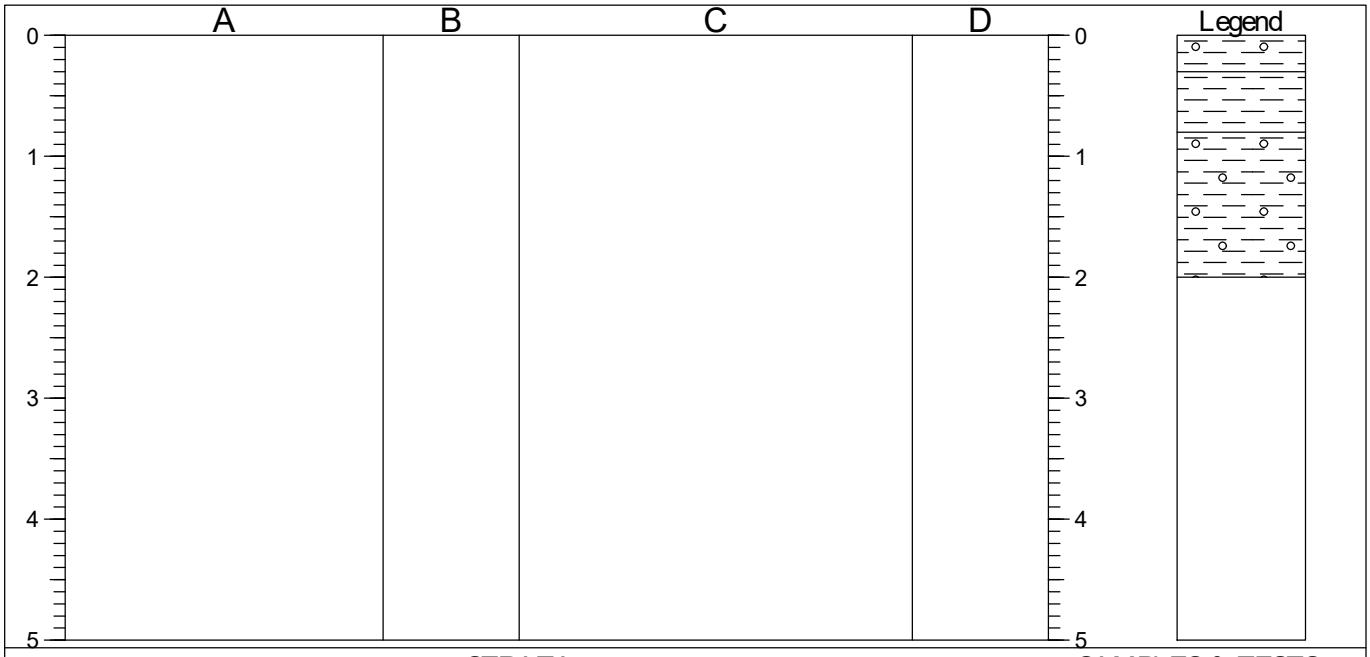
Fax: 01684 576917

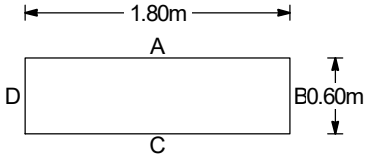
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**IT08**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	104.60	E 482,344.1 N 232,579.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
0.30-0.80		(Firm) brown CLAY with rare sub-angular to sub-rounded fine to coarse chert and chalk. (OADBY MEMBER - DIAMICTON)			
0.80-2.00		(Stiff) light greyish brown gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Infiltration test completed in base. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
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Malvern, WR14 2HR
Telephone: 01684 212526
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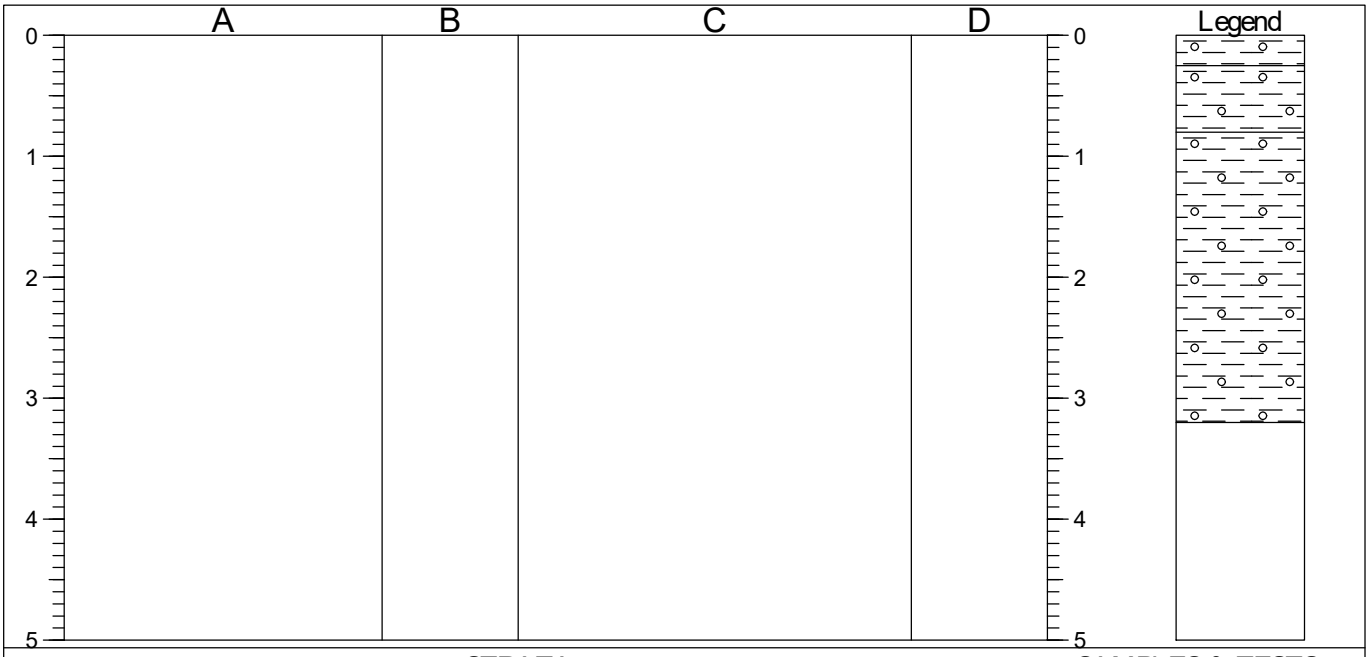
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	109.80	E 483,890.9 N 232,550.9	
Contractor				Sheet 1 of 1

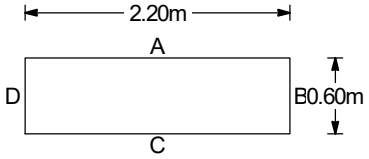


STRATA

SAMPLES & TESTS

Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.25-0.80		(TOPSOIL)	0.20	D	
0.80-3.20		(Firm to stiff) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk. (OADBY MEMBER - DIAMICTON)	0.60	D	
		(Stiff to very stiff) grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.20 - 2.60 Rare cobble sized pockets of brown medium sand	1.30	D	
		2.60 - 3.20 Becoming slightly gravelly CLAY			
		2.90 - 3.20 Rare chalk cobbles			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2 Upon completion trial pit backfilled with arisings.

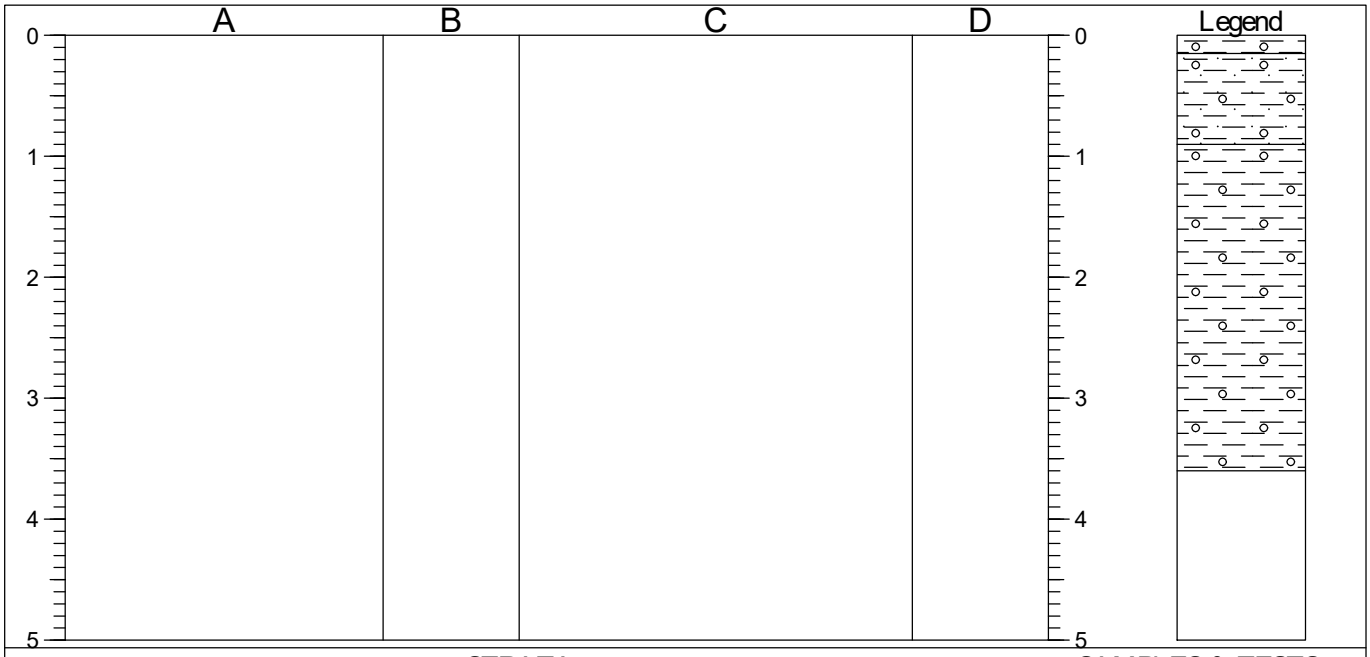
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

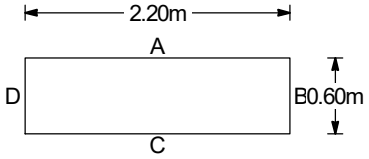
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	106.50	E 483,961.0 N 232,478.1	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.15 0.15-0.90		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.10	D	
0.90-3.60		(Firm) brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	0.60	D	
		(Stiff) light brownish grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.50 - 3.60 Occasional gravel sized pockets brown fine sand	1.90	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

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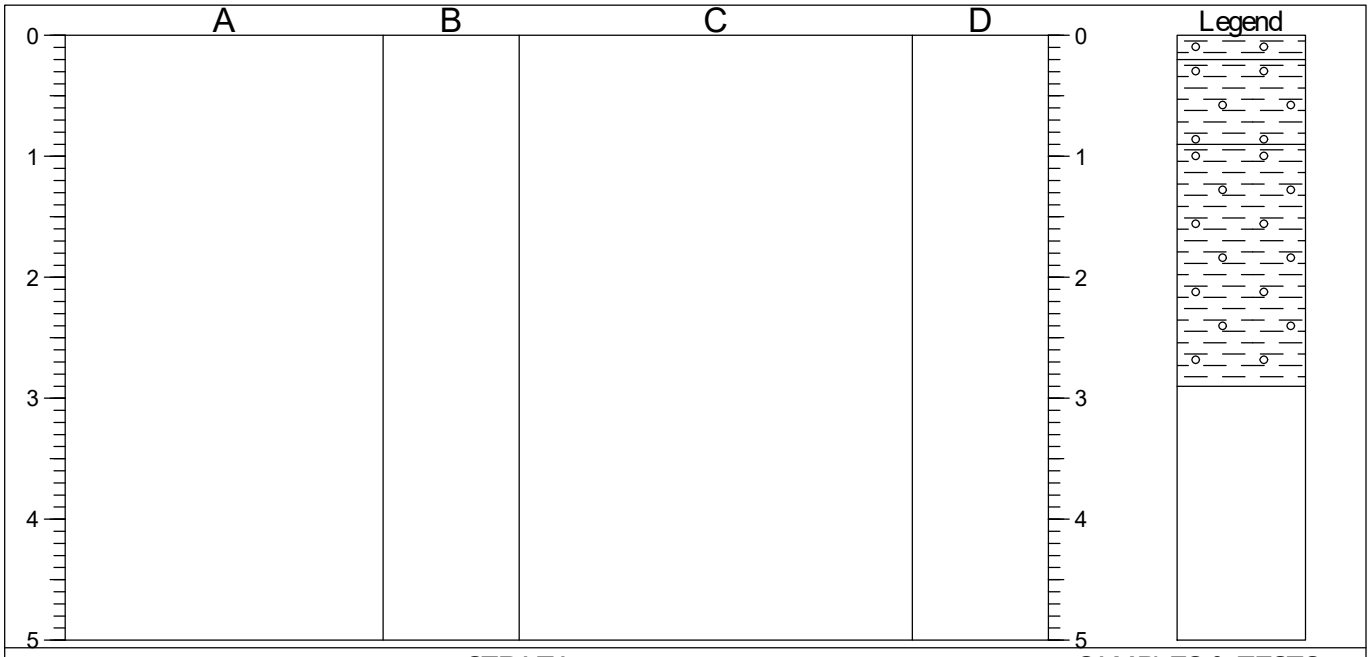
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

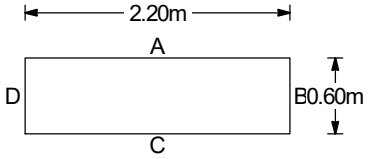
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP03**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	99.30	E 484,061.2 N 232,310.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-0.90		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.10	D	
0.90-2.90		(Firm) brown gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			
		(Stiff) brownish grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert and chalk. (OADBY MEMBER - DIAMICTON)	1.70	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
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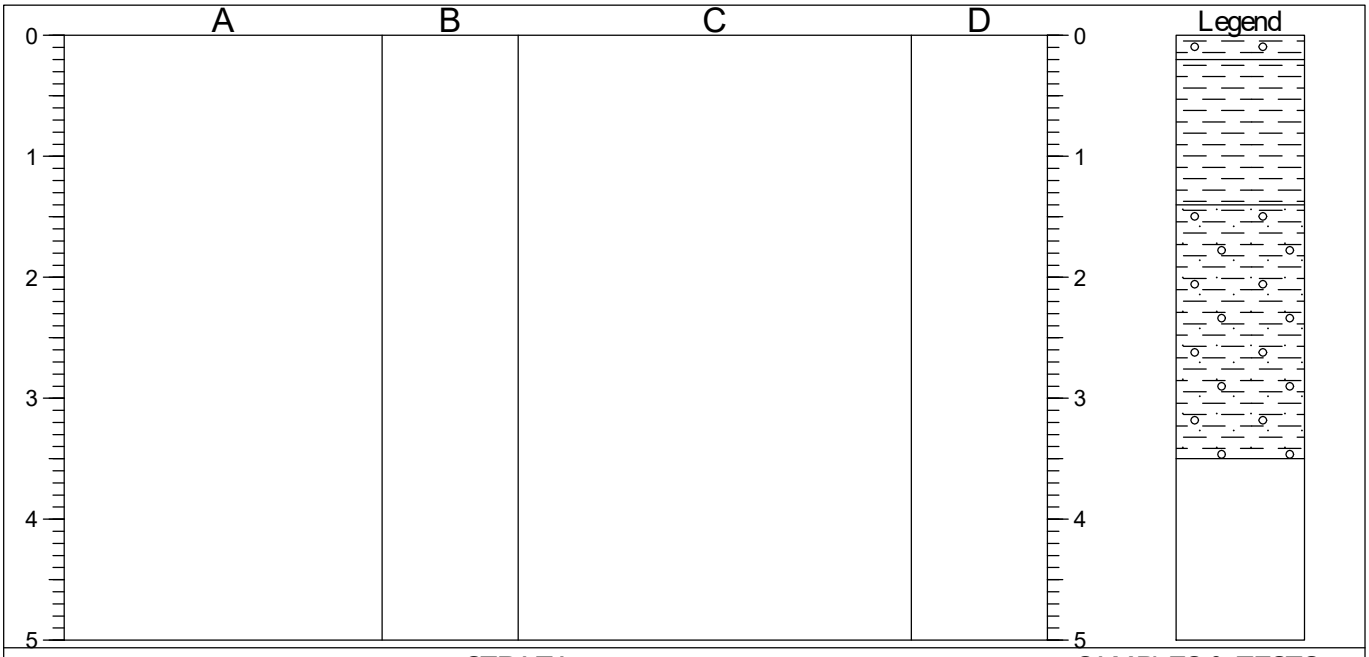
Fax: 01684 576917

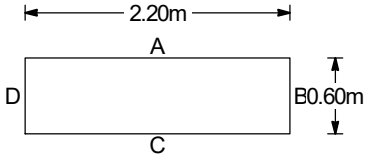
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP04**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	13-10-17	99.40	E 483,867.1 N 232,200.3	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
0.20-1.40		(Firm to stiff) brown CLAY with rare fine sub-angular to sub-rounded gravel chert and flint. (OADBY MEMBER - DIAMICTON)	0.60	D	
			1.20	HV	113,108,115kPa
1.40-3.50		Stiff grey brown mottled slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	1.50	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
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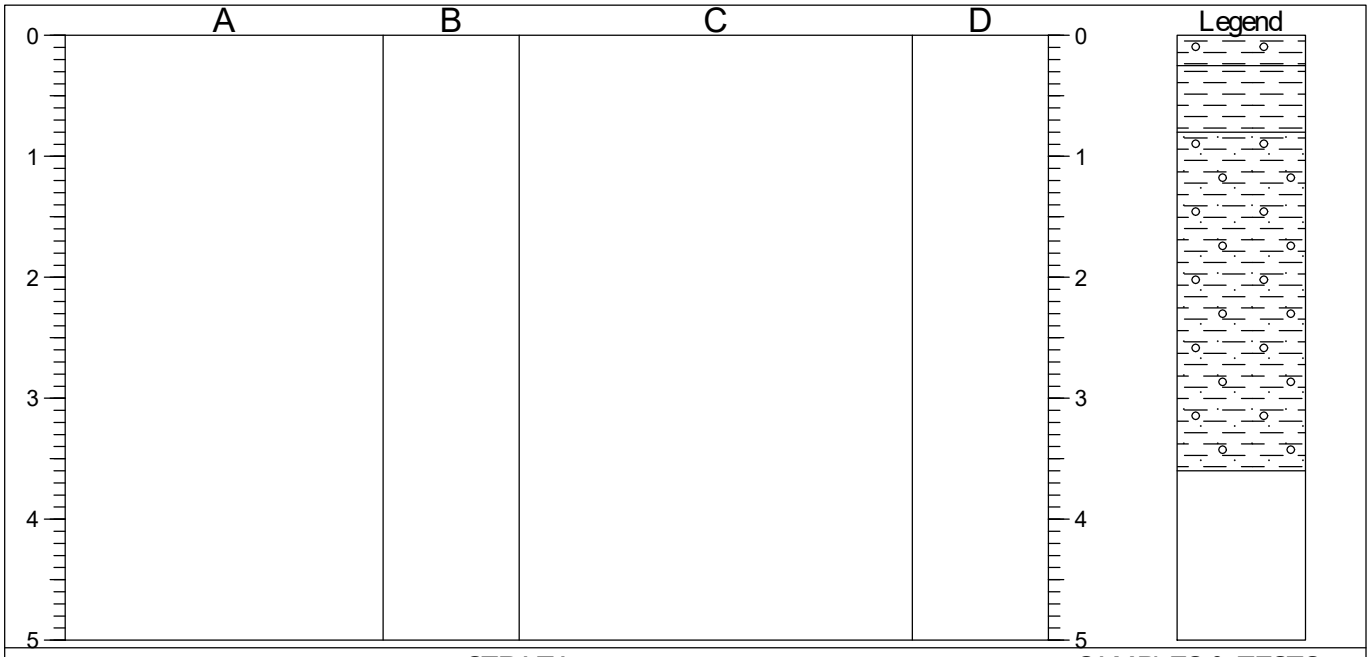
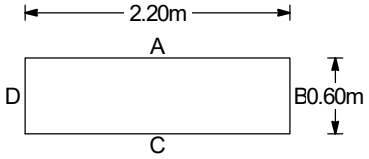
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP05**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	13-10-17	101.90	E 483,758.0 N 232,203.6	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.15	D	
0.25-0.80		(TOPSOIL)			
0.80-3.60		(Firm to stiff) brown CLAY with rare fine sub-angular to sub-rounded gravel chert and flint. (OADBY MEMBER - DIAMICTON)	1.00	D	
		(Stiff to very stiff) greyish brown gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, chert and chalk. (OADBY MEMBER - DIAMICTON) 1.50 - 3.60 Occasional cobbles of flint and chalk			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

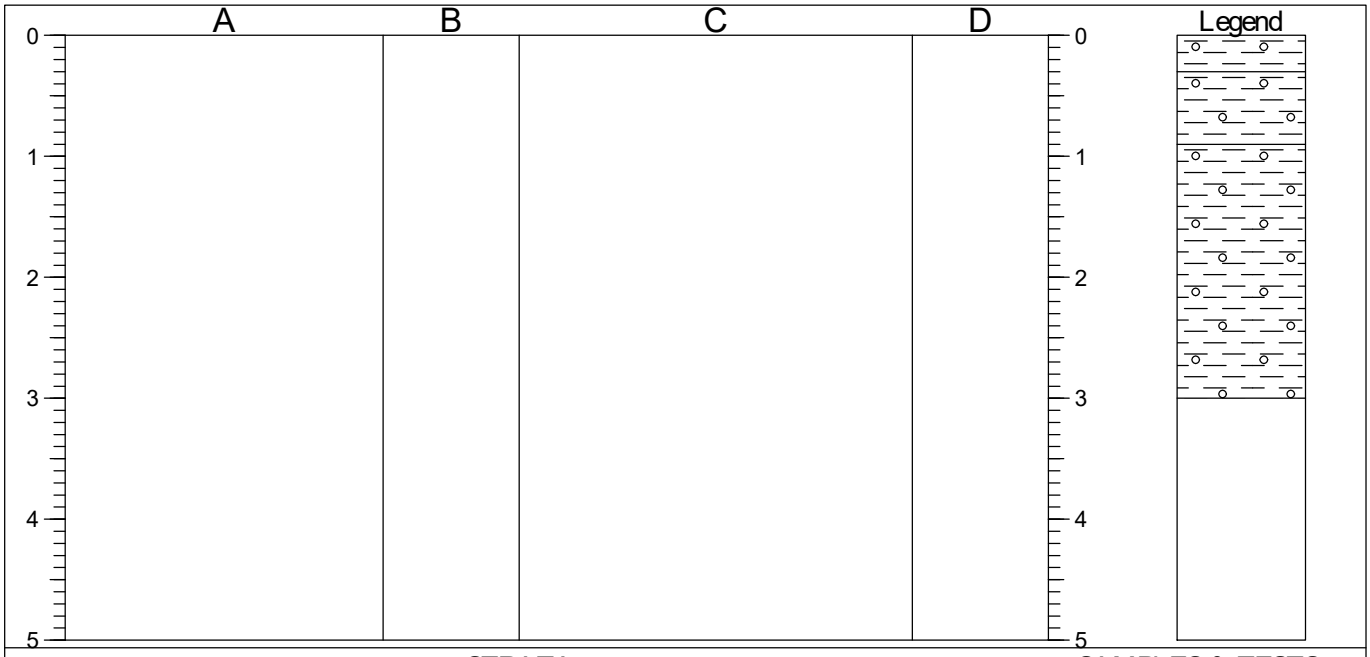
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

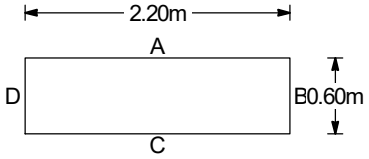
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP06**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	13-10-17	107.50	E 483,609.6 N 232,181.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.30-0.90		(TOPSOIL)			
0.90-3.00		(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert and flint. (OADBY MEMBER - DIAMICTON) 0.80 - 0.80 Field drain			
		(Stiff) brownish grey gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.30 - 3.00 Becoming very stiff	1.30	D	
		2.80 - 3.00 Occasional cobble sized pockets of fine to coarse yellow brown sand			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
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Malvern, WR14 2HR
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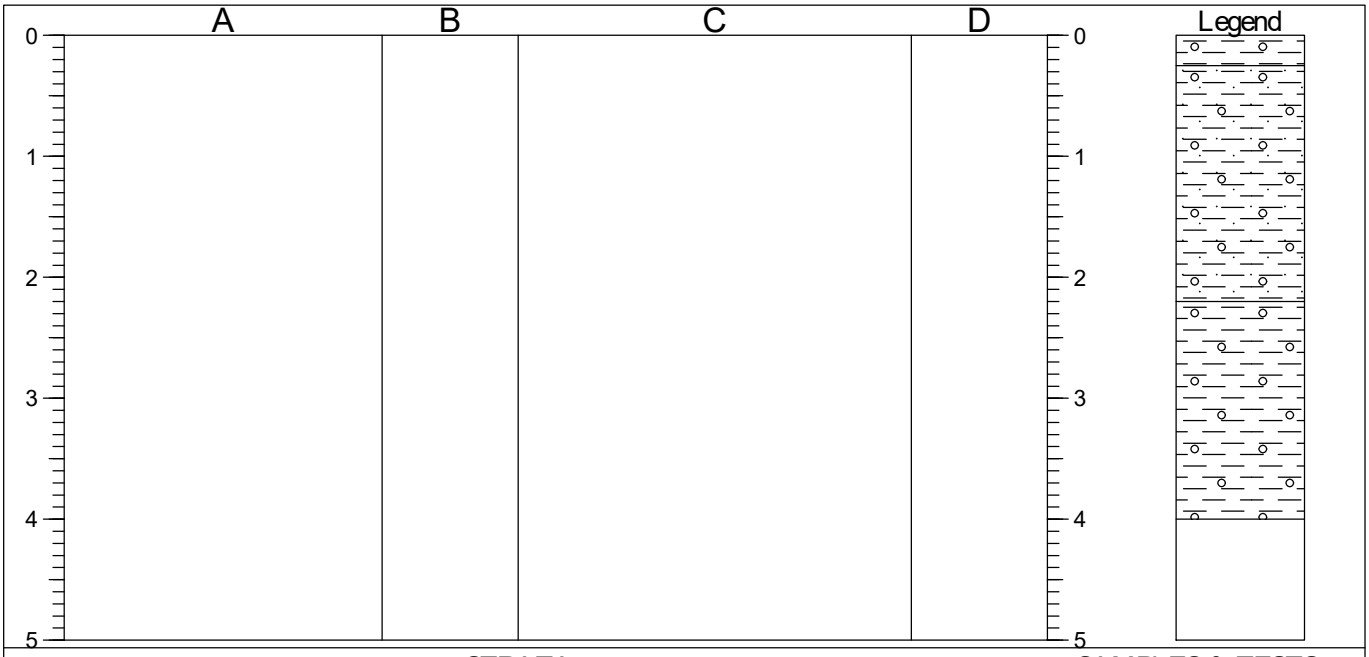
Fax: 01684 576917

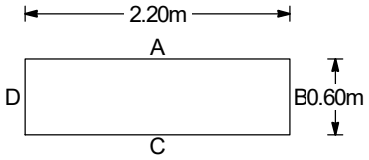
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP07**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	13-10-17	110.40	E 483,313.2 N 231,989.5	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.25-2.20		(TOPSOIL)	0.25	D	
		(Stiff) greyish brown slightly sandy gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint, chert and rare sandstone. (OADBY MEMBER - DIAMICTON)	1.00	D	
		0.90 - 2.20 Becoming grey brown mottled			
		1.50 - 2.20 Rare cobbles of chalk			
2.20-4.00		(Stiff to very stiff) grey slightly gravelly CLAY with boulder-sized pockets of light grey silty sandy gravel. Gravel is sub-angular to sub-rounded flint, chert and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. Soils wet from 2.20-2.40m . 2 Upon completion trial pit backfilled with arisings.

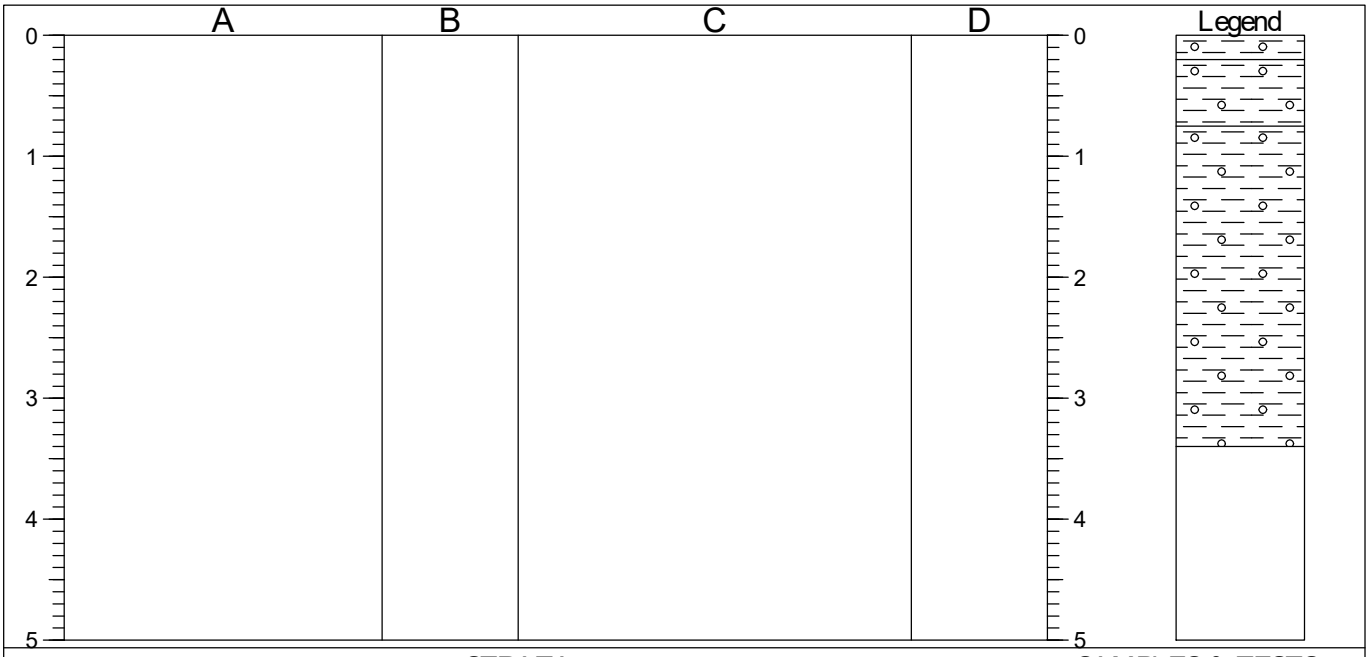
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

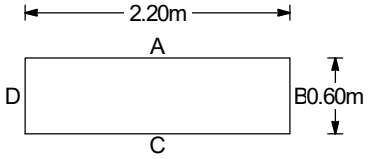
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP08**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	16-10-17	115.00	E 482,991.4 N 232,311.8	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.20-0.75		(TOPSOIL)			
0.75-3.40		(Stiff) light brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	0.90 1.00	D HV	>193kPa
		Stiff to very stiff light greyish brown gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			
		2.00 - 3.40 Becoming darker grey brown mottled			
		3.00 - 3.40 Becoming (firm)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. Slow seepage of groundwater at 3.30m to base. 2. HV=Uncorrected hand vane measurement. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
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Malvern, WR14 2HR
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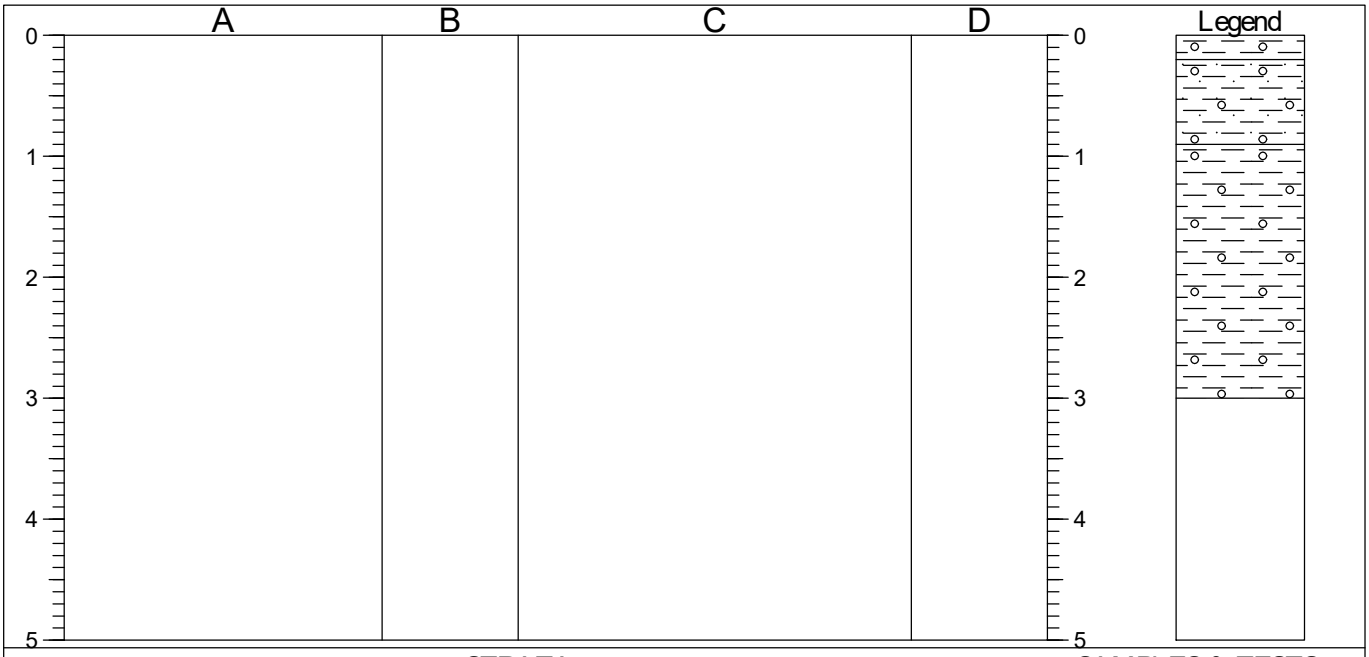
Fax: 01684 576917

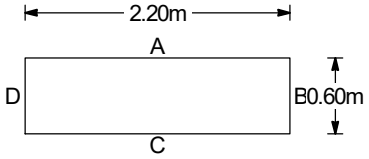
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP09**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	16-10-17	110.60	E 482,848.1 N 232,347.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.10	B	
0.20-0.90		(Firm) light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine chert. (OADBY MEMBER - DIAMICTON)	0.50	D	
0.90-3.00		(Stiff) light greyish brown gravelly CLAY with rare pockets of cobble sized fine to medium brown sand. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
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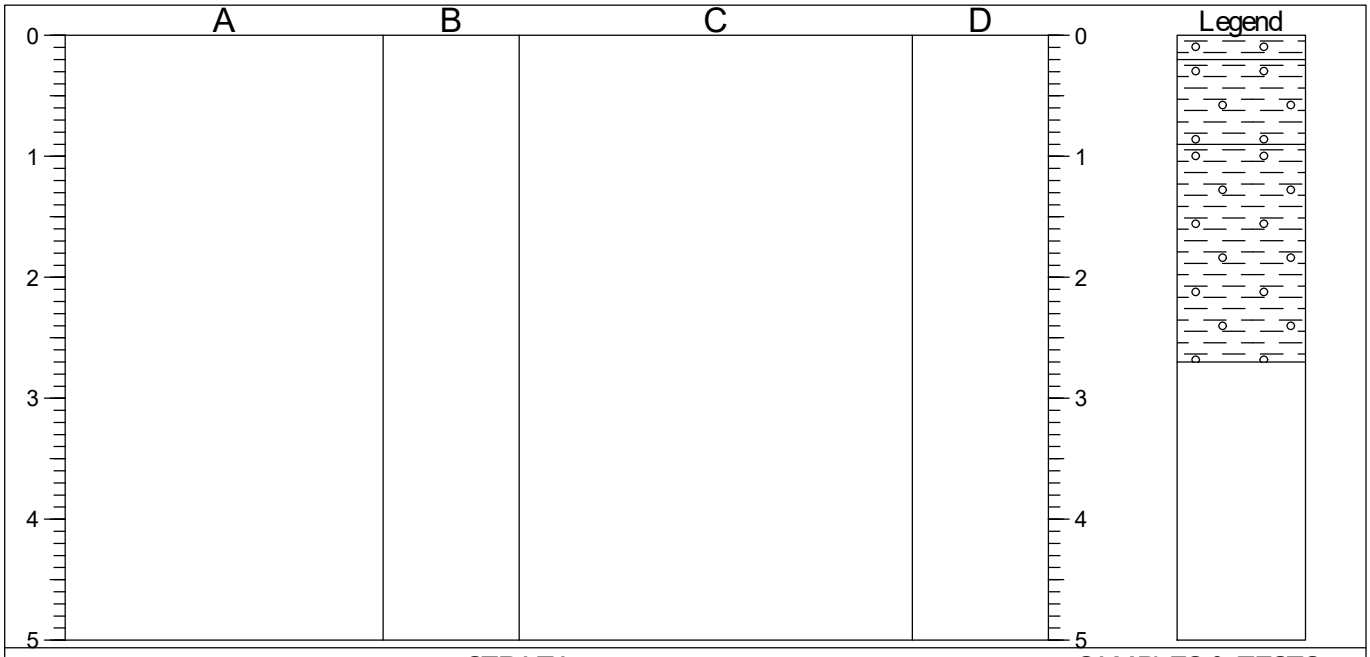
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP10**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	110.30	E 482,749.2 N 232,454.3	
Contractor				Sheet 1 of 1

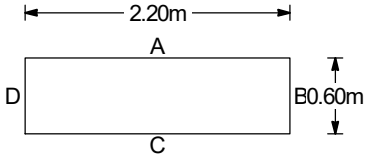


STRATA

SAMPLES & TESTS

Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-0.90		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.15	D	
0.90-2.70		(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	1.00	D	
		(Stiff) grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk with occasional coarse sand. (OADBY MEMBER - DIAMICTON) 1.70 - 2.70 Occasional cobble sized pockets of fine to medium brown sand			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

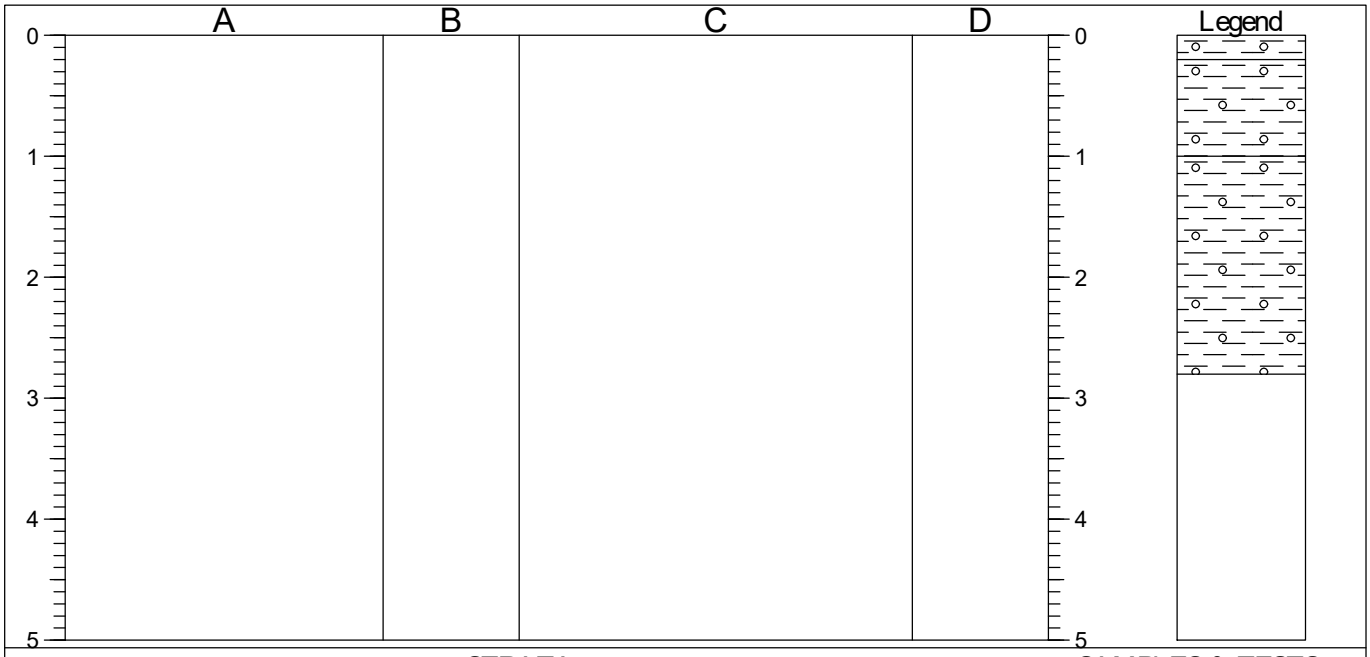
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP11**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	107.90	E 482,657.2 N 232,500.3	
Contractor				Sheet 1 of 1

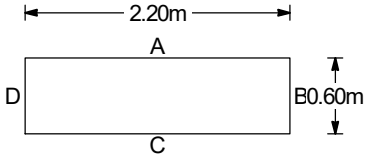


STRATA

SAMPLES & TESTS

Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.40	D	
0.20-1.00		(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)			
1.00-2.80		(Stiff) brownish grey gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	1.50	D	
		2.00 - 2.80 Rare chalk cobbles	2.30	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

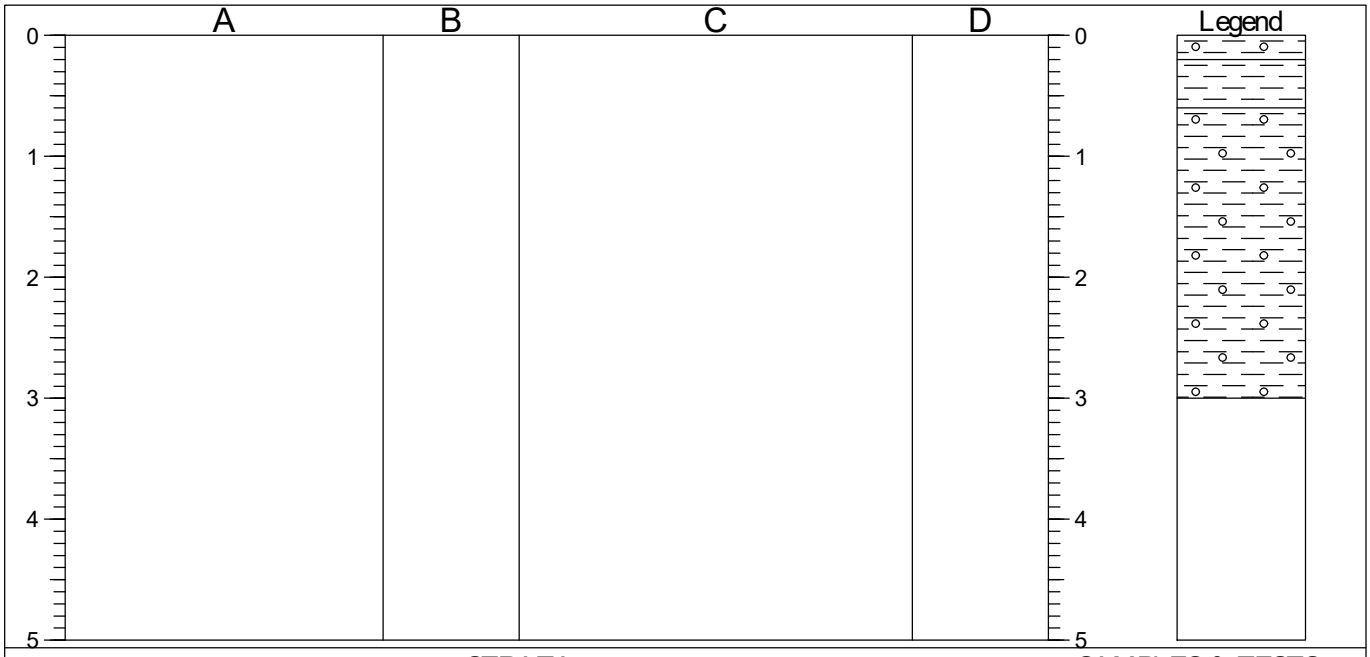
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

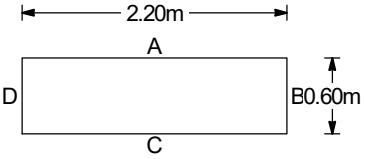
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP12**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	16-10-17	108.50	E 482,560.0 N 232,540.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.15	D	
0.20-0.60		(TOPSOIL)			
0.60-3.00		(Firm to stiff) brown CLAY with occasional fine to medium sub-angular to sub-rounded chert and chalk gravel. (OADBY MEMBER - DIAMICTON)	1.00	D	
		(Stiff) brownish grey gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.00 - 3.00 Becoming very stiff 2.00 - 3.00 Becoming grey mottled brown rare with rare flint cobbles	1.00 1.20	HV D	>193kPa

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

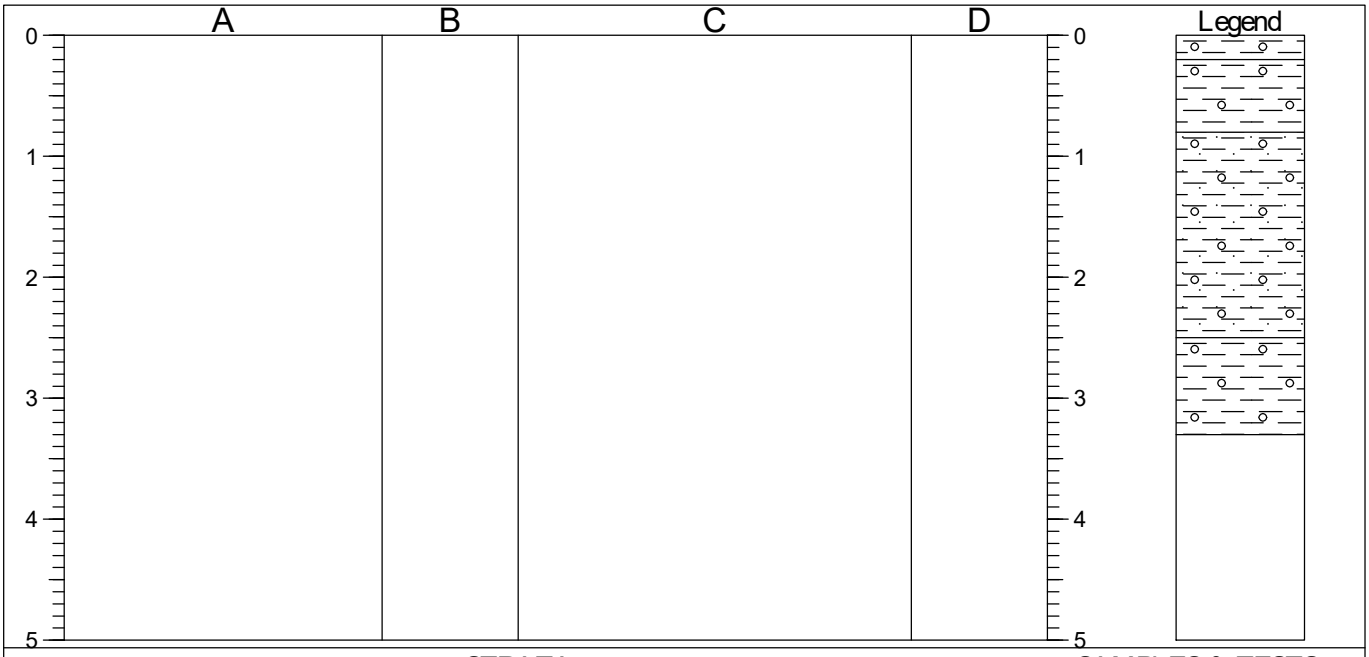
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

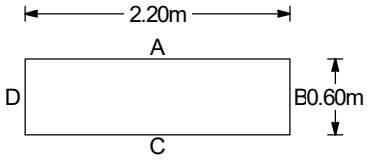
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP13**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	16-10-17	104.90	E 482,786.4 N 232,635.9	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.20-0.80		(TOPSOIL)			
0.80-2.50		(Firm to stiff) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert. (OADBY MEMBER - DIAMICTON)	0.60	D	
		(Stiff) light brownish grey slightly sandy gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	1.60	D	
2.50-3.30		2.40 Boulder of bioclastic limestone. (Firm) dark grey mottled brown gravelly CLAY with occasional coarse sand. Gravel is sub-angular to sub-rounded fine to coarse chert and flint. Rare rootlet relicts.			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

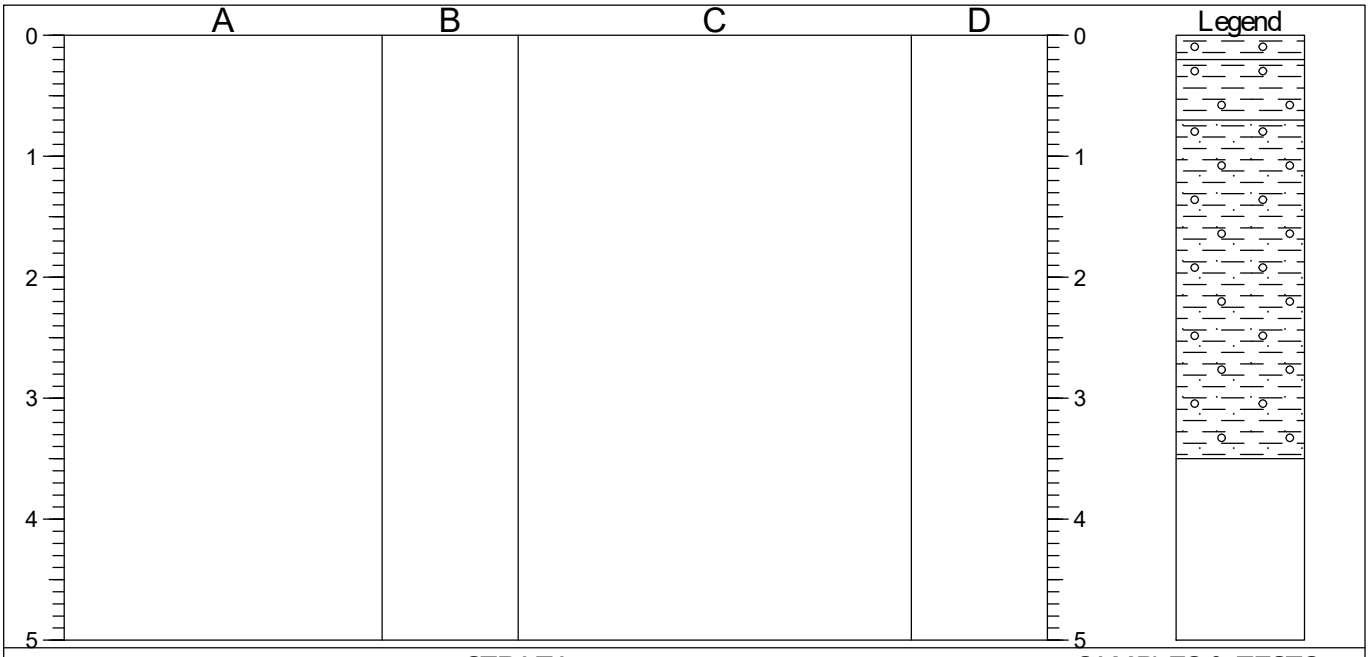
1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP14**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	108.50	E 482,933.4 N 232,677.0	
Contractor				Sheet 1 of 1



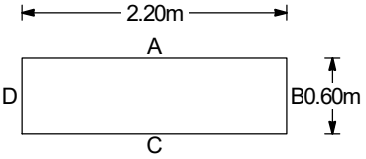
STRATA

Depth	No	DESCRIPTION
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.
0.20-0.70		(TOPSOIL)
0.70-3.50		(Firm) brown slightly sandy gravelly CLAY. Sand is medium to coarse. Gravel is sub-angular to sub-rounded chert, flint and chalk. (OADBY MEMBER - DIAMICTON)
		(Firm to stiff) grey brown mottled gravelly CLAY with frequent coarse sand. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)

SAMPLES & TESTS

Depth	No	Remarks/Tests
0.30	D	
1.00	D	
2.30	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

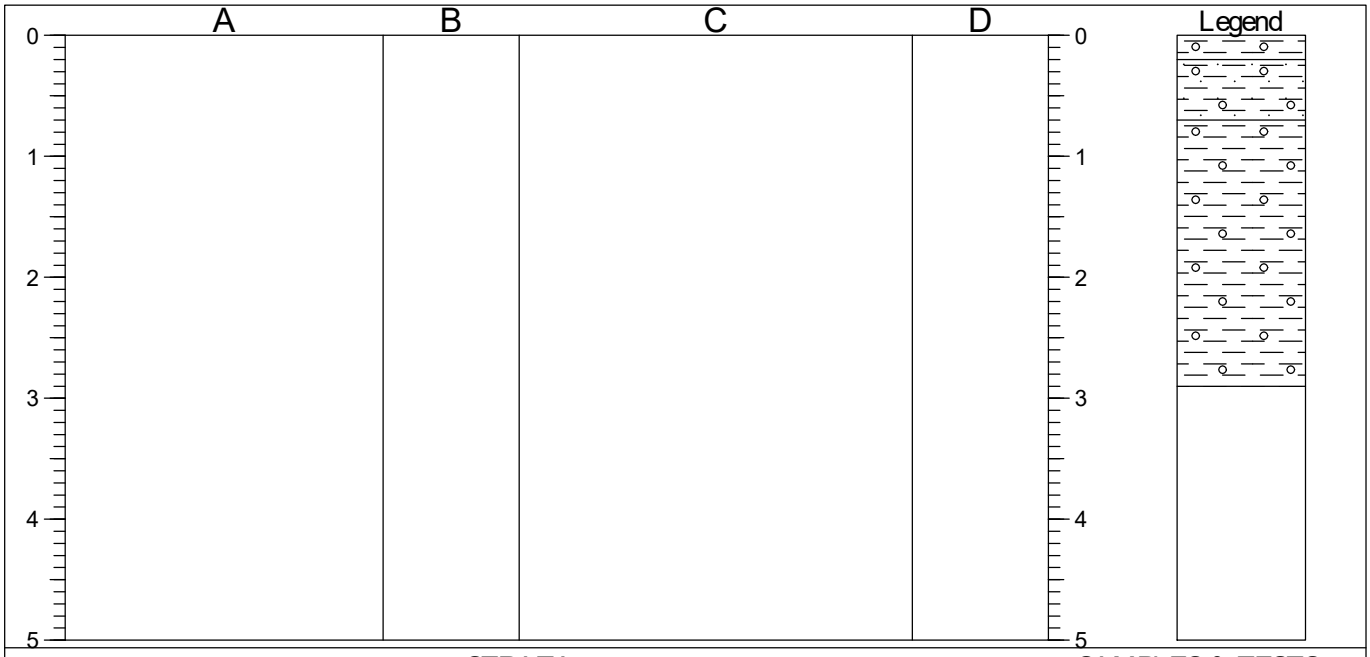
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

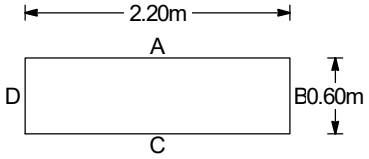
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP15**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	112.50	E 483,091.4 N 232,672.8	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-0.70		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.10	D	
0.70-2.90		(Firm) brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert flint and chalk. (OADBY MEMBER - DIAMICTON)	0.90	D	
		(Firm to stiff) grey brown mottled slightly sandy gravelly CLAY with occasional cobbles of chalk. Gravel is sub-angular to sub-angular fine to coarse chert, flint and chalk. Rare pockets of cobble sized brown medium sand. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

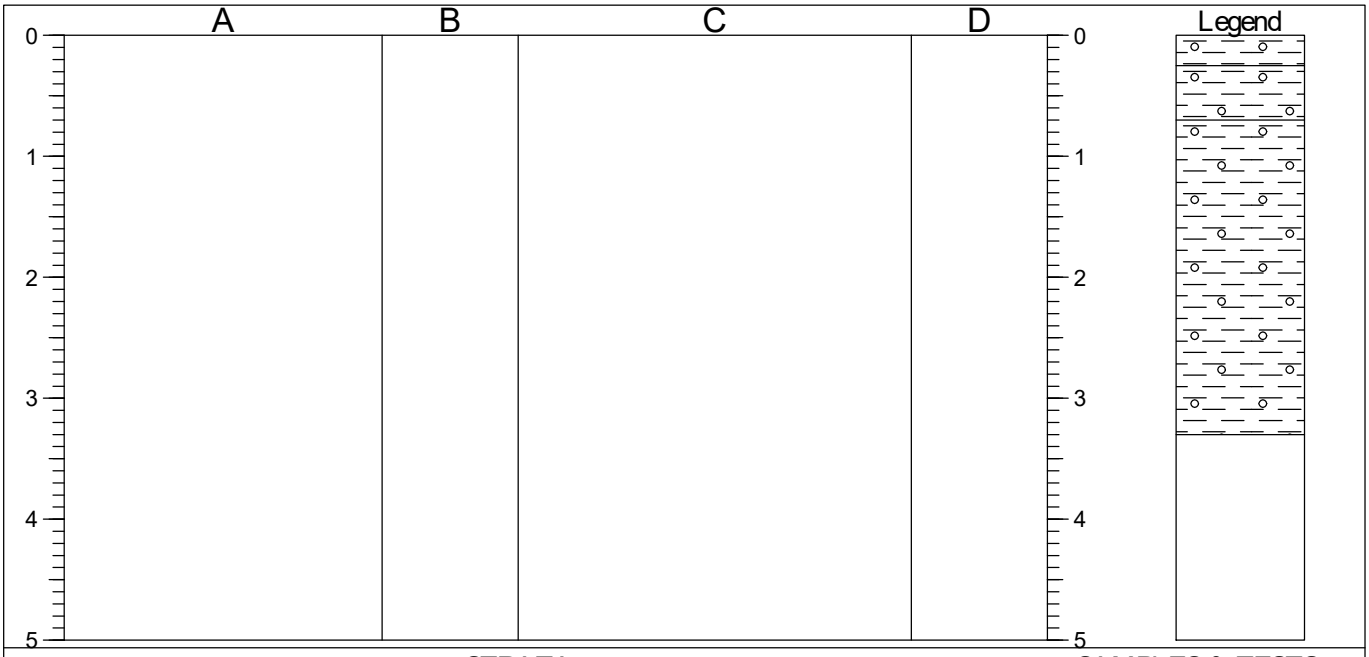
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

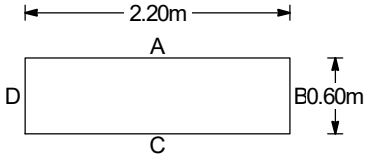
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP16**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	117.60	E 483,186.8 N 232,580.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.20	D	
0.25-0.70		(TOPSOIL)	0.50	D	
0.70-3.30		(Firm to stiff) light brown gravelly CLAY. Gravel is sub-angular to sub-rounded chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	1.10	HV	>193kPa
		(Stiff) light grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, chert and chalk. (OADBY MEMBER - DIAMICTON) 1.10 Becoming very stiff	1.90	D	
		2.00 Boulder size pockets of fine to medium sand.			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

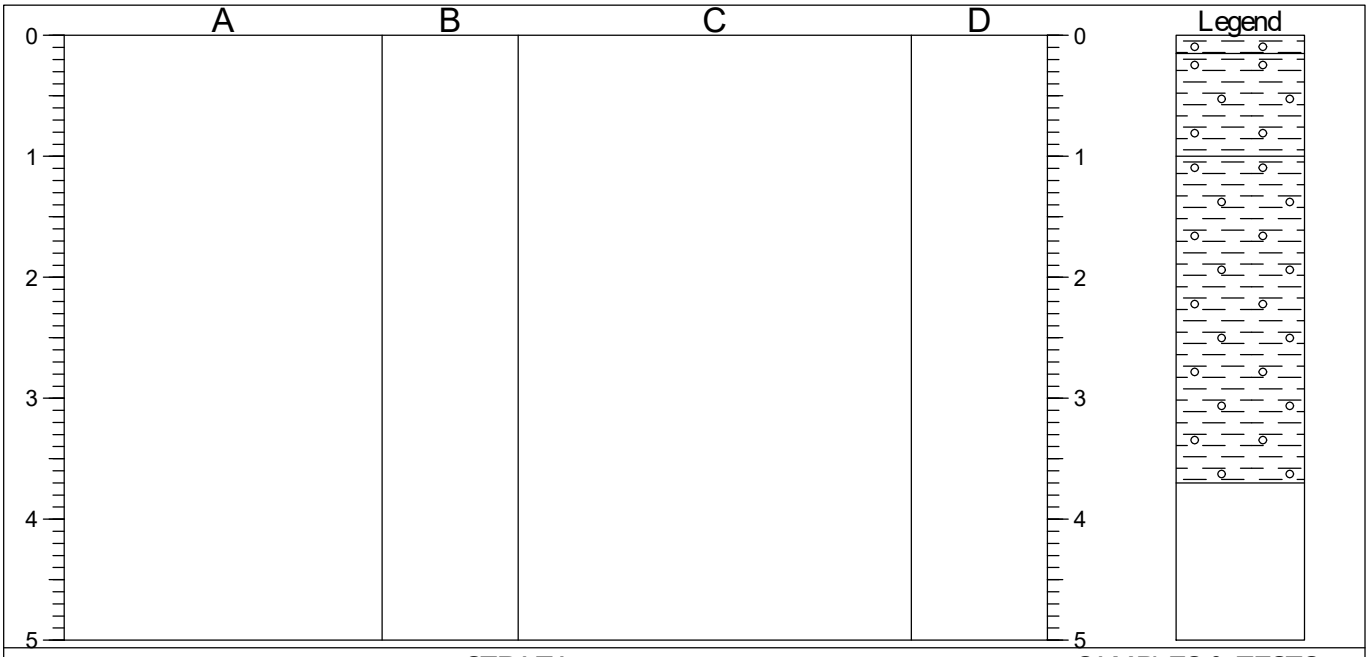
1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

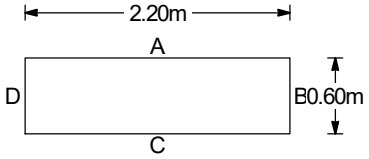
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP17**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	117.10	E 483,343.0 N 232,707.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.15		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
0.15-1.00		(Firm to stiff) brown slightly gravelly CLAY with rare coarse sand. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON)	0.90	D	
1.00-3.70		(Stiff) grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.70 Becoming slightly gravelly CLAY.	1.30	D	
		3.40 Rare chalk cobble.			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

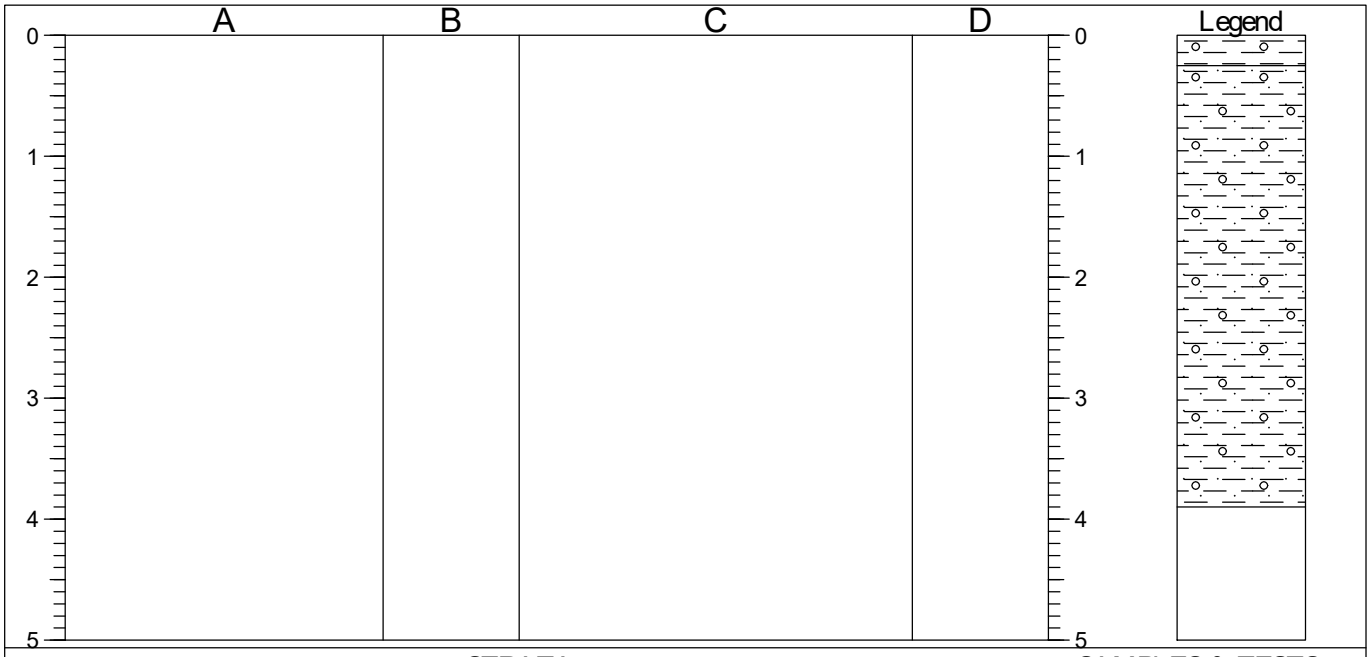
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

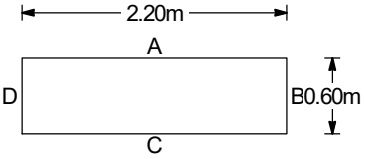
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP18**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	115.50	E 483,980.3 N 232,777.5	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.25-3.90		(TOPSOIL)	0.20	D	
		(Firm) light brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse chert and flint.	0.70	D	
		(OADBY MEMBER - DIAMICTON)	1.00	HV	182,>193,166kPa
		0.90 - 1.10 Rare cobbles			
		1.00 Becoming very stiff brown mottled grey	1.70	D	
			3.10	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

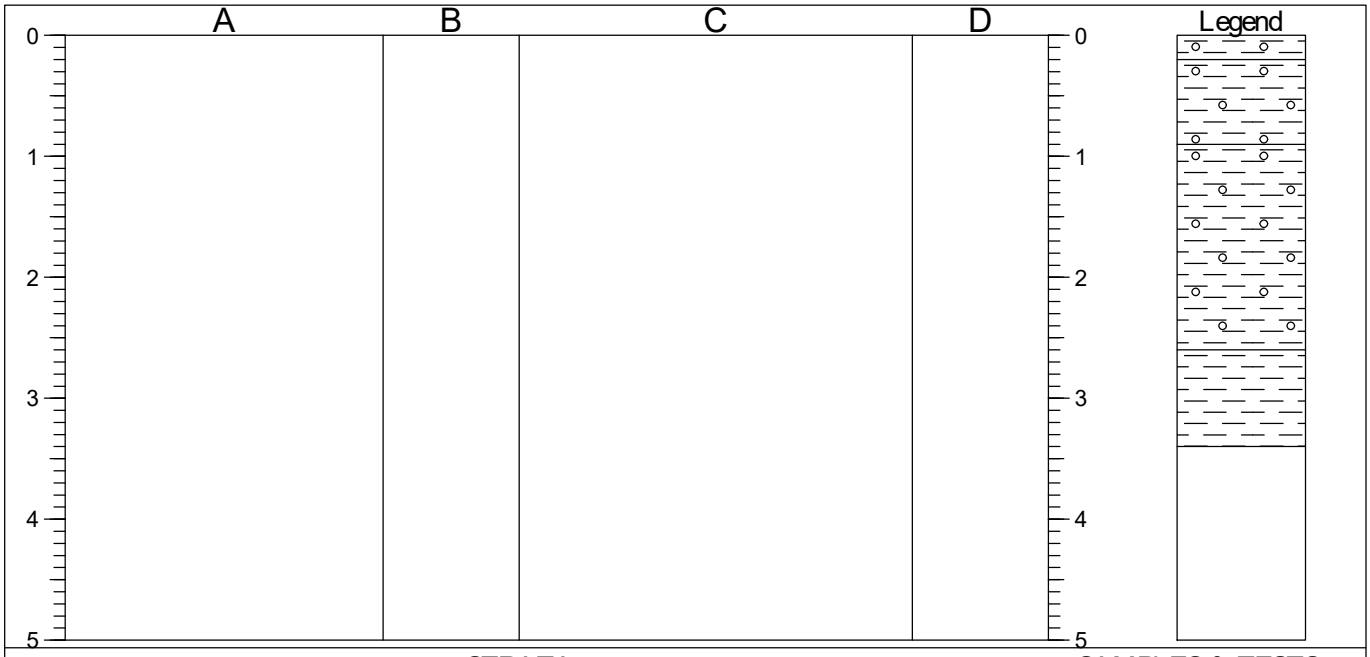
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

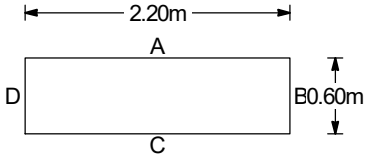
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP19**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	109.10	E 483,790.4 N 232,464.3	
Contractor				Sheet 1 of 1



STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION		Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)				
0.20-0.90		(Firm) brown slightly gravelly CLAY with occasional coarse sand. Gravel is sub-angular to sub-rounded fine to coarse chert, chalk and flint. (OADBY MEMBER - DIAMICTON)		0.50	D	
0.90-2.60		(Stiff) grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk, chert and flint. (OADBY MEMBER - DIAMICTON)		2.20	D	
2.60-3.40		(Stiff) dark grey CLAY with occasional fine to coarse sub-angular to sub-rounded chert, chalk gravel. (OADBY MEMBER - DIAMICTON)		2.80	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

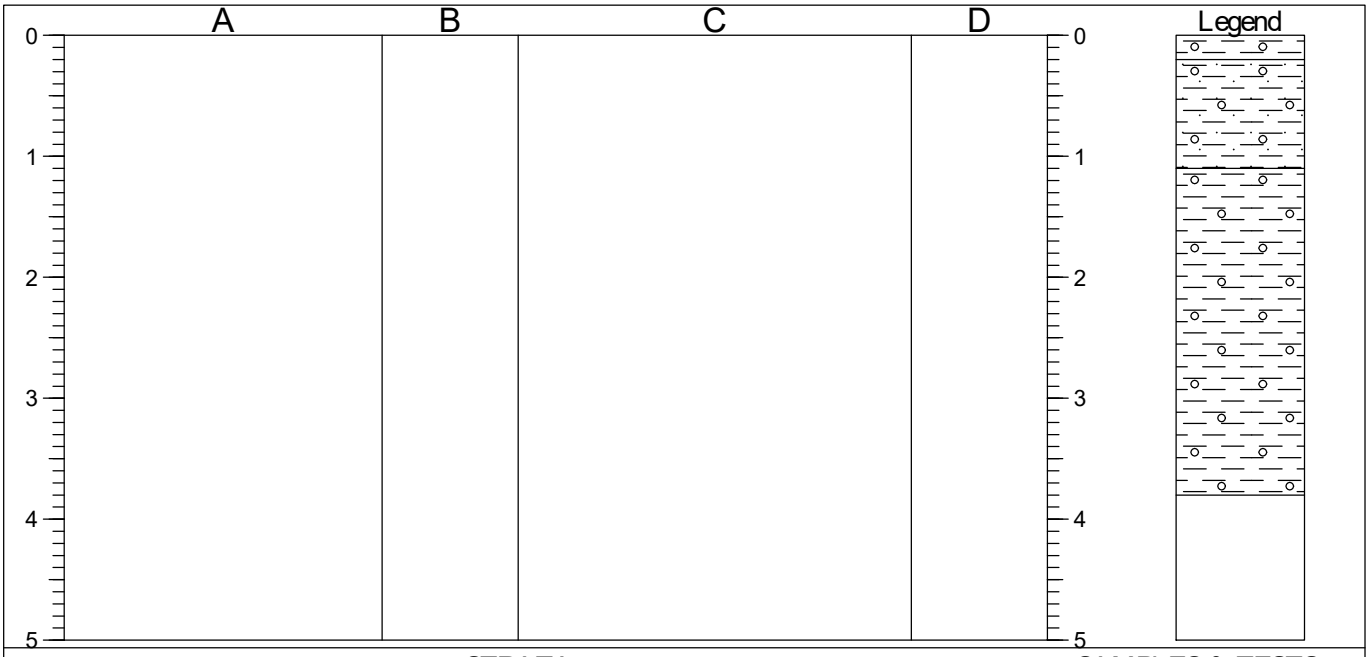
1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

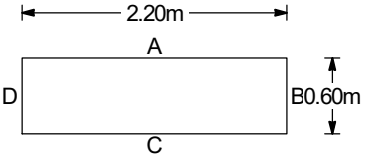
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP20**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	118.90	E 483,250.1 N 232,211.6	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)			
0.20-1.10		(Firm to stiff) light brown grey mottled slightly sandy gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse flint, chert and chalk. (OADBY MEMBER - DIAMICTON)	1.00	D	
1.10-3.80		1.00 - 1.10 Becoming very stiff	1.00	HV	>193kPa
		Very stiff grey mottled brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, chert and chalk with rare cobbles. (OADBY MEMBER - DIAMICTON)			
		2.40 - 3.80 Cobble sized pockets of black organic material, no odour.	2.40	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

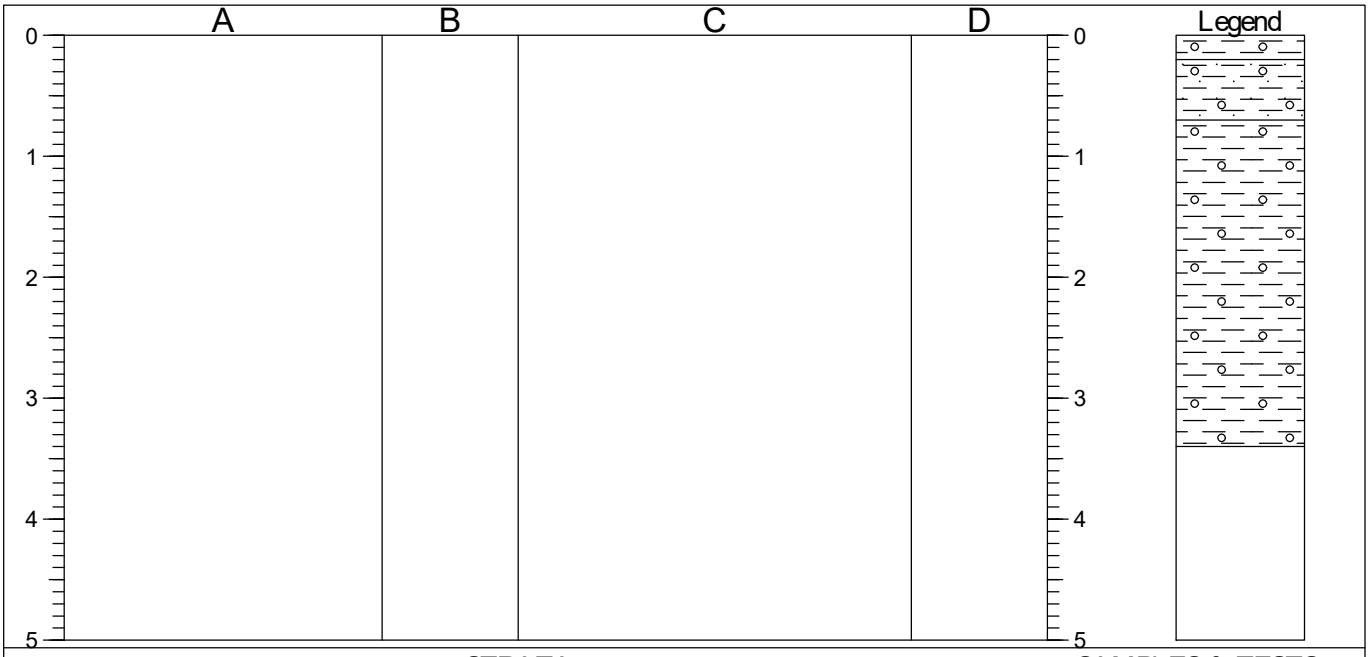
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

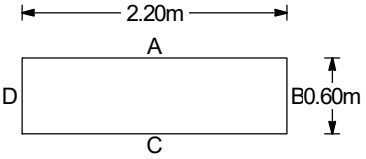
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP21**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	104.80	E 482,546.8 N 232,673.6	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20 0.20-0.70		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint. (TOPSOIL)	0.10	D	
0.70-3.40		(Firm) brown CLAY with rare sub-angular to sub-rounded fine chert. (OADBY MEMBER - DIAMICTON)	0.80	D	
		Very stiff grey brown mottled gravelly CLAY. Gravel is sub-angular to subrounded fine to coarse chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 1.50 - 1.90 Boulder sized pockets of orangish brown fine sand	0.80	HV	>193kPa

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Trial pit terminated due to slow digging in (stiff) clay. 3. HV=Uncorrected hand vane measurement. 4. Upon completion trial pit backfilled with arisings.

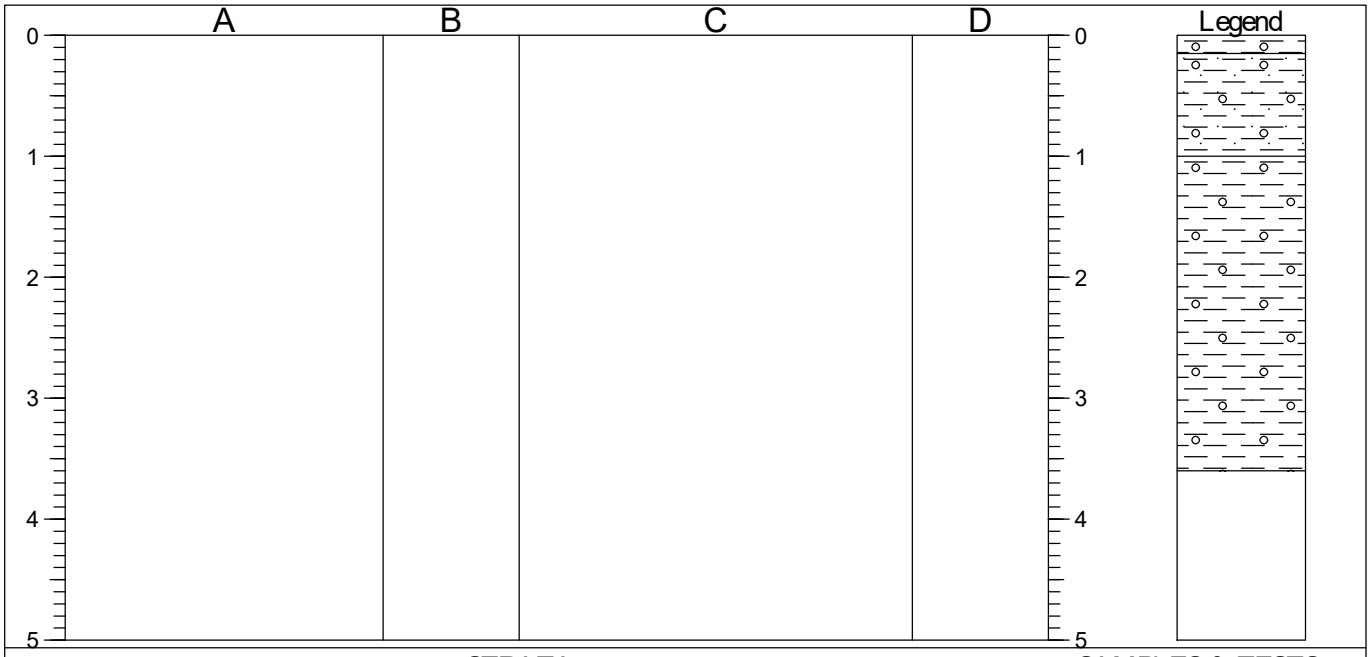
All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

AGS3 UK TP GEG-17-514 SW MILTON KEYNES.GPJ GINT STD AGS 3_1.GDT 15/12/17

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP22**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	118.20	E 483,513.4 N 232,755.4	
Contractor				Sheet 1 of 1

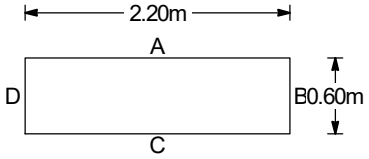


STRATA

SAMPLES & TESTS

Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.15		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.			
0.15-1.00		(TOPSOIL)	0.40	D	
		(Firm) brown slightly sandy slightly gravelly CLAY. Sand is coarse. Gravel is sub-angular to sub-rounded fine to coarse chert, flint and chalk.			
1.00-3.60		(OADBY MEMBER - DIAMICTON)	1.10	D	
		(Stiff to very stiff) grey brown mottled gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, chert and chalk. (OADBY MEMBER - DIAMICTON)			

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

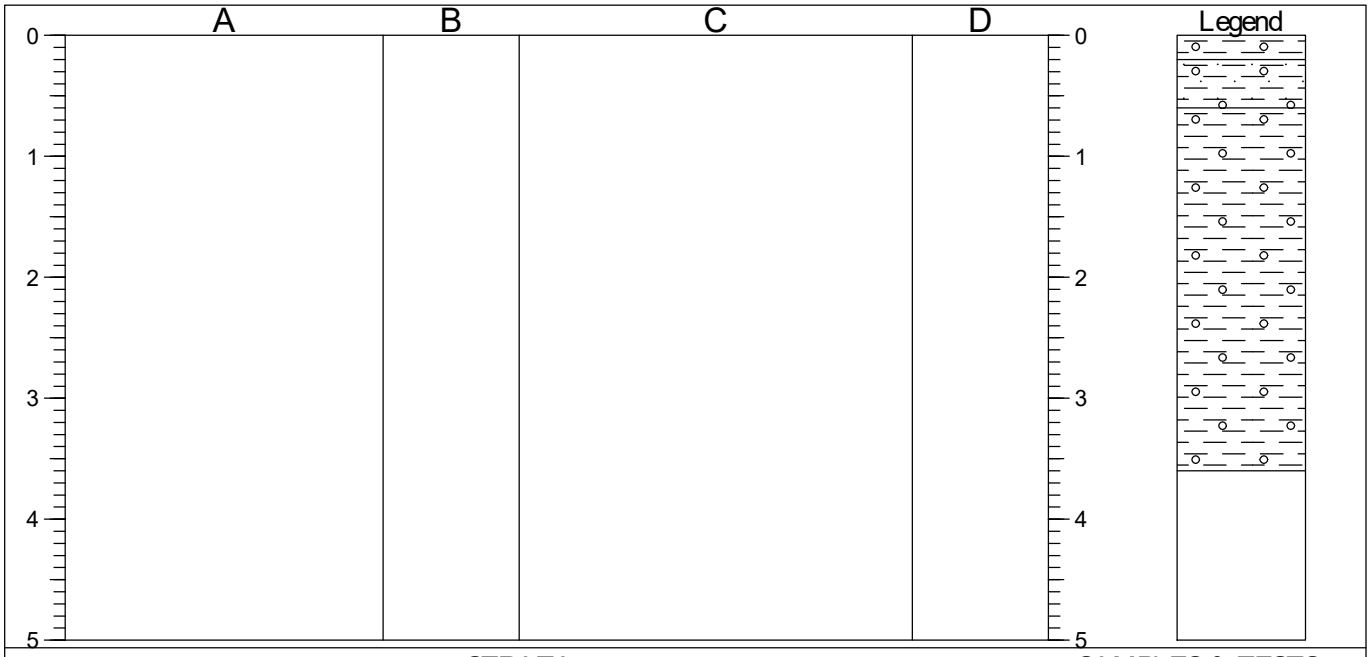
1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

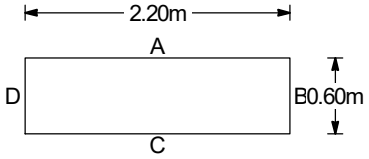
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP23**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	102.20	E 483,883.9 N 232,352.2	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.10	D	
0.20-0.60		(TOPSOIL)			
0.60-3.60		(Firm) brown CLAY with rare fine sub-angular to sub-rounded chert gravel. (OADBY MEMBER - DIAMICTON)	0.70	D	
		(Stiff to very stiff) light brownish grey slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chert and chalk. (OADBY MEMBER - DIAMICTON) 1.10 - 3.60 Rare chalk cobbles			
		3.00 - 3.60 Becoming (stiff)	3.00	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

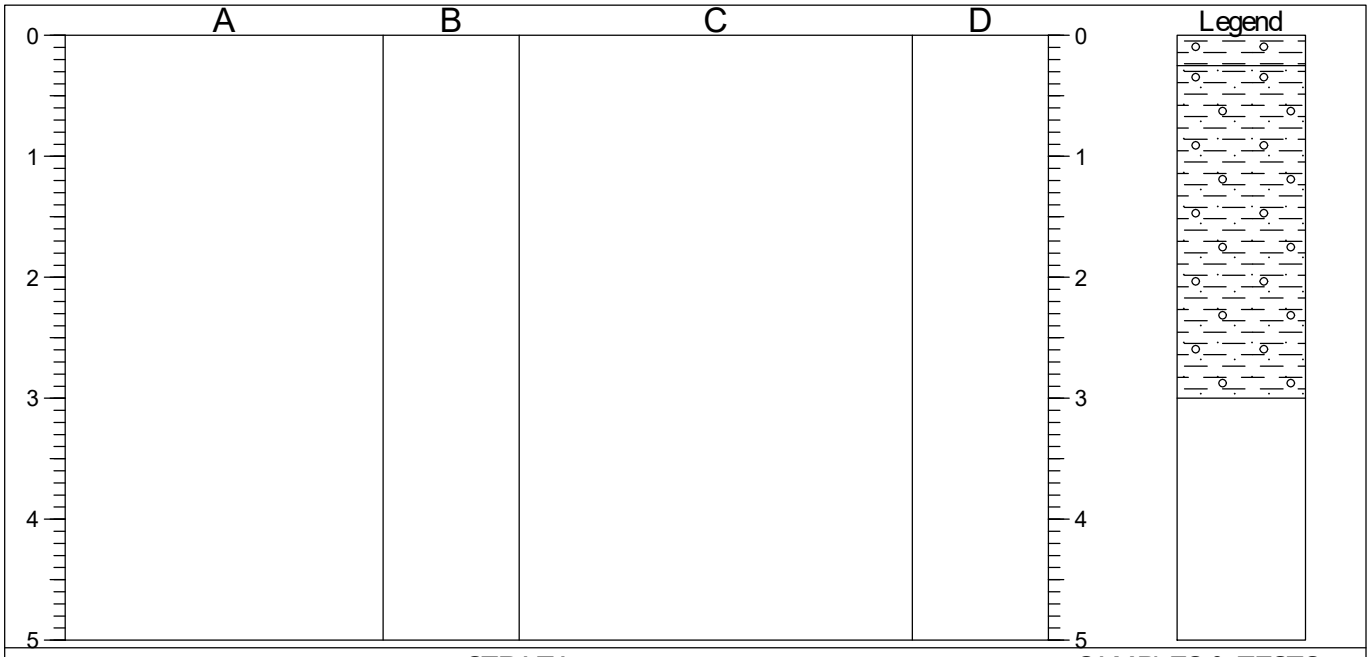
1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

Geo Environmental Group
GEG House, 17 Graham Road
Malvern, WR14 2HR
Telephone: 01684 212526
Fax: 01684 576917

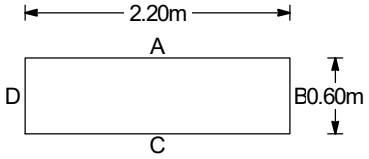
TRIAL PIT LOG

Project				TRIAL PIT No
SW Milton Keynes, Whaddon Road, Milton Keynes MK17 0EG				**TP24**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEG-17-514	17-10-17	106.50	E 483,460.2 N 231,928.7	
Contractor				Sheet 1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		(Soft to firm) brown slightly gravelly SILT/CLAY. Gravel is sub-angular to sub-rounded fine flint.	0.10	D	
0.25-3.00		(TOPSOIL)			
		(Firm to stiff) brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded chert, flint and chalk. (OADBY MEMBER - DIAMICTON) 0.90 - 3.00 Becoming grey and brown mottled 1.00 - 3.00 Becoming (stiff)	1.90	D	

Shoring/Support: N/A
Stability: Stable



GENERAL REMARKS

1. No groundwater encountered. 2. Upon completion trial pit backfilled with arisings.

All dimensions in metres Scale 1:62.5	Client Brookbanks	Method/ Plant Used JCB-3CX	Logged By AT

APPENDIX D

INFILTRATION TEST DATA

Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT01 Test 1 of 1**

Depth of Pit (cm): 220.00
Depth of Water at Start of Depth (cm): 115.00
Date of Test: 13 October 2017

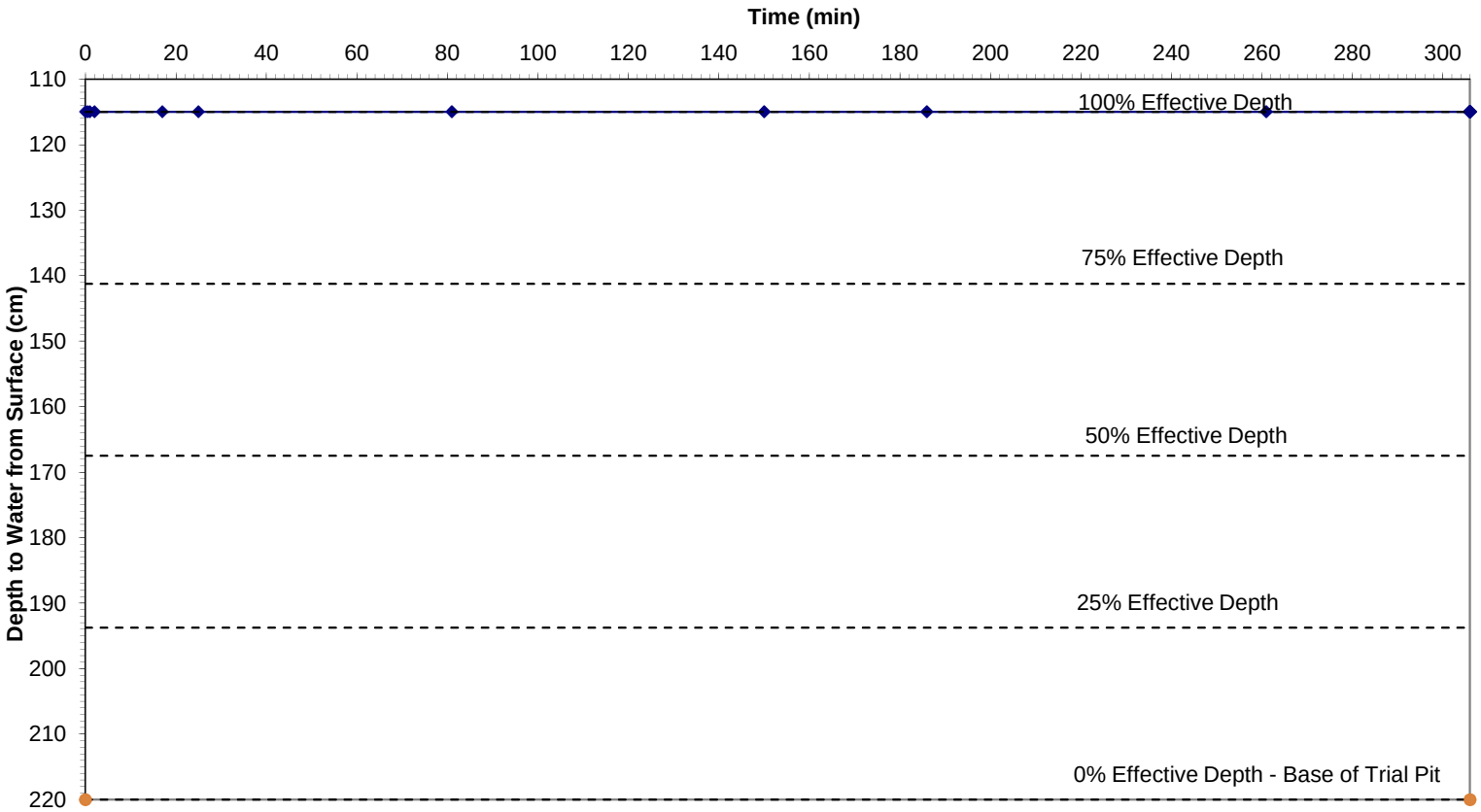
Time (min)	Depth from Surface (cm)	% Effective Depth
0	115	100%
0.5	115	100%
1	115	100%
2	115	100%
17	115	100%
25	115	100%
81	115	100%
150	115	100%
186	115	100%
261	115	100%
306	115	100%
End of Test		

Parameter	Symbol	Calculation	Units	IT01 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.05
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.13
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.567
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.60
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-1**

Figure D-1 **GEG-17-514** **Land off SW Milton Keynes** **IT01 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT02 Test 1 of 1**

Depth of Pit (cm): 170.00
Depth of Water at Start of Depth (cm): 68.00
Date of Test: 13 October 2017

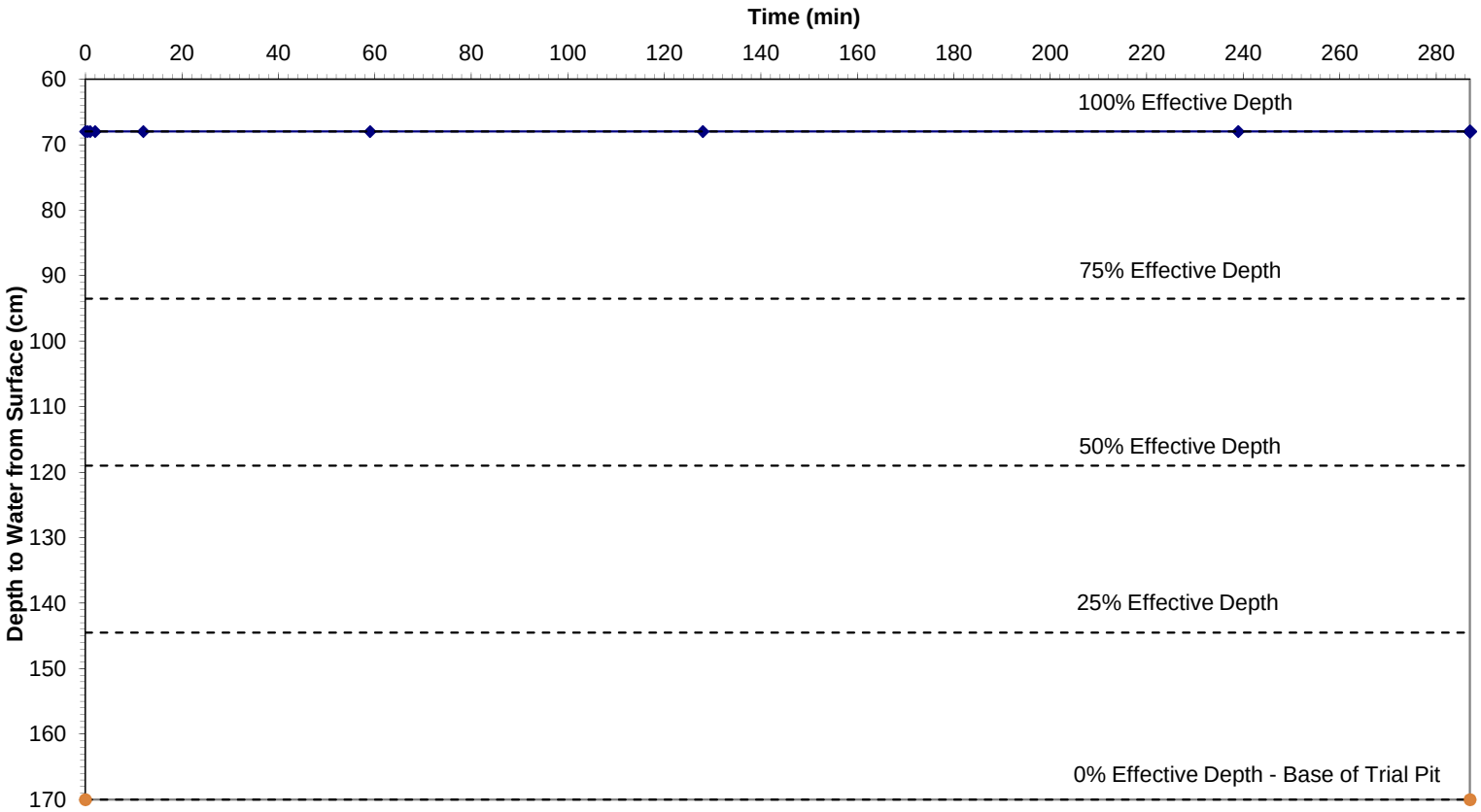
Time (min)	Depth from Surface (cm)	% Effective Depth
0	68	100%
0.5	68	100%
1	68	100%
2	68	100%
12	68	100%
59	68	100%
128	68	100%
239	68	100%
287	68	100%
End of Test		

Parameter	Symbol	Calculation	Units	IT02 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.02
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	2.20
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.35
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.6732
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	4.18
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-2**

Figure D-2 **GEG-17-514** **Land off SW Milton Keynes** **IT02 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT03 Test 1 of 1**

Depth of Pit (cm): 180.00
Depth of Water at Start of Depth (cm): 77.00
Date of Test: 13 October 2017

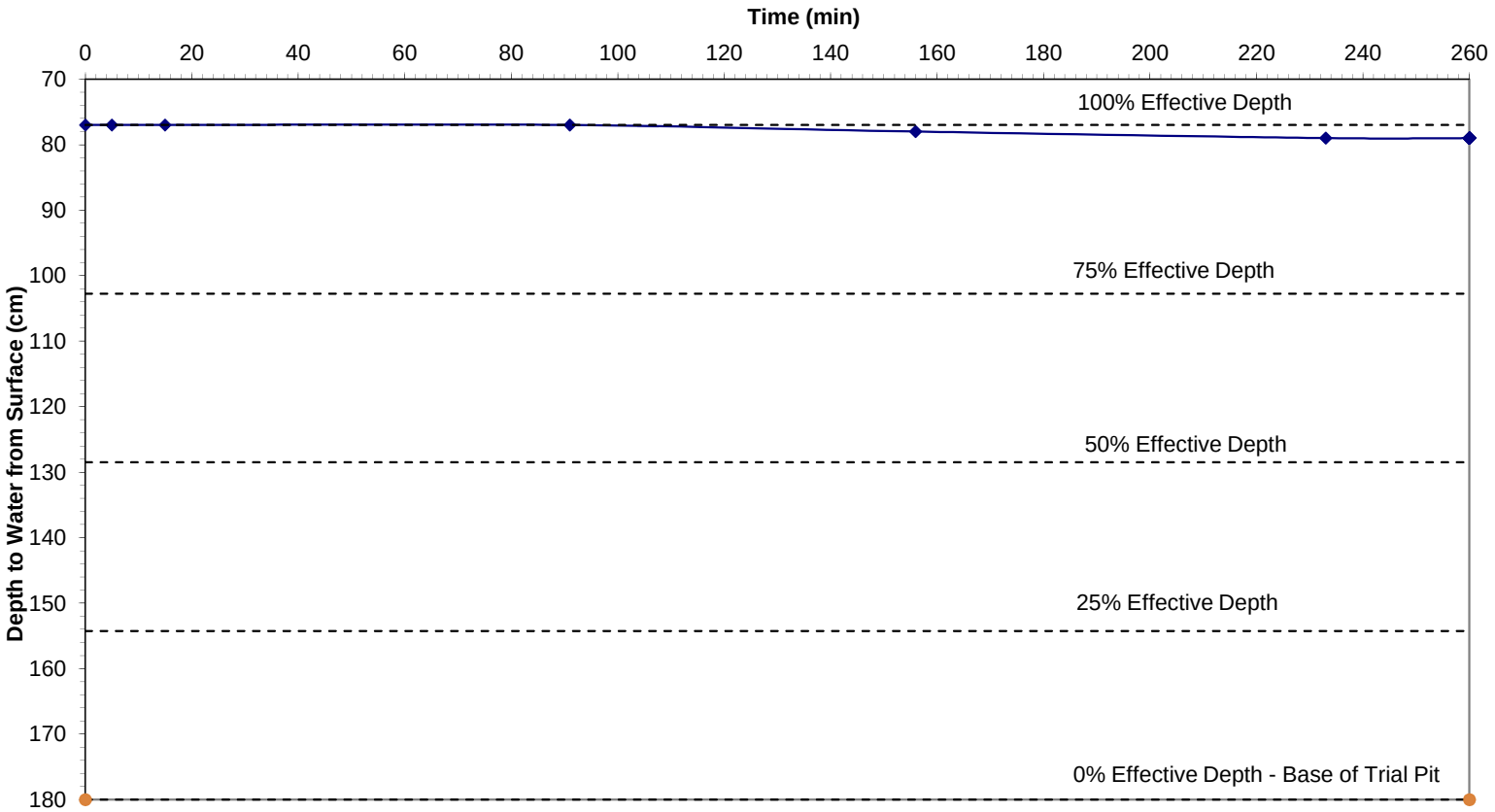
Time (min)	Depth from Surface (cm)	% Effective Depth
0	77	100%
5.0	77	100%
15	77	100%
91	77	100%
156	78	99%
233	79	98%
260	79	98%
End of Test		

Parameter	Symbol	Calculation	Units	IT03 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.03
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.11
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.5562
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.55
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-3**

Figure D-3 **GEG-17-514** **Land off SW Milton Keynes** **IT03 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT04 Test 1 of 1**

Depth of Pit (cm): 190.00
Depth of Water at Start of Depth (cm): 84.00
Date of Test: 13 October 2017

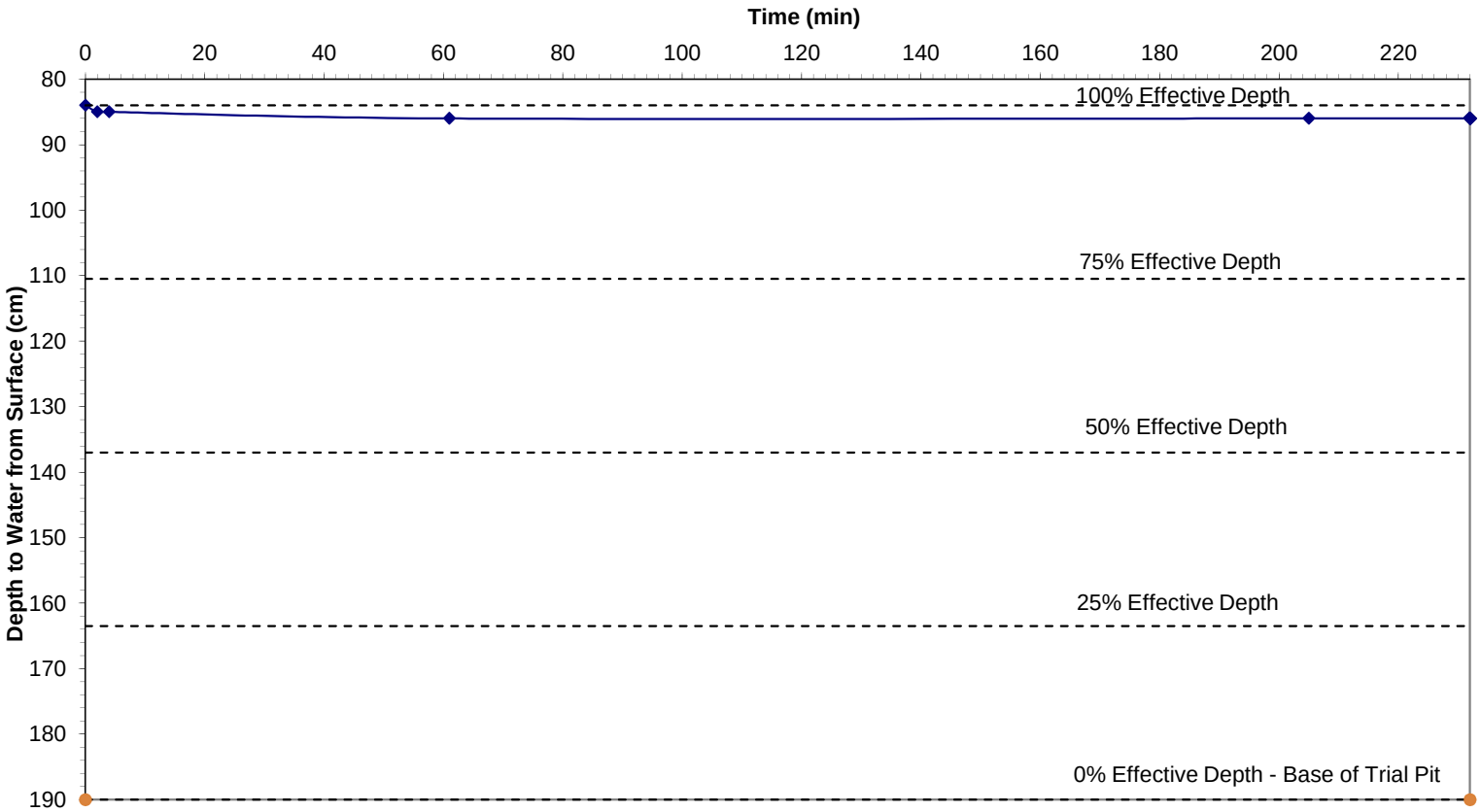
Time (min)	Depth from Surface (cm)	% Effective Depth
0	84	100%
2.0	85	99%
4	85	99%
61	86	98%
205	86	98%
232	86	98%
End of Test		

Parameter	Symbol	Calculation	Units	IT04 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.06
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.14
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.5724
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.62
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-4**

Figure D-4 **GEG-17-514** **Land off SW Milton Keynes** **IT04 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name:	**Land off SW Milton Keynes**	Depth of Pit (cm):	190.00
Project Ref.:	**GEG-17-514**	Depth of Water at Start of Depth (cm):	81.00
Trial Pit:	**IT05 Test 1 of 1**	Date of Test:	17 October 2017

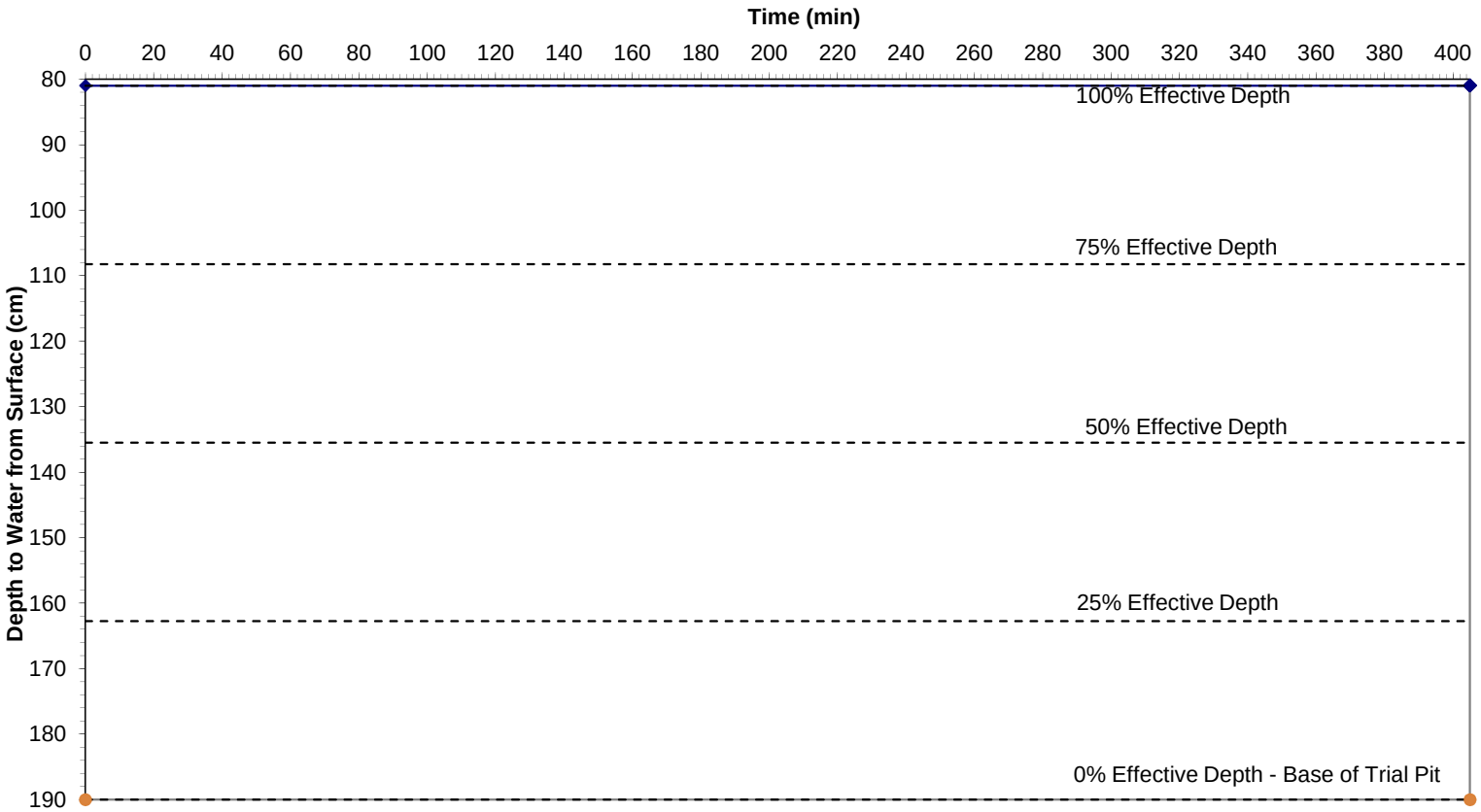
Time (min)	Depth from Surface (cm)	% Effective Depth
0	81	100%
405	81	100%
End of Test		

Parameter	Symbol	Calculation	Units	IT05 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.09
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.70
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.11
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.5559
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.53
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-5**

Figure D-5 **GEG-17-514** **Land off SW Milton Keynes** **IT05 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name:	**Land off SW Milton Keynes**	Depth of Pit (cm):	190.00
Project Ref.:	**GEG-17-514**	Depth of Water at Start of Depth (cm):	77.00
Trial Pit:	**IT06 Test 1 of 1**	Date of Test:	16 October 2017

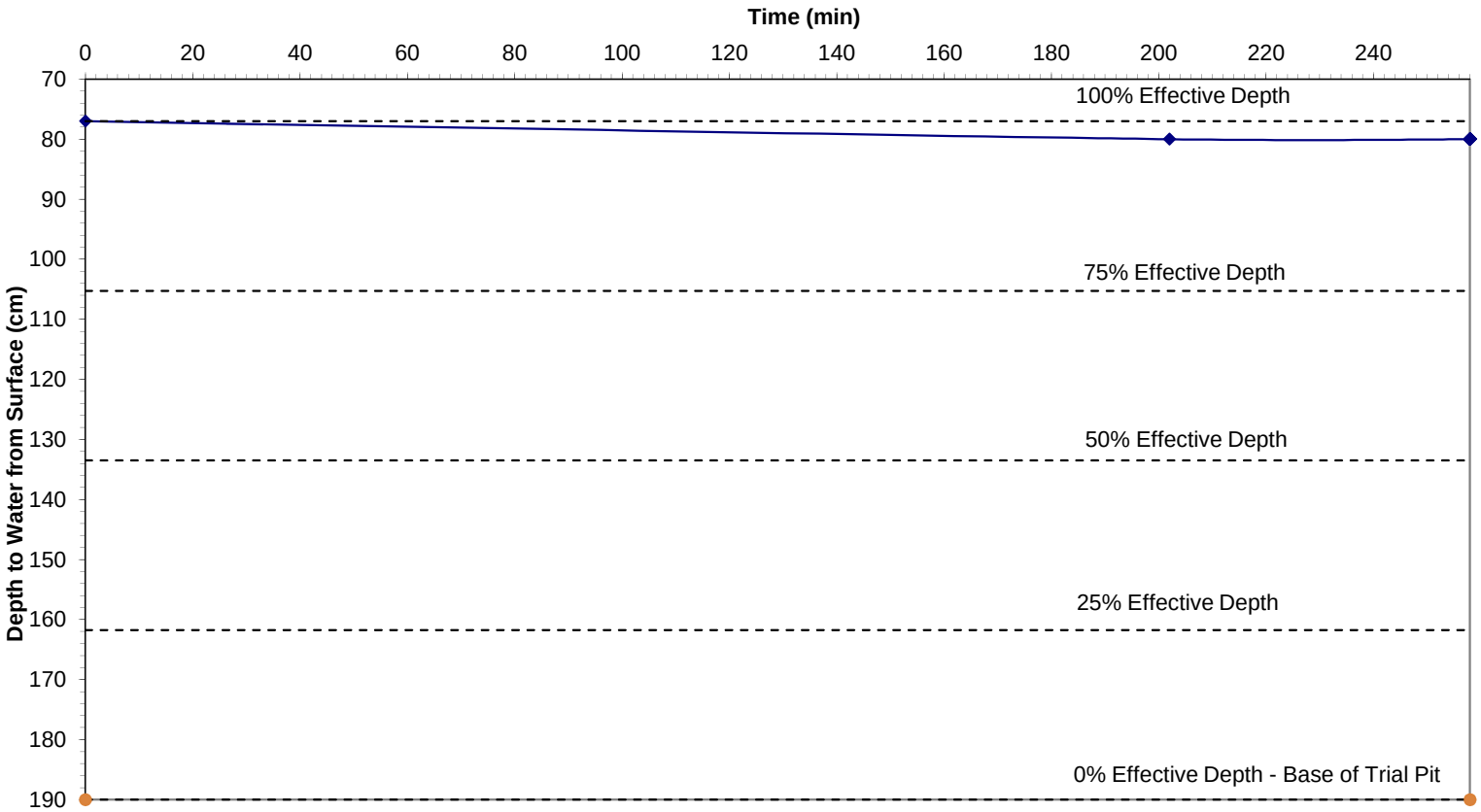
Time (min)	Depth from Surface (cm)	% Effective Depth
0	77	100%
202	80	97%
258	80	97%
End of Test		

Parameter	Symbol	Calculation	Units	IT06 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.13
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.22
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.6102
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.79
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-6**

Figure D-6 **GEG-17-514** **Land off SW Milton Keynes** **IT06 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT07 Test 1 of 1**

Depth of Pit (cm): 180.00
Depth of Water at Start of Depth (cm): 72.00
Date of Test: 16 October 2017

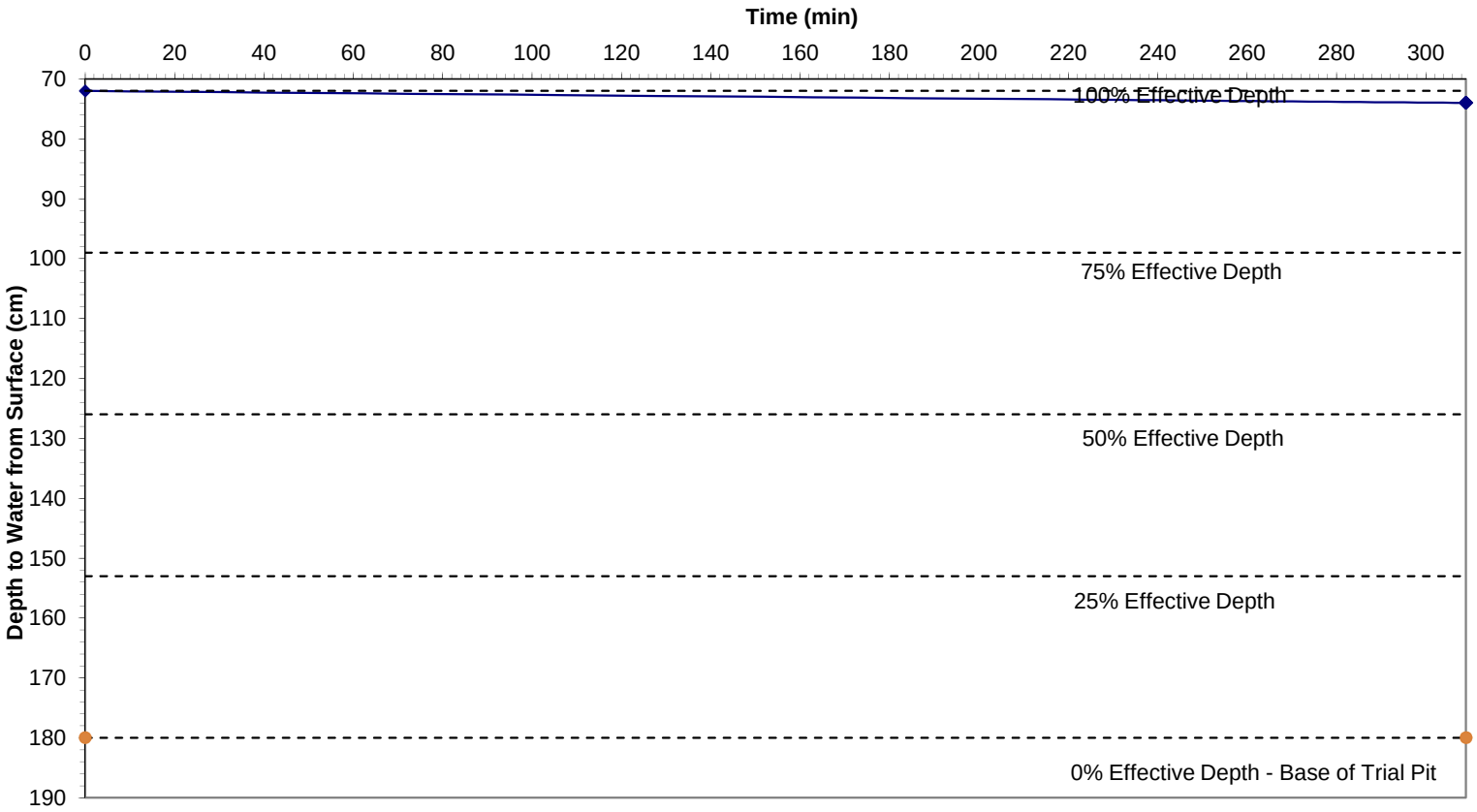
Time (min)	Depth from Surface (cm)	% Effective Depth
0	72	100%
309	74	98%
End of Test		

Parameter	Symbol	Calculation	Units	IT07 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.08
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.17
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.5832
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.67
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-7**

Figure D-7 **GEG-17-514** **Land off SW Milton Keynes** **IT07 Test 1 of 1**



Appendix D
Infiltration Tests

Project Name: **Land off SW Milton Keynes**
Project Ref.: **GEG-17-514**
Trial Pit: **IT08 Test 1 of 1**

Depth of Pit (cm): 200.00
Depth of Water at Start of Depth (cm): 84.00
Date of Test: 16 October 2017

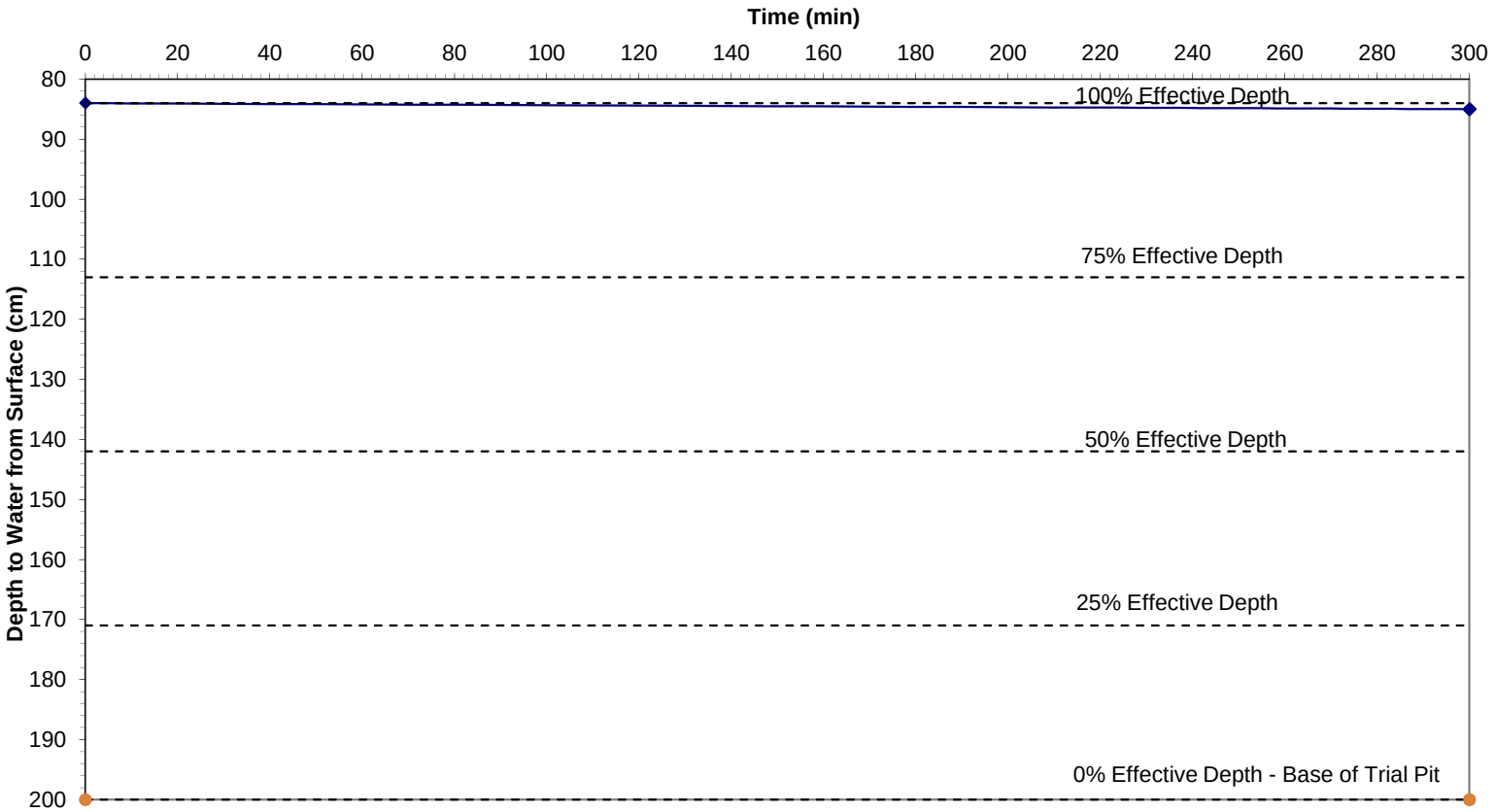
Time (min)	Depth from Surface (cm)	% Effective Depth
0	84	100%
300	85	99%
End of Test		

Parameter	Symbol	Calculation	Units	IT08 Test 1 of 1
Effective Depth of Trial Pit	d_p		m	1.16
Width of Trial Pit	w		m	0.60
Length of Trial Pit	l		m	1.80
Volume of Trial Pit	V	$= d_p \times w \times l$	m^3	1.25
Volume of Trial Pit at 50% Effective Depth	$V_{50\%}$	$= V \times 0.5$	m^3	0.6264
Internal Surface Area of Trial Pit*	$a_{p50\%}$	$= l \times w + d_p \times (w + l)$	m^2	3.86
Time to reach 75% Effective Depth	$T_{p75\%}$		min	N/A
Time to reach 25% Effective Depth	$T_{p25\%}$		min	N/A
Time 75% - 25%	$T_{p75\%-25\%}$	$= T_{p25\%} - T_{p75\%}$	min	N/A
Infiltration Rate	f	$= V_{50\%} / a_{p50\%} \times (T_{p75\%-25\%})$	m/s	**N/A**

*To 50% Effective Depth (including base)

With Reference to: **Figure D-8**

Figure D-8 **GEG-17-514** **Land off SW Milton Keynes** **IT08 Test 1 of 1**



APPENDIX E

CHEMICAL ANALYSIS RESULTS

CONCEPT LIFE SCIENCES
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Concept Life Sciences

Certificate of Analysis

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Fax : 0161 874 2468

Report Number: Supplemental to 690614-2

Date of Report: 17-Nov-2017

Customer: Geo Environmental Group
17 Graham Road
Malvern
Worcestershire
WR14 2HR

Customer Contact: Mr Alan Taylor

Customer Job Reference: GEG-17-514
Customer Purchase Order: 2748
Customer Site Reference: SW Milton Keynes
Date Job Received at Concept: 18-Oct-2017
Date Analysis Started: 20-Oct-2017
Date Analysis Completed: 26-Oct-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual

UKAS TESTING
1549

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report checked and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**690614 001**	**690614 006**	**690614 007**	**690614 009**	**690614 013**
				Customer Sample Reference	**IT02**	**TP05**	**TP07**	**TP10**	**TP16**
				Bottom Depth	**0.10**	**0.15**	**0.25**	**0.15**	**0.20**
				Date Sampled	**13-OCT-2017**	**13-OCT-2017**	**13-OCT-2017**	**17-OCT-2017**	**16-OCT-2017**
				Matrix Class	**Sandy Soil**	**Clay**	**Sandy Soil**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Moisture @105C	T162	AR	0.1	%	**22**	**32**	**21**	**28**	**25**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**690614 014**	**690614 016**	**690614 017**
				Customer Sample Reference	**TP18**	**TP21**	**TP22**
				Bottom Depth	**0.20**	**0.10**	**0.10**
				Date Sampled	**13-OCT-2017**	**16-OCT-2017**	**17-OCT-2017**
				Matrix Class	**Clay**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**			
Moisture @105C	T162	AR	0.1	%	**17**	**22**	**21**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG Suite 2

				Concept Reference	**690614 001**	**690614 006**	**690614 007**	**690614 009**	**690614 013**
				Customer Sample Reference	**IT02**	**TP05**	**TP07**	**TP10**	**TP16**
				Bottom Depth	**0.10**	**0.15**	**0.25**	**0.15**	**0.20**
				Date Sampled	**13-OCT-2017**	**13-OCT-2017**	**13-OCT-2017**	**17-OCT-2017**	**16-OCT-2017**
				Matrix Class	**Sandy Soil**	**Clay**	**Sandy Soil**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Arsenic	T6	M40	2	mg/kg	**23**	**19**	**17**	**15**	**17**
SO4(2:1)	T6	AR	0.1	g/l	<0.1	<0.1	<0.1	<0.1	<0.1
Boron (water-soluble)	T6	AR	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	**43**	**43**	**28**	**38**	**37**
Chromium (trivalent)	T85	AR	2	mg/kg	**43**	**43**	**28**	**38**	**37**
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	**29**	**28**	**19**	**19**	**17**
Cyanide(Total)	T4	AR	1	mg/kg	<1	<1	<1	<1	<1
Cyanide(free)	T4	AR	1	mg/kg	<1	<1	<1	<1	<1
Lead	T6	M40	1	mg/kg	**43**	**40**	**24**	**29**	**53**
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	**38**	**34**	**28**	**28**	**25**
pH	T7	AR			**7.9**	**6.8**	**7.7**	**7.7**	**7.2**
Phenols(Mono)	T4	AR	1	mg/kg	<1	<1	<1	<1	<1
Selenium	T6	M40	3	mg/kg	<3	<3	<3	<3	<3
Soil Organic Matter	T287	A40	0.1	%	**3.3**	**5.5**	**3.1**	**4.3**	**3.5**
SO4(Total)	T6	A40	0.01	%	**0.07**	**0.11**	**0.08**	**0.10**	**0.08**
Sulphide	T4	AR	10	mg/kg	<10	<10	<10	<10	<10
Zinc	T6	M40	1	mg/kg	**120**	**110**	**74**	**88**	**88**
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C10-C12)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21)	T8	M105	1	mg/kg	**(13) 2**	**(13) 2**	**(13) 2**	**(13) 1**	**(13) 2**
TPH (C21-C35)	T8	M105	1	mg/kg	**(13) 3**	**(13) 4**	**(13) 2**	**(13) 2**	**(13) 2**
TPH (C35-C40)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH C6-C40 (Sum)	T85	M105	1	mg/kg	**5**	**6**	**4**	**3**	**4**

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG Suite 2

				Concept Reference	**690614 014**	**690614 016**	**690614 017**
				Customer Sample Reference	**TP18**	**TP21**	**TP22**
				Bottom Depth	**0.20**	**0.10**	**0.10**
				Date Sampled	**13-OCT-2017**	**16-OCT-2017**	**17-OCT-2017**
				Matrix Class	**Clay**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**			
Arsenic	T6	M40	2	mg/kg	**18**	**18**	**18**
SO4(2:1)	T6	AR	0.1	g/l	<0.1	<0.1	<0.1
Boron (water-soluble)	T6	AR	1	mg/kg	<1	<1	<1
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	**35**	**39**	**38**
Chromium (trivalent)	T85	AR	2	mg/kg	**35**	**39**	**38**
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	**23**	**17**	**20**
Cyanide(Total)	T4	AR	1	mg/kg	<1	<1	<1
Cyanide(free)	T4	AR	1	mg/kg	<1	<1	<1
Lead	T6	M40	1	mg/kg	**34**	**23**	**41**
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	**35**	**31**	**30**
pH	T7	AR			**8.0**	**6.6**	**7.2**
Phenols(Mono)	T4	AR	1	mg/kg	<1	<1	<1
Selenium	T6	M40	3	mg/kg	<3	<3	<3
Soil Organic Matter	T287	A40	0.1	%	**2.8**	**1.9**	**4.3**
SO4(Total)	T6	A40	0.01	%	**0.06**	**0.05**	**0.10**
Sulphide	T4	AR	10	mg/kg	<10	<10	<10
Zinc	T6	M40	1	mg/kg	**94**	**84**	**90**
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C10-C12)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21)	T8	M105	1	mg/kg	(13) <1	**(13) 1**	**(13) 1**
TPH (C21-C35)	T8	M105	1	mg/kg	**(13) 1**	**(13) 3**	**(13) 1**
TPH (C35-C40)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH C6-C40 (Sum)	T85	M105	1	mg/kg	**1**	**4**	**2**

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG Suite 4

				Concept Reference	**690614 002**	**690614 003**	**690614 004**	**690614 005**	**690614 008**
				Customer Sample Reference	**IT04**	**TP02**	**TP02**	**TP04**	**TP09**
				Bottom Depth	**1.10**	**0.10**	**1.90**	**0.60**	**0.50**
				Date Sampled	**13-OCT-2017**	**17-OCT-2017**	**17-OCT-2017**	**13-OCT-2017**	**16-OCT-2017**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
pH	T7	A40			**8.0**	**7.9**	**7.7**	**7.4**	**8.0**
SO4(2:1)	T6	AR	0.1	g/l	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG Suite 4

Concept Reference	**690614 010**	**690614 011**	**690614 012**	**690614 015**	**690614 018**
Customer Sample Reference	**TP12**	**TP14**	**TP15**	**TP18**	**TP22**
Bottom Depth	**0.15**	**0.30**	**0.10**	**3.10**	**0.40**
Date Sampled	**16-OCT-2017**	**17-OCT-2017**	**17-OCT-2017**	**13-OCT-2017**	**17-OCT-2017**

Determinand	Method	Test Sample	LOD	Units					
pH	T7	A40			**7.1**	**7.5**	**8.3**	**8.0**	**8.0**
SO4(2:1)	T6	AR	0.1	g/l	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG PAH (USEPA 16)

Concept Reference	**690614 001**	**690614 006**	**690614 007**	**690614 009**	**690614 013**
Customer Sample Reference	**IT02**	**TP05**	**TP07**	**TP10**	**TP16**
Bottom Depth	**0.10**	**0.15**	**0.25**	**0.15**	**0.20**
Date Sampled	**13-OCT-2017**	**13-OCT-2017**	**13-OCT-2017**	**17-OCT-2017**	**16-OCT-2017**
Matrix Class	**Sandy Soil**	**Clay**	**Sandy Soil**	**Clay**	**Clay**

Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
GEG PAH (USEPA 16)

				Concept Reference	**690614 014**	**690614 016**	**690614 017**
				Customer Sample Reference	**TP18**	**TP21**	**TP22**
				Bottom Depth	**0.20**	**0.10**	**0.10**
				Date Sampled	**13-OCT-2017**	**16-OCT-2017**	**17-OCT-2017**
				Matrix Class	**Clay**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	**0.2**	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	**0.1**	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	**0.3**	<0.1

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
Miscellaneous

				Concept Reference	**690614 001**	**690614 006**	**690614 007**	**690614 009**	**690614 013**
				Customer Sample Reference	**IT02**	**TP05**	**TP07**	**TP10**	**TP16**
				Bottom Depth	**0.10**	**0.15**	**0.25**	**0.15**	**0.20**
				Date Sampled	**13-OCT-2017**	**13-OCT-2017**	**13-OCT-2017**	**17-OCT-2017**	**16-OCT-2017**
				Matrix Class	**Sandy Soil**	**Clay**	**Sandy Soil**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
SVOC Pesticide Screen	T16	M105	0.1	mg/kg	<0.1	<0.1	<0.1	-	-
Antimony	T6	A40	1	mg/kg	**3**	**4**	**2**	**3**	**3**

Concept Reference: 690614
Project Site: SW Milton Keynes
Customer Reference: GEG-17-514

Soil Analysed as Soil
Miscellaneous

				Concept Reference	**690614 014**	**690614 016**	**690614 017**
				Customer Sample Reference	**TP18**	**TP21**	**TP22**
				Bottom Depth	**0.20**	**0.10**	**0.10**
				Date Sampled	**13-OCT-2017**	**16-OCT-2017**	**17-OCT-2017**
				Matrix Class	**Clay**	**Clay**	**Clay**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**			
SVOC Pesticide Screen	T16	M105	0.1	mg/kg	-	<0.1	<0.1
Antimony	T6	A40	1	mg/kg	**3**	**3**	**3**

Index to symbols used in Supplemental to 690614-2

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
13	Results have been blank corrected.
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Samples 001, 002, 005-007 and 014-015 have been analysed exceeding recommended holding times for pH . It is possible therefore that the results provided may be compromised.
Supplemental report to include SO4 results.

Method Index

Value	Description
T2	Grav
T8	GC/FID
T16	GC/MS
T287	Calc TOC/0.58
T54	GC/MS (Headspace)
T85	Calc
T207	GC/MS (MCERTS)
T4	Colorimetry
T7	Probe
T162	Grav (1 Dec) (105 C)
T6	ICP/OES

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001,006-007,009,013-014,016-017
Retained on 10mm sieve	T2	M40	0.1	%	N	001,006-007,009,013-014,016-017
Arsenic	T6	M40	2	mg/kg	M	001,006-007,009,013-014,016-017
SO4(2:1)	T6	AR	0.1	g/l	N	001-018
Boron (water-soluble)	T6	AR	1	mg/kg	N	001,006-007,009,013-014,016-017
Cadmium	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
Chromium	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
Chromium (trivalent)	T85	AR	2	mg/kg	N	001,006-007,009,013-014,016-017
Chromium VI	T6	AR	1	mg/kg	N	001,006-007,009,013-014,016-017
Copper	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
Cyanide(Total)	T4	AR	1	mg/kg	U	001,006-007,009,013-014,016-017
Cyanide(free)	T4	AR	1	mg/kg	U	001,006-007,009,013-014,016-017
Lead	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
Mercury	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
Nickel	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
pH	T7	AR			M	001,006-007,009,013-014,016-017
Phenols(Mono)	T4	AR	1	mg/kg	U	001,006-007,009,013-014,016-017
Selenium	T6	M40	3	mg/kg	M	001,006-007,009,013-014,016-017
Soil Organic Matter	T287	A40	0.1	%	N	001,006-007,009,013-014,016-017
SO4(Total)	T6	A40	0.01	%	N	001,006-007,009,013-014,016-017
Sulphide	T4	AR	10	mg/kg	N	001,006-007,009,013-014,016-017
Zinc	T6	M40	1	mg/kg	M	001,006-007,009,013-014,016-017
TPH (C6-C8)	T54	AR	0.10	mg/kg	N	001,006-007,009,013-014,016-017
TPH (C8-C10)	T8	M105	1	mg/kg	U	001,006-007,009,013-014,016-017
TPH (C10-C12)	T8	M105	1	mg/kg	U	001,006-007,009,013-014,016-017
TPH (C12-C16)	T8	M105	1	mg/kg	U	001,006-007,009,013-014,016-017
TPH (C16-C21)	T8	M105	1	mg/kg	U	001,006-007,009,013-014,016-017
TPH (C21-C35)	T8	M105	1	mg/kg	U	001,006-007,009,013-014,016-017
TPH (C35-C40)	T8	M105	1	mg/kg	N	001,006-007,009,013-014,016-017
TPH C6-C40 (Sum)	T85	M105	1	mg/kg	N	001,006-007,009,013-014,016-017
pH	T7	A40			U	002-005,008,010-012,015,018
Naphthalene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Acenaphthylene	T207	M105	0.1	mg/kg	U	001,006-007,009,013-014,016-017
Acenaphthene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Fluorene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Phenanthrene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Anthracene	T207	M105	0.1	mg/kg	U	001,006-007,009,013-014,016-017
Fluoranthene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Pyrene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Chrysene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001,006-007,009,013-014,016-017
PAH(total)	T207	M105	0.1	mg/kg	U	001,006-007,009,013-014,016-017
SVOC Pesticide Screen	T16	M105	0.1	mg/kg	N	001,006-007,016-017
Antimony	T6	A40	1	mg/kg	U	001,006-007,009,013-014,016-017

APPENDIX F

STATISTICAL ASSESSMENT OF CHEMICAL RESULTS

Client/client ref	BROOKBANKS
Project ref	GEG-17-514
Site ref	SW MILTON KEYNES
Data description	Natural Ground
Contaminant(s)	As to Phenol
Test scenario	Planning: is true mean lower than critical concentration (μ < Cc)?
Date	21 November 2017
User details	AT

Statistics calculator (version 1)

Input data

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Go to summary

Data sheet

Project details

Easting	Northing	Sample ID	Arsenic	Cadmium	Chromium (total)	Chromium (III)	(Chromium (VI)	Lead	Mercury	Nickel	Selenium	Cyanide (total)	Cyanide (free)	pH	Phenols (mono)	Soil Organic Matter	Outliers: Arsenic		
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	%	mg/kg		
IT02	0.10m	NG		<1	43	43	<1	43	<1	38	<3	<1	<1	7.9	<1	3.3	23		
TP05	0.15m	NG	19	<1	43	43	<1	40	<1	34	<3	<1	<1	6.8	<1	5.5			
TP07	0.25m	NG	17	<1	28	28	<1	24	<1	28	<3	<1	<1	7.7	<1	3.1			
TP10	0.15m	NG	15	<1	38	38	<1	29	<1	28	<3	<1	<1	7.7	<1	4.3			
TP16	0.20m	NG	17	<1	37	37	<1	53	<1	25	<3	<1	<1	7.2	<1	3.5			
TP18	0.20m	NG	18	<1	35	35	<1	34	<1	35	<3	<1	<1	8	<1	2.8			
TP21	0.10m	NG	18	<1	39	39	<1	23	<1	31	<3	<1	<1	6.6	<1	1.9			
TP22	0.10m	NG	18	<1	38	38	<1	41	<1	30	<3	<1	<1	7.2	<1	4.3			

Client/client ref: BROOKBANKS
Project ref: GEG-17-514
Site ref: SW MILTON KEYNES
Data description: Natural Ground
Contaminant(s): As to Phenol
Test scenario: Planning
Date: 21 November 2017
User details: AT

	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (total) (mg/kg)	Chromium (III) (mg/kg)	(Chromium (VI) (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Cyanide (total) (mg/kg)	Cyanide (free) (mg/kg)	pH	Phenols (mono) (mg/kg)	Soil Organic Matter (%)	Outliers: Arsenic (mg/kg)	
Critical concentration, C_c	**32**	**5**	**130**	**3000**	**4.3**	**200**	**1**	**130**	**350**	**43**	**43**		**198**		**32**	
Notes																
Sample size, n	7	8	8	8	8	8	8	8	8	8	8	8	8	8	1	0
Sample mean, $\bar{x}$	17.4285714	0.5	37.625	37.625	0.5	35.875	0.5	31.125	1.5	0.5	0.5	7.3875	0.5	3.5875	23	No Data
Standard deviation, s	1.27241802	0	4.77904653	4.77904653	0	10.3155569	0	4.29077083	0	0	0	0.51668587	0	1.09991883	0	
Number of non-detects	0	**8**	0	0	**8**	0	**8**	0	**8**	**8**	**8**	0	**8**	0	0	
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	N/A (n<3)	
Distribution	Normal	Single value	Normal	Normal	Single value	Normal	Single value	Normal	Single value	Single value	Single value	Normal	Single value	Normal	Single value	
Statistical approach	Auto: One-sample t	Auto: Chebychev	Auto: One-sample t	Auto: One-sample t	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto
Test scenario:	Planning: Is true mean lower than critical concentration ($\mu < C_c$)?				**Evidence level required:**		**95%**	Use normal distribution to test for outliers								
t statistic, t_0 (or k_0)	-30.29851482	N/A	-54.67114709	-1753.249682	N/A	-45.00150657	N/A	-65.17727077	N/A	N/A	N/A		N/A		N/A	
Upper confidence limit (on true mean concentration, μ)	18.3631028	0.5	40.8261711	40.8261711	0.5	42.7847179	0.5	33.9991071	1.5	0.5	0.5	7.73359412	0.5	4.32426379	23	
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**		**100%**		**100%**	
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	lower bound	evidence level	lower bound	evidence level	
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**		**μ < Cc**		**μ < Cc**	
Select dataset	◉ X	○ X	○ X	○ X	○ X	○ X	○ X	○ X	○ X	○ X	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y

Back to data | **Go to outlier test** | **Go to normality test** | **Show individual summary**

Client/client ref	BROOKBANKS
Project ref	GEG-17-514
Site ref	SW MILTON KEYNES
Data description	Natural Ground
Contaminant(s)	Cu, Zn & B
Test scenario	Planning: is true mean lower than critical concentration (μ < Cc)?
Date	21 November 2017
User details	AT

Statistics calculator (version 1)

Input data

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Go to summary

Data sheet

Project details

Easting	Northing	Sample ID	Copper	Zinc	Boron														
			mg/kg	mg/kg	mg/kg														
IT02	0.10m	NG	29	120	<1														
TP05	0.15m	NG	28	110	<1														
TP07	0.25m	NG	19	74	<1														
TP10	0.15m	NG	19	88	<1														
TP16	0.20m	NG	17	88	<1														
TP18	0.20m	NG	23	94	<1														
TP21	0.10m	NG	17	84	<1														
TP22	0.10m	NG	20	90	<1														

Client/client ref: BROOKBANKS
Project ref: GEG-17-514
Site ref: SW MILTON KEYNES
Data description: Natural Ground
Contaminant(s): Cu, Zn & B
Test scenario: Planning
Date: 21 November 2017
User details: AT

	Copper (mg/kg)	Zinc (mg/kg)	Boron (mg/kg)													
Critical concentration, C_c	**2330**	**3550**	**291**													
Notes																
Sample size, n	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample mean, $\bar{x}$	21.5	93.5	0.5	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	4.72077475	14.7260702	0													
Number of non-detects	0	0	**8**													
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	No	No													
Distribution	Normal	Normal	Single value													
Statistical approach	Auto: One-sample t	Auto: One-sample t	Auto: Chebychev	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto

Test scenario:	Planning: Is true mean level below critical concentration ($\mu < C_c$)?		**Evidence level required:**	**95%**	Use normal distribution to test for outliers											
t statistic, t_0 (or k_0)	-1383.125516	-663.8878016	N/A													
Upper confidence limit (on true mean concentration, μ)	24.6621387	103.364033	0.5													
Evidence level	**100%**	**100%**	**100%**													
Base decision on:	evidence level	evidence level	evidence level													
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**													
Select dataset	○ Y	◉ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y

Back to data | **Go to outlier test** | **Go to normality test** | **Show individual summary**

Client/client ref	BROOKBANKS
Project ref	GEG-17-514
Site ref	SW MILTON KEYNES
Data description	Natural Ground
Contaminant(s)	PAHs (Naphthalene - Pyrene)
Test scenario	Planning: is true mean lower than critical concentration (μ < Cc)?
Date	21 November 2017
User details	AT

Statistics calculator (version 1)

Input data

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Go to summary

Data sheet

Project details

Easting	Northing	Sample ID	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Outliers: Fluoranthene	Outliers: Pyrene								
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg								
IT02	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP05	0.15m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP07	0.25m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP10	0.15m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP16	0.20m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP18	0.20m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP21	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			0.2	0.1								
TP22	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										

Client/client ref: BROOKBANKS
Project ref: GEG-17-514
Site ref: SW MILTON KEYNES
Data description: Natural Ground
Contaminant(s): PAHs (Naphthalene - Pyrene)
Test scenario: Planning
Date: 21 November 2017
User details: AT

	Naphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Outliers: Fluoranthene (mg/kg)	Outliers: Pyrene (mg/kg)						
Critical concentration, C_c	**0.85**	**165**	**199**	**161**	**92**	**2232**	**257**	**565**	**257**	**565**						
Notes																
Sample size, n	8	8	8	8	8	8	7	7	1	1	0	0	0	0	0	0
Sample mean, $\overline{x}$	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	1.4836E-17	7.418E-18	7.418E-18	7.418E-18	7.418E-18	7.418E-18	7.4949E-18	7.4949E-18	0	0						
Number of non-detects	**8**	**8**	**8**	**8**	**8**	**8**	**7**	**7**	0	0						
Set non-detect values to:	Detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	No	No	No	No	No	No	No	N/A (n<3)	N/A (n<3)						
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Single value	Single value						
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto	Auto	Auto	Auto	Auto	Auto
Test scenario:	Planning: Is true mean level below critical concentration ($\mu < C_c$)?				**Evidence level required:**		**95%**	Use normal distribution to test for outliers								
t statistic, t_0 (or k_0)	-1.42985E+17	-6.28943E+19	-7.58582E+19	-6.13691E+19	-3.50599E+19	-8.51027E+20	-9.07056E+19	-1.99432E+20	N/A	N/A						
Upper confidence limit (on true mean concentration, μ)	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1						
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**						
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level						
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**						
Select dataset	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	◉ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y

Back to data | **Go to outlier test** | **Go to normality test** | **Show individual summary**

Client/client ref	BROOKBANKS
Project ref	GEG-17-514
Site ref	SW MILTON KEYNES
Data description	Natural Ground
Contaminant(s)	PAHs (Benzo(a)anthracene - Benzo(ghi)perylene)
Test scenario	Planning: is true mean lower than critical concentration (μ < Cc)?
Date	21 November 2017
User details	AT

Statistics calculator (version 1)

Input data

This spreadsheet has been produced based on the document 'Guidance on Comparing Soil Contamination Data with a Critical Concentration (CIEH/CL:AIRE, 2008)'. Users of this spreadsheet should always refer to this guidance, the User Manual and to relevant guidance on UK legislation and policy, in order to understand how the procedure should be applied in an appropriate context.

ESI Ltd (ESI) do not promise that the spreadsheet will provide any particular facilities or functions. The user must ensure that the spreadsheet meets their needs and they remain solely responsible for the competent use of the spreadsheet. Users are entirely responsible for the consequences of any use of the spreadsheet, ESI do not provide any warranty about the fitness for purpose or performance of any par of the spreadsheet. We do not promise that the media will always be free from defects, computer viruses, software locks or other similar code or that the operation of the spreadsheet will be uninterrupted or error free. The user should carry out all necessary virus checks prior to installing on their computing system.

Go to summary

Data sheet

Project details

Easting	Northing	Sample ID	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(123-cd)Pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene										
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg										
IT02	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP05	0.15m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP07	0.25m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP10	0.15m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP16	0.20m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP18	0.20m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP21	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
TP22	0.10m	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										

Client/client ref: BROOKBANKS
Project ref: GEG-17-514
Site ref: SW MILTON KEYNES
Data description: Natural Ground
Contaminant(s): PAHs (Benzo(a)anthracene - Benzo(ghi)perylene)
Test scenario: Planning
Date: 21 November 2017
User details: AT

	Benzo(a)anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Benzo(a)pyrene (mg/kg)	Indeno(123-cd)Pyrene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Benzo(ghi)perylene (mg/kg)								
Critical concentration, C_c	**5.9**	**12**	**1.9**	**56**	**2**	**21**	**0.17**	**213**								
Notes																
Sample size, n	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0
Sample mean, $\bar{x}$	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	1.4836E-17	7.418E-18	7.418E-18	7.418E-18	7.418E-18	7.418E-18	7.418E-18	7.418E-18								
Number of non-detects	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**								
Set non-detect values to:	Detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	No	No	No	No	No	No	No								
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal								
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto

Test scenario:	Planning: Is true mean level below critical concentration ($\mu < C_c$)?				**Evidence level required:**		**95%**	Use normal distribution to test for outliers								
t statistic, t_0 (or k_0)	-1.10575E+18	-4.55645E+18	-7.05392E+17	-2.13333E+19	-7.43521E+17	-7.98809E+18	-4.57552E+16	-8.11963E+19								
Upper confidence limit (on true mean concentration, μ)	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05								
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**								
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level								
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**								
Select dataset	○ Y	○ Y	○ Y	◉ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y

Back to data | **Go to outlier test** | **Go to normality test** | **Show individual summary**

Client/client ref	BROOKBANKS
Project ref	GEG-17-514
Site ref	SW MILTON KEYNES
Data description	Natural Ground
Contaminant(s)	TPH (banded)
Test scenario	Planning: is true mean lower than critical concentration (μ < Cc)?
Date	21 November 2017
User details	AT

Statistics calculator (version 1)

Input data

This spreadsheet has been produced based on the document 'Guidance on Comparing Soil Contamination Data with a Critical Concentration (CIEH/CL:AIRE, 2008)'. Users of this spreadsheet should always refer to this guidance, the User Manual and to relevant guidance on UK legislation and policy, in order to understand how the procedure should be applied in an appropriate context.

Go to summary

Data sheet

Project details

Easting	Northing	Sample ID	TPH (C6-C8)	TPH (C8-C10)	TPH (C10-C12)	TPH (C12-C16)	TPH (C16-C21)	TPH (21-C35)	TPH (C35-40)										
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg											
IT02	0.10m	NG	<0.10	<1	<1	<1	2	3	<1										
TP05	0.15m	NG	<0.10	<1	<1	<1	2	4	<1										
TP07	0.25m	NG	<0.10	<1	<1	<1	2	2	<1										
TP10	0.15m	NG	<0.10	<1	<1	<1	1	2	<1										
TP16	0.20m	NG	<0.10	<1	<1	<1	2	2	<1										
TP18	0.20m	NG	<0.10	<1	<1	<1	<1	1	<1										
TP21	0.10m	NG	<0.10	<1	<1	<1	1	3	<1										
TP22	0.10m	NG	<0.10	<1	<1	<1	1	1	<1										

Client/client ref: BROOKBANKS
Project ref: GEG-17-514
Site ref: SW MILTON KEYNES
Data description: Natural Ground
Contaminant(s): TPH (banded)
Test scenario: Planning
Date: 21 November 2017
User details: AT

	TPH (C6-C8) (mg/kg)	TPH (C8-C10) (mg/kg)	TPH (C10-C12) (mg/kg)	TPH (C12-C16) (mg/kg)	TPH (C16-C21) (mg/kg)	TPH (21-C35) (mg/kg)	TPH (C35-40) (mg/kg)						
Critical concentration, C_c	**7**	**13**	**61**	**185**	**474**	**1770**	**1770**						
Notes													
Sample size, n	8	8	8	8	8	8	8	0	0	0	0	0	0
Sample mean, $\bar{x}$	0.05	0.5	0.5	0.5	1.5	2.25	0.5	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	7.418E-18	0	0	0	0.53452248	1.03509834	0						
Number of non-detects	**8**	**8**	**8**	**8**	**1**	0	**8**						
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	No	No	No	No	No	No						
Distribution	Non-normal	Single value	Single value	Single value	Non-normal	Normal	Single value						
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto	Auto	Auto	Auto	Auto	Auto

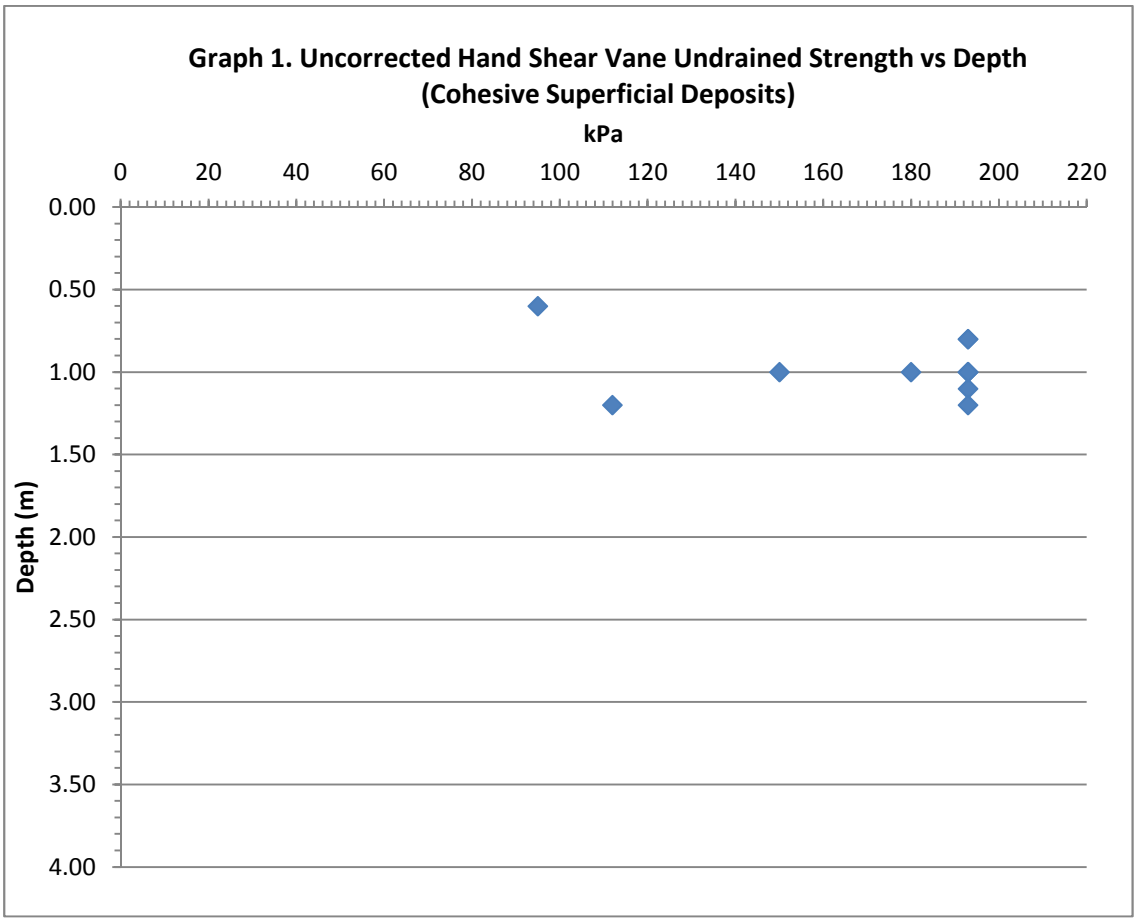
Test scenario:	Planning: Is true mean level below critical concentration ($\mu < C_c$)?				**Evidence level required:**		**95%**	Use normal distribution to test for outliers					
t statistic, t_0 (or k_0)	-2.64999E+18	N/A	N/A	N/A	-2500.234989	-4830.412591	N/A						
Upper confidence limit (on true mean concentration, μ)	0.05	0.5	0.5	0.5	2.32375447	2.94334477	0.5						
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**						
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level						
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**						
Select dataset	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y	◉ Y	○ Y	○ Y	○ Y	○ Y	○ Y	○ Y

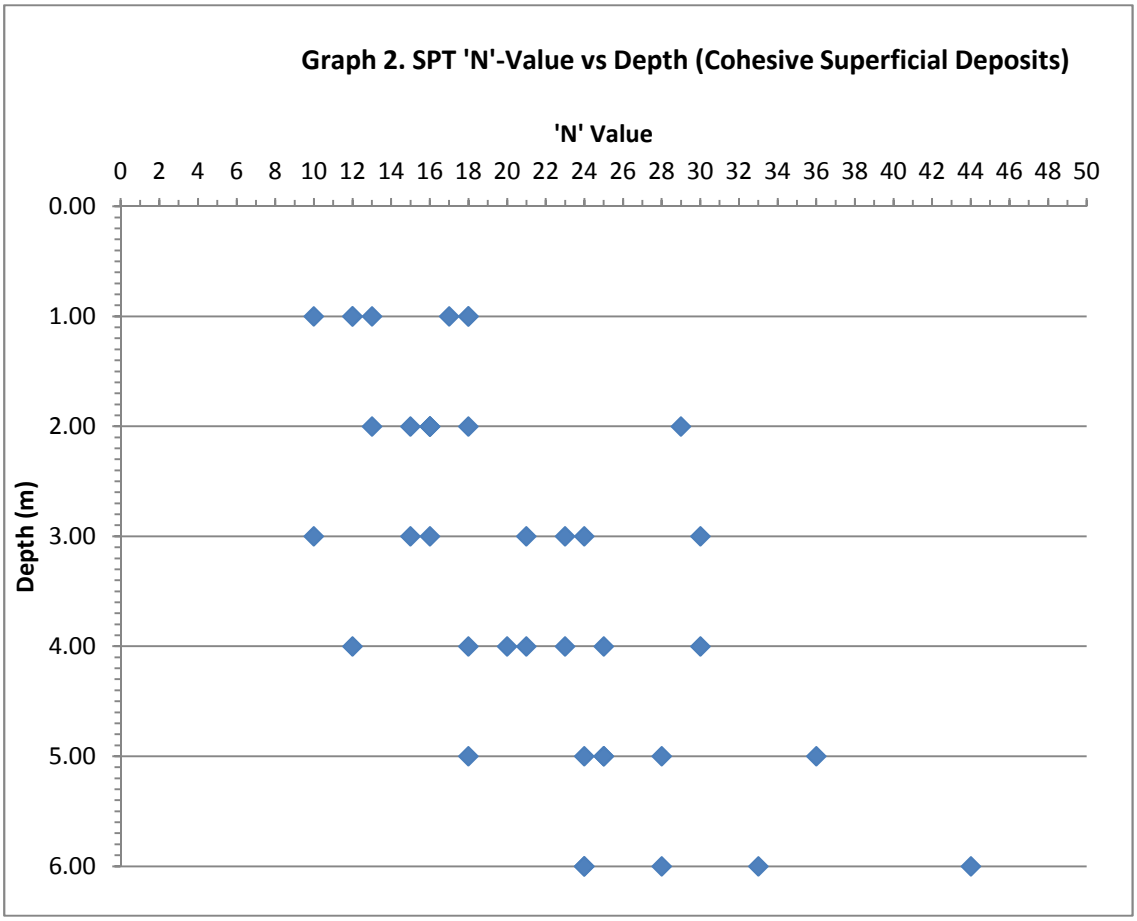
Back to data | **Go to outlier test** | **Go to normality test** | **Show individual summary**

APPENDIX G

GEOTECHNICAL TESTING

Appendix G


Graph 1. Uncorrected Hand Shear Vane Undrained Strength vs Depth
(Cohesive Superficial Deposits)
kPa
0
20
40
60
80
100
120
140
160
180
200
220
Depth (m)
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00


Graph 2. SPT 'N'-Value vs Depth (Cohesive Superficial Deposits)
'N' Value
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
Depth (m)
0.00
1.00
2.00
3.00
4.00
5.00
6.00

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 36938

Client's Reference: **GEG-17-514 PO2726**

Report Date: **16-10-2017**

Client **GEG Limited**
17 Graham Road
Malvern
Worcestershire
WR14 2HR

Contract Title: **Land SW Milton Keynes**

For the attention of: **Alan Taylor**

Date Received: **06-10-2017**

Date Commenced: **13-10-2017**

Date Completed: **16-10-2017**

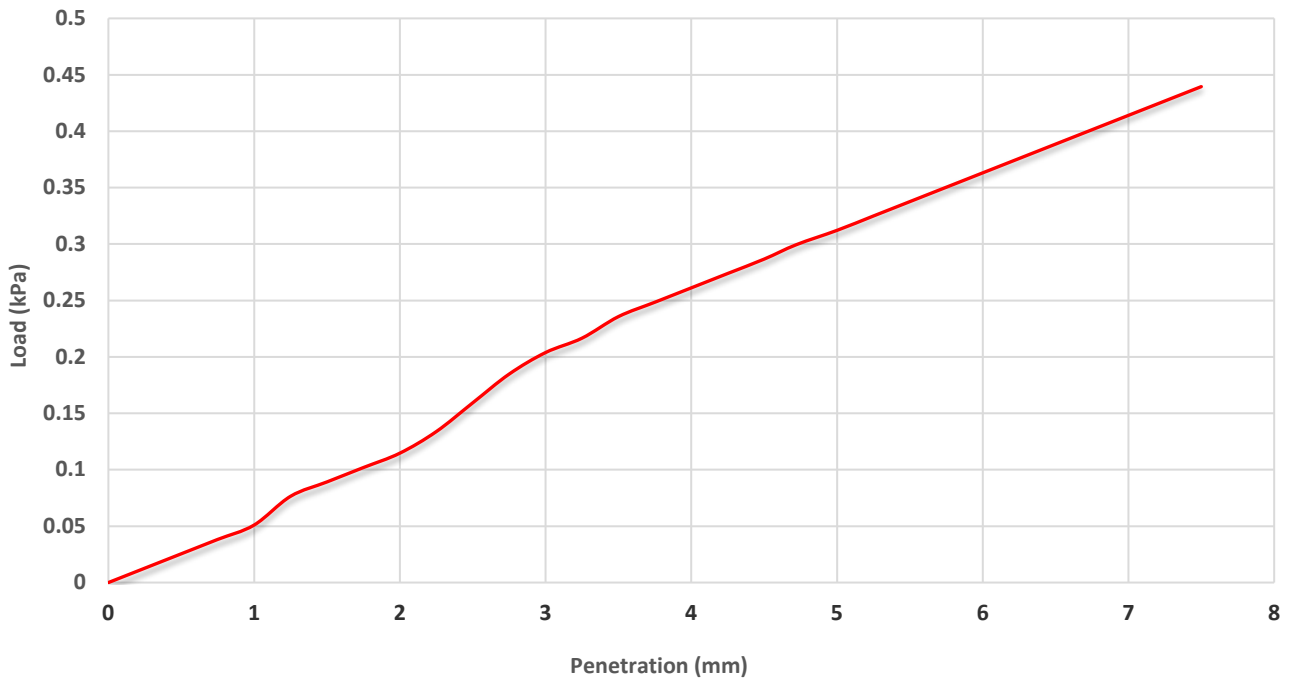
Test Description	Qty
Determination of the in-situ California Bearing Ratio using GSTL 4x4. **Note: Unable to access Location for CBR 4** BS 1377 Part 9 1990 Cl 4.3 - * UKAS	7

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 1
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	1.6

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	28

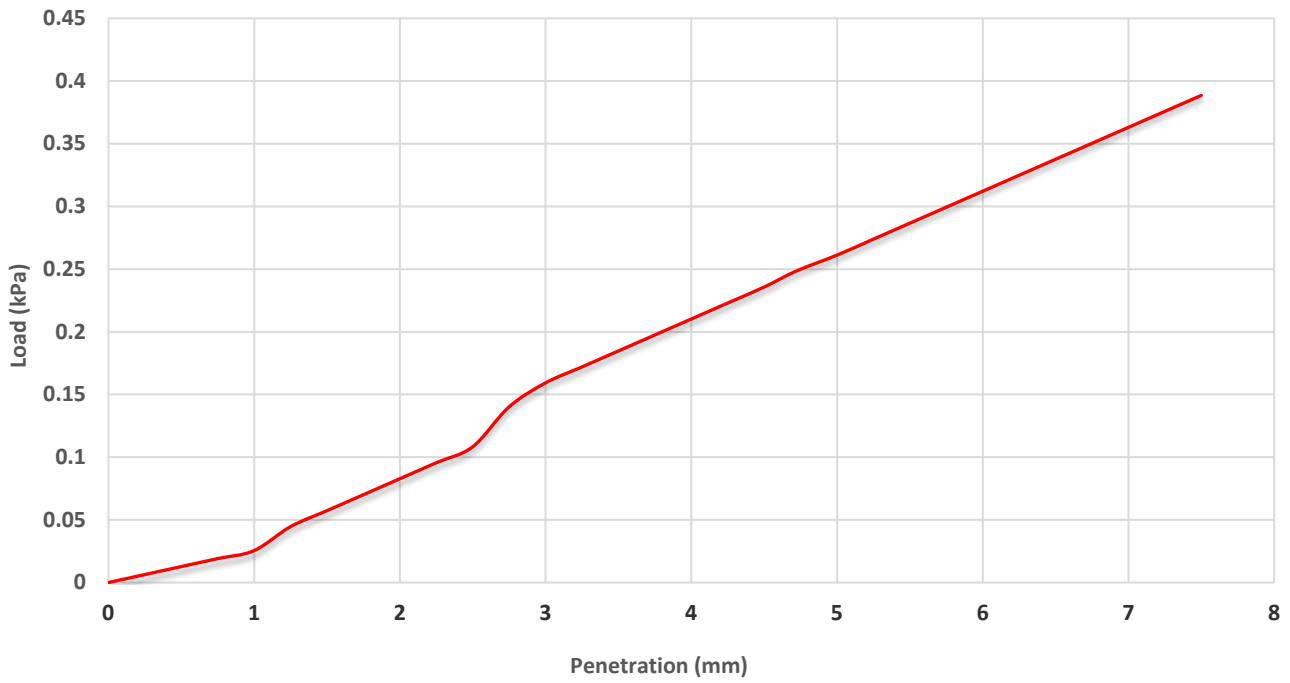
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by			
Ben Steele	Date	16/10/2017	Vaughan Edwards	

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 2
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	1.3

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	28

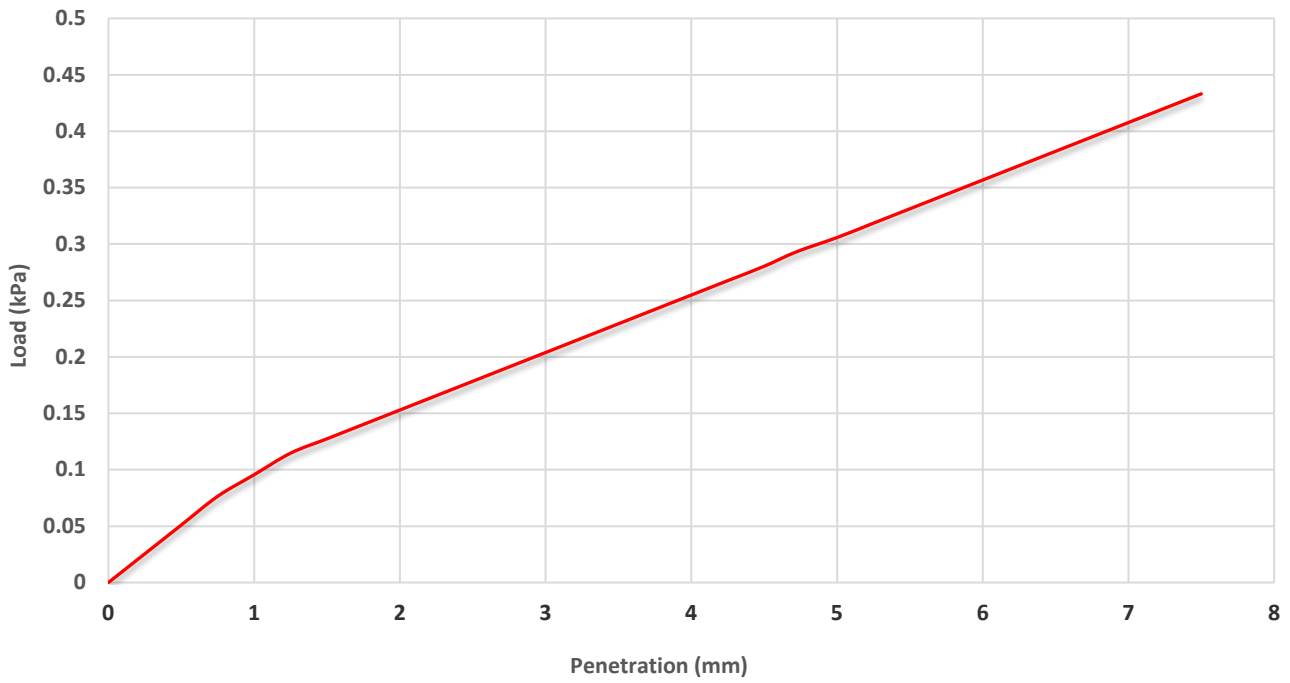
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by			
Ben Steele	Date	16/10/2017	Vaughan Edwards	

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 3
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	1.5

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	33

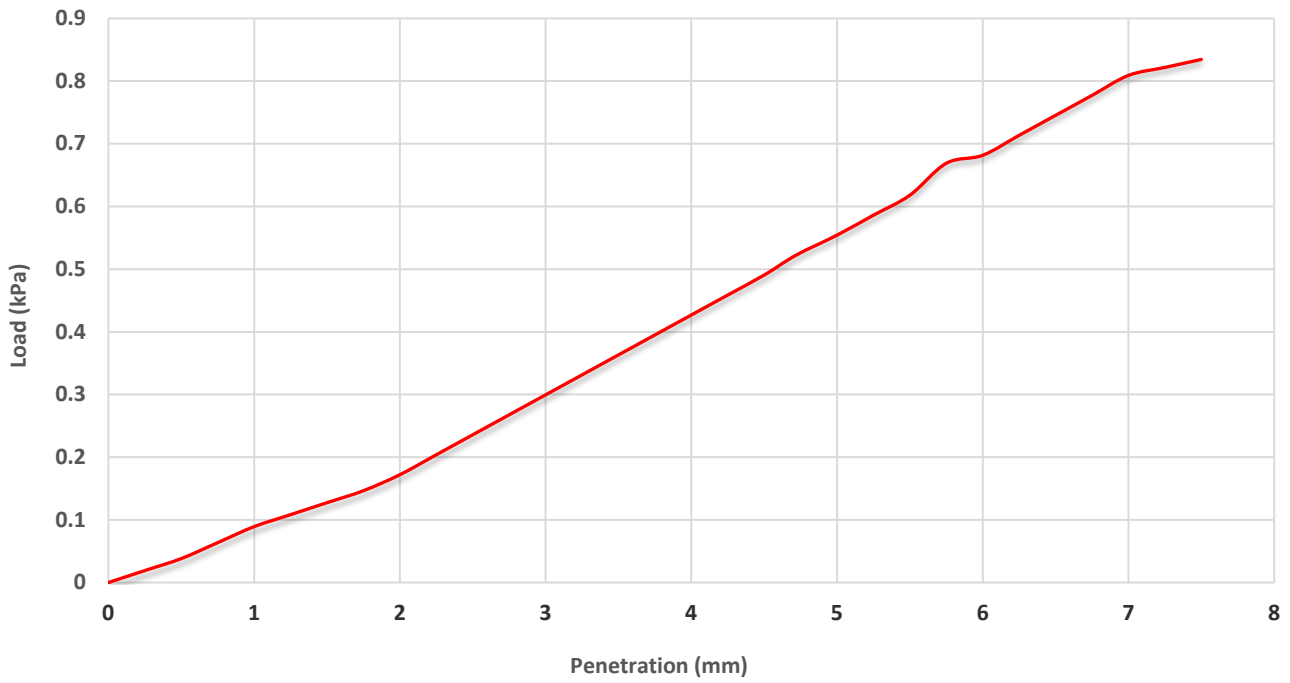
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by			
Ben Steele	Date	16/10/2017	Vaughan Edwards	

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 5
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	2.8

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	30

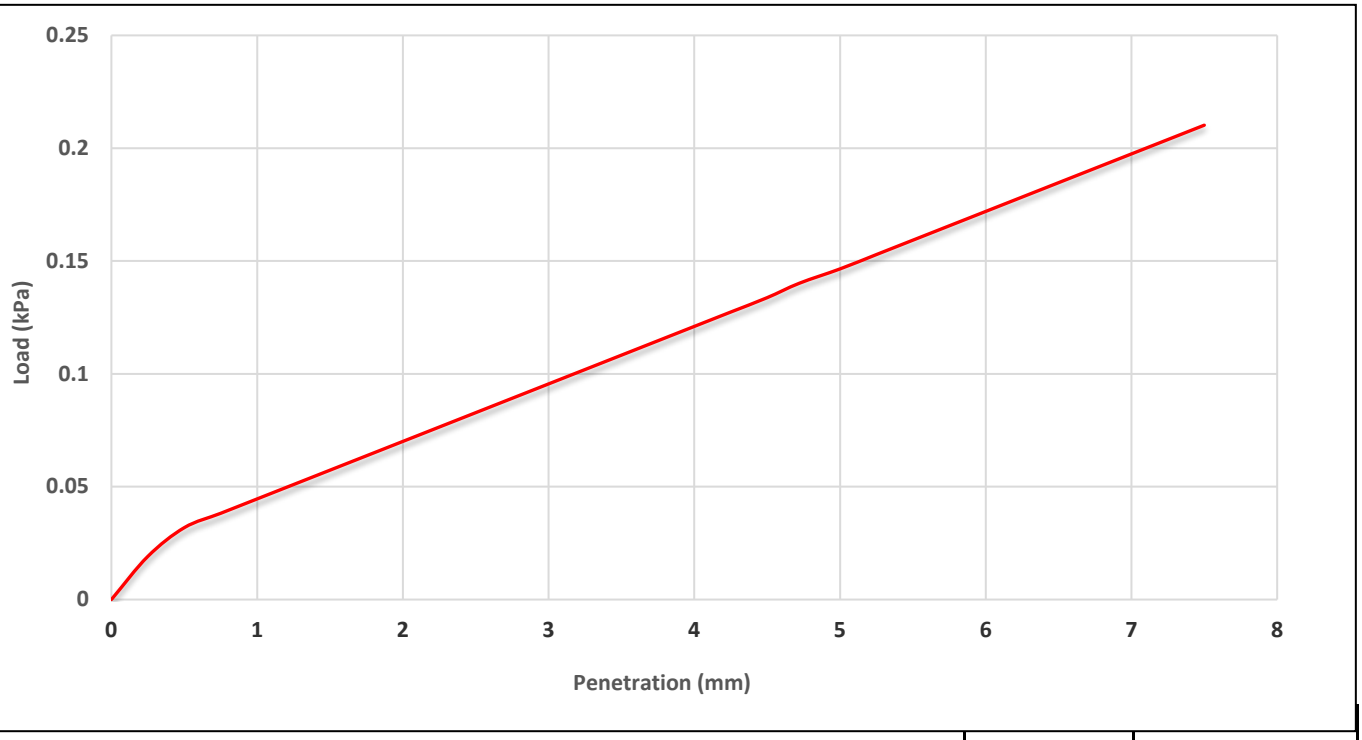
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by			
Ben Steele	Date	16/10/2017	Vaughan Edwards	

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	**GEG Limited**	Test Date	**13/10/2017**
Site Location	**Land SW Milton Keynes**	Test Location	**CBR 6**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.20**
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	0.7

Weather Conditions	**Wet**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**24**

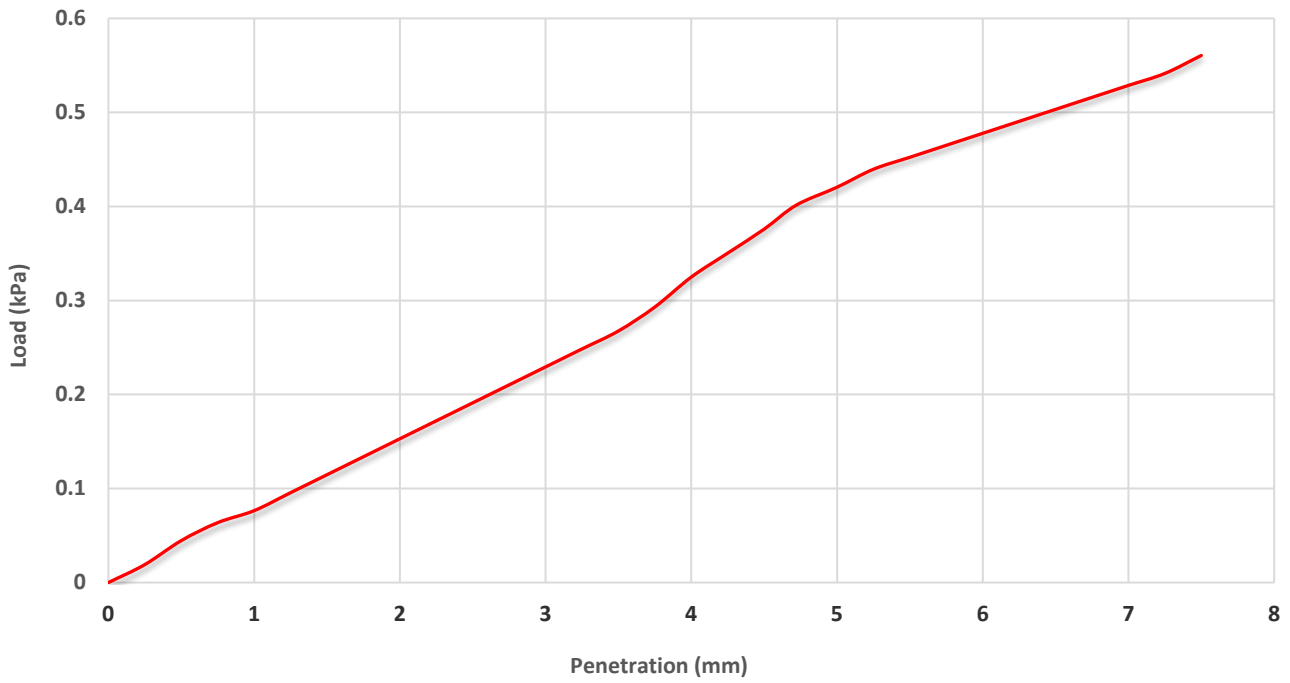
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Vaughan Edwards	
Ben Steele	Date	16/10/2017		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 7
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	2.1

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	25

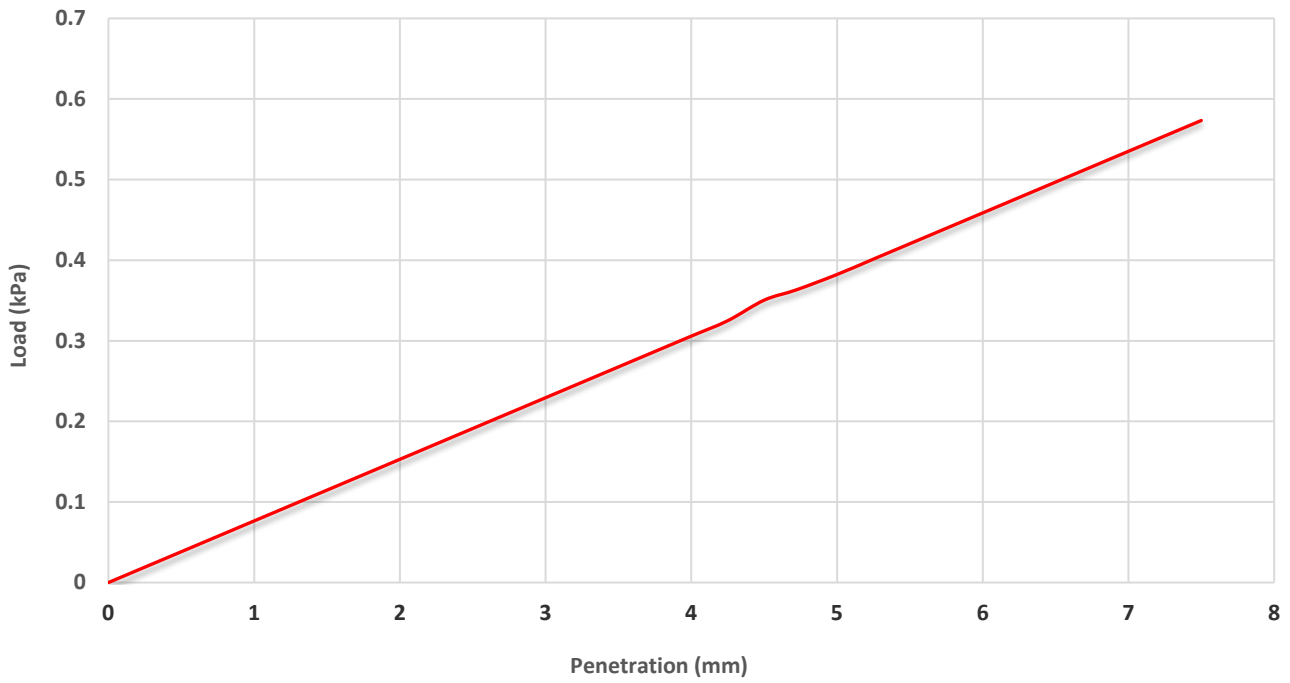
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by			
Ben Steele	Date	16/10/2017	Vaughan Edwards	

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	36938-061017
		Client Reference	GEG-17-514
Client	GEG Limited	Test Date	13/10/2017
Site Location	Land SW Milton Keynes	Test Location	CBR 8
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	0.20
Soil Description	Brown gravelly sandy silty CLAY.	Kentledge Type	Back of 4x4



C.B.R Value %	1.9

Weather Conditions	Wet
Surcharge (kg)	9
Material Above 20mm (est.)	N/A
Moisture Content (%)	32

Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Vaughan Edwards	
Ben Steele	Date	16/10/2017		

UKAS TESTING 2788

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 37024

Client's Reference: **GEG-17-514**

Report Date: **06-11-2017**

Client **GEG Limited**
17 Graham Road
Malvern
Worcestershire
WR14 2HR

Contract Title: **Milton Keynes**

For the attention of: **Alan Taylor**

Date Received: **23-10-2017**

Date Commenced: **23-10-2017**

Date Completed: **06-11-2017**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - * UKAS	13
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	13
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould) 1377 : 1990 Part 4 : 3.5 - * UKAS	5
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**37024**	
Site Name	**Milton Keynes**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
IT02		D	1.50	-		Brown fine to medium gravelly sandy silty CLAY.
IT03		D	0.90	-		Brown fine to medium gravelly sandy silty CLAY.
TP06		D	1.30	-		Brown fine to medium gravelly sandy silty CLAY.
TP07		D	1.00	-		Brown fine to medium gravelly sandy silty CLAY.
TP08		D	0.90	-		Brown fine to medium gravelly sandy silty CLAY.
TP11		D	2.30	-		Brown fine to medium gravelly sandy silty CLAY.
TP12		D	1.90	-		Brown fine to medium gravelly sandy silty CLAY.
TP16		D	0.70	-		Brown fine to medium gravelly sandy silty CLAY.
TP18		D	2.20	-		Brown fine to medium gravelly sandy silty CLAY.
TP21		D	0.80	-		Brown fine to medium gravelly sandy silty CLAY.
TP22		D	1.10	-		Brown fine to medium gravelly sandy silty CLAY.
TP23		D	0.70	-		Brown fine to medium gravelly sandy silty CLAY.
CBR04		D	0.50	-		Brown fine to medium gravelly sandy silty CLAY.
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	05-11-17	Emma Sharp	
RO/MH	Approved	06-11-17	Paul Evans	

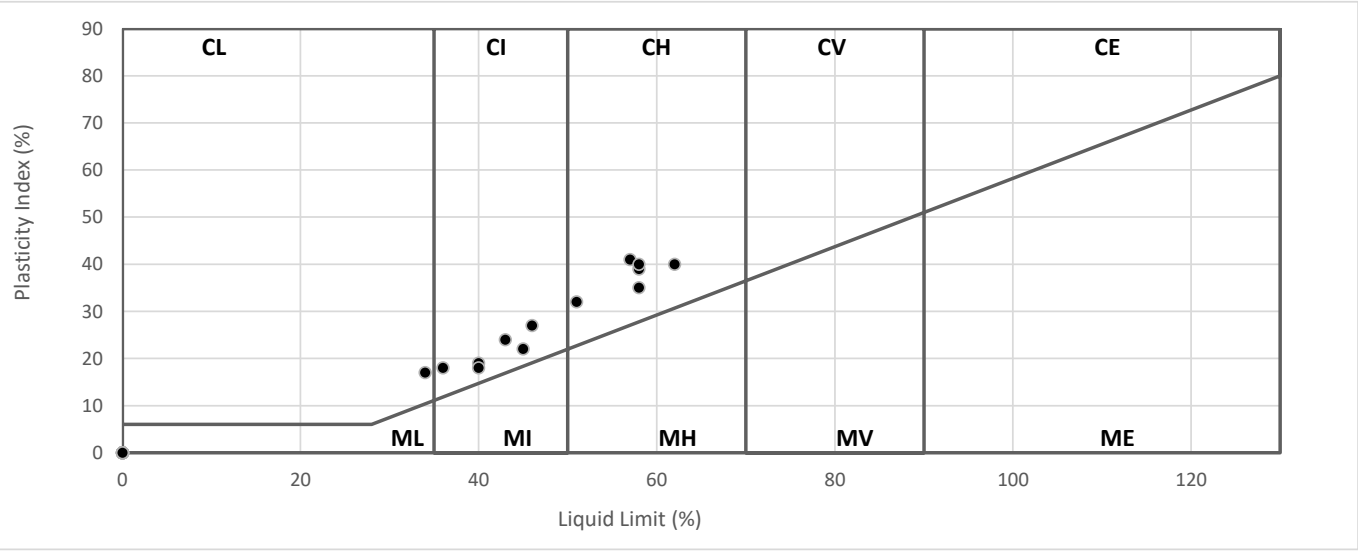
UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**37024**	
Site Name	**Milton Keynes**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
IT02		D	1.50	-		18	34	17	17	88	CL Low Plasticity
IT03		D	0.90	-		19	36	18	18	89	CI Intermediate Plasticity
TP06		D	1.30	-		15	46	19	27	91	CI Intermediate Plasticity
TP07		D	1.00	-		15	40	21	19	87	CI Intermediate Plasticity
TP08		D	0.90	-		14	40	22	18	87	CI Intermediate Plasticity
TP11		D	2.30	-		19	62	22	40	86	CH High Plasticity
TP12		D	1.90	-		17	43	19	24	85	CI Intermediate Plasticity
TP16		D	0.70	-		18	45	23	22	89	CI Intermediate Plasticity
TP18		D	2.20	-		18	51	19	32	88	CH High Plasticity
TP21		D	0.80	-		17	58	19	39	90	CH High Plasticity
TP22		D	1.10	-		15	57	16	41	85	CH High Plasticity
TP23		D	0.70	-		15	58	18	40	84	CH High Plasticity
CBR04		D	0.50	-		24	58	23	35	88	CH High Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

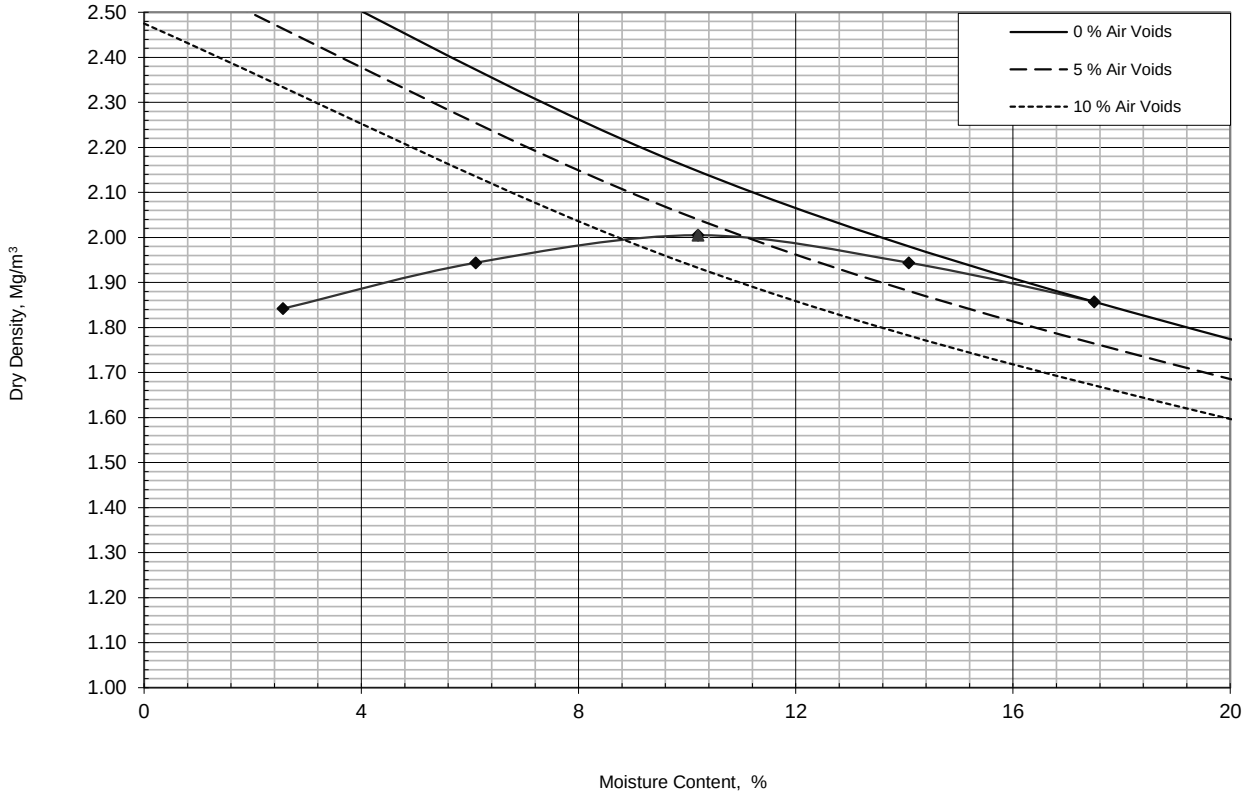
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	05-11-17	Emma Sharp	
DB	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	37024
		Borehole / Pit No	TP04
Site Name	**Milton Keynes**	Sample No	
Soil Description	**Brown fine gravelly sandy silty CLAY.**	Depth Top	**1.50**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



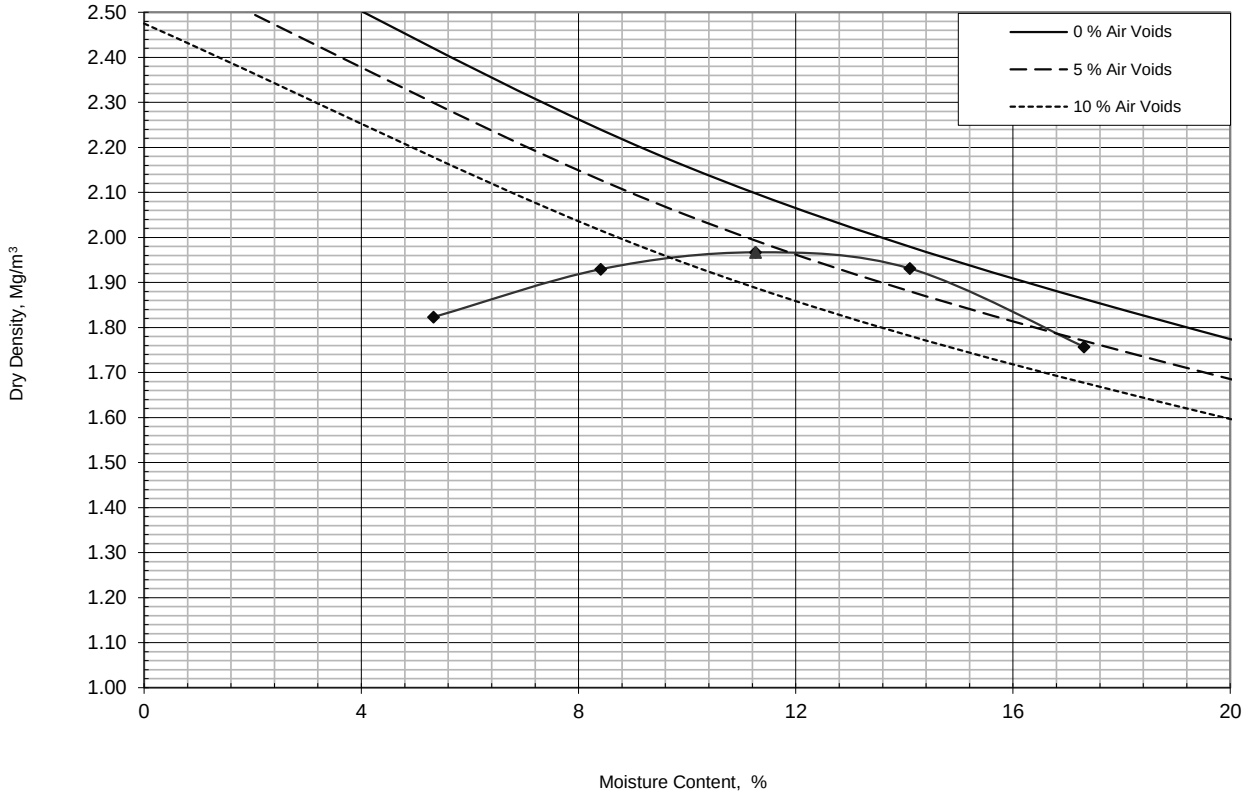
Compaction Point	1	2	3	4	5							
Moisture Content	2.6	6.1	10	14	18							
Bulk Density	1.89	2.06	2.21	2.22	2.18							
Dry Density	1.84	1.94	2.00	1.94	1.86							

Initial Moisture Content	18	%
Maximum Dry Density	2.00	Mg/m3
Optimum Moisture Content	10	%
Paricle Density	2.75 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	05-11-17	Emma Sharp	
CA	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	37024
		Borehole / Pit No	TP12
Site Name	**Milton Keynes**	Sample No	
Soil Description	**Brown fine gravelly sandy silty CLAY.**	Depth Top	**1.20**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



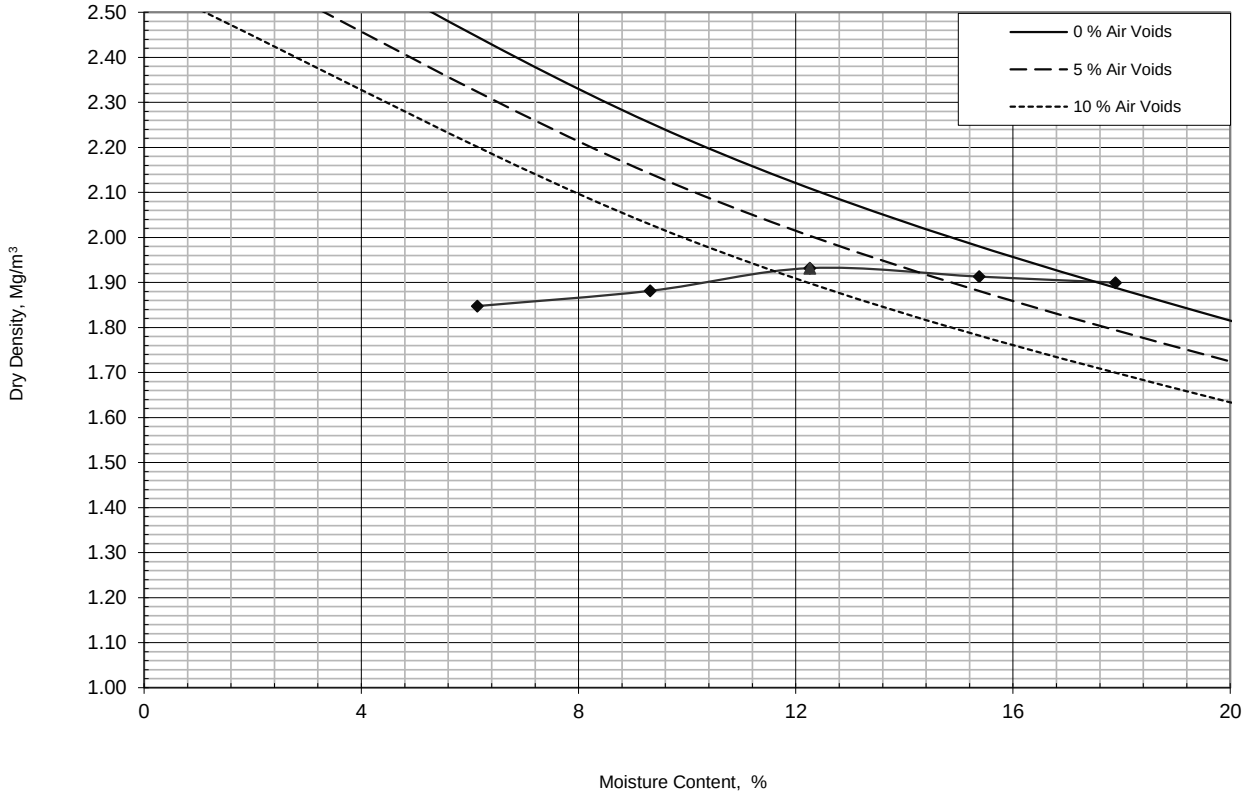
Compaction Point	1	2	3	4	5							
Moisture Content	5.3	8.4	11	14	17							
Bulk Density	1.92	2.09	2.19	2.20	2.06							
Dry Density	1.82	1.93	1.97	1.93	1.76							

Initial Moisture Content	14	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	11	%
Paricle Density	2.75 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	05-11-17	Emma Sharp	
CA	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	37024
		Borehole / Pit No	TP14
Site Name	Milton Keynes	Sample No	
Soil Description	Brown fine gravelly sandy silty CLAY.	Depth Top	1.00
Compaction Method	4.5 Kg Rammer	Depth Base	
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



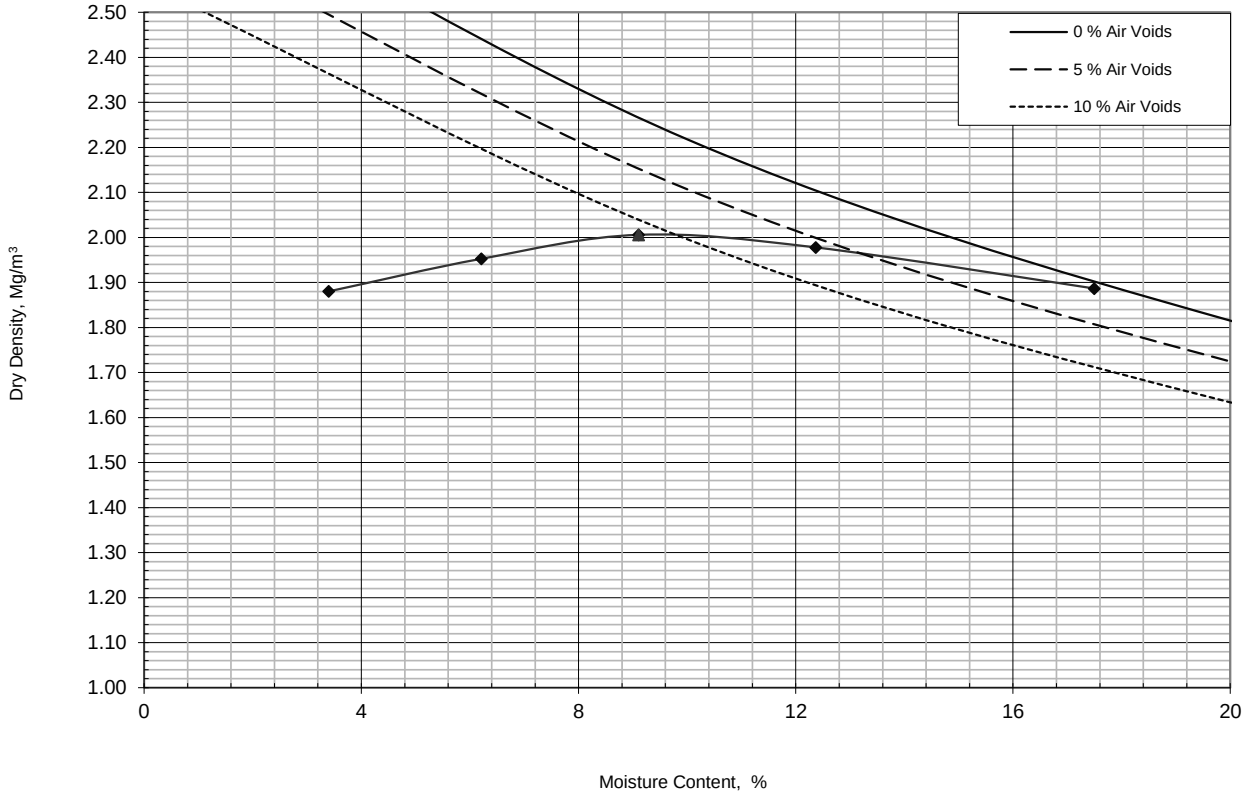
Compaction Point	1	2	3	4	5							
Moisture Content	6.1	9.3	12	15	18							
Bulk Density	1.96	2.06	2.17	2.21	2.24							
Dry Density	1.85	1.88	1.93	1.91	1.90							

Initial Moisture Content	18	%
Maximum Dry Density	1.93	Mg/m3
Optimum Moisture Content	12	%
Paricle Density	2.85 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	05-11-17	Emma Sharp	
CA	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	37024
		Borehole / Pit No	TP19
Site Name	**Milton Keynes**	Sample No	
Soil Description	**Brown fine gravelly sandy silty CLAY.**	Depth Top	**0.50**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



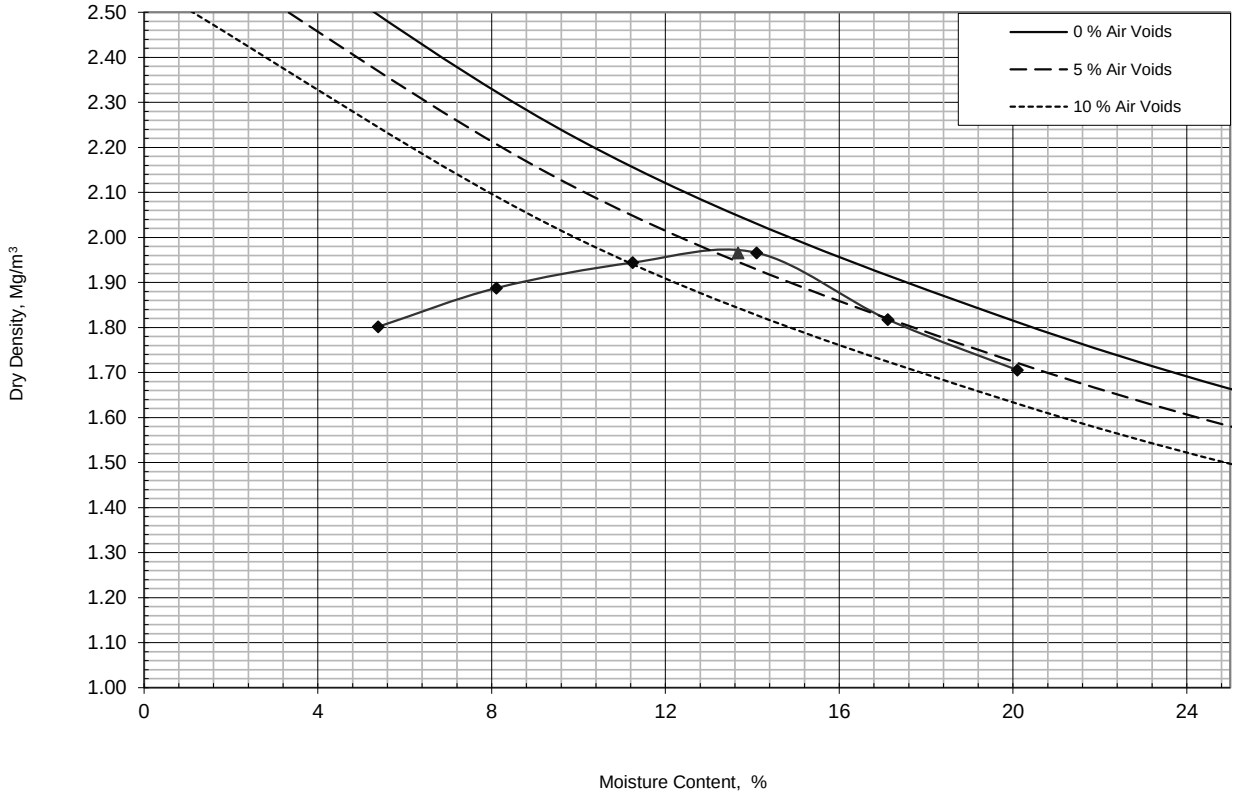
Compaction Point	1	2	3	4	5							
Moisture Content	3.4	6.2	9.1	12	18							
Bulk Density	1.94	2.07	2.19	2.22	2.22							
Dry Density	1.88	1.95	2.01	1.98	1.89							

Initial Moisture Content	18	%
Maximum Dry Density	2.01	Mg/m3
Optimum Moisture Content	9	%
Paricle Density	2.85 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	05-11-17	Emma Sharp	
CA	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	37024
		Borehole / Pit No	TP20
Site Name	**Milton Keynes**	Sample No	
Soil Description	**Brown fine gravelly sandy silty CLAY.**	Depth Top	**1.00**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



Compaction Point	1	2	3	4	5	6						
Moisture Content	5.4	8.1	11	14	17	20						
Bulk Density	1.90	2.04	2.16	2.24	2.13	2.05						
Dry Density	1.80	1.89	1.94	1.97	1.82	1.71						

Initial Moisture Content	14	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	14	%
Paricle Density	2.85 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	05-11-17	Emma Sharp	
CA	Approved	06-11-17	Paul Evans	

UKAS TESTING 2788