PADDOCK GEO ENGINEERING

Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

GROUND INVESTIGATION

Beard Construction Limited

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P20-069gi

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ISSUE	DATE	Written by	Comment
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For and on behalf of Paddock Geo Engineering Limited			

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) were instructed by Beard Construction Limited; the Client, to undertake a Ground Investigation and Generic Site Contamination Assessment as Phase 2 of a Site Contamination Assessment in relation to the proposed residential development for the subject site, referred to as Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB.

We understand that a previous report has been produced for the site by the William Sale Partnership (WSP) in early 2020. The report was undertaken on behalf of Reading Council and we have reviewed the factual finding of the Technical Memo for the investigation. No reliance has been placed upon the previous investigation by PGE, however, some factual date relating to the ground conditions encountered has been referred to where appropriate.

1.1 Terms of Reference

- British Standards BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites – Code of Practice.
- CLR11 Model Procedures for the Management of Land Contamination, 2010, DEFRA/Environment Agency.
- PPG23 (PPS23) Planning and pollution control (contaminated land aspects), 2002
- GPLC1 Guiding Principles for Lan0d Contamination, 2010, Environment Agency
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA
- BS 5930:2015 Site Investigation Code of Practice
- BS EN 1997-2, Eurocode 7. Geotechnical design. Ground investigation and Testing
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- TRL Laboratory Report 1132:1984 – The Structure of Bituminous Road, Appendix C Table C1
- BS 5930:1999+A2:2010 Site Investigation Code of Practice
- BS EN 1997-2, Eurocode 7. Geotechnical design. Ground investigation and testing
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- BRE412 1996 Desiccation in Clay Soils
- BRE240 1993 Low Rise Buildings on Shrinkable Clay Soils: Part 1
- BRE241 1990 Low Rise Buildings on Shrinkable Clay Soils: Part 2

1.2 Objective

The objective of the Ground Investigation for the site comprised the following elements:

- An Intrusive Investigation
- A Geotechnical Appraisal including infiltration testing and in-situ CBR testing
- A Site Contamination Assessment and Generic Human Health Risk Assessment
- Ground Gas Risk Assessment including Monitoring

The scope of work was discussed and agreed with the Client prior to commencement. The investigation was carried out in order to provide data on the sub-soil characteristics of the site, the groundwater regime and also to recover samples for geotechnical laboratory testing and chemical analysis. This data was employed to derive a ground model for the site, foundation design criteria, infiltration data and a generic human health contamination risk assessment for the site.

2.0 THE SITE

2.1 Site Description

The subject site is located in an urban area, Norcot, a western suburb of Reading, the town centre of which is some 3.6km east.

The site comprises an irregular shaped parcel of land formerly occupied by Norcot Community Centre at the northern end of Lyndhurst Road. The site is currently covered with crushed demolition rubble and is hoarded on all sides. Vegetation and several trees of mixed species and maturity are present around the perimeter of the site.

The approximate centre of the site is located at grid reference 467880, 174510 and the site covers an area of approximately 0.19Ha. The site has a gentle becoming moderate slope down to the south towards a shallow north-south trending valley feature to the south of the site area.

There is a strip along the northeast border of the site is approximately 1m lower in elevated that the central and western area of the site

Site Location Plans and an Aerial Photograph are presented in Appendix A.

2.2 Proposed Development

The proposed development scheme is indicated by the client to involve the development of the site with a central three storey steel framed structure housing residential apartments and including associated access, parking, infrastructure and ornamental soft landscaping.

A Proposed development plan is presented within Appendix A.

3.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT SUMMARY

An associated Preliminary Contamination Risk Assessment (PRA) have been carried out for the site by PGE reference P20-069pra dated August 2020, with which reference should be made. Salient data from the PRA are summarised and extracted from the PRA and presented in the following Sections.

3.1 Geology, Hydrogeology and Hydrology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) Sheet 268 (scale: 1:50,000 dated 2005) for Reading and indicates the superficial deposits of Head. The Bedrock at the site is indicated to comprise generally Seaford Chalk Formation and Newhaven Chalk Formation (SNCK).

The geological mapping reviewed indicates several areas of Worked Ground some 450m southwest of the site.

The groundwater vulnerability map for the site and the surrounding area indicates the site to be underlain by Principal aquifer associated with the Chalk strata, and a Secondary A aquifer within the superficial Head deposits.

The site is not located within a Groundwater Source Protection Zone (SPZ).

No groundwater or surface water abstractions or discharge consent are indicated within 500m.

The nearest surface water feature is a drainage channel located 292m northeast of the subject site, likely to be the channel of the River Thames which flows west to east to the north of the site.

The site is not indicated to be with a flood risk zone or extreme flood risk zone.

3.2 Ground Stability and Mining

The site is underlain by Chalk strata and as such is subject to potential ground instability due to natural dissolution of this chalk strata or from anthropogenic historic mining activities creating cavities.

A Mining and Ground Stability Assessment data report and associated plans are presented in Appendix C. This data has been employed to assess the risk posed to the site from ground instability due to mining or natural solution cavities and is summarised below.

Feature	Comments	Risk Level to Site
Mining	Twenty one BGS recorded Mineral Sites are noted within 1km of the subject site. Three of these were within 500m of the site. Beecham Hill Chalk Pit – 207m south. Removed sand and gravel via opencast methods. Operation ceased. Kentwood Farm Chalk Pit – 265m northwest. Removed chalk via opencast methods. Operation ceased. Gipsy Lane Gravel Pit – 404m southwest. Removed chalk via opencast methods. Operation ceased. The remaining listings were all opencast operations and have now all ceased operations. The produced	Low to Moderate

Feature	Comments	Risk Level to Site
	a mixture of chalk, sand and gravel and common clay and shale.	
Man-made Cavities	Four listings are included under the heading man made mining cavities, all of which are beyond 500m of the site. The nearest listing is located 554m southwest.	Low
Natural Cavities	Two features, the nearest of which is 682m west and the second located 780m southwest. Both features are listed as solution pipe.	Low to Moderate
Collapse Ground Stability Hazard	On site hazard listed as very low.	Very Low
Ground Dissolution Stability Hazard	On site hazard has been identified as High with the risk within the wider area varying between very low and moderate.	High
Ground Movement	No data available.	Unknown

Given the above data it is considered that the site has at worst a **High** risk of ground instability natural dissolution cavities beneath the site.

3.3 Historic Land Use on the Site and Surrounding Area

The available historical maps span a period of 141 years, dating back to 1868.

The site was indicated to be an agricultural field from the earliest mapping, and from around 1936 appear to be located within the grounds of a Mission Church to the northeast of the site. The site was redeveloped in circa 1969 with a central structure and apparent domestic garages along the northwest and southwest boundaries. The central structure was latterly labelled at Norcot Clinic.

The surrounding area was undeveloped until circa 1936 when developed with residential housing. The areas of housing were extended during the 1960. Several chalk and gravel pits were noted to the southeast, east and northeast. Some of which were later developed over with residential housing and some of which are now located within an area of public green space named as McIlroy Park.

The historical mapping did not indicate any potential significantly contaminative land uses within 250m of the site.

3.4 Waste Management and Landfill Sites

Based on the report compiled by Envirocheck, there are two historical landfill sites located within 500m of subject site. These comprise Thirlmere Avenues, 72m west and Beecham Hill 84m south. First and last input are not listed for either site and both sites list deposited waste are inert and industrial waste.

A single registered waste transfer site is located 749m southeast of the site. Authorised wastes are listed as hydrocarbons, hydrocarbon solvents, and oxygen containing compounds. Prohibited wastes are listed as waste N.O.S..

3.5 Potential Contaminant Sources Summary

The potential contaminants are based on the data within CL8, Department of the Environment (DoE) Industry Profiles, the current and historic site uses.

Potential Contamination Sources

Current Potential On-Site Contaminant Sources	**Potential Contaminants**
Currently disused land covered with demolition rubble.	Asbestos
Historic Potential On-Site Sources	**Potential Contaminants**
Former development on site from 1969 (labelled for part of history as clinic)	Asbestos, metals, inorganics, hydrocarbons (from vehicle parking and movement)
Former domestic garages	Asbestos, hydrocarbons.
Former use as part of Church yard / garden	N/A
Agricultural fields – use of herbicides and pesticides	Agrichemicals
Current Potential Off-Site Contaminant Sources	**Potential Contaminants**
Sheltered housing / home to northeast of site.	N/A
Residential land use surrounding site	N/A
Historic Potential Off-Site Contaminant Sources	**Potential Contaminants**
Former Mission Church and later Sheltered housing / home to northeast of site.	N/A
Residential land use surrounding site	N/A
Agricultural fields – use of herbicides and pesticides	Agrichemicals
Infilled excavations from chalk and gravel pits and historical landfill 72m west	Ground gases

3.6 Conceptual Contaminant-Pathway-Receptor Model

The information gathered from the associated Preliminary Contaminated Land Risk Assessment was compiled to produce a Contaminant-Pathway-Receptor (C-P-R) model, which has been extracted and presented below.

The risk posed to site construction workers has not been assessed as any risks are considered to be mitigated through good site practices.

Preliminary Contamination Source-Pathway-Receptor Table

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
Current Disused land surface with demolition rubble. Residential housing and sheltered housing / home to northeast. **Historic** Agricultural land initially. Site was part of ground of a Mission Church to the north from circa 1936. Later developed as Clinic on site and sheltered housing / north to north. Residential housing first developed in 1930s surrounding areas and expanded in 1960s. Historical landfill and infilled chalk, gravel and clay pits in surrounding areas. Nearest located some 72m west.	Dermal / direct contact	Current site users (Agricultural field)	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		No	
	Vapour migration		No	
	Ground gas migration		No	
	Dermal / direct contact	Future site users (residential use with plant uptake)	Yes	Low
	Direct ingestion		Yes	Low
	Direct inhalation		Yes	Low
	Inhalation of Radon gas		No	
	Inhalation of wind-blown dust		Yes	Low
	Vapour Migration onto the site		Yes	Low
	Ground gas migration		Yes	Low
	Direct contact	Services (following redevelopment)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent Properties	No	
	Migration of contaminants off site: aqueous phase		No	
	Vapour migration		No	
	Inhalation of wind-blown dust	Ecological Impacts	No	
	Migration of contaminants: non-aqueous phase		No	
	Migration of contaminants: aqueous phase		No	
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	Yes	Low
	Migration of contaminants from site: aqueous phase		Yes	Low
	Migration of Contaminants: non-aqueous phase	Surface Waters	No	
	Migration of contaminants: aqueous phase		No	

3.7 Preliminary Contamination Risk Assessment Conclusions

The preliminary contamination risk assessment has identified complete Contaminant-Pathway-Receptor (CPR) linkages with a maximum **Low** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

The most significant of these potential source drivers, representing the greatest potential to impact the proposed site user (equivalent to residential without plant uptake) is the former development including domestic garages on site, now demolished with the likely presence of asbestos on site due to the age of the former buildings and the possible presence of hydrocarbon contamination due to vehicle movements and parking on site.

The site was initial apparently open agricultural land with the potential for use of agrichemicals, however, given the time elapsed and subsequent developments on site, the risk of residual agrichemicals remaining on site is minimal and the risk is considered very low.

There are records of two historical landfill since within 100m of the site and several potentially infilled areas from former chalk, sand and gravel and clay pits excavated in the wider areas. As such, there is considered to be the potentially for ground gases to be generated and migrate through any near surface highly permeable soils to impact the proposed highly sensitive end site users.

The proposed site use will allow contact with potential contaminant through direct contact, ingestion and inhalation pathways. As the site is to be residential apartments with minimal ornamental soft landscaping, however, some of the pathways such as direct ingestion or soil or ingestion via fruits and vegetables will be limited.

Given the above discussion, in order to verify that 'Significant Possibility of Significant Harm' does not exist with respect to the potential contamination sources, and the proposed end user, it is recommended that a ground investigation be undertaken across the site to confirm the risks to receptors and confirm ground conditions with respect to potential geotechnical and geo-environmental risks. Specific objectives of this investigation should include sampling and assessment of the imported aggregate on the cattle barn area in the northwest of the site. Ground gas monitoring wells should be installed in order to assess the ground gas risk regime beneath the site.

Further to this, should any unexpected contamination be identified during the future development groundworks, then a suitably qualified and experienced Geo-Environmental Engineer should be consulted and if necessary further assessment should be undertaken.

3.8 Potential Geotechnical Risk Summary

A **high** geotechnical risk was identified at the site associated with dissolution instability on the site.

Therefore, it is recommended that a geotechnical appraisal of the site be carried out to derive foundation design criteria and an initial ground instability assessment.

4.0 INTRUSIVE INVESTIGATION FIELDWORKS

An intrusive investigation was designed with reference to the data from the associated Preliminary Contamination Risk Assessment and Geotechnical Desk Study to establish the ground conditions

beneath the site in relation to the development of a Ground Model for the proposed development. The works were also employed to gather geotechnical data to derive geotechnical design parameters, gather infiltration data and to assess the contamination status of the near surface soils and potential for ground gas contamination beneath the site.

The main fieldworks were carried out between Wednesday 29th and Friday 31st July 2020 and comprised the forming of 2no. machine excavated Trial Pits, 6no. percussion liner boreholes and 7no. dynamic probes to assess the ground conditions, recover samples and undertaken infiltration testing.

All exploratory positions were cleared of buried services employing service plans where available and a Cable Avoidance Tool (CAT) and signal generator survey.

These exploratory positions were formed to allow general site coverage and to focus on the highlighted potential contamination features identified during the above preliminary contamination risk assessment.

The table below details the rationale of the locations of the exploratory points.

Borehole Location Details

Exploratory Location (Depth)	Location Details
WS101 (5.00m)	General site coverage, assess ground conditions and undertake ground gas monitoring.
WS102 (5.00m)	General site coverage and assess ground conditions.
WS103 (5.00m)	General site coverage, assess ground conditions and undertake ground gas monitoring.
WS104 (5.00m)	General site coverage and assess ground conditions.
WS105 (5.00m)	General site coverage, assess ground conditions and undertake ground gas monitoring.
WS106 (5.00m)	General site coverage and assess ground conditions.
SA1 (1.50m)	General site coverage and assess infiltration potential
SA2 (2.40m)	General site coverage and assess infiltration potential

The depth of the boreholes / DP and trial pits, sample details, strata descriptions and comments on the groundwater conditions are detailed on the Logs which are presented in Appendix B along with an Exploratory Point Location Plan.

Hand vane soil strength testing was carried out on the encountered fine-grained soil arisings. The relative density of the granular soils encountered was estimated based on logging of the arisings on site.

Soil strength testing was undertaken in the field employing Standard Penetration Testing (SPT) carried out at 1.0m centres within the Window Sample boreholes and hand vane shear strength testing in fine grained soils from intact borehole liner arising. Logging where chalk strata was encountered is broadly in accordance with CIRIA C574.

The Trial Pits SA1 and SA2 were also to allow infiltration testing to the BRE365 methodology and assess infiltration potential of the near surface strata.

The trial pits were backfilled with arisings once logged and tested.

Boreholes WS101, WS103 and WS105 were installed with groundwater and ground gas monitoring wells to full depth comprising 5.00m 35mm internal diameter slotted pipe and completed at surface with 1.00m of plain pipe to surface level.

The monitoring wells were left proud of the ground for ease of identification during return visits.

A PID was used to screen samples for VOCs during the siteworks.

A series of photographs taken during the fieldworks are presented in Appendix B.

4.1 Encountered Strata

The exploratory point arisings were logged by a Geotechnical Engineer generally in accordance with BS5930:2015. The geology sequence beneath the site was similar across the with a thin veneer of Made Ground over fine grained Head deposits with a mixture of fine and coarse grained Head deposits at depth. The depth of Head deposits varied significantly across the site with Chalk encountered locally within WS101 and WS102 on the western area of site which is also the topographically highest area of the site. The strata encountered is detailed below.

A log of the exploratory holes and Exploratory Point Location Plan showing the positions investigated are presented in Appendix B.

MADE GROUND/TOPSOIL

Made Ground was encountered across the site and typically comprised a surface layer of coarse GRAVEL of brick, macadam, limestone, concrete and locally ash of demolition rubble to around 0.10m to 0.20m depth.

Underlying the surface gravel was soft to stiff grey brown and brown variably gravelly sandy CLAY and gravelly clayey silty SAND with gravel of brick and concrete fragments. Locally rootlets were noted to approximately 0.5m depth.

Such Made Ground deposits were encountered to between 0.40m and 1.00m depth across the site.

HEAD

Head deposits were encountered within all trial pits and boreholes across the site directly underlying the Made Ground. The Head deposits were highly variable in consistency and composition.

Broadly the Head deposits typically comprised stiff locally firm orange brown and brown variably sandy gravelly CLAY to between 2.00m and the base of the unit at 4.50m depth in WS101. The gravel fraction comprising predominantly flint but occasionally chalk or sandstone.

Beyond depths of approximately 2.00m to 3.90m the Head deposits were predominantly coarse grained in nature and comprised medium dense brown and orange brown variably clayey SAND and GRAVEL / gravelly SAND. Such coarse grained Head deposits were encountered to the base of the boreholes at 5.00m depth where encountered.

Loose brown sandy GRAVEL was encountered within borehole WS106 from 4.00-5.00m depth.

Trial pit SA2 was undertaken adjacent to WS102, however, WS102 encountered coarse grained material from 2.0m depth, whereas the soils within trial pit SA2 where fine grained to 2.40m depth. In addition, the previous WSP report indicates some bands of fine grained Head deposits interbedded with the coarse grained Head at depth. It is likely that the Head is highly variable both laterally and vertically with pockets, bands and lenses of sand and gravel in varying proportions within a predominantly fine grained matrix as opposed to distinct layers of fine and coarse grained soils.

The base of the Head deposits was only proven within boreholes WS101 and WS102 at 4.5m depth on the western area of site. Head deposits extended to beyond the base depth of the percussion liner sampling boreholes at 5.0m depth across the remaining area of the site.

CHALK

The SNCK Chalk stratum was encountered within boreholes WS101 and WS102 only at depth of 4.50 bgl. The SNCK comprised structureless chalk composed of white gravelly CLAY. The gravel fine to medium angular extremely weak low density chalk with occasional black flint.

Chalk was encountered within the previous WSP report at depth of between 3.50m and 5.20m on the southern and western area of the site and at a depth of 8.90m bgl on the northern corner of site.

DYNAMIC PROBING

Dynamic probing was undertaken in seven location across the site to determine the soil strength profile at depth, and in order to estimate the Head / Chalk boundary.

A low SPT with an N-value of N=6 was recorded within boreholes WS101 at 4.0m depth. This appears to be just above the interface of the Head and Chalk. Dynamic probe DP1 was undertaken adjacent to borehole WS101 and indicated no correlating significant drop in blow count at the same depth.

Low SPT N-values of N=6 and N=2 were recorded at 3.0m and 4.0m depth respectively in borehole WS106. Dynamic probe DP6 was undertaken through the base of borehole WS106. An initial blow count of 1 per 100mm was recorded from the base of the borehole (5.50m) to 6.00m depth where an increase in blow count was observed, probably due to drilling disturbance.

Dynamic probe DP5 was undertaken through the base of borehole WS105 and indicated very low blow counts of 0-1 between 6.00m and 7.30m depth.

Dynamic probe DP7 was undertaken on the eastern edge of the site and indicated very low blow counts of 0-2 at depths of between approximately 5.3m and 7.4m depth.

Based upon the above no distinct indication of a Head / Chalk boundary was discernible within the DP records. Several localised high blow counts were observed which are likely to be attributed to cobbles of flint.

With the exception of a lower than average SPT N-value within WS101, the low SPTs and low DP blow counts at depth typically occurred within the positions on the east and north east area of the site. Soft spots were also noted in this area within the logs from the previous WSP investigation at between approximately 6-8m depth. The site is noted to be at **High** risk of dissolution feature within the chalk. On this basis, there is conjectured to be a dissolution feature within the underlying Chalk strata at depth on the central northeastern area of the site, with possible spalling of the overlying Head deposits resulting in lower than typical in-situ strength / density for these deposits.

4.2 Groundwater Conditions

No groundwater was encountered during the site works within the trial pit or the boreholes.

Groundwater was encountered within one of the previous WSP GI boreholes at 4.90m bgl with no further data. Water was not struck in any of the other WSP boreholes to a depth of 17.00m bgl, so this is suspected to be localised perched water at the Head/Chalk interface. This would explain some of the strata softening identified at this depth within the PGE investigation works, such as in WS104 and WS106.

Subsequent monitoring of the groundwater level indicated no groundwater within the standpipe positions.

4.3 Ground Gas Conditions

The PRA highlighted the potential for migration of ground gases from two historical landfills 72m west and 84m south of the site along with several chalk, gravel and clay pits in the wider area, should infilling have occurred.

Ground gas monitoring is ongoing to allow a ground risk assessment to apply a precautionary approach given the highly sensitive proposed residential land use on the site.

Three boreholes, WS101, WS103 and WS105 were installed in order to monitor groundwater and ground gas levels. The ground gas and groundwater levels were monitored on an initial 4no. visits following the fieldworks during July 2020.

Given the risk of ground gases concluded in the associated PRA further monitoring visits are scheduled dependent upon weather and atmospheric pressure conditions. The report will be updated and reissued once these are completed.

4.4 Sampling Strategy

Disturbed samples of the strata encountered were recovered at regular intervals within all of the exploratory points to the full depth of the investigation for geotechnical laboratory testing.

Samples were also recovered in suitable containers for chemical analysis from the top metre of soils from the general site area. Shallow samples were also olfactorily screened for agrichemicals.

5.0 CONTAMINATION ASSESSMENT

5.1 Chemical Analysis

A total of 6no. soil samples were sent to an external laboratory to obtain total soil concentrations for a range of priority contaminants.

The suite of analysis was decided based on consultation of the Contamination Exposure Assessment (CLEA) supporting documents and consideration for the former site and surrounding area land uses.

The suite of testing included:

- Asbestos screen for near surface Made Ground samples
- Metals and Inorganic compounds
- Polyaromatic Hydrocarbons (PAH) USPEA Priority 16 Compounds
- Total Petroleum Hydrocarbons (TPH) EC10-EC40 screen

Results of the chemical analysis are presented in Appendix C.

5.2 Human Health Assessment Criteria

The assessment has been carried out in accordance with the Contaminated Land Exposure Assessment (CLEA) methodology as detailed within CLR11 2004. The assessment criteria employed are based on the proposed final land use of the site. For this site, a worst-case proposed land use of 'Residential without Home Grown Produce' will be employed for all areas of the site.

In March 2014 DEFRA published new guidance detailing the Category 4 Screening Levels (C4SL) system for the classification of contaminated land. The C4SL system was published to assist with revised statutory guidance published in 2012 for Part 2a of the Environmental Protection Act.

It introduces a new four category system for the classification of land under Part 2a where a Significant Possibility of Significant Harm to human health has been concluded. The categories correspond to Category 1 – land where the level of risk is clearly unacceptable, to Category 4 – where the level of risk posed is acceptably low. In short, land that passes the category 4 test "should not be capable of being determined as contaminated land under Part 2a".

Currently no statutory chemical guidance levels for land and controlled waters contamination exist in the UK. Therefore, the reported soil total contaminants concentrations will be compared to In-House Generic Assessment Criteria (GAC) used as C4SLs.

These In-House GACs are presented in Appendix C and are generally based on the LQM/CIEH S4UL values.

The S4UL values employed are based on a Soil Organic Material (SOM) concentration of 2.5% for the initial screening.

A S4UL has not been published for lead. The GAC value employed has been derived using the DEFRA C4SL[1] toxicological data and exposure parameters and the CLEA Software V1.071:2015.

The C4SL value employed for the lead GAC, for a residential without plant uptake land use scenario, is based on a blood lead level of 3.5ug/dl for the lower level of toxicological concern employing the Integrated Exposure Uptake Biokinetic model (IEBUK) estimated blood lead concentrations in children and employs the exposure parameters within the DEFRA C4SL report.

A minimal risk approach was employed to derive the S4UL values, whereas the C4SL model uses a lower level for risk model, which is deemed generally less conservative than the minimal risk approach. However, the use of a lower level for risk model screening criteria is considered strongly precautionary and is generally considered appropriate for use within the planning regime.

However, with consideration of the C4SL and S4UL values there still remains some gaps in the available chemical and/or toxicological data for non-priority contaminants and therefore a limited number of previously used CLEA SGVs and ICRCL guideline values have been retained and include those for pH, sulphide, sulphur and water-soluble boron.

Should an exceedance be noted when site priority contaminant concentrations are compared to the employed GACs, a site specific assessment criteria can be derived using CLEA software or similar human health risk assessment software. This can also include consideration of bio-availability of the contaminants if required.

Further to the above, samples of near surface Topsoil and Made Ground are generally screened for asbestos presence. Generic assessment criteria do not exist currently for asbestos presence in soil within the UK. Therefore, where asbestos is identified in soil it is recommended that further risk assessment be carried out by suitably qualified and registered persons.

5.3 Groundwater Assessment Criteria

A detailed controlled water risk assessment was outside the scope of this report.

6.0 GENERIC HUMAN HEALTH SITE CONTAMINATION RISK ASSESSMENT

Statistical analysis of the data set is carried out employing the statistical method detailed in CL:AIRE Document 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', if exceedances are noted on individual comparison of the contaminant concentrations to the employed assessment criteria, which allows a derivation of a true mean concentration (μ).

The statistical analysis also assesses if the data is normally distributed and considers high levels to determine if they are part of the underlying data set due to 'site wide contamination' or due to contamination 'outliers'.

The statistical analysis derives a 95th percentile upper confidence limit of μ for each determinands for comparison to the suitable employed guidance level (GAC) or 'Critical Concentration (Cc)'.

The reported soil sample total contaminant concentrations data set was placed into a single averaging area comprising the near surface soils across the site. Further to the statistical analysis the chemical results were compared individually to the relevant GACs.

[1] DEFRA SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Final Project Report (Revision 2) 2014

6.1 Total Soil Concentrations – Shallow Soils <1.0m Depth

The priority contaminant concentrations from the 6no. samples of shallow soils analysed, and a summary of the results are presented in Appendix C and are detailed in the following section.

Heavy Metals

The comparison of the reported heavy metal concentrations within the shallow soil samples analysed indicated 95th percentile upper confidence limit of μ concentrations which were below the relevant Residential without Home Grown Produce GACs employed for all determined.

Further to this individual comparison of the concentrations data set to the relevant GAC did not indicated any exceedances.

Hydrocarbons

The comparison of the reported hydrocarbon concentrations within the shallow soil samples analysed indicated 95th percentile upper confidence limit of μ concentrations which were below the relevant Residential without Home Grown Produce GACs employed for all determined.

Further to this individual comparison of the concentrations data set to the relevant GAC did not indicated any exceedances.

Other Priority Contaminants

The comparison of the reported total other priority contaminant concentrations within the shallow soil samples analysed indicated 95th percentile upper confidence limit of μ concentrations which were below the relevant Residential without Home Grown Produce GACs employed for all determined.

Individual comparison of the other priority contaminant concentrations data set to the relevant GAC did not indicated any exceedances.

Analysis for the presence of asbestos was carried out on some shallow samples. One of the five samples tested positive for Asbestos, the positive sample was recovered from within WS105 at 0.80m depth. The asbestos was identified as Chrysotile- Loose Fibrous debris. Subsequent quantification testing was carried out and indicated an asbestos concentration of <0.001%.

Olfactory screening of the shallow samples did not indicate any significant odorous agrichemical concentrations.

6.2 Controlled Groundwater Risk Assessment

A detailed controlled groundwater risk assessment was outside the scope of this report.

6.3 Ground Gas Risk Assessment

The PRA report concluded that there was a potential risk of contamination of the site from ground gases. Therefore, monitoring standpipes were installed during the fieldworks for the purpose of monitoring ground gas and groundwater level.

6.3.1 Sources

The underlying natural strata comprises Head and Chalk strata. Limited depth of Made Ground were encountered on the site and there were no significantly organic soils that would constitute a potential source of ground gases encountered that had not been previously identified.

The primary potential source of ground gases is deemed to be two historical landfills some 72m west and 84m south of the site. Deposited waste on these sites are listed as inert and industrial waste. No data is provided on the first and last input dates of the site. In addition, several old chalk, gravel and clay pits are located within the wider area, some of which appear to have been infilled.

On the above basis there is the possibility of a significant risk that ground gases will be generated and have the potential to migrate and accumulate within any enclosed spaces in the proposed development.

Therefore, based upon the above discussion, a Low Environmental Risk classification for the generation of carbon dioxide and methane gases on site has been concluded for the site in accordance with CIRIA C665 and BS8576:2013.

6.3.2 Pathways

The predominating pathway concluded in the CGM is for the migration of ground gases from the off-site potential gas generation sources and migration to impact any proposed structures through the near surface Head and underlying higher permeable Chalk.

Groundwater was not encountered within any of the excavation during the site work or during the subsequent monitoring of the standpipes to date. On this basis no retardation of ground gas flow beneath the site is likely to occur due to groundwater.

Further monitoring visits are planned, and the report will be updated upon completion of the monitoring phase.

6.3.3 Receptors

The main receptors of concern are the future site users of the proposed residential development on the site through inhalation of asphyxiant gases (CO_2) and explosion from flammable gases (CH_4) within any new structures.

6.3.4 Ground Gas Monitoring

Monitoring wells were installed within 3no. of the boreholes (WS101, WS103 and WS105) on the site during associated ground investigation works on 29th July 2020.

The borehole monitoring was each installed to the full depth of the borehole at 5.00m bgl with 35mm internal diameter HDPE well pipe at the base and 1.0m of plain well pipe at the surface.

The borehole installations were backfilled with 3-6mm gravel and a pelleted bentonite seal was created for the top 1.0m of pipe. The well was finished with a cap and gas valve on the pipe and was left proud of the ground surface for ease of identified during return monitoring visits. An Exploratory Point Location Plan showing the monitoring well locations are presented in Appendix B.

The wells were positioned to give general site coverage for subsequent ground gas and groundwater monitoring. The monitoring was carried out by PGE using a Geotech GA5000 Gas Analyser.

The results of the initial monitoring are summarised in the table below, with the highest gas level within each well highlighted. The monitoring data is presented in Appendix E.

Ground Gas Monitoring Summary

Borehole	Date	GW Level (mbgl)	Atmospheric Pressure (Mb)	Maximum Methane (% v/v)	Maximum Carbon Dioxide (% v/v)	Lowest Oxygen (% v/v)	Max sustained Flow (l/hr)
WS101	31/07/2020 to 20/08/2020	DRY	1000-1016	0.0	2.20	16.30	0.0
WS103		DRY		0.0	1.00	17.10	0.1
WS105		DRY		0.0	1.40	16.20	0.0

The ground gas monitoring on the site indicated generally low levels of flammable gas (methane) concentrations with a maximum of 0.0% v/v. A value of 0.1% v/v is utilised for the risk assessment. Carbon dioxide concentrations were recorded at a maximum level of 2.20% v/v in WS101.

Sustained gas flows were not noted; thus, a flow 0.1l/hr has been assumed for modelling and the following risk assessment.

6.3.5 Ground Gas Risk Assessment

The results of all the monitoring have been initially assessed in accordance with CIRIA C665 2007 – Assessing the risks posed by hazardous gases to building.

For the subject development of proposed residential development, a CIRIA C665 2007 Situation A – Any development other than Situation B e.g. factories, shops, commercial, warehouses, school, cinema, sports centres, stadiums, high rise housing with basements etc.

A maximum methane concentration of 0.1% v/v and carbon dioxide concentration of 2.20% v/v were identified during the monitoring with a maximum sustained gas flow rate of 0.1 l/hr detected.

This gives a maximum Gas Screening value of 0.0001l/hr for methane and 0.0022l/hr carbon dioxide.

The calculated gas screening values allow a Characteristic Situation 1 (Very Low Risk) employing the Modified Wilson and Card classification detailed in CIRIA C665 2007.

6.3.6 Ground Gas Risk Assessment Conclusions

An initial Conceptual Gas Model has been produced for the site which indicates a low ground gas risk to the proposed residential end site users.

Initial ground gas contaminant monitoring comprising 4no. visit has been carried out on the site in July and August 2020.

The gas monitoring results to date gave a worst-case gas screening value of 0.0022l/hr for CO_2. This allows a Characteristic Situation 1 employing the Modified Wilson and Card classification detailed in CIRIA C665 2007.

The monitoring visits carried out to date indicated atmospheric pressure of above 1000mb. A minimum of 6 visit over a period of 3 month is recommended for a very low classification of gas generation potential with at least 2 no. at atmospheric pressures below 1000mb as per the CIRIA C665 guidance.

The further monitoring visits are scheduled which will allow the risk assessment refined prior to development of the site. The report will be updated and reissued once this monitoring is complete.

6.4 Soil Waste Assessment

The HazWaste online classification system was employed to assess the waste classification employing the total determinand concentrations within samples of the near surface Made Ground and near surface natural soils, in relation to groundworks arising disposal. This indicated the samples of the near surface soils tested to have a Non-Hazardous classification with EWC code **17 05 04.**

Waste Acceptance Criteria (WAC) testing was also carried out to determine if the soils tested could be disposed of into an inert facility. This indicates that the samples of soils had leachable determinand levels below the related guidance levels for disposal into an inert facility. Based upon the testing carried out the waste soils generated on site may still be suitable for disposal at an inert facility.

Further to this, asbestos fibres were identified within one sample. The sample from WS105 at 0.80m depth tested positive with the asbestos being identified as Chrysotile – Loose Fibrous debris. Subsequent quantification testing was carried out and indicated an asbestos concentration of <0.001%. As such, based upon the testing to date the Made Ground soils on site is not necessarily considered as asbestos impacted soils.

The results of the soil waste classification testing are presented in Appendix C.

On the above basis, it is considered that the soils tested would classify as non-hazardous waste and may be suitable for disposal into an inert facility.

All waste classification should be confirmed with the waste receiving facility prior to disposal. The waste receiving facility, especially if not an inert landfill, may also require the total soil priority contaminant concentrations which are also presented in Appendix C.

6.5 Potable Water Supply Pipe

Guidance on the type of potable water supply pipe to be employed on residential development sites is given by UKWIR, who have published guidance for the type of potable water supply pipework to be employed for new structures on reused land.

Samples were recovered from shallow depth on the site. These samples were analysed for a suite of contaminants which are considered to be generally in accordance with the UKWIR requirements. The analysis results indicated generally very low levels of hydrocarbon (TPH(C10-C40) and PAH) concentrations at buried pipe depth (0.8m bgl).

Therefore, conventional PE pipe may be suitable for the potable water supply pipework on site.

The classification will be decided by the local water company and their advice should be sought prior to the laying of any potable water supply pipework. The local water company will likely require furthermore detailed sampling, testing and assessment prior to pipe selection.

6.6 Site Contamination Assessment Discussion

Generally low levels of priority contaminants were noted in the shallow soils from across the site with no exceedances compared to the most stringent residential GACs.

Given the above, the shallow soils across the majority of the site are **not** considered to pose an unacceptable risk to the proposed highly sensitive end site users. The exception being the very low level asbestos impacted soils identified in Made Ground from WS105 at 0.80m depth. Therefore, measures should be put in place to ensure that this soil is not able to be contacted by the end users of the site. These mitigation measures could comprise removal of the impacted soil and replacement with clean soil in open areas of the site. From the proposed development plan presented in Appendix A, it would appear that the WS105 location is beneath the main structure, therefore, creating a suitable separation from these soils.

Notwithstanding the above assessment, if any unexpected or previously unidentified contamination is discovered during the site development works, a suitably qualified and experienced person should be contacted so any further assessment required can be carried out.

6.7 Updated Conceptual Site Model

An assessment of the risk posed by the identified contaminant concentrations has been carried out employing the Source-Pathway-Receptor (S-P-R) methodology detailed within the CLEA methodology.

Updated SPR Flowchart

Potential On-Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete
Very low levels of asbestos fibres in MG from WS105 at 0.80m depth. (Under proposed building footprint)	Dermal/Direct Contact	Current Site Users (Disused site)	N
	Direct Ingestion		N
	Direct Inhalation		N
	Inhalation of Radon Gas		N
	Inhalation of Wind Blown Dust		N
	Vapour Migration		N
	Gas Migration		N
	Dermal/Direct Contact	Future Site Users (Residential without plant uptake)	Y
	Direct Ingestion		N
	Direct Inhalation		Y
	Inhalation of Radon Gas		N
	Inhalation of Wind Blown Dust		Y
	Vapour Migration		N
	Ground Gas Migration		N
	Direct Contact	Service	N
	Migration of Contaminants – Non-Aqueous Phased		N
	Migration of Contaminants – Aqueous Phased		N
	Migration of Contaminants – Non-Aqueous Phased	Adjacent Properties	N
	Migration of Contaminants – Aqueous Phased		N
	Vapour Migration		N
	Inhalation of Wind Blown Dust	Ecological Impacts	N
	Migration of Contaminants – Non-Aqueous Phased		N
	Migration of Contaminants – Aqueous Phased		N
	Migration of Contaminants from site – Non-Aqueous Phased	Controlled groundwater	N
	Migration of Contaminants from site – Aqueous Phased		N
	Migration of Contaminants – Non-Aqueous Phased	Surface Waters	N
	Migration of Contaminants – Aqueous Phased		N

The risk to construction workers has not been assessed as generally any risks posed to site construction workers from identified contamination can be mitigated through good site practices and robust sitework risk assessment. However, works carried out on sites where asbestos fibres have been identified must be carried out by a suitable contractor and a site specific Health and Safety Plan for site construction workers must be produced in line with CAR 2012[2].

[2] Control of Asbestos Regulations 2012

7.0 FOUNDATION DESIGN CRITERIA

7.1 Geotechnical Laboratory Testing

Representative samples were sent to an external laboratory following visual assessment and logging of the borehole and trial pit arisings. The testing programme was designed to classify the properties of the encountered soils and to determine the chemistry of the soil in relation to the design of buried concrete.

7.1.1 Atterberg Limits

The results of 7no. Atterberg Limit determinations carried out on samples of fine-grained soils encountered are presented in Appendix D. The results have also been plotted on a Casegrande Plasticity Chart, also presented in Appendix D.

The soils tested have been assessed for their volume change potential (VCP) in accordance with NHBC Standards Chapter 4.2 and are detailed in the table below.

Atterberg Limit Testing

Exploratory Point and Strata	Depth (m)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm	Casegrande Classification	NHBC Modified Plasticity Index	NHBC Volume Change Potential
Head									
WS101	1.50	19	39	18	21	98	ClM	21	Medium
WS102	1.60	17	35	19	16	35	ClM	5.6	Non-plastic
WS103	1.80	17	32	15	17	32	ClL	5.4	Non-plastic
WS104	0.80	13	38	18	20	38	ClM	7.6	Non-plastic
WS104	3.90	14	31	16	15	31	ClL	4.6	Non-plastic
WS105	2.50	18	32	16	16	32	ClL	5.1	Non-plastic
WS106	2.50	18	35	17	18	35	ClM	6.3	Non-plastic

The samples of fine grained Head deposits have Modified Plasticity Indices (MPI) of between 4.6% and 21% and therefore can be classified as **non-plastic to Medium** Volume Change Potential employing the NHBC classification scheme.

7.1.2 Natural Moisture Content

A test was performed to determine the natural moisture content (NMC) of the fine-grained soil subjected to Atterberg Limit testing and is presented within Appendix C.

7.1.3 Particle Size Distribution

Particle Size Distribution (PSD) testing was carried out to classify the grading of the granular Head soil encountered. The results of the testing are presented in Appendix D and on the logs presented in Appendix B.

The grading of the granular Head deposits indicates a fines content of 12% and 21.1% and thus, as below 35% fines, the soils can be considered as non-plastic and hence non-shrinkable with associated volume change potential as outlined in NHBC and LABC guidance.

7.1.4 pH and SO_x

The level of pH, sulphate and other determinands within the BRE SD1 Suite have been determined for selected samples from above and at the proposed likely shallow foundation invert level, to assess the appropriate Design Sulphate Class for buried concrete in accordance with BRE Special Digest 1 Table 2. The results of the analysis are presented in Appendix C along with the chemical laboratory results.

The table below summarises the reported pH values, Total Sulphate and 2:1 Water Soluble Sulphate concentrations.

The assessment assumes that all of the Total Sulphate (%) is in a suitable form that following ground disturbance could oxidise.

Design Sulphate Class for Site

Borehole	Depth	pH	Water Soluble Sulphate (2:1 Water Extract) (mg/l)	Total Sulphate (%)	Appropriate Design Sulphate Class
WS101	0.80	7.3	20	0.015	DS-1
WS101	4.50	8.3	12	0.029	DS-1
WS102	2.60	8.1	3.3	0.016	DS-1
WS103	1.80	8.0	6.8	0.011	DS-1
WS104	0.40	8.0	19	0.016	DS-1
WS104	4.50	8.0	42	0.025	DS-1
WS105	0.80	7.3	33	0.019	DS-1

The Design Sulphate Class for the soils across the site was consistent both laterally and with depth and is DS-1 with a worst case Aggressive Chemical Environment for Concrete (ACEC) site classification of AC-1s.

7.2 In-Situ Testing

A Hand Vane was employed on fine grained soils within the Trial Pits to assess the shear strength of the fine grained soils encountered.

Standard Penetration Testing (SPT) was carried out at 1.0m centres within the Window Sample boreholes. A Hand Vane was also employed on fine grained soils within the intact liner arisings to assess the shear strength of the fine-grained soils encountered. The SPT and Hand Shear vane values are presented with the Exploratory Point Logs in Appendix B.

The fine grained Head Deposits soils were typically of medium to high strength at depths of up to 2.0m depth with hand shear vane readings of between 23kPa and 81kPa. Fine grained Head deposits were noted to be low to medium strength between 2.0m and 4.0m depth with hand shear vane readings of between 23kPa and 47kPa. The SPT N ranged between 6 to 21 with no corresponding increase with depth as is typically shown in fine grained strata. The SPT testing result correlate to a soil strength of between 30kPa and 126kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

Where coarse grained Head deposits where encountered SPT N-values were recorded between 2 and 28. Except for the single result of N=2 within WS106 at 4m depth the lowest SPT within the coarse grained strata was 10, and as such typically the coarse grained strata is classified as medium dense.

An SPTs N-value within the Chalk deposits in WS101 was recorded as 16.

8.0 ENGINEERING EVALUATION

8.1 Introduction

The proposed development scheme is indicated by the client to involve the development of the site with a three storey steel framed structure centrally housing residential apartments and including associated access, parking, infrastructure and ornamental soft landscaping.

8.2 Foundation Design Considerations

Made Ground was encountered across the site and typically comprised a surface layer of coarse GRAVEL of demolition rubble to between 0.10m to 0.20m depth. Underlying the surface gravel was soft to stiff grey brown and brown variably gravelly sand CLAY and gravelly clayey silty SAND. Made Ground deposits were encountered to between 0.40m and 1.00m depth across the site.

Head deposits were encountered within all trial pits and boreholes across the site directly underlying the Made Ground. The Head deposits were highly variable in consistency and composition. Broadly the Head deposits typically comprised stiff locally firm orange brown and brown variably sandy gravelly CLAY to between 2.00m and the base of the unit at 4.50m depth in WS101.

Beyond depths of approximately 2.00m to 3.90m the Head deposits were predominantly coarse grained in nature and comprised medium dense, locally loose brown and orange brown variably clayey SAND and GRAVEL / gravelly SAND. Such granular Head deposits were encountered to the base of the boreholes at 5.0m depth where encountered. The base of the Head deposits was only proven within boreholes WS101 and WS102 at 4.50m depth on the western area of site. Head deposits extended to beyond the base depth of the percussion liner sampling boreholes at 5.00m depth across the remaining area of the site.

The SNCK Chalk stratum was encountered within boreholes WS101 and WS102 only at depth of 4.50 bgl. Th SNCK soil comprised structureless chalk composed of white gravelly CLAY. The gravel fine to medium angular extremely weak low density chalk with occasional black flint.

Chalk was proven within the previous investigation at depth of between 3.50m and 5.20m on the southern and western area of the site, and at a depth of 8.90m bgl on the northern corner of site.

Localised soft / loose spots were observed on the DP records, particularly within DP5 and DP7 between approximately 6.00m and 7.50m depth. No distinct indication of a Head / Chalk boundary was noted within the DP records. Localised high blow count are likely to be attributed to cobbles of flint.

A **HIGH** risk of ground instability from natural dissolution cavities beneath the site concluded in the associated geotechnical desk study.

There is conjectured to be a potential dissolution feature present across the eastern / northeast area of the site at a depth of c. 6.00m to 7.50m bgl with possible spalling on the overlying Head deposits resulting the low results from the in-situ SPT and DP testing.

No groundwater was encountered across during the site works within the trial pit or the boreholes or in subsequent monitoring carried out to date. Some perched water was identified in the previous works at a depth of 4.90m bgl.

The results of the soil strength testing are summarised and presented with the logs in Appendix B.

The strength of the fine grained Head deposits on the site have been assessed using a Hand Vane in the field as generally firm to stiff near surface up to approximately 2.0m depth with localised low to medium deposit below.

Where coarse grained the Head deposits were generally assessed through in-situ SPT testing to be medium dense, however, localised SPTs and DPs indicating loose deposits were noted around approximately 4m in WS1 and WS106. This is conjectured to be due to perched water softening the formation at the Head/Chalk interface level.

The variable fine and coarse grained Head deposits are indicated to range between non-plastic and Medium VCP, however, only 1 no. of 7no samples tested indicated a Medium VCP with a modified plasticity index of 21% at the boundary between low and medium, with the remaining three samples indicating a non-plastic classification. Therefore, based upon the soils observed during the investigation and the average results of the testing of head deposits strata, it is considered that the Head deposits can essentially be classified as non-plastic with no associated VCP.

8.3 New Structure Foundation Design Criteria

8.3.1 Building Near Trees Assessment

A range of trees of mixed species and maturity were noted on site within hedgerows around the perimeter of the site. Foundation will likely be placed onto variable Head deposits which are indicated to be generally non-plastic and therefore not considered to have a VCP.

8.3.2 Excavations

Excavations should be readily achieved within the near surface soils using conventional plant.

The soils encountered within the trial pits are considered to remain stable in the short to medium term within shallow excavations to approximately 2.50m depth.

At no time should any excavations be entered by personnel without correct shoring and only after an assessment of whether the task can be completed without entry to the excavation has been completed.

8.4 Foundation Options Discussion

Conventional foundations, such as strip and isolated pads, placed into Made Ground, variable soils, desiccated soils or soils containing significant organic matter are generally subjected to increased risk of settlement, especially differential settlement. Therefore, it is not recommended that foundation be placed into the Topsoil or Made Ground soils identified on the site to a depth of 1.00m bgl.

The Head deposits on site are typically firm to stiff, medium to high strength at near surface but were noted to be loose / soft at around 4.00m depth within WS105 and WS106, along with a potential dissolution feature beneath the WS105 and WS107 central northeastern area of the site at around 6.00m to 7.50m depth with potential spalling of Head deposits into the dissolution feature.

Given the variability in depth of the Head deposits, the poor results at depth from the in-situ SPTs, in-situ shear vane tests and low blow counts recorded within some of the DP positions, conventional shallow spread foundations are considered unlikely to be suitable for the proposed development and an alternative foundation solution should be adopted.

A piled or raft foundation solution would both be suitable for the proposed development.

Based upon the average laboratory testing the Head deposits are essentially considered as non-plastic, however, given the depth of Made Ground across the site it is recommended that the raft foundation is placed at a depth of as at least 1.0m bgl.

Due to the variability of the Head deposits and local strata softening, foundations may cross differing strata, and as such a raft foundation should be designed to limit any potential differential settlement.

***Therefore, given the above assessment it is considered that conventional foundations are unlikely to be suitable for the proposed development and it is recommended that considered be given to a piled foundation option. However, a correctly Engineer designed raft foundation is also deemed suitable founding onto the Head deposits at a minimum of 1.0m depth*.**

The above foundation options and design approaches are subject to detailed Structural Engineer design and regulator agreement.

A **High** risk of ground instability was indicated in the associated geotechnical desk study due to natural dissolution cavities. Variable but typically substantial cover of Head deposits of at least 4.5m thickness was observed across the site. Significant voided ground was not observed during the siteworks; however, several zones of low soil strength were recorded within the Head deposits at depth. This is considered likely to indicate a dissolution feature below the site with possible spalling of the overlying Head deposits. Should a raft foundation solution be adopted, given the **High** risk of ground instability it is recommended that supplementary ground investigation should be undertaken to confirm the risk level due to potential dissolution. The investigation should comprise a grid of probing utilising Dynamic Probing, Cone Penetration Techniques or similar that would help to delineate soft, potentially voided or infilled / disturbed areas of ground to confirm the proposed raft can suitably

spam the feature and ascertain the risk posed to the open areas of the site from possible ground movement. Following the probing, it cannot be ruled out that remedial works will be required to mitigate the risk of any features identified.

8.5 Bearing Capacity

For a raft foundation for the proposed structure bearing onto the Head deposits at a depth of at least 1.00mbgl, a conservative allowable bearing capacity would be in the order of **45kPa.**

These estimates include an allowance for the softening of the Head deposits with depth noted in some areas and a factor of safety of 3 against general shear failure and should keep settlements within tolerable limits.

Any excavations for the footings should be inspected by a suitably qualified person to assess the variability of the soils and groundwater conditions. If, following inspection, the soil conditions differ from those identified within this geotechnical appraisal the recommendations may require reassessment. Any roots, organic matter, and in particular any 'soft/loose' or otherwise unsuitable material encountered at the founding depth should be removed prior to pouring of any concrete.

8.6 Retaining Structures Design Criteria

It is understood that retaining structures may be required as part of the proposed development.

No groundwater was encountered within the boreholes or trial pits during the site work or during the subsequent monitoring of borehole standpipes.

Site specific testing was not carried out for the derivation of retaining structure design coefficients. However, much geotechnical data is available for the strata encountered beneath the site from published sources, best practice and PGE's experience of similar ground conditions in the area of the site. Therefore, the most appropriate effective stress design coefficients have been selected and are summarised below. The design values may be taken as 'worst credible' following the guidance of CIRIA C580 Embedded retaining walls - guidance for economic design: 2003.

Retaining Structure Design Criteria

Strata	Bulk Density (Mgm^{-3})	Effective Cohesion (c') kNm^{-2}	Effective Friction Angle (φ') (degrees)
Made Ground	1.70	0	20°
Head (fine grained)	1.90	0	25^{0}
Head (coarse grained)	1.70	0	30°

Where retaining structure cross areas of fine and coarse grained strata or Made Ground and natural ground the worst case scenario should be adopted for design.

8.7 Piled Foundations

Should assessed the assess bearing capacities derived above not be sufficient for the proposed development then consideration of alternative foundation solutions such as piles may provide the required improvement in bearing capacities.

Piled foundations are likely to provide a satisfactory foundation option for the proposed development with piles extending into the Chalk SNCK Formation deposits.

Where trees are removed, depending upon pile types and design, piles should be sleeved within the zone of potential desiccation to prevent uplift forces whilst the ground recovers soil water deficits to stable moisture contents.

A cable percussion borehole with attendant sampling, testing and supplementary ground investigation report will be required to provide a further range of geotechnical parameters and to assist structural engineer and piling contractor with the piled foundation design. The advice of a specialist piling contractor should be sought who can provide an assessment of the suitability of their piles.

8.8 Sub-Surface Concrete

The Design Sulphate Class was generally consistent across the site and with depth with a worst case Design Sulphate Class of **DS-1** for Head deposits and Chalk soils.

Where foundation have the potential to straddle soils of different formations the worst case scenario should be adopted.

A worst case Aggressive Chemical Environment for Concrete (ACEC) site classification is general **AC-1s** classification for Head deposits and Chalk soils.

8.9 Surface Water Soakaways and Soil Permeability

Infiltration testing was carried out on the site within the Trial Pits SA1 and SA2 employing the BRE365 methodology.

Infiltration testing was also attempted as a falling head test to BS5930 methodology within borehole WS101 where chalk was encountered within the base of the borehole.

The infiltration factor calculation sheets are presented in Appendix D and the values are summarised below.

Infiltration Testing Results

Trial Pit	Cycle	Depth of Test (m begl)	Strata Tested	Infiltration Factors (ms^{-1})
SA1	1	1.00-1.50m	Head	Insufficient infiltration. Test failed.
SA2	1	2.00-2.40m	Head	Insufficient infiltration. Test failed.

The infiltration testing within trial pits SA1 and SA2 were carried out within the Head deposits. Testing within both trial pit showed little to no movement over a three hour period and the testing was considered to be a failure.

The soakaway within WS101 was undertaken within the Chalk strata and over 100 litres of water was added to the borehole, however, no significant head of water could be maintained to allow accurate measurements to be taken which would indicated good infiltration potential within the chalk.

Given the infiltration testing results the Head deposits are considered unsuitable for the construction of effective conventional soakaways. The Chalk underlying the site at depth is considered potentially permeable and could provide effective deeper infiltration feature, such as a borehole soakaway. Further testing should be undertaken to confirm the achievable infiltration rates within the chalk strata.

It should be born in mind that soakaway installed within Chalk strata can result in activation or propagation of existing dissolution features and as such soakaways should be situated at a suitable distance from structures and site boundary based upon the relevant guidance (BRE 365 "Soakaway design" 2016 and CIRIA C574 Engineering in Chalk 2002).

8.10 Access Roadways and Parking Areas

In-situ CBR determinations were carried out at 4no. locations across the site. The determinations were carried out at a depth of 0.60m to 0.80m bgl using a 5kN resistance ring and an excavator as kentledge. The tests were carried out in deposits considered likely to be Head deposits.

The location of the CBR testing are detailed on the Exploratory Point Location Plan presented in Appendix B.

The results of the CBR testing are presented in Appendix D and are summarised below.

Location	Test Depth (m bgl)	Representative CBR Value (%)
CBR 1	0.80m	10
CBR 2	0.60m	10
CBR 3	0.60m	5.6
CBR 4	0.60m	5.4

These values within the Head deposits are considered commensurate with the soils tested.

It is recommended that for design a CBR of 5% is assumed where Head deposits are encountered at shallow depth.

9.0 CERTIFICATION

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any Third Party who may rely upon it.

The conclusions and recommendations given in this report are based on our understanding of the future plans for the site and based on a scope of works agreed by the Client and afforded by the agreed budget. No responsibility is accepted for conditions not encountered, which are between exploratory points or outside of the agreed scope of work.

If the future plans for the site are changed, such as the site is developed for a more or less sensitive use, then a different interpretation might be appropriate.

The report has been prepared generally following the guidelines and principles established in the British Standards, BS5930:1999+A2:2010, BS 10175:2011, entitled 'Investigation of Potentially Contaminated Sites – Code of Practice' and the DEFRA/EA Contaminated Land Reports CLR7 and CLR8.

It necessarily relies on the co-operation of other organisations and the free availability of information and total access. No responsibility can, therefore, be accepted for conditions arising from information that was not available to the investigating team as a result of information being withheld or access being denied.

This report may suggest an opinion on a suspected configuration of strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy. Comments on the groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. It should be noted, however, that groundwater levels might vary due to seasonal or other effects.

It should be noted that this report is based solely on the samples collected in the borehole locations investigated. During the works and following general site clearance, should the sub-soil conditions in other areas of the site appear to be inconsistent with those found in the areas sampled then this geotechnical appraisal and site contamination assessment may need to be reviewed.

This report is prepared and written in the context of the proposals stated in the introduction to this report and it should not be used in a differing context. Furthermore, new information, improved practices and changes in legislation may require an alteration to the report in whole or in part after its submission. Therefore, with any changes in circumstances, or after one year from the date of the report, the report should be referred back to Paddock Geo Engineering Limited for re-assessment (and, if necessary, for an estimate for the cost of such).

The copyright of this report and any associated plans and documents prepared by Paddock Geo Engineering Limited is owned by them and should not be reproduced, published or adapted, in whole or part, without their written consent.

REFERENCES

Investigation of Potentially Contaminated Sites – Code of Practice, British Standards Institution BS 10175:2001+A2:2017.

Code of Practice for Site Investigations, British Standards Institution BS5930: 2015

Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination, R&D Technical Report P5-066/TR, 2000, Environment Agency.

National House-Building Council, NHBC Standards Chapter 4.2 'Building near Trees', 2003

CLR8 Potential Contaminants for the assessment of Land, 2002, DEFRA/Environment Agency.

Health and Safety Executive, Protection of workers and the general public during the development of contaminated land, HMSO, London 1991.

BRE Special Digest 1 'Concrete in Aggressive Ground', 2001.

Contaminated Land Exposure (CLEA) Model version 1.03 developed by the Environment Agency, Department for Environment, Food and Rural Affairs and the Scottish Environment Protection Agency. 2008

CLR7 Assessment of Risks to Human Health from Land Contamination, 2002, DEFRA/Environment Agency.

CLR8 Potential Contaminants for the assessment of Land, 2002, DEFRA/Environment Agency.

CLR11 Model Procedures for the Management of Land Contamination, 2004, DEFRA/Environment Agency.

Rudland, D., Lancefield, R.M., Mayal, P.N. (2001) Contaminated Land Risk Assessment: A Guide to Good Practice. CIRIA C552. UK.

Method for Deriving Site-Specific Human Health Criteria for Contaminants in Soil, SNIFFER, 2003.

Technical evaluation of the Intervention Values for Soil/Sediment and Groundwater, RIVM Report 711701 023, National Institute of Public Health and the Environment, 2001.

Tonks D M and Whyte I L 'Dynamic soundings in site investigation: some observations and correlations', Proceedings of ICE Geotechnology Conference, Paper 10, 1988.

The Water Supply (Water Quality) Regulations. HMSO. 2000

Code of Practice for Investigation and Mitigation of Possible Petroleum –Based Land Contamination, 1993, Institute of Petroleum, London.

Contaminated Land Management – Ready Reference, J Nathanail, P Bardos and P Nathanail, Land Quality Press, 2002.

BRE Digest 412 'Desiccation in Clay Soils', 1996

DTI/CIRIA Publication 'Engineering in Chalk'

http://www.silsoeresearch.org.uk/ Silsoe Research Organisation. Viewed July 2007.

Hydrogeological Risk Assessment for Land Contamination Remedial Targets Worksheet, release 3.1 – October 2006

Assessing risks posed by hazardous ground gases to buildings – CIRIA C665, 2007 – Wilson, Oliver, Mallet, Hutchings and Card

Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings - British Standards Institution BS 8485:2015

NHBC & RSK Group publication 'Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present' (March 2007).

Mobilising Natures Army: Monitored Natural Attenuation – dealing with pollution using natural processes, Environment Agency. 2004

Remediation Targets Methodology: Hydrogeological Risk Assessment for Land Contamination, Environment Agency. 2006

BRE Report BR211 - Radon: Protective measures for new dwellings, November 2007

GPLC1 - Guiding Principles for Land Contamination Environment Agency, 2010

Environment Agency Landfill Environmental Permit EPR/FP3399VV

Perimeter soil gas emissions criteria and associated management. Industry Guidance v1.01. BIFFA et al. January 2011

Environment Agency, Briefing Note – Monitoring Frequencies and Non-Compliance Recording

LFTGN03. Guidance on the Management of Landfill Gas. Environment Agency. 2003

Environment Agency, Final R&D Technical Report P1-471 Techniques for the Interpretation of Landfill Monitoring Data – Guidance Notes

APPENDIX A – MAPS AND PLANS

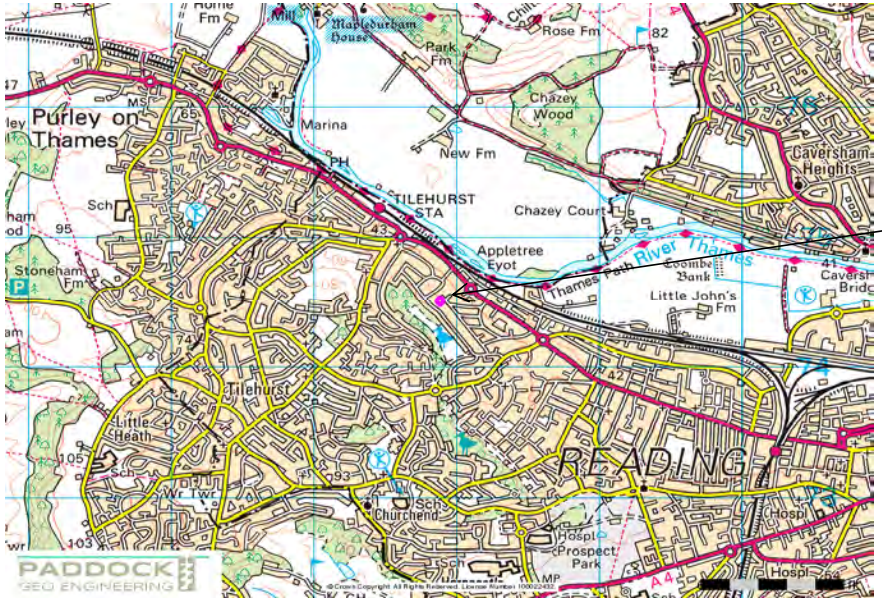
Site Location Plan

Site Plan

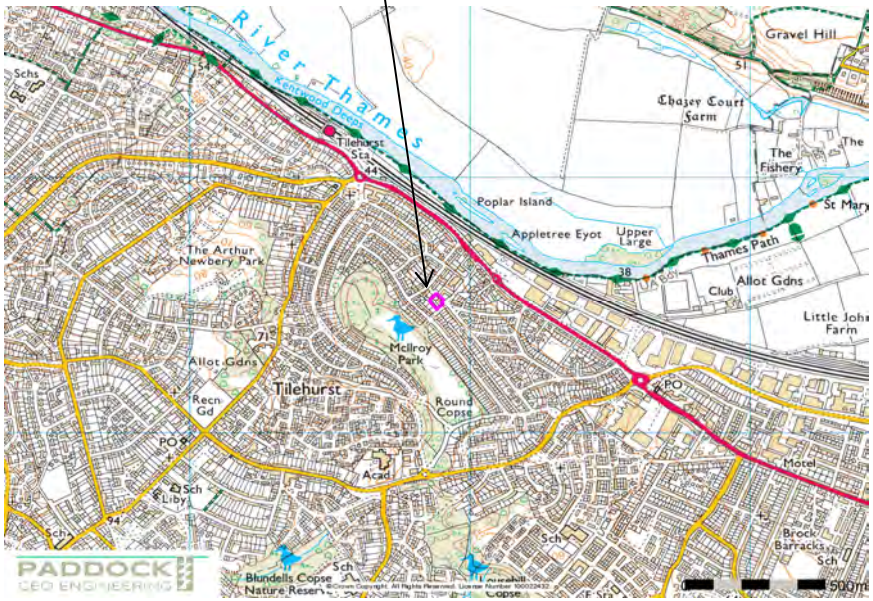
Aerial Photograph

Proposed Development Plans

SITE LOCATION PLAN

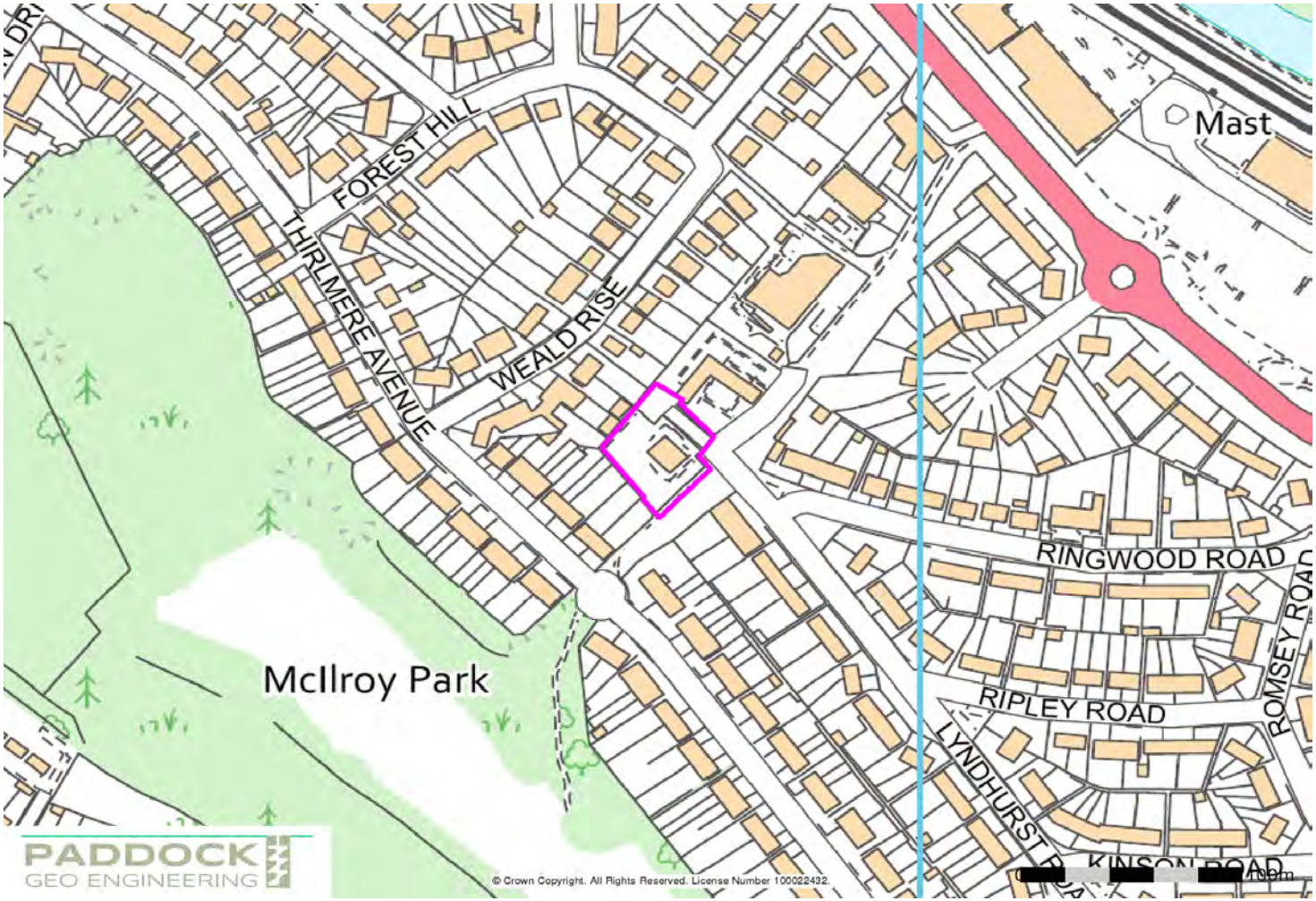


Site Location



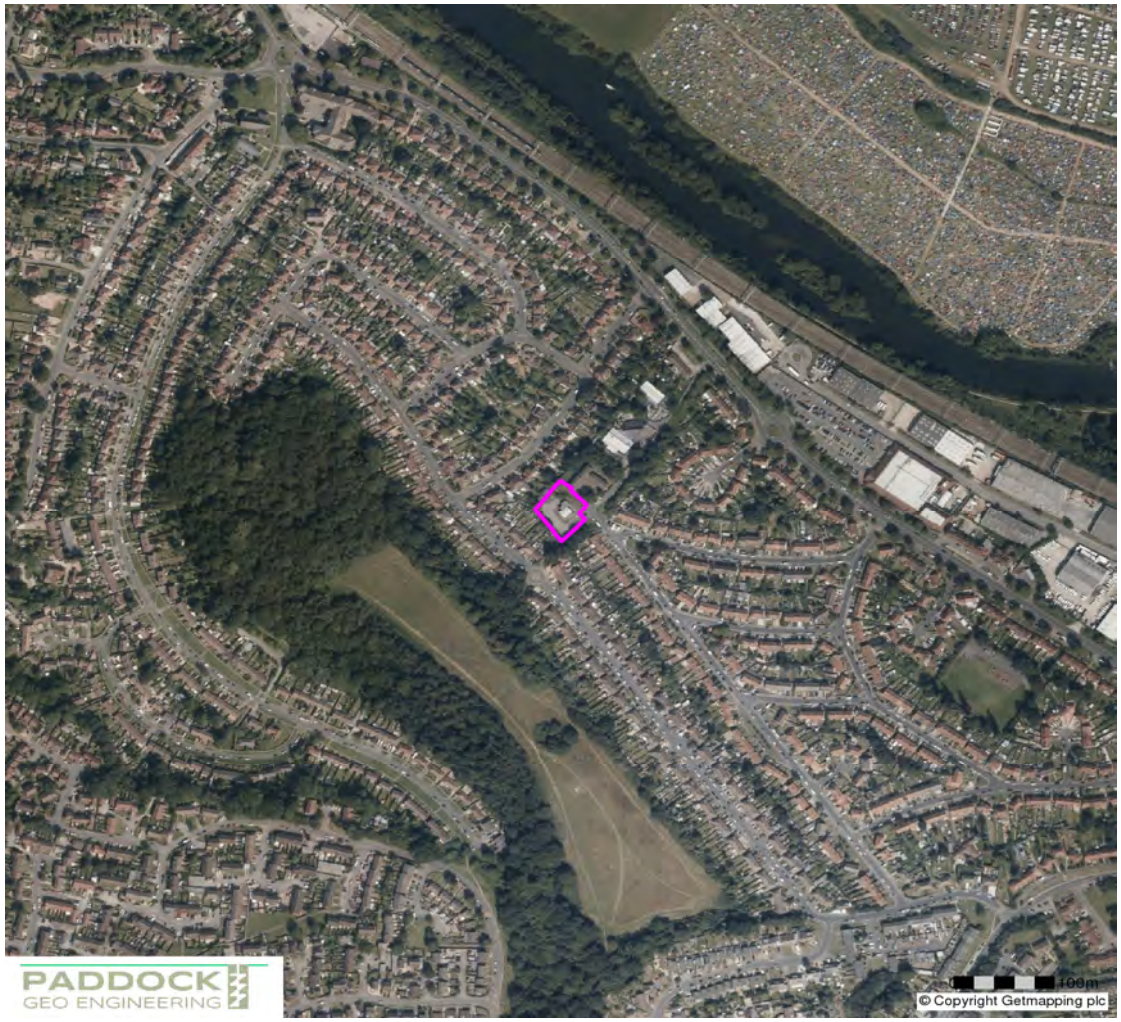
PADDOCK GEO ENGINEERING	**CLIENT:**	Beard Construction Limited
	PROJECT No:	P20-069
	PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

SITE PLAN



PADDOCK GEO ENGINEERING	**CLIENT:**	Beard Construction Limited
	PROJECT No:	P20-069
	PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

AERIAL PHOTOGRAPH



PADDOCK GEO ENGINEERING	**CLIENT:**	Beard Construction Limited
	PROJECT No:	P20-069
	PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

NOTES

This drawing to be read in accordance with the specification/Bills of Quantities and related drawings. No Dimensions to be scaled from this drawing. All stated dimensions to be verified on site and the Architect notified of any discrepancies

0 50

Scale bar 50mm at 1:1

D	Layout changes in accordance with discussion with Reading Borough Council planning team	09/05/19	JT
C	Parking layout revised	20/11/18	SB

Project

Norcot Community Centre
Lyndhurst Road
Tilehurst
Reading

Title

Rendered Site Plan

Scale
1:200 @A1

Date
15/04/2018

Drawn
AS

Checked
MS

Drawing Number
7870_PL102

Revision
D

Saunders
Architecture + Urban Design

saundersarchitects.com | 01707 385300 | London | Manchester | Bristol | Welwyn

APPENDIX B – SITE DETAILS

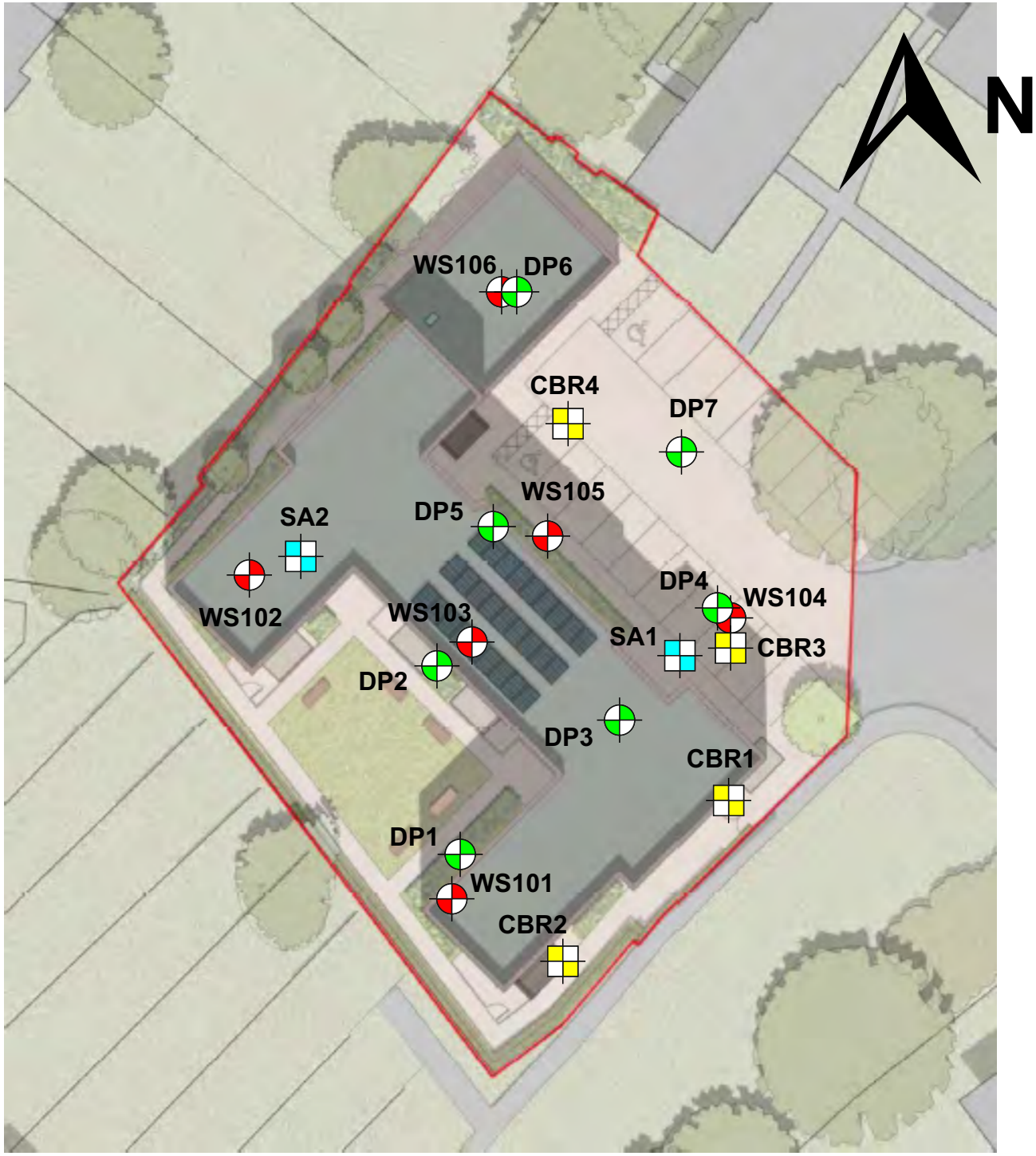
Exploratory Point Location Plan

Borehole and DP Logs

Trial Pit Logs

Insitu CBR Testing Data

Site Photographs



PADDOCK GEO ENGINEERING

Exploratory Point Location Plan

Norcot Community Centre
Lyndhurst Road
Tilehurst
Reading

Beard Construction Ltd

August 2020

Window Sample Borehole Location

Machine Excavated Infiltration Test Location

In-situ CBR Test Location

Dynamic Probing Test Position

Not to scale.
All positions are approximate and subject to change.
Plan based on plan provided by Saunders Architecture and Urban Design Drawing Number 7870_PL102

PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS101

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler	87mm to 1.00m, 77mm to 2.00m, 67mm to 3.00m, 57mm to 4.00m, 47mm to 5.00m		Beard Construction Limited	P20-069
	Location	**Dates** 29/07/2020	**Project Contractor** PGE	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.10) 0.10	Grey coarse GRAVEL of limestone, concrete and brick. (MADE GROUND)			
					(0.30) 0.40	Stiff grey brown mottled orange brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-rounded flint. (MADE GROUND)			
0.80	ES					Stiff orange brown and brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-rounded flint. (HEAD)			
0.90	73kPa								
0.90	ES					... becoming firm and speckled black between 1m to 3m depth.			
1.00-1.45	SPT(C) N=11		1,2/3,2,3,3						
1.50	D								
1.80	47kPa				(2.60)				
1.90	46kPa								
2.00-2.45	SPT(C) N=17		4,3/4,4,4,5						
2.30	47kPa								
2.50	D								
2.90	27kPa								
3.00-3.45	SPT(C) N=21		3,3/5,5,5,6		3.00	Stiff orange brown and brown with occasional black speckling sandy gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded flint. (HEAD)			
3.20	38kPa								
3.50	D								
					(1.50)				
4.00-4.45	SPT(C) N=6		1,1/1,1,0,4						
4.50	D				4.50	Structureless CHALK composed of white mottled cream with brown veining gravelly CLAY. Gravel is fine to medium angular extremely weak low density chalk and occasional black flint. (SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED), Grade Dm)			
					(0.50) 5.00				
						Complete at 5.00m			

Remarks
No collapse noted.
No groundwater encountered.
Monitoring standpipe installed upon completion.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS101

Produced by the GEOtechnical DAtabase SYstem (GEODASY) © all rights reserved

PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS102
Excavation Method: Drive-in Windowless Sampler	**Dimensions**: 87mm to 1.00m, 77mm to 2.00m, 67mm to 3.00m, 57mm to 4.00m, 47mm to 5.00m	**Ground Level (mOD)**		**Client**: Beard Construction Limited	**Job Number**: P20-069
	Location	**Dates**: 29/07/2020		**Project Contractor**: PGE	**Sheet**: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Black and red GRAVEL of macadam, ash and brick. (MADE GROUND).		
0.15	ES					Brown slightly gravelly clayey silty SAND. Gravel is fine to coarse sub rounded flint, brick and concrete. (MADE GROUND)		
0.60	ES				(0.80)			
0.80	D					... becoming light brown from 0.70m depth.		
1.00-1.45	SPT(C) N=13		2,2/3,3,3,4		1.00	Stiff brown and orange brown slightly gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and chalk. (HEAD)		
					(1.00)			
1.60	D							
1.90	SV 23kPa							
2.00-2.45	SPT(C) N=20		3,3/4,4,5,7		2.00	Medium dense brown and orange brown clayey very sandy GRAVEL. Gravel is fine to coarse sub-angular to rounded flint and occasional sandstone. (HEAD)		
					(1.00)			
2.60	D							
3.00-3.45	SPT(C) N=28		9,6/6,7,8,7		3.00	Medium dense brown and orange brown gravelly SAND. Gravel is fine to coarse sub-angular to rounded flint and occasional sandstone. (HEAD)		
3.60	D				(1.50)			
4.00-4.45	SPT(C) N=25		3,3/3,3,8,11					
					4.50	Structureless CHALK composed of white mottled cream with brown veining gravelly CLAY. Gravel is fine to medium angular extremely weak low density chalk and occasional black flint. (SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED), Grade Dm)		
4.60	D				(0.50)			
5.00-5.45	SPT(C) N=16		4,5/4,5,3,4		5.00			
5.00	D					Complete at 5.00m		

Remarks
No collapse noted.
No groundwater encountered.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS102

Produced by the GEOtechnical DAtabase SYstem (GEODASY) © all rights reserved

PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS103

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler	87mm to 1.00m, 57mm to 4.00m, 77mm to 2.00m, 47mm to 5.00m, 67mm to 3.00m		Beard Construction Limited	P20-069
	Location	**Dates** 29/07/2020	**Project Contractor** PGE	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.10) 0.10	Grey fine to coarse angular limestone GRAVEL. (MADE GROUND)			
0.10	ES				(0.30) 0.40	Soft orange brown very sandy CLAY. (MADE GROUND)			
0.30	D				(0.60) 1.00	Firm orange brown occassionally veined dark grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular flint and limestone. (HEAD)			
0.70	SV 60kPa								
0.80	ES								
0.90	SV 70kPa								
0.90	D								
1.00-1.45	SPT(C) N=13		3,2/3,3,4,3		(1.60) 2.60	Firm orange brown mottled light brown slightly gravelly very sandy CLAY. Gravel is fine to coarse sub angular flint. (HEAD) ... becoming speckled black 1.5m depth.			
1.20	D								
1.80	D								
2.00-2.45	SPT(C) N=17		2,2/3,4,5,5						
2.60	D				(2.40) 5.00	Medium dense orange brown clayey SAND and GRAVEL. Gravel is fine to coarse sub rounded flint. (HEAD) ... becoming very gravelly 3.0m depth.			
3.00-3.45	SPT(C) N=25		7,6/5,7,6,7						
3.60	D								
4.60	D								
						Complete at 5.00m			

Remarks
Monitoring standpipe installed upon completion.
No groundwater encountered.
No collapse noted.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS103

Produced by the GEOtechnical DAtabase SYstem (GEODASY) © all rights reserved

PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS104
Excavation Method: Drive-in Windowless Sampler	**Dimensions**: 87mm to 1.00m, 77mm to 2.00m, 67mm to 3.00m, 57mm to 4.00m, 47mm to 5.00m	**Ground Level (mOD)**		**Client**: Beard Construction Limited	**Job Number**: P20-069
	Location	**Dates**: 29/07/2020		**Project Contractor**: PGE	**Sheet**: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grey brown gravelly SAND. (MADE GROUND)		
0.10	ES				0.20			
					(0.40)	Soft dark brown slightly gravelly sandy CLAY with rootlet and rootlets up to 0.50m depth. Gravel is flint and concrete. (MADE GROUND)		
0.40	D							
0.40	ES				0.60	Firm orange brown slight gravelly sandy to very sandy CLAY. Gravel is fine to coarse sub angular flint. (HEAD)		
0.80	SV 44kPa							
0.80	D							
1.00-1.45	SPT(C) N=10		1,1/2,2,3,3			... becoming mottled light grey, yellow brown and occasionally speckled black 1.0 depth.		
1.50	D							
1.80	SV 49kPa							
2.00-2.45	SPT(C) N=10		2,2/2,2,3,3					
					(3.30)			
2.50	D							
2.60	SV 23kPa							
3.00-3.45	SPT(C) N=17		5,3/4,4,4,5					
3.50	D							
3.90	D				3.90			
4.00-4.45	SPT(C) N=10		1,1/1,1,3,5			Medium dense orange brown gravelly SAND. Gravel is fine to coarse sub-rounded flint. (HEAD)		
					(0.60)			
4.50	D				4.50	Medium dense light brown clayey gravelly SAND. Gravel is fine to coarse sub-rounded flint. (HEAD)		
					(0.50)			
5.00-5.45	SPT(C) N=14		3,3/3,3,4,4		5.00	Complete at 5.00m		

Remarks
No groundwater encountered.
No collapse noted.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS104

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PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS105

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler	87mm to 1.00m, 57mm to 4.00m, 77mm to 2.00m, 47mm to 5.00m, 67mm to 3.00m		Beard Construction Limited	P20-069
	Location	**Dates** 29/07/2020	**Project Contractor** PGE	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	ES					Grey gravelly clayey SAND. Gravel is flint, brick fragments, ash, clinker. (MADE GROUND)			
0.50	D				(1.10)				
0.80	ES								
1.00-1.45	SPT(C) N=9		1,0/2,2,2,3		1.10	Stiff orange brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub rounded to sub angular flint. (HEAD)			
1.20	ES								
1.50	D								
2.00-2.45	SPT(C) N=6		2,1/1,1,2,2			... becoming speckled black from 2.0m depth.			
2.50	D				(2.70)				
3.00-3.45	SPT(C) N=10		2,2/2,3,3,2						
3.50	D								
3.90	D				3.80	Medium dense orange brown clayey very gravelly SAND. Gravel is fine to coarse sub-angular to rounded flint. (HEAD)			
4.00-4.45	SPT(C) N=12		3,2/2,3,3,4						
4.50	D				(1.20)				
					5.00	Complete at 5.00m			

Remarks
No collapse noted.
No groundwater encountered.
Monitoring standpipe installed upon completion.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS105

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PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Number: WS106
Excavation Method: Drive-in Windowless Sampler	**Dimensions:** 87mm to 1.00m, 77mm to 2.00m, 67mm to 3.00m, 57mm to 4.00m, 47mm to 5.00m	**Ground Level (mOD):**
Client: Beard Construction Limited	**Job Number:** P20-069	
Location:	**Dates:** 29/07/2020	**Project Contractor:** PGE
Sheet: 1/1		

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.10)	Brown gravelly CLAY. Gravel is brick, concrete and macadam. (MADE GROUND)			
					(0.10)				
0.15	ES				0.20				
					(0.20)	Red GRAVEL of crushed brick. (MADE GROUND)			
					0.40	Black SAND of ash. (MADE GROUND)			
1.00-1.45	SPT(C) N=11		2,2/2,2,3,4			Firm to stiff brown mottled orange brown and yellow brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub angular to rounded flint. (HEAD)			
1.50	D								
1.80	SV 55kPa								
2.00-2.45	SPT(C) N=12		4,2/2,3,3,4			... becoming very sandy from 2.0m depth.			
					(3.60)				
2.50	D								
3.00-3.45	SPT(C) N=6		2,2/2,2,1,1						
3.50	D					... interebedded with bands of orange brown SAND from 3.50m depth.			
3.80	SV 39kPa								
4.00-4.45	SPT(C) N=2		1,0/0,1,0,1		4.00	Loose brown sandy GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded flint. (HEAD)			
4.50	D				(1.00)				
					5.00	Complete at 5.00m			

Remarks
No groundwater encountered.
No collapse noted.

Scale (approx)	Logged By
1:40	SJF

Figure No. P20-069.WS106

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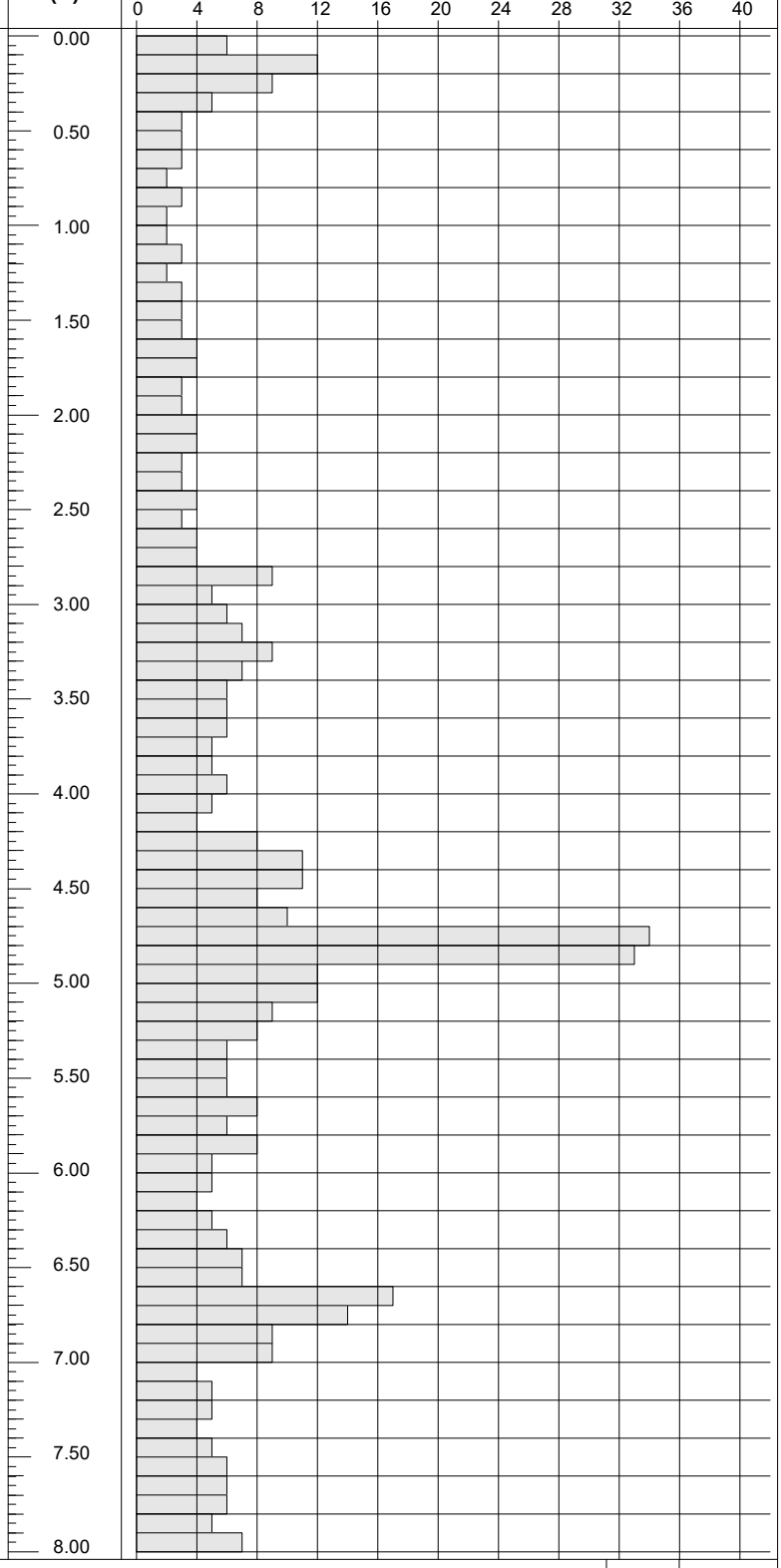
PADDOCK GEO ENGINEERING			Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP1
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020	Engineer	Sheet: 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
0.00-0.10	6		
0.10-0.20	12		
0.20-0.30	9		
0.30-0.40	5		
0.40-0.50	3		
0.50-0.60	3		
0.60-0.70	3		
0.70-0.80	2		
0.80-0.90	3		
0.90-1.00	2		
1.00-1.10	2		
1.10-1.20	3		
1.20-1.30	2		
1.30-1.40	3		
1.40-1.50	3		
1.50-1.60	3		
1.60-1.70	4		
1.70-1.80	4		
1.80-1.90	3		
1.90-2.00	3		
2.00-2.10	4		
2.10-2.20	4		
2.20-2.30	3		
2.30-2.40	3		
2.40-2.50	4		
2.50-2.60	3		
2.60-2.70	4		
2.70-2.80	4		
2.80-2.90	9		
2.90-3.00	5		
3.00-3.10	6		
3.10-3.20	7		
3.20-3.30	9		
3.30-3.40	7		
3.40-3.50	6		
3.50-3.60	6		
3.60-3.70	6		
3.70-3.80	5		
3.80-3.90	5		
3.90-4.00	6		
4.00-4.10	5		
4.10-4.20	4		
4.20-4.30	8		
4.30-4.40	11		
4.40-4.50	11		
4.50-4.60	8		
4.60-4.70	10		
4.70-4.80	34		
4.80-4.90	33		
4.90-5.00	12		
5.00-5.10	12		
5.10-5.20	9		
5.20-5.30	8		
5.30-5.40	6		
5.40-5.50	6		
5.50-5.60	6		
5.60-5.70	8		
5.70-5.80	6		
5.80-5.90	8		
5.90-6.00	5		
6.00-6.10	5		
6.10-6.20	4		
6.20-6.30	5		
6.30-6.40	6		
6.40-6.50	7		
6.50-6.60	7		
6.60-6.70	17		
6.70-6.80	14		
6.80-6.90	9		
6.90-7.00	9		
7.00-7.10	4		
7.10-7.20	5		
7.20-7.30	5		
7.30-7.40	4		
7.40-7.50	5		
7.50-7.60	6		
7.60-7.70	6		
7.70-7.80	6		
7.80-7.90	5		
7.90-8.00	7		



Remarks	Scale (approx)	Logged By
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	Figure No. P20-069.DP1	

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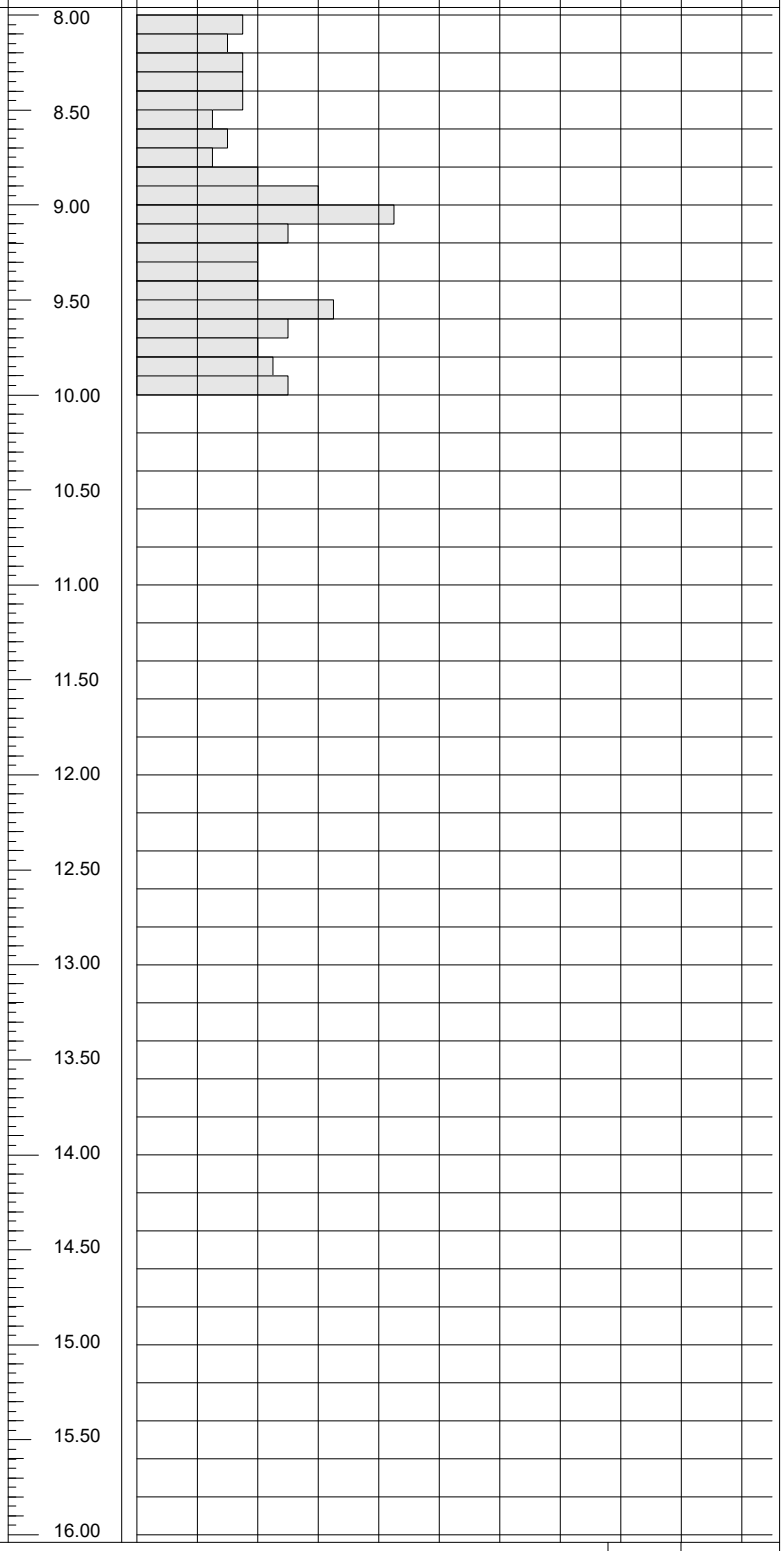
PADDOCK GEO ENGINEERING			Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP1
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020	Engineer	Sheet: 2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	7		
8.10-8.20	6		
8.20-8.30	7		
8.30-8.40	7		
8.40-8.50	7		
8.50-8.60	5		
8.60-8.70	6		
8.70-8.80	5		
8.80-8.90	8		
8.90-9.00	12		
9.00-9.10	17		
9.10-9.20	10		
9.20-9.30	8		
9.30-9.40	8		
9.40-9.50	8		
9.50-9.60	13		
9.60-9.70	10		
9.70-9.80	8		
9.80-9.90	9		
9.90-10.00	10		



Remarks	Scale (approx)	Logged By
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	Figure No. P20-069.DP1	

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PADDOCK GEO ENGINEERING

Site	Probe Number
Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	DP2

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
0.00-0.10	5		
0.10-0.20	8		
0.20-0.30	6		
0.30-0.40	2		
0.40-0.50	3		
0.50-0.60	2		
0.60-0.70	3		
0.70-0.80	2		
0.80-0.90	3		
0.90-1.00	2		
1.00-1.10	3		
1.10-1.20	3		
1.20-1.30	3		
1.30-1.40	4		
1.40-1.50	7		
1.50-1.60	6		
1.60-1.70	5		
1.70-1.80	4		
1.80-1.90	5		
1.90-2.00	5		
2.00-2.10	4		
2.10-2.20	4		
2.20-2.30	4		
2.30-2.40	3		
2.40-2.50	4		
2.50-2.60	2		
2.60-2.70	4		
2.70-2.80	5		
2.80-2.90	3		
2.90-3.00	3		
3.00-3.10	4		
3.10-3.20	3		
3.20-3.30	2		
3.30-3.40	2		
3.40-3.50	2		
3.50-3.60	7		
3.60-3.70	10		
3.70-3.80	11		
3.80-3.90	13		
3.90-4.00	13		
4.00-4.10	11		
4.10-4.20	10		
4.20-4.30	9		
4.30-4.40	10		
4.40-4.50	12		
4.50-4.60	12		
4.60-4.70	11		
4.70-4.80	9		
4.80-4.90	10		
4.90-5.00	8		
5.00-5.10	7		
5.10-5.20	11		
5.20-5.30	7		
5.30-5.40	7		
5.40-5.50	8		
5.50-5.60	6		
5.60-5.70	4		
5.70-5.80	7		
5.80-5.90	4		
5.90-6.00	5		
6.00-6.10	5		
6.10-6.20	6		
6.20-6.30	5		
6.30-6.40	6		
6.40-6.50	7		
6.50-6.60	6		
6.60-6.70	8		
6.70-6.80	6		
6.80-6.90	7		
6.90-7.00	7		
7.00-7.10	4		
7.10-7.20	5		
7.20-7.30	3		
7.30-7.40	5		
7.40-7.50	6		
7.50-7.60	4		
7.60-7.70	4		
7.70-7.80	3		
7.80-7.90	6		
7.90-8.00	7		

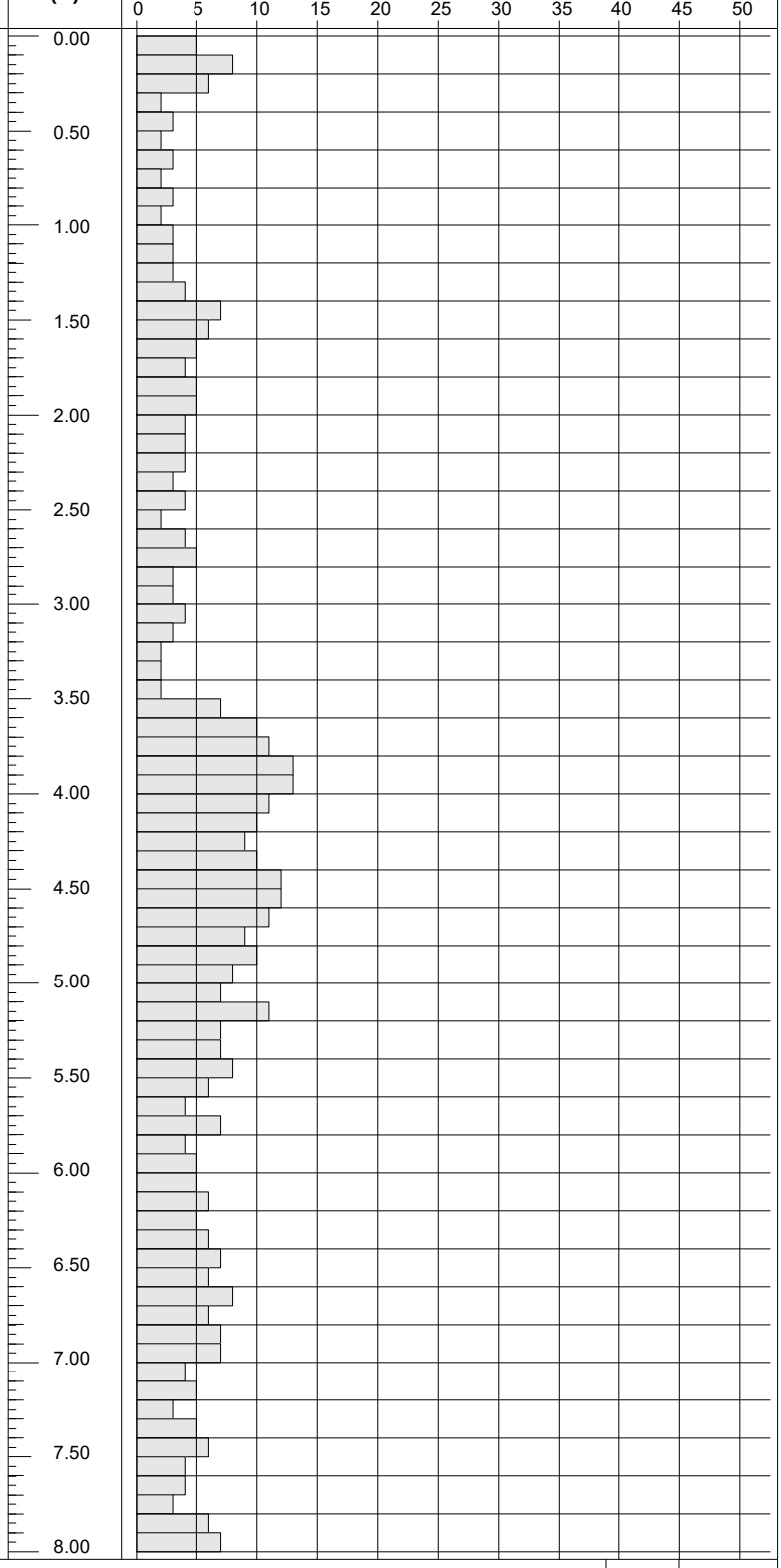

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Figure No. P20-069.DP2

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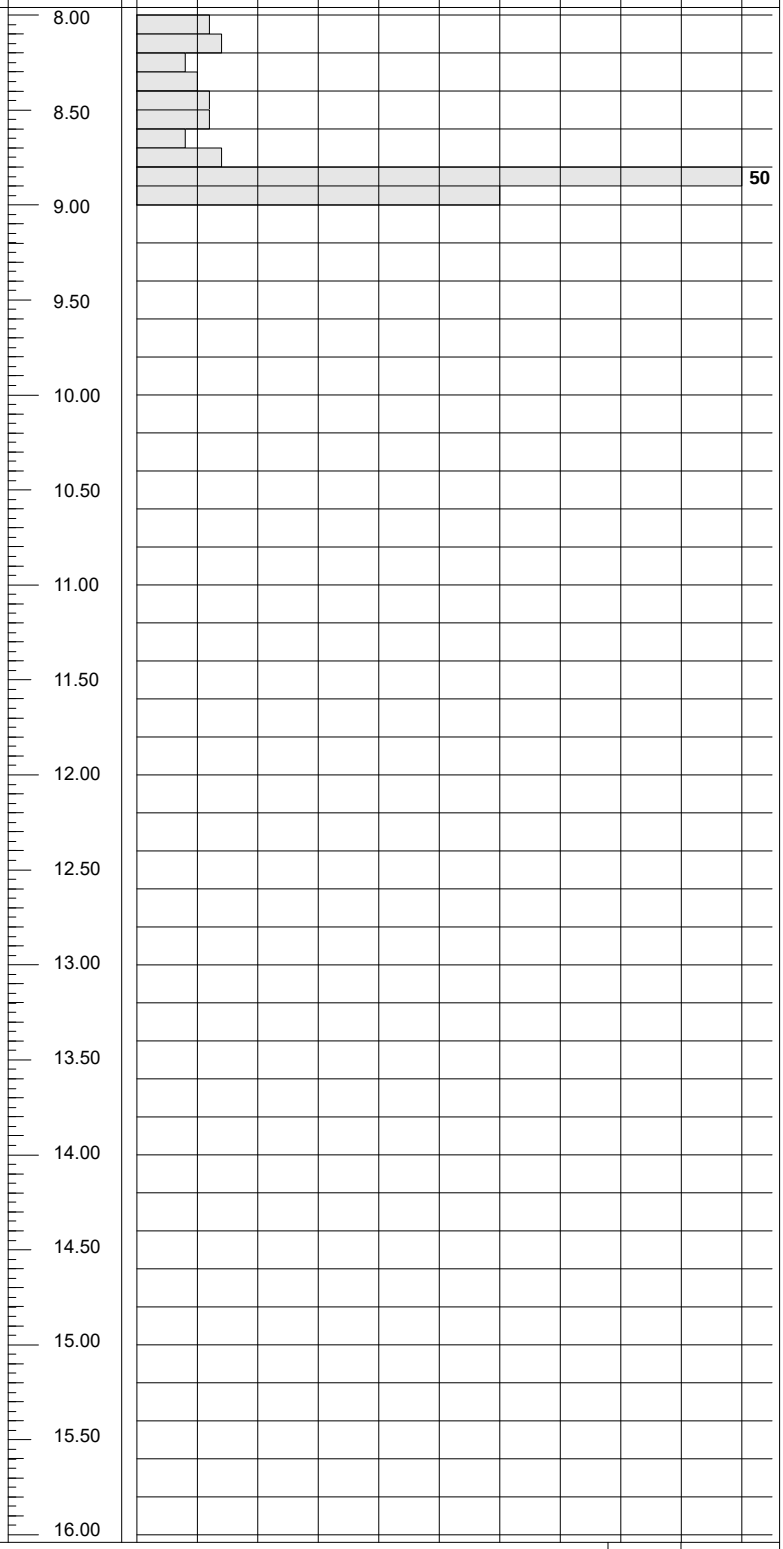
PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP2

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	6		
8.10-8.20	7		
8.20-8.30	4		
8.30-8.40	5		
8.40-8.50	6		
8.50-8.60	6		
8.60-8.70	4		
8.70-8.80	7		
8.80-8.90	50		
8.90-9.00	30		



Remarks	Scale (approx)	Logged By
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	Figure No.	
	P20-069.DP2	

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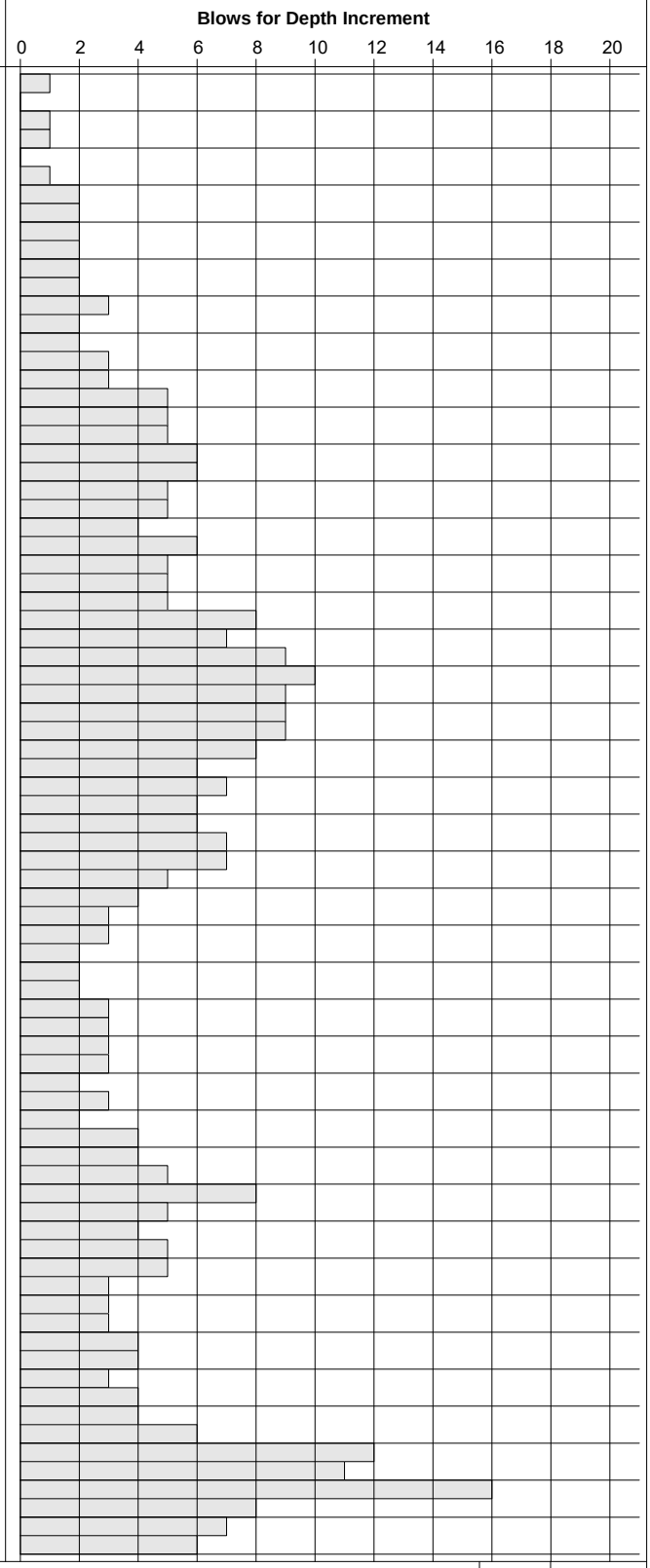
PADDOCK GEO ENGINEERING			Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP3
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020	Engineer	Sheet: 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
0.00-0.10	1		
0.10-0.20	0		
0.20-0.30	1		
0.30-0.40	1		
0.40-0.50	0		
0.50-0.60	1		
0.60-0.70	2		
0.70-0.80	2		
0.80-0.90	2		
0.90-1.00	2		
1.00-1.10	2		
1.10-1.20	2		
1.20-1.30	3		
1.30-1.40	2		
1.40-1.50	2		
1.50-1.60	3		
1.60-1.70	3		
1.70-1.80	5		
1.80-1.90	5		
1.90-2.00	5		
2.00-2.10	6		
2.10-2.20	6		
2.20-2.30	5		
2.30-2.40	5		
2.40-2.50	4		
2.50-2.60	6		
2.60-2.70	5		
2.70-2.80	5		
2.80-2.90	5		
2.90-3.00	8		
3.00-3.10	7		
3.10-3.20	9		
3.20-3.30	10		
3.30-3.40	9		
3.40-3.50	9		
3.50-3.60	9		
3.60-3.70	8		
3.70-3.80	6		
3.80-3.90	7		
3.90-4.00	6		
4.00-4.10	6		
4.10-4.20	7		
4.20-4.30	7		
4.30-4.40	5		
4.40-4.50	4		
4.50-4.60	3		
4.60-4.70	3		
4.70-4.80	2		
4.80-4.90	2		
4.90-5.00	2		
5.00-5.10	3		
5.10-5.20	3		
5.20-5.30	3		
5.30-5.40	3		
5.40-5.50	2		
5.50-5.60	3		
5.60-5.70	2		
5.70-5.80	4		
5.80-5.90	4		
5.90-6.00	5		
6.00-6.10	8		
6.10-6.20	5		
6.20-6.30	4		
6.30-6.40	5		
6.40-6.50	5		
6.50-6.60	3		
6.60-6.70	3		
6.70-6.80	3		
6.80-6.90	4		
6.90-7.00	4		
7.00-7.10	3		
7.10-7.20	4		
7.20-7.30	4		
7.30-7.40	6		
7.40-7.50	12		
7.50-7.60	11		
7.60-7.70	16		
7.70-7.80	8		
7.80-7.90	7		
7.90-8.00	6		



Remarks	Scale (approx)	Logged By
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	Figure No. P20-069.DP3	

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PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP3

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	4		
8.10-8.20	6		
8.20-8.30	5		
8.30-8.40	6		
8.40-8.50	6		
8.50-8.60	6		
8.60-8.70	5		
8.70-8.80	5		
8.80-8.90	3		
8.90-9.00	4		
9.00-9.10	5		
9.10-9.20	7		
9.20-9.30	8		
9.30-9.40	8		
9.40-9.50	5		
9.50-9.60	4		
9.60-9.70	5		
9.70-9.80	6		
9.80-9.90	8		
9.90-10.00	7		

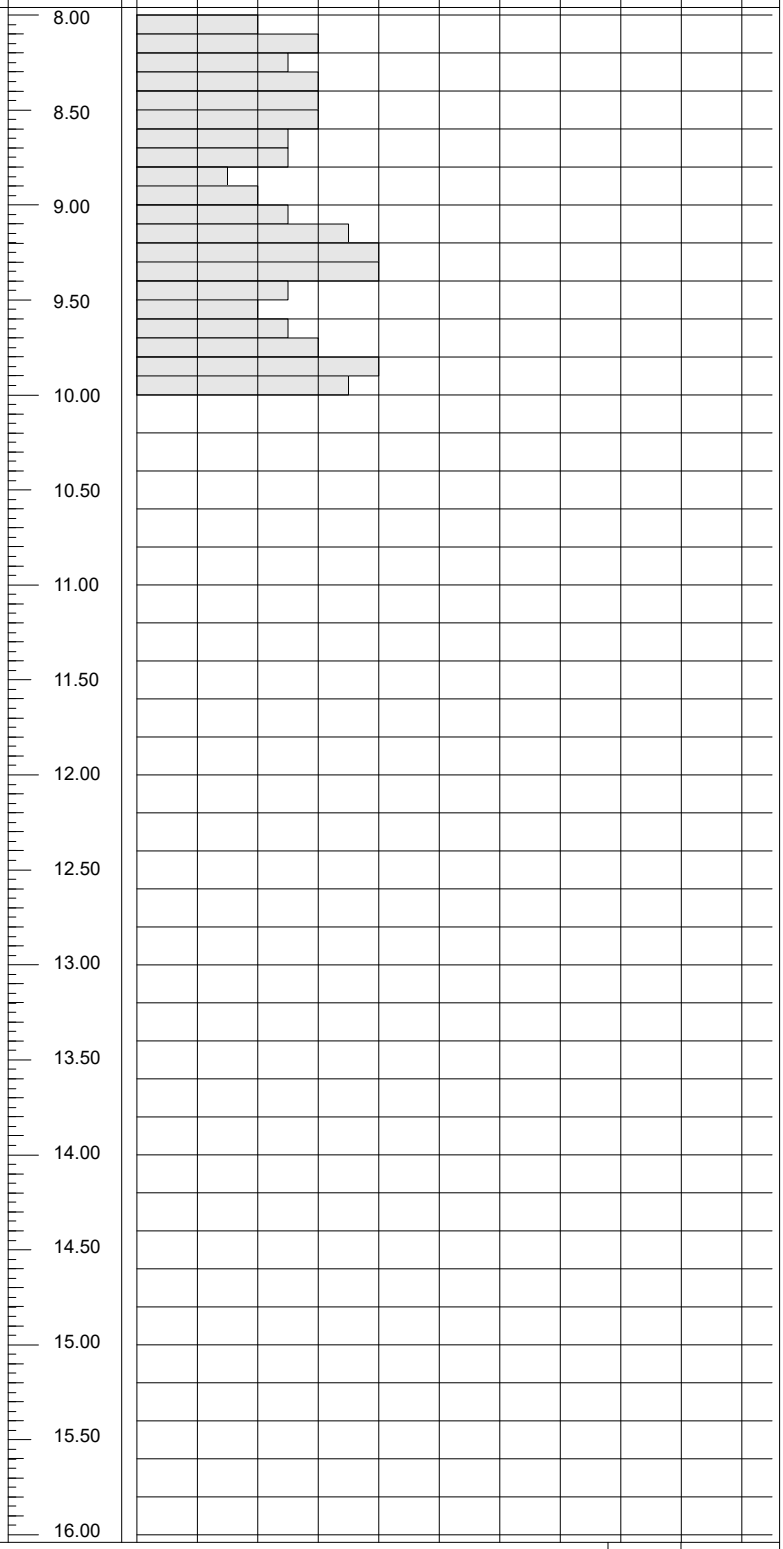

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Figure No. P20-069.DP3

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PADDOCK GEO ENGINEERING

Site	Probe Number
Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	DP4

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2			0.00
0.10-0.20	3			
0.20-0.30	3			
0.30-0.40	3			
0.40-0.50	5			
0.50-0.60	2			0.50
0.60-0.70	1			
0.70-0.80	3			
0.80-0.90	2			
0.90-1.00	2			
1.00-1.10	2			1.00
1.10-1.20	2			
1.20-1.30	2			
1.30-1.40	2			
1.40-1.50	2			
1.50-1.60	2			1.50
1.60-1.70	2			
1.70-1.80	2			
1.80-1.90	3			
1.90-2.00	4			
2.00-2.10	2			2.00
2.10-2.20	1			
2.20-2.30	2			
2.30-2.40	2			
2.40-2.50	7			
2.50-2.60	8			2.50
2.60-2.70	6			
2.70-2.80	5			
2.80-2.90	3			
2.90-3.00	3			
3.00-3.10	4			3.00
3.10-3.20	5			
3.20-3.30	10			
3.30-3.40	9			
3.40-3.50	5			
3.50-3.60	6			3.50
3.60-3.70	5			
3.70-3.80	5			
3.80-3.90	6			
3.90-4.00	7			
4.00-4.10	5			4.00
4.10-4.20	5			
4.20-4.30	4			
4.30-4.40	4			
4.40-4.50	6			
4.50-4.60	8			4.50
4.60-4.70	8			
4.70-4.80	8			
4.80-4.90	8			
4.90-5.00	7			
5.00-5.10	9			5.00
5.10-5.20	12			
5.20-5.30	9			
5.30-5.40	8			
5.40-5.50	7			
5.50-5.60	7			5.50
5.60-5.70	13			
5.70-5.80	22			
5.80-5.90	18			
5.90-6.00	13			
6.00-6.10	8			6.00
6.10-6.20	10			
6.20-6.30	9			
6.30-6.40	11			
6.40-6.50	8			
6.50-6.60	6			6.50
6.60-6.70	7			
6.70-6.80	6			
6.80-6.90	5			
6.90-7.00	7			
7.00-7.10	8			7.00
7.10-7.20	8			
7.20-7.30	8			
7.30-7.40	8			
7.40-7.50	4			
7.50-7.60	6			7.50
7.60-7.70	7			
7.70-7.80	6			
7.80-7.90	6			
7.90-8.00	6			
				8.00

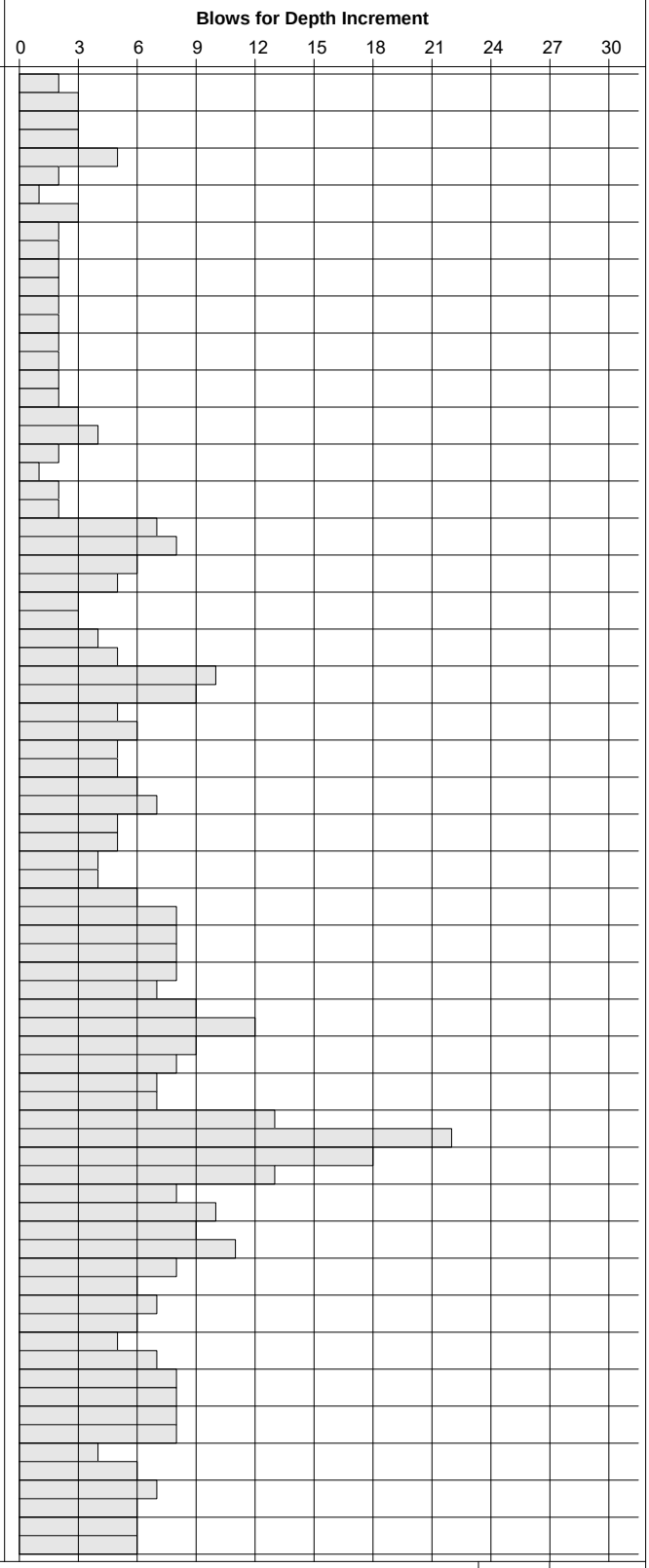

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Figure No. P20-069.DP4

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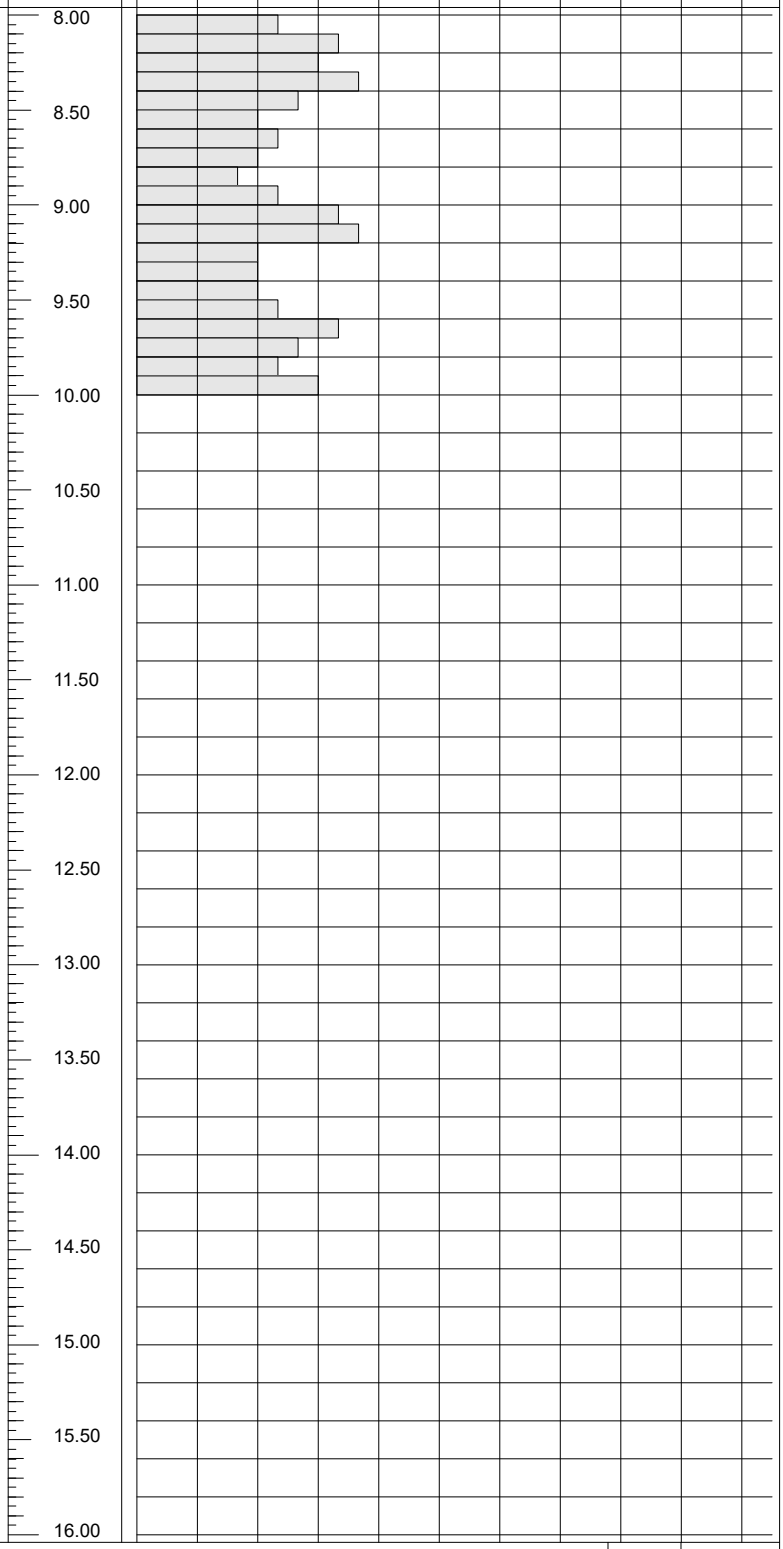
PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP4

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	7		
8.10-8.20	10		
8.20-8.30	9		
8.30-8.40	11		
8.40-8.50	8		
8.50-8.60	6		
8.60-8.70	7		
8.70-8.80	6		
8.80-8.90	5		
8.90-9.00	7		
9.00-9.10	10		
9.10-9.20	11		
9.20-9.30	6		
9.30-9.40	6		
9.40-9.50	6		
9.50-9.60	7		
9.60-9.70	10		
9.70-9.80	8		
9.80-9.90	7		
9.90-10.00	9		



Remarks	Scale (approx)	Logged By
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	Figure No.	
	P20-069.DP4	

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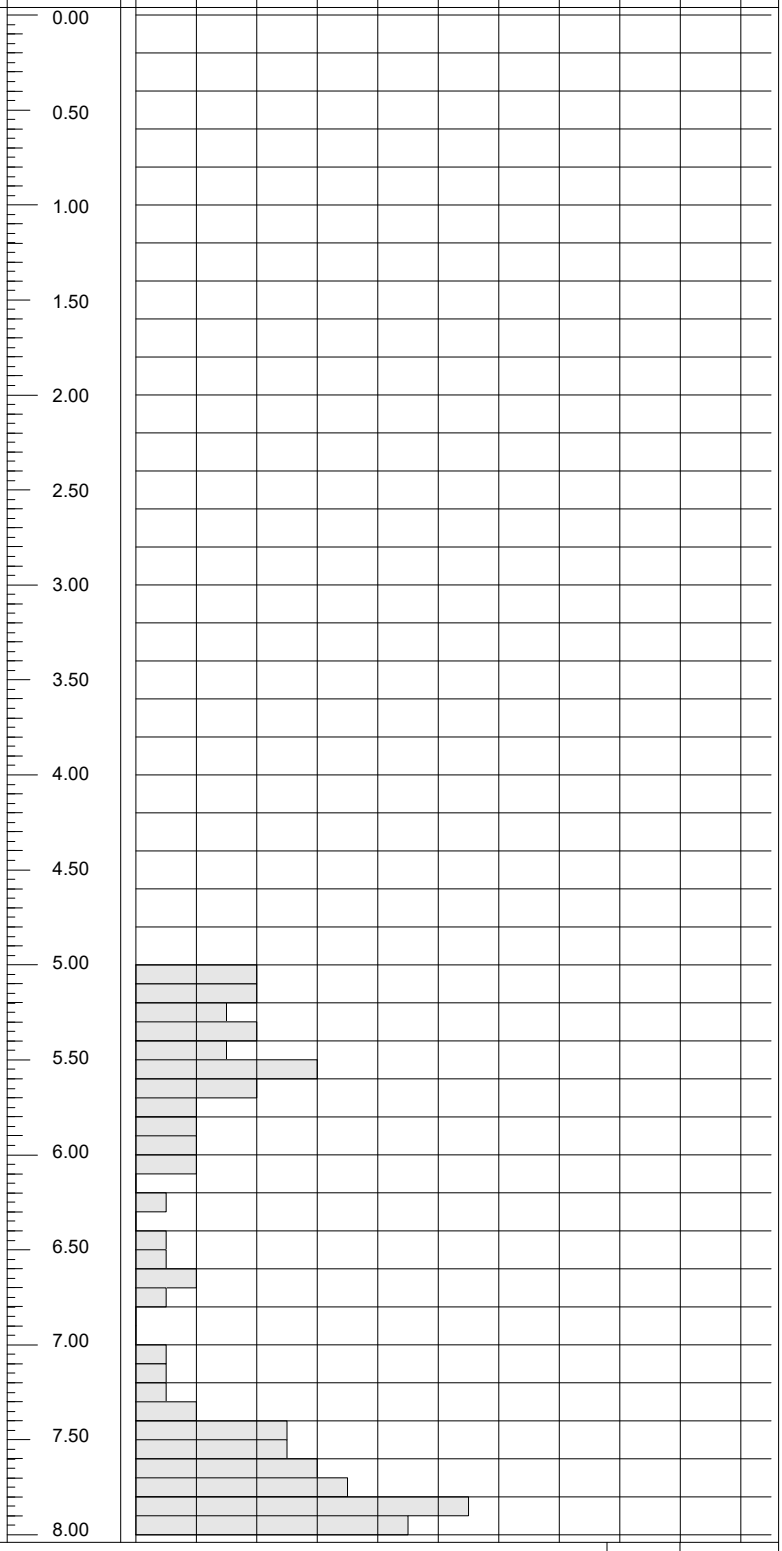
PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP5
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)		Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020		Engineer	Sheet: 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
5.00-5.10	4		
5.10-5.20	4		
5.20-5.30	3		
5.30-5.40	4		
5.40-5.50	3		
5.50-5.60	6		
5.60-5.70	4		
5.70-5.80	2		
5.80-5.90	2		
5.90-6.00	2		
6.00-6.10	2		
6.10-6.20	0		
6.20-6.30	1		
6.30-6.40	0		
6.40-6.50	1		
6.50-6.60	1		
6.60-6.70	2		
6.70-6.80	1		
6.80-6.90	0		
6.90-7.00	0		
7.00-7.10	1		
7.10-7.20	1		
7.20-7.30	1		
7.30-7.40	2		
7.40-7.50	5		
7.50-7.60	5		
7.60-7.70	6		
7.70-7.80	7		
7.80-7.90	11		
7.90-8.00	9		



Remarks	Scale (approx)	Logged By
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	Figure No. P20-069.DP5	

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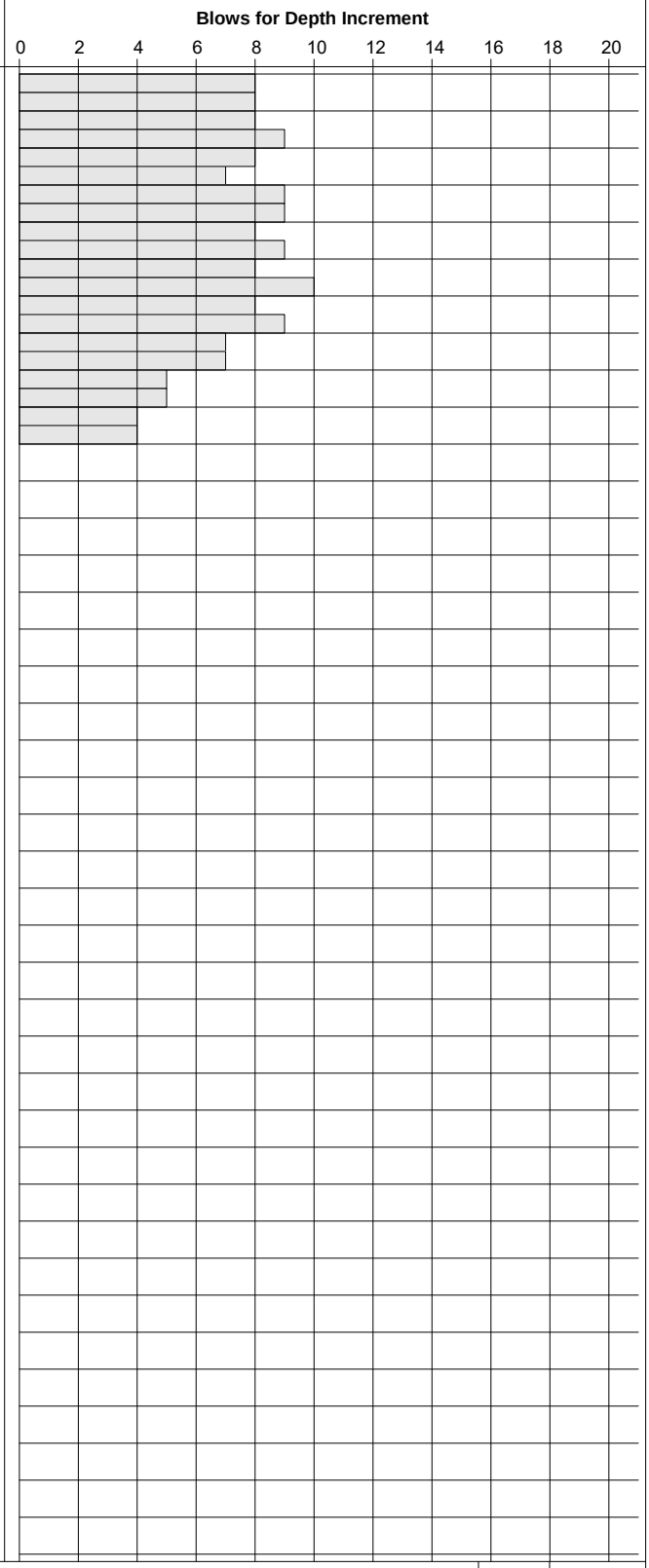
PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP5

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	8		
8.10-8.20	8		
8.20-8.30	8		
8.30-8.40	9		
8.40-8.50	8		
8.50-8.60	7		
8.60-8.70	9		
8.70-8.80	9		
8.80-8.90	8		
8.90-9.00	9		
9.00-9.10	8		
9.10-9.20	10		
9.20-9.30	8		
9.30-9.40	9		
9.40-9.50	7		
9.50-9.60	7		
9.60-9.70	5		
9.70-9.80	5		
9.80-9.90	4		
9.90-10.00	4		

Depth (m): 8.00, 8.50, 9.00, 9.50, 10.00, 10.50, 11.00, 11.50, 12.00, 12.50, 13.00, 13.50, 14.00, 14.50, 15.00, 15.50, 16.00



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Scale (approx)	Logged By
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Figure No. P20-069.DP5

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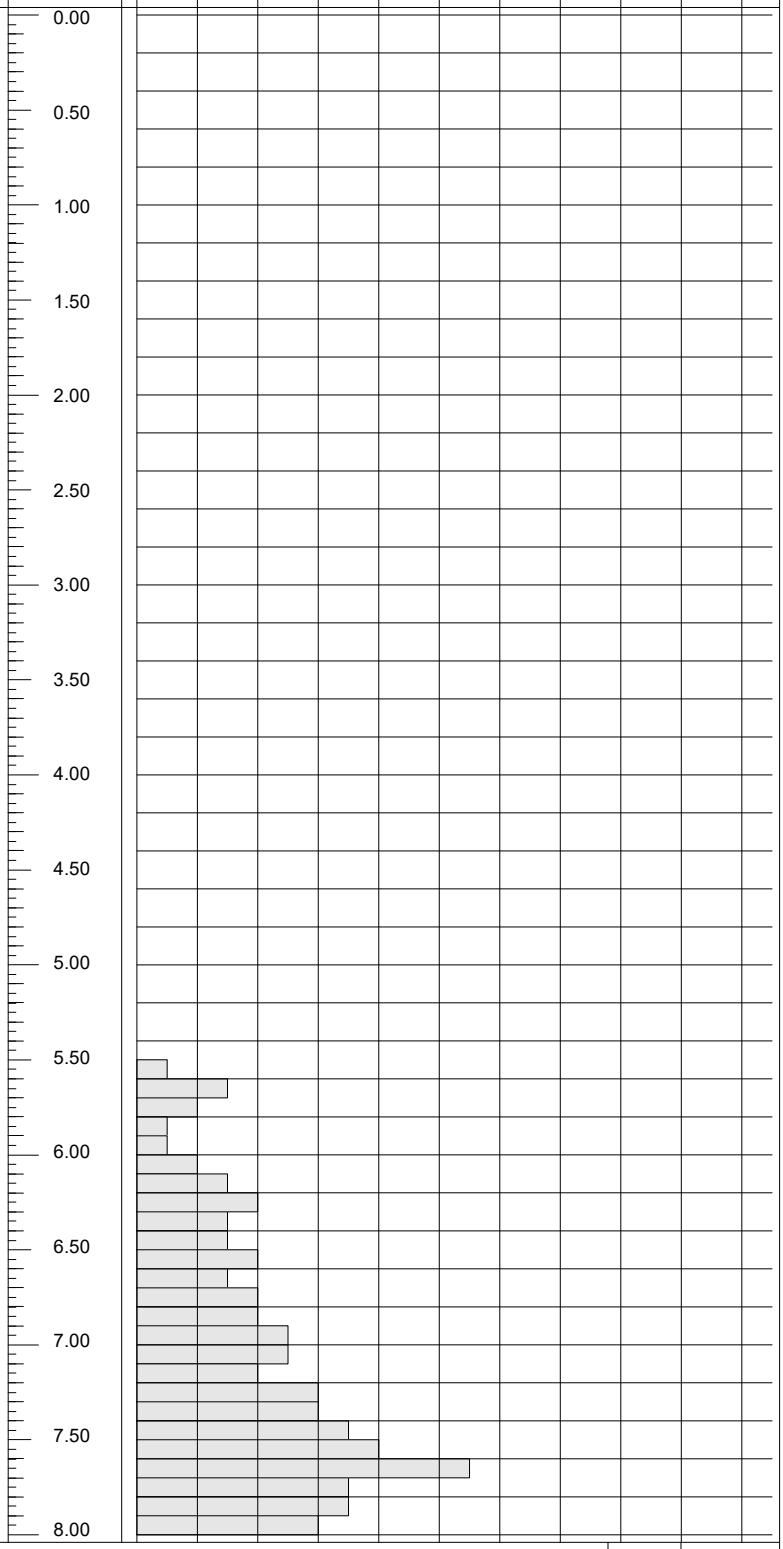
PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP6
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)		Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020		Engineer	Sheet: 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
5.50-5.60	1		
5.60-5.70	3		
5.70-5.80	2		
5.80-5.90	1		
5.90-6.00	1		
6.00-6.10	2		
6.10-6.20	3		
6.20-6.30	4		
6.30-6.40	3		
6.40-6.50	3		
6.50-6.60	4		
6.60-6.70	3		
6.70-6.80	4		
6.80-6.90	4		
6.90-7.00	5		
7.00-7.10	5		
7.10-7.20	4		
7.20-7.30	6		
7.30-7.40	6		
7.40-7.50	7		
7.50-7.60	8		
7.60-7.70	11		
7.70-7.80	7		
7.80-7.90	7		
7.90-8.00	6		



Remarks	Scale (approx)	Logged By
	1:40	
	Figure No. P20-069.DP6	

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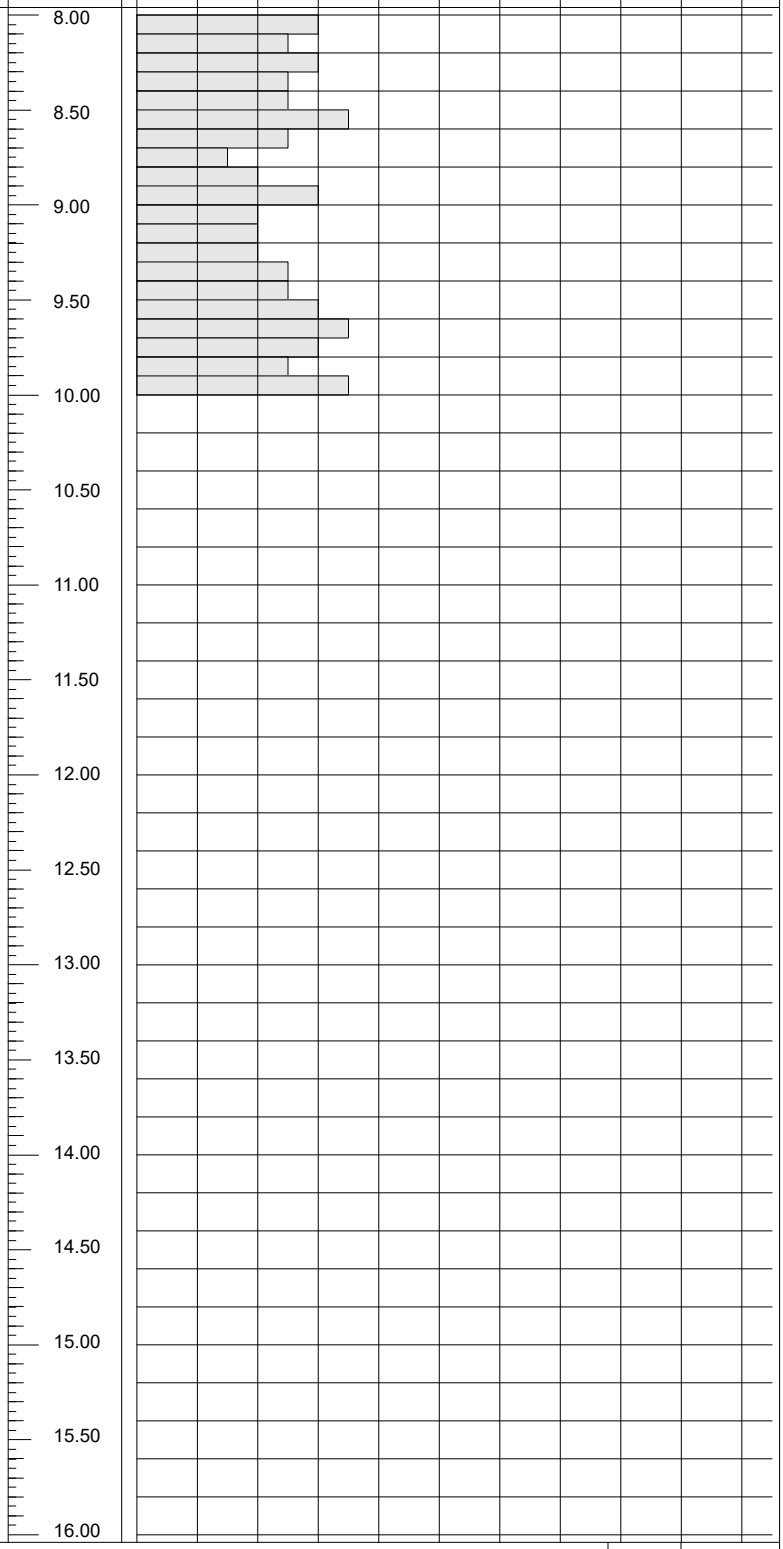
PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP6

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	6		
8.10-8.20	5		
8.20-8.30	6		
8.30-8.40	5		
8.40-8.50	5		
8.50-8.60	7		
8.60-8.70	5		
8.70-8.80	3		
8.80-8.90	4		
8.90-9.00	6		
9.00-9.10	4		
9.10-9.20	4		
9.20-9.30	4		
9.30-9.40	5		
9.40-9.50	5		
9.50-9.60	6		
9.60-9.70	7		
9.70-9.80	6		
9.80-9.90	5		
9.90-10.00	7		



Remarks	Scale (approx)	Logged By
	1:40	
	Figure No.	
	P20-069.DP6	

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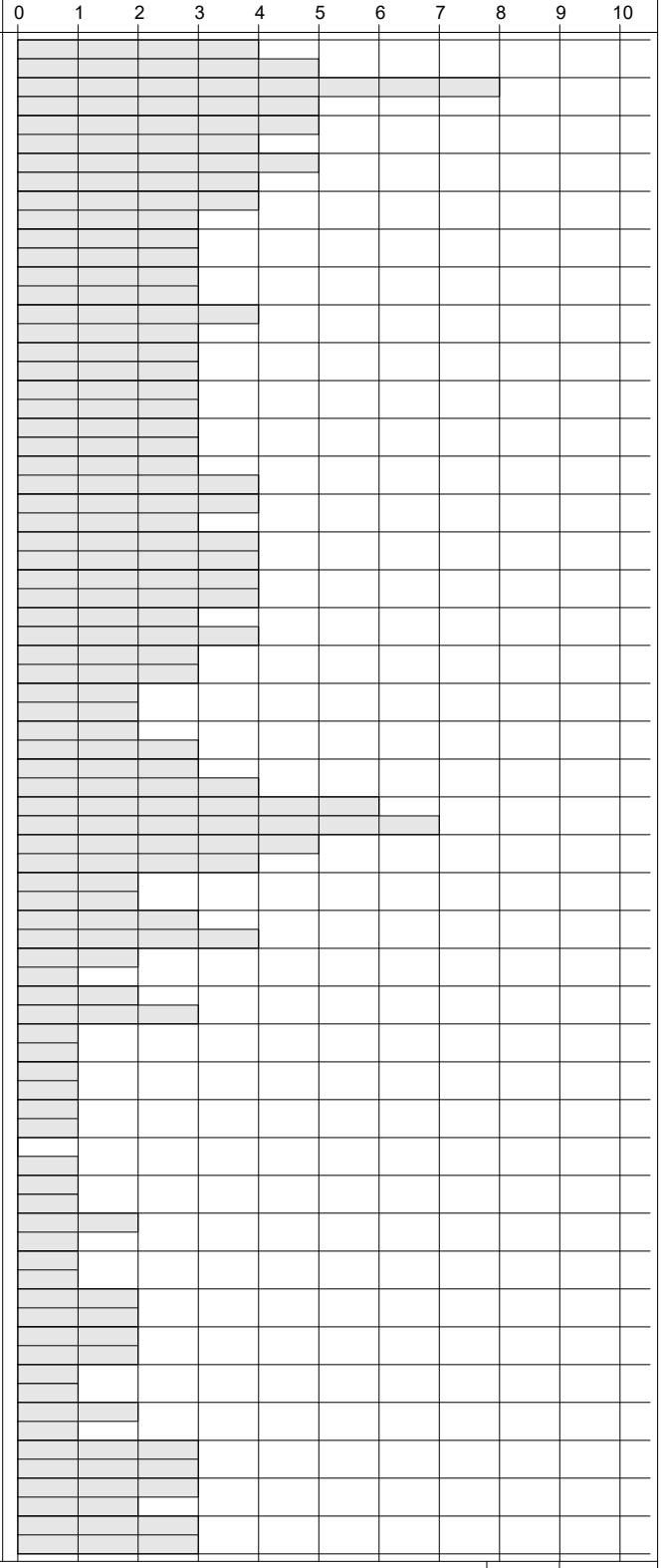
PADDOCK GEO ENGINEERING			Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP7
Method: Dynamic Probing	Cone Dimensions	Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location	Dates: 30/07/2020	Engineer	Sheet: 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
0.00-0.10	4		
0.10-0.20	5		
0.20-0.30	8		
0.30-0.40	5		
0.40-0.50	5		
0.50-0.60	4		
0.60-0.70	5		
0.70-0.80	4		
0.80-0.90	4		
0.90-1.00	3		
1.00-1.10	3		
1.10-1.20	3		
1.20-1.30	3		
1.30-1.40	3		
1.40-1.50	4		
1.50-1.60	3		
1.60-1.70	3		
1.70-1.80	3		
1.80-1.90	3		
1.90-2.00	3		
2.00-2.10	3		
2.10-2.20	3		
2.20-2.30	3		
2.30-2.40	4		
2.40-2.50	4		
2.50-2.60	3		
2.60-2.70	4		
2.70-2.80	4		
2.80-2.90	4		
2.90-3.00	4		
3.00-3.10	3		
3.10-3.20	4		
3.20-3.30	3		
3.30-3.40	3		
3.40-3.50	2		
3.50-3.60	2		
3.60-3.70	2		
3.70-3.80	3		
3.80-3.90	3		
3.90-4.00	4		
4.00-4.10	6		
4.10-4.20	7		
4.20-4.30	5		
4.30-4.40	4		
4.40-4.50	2		
4.50-4.60	2		
4.60-4.70	3		
4.70-4.80	4		
4.80-4.90	2		
4.90-5.00	1		
5.00-5.10	2		
5.10-5.20	3		
5.20-5.30	1		
5.30-5.40	1		
5.40-5.50	1		
5.50-5.60	1		
5.60-5.70	1		
5.70-5.80	1		
5.80-5.90	0		
5.90-6.00	1		
6.00-6.10	1		
6.10-6.20	1		
6.20-6.30	2		
6.30-6.40	1		
6.40-6.50	1		
6.50-6.60	1		
6.60-6.70	2		
6.70-6.80	2		
6.80-6.90	2		
6.90-7.00	2		
7.00-7.10	1		
7.10-7.20	1		
7.20-7.30	2		
7.30-7.40	1		
7.40-7.50	3		
7.50-7.60	3		
7.60-7.70	3		
7.70-7.80	2		
7.80-7.90	3		
7.90-8.00	3		

Depth (m): 0.00, 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.00

Blows for Depth Increment



Remarks	Scale (approx)	Logged By
	1:40	
	Figure No. P20-069.DP7	

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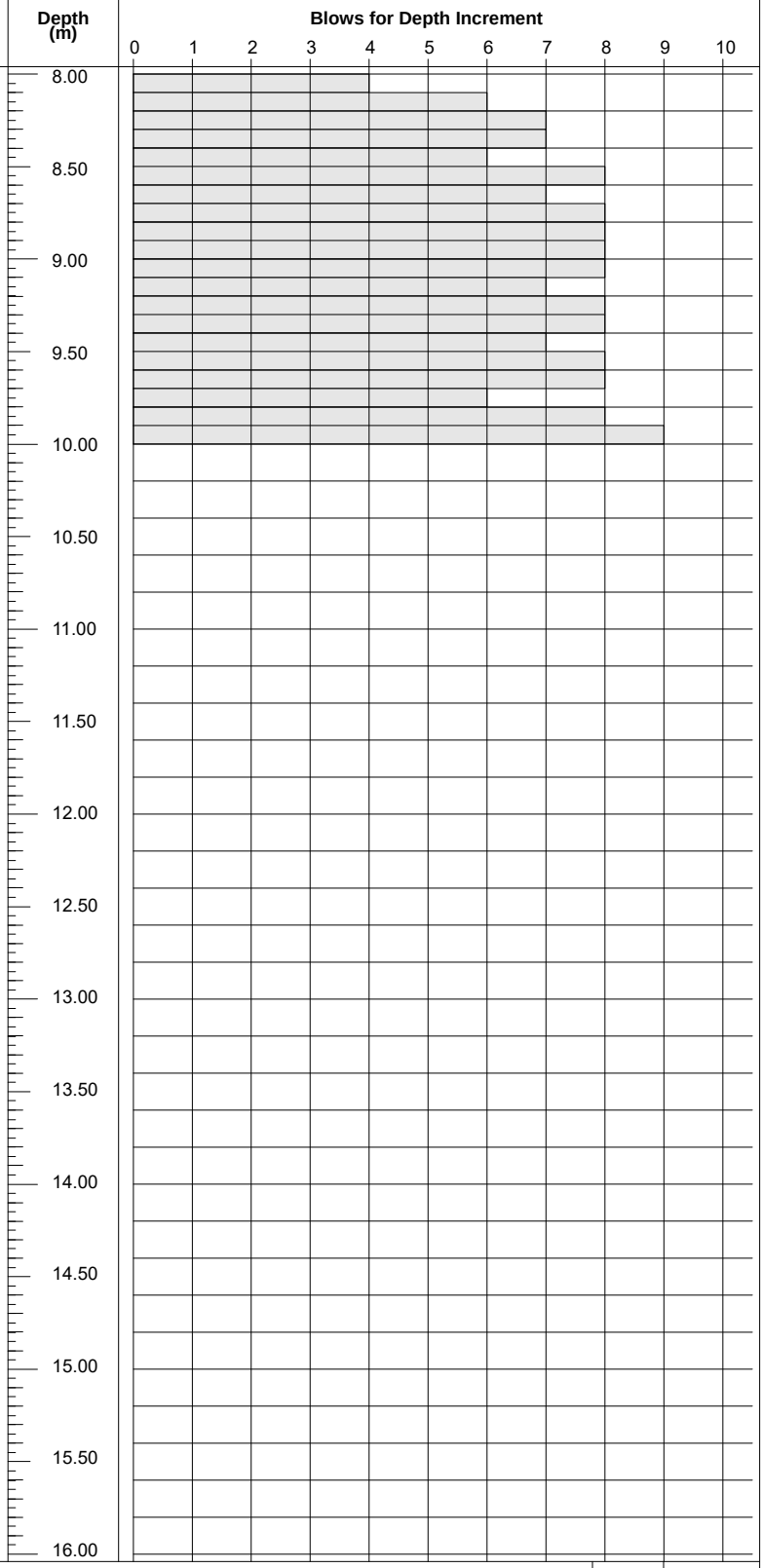
PADDOCK GEO ENGINEERING	Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Probe Number: DP7

Method	Cone Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Probing			Beard Construction Limited	P20-069
	Location	**Dates**	**Engineer**	**Sheet**
		30/07/2020		2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
8.00-8.10	4		
8.10-8.20	6		
8.20-8.30	7		
8.30-8.40	7		
8.40-8.50	6		
8.50-8.60	8		
8.60-8.70	7		
8.70-8.80	8		
8.80-8.90	8		
8.90-9.00	8		
9.00-9.10	8		
9.10-9.20	7		
9.20-9.30	8		
9.30-9.40	8		
9.40-9.50	7		
9.50-9.60	8		
9.60-9.70	8		
9.70-9.80	6		
9.80-9.90	8		
9.90-10.00	9		



Remarks	Scale (approx)	Logged By
	1:40	
	Figure No.	
	P20-069.DP7	

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PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Trial Pit Number: SA1
Excavation Method: Trial Pit	Dimensions: 1.5m by 0.30m		Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location		Dates: 31/07/2020	Project Contractor: PGE	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Grey brown gravelly SAND (MADE GROUND).		
					(0.40) 0.60	Soft dark brown slightly gravelly sandy CLAY with rootlet and rootlets up to 0.50m. Gravel is flint and concrete (MADE GROUND)		
1.00	SV 81kPa				(0.90) 1.50	Firm orange brown slightly gravelly sandy to very sandy CLAY. Gravel is fine to coarse sub angular flint (HEAD).		
						Complete at 1.50m		

Remarks

Infiltration testing undertaken.
No groundwater encountered.
Trial pit side remained stable and upright.

Scale (approx)	Logged By	Figure No.
1:20	SJF	P20-069.SA1

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PADDOCK GEO ENGINEERING				Site: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Trial Pit Number: SA2
Excavation Method: Trial Pit	Dimensions: 2.00m by 0.30m		Ground Level (mOD)	Client: Beard Construction Limited	Job Number: P20-069
	Location		Dates: 31/07/2020	Project Contractor: PGE	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Black and red GRAVEL of macadam, ash and brick fragments (MADE GROUND).		
					(0.80) 1.00	Brown slightly gravelly clayey silty SAND. Gravel is fine to coarse sub rounded flint, and rare brick and concrete. (MADE GROUND)		
1.00	SV 59kPa				(1.40) 2.40	Stiff brown and orange brown slightly gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and chalk. (HEAD)		
2.00	SV 65kPa					Complete at 2.40m		

Remarks

Trial pit side remained upright and stable.
No groundwater encountered.
Infiltration testing undertaken.

Scale (approx)	Logged By	Figure No.
1:20	SJF	P20-069.SA2

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PADDOCK GEO ENGINEERING

Field Test

Site : Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Client : Beard Construction Limited

Project Contractor :

Job Number P20-069

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

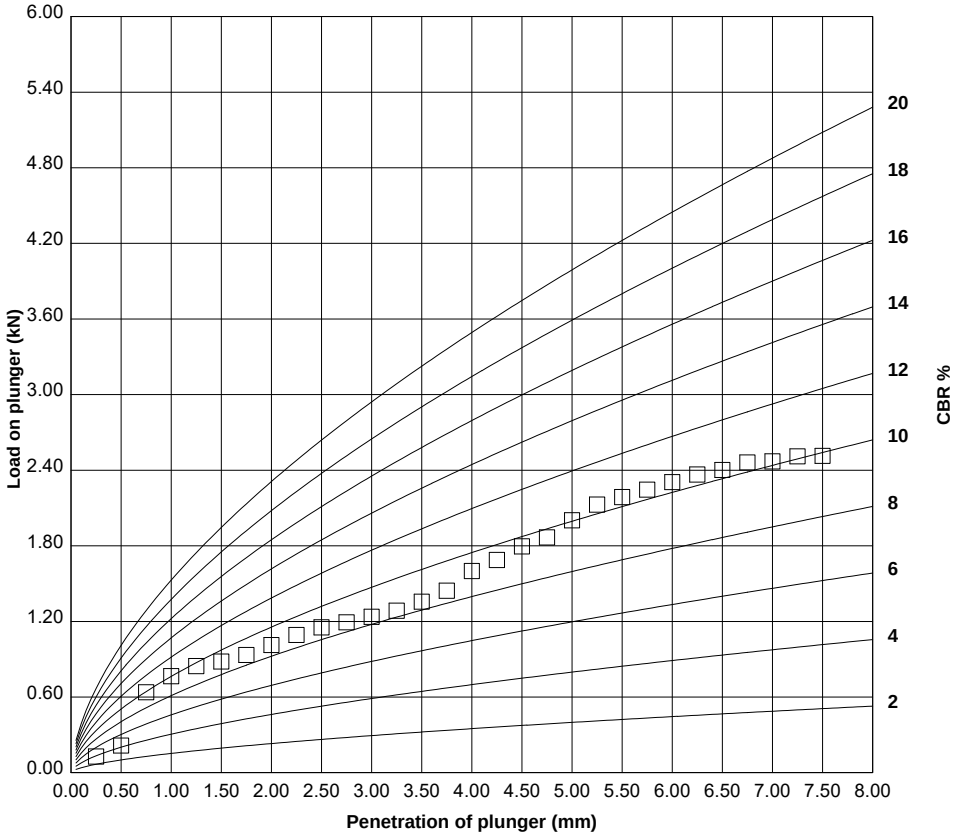
Borehole / Trial Pit	Test No.	Test Depth (m)	Sample Depth (m)	Sample Ref	Description
CBR1	1	0.80	0.80		Stiff orange brown sandy CLAY.

Date	31-07-2020
Easting	-
Northing	-
Level (mOD)	-
Operator	

Moisture Content %	16
Surcharge weight kg	
Material Larger than 20mm	No

Penetration mm	2.5	5.0
Force kN	1.2	2.0
CBR %	8.7	10

Reported CBR %	10



Method of Test :

Remarks :

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PADDOCK GEO ENGINEERING

Field Test

Site : Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Client : Beard Construction Limited

Project Contractor :

Job Number P20-069

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

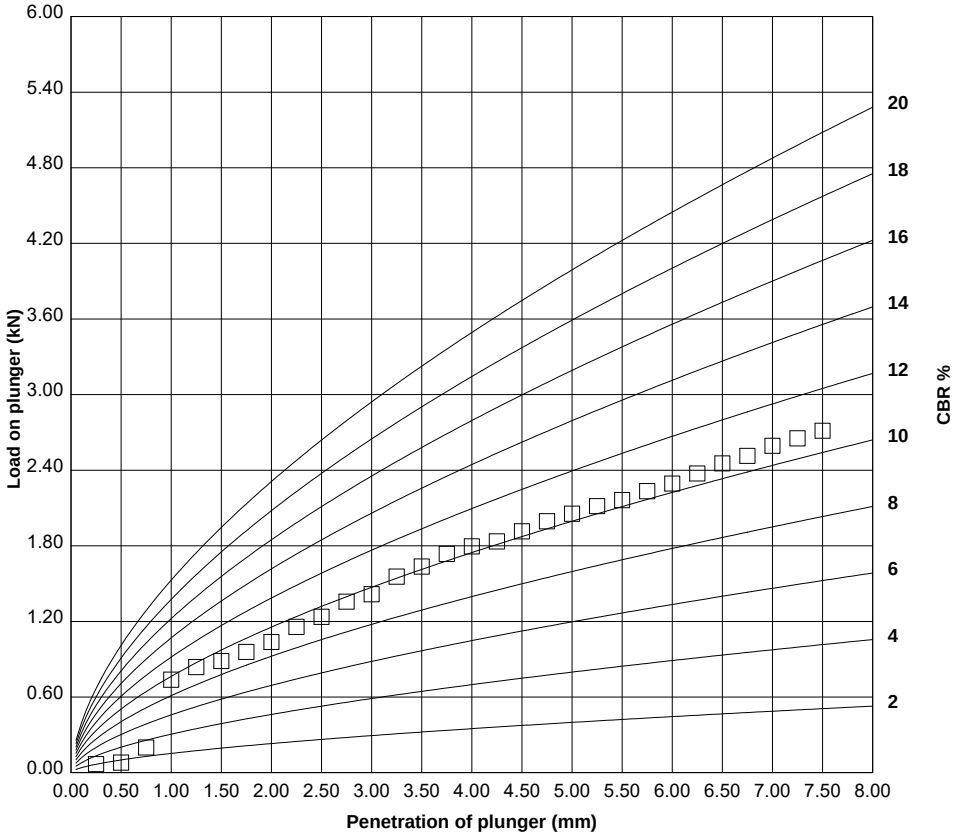
Borehole / Trial Pit	Test No.	Test Depth (m)	Sample Depth (m)	Sample Ref	Description
CBR2	1	0.60	0.60		Stiff orange brown sandy CLAY.

Date	31-07-2020
Easting	-
Northing	-
Level (mOD)	-
Operator	

Moisture Content %	17
Surcharge weight kg	
Material Larger than 20mm	No

Penetration mm	2.5	5.0
Force kN	1.2	2.1
CBR %	9.4	10

Reported CBR %	10



Method of Test :

Remarks :

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PADDOCK GEO ENGINEERING

Field Test

Site : Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Client : Beard Construction Limited

Project Contractor :

Job Number P20-069

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

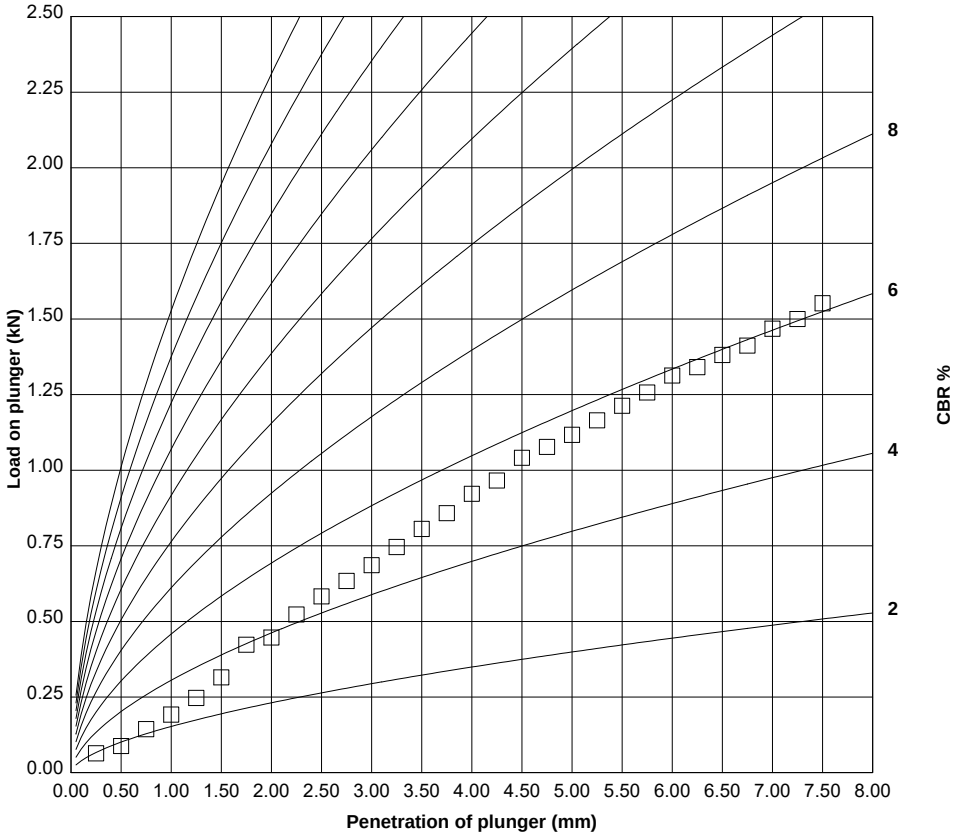
Borehole / Trial Pit	Test No.	Test Depth (m)	Sample Depth (m)	Sample Ref	Description
CBR3	1	0.60	0.60		Stiff orange brown sandy CLAY.

Date	31-07-2020
Easting	-
Northing	-
Level (mOD)	-
Operator	

Moisture Content %	20
Surcharge weight kg	
Material Larger than 20mm	No

Penetration mm	2.5	5.0
Force kN	0.58	1.1
CBR %	4.4	5.6

Reported CBR %	5.6



Method of Test :

Remarks :

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PADDOCK GEO ENGINEERING

Field Test

Site : Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Client : Beard Construction Limited

Project Contractor :

Job Number P20-069

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

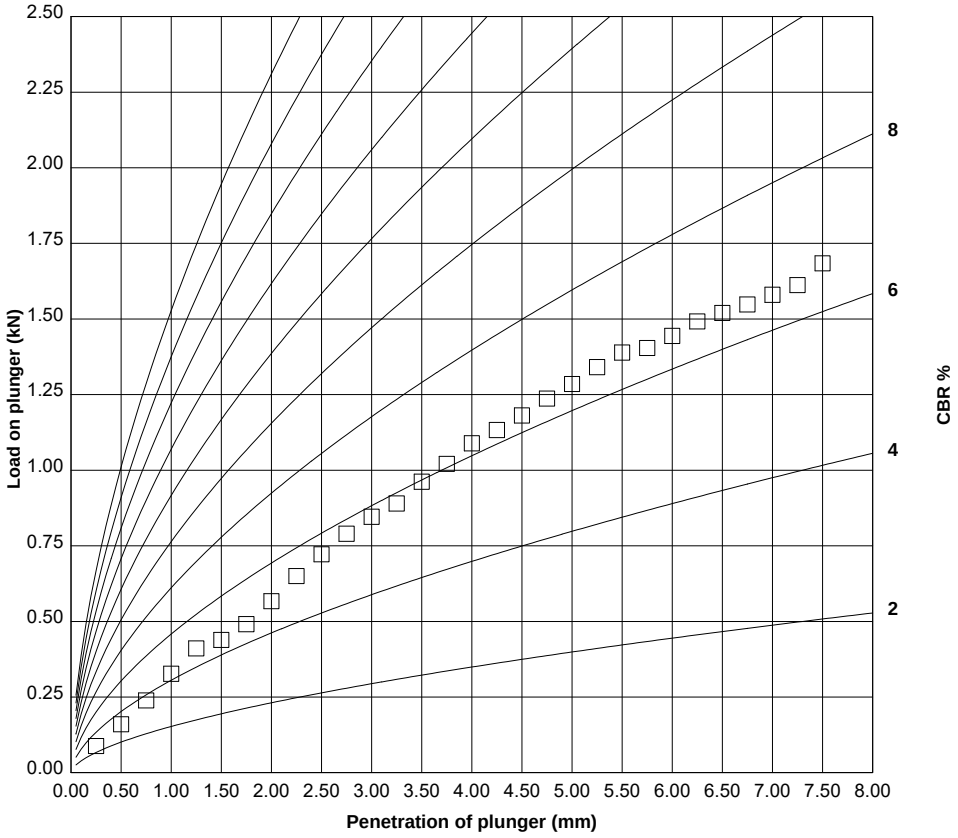
Borehole / Trial Pit	Test No.	Test Depth (m)	Sample Depth (m)	Sample Ref	Description
CBR4	1	0.60	0.60		Stiff orange brown sandy CLAY.

Date	31-07-2020
Easting	-
Northing	-
Level (mOD)	-
Operator	

Moisture Content %	21
Surcharge weight kg	
Material Larger than 20mm	No

Penetration mm	2.5	5.0
Force kN	0.72	1.3
CBR %	5.5	6.4

Reported CBR %	6.4



Method of Test :

Remarks :

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Photo of arisings from boreholes WS1

Photo of arisings from boreholes WS2

PADDOCK GEO ENGINEERING

Client:	**Beard Construction Ltd**
Project No:	**P20-069**
Project Title:	**Norcot Community Centre Lyndhurst Road Reading RG30 6UB**
Date Taken:	**July 2020**

Photo of arisings from boreholes WS3

Photo of arisings from boreholes WS4

PADDOCK GEO ENGINEERING

Client:	**Beard Construction Ltd**
Project No:	**P20-069**
Project Title:	**Norcot Community Centre Lyndhurst Road Reading RG30 6UB**
Date Taken:	**July 2020**

Photo of arisings from boreholes WS5

Photo of arisings from boreholes WS6

PADDOCK GEO ENGINEERING

Client:	**Beard Construction Ltd**
Project No:	**P20-069**
Project Title:	**Norcot Community Centre Lyndhurst Road Reading RG30 6UB**
Date Taken:	**July 2020**

Photo from trial pit SA1

Photo of arisings from trial pit SA1

PADDOCK GEO ENGINEERING

Client:	**Beard Construction Ltd**
Project No:	**P20-069**
Project Title:	**Norcot Community Centre Lyndhurst Road Reading RG30 6UB**
Date Taken:	**July 2020**

Photo from trial pit SA2

Photo of arisings from trial pit SA2

PADDOCK GEO ENGINEERING

Client:	**Beard Construction Ltd**
Project No:	**P20-069**
Project Title:	**Norcot Community Centre Lyndhurst Road Reading RG30 6UB**
Date Taken:	**July 2020**

APPENDIX C – GEOCHEMICAL DATA

Chemical Analysis Reports

Chemical Analysis Results Summary

PGE In-House GACs

HazWaste Online Classification Report

Stephen
Paddock Geo Engineering
14 Burns Road
Bletchley
Milton Keynes
MK3 5AL

t: 01908 271366

e: Paddock Engineering

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

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

Analytical Report Number : 20-22959

Project / Site name:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	**Samples received on:**	04/08/2020
Your job number:	P20-069	**Sample instructed/ Analysis started on:**	04/08/2020
Your order number:	P20-069 G 01	**Analysis completed by:**	13/08/2020
Report Issue Number:	1	**Report issued on:**	13/08/2020
Samples Analysed:	2 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB
Your Order No: P20-069 G 01

Lab Sample Number				1582487	1584543			
Sample Reference				WS106	WS106			
Sample Number				None Supplied	D			
Depth (m)				0.05	2.50			
Date Sampled				29/07/2020	29/07/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	3.7	11			
Total mass of sample received	kg	0.001	NONE	0.82	0.50			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	7.8			
Total Sulphate as SO_4	mg/kg	50	MCERTS	460	140			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.029			
Loss on Ignition @ 450°C	%	0.2	MCERTS	2.2	-			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-			
Phenanthrene	mg/kg	0.05	MCERTS	2.3	-			
Anthracene	mg/kg	0.05	MCERTS	0.56	-			
Fluoranthene	mg/kg	0.05	MCERTS	5.3	-			
Pyrene	mg/kg	0.05	MCERTS	4.7	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.8	-			
Chrysene	mg/kg	0.05	MCERTS	2.6	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.2	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.4	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.0	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.5	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.34	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	-			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	29.2	-			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	-			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	-			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	-			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	-			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	-			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51	-			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	-			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	-			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	-			
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	180	-			

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Analytical Report Number : 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1582487	WS106	None Supplied	0.05	Brown sand with gravel.
1584543	WS106	D	2.50	Brown clay and sand with gravel and vegetation.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number : 20-23163

Replaces Analytical Report Number: 20-23163, issue no. 2

Additional analysis undertaken.

Project / Site name:	Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB	**Samples received on:**	31/07/2020
Your job number:	P20-069	**Samples instructed on/ Analysis started on:**	31/07/2020
Your order number:	P20-069 G01	**Analysis completed by:**	18/08/2020
Report Issue Number:	2	**Report issued on:**	18/08/2020
Samples Analysed:	10 soil samples		

Signed: Karolina Marek

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

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

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

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

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

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

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

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

Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB
Your Order No: P20-069 G01

Lab Sample Number				1583480	1583481	1583482	1583483	1583484
Sample Reference				WS101	WS101	WS102	WS102	WS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	4.50	0.60	2.60	0.30
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	15	6.7	4.1	9.3
Total mass of sample received	kg	0.001	NONE	0.5	0.61	0.45	0.42	1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.3	8.3	8	8.1	8
Total Sulphate as SO4	mg/kg	50	MCERTS	150	290	130	160	96
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.02	0.012	-	0.0033	-
Loss on Ignition @ 450oC	%	0.2	MCERTS	1.8	-	1.2	-	0.9
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	< 0.80	-	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	-	9.9	-	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	-	0.56	-	0.58
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	-	0.4	-	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	0.2	-	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	-	16	-	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	-	8.5	-	7.1
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	-	21	-	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	0.6	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	-	15	-	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	2	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	-	25	-	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	-	47	-	34

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Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB
Your Order No: P20-069 G01

Lab Sample Number				1583480	1583481	1583482	1583483	1583484
Sample Reference				WS101	WS101	WS102	WS102	WS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	4.50	0.60	2.60	0.30
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10	-	< 10

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

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Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG3
Your Order No: P20-069 G01

Lab Sample Number				1583485	1583486	1583487	1583488	1583489
Sample Reference				WS103	WS104	WS104	WS105	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80	0.40	4.50	0.80	3.50
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	9.1	4.7	8.5	13
Total mass of sample received	kg	0.001	NONE	0.44	0.43	0.62	0.44	1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8	8	8	7.3	7.7
Total Sulphate as SO4	mg/kg	50	MCERTS	110	160	250	190	100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0068	0.019	0.042	0.033	0.0076
Loss on Ignition @ 450oC	%	0.2	MCERTS	-	1.7	-	1.6	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80	-	< 0.80	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	11	-	13	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.63	-	0.71	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.6	-	0.5	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.3	-	0.3	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	26	-	33	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	12	-	13	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	31	-	44	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-	18	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	2	-	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	29	-	34	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	52	-	58	-

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Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG3
Your Order No: P20-069 G01

Lab Sample Number				1583485	1583486	1583487	1583488	1583489
Sample Reference				WS103	WS104	WS104	WS105	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80	0.40	4.50	0.80	3.50
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	< 10	-

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

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Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB
Your Order No: P20-069 G01

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1583488	WS105	0.80	151	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

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

Analytical Report Number : 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1583480	WS101	None Supplied	0.8	Brown clay with gravel.
1583481	WS101	None Supplied	4.5	White chalk.**
1583482	WS102	None Supplied	0.6	Brown sandy clay with gravel.
1583483	WS102	None Supplied	2.6	Brown sand with gravel.
1583484	WS103	None Supplied	0.3	Brown sandy clay with gravel.
1583485	WS103	None Supplied	1.8	Brown sandy clay with gravel.
1583486	WS104	None Supplied	0.4	Brown loam and clay with gravel.
1583487	WS104	None Supplied	4.5	Light brown sand with gravel.
1583488	WS105	None Supplied	0.8	Brown sandy clay with gravel.
1583489	WS105	None Supplied	3.5	Brown sandy clay.

** Non MCERTS matrix

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Analytical Report Number : 20-23163
Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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

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Analytical Report Number : 20-23164

Project / Site name:	Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB	**Samples received on:**	31/07/2020
Your job number:	P20-069	**Sample instructed/ Analysis started on:**	31/07/2020
Your order number:	P20-069 G01	**Analysis completed by:**	14/08/2020
Report Issue Number:	1	**Report issued on:**	14/08/2020
Samples Analysed:	10:1 WAC sample		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

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The results included within the report relate only to the sample(s) submitted for testing.

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Waste Acceptance Criteria Analytical Results

Report No:	**20-23164**						
					Client:	**PADDOCK**	
Location	**Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB**						
Lab Reference (Sample Number)	1583491 / 1583492				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	29/07/2020				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC1						
Depth (m)	0.60-1.20						
Solid Waste Analysis							
TOC (%)**	0.1				3%	5%	6%
Loss on Ignition (%) **	2.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.0				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0026			0.0226	0.5	2	25
Barium *	0.0013			0.0111	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0021			0.019	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	< 0.0004			< 0.0040	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0020			0.018	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0024			0.021	4	50	200
Chloride *	0.51			4.5	800	15000	25000
Fluoride	0.32			2.9	10	150	500
Sulphate *	1.7			15	1000	20000	50000
TDS*	20			170	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.07			44.8	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	91						
Moisture (%)	9.4						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation
** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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

Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1583491	WAC1	None Supplied	0.60-1.20	Brown clay and sand.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025

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Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhurts Road, Readoing, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report relate only to the sample(s) submitted for testing.

Human Health Generic Contamination Risk Assessment - Norcot Community Centre, Lyndhurst Road,, Reading, RG30 6UB (6 Samples)

Determinand	Units	95th Percentile Upper Confidence Limit (Mean)	Assessment Criteria Residential without Home Grown Produce Concentration (cc)	Mean Exceeds cc	Outliers	True Mean (μ)	Exceeding Samples
Metals/Metaloids							
Arsenic	mg kg^{-1}	13.32	40.0				
Berylium	mg kg^{-1}	0.89	1.7				
Cadmium	mg kg^{-1}	0.27	85.0				
Chromium	mg kg^{-1}	30	910				
Inorganic Mercury	mg kg^{-1}	0.43	56.0				
Nickel	mg kg^{-1}	22	180				
Lead	mg kg^{-1}	39	310				
Selenium	mg kg^{-1}	1.67	430				
Copper	mg kg^{-1}	15	7100				
Zinc	mg kg^{-1}	61	4000				
Vanadium	mg kg^{-1}	40.69	1200				
Phytotoxic Metals (Phytotoxicity)							
Copper	mg kg^{-1}	15	111				
Zinc	mg kg^{-1}	61	330				
Hydrocarbons							
Total Petroleum Hydrocarbons							
TPH EC6-EC10 (PRO)	mg kg^{-1}	N/A	65				
TPH EC10-EC21 (DRO)	mg kg^{-1}	N/A	300				
TPH EC21-EC40 (Min.Oil)	mg kg^{-1}	N/A	1500				
Total TPH	mg kg^{-1}	83.98	600				
Poly Aromatic Hydrocarbons							
Benzo(a)pyrene	mg kg^{-1}	1.33	3.20				
Napthalene	mg kg^{-1}	0.05	5.60				
Dibenzo(a,h) anthracene	mg kg^{-1}	0.18	0.32				
Flourene	mg kg^{-1}	0.05	3800.00				
Phenols	mg kg^{-1}	NE	420.00				
OTHER							
pH	-	8.1	<5, >12				
Sulphur	mg kg^{-1}	N/A	2500				
Water Soluble Boron	mg kg^{-1}	1.11	11000				
Asbestos Screen	Detection	Not Detected	Chrysotile - Loose fibres				WS105 at 0.80m
Asbestos Quantification	%	-	<0.001%				

NOTE:

na - Not applicable
ne - Not evaluated, all results below the appropriate guideline level
nc - not displayed as results are not meaningful due to large uncertainty from small data set

GENERIC HUMAN HEALTH SCREENING TOTAL SOIL CONCENTRATION ASSESSMENT CRITERIA (GAC)

DETERMINAND		RESIDENTIAL (mg/kg)		COMMERCIAL (mg/kg)
Chemical	**GAC Sources and units**	**With Home Grown produce**	**Without Home Grown produce**	
Asbestos Screen & ID*	-	Detected	Detected	Detected
Cyanide - Total	SNIFFER	53.25	53.25	53.25
Cyanide - Free	SNIFFER	53.25	53.25	53.25
Loss on Ignition @ 450°C	-	-	-	-
Sulphate (as SO_4) - Total	BRE****	2400	2400	2400
Sulphide	ICRCL	2500	2500	2500
Sulphur - Total	ICRCL	2500	2500	2500
Phenol (Total Monohydric)	CLEA	420	420	3200
pH	ICRCL	<5,>12	<5,>12	-
Metals and Metalloids (CLEA Metals)				
Arsenic	LQM S4UL	37	40	640
Beryllium	LQM S4UL	1.7	1.7	12
Cadmium	LQM S4UL	11	85	190
Chromium III	LQM S4UL	910	910	8600
Lead	DEFRA C4SL	190	310	2300
Mercury (Total)	LQM S4UL (Inorganic)	40	56	1100
Selenium	LQM S4UL	250	430	12000
Copper (phytotoxicity)	LQM S4UL	2400 (111)	7100	68000
Nickel	LQM S4UL	180	180	980
Zinc (phytotoxicity)	LQM S4UL	3700 (330)	40000	730000
Vanadium	LQM S4UL	410	1200	9000
Boron - Water Soluble	LQM S4UL	290	11000	240000
Total Petroleum Hydrocarbons**				
TPH (EC6-EC10) - PRO	LQM S4UL (2.5% SOM)	65	100	4800
TPH (EC10-EC21) - DRO	LQM S4UL (2.5% SOM)	300	600	23000
TPH (EC21-EC40) - Min. Oil	LQM S4UL (2.5% SOM)	1500	1900	28000
Total TPH (EC10-EC40)	LQM S4UL (2.5% SOM)	600	900	23000
Polycyclic Aromatic Hydrocarbons***				
Naphthalene	LQM S4UL (2.5% SOM)	5.6	5.6	460
Flourene	LQM S4UL (2.5% SOM)	400	3800	68000
Benzo[a]pyrene	LQM S4UL (2.5% SOM)	2.7	3.2	35
Dibenzo[a,h]anthracene	LQM S4UL (2.5% SOM)	0.28	0.32	3.6

Notes

The Generic Assessment Criteria (GAC) are based on CLEA Soil Guidance Values published values and CIEH/LQM S4CLs where available or ICRCL, DoE, BRE and HSE levels where necessary.
Where gaps remain GACs were calculated using the latest CLEA spreadsheet using DEFRA C4SL toxicology and physiochemical parameters from DEFRA SP1010.

* Guidance level set at any fibre identification.

** TPH 3 band is employed as a screening tool to instigate detailed speciated analysis to the TPHCWG methodology. Based on mean of fractions included

*** Testing based on USEPA Priority 16 compounds. GACs for four compounds and total PAH with published GACs only, used as a screening tool.

**** BRE SD1 - DS-1 Concrete Sulphate Design Class limit. Sulphate is not considered to pose a significant risk to human health under normal circumstances.

PADDOCK GEO ENGINEERING

CLIENT:	Beard Construction Limited
PROJECT No:	P20-069
PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

PADDOCK GEO ENGINEERING

HazWasteOnline™

Waste Classification Report

A2V7E-LRZ7U-F86AD

Job name

Norcot Community Centre

Description/Comments

Project

P20-069

Site

Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Related Documents

#	Name	Description
None		

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Matthew Paddock
Date:
26 Aug 2020 08:14 GMT
Telephone:
07377 422528

Company:
Paddock Geo Engineering
The Annex,
14 Burns Road
Milton Keynes
MK3 5A

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	-
Advanced Hazardous Waste Classification	-

Report

Created by: Matthew Paddock
Created date: 26 Aug 2020 08:14 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS101	0.8	Non Hazardous		2
2	WS102	0.6	Non Hazardous		4
3	WS103	0.3	Non Hazardous		6
4	WS104	0.4	Non Hazardous		8
5	WS105	0.8	Non Hazardous		10
6	WS106	0.05	Non Hazardous		12

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	14
Appendix B: Rationale for selection of metal species	15
Appendix C: Version	16

Classification of sample: WS101

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS101
Sample Depth:
0.8 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2	mg/kg	2.775	3.33	mg/kg	0.000333 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.966	mg/kg	0.0000966 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		37	mg/kg	1.462	54.078	mg/kg	0.00541 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12	mg/kg	1.126	13.511	mg/kg	0.00135 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12	mg/kg	1.56	18.718	mg/kg	0.0012 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30	mg/kg	2.976	89.288	mg/kg	0.00893 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		49	mg/kg	2.774	135.933	mg/kg	0.0136 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		pH			PH		7.3	pH		7.3	pH	7.3 pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
19	●	anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
20	●	fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-912-4	206-44-0									
21	●	pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
										Total:	0.0344 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS102

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS102
Sample Depth:
0.6 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.9	mg/kg	1.32	13.071	mg/kg	0.00131 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.56	mg/kg	2.775	1.554	mg/kg	0.000155 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.288	mg/kg	0.000129 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.5	mg/kg	1.126	9.57	mg/kg	0.000957 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21	mg/kg	1.56	32.756	mg/kg	0.0021 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.6	mg/kg	1.353	0.812	mg/kg	0.0000812 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15	mg/kg	2.976	44.644	mg/kg	0.00446 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		47	mg/kg	2.774	130.385	mg/kg	0.013 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		pH			PH		8	pH		8	pH	8pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
19	●	anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
20	●	fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-912-4	206-44-0									
21	●	pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
										Total:	0.0262 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS103

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS103
Sample Depth:
0.3 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.58	mg/kg	2.775	1.61	mg/kg	0.000161 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.966	mg/kg	0.0000966 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.1	mg/kg	1.126	7.994	mg/kg	0.000799 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15	mg/kg	2.976	44.644	mg/kg	0.00446 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		34	mg/kg	2.774	94.321	mg/kg	0.00943 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		pH			PH		8	pH		8	pH	8pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
19	●	anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
20	●	fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-912-4	206-44-0									
21	●	pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
										Total:	0.0214 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS104

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS104
Sample Depth:
0.4 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.63	mg/kg	2.775	1.748	mg/kg	0.000175 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6	mg/kg	3.22	1.932	mg/kg	0.000193 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.343	mg/kg	0.0000343 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12	mg/kg	1.126	13.511	mg/kg	0.00135 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	31	mg/kg	1.56	48.354	mg/kg	0.0031 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17	mg/kg	2.976	50.597	mg/kg	0.00506 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		pH			PH		8	pH		8	pH	8pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
19	●	anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
20	●	fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-912-4	206-44-0									
21	●	pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
										Total:	0.0312 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS105

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS105
Sample Depth:
0.8 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.71	mg/kg	2.775	1.97	mg/kg	0.000197 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.61	mg/kg	0.000161 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.343	mg/kg	0.0000343 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13	mg/kg	1.126	14.637	mg/kg	0.00146 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44	mg/kg	1.56	68.632	mg/kg	0.0044 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18	mg/kg	2.976	53.573	mg/kg	0.00536 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		58	mg/kg	2.774	160.9	mg/kg	0.0161 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		pH			PH		7.3	pH		7.3	pH	7.3 pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-581-5	85-01-8									
19	●	anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-371-1	120-12-7									
20	●	fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-912-4	206-44-0									
21	●	pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			205-883-8	191-24-2									
										Total:	0.0356 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS106

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS106
Sample Depth:
0.05 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.3	mg/kg	1.32	12.279	mg/kg	0.00123 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.75	mg/kg	2.775	2.082	mg/kg	0.000208 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		2	mg/kg	3.22	6.44	mg/kg	0.000644 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19	mg/kg	1.126	21.392	mg/kg	0.00214 %		
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	51	mg/kg	1.56	79.551	mg/kg	0.0051 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17	mg/kg	2.976	50.597	mg/kg	0.00506 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
12		TPH (C6 to C40) petroleum group			TPH		180	mg/kg		180	mg/kg	0.018 %		
13		pH			PH		8.2	pH		8.2	pH	8.2 pH		
14		naphthalene	601-052-00-2	202-049-5	91-20-3		0.05	mg/kg		0.05	mg/kg	0.000005 %		
15		acenaphthylene		205-917-1	208-96-8		0.05	mg/kg		0.05	mg/kg	0.000005 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16	●	acenaphthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-469-6	83-32-9									
17	●	fluorene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
			201-695-5	86-73-7									
18	●	phenanthrene				2.3	mg/kg		2.3	mg/kg	0.00023 %		
			201-581-5	85-01-8									
19	●	anthracene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
			204-371-1	120-12-7									
20	●	fluoranthene				5.3	mg/kg		5.3	mg/kg	0.00053 %		
			205-912-4	206-44-0									
21	●	pyrene				4.7	mg/kg		4.7	mg/kg	0.00047 %		
			204-927-3	129-00-0									
22		benzo[a]anthracene				2.8	mg/kg		2.8	mg/kg	0.00028 %		
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				2.6	mg/kg		2.6	mg/kg	0.00026 %		
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				3.2	mg/kg		3.2	mg/kg	0.00032 %		
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				3	mg/kg		3	mg/kg	0.0003 %		
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			205-883-8	191-24-2									
										Total:	0.0589 %		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.018%)

Appendix A: Classifier defined and non CLP determinands

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.224.4427.8663 (11 Aug 2020)
HazWasteOnline Database: 2020.224.4427.8663 (11 Aug 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

APPENDIX D – GEOTECHNICAL DATA

Geotechnical Laboratory Testing Results

Geotechnical Site Testing Data

Infiltration Testing Data

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

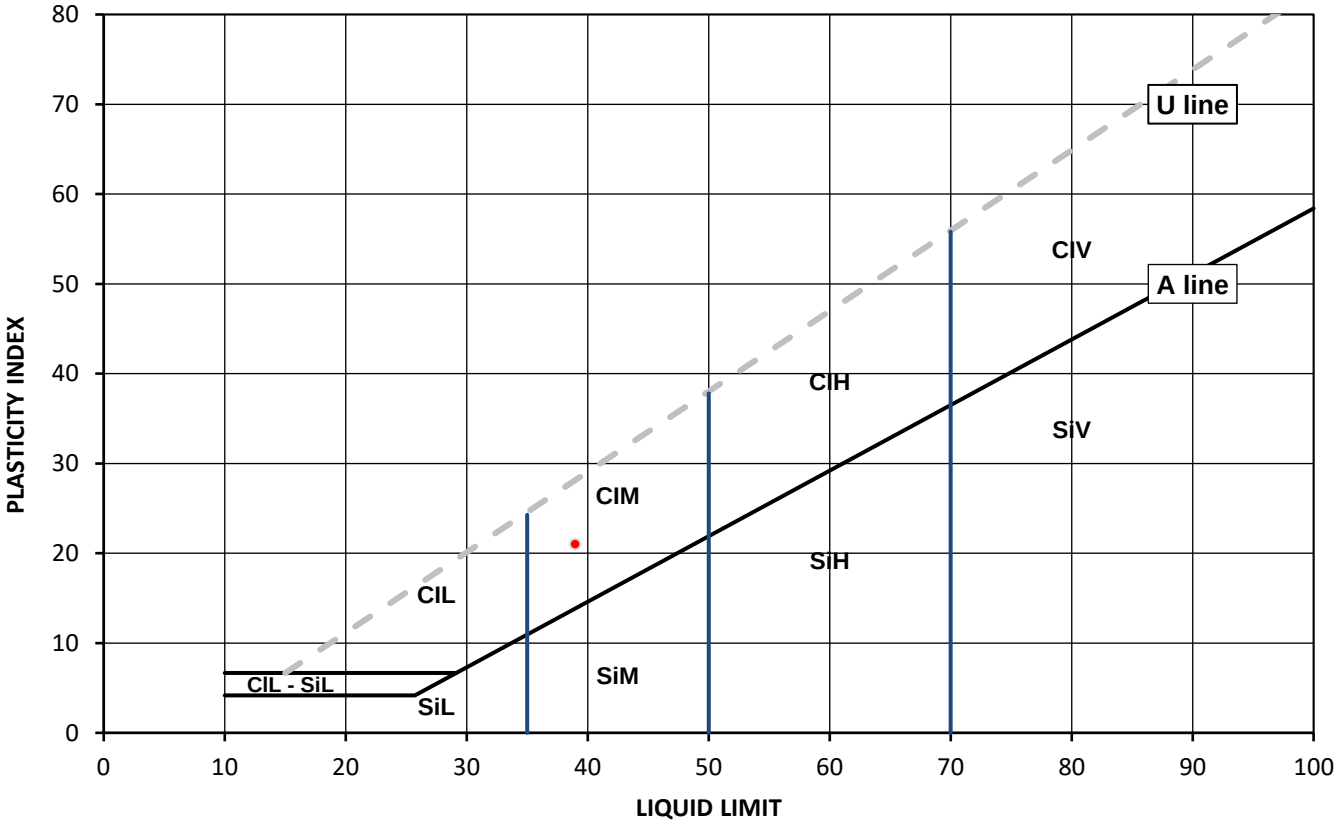
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581877	Depth Top [m]:	1.50
Hole No.:	WS101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	39	18	21	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 232.10

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

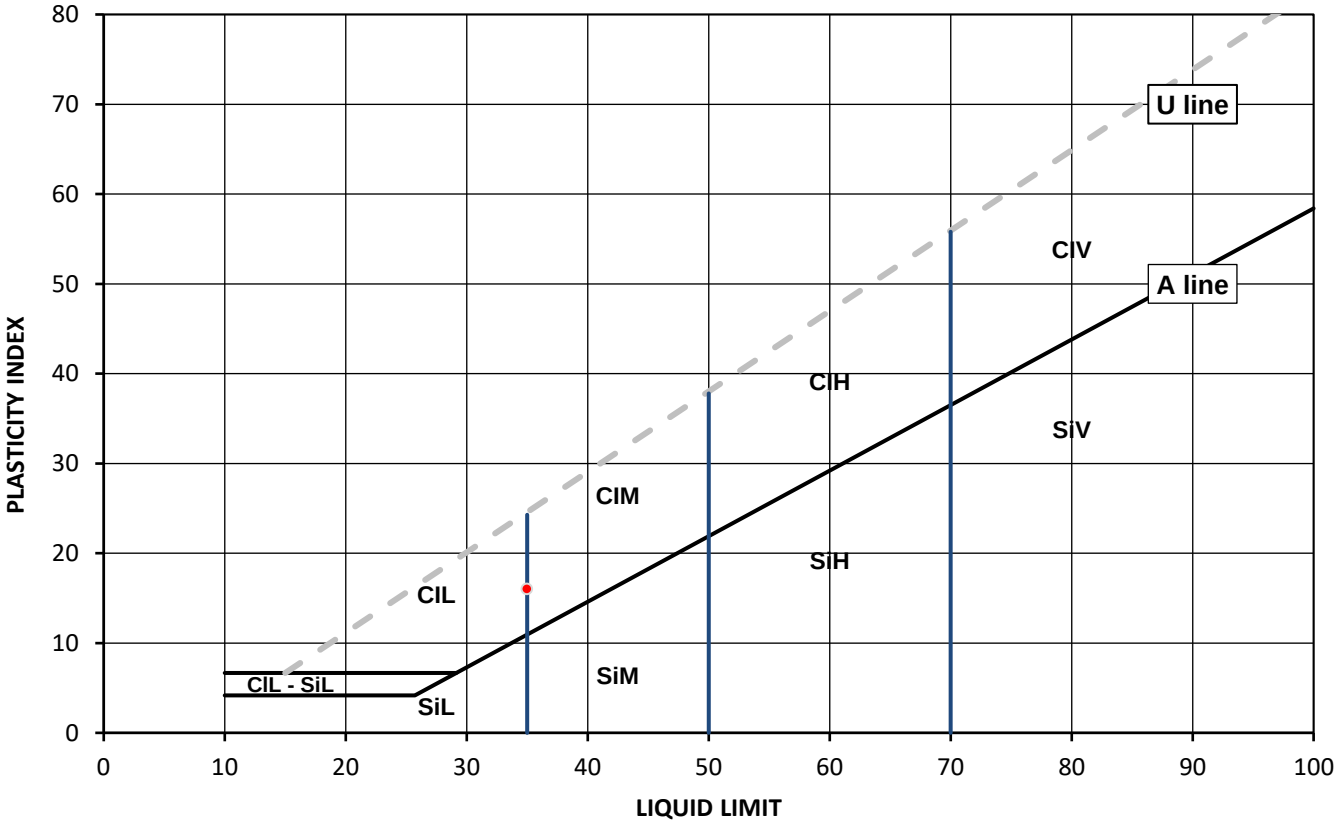
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581878	Depth Top [m]:	1.60
Hole No.:	WS102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	35	19	16	86



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

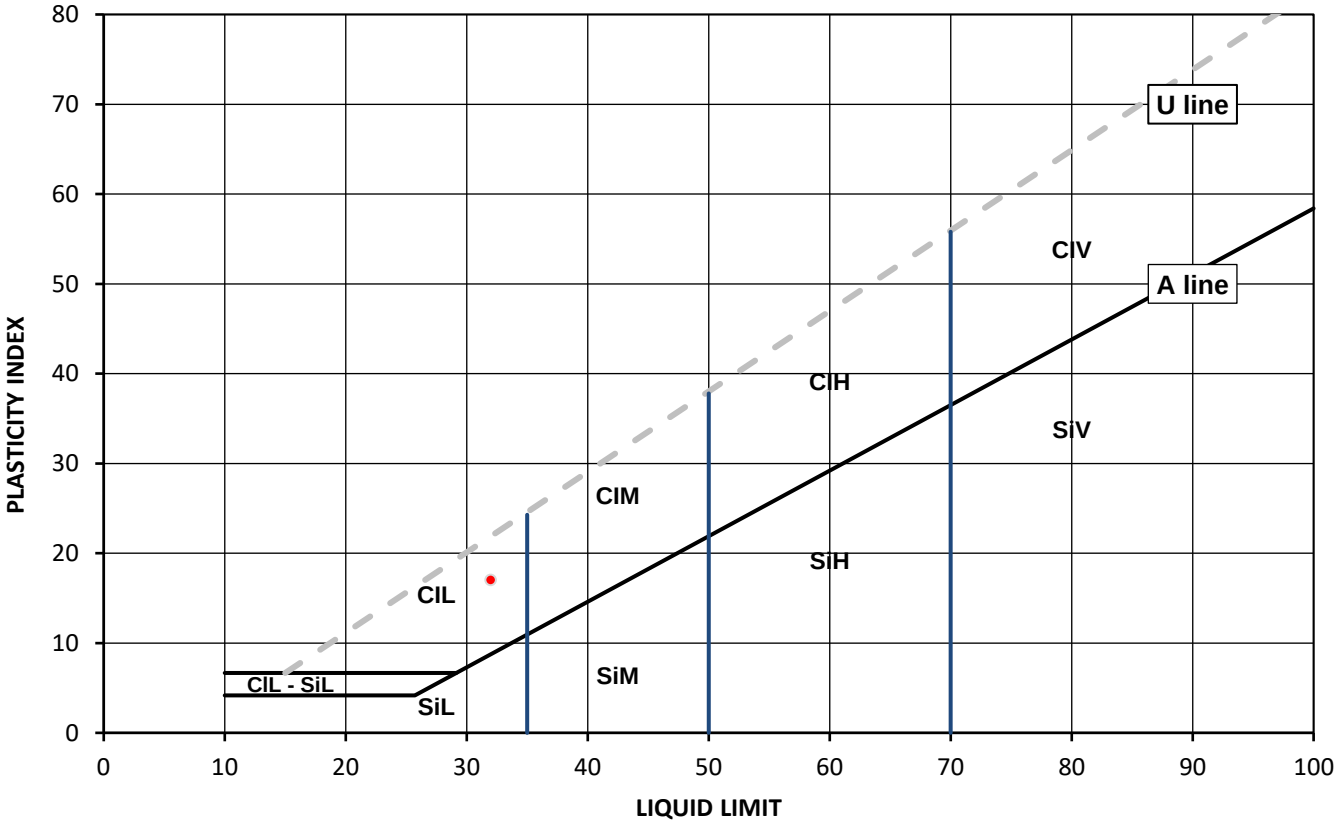
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581880	Depth Top [m]:	1.80
Hole No.:	WS103	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	32	15	17	93



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

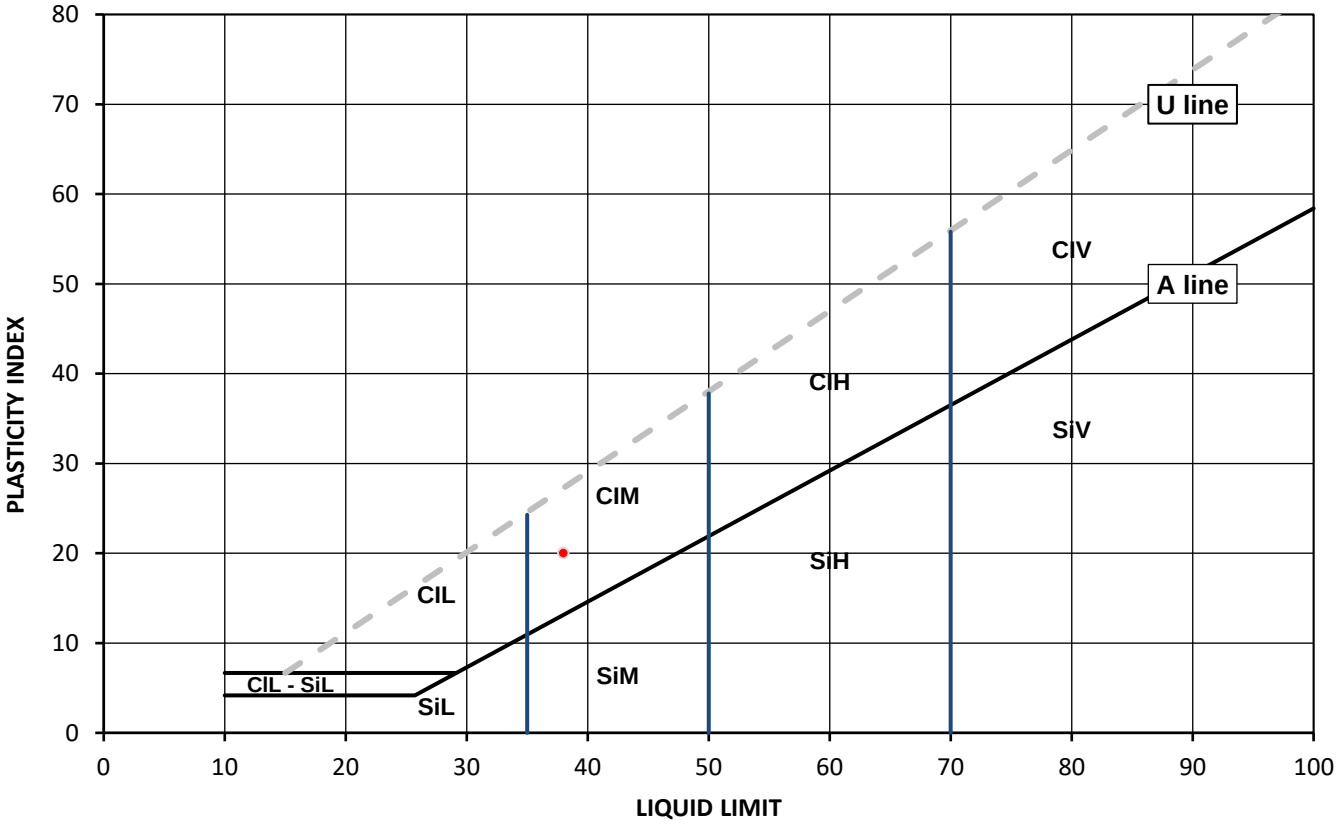
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581882	Depth Top [m]:	0.80
Hole No.:	WS104	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly sandy CLAY with fragments of flintstone		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
13	38	18	20	89



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

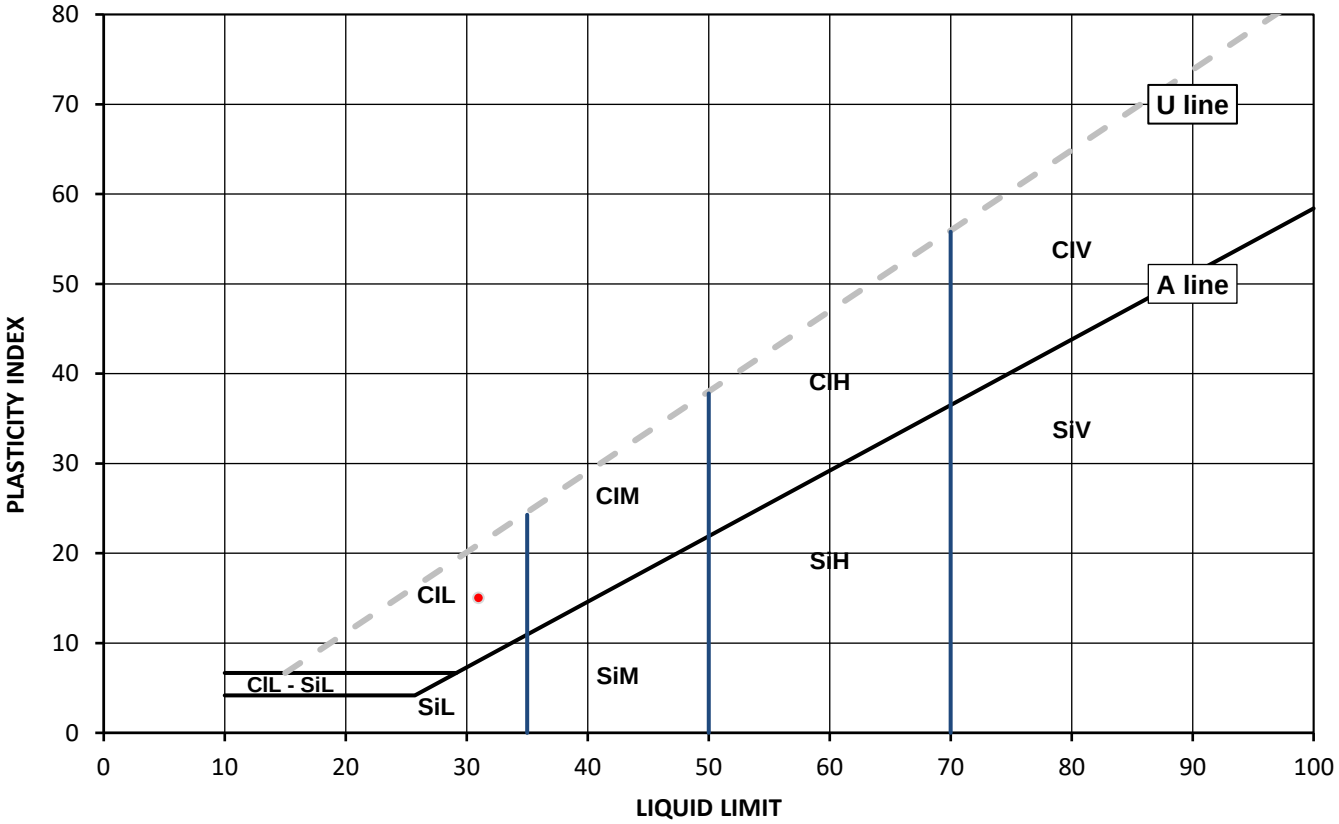
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581883	Depth Top [m]:	3.90
Hole No.:	WS104	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown gravelly very sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
14	31	16	15	59



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

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PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 232.10

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Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

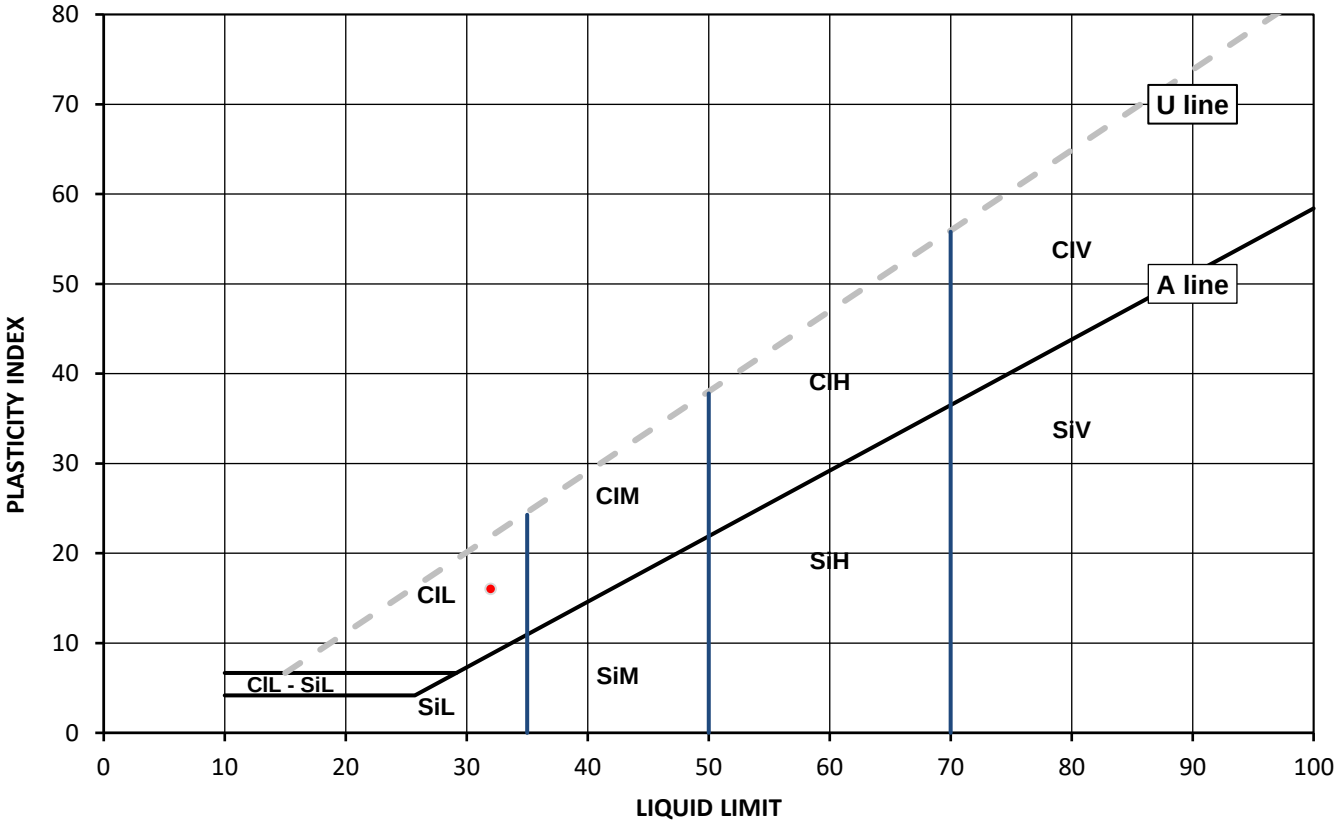
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581884	Depth Top [m]:	2.50
Hole No.:	WS105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	32	16	16	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 232.10

TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

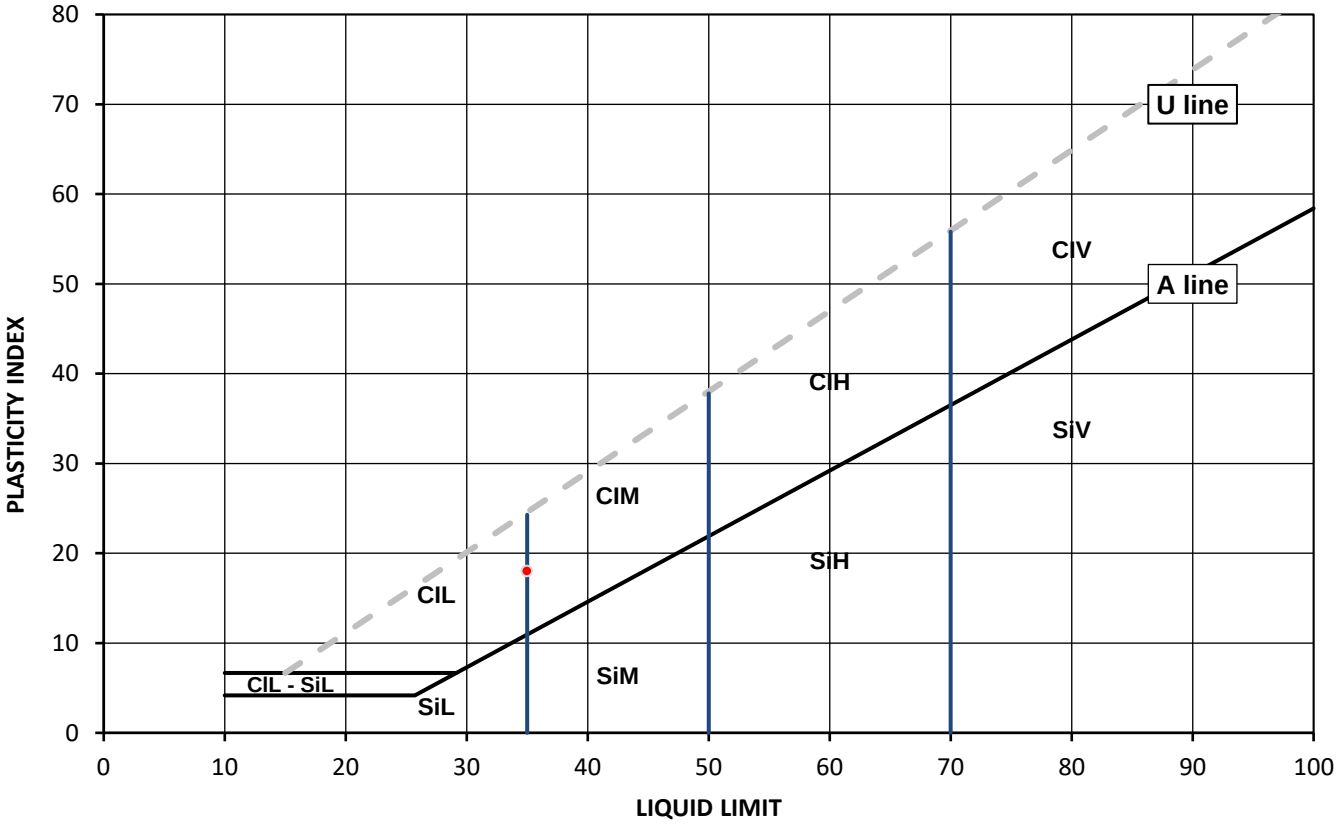
Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581886	Depth Top [m]:	2.50
Hole No.:	WS106	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	35	17	18	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 232.10

SUMMARY REPORT

Summary of Classification Test Results

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Paddock Geo Engineering

Client Address: 14 Burns Road, Bletchley, Milton Keynes, MK3 5AL

Contact: Stephen

Site Address: Norcot Community Centre, Lyndhurst Road, Reading

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: P20-069
Job Number: 20-22843
Date Sampled: 29/07/2020
Date Received: 04/08/2020
Date Tested: 20/08/2020
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1581877	WS101	Not Given	1.50	Not Given	D	Orangish brown slightly gravelly sandy CLAY	Atterberg 1 Point	19		98	39	18	21						
1581878	WS102	Not Given	1.60	Not Given	D	Orangish brown slightly gravelly sandy CLAY	Atterberg 1 Point	17		86	35	19	16						
1581880	WS103	Not Given	1.80	Not Given	D	Orangish brown slightly gravelly very sandy CLAY	Atterberg 1 Point	17		93	32	15	17						
1581882	WS104	Not Given	0.80	Not Given	D	Orangish brown slightly gravelly sandy CLAY with fragments of flintstone	Atterberg 1 Point	13		89	38	18	20						
1581883	WS104	Not Given	3.90	Not Given	D	Orangish brown gravelly very sandy CLAY	Atterberg 1 Point	14		59	31	16	15						
1581884	WS105	Not Given	2.50	Not Given	D	Orangish brown slightly gravelly very sandy CLAY	Atterberg 1 Point	18		95	32	16	16						
1581886	WS106	Not Given	2.50	Not Given	D	Orangish brown sandy CLAY	Atterberg 1 Point	18		100	35	17	18						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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Date Reported: 25/08/2020

GF 234.12

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

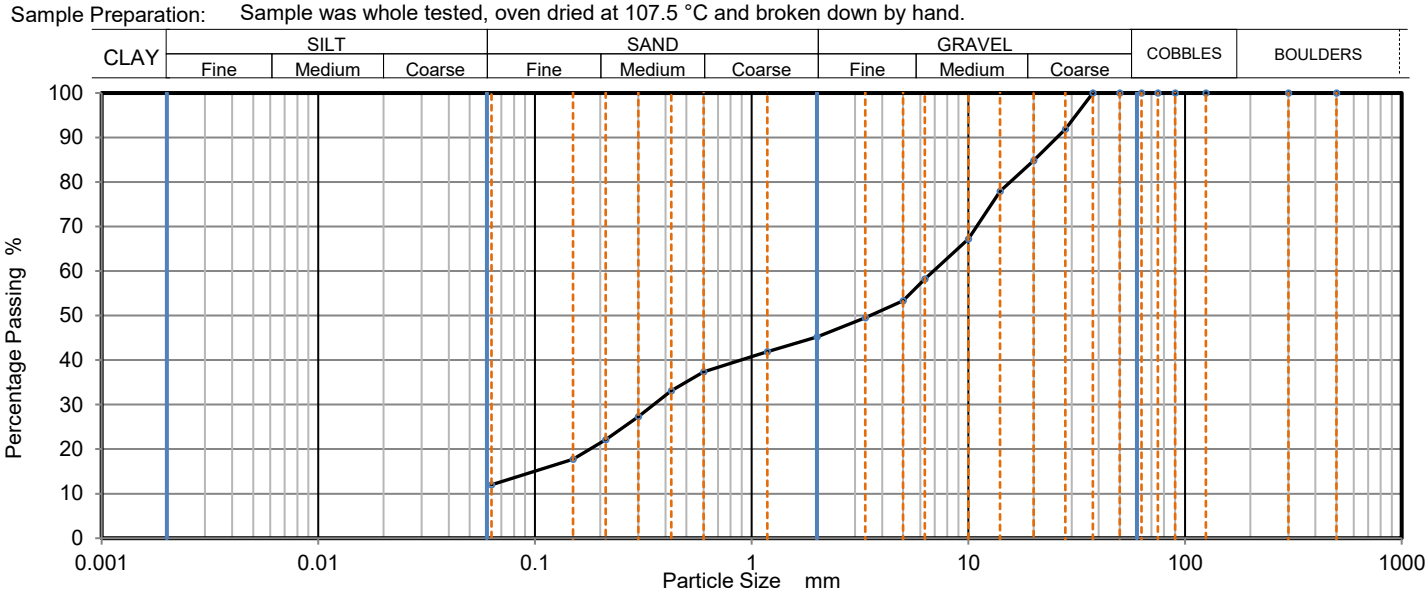
Environmental Science

Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581879	Depth Top [m]:	2.60
Hole No.:	WS102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Orangish brown clayey very sandy GRAVEL		
Sample Preparation:	Sample was whole tested, oven dried at 107.5 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	92		
20	85		
14	78		
10	67		
6.3	58		
5	53		
3.35	50		
2	45		
1.18	42		
0.6	37		
0.425	33		
0.3	27		
0.212	22		
0.15	18		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	54.80
Sand	33.20
Fines <0.063mm	12.00

Grading Analysis		
D100	mm	37.5
D60	mm	6.9
D30	mm	0.353
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

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Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 100.18

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

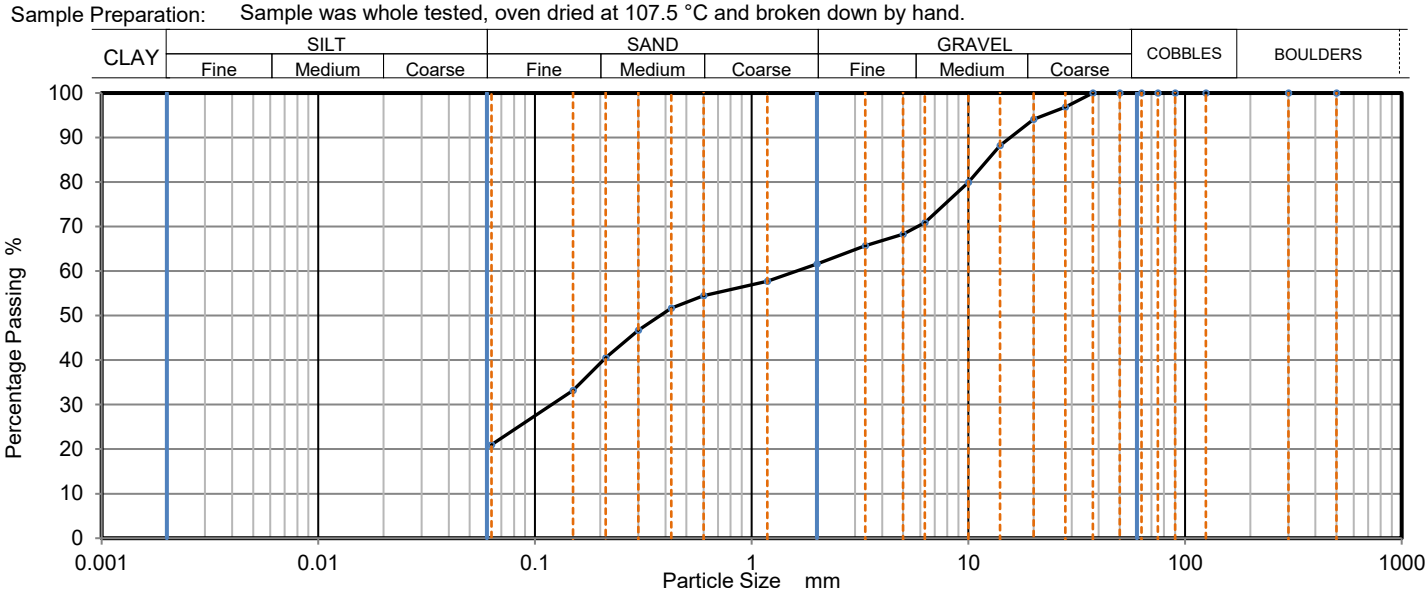
Environmental Science

Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581881	Depth Top [m]:	3.60
Hole No.:	WS103	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Orangish brown clayey GRAVEL and SAND		
Sample Preparation:	Sample was whole tested, oven dried at 107.5 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	88		
10	80		
6.3	71		
5	68		
3.35	66		
2	62		
1.18	58		
0.6	55		
0.425	52		
0.3	47		
0.212	41		
0.15	33		
0.063	21		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	38.40
Sand	40.50
Fines <0.063mm	21.10

Grading Analysis		
D100	mm	37.5
D60	mm	1.61
D30	mm	0.119
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 100.18

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

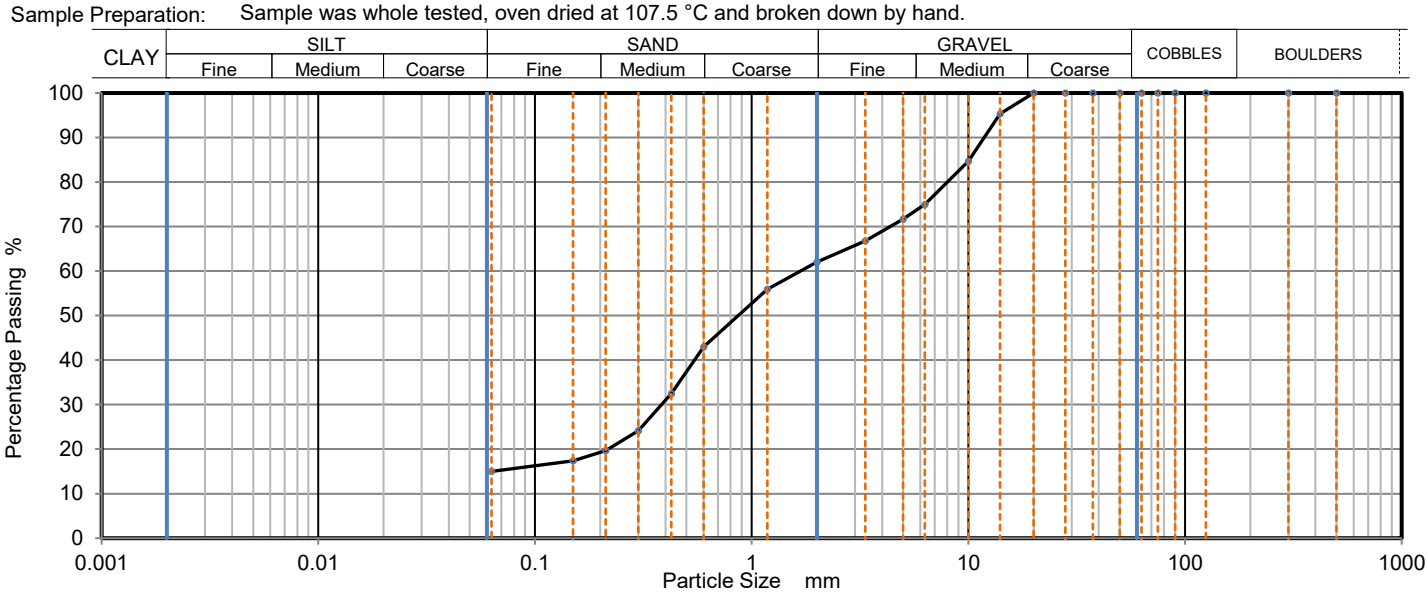
Environmental Science

Client:	Paddock Geo Engineering	Client Reference:	P20-069
Client Address:	14 Burns Road, Bletchley, Milton Keynes, MK3 5AL	Job Number:	20-22843
		Date Sampled:	29/07/2020
		Date Received:	04/08/2020
Contact:	Stephen	Date Tested:	20/08/2020
Site Address:	Norcot Community Centre, Lyndhurst Road, Reading	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1581885	Depth Top [m]:	4.50
Hole No.:	WS105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown clayey very gravelly SAND		
Sample Preparation:	Sample was whole tested, oven dried at 107.5 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	85		
6.3	75		
5	72		
3.35	67		
2	62		
1.18	56		
0.6	43		
0.425	33		
0.3	24		
0.212	20		
0.15	17		
0.063	15		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	38.00
Sand	46.90
Fines <0.063mm	15.10

Grading Analysis		
D100	mm	20
D60	mm	1.68
D30	mm	0.384
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/08/2020

GF 100.18

PADDOCK GEO ENGINEERING

Standard Penetration Test Results

Site : Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Client : Beard Construction Limited

Project Contractor : PGE

Job Number P20-069

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
WS101	1.00	1.15	1.45	CPT	1	2	3	2	3	3	N=11	
WS101	2.00	2.15	2.45	CPT	4	3	4	4	4	5	N=17	
WS101	3.00	3.15	3.45	CPT	3	3	5	5	5	6	N=21	
WS101	4.00	4.15	4.45	CPT	1	1	1	1	0	4	N=6	
WS102	1.00	1.15	1.45	CPT	2	2	3	3	3	4	N=13	
WS102	2.00	2.15	2.45	CPT	3	3	4	4	5	7	N=20	
WS102	3.00	3.15	3.45	CPT	9	6	6	7	8	7	N=28	
WS102	4.00	4.15	4.45	CPT	3	3	3	3	8	11	N=25	
WS102	5.00	5.15	5.45	CPT	4	5	4	5	3	4	N=16	
WS103	1.00	1.15	1.45	CPT	3	2	3	3	4	3	N=13	
WS103	2.00	2.15	2.45	CPT	2	2	3	4	5	5	N=17	
WS103	3.00	3.15	3.45	CPT	7	6	5	7	6	7	N=25	
WS104	1.00	1.15	1.45	CPT	1	1	2	2	3	3	N=10	
WS104	2.00	2.15	2.45	CPT	2	2	2	2	3	3	N=10	
WS104	3.00	3.15	3.45	CPT	5	3	4	4	4	5	N=17	
WS104	4.00	4.15	4.45	CPT	1	1	1	1	3	5	N=10	
WS104	5.00	5.15	5.45	CPT	3	3	3	3	4	4	N=14	
WS105	1.00	1.15	1.45	CPT	1	0	2	2	2	3	N=9	
WS105	2.00	2.15	2.45	CPT	2	1	1	1	2	2	N=6	
WS105	3.00	3.15	3.45	CPT	2	2	2	3	3	2	N=10	
WS105	4.00	4.15	4.45	CPT	3	2	2	3	3	4	N=12	
WS106	1.00	1.15	1.45	CPT	2	2	2	2	3	4	N=11	
WS106	2.00	2.15	2.45	CPT	4	2	2	3	3	4	N=12	
WS106	3.00	3.15	3.45	CPT	2	2	2	2	1	1	N=6	
WS106	4.00	4.15	4.45	CPT	1	0	0	1	0	1	N=2	

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Infiltration Test to BRE365 - SA1 Test 1

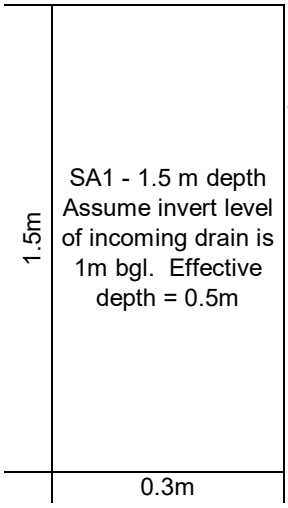
Field Data

Location: SA1 **TEST 1**
Weather: Sunny
Engineer: SJF
Date: 31/07/2020

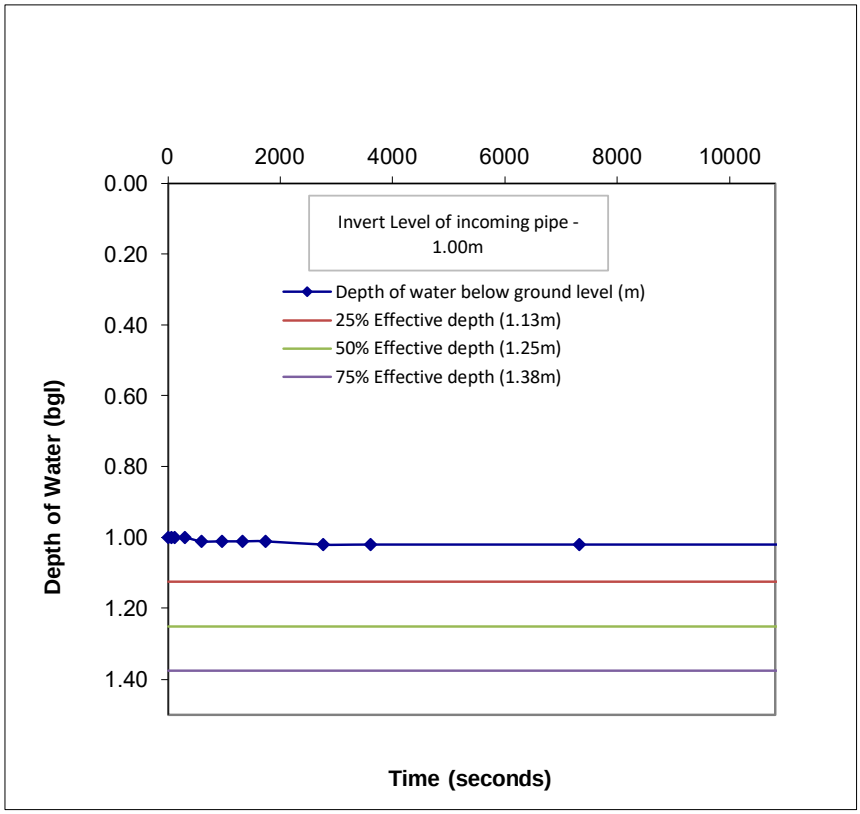
Strata Tested Head

Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.0	0	1.00
	1.0	60	1.00
	2.0	120	1.00
	5.0	300	1.00
	10.0	600	1.01
	16.0	960	1.01
	22.0	1320	1.01
	29.0	1740	1.01
	46.0	2760	1.02
	60.0	3600	1.02
	122.0	7320	1.02
	183.0	10980	1.02

Linear extrapolated values for calculation



Pit Depths (m bgl)
Length
1.50
Width
0.30
Depth
1.50
25% Effective Depth
1.13
75% Effective Depth
1.38
Inlet Depth
1.00



CALCULATION:

Soil Infiltration Rate(f) =
Vp75-25 / (ap50 x tp75-25)

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.5x0.3x(1.375-1.125)
= **0.1125**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.5 x) + 2(0.3 x) + (1.5 x 0.3)
= **1.35**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= secs

f= **N/A** m/s

Comment
Insufficient infiltration in over 3 hours - Test Failed

PADDOCK GEO ENGINEERING

Client: Beard Construction Limited
Project No: P20-069
Project: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Infiltration Test to BRE365 - SA2 Test 1

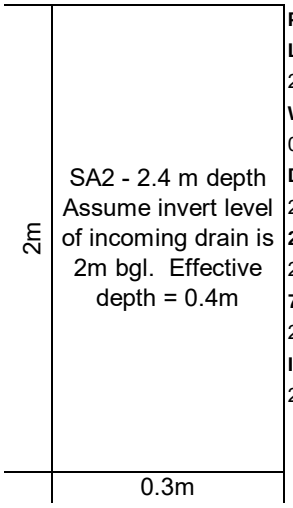
Field Data

Location: SA2 **TEST 1**
Weather: Sunny
Engineer: SJF
Date: 31/07/2020

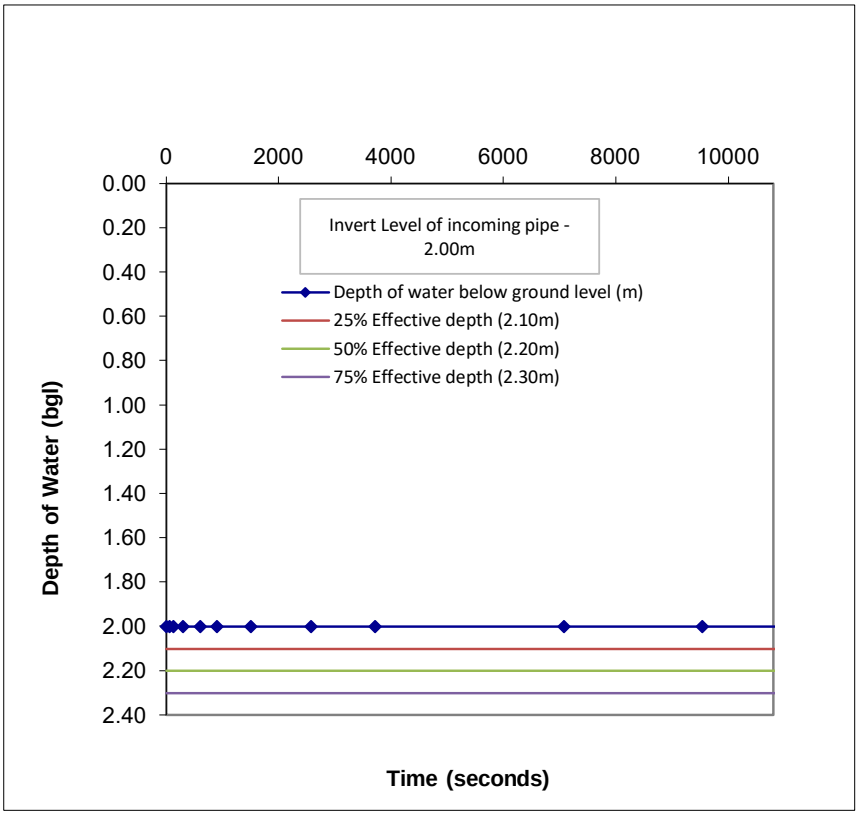
Strata Tested Head

Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.0	0	2.00
	1.0	60	2.00
	2.0	120	2.00
	5.0	300	2.00
	10.0	600	2.00
	15.0	900	2.00
	25.0	1500	2.00
	43.0	2580	2.00
	62.0	3720	2.00
	118.0	7080	2.00
	159.0	9540	2.00
	192.0	11520	2.00

Linear extrapolated values for calculation



Pit Depths (m bgl)
Length
2.00
Width
0.30
Depth
2.40
25% Effective Depth
2.10
75% Effective Depth
2.30
Inlet Depth
2.00



CALCULATION:

Soil Infiltration Rate(f) =
Vp75-25 / (ap50 x tp75-25)

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
2x0.3x(2.3-2.1)
= **0.12**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(2 x) + 2(0.3 x) + (2 x 0.3)
= **1.52**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= secs

f= **N/A** m/s

Comment
Insufficient infiltration in over 3 hours - Test Failed

PADDOCK GEO ENGINEERING

Client: Beard Construction Limited
Project No: P20-069
Project: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

APPENDIX E – GEOTECHNICAL DATA

Ground Gas Monitoring Results

GROUND GAS MONITORING SHEET

PADDOCK GEO ENGINEERING

SITE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB
JOB No.:	P20-069
DATE:	31/07/2020

BOREHOLE	**WS101**				Initial/ 30 secs	2 mins	Stable / 3 mins	GSV (l/h)
TIME:	10:27:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	27	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	2.00	2.00	1.80	0.0020
Atm Pressure mb:	1006	BH Level	4.90	O2 %	16.70	16.50	16.30	
Operator:	PM	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	**WS103**							
TIME:	10:35:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	27	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.70	0.70	0.80	0.0008
Atm Pressure mb:	1006	BH Level	4.90	O2 %	19.40	18.00	17.20	
Operator:	PM	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	**WS105**							
TIME:	10:45:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	27	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	1.20	1.30	1.40	0.0014
Atm Pressure mb:	1006	BH Level	4.40	O2 %	16.60	16.50	16.20	
Operator:	PM	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

GROUND GAS MONITORING SHEET

PADDOCK GEO ENGINEERING

SITE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB
JOB No.:	P20-069
DATE:	05/08/2020

BOREHOLE	**WS101**				Initial/ 30 secs	2 mins	Stable / 3 mins	GSV (l/h)
TIME:	13:30:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	23	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	1.70	1.90	2.00	0.0020
Atm Pressure mb:	1009	BH Level	4.90	O2 %	17.40	17.20	17.10	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	**WS103**							
TIME:	13:24:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	23	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.90	1.00	1.00	0.0010
Atm Pressure mb:	1009	BH Level	4.90	O2 %	17.50	17.10	17.10	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	**WS105**							
TIME:	13:19:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	23	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.60	0.70	0.70	0.0007
Atm Pressure mb:	1009	BH Level	4.40	O2 %	19.60	19.40	19.30	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

GROUND GAS MONITORING SHEET

PADDOCK GEO ENGINEERING

SITE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB
JOB No.:	P20-069
DATE:	13/08/2020

BOREHOLE	**WS101**				Initial/ 30 secs	2 mins	Stable / 3 mins	GSV (l/h)
TIME:	12:16:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	24	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	1.90	2.20	2.20	0.0022
Atm Pressure mb:	1016	BH Level	4.90	O2 %	17.30	17.10	16.90	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	**WS103**							
TIME:	12:11:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	24	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	1.00	1.00	1.00	0.0010
Atm Pressure mb:	1016	BH Level	4.90	O2 %	17.80	17.40	17.40	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments								

BOREHOLE	**WS105**							
TIME:	12:05:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	24	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.50	0.50	0.50	0.0005
Atm Pressure mb:	1016	BH Level	4.40	O2 %	20.60	20.10	20.20	
Operator:	MC	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

GROUND GAS MONITORING SHEET

PADDOCK GEO ENGINEERING

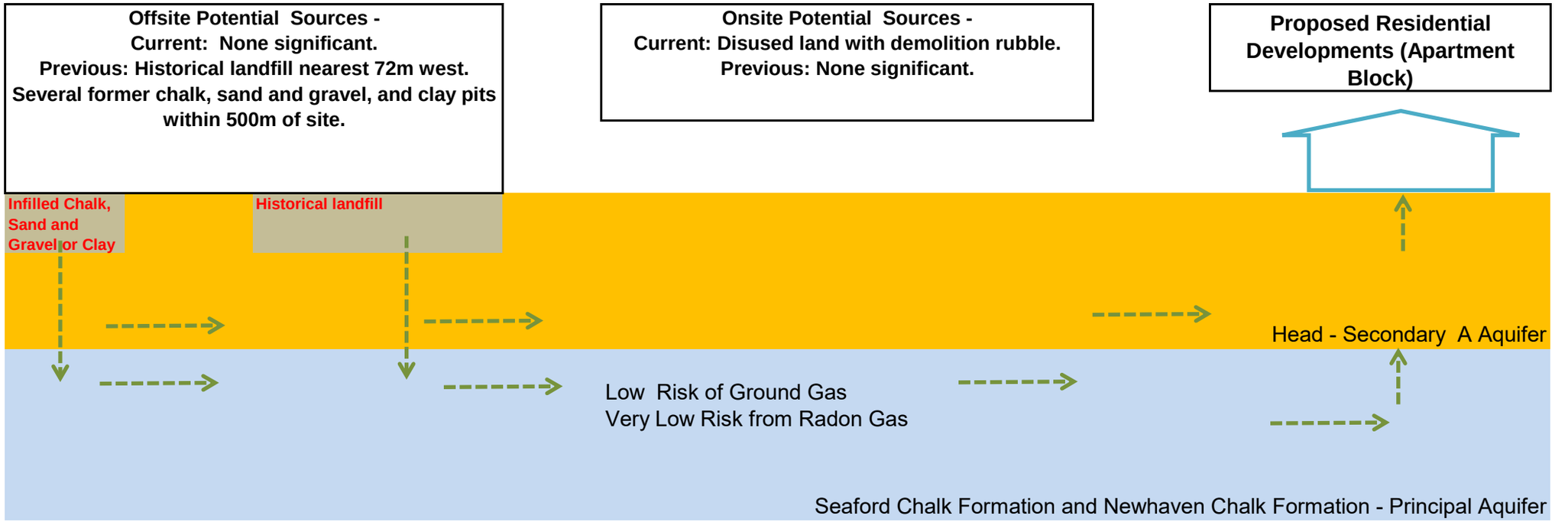
SITE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB
JOB No.:	P20-069
DATE:	20/08/2020

BOREHOLE	WS101				Initial/ 30 secs	2 mins	Stable / 3 mins	GSV (l/h)
TIME:	12:00:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	22	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.80	0.70	0.60	0.0008
Atm Pressure mb:	1000	BH Level	4.90	O2 %	17.10	17.10	17.10	
Operator:	MP	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

BOREHOLE	WS103							
TIME:	12:15:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	22	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.50	0.60	0.60	0.0006
Atm Pressure mb:	1000	BH Level	4.90	O2 %	16.50	16.40	16.30	
Operator:	MP	mAOD		H2S ppm				
				VOCs %	0.00			
Comments								

BOREHOLE	WS105							
TIME:	12:30:00	Flow l/h:	0.1	CH4 %	0.00	0.00	0.00	0.0000
TEMP deg C:	22	DP Pa:		LEL				
Weather:	Sunny	GW m:	DRY	CO2 %	0.50	0.50	0.50	0.0005
Atm Pressure mb:	1000	BH Level	4.40	O2 %	19.20	19.10	19.10	
Operator:	MP	mAOD		H2S ppm				
				VOCs %	0.00			
Comments	No flow recorded. Assumed as 0.1l/h for modelling and calculation purposes.							

CONCEPTUAL GROUND GAS MODEL



Potential Hydrocarbon vapour, Ground gas and Radon pathway

PADDOCK GEO ENGINEERING

CLIENT:	Beard Construction Limited
PROJECT No:	P20-069
PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB