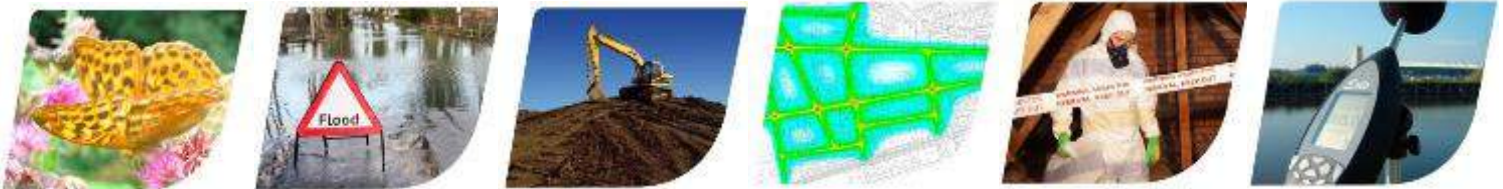





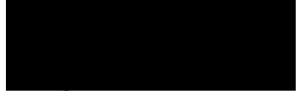

**PHASE I AND II GEO-ENVIRONMENTAL
SITE ASSESSMENT
LAND WEST OF HEMEL HEMPSTEAD,
HERTFORDSHIRE,
HP1 2SA**

**REC REFERENCE: 1CO101380P2R1
REPORT PREPARED FOR: TAYLOR WIMPEY STRATEGIC LAND
& BARRATT HOMES (NORTH THAMES)**





OCTOBER 2016



QUALITY ASSURANCE

Issue/revision	Issue 1		
Remarks	Draft for comment - pending completion of long term groundwater level monitoring	Updated with additional investigation works and updated natural cavities assessment undertaken.	
Date	June 2016	October 2016	
Prepared by	Marc Roberts	Marc Roberts	
Qualifications	BSc (Hons)	BSc (Hons)	
Signature			
Checked by	Ross Lawton	Richard Hodkin	
Qualifications	BSc (Hons)	BSc (Hons), MSc, FGS	
Signature			
Authorised by	Stuart Phillips	Stuart Phillips	
Qualifications	Regional Director	Regional Director	
Signature			
Project number	1CO101380p2r0	1CO101380p2r1	

EXECUTIVE SUMMARY	
Site Address	Fields End Farm, Pouchen End Lane, Hemel Hempstead, Hertfordshire, HP1 2SD (Phase 1A) and Pouchen End Farm, Pouchen End Lane, Hemel Hempstead, Hertfordshire, HP1 2SA (all other phases)
Grid Reference	E: 503202, N: 206938
Site Area	53.77 ha
Current Site Use	<p>The subject site as a whole is irregular in shape with a difference in elevation of approximately 60m. The slope direction is generally orientated north to south. The development has been split into a number of phases which are referred to within this report. Phase 1A forms Fields End Farm while the other phases form Pouchen End Farm.</p> <p>Phase 1A consists of two large crop fields occupying approximately 70% of the phase area between them, and two smaller grass fields occupying the other approximately 30% of Phase 1A.</p> <p>Phase 1B consists of the southern quarter of the field adjacent to the east of Pouchen End Lane and a field in the east. The Eastern Phase 1B Field was more ecologically sensitive with skylarks being identified within this area. The southern area of the Western Phase 1B Field was fenced off with horses kept in that area. This part of Phase 1B was not investigated as the Hemel Hempstead to Picketts High Pressure Gas Pipeline was identified in this area.</p> <p>Phase 2 consists of the rest of the field adjacent to the east of Pouchen End Lane. Together Phases 1B and 2 were used by the users of Pouchen End Farm as a horse riding area although by the time of the most recent groundwater level monitoring visit on 7th June 2016, these areas became overgrown with grass.</p> <p>Phase 3 forms the southern area of Pouchen End Farm although a small rectangular area on its south eastern corner is owned by Hertfordshire County Council. Phase 3 is largely a field separated by a fence aligned east to west, with the area north of the fence being grassland where horses were kept.</p>
Adjacent Site Uses	The site is immediately adjacent to multiple residential properties to the east and is bordered by Pouchen End Lane and the Pouchen End Farmyard to the west and north west, and Chaulden Lane to the south. The site is bordered by other fields belonging to Fields End Farm to the north east.

<p style="text-align: center;">Environmental Setting</p>	<p>Geology: Clay-with-Flints Formation overlying the Seaford Chalk Formation and Lewes Nodular (Undifferentiated) Chalk Formation.</p> <p>The Clay-with-Flints Formation was absent within TP225 and TP229.</p> <p>Hydrogeology: The site is underlain by a Principal Aquifer (Seaford and Lewes nodular (Undifferentiated) Chalk Formation). Superficial deposits (Clay-with-Flints Formation) are recorded as unproductive. An active groundwater abstraction licence exists within the Fields End Farmyard 200m north west of the site. The nearest potable water abstraction licence is 1949m east of the site.</p> <p>Hydrology: The nearest surface water feature is the Grand Union Canal located 156m south of the site. Although a drainage channel forms the boundary that separates the barley field with the rest of Phase 1A and a culvert surfaces within the south easterly field of Phase 1A, no flowing water was observed during the ground investigation (11th April 2016 – 6th May 2016) or during the subsequent return groundwater level monitoring visits undertaken since. No surface water abstraction licenses are located within 1km of the site.</p> <p>Sensitive Land Uses - Residential properties with gardens and several schools are within close proximity. In addition, the site lies within the London Area Green Belt and within a nitrate vulnerable zone. Shrubhill Common Nature Reserve lies 11m south east of the site.</p> <p>Ecological: Ecological surveys carried out by CSA Environmental identified the following ecological constraints which affecting the ground investigation:</p> <ul style="list-style-type: none">  No intrusive investigation or mobilisation of plant within the wildlife buffer separating Phase 1A from Phase 1B and Phase 2. A break within the wildlife corridor was constructed under the supervision of CSA, in order to avoid disturbing badger setts and nests within the infant trees, to allow mobilisation between phases. This prevented one of the proposed additional holes located within the south west corner of Phase 1A from being undertaken;  No intrusive investigations within 30m of Badger setts, located primarily along the boundary of Phase 1;  Potential for skylark nests within the crop fields of Phase 1A during the initial investigation; and,  Vegetation strimming within the south east corner of Phase 1A and the eastern half of Phase 1B was required prior to the additional investigation being carried out due to the presence of slow worms. <p>Archaeological: No archaeological considerations have been included within this report as it did not form the scope of works. It should be noted however, that the additional ground investigation was carried out concurrently with an archaeology investigation undertaken by Cotswold Archaeology.</p>
<p style="text-align: center;">Site History</p>	<p>There has been relatively little recorded on-site historical development since the earliest historical maps, dated 1877. The site took on its present configuration pre 1955 when the land forming Phase 3 was truncated at its present eastern boundary following the construction of the residential dwellings adjacent to the site.</p>

	<p>Written records held by National Grid however indicate that the underground Hemel Hempstead to Picketts High Pressure Gas Pipeline, which runs within Phase 1B, Phase 3 and partly under the track bordering the two phases, was constructed in 1971. No records however were obtained indicating the date of the construction of the antenna at the Phase 1B - Phase 3 boundary.</p>
<p>Landfill Sites & Ground Gases</p>	<p>The Environment Agency hold records of a single historical landfill within 1km of the site, which is Westbrook Hay Landfill located approximately 479m to the south of the site. The landfill site was recorded to be active between 19th February 1992 and 31st December 1992. The waste type accepted was inert. Given the distance of the landfill, there is considered to be no significant gas risk to the site.</p> <p>No potential ground gas sources have therefore been identified either on site or within close proximity so no gas monitoring was deemed necessary.</p>
<p>Radon</p>	<p>BRE211 Radon: Guidance on protective measures for new buildings (2007 Edition), indicates that while the site lies within an area where between 1-3% of homes are above the action level, no radon protective measures are deemed necessary in the construction of new dwellings.</p>
<p>Mining / Land Stability</p>	<p>The site does not lie within an area of mining activity. The Peter Brett Associates Chalk Solution Features Assessment Report found that there are twenty solution pipes across the site and indicated the probability of chalk solution features as very low to moderately high across the site.</p>
<p>Intrusive Ground Investigation</p>	
<p>Ground Conditions</p>	<p>Topsoil Topsoil was encountered across the site with its thickness ranging from 0.05 and 0.60m. The soils were observed to comprise predominantly gravelly clay within Phase 1A, and predominantly gravelly silt across the remainder of the site.</p> <p>Made Ground A localised area of Made Ground was encountered within WS347, located within the council owned field located within the south east corner of Phase 3. The base of the Made Ground was observed to be 0.75m bgl, and the soils comprised firm to stiff orangeish brown slightly gravelly CLAY. Gravel was angular to sub-rounded fine to medium flint and occasional brick.</p> <p>Clay-with-Flints Formation The Clay-with-Flints Formation was encountered across the majority of the site and typically comprised firm to stiff brown gravelly clay with varying cobble content. The thickness of the Clay-with-Flints Formation was highly variable across the site. Localised observations of gravelly silt up to 0.50m thick were recorded at the top of the Clay-with-Flints Formation in TP326 in Phase 1A, TP314 and TP313 in Phase 1B, and TP306 and TP305 in Phase 3. The Clay-with-Flints Formation was absent in TP225 and TP229, TP308 and TP315.</p> <p>Seaford Chalk Formation and Lewes Nodular Chalk Formation (Undifferentiated) Where chalk was encountered across trial pits, classification was assessed based on observations of the chalk features in accordance with CIRIA C574. In most cases across the site, the chalk grading was designated as Dc although Dm graded chalk was observed in localised spots. In some trial pits within Phase 3 however, structured chalk was observed.</p> <p>Ground anomalies Within BH201 and BH202, ground anomalies were encountered at depth where material with a similar composition to the Clay-with-Flints Formation was encountered within the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation. Within BH202, very stiff brown clay was encountered between 18.50 and 21.00mbgl while within BH201, very stiff</p>

	<p>orangeish brown gravelly clay was encountered between 17.35 and 18.00mbgl. Further anomalies of similar properties were observed within TP314, TP330 and WS358 during the additional ground investigation.</p> <p>The depth to the strata boundary between the Clay-with-Flints Formation and the Chalk Formation was highly variable across the site ranging from 0.50 and 15.30mbgl. This variation was also observed within individual trial pits, with the difference between the depth to the first chalk encounter and complete trial pit coverage of chalk being >1.00m in TP201, TP203, TP207, TP209, TP213, TP214, TP215, TP216, TP220 and TP221 during the Spring 2016 Ground Investigation, and within TP319 and most trial pits excavated within Phase 1A during the Autumn 2016 Ground Investigation. TP215 was notable for a vertical boundary being present between the Clay-with-Flints Formation and the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation. Here the chalk was encountered at the eastern side at 1.20mbgl, while no chalk was encountered at the western side of the trial pit. The base of TP215 was 5.50mbgl. Further vertical boundaries between the Clay-with-Flints Formation and the chalk were observed during the Autumn 2016 Ground Investigation within TP307 and TP327. TP207, TP209 and TP217 were also notable as the shallower soil infiltration tests within these trial pits was undertaken at a depth where both the Clay-with-Flints Formation and the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation were the receiving stratum.</p> <p>These observations were made within areas of increased frequency of chalk solution features identified by the Peter Brett Associates Chalk Solution Features Assessment. These observations are therefore likely to be examples of chalk solution features present across the site.</p> <p>The Peter Brett report also indicates the following <i>“At sites that are prone to solution feature development the CIRIA C574 surface water drainage guidance (p236) suggests that shallow soakaways should be avoided or located at least 20m from structures. Alternative drainage solutions, including deep bored soakaways, at closer distances may be considered.”</i></p> <p>Groundwater During the initial ground investigation, groundwater strikes were encountered within the chalk stratum across the site, at depths ranging between 15.00 and 64.00mbgl. The high variability of depth to groundwater is attributable to the large differences in ground elevation with corrected groundwater levels all being 86.00±3.00m above sea level.</p>
<p>Tier 1 Contaminated Land Risk Assessment</p>	
<p>Human Health</p>	<p>No exceedances in guideline acceptance criteria were encountered for metals, PAH or TPH species, and no asbestos was detected. In addition, pesticide and herbicide analysis undertaken on composite samples throughout the site showed that the only substances present above laboratory detection limits were up to 0.27mg/kg of dichloroprop, and up to 0.08mg/kg of mecoprop. These substances and concentrations are not considered high enough to pose a significant risk to human health. This is consistent with the findings of the 2011 Delta Simons Ground Investigation across Phase 1A.</p>
<p>Controlled Waters</p>	<p>Groundwater sampling was not undertaken following the absence of contamination within any of the samples tested across site. Furthermore, groundwater strikes were only encountered within BH209, BH210, RBH201 and RBH202 at depths ranging from 15.0 – 66.0mbgl.</p>
<p>Groundwater level monitoring</p>	<p>The results of the groundwater monitoring undertaken to date, presented within Appendix XI, indicate that groundwater levels across the site have been generally decreasing, as is anticipated with the general decrease in average rainfall from spring to summer. The results of the outstanding groundwater monitoring will be included within an addendum report to be issued following completion of the groundwater monitoring.</p>

Geotechnical Assessment






**Underground
Obstructions**

No obstructions were encountered during the ground investigation. It was noted however that chiselling occurred during the drilling of BH201, BH202, BH203, BH204, BH205, BH207 and BH209 on flint and chalk cobbles. Chalk boulders were noted in TP225, TP229, TP231 and TP304. In addition, WS208 and WS209 were terminated short of the target depth due to refusals on very dense gravels.

Consideration must be given to the Hemel Hempstead to Picketts High Pressure Gas Pipeline which runs through the site at the south western corner of Phase 1B and close to the eastern boundary of Phase 3. Written records held by National Grid indicate this pipeline is a 24 inch diameter steel pipeline with its top lying at 1.20mbgl.

Foundation Options and Floor Slabs	<p>A number of areas with very low to moderately high probability of solution features (see the discussion presented in Section 10 of this report) have been identified as being present on the site. Consequently, the adoption of shallow conventional foundations and/or ground bearing floor slabs should be considered to carry an elevated risk in relation to chalk dissolution related subsidence on this site. Alternative options such as piled foundations and suspended floor slabs represent a lower risk.</p> <p>The following table shows the implications of foundations for various geohazard zones defined across the site:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #92d050;"> <th style="text-align: left; padding: 2px;">Geohazard Rating</th> <th style="text-align: left; padding: 2px;">Comments</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Moderately High and Moderate</td> <td style="padding: 2px;">All foundations should be designed to withstand a loss of ground support (void) of 1m diameter</td> </tr> <tr> <td style="padding: 2px;">Moderately Low</td> <td style="padding: 2px;">All foundations should be designed with nominal reinforcement to withstand potential for differential settlement</td> </tr> <tr> <td style="padding: 2px;">Low and Very Low</td> <td style="padding: 2px;">All foundations should where possible, bear onto the chalk. The best practice would be to expose the chalk and inspect for any signs of infilling or other weakening. Should problems be found then revert to geotechnical inspection and advice</td> </tr> <tr> <td style="padding: 2px;">Man-made areas</td> <td style="padding: 2px;">All foundations where possible to bear on to chalk. If not possible within reasonable depth (say within 2m of surface) then it will be necessary to pile foundations down into competent chalk below. Shallow foundations on head deposits are prone to differential settlement and serviceability damage if formation becomes saturated and fines are eroded.</td> </tr> </tbody> </table> <p>For lighter loaded buildings (such as residential properties) foundations should pass through the Topsoil and bear onto the underlying fine grained Clay-with-Flints Formation or where present at shallow depths, the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation.</p> <p>Atterberg limit tests carried out on fine grained soils from the Clay-with-Flints Formation indicated soils of low to medium volume change potential. In accordance with NHBC Guidance, Chapter 4 building near trees a minimum founding depth of 0.90mbgl is recommended in the absence of existing or proposed trees.</p> <p>An average undrained shear strength of 60kN/m² has been calculated using shear strengths from depths ranging from ground level to 1.50mbgl within the Clay-with-Flints Formation. At this depth an allowable bearing pressure of circa 130kN/m² based on an undrained shear strength of 60kN/m² could be considered limiting total settlements to 25mm, which is relatively consistent with values calculated from previous phases of works. This is based on a Factor of Safety of 3, anticipated founding depth of 1.00mbgl or shallower where high density chalk is encountered, and a foundation width of 600mm. Localised soft spots may be present within the Clay-With-Flints Formation and it is recommended that any soft spots are removed and the resulting voids backfilled with engineer fill.</p> <p>Within large parts of Phase 3 however or where Chalk is encountered near surface an allowable bearing pressure of 225kN/m² could be determined based on a minimum Chalk Grade of Dc (clast dominated structureless chalk).</p>	Geohazard Rating	Comments	Moderately High and Moderate	All foundations should be designed to withstand a loss of ground support (void) of 1m diameter	Moderately Low	All foundations should be designed with nominal reinforcement to withstand potential for differential settlement	Low and Very Low	All foundations should where possible, bear onto the chalk. The best practice would be to expose the chalk and inspect for any signs of infilling or other weakening. Should problems be found then revert to geotechnical inspection and advice	Man-made areas	All foundations where possible to bear on to chalk. If not possible within reasonable depth (say within 2m of surface) then it will be necessary to pile foundations down into competent chalk below. Shallow foundations on head deposits are prone to differential settlement and serviceability damage if formation becomes saturated and fines are eroded.
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Soak-away Drainage	<p>Soil infiltration rates within the Clay-with-Flints Formation and the shallow chalk formations within trial pits at depths ranging from 3.00 to 5.50mbgl, typically indicated good drainage conditions within Phase 2, Phase 1B and Phase 3. However, it is likely that deep bore soakaways would need to be adopted within Phase 1A due to the thickness of the Clay-with-Flints Formation.</p> <p>Variable head testing undertaken within the cable percussive boreholes at depths ranging from 6.50 and 25.00mbgl typically indicate medium to very high permeability within the deeper Seaford and Lewes Nodular (undifferentiated) Chalk Formation.</p>										

	<p>At sites that are prone to solution feature development, CIRIA C574 surface water drainage guidance suggests that shallow soakaways should be avoided or located at least 20m from structures. Alternative drainage solutions, including deep bored soakaways, at closer distances may be considered. It is recommended that The position of all soakaways should be plotted before the layout is set, and the position should be checked by a qualified engineer so that if the soakaway is found to cause chalk solution it can be moved.</p> <p>The following table shows the implications for soakaway drainage for various geohazard zones defined across the site:</p>										
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<p>With regards to the balancing pond area to the east of the site – past excavations are likely to have removed a thickness of Clay-with-Flint deposits and with it the upper portions of infilled solution pipes. Any water will therefore now likely drain down through the lower remnants of solution features where present. This could give rise to differential settlement, with collapse failure over voids however less likely. As this area is not likely to be frequented by people the impact of this risk as such is largely controlled, and the risk could be further mitigated if a geogrid reinforcement layer was installed across the footprint of the balancing pond.</p>											
<p>Sulphate Assessment</p>	<p>Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE Special Digest 1 (2005).</p>										
<p>CBR Design %</p>	<p>Based on Atterberg Limit Determination Tests and the presence of Chalk near surface in some parts of the site, a design CBR value of 2 to 3 % is recommended for pavement design.</p>										
<p>Earthworks Classification</p>	<p>Laboratory assessments have been made of the material encountered on site and in accordance with the Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, Series 600, Earthworks as amended in November 2005, the material from the Clay-with-Flints Formation should be classed as a General Stony Cohesive Fill, Class 2C. The chalk samples tested from TP227 and TP229 should be classified as a General Chalk Fill Class 3.</p> <p>Based on the results of the laboratory geotechnical testing the following characteristic geotechnical parameters are recommended for use in any subsequent geotechnical design.</p>										

	Stratum	Geotechnical Parameter		Notes	Characteristic Value
		Clay-with-Flints Formation	Unit Weight	bulk γ	Typical Values
Maximum Dry Density			Based on an average of the tests undertaken	1.68Mg/m ³	
Optimum Moisture Content			Based on an average of the tests undertaken	19%	
CBR Value			Achievable at MDD and based on an average of the tests undertaken	14%	
Seaford and Lewes Nodular (Undifferentiated) Chalk Formation		Unit Weight	bulk γ	Typical Values	18kN/m ³
		Maximum Dry Density		Based on an average of the tests undertaken	1.69 Mg/m ³
		Optimum Moisture Content		Based on an average of the tests undertaken	19%
		CBR Value		Achievable at MDD and based on an average of the tests undertaken	34%
Waste Classification	It is recommended that any materials requiring disposal at landfill should be Waste Assessment Criteria (WAC) tested although given the lack of significant contamination risks based on the chemical testing results, it is likely that any natural material requiring disposal will be classified as inert.				
Developed Conceptual Site Model (CSM)					
<p>Human Health The Tier II Human Health Risk has identified no elevated concentrations of any determinands across the site and therefore no further action is required.</p> <p>Controlled Waters The site is considered to be located within a moderate sensitivity setting in regard of controlled waters on the basis that the site lies within a nitrate vulnerable zone, a groundwater abstraction licence lies 200m north of the site, the superficial Clay-with-Flints Formation is absent in parts of Phase 3 resulting in the topsoil directly overlying the chalk, and the nearest surface water feature is the grand Union Canal 156m south of the site.</p> <p>It is however considered that the risk posed to controlled waters within influencing distance of the site is not significant based on the following rationale;</p> <ul style="list-style-type: none">  The site is mostly underlain by practically impermeable Clay-with-Flints Formation deposits which would reduce the migration of contaminants;  There are no exceedances of guideline acceptance criteria for any of the soil samples tested with respect to that for a residential end use with gardens;  No gross hydrocarbon contamination of the soils has been identified at the site;  While there is a drainage channel flowing within the site, no water flows were observed throughout the four weeks that the ground investigation took place; and  Groundwater was identified as lying at approximately 86.00m \pm 3.00m above sea level. The elevation of the site ranges from 96.355 – 154.903m above sea level. 					

Conclusions and Recommendations

Given the ground conditions encountered on site, and the number of residential developments that are situated within close proximity, it is reasonable to assume that the site is suitable for the proposed end use. However, we would recommend that the following considerations are given with respect to the proposed development:

- A full geotechnical earthworks specification will be required for all cut and filling activities. A process of validation by a third party will also be required;
- It is noted that an ecological assessment was undertaken by CSA Environmental prior to and at the start of both ground investigations. Reference should be made with them for a full list of ecological constraints as those outlined within this report only refer to those affecting the ground investigation;
- Although archaeological considerations were not part of the scope of works outlined with this report, it should be noted that an archaeological survey was undertaken by Cotswold Archaeology concurrent with the additional ground investigation. This report should be consulted with regards to archaeological constraints;
- Consideration must be given to the Hemel Hempstead to Picketts High Pressure Gas Pipeline running under the Phase 1B, Phase 3 and the track that forms the boundary between Phase 1B and Phase 3;
- Given the risk of solution features being present, as identified in the report produced by Peter Brett Associates, and the revised risk ratings across site following the additional ground investigation undertaken during Autumn 2016, the adoption of any foundation options must take into account the risk presented by the potential presence of chalk solution features;
- Should piled foundations be adopted within parts of the site, pile design should be undertaken by a specialist contractor in order to confirm the indicative capacities detailed above and in order to select the most efficient piling method for ground conditions of this type;
- The adoption of soakaway drainage will ultimately be dependent on the specific requirements of the development. It is recommended that consultation is made with the Statutory Regulators (EA and the Local Authority) in order to confirm that both deep and shallow soakaways could be adopted for the scheme. In addition, further consultation should be made with a drainage engineer to assist with the design of soakaways across the site; and
- The position of all soakaways should be plotted before the layout is set, and the position should be investigated by a qualified engineer so that if the soakaway is found to cause chalk solution it can be moved. This is likely to include dynamic probe and window sampling to show strength profile of the ground (need to penetrate down into chalk surface for a minimum of two metres) to assess whether a feature is present or not. Alternatively if the deep bored soakaway is started as a cable percussive borehole then use SPT profile and depth to chalk surface to demonstrate that a feature is absent.

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1.0 INTRODUCTION

1.1 Background

Resource and Environmental Consultants Ltd (REC) has been commissioned by Taylor Wimpey Strategic Land and Barratt Homes (North Thames), herein jointly referenced as “the Client” to undertake a Phase I and II Geo-Environmental Site Assessment at “land to the west of Hemel Hempstead”, herein referenced as “the site”, in Hertfordshire. A site location plan (ref. 1CO101380-001) is presented within Appendix III.

All acronyms used within this report are defined in the Glossary presented within Appendix II.







1.2 Proposed Development

It is understood that the proposed development will comprise approximately 900no. new houses, a primary school and other community facilities with associated access roads and infrastructure. It is also understood that the development will be undertaken in four phases; Phase 1A, Phase 1B, Phase 2 and Phase 3.

The proposed development plan (ref. 1CO101380-002) showing the location of each of the four development phases is presented within Appendix III.







1.3 Objectives

The objectives of the geo-environmental investigation are to:

-  Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with Environment Agency (EA) document Model Procedures for the Management of Contaminated Land (Contaminated Land Report 11 (CLR11));
-  Undertake a preliminary stage of sampling and analysis to provide an overview of environmental issues identified;
-  Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to future use and in relation to off-site receptors;
-  Assess the geotechnical information and provide preliminary recommendations in relation to foundations, pavement construction and floor slabs;
-  Provide an assessment of the shallow and deep soakage potential of the underlying soils to assist in the design of SuDS; and,
-  Provide recommendations regarding future works if required.

1.4 Sources of Information

Background information was sought from the following sources:

-  Groundsure Database Search (GS-2887663 and GS-2887664);
-  Historical mapping dated 1877 to 2014;
-  On-line planning records held by Dacorum Borough Council;
-  Consultations with representatives of Dacorum Borough Council;
-  Environment Agency Groundwater Vulnerability Map (www.environment-agency.gov.uk/wiyby);
-  Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007);

- British Geological Survey Map (BGS Mapapps online, onshore geoIndex tool 1:50,000 scale <http://mapapps2.bgs.ac.uk/geoindex/home.html>); and,
- Delta-Simons: Combined Phase I & II Geo-Environmental Assessment (Project No. 11-0150.01, dated June 2011).

1.5 Risk Classification

REC Ltd has utilised the available data to classify the site on the basis of its likely contaminated land liability and potential for geotechnical constraints in relation to the property development. The risk classification definitions are summarised below:

Risk	Definition
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
Low-Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of a future redevelopment of the site etc.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the site will likely require further site investigation.
Moderate-High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine to level of risk and associated liability.

1.6 Limitations

The limitations of this report are presented in Appendix I.

2.0 SITE SETTING

2.1 Site Details

Site Address	Site is located within Fields End Farm, Pouchen End Lane, Hemel Hempstead, Hertfordshire, HP1 2SD (Phase 1A) and Pouchen End Farm, Pouchen End Lane, Hemel Hempstead, Hertfordshire, HP1 2SA (all other phases)
National Grid Reference	E: 503202, N: 206938
Site Area	53.77 ha

The subject site is located in the western edge of the suburban village of Warners End, a predominantly residential area to the west of Hemel Hempstead. The site is immediately adjacent to multiple residential properties to the east and is bordered by Pouchen End Lane to the north west and west, other fields belonging to Fields End Farm to the north east, and Chaulden Lane to the south.

A site location plan (ref. 1CO101380-001) is presented within Appendix III.

2.2 Current Site Use

Site Walkover Brief

A site walkover was undertaken on 5th April 2016 prior to commencement of intrusive works. The following site description comprises the site's current layout and key features based on the REC Engineer's observations at the time of the site walkover. The walkover is primarily used to identify potential sources of contamination present at the site.

A selection of site photographs are presented within Appendix XII.

Site Description

The site as a whole is irregular in shape and generally slopes from north to south, with the north being approximately 60m higher in elevation. The site predominately comprises arable farmland in the north and fields for equestrian use in the south.

The site has been divided into four Phases (Phase 1A, 1B, 2 and 3), based on site development plans. A Site Layout Plan is presented in Appendix III. For simplicity, each of the four phases have been described separately below:

Phase 1A

Phase 1A is located within the north and north east of the site and comprises two large agricultural fields within Fields End Farm, and a small non-agricultural area comprising two grassed fields. The larger of the two fields lies within the west of the phase and is used to grow barley. This field is referred to as the 'barley field' in this report.

The smaller of the two fields is located along the eastern boundary of the site and is used to grow beans. This field is referred to as the 'bean field' in this report. A line of trees and a drainage ditch separates the two fields. A public footpath runs along the northern boundary of the Bean Field within Phase 1A. By the time of the Autumn 2016 Ground Investigation, the barley and bean crops had been harvested and following the conclusion of these works in Phase 1A, the Bean Field and

approximately three quarters of the Barley Field had been re-ploughed in preparation for the growing of winter crops.

An access gate in the south of the Bean Field leads to an adjacent grass field, with a further gate leading to another grassed field beyond. A culvert surfaces within the southernmost grass field of Phase 1A. Phase 1A is separated from the rest of the site by a thick line of young trees. In both these grass fields, by the time of the Autumn 2016 Ground Investigation, the grass was observed to have grown to approximately 1.2m in height although this had been cut between the second and third initial monitoring visit. Prior to the Autumn 2016 works, slow worms were identified to be present within the grass fields. Details of the ecological aspects are detailed further in Section 4.10.

Phase 1A is bounded by Pouchen End Lane and other fields belonging to Fields End Farm to the north, residential properties to the east, Phase 1B to the south and Phase 2 to the west. Ecological corridors comprising young trees form part of the north western, southern and western boundaries of Phase 1A, although fencing was only present within the north western boundary (with Pouchen End Lane) and the western boundary (with Phase 2).

Access to Phase 1A is gained from either Long Chaulden in the south east, the public footpath within the north east, adjacent fields belonging to Fields End Farm in the north east into the Bean Field, or, from Pouchen End Lane in the north west into the Barley Field. Due to the sensitivity of the development with respect to the surrounding residents, the access from Long Chaulden was not used in either of the ground investigations.

Phase 1B

Phase 1B forms a roughly east to west split into two grassed fields and are referred to as the Western Phase 1B Field and the Eastern Phase 1B Field. The two fields forming Phase 1B are separated by a line of young trees with a gate, although there is also a track through the vegetation which forms the access route between the two fields forming Phase 1B. Access into Phase 1B is through a gate in the south western corner of the phase only.

The Western Phase 1B Field comprises the southern portion of a field that lies adjacent to the east of Pouchen End Lane, which was in turn separated by a fence running from east to west. The northern portion of this field is Phase 2, as described below. The field north of the fence line was used as a horse riding area associated with Pouchen End Farm. There were no fence lines, markers or features dividing the field into areas designated for Phase 1B and Phase 2. As a result, some exploratory hole locations that were scheduled for Phase 2 were relocated to Phase 1B in order to obtain more effective distribution of the exploratory holes along that field in general. During the groundwater level monitoring visits between the two rounds of ground investigation works, the grass was observed to have grown rapidly to approximately 1.2m in height although this had been cut between the July and August 2016 visits.

The Eastern Phase 1B Field comprised a grassed area with a high ecological significance. Between the two rounds of ground investigation works, the grass within this area was observed to have grown rapidly to approximately 1.2m in height although this was cut prior to the additional ground investigation. Skylarks were known to be present within this field during the initial investigation. Prior to the additional investigation, slow worms were identified to be present within this field. Details of the ecological aspects are detailed further in Section 4.10.

Phase 1B is bounded by Phase 1A and Phase 2 to the north, residential properties to the east, a track used as a public footpath to the south and Pouchen End Lane to the west. The public footpath separates Phase 1B from Phase 3 and the Hemel Hempstead to Picketts High Pressure Gas Pipeline runs beneath it for part of the way. More details regarding the gas pipeline and the implications on

the proposed development are presented in section 7.2.1.

Phase 2

By land area, Phase 2 is the smallest of the phases and comprises approximately the northern 75% of the grass field adjacent to the east of Pouchen End Lane only. The southern 25% comprises part of Phase 1B as described above. During the site investigation, the field was unused although it is understood that it has been used in the past as a horse riding area by users of Pouchen End Farm. Access into Phase 2 was only possible through Phase 1B.

During the groundwater level monitoring periods which took place between the two rounds of ground investigation works, the grass across the entire area was observed to have grown rapidly to a height of approximately 1.2m although this had been cut between the July and August 2016 visits.

Phase 2 is bounded by Pouchen End Lane to the north and west, Phase 1A to the east and Phase 1B to the south.

Phase 3

Phase 3 is the most isolated area of the site with no direct access from the other phases of the site. The majority of Phase 3 is associated with Pouchen End Farm. A small rectangular area of grassland owned by Hertfordshire County Council Property lies in the south easternmost corner.

The land associated with Pouchen End Farm was formed predominately of a large grass field with a fence line running west to east separating the area into two. In the south west corner of the Phase 3 there was an area used as a plantation for Christmas tree farming, separated from the main grassed field by a smaller strip of grass where TP230, TP302 and TP303 were located, and a north to south alignment of mature silver birch trees. At the time of the walkover, horses occupied the field east of the line of silver birch trees, and north of the fence line in the main field. A small area of bonfire waste and rusted metal tin cans were present north of the Christmas Tree Plantation and TP229 was located to target this. Access to the land owned by Pouchen End Farm in Phase 3 was from two separate gates in the west of the Phase, both of which led into the Pouchen End Farmyard.

The Hertfordshire County Council property comprised a rectangular grassed field occupying the south eastern area of the site. Access was not possible to this area until the second week of the Initial investigation so WS216 was the only exploratory hole located here at the time. Access to the Hertfordshire County Council Property however was only possible from Chaulden Lane, with a barbed wire fence line and hedgerow isolating the Hertfordshire County Council property from the rest of Phase 3. Due to the restricted access into this field, it was only possible to undertake window sampling within this field, hence WS216 being located there during the initial investigation, and WS346, WS347 and WS348 being located there during the Autumn 2016 Ground Investigation.

During the groundwater level monitoring periods which took place between the two rounds of ground investigation works, the grass across the southern half of Phase 3 within Pouchen End Farm was observed to have grown rapidly to a height of approximately 1.2m. This grass was cut in the southern half of Phase 3 between the July and August groundwater level monitoring visit within all areas belonging to Pouchen End Farm. Within the northern half of Phase 3, horses had been returned to the field between the two rounds of ground investigation and the grass height remained consistent. Within the council owned property in the south eastern corner of the site, horses were not observed to have returned to this field until 7th October 2016 – the final day of the Autumn 2016 Ground Investigation, although the grass height was observed to be low during the intervening groundwater level monitoring periods.

Phase 3 is bounded to the north by the track/public footpath separating Phases 3 and 1B, by residential properties to the east, Chaulden Lane to the south and Pouchen End Lane and Pouchen End Farmyard to the west.

An antenna is present along the track between Phase 3 and Phase 1B. Underground BT cables supplying the antenna were denoted on service plans running to the east of the site beneath the track/public footpath. The Hemel Hempstead to Picketts High Pressure Gas Pipeline runs within Phase 3 close to the north eastern and eastern boundary of the Phase.

Hazardous Materials Storage

No above ground storage tanks (ASTs) or Underground Storage Tanks (USTs) were observed within the site. It is assumed that diesel storage tanks would be present given the magnitude of farm machinery that would be in operation requiring fuel. However, all such tanks are noted to have been outside of the area designated as “the site”.

Polychlorinated Biphenyls (PCBs)

No equipment that may potentially contain PCBs was observed at the site.

Asbestos Containing Materials (ACMs)

No potential ACMs were observed at the site during the initial walkover. However, given the size of the site it cannot be ruled out that fly tipping of asbestos has not taken place in the past.

Waste Storage

No potentially hazardous waste streams are currently generated within the site.

Small areas of fly-tipped material were present within Phase 3 by the Christmas Tree Plantation, and within Phase 2 adjacent to western boundary of the site. The waste predominantly comprised metallic cans in Phase 3, and metallic farming equipment in Phase 2. In both cases the material was found to be heavily rusted. TP229 was subsequently located to target the fly-tipped area in Phase 3 and TP210 was located to target the fly-tipped area in Phase 2.

Potential Bonfire Area

An area of ash was observed within Phase 3 located close to the aforementioned fly tipped material, which could be a potential source of PAH contamination. TP229 was positioned at this location in order to target the potential source.

2.3 Surrounding Area of the Site in General

The surrounding land uses of the site in general are summarised below:

Direction	Land Use
North	Agricultural fields. Pouchen End Lane is present along the north western boundary only before turning northwards at roughly the centre north of the site
East	Residential properties

South	Chaulden Lane, beyond which are further agricultural fields and the West Coast Main Line railway line
West	Pouchen End Lane beyond which are further agricultural fields with a small area occupied by the Pouchen End Farm buildings by the central western boundary of Phase 3

2.4 High Pressure Gas Pipeline





Consideration needed to be given prior to commencement of both intrusive works with regards to the "Hemel Hempstead to Picketts High Pressure Gas Pipeline" which runs through Phase 1B, Phase 3 and the track that forms the boundary between Phases 1B and 3. Advice sought from National Grid concluded that no exploratory holes were to be located within 15m from the pipeline. The pipeline was then marked out accurately by a National Grid representative on site prior to excavation work during the initial ground investigation. The marker posts were subsequently surveyed along with the exploratory holes from this phase of works. The area of Phase 1B which was affected predominantly consisted of the fenced off area in the southern portion of the Western Phase 1B Field, which was occupied by horses and hence was not investigated. The location of this pipeline is presented in drawing 1CO101380-004, included within Appendix III.

3.0 SITE HISTORY

3.1 On-Site Historical Development

A review of historical mapping pertinent to the site is summarised in Table 3.1 below.

Table 3.1 Summary of Potentially Contaminative Historical Land Uses

Dates	Historical Land Use
1877 to present	<p>The subject site is an undeveloped and used primarily for agricultural purposes. The only changes that have occurred between 1877 (the earliest map available) and the present day are as follows:</p> <ul style="list-style-type: none">  The establishment of the present site boundary pre 1955 (the field forming Phase 3 had prior to the 1955 map extended east of the present site boundary);  A footpath is denoted as traversing Phase 3 in the 1897 map only;  The construction of the mast between Phase 1B and Phase 3 although it is not clear when this took place; and  Records held by National Grid indicate that the underground Hemel Hempstead to Picketts High Pressure Gas Pipeline was constructed in circa 1971.

3.2 Off-Site Historical Development

A review of potentially contaminative uses identified from historical Ordnance Survey maps within influencing distance of the site are summarised below in Table 3.2.

Table 3.2 Summary of Potentially Contaminative Off-Site Historical Land Uses

Surrounding Feature	Dates	Distance	Direction
Active petrol station at Bourne End Service Station	Unspecified date to Present	250m	South West
Old Chalk Pit	Pre 1897 to Pre 1923	475m	East
West Coast Main Line Railway	Pre 1877 to Present	100m	South

3.3 Planning History

REC has undertaken a review of on-line planning records held by Dacorum Borough Council and although many planning applications have been submitted for Pouchen End Farm and Fields End Farm, these all relate to activities within the farmyards or in a single case in 1999, relating to the mast on the site.

3.4 Review of Previous Investigation Report

3.4.1 Delta-Simons: Combined Phase I & II Geo-Environmental Assessment (Project No. 11-0150.01, dated June 2011)

Delta-Simons Environmental Consultants Limited (Delta-Simons) undertook a combined Phase I and II geo-environmental assessment of the land at Fields End Farm, Hemel Hempstead, in 2011. This initial investigation extended over approximately 22 hectares, covering the area defined as Phase 1A in this report. The purpose of the Delta-Simons investigation was to obtain information regarding

the geotechnical and contamination status of the site and to identify any potential risk or liabilities associated with contaminated land or geotechnical constraints.

The site investigation included the following:

- A review of historical and geological mapping data;
- Completion of 18no. window sample boreholes to a maximum depth of 6.00mbgl;
- 26no. trial pits to a maximum depth of 4.00mbgl;
- Laboratory chemical and geotechnical testing; and,
- Four rounds of groundwater and ground gas monitoring.

The intrusive locations were positioned in order to obtain the widest possible coverage, whilst limiting the impact on the site's agricultural use. A 'settling pond' was not investigated due to health and safety concerns.

The ground conditions were found to comprise the following sequence:

- Topsoil comprising dark brown gravelly clayey organic reworked soil with frequent roots, extending to depths ranging from 0.15 to 0.35mbgl;
- Generally firm to stiff brown and light brown sandy gravelly clay, with increasing gravel content recorded in the south. The full extent of the clay was not proven in all exploratory holes; and
- Weak to very weak white chalk and cream structureless 'putty' chalk was encountered beneath the clays, most frequently in the far northern and south eastern areas of the site.

The environmental findings of the report are summarised below:

- There were no potential sources of contamination identified at the site;
- No groundwater was encountered during drilling or the return monitoring visits;
- The ground gas regime has been identified as CS-1; and,
- No visual or olfactory evidence of contamination was identified during the site investigation.

The geotechnical findings of the report are summarised below:

- Ground conditions were considered to be potentially suitable for traditional strip or pad foundations. Initial assessments indicated that an allowable bearing capacity of 125kN/m² would be suitable within the firm to stiff clays beneath any topsoil or other unsuitable soil. However, due to the risk of laterally variable granular fractions and soil strengths it was recommended that allowable bearing capacities are limited to 100kN/m²;
- Clays were of high or very high shrinkability, so allowance should be made for this in foundation design;
- There were no conclusive indications of the presence of dissolution features, although there remains a risk that chalk dissolution may have occurred. Although it should be noted that a site specific assessment has been undertaken by Peter Brett Associates;
- The site is not suitable for soakaway drainage at shallow depth due to predominately cohesive ground conditions;
- Design Sulphate Class for the site is DS-1 and the ACEC Class is AC-; and,
- Design CBR values of 5% may be adopted for the shallow depth clay soils; therefore the natural clays are considered suitable for re-use beneath roadways and pavements.

However, given the changes to regulation and guidance since these works were undertaken, these results have been re-screened by REC utilising more recent GAC criteria. The re-screening confirmed

that all of the determinants analysed fall below the criteria for a residential end use with private gardens.

In addition to the above, the ground investigation also indicated that shallow soakaways would not be suitable within this area of the site given the thickness of relatively impermeable soils of the Clay-with-Flints identified during the works.

A copy of the 2011 Delta Simons report is presented within Appendix IV.

4.0 GEO-ENVIRONMENTAL SETTING

4.1 Geology & Hydrogeology

Publicly accessible GIS data provided by the British Geological Society (BGS) indicates that the site is underlain by the following geological sequence:

Geological Unit	Classification	Description	Aquifer Classification
Superficial deposits	Clay-with-Flints Formation (absent across phase 3 and parts of Phase 1B)	Clay, Silt, Sand and Gravel	Unproductive
Bedrock	Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated)	Chalk	Principal
Bedrock	Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated) (Southern area of Phase 3 only)	Chalk	Principal
Bedrock	Chalk Rock Member (Southern area of Phase 3 only)	Chalk	Principal

The geological mapping records indicate that the site is underlain by the Clay-with-Flints Formation (clay, silt, sand and gravel) over bedrock, predominantly comprising chalk of the Lewes Nodular and Seaford (Undifferentiated) Chalk Formation. It is noted however that the Clay-with-Flints Formation is not shown to cover the entire site area, with this stratum indicated as being absent across Phase 3 and parts of Phase 1B.

The Groundwater Vulnerability map shows that the site has been preliminarily classified as having a high leaching potential, however this has been provided as a conservative assessment due to being located close to an urban environment.

The Groundsure report contains seventeen (17no.) records of groundwater abstraction licences and a single potable water abstraction within a 2km radius of the site. The nearest abstraction licences are as follows:

- A historical groundwater borehole at Fields End Farm located 165m north west of the site. The most recent licence issue was in place from 2nd August 1976 to an unspecified end date. The licence was for general farming and domestic use;
- An active groundwater borehole at Fields End Farm located 200m north west of the site. The current licence version was issued on 4th April 2003. The licence is for general farming and domestic use; and
- An active groundwater borehole at Chaulden Cress Farm located 250m south east of the site. The current licence version started on 3rd October 2011. The licence is for fish farm/cress pond through flow.

It is noted that the active groundwater abstraction point at Fields End Farm was surveyed in as part of the post ground investigation surveying works. This was undertaken in order to supplement the list of groundwater strikes and to support the long term groundwater modelling.

The single potable abstraction licence is located 1949m east of the site.

4.2 Natural Geological Hazards

GIS modelling data held by the BGS has determined the following risks at the site from natural geological hazards:

Hazard	Hazard Risk Rating
Shrink-Swell Clay	Low
Landslides	Very Low
Ground Dissolution	Moderate
Compressible Ground	Negligible
Collapsible Deposits	Very Low
Running Sand	Negligible

Based upon the preliminary desk-based information, the BGS considers that there is a moderate risk of ground dissolution of soluble rocks underlying the site.

A Chalk Solution Features Assessment of the underlying geology across the site was undertaken by Peter Brett Associates, further details of which are discussed in section 4.11. The Chalk Solution Features Assessment report is presented within Appendix V.

4.3 Mining Records

The site does not lie within a coal mining area and as such, no Coal Authority Reports were obtained for the site. The Groundsure Report indicates that the site lies within an area where sporadic underground chalk mining may have occurred, although it is assessed that the mining, if it had occurred, was restricted in extent. The potential for difficult ground conditions are unlikely and localised and are therefore, at a level where they need not be considered.

4.4 Hydrology

The nearest recorded surface water course (the Grand Union and Regents Canal) is located approximately 156m south of the site at its nearest point. It was also noted during the walkover that a drainage channel was present across Phase 1A separating the Barley Field from the rest of Phase 1A. A culvert was also observed to be present within the most southerly grassed field in Phase 1A, in the vicinity of the south eastern corner of Phase 1A. It should be noted that no water was observed to be flowing in that location during the walkover or at any point during the site investigation.

No surface water abstraction licenses are held within 1km of the site.

4.5 Flood Risk

4.5.1 Surface Water Flooding

The site is not located within a currently defined flood risk zone.

4.5.2 Groundwater Flooding

The BGS has identified the surface of the site as being susceptible from Clearwater flooding, owing to an unconfined bedrock aquifer. The BGS have a moderate confidence in this assessment and provide the following recommendation:

“...groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.”




Geological mapping indicates that confining cohesive superficial deposits will be present overlying the Principal Aquifer within the Chalk Formations but this is limited in extent across the site. The assessment of flood risk is outside the scope of this report.

4.6 Radon Risk Potential

The UK radon website indicates the site is situated within an area where between 1-3% of homes are above the action level however, no radon protective measures are deemed necessary in the construction of new dwellings.

4.7 Industrial Land Uses






The site is situated within a predominantly agricultural area although there are nineteen records of current potentially contaminative industrial land uses within a 250m radius of the site, five of which are electrical substations. The nearest three potentially contaminative industrial land uses to the site are as follows:

-  J Proctor Stained Glass Studio located 16m south west of the site within the Pouchen End Farm Buildings. The activity is glass with the category being industrial products;
-  H J S Bespoke Activities located 29m east of the site. The activity is electrical equipment and repair servicing with the category being repair and servicing;
-  Barnes Upholstery located 30m north east of the site. The activity is carpets, flooring rugs and soft furnishings with the category being consumer products.

The nearest of the electrical substations is located approximately 57m north east of the site.








4.8 Sensitive Land Uses

The following sensitive land uses have been identified within close proximity to the site:

-  Residential properties are located immediately adjacent to the east of the subject site;
-  Three schools, are located within 500m from the site;
-  The site lies partly within a Zone 3 Source Protection Zone (SPZ);
-  The site lies within a Nitrate Vulnerable Zone (NVZ); and
-  The site lies within the London Area Greenbelt.




4.9 Site Sensitivity Assessment

The site is considered to be located within a **high** sensitivity setting due to the following reasons:


-  The site is adjacent to a number of residential dwellings with private gardens;
-  Three schools lie within close proximity to the site;
-  The site is underlain by a bedrock designated as a principal aquifer with a limited extent of overlying impermeable superficial deposits;
-  The site lies partly within a zone 3 source protection zone;
-  The site lies within a nitrate vulnerable zone;
-  The site lies within the London Area Greenbelt; and
-  The Shrubhill Common local nature reserve lies 11m south east of the site.

4.10 Ecological Sensitivity Assessment

An ecological survey was being undertaken by CSA Environmental during the initial ground investigation and some of their findings created some constraints to the timing of the ground investigation works and in some cases, resulted in some of the exploratory holes being moved. These constraints are detailed further below:

-  Skylarks were known to be in the process of nesting within the Barley field in Phase 1A and in the eastern field of Phase 1B at the time of the ground investigation (April 2016);
-  Badger setts had been identified within the boundaries between Phase 1A and other areas of the site. As a result, WS204 was relocated as to not impinge on easements set by the ecology team. For the Autumn 2016 Ground Investigation, a badger sett was identified close to the suspected chalk hollow feature in the south western corner of Phase 1A and the lack of suitable alternative locations within the hollow feature resulted in the cancellation of TP321;
-  Nesting birds were present within the boundary between Phase 1A and Phase 1B. As a result, a designated passageway through this area was agreed with CSA Environmental prior to creation. Due to access constraints along Pouchen End Lane, it was necessary to fell the young trees through the area in order to allow a 14 tonne tracked excavator to access the whole site from Fields End Farm. These works were undertaken under supervision by CSA Environmental.

A further ecological survey was undertaken by CSA Environmental prior to the Autumn 2016 site investigation and the following further constraints were identified affecting the timing of the ground investigation:

-  Slow worms were known to be present within the eastern field in Phase 1B and in the grass fields forming the south western corner of Phase 1A.

It must be noted that the constraints listed above is not an exhaustive list of ecological constraints that may affect the proposed development.

4.11 Archaeological Constraints

No archaeological considerations have been included within this report as it did not form the scope of works. It should be noted however, that the additional ground investigation was carried out concurrently with an archaeology investigation undertaken by Cotswold Archaeology.

4.12 Geotechnical Assessment

The following potential geotechnical constraints have been identified:

- Mature trees are present on the site and therefore an assessment of the underlying clay is required for shrink and swell susceptibility;
- There is a moderate to high risk of ground dissolutions from the rocks underlying the site (refer to Section 4.13);
- The site lies along a southwards facing slope with a 58.548m difference in ground level elevation between the northern end of the site (RBH201 taken as the reference point) and the southern end of the site (WS216 taken as the reference point); and
- There is a potential for groundwater flooding to occur at the surface of the site.

4.13 Solution Features Occurrence Assessment

REC was instructed to procure a solution features database search and occurrence assessment to assess the risk from potential solution features on site. Both the initial Solution Feature Assessment (ref. 38001-3501/CBH/CNE/AD/CB, dated June 2016) and the Updated Natural Cavities Assessment (ref. 38001/CBH/CNE, dated October 2016) were carried out by Peter Brett Associates LLP Chalk Solution Features Assessment Report and is presented in Appendix V. Natural cavity records indicate there are twenty (20no.) recorded natural cavity locations within 200m of the site centre, with these being adjacent to the southern boundary of the site.

The report indicated that:

“Combining the results of the geomorphological mapping terrain units with the modified geology and the hydrogeological conditions, the site setting has been assessed using the semi-quantitative modelling approach developed by Edmonds (2001). The results of the assessment are presented in the attached Figure 1 which shows the site area subdivided into a number of zones of varying solution feature occurrence potential – the categories varying from Very Low to Moderately High as shown”

In addition, a number of hollows were identified during the site walkover, with a recommendation made that these should be investigated further to determine their nature and whether a more specialist foundation solution would be required.

The full report can be found in Appendix V, along with an updated version produced following the Autumn 2016 Ground Investigation which further investigated the identified hollow features.

In respect to soakaway design the report indicates the following:

“At sites that are prone to solution feature development the CIRIA C574 surface water drainage guidance (p236) suggests that shallow soakaways should be avoided or located at least 20m from structures. Alternative drainage solutions, including deep bored soakaways, at closer distances may be considered.”

Further reference to the findings of this report is detailed within Section 10.

5.0 REGULATORY INFORMATION

5.1 Landfill Sites and Waste Treatment Sites

The Environment Agency hold records of a single landfill within 1km of the site, which is Westbrook Hay landfill, located approximately 479m south of the site. The landfill site was recorded to be active between 19th February 1992 and 31st December 1992. The receiving waste was classified as inert.

No further records of other landfill sites from other sources are found within 500m from the site.

There are no records of a waste treatment, transfer or disposal sites within 500m of the proposed development.

5.2 Pollution Incidents

There are four (4no.) pollution incidents recorded within 250m of the site. These are as follows:

- An incident which occurred on 11th October 2001 145m south of the site. The pollutants involved were diesel, surfactants and detergents. There was no impact on air or land with minor impact on groundwater;
- An incident which occurred on 16th July 2001 162m east of the site. The pollutant involved was sewage material. There was no impact on air or land with minor impact on groundwater;
- An incident which occurred on 18th January 2003 215m south of the site. The pollutant involved was suspended soils. There was no impact on air or land with minor impact on groundwater; and
- An incident which occurred on 11th July 2001 229m west of the site. The pollutant involved was storm sewage. There was no impact on air or land with significant impact on groundwater.

5.3 Regulatory Database

The following information has been obtained from a commercially available environmental database. The summary table only includes records not otherwise detailed in the report.

Table 5.1 Summary of Regulatory Activities

Activity	0-249m	250-500m	Details
Contaminated Land Register Entries and Notices	0	0	N/A
Authorised industrial processes (IPC/IPPC/LAPPC).	0	0	N/A
Fuel Stations Entries	1	0	Existing Bourne End Services 246m south.
Licensed radioactive substances	0	0	N/A
Part A2 and Part B Activities and Enforcements	2	2	Three Horseshoes Fill Station 164m south west. Part B Historical Permit for petrol vapour recovery; Bourne End Filling Station 246m south. Part B active permit for unloading petrol into storage at service stations; MK Services 251m south. Part B historical permit for unloading petrol into storage at service stations; WF Button and Son Ltd 456m west. Part B historical permit for concrete crushing.

Discharge Consents	5	1	All related to sewage discharges. All except for one are historical licences which were revoked within dates ranging from 1996 and 2014. A single discharge consent however is still denoted as active and this is located 105m north west of the site.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	N/A
Control of Major Accident Hazard (COMAH) sites	0	0	N/A

6.0 INITIAL CONCEPTUAL SITE MODEL (CSM)





6.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), REC Ltd have developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area.

6.2 Contaminant Sources




On-site Potential Sources

Potential sources of contamination have been identified on-site which may give rise to heavy metals, sulphates, polycyclic aromatic hydrocarbons, asbestos and hydrocarbons, along with the potential for the generation of hazardous ground gases such as methane and carbon dioxide. The following on-site potential sources of contamination have been identified:

-  Made Ground associated with the backfill of an unspecified pit dating back to 1877 within the northern grass field in Phase 1A;
-  Contamination associated with agricultural practices within the site which could be a source of pesticide and herbicide material;
-  An area of ash identified within Phase 3 which is likely to have been an area where bonfires occurred recently and is a potential source of Polycyclic aromatic hydrocarbons; and
-  Rusted metallic cans within Phase 3 and rusted metallic farming equipment in Phase 2 may be a potential source of metal contamination.

Off-site Potential Sources






Limited potential off-site sources of contamination have been identified within influencing distance of the site, and these include;

-  Diesel storage tanks which are assumed to be present within the Fields End and Pouchen End Farmyards;
-  The West Coast Main Line railway which could be a source of PAH species, especially from traffic predating its electrification; and
-  The active fuel station 246m south of the site.

Based on the topography of the site and the direction of flow in the nearest river course, it is considered that groundwater if encountered would be flowing in a south easterly direction. However, this will be confirmed following the completion of the long term groundwater monitoring.

6.3 Potential Pathways

Receptors may be potentially at risk from the identified potential sources of contamination via the following pathways:

-  Migration of mobile contaminants and gases through permeable bands within the chalk;
-  Direct contact, ingestion and inhalation of contaminants on site;
-  Migration of contaminated dusts during earthworks;
-  Migration of mobile contaminants into groundwater and transport into surface waters; and,
-  Uptake of toxins/phytotoxins by plants.

6.4 Potential Receptors

The following potential receptors have been identified:

Human Health

- Site investigation and construction workers during the redevelopment of the site from hazardous short term exposure;
- Future users of the site and buildings (residents); and,
- Adjacent residents due to off-site migration of gases or contaminated dust.

Controlled Waters

- Groundwater (Principal Aquifer); and,
- Drainage channel/culvert within Phase 1A.

6.5 Preliminary Risk Assessment

Human Health

The potential for on-site contamination is considered to be **low to moderate**, based on the following rationale:

- Minimal on-site site sources identified;
- Only shallow and localised deposits of Made Ground are anticipated if at all;
- No exceedances with respect to current guideline acceptance criteria of metals, PAH and TPH species was encountered during the 2011 Delta Simons ground investigation across Phase 1A; and,
- There is potential for localised contamination from the ash and flytipped metallic objects in Phases 3 and 1B.

The overall risk associated with off-site sources is considered **low** on the basis that are limited impermeable superficial deposits on site with the bedrock throughout the surrounding area comprising high permeability chalk, which would allow the potential migration of hazardous ground gases from an off-site source, although the nearest potential source of ground gas is recorded to be the active fuel station located 246m south of the site.

Controlled Waters

Groundwater

The site has been shown to be underlain by Clay-With-Flints Formation which is classified as an unproductive aquifer, although the various chalk formations that form the bedrock across the site are classified as a Principal aquifer. BGS borehole records from the nearest boreholes to the site indicate that groundwater is present at depths ranging from 34m below ground level (bgl) within the vicinity of the Pouchen End Farmyard, and 72mbgl within the vicinity of the Fields End Farmyard. With consideration to the above points, and the limited contaminated sources identified, it is considered that the risk of contamination to the underlying groundwater is **low to moderate**.

Surface Waters

No surface water features are recorded to be located within 250m of the site although given that there is a drainage channel and culvert located on site within Phase 1A, it is considered that the risk of contamination to surface water receptors is **low to moderate**.

7.0 SITE INVESTIGATION

7.1 General

An initial ground investigation during April and May 2016 (referred to within this report as the “initial ground investigation”) was designed based on the findings of the Conceptual site Model (CSM) with exploratory holes advanced to target specific potential contaminant sources summarised in Section 6.0 and indicated in Table 7.1 below. In addition, exploratory holes have also been advanced to provide information on baseline conditions across the site and to collect geotechnical information to assist in the design and construction of the proposed development. An Exploratory Hole Location Plan (ref. 1CO101380-003) is presented within Appendix III.

Table 7.1 Summary of Potential Contaminant Sources

Potential Source	Potential Contaminants	Potential Receptor
Contamination associated with agricultural practices within the site which could be a source of pesticide and herbicide material	Pesticides and Herbicides	Human health and controlled waters
Made Ground associated with an area where bonfires were suspected to have occurred within Phase 3	Metals, PAHs and hydrocarbons	Human health and controlled waters
Rusted metallic objects in Phases 3 and 1B	Metals	Human health and controlled waters
Made Ground associated with an unspecified pit in Phase 1A	Metals, PAHs and hydrocarbons and Ground gases	Human health, controlled waters and buildings

The general scope of works undertaken during initial investigation comprised the following:

- 16 No. window sample probeholes (WS201 – WS216) to depths of circa 5.0mbgl;
- 32 No. trial pits (TP201 – TP232) to depths of circa 5.50mbgl, of which 12no. trial pits (3no. per phase) were used for shallow soil infiltration testing at various depths;
- 10 No. cable percussive boreholes (BH201 – BH210) of circa 32.0mbgl with variable head infiltration testing taken at various depths in each borehole;
- 2 No. rotary boreholes (RBH201 – RBH202) of circa 80mbgl in order to determine the depth to groundwater on the site;
- Surveying of all exploratory hole locations and the existing Fields End Farm Borehole to provide x,y,z co-ordinates of the exploratory holes and to provide an indication of groundwater flows;
- 28 No. groundwater level monitoring installations (these were installed within all window sample probeholes, cable percussive and rotary boreholes);
- Chemical and geotechnical laboratory analysis;
- In-situ geotechnical testing; and,
- Groundwater level monitoring, three initial visits, followed by monthly monitoring for 12 months.

The rotary boreholes were not originally part of the scope of works due to BGS Borehole records indicating deep groundwater levels below the site. However, with deep bore soakaways potentially being implemented as part of the proposed development, and following inconclusive discussions with the Environmental Agency and Hertfordshire County Council over agreeing an accepted methodology for an SUDS assessment to be completed at a later stage, it was requested by the Client that two (2no.) rotary boreholes were advanced across the site to identify groundwater levels.

Following the identification of potential chalk solution features using both desk based assessments, surveying methods and information from the initial investigation, further works were undertaken during September and October 2016 (referred to within this report as the “additional ground investigation”) which comprised the following:

- 45no. trial pits to depths ranging from 5.00 to 5.35mbgl in areas where potential hollow features were identified;
- 14no. window sample probeholes to 5.00mbgl to increase coverage in areas identified as at high risk of chalk solution features;
- All 59no. additional trial pits and window sample probeholes were continued as dynamic probes to 15.00mbgl or refusal, whichever occurred first.

In order to keep the dynamic probing numbering consistent, the trial pits in the additional ground investigation were numbered TP301 – 345 with the window sample probeholes numbered WS346 – 359. The numbering DP301 – 359 refer to dynamic probes between the base of the trial pits and window sampler probeholes and the base of the dynamic probe (between circa 5 – 15mbgl), with the numbers reflecting the continuation of each corresponding exploratory hole into a dynamic probing phase.

7.2 Site Investigation

Exploratory fieldwork of the initial investigation was carried out between the 12th April 2016 and 6th May 2016, with exploratory fieldwork of the additional investigation undertaken between 21st September 2016 and 7th October 2016. A summary of all intrusive holes undertaken is provided within Table 7.2, overleaf.

Table 7.2 Summary of Fieldwork undertaken throughout 2016

Initial Investigation (Spring 2016)					
Hole Location	Potential Source/Rationale	Infiltration testing undertaken	Type	Maximum Depth (m bgl)	Monitoring Wells Response Zone (m bgl)
BH201 – 204	Baseline Conditions and deep bore infiltration testing Phase 1A	On two occasions per borehole at depths ranging from 10.00 and 25.00mbgl	Cable Percussive Borehole	20.00 – 32.00	From the top of the chalk (3.00 – 16.00), to the base of the boreholes
BH205	Baseline Conditions and deep bore infiltration testing Phase 2	At 10.00 and 15.00mbgl		20.00	7.00 – 20.00
BH206 and BH207	Baseline Conditions and deep bore infiltration testing Phase 1B	On two occasions per borehole at depths ranging from 10.30 and 16.00mbgl		20.00	From 3.00 – 6.00, to the base of the boreholes
BH208 - 210	Baseline Conditions and deep bore infiltration testing Phase 3	On two occasions per borehole at depths ranging from 8.00mbgl to 20.00mbgl		20.00 – 22.00	From 1.00 - 2.00, to the base of the boreholes
WS201 – 204	Baseline conditions Phase 1A. WS203 targeting unspecified pit.	N/A		Window Sample Borehole	4.90 – 5.00
WS205 – 208	Baseline Conditions Phase 2	N/A	2.80 - 5.00		1.00 to the base of the boreholes
WS209 - 212	Baseline Conditions Phase 1B	N/A	2.70 – 5.00		1.00 to the base of the boreholes
WS213 - 216	Baseline conditions Phase 3	N/A	5.00		1.00 to the base of the boreholes
TP201 - 203	Baseline conditions Phase 1A	N/A	Trial Pit	4.60 - 5.00	N/A
TP204 and 206		At 5.50mbgl		5.50	
TP205		At 3.00 and 5.50mbgl		5.50	
TP207 and 209	Baseline Conditions Phase 2. TP210 targeting an area of flytipped metallic objects.	At 3.00 and 5.50mbgl		5.50	
TP208, 210 and 212 – 214		N/A		4.70 - 5.50	
TP211		At 3.00mbgl		3.10	
TP215, 216, 218, 220 and 221		Baseline conditions Phase 1B		N/A	
TP217	At 3.20 and 5.50mbgl			5.50	
TP219	At 4.50mbgl			3.00	

TP222		At 3.14mbgl		3.14	
TP223		At 3.00 and 5.20mbgl		5.50	
TP224, 225 and 227 – 231	Baseline Conditions Phase 3. TP228 targeting area of ash and fly-tipped metallic objects.	N/A		3.00 – 4.30	
TP226		At 3.00mbgl and 5.40mbgl		5.50	
TP232		At 3.00mbgl		3.00	
RBH201		Proving of groundwater depths Phase 1A	N/A	Rotary Borehole	80
RBH202	Proving of groundwater depths Phase 1B	N/A	60		15.00 – 60.00
Additional Investigation (Autumn 2016)					
Hole Location	Potential Source/Rationale	Infiltration testing undertaken	Type	Maximum Depth (m bgl)	Monitoring Wells Response Zone (m bgl)
TP301 – 310	Targeting potential chalk hollow features in Phase 3	N/A	Trial Pit continued as a Dynamic Probe	5.00 – 5.35. Dynamic probing to 15.00 or refusal whichever occurred first	N/A
TP311 – 320	Targeting potential chalk hollow features in Phase 1B	N/A	Trial Pit continued as a Dynamic Probe	5.20. Dynamic probing to 15.00 or refusal whichever occurred first	N/A
TP327 – 329, 343 and 344	Targeting potential chalk hollow features in Phase 2	N/A	Trial Pit continued as a Dynamic Probe	5.20. Dynamic probing to 15.00 or refusal whichever occurred first	N/A
TP321 – 326, 330 – 342 and 345	Targeting potential chalk hollow features in Phase 1A. TP321 cancelled due to the presence of badger setts	N/A	Trial Pit continued as a Dynamic Probe	5.20. Dynamic probing to 15.00 or refusal whichever occurred first	N/A
WS346 – 348	Targeting identified potential man-made solution features in Phase 3	N/A	Window Sample continued as Dynamic Probe	5.00. Dynamic probing to 15.00	N/A

WS349	Targeting areas at high risk of potential solution features in Phase 3	N/A	Window Sample continued as Dynamic Probe	5.00. Dynamic probing to 15.00	N/A
WS350 and 351	Targeting areas at high risk of potential solution features in Phase 1B	N/A	Window Sample continued as Dynamic Probe	5.00. Dynamic probing to 15.00	N/A
WS352 – 359	Targeting areas at high risk of potential solution features in Phase 1A	N/A	Window Sample continued as Dynamic Probe	5.00. Dynamic probing to 15.00 or refusal whichever occurred first	N/A

An exploratory hole location plan (ref. No. 1CO101380-003) is presented within Appendix III.

The ground conditions encountered and details of monitoring well response zones are indicated on the exploratory hole logs, included within Appendix VI.

Soil samples for chemical and geotechnical analysis were collected in appropriate sampling containers. All samples were subsequently stored in cooled boxes prior to submission to analytical laboratory. The samples were collected using appropriate PPE and sampling equipment and a more detailed copy of REC Ltd sampling methodology, QA procedures and laboratory chain of custody forms can be provided upon request.

Return groundwater monitoring visits were undertaken at weekly intervals for a period of three weeks and at monthly intervals thereafter. The results of the groundwater level monitoring undertaken to date is presented in Section 8.2, and the results of the remaining monthly groundwater visits will be included within an addendum report following completion.

7.2.1 Site Constraints Affecting the Ground Investigations

Crops

During the initial investigation access routes had to be agreed with the land agent and investigation works were required to be undertaken so as to minimise crop damage within Phase 1A. Additionally, intrusive locations requiring installation of monitoring wells were located approximately 2-3m to the side of a tram line to avoid collisions between farming equipment and upstanding monitoring well covers during the groundwater level monitoring period. The additional investigation works undertaken within Phase 1A were required to be completed by Friday 30th September 2016, prior to recommencement of crop farming.

Livestock

Liaison with the farmer at Pouchen End farm was required at during both phases of investigation in order that livestock could be relocated prior investigation works being carried out within Phase 3.

High Pressure Gas Main





The high pressure gas main which crosses the site was required to be marked out by nation Grid prior to carrying out the initial phase of investigation. The route of the gas main was surveying in allowing the main to be re-marked out prior to commencement of the additional investigation. All intrusive locations were required to be positioned a minimum of 15m from the gas main hampered the progress of marking out the pipeline by National Grid due to legal liability issues.

Council Owned Land

Access to the land owned by Hertfordshire County Council, located within the south east corner of the site, was not granted until 4th May 2016 with WS216 placed as far to the west of the land as possible while maintaining a position amongst the lowest elevation of the site.

Ecological Constraints

Ecological surveys carried out by CSA Environmental identified the following ecological constraints which affecting the ground investigation:

-  No intrusive investigation or mobilisation of plant within the wildlife buffer separating Phase 1A from Phase 1B and Phase 2. A break within the wildlife corridor was constructed under the supervision of CSA, in order to avoid disturbing badger setts and nests within the infant trees, to allow mobilisation between phases. This prevented one of the proposed additional holes located within the south west corner of Phase 1A from being undertaken;
-  No intrusive investigations within 30m of Badger setts, located primarily along the boundary of Phase 1;
-  Potential for skylark nests within the crop fields of Phase 1A during the initial investigation; and,
-  Vegetation strimming within the south east corner of Phase 1A and the eastern half of Phase 1B was required prior to the additional investigation being carried out due to the presence of slow worms.

Restricted vehicular access to site

Access to the site was only available from Fields End Farm and Pouchen End Farm, via Pouchen End Lane to the west of the site. Due to the narrow width of the southern end of Pouchen End Lane all large plant (eg. 14tonne excavators) was required to access the site from Field End Farm located to the north of the site.

Boggy ground

After extended periods of heavy rain during the initial phase of investigation, the cable percussive rig was unable to be mobilised between investigation locations using the 4 wheel drive vehicle and assistance was required from the farmer tractors.

7.3 In-Situ Testing

7.3.1 Shear strength testing using Standard Penetration Tests/Hand Shear Vanes

During the initial investigation, Standard Penetration Testing was undertaken at 1.00m intervals to a depth of 5.00mbgl then at every 1.50mbgl thereafter within the cable percussive boreholes. UT100 sampling was also undertaken where ground conditions dictated. Within the window sample probeholes, Standard Penetration Testing was undertaken at 1.00m intervals within the chalk only with hand shear vane testing undertaken at regular intervals within the fine grained Clay-with-Flints Formation. Hand shear vanes were also used to measure shear strengths within trial pits where predominantly clay material was extracted. During the additional investigation, further standard penetration tests were undertaken within the window samples, in addition to the dynamic probing which was undertaken from the base of window sample holes to a maximum depth of 15mgl. The

results of all the in-situ testing undertaken are shown on the exploratory hole logs presented within Appendix VI, and discussed in Sections 8 and 10.

7.3.2 Soil Infiltration and In-Situ Testing

During the initial investigation, soil infiltration testing, broadly in accordance with BRE365, was undertaken within twelve (12no.) of the trial pits, with three (3no.) undertaken within each phase, in order to investigate shallow drainage conditions. These were undertaken at depths of circa 3.00mbgl and 5.50mbgl with the tests repeated where time constraints allowed.

In-situ variable head (falling) permeability tests were also undertaken during the initial phase of works, broadly in accordance with BS22282-2: 2012, within all cable percussive boreholes (with the exception of BH203 and BH210) at various depths, in order to investigate drainage conditions at depth.

The results of the soil infiltration testing are presented within Appendix IX, and discussed in further detail in section 8.1.7.

7.3.3 Dynamic Probing

During the additional investigation, dynamic probing was undertaken from the base of each window sample and trial pit location using the window sampling rig to depths of 15.00mbgl or refusal, whichever occurred first. This was used to determine any soft spots which may indicate chalk solution features at depths. In selected holes at 2m intervals between 6.00-14.00mbgl torque readings of the ground conditions were obtained to determine the shear strength at depth. The results of the dynamic probing and torque readings can be found within the in-situ testing results in Appendix X.

7.4 Laboratory Analysis

7.4.1 Soil Chemical Analysis


Selected soil samples from the initial ground investigation were submitted for a range of chemical analysis comprising, metals, pH, total sulphate, water soluble sulphate (2:1 extract), cyanide, phenols, total and speciated polycyclic aromatic hydrocarbons (PAHs), asbestos and banded total petroleum hydrocarbons (TPH). A sample obtained from each phase was tested for a pesticide and herbicide analysis. Selected samples were also tested for topsoil compliance in accordance with BS3882:2015.

Scientific Analysis Laboratories (SAL) Ltd of Braintree undertook the analytical work, the results of which are included in Appendix VII and discussed in Section 9.

It was assessed that the number of contamination tests from both the initial ground investigation and the 2011 Delta Simons works with no significant risks to human health identified across both works. Consequently, no further contamination tests from the additional ground investigation was deemed necessary.

7.4.2 Geotechnical Laboratory Analysis

Selected soil samples from the Initial ground investigation were submitted to Professional Soil Laboratories (PSL) Ltd of Doncaster, where the following geotechnical tests were undertaken:

 10no. Particle Size Distributions by wet sieve analysis;

- 19no. Atterberg Limit and Moisture Content Determinations;
- 5no. Saturated moisture content/intact dry density in chalk samples;
- 10no. California Bearing Ratios (CBR's) at maximum dry density;
- 10no. 2.5kg compaction tests; and,
- 9no. Quick Undrained Triaxial tests.

The results of the geotechnical analysis are presented in Appendix VIII and discussed in Sections 8 and 10.

No geotechnical testing was required to be carried out during the initial investigation.

7.5 Groundwater Level Monitoring

Following the intrusive phase of site works, a total of fifteen groundwater level monitoring visits are scheduled to be undertaken within a twelve month period.

A 100m electronic dip meter is utilised to record groundwater levels within the installed standpipes.

The recorded groundwater levels to date are summarised in Section 8.2 and discussed within Section 10. An addendum will be issued following the completion of the groundwater level monitoring visits following completion.

8.0 GROUND AND GROUNDWATER CONDITIONS

8.1 Ground Conditions

8.1.1 Summary of Ground Conditions

The ground investigation shows the superficial deposits to be more widespread than anticipated following a review of desk based information, with heavily interbedded slightly sandy gravel and clay deposits. The depth to the chalk was very highly variable across the entire site including within individual trial pits. A summary of the strata encountered is shown below:

Table 8.1 Summary of Strata

Stratum	Typical Description	Min Depth to Top of Strata (m)	Max Depth to Top of Strata (m)	Max Thickness (m)
Topsoil	Dark grey gravelly CLAY within Phase 1A, dark grey gravelly SILT across the remainder of the site.	0.00	0.00	0.60
Made Ground	Firm to stiff orangeish brown slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and occasional brick.	0.20	0.20	0.55
Clay-with-Flints Formation	Firm to stiff brown slightly sandy slightly gravelly CLAY. Localised areas of gravelly SILT up to 0.5m thick observed at selected locations at the top of the stratum.	0.05	0.75	12.95
Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated)	Recovered as white clay, gravels, cobbles and boulders of varying proportions. Gravels and cobbles are flint and chalk. Boulders are chalk. Grade C5 in Phase 3 and Grade Dc or Grade Dm in localised locations across the rest of the site at depths within trial pitting range (up to 5.50mbgl).	0.30	15.30	N/A

8.1.2 Topsoil

Topsoil was encountered across the site with its thickness ranging from 0.05 and 0.60m. The soils were observed to comprise predominantly gravelly clay within Phase 1A, and predominantly gravelly silt across the remainder of the site.

8.1.3 Made Ground

A localised area of Made Ground was encountered within WS347, located within the council owned field located within the south east corner of Phase 3. The base of the Made Ground was observed to be 0.75m bgl, and the soils comprised firm to stiff orangeish brown slightly gravelly CLAY. Gravel was angular to sub-rounded fine to medium flint and occasional brick.

8.1.4 Clay-with-Flints Formation

The Clay-with-Flints Formation was encountered across the majority of the site and typically comprised firm to stiff brown gravelly clay with varying cobble content. The thickness of the Clay-with-Flints Formation was highly variable across the site. Localised observations of gravelly silt up to 0.50m thick were recorded at the top of the Clay-with-Flints Formation in TP326 in Phase 1A, TP314

and TP313 in Phase 1B, and TP306 and TP305 in Phase 3. The Clay-with-Flints Formation was absent in TP225 and TP229, TP308 and TP315.

Anomalies were encountered within the chalk formations at BH202 and BH201 which comprised material similar to that found within the Clay-with-Flints Formation. Within BH202, this consisted of stiff to very stiff brown clay. Within BH201, this consisted of very stiff gravelly clay. The boundary between the Clay-with-Flints Formation and the underlying Chalk formations was also observed to be highly variable between exploratory holes in close proximity.

Within individual trial pits excavated during the initial ground investigation, there was variation of the depth to the strata boundary between the Clay-with-Flints Formation and the underlying chalk by in some cases >1.00mbgl in TP201, TP203, TP207, TP209, TP213, TP214, TP215, TP216, TP220 and TP221. Examples of such observations can be found within the site photographs in Appendix XII. A vertical boundary between the Clay-with-Flints Formation and the chalk was observed within TP215 where the Clay-with-Flints Formation was observed from 0.50-1.20mbgl in the east of the trial pit, but the base of the Clay-with-Flints Formation was not encountered at the western side of the trial pit.

These anomalies were identified within the Solution Feature Occurrence Assessment (ref. 38001-3501/CBH/CNE/AD/CB) presented within Appendix V, as potential indicators of chalk solution features, and thus was the defining factor in scoping up the additional investigation. During these works, further anomalies were encountered with bands of the Clay-with-Flints Formation being observed within the chalk within TP314, TP330 and WS358. In addition, variations of depths to the strata boundary between the Clay-with-Flints Formation and the underlying chalk of >1.00m were observed within TP319, and most trial pits excavated within Phase 1A. Vertical boundaries between the two strata were observed within TP307 and TP327. The exploratory hole logs for TP307 and TP327 as well as for TP215 within Appendix VI have been split to reflect the differing properties of the trial pits either side of the vertical boundary.

8.1.5 Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated)

Solid geology of the Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated) was encountered within the majority of the exploratory hole locations. Table 8.2 below indicates exploratory holes where chalk was not encountered and grouped by phase:

Table 8.2 Exploratory holes where chalk was not encountered

Exploratory hole	Depth of exploratory hole (mbgl)	Location on site (Phase no.)
TP202	5.00	1A
TP204	5.50	
TP206	5.50	
WS201	4.90	
WS202	5.00	
WS203	5.00	
TP323	5.20	1A
TP340	5.20	
TP341	5.20	
WS356	5.00	
WS357	5.00	
WS358	5.00	
WS359	5.00	
TP210	5.50	2
TP212	5.50	
WS205	5.00	
WS206	5.00	

WS208	2.80	
TP329	5.20	
TP343	5.20	
TP344	5.20	
TP218	5.50	1B
TP219	3.00	
WS209	2.70	
WS211	5.00	
TP302	5.30	3
TP303	5.35	

Where chalk was encountered across trial pits, classification was assessed based on observations of the chalk features in accordance with CIRIA C574 "Engineering in Chalk". In most cases across the site, the chalk grading was designated as Structureless (Grade Dc or Dm). In some trial pits within Phase 3 however, structured chalk (Grade C5) was observed. Localised brown staining of chalk was observed in various places across the site. Due to the percussive nature drilling methods employed, no grade could be assigned to chalk recovered from the window sample and cable percussive borehole locations. As the rotary boreholes were advanced for the purpose of intercepting the groundwater table, no attempts were made to recover chalk cores for subsequent logging and grading. Therefore, the chalk descriptions shown within the rotary borehole logs within Appendix VI do not provide an accurate representation of chalk compositions at depth.

The depth to the chalk was highly variable across the site and in some cases within Phases 1A, 1B and 2, variations in depths to chalk was observed within individual trial pits as explained in section 8.1.4. Examples of such observations can be found within the site photographs in Appendix XII.

A notable example of such variations was observed along an approximately 200m stretch of the site in BH202, TP203 and BH203. BH202 encountered chalk at 5.00mbgl while BH203 encountered chalk at 15.3mbgl. TP203 was located approximately halfway between both locations and here, the chalk was first encountered within the northern end of the trial pit at 1.70mbgl albeit not visible across the entire trial pit until 4.00mbgl.

Anomalies were observed within BH202 and BH201 where material similar in composition to the Clay-with-Flints Formation was encountered at depth within the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation. A layer of stiff brown clay was encountered between 18.50 and 21.00mbgl within BH202, while a layer of stiff orangeish brown gravelly clay was encountered between 17.35 and 18.00mbgl within BH201.

A vertical boundary was also observed within TP215 between the Clay-with-Flints Formation and the chalk. Trial pit logs are shown in Appendix VI and has therefore been split to reflect this. Chalk was encountered at 1.20mbgl across the eastern side of the trial pit while no chalk was encountered across the western side of the trial pit. The depth of the trial pit was extended to 5.50mbgl.

These and other anomalies within the depths to chalk were investigated further within Solution Feature Occurrence Assessment (ref. 38001-3501/CBH/CNE/AD/CB) presented within Appendix V. It was found that these locations where such occurrences took place were in areas where higher frequencies of chalk solution features were mapped out and such areas were targeted for the additional ground investigation. Further anomalies were encountered during the additional investigation with bands of material originating from the Clay-with-Flints Formation being observed within the chalk within TP314, TP330 and WS358. In addition, further wide variations of depths to the strata boundary between the Clay-with-Flints Formation and the underlying chalk were observed within individual trial pits, with vertical boundaries between the two strata being observed within TP307 and TP327. The trial pit logs for TP307 and TP327 (Appendix VI) have been split to reflect this.

8.1.6 Soil Consistency

Shear strength results derived from In-Situ Standard Penetration Testing and Hand Shear Vanes and from laboratory Triaxial Testing shown in Appendix X, indicates that the clays within the Clay-with-Flints Formation were predominantly medium to high strength and firm to very stiff consistency. Localised soft spots within the clay however were noted at WS205 and WS206 within Phase 2 at depths of 0.90 and 0.80mbgl respectively.

8.1.7 Side Stability and Ease of Excavation

The exploratory trial pits were excavated with a 14 tonne excavator to depths of up to 5.50m. The pit sides remained stable in all cases, with the exception of TP201 and TP304 where the pit walls collapsed on excavation below 5.00mbgl resulting in their termination at such depth.

8.1.8 Soil Infiltration

It is understood soakaways are planned to be implemented within the proposed development. As such, soakaway tests were undertaken at shallow depths in order to characterise the near surface soils potential for soakaway implementation. Soakage was noted at a depth of 3.00mbgl within TP211, TP219, TP222 and TP232 and at 5.50mbgl within TP207, TP217 and TP223 after being advanced deeper due to poor soakage under initial soakage depths. Infiltration rates encountered ranged from $3.92 \times 10^{-6} \text{m/s}$ to $1.16 \times 10^{-5} \text{m/s}$ across these locations indicating good drainage conditions. The areas where shallow soakage was encountered were located within Phase 2, Phase 1B and Phase 3. No soakage was achieved with infiltration tests undertaken within Phase 1A, which is considered to be as a result of the increased thickness of the Clay-with-Flints Formation, with respect to the remainder of the site. It should also be noted that no soakage was achieved during the infiltration test undertaken within TP226, located within the centre of Phase 3. It is therefore recommended that for Phase 1A and within the surrounding areas of TP226 deep bore soakaways are implemented.

In-situ variable head permeability tests were undertaken in all cable percussive boreholes, generally with the first test at 10.00mbgl with further testing undertaken at various depths to the base of the borehole. Within BH202 and BH205, variable head testing caused boreholes to collapse, and in this instance the new depth of the base of the borehole was assumed as the testing depth. As a result, the shallowest variable head testing depth was 6.50mbgl in BH202.

In BH203 however, chalk was not encountered until 15.3mbgl although this borehole was extended to 30.00mbgl. With no groundwater strikes taking place, >10.00m of unsaturated ground was therefore still proven between the test undertaken at 15.50mbgl and the base of the borehole. Following the groundwater strike in BH209 and with BH210 subsequently being located at a lower elevation, a groundwater strike was anticipated within BH210. A soil infiltration test was therefore undertaken at 8.00mbgl in anticipation of a groundwater strike in order to maximise the probability of proving 10.00m of unsaturated ground whilst remaining below the maximum possible depth of trial pit soakaways.

Standing groundwater was noted at depths of approximately 19.00mbgl within BH209, and approximately 13.00mbgl in BH210.

Soil infiltration rates within the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation however proved to be highly variable. Within the shallow chalk formations, soakage was observed to range from no permeability to medium permeability. Within the boreholes at depths ranging from

6.50 to 25.00mbgl however, soakage within the chalk was indicated to range from medium to high permeability.

8.1.9 Soil Plasticity

The Atterberg Limits determinations, summarised in Table 8.3 below, indicates the underlying clay to be of high to very high plasticity with a medium volume change potential.

Table 8.3 Summary of Plasticity Index Test Results

Location	Depth (m bgl)	Plastic Limit (%)	Liquid Limit (%)	Plasticity Index (%)	Percentage Passing 0.425mm	Modified Plasticity Index	Volume Change Potential
TP202	1.6	23	57	34	80	27	Medium
TP204	0.5	25	59	34	60	20	Medium
TP205	0.7	23	58	35	53	19	Low
TP207	1.5	75	31	44	89	39	Medium
TP210	1.0	67	27	40	69	28	Medium
TP214	0.5	65	26	39	48	19	Low
TP218	1.4	60	25	35	45	16	Low
TP223	2.0	64	27	37	92	34	Medium
TP226	0.7	67	26	41	83	34	Medium
TP226	2.0	62	29	44	61	24	Medium
TP230	0.5	62	26	36	50	18	Low
TP230	1.5	64	26	38	81	31	Medium
WS201	1.2	58	24	34	80	27	Medium
WS205	1.0	68	28	40	91	36	Medium
WS206	2.0	56	23	33	87	29	Medium
WS207	1.2	61	25	36	79	28	Medium
WS208	2.0	66	27	39	81	32	Medium
WS209	1.8	63	25	38	83	32	Medium
WS211	1.0	73	30	43	84	36	Medium

8.1.10 California Bearing Ratio

Laboratory remoulded California Bearing Ratio (CBR) for selected soils were measured at maximum dry density, the results are summarised in Table 8.4 and the result sheets are included in the geotechnical testing results presented within Appendix VIII.

Table 8.4 Results of the Determination of Dry Density and Moisture Content Relationship (2.5kg rammer) with a CBR at Maximum Dry Density

Location	Depth (mbgl)	Stratum	Natural Moisture Content (%)	Optimum Moisture Content (%)	Maximum Dry Density (Mg/m ³)	CBR at Maximum Dry Density (%)
TP202	1.60	CLAY	20	17	1.74	11
TP204	0.50	CLAY	23	20	1.64	9
TP205	0.70	CLAY	15	15	1.81	19
TP207	1.50	CLAY	33	30	1.43	12
TP210	1.00	CLAY	22	22	1.61	12
TP214	0.50	CLAY	22	19	1.66	9
TP218	1.40	CLAY	18	15	1.79	16
TP227	1.40	CHALK	21	19	1.68	34
TP229	0.70	CHALK	20	18	1.70	33
TP230	0.50	CLAY	18	15	1.76	20

The test sheets show that the derived CBR values are variable across the site and with depth. Within the upper 1.60m from existing ground level, results tend to range between 9% and 20% within the Clay-with-Flints Formation, and between 33 and 34% within the chalk where encountered at shallow depths.

8.1.11 pH and Sulphate

Chemical analyses for pH and soluble sulphate content contained in Appendix VII, shows that the soils at the site meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE Special Digest 1 (2005).

Soil Concrete Design Parameters

No. Tests	=	45
Depth Range	=	0.10m → 30.00m
pH Range	=	5.9 → 9.1
SO ₄ (2:1)	=	≤ 100 mg/l

8.1.12 Particle Size Distribution by Wet Sieve Analysis

Selected samples were scheduled for wet sieve analysis with the results presented in Table 8.5 below:

Table 8.5 Summary of Wet Sieve Analysis Tests

Stratum	Location	Depth (mbgl)	Granulometric Composition (%)			
			Cobbles	Gravel	Sand	Silt / Clay
Clay-with-Flints Formation	TP202	1.60	0	16	19	65
Clay-with-Flints Formation	TP204	0.50	0	35	11	54
Clay-with-Flints Formation	TP205	0.70	0	46	14	40
Clay-with-Flints Formation	TP207	1.50	0	11	2	87
Clay-with-Flints Formation	TP210	1.00	0	29	6	65
Clay-with-Flints Formation	TP214	0.50	0	46	8	46
Clay-with-Flints Formation	TP218	1.40	0	48	13	39
Seaford Chalk Formation and Lewes Nodular Chalk Formation (Undifferentiated)	TP227	1.40	0	80	5	15
Seaford Chalk Formation and Lewes Nodular Chalk Formation (Undifferentiated)	TP229	0.70	0	77	7	16
Clay-with-Flints Formation	TP230	0.50	0	46	7	47

The particle size distribution tests carried out on representative soils taken generally confirmed on-site soil descriptions albeit with variable gravel to clay ratios within the Clay-with-Flints Formation.

8.1.13 Chalk density classification

Table 8.6 Chalk Intact Dry Density Results

Location	Depth	Saturated MC	Dry Density Mg/m ³	Bulk Density Mg/m ³
TP227	1.40	20	1.69	2.01
TP229	0.70	18	1.70	2.00

The results of the testing detailed above show an average dry density of 1.695Mg/m³ and an average bulk density of 2.005Mg/m³ indicating the chalk within Phase 3 to be on the boundary of medium and high density. Saturated Moisture Content (SMC) testing identified the samples to have an average SMC of 19%, identifying the chalk to be of high density. As such, the underlying shallow structured chalk geology encountered within Phase 3 can be described as high density. When compared to the CIRIA Classification of Chalk Density within CIRIA Report C574 (see Table 8.7 below) laboratory testing generally confirms the engineering description found on the exploratory hole logs at that area of the site.

Table 8.7 CIRIA Classification of Chalk Density (CIRIA Report 574)

Identification Method	Low Density	Medium Density	High Density	Very High Density
Saturated MC	>27.5	27.5-21.8	21.8-14.3	<14.3
Dry Density Mg/m ³	<1.55	1.55 – 1.70	1.70 – 1.95	>1.95
Approximate UCS (MN/m ²)	<3	3 - 5	5 – 12.50	>12.5
BS5930 Strength	Very Weak - Weak	Weak – Moderately Weak	Moderately Weak	Moderately Strong

It must be noted however that chalk density tests were only undertaken within the chalk encountered within Phase 3 as this was the only area of the site where chalk was encountered at shallow depths, hence where it would be likely to be used for earthworks and/or founding depth. The chalk encountered elsewhere on the site was less structured and highly variable with respect to composition and depth encountered.

8.2 Groundwater Conditions

During the initial ground investigation, groundwater strikes were encountered within the chalk stratum across the site, at depths ranging between 15.00 and 64.00mbgl. The depth of the water strikes are shown on the exploratory hole logs (Appendix V) and summarised in Table 8.8 below:

Table 8.8 Summary of Groundwater Strikes

Location	Depth to strike (m)	Inflow Rate
BH209	19.00	Slow
BH210	15.00	Slow
RBH201	64.00*	Unknown
RBH202	44.80*	Unknown

*Depths to standing water used only. See discussion below.

Due to deep groundwater and high permeability of chalk at depth, it was not possible to directly determine the depth of the water strike within RBH201 and RBH202. The depths to groundwater in these locations were therefore determined by measuring the depth to standing water following the completion of drilling operations and the removal of the drilling rods used.

No further groundwater strikes were recorded during the additional ground investigation.

The results of the groundwater monitoring undertaken to date, presented within Appendix XI, indicate that groundwater levels across the site have been generally decreasing, as is anticipated with the general decrease in average rainfall from spring to summer. The results of the outstanding groundwater monitoring will be included within an addendum report to be issued following completion of the groundwater monitoring.

9.0 TIER 1 QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT

REC has undertaken a Tier II Qualitative Risk Assessment to determine if any potential contaminants are present within the underlying soils and groundwater, and/or if they pose an unacceptable level of risk to the receptors identified within the initial CSM.

9.1 Human Health Risk Assessment

At a Tier II stage, the long term (chronic) toxicity risk to human health is assessed by utilising appropriate and conservative generic assessment criteria (GAC) to determine whether there are actual or potential unacceptable risks at the site and if any viable pollutant linkages are present.

To undertake the Tier II assessment within the context of the development proposal, REC has determined that the most appropriate GAC values available will be those based upon a residential land use with the cultivation and ingestion of home-grown produce taken into account.

The following assessment, summarised below and overleaf in Table 9.1, has primarily adopted the S4UL (Suitable for Use Levels reference values published by LQM/CIEH in 2015, the S4ULs). Currently, no published GAC value is available for cyanide and therefore REC has utilised the Environmental Agency Contaminated Land Exposure Assessment Tool (CLEA v1.06) to derive the relevant GAC for this proposed land use. Due to the absence of a published lead GAC for direct use within the planning regime, the 2014 Defra C4SL (Category 4 Screening Level) has been used as this value is considered to incorporate the latest toxicological, bioaccessibility and exposure modelling research to date.

Based on an average total organic carbon value of 1.97%, an SOM value of 1% has been assumed for determining the guidance screening criteria where applicable.

Table 9.1 Summary of Toxicity Assessment for a Residential End Use with plant uptake

Determinand	Units	GAC	GAC Source	n	[mc]	Location	Primary Pathways	Assessment
Inorganics								
Arsenic	mg/kg	37	(i)	26	29	N/A	1	No Further Action
Cadmium	mg/kg	11	(i)	26	1.2		1, 2	
Chromium (VI)	mg/kg	6	(ii)	26	<1		1, 2, 3	
Lead	mg/kg	200	(iv)	26	150		1, 2	
Mercury [Inorganic]	mg/kg	40	(i)	26	<1		1, 2	
Nickel	mg/kg	130	(i)	26	110		1	
Selenium	mg/kg	250	(ii)	26	<3		1, 2	
Copper	mg/kg	2,400	(ii)	26	52		1, 2	
Zinc	mg/kg	3,700	(ii)	26	120		1, 2	
Cyanide [Total]	mg/kg	791	(v)	26	<1		1	
Asbestos	-	D.	-	26	ND.	3		
Organics – PAHs and Phenol								
Phenols	mg/kg	280	(ii)	26	3	N/A	2	No Further Action
Naphthalene	mg/kg	2.3	(ii)	26	<0.1		4	
Acenaphthylene	mg/kg	170	(ii)	26	<0.1		2	
Acenaphthene	mg/kg	210	(ii)	26	<0.1		2	
Fluorene	mg/kg	170	(ii)	26	<0.1		2	
Phenanthrene	mg/kg	95	(ii)	26	<0.1		2	
Anthracene	mg/kg	2,400	(ii)	26	<0.1		2	
Fluoranthene	mg/kg	280	(ii)	26	0.2		1, 2	

Pyrene	mg/kg	620	(ii)	26	0.1	N/A	1, 2	No Further Action
Benzo(a) Anthracene	mg/kg	7.2	(ii)	26	<0.1		1	
Chrysene	mg/kg	15	(ii)	26	<0.1		1	
Benzo(b/k) Fluoranthene	mg/kg	2.6	(ii)	26	<0.1		1	
Benzo(a)Pyrene	mg/kg	2.2	(ii)	26	<0.1		1	
Indeno (123-cd)Pyrene	mg/kg	27	(ii)	26	<0.1		1	
Dibenzo(a,h) Anthracene	mg/kg	0.24	(ii)	26	<0.1		1	
Benzo(ghi) Perylene	mg/kg	320	(ii)	26	<0.1		1	
Organics – TPHs								
TPH C ₅ -C ₆	mg/kg	42	(iii)	26	<0.10	N/A	4	No Further Action
TPH C ₆ -C ₈	mg/kg	100	(iii)	26	<0.10		4	
TPH C ₈ -C ₁₀	mg/kg	27	(iii)	26	<0.10		4	
TPH C ₁₀ -C ₁₂	mg/kg	74	(iii)	26	<2		4	
TPH C ₁₂ -C ₁₆	mg/kg	140	(iii)	26	<2		1, 2	
TPH C ₁₆ -C ₂₁	mg/kg	260	(iii)	26	<2		1	
TPH C ₂₁ -C ₃₅	mg/kg	1,100	(iii)	26	<2		1	
Key for Table 9.1								
[mc] Maximum Concentration Recorded								
D. Detected								
N.D. None Detected (Limit of Detection = <0.0001%)								
Primary Pathways								
1 Ingestion of soil and indoor dust and / or oral background exposure;								
2 Consumption of home-grown produce and attached soil;								
3 Inhalation of dust (background and indoor);								
4 Inhalation of vapour (background and indoor);								
Generic Assessment Criteria (GAC) Source								
(i) LQM/CIEH Suitable For Use Level (S4UL) (2015);								
(ii) S4UL – Conservative Assessment Approach of 1% SOM;								
(iii) S4UL –1% SOM and assumed worst case aliphatic / aromatic compound;								
(iv) Defra Category 4 Screening Level (2014);								
(v) CLEA 1.06 Derived Value.								
(vi) EA Values								

Referring to Table 9.1, the results of this direct comparison indicates that no screening values have been exceeded for any of the above the determinands and hence no further action is required.

Pesticide and herbicide analysis undertaken on composite samples throughout the site showed that the only substances present above laboratory detection limits were up to 0.27mg/kg of dichloroprop, and up to 0.08mg/kg of mecoprop. These substances and concentrations are not considered high enough to pose a significant risk to human health and thus, no further action is required in this regard.

9.2 Controlled Waters

The groundwater vulnerability map shows the site to be located over a Principal Aquifer (Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated)) with a high risk of leaching. The Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated) are

partly overlain by the Clay-With-Flints Formation which is considered an unproductive aquifer.

The site is considered to be located within a **medium** sensitivity setting in regard of controlled waters on the basis that the site is recorded to be underlain by a Principal Aquifer which is partly overlain by an unproductive aquifer and that Phase 3 and part of Phase 1B lie within a zone 3 source protection zone.

No significant risk posed to controlled waters is therefore present based on the following rationale;

- No GAC exceedances were noted in the screening process against residential with private garden values;
- Parts of the site (predominantly in Phase 1A) were underlain by relatively impermeable fine grained soils;
- Groundwater depths range from 60.00mbgl (RBH201) and 15.00mbgl (BH210); and,
- Although a drainage channel forms the boundary between the Bean Field and the Barley Field within Phase 1A, the lack of exceedances for the analysed determinands indicate an insignificant risk to surface waters.

9.3 Revised Conceptual Site Model

The initial conceptual site model has been revised in light of the ground investigation as shown in Table 9.2 below.

Table 9.2 Revised Conceptual Site Model

Receptor	Potential Risk	Current Residual Risk	Mitigation
Human Health	<i>Uptake of contaminants by food plants grown in contaminated soil</i>	NO SIGNIFICANT RISK	N/A
	<i>Ingestion</i>	NO SIGNIFICANT RISK	N/A
	<i>Inhalation</i>	NO SIGNIFICANT RISK	N/A
	<i>Skin contact</i>	NO SIGNIFICANT RISK	N/A
	<i>Irradiation</i>	NO SIGNIFICANT RISK	N/A
	<i>Chemical attack on building materials and services</i>	NO SIGNIFICANT RISK	Soils present at the site are consistent with design sulphate class DS-1 and ACEC AC-1s. Water supply pipes – A risk assessment is required.
Natural Environment	<i>Phytotoxicity</i>	NO SIGNIFICANT RISK	N/A
	<i>Contamination of Controlled waters</i>	NO SIGNIFICANT RISK	N/A

10.0 GEOTECHNICAL ASSESSMENT

10.1 Proposed Development

It is understood that the proposed development comprises 900 No. residential dwellings with private gardens, driveways, roads, a primary school and community facilities. Details of the proposed development provided are limited, however the Site Master Plan provided (ref. 1CO101380-003) is presented within Appendix III.

Details of the proposed loadings are not known and as such, the following sections provide an overview of a variety of geotechnical options that could be adopted for various elements of the scheme.




10.2 Summary of Ground Conditions

Ground conditions identified at the site are summarised in Table 8.1, Section 8.0 and generally comprises Topsoil encountered to a maximum depth of 0.60m bgl overlying the Clay-with-Flints Formation, predominantly comprising gravelly clay with cobble content of varying proportions. Solid geology of the Seaford and Lewes nodular (Undifferentiated) Chalk Formation was encountered in most of the exploratory hole locations at depths ranging from 0.50 and 15.30mbgl.

10.3 Chalk Solution Features

The findings of the Solution Feature Occurrence Assessment report (ref. 38001-3501/CBH/CNE/AD/CB, presented within Appendix V) undertaken by Peter Brett Associates, indicated that the probability of natural cavities occurring across the site was moderately low to moderately high. A solution feature occurrence assessment plan (ref. 1.1) is presented within Appendix III.

The additional investigation was scoped in order to further investigate the potential solution features identified, and subsequently an Updated Natural Cavities Assessment report (ref. 38001/CBH/CNE, presented within Appendix V) was also undertaken by Peter Brett Associates, and an updated solution feature occurrence assessment plan (ref. 1.2, presented within Appendix III). The geohazard ratings of the identified features were re-assessed based on the findings of the additional ground investigation with the changes to the initial risk ratings summarised as follows:

-  18no. geohazard risk ratings remained unchanged;
-  7no. geohazard risk ratings were increased; and,
-  6no. geohazard risk ratings were decreased.

In addition, the two man-made features were assessed and it was found that the ground conditions suggested ground that was locally weakened either by dissolution weathering and/or periglacial weathering.

Table 10.1 below shows the revised assessment by Peter Brett Associates of the hollow features targeted during the additional ground investigation:

Table 10.1 Revised Assessment of Geohazard Risk

Review of exploratory hole records				
Feature reference in drawing 1CO101380 – 005 and Phase number location	Relevant exploratory holes	Initial Rating following initial ground investigation	Rating Confirmed following Autumn 2016 Ground Investigation	Comments
H1 – Phase 1A	TP/DP342 – 340	Moderately Low	No, recommended to change to Low	The GI data suggests that ground conditions are undisturbed
H2 – Phase 1A	TP/DP339	Moderately Low	No, recommended to change to Moderate	TP data shows undulatory interface of CwF/Chalk; DP data suggests karstic weathering
H3 – Phase 1A	TP/DP338	Moderately Low	Yes	TP data shows evidence of karstic weathering
H4 – Phase 1A	TP/DP337	Moderately Low	Yes	Evidence of karstic weathering
H5 – Phase 1A	TP/DP336	Moderately Low	Yes	Evidence of karstic weathering
H6 – Phase 1A	TP/DP335 & 334	Moderately Low	No, recommended to change to Moderate	Evidence of solution pipes
H7 – Phase 1A	TP/DP333	Moderate	Yes	Evidence of solution pipes
H8 – Phase 1A	TP/DP345	Moderately High	Yes	Evidence of solution pipes and karstic weathering
H9 – Phase 1A	TP/DP332 – 330	Moderately Low	No, Recommended to change to Moderately High	Evidence of solution piping, sheet pipes and karstic weathering
H10 – Phase 2	TP/DP323 & 322	Moderately Low	No, Recommended to change to Moderately High	Evidence of solution pipes and deep karstic weathering
H11 – Phase 1A	TP/DP326 – 324	Moderately Low	No, Recommended to change to Moderately High	Evidence of solution pipes and deep karstic weathering
H12 – Phase 1A	TP/DP323 & 322	Moderately Low	No, Recommended to change to Moderately High	Evidence of solution pipes
H13 – Phase 2	TP/DP344 & 343	Moderate	No, Recommended to change to Moderately Low	Evidence of karstic weathering
H14 – Phase 1B	TP/DP320	Moderate	Yes	Evidence of karstic weathering and possible piping
H15 – Phase 1B	TP/DP319	Moderate	Yes	Evidence of karstic weathering and possible piping

Review of exploratory hole records				
Feature reference in drawing 1CO101380 – 005 and Phase number location	Relevant exploratory holes	Initial Rating following initial ground investigation	Rating Confirmed following Autumn 2016 Ground Investigation	Comments
H16 – Phase 1B	TP/DP318	Moderate	Yes	Evidence of karstic weathering and possible piping
H17 – Phase 1B	TP/DP317	Moderate	Yes	Evidence of solution piping
H18 – Phase 1B	TP/DP316 – 311	Moderately High	Yes	Evidence of solution piping, sheet pipes and karstic weathering
H19 – Phase 3	TP/DP310 – 307	Moderately High	No, Recommended to change to Moderately Low	Evidence of karstic weathering
H20 – Phase 3	TP/DP306 & 305	Moderately High	No, Recommended to change to Moderately Low	Undulatory interface between CwF/Chalk only
H21 – Phase 3	TP/DP304	Moderately Low	No, recommended to change to Moderate	Evidence of sheet pipe and karstic weathering
H22 – Phase 3	TP/DP303 & 302	Very Low	Yes	Some evidence of possible karst and/or periglacial weathering in chalk
H23 – Phase 3	TP/DP301	Very Low	Yes	Some evidence of possible karst and/or periglacial weathering in chalk
MM1	WS/DP346 – 348	N/A	N/A	Data suggests some karstic or periglacial weathering in chalk
MM2	WS/DP355 - 357	N/A	N/A	Data suggests some karstic or periglacial weathering in chalk
Further moderately high risk areas – Phase 3	WS349	Moderately High	Yes	Possible solution piping and karst weathering
Further moderately high risk areas – Phase 1B	WS350	Moderately High	Yes	Possible solution piping and karst weathering
	WS351	Moderately High	No, recommended to change to Moderate	Possible solution piping and karst weathering
Further moderately high risk areas –	WS352	Moderately High	Yes	Possible solution piping and karst

Review of exploratory hole records				
Feature reference in drawing 1CO101380 – 005 and Phase number location	Relevant exploratory holes	Initial Rating following initial ground investigation	Rating Confirmed following Autumn 2016 Ground Investigation	Comments
Phase 1A				weathering
	WS353	Moderately High	Yes	Possible solution piping and karst weathering
	WS354	Moderately High	No, recommended to change to Low	The GI data suggests that ground conditions are undisturbed
	WS358	Moderately High	Yes	Evidence of sheet pipes, solution piping and karstic weathering
	WS359	Moderately High	Yes	Possible solution piping and karst weathering

Details of the implications to foundation options on a category by category basis are explained in sections 10.5, 10.6 and 10.7. Details of the implications to drainage options on a category by category basis are explained in section 10.9.

With regards to the proposed development a key consideration for the selection of foundation types adopted for future developments relates to the potential for weathering features within the chalk to affect the stability of the soils underlying structures.

Chalk contains many joints which act as planes of weakness allowing preferential erosion along them. A more significant alteration occurred at the end of the Ice Age when the Chalk was subject to the chemical weathering effects of melt-waters percolating down through the overlying granular deposits. It is thought that these waters were more acidic making them chemically aggressive to Chalk. This, and the high volumes of water involved, lead to relatively rapid widening of the joints in the chalk resulting in the development of "Dissolution Features".

Dissolution Features typically comprise horizontal channels and vertical pipes within the Chalk, the latter generally penetrating down 20 to 30m. As these features are formed preferentially along the discontinuities in the chalk, they take on a ramifying structure. They are infilled with materials derived from the overlying strata as determined from the Clay-With-Flint encountered on this site.

Further distortion occurred as a result of the physical effects of repeated ice formation and melting, typical of the margins of ice sheets. This lead to highly disturbed sequences in the near surface deposits and near surface Chalk, referred to as cryoturbation structures.

The final result of all these processes was to form a Chalk / Near Surface Deposit interface which is highly irregular showing rapid variations in depth over short distances. The Near Surface Deposits themselves show a highly disturbed structure and may also contain large detached blocks of Chalk. The accurate prediction of the depth to chalk is therefore hazardous, particularly if this relies on the use of boreholes alone.

CIRIA C574 draws attention to the fact that dissolution of the chalk can cause zones of metastability (becoming unstable) within the chalk or the overlying superficial deposits, particularly when

concentrated groundwater flows, including those from soakaways if considered and leaking water pipes, could be present.

10.4 Site Preparation

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:

- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill;
- Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill;
- From plans provided it is understood that the Hemel Hempstead to Picketts High Pressure Gas Pipeline running through Phases 1B and 3 will remain in place. However, this will pose a constraint to the development and consultations with National Grid will be required with regards to the working easements during construction works.

10.5 Foundation Conditions and Bearing Capacity

General

Given the discussion presented in Section 10.3, the adoption of shallow conventional foundations and or ground bearing floor slabs should be considered to carry an elevated risk in relation to chalk dissolution related subsidence on this site. Alternative options such as piled foundations and suspended floor slabs represent a lower risk. Table 10.1 shows the revised risk rating for shallow conventional foundations in areas identified as potential chalk hollow features.

Table 10.2 below shows the implications for foundations with respect to each risk rating zone along with the corresponding recommendations:

Table 10.2 Geophysical hazard zones and corresponding implications for foundations

Geohazard Rating	Comments
Moderately High and Moderate	All foundations should be designed to withstand a loss of ground support (void) of 1m diameter.
Moderately Low	All foundations should be designed with nominal reinforcement to withstand potential for differential settlement
Low and Very Low	All foundations should where possible, bear onto the chalk. The best practice would be to expose the chalk and inspect for any signs of infilling or other weakening. Should problems be found then revert to geotechnical inspection and advice
Man-made areas	All foundations where possible to bear on to chalk. If not possible within reasonable depth (say within 2m of surface) then it will be necessary to pile foundations down into competent chalk below. Shallow foundations on head deposits are prone to differential settlement and serviceability damage if formation becomes saturated and fines are eroded.

An assessment of the Allowable Bearing Capacity (ABC) has been undertaken using data obtained from in-situ SPT tests, chalk classification assessment grades during Trial Pitting, Undrained Triaxials and Hand Shear Vane Tests.

For lighter loaded buildings (such as residential properties) foundations should pass through the Topsoil and bear onto the underlying fine grained Clay-With-Flints Formation or where present at shallow depths, the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation.

For the Clay-With-Flints, an average undrained shear strength of 60kN/m^2 has been determined using shear strengths from depths ranging from ground level to 1.5mbgl. Atterberg limit tests carried out on fine grained soils from the Clay-With-Flints Formation indicated soils of low to medium volume change potential. As such and in accordance with NHBC Guidance, "Chapter 4 Building Near Trees" a minimum founding depth of 0.90mbgl is recommended in the absence of existing or proposed trees.

At this depth an allowable bearing pressure of circa 130kN/m^2 based on an undrained shear strength of 60kN/m^2 could be considered limiting total settlements to 25mm, which is relatively consistent with values calculated from previous phases of works. This is based on a Factor of Safety of 3, anticipated founding depth of 1.0mbgl or shallower where high density chalk is encountered, and a foundation width of 1000mm. Localised soft spots may be present within the Clay-With-Flints Formation and it is recommended that any soft spots are removed and the resulting voids backfilled with engineer fill.

Within large parts of Phase 3 however or where Chalk is encountered near surface an allowable bearing pressure of 225kN/m^2 could be determined however, this is based on a minimum Chalk Grade of Structureless Grade Dc.

Where foundations are constructed into Chalk frost protection measures for foundations and floor slabs should be carried out in accordance with CIRIA C574 in order to protect against frost heave.

As detailed in the Peter Brett report, in land areas with a Moderate rating and above it is likely that the foundation approach will need to assume that all foundations must be capable of bridging across at least a 1m loss of ground support (void), which could be achieved by employing stiffened raft foundations. The risk zones are indicated on the updated Solution Feature Occurrence Assessment Plan (ref. 1.2) included within Appendix III, with the recommended foundation solutions for each zone being shown within Table 10.1.

Specialist advice should however be sought from a suitably qualified structural engineer with regard to foundation design and the probability of encountered solution features.

10.6 Ground Floor Slabs

The following recommendations have been made in the PBA report:

"As per the shallow foundations section, ground bearing floor slabs will be highly susceptible to the effects of dissolution features and therefore, based on the current assessment of risk for such features, it is recommended that consideration be given to suspended floor slabs until further footprint specific testing is undertaken and the risk rating reviewed.

Should the risk of dissolution features be reduced following further investigation, floor slabs constructed to bear directly onto the predominantly fine grained soils of the Clay-With-Flints could be considered providing that soils are checked for consistency at formation level. Variable ground conditions within the footprint may lead to differential settlements leading to cracking and in such circumstances it is recommended that soft or loose areas be excavated and replaced with compacted granular material."

Ground bearing floor slabs (if adopted in light of the above) for unheated or open structures constructed upon chalk near to ground level should incorporate a 300mm layer of compacted granular material to mitigate the potential for damage due to frost heave during extended periods of freezing conditions (CIRIA 575, 2002).

10.7 Piled foundations

Should high rise residential or heavily loaded structures be proposed, and/or shallow foundations are found to not offer adequate bearing capacity including due to the risk of localised chalk solution features, consideration should be given to the use of piled foundations. It is considered that the Lewes Nodular Chalk formation and Seaford Chalk Formation will provide a suitable bearing stratum across the site.

Given the highly variable geological composition of the site, the ground model shown in Table 10.3 utilised assumes Grade Dc chalk from an average depth of 4.00mbgl with the generally stiff clays of the Clay with Flints Formation overlying. The assessment has adopted average SPT N value (where available) for the depth of pile being considered. Contributions to the skin friction from the overlying Clay-With-Flints have not been considered due to variable thickness. A maximum limit for pile base bearing pressure of 800 kN/m² (for Chalk) has been assumed given a maximum average SPT N value of 20 in accordance with CIRIA C574 Section 8.

Table 10.3 Preliminary Pile capacity table

Embedment (m)	Pile Diameter		
	0.30m	0.45m	0.60m
	Working Load (kN)		
10	150	240	340
15	345	535	740
20	495	760	1040

The above calculated values are presented for indicative purposes only. Where preliminary and working pile load tests are undertaken it may be appropriate to reduce Safety Factors.

Pile design should be undertaken by a specialist contractor in order to confirm the indicative capacities detailed above and in order to select the most efficient piling method for ground conditions of this type.

10.8 Road and Pavement Construction

An assessment of the California Bearing Ratio (CBR) for the Clay-With-Flints Formation and the Seaford and Lewes nodular (Undifferentiated) Chalk Formation has been assessed based on the ground conditions encountered and geotechnical laboratory analysis.

Based on Atterburg Limits Determination tests and the presence of Chalk near surface in some parts of the site, a design CBR value of 2 to 3 % is recommended for pavement design.

Due to the variable nature of the ground conditions across the site it would be prudent to undertake in-situ CBR tests for proposed pavement routes. The subgrade should be inspected during construction to identify any soft clay or other unsuitable material, which should be removed and replaced with suitable compacted backfill.

10.9 Drainage

Soil infiltration rates within the Clay-With-Flints Formation and the shallow chalk formations in trial pits at depths ranging from 3.00 to 5.50mbgl, typically indicated good drainage conditions within

Phase 2, Phase 1B and Phase 3. As such, it is considered that shallow soakaways could be considered within these areas. However, given the presence of predominantly fine grained soils in Phase 1A and the poor levels of permeability noted, it is unlikely that shallow soakaways could be adopted within this area, with deep bore soakaways utilised. Utilising this system within this Phase also has the advantage of providing maximum thickness of unsaturated ground above the Principal Aquifer below (circa 64mbgl) compared to the southern area of the site (Phase 3) where only approximately 15.0m of unsaturated ground was identified.

It should also be noted that CIRIA C574 indicates that the use of shallow soakaways should be located at least 20m from and proposed structures in areas prone to solution features. Differing drainage solutions, such as deep bored soakaways, can be considered at closer distances.

Table 10.4 below shows the implications for drainage with respect to each chalk solution risk rating zone along with the corresponding recommendations. The complete site plan showing the corresponding geohazard rating zones can be seen within drawing 1CO101380-005 n Appendix III:

Table 10.4 Geophysical hazard zones and corresponding implications for drainage

Geohazard Rating	Comments
Moderately High and Moderate	Shallow soakaways are not recommended because of the presence of solution features and the potential to trigger ground movement. Deep bored soakaways are preferred, using a lined bore to 10m below ground level as a minimum, with the soakage zone below this designed to accommodate the proposed drainage flows. Deep bored soakaways can be located within 20m of a foundation subject to proving the absence of a solution feature at the proposed soakaway position, but it would be prudent to not have the soakaway located within 10m.
Moderately Low	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected (preferably by a geotechnical engineer) to confirm the absence of any solution features. No soakaways should be located within 10m of a structure.
Low and Very Low	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected to ensure that the soakage zone is entirely within chalk and is free of any signs of solution features. No soakaways should be sited within 5m of a structure.
Man-made areas	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected to ensure that the soakage zone is entirely within chalk and is free of any signs of solution features. No soakaways should be sited within 5m of a structure.

The adoption of soakaway drainage will ultimately be dependent on the specific requirements of the development. It is therefore recommended that consultation is made with the Statutory Regulators (EA and the Local Authority) in order to confirm that both deep and shallow soakaways could be adopted for the scheme. In addition consultation with a drainage engineer is recommended to aid with the design of soakaway drainage systems.

A watching brief should be undertaken by REC during soakaway positioning in order to ensure that shallow soakaways are located at least 20m from structures prone to solution feature development.

10.10 Use of Balancing Ponds

With regards to the balancing pond area to the east of the site – past excavations are likely to have removed a thickness of Clay-with-Flint deposits and with it the upper portions of infilled solution pipes. Any water will therefore now likely drain down through the lower remnants of solution features where present. This could give rise to differential settlement, with collapse failure over voids however less likely. As this area is not likely to be frequented by people the impact of this risk as such is largely controlled, and the risk could be further mitigated if a geogrid reinforcement layer was installed across the footprint of the balancing pond.

10.11 Concrete Durability

Chemical analyses for pH and soluble sulphate content contained in Appendix VII, shows that the soils at the site meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE Special Digest 1 (2005).

10.12 Material Classification

Five point compaction tests carried out using the 2.5kg hammer indicated an average maximum dry density of 1.68 Mg/m³ with a corresponding optimum moisture content of 19% within the Clay-with-Flints Formation.

From the chalk samples from the Seaford and Lewes nodular (Undifferentiated) Chalk Formation, the average maximum dry density was calculated as 1.69Mg/m³ with a corresponding optimum moisture content of 19%.

Natural moisture contents for the testing averaged 21% for the Clay-with-Flints Formation and 21% for the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation. As such, processing the soil to achieve optimum moisture content should be achievable, given that natural moisture content is relatively close to the optimum moisture content.

Laboratory assessments have been made of the material encountered on site and in accordance with the Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, Series 600, Earthworks as amended in November 2005, the material from the Clay-with-Flints Formation should be classed as a General Stoney Cohesive Fill, Class 2C. The chalk samples tested from TP227 and TP229 should be classified as a General Chalk Fill Class 3. However, given that the samples contain chalk, Local Authorities typically recommend that this material is not used for highways during the months of October to March inclusive. In addition, chalk is usually recommended to be placed at a depth of 0.45mbgl as to negate the effects of frost damage.

A detailed compaction specification for the proposed development should be developed for the project. This specification would need to include consideration of the material type, equipment being used and weather conditions during formation.

Supervision of the earthworks will also be required by a Geotechnical Engineer to ensure that only suitable material is utilised and placed with a Validation Report prepared following the completion of works.

It is essential that the cut and fill process is well controlled with particular attention placed on control of moisture levels of the soils.

Based on the results of the laboratory geotechnical testing the following characteristic geotechnical parameters are recommended for use in any subsequent geotechnical design.

Table 10.5 Characteristic Geotechnical Parameters of Soils

Stratum	Geotechnical Parameter		Notes	Characteristic Value
Clay-with-Flints Formation	Unit Weight	bulk γ	Typical Values	18kN/m ³
	Maximum Dry Density		Based on an average of the tests undertaken	1.68Mg/m ³
	Optimum Moisture Content		Based on an average of the tests undertaken	19%
	CBR Value		Achievable at MDD and based on an average of the tests undertaken	14%
Seaford and Lewes Nodular (Undifferentiated) Chalk Formation	Unit Weight	bulk γ	Typical Values	18kN/m ³
	Maximum Dry Density		Based on an average of the tests undertaken	1.69 Mg/m ³
	Optimum Moisture Content		Based on an average of the tests undertaken	19%
	CBR Value		Achievable at MDD and based on an average of the tests undertaken	34%

10.13 Filling Placement

In the areas which require filling, the stripped surfaces should be proof rolled in the presence of a Geotechnical Engineer. Any areas exhibiting significant deflections under proof rolling should be treated by over excavation and replacement with compacted granular fill.

All fill material should be placed in horizontal layers, the maximum thickness of which will be dependent upon the suitability and type of compaction plant available, for the purposes of this preliminary report, it is assumed that lifts will comprise thickness's of 300mm. The maximum particle size of any fill material shall be no more than two thirds of the compacted layer thickness except that cobbles having an equivalent diameter of more than 100mm shall not be deposited within 1.5m of the finished surface level.

Fill material should be compacted to a minimum of 90% maximum dry density, except for the upper 1.0m, which should be compacted to a minimum of 95% maximum dry density. To validate compaction, field inspections and in-situ testing of earthworks must be undertaken.

Compaction should be in accordance with the relevant method for each class of material as set out in table 6/4 of the Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, Series 600, Earthworks as amended in November 2005.

Each lift should be tested to ensure compliance with the specification and to validate the fill compaction. It is recommended that the in-situ testing is undertaken in accordance with guidance contained within Highways Design Series 600 and that the following tests adopted. Frequency of testing is to be confirmed.

Table 10.6 Compaction Validation Tests

Test	Method	Frequency
Density Testing	Sand Replacement	TBC
Density Testing	Nuclear Density Testing (NDT)	TBC
Plasticity	Atterberg Limits	TBC

Grading	Particle Size Distribution	TBC
MCV		
Moisture Content	Via Atterberg Limits	TBC
Undrained Shear Strength	Triaxial compression on remoulded sample in accordance with BS 1377: Part 7	TBC

Key – TBC (to be confirmed once the earthworks design has been confirmed)

Waste Acceptance Criteria testing and / or a Materials Management Plan may be required should on any soil material be sent for landfill or reused on site. Although given that no exceedances in guideline acceptance criteria was encountered in any of the samples tested, it is likely that the waste classification would be classified as inert.

10.14 Construction Activity and Inspections

It is considered that temporary works are likely to comprise foundation excavations and trench excavations for service construction. The following should therefore be considered:

- It is recommended that where entry into excavations deeper than 1.20m is required that either; excavations are shored or that the sides of excavations are battered to a safe angle of repose;
- Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA 97 utilised;
- Shallow groundwater was not encountered during the investigation, although it is possible that minor ingresses could occur into excavations from perched water or from leaking drains / water pipes. It is envisaged that any groundwater ingress occurring could be controlled via pumping and sumps; and
- Given the moderate to high risk of dissolution features being present, NHBC are likely to request that the base of all foundations are inspected by a third party to ensure that no soft spots are present. Any unsuitable material would need to be removed and replaced with compacted granular fill or lean concrete, or the founding depth increased. This would include chalk that has been remoulded or 'puttied' by mechanical excavation. All excavations should be blinded immediately after excavation to avoid softening or degrading of the exposed soils.
- It is recommended that the NHBC are notified when foundations are at depth. Generally the NHBC will want to be present for inspection of the bearing strata.

11.0 CONCLUSIONS & RECOMMENDATIONS

Given the ground conditions encountered on site, and the number of residential developments that are situated within close proximity, it is reasonable to assume that the site is suitable for the proposed end use. However, we would recommend that the following considerations are given with respect to the proposed development:

- A full geotechnical earthworks specification will be required for all cut and filling activities. A process of validation by a third party will also be required;
- It is noted that an ecological assessment was undertaken by CSA Environmental prior to and at the start of both ground investigations. Reference should be made with them for a full list of ecological constraints as those outlined within this report only refer to those affecting the ground investigation;
- Although archaeological considerations were not part of the scope of works outlined with this report, it should be noted that an archaeological survey was undertaken by Cotswold Archaeology concurrent with the additional ground investigation. This report should be consulted with regards to archaeological constraints;
- Consideration must be given to the Hemel Hempstead to Picketts High Pressure Gas Pipeline running under the Phase 1B, Phase 3 and the track that forms the boundary between Phase 1B and Phase 3;
- Given the risk of solution features being present, as identified in the report produced by Peter Brett Associates, and the revised risk ratings across site following the additional ground investigation undertaken during Autumn 2016, the adoption of any foundation options must take into account the risk presented by the potential presence of chalk solution features;
- Should piled foundations be adopted within parts of the site, pile design should be undertaken by a specialist contractor in order to confirm the indicative capacities detailed above and in order to select the most efficient piling method for ground conditions of this type;
- The adoption of soakaway drainage will ultimately be dependent on the specific requirements of the development. It is recommended that consultation is made with the Statutory Regulators (EA and the Local Authority) in order to confirm that both deep and shallow soakaways could be adopted for the scheme. In addition, further consultation should be made with a drainage engineer to assist with the design of soakaways across the site; and
- The position of all soakaways should be plotted before the layout is set, and the position should be investigated by a qualified engineer so that if the soakaway is found to cause chalk solution it can be moved. This is likely to include dynamic probe and window sampling to show strength profile of the ground (need to penetrate down into chalk surface for a minimum of two metres) to assess whether a feature is present or not. Alternatively if the deep bored soakaway is started as a cable percussive borehole then use SPT profile and depth to chalk surface to demonstrate that a feature is absent.

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between REC Ltd and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. In addition to the above REC Ltd note that when investigating, or developing, potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and also with time. The absence of certain ground, ground gas, and contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Due to the presence of existing buildings and structures access could not be obtained to all areas. Additional contamination may be identified following the removal of the buildings or hard standing.
7. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
8. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
9. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
10. This report presents an interpretation of the geotechnical information established by excavation, observation and testing. Whilst every effort is made in interpretative reporting to assess the soil conditions over the Site it should be noted that natural strata vary from point to point and that man made deposits are subject to an even greater diversity. Groundwater conditions are dependent on seasonal and other factors. Consequently there may be conditions present not revealed by this investigation.
11. REC can not be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by REC is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by REC in this connection without their explicit written agreement there to by REC.
12. Rather, this investigation has been undertaken to provide a preliminary characterisation of the existing sub-surface geotechnical characteristics and make up and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.
13. This investigation has been undertaken to reasonably characterise existing sub-surface conditions and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II

GLOSSARY

TERMS

ABP	Allowable Bearing Pressure
AST	Above Ground Storage Tank
BGS	British Geological Survey
BRE	Building Research Establishment
BSI	British Standards Institute
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
EA	Environment Agency
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
ICSM	Initial Conceptual Site Model
ND	Not Detected
NR	Not Recorded
PAH	Poly Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPT	Standard Penetration Test
UST	Underground Storage Tank

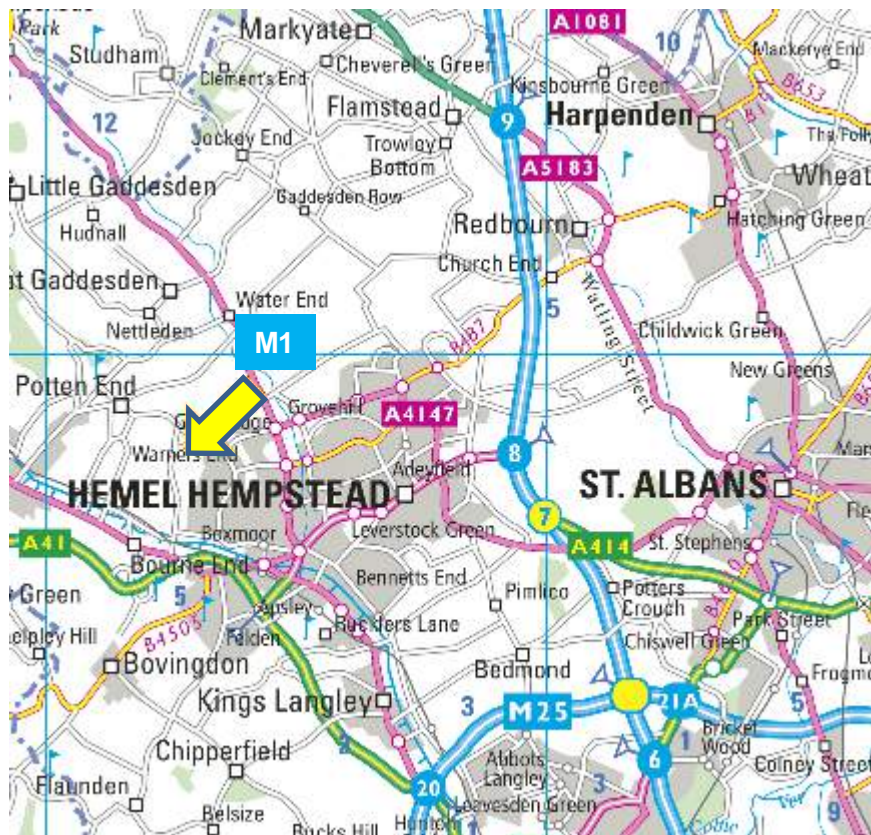
UNITS

m	Metres
km	Kilometres
%	Percent
%v/v	Percent volume in air
mb	Milli Bars (atmospheric pressure)
l/hr	Litres per hour
µg/l	Micrograms per Litre (parts per billion)
ppb	Parts Per Billion
mg/kg	Milligrams per kilogram (parts per million)
ppm	Parts Per Million
mg/m ³	Milligram per metre cubed
m bgl	Metres Below Ground Level
m bcl	Metre Below Cover Level
mAOD	Metres Above Ordnance Datum (sea level)
kN/m ²	Kilo Newtons per metre squared
µm	Micro metre

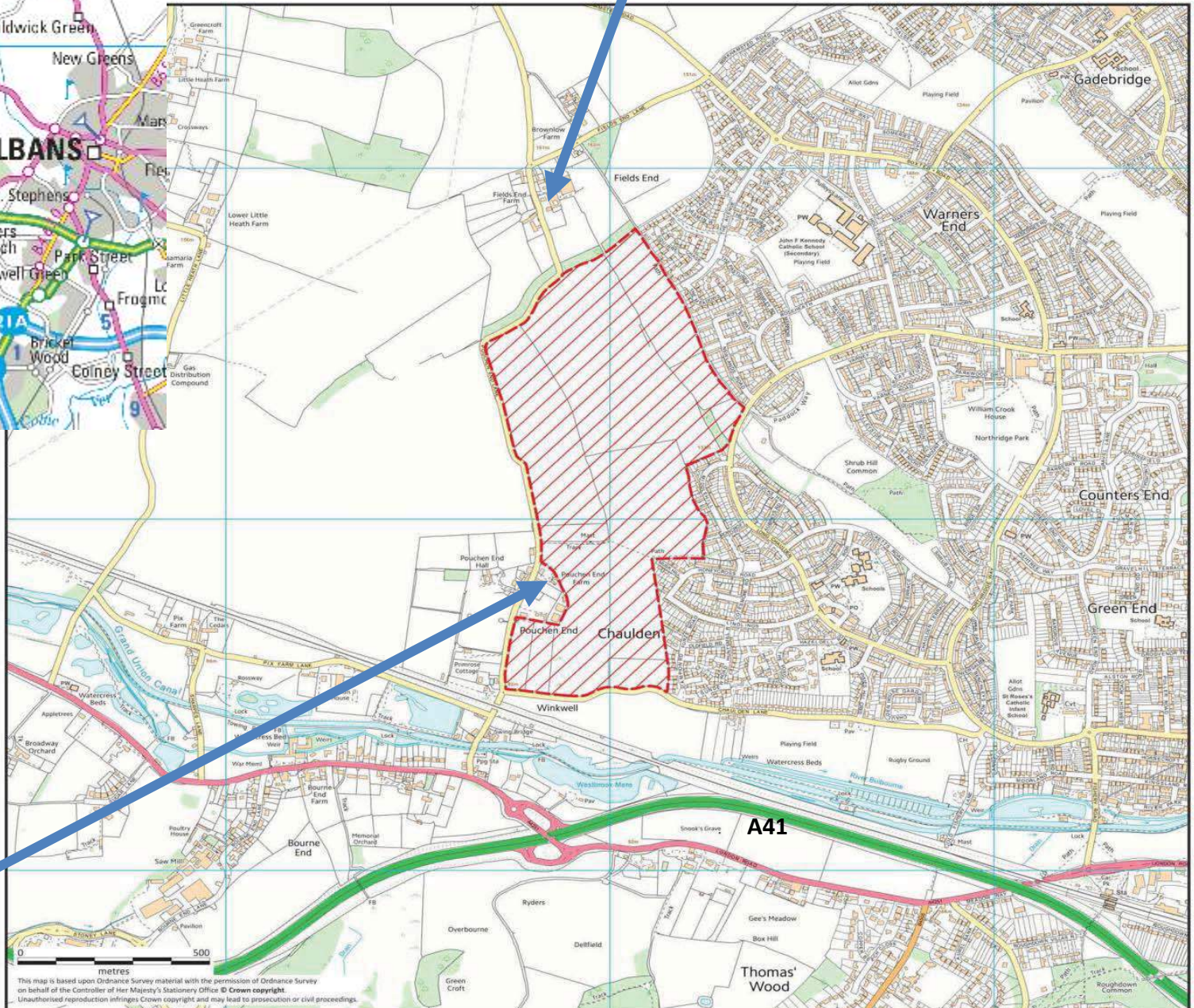
APPENDIX III

DRAWINGS

KEY:



Fields End Farm



Pouchen End Farm

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Job Title:
Land West of
Hemel
Hempstead

Client:
C&A Consulting
Engineers

Job No: 1CO101380
Drawn By: RH
Approved by: RL

Notes:

Drawing Title:
1CO101380-001
Site Location Plan

KEY:



-  Site Boundary
-  Residential Parcels
-  Primary School & Community Facility
-  Primary Road Network
-  Primary Accesses
-  Footpath/Cycle Routes
-  Green Space Framework
-  Potential Allotments
-  Possible Surface Water Balancing
-  Structural Tree Belts
-  Reinforced Tree Belts
-  Potential Location for Traveller Site
-  Trial Pit Locations
-  Trial Pit Locations with soakaway testing
-  Window Sample Locations
-  Cable Percussive Borehole Locations
-  Rotary Borehole Locations

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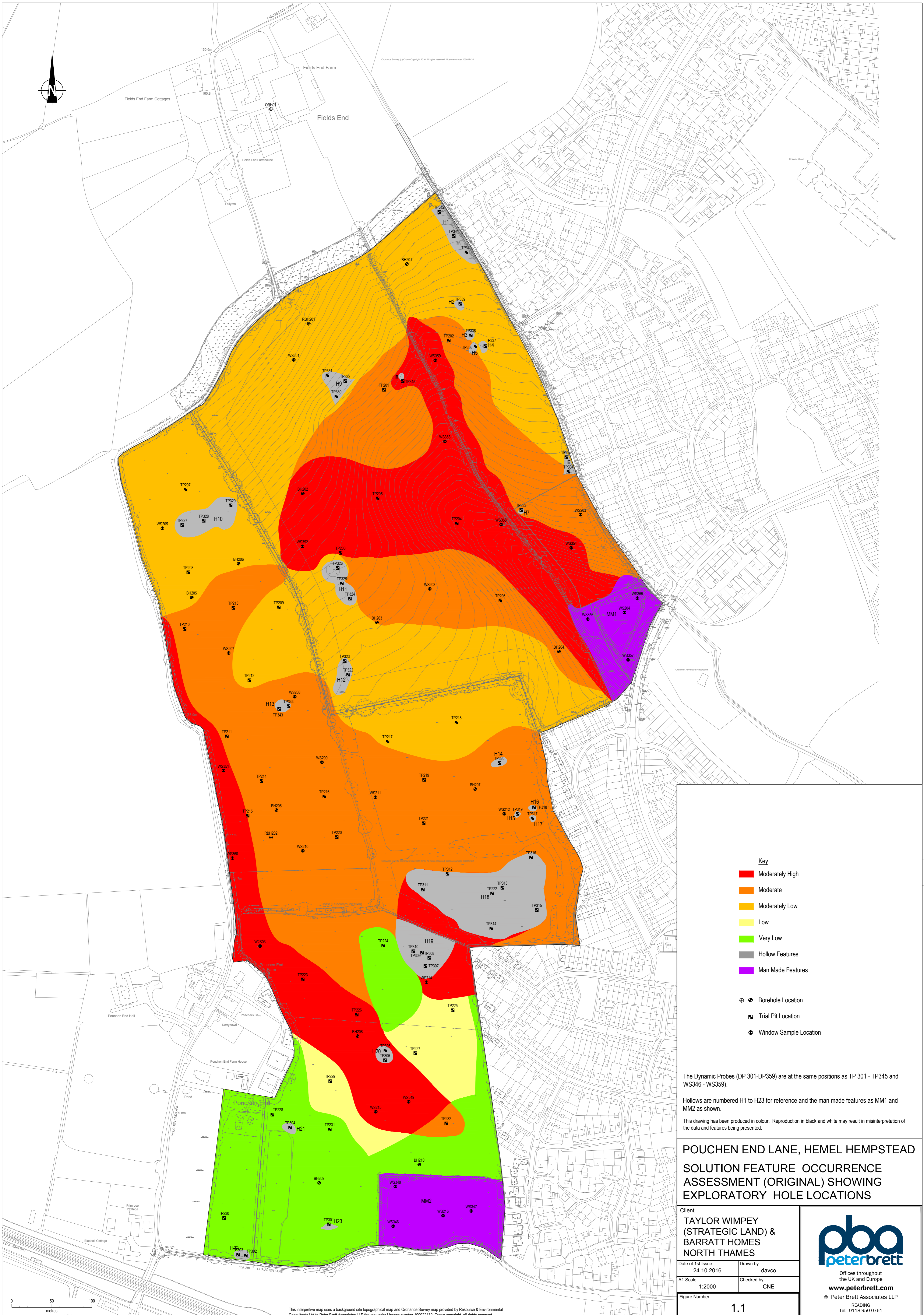
Job Title:
Land West of
Hemel
Hempstead

Client:
C&A Consulting
Engineers

Job No: 1CO101380
Drawn By: RH
Approved by: RL

Notes:
Exploratory hole locations are
indicative only. Please refer to
drawing 1CO101380-004 and
associated DWG for accurate
positions.

Drawing Title:
1CO101380-002
Exploratory Hole Location
and Site Master Plan



Key

- Moderately High
- Moderate
- Moderately Low
- Low
- Very Low
- Hollow Features
- Man Made Features

- Borehole Location
- Trial Pit Location
- Window Sample Location

The Dynamic Probes (DP 301-DP359) are at the same positions as TP 301 - TP345 and WS346 - WS359.

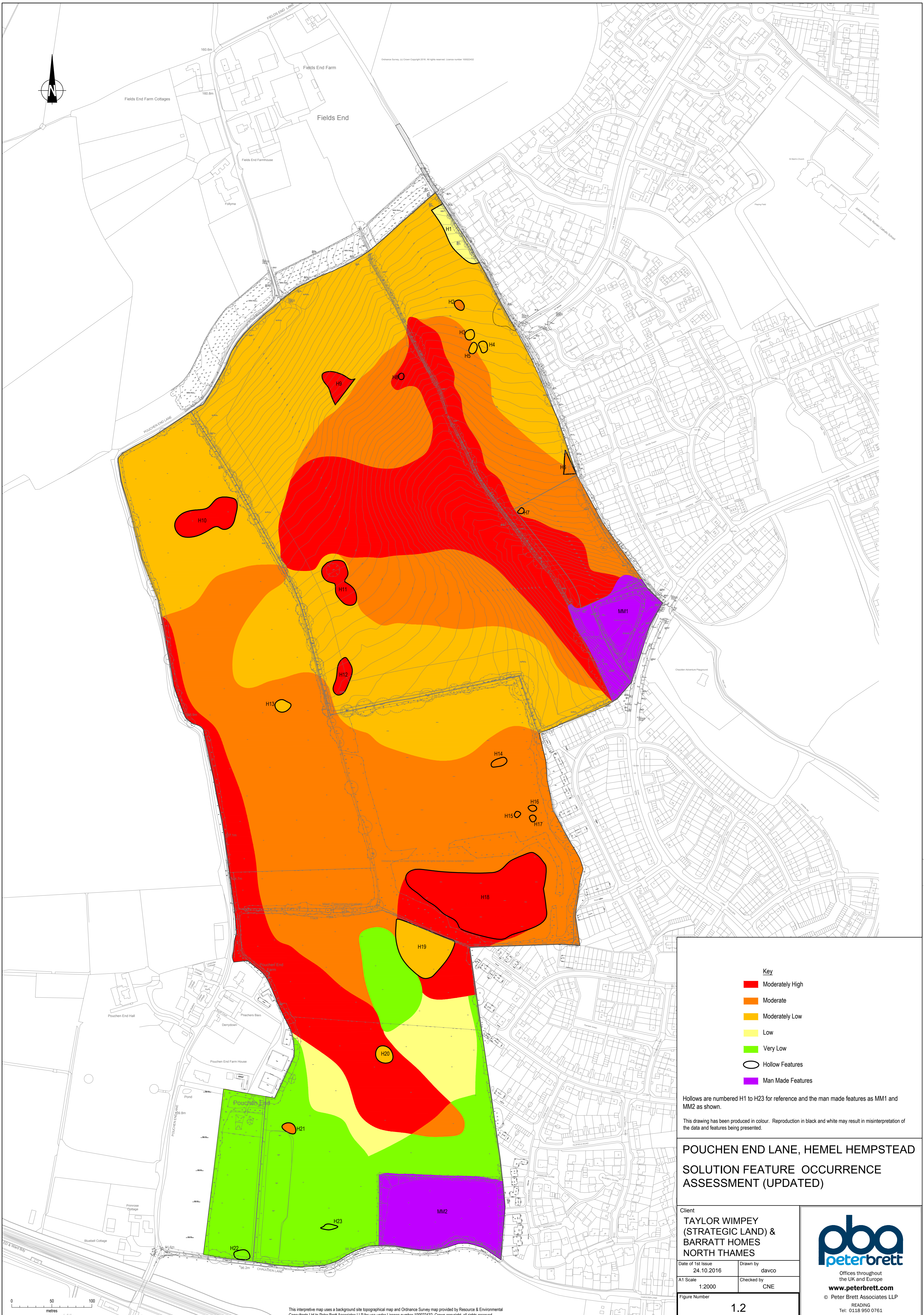
Hollows are numbered H1 to H23 for reference and the man made features as MM1 and MM2 as shown.

This drawing has been produced in colour. Reproduction in black and white may result in misinterpretation of the data and features being presented.

**POUCHEN END LANE, HEMEL HEMPSTEAD
SOLUTION FEATURE OCCURRENCE
ASSESSMENT (ORIGINAL) SHOWING
EXPLORATORY HOLE LOCATIONS**

Client TAYLOR WIMPEY (STRATEGIC LAND) & BARRATT HOMES NORTH THAMES	
Date of 1st Issue 24.10.2016	Drawn by davco
A1 Scale 1:2000	Checked by CNE
Figure Number 1.1	

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Key

- Moderately High
- Moderate
- Moderately Low
- Low
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- Hollow Features
- Man Made Features

Hollows are numbered H1 to H23 for reference and the man made features as MM1 and MM2 as shown.

This drawing has been produced in colour. Reproduction in black and white may result in misinterpretation of the data and features being presented.

**POUCHEN END LANE, HEMEL HEMPSTEAD
SOLUTION FEATURE OCCURRENCE
ASSESSMENT (UPDATED)**

Client TAYLOR WIMPEY (STRATEGIC LAND) & BARRATT HOMES NORTH THAMES	
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APPENDIX IV

DELTA SIMONS GROUND INVESTIGATION REPORT



delta-simons
environmental consultants



A different perspective

**Combined Phase I & II Geo-Environmental
Assessment
Fields End, Hemel Hempstead**

**For
Taylor Wimpey UK Limited**

Delta-Simons Project No. 11-0150.01



delta-simons
environmental consultants

**Combined Phase I & II Geo-Environmental
Assessment
Fields End, Hemel Hempstead**

**For
Taylor Wimpey UK Limited**

Delta-Simons Project No. 11-0150.01



This Report was issued in June 2011 and prepared by:
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EXECUTIVE SUMMARY STATEMENT
COMBINED PHASE I & II GEO-ENVIRONMENTAL ASSESSMENT
FIELDS END, HEMEL HEMPSTEAD
DELTA-SIMONS PROJECT NO. 11-0150.01

Delta-Simons Environmental Consultants Limited (Delta-Simons) was instructed by Vincent & Goring Ltd (the 'Planning Consultant') on behalf of Taylor Wimpey UK Ltd (the 'Client') to undertake a Combined Phase I & II Geo-Environmental Assessment of land at Fields End, Hemel Hempstead, (hereafter referred to as the 'Site').

The purpose of this Report is to summarise Delta-Simons' findings in order to gain a better understanding of the geotechnical and contamination status of the Site to identify any potential risks or liabilities associated with contaminated land or geotechnical constraints.

Current Site Status	The Site comprises an approximate rectangular parcel of land south of Fields End Farm, extending to an area of approximately 22 Hectares, located on the eastern urban/rural fringe of Hemel Hempstead in Hertfordshire.
Context/Purpose	It is understood that the Site is to be developed under a Local Development Framework with an anticipated mix of residential properties together with retail, educational and health facilities.
Environmental Setting	The 1:50,000 British Geological Survey map for the area indicate that the Site geology is likely to comprise clays of the Clay with Flints Formation overlying Chalk.
Historical Land Uses	Historical mapping shows that the Site has remained undeveloped from the earliest mapping available as part of this investigation, with the primary historic use being arable farmland.
Site Investigation Works	<p>Scope of works included the following:</p> <ul style="list-style-type: none"> △ A review of the published geological records, Sitecheck data, and data provided by the Planning Consultant; △ A Site walkover to identify any potential on-Site and off-Site sources of contamination and to agree intrusive locations at the Site; △ Completion of 18 window sample boreholes including Dynamic Penetration Tests across the Site, to a maximum depth of 6.00 metres below ground level (m bgl); △ Completion of 26 trial pits across the Site to a maximum depth of 4.00 m bgl; △ Collection of a total of eight soil samples from the exploratory holes for analysis at an appropriately accredited laboratory for a range of organic and inorganic determinands; △ Collection of six soils samples from the exploratory holes for analysis at an appropriately accredited laboratory for a range of geotechnical parameters; △ Four rounds of groundwater and ground gas monitoring; and △ Completion of a Phase II Geo-Environmental Assessment Report summarising the findings of the investigation.
Ground Conditions	The ground conditions beneath the Site have been shown to comprise a layer of topsoil extending to a maximum recorded depth of 0.35 m bgl, overlying generally firm to stiff clays rested upon weak and very weak chalk.
Environmental Findings	<p>The environmental findings at the Site are summarised as:</p> <ul style="list-style-type: none"> △ There were no potential sources of contamination identified at the Site during the initial Site inspection; △ The ground gas regime has been categorised as CS-1;

	<ul style="list-style-type: none"> △ A Site investigation has been carried out in order to assess the ground conditions in the context of a proposed residential end-use of the Site; and △ No visual or olfactory evidence of contamination was identified at the Site during the investigation, and, therefore, the Site can be considered as being uncontaminated.
Geotechnical Findings	<p>The geotechnical findings at the Site are summarised as:</p> <ul style="list-style-type: none"> △ Ground conditions are considered to be potentially suitable for traditional strip or pad foundations for the proposed construction. Initial assessments indicate that an allowable bearing capacity of 125kN/m² would be suitable located at a minimum within the firm to stiff clays beneath any topsoil or other unsuitable soil, however, due to the risk of laterally variable granular fractions and soil strengths it is recommended that allowable bearing capacities are limited to 100kN/m²; △ It is recommended that foundations are reinforced against differential settlement; △ The clays are found to be of high or very high shrinkability and, therefore, allowances should be made for this in foundation design; △ There were no conclusive indications of the presence of dissolution features; △ The Site is not suitable for the use of soakaway drainage at shallow depth due to the predominantly cohesive ground conditions, however, soakaways may be feasible at an increased depth within the chalk stratum subject to the appropriate confirmatory testing; △ The Design Sulfate Class for the Site is DS-1, and the ACEC Class is AC-1; and △ A design California Bearing Ratio (CBR) value for the shallow depth clay soils of 5% may be adopted and, therefore, the natural clays are considered suitable for re-use beneath roadways and pavements without the need for any abnormal preparatory work.
Environmental Recommendations	<p>On the basis of the information obtained and reviewed as part of this Assessment and the conclusions drawn above, Delta-Simons recommends the following:</p> <ul style="list-style-type: none"> △ Any groundworkers who are required to perform sub-surface work at the Site should be made aware of the possibility of encountering unforeseen contamination. Therefore, good standards of personal hygiene should be observed with appropriate levels of personal protective equipment (PPE) provided and utilised, and toolbox talks should be given to contractors prior to the commencement of works; △ The developer and their contractors should remain vigilant for any previously unidentified contamination; and △ It is recommended that this Report is submitted in support of any future planning application.
Geotechnical Recommendations	<p>Based on the completion of this Assessment, the following recommendations are considered appropriate:</p> <ul style="list-style-type: none"> △ Any groundworkers who are required to perform sub-surface work at the Site should be made aware of the possibility of encountering unforeseen chalk dissolution features during excavations for foundations or other structures. The foundation formation level should be inspected for dissolution features and fractures, with any significant 'puttied' or highly weathered material removed prior to construction. Should any unusual ground conditions be encountered, the advice of a geotechnical engineer should be sought prior to placement of concrete. If unusual features are encountered, localised deepening of the formation would be required, or the foundation designed to span the affected area. Once deemed suitable, the formation should be protected upon exposure to prevent spoiling through moisture content variation; and △ If soakaway drainage is required, permeability testing should be undertaken within the chalk stratum to assess its suitability for this purpose.
Statement of Risk	<p>On the basis of available information, Delta-Simons considers that with regard to potential soil and groundwater contamination issues and associated environmental and geotechnical liabilities, the Site represents a Low overall risk status.</p>
<p>This Executive Summary is intended as a summary of the Assessment of the Site based on information received by Delta-Simons at the time of production.</p>	

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COMBINED PHASE I & II GEO-ENVIRONMENTAL ASSESSMENT
FIELDS END, HEMEL HEMPSTEAD
FOR
TAYLOR WIMPEY UK LIMITED
DELTA-SIMONS PROJECT NO. 11-0150.01

1.0 INTRODUCTION

1.1 Authorisation

Delta-Simons Environmental Consultants Limited (Delta-Simons) was instructed by Vincent & Goring Ltd (the 'Planning Consultant') on behalf of Taylor Wimpey UK Ltd (the 'Client') to undertake a Combined Phase I & II Geo-Environmental Assessment of land at Fields End, Hemel Hempstead, (hereafter referred to as the 'Site').

1.2 Context and Purpose

It is understood that the Client already owns the Site, and proposes to develop it under a Local Development Framework (LDF), and is completing due diligence to support their intended development of the Site. As part of the due diligence process the Client requires a desk-top study and intrusive investigation in order to gain a better understanding of the contamination and geotechnical status of the Site and any associated potential risks or liabilities. The exact development layout is not yet known, however, it is understood that it is likely to comprise residential housing with landscaping, gardens and infrastructure, alongside supporting facilities which may include retail, health and educational facilities. A proposed 'skeleton' development layout is given in Figure 2.

This Report includes data obtained from the previous third party desk studies and an intrusive Site investigation. This data is interpreted to form a Conceptual Site Model (CSM) and risk assessment, based on the Source-Pathway-Receptor principle.

1.3 Scope of Works

The scope of works undertaken by Delta-Simons comprised:

- △ A review of the published geological records, Sitecheck data, and data provided by the Planning Consultant;
- △ A Site walkover to identify any potential on-Site and off-Site sources of contamination and to agree intrusive locations at the Site;

- △ Completion of 18 window sample boreholes including Dynamic Penetration Tests across the Site, to a maximum depth of 6.00 metres below ground level (m bgl);
- △ Completion of 26 trial pits across the Site to a maximum depth of 4.00 metres below ground level (m bgl);
- △ Collection of a total of eight soil samples from the exploratory holes for analysis at an appropriately accredited laboratory for a range of organic and inorganic determinands;
- △ Collection of six soils samples from the exploratory holes for analysis at an appropriately accredited laboratory for a range of geotechnical parameters;
- △ Four rounds of groundwater and ground gas monitoring; and
- △ Completion of a Phase II Geo-Environmental Assessment Report summarising the findings of the investigation.

1.4 Data Sources and Third Party Information

In completing this assessment, Delta-Simons has utilised information from the following:

- △ Chemtech Ltd;
- △ Professional Soils Laboratory Ltd; and
- △ The Client.

1.5 Limitations to Site Investigation

The locations of the window sample boreholes and trial pits were selected in order to give the widest possible coverage, with respect being given to the Site's current agricultural use. It should be noted that the area in the south-eastern corner of the Site identified as a 'settling pond' was not subject to intrusive investigation due to health and safety concerns.

Any other issues not listed in the scope of works, but subsequently identified during the completion of the Site investigation and reported herein (such as the potential presence of Japanese knotweed, flood assessment studies or ecological surveys) are provided for information only and fall outside the scope of this Assessment. The Report does not constitute an archaeological or ecological assessment, nor does it constitute an asbestos inspection or flood assessment.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client, Professional Soils Laboratory, Chemtech Ltd and others. Delta-Simons' conclusions, opinions and recommendations are based upon this information and the information obtained during the Site investigation. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions that Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

2.0 ENVIRONMENTAL SETTING

2.1 Information from the Planning Consultant

Delta-Simons has been provided, for information purposes, with a copy of the Local Development Framework document pertaining to this Site, which includes a summary of the likely end-uses and 'skeleton' proposed Site layouts.

2.2 Desk Top Review

Data obtained from the Planning Consultant and other sources has been summarised in the table below.

Current Site Status and Surrounding Area	<p>The Site comprises an approximate rectangular parcel of land south of Fields End Farm, extending to an area of approximately 22 Hectares, located on the eastern urban/rural fringe of Hemel Hempstead in Hertfordshire.</p> <p>The Site currently comprises arable farmland, and is divided into four areas as follows:</p> <ul style="list-style-type: none"> △ The western half of the Site comprises a single field (roughly 50 % of the total Site area) with the division between the western and eastern areas being formed by deciduous tree line and dry ditch; and △ The eastern half of the Site is further sub-divided into three areas, comprising two fields and a settling pond, with the settling pond comprising approximately 5 % of the total Site area. <p>The Site boundaries are formed by structural tree planting of deciduous species to all aspects, with Pouchen End Lane running in a generally north to south direction along the Site's western boundary.</p> <p>Beyond the Site boundaries the land comprises arable farmland to the north, south and west, with residential housing to the east.</p> <p>A Site location map and Site layout plan are given in Figures 1 and 2 respectively.</p>
Geology	<p>The 1:50,000 British Geological Survey map for the area indicate that the Site geology is likely to comprise clays of the Clay with Flints Formation overlying Chalk.</p>
Hydrogeology	<p>From the EA Aquifer Designation Map, the solid (Chalk) geology underlying the Site is classified as a Major Aquifer and the Site is within a Source Protection Zone (Zone III).</p> <p>There are two licensed abstractions from groundwater recorded within 250 m, located north of the Site.</p>
Hydrology	<p>The nearest surface water feature is a settling pond located in the Site's south-eastern corner. Beyond this, no surface water features are noted within 250m of the Site.</p>
Other Environmental / Land Features	<p>Reference to the online EA Flood Risk maps indicates that the Site is not located in an area that is considered to be at risk from fluvial flooding.</p>

Historical Land Features of the Site and Surrounding Area	<p>The current Site layout and field boundaries reflect those shown in the earliest historical mapping obtained as part of this investigation.</p> <p>The land surrounding the Site remains unchanged from the earliest obtained mapping, up until to the most recent mapping which shows the encroachment of residential properties in the east.</p>
Coal Mining	<p>The Site is not considered to be at risk from any coal mining activities.</p>
Hazardous Ground Gas	<p>No potential sources of hazardous ground gas have been identified.</p> <p>The BRE Radon Gas Map for the Site indicates that the Site is located in an area where radon gas protective measures are not required.</p>

2.3 Initial Conceptual Site Model

Based on the findings of the desktop review, an Initial CSM has been developed and is presented overleaf.

Table 1 – Potential Pollutant Linkages

Source	Pathway	Receptor	Matrix Assessment	Justification
No Sources Identified	Vertical migration through permeable deposits below the Site	Major Aquifer	Low Risk	Absence of source
	Direct contact/ingestion and inhalation of dust and vapours	Human Health	Low Risk	Absence of source
	Direct contact and leaching	Buildings and services (including water supply pipes)	Low Risk	Absence of source
Ground Gas	Vertical & lateral migration	Human Health and buildings	Low Risk	Absence of source

Risk Definitions are included within Appendix I.

3.0 SITE INVESTIGATION

3.1 Intrusive Locations and Soil Sampling

In order to obtain information on the ground conditions across the Site, 18 window sample boreholes with Dynamic Penetration Tests (DPTs) referenced WS 101 to WS 118) were advanced at the Site between the 5th and the 10th of May 2011 using a tracked window sample rig. Window sample boreholes and DPTs were advanced to a maximum depth of 6.00 m.

The locations of the window sample boreholes are shown on Figure 3 and the borehole logs are included as Appendix II. Soil samples were collected from the arisings for environmental analysis. Window sample boreholes WS 101, WS 104, WS 106, WS 107, WS 110 and WS 115 were installed with 50 mm internal diameter monitoring wells to facilitate ground gas and groundwater monitoring. The construction of the monitoring wells is detailed on the individual window sample borehole logs. The remainder of the window sample boreholes were backfilled with arisings.

In order that greater coverage could be achieved and further detail obtained, a total of 26 trial-pits and four hand-auger holes were excavated to a maximum depth of 4.00m bgl. The locations of the trial pits are shown on Figure 3 and the logs are included as Appendix II.

Geotechnical and Chemical analysis was performed on 14 soil samples collected from the Site (six geotechnical and eight chemical). Chemical analyses were selected on the basis of the potential pollutant linkages identified in the CSM and field observations and to obtain representative data on ground conditions at the Site. Geotechnical analyses were selected on the basis of the encountered ground conditions and in the context of the proposed development. The location, depth and suite of analyses selected for each soil sample is presented in Table 2.

Table 2 – Soil Sample Analyses

Intrusive Location	Depth (m bgl)	Chemical Determinands				Geotechnical Determinands			
		Heavy Metals	TPH	STPH	sPAH	pH	Plastic and Liquid Limits	Moisture Content	CBR
WS 101	0.20	X	X	X	X	X			
WS 101	0.30						X	X	X
WS 104	0.30	X	X	X	X	X			
WS 104	1.00	X	X	X	X	X			
WS 107	0.40						X	X	X
WS 108	1.50						X	X	
WS 109	1.00						X	X	
WS 110	0.20	X	X	X	X	X			
WS 110	0.50	X	X	X	X	X			
WS 111	1.00						X	X	
WS 113	0.10	X	X	X	X	X			
WS 114	0.10	X	X	X	X	X			
WS 114	1.50						X	X	
WS 118	0.30	X	X	X	X	X			
TOTAL		8	8	8	8	8	6	6	3

Note: Heavy metals = Arsenic, boron, cadmium, chromium, copper, zinc, lead, mercury, nickel, selenium
 TPH = Total petroleum hydrocarbons
 sTPH = Speciated total petroleum hydrocarbons
 sPAH = Speciated polycyclic aromatic hydrocarbons
 pH = Acidity/Alkalinity

3.2 Groundwater Sampling

Groundwater was not recorded during the intrusive investigation works or during the subsequent visits for monitoring, therefore, no sampling was undertaken.

3.3 Ground Gas Monitoring

Measurements of methane, carbon dioxide and oxygen concentrations, atmospheric pressure and borehole flows were made in each of the monitoring wells on the 10th, 16th, 25th and the 31st May 2011. The soil gas concentrations were recorded using an infrared gas analyser (Gas Data, GFM Series). Gas flow readings were measured using a Geotechnical Instruments Flow Pod. The monitoring sheets are included as Appendix III.

4.0 RESULTS & ASSESSMENT

4.1 Ground Conditions

Made Ground was not recorded at the Site. Generally the geological sequence comprised topsoil extending to depths of approximately 0.35 m bgl, overlying gravelly clays rested upon chalk.

Topsoil

The topsoil at the Site generally comprised a dark brown gravelly clayey organic reworked soil with frequent roots. Topsoil thicknesses were recorded between 0.15 m and 0.35 m.

Clay

Generally firm and stiff brown and light brown sandy gravelly clay was encountered at the Site beneath the topsoil. The clays were variable in their granular composition, with very gravelly clays recorded in the southern areas of the Site, and only slightly gravelly clays encountered in the central areas of the Site. Where granular fractions were highest within the clay matrix, coarse gravel and cobbles were also recorded as being present. The full extent of the clay was not proven in all of the exploratory holes.

Chalk

Very weak white chalk was encountered beneath the clays, most frequently in the far northern and south-eastern areas of the Site. The chalk was varied between weak white chalk and cream structureless 'putty' chalk. The full depth of this stratum was not proven as part of this investigation.

Dissolution Features

Although not fully substantiated, there remains a risk that chalk dissolution may have occurred at this Site given the variability in chalk condition and it's only sporadic presence at shallow depth.

Groundwater

No groundwater was encountered during either drilling or the excavation of the trial pits, and all exploratory holes were noted as being stable during advancement. It

should be noted, however, that prevailing conditions were noted as being exceptionally dry at the time of the investigation.

4.2 Visual and Olfactory Evidence of Contamination

No olfactory or visual evidence of contamination was identified within either the window sample boreholes or the trial pits during the Site investigation.

4.3 Analytical Results: Soils

4.3.1 Soils: Available Guidance

In the absence of a complete published set of screening values derived by the Regulators using the new CLEA Framework, Delta-Simons will refer to the following:

- △ The new Soil Guidance Values (SGVs) published by the EA;
- △ Former SGVs for which no updated SGV has been published;
- △ The 2009 Chartered Institute of Environmental Health (CIEH)/Land Quality Management (LQM) Generic Assessment Criteria (GAC);
- △ The guidance values produced by the Environmental Industries Commission (EIC), the Association of Geotechnical and Geoenvironmental Specialists (AGS) and Contaminated Land: Application in Real Environments (CL:AIRE) in December 2009; and
- △ In house Generic Screening Values (HH-GSVs) derived by Delta-Simons and other non UK values where considered relevant.

These guidance values are presented in Appendix IV.

For the purpose of this Assessment, the analytical results have been assessed against guidance values for a residential end-use with gardens.

4.3.2 Summary of Analytical Results: Soil Analysis

A total of eight soil samples were submitted for a range of chemical analyses. A complete set of analytical results for soils is provided within Appendix V. A summary of the pertinent findings is presented below:

- △ The samples of topsoil and natural clay can be generally considered to be uncontaminated, with concentrations of hydrocarbons and heavy metals contaminants that were either below the detection thresholds, or below the relevant UK guidance thresholds, and as such, based upon the results

obtained, the proposed development area can be considered to be uncontaminated.

4.4 Analytical Results: Groundwater

4.4.1 Groundwater: Available Guidance

The Freshwater Environmental Quality Standards (FEQS), the UK Drinking Water Quality Standards (DWQS) or World Health Organisation Drinking Water Guidelines (WHO DWG) have been used as initial conservative screening values to assess whether groundwater contamination requires further assessment or discussion in terms of both the risks to controlled waters and Human Health. The chosen guidance values relate to the sensitivity of the Site setting.

In terms of risk to Human Health, where groundwater contaminant concentrations (for volatile organic compounds and lighter fraction hydrocarbon bandings) exceed the above stringent water quality standards, the concentrations can be compared to HH-GSVs that have been derived by Delta-Simons for groundwater using the Risk Based Corrective Action (RBCA) Toolkit for Chemical Releases (adapted where necessary to be in line with the CLEA methodology). The HH-GSVs are based upon the indoor inhalation pathway as it is considered unlikely that there will be direct contact with or direct consumption of groundwater at the Site. The HH-GSVs are presented in Appendix IV.

In terms of the risks to controlled waters, groundwater contaminant concentrations that exceed the above stringent water quality standards need to be considered in the context of the Site's environmental setting as to whether further qualitative or quantitative assessment is required.

4.4.2 Summary of Analytical Results: Groundwater Analysis

Groundwater was not encountered during the Site investigation or subsequent monitoring in significant volumes. As such it was not possible to undertake groundwater analysis as part of this Assessment.

4.5 Hazardous Gases

4.5.1 Available Guidance

Upon completion of the ground gas monitoring, the results of the gas monitoring can be used to assess the level of risk associated with the presence of gas at the Site. From available guidance (CIRIA, C665), a classification system has been developed using both the gas concentrations and the borehole flow rates to define a Characteristic Situation for the Site based on the GSV for methane and carbon dioxide.

The GSV is calculated by multiplying the borehole flow rate (l/hr) by the gas concentration (% v/v), using the maximum recordable concentrations of methane and carbon dioxide and the maximum recordable positive gas flow rate. Once calculated, the GSV can be further assessed using Table 8.5 and Table 8.6 in CIRIA, C665, in order to provide typical scopes of protection measures for the proposed development.

4.5.2 Ground Gas Monitoring Results

Measurements of methane, carbon dioxide and oxygen concentrations, atmospheric pressure and borehole flows were made in each of the monitoring wells on the 10th, 16th, 25th and the 31st May 2011. Barometric pressure ranged between 998 mb and 1008 mb during the monitoring events.

Table 3 – Summary of Ground Gas Monitoring Results.

Maximum Methane (% v/v)	Maximum Carbon Dioxide (% v/v)	Minimum Oxygen (% v/v)	Maximum flow rate (l/hr)	GSV (l/hr) (CIRIA 665)	Characteristic Situation
<0.1	2.2	17.2	<0.1	0.0022	1

Following a review of the available ground gas monitoring results that have been undertaken as part of this investigation, and consideration of the prevailing geology (generally comprising low permeability clays overlying chalk), it is considered that the ground gas regime at the Site falls under Characteristic Situation 1, which represents the lowest risk characterisation, under which ground gas protection measures are not required.

5.0 CONTAMINATED LAND RISK ASSESSMENT

The regulatory framework for contaminated land risk assessment is discussed in Sections 5.1 and 5.2 below. The qualitative risk assessment for this Site is provided in Section 5.3.

5.1 Environmental Protection Act 1990

The clean-up of historical contamination is controlled under a specific statutory scheme found in Part 2A of the Environmental Protection Act 1990 (Part 2A), as inserted by the Environment Act 1995, and other 'rules' found in regulations and statutory guidance. The Act came into force in England in April 2000.

The LA has the primary role in inspecting land within its area and identifying land, which is deemed to be contaminated for the purposes of Part 2A. Once contaminated land has been identified, responsibility is divided with the EA taking control over sites where risks from contamination are perceived to be high (special sites). The definition of contaminated land is, therefore, central to the operation of Part 2A. Section 78A (2), EPA 1990 provides that for the purposes of Part 2A contaminated land is defined as:

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

- (a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) Pollution of controlled water is being, or likely to be, caused.

Harm is defined as meaning:

Harm to the health of living organisms or other interference with the ecological systems of which they form part and in the case of man includes harm to his property.

Section 86 of the Water Act 2003, which will be implemented in stages, will amend the definition of contaminated land so that Part 2A only applies where 'significant' pollution of controlled waters is being caused or there is a 'significant' possibility of such pollution being caused. Statutory Guidance for the determination of what is "significant" pollution has yet to be issued, as this requires careful and key

consideration in conjunction with the implementation of the new EC Water Framework Directive.

The statutory definitions are meaningless without the backing of statutory guidance and the enforcing authorities are required to act in accordance with the guidance on the definition of contaminated land.

5.2 Significant Harm

The guidance introduces the concept of the 'pollutant linkage'. A pollutant linkage is formed when there is a linkage between a contaminant source and a receptor or target by means of a pathway. If any one aspect is missing no linkage is formed. Where such a linkage is present it must be 'significant' forming what is known as a 'significant pollutant linkage' (SPL) for the land to come within the definition of 'contaminated land' under Part 2A. Significance is assessed in relation to the types of targets, which are being harmed, the degree or nature of the harm and the possibility of harm being caused. The focus of a risk assessment in relation to Part 2A is, therefore, the identification of sources, pathways, receptors and significant pollutant linkages.

The guidance also defines the types of receptors, which can form part of the SPL and comprises human beings, nature conservation sites (those protected under nature conservation laws), buildings and other property (covers crops and animals which are subject to property rights such as livestock). Any targets outside these categories do not fall under Part 2A.

In terms of harm, for humans this includes serious injury, birth defects and impairment of reproductive functions. In relation to nature conservation sites it includes harm, which results in irreversible, or substantial adverse changes to the functioning of the ecosystem. In relation to property it includes substantial loss in crop value or substantial damage to buildings.

5.3 Revised Conceptual Site Model

The risk assessment procedure which identifies sources, pathways, receptors and pollutant linkages is recognised as an appropriate approach to determining the extent and significance of contamination either within the context of Part 2A, or as part of the planning process.

This risk assessment has been undertaken for the Site based upon the suitable for use approach in the context of the Site being redeveloped with a residential with gardens end-use. This revised CSM provides an update to the initial CSM discussed in Section 2.2 of this Report, based upon the findings of the intrusive investigation. The revised CSM is presented overleaf.

Table 4 – Identified Pollutant Linkages

Source	Receptor	Pathway	Matrix Assessment	Assessment of the Significance of the Linkage	
None Identified	Future Site users (residents and visitors)	Direct contact/ ingestion and inhalation of dust	Low Risk	Absence of source	
		Inhalation of volatile vapours	Low Risk	Absence of source	
	Groundworkers during any future landscaping works	Direct contact/ ingestion and inhalation of dust and vapours	Low Risk	Absence of source	
		Dust inhalation	Low Risk	Absence of source	
	Controlled waters (surface water courses and groundwater Aquifer)	Horizontal and vertical leaching of contamination	Direct infiltration	Low Risk	Absence of source
			Root zone uptake	Low Risk	Absence of source
Ground Gas	Future Site users and buildings	Lateral and vertical migration	Low Risk	Absence of source	

Risk Definitions are included within Appendix I.

6.0 GEOTECHNICAL RESULTS

The results of the geotechnical tests carried out on soil samples are included in Appendix VI.

6.1 Geotechnical Appraisal

The Site comprises arable farmland as described in Section 2.1 of this Report.

6.1.1 Structural Foundations and Floor Slabs

The ground conditions beneath the Site have been shown to comprise a layer of topsoil extending to a maximum recorded depth of 0.35 m bgl, overlying generally firm to stiff clays rested upon weak and very weak chalk as described in Section 4.1 of this Report.

Groundwater has not been encountered at shallow depth beneath the Site, though this should be treated with caution due to the exceptionally dry conditions experienced at the time of the investigation.

Ground conditions are considered to be potentially suitable for traditional strip or pad foundations for the proposed construction. Initial assessments indicate that an allowable bearing capacity of 125kN/m² would be suitable located at a minimum within the firm to stiff clays beneath any topsoil or other unsuitable soil, however, due to the risk of laterally variable granular fractions and soil strengths it is recommended that allowable bearing capacities are limited to 100kN/m². It is recommended that foundations are reinforced against differential settlement.

Geotechnical analysis has found the clay soils to be of high to very high shrinkability, therefore, appropriate precautions in line with NHBC guidance, especially where trees currently exist, should be adhered to. This may include the extending, or reinforcing of foundations where appropriate, and the use of void formers near to where trees are existing, are to be removed, or are proposed. As a result, suitable foundation formation depths are likely to vary across the Site, and allowances should be made for this.

There were no conclusive indications of dissolution features recorded in the investigation. The foundation formation level should be inspected for dissolution

features and fractures, with any significant 'puttied' or highly weathered material removed prior to construction. Should any unusual ground conditions be encountered, the advice of a geotechnical engineer should be sought prior to placement of concrete. If unusual features are encountered, localised deepening of the formation would be required, or the foundation designed to span the affected area. Once deemed suitable, the formation should be protected upon exposure to prevent spoiling through moisture content variation.

6.1.2 Groundworks

Shallow excavations are likely to remain stable, except for extended periods, where support may be required during construction. Once below about 1.00 m depth, close boarded support is recommended.

During all excavation work, particular care will be needed to maintain footways and services. If excavations exceed approximately 1.00 m in depth, the need for ground support to be provided before workers enter them must be considered, in compliance with Health and Safety legislation. Loadings from neighbouring structures and traffic must be considered in the design of ground support systems. Heavy plant and stockpiles of materials must not be placed close to the edges of open excavations.

6.1.3 External Works

The formation for new paved areas and access roads is likely to comprise the natural gravelly clays.

A design California Bearing Ratio (CBR) value for the shallow depth stiff clay soils of 5 % may be adopted, and the clays are considered to be sufficiently competent to support the construction of new roads and pavements without the need for any abnormal preparatory work.

6.1.4 Drainage

The shallow-depth ground conditions where the clays are present at the Site are not suitable for soakaway drainage due to the cohesive ground conditions. The chalk present at increased depth may be suitable for soakaway drainage subject to the appropriate field testing being undertaken.

6.1.5 Sulphate Attack on Buried Concrete

Soluble sulphate concentrations were generally recorded below the laboratory detection limits and pH values ranged between neutral and slightly alkaline, with the risk of Oxidisable Sulphides assessed as being low.

The Design Sulphate Class for the Site is DS-1, and the Aggressive Chemical Environment for Concrete (ACEC) class is AC-1, from Table C2 of BRE Special Digest 1, Concrete in aggressive ground, 2005.

7.0 ASSESSMENT OF RISKS AND LIABILITIES

This Assessment considers both perceived and actual risks using the Source, Pathway, Receptor concept, with the principal measure of risk being whether significant harm to people, animals, property, (including buildings, cattle or ecosystems etc) or pollution of controlled waters (surface water bodies, aquifers, coastal waters, or territorial waters) is being caused, or whether there is a significant possibility of such harm being caused.

The overall risk classification, based on the source-pathway-receptor principle, adopted for this preliminary assessment, is defined as follows:

- △ Low risk – issue unlikely to present a liability or cost;
- △ Moderate risk – issue may present a liability or cost, but these may be limited;
and
- △ High risk – likely that liabilities and/or costs exist.

7.1 Regulatory Body Enforcement

7.1.1 Part 2A of the Environmental Protection Act 1990

Based on the available information, Delta-Simons considers that the risk of remediation being enforced on the Site under the terms of Part 2A is low.

7.1.2 Planning and Development Control

Prior to any future major application for redevelopment on the Site it is likely that further assessment of the environmental condition of the land may be required by the Local Planning Authority as a condition of planning.

7.1.3 Water Resources Act (WRA)

Based on the available information, Delta-Simons considers there to be a low risk that the Site is likely to present a risk of pollution to controlled waters and invoke prosecution under the WRA.

7.2 Third Party Liability

Delta-Simons considers that the risk of legal action from a third party with regard to contamination migration from the Site is low.

7.3 Investment/Asset Impact

Delta-Simons considers there to be a low risk of significant adverse impacts on the commercial value of the Site, in relation to contamination issues.

8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 Environmental Conclusions

The Site comprises an approximate rectangular parcel of land south of Fields End Farm, extending to an area of approximately 22 Hectares, located on the eastern urban/rural fringe of Hemel Hempstead in Hertfordshire as described in Section 2.2 of this report.

- △ There were no potential sources of contamination identified at the Site during the initial Site inspection;
- △ The ground gas regime has been categorised as CS-1;
- △ A Site investigation has been carried out in order to assess the ground conditions in the context of a proposed residential end-use of the Site; and
- △ No visual or olfactory evidence of contamination was identified at the Site during the investigation, and, therefore, the Site can be considered as being uncontaminated.

8.2 Geotechnical Conclusions

The ground conditions beneath the Site have been shown to comprise a layer of topsoil extending to a maximum recorded depth of 0.35 m bgl, overlying generally firm to stiff clays rested upon weak and very weak chalk as described in Section 4.1 of this report.

- △ Ground conditions are considered to be potentially suitable for traditional strip or pad foundations for the proposed construction. Initial assessments indicate that an allowable bearing capacity of 125kN/m² would be suitable located at a minimum within the firm to stiff clays beneath any topsoil or other unsuitable soil, however, due to the risk of laterally variable granular fractions and soil strengths it is recommended that allowable bearing capacities are limited to 100kN/m²;
- △ It is recommended that foundations are reinforced against differential settlement;
- △ The clays are found to be of high or very high shrinkability and, therefore, allowances should be made for this in foundation design;
- △ There were no conclusive indications of the presence of dissolution features;

- △ The Site is not suitable for the use of soakaway drainage at shallow depth due to the predominantly cohesive ground conditions, however, soakways may be feasible at an increased depth within the chalk stratum subject to the appropriate confirmatory testing;
- △ The Design Sulfate Class for the Site is DS-1, and the ACEC Class is AC-1; and
- △ A design California Bearing Ratio (CBR) value for the shallow depth clay soils of 5% may be adopted, and, therefore the natural clays are considered suitable for re-use beneath roadways and pavements without the need for any abnormal preparatory work.

8.3 Environmental Recommendations

On the basis of the information obtained and reviewed as part of this assessment and the conclusions drawn above, Delta-Simons recommends the following:

- △ Any groundworkers who are required to perform sub-surface work at the Site should be made aware of the possibility of encountering unforeseen contamination. Therefore, good standards of personal hygiene should be observed with appropriate levels of PPE provided and utilised, and toolbox talks should be given to contractors prior to the commencement of works;
- △ The developer and their contractors should remain vigilant for any previously unidentified contamination; and
- △ It is recommended that this Report is submitted in support of any future planning application.

8.4 Geotechnical Recommendations

On the basis of the information obtained and reviewed as part of this assessment and the conclusions drawn above, Delta-Simons recommends the following:

- △ Any groundworkers who are required to perform sub-surface work at the Site should be made aware of the possibility of encountering unforeseen chalk dissolution features during excavations for foundations or other structures. The foundation formation level should be inspected for dissolution features and fractures, with any significant 'puttied' or highly weathered material removed prior to construction. Should any unusual ground conditions be encountered, the advice of a geotechnical engineer should be sought prior to placement of concrete. If unusual features are encountered, localised deepening of the formation would be required, or the foundation designed to span the affected

area. Once deemed suitable, the formation should be protected upon exposure to prevent spoiling through moisture content variation; and

- △ If soakaway drainage is required, permeability testing should be undertaken within the chalk stratum to assess its suitability for this purpose.

8.5 Statement of Risk

On the basis of the CSM identified in Section 5, Delta-Simons considers that in the Site's current use, the following risk and liability statements can be made.

Table 5 – Liability Assessment

Regulatory Body Enforcement under Part 2A or WRA	There is a Low risk of enforcement action in the future.
Third Party Liability	Potential for legal action by surrounding landowners based on the potential for contamination to migrate off-Site is considered to be Low .
Investment Impact	Delta-Simons considers there to be a Low risk of impact on the value of the Site from significant contamination issues, in the context of the Site remaining in a commercial use.
Overall Statement of Risk	On the basis of available information, Delta-Simons considers that with regard to potential soil and groundwater contamination issues and associated environmental liabilities, in its current use, the Site represents an investment opportunity with a Low overall risk status.

Should the Site be redeveloped in the future for a residential end-use, the Site would still be considered to represent a low overall risk with regard to potential soil and groundwater contamination issues and associated environmental liabilities.

9.0 LIMITATIONS TO GEO-ENVIRONMENTAL ASSESSMENTS

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client, Landmark Information Group and others. Delta-Simons' conclusions, opinions and recommendations have been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

This Report was prepared by:



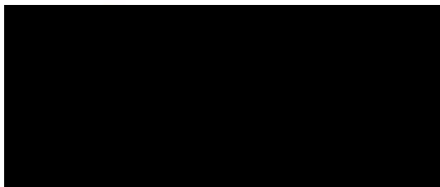
Kevin McGee

Geo-Environmental Consultant

14/06/11

Date

This Report was reviewed and authorised by



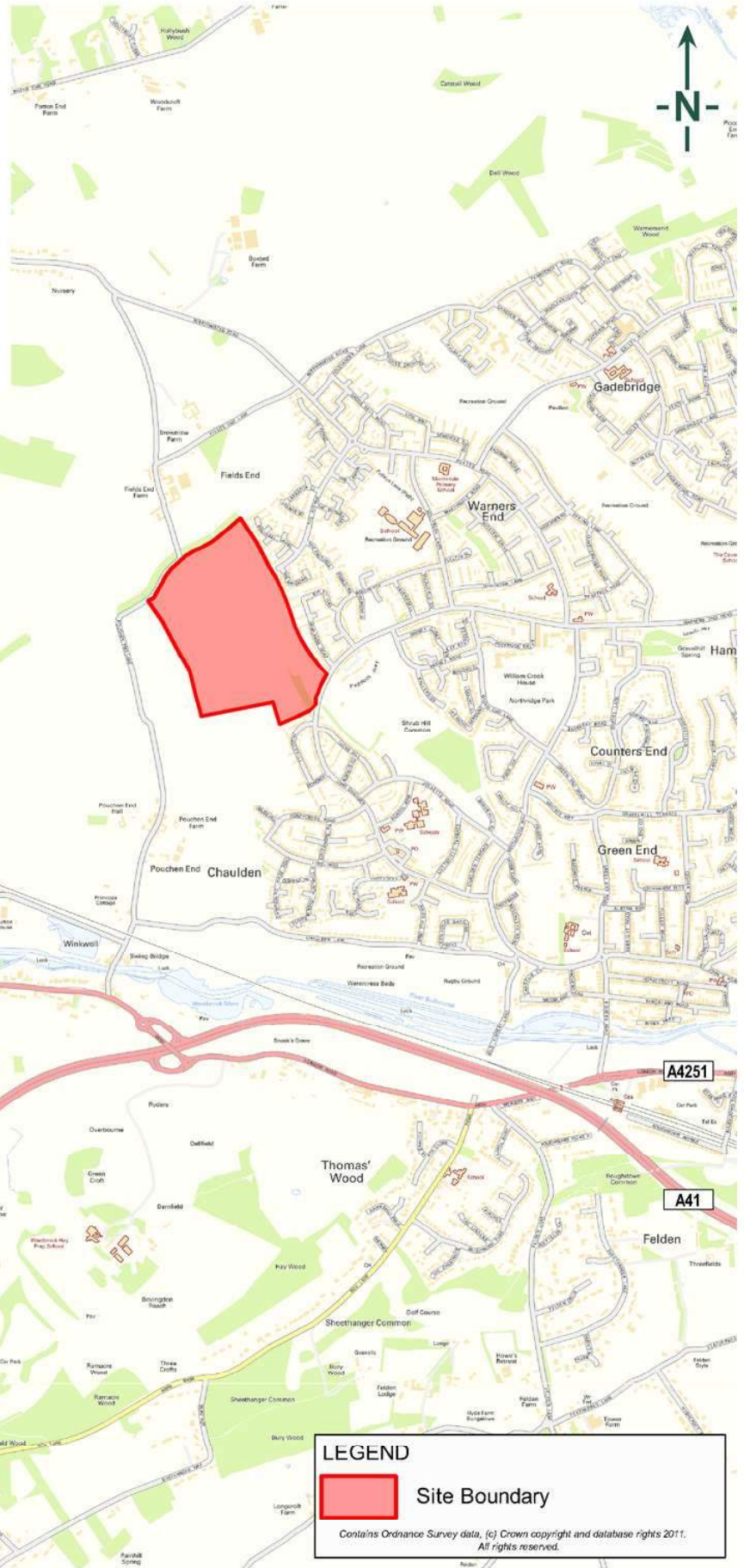
Alex Ferguson

Projects Director

14th June 2011

Date

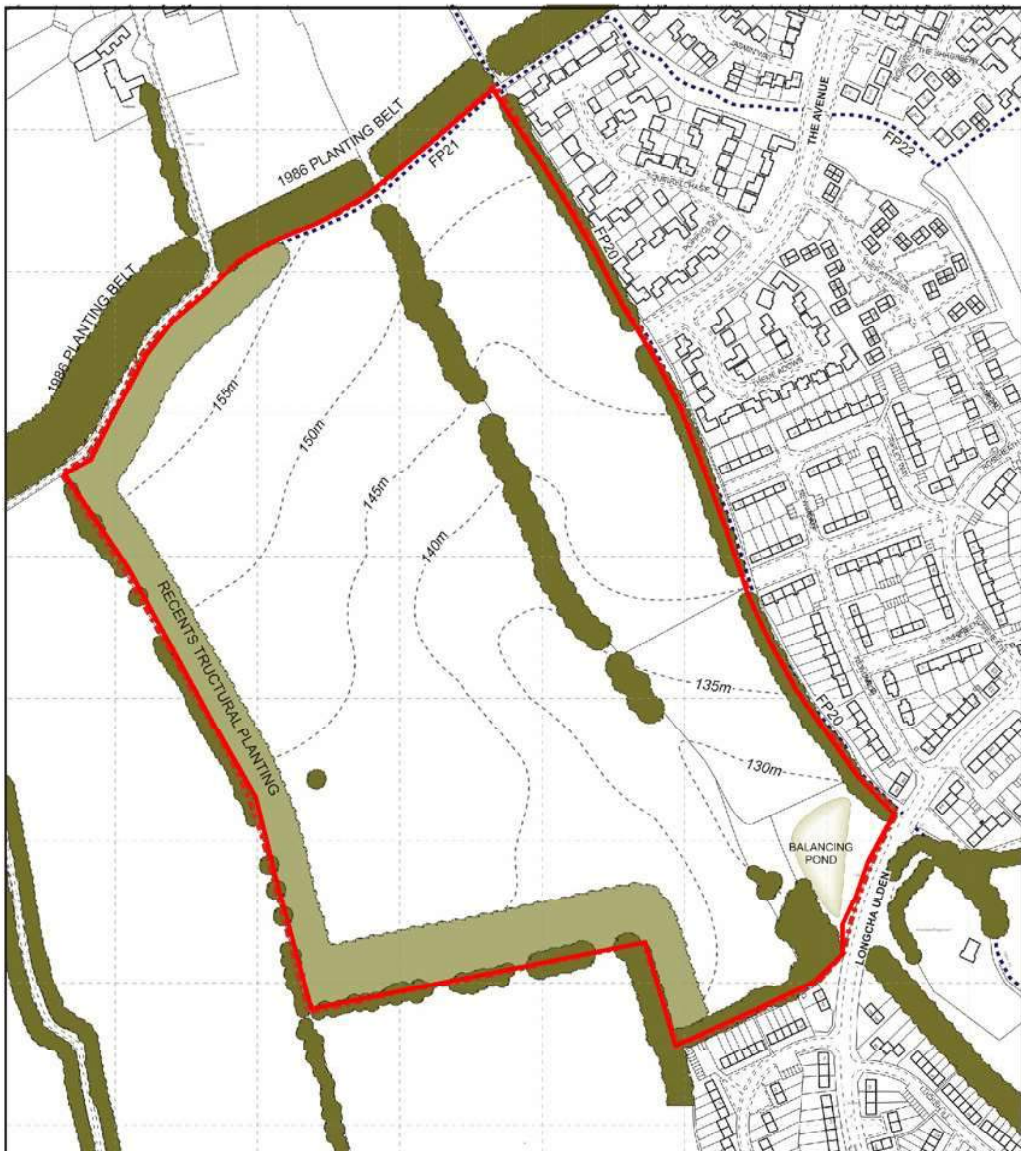
Figures



LEGEND

Site Boundary

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Scale: 1 / 5000 @ A4
 0m 100 200 300 400 500m

LEGEND

— Site Boundary

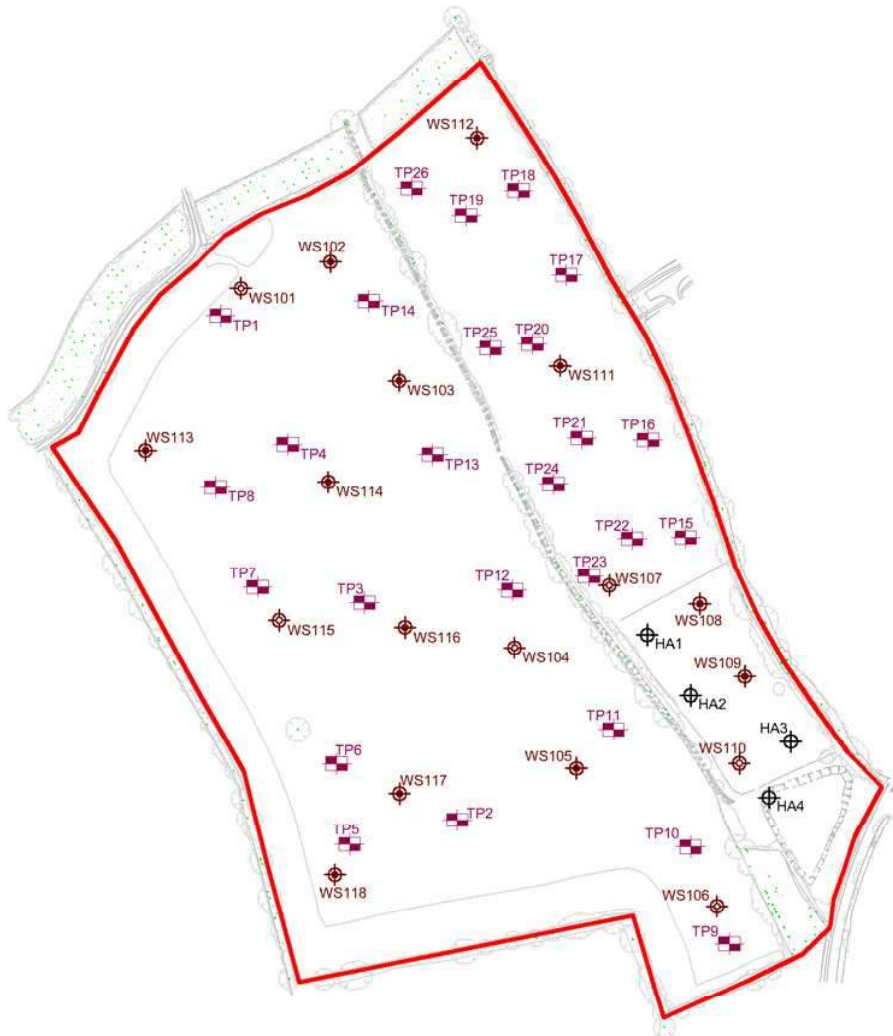
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TITLE:
**Site Layout Plan
 Hemel Hempstead**

DWN: AL	DES: -
CHK: KDM	APP: -
DATE: 12 May 2011	REV: 1

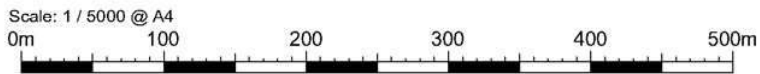
PROJECT NO.: 11-0150.01
FIGURE NO.: 2



LEGEND

- Site Boundary
- Window Sample (Installed) Advanced by Delta-Simons, May 2011
- Window Sample (Backfilled) Advanced by Delta-Simons, May 2011
- Hand Auger Advanced by Delta-Simons, May 2011
- Trial Pit Advanced by Delta-Simons, May 2011

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Appendix I



APPENDIX I : RISK DEFINITIONS

Consequence to Receptor Definition Matrix

	Human Health	Controlled Waters	Buildings/Services
Severe Consequence	Acute or chronic permanent impact on human health.	Sensitive controlled water pollution ongoing, or just about to occur.	Catastrophic collapse
Moderate Consequence	Chronic permanent impact on human health	Gradual pollution of sensitive controlled water	Degradation of materials
Mild Consequence	Chronic temporary impact on human health	Gradual pollution of non-sensitive controlled water	Noticeable change, non-structural

Standard Risk Matrix

	Severe Consequence	Moderate Consequence	Mild Consequence
Higher Probability	Very High Risk	High Risk	Medium Risk
Median Probability	High Risk	Medium Risk	Low Risk
Lower Probability	Medium Risk	Low Risk	Very Low Risk

Probability Definitions

Probability	Definition in Context
Higher	Positive evidence of hazard, pathway and receptor
Median	Suspect hazard, pathway, and receptor
Lower	No evidence of hazard, pathway, and receptor

Risk Rank Definitions

Rank	Definition in Context
Very High Risk	Demonstrable contaminated land situation, highest threat & liability level, urgent action recommended.
High Risk	Likely contaminated land situation, risk assessment and action recommended.
Medium Risk	Plausible contaminated land situation, risk assessment and possible action recommended.
Low Risk	Unlikely contaminated land situation, possible risk assessment and possible action.
Very Low Risk	Negligible risk, no action recommended except vigilance for changes in conditions.

Appendix II

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Project: **Fields End Farm** Project No: **11-0150.01** **WS101**

BOREHOLE LOG

Date Started:
05-05-2011

Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30)	D1	0.20		
Very stiff light orange/brown slightly silty gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			0.30	B D2	0.30		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			(0.70)				
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			1.00				
White weathered CHALK with occasional medium size chalk gravel.			(0.80)	D3	1.50		
			1.80				
			(2.20)	D4	2.50		
			4.00				
White structureless CHALK (putty like characteristics).			(1.00)	D5	4.80		
			5.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 5.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS102**

BOREHOLE LOG

Date Started: **05-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy Clay. Sand is fine. Gravel is fine to coarse angular and includes flint.			(0.25) 0.25	D1	0.20		
Very stiff light orange/brown slightly silty sandy, gravelly, CLAY. Sand is fine, Gravel is fine to coarse, angular and includes flint.			(0.55) 0.80	D2	0.50		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(3.20) 4.00	D3 D4	1.50 3.50		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 4.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS103**

BOREHOLE LOG

Date Started:
05-05-2011

Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to coarse angular and includes flint.			0.20	D1	0.15		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			(0.80)				
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint and fine chalk gravels.			1.00	D2	1.00		
Very stiff dark orange/ black/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to medium angular to rounded and includes flint.			(0.50)				
			1.50				
			(3.50)	D3	2.50		
			5.00	D4	5.00		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 5.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS104**

BOREHOLE LOG

Date Started: **05-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30)	D1	0.20		
Very stiff light orange/brown slightly silty gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to coarse angular and includes flint.			0.30				
			(0.70)				
			1.00	D2	1.00		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			(2.00)				
				D3	2.50		
			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS105**

BOREHOLE LOG Date Started: **05-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.40) 0.40	D1 B D2	0.30 0.40		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			(1.80) 2.20	D3	2.00		
White structureless CHALK.			(0.80) 3.00	D4	2.50		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS106**

BOREHOLE LOG

Date Started: **05-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.20	D1	0.15		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(1.80)	D2	1.50		
Very stiff dark orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(1.00)	D3	2.50		
			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS107**

BOREHOLE LOG Date Started: **09-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30) 0.30	D1	0.20		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(1.30) 1.60	B D2	0.40	CBR	
White/cream/ brown weathered chalk includes flint and fine chalk gravel.			(1.20) 2.80	D3	2.50		
White/brown/cream structureless CHALK. Fine to medium chalk gravel.			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS108**

BOREHOLE LOG Date Started: **09-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.15	D1	0.10		
Stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(1.65)	D2	1.50		
White/cream/brown weathered CHALK. Includes fine chalk gravel.			1.80				
			(0.70)				
White/brown/cream structureless CHALK. Includes fine to medium chalk gravel.			2.50	D3	2.50		
			(0.30)				
Firm light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			2.80				
			3.00	D4	3.00		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS109**

BOREHOLE LOG

Date Started:
09-05-2011

Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30) 0.30	D1	0.20		
Stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.70) 1.00	D2	1.00		
Stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to medium angular to rounded and includes flint and fine chalk gravel.			(0.50) 1.50	D3	1.50		
White/cream/brown weathered CHALK. Includes fine to medium chalk gravel.			(1.50) 3.00	D4	2.50		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS110**

BOREHOLE LOG Date Started: **09-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy Clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30)	D1	0.20		
Stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			0.30	B D2 D3	0.40 0.50		
			(2.40)	D4	2.00		
			2.70				
Stiff light orange/brown slightly silty sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular and includes flint.			2.80				
White structureless CHALK (putty like Characteristics).	3.00	D5	3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS111**

BOREHOLE LOG

Date Started: **09-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.20	D1	0.10		
Very stiff light orange/brown slightly silty slightly sandy very gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.90)	D2	1.00		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			1.10	D3	2.50		
			(1.90)				
			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS112**

BOREHOLE LOG Date Started: **09-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.20	D1	0.10		
Very stiff light orange/brown slightly silty slightly sandy very gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(2.00)	D2	1.50		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			2.20	D3	2.50		
			(1.30)				
Brown/cream weathered CHALK with fine to medium chalk gravel.			3.50				
			(0.50)	D4	4.00		
			4.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 4.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: **Terrier** Coordinates / Level (AOD): Logged By: **GB** Checked By: **KM** Approved By:

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Project: **Fields End Farm** Project No: **11-0150.01** **WS113**

BOREHOLE LOG Date Started: **10-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.20	D1	0.10		
Very stiff dark orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.60)				
Very stiff light orange/brown slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium angular to rounded and includes flint.			0.80				
			(1.70)	D2	1.50		
			2.50				
Cream/brown weathered CHALK with occasional medium flint gravels.			(0.50)	D3	3.00		
		3.00					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: **Terrier** Coordinates / Level (AOD): Logged By: **GB** Checked By: **KM** Approved By:

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Project: **Fields End Farm** Project No: **11-0150.01** **WS114**

BOREHOLE LOG

Date Started: **10-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Dark orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.15	D1	0.10		
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.95)	D2	0.50		
Very stiff light orange/brown slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium angular to rounded and includes flint.			1.10	D3	2.00		
	(1.90)						
			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS115**

BOREHOLE LOG

Date Started: **06-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30) 0.30	D1	0.20		
Very stiff light orange/brown slightly silty gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.60) 0.90	D2	0.50		
Very stiff light orange/red/grey/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(2.10) 3.00	D3	2.00		
				D4	3.00		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Installed as 50mm monitoring well.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS116**

BOREHOLE LOG

Date Started: **06-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS	
				TYPE	DEPTH	RESULT		
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30)	D1	0.20	CBR		
Very stiff light orange/brown slightly silty gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			0.30	B D2	0.40			
			(0.50)					
			0.80	D3	1.00			
Very stiff light orange/red/grey/brown slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(2.20)	D4	2.50			
			3.00					

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: Terrier	Coordinates / Level (AOD):	Logged By: GB	Checked By: KM	Approved By:
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Project: **Fields End Farm** Project No: **11-0150.01** **WS117**

BOREHOLE LOG Date Started: **06-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			0.20	D1	0.15		
Very stiff light orange/brown slightly silty gravelly sandy CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.80)				
			1.00				
Very stiff light orange/brown slightly silty slightly sandy very gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(2.00)	D2	1.50		
			3.00	D3	3.00		
Very stiff light orange/brown slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(1.20)				
			4.20				
Cream and brown structureless CHALK (putty like Characteristics).			(0.80)	D4	4.50		
			5.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 5.0m.
4. Pit backfilled with compacted arisings on completion.

(ALL DIMENSIONS IN METRES)

Plant Used: **Terrier** Coordinates / Level (AOD): Logged By: **GB** Checked By: **KM** Approved By:

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Project: **Fields End Farm** Project No: **11-0150.01** **WS118**

BOREHOLE LOG

Date Started: **05-05-2011** Page 1 of 1

DESCRIPTION OF STRATA	LEGEND	WATER	DEPTH (Thickness)	SAMPLES & TESTS			BACKFILL DETAILS
				TYPE	DEPTH	RESULT	
TOPSOIL: Light orange/brown slightly silty gravelly sandy clay. Sand is fine. Gravel is fine to medium angular and includes flint.			(0.30)	D1	0.30		
0.30							
Very stiff light orange/brown slightly silty slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse angular to rounded and includes flint.			(0.70)	D2	0.80		
Very stiff dark orange/brown slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium angular to rounded and includes flint.			1.00	D3	2.00		
			(2.00)				
			3.00				

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Groundwater not encountered.
3. Window sample terminated at 3.0m.
4. Pit backfilled with compacted arisings on completion.

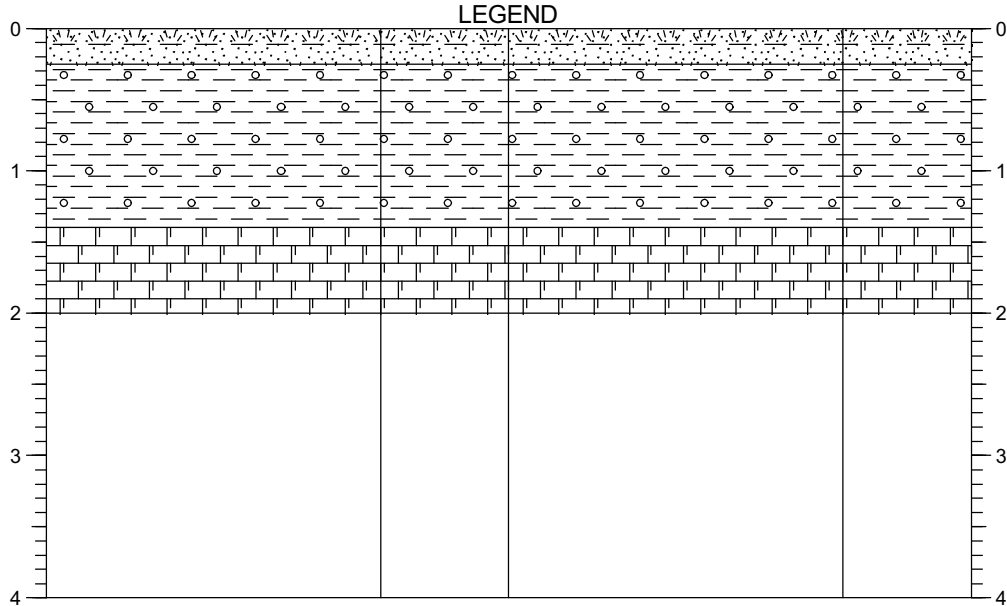
(ALL DIMENSIONS IN METRES)

Plant Used: **Terrier** Coordinates / Level (AOD): Logged By: **GB** Checked By: **KM** Approved By:

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Project:	Fields End Farm	Project No: 11-0150.01	TP1
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown sandy gravelly TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.25		Firm light brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint.					
1.40		Very weak white weathered CHALK.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
 Stability:

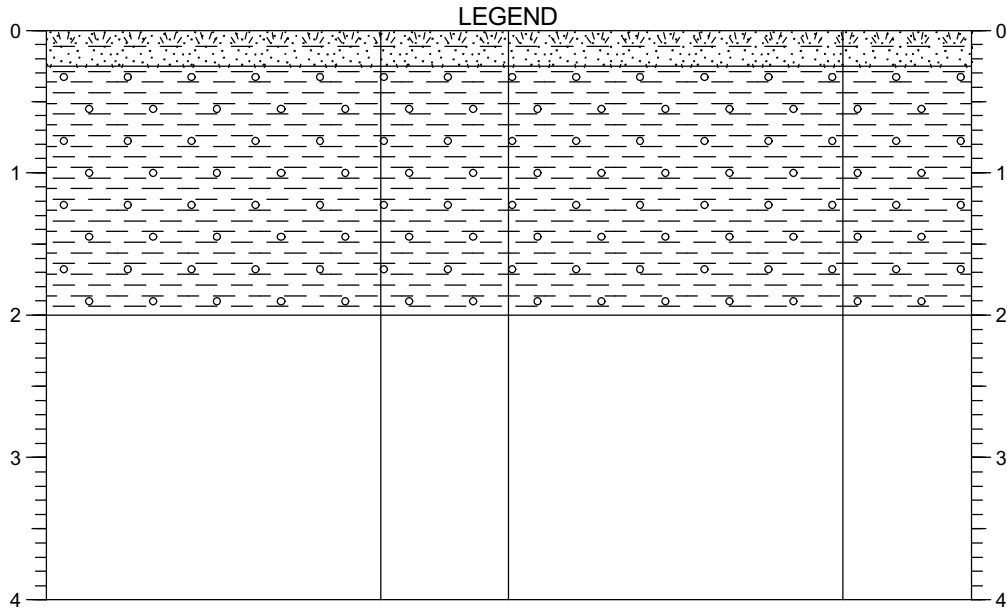
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP2
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown sandy gravelly TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.25		stiff brown slightly sandy very gravelly CLAY with occasional grey mottles. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint. Below 1.50m: becoming locally grey. Difficult excavation noted.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
 Stability:

REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

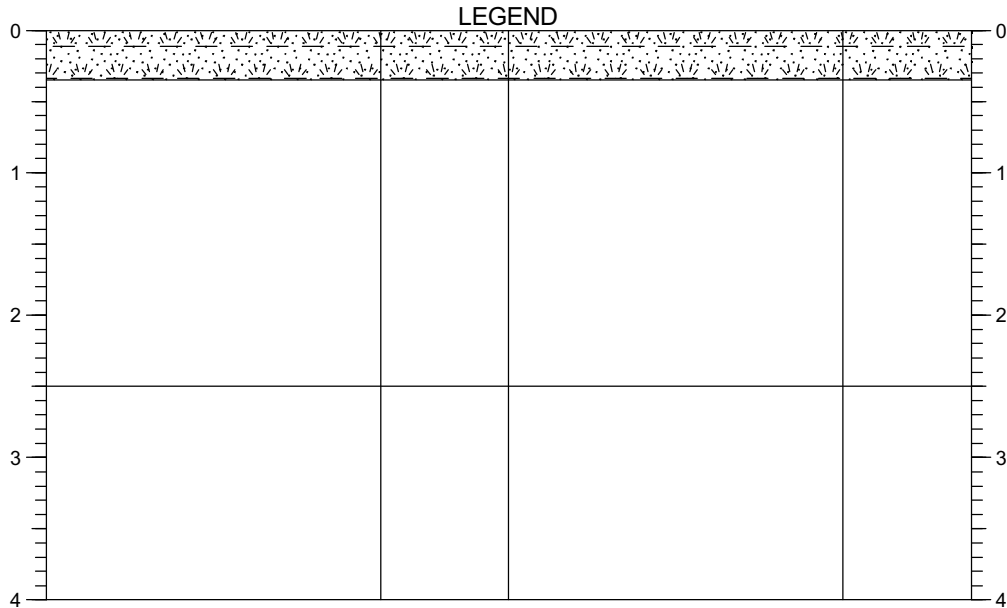
Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP3
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TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1
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STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown sandy gravelly TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.35		firm to stiff light brown and locally orange brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. Below 1.00m: becoming locally mottled grey and slightly gravelly.					
2.50		Trial pit complete at 2.50 m.					

Shoring/Support:
 Stability:

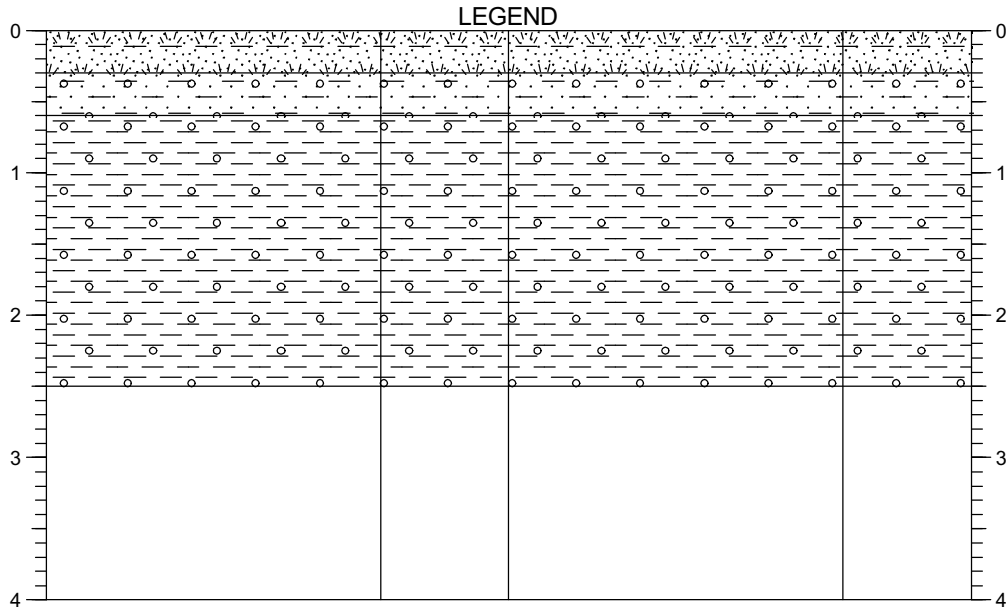
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP4
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown sandy gravelly TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		light brown gravelly clayey fine to medium SAND. Gravel is subrounded to angular fine to coarse flint.					
0.60		stiff grey and brown slightly sandy very gravelly CLAY with occasional grey mottles. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint. Below 1.50m: becoming light brown with occasional flint cobbles.					
2.50		Trial pit complete at 2.50 m.					

Shoring/Support:
 Stability:

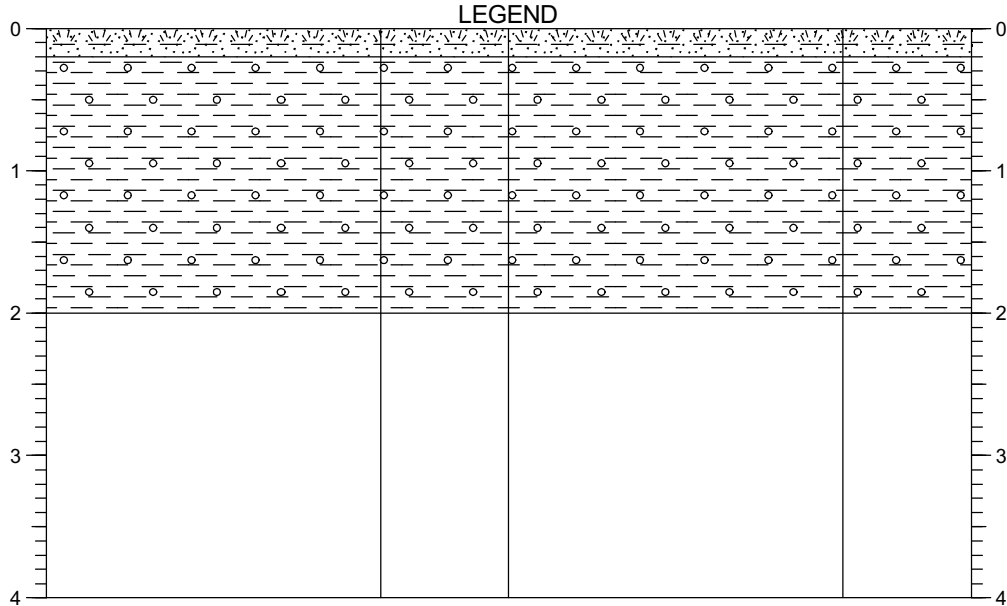
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP5
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00 0.20		Brown sandy very gravelly TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. stiff light brown slightly sandy very gravelly CLAY with occasional grey mottles. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint. Difficult excavation noted.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
Stability:

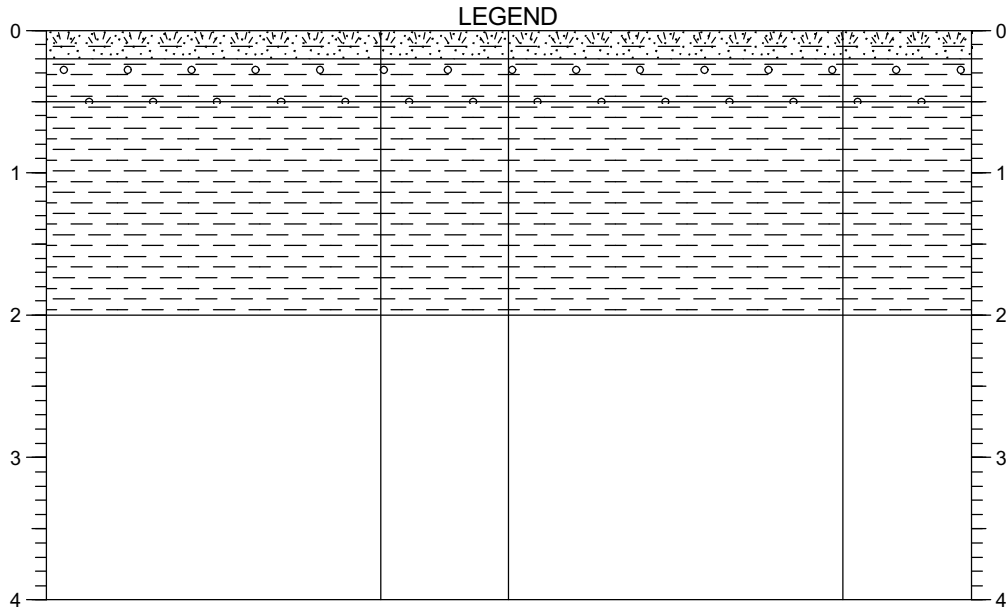
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP6
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Stiff brown gravelly CLAY. Gravel is subrounded to angular fine to coarse flint. Firm to stiff light brown, mottled grey, slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded to angular fine to coarse flint and chalk.					
0.20							
0.50							
2.00		Trial pit complete at 2.00 m					

Shoring/Support:
 Stability:

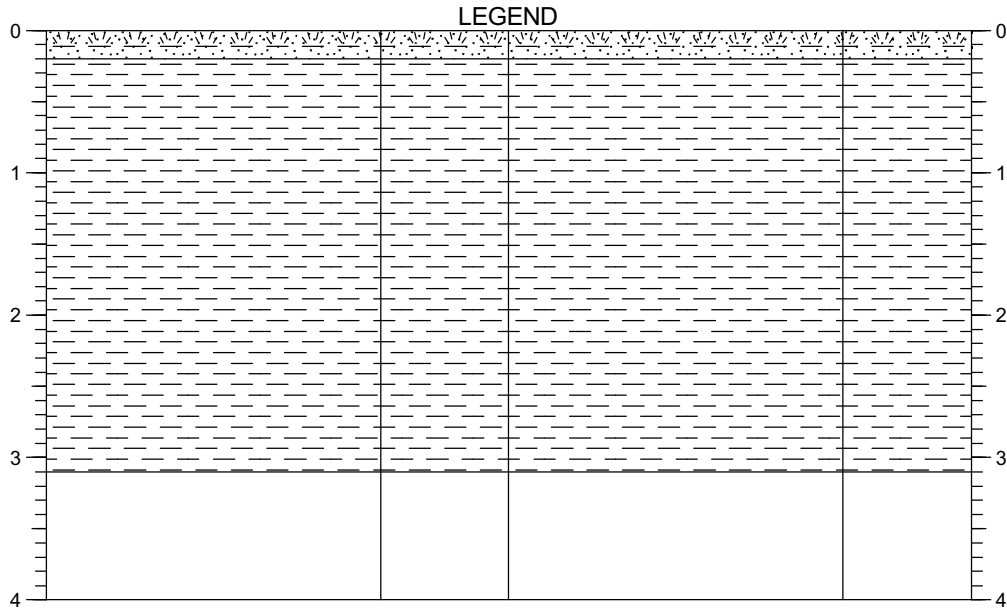
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP7
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Firm to stiff brown slightly sandy slightly gravelly mottled grey CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint. 2.80m: becoming grey/brown.					
0.20							
3.10		Trial pit complete at 3.10 m.					

Shoring/Support:
 Stability:

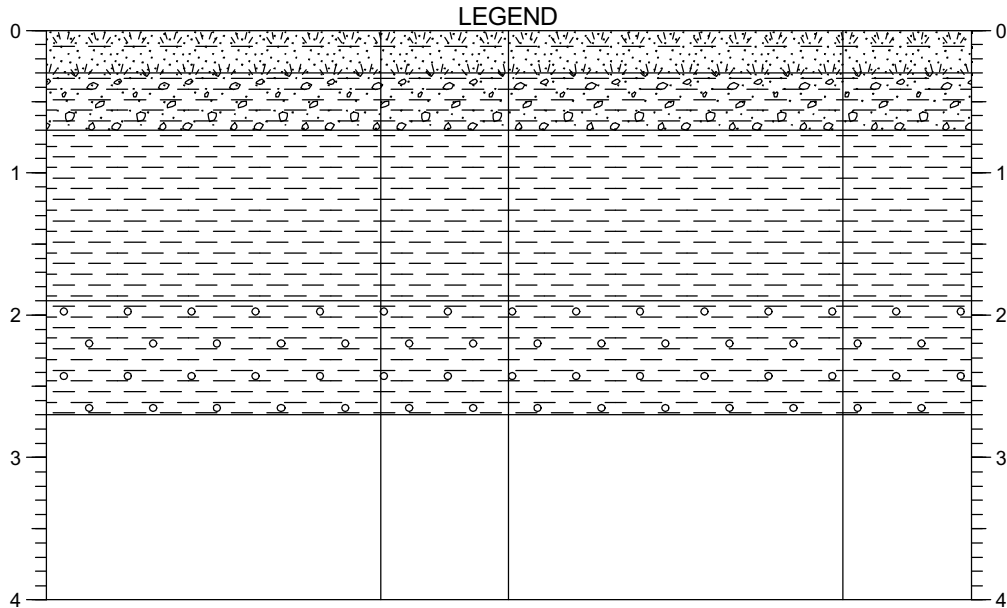
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP8
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm grey/brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint.					
0.70		Firm to stiff light brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium flint. 2.80m: becoming grey/brown.					
1.90		Stiff grey locally brown gravelly CLAY. Gravel is subrounded to angular fine to coarse flint.					
2.70		Trial pit complete at 2.70 m.					

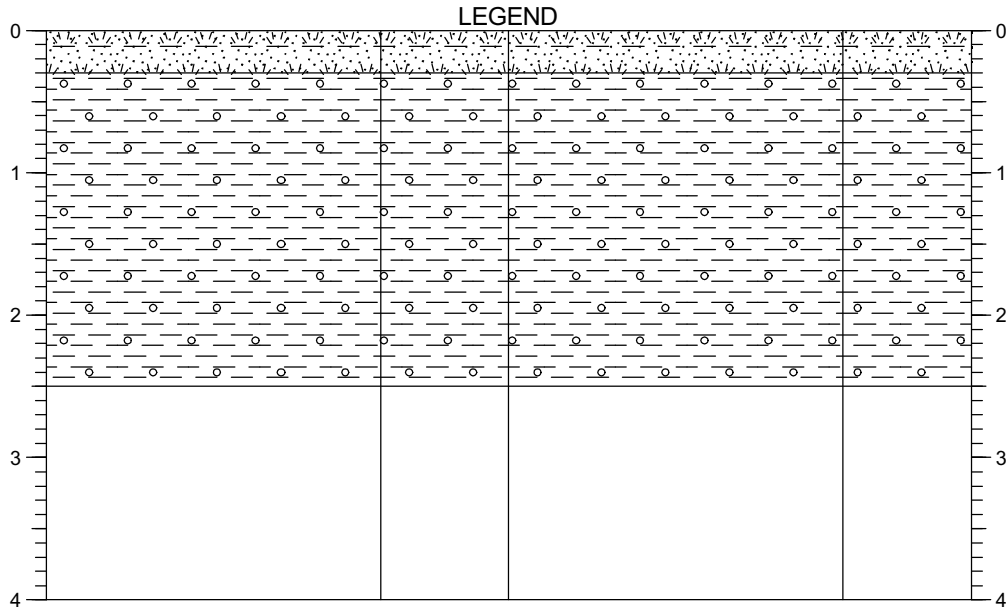
Shoring/Support: Stability: <p>The diagram shows a rectangle with width 'A', height 'B', and length 'C'. A vertical dimension 'D' is shown on the left side, representing the depth of the pit.</p>	REMARKS: 1. Logged in general accordance to BS 5930. 2. Remained dry and stable during excavation.
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Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP9
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm to stiff light brown gravelly CLAY. Gravel is angular to subrounded flint.					
2.50		Trial pit complete at 2.50 m.					

Shoring/Support:
 Stability:

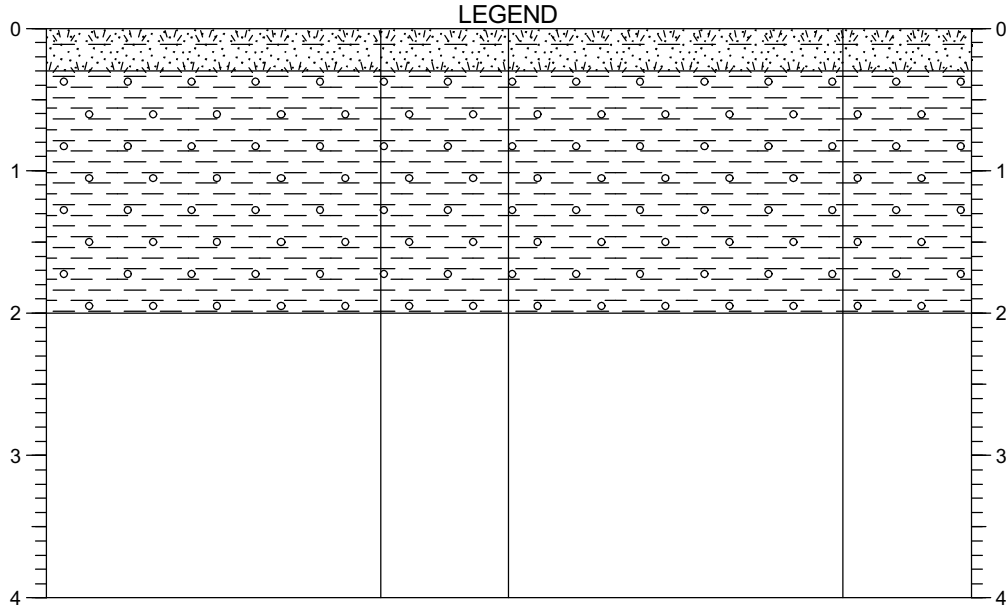
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP10
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm to stiff light brown gravelly CLAY with occasional cobbles. Gravel is subrounded to angular fine to coarse flint. Cobbles are subangular flint.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
 Stability:

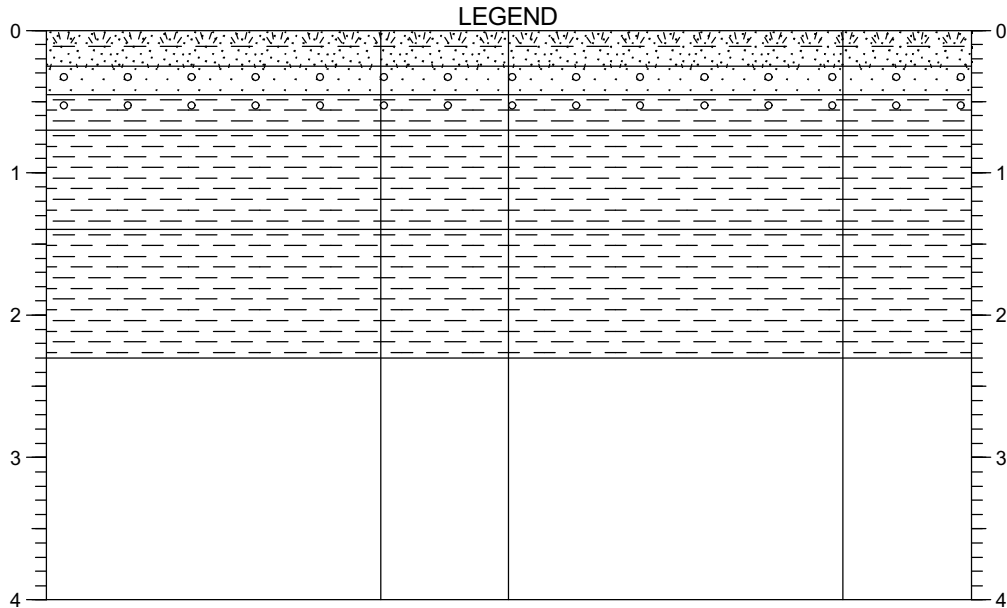
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP11
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.25		Orange/brown gravelly fine to medium SAND with occasional pockets of firm brown clay. Gravel is subangular to rounded fine to coarse flint.					
0.45		Firm to stiff brown slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to coarse flint.					
0.70		Firm to stiff light grey/brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to angular fine to coarse flint and chalk.					
1.40		Firm grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium flint and chalk.					
2.30		Trial pit complete at 2.30 m.					

Shoring/Support:
 Stability:

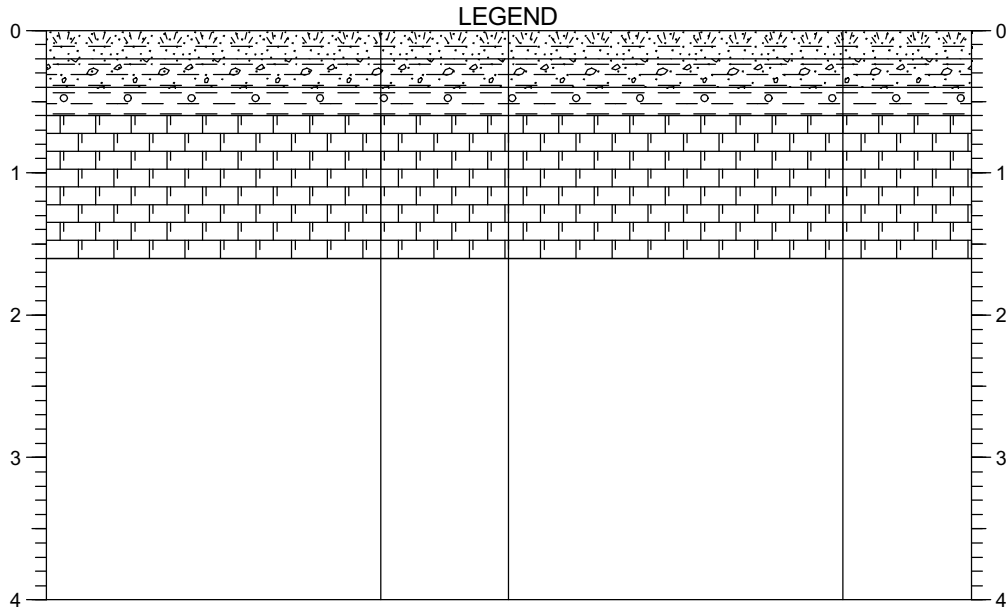
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP12
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Brown sandy very gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint. Fine to medium light brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint and chalk. Very weak white structureless CHALK with occasional gravel. Gravel is subangular to subrounded fine to coarse flint. Light brown mottling.					
0.20							
0.40							
0.60							
1.60		Trial pit complete at 1.60 m.					

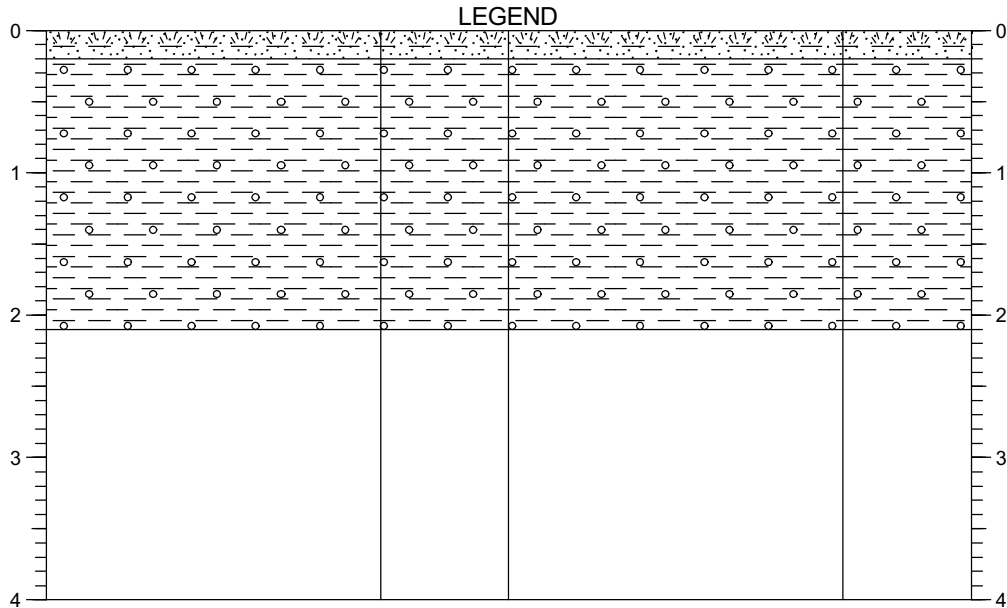
Shoring/Support: Stability: 	REMARKS: 1. Logged in general accordance to BS 5930. 2. Remained dry and stable during excavation.
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Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP13
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00 0.20		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Firm brown gravelly CLAY. Gravel is fine to coarse subrounded to angular flint. Below 1.50 m becoming firm to stiff.					
2.10		Trial pit complete at 2.10 m.					

Shoring/Support:
 Stability:

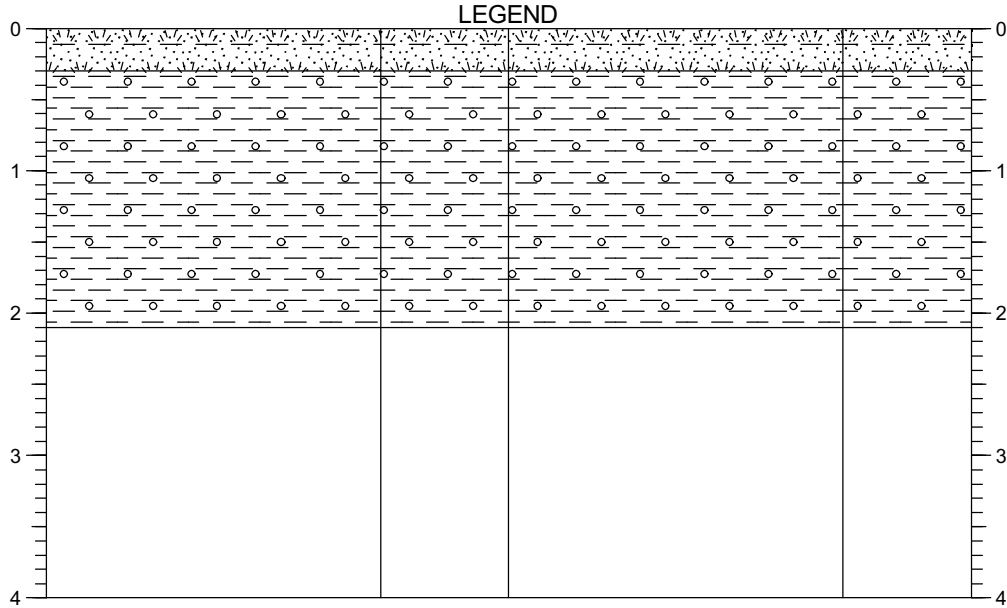
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP14
	TRIAL PIT LOG	Date Started: 09-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm to stiff brown locally grey/brown with occasional grey mottling gravelly CLAY. Gravel is angular to subrounded fine to coarse flint.					
2.10		Trial pit complete at 2.10 m.					

Shoring/Support:
 Stability:

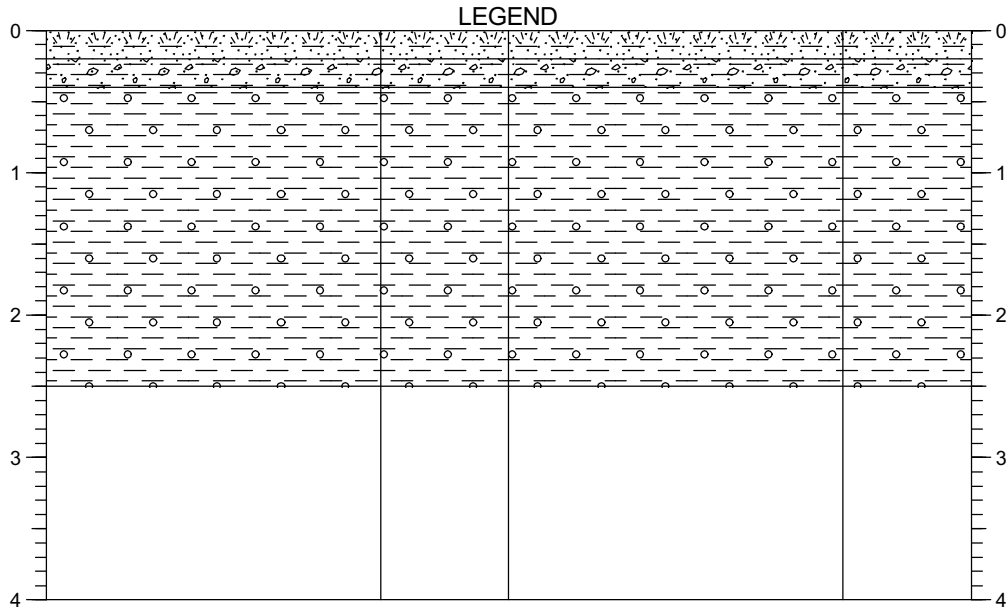
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP15
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



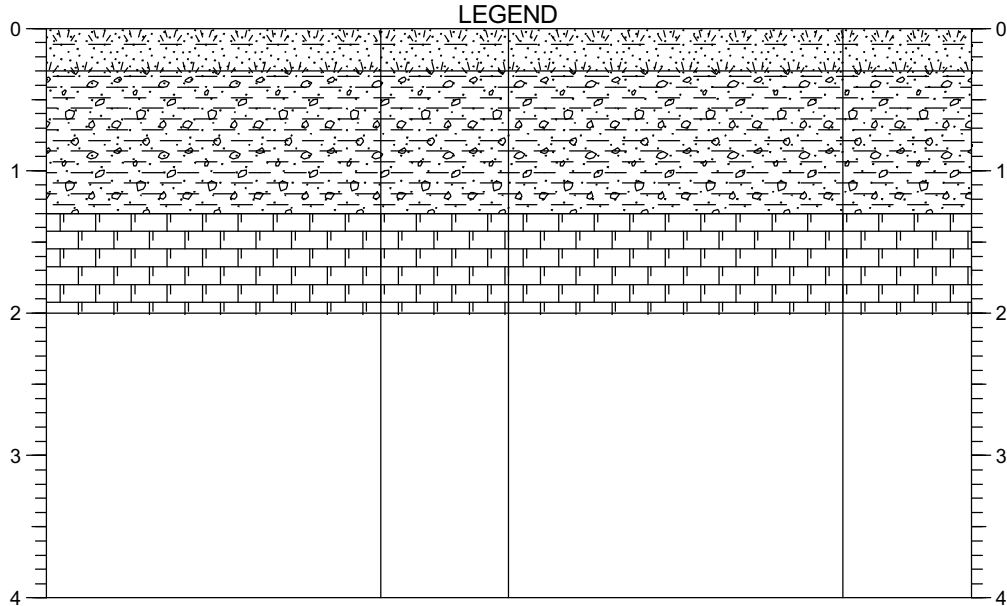
STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.20		Firm dark brown sandy gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.40							
		Firm to stiff light brown gravelly CLAY. Gravel is subrounded to angular fine to coarse flint and chalk.					
		Below 1.00 m Occasional flint cobbles.					
2.50		Trial pit complete at 2.50 m.					

Shoring/Support: Stability:		REMARKS: 1. Logged in general accordance to BS 5930. 2. Remained dry and stable during excavation.		
Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:

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Project:	Fields End Farm	Project No: 11-0150.01	TP16
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm dark brown sandy gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
1.30		Very weak white CHALK.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
Stability:

A diagram of a rectangular trial pit. Dimension A is the length, B is the width, C is the bottom length, and D is the depth. Arrows indicate the direction of each measurement.

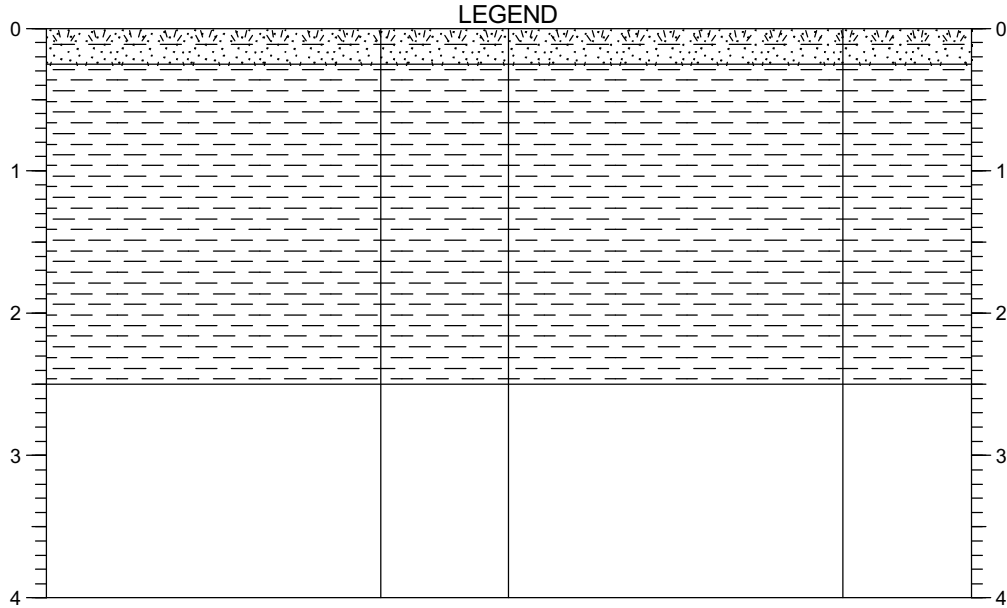
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP17
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Firm orange/brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint.					
0.25							
2.50		Trial pit complete at 2.50 m.					

Shoring/Support:
 Stability:

The diagram shows a rectangular excavation pit. Dimension A is the width, B is the height, C is the length, and D is the depth.

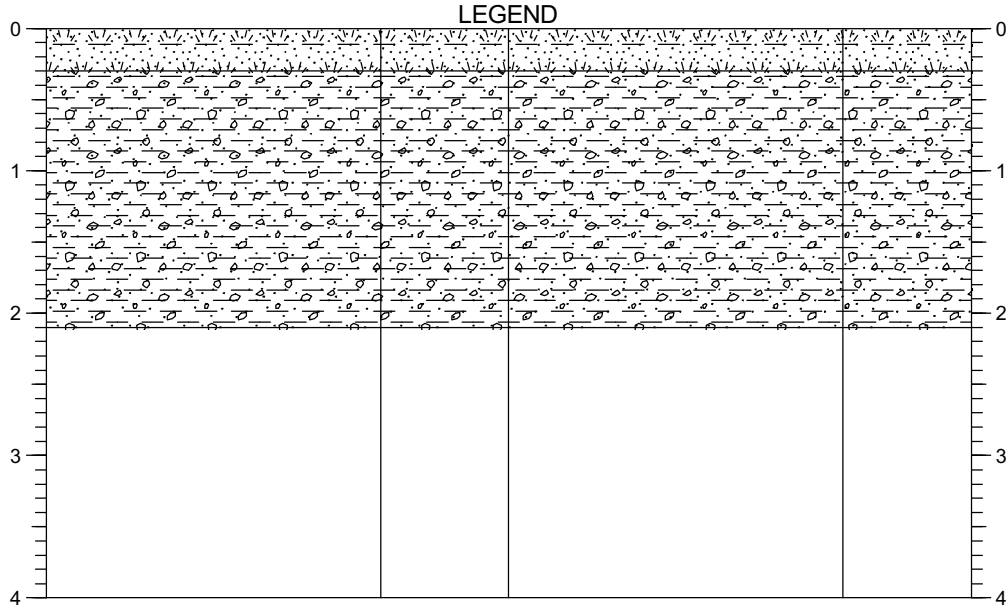
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP18
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Firm, becoming stiff with depth orange/brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to angular fine to coarse flint. Occasional subrounded flint cobbles below 1.00 m.					
2.10		Trial pit complete at 2.10 m.					

Shoring/Support:
Stability:

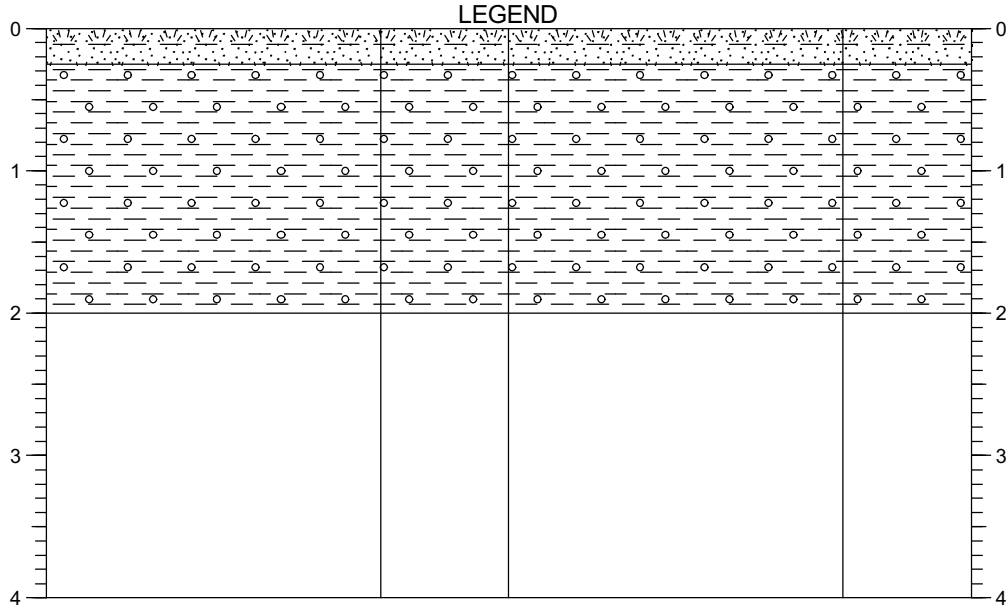
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP19
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.25		Firm brown gravelly CLAY with occasional cobbles. Gravel is subrounded to angular fine to coarse flint. Cobbles are subangular to rounded flint.					
2.00		Trial pit complete at 2.00 m.					

Shoring/Support:
 Stability:

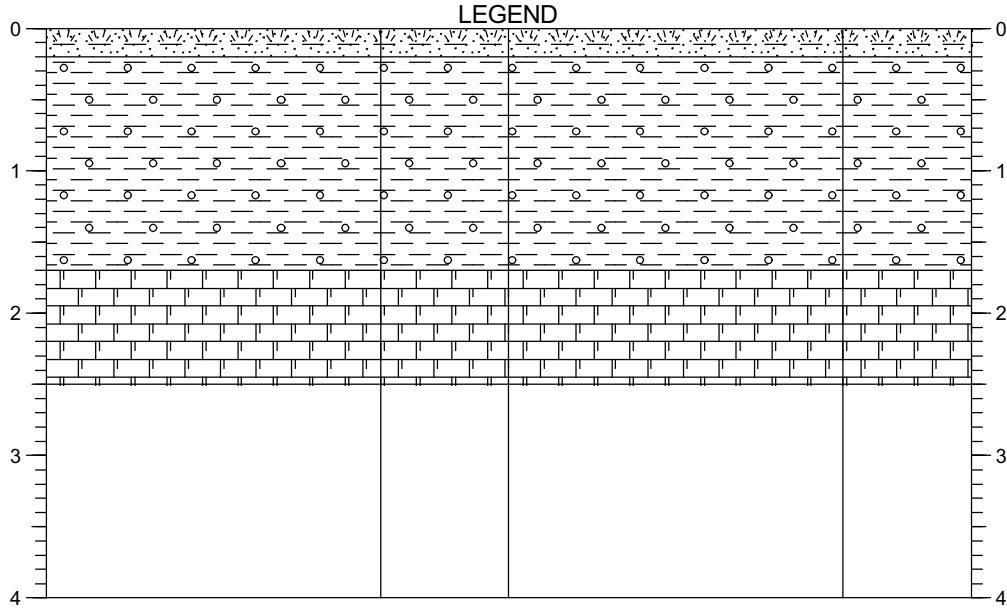
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP20
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.20		Firm to stiff brown locally grey gravelly CLAY. Gravel is subrounded to angular fine to coarse flint.					
1.70		Very weak white CHALK.					
2.50		Trial pit complete at 2.50 m.					

Shoring/Support:
 Stability:

\overline{A}
 \overline{B}
 \overline{C}
 \overline{D}

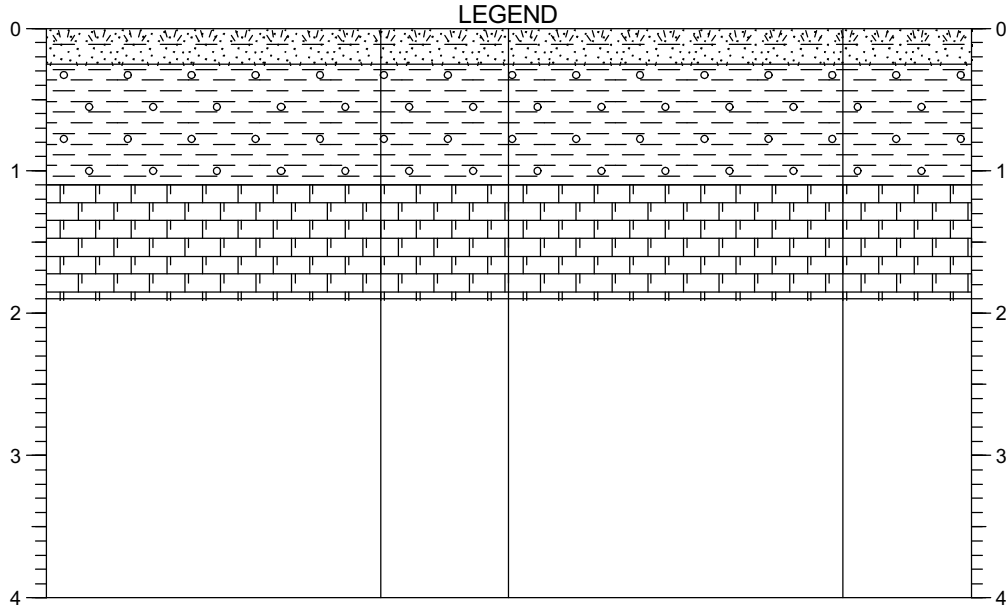
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP21
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.25		Firm to stiff brown slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint and chalk.					
1.10		Very weak white CHALK.					
1.90		Trial pit complete at 1.90 m.					

Shoring/Support:
 Stability:

The diagram shows a rectangle representing the trial pit. Dimension A is the width, B is the depth, C is the length, and D is the height. Arrows indicate the direction of each dimension.

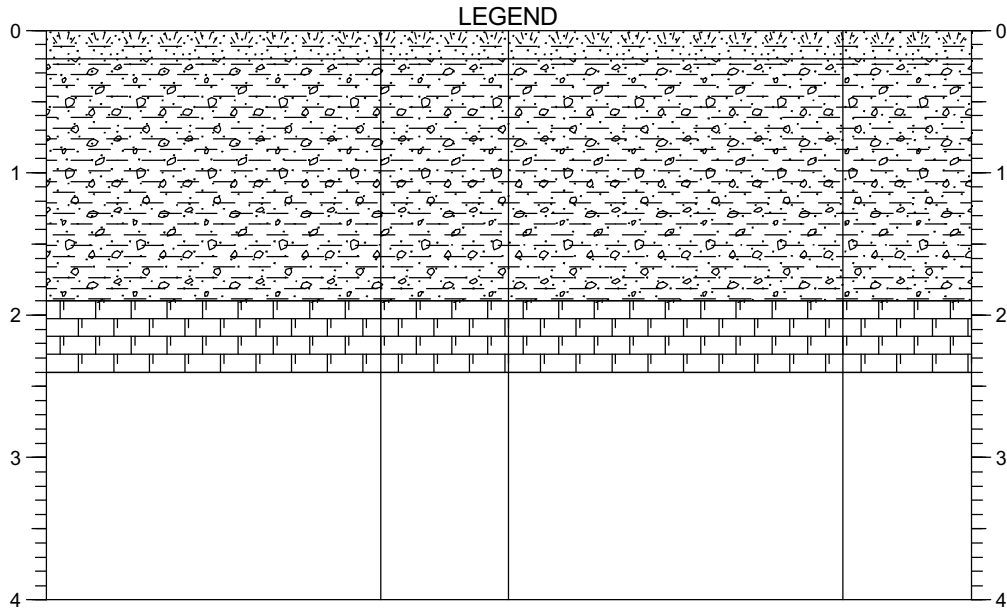
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP22
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00 0.20		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Firm becoming stiff with depth brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint. Below 1.00 m becoming slightly gravelly.					
1.90		Very weak white CHALK.					
2.40		Trial pit complete at 2.40 m.					

Shoring/Support:
Stability:

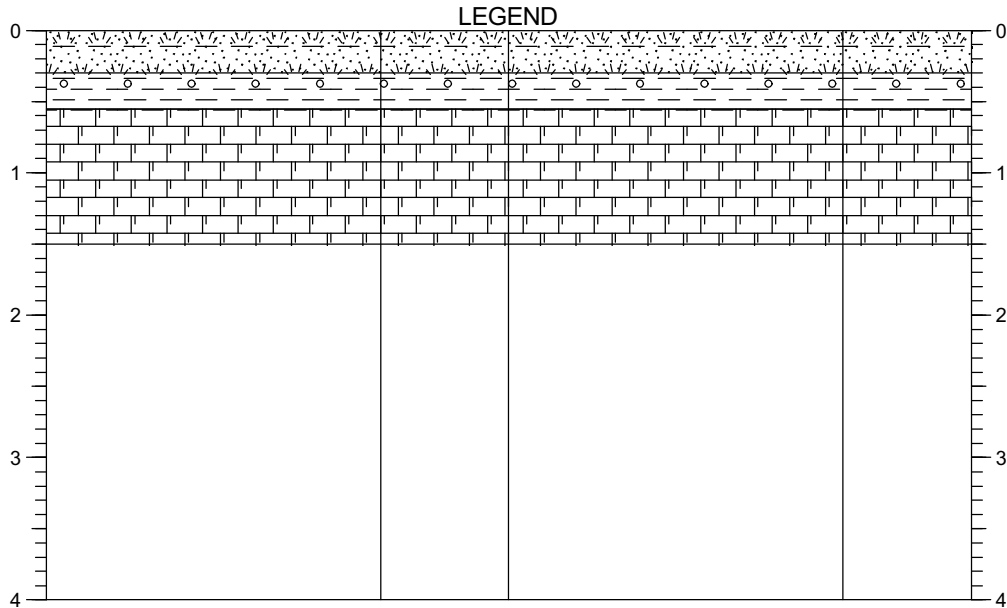
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP23
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy clayey TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.30		Stiff brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint and chalk.					
0.55		Very weak white structureless CHALK.					
1.50		Trial pit complete at 1.50 m.					

Shoring/Support:
 Stability:

The diagram shows a rectangle representing the trial pit. Dimension A is the top width, B is the right height, C is the bottom width, and D is the left height. Arrows indicate the direction of measurement for each dimension.

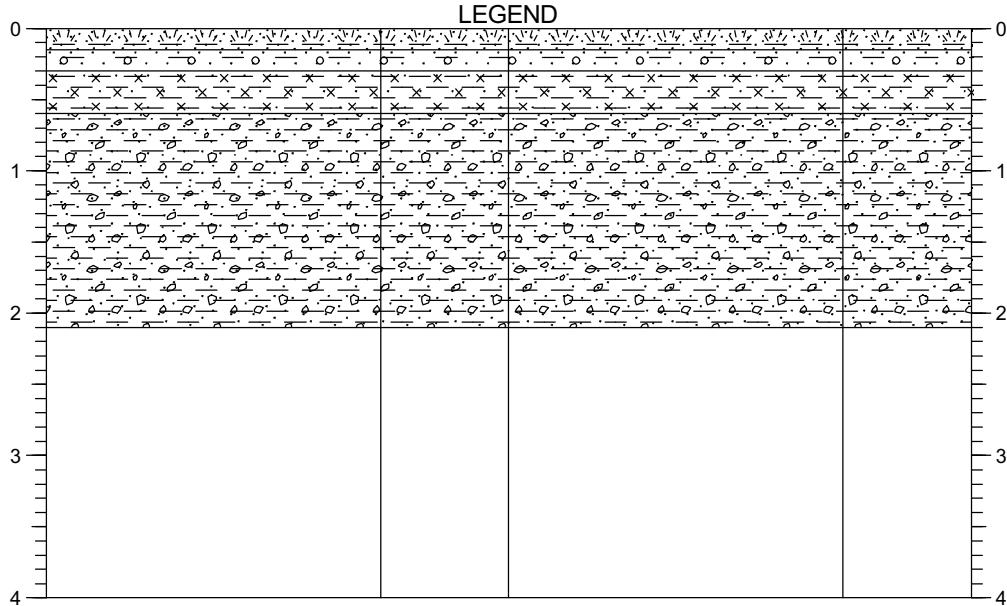
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP24
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Light brown gravelly clayey fine to medium SAND. Gravel is subrounded to angular fine to medium flint and chalk. Brown clayey gravelly silty fine SAND. Gravel is subangular to subrounded fine to medium flint. Firm to stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and chalk.					
0.15							
0.30							
0.60							
2.10		Trial pit complete at 2.10 m.					

Shoring/Support:
Stability:

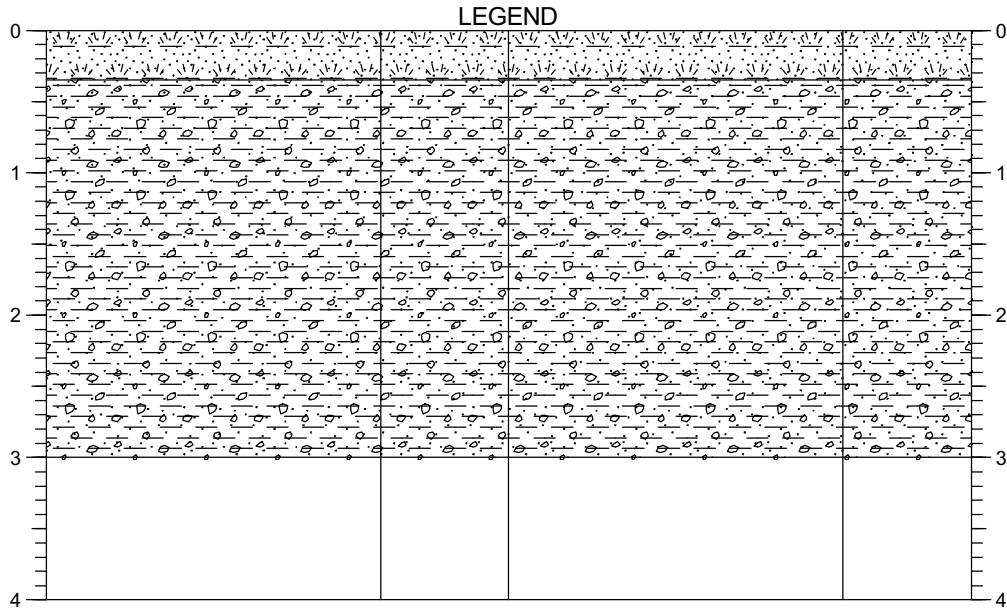
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Project:	Fields End Farm	Project No: 11-0150.01	TP25
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.					
0.35		Firm becoming stiff with depth brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint. Becoming orange/brown from 1.90 m.					
3.00		Trial pit complete at 3.00 m.					

Shoring/Support:
 Stability:

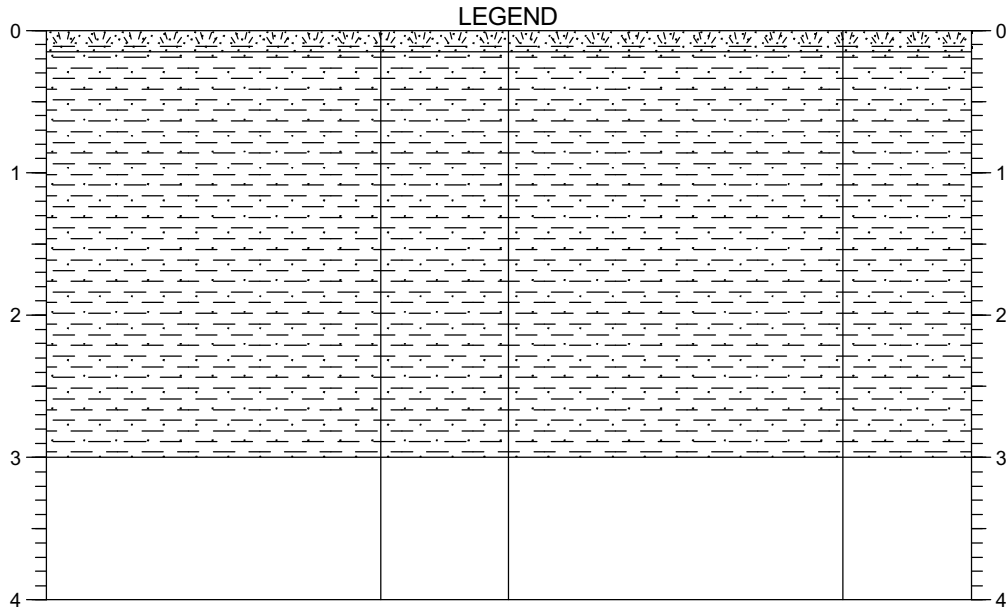
REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Delta Simons Environmental Consultants Ltd
 The Lawn, Union Road,
 Lincoln LN1 3BL
 Tel: 08700 400 012
 Fax: 01522 882 567
 Email: info@deltasimons.com



Project:	Fields End Farm	Project No: 11-0150.01	TP26
	TRIAL PIT LOG	Date Started: 10-05-2011	Page 1 of 1



STRATA			SAMPLES & TESTS				
Depth	No	DESCRIPTION	Depth	No	PID	HSV	PP
0.00 0.15		Brown gravelly very sandy TOPSOIL with frequent roots. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. Firm to stiff light brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to angular fine to coarse flint and chalk.					
3.00		Trial pit complete at 3.00 m.					

Shoring/Support:
 Stability:

REMARKS:
 1. Logged in general accordance to BS 5930.
 2. Remained dry and stable during excavation.

Plant Used: JCB 3X Excavator	Coordinates / Level (AOD):	Logged By: KM	Checked By:	Approved By:
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Appendix III

Appendix III



A different perspective


Proforma: B03	Monitoring Record Sheet
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Job Name:	Hemel Hemstead, Fields End
Job Number:	11-0150.01
Date:	10.05.11
Site Personnel:	Hazel Salkeld
Site Contact:	
Weather Conditions:	Sunny

Monitoring Location		WS101	WS115	WS104	WS107	WS110	WS106	
GROUNDWATER	Pressure	1006	1006	1008	1008	1009	1008	
	Flow	Peak Flow	0	0	0	0	0	0
		Steady Flow	0	0	0	0	0	0
	CH₄ (% v/v)	Highest Value	0	0	0	0	0	0
		Steady	0	0	0	0	0	0
	CO₂ (% v/v)	Highest Value	1.9	1.9	2.2	1.9	1.6	2.4
		Steady	1.9	1.9	2.2	1.9	1.6	2.4
	O₂ (% v/v)	Lowest Value	16.4	18.9	18.7	17.3	19	17.7
		Steady	16.4	18.9	18.7	17.3	19	17.7
	Mb							
	PID (ppm)	Highest Value						
		Steady						
	Time							
	Notes							
Internal Well Diameter (mm)								
Depth To Product (m)								
Product Thickness (mm)								
Depth To Water (m)		Dry	Dry	Dry	Dry	Dry	Dry	
Depth To Base (m)								
Height of Water Column (m)								
Volume to Purge (L)								
Water Colour								
Odour/Sheen								
Notes								

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi^2 r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Author: C Ramsbottom	Proforma: B03	Issue Date: June 2006	
Version: 1.0	Page: 1 of 1	Authorised by: G Pickles	


Proforma: B03	Monitoring Record Sheet
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Job Name:	Fields End Farm, Hemel Hempstead
Job Number:	11-0150.01
Date:	16/05/2011
Site Personnel:	Keith Roper
Site Contact:	Kevin McGee
Weather Conditions:	Sunny Intervals, Warm, Breezy 18°C

Monitoring Location		WS101	WS115	WS104	WS107	WS110	WS106	
GROUNDWATER	Pressure							
	Flow	Peak Flow						
		Steady Flow	0	0	0	0	0	0
	CH₄ (% v/v)	Highest Value						
		Steady	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	CO₂ (% v/v)	Highest Value	2.7	1.8	2.2	1.8	2.0	2.6
		Steady	2.7	1.8	2.2	1.8	2.0	2.6
	O₂ (% v/v)	Lowest Value	15.0	18.0	17.5	16.7	17.2	17.3
		Steady	15.0	18.0	17.6	16.7	17.2	17.3
	Mb		1000	1000	1000	1000	1002	1000
	PID (ppm)	Highest Value						
		Steady						
	Time							
	Notes							
	Internal Well Diameter (mm)		50	50	50	50	50	50
Depth To Product (m)								
Product Thickness (mm)								
Depth To Water (m)		-	-	-	-	-	-	
Depth To Base (m)		4.92	2.91	2.91	2.91	2.91	2.91	
Height of Water Column (m)		-	-	-	-	-	-	
Volume to Purge (L)								
Water Colour								
Odour/Sheen								
Notes		Wet at base	Dry at base	Dry at base	Dry at base	Dry at base	Dry at base	

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

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Proforma:
B03


Monitoring Record Sheet

Job Name:	Fields End Farm, Hemel Hempstead
Job Number:	11-0150.01
Date:	25/05/2011
Site Personnel:	Keith Roper
Site Contact:	Kevin McGee
Weather Conditions:	Sunny, windy, very dry, warm 20° C

Monitoring Location		WS101	WS115	WS104	WS107	WS110	WS106	
GROUNDWATER	Pressure							
	Flow	Peak Flow						
		Steady Flow	0	0	0	0	0	0
	CH₄ (% v/v)	Highest Value	0.1					
		Steady	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	CO₂ (% v/v)	Highest Value	1.9	1.5	2.0	1.7	1.8	2.3
		Steady	1.9	1.5	2.0	1.7	1.8	2.3
	O₂ (% v/v)	Lowest Value	15.3	18.4	17.7	17.4	17.4	17.8
		Steady	15.3	18.4	17.7	17.4	17.4	17.8
	Mb		998	998	998	998	998	998
	PID (ppm)	Highest Value						
		Steady						
	Time							
	Notes							
Internal Well Diameter (mm)		50	50	50	50	50	50	
Depth To Product (m)								
Product Thickness (mm)								
Depth To Water (m)		-	-			-	-	
Depth To Base (m)		4.91	2.91			2.90	2.91	
Height of Water Column (m)		-	-			-	-	
Volume to Purge (L)								
Water Colour								
Odour/Sheen								
Notes		Wet at base	Dry at base	Not dipped	Not dipped	Dry at base	Dry at base	

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

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Proforma: B03	Monitoring Record Sheet
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Job Name:	Fields End Farm, Hemel Hempstead
Job Number:	11-0150.01
Date:	31/05/2011
Site Personnel:	Keith Roper
Site Contact:	Kevin McGee
Weather Conditions:	Overcast, showers 12°C

Monitoring Location		WS101	WS115	WS104	WS107	WS110	WS106	
GROUNDWATER	Pressure							
	Flow	Peak Flow						
		Steady Flow	0	0	0	0	0	0
	CH₄ (% v/v)	Highest Value						
		Steady	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	CO₂ (% v/v)	Highest Value	0.8	1.6	2.0	1.6	1.9	2.3
		Steady	0.8	1.6	2.0	1.6	1.9	2.3
	O₂ (% v/v)	Lowest Value	18.1	18.2	17.9	18.3	17.2	17.6
		Steady	18.1	18.3	17.9	18.3	17.2	17.6
	Mb		998	998	998	998	998	998
	PID (ppm)	Highest Value						
		Steady						
	Time							
	Notes							
	Internal Well Diameter (mm)		50	50	50	50	50	50
Depth To Product (m)								
Product Thickness (mm)								
Depth To Water (m)		4.91	-	-	-	-	-	
Depth To Base (m)		4.92	2.91	2.90	2.91	2.91	2.91	
Height of Water Column (m)		0.01	-	-	-	-	-	
Volume to Purge (L)								
Water Colour								
Odour/Sheen								
Notes			Dry at base	Dry at base	Dry at base	Dry at base	Dry at base	

Diameter of Casing (mm)	19	35	50	50	75	100
Diameter of Bailer (mm)	18	19	19	38	38	38
No. bails per m	4	12	22	6	13	23

To calculate the number of litres to be purged from a well with a different diameter, use the formula $3\pi r^2 h$ (where r = radius of the well and h = height of the water column). Use the formula $\pi r^2 h$ to calculate the volume of a bailer. Please note that the standard bailers Delta-Simons use are typically 0.95 m in length.

Author: C Ramsbottom	Proforma: B03	Issue Date: June 2006	
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Appendix IV

Appendix IV



A different perspective



Collation of Human Health SGVs and Soil Screening Values

Version 2.2- January 2010

Environment Agency (EA) Soil Guideline Values (SGVs) and Delta-Simons Human Health Generic Screening Values (HH-GSVs) calculated within CLEA V.1.04

Environment Agency (EA) Soil Guideline Values (SGVs) for dioxins, furans and dioxin-like PCBs calculated within CLEA V.1.05

LQM/CIEH Generic Assessment Criteria (GAC) 2nd Edition and Delta-Simons GAC derived using CLEA V.1.04

EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment derived using CLEA V.1.06

Withdrawn SGVs derived using CLEA UK Beta Version 1.0

Dutch Intervention Values

USEPA PRGs

References – CLEA UK Beta Modelling and Old Guidance

References – CLEA V.1.04 Modelling

**Environment Agency (EA) Soil Guideline Values (SGVs) and Delta-Simons Human
 Health Generic Screening Values (HH-GSVs) calculated within CLEA V.1.04 –
 Commercial (mg/kg) dry weight soil**

Compound	Published EA SGV 6% SOM	DS HH-GSV 1% SOM	DS HH-GSV 3% SOM
Organic compounds			
Benzene	95	28	57
Toluene	4,400 *	870 *	2,300 *
Ethylbenzene	2,800 *	520 *	1,500 *
Xylene – m	3,500 *	630 *	1,800 *
Xylene – o	2,600 *	480 *	1,300 *
Xylene – p	3,200 *	580 *	1,600 *
Phenol	3,200 (38,000)	3,200 (31,000)	3,200 (36,000)
Metals			
Elemental mercury Hg	26 *	4.3 *	13 *
Inorganic mercury Hg ²⁺	3,600	3,600	3,600
Methyl mercury Hg ⁴⁺	410	73 *	400
Selenium	13,000	13,000	13,000
Inorganic Arsenic	640	640	640
Nickel	1,800	1,800	1,800
Cadmium	230	230	230

Notes:

* Soil or vapour Saturation limit

3200 (38,000) – Based on a threshold protective of direct skin contact with phenol (guideline in brackets based on health effects following long term exposure provided for illustration only).

**Environment Agency (EA) Soil Guideline Values (SGVs) and Delta-Simons Human
 Health Generic Screening Values (HH-GSVs) calculated within CLEA V.1.04 –
 Residential (Assumes Plant Uptake) (mg/kg) dry weight soil**

Compound	Published EA SGV 6% SOM	DS HH-GSV 1% SOM	DS HH-GSV 3% SOM
Organic compounds			
Benzene	0.33	0.18	0.27
Toluene	610	120	320
Ethylbenzene	350	65	180
Xylene – m	240	44	120
Xylene – o	250	45	130
Xylene – p	230	42	120
Phenol	420	180	320
Metals			
Elemental mercury Hg	1.0	0.17	0.5
Inorganic mercury Hg ²⁺	170	170	170
Methyl mercury Hg ⁴⁺	11	7.4	10
Selenium	350	350	350
Inorganic Arsenic	32	32	32
Nickel	130	130	130
Cadmium	10	10	10

Environment Agency (EA) Soil Guideline Values (SGVs) and Delta-Simons Human Health Generic Screening Values (HH-GSVs) calculated within CLEA V.1.04 – Residential without Plant Uptake (mg/kg) dry weight soil

Compound	DS HH-GSV 6% SOM	DS HH-GSV 1% SOM	DS HH-GSV 3% SOM
Organic compounds			
Benzene	1.0	0.27	0.56
Toluene	2,700	610	1,500
Ethylbenzene	840	170	450
Xylene – m	300	55	160
Xylene – o	320	60	170
Xylene – p	290	53	150
Phenol	520	310	440
Metals			
Elemental mercury Hg	1.0	0.17	0.51
Inorganic mercury Hg ²⁺	240	240	240
Methyl mercury Hg ⁴⁺	14	8.4	12
Selenium	600	600	600
Inorganic Arsenic	35	35	35
Nickel	130	130	130
Cadmium	84	84	84

Environment Agency (EA) Soil Guideline Values (SGVs) calculated within CLEA V.1.05 for Sum of PCDDs, PCDFs and dioxin-like PCBs (µg/kg) dry weight soil

Land Use	Residential	Allotment	Commercial
Sum of PCDDs, PCDFs and dioxin-like PCBs	8	8	240

Notes:
 Based on a sandy loam soil and 6 per cent SOM.

**LQM/CIEH Generic Assessment Criteria (GAC) and Delta-Simons Generic Assessment
 Criteria (DS GAC)–
 Commercial (mg/kg) dry weight soil**

Compound	Published GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Metals			
Beryllium	420	420	420
Boron	192,000	192,000	192,000
Chromium (III)	30,400	30,400	30,400
Chromium (VI)	35	35	35
Copper	71,700	71,700	71,700
Vanadium	3,160	3,160	3,160
Zinc	665,000	665,000	665,000
Petroleum Hydrocarbons			
	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Aliphatic EC5-EC6	13,000 (1,150) *	3,400 (304) *	6,200 (558) *
Aliphatic >EC6-EC8	42,000 (736) *	8,300 (144) *	18,000 (322) *
Aliphatic >EC8-EC10	12,000 (451) *	2,100 (78) *	5,100 (190) *
Aliphatic >EC10-EC12	49,000 (283) *	10,000 (48) *	24,000 (118) *
Aliphatic >EC12-EC16	91,000 (142) *	6,100 (24) *	83,000 (59) *
Aliphatic >EC16-EC35	1,800,000	1,600,000	1,800,000
Aliphatic >EC35-EC44	1,800,000	1,600,000	1,800,000
Aromatic >EC5-EC7	90,000 (4,710) *	28,000 (1,220) *	49,000 (2,260) *
Aromatic >EC7-EC8	190,000 (4,360) *	59,000 (869) *	110,000 (1,920) *
Aromatic >EC8-EC10	18,000 (3,580) *	3,700 (613) *	8,600 (1,500) *
Aromatic >EC10-EC12	34,500 (2,150) *	17,000 (364) *	29,000 (899) *
Aromatic >EC12-EC16	37,800	36,000 (169) *	37,000
Aromatic >EC16-EC21	28,000	28,000	28,000
Aromatic >EC21-EC35	28,000	28,000	28,000
Aromatic >EC35-EC44	28,000	28,000	28,000
Aromatic and Aliphatic >EC44-EC70	28,000	28,000	28,000
PAHs			
	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Acenaphthene	100,000	85,000 (57) *	141
Acenaphthylene	100,000	84,000 (86) *	212
Anthracene	540,000	530,000	540,000

Benz[a]anthracene	97	90	95
Benzo[a]pyrene	14	14	14
Benzo[b]fluoranthene	100	100	100
Benzo[ghi]perylene	660	650	660
Benzo[k]fluoranthene	140	140	140
Chrysene	140	140	140
Dibenz[ah]anthracene	13	13	13
Fluoranthene	23,000	23,000	23,000
Fluorene	71,000	64,000 (31) *	69,000
Indeno[123-cd]pyrene	62	60	61
Naphthalene	1,100 (432) *	200 (76) *	480 (183) *
Phenanthrene	23,000	22,000	22,000
Pyrene	54,000	54,000	54,000
Chloroalkanes and alkenes	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Vinyl Chloride (Chloroethene)	0.12	0.063	0.081
Trichloromethane	370	110	190
1,2-Dichloroethane	1.8	0.71	1.0
Trichloroethene	55	12	25
1,1,1-Trichloroethane	3,100	700	1,400
Tetrachloroethene	660	130	290
1,1,1,2-Tetrachloroethane	590	120	260
1,1,2,2-Tetrachloroethane	1,200	290	580
Tetrachloromethane	15	3.0	6.6
Explosives	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
TNT	1,100	1,000	1,000
RDX	6,400	6,400	6,400
HMX	110,000	110,000	110,000
Pesticides	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Aldrin	54	54	54
Dieldrin	92	90	91
Atrazine	880	880	870
Dichlorvos	893	842	872
Endosulfan (alpha)	3,390	2,310 (0.003) *	2,990 (0.007) *

Endosulfan (beta)	3,480	2,580 (0.00007) *	3,160 (0.0002) *
Hexachlorocyclohexane (alpha)	14,900	14,000	14,600
Hexachlorocyclohexane (beta)	1,130	1,120	1,130
Hexachlorocyclohexane (gamma)	552	532	546
Chlorobenzenes	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Chlorobenzene	310	59	130
1,2-Dichlorobenzene	12,000 (3,240) *	2,100 (571) *	5,100 (1,370) *
1,3-Dichlorobenzene	180	32	77
1,4-Dichlorobenzene	22,000 (1,280) *	4,500 (224) *	10,000 (540) *
1,2,3-Trichlorobenzene	620	110	270
1,2,4-Trichlorobenzene	1,300	230	560
1,3,5-Trichlorobenzene	140	24	57.8
1,2,3,4-Tetrachlorobenzene	4,500 (728) *	1,800 (122) *	3,200 (304) *
1,2,3,5-Tetrachlorobenzene	250 (235) *	52 (39.4) *	120 (98.1) *
1,2,4,5-Tetrachlorobenzene	97	44 (19.7) *	73 (49.1) *
Pentachlorobenzene	830	650 (43.0) *	770 (107) *
Hexachlorobenzene	55	48 (0.20) *	53
Chlorophenols	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Chlorophenols (except Pentachlorophenol)	4,200	3,500	4,000
Pentachlorophenol	1,400	1,200	1,300
Other	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Carbon Disulphide	50	12	23
Hexachlorobutadiene	120	32	69

Notes:

* Soil or vapour Saturation limit, presented in brackets

LQM/CIEH Generic Assessment Criteria (GAC) and Delta-Simons Generic Assessment

Criteria (DS GAC) –

Residential (Assumes Plant Uptake) (mg/kg) dry weight soil

Compound	Published GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Metals			
Beryllium	51	51	51
Boron	291	290	290
Chromium (III)	3,000	3,000	3,000
Chromium (VI)	4.3	4.3	4.3
Copper	2,330	2,330	2,330
Vanadium	75	74	74
Zinc	3,750	3,750	3,750
Petroleum Hydrocarbons			
	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Aliphatic EC5-EC6	110	30	55
Aliphatic >EC6-EC8	370	73	160
Aliphatic >EC8-EC10	110	19	46
Aliphatic >EC10-EC12	540 (283) *	93 (48) *	230 (118) *
Aliphatic >EC12-EC16	3,000 (142) *	740 (24) *	1,700 (59) *
Aliphatic >EC16-EC35	76,000	45,000 (8.48) *	64,000 (21) *
Aliphatic >EC35-EC44	76,000	45,000 (8.48) *	64,000 (21) *
Aromatic >EC5-EC7	280	65	130
Aromatic >EC7-EC8	611	120	270
Aromatic >EC8-EC10	151	27	65
Aromatic >EC10-EC12	346	69	160
Aromatic >EC12-EC16	593	140	310
Aromatic >EC16-EC21	770	250	480
Aromatic >EC21-EC35	1,230	890	1,100
Aromatic >EC35-EC44	1,230	890	1,100
Aromatic and Aliphatic >EC44-EC70	1,300	1,200	1,300
PAHs			
	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Acenaphthene	1,000	210	480
Acenaphthylene	850	170	400
Anthracene	9,200	2,300	4,900

Benz[a]anthracene	5.9	3.1	4.7
Benzo[a]pyrene	1.0	0.83	0.94
Benzo[b]fluoranthene	7.0	5.6	6.5
Benzo[ghi]perylene	47	44	46
Benzo[k]fluoranthene	10	8.5	9.6
Chrysene	9.3	6.0	8.0
Dibenz[ah]anthracene	0.90	0.76	0.86
Fluoranthene	670	260	460
Fluorene	780	160	380
Indeno[123-cd]pyrene	4.2	3.2	3.9
Naphthalene	8.7	1.5	3.7
Phenanthrene	380	92	200
Pyrene	1,600	560	1,000
Chloroalkanes and alkenes	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Vinyl Chloride (Chloroethene)	0.00099	0.00047	0.00064
Trichloromethane	2.7	0.75	1.3
1,2-Dichloroethane	0.014	0.0054	0.0080
Trichloroethene	0.49	0.11	0.22
1,1,1-Trichloroethane	28	6.2	13
Tetrachloroethene	4.8	0.94	2.1
1,1,1,2-Tetrachloroethane	4.8	0.90	2.1
1,1,2,2-Tetrachloroethane	6.3	1.4	2.9
Tetrachloromethane	0.089	0.018	0.039
Explosives	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
TNT	8.0	1.6	3.7
RDX	16	3.5	7.4
HMX	26	5.7	13
Pesticides	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Aldrin	2.1	1.7	2.0
Dieldrin	2.2	0.69	1.4
Atrazine	1.3	0.24	0.56
Dichlorvos	1.3	0.29	0.6
Endosulfan (alpha)	16	2.9	7.0

Endosulfan (beta)	15	2.8	6.6
Hexachlorocyclohexane (alpha)	100	19	46
Hexachlorocyclohexane (beta)	8.5	1.7	3.9
Hexachlorocyclohexane (gamma)	3.0	0.58	1.4
Chlorobenzenes	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Chlorobenzene	1.7	0.33	0.73
1,2-Dichlorobenzene	91	16	39
1,3-Dichlorobenzene	1.7	0.29	0.7
1,4-Dichlorobenzene	167	30	72
1,2,3-Trichlorobenzene	6.1	1.0	2.6
1,2,4-Trichlorobenzene	11	1.8	4.5
1,3,5-Trichlorobenzene	1.3	0.23	0.57
1,2,3,4-Tetrachlorobenzene	62	12	29
1,2,3,5-Tetrachlorobenzene	2.8	0.49	1.2
1,2,4,5-Tetrachlorobenzene	1.4	0.3	0.68
Pentachlorobenzene	17	5.2	10
Hexachlorobenzene	1.4	0.59 (0.20) *	1.0 (0.50) *
Chlorophenols	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Chlorophenols (except Pentachlorophenol)	4.4	0.87	2.0
Pentachlorophenol	2.96	0.55	1.3
Other	Published GAC 6% SOM	Published GAC 1% SOM	Published GAC 2.5% SOM
Carbon Disulphide	0.44	0.10	0.20
Hexachlorobutadiene	1.2	0.21	0.51

Notes:

* Soil or vapour Saturation limit presented in brackets

Delta-Simons Generic Assessment Criteria (DS GAC) – Residential without Plant

Uptake (mg/kg) dry weight soil

Compound	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Metals			
Beryllium	51	51	51
Boron	10,000	10,000	10,000
Chromium (III)	3,010	3,010	3,010
Chromium (VI)	4.3	4.3	4.3
Copper	6,200	6,200	6,200
Vanadium	190	190	190
Zinc	40,400	40,400	40,400
Petroleum Hydrocarbons			
Aliphatic EC5-EC6	110	30	55
Aliphatic >EC6-EC8	370	73	160
Aliphatic >EC8-EC10	110	19	46
Aliphatic >EC10-EC12	540 (283) *	93 (48) *	230 (118) *
Aliphatic >EC12-EC16	3,000 (142) *	750 (24) *	1,700 (59) *
Aliphatic >EC16-EC35	77,000	45,000 (8.5) *	64,000 (21) *
Aliphatic >EC35-EC44	77,000	45,000 (8.5) *	64,000 (21) *
Aromatic >EC5-EC7	980	260	480
Aromatic >EC7-EC8	2,700	610	1,300
Aromatic >EC8-EC10	190	33	81
Aromatic >EC10-EC12	870	180	420
Aromatic >EC12-EC16	1,710	1,300 (169) *	1,600 (419) *
Aromatic >EC16-EC21	1,300	1,300	1,300
Aromatic >EC21-EC35	1,300	1,300	1,300
Aromatic >EC35-EC44	1,300	1,300	1,300
Aromatic and Aliphatic >EC44-EC70	1,300	1,300	1,300
PAHs			
Acenaphthene	3,900 (336) *	2,000 (57) *	3,100 (140) *
Acenaphthylene	3,900 (506) *	1,950 (86) *	3,000 (212) *
Anthracene	23,000	20,000 (1.2) *	22,000
Benz[a]anthracene	6.2	3.7	5.2

Benzo[a]pyrene	1.0	1.0	1.0
Benzo[b]fluoranthene	7.4	7.0	7.3
Benzo[ghi]perylene	48	47	47
Benzo[k]fluoranthene	10	10	10
Chrysene	10	8.8	9.7
Dibenz[ah]anthracene	0.93	0.87	0.9
Fluoranthene	1,000	970	990
Fluorene	2,900 (183) *	1,850 (31) *	2,500 (77) *
Indeno[123-cd]pyrene	4.4	4.2	4.4
Naphthalene	9.2	1.6	3.9
Phenanthrene	970	840 (36) *	930
Pyrene	2,400	2,400	2,400
Chloroalkanes and alkenes	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Vinyl Chloride (Chloroethene)	0.0011	0.00054	0.0007
Trichloromethane	3.22	0.92	1.6
1,2-Dichloroethane	0.016	0.0065	0.0093
Trichloroethene	0.51	0.11	0.23
1,1,1-Trichloroethane	28	6.3	13
Tetrachloroethene	5.3	1.0	2.3
1,1,1,2-Tetrachloroethane	5.7	1.1	2.4
1,1,2,2-Tetrachloroethane	12	2.7	5.5
Tetrachloromethane	0.090	0.018	0.040
Explosives	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
TNT	58	57	57
RDX	370	370	370
HMX	6,500	6,500	6,500
Pesticides	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Aldrin	2.2	2.1	2.1
Dieldrin	3.9	3.5	3.8
Atrazine	32	31	32
Dichlorvos	37	25	32
Endosulfan (alpha)	110 (0.016) *	44 (0.0029) *	78 (0.00069) *
Endosulfan (beta)	120 (0.00038) *	53 (0.000067) *	89 (0.00016) *

Hexachlorocyclohexane (alpha)	650	17	42
Hexachlorocyclohexane (beta)	52	50	52
Hexachlorocyclohexane (gamma)	23	19	22
Chlorobenzenes	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Chlorobenzene	1.7	0.33	0.74
1,2-Dichlorobenzene	94	17	40
1,3-Dichlorobenzene	1.7	0.31	0.74
1,4-Dichlorobenzene	230	42	100
1,2,3-Trichlorobenzene	6.2	1.1	2.6
1,2,4-Trichlorobenzene	11	1.8	4.5
1,3,5-Trichlorobenzene	1.4	0.23	0.57
1,2,3,4-Tetrachlorobenzene	84	17	39
1,2,3,5-Tetrachlorobenzene	3.0	0.53	1.3
1,2,4,5-Tetrachlorobenzene	2.6	0.52	1.2
Pentachlorobenzene	27	14	21
Hexachlorobenzene	1.7	1.2 (0.2) *	1.5 (0.5) *
Chlorophenols	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Chlorophenols (except Pentachlorophenol)	110	58	85
Pentachlorophenol	35	22	31
Other	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
Carbon Disulphide	0.44	0.10	0.20
Hexachlorobutadiene	1.3	0.22	0.55

Notes:

* Soil or vapour Saturation limit presented in brackets

EIC/AGS/CL:AIRE Generic Assessment Criteria – Commercial

Compound	EIC GAC 6% SOM	EIC GAC 1% SOM	EIC GAC 2.5% SOM
Metals			
Antimony	7,500	7,500	7,500
Barium	22,000	22,000	22,000
Molybdenum	17,000	17,000	17,000
Organics			
1,1,2 Trichloroethane	400	94	190
1,1-Dichloroethane	850	280	450
1,1-Dichloroethene	92	26	46
1,2,4-Trimethylbenzene	220	42	99
1,2-Dichloropropane	12	3.3	5.9
2,4-Dimethylphenol	30,000 (7,240) *	16,000 (1,380) *	24,000 (3,140) *
2,4-Dinitrotoluene	3,800 (669) *	3,700 (141) *	3,700 (299) *
2,6-Dinitrotoluene	1,900 (1,400) *	1,900 (287) *	1,900 (622) *
2-Chloronaphthalene	2,200 (669) *	390 (114) *	960 (280) *
Biphenyl	48,000 (201) *	18,000 (34.4) *	33,000 (84.3) *
Bis (2-ethylhexyl)phthalate	86,000 (51.7) *	85,000 (8.68) *	86,000 (21.6) *
Bromobenzene	520	97	220
Bromodichloromethane	7.6	2.1	3.7
Bromoform	3,100	760	1500
Butyl benzyl phthalate	950,000 (154) *	940,000 (26.3) *	940,000 (64.7) *
Chloroethane	2,100	960	1,300
Chloromethane	1.6	1	1.2
Cis 1,2-Dichloroethene	47	14	24
Dichloromethane	560	270	360
Diethyl phthalate	290,000 (65) *	150,000 (13.7) *	220,000 (29.1) *
Di- <i>n</i> -butyl phthalate	15,000 (27.3) *	15,000 (4.65) *	15,000 (11.4) *
Di- <i>n</i> -octyl phthalate	89,000 (196) *	89,000 (32.6) *	89,000 (81.5) *
Hexachloroethane	120 (48.1) *	22 (8.17) *	53 (20.1) *
Iso-propylbenzene	7,700 (2,250) *	1,400 (390) *	3,300 (950) *
Methyl <i>tert</i> -butyl ether	24,000	7,900	13,000
Propylbenzene	21,000 (2,330) *	4,100 (402) *	9,700 (981) *

Styrene	11,000 (3,350) *	3,300 (626) *	6,500 (1,440) *
Total Cresols (2-, 3- and 4-methylphenol)	180,000 (73,300) *	160,000 (15,000) *	180,000 (32,500) *
<i>Trans</i> 1,2-dichloroethene	81	22	40
Tributyl tin oxide	200 (241) *	130 (41.3) *	180 (101) *

Notes:

* GAC exceed soil saturation concentration (given in brackets). Soil concentrations above the soil saturation may indicate that NAPL is present. Risks from NAPL may need to be considered separately.

**EIC/AGS/CL:AIRE Generic Assessment Criteria –Residential without consumption of
 homegrown produce**

Compound	EIC GAC 6% SOM	EIC GAC 1% SOM	EIC GAC 2.5% SOM
Metals			
Antimony	550	550	550
Barium	1,300	1,300	1,300
Molybdenum	670	670	670
Organics			
1,1,2 Trichloroethane	3.9	0.88	1.8
1,1-Dichloroethane	7.7	2.5	4.1
1,1-Dichloroethene	0.82	0.23	0.41
1,2,4-Trimethylbenzene	2.3	0.41	0.99
1,2-Dichloropropane	0.085	0.024	0.042
2,4-Dimethylphenol	730	210	410
2,4-Dinitrotoluene	170	170 (141) *	170
2,6-Dinitrotoluene	87	78	84
2-Chloronaphthalene	22	3.8	9.3
Biphenyl	980 (201) *	220 (34.4) *	500 (84.3) *
Bis (2-ethylhexyl)phthalate	2,800 (51.7) *	2,700 (8.68) *	2,800 (21.6) *
Bromobenzene	4.9	0.91	2.1
Bromodichloromethane	23	5.2	11
Bromoform	0.070	0.019	0.034
Butyl benzyl phthalate	44,000 (154) *	42,000 (26.3) *	44,000 (64.7) *
Chloroethane	18	8.4	11
Chloromethane	0.013	0.0085	0.0099
<i>Cis</i> 1,2-Dichloroethene	0.39	0.12	0.2
Dichloromethane	4.5	2.1	2.8
Diethyl phthalate	6,300 (65) *	1,800 (13.7) *	3,500 (29.1) *
Di- <i>n</i> -butyl phthalate	450 (27.3) *	450 (4.65) *	450 (11.4) *
Di- <i>n</i> -octyl phthalate	3,400 (196) *	3,400 (32.6) *	3,400 (81.5) *
Hexachloroethane	1.3	0.22	0.54
Iso-propylbenzene	67	12	28
Methyl <i>tert</i> -butyl ether	220	73	120

Propylbenzene	230	40	97
Styrene	170	35	78
Total Cresols (2-, 3- and 4-methylphenol)	6,900	3,700	5,400
<i>Trans</i> 1,2-dichloroethene	0.71	0.19	0.35
Tributyl tin oxide	5.7	1.4	3.1

Notes:

* GAC exceed soil saturation concentration (given in brackets). Soil concentrations above the soil saturation may indicate that NAPL is present. Risks from NAPL may need to be considered separately.

**EIC/AGS/CL:AIRE Generic Assessment Criteria –Residential with consumption of
 homegrown produce**

Compound	EIC GAC 6% SOM	EIC GAC 1% SOM	EIC GAC 2.5% SOM
Metals			
Antimony	ND	ND	ND
Barium	ND	ND	ND
Molybdenum	ND	ND	ND
Organics			
1,1,2 Trichloroethane	2.7	0.6	1.2
1,1-Dichloroethane	7.4	2.4	3.9
1,1-Dichloroethene	0.82	0.23	0.40
1,2,4-Trimethylbenzene	2.0	0.35	0.85
1,2-Dichloropropane	0.084	0.024	0.042
2,4-Dimethylphenol	97	19	43
2,4-Dinitrotoluene	7.2	1.5	3.2
2,6-Dinitrotoluene	3.9	0.78	1.7
2-Chloronaphthalene	22	3.7	9.2
Biphenyl	360	66 (34.4) *	160
Bis (2-ethylhexyl)phthalate	1,100 (51.7) *	280 (8.68) *	610 (21.6) *
Bromobenzene	4.7	0.87	2
Bromodichloromethane	0.061	0.016	0.030
Bromoform	13	2.8	5.9
Butyl benzyl phthalate	7,200 (154) *	1,400 (26.3) *	3,300 (64.7) *
Chloroethane	18	8.3	11
Chloromethane	0.013	0.0083	0.0098
<i>Cis</i> 1,2-Dichloroethene	0.37	0.11	0.19
Dichloromethane	1.7	0.58	0.98
Diethyl phthalate	570 (65) *	120 (13.7) *	260 (29.1) *
Di- <i>n</i> -butyl phthalate	67 (27.3) *	13 (4.65) *	31 (11.4) *
Di- <i>n</i> -octyl phthalate	3,100 (196) *	2,300 (32.6) *	2,800 (81.5) *
Hexachloroethane	1.1	0.2	0.48
Iso-propylbenzene	64	11	27
Methyl <i>tert</i> -butyl ether	160	49	84

Propylbenzene	190	34	82
Styrene	43	8.1	19
Total Cresols (2-, 3- and 4-methylphenol)	400	80	180
<i>Trans</i> 1,2-dichloroethene	0.7	0.19	0.34
Tributyl tin oxide	1.3	0.25	0.59

Notes:

* GAC exceed soil saturation concentration (given in brackets). Soil concentrations above the soil saturation may indicate that NAPL is present. Risks from NAPL may need to be considered separately.

ND – Not derived. It was considered beyond the scope of the project to collate and review plant concentration factors for the metals and therefore GAC have only been produced for land-uses that do not involve plant uptake.

Withdrawn CLEA Soil Guideline Values (SGVs) derived using CLEA UK Beta

Compound	Residential with plant uptake (mg/kg) dry weight soil			Residential without plant uptake (mg/kg) dry weight soil	Allotments (mg/kg) dry weight soil			Commercial/Industrial (mg/kg) dry weight soil
Inorganic compounds								
Arsenic	20			20	20			500
Cadmium	(pH6) 1	(pH7) 2	(pH8) 8	30	(pH6) 1	(pH7) 2	(pH8) 8	1,400
Chromium	130			200	130			5,000
Lead	450			450	450			750
Mercury	8			15	8			480
Nickel	50			75	50			5,000
Selenium	35			35	35			8,000
Organic compounds								
Ethylbenzene	9 [#]			16 [#]	18 [#]			48,000 [#]
Toluene	3 [#]			3 [#]	31 [#]			150 [#]
Phenol	78 [#]			21,900 [#]	80 [#]			21,900 [#]

Notes:

Based on 1 % soil organic matter, which is the most conservative scenario of those presented within the appropriate SGV document.

Ethylbenzene Residential without Plant Uptake SGV updated April 2005.

ICRCL Values for Copper and Zinc (use LQM/CIEH GACs for Human Health)

Compound	ICRCL (mg/kg)
Copper	130
Zinc	300

Notes:

It is noted that at elevated copper and zinc concentrations, phytotoxicity might start to limit vegetable growth and may become a major cause of concern. In these circumstances the ICRCL limit of 130 mg/kg for copper, and the ICRCL Tentative 'Trigger concentration' of 300 mg/kg for zinc might need to be considered as suitable generic assessment criterias in order to be protective of plant growth.

Dutch Intervention Values

Compound	Dutch Intervention Value (mg/kg) dry matter
Cobalt	240
Free cyanide	20
Complex cyanide	(pH <5) 650 (pH >5) 50

Notes:

The soil remediation Intervention Values indicate when the functional properties of the soil for humans, plant and animal life, is seriously impaired or threatened. They are representative of the level of contamination above which there is a serious case of soil contamination (Dutch Circular). Values for soil/sediment have been expressed as the concentration in a standard soil assumed to be 10% organic matter and 25 % clay.

USEPA PRGs 2004

Compound	Residential Soil (mg/kg)	Industrial Soil (mg/kg)
Manganese and compounds	1,800	19,000
Ammonium sulphate	12,000	100,000

Notes:

The USEPA Preliminary Remediation Goals are guideline values to be used for Site screening. Ammonium sulphamate has been used by Delta-Simons as a proxy for Ammonium.

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Human Health Generic Screening Values (HH-GSVs) for Groundwater derived using RBCA.

**Version 4.0
April 2007**

Table 1a. Human Health Generic Screening values (HH-GSVs) for Groundwater derived using RBCA

Compound	Carcinogenic Compound (Y or N)	Applicable Residential HH-GSV (mg/l)	Applicable Commercial/Industrial HH-GSV (mg/l)
BTEX			
Benzene	Y	0.27	2.3
Ethylbenzene	N	45	>170
Toluene	N	20	170
Xylene (- <i>m</i>)	N	18	150
Xylene (- <i>o</i>)	N	24	>180
Xylene (<i>mixed isomer</i>)	N	25	>200
sTPH			
Aliphatics >C5-C6	N	4.4	>36
Aliphatics >C6-C8	N	2.9	>5.4
Aliphatics >C8-C10	N	0.098	>0.43
Aliphatics >C10-C12	N	>0.034	>0.034
Aliphatics >C12-C16	N	>7.6x10 ⁻⁴	>7.6x10 ⁻⁴
Aliphatics >C16 – C21	N	NC	NC
Aliphatics >C21 – C35	N	NC	NC
Aromatics >C5-C7 (as benzene)	Y	0.26	2.3
Aromatics >C7-C8 (as toluene)	N	19	160
Aromatics >C8-C10	N	3.2	27
Aromatics >C10-C12	N	11	>25
Aromatics >C12 – C16	N	>5.8	>5.8
Aromatics >C16 – C21	N	NC	NC
Aromatics >C21 – C35	N	NC	NC

Table 1a. Human Health Generic Screening Values (HH-GSVs) for Groundwater derived using RBCA, cont'd

Compound	Carcinogenic Compound (Y or N)	Applicable Residential HH-GSV (mg/l)	Applicable Commercial/Industrial HH-GSV (mg/l)
PAH			
Naphthalene	N	4.2	>31
Acenaphthylene	N	NC	NC
Acenaphthene	N	NC	NC
Fluorene	N	NC	NC
Phenanthrene	N	NC	NC
Anthracene	N	NC	NC
Fluoranthene	N	NC	NC
Pyrene	N	NC	NC
Benzo[a]anthracene	Y	>5.7x10 ⁻³	>5.7x10 ⁻³
Chrysene	Y	>1.8x10 ⁻³	>1.8x10 ⁻³
Benzo[b]fluoranthene	Y	>0.015	>0.015
Benzo[k]fluoranthene	Y	>4.3x10 ⁻³	>4.3x10 ⁻³
Benzo[a]pyrene	Y	>1.6x10 ⁻³	>1.6x10 ⁻³
Indeno[1,2,3-cd]pyrene	N	>0.062	>0.062
Dibenzo[a,h]anthracene	Y	>5.0x10 ⁻⁴	>5.0x10 ⁻⁴
Benzo[g,h,i]perylene	N	NC	NC
PCBs and Dioxins			
PCBs	Y	NC	NC
Dioxin (2,3,7,8-tcdd)	Y	NC	NC

Table 1a. Human Health Generic Screening Values (HH-GSVs) for Groundwater derived using RBCA, cont'd

Compound	Carcinogenic Compound (Y or N)	Applicable Residential HH-GSV (mg/l)	Applicable Commercial/Industrial HH-GSV (mg/l)
VOCs			
Isopropyl benzene (cumene)	N	5.8	48
Methyl-t-butyl ether	N	1,500	13,000
Methylethylketone MEK	N	1,300	11,000
Chlorinated Compounds			
Vinyl Chloride	Y	0.013	0.11
Trichloroethene (TCE)	Y	0.83	7.1
1,1,2,2-Tetrachloroethane	Y	32	280
Tetrachloroethene (PCE)	Y	7.5	63
1,1,1-Trichloroethane	N	59	500
cis-1,2-dichloroethene	N	NC	NC
trans-1,2-dichloroethene	N	NC	NC
1,1 - Dichloroethane	N	0.33	2.8
1,2 - Dichloroethane	Y	0.19	1.7
1,2,4-Trichlorobenzene	N	>30	>30
1,1,2-Trichloroethane	Y	91	780
1,2-Dichlorobenzene	N	8.5	72
1,3-Dichlorobenzene	N	1.1	9.3
1,4-Dichlorobenzene	Y	>150	>150
Chloroform	Y	0.028	0.071
Carbon tetrachloride (tetrachloromethane)	Y	0.14	1.2

"s" indicates that the HH-GSV exceeds the constituent solubility value (groundwater). The predicted volatilisation within RBCA model is carried out using the Johnson and Ettinger equation, which is only valid for dissolved phase concentrations of contaminants. Where the HH-GSV is indicated to exceed the constituent solubility value, this means that even if free product were encountered it would not cause adverse effects via that particular exposure pathway, (this is confirmed by the RBCA Tool Kit for Chemical Releases by the Environment Agency, FS-02, February 2003).

NC - HH-GSVs for the heavy end aliphatic and aromatic hydrocarbons in the range >C16-C35, for some of the PAH's, PCBs and dioxins are not calculated by the RBCA method. Given the low volatility, there is also no inhalation reference concentration within the RBCA Toolkit for these compounds and they are not considered to be of concern via the inhalation exposure pathway. HH-GSVs for the dichloroethenes are not calculated as no inhalation reference dose has been sourced to date.

Carcinogenicity data from RBCA, DEFRA, USEPA and IARC.

The HH-GSVs are based upon the indoor inhalation pathway in order to maintain a conservative approach.

Constituents of Concern Input Parameters

The Constituents of Concern input parameters have been updated from the default values within RBCA, in order to reflect the CLEA methodology. Where possible, toxicological information was taken from the DEFRA TOX reports.

For carcinogenic compounds, the Oral Index dose (ID oral) from the DEFRA TOX reports was input into the model as the Oral Reference Dose (RfD oral). The inhalation Index Dose (ID inhal) was also input into the model, as the Inhalation Reference Concentration (RfC inhal). In order to convert the ID inhal to the correct units, it was necessary to perform the following calculation;

Inhalation Index Dose (mg/kg/day) x Average Weight (kg) / Average Inhaled Concentration per day (m^3/day) = Value input (mg/m^3)

i.e. Value input = ID inhal x (70/20)

The Average Weight of 70 kg was taken from CLR 9 Para. 3.19.

The Average inhaled concentration of $20 \text{ m}^3/\text{day}$ was taken from CLR 9 Table 3.1.

For non-Carcinogenic compounds for which there is a DEFRA TOX report, the Oral Tolerable Daily Soil Intake (TDSI) and Inhalation TDSI could be input into the model in place of the RfD oral and the RfC inhal, respectively.

For non-carcinogenic compounds for which there is no DEFRA TOX report, the Oral and Inhalation TDSIs were calculated from the RBCA RfD oral (TDI equivalent) and RfC inhal (TDI equivalent), with consideration of the Mean Daily Intake (MDI), as detailed in CLR 9 Para. 3.26.

In summary:

Where the MDI < 80% TDI, then the TDSI = TDI - MDI

Where the MDI ≥ 80% TDI or if the MDI was unknown, then the TDSI = 0.2 x TDI

The Henry's Law Concentration was corrected for an average annual temperature of 10 °C, on the basis that the ambient soil temperature at UK sites is 283 K from CLEA Briefing Note 2 Version 1.1, Table 3. The correction was performed using the USEPA on-line Tools for Site Assessment Calculations <http://www.epa.gov/athens/learn2model/part-two/onsite/esthenry.htm>. The calculation was performed for benzene, toluene, ethylbenzene, xylenes (as o-xylene), naphthalene, vinyl chloride, 1,1,1-trichloroethane, 1,2-Dichloroethane, aromatic C5-C7 (as benzene), aromatics >C7-C8 (as toluene), chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, benzo(a)anthracene, benzo(a)pyrene, trichloroethene, fluorine, fluoranthene, acenaphthene, anthracene, pyrene, indeno(1,2,3,c,d)pyrene, Methyl t-butyl ether, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,1-dichloroethane, 1,2-trans-dichloroethene, cis-1,2-dichloroethene, tetrachloroethene, 1,1,2,2-tetrachloroethane and carbon tetrachloride.

Exposure Parameters

Parameter	EA CLR9 Parameters used within the RBCA Toolkit				Source
	Residential		Commercial / Industrial		
Human receptor	Female Adult Age 16-70	Female Child Age 0-6	Female Child Age 0-16	Female Adult age 16-59	
Exposure duration (years)	54	6	16	43	CLR 10, Table 3.2.
Exposure frequency (days/yr)	365	365	365	230	CLR 10 Table 4.8, Table 4.9 and Table 4.13
Body weight (kg)	46.4	14.8	39.0	46.4	CLR 10 Table 5.6
Skin surface area, soil contact (cm ²).	274	-	253	274	CLR 10, Table 5.8

Soil Parameters

Parameter	Soil Parameters used within the RBCA Toolkit		Source
	Residential	Commercial / Industrial	
Depth to Water- bearing Unit	1 m	1 m	Assumed
Total porosity	0.46	0.46	CLEA Briefing Note 2 : Version 1.1 Table 3 Sandy Soil
Volumetric water content	0.15	0.15	CLEA Briefing Note 2 : Version 1.1 Table 3 Sandy Soil
Volumetric air content	0.31	0.31	CLEA Briefing Note 2 : Version 1.1 Table 3 Sandy Soil
Dry Bulk Density	1.6 g/cm ³	1.6 g/cm ³	CLEA Briefing Note 2 : Version 1.1 Table 3 Sandy Soil
Vertical Hydraulic conductivity	860 cm/d	860 cm/d	RBCA Default for sand
Vapour permeability	1.0 x 10 ⁻¹² m ²	1.0 x 10 ⁻¹² m ²	RBCA Default for sand
Capillary zone thickness	0.05 m	0.05 m	RBCA Default for sand
Fraction of organic carbon	0.01	0.01	Assumed
Soil/water pH	6.8	6.8	RBCA default for sand

Groundwater Parameters

Groundwater Parameters used within the RBCA Toolkit

Parameter	Residential	Commercial / Industrial	Source
Groundwater plume width at source	10 m	10 m	Assumed

Outdoor Air Parameters

Outdoor Air Parameters used within the RBCA Toolkit

Parameter	Residential	Commercial / Industrial	Source
Air mixing zone height	1.623 m	1.623 m	Adult body height CLR 10 Table 5.7
Ambient air velocity in mixing zone	3 m/s	3 m/s	Conservative assumption based on met office data

Indoor Air Parameters

Indoor Air Parameters used within the RBCA Toolkit

Parameter	Residential	Commercial / Industrial	Source
Building Volume/area ratio	2.4 m	9.6 m	CLEA Briefing Note 3: Version 1.0 (March 2004)
Foundation area	70 m ²	600 m ²	CLEA Briefing Note 3: Version 1.0 (March 2004)
Foundation perimeter	33.6 m	98 m	Calculated from CLEA Briefing Note 3: Version 1.0 (March 2004)

	1.4 x 10 ⁻⁴ /s	2.8 x 10 ⁻⁴ /s	Calculated from CLEA Briefing Note 3: Version 1.0 (March 2004)
Building air exchange rate			
Depth to bottom of foundation slab	0.15 m	0.15 m	CLEA Briefing Note 3: Version 1.0 (March 2004)
Foundation thickness	0.15 m	0.15 m	CLEA Briefing Note 3: Version 1.0 (March 2004)
Foundation crack fraction	0.001	0.001	CLEA Briefing Note 3: Version 1.0 (March 2004)
Volumetric water content of cracks	0.12	0.12	RBCA Default
Volumetric air content of cracks	0.26	0.26	RBCA Default
Indoor/outdoor differential pressure	2.5 Pa	4.5 Pa	CLEA Briefing Note 3: Version 1.0 (March 2004) Table 5.

The Building parameters were taken for a commercial office building and for a residential bungalow.

References

- CLEA Briefing Note 2: Update on Estimating Vapour Intrusion Into Buildings. Version 1.1 (July 2004)
- CLEA Briefing Note 3: Update of Supporting Values and Assumptions Describing UK Building Stock Version 1.0 (March 2004)
- CLR 9 - Contaminants in Soil: Collation of Toxicological Data and Intake Values for Humans. Department for Environment, Food and Rural Affairs and The Environment Agency, Various contaminants covered in DEFRA TOX reports (March 2002)
- CLR10 The Contaminated Land Exposure Assessment (CLEA) Model: Technical Basis and Algorithms. Department for Environment, Food and Rural Affairs and The Environment Agency, R&D Publication CLR1 (Jan 2002)



Appendix V

Appendix V



A different perspective



ANALYTICAL TEST REPORT

Contract no: PSL/42570
Contract name: Fields End
Client reference: PSL11/1163
Clients name: Professional Soils Laboratory
Clients address: 5-7 Hexthorpe Road
Doncaster
DN4 0AG

Samples received: 26 May 2011

Analysis started: 26 May 2011

Analysis completed: 02 June 2011

Report issued: 03 June 2011

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAF Non-Asbestos Fibre

Approved by:



Karan Campbell John Campbell
Director Director

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are exclusive of stones.

Lab ref	Sample id	Depth (m)	Soil description passing 2mm sieve	Description of material retained on 2mm sieve	% Retained on 2mm sieve	Moisture (%)
42570-1	WS 101	0.20	Clay Loam	Stones & Gravel	44.8	10.0
42570-2	WS 104	0.30	Loamy Clay	Stones & Gravel	41.7	9.6
42570-3	WS 104	1.00	Sandy Clay	Stones & Gravel	21.5	13.7
42570-4	WS 110	0.20	Loam	Gravel & Roots	5.6	19.4
42570-5	WS 110	0.50	Loamy Clay	Gravel	23.3	13.4
42570-6	WS 113	0.10	Clay Loam	Stones & Gravel	46.7	12.6
42570-7	WS 114	0.10	Sandy Clay	Stones & Gravel	48.9	11.9
42570-8	WS 118	0.30	Clay Loam	Stones & Gravel	68.6	4.7

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SOILS

Lab number			42570-1	42570-2	42570-3	42570-4	42570-5	42570-6
Sample id			WS 101	WS 104	WS 104	WS 110	WS 110	WS 113
Depth (m)			0.20	0.30	1.00	0.20	0.50	0.10
Test	Method	Units						
Arsenic (total)	CE054 ^M	mg/kg	17	20	11	11	11	12
Boron (water soluble)	CE063 ^M	mg/kg	1.0	1.0	0.6	0.8	0.8	0.5
Cadmium (total)	CE054 ^M	mg/kg	<0.2	0.4	<0.2	0.3	<0.2	0.3
Chromium (total)	CE054 ^M	mg/kg	46	69	41	37	38	36
Copper (total)	CE054 ^M	mg/kg	34	46	20	28	25	42
Lead (total)	CE054 ^M	mg/kg	57	75	7.1	35	25	110
Mercury (total)	CE054	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE054 ^M	mg/kg	36	61	62	41	42	28
Selenium (total)	CE054 ^M	mg/kg	0.3	0.6	<0.3	0.4	<0.3	0.7
Zinc (total)	CE054 ^M	mg/kg	84	119	86	78	66	88
pH	CE004 ^M	units	7.3	7.7	7.7	6.7	7.7	6.9
Sulphate (2:1 water soluble)	CE049 ^U	mg/l	15	<10	<10	11	<10	<10
PAH								
Naphthalene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123cd)pyrene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(ah)anthracene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	CE087	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH (total)	CE087	mg/kg	<5	<5	<5	<5	<5	<5
TPH								
TPH (C6-C10)	CE067	mg/kg	<10	<10	<10	<10	<10	<10
TPH (C10-C28)	CE033	mg/kg	<10	<10	<10	<10	<10	<10
TPH (C28-C40)	CE033	mg/kg	51	26	12	137	19	83

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SOILS

Lab number			42570-7	42570-8
Sample id			WS 114	WS 118
Depth (m)			0.10	0.30
Test	Method	Units		
Arsenic (total)	CE054 ^M	mg/kg	15	9.9
Boron (water soluble)	CE063 ^M	mg/kg	1.3	0.5
Cadmium (total)	CE054 ^M	mg/kg	<0.2	0.3
Chromium (total)	CE054 ^M	mg/kg	48	30
Copper (total)	CE054 ^M	mg/kg	32	27
Lead (total)	CE054 ^M	mg/kg	47	59
Mercury (total)	CE054	mg/kg	<0.5	<0.5
Nickel (total)	CE054 ^M	mg/kg	30	17
Selenium (total)	CE054 ^M	mg/kg	<0.3	0.9
Zinc (total)	CE054 ^M	mg/kg	68	61
pH	CE004 ^M	units	7.7	7.7
Sulphate (2:1 water soluble)	CE049 ^U	mg/l	<10	<10
PAH				
Naphthalene	CE087	mg/kg	<0.1	<0.1
Acenaphthylene	CE087	mg/kg	<0.1	<0.1
Acenaphthene	CE087	mg/kg	<0.1	<0.1
Fluorene	CE087	mg/kg	<0.1	<0.1
Phenanthrene	CE087	mg/kg	<0.1	0.1
Anthracene	CE087	mg/kg	<0.1	<0.1
Fluoranthene	CE087	mg/kg	<0.1	<0.1
Pyrene	CE087	mg/kg	<0.1	<0.1
Benzo(a)anthracene	CE087	mg/kg	<0.1	<0.1
Chrysene	CE087	mg/kg	<0.1	<0.1
Benzo(b)fluoranthene	CE087	mg/kg	<0.1	<0.1
Benzo(k)fluoranthene	CE087	mg/kg	<0.1	<0.1
Benzo(a)pyrene	CE087	mg/kg	<0.1	<0.1
Indeno(123cd)pyrene	CE087	mg/kg	<0.1	<0.1
Dibenz(ah)anthracene	CE087	mg/kg	<0.1	<0.1
Benzo(ghi)perylene	CE087	mg/kg	<0.1	<0.1
PAH (total)	CE087	mg/kg	<5	<5
TPH				
TPH (C6-C10)	CE067	mg/kg	<10	<10
TPH (C10-C28)	CE033	mg/kg	<10	<10
TPH (C28-C40)	CE033	mg/kg	43	31

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	STATUS	LOD	UNITS
CE054	Arsenic (total)	Aqua regia digest, ICP-OES	M	1	mg/kg
CE063	Boron (water soluble)	Hot water extract, ICP-OES	M	0,3	mg/kg
CE054	Cadmium (total)	Aqua regia digest, ICP-OES	M	0.2	mg/kg
CE054	Chromium (total)	Aqua regia digest, ICP-OES	M	1	mg/kg
CE054	Copper (total)	Aqua regia digest, ICP-OES	M	1	mg/kg
CE054	Lead (total)	Aqua regia digest, ICP-OES	M	1	mg/kg
CE054	Mercury (total)	Aqua regia digest, ICP-OES		0.5	mg/kg
CE054	Nickel (total)	Aqua regia digest, ICP-OES	M	1	mg/kg
CE054	Selenium (total)	Aqua regia digest, ICP-OES	M	0.3	mg/kg
CE054	Zinc (total)	Aqua regia digest, ICP-OES	M	3	mg/kg
CE004	pH	Based on BS 1377, pH Meter	M	0.1	units
CE049	Sulphate (2:1 water soluble)	Aqueous extraction, IC-COND	U	10	mg/l
CE087	PAH (speciated)	Solvent extraction, GC-MS		0.1	mg/kg
CE087	PAH (total)	Solvent extraction, GC-MS		5	mg/kg
CE033	TPH (C6-C40) speciation	Solvent extraction, GC-FID		1	mg/kg

Appendix VI



LABORATORY REPORT



4043

Contract Number: PSL11/1163

Client's Reference:

Report Date: 26 May 2011

Client Name: Delta-Simons Environmental Consultants
The Lawn
Union Road
Lincoln

LN1 3BL

For the attention of: Kevin McGee

Contract Title: Fields End

Date Received: 19-May-11

Date Commenced: 19-May-11

Date Completed: 26-May-11

Notes: Observations and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:



R Gunson
(Director)

A Watkins
(Director)


M Beastall
(Laboratory Manager)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
WS101			0.30	Brown gravelly CLAY.
WS107			0.40	Brown very gravelly CLAY.
WS108			1.50	Brown CLAY.
WS109			1.00	Brown slightly gravelly CLAY.
WS111				Brown very gravelly CLAY.
WS114				Brown very gravelly CLAY.

					
Compiled by	<i>Mat</i>	Date	26/05/11	Checked by	<i>RL</i>
		Date	26/05/11	Approved by	<i>RL</i>
			Date	26/05/11	Date
			Contract No: PSL11/1163 Client Ref:		
FIELDS END.					

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m ³ Clause 7.2	Dry Density Mg/m ³ Clause 7.2	Particle Density Mg/m ³ Clause 8.	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.	Plasticity Index % Clause 6.	% Passing .425mm	Remarks
WS101			0.30	31				77	22	55	79	Very high plasticity CV.
WS107			0.40	19				78	23	55	59	Very high plasticity CV.
WS108			1.50	33				82	23	59	100	Very high plasticity CV.
WS109			1.00	30				82	24	58	92	Very high plasticity CV.
WS111				12				78	20	58	66	Very high plasticity CV.
WS114				13				79	23	56	67	Very high plasticity CV.

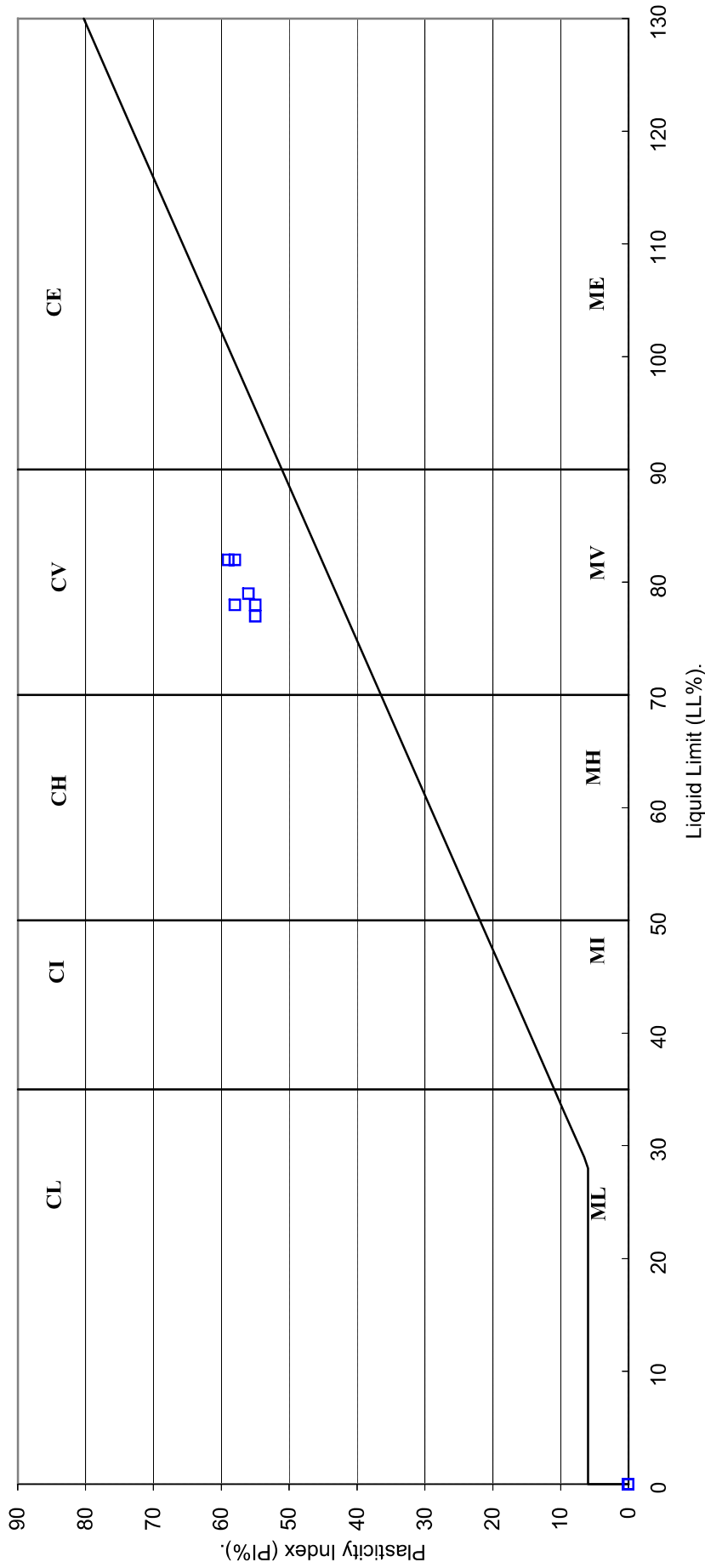
SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

<div style="text-align: center;"> <p>Professional Soils Laboratory</p> </div>			Compiled by	<i>Mar</i>	Date	26/05/11	Checked by	<i>RL</i>	Date	26/05/11	Approved by	<i>RL</i>	Date	26/05/11	
			FIELDS END.											Contract No:	PSL11/1163
														Client Ref:	

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



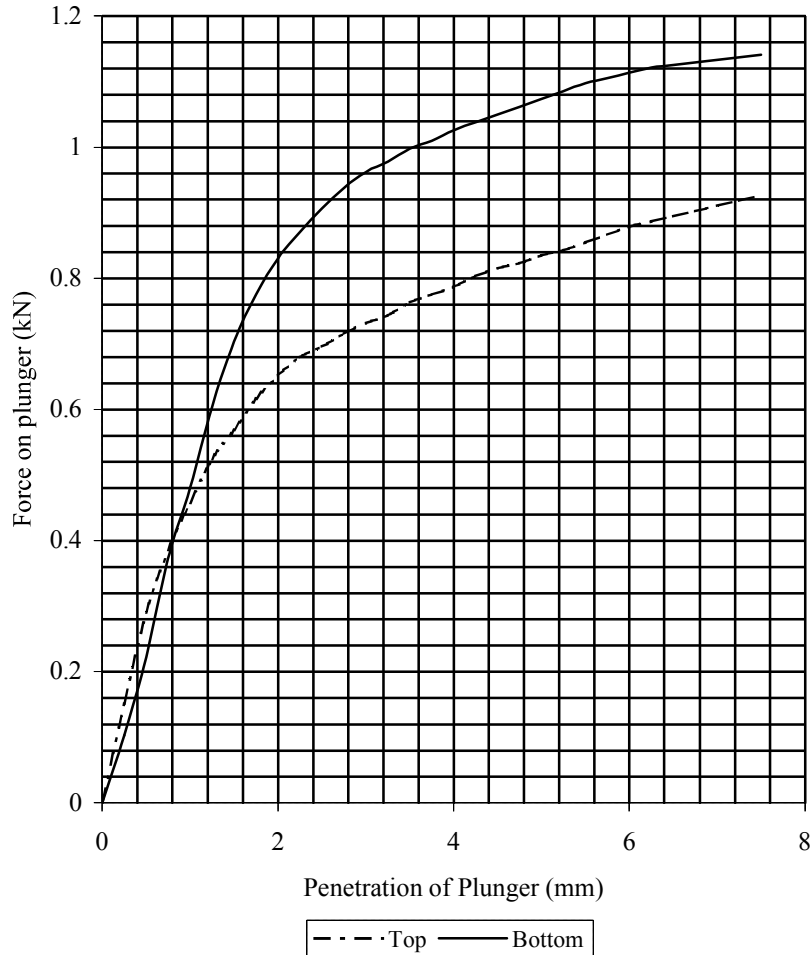
Compiled by	Date	Checked by	Date	Approved by	Date
<i>mas</i>	26/05/11	<i>RL</i>	26/05/11	<i>RL</i>	26/05/11
FIELDS END.				Contract No:	PSL11/1163
				Client Ref:	

California Bearing Ratio Test.

BS 1377 : Part 4 : 1990

Hole Number: **WS101** Depth (m): **0.30**

Sample Number: Sample Type:



Initial Sample Conditions		Test Conditions		Method of compaction 2.5Kg Rammer			
Moisture Content:	31.6	Surcharge Kg:	4.20	Final Moisture Content %		C.B.R. Value %	
Bulk Density Mg/m ³ :	1.81	Soaking Time hrs	0	Sample Top	31.5	Sample Top	5.3
Dry Density Mg/m ³ :	1.38	Swelling mm:	0	Sample Bottom	31.7	Sample Bottom	6.9
Percentage retained on 20mm BS test sieve:	6	Remarks: See Summary of Soil Description.					

Checked by	Date	Approved By	Date
<i>RL</i>	26/05/11	<i>RL</i>	26/05/11

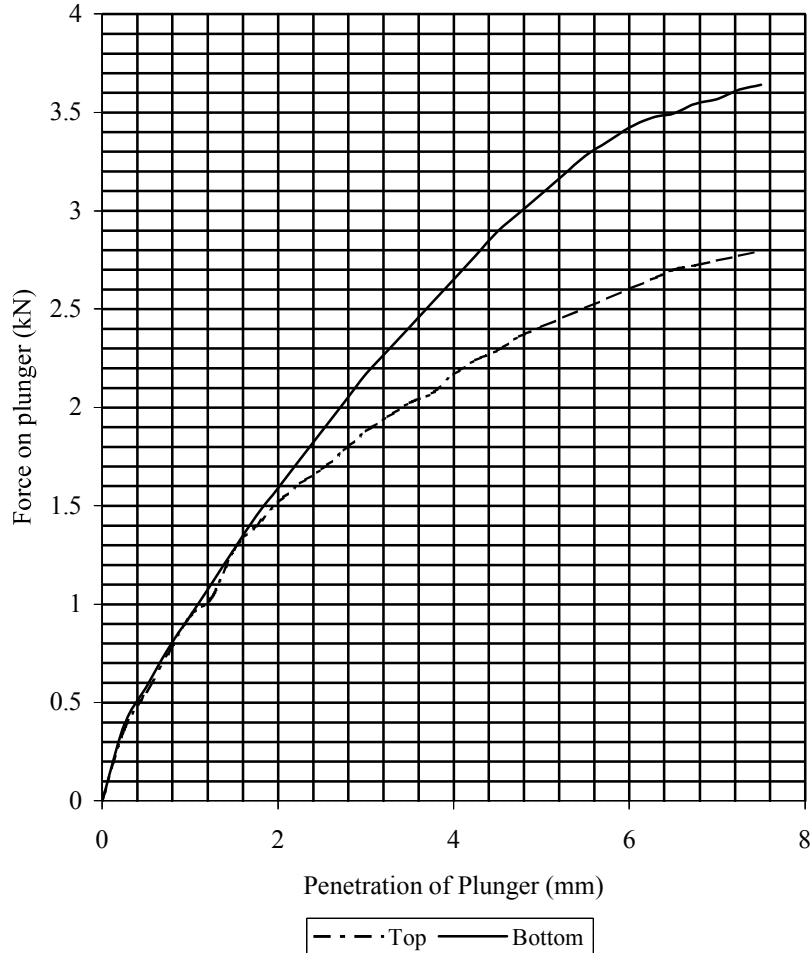
	<p>FIELDS END.</p>	<p>Contract No. PSL11/1163</p>
--	---------------------------	--

California Bearing Ratio Test.

BS 1377 : Part 4 : 1990

Hole Number: **WS107** Depth (m): **0.40**

Sample Number: Sample Type:



Initial Sample Conditions		Test Conditions		Method of compaction		2.5Kg Rammer	
Moisture Content:	18.9	Surcharge Kg:	4.20	Final Moisture Content %	C.B.R. Value %		
Bulk Density Mg/m3:	1.76	Soaking Time hrs	0	Sample Top	19.2	Sample Top	12.8
Dry Density Mg/m3:	1.48	Swelling mm:	0	Sample Bottom	18.6	Sample Bottom	15.4
Percentage retained on 20mm BS test sieve:	17	Remarks: See Summary of Soil Description.					

Checked by	Date	Approved By	Date
<i>RL</i>	26/05/11	<i>RL</i>	26/05/11

	FIELDS END.	Contract No. PSL11/1163
--	--------------------	--

APPENDIX V

PETER BRETT ASSOCIATES CHALK SOLUTION FEATURES ASSESSMENT REPORT

Your ref:

Our ref: 38001-3501/CBH/CNE/AD/CB



16 June 2016

Resource and Environmental Consultants Limited
Capital Business Centre
22 Carlton Road
South Croydon
CR2 0BS

Peter Brett Associates LLP
Caversham Bridge House
Waterman Place, Reading
Berkshire RG1 8DN
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F: +44 (0)118 959 7498
E: reading@peterbrett.com

Attn: Mr Marc Roberts

Dear Mr Roberts

**RE: SOLUTION FEATURE OCCURRENCE ASSESSMENT
POUCHEN END LANE, HEMEL HEMPSTEAD**

Thank you for your email instructions dated 8 April 2016 in relation to the site at Pouchen End Lane, Hemel Hempstead for Peter Brett Associates LLP (PBA) to carry out a Solution Feature Occurrence Assessment.

Scope of Works

As per the PBA proposal we have carried out the following scope of works:

- A search of the PBA Natural Cavities Database for known features within 2km of the site;
- A site walkover survey to record by mapping the site terrain and surrounding landscape;
- Review of the geological, hydrogeological and geomorphological setting of the site area;
- Review of available online aerial photographs;
- Prepare a geomorphological map including a solution risk assessment (karst model) to show the site area zoned in terms of potential for the occurrence of solution features which can be used to determine implications for further ground investigation, foundations, earthworks, pavement and drainage design;
- Preparation of a letter report to support the geomorphological map and to explain the assessment and site risk zoning.

PBA Natural Cavities Database Search

A search of the PBA Natural Cavities Database indicated that there are 3 recorded natural cavity locations within 2000m of the site boundary, as shown in the table below.

Approximate NGR	Approximate distance from site (m)	Recorded Location	Geology	Natural Cavity Details	Source
TL 0315 0645 TL 0305 0635 TL 0390 0640 TL 0395 0620	Adjacent to southern margin of site	Chaulden/ Boxmoor area, Hemel Hempstead Hertfordshire	Superficial Deposits: Head Solid: Chalk group	20 x Solution Pipes	<i>Building Research Establishment</i>

J/38001 Pouchen End Lane/Reports/Pouchen End Lane letter report

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Registered number: 07765026.



Approximate NGR	Approximate distance from site (m)	Recorded Location	Geology	Natural Cavity Details	Source
TL 022 090	1500 NNW	Potten End, Berkhamsted, Hertfordshire	Superficial Deposits: Clay-with-Flints Solid: Lambeth Group Chalk Group	1 x Solution Pipe	<i>Sherlock R.L. (1922). 'The Geology of the country around Aylesbury and Hemel Hempstead' / 'British Geological Survey Memoir (Sheet 238)'</i>
TL 049 082	1800 ENE	Gadebridge Hemel Hempstead Hertfordshire	Superficial Deposits: Clay-with-Flints Solid: Chalk Group	1 x Solution Pipe	<i>Rust Environmental</i>

Site walkover

PBA undertook the site walkover survey on Friday 22nd April and Tuesday 26th April which coincided with the time that the trial pit investigation was taking place. The mapping methodology used followed Edmonds (2001)* whereby the landscape was subdivided into a series of terrain units (hillslopes/valleys/plateaux) using geomorphological techniques. The various terrain units were marked upon the site topographical survey plan and captured digitally. Aerial photograph coverage of the site available via Google has been studied and for certain years (31/12/2006 and 30/06/2009) there are notable “speckle” ground patterns within the fields in the central eastern portion of the site – sometimes such patterns can be related to drainage variations or stressed vegetation variations which are a reflection of underlying solution features.

Geology

The site geology was initially obtained from online resources (www.bgs.ac.uk) to assess the published geology at the site. The recorded sequence comprised Quaternary age Clay-with-Flints over Cretaceous age Chalk Group strata across the northern parts with the chalk outcropping at the surface in the south. However, later, once the trial pit and borehole profiles became available to PBA the geological boundaries were modified to reflect the actual recorded presence of the Clay-with-Flints.

Hydrogeology

The site hydrogeology conditions were obtained from online resources (www.bgs.ac.uk) that indicated the Clay-with-Flints to be under-draining down into the chalk below. These conditions are favourable to solution feature development if they are maintained for a long geological time period.

Solution feature occurrence assessment

Combining the results of the geomorphological mapping terrain units with the modified geology and the hydrogeological conditions, the site setting has been assessed using the semi-quantitative modelling approach developed by Edmonds (2001). The results of the assessment are presented in the attached Figure 1 which shows the site area subdivided into a number of zones of varying solution feature occurrence potential – the categories varying from Very Low to Moderately High as shown.

Additionally as the survey work took place there were a number of discrete land areas that showed the surface characteristics of having been modified by man. These areas have been separately demarcated upon Figure 1 and in such areas because of the modifications it is not possible to calculate the solution feature potential using the techniques applied.



Finally during the walkover a number of surface hollows were noted and these have been marked on Figure 1 as well. At this stage it is not possible to be certain what the origin of the hollows is and hence further ground investigation is recommended. Some of the hollows may be man-made while others might be naturally occurring and are possibly historical sinkholes linked to underlying solution features at depth in the chalk.

Implications for site development

In land areas with a Moderate rating and above (including the hollows for the present) it is likely that the foundation approach will need to assume that all foundations must be capable of bridging across at least a 1m loss of ground support (void). More detailed investigation and advice is likely to be needed within the Moderately High zone and the hollows where a more robust foundation solution might be required. At sites that are prone to solution feature development the CIRIA C574 surface water drainage guidance (p236) suggests that shallow soakaways should be avoided or located at least 20m from structures. Alternative drainage solutions, including deep bored soakaways, at closer distances may be considered.

We trust that the solution feature assessment meets your requirements but if you should have any questions then please do not hesitate to contact us.

Yours sincerely,



Dr Clive Edmonds
Partner

For and on behalf of

PETER BRETT ASSOCIATES LLP

*C N Edmonds (2001) Predicting natural cavities in chalk, *From Griffiths, J S (ed) Land Surface Evaluation for Engineering Practice*, Geological Society, London, Engineering Geology Special Publications, **18**, 29-38.

APPENDIX V
CHALK SOLUTION FEATURES ASSESSMENTS

Your ref:

Our ref: 38001-3501/CBH/CNE/AD/CB



16 June 2016

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22 Carlton Road
South Croydon
CR2 0BS

Peter Brett Associates LLP
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Attn: Mr Marc Roberts

Dear Mr Roberts

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J/38001 Pouchen End Lane/Reports/Pouchen End Lane letter report

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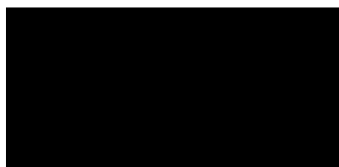
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We trust that the solution feature assessment meets your requirements but if you should have any questions then please do not hesitate to contact us.

Yours sincerely,



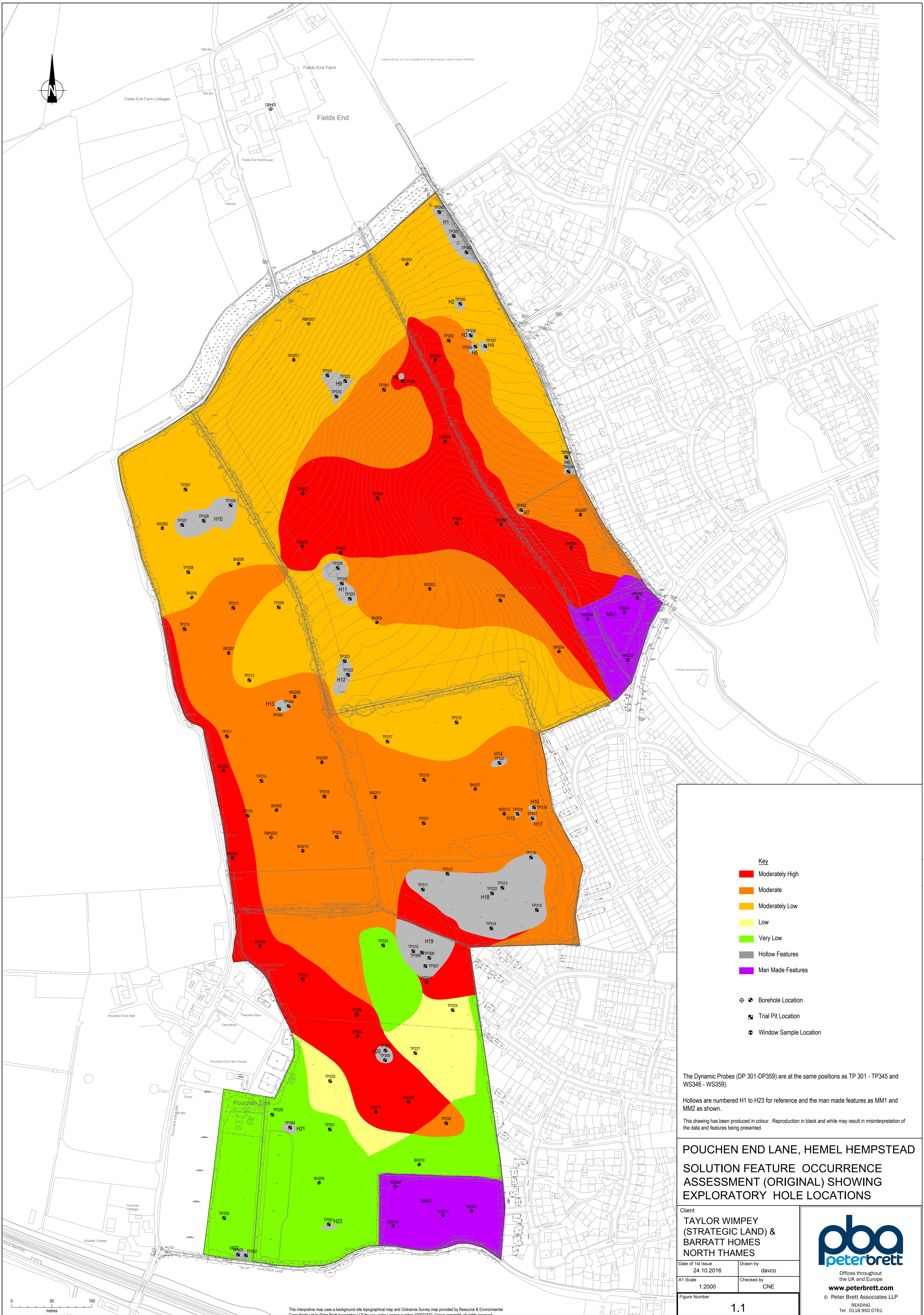
Dr Clive Edmonds

Partner

For and on behalf of

PETER BRETT ASSOCIATES LLP

*C N Edmonds (2001) Predicting natural cavities in chalk, *From Griffiths, J S (ed) Land Surface Evaluation for Engineering Practice*, Geological Society, London, Engineering Geology Special Publications, **18**, 29-38.



Key

- Moderately High
- Moderate
- Moderately Low
- Low
- Very Low
- Hollow Features
- Man Made Features

- Borehole Location
- Trial Pit Location
- Window Sample Location

The Dynamic Probes (DP 301-DP359) are at the same positions as TP 301 - TP345 and WS346 - WS359.

Hollows are numbered H1 to H23 for reference and the man made features as MM1 and MM2 as shown.

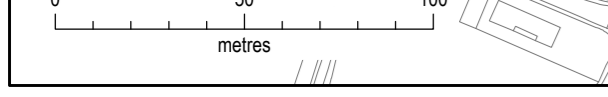
This drawing has been produced in colour. Reproduction in black and white may result in misinterpretation of the data and features being presented.

**POUCHEN END LANE, HEMEL HEMPSTEAD
SOLUTION FEATURE OCCURRENCE
ASSESSMENT (ORIGINAL) SHOWING
EXPLORATORY HOLE LOCATIONS**

Client
**TAYLOR WIMPEY
(STRATEGIC LAND) &
BARRATT HOMES
NORTH THAMES**

Offices throughout
the UK and Europe
www.peterbrett.com
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READING
Tel: 0118 950 0761

Date of 1st Issue 24.10.2016	Drawn by davco
A1 Scale 1:2000	Checked by CNE
Figure Number 1.1	



This interpretive map uses a background site topographical map and Ordnance Survey map provided by Resource & Environmental Consultants Ltd to Peter Brett Associates LLP for use under Licence number 100022432. Crown copyright, all rights reserved

Your ref:

Our ref: 38001/CBH/CNE

24 October 2016

REC Ltd
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Attn: Tim Conibear

Dear Tim

RE: UPDATED NATURAL CAVITIES ASSESSMENT AT POUCHEN END LANE, HEMEL HEMPSTEAD, HERTS

Further to the first phase of work when Peter Brett Associates LLP (PBA) carried out a review of the geology, hydrogeology and geomorphology setting of the site and prepared a Solution Feature Occurrence Assessment plan, following additional ground investigations by REC Ltd we are pleased to present our further updated review. Much of the additional ground investigation works were focussed upon various surface hollows and man-made features in the landscape. In Figure 1.1 enclosed these features have been numbered for reference. A series of trial pits, window sample boreholes and dynamic probes have been carried out and the exploratory hole locations are also shown on Figure 1.1, together with the original GI locations, again for reference. PBA has reviewed the results and our opinion of what type of ground conditions have been encountered are given in the table below:

Review of exploratory hole records				
Feature reference	Relevant exploratory holes	Initial Rating	Rating Confirmed	Comments
H1	TP340 to TP342 DP340 to DP342	Moderately Low	No, change to Low	The GI data suggests that ground conditions are undisturbed
H2	TP339 DP339	Moderately Low	No, change to Moderate	TP data shows undulatory interface of CwF/Chalk; DP data suggests karstic weathering
H3	TP338 DP338	Moderately Low	Yes	TP data shows evidence of karstic weathering
H4	TP337 DP337	Moderately Low	Yes	Evidence of karstic weathering
H5	TP336 DP336	Moderately Low	Yes	Evidence of karstic weathering
H6	TP334 & TP335 DP334 & DP335	Moderately Low	No, change to Moderate	Evidence of solution pipes
H7	TP333 DP333	Moderate	Yes	Evidence of solution pipes

J/38001 Pouchen End Lane/02 Correspondence/Letters/HH Nat Cav Review Update.docx

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H8	TP345 DP345	Moderately High	Yes	Evidence of solution pipes and karstic weathering
H9	TP330 to TP332 DP330 to DP332	Moderately Low	No, change to Moderately High	Evidence of solution piping, sheet pipes and karstic weathering
H10	TP327 to TP329 DP327 to DP329	Moderately Low	No, change to Moderately High	Evidence of solution pipes and deep karstic weathering
H11	TP324 to TP326 DP324 to DP326	Moderately Low	No, change to Moderately High	Evidence of solution pipes and deep karstic weathering
H12	TP322 to TP323 DP322 to DP323	Moderately Low	No, change to Moderately High	Evidence of solution piping
H13	TP343 to TP344 DP343 to TP344	Moderate	No, change to Moderately Low	Evidence of karstic weathering
H14	TP320 DP320	Moderate	Yes	Evidence of karstic weathering and possible piping
H15	TP319 DP319	Moderate	Yes	Evidence of karstic weathering and possible piping
H16	TP318 DP318	Moderate	Yes	Evidence of karstic weathering and possible piping
H17	TP317 DP317	Moderate	Yes	Evidence of solution piping
H18	TP311 to TP316 DP311 to DP316	Moderately High	Yes	Evidence of solution piping, sheet pipes and karstic weathering
H19	TP307 to TP310 DP307 to DP310	Moderately High	No, change to Moderately Low	Evidence of karstic weathering
H20	TP305 to TP306 DP305 to DP306	Moderately High	No, change to Moderately Low	Undulatory interface between CwF/Chalk only
H21	TP304 DP304	Moderately Low	No, change to Moderate	Evidence of sheet pipe and karstic weathering
H22	TP302 to TP303 DP302 to DP303	Very Low	Yes	Some evidence of possible karst and/or periglacial weathering in chalk
H23	TP301 DP301	Very Low	Yes	Some evidence of possible karst and/or periglacial weathering in chalk
MM1	WS346 to WS348	N/A	N/A	Data suggests some karstic or periglacial weathering in chalk
MM2	WS355 to WS357	N/A	N/A	Data suggests some karstic or periglacial weathering in chalk



	WS349	Moderately High	Yes	Possible solution piping and karst weathering
	WS350	Moderately High	Yes	Probable solution piping and karst weathering
	WS351	Moderately High	No, change to Moderate	Proximity to solution pipes and karstic weathering
	WS352	Moderately High	Yes	Probable solution pipes and karstic weathering
	WS353	Moderately High	Yes	Probable solution piping and karst weathering
	WS354	Moderately High	No, change to Low	The GI data suggests that ground conditions are undisturbed
	WS358	Moderately High	Yes	Evidence of sheet pipes, solution piping and karstic weathering
	WS359	Moderately High	Yes	Probable solution piping and karstic weathering

As can be seen from the above table, based on the new GI data made available by REC Ltd it has been possible to reconsider the solution feature potential ratings across the site. The results of the review can be summarised as follows:

- 18 ratings are confirmed and remain unchanged
- 9 ratings are changed causing the rating to rise in category
- 4 ratings are changed causing the rating to fall in category

In addition, the two man-made features were assessed and it was found that the ground conditions suggested ground that was locally weakened either by dissolution weathering and/or periglacial weathering. The revised ratings as per the table above are shown in Figure 1.2, but it should be noted that although the local ground conditions at the point locations of WS351 and WS354 suggested that the original rating should be down-graded they still lie within landforms and other data points that confirm the original ratings overall hence the plan remains unchanged.

In terms of implications for foundations the following recommendations are given:

Geohazard Rating	Comments
Moderately High Moderate	All foundations should be designed to withstand a loss of ground support (void) of 1m diameter
Moderately Low	All foundations should be designed with nominal reinforcement to withstand potential for differential settlement
Low Very Low	All foundations should where possible, bear onto the chalk. The best practice would be to expose the chalk and inspect for any signs of infilling or other weakening. Should problems be found then revert to geotechnical inspection and advice
Man-made areas	All foundations where possible to bear on to chalk. If not possible within reasonable depth (say within 2m of surface) then it will be necessary to pile foundations down into competent chalk below. Shallow foundations on



	head deposits are prone to differential settlement and serviceability damage if formation becomes saturated and fines are eroded.
--	---

In terms of implications for drainage the following recommendations are given:

Geohazard Rating	Comments
Moderately High Moderate	Shallow soakaways are not recommended because of the presence of solution features and the potential to trigger ground movement. Deep bored soakaways are preferred, using a lined bore to 10m below ground level as a minimum, with the soakage zone below this designed to accommodate the proposed drainage flows. Deep bored soakaways can be located within 20m of a foundation subject to proving the absence of a solution feature at the proposed soakaway position, but it would be prudent to not have the soakaway located within 10m.
Moderately Low	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected (preferably by a geotechnical engineer) to confirm the absence of any solution features. No soakaways should be located within 10m of a structure.
Low Very Low	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected to ensure that the soakage zone is entirely within chalk and is free of any signs of solution features. No soakaways should be sited within 5m of a structure.
Man-made areas	Shallow soakaways may be possible (subject to suitable infiltration being proven) but at each position the ground conditions should be carefully inspected to ensure that the soakage zone is entirely within chalk and is free of any signs of solution features. No soakaways should be sited within 5m of a structure.

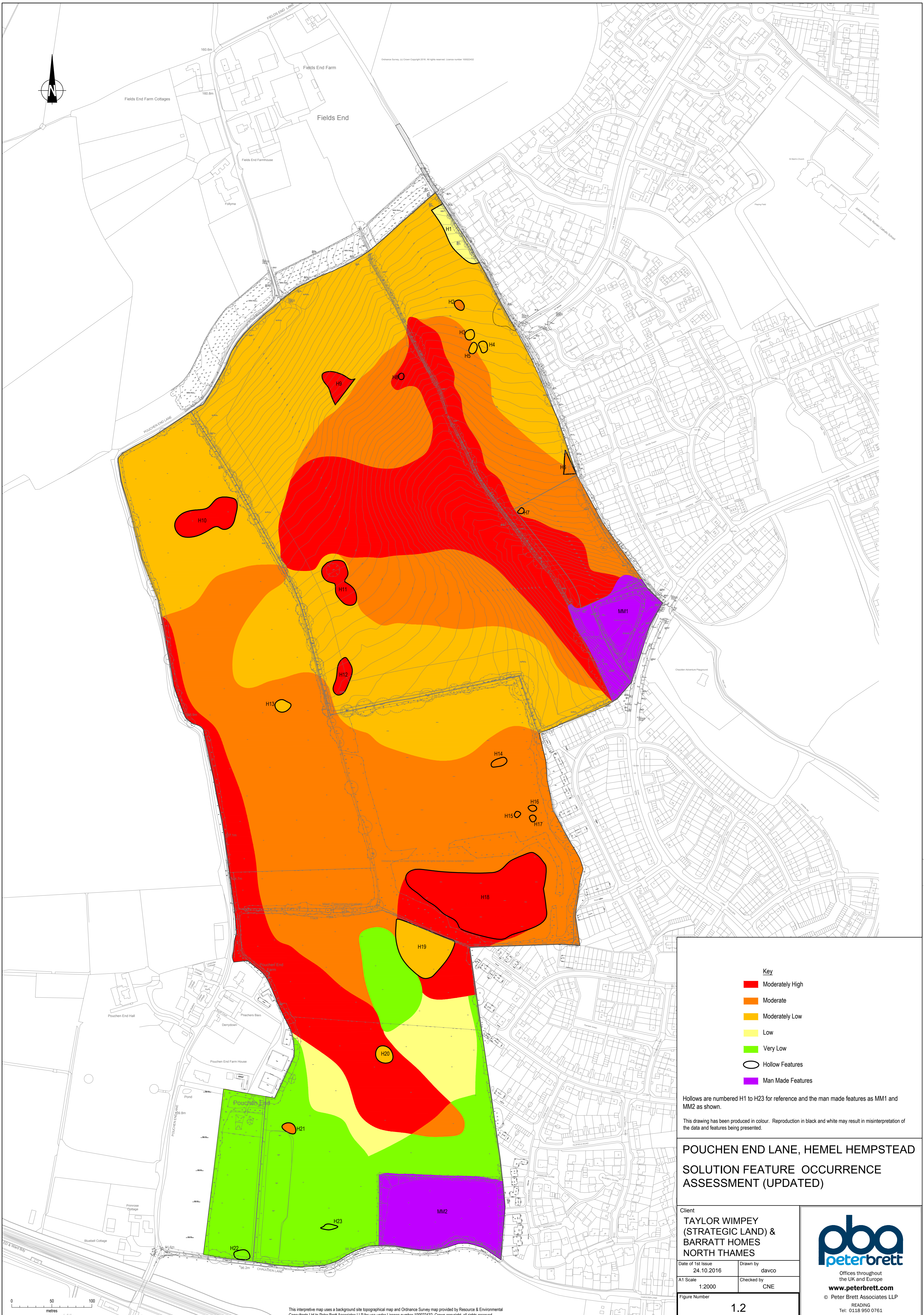
We trust that the advice given above assists you with your project, please let us know if you have any further questions.

Yours sincerely



Dr Clive Edmonds
Partner
 For and on behalf of
PETER BRETT ASSOCIATES LLP

Enc: Figure 1.1 & Figure 1.2



Key


- Moderately High
- Moderate
- Moderately Low
- Low
- Very Low
- Hollow Features
- Man Made Features

Hollows are numbered H1 to H23 for reference and the man made features as MM1 and MM2 as shown.

This drawing has been produced in colour. Reproduction in black and white may result in misinterpretation of the data and features being presented.

**POUCHEN END LANE, HEMEL HEMPSTEAD
SOLUTION FEATURE OCCURRENCE
ASSESSMENT (UPDATED)**

Client TAYLOR WIMPEY (STRATEGIC LAND) & BARRATT HOMES NORTH THAMES	
Date of 1st Issue 24.10.2016	Drawn by davco
A1 Scale 1:2000	Checked by CNE
Figure Number 1.2	


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**APPENDIX VI
EXPLORATORY HOLE LOGS**



Borehole Log

Borehole No.

BH201

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503031.52	Hole Type	BH
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Northing:	207741.27	Level (m AOD):	150.85
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	12/04/2016	REC Engineer:	RH
				End Date:	12/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.50	150.85		Crops over soft to firm, dark orangeish brown very gravelly CLAY. Gravel is angular to subrounded with fine to coarse flint. [TOPSOIL]	1
		0.50	D						
		1.10 - 1.20	D		1.00	150.35		Stiff yellowish brown slightly gravelly CLAY. Gravel is angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.20	SPT	N=18 (2,4/4,3,5,6)					
		1.70	D		2.00 - 2.45			Stiff to very stiff, medium to high strength, red mottled grey slightly gravelly CLAY. Gravel is angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	2
		2.45	U	Ublow=20					
		3.00	SPT	N=16 (2,3/4,3,4,5)	3.90 - 4.35			CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
		3.60	D						
		3.90 - 4.35	U	Ublow=50	4.50	149.85		CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
		4.50	D						
		5.00	SPT	N=15 (1,2/2,2,3,8)	5.45 - 5.60			CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	5
		5.45 - 5.60	B						
		5.80 - 6.70	B		6.70 - 7.15			CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	6
		6.70 - 7.15	U	Ublow=18					
		7.80	D		8.20			CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	7
	8.20	SPT	N=16 (2,3/4,4,3,5)						
	8.20	SPT	N=16 (2,3/4,4,3,5)	9.20			CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	8	
	9.20	D							
	9.70 - 10.15	U	Ublow=19	10.00	146.35		CHALK recovered as soft white to off white gravelly CLAY. Gravel is very weak angular to subangular fine to medium chalk, and angular to rounded, fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	9	
	9.70 - 10.15	U	Ublow=19						
								10	

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head test carried out at 10.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH201

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503031.52 Northing: 207741.27	Hole Type BH
Location:	Hemel Hempstead	Plant: Pilcon Cable Percussive Rig	Level (m AOD): 150.85 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 12/04/2016 End Date: 12/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.60	D				CHALK recovered as very soft white to off white with thick veins of brown gravelly CLAY. Gravel is very weak to weak angular to subangular chalk and angular to rounded fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	11	
		11.60	SPT	N=6 (1,2/2,1,1,2)			<i>... below 11.60mbgl: gravel is very weak to slightly weak, angular to subrounded, fine to coarse chalk.</i>	12	
		13.00	D		12.50	140.85	CHALK recovered as white to off white clayey GRAVEL with rare cobbles. Gravel is weak to moderately strong subangular to subrounded fine to coarse chalk and rare subangular to well rounded fine to medium flint. Cobbles are chalk with black and brown specks. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	13	
		13.20 - 13.65	U	Ublow=30				14	
		14.40	D					15	
		15.20	SPT	N=12 (2,3/2,4,2,4)				16	
		16.00	D					17	
		16.90 - 17.35	U	Ublow=20				18	
		17.35 - 18.00	B		17.35	138.35	Very stiff dark orangeish brown gravelly CLAY. Gravel is angular to subangular fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	18	
		18.10	D		18.00	133.50	CHALK recovered as very soft to soft white to off white with pockets of brown very gravelly CLAY. Gravel is very weak to slightly weak subangular to subrounded fine to medium chalk and angular to subangular fine to medium flint. Cobbles are angular to rounded flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	19	
		18.20	SPT	N=17 (3,4/3,4,5,5)				20	
		19.30	D						
		19.60	SPT	N=23 (4,3/5,6,6,6)					
					20.00	132.85	End of Borehole at 20.00m	20	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head test carried out at 10.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH202

Sheet 1 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502901.68 Northing: 207455.06	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 147.96 Final Depth (m): 32.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 15/04/2016 End Date: 15/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	D		0.50	147.96		Crops over very soft brown slightly gravelly CLAY. Gravel is angular to subrounded, fine to coarse flint. [TOPSOIL]	
		0.50 - 1.00	B						
		1.00	D		Ublow=38			Firm to stiff, high strength, brown gravelly CLAY. Gravel is angular to rounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		1.20	D						
		1.20 - 1.70	U						
		1.50	D						
		2.00	D		N=12 (2,3/3,4,2,3)				
		2.00	SPT						
		2.50	D		Ublow=30				
		3.00	D						
		3.00 - 3.50	U						
		3.50	D						
		4.00	D		N=14 (3,3/2,3,4,5)				
		4.00	SPT						
		5.00	D		Ublow=10	5.00		CHALK recovered as soft to stiff, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		5.00 - 5.50	B						
	5.00 - 5.50	U		N=8 (2,2/1,2,2,3)					
	6.00	D							
	6.50	D							
	6.50	SPT							
	7.00	D		Ublow=25					
	8.00	D							
	8.00 - 8.50	U		N=12 (2,3/3,2,3,4)					
	9.00	D							
	9.50	D							
	9.50	SPT							
	10.00	D							

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 32mbgl following the encounter of brown clay between 18.50 and 21mbgl. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 32.00mbgl.





Borehole Log

Borehole No.

BH202

Sheet 2 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502901.68	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	207455.06	Level (m AOD):	147.96
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	32.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	MR
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.50	D U	Ublow=10					11
		12.00	D						12
		12.50 12.50	D SPT	N=12 (2,2/3,3,3,3)					13
		13.00	D						13
		14.00 14.00 - 14.50	D U	Ublow=15					14
		15.00	D						15
		15.50 15.50	D SPT	N=17 (3,3/4,4,4,5)					16
		16.00 16.00	D SPT	N=19 (10,10/6,4,5,4)					16
		17.00 17.00 - 17.50	D U	Ublow=30	17.00	142.96		CHALK recovered as very soft to stiff white mottled brown gravelly CLAY. Gravel is very weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	17
		18.00 18.00 18.00 - 18.50	D SPT B	N=25 (6,6/6,7,8,4)					18
		18.50 18.50	D SPT	N=24 (4,5/5,6,7,6)	18.50	130.96		Stiff, very high strength, brown CLAY. [CLAY-WITH-FLINTS FORMATION]	19
		19.00	D						19
		20.00	D						20

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 32mbgl following the encounter of brown clay between 18.50 and 21mbgl. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 32.00mbgl.





Borehole Log

Borehole No.

BH202

Sheet 3 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502901.68	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	207455.06	Level (m AOD):	147.96
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	32.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	MR
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00 - 20.50	U	Ublow=26					
		21.00 21.00	D SPT	N=27 (10,11/12,6,4,5)	21.00	129.46		CHALK recovered as very soft to stiff white gravelly CLAY. Gravel is very weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint.	21
		21.50 21.50 21.50 - 22.00	D SPT B	N=1 (0,1/1,0,0,0)				[LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	22
		22.00	D						
		23.00 23.00	D SPT	N=6 (1,1/2,1,1,2)					23
		24.00	D						24
		24.50 24.50	D SPT	N=16 (2,2/3,4,4,5)					25
		25.00	D						
		26.00 26.00	D SPT	N=17 (2,3/3,4,4,6)					26
		27.00	D						27
		27.50 27.50	D SPT	N=12 (2,3/2,3,3,4)					28
		28.00	D						
		29.00 29.00	D SPT	N=15 (3,3/2,3,5,5)					29
		30.00	D						30

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 32mbgl following the encounter of brown clay between 18.50 and 21mbgl. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 32.00mbgl.





Borehole Log

Borehole No.

BH202

Sheet 4 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502901.68 Northing: 207455.06	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 147.96 Final Depth (m): 32.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 15/04/2016 End Date: 15/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		30.00	SPT	N=21 (3,3/4,5,5,7)					
		31.00	D						31
		31.50 31.50	D SPT	N=14 (3,3/4,3,3,4)					
		32.00	D		32.00	126.96		End of Borehole at 32.00m	32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 32mbgl following the encounter of brown clay between 18.50 and 21mbgl. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 32.00mbgl.





Borehole Log

Borehole No.

BH203

Sheet 1 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502994.19	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	207294.13	Level (m AOD):	142.42
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	30.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	RH
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	D		0.35	142.42	Crops over soft brown gravelly CLAY. Gravel is angular to rounded, fine to medium flint. [TOPSOIL]		
		0.40 - 0.90	B						
		1.00	D				Soft to stiff, medium strength, orangeish brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. Rare cobbles of subrounded to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
		1.20	D						
		1.20 - 1.70	U	Ublow=10			... below 0.90mbgl: mottled orange and grey.		
		1.50	D				... at 1.20 - 3.00mbgl: stiff to very stiff and slightly gravelly.		
		1.50 - 2.00	B						
		2.00	D					2	
		2.00	SPT	N=21 (5,4/5,4,6,6)					
		2.50	D						
		3.00	D				... below 3.00mbgl: high strength.	3	
		3.00 - 3.50	U	Ublow=45					
		3.50	D						
		4.00	D					4	
		4.00	SPT	N=19 (3,4/4,5,5,5)					
		4.50	D						
		5.00	D					5	
		5.00 - 5.50	B						
		5.00 - 5.50	U	Ublow=40					
		6.00	D					6	
		6.50	D						
		6.50	SPT	N=13 (2,2/2,3,4,4)					
		7.00	D					7	
		8.00	D						
		8.00 - 8.50	U	Ublow=37				8	
		9.00	D					9	
		9.50	D						
		9.50	SPT	N=21 (3,4/4,5,6,6)					
		10.00	D					10	

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 30mbgl following the absence of chalk between ground level and 15.3mbgl. Falling head tests carried out at 15.50 and 25.00mbgl. 50mm internal diameter monitoring standpipe installed to 30.00mbgl.





Borehole Log

Borehole No.

BH203

Sheet 2 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502994.19	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	207294.13	Level (m AOD):	142.42
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	30.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	RH
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.50	D U	Ublow=45					11
		12.00	D						12
		12.50 12.50	D SPT	N=23 (4,4/5,5,6,7)			... between 12.50 - 15.50mgl: occasional bands of fine to coarse sand.		13
		13.00	D						14
		14.00 14.00 - 14.50 14.00 - 14.50 14.50 - 15.00	D B U B	Ublow=20					15
		15.00	D						16
		15.50 15.50 15.50 - 16.00 16.00	D B SPT D	N=9 (1,2/2,2,3,2)	15.50	142.06	CHALK recovered as soft to stiff, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		17
		17.00 17.00 - 17.50	D U	Ublow=15					18
		18.00 18.00 - 18.50	D B						19
		18.50 18.50	D SPT	N=18 (3,4/4,4,5,5)					20
		19.00	D						20
		20.00	D						20

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mgl to clear services. No groundwater encountered. Borehole extended to 30mgl following the absence of chalk between ground level and 15.3mgl. Falling head tests carried out at 15.50 and 25.00mgl. 50mm internal diameter monitoring standpipe installed to 30.00mgl.





Borehole Log

Borehole No.

BH203

Sheet 3 of 4

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502994.19 Northing: 207294.13	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 142.42 Final Depth (m): 30.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 15/04/2016 End Date: 15/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00	SPT	N=18 (2,3/4,5,5,4)					
		21.00	D						21
		21.50 21.50	D SPT	N=18 (2,3/3,4,5,6)					
		22.00	D						22
		23.00 23.00	D SPT	N=22 (3,4/5,5,6,6)					23
		24.00	D						24
		24.50 24.50	D SPT	N=21 (4,4/5,5,5,6)					
		25.00	D						25
		26.00 26.00	D SPT	N=15 (2,2/3,2,4,6)					26
		27.00	D						27
		27.50 27.50	D SPT	N=21 (3,4/4,5,5,7)					
		28.00	D						28
		29.00 29.00	D SPT	N=13 (2,2/2,3,4,4)					29
		30.00	D		30.00	126.92		Continued on Next Sheet	30

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 30mbgl following the absence of chalk between ground level and 15.3mbgl. Falling head tests carried out at 15.50 and 25.00mbgl. 50mm internal diameter monitoring standpipe installed to 30.00mbgl.




Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502994.19 Northing: 207294.13	Hole Type BH
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Location: Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 142.42 Final Depth (m): 30.00	Scale: 1:50
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Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 15/04/2016 End Date: 15/04/2016	REC Engineer: RH
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		30.00	SPT	N=24 (3,3/4,6,7,7)				End of Borehole at 30.00m	31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Borehole extended to 30mbgl following the absence of chalk between ground level and 15.3mbgl. Falling head tests carried out at 15.50 and 25.00mbgl. 50mm internal diameter monitoring standpipe installed to 30.00mbgl.	
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Borehole Log

Borehole No.

BH204

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503221.27 Northing: 207257.95	Hole Type BH
Location:	Hemel Hempstead	Plant: Pilcon Cable Percussive Rig	Level (m AOD): 134.77 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 14/04/2016 End Date: 14/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.50	134.77		Crops over soft dark brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.50	D						
		1.00 - 1.20	D		2.80	134.27		Firm, medium strength, brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	2
		1.20 - 1.65	U	Ublow=25					
		1.80	D		3	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
		2.00	SPT	N=17 (2,3/4,4,4,5)					
		2.20 - 2.60	B		4	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
		2.60	D						
		3.00 - 3.45	U	Ublow=15	5	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	5
		3.60	D						
		4.00	SPT	N=8 (1,2/1,2,2,3)	6	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	6
		4.70	D						
		5.00 - 5.45	U	Ublow=19	7	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	7
		5.50 - 6.50	B						
		6.50	SPT	N=19 (3,2/4,5,5,5)	8	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	8
	7.50	D							
	8.20 - 8.65	U	Ublow=22	9	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	9	
	9.20	D							
	9.80	SPT	N=19 (2,4/4,6,4,5)	10	134.27		CHALK recovered as soft to firm, white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	10	

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head test carried out at 9.90mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH204

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503221.27	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Northing:	207257.95	Level (m AOD):	134.77
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	14/04/2016	REC Engineer:	MR
				End Date:	14/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.60	D						11
		11.50 - 11.75	B						
		11.50 - 11.75	U	Ublow=24					
		12.00	SPT	N=50 (5,4/6,10,12,22)					12
		12.50 - 13.10	B						13
		13.50 - 13.95	U	Ublow=26					14
		14.50	D						15
		15.00	SPT	N=20 (4,5/4,5,5,6)					16
		16.00	D						17
		17.70	D						18
		17.80 - 18.00	D						
		18.00	SPT	N=24 (5,5/5,6,5,8)					19
		19.20	D						20
		19.80	SPT	N=50 (7,9/9,11,14,16)					
					20.00	131.97		End of Borehole at 20.00m	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head test carried out at 9.90mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH205

Sheet 1 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502763.08	Hole Type	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	207325.24	Level (m AOD):	145.40
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	18/04/2016	REC Engineer:	MR
				End Date:	18/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description					
		Depth (m)	Type	Results									
[Well Diagram]		0.50	D		0.50	145.40	[Pattern]	Grass over soft, dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	1				
		0.50 - 1.00	B										
		1.00	D										
		1.20	D										
		1.20 - 1.70	U	Ublow=44									
		1.50	D										
		1.50 - 2.00	B										
		2.00	D										
		2.00	SPT	N=21 (2,3/6,6,5,4)									
		2.50	D										
		3.00	D										
		3.00 - 3.50	U	Ublow=46									
		3.50	D										
		4.00	D										
		4.00	SPT	N=21 (3,4/4,5,6,6)									
	4.50	D											
	5.00	D											
	5.00 - 5.50	B											
	5.00 - 5.50	U	Ublow=40										
	6.00	D		6.30	144.90	[Pattern]	CHALK recovered as firm to stiff, gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	7					
	6.50	D											
	6.50	SPT	N=30 (11,11/10,8,6,6)										
	7.00	D											
	7.00 - 7.50	B											
	8.00	D											
	8.00 - 8.50	U	Ublow=10										
	9.00	D											
	9.50	D											
	9.50	SPT	N=15 (3,3/4,4,3,4)										
	10.00	D											
												Continued on Next Sheet	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH205

Sheet 2 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502763.08 Northing: 207325.24	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 145.40 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 18/04/2016 End Date: 18/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.50	D U	Ublow=10					11
		12.00	D						12
		12.50 12.50	D SPT	N=16 (2,2/3,3,5,5)					13
		13.00	D						13
		14.00 14.00	D SPT	N=19 (1,1/3,5,5,6)					14
		15.00	D						15
		15.50 15.50	D SPT	N=16 (2,2/3,4,5,4)					16
		16.00	D						16
		17.00 17.00 17.00 - 17.50	D SPT B	N=19 (3,3/4,4,5,6)					17
		18.00	D						18
		18.50 18.50	D SPT	N=22 (4,4/5,6,6,5)					19
		19.00	D						19
		20.00	D		20.00	139.10		Continued on Next Sheet	20

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH205

Sheet 3 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502763.08 Northing: 207325.24	Hole Type BH
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Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 145.40 Final Depth (m): 20.00	Scale: 1:50
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Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 18/04/2016 End Date: 18/04/2016	REC Engineer: MR
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00	SPT	N=22 (4,4/5,5,6,6)				End of Borehole at 20.00m	
									21
									22
									23
									24
									25
									26
									27
									28
									29
									30

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.00mbgl and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH206

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502868.74	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Northing:	207060.11	Level (m AOD):	133.49
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	MR
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.50	133.49		Grass over soft, dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.80	D						
		1.20 - 1.65	B		1.50	132.99		CHALK recovered as soft to stiff white gravelly CLAY with low cobble content. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	2
		1.20 - 1.65	U	Ublow=10					
		1.65 - 2.10	U						
		2.40	D						
		2.60	SPT	N=5 (1,2/1,1,1,2)					
		3.50	D						
		3.60 - 4.05	B						
		3.60 - 4.05	U	Ublow=15					
		4.20	SPT	N=9 (1,0/1,2,3,3)					
		4.80	D						
		5.20 - 5.65	U	Ublow=30					
		6.00	D						
	6.70	SPT	N=18 (2,3/5,5,4,4)						
	7.80	D							
	8.20 - 8.65	U	Ublow=25						
	9.20	D							
	9.80	SPT	N=19 (3,2/3,4,6,6)						
Continued on Next Sheet								10	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.30mbgl and 15.00 mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH206

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502868.74	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Northing:	207060.11	Level (m AOD):	133.49
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	15/04/2016	REC Engineer:	MR
				End Date:	15/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.20	D						11
		11.70 - 12.15	U	Ublow=40					12
		12.60	D						13
		13.20	SPT	N=24 (2,3/5,6,6,7)					14
		14.00	D						15
		14.80 - 15.25	U	Ublow=45					16
		16.00	D						17
		16.30	SPT	N=26 (3,5/5,6,7,8)					18
		17.30	D						19
		18.00 - 18.45	U	Ublow=50					20
		19.40	D						
		19.60	SPT	N=31 (4,5/7,7,8,9)					
					20.00	131.99		End of Borehole at 20.00m	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.30mbgl and 15.00 mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH207

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503116.77 Northing: 207086.36	Hole Type BH
Location:	Hemel Hempstead	Plant: Pilcon Cable Percussive Rig	Level (m AOD): 132.88 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 18/04/2016 End Date: 18/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.50	132.88	Grass over soft, dark gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
		1.00	D					Very stiff, brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.20 - 1.60	U	Ublow=50					
		1.60 - 2.00	B						
		2.00	SPT	N=50 (8,10/12,14,15,9)				2	
		2.60	D						
		3.00	SPT	N=50 (9,12/14,14,12,10)				3	
		3.70	D						
		4.00	SPT	N=49 (8,10/10,12,12,15)				4	
		4.60	D						
		5.00	SPT	N=50 (9,12/10,12,14,14)				5	
		5.60 - 5.75	D						
		5.90	D					6	
		6.30	D		6.30	132.38	CHALK recovered as firm to very stiff angular to rounded, fine to coarse gravelly CLAY with low cobble content. Gravel is very weak to weak, angular to rounded, fine to coarse flint, and angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	7	
		6.50	SPT	N=11 (1,0/2,2,3,4)					
		7.50	D						
		8.00 - 8.45	U	Ublow=35				8	
		9.00	D					9	
		9.70	SPT	N=28 (2,3/4,6,8,10)				10	

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.50 and 15.60mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH207

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503116.77	Hole Type:	BH
				Northing:	207086.36		
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Level (m AOD):	132.88	Scale:	1:50
				Final Depth (m):	20.00		
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Start Date:	18/04/2016	REC Engineer:	MR
				End Date:	18/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.10 - 10.35	B						
		10.50	D						
		11.20 - 11.65	U	Ublow=40					11
		12.50	D						12
		13.80	SPT	N=18 (1,3/4,4,5,5)					13
		14.80	D						14
		15.00 - 15.45	U	Ublow=45					15
		16.00	D						16
		16.50	SPT	N=26 (3,4/5,7,6,8)					17
		17.40	D						18
		18.00 - 18.45	U	Ublow=50					19
		19.20	D						20
		19.70	SPT	N=32 (4,5/7,8,8,9)					20
				20.00	126.58		End of Borehole at 20.00m		20

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.50 and 15.60mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH208

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502969.92 Northing: 206778.29	Hole Type BH
Location:	Hemel Hempstead	Plant: Pilcon Cable Percussive Rig	Level (m AOD): 110.35 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 19/04/2016 End Date: 19/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.40	110.35		Grass over soft, dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	1
		0.80	D						
		1.20 - 1.65	U		1.80	109.95		Firm, brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	2
		1.60 - 1.70	D						
		1.80	D						
		2.00	SPT	N=24 (3,4/3,5,7,9)					
		2.60 - 2.70	D						
		2.80	D						
		3.00	SPT	N=26 (5,7/6,7,5,8)	3				
		3.60	D						
		4.00 - 4.40	B						
		4.00 - 4.40	U	Ublow=45					
		4.60	D		4				
		5.00	SPT	N=21 (4,5/4,5,6,6)					
		6.00	D		5				
		6.50 - 6.95	U	Ublow=50					
	7.00 - 7.25	D		6					
	7.60	D							
	8.00	SPT	N=17 (3,3/4,3,4,6)	7					
	9.00	D							
	9.60	SPT	N=18 (4,3/4,5,5,4)	8					
				9					
				10					

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH208

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502969.92	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Pilcon Cable Percussive Rig	Northing:	206778.29	Level (m AOD):	110.35
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	20.00	Scale:	1:50
				Start Date:	19/04/2016	REC Engineer:	MR
				End Date:	19/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D						
		11.00 - 11.45	U	Ublow=50					11
		12.00	D						12
		12.50	SPT	N=15 (3,2/3,4,3,5)					13
		13.50	D						14
		14.00 - 14.45	U						15
		15.50	D						16
		16.00	SPT	N=21 (3,4/5,4,5,7)					17
		17.00	D						18
		18.50	D						19
		18.80	SPT	N=28 (5,6/6,7,7,8)					20
		19.80	D						
		20.00	SPT	N=43 (6,8/9,10,12,12)	20.00	108.55		End of Borehole at 20.00m	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. Falling head tests carried out at 10.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 20.00mbgl.





Borehole Log

Borehole No.

BH209

Sheet 1 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502922.06	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	206595.22	Scale:	1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Level (m AOD):	104.92	REC Engineer:	MR
				Final Depth (m):	22.00		
				Start Date:	19/04/2016		
				End Date:	19/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	104.92		Grass over soft, dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	
		0.50	D					Firm, brown mottled white gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		0.50 - 1.00	B		0.80	104.62		CHALK recovered as medium dense, white, clayey GRAVEL. Gravel is weak to moderately weak, angular to rounded, fine to coarse chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	1
		1.00	D						
		1.20	D						
		1.20 - 1.70	U	Ublow=38					
		1.50 - 2.00	B						
		2.00	D						2
		2.00	SPT	N=14 (2,3/4,2,4,4)					
		2.50	D						
		3.00	D						3
		3.00	SPT	N=15 (3,3/4,4,3,4)					
		3.50	D						
		4.00	D						4
		4.00	SPT	N=18 (3,4/4,5,4,5)					
		4.50	D						
		5.00	D						5
		5.00 - 5.50	U	Ublow=62					
		6.00	D						6
		6.00 - 6.50	B						
		6.50	D						7
		6.50	SPT	N=17 (2,3/4,4,5,4)					
		7.00	D						
		8.00	D						8
		8.00	SPT	N=15 (3,4/3,3,4,5)					
		9.00	D						9
		9.50	D						
		9.50 - 10.00	U	Ublow=30					
		10.00	D						10

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Water strike at 19mbgl and remained static. Borehole extended to 22mbgl following groundwater strike. Borehole redrilled from 19 to 22mbgl following borehole collapse. Falling head tests carried out at 10.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 22.00mbgl.





Borehole Log

Borehole No.

BH209

Sheet 2 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502922.06	Hole Type:	BH
Location:	Hemel Hempstead	Plant:	Dando Cable Percussive Rig	Northing:	206595.22	Level (m AOD):	104.92
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Final Depth (m):	22.00	Scale:	1:50
				Start Date:	19/04/2016	REC Engineer:	MR
				End Date:	19/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00	D SPT	N=11 (2,3/3,3,3,2)					11
		12.00 12.00 - 12.50	D B						12
		12.50 12.50	D SPT	N=13 (3,3/2,3,4,4)					13
		13.00	D						14
		14.00 14.00	D SPT	N=19 (3,4/6,4,5,4)					15
		15.00	D						16
		15.50 15.50	D SPT	N=20 (3,4/4,5,5,6)					17
		16.00	D						18
		17.00 17.00	D SPT	N=15 (3,4/4,4,3,4)					19
		18.00	D						20
		18.50 18.50	D SPT	N=20 (4,4/5,4,5,6)					20
	▼	19.00	D						20
		20.00	D						20


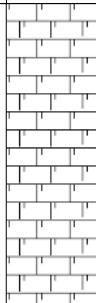
Continued on Next Sheet


Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Water strike at 19mbgl and remained static. Borehole extended to 22mbgl following groundwater strike. Borehole redrilled from 19 to 22mbgl following borehole collapse. Falling head tests carried out at 10.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 22.00mbgl.



Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502922.06 Northing: 206595.22	Hole Type BH
Location: Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 104.92 Final Depth (m): 22.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 19/04/2016 End Date: 19/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00	SPT	N=21 (4,4/5,4,6,6)	22.00	104.12		End of Borehole at 22.00m	21
		21.00	D						22
		21.50 21.50	D SPT	N=22 (3,4/4,5,6,7)					23
		22.00	D						24
									25
									26
									27
									28
									29
									30

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Water strike at 19mbgl and remained static. Borehole extended to 22mbgl following groundwater strike. Borehole redrilled from 19 to 22mbgl following borehole collapse. Falling head tests carried out at 10.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 22.00mbgl.	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Borehole Log

Borehole No.

BH210

Sheet 1 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503046.92 Northing: 206618.04	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 99.61 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 20/04/2016 End Date: 20/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	99.61		Grass over soft, dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50	D					Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint.	
		0.50 - 0.70	B						
		0.70	D		0.80	99.21		[CLAY-WITH-FLINTS FORMATION]	
		1.20	D					CHALK recovered as dense clayey GRAVEL. Gravel is very weak to weak angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint.	1
		1.20 - 1.70	B						
		1.20 - 1.70	U	Ublow=62				[LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		2.00	D						2
		2.00	SPT	N=10 (2,2/2,3,2,3)					
		2.50	D						
		3.00	D						3
		3.00	SPT	N=11 (3,2/3,2,3,3)					
		3.50	D						
		4.00	D						4
	4.00	SPT	N=15 (2,3/3,4,4,4)						
	4.50	D							
	5.00	D						5	
	5.00 - 5.50	U	Ublow=20						
	6.00	D						6	
	6.50	D							
	6.50	SPT	N=15 (3,3/4,4,4,3)						
	7.00	D						7	
	8.00	D						8	
	8.00	SPT	N=17 (3,4/4,5,4,4)						
	9.00	D						9	
	9.50	D							
	10.00	D						10	

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Groundwater strike at 14.50mbgl and remained static. Falling head tests carried out at 8.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 18.00mbgl. Borehole collapsed below 18.00mbgl during installation.





Borehole Log

Borehole No.

BH210

Sheet 2 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503046.92 Northing: 206618.04	Hole Type BH
Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 99.61 Final Depth (m): 20.00	Scale: 1:50
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 20/04/2016 End Date: 20/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.50	D U	Ublow=40					11
		12.00	D						12
		12.50 12.50	D SPT	N=19 (4,4/5,5,5,4)					13
		13.00	D						13
		14.00 14.00	D SPT	N=21 (3,4/5,5,6,5)					14
		15.00	D						15
		15.50 15.50	D SPT	N=22 (3,4/5,6,6,5)					16
		16.00	D						16
		17.00 17.00	D SPT	N=24 (4,5/5,6,6,7)					17
		18.00	D						18
		18.50 18.50	D SPT	N=25 (5,5/6,6,7,6)					19
		19.00	D						19
		20.00	D		20.00	98.81			20

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Groundwater strike at 14.50mbgl and remained static. Falling head tests carried out at 8.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 18.00mbgl. Borehole collapsed below 18.00mbgl during installation.





Borehole Log

Borehole No.

BH210

Sheet 3 of 3

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503046.92 Northing: 206618.04	Hole Type BH
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Location:	Hemel Hempstead	Plant: Dando Cable Percussive Rig	Level (m AOD): 99.61 Final Depth (m): 20.00	Scale: 1:50
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Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 20/04/2016 End Date: 20/04/2016	REC Engineer: MR
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00	SPT	N=28 (6,6/7,6,7,8)				End of Borehole at 20.00m	
									21
									22
									23
									24
									25
									26
									27
									28
									29
									30

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. Groundwater strike at 14.50mbgl and remained static. Falling head tests carried out at 8.00 and 15.00mbgl. 50mm internal diameter monitoring standpipe installed to 18.00mbgl. Borehole collapsed below 18.00mbgl during installation.



Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	154.90		Crops over soft, dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
								Firm to stiff brown gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	2
									3
									4
									5
									6
									7
									8
					9.00	154.40		CHALK recovered as white gravelly CLAY. Gravel is angular to rounded, fine to coarse chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	9
								Continued on Next Sheet	10

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									21
									22
									23
									24
									25
									26
									27
									28
									29
									30

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									41
									42
									43
									44
									45
									46
									47
									48
									49
									50

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
▼									Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									61
									62
									63
									64
									65
									66
									67
									68
									69
									70

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.


Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502908.98 Northing: 207666.90	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 154.90 Final Depth (m): 80.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 03/05/2016 End Date: 04/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									71
									72
									73
									74
									75
									76
									77
									78
									79
					80.00	145.90		End of Borehole at 80.00m	80

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole drilled to intercept groundwater. Terminated at target depth. No samples obtained and little soil recovered due to drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 80.00mbgl. Depth to standing water post drilling at 60.00mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502861.98 Northing: 207026.01	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 131.19 Final Depth (m): 60.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 05/05/2016 End Date: 05/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	131.19	Crops over soft, dark grey gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [TOPSOIL]	1	
							Firm to stiff brown gravelly CLAY with low cobble content. Gravel is angular to rounded with fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	2	
								3	
								4	
								5	
								6	
								7	
								8	
					9.00	130.69	CHALK recovered as white gravelly CLAY. Gravel is angular to rounded, fine to coarse chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	9	
							Continued on Next Sheet	10	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502861.98 Northing: 207026.01	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 131.19 Final Depth (m): 60.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 05/05/2016 End Date: 05/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Continued on Next Sheet

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502861.98 Northing: 207026.01	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 131.19 Final Depth (m): 60.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 05/05/2016 End Date: 05/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									21
									22
									23
									24
									25
									26
									27
									28
									29
									30

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.

Borehole Log

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502861.98	Hole Type:	RO
Location:	Hemel Hempstead	Plant:	Truck Mounted Commachio 450 Rotary Rig	Northing:	207026.01	Level (m AOD):	131.19
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Dynamic Sampling	Final Depth (m):	60.00	Scale:	1:50
				Start Date:	05/05/2016	REC Engineer:	MR
				End Date:	05/05/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								31
								32
								33
								34
								35
								36
								37
								38
								39
								40

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.


Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502861.98 Northing: 207026.01	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 131.19 Final Depth (m): 60.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 05/05/2016 End Date: 05/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
▼									41
									42
									43
									44
									45
									46
									47
									48
									49
									50

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502861.98 Northing: 207026.01	Hole Type RO
Location: Hemel Hempstead	Plant: Truck Mounted Commachio 450 Rotary Rig	Level (m AOD): 131.19 Final Depth (m): 60.00	Scale: 1:50
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Dynamic Sampling	Start Date: 05/05/2016 End Date: 05/05/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1									51
									52
									53
									54
									55
									56
									57
									58
									59
					60.00	122.19		End of Borehole at 60.00m	60

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear for services. Borehole collapse between 59.70 and 60.00mbgl. No samples obtained and little soil recovered due to the drilling technique. Soil descriptions are likely to be inaccurate as a result. 50mm internal diameter monitoring standpipe installed to 60.00mbgl. Depth to standing groundwater post drilling at 44.80mbgl.	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Trial Pit Log

Borehole No.

TP201

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503003.00	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207579.00	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	146.00	REC Engineer:	MR
				Final Depth (m):	5.00		
				Start Date:	28/04/2016		
				End Date:	28/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	146.00		Crops over soft brown gravelly CLAY. Gravel is angular to rounded. Fine to coarse flint. [TOPSOIL]	
		1.10		HVP=80				Firm to stiff, high strength, brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.60	D		1.80	145.60		Northern side of pit only: Structureless CHALK comprising very weak to weak, angular to rounded chalk, and angular to rounded, fine to coarse flint GRAVEL. Occasional weak, subangular chalk boulders. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	2
		2.30 2.30	D	HVP=110					3
		4.00	D						4
Continued on Next Sheet									

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.00mbgl after establishing depth to full coverage of chalk. No groundwater encountered. Hole backfilled with arisings in reverse order and compacted in layers. Hand shear vane test undertaken at 2.30mbgl was from the clay at eastern side of the pit.	Pit Dimensions		
	(m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	5.00	



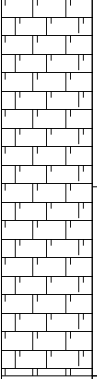
Trial Pit Log

Borehole No.

TP201

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503003.00 Northing: 207579.00	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 146.00 Final Depth (m): 5.00	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/04/2016 End Date: 28/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00	144.20	 ... between 4.50 and 5.00mbgl: chalk encountered throughout pit.		5
							End of Borehole at 5.00m		6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.00mbgl after establishing depth to full coverage of chalk. No groundwater encountered. Hole backfilled with arisings in reverse order and compacted in layers. Hand shear vane test undertaken at 2.30mbgl was from the clay at base of the hole.	Pit Dimensions (m)		
	Length:		4.70
	Width:		1.30
	Depth:		5.00



Trial Pit Log

Borehole No.

TP202

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503083.82	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207645.76	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	145.22	REC Engineer:	MR
				Final Depth (m):	5.00		
				Start Date:	21/04/2016		
				End Date:	21/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Crops over soft, grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
		0.50	D		0.40	145.22			
		1.50		HVP=95			Firm to stiff, high strength, brown mottled grey slightly sandy, slightly gravelly CLAY with medium cobble content. Gravels are angular fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
		1.60	B						
		2.20		HVP=120				2	
		2.90	D					3	
		3.90	D					4	
Continued on Next Sheet									

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Terminated at 5.00mbgl due to collapse. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m) Length: 5.00 Width: 1.30 Depth: 5.00	



Trial Pit Log

Borehole No.

TP202

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503083.82 Northing: 207645.76	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 145.22 Final Depth (m): 5.00	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 21/04/2016 End Date: 21/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.80	D		5.00	144.82		End of Borehole at 5.00m	5
									6
									7
									8

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Terminated at 5.00mbgl due to collapse. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Eastern pit wall collapsed on excavation below 5.0mbgl.</p>	<p>Pit Dimensions (m)</p> <p>Length: 5.00</p> <p>Width: 1.30</p> <p>Depth: 5.00</p>	
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Trial Pit Log

Borehole No.

TP203

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502948.78	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207381.04	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	144.86	REC Engineer:	MR
				Final Depth (m):	4.60		
				Start Date:	28/04/2016		
				End Date:	28/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES	HVP=60	0.40	144.85		Crops over soft, dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.70 0.70 0.80	B ES					Firm to stiff, medium strength, brown gravelly CLAY with low cobble content. Gravel is angular to rounded with fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
		1.40	D	HVP=115	1.70	144.46		Northern side of pit only: Structureless CHALK composed of white, very weak to weak, angular to subrounded chalk, GRAVEL and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	2
		1.90							
		2.80	D						3
									4

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 4.60mbgl after establishing depth to full coverage of chalk. No groundwater encountered. Hole backfilled with arisings in reverse order and compacted in layers. Hand shear vane undertaken at 1.90mbgl was from the clay at the stability side of the pit.	Pit Dimensions (m) Length: 4.60 Width: 1.30 Depth: 4.60	



Trial Pit Log

Borehole No.

TP203

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502948.78 Northing: 207381.04	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.86 Final Depth (m): 4.60	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/04/2016 End Date: 28/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							... below 4.00mbgl: chalk encountered throughout the pit.	
				4.60	143.16		End of Borehole at 4.60m	



<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 4.60mbgl after establishing depth to full coverage of chalk. No groundwater encountered. Hole backfilled with arisings in reverse order and compacted in layers. Hand shear vane undertaken at 1.90mbgl was from the clay at the stability side of the pit.</p>	<p>Pit Dimensions (m) Length: 4.60 Width: 1.30 Depth: 4.60</p>	
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Trial Pit Log

Borehole No.

TP204

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503093.70	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207417.69	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	135.06	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	21/04/2016		
				End Date:	21/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	135.06		Crops over soft, dark grey gravelly CLAY. Gravels are angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.50	B	HVP=70				Firm, medium strength, brown slightly sandy gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Sand is fine to coarse. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]	
		0.50	D						
		0.70							
		2.50	D					2	
		3.50	D					3	
							... below 1.60mbgl: clay is brittle and recovered in gravel sized fragments.	4	
Continued on Next Sheet								4	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration test carried out at 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	5.50	
	Width:	1.30	
	Depth:	5.50	



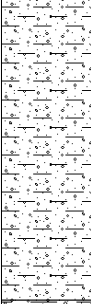
Trial Pit Log


Borehole No.

TP204

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503093.70 Northing: 207417.69	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 135.06 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 21/04/2016 End Date: 21/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.20	D		4.80	134.66	 Brown angular to rounded, fine to coarse slightly sandy clayey flint GRAVEL. [CLAY-WITH-FLINTS FORMATION]	5	
					5.50	130.26		End of Borehole at 5.50m	6
								7	
								8	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration test carried out at 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
	(m)		
	Length:	5.50	
	Width:	1.30	
Depth:	5.50		



Trial Pit Log

Borehole No.

TP205

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502995.00 Northing: 207449.00	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.00 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 21/04/2016 End Date: 21/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	144.00	[TOPSOIL]	Crops over soft, dark grey gravelly CLAY. Gravels are angular to rounded, fine to coarse flint.	
		0.70	B				[CLAY-WITH-FLINTS FORMATION]	Stiff, high strength, brown, slightly sandy, gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint.	1
		1.70	D						
		2.00		HVP=130					2
		2.70	D						3
		4.00	D						4
Continued on Next Sheet									

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.00mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	5.50	
	Width:	1.30	
	Depth:	5.50	



Trial Pit Log

Borehole No.

TP205

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502995.00 Northing: 207449.00	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.00 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 21/04/2016 End Date: 21/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.20	D		5.10	143.50		Structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc] End of Borehole at 5.50m	5
					5.50	138.90			6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.00mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	5.50	
	Width:	1.30	
Depth:	5.50		



Trial Pit Log

Borehole No.

TP206





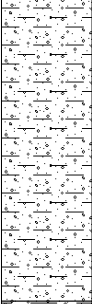

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503148.14 Northing: 207321.72	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 137.47 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 21/04/2016 End Date: 21/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	137.47		Crops over soft, dark grey gravelly CLAY. Gravels are angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50 0.50	B D					Firm to stiff, medium strength, brown slightly sandy gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]	
		1.00		HVP=52					1
		1.40	D						2
		2.70	D					... between 2.70 and 4.00mbgl: dark grey mottling.	
	3.00	D						3	
								4	

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Groundwater not encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration test carried out at 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	5.50	
	Width:	1.30	
	Depth:	5.50	

   		<h1>Trial Pit Log</h1>			Borehole No. TP206 Sheet 2 of 2				
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 503148.14 Northing: 207321.72		Hole Type TP			
Location: Hemel Hempstead		Plant: 14 Tonne Excavator		Level (m AOD): 137.47 Final Depth (m): 5.50		Scale: 1:20			
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 21/04/2016 End Date: 21/04/2016		REC Engineer: MR			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	D		4.80	137.07		Brown slightly sandy clayey angular to rounded, fine to coarse flint GRAVEL with medium cobble content. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	5
					5.50	132.67		End of Borehole at 5.50m	6 7 8

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Groundwater not encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration test carried out at 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers.

Stability: Pit sides stable

Pit Dimensions

(m)
Length: 5.50
Width: 1.30
Depth: 5.50



Trial Pit Log

Borehole No.

TP207

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502755.35 Northing: 207460.05	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 153.27 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES	HVP=68	0.40	153.27		Grass over soft, dark grey gravelly CLAY. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	1
		0.50	D					Firm to stiff, medium strength, reddish brown mottled grey, slightly gravelly CLAY with medium cobble content. Gravels are angular to rounded, fine to coarse flint. Cobbles are angular to rounded, fine to coarse flint. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]	
		0.70						... below 1.50mbgl: clay is brittle and recovered in gravel sized fragments.	
		1.50 1.50 1.50	B ES	HVP=60	2.60	152.87		North eastern corner of pit: structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	2
2.40	D	... below 3.20mbgl: chalk encountered across northern end of pit.	3						
		4.00	D						4

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.00mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.10	
	Width:	1.30	
Depth:	5.50		

Continued on Next Sheet



Trial Pit Log

Borehole No.

TP207

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502755.35 Northing: 207460.05	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 153.27 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	D				... below 4.50mbgl: chalk encountered throughout pit.		5
					5.50	150.67		End of Borehole at 5.50m	6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.00mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.10	
	Width:	1.30	
Depth:	5.50		



Trial Pit Log

Borehole No.

TP208

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502758.83	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207356.88	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	147.41	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	25/04/2016		
				End Date:	25/04/2016		


Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	147.41		Grass over soft grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50	D						Firm to stiff, medium strength, brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]
		1.00 1.00 1.00	B ES	HVP=65					1
		1.50		HVP=80				... below 1.50mbgl: high strength.	
		2.00 2.00	D	HVP=80					2
	3.00	D		2.90	147.01		Structureless CHALK composed of white, very weak to weak, angular to subrounded, fine to coarse chalk, and angular to rounded, fine to coarse, flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	3	
								4	

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	4.40	
	Width:	1.30	
	Depth:	5.50	

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502758.83 Northing: 207356.88	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 147.41 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	D		5.50	144.51		End of Borehole at 5.50m	5
									6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m) Length: 4.40 Width: 1.30 Depth: 5.50	
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Trial Pit Log

Borehole No.

TP209

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502871.68 Northing: 207313.05	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.05 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	144.05		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50	D					Firm to stiff, medium strength, brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]	
		1.00 1.00 1.00	B ES	HVP=75					1
		1.50		HVP=70				<u>... below 1.50mbgl: clay is brittle and recovered in gravel sized fragments.</u>	
		2.00	D						2
					2.80	143.65		East side of pit only: Structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	3
		4.00	D						4

Continued on Next Sheet

Remarks:

Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.20mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers.

Stability: Pit sides stable

Pit Dimensions

(m)
Length: 4.40
Width: 1.30
Depth: 5.50





Trial Pit Log

Borehole No.

TP209

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502871.68 Northing: 207313.05	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.05 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	D		5.50	141.25		... below 4.00mbgl: chalk encountered throughout pit.	5
							End of Borehole at 5.50m		6
									7
									8

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.20mbgl and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.40</p> <p>Width: 1.30</p> <p>Depth: 5.50</p>	
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Trial Pit Log

Borehole No.





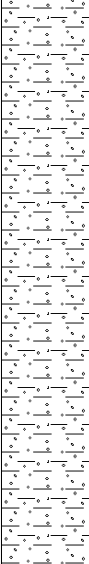
TP210

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502754.16 Northing: 207285.89	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 143.82 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.50	143.82		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.70		HVP=62				Firm to stiff, medium strength brown mottled dark grey, slightly sandy, slightly gravelly CLAY with medium cobble content. Gravels are angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.00 1.00 1.00	B ES	HVP=90					
		2.00 2.00	D	HVP=90					2
		2.60		HVP=88					
	3.00	D						3	
	4.00	D						4	
Continued on Next Sheet									

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.60	
	Width:	1.30	
Depth:	5.50		

   		<h1>Trial Pit Log</h1>			Borehole No. TP210 Sheet 2 of 2				
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 502754.16 Northing: 207285.89		Hole Type TP			
Location: Hemel Hempstead		Plant: 14 Tonne Excavator		Level (m AOD): 143.82 Final Depth (m): 5.50		Scale: 1:20			
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 25/04/2016 End Date: 25/04/2016		REC Engineer: MR			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.50	143.32		... below 4.80mbgl: very stiff.	5
								End of Borehole at 5.50m	6
									7
									8

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers.
Stability: Pit sides stable

Pit Dimensions (m)
 Length: 4.60
 Width: 1.30
 Depth: 5.50





Trial Pit Log

Borehole No.

TP211

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502806.97 Northing: 207152.12	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 136.23 Final Depth (m): 3.10	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 25/04/2016 End Date: 25/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES	HVP=87	0.40	136.23		Grass over soft grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.50	B					Stiff, high strength light brown gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
		0.50	D			2	135.83		Western side of pit only: structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint, GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]
		0.50	ES						
		0.70				3	134.23		End of Borehole at 3.10m

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Soil infiltration test carried out at 3.10mbgl. Hole terminated after establishing soakage at 3.10mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.40	
	Width:	1.30	
	Depth:	3.10	



Trial Pit Log

Borehole No.





TP212

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502834.97 Northing: 207222.19	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 140.53 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/04/2016 End Date: 28/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.30	ES		0.40	140.53	Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]			
		0.60 0.60	B ES				Firm to stiff, medium strength brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]			
		1.00		HVP=72					1	
		1.40	D							
		1.70		HVP=70						
		2.50	D							
		2.70		HVP=82					... below 2.70mbgl: high strength.	
		3.20	D						... below 3.00mbgl: slightly sandy.	3
		3.70		HVP=93				4		
Continued on Next Sheet										

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	5.00	
	Width:	1.30	
	Depth:	5.50	

		  		<h1>Trial Pit Log</h1>			Borehole No. TP212 Sheet 2 of 2	
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 502834.97 Northing: 207222.19		Hole Type TP		
Location: Hemel Hempstead		Plant: 14 Tonne Excavator		Level (m AOD): 140.53 Final Depth (m): 5.50		Scale: 1:20		
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 28/04/2016 End Date: 28/04/2016		REC Engineer: MR		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.40	D					
				5.50	140.13		End of Borehole at 5.50m	
Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable								Pit Dimensions Length: 5.00 Width: 1.30 Depth: 5.50



Trial Pit Log

Borehole No.

TP213

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502815.08 Northing: 207312.32	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.04 Final Depth (m): 4.70	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/04/2016 End Date: 28/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.30	ES		0.40	144.04		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1	
		0.60 0.60	B ES							Firm to stiff, medium strength brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]
		1.40 1.40	D	HVP=60	2.20	143.64		North of trial pit only: Structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse, flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]		2
		2.40 2.40	D	HVP=88						
		3.20	D						3	
								Continued on Next Sheet	4	

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 4.70mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.70</p> <p>Width: 1.30</p> <p>Depth: 4.70</p>	
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Trial Pit Log

Borehole No.

TP213

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502815.08 Northing: 207312.32	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 144.04 Final Depth (m): 4.70	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/04/2016 End Date: 28/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.10	D				... below 4.00mbgl: chalk encountered throughout pit.	
				4.70	141.84		End of Borehole at 4.70m	



Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Hole terminated at 4.70mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	4.70	



Trial Pit Log

Borehole No.

TP214

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502850.15 Northing: 207096.58	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 135.21 Final Depth (m): 5.10	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.30	135.21		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50	B					Firm to stiff, medium strength, brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		0.50	D						
		0.50	ES						
		1.20	D	HVP=70					
		1.20	D		1.60	134.91		North of trial pit only: Structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse, flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	
		2.70	D						
		4.00	D					... below 3.70mbgl: chalk encountered throughout pit.	
								Continued on Next Sheet	

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.10mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 5.00</p> <p>Width: 1.30</p> <p>Depth: 5.10</p>	
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Trial Pit Log

Borehole No.

TP214

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502850.15 Northing: 207096.58	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 135.21 Final Depth (m): 5.10	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.10	133.61		End of Borehole at 5.10m	5
									6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.10mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	5.00	
	Width:	1.30	
	Depth:	5.10	



Trial Pit Log

Borehole No.

TP215E

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502832.84 Northing: 207053.11	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 131.88 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	D		0.50	131.88		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.80		HVP=75				Stiff, high strength light brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [CLAY-WITH-FLINTS FORMATION]	1
		1.10 1.10	D	HVP=85	1.20	131.38		Structureless CHALK composed of: white, very weak to weak, angular to subrounded chalk, and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	2
		2.70	D						3
		3.90	D					4	
Continued on Next Sheet									

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. East of pit [TP215E] and west of pit [TP215W] logged separately due to differing geology. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.80 Width: 1.30 Depth: 5.50</p>	
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Trial Pit Log

Borehole No.

TP215E

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502832.84 Northing: 207053.11	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 131.88 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.40	D		5.50	130.68			5
							End of Borehole at 5.50m		6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. East of pit [TP215E] and west of pit [TP215W] logged separately due to differing geology. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.80	
	Width:	1.30	
	Depth:	5.50	



Trial Pit Log

Borehole No.






TP215W

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502832.84	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207053.11	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	131.88	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	27/04/2016		
				End Date:	27/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	D		0.50	131.88		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.80		HVP=75				Stiff, high strength light brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [CLAY-WITH-FLINTS FORMATION]	1
		1.10 1.10	D	HVP=85				2	
		2.70	D					3	
		3.90	D					4	
Continued on Next Sheet									

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. East of pit [TP215E] and west of pit [TP215W] logged separately due to differing geology. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.80	
	Width:	1.30	
	Depth:	5.50	

								<h1>Trial Pit Log</h1>		Borehole No. TP215W Sheet 2 of 2	
Project Name: Land West of Hemel Hempstead				Proj. ID: 1CO101380		Easting: 502832.84 Northing: 207053.11		Hole Type TP			
Location: Hemel Hempstead				Plant: 14 Tonne Excavator		Level (m AOD): 131.88 Final Depth (m): 5.50		Scale: 1:20			
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)				Crew: Lynch Plant Hire		Start Date: 27/04/2016 End Date: 27/04/2016		REC Engineer: MR			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		5.40	D		5.50	131.38		End of Borehole at 5.50m			
Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. East of pit [TP215E] and west of pit [TP215W] logged separately due to differing geology. Hole terminated at 5.50mbgl due to maximum reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers.								Pit Dimensions Length: 4.80 Width: 1.30 Depth: 5.50			
Stability: Pit sides stable											



Trial Pit Log

Borehole No.

TP216

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502928.57 Northing: 207077.16	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 135.10 Final Depth (m): 4.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30	135.10		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.40	D					Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
		0.50	B		1.60	134.80		Northern end of pit only: Structureless CHALK composed of white, very weak to weak, angular to subrounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	
		0.50	ES	HVP=75					
		1.50							2
		1.50	D						
		2.50	D						3
									4

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 4.50mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.80	
	Width:	1.30	
	Depth:	4.50	



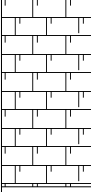
Trial Pit Log

Borehole No.


TP216

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502928.57 Northing: 207077.16	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 135.10 Final Depth (m): 4.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.30	D		4.50	133.50	 ... below 4.00mbgl: chalk encountered throughout pit.	
							End of Borehole at 4.50m	



Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 4.50mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
	Length:	4.80	
	Width:	1.30	
	Depth:	4.50	



Trial Pit Log

Borehole No.






TP217

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503007.37	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207145.63	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	137.86	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	27/04/2016		
				End Date:	27/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20	ES		0.30	137.86		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1		
		0.30	B								Light brown clayey angular to subrounded fine to coarse flint GRAVEL with high cobble content. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]
		0.30	ES								
		0.40	D								
	3.10	D		3.00	137.56		Northern end of pit only: Structureless CHALK composed of white, very weak to weak, angular to rounded, fine to coarse chalk GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	3			
	4.00	D					... below 3.80mbgl: chalk encountered throughout pit.	4			
Continued on Next Sheet											

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests took place at 3.2mbgl and 5.5mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.50	
	Width:	1.30	
	Depth:	5.50	

								<h1>Trial Pit Log</h1>		Borehole No. <h2>TP217</h2>	
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 503007.37 Northing: 207145.63		Hole Type TP					
Location: Hemel Hempstead		Plant: 14 Tonne Excavator		Level (m AOD): 137.86 Final Depth (m): 5.50		Scale: 1:20					
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 27/04/2016 End Date: 27/04/2016		REC Engineer: MR					
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
								5			
				5.50	134.86		End of Borehole at 5.50m	6			
								7			
								8			
Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maxium reach of excavator. Soil infiltration tests took place at 3.2mbgl and 5.5mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable							Pit Dimensions (m) Length: 4.50 Width: 1.30 Depth: 5.50				



Trial Pit Log

Borehole No.

TP218

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503093.47 Northing: 207169.46	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 137.42 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.35	137.42		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		1.20	B ES	HVP=74				Firm to stiff, medium strength, light brown, slightly sandy gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]	
		1.30				... below 1.60mbgl: clay is brittle and recoved in gravel sized fragments.			
		1.30							
		3.20	D					2	
								3	
								4	

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maxium reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.50	
	Width:	1.30	
	Depth:	5.50	



Trial Pit Log

Borehole No.

TP218

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503093.47 Northing: 207169.46	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 137.42 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
Well	Water Strikes	4.40	D		5.50	137.07	Well	Water Strikes
		5.00	D					
End of Borehole at 5.50m								

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maxium reach of excavator. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.50 Width: 1.30 Depth: 5.50</p>	
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Trial Pit Log

Borehole No.

TP219

Sheet 1 of 1



Trial Pit Log

Borehole No.

TP220

Sheet 1 of 1

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502944.04 Northing: 207026.49	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 131.96 Final Depth (m): 4.00	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/04/2016 End Date: 22/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	ES		0.30	131.96		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1	
		0.50 0.50	B ES					Firm to stiff, medium to high strength, brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Clay becoming increasingly friable with depth. [CLAY-WITH-FLINTS FORMATION]		
		0.70		HVP=70	1.40	131.66		Western side of pit only: Structureless CHALK composed of white, very weak to weak, angular to subrounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]		2
		1.20 1.20	D	HVP=80				... below 2.50mbgl: chalk encountered throughout pit.		
		2.70	D							
	3.50	D						4		
				4.00	130.56		End of Borehole at 4.00m			

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 4.00mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.80 Width: 1.30 Depth: 4.00</p>	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Trial Pit Log

Borehole No.

TP221

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503052.44	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	207043.80	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	131.25	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	22/04/2016		
				End Date:	22/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES	HVP=58	0.40	131.25		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.50	B						
		0.50	ES						
		1.60	D						
	2.80	D				3			
							4		

Continued on Next Sheet

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.20mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP221

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503052.44 Northing: 207043.80	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 131.25 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/04/2016 End Date: 22/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.20	D						
					5.20	129.55	... below 4.40mbgl: chalk encountered throughout pit.		5
							End of Borehole at 5.20m		6
									7
									8

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.20mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP222

Sheet 1 of 1

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503137.82 Northing: 206956.33	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 120.69 Final Depth (m): 3.14	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/04/2016 End Date: 22/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.30	ES		0.40	120.69		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
		1.00	B		1.40	120.29		Firm to stiff, medium strength dark brown gravelly CLAY with low cobble content. Gravels are angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
		1.20		HVP=51						
		1.30		HVP=66						
		2.00	D		2.10				Eastern end of pit only: Structureless CHALK composed of white clayey, very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc] <i>... below 1.70mbgl: chalk visible throughout pit.</i>	2
		2.10		HVP=27						
				3.14	119.29		End of Borehole at 3.14m	3		
								4		

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Terminated upon establishing depth to full coverage of chalk. Soil infiltration test took place at 3.14mbgl. Terminated after establishing soakage at 3.14mbgl. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.40 Width: 1.30 Depth: 3.14</p>	
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Trial Pit Log

Borehole No.

TP223

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502901.59 Northing: 206849.03	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 116.22 Final Depth (m): 5.50	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/04/2016 End Date: 26/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.60	116.22		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.40	ES						
		1.00 1.00	B ES					Firm to stiff, medium strength brown gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		2.00	D						2
		3.70	D		3.60	115.62		Structureless CHALK composed of white very weak to weak, angular to subrounded, fine to coarse chalk and angular to subrounded, fine to coarse flint gravels. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	3
								Continued on Next Sheet	4

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. NO groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.10 and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.10 Width: 1.30 Depth: 5.50</p>	
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Trial Pit Log

Borehole No.

TP223

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502901.59	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	206849.03	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	116.22	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	26/04/2016		
				End Date:	26/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.25	D					
				5.50	112.62		<p>... below 5.00mbgl: low cobble content. Cobbles are angular to subrounded flint.</p> <p>End of Borehole at 5.50m</p>	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. NO groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests carried out at 3.10 and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	4.10	
	Width:	1.30	
	Depth:	5.50	



Trial Pit Log

Borehole No.

TP224

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503001.92 Northing: 206891.37	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 121.28 Final Depth (m): 3.00	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/04/2016 End Date: 26/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
[Pattern]		0.30	ES		0.40	121.28	[Pattern]	Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.50 0.50	B ES				[Pattern]	Firm to stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					0.90	120.88	[Pattern]	Structureless CHALK composed of white, very weak to weak, angular to subrounded chalk, and angular to rounded, fine to coarse flint GRAVEL with low cobble content. Cobbles are angular chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	1
		1.50	D				[Pattern]		2
	2.50	D							
				3.00	120.38		End of Borehole at 3.00m	3	
								4	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Soil infiltration testing undertaken at 3.00mbgl. Terminated after establishing soakage at 3.00mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.20	
	Width:	1.30	
Depth:	3.00		



Trial Pit Log

Borehole No.

TP225

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503088.66 Northing: 206810.61	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 112.53 Final Depth (m): 3.00	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/04/2016 End Date: 26/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00	ES		0.30	112.53		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
		0.70 0.70	B ES					Structureless CHALK composed of white, weak, angular to subrounded, fine to coarse chalk, and angular to rounded, fine to coarse flint GRAVEL, cobbles and boulders with occasional fossils and brown staining. Grade Dc. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	
		2.00	D					2	
					3.00	112.23		End of Borehole at 3.00m	3
									4

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Soil infiltration testing undertaken at 3.00mbgl. Hole terminated after establishing soakage at 3.00mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.20	
	Width:	1.30	
Depth:	3.00		



Trial Pit Log

Borehole No.

TP226

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502969.01	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	206804.98	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	113.24	REC Engineer:	MR
				Final Depth (m):	5.50		
				Start Date:	26/04/2016		
				End Date:	26/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	ES		0.30	113.24		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
		0.50	D					Firm to stiff gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]		
		0.70	B							
		0.70	ES							
		2.10	D					... below 1.60mbgl: clay is brittle and recoved in gravel sized fragments.		
					3.60	112.94		Structureless CHALK composed of white, very weak to weak, angular to subrounded, fine to coarse chalk and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]		
								Continued on Next Sheet		

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maxium reach of excavator. Soil infiltration tests took place at 3.20 and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	4.20	
	Width:	1.30	
Stability: Pit sides stable	Depth:	5.50	



Trial Pit Log

Borehole No.

TP226

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502969.01 Northing: 206804.98	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 113.24 Final Depth (m): 5.50	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/04/2016 End Date: 26/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
Water		4.30	D		5.50	109.64	Cobbles	
		5.20	D					
							End of Borehole at 5.50m	

... below 5.00mbgl: high cobble content. Cobbles are angular to subrounded chalk.

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 5.50mbgl due to maximum reach of excavator. Soil infiltration tests took place at 3.20 and 5.50mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.20	
	Width:	1.30	
Depth:	5.50		



Trial Pit Log

Borehole No.

TP227

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503043.30 Northing: 206751.80	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 101.93 Final Depth (m): 3.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES	HVP=70	0.25	101.93		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.40	B ES		0.50	101.68		Firm, medium strength brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		0.40					Structureless CHALK composed of white with brown staining, weak, medium dense, angular to subrounded CHALK and occasional angular to rounded flint gravels and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]		
		0.40							
		1.40	B						
		3.00	D						
					3.20	101.43		End of Borehole at 3.20m	

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Soil infiltration testing undertaken at 3.20mbgl. Terminated after establishing soakage at 3.20mbgl. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.00	
	Width:	1.30	
	Depth:	3.20	



Trial Pit Log

Borehole No.

TP228

Sheet 1 of 1



Trial Pit Log

Borehole No.

TP229

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502935.84	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	206722.04	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	110.70	REC Engineer:	MR
				Final Depth (m):	4.00		
				Start Date:	27/04/2016		
				End Date:	27/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	110.70		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		1.00	D					Structured CHALK composed of slightly sandy, clayey, weak, high density, white with frequent brown specs, chalk GRAVEL, and boulders. Fractures very closely spaced, heavily brown stained. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE C5]	1
		2.00	D						2
		3.00	D					... between 3.00 and 3.50mbgl: band of fine to coarse brown sand encountered within southern end of pit.	3
					4.00	110.40		End of Borehole at 4.00m	4

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Terminated at 4.00mbgl after establishing depth of chalk below a lense of sand. Hole backfilled with arisings in reverse order and compacted in layers.	Stability: Pit sides stable	Pit Dimensions (m)		
		Length:	4.00	
		Width:	1.30	
		Depth:	4.00	



Trial Pit Log

Borehole No.

TP230

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502803.47	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14 Tonne Excavator	Northing:	206551.24	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	101.82	REC Engineer:	MR
				Final Depth (m):	4.30		
				Start Date:	27/04/2016		
				End Date:	27/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	101.82		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		0.70 0.70	B ES					Stiff, high strength brown, slightly sandy gravelly CLAY with medium cobble content. Gravels is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. Sand is fine to coarse. [CLAY-WITH-FLINTS FORMATION]	1
		1.40 1.50	D	HVP=78					
		2.10		HVP=78					2
		3.20	D		3.10	101.42		Structureless CHALK composed of white very weak to weak, angular to rounded chalk, GRAVEL and cobbles. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]	3
								Continued on Next Sheet	4

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 4.30mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	4.30	



Trial Pit Log

Borehole No.

TP230

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502803.47 Northing: 206551.24	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 101.82 Final Depth (m): 4.30	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.20	D		4.30	98.72		
							End of Borehole at 4.30m	



Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 4.30mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions (m)		
	Length:	4.70	
	Width:	1.30	
	Depth:	4.30	



Trial Pit Log

Borehole No.

TP231

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502935.38 Northing: 206661.83	Hole Type TP
Location:	Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 109.13 Final Depth (m): 3.00	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/04/2016 End Date: 27/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20	ES	HVP=64	0.30	109.13		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]			
		0.50	B		0.50	ES	0.80	108.83		Firm to stiff, medium strength brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		1.20	B		0.80	ES	1.20	108.83		Structured CHALK composed of weak, dense, white with frequent black specs, angular to subrounded coarse chalk GRAVEL cobbles and boulders. Fractures very closely spaced. Heavily brown stained. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE C5]	1
		2.30	D		2.30	ES	2.30	108.33			2
					3.00	108.33		End of Borehole at 3.00m	3		
									4		

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 3.00mbgl after establishing depth to full coverage of chalk. Hole backfilled with arisings in reverse order and compacted in layers. Stability: Pit sides stable	Pit Dimensions		
	(m)		
	Length:	4.30	
	Width:	1.30	
	Depth:	3.00	



Trial Pit Log

Borehole No.

TP232

Sheet 1 of 1

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503080.60 Northing: 206669.45	Hole Type TP
Location: Hemel Hempstead	Plant: 14 Tonne Excavator	Level (m AOD): 100.79 Final Depth (m): 3.00	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/04/2016 End Date: 26/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	ES		0.30	100.79		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1	
		0.50	D					Stiff brown gravelly CLAY with low cobble content. Clay is brittle and friable and recovered in gravel sized fragments only. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]		
		1.00 1.00	B ES		1.30	100.49		Structureless CHALK composed of white, weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint gravel. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED) GRADE Dc]		2
		1.50	B							
		2.50	D							
				3.00	99.49		End of Borehole at 3.00m	3		
								4		

<p>Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. No groundwater encountered. Soil infiltration testing carried out at 3.00mbgl. Terminated after establishing soakage at 3.00mbgl. Hole backfilled with arisings in reverse order and compacted in layers.</p> <p>Stability: Pit sides stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.00 Width: 1.30 Depth: 3.00</p>	
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Borehole Log

Borehole No.

WS201

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502890.48 Northing: 207621.67	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 154.44 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 14/04/2016 End Date: 14/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30			154.44		Crops over very soft brown slightly gravelly CLAY with frequent rootlets. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]		
		0.80		HVP=48					
		1.00	SPT	N=10 (3,3/2,2,3,3)					
		1.20 - 1.30	D						
		1.30		HVP=88			... below 1.30mbgl: high strength with frequent black specks.		
		1.90		HVP=106			... below 1.70mbgl: stiff and slightly sandy with medium to coarse flint gravel.		
		2.00	SPT	N=19 (4,5/4,6,5,4)	2.05	154.14			
		2.00 - 2.10	D				Orangeish brown, mottled white very clayey GRAVEL. Gravels are angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	2	
		2.40		HVP=100	2.30	152.39			
		2.80		HVP=108			Stiff, high strength orangeish brown gravelly CLAY with black mottling. Gravel is angular to subrounded with fine to medium flint. Cobbles are subrounded to rounded flint. [CLAY-WITH-FLINTS FORMATION]		
		3.00 - 3.10	D					3	
		3.70		HVP=98			... between 3.60 and 4.00mbgl: no recovery.		
		4.00 - 4.10	D					4	
		4.20		HVP=75					
		4.80 - 4.90	D						
		5.00			152.14		End of Borehole at 5.00m	5	
								6	

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Borehole Log

Borehole No.

WS202

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503248.12	Hole Type:	WS
Location:	Hemel Hempstead	Plant:	Dando Terrier Rig	Northing:	207428.62	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Level (m AOD):	137.80	REC Engineer:	RH
				Final Depth (m):	5.00		
				Start Date:	14/04/2016		
				End Date:	14/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.27	137.80		Crops over very soft brown silty gravelly CLAY with frequent rootlets. Gravel is angular to subrounded, fine to medium flint. [TOPSOIL]	
		1.00	D					Soft to firm, medium to high strength orangeish brown gravelly CLAY with cobbles. Gravel is angular to subrounded fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.30		HVP=74				... at 1.30mbgl: black specks.	
		1.55			1.55	137.53		... at 1.50mbgl: becoming stiff slightly sandy gravel.	
		1.70		HVP=106	1.70	136.25		Firm to stiff, high strength, orangeish brown silty gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	2
		2.00	D					Stiff, high strength, orangeish brown gravelly CLAY with black mottling. Gravel is angular to subrounded with fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
		2.20		HVP=94					
		2.80		HVP=120					
		3.00			3.00	136.10		NO RECOVERY.	3
		3.40	D		3.40	134.80		Stiff, high strength orangeish brown gravelly CLAY with black mottling. Gravel is angular to subrounded with fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
		3.50		HVP=108					
		3.80		HVP=116					
		4.00	D					... at 3.90mbgl: slightly sandy.	4
		4.30		HVP=90	4.20	134.40		Stiff to very stiff, high strength orangeish brown slightly sandy gravelly CLAY. Sand is coarse. Gravel is subrounded to rounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		4.80	D						
		4.90		HVP=116					
		5.00			5.00	133.60		End of Borehole at 5.00m	5
									6

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Borehole Log

Borehole No.

WS203

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502848.35	Hole Type:	WS
Location:	Hemel Hempstead	Plant:	Dando Terrier Rig	Northing:	206890.52	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Level (m AOD):	119.43	REC Engineer:	RH
				Final Depth (m):	5.00		
				Start Date:	14/04/2016		
				End Date:	14/04/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.38 - 0.45	ES		0.38	119.43		Grass over very soft brown slightly gravelly CLAY with frequent rootlets. Gravel is angular to subrounded, fine to medium flint. [TOPSOIL]	
		0.60 - 0.70	ES	HVP=45	0.45	119.05		Soft light brown gravelly CLAY. Gravel is subrounded to rounded, fine chalk. [CLAY-WITH-FLINTS FORMATION]	
		0.70						Soft to firm, medium to high strength, orangeish brown with black veins gravelly CLAY. Gravel is angular to well rounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.00	D	HVP=98					
		1.10							
		1.80		HVP=86	1.80	118.98			
		2.00	D					Firm to stiff, high strength orangeish brown very gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse flint. Cobbles are subangular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	2
		2.75		HVP=84					
		3.00			3.00	117.63		NO RECOVERY.	3
		3.40	D	HVP=84	3.40	116.43		Stiff, medium strength, dark orangeish brown mottled black slightly gravelly CLAY. Gravel is subangular to rounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		3.40							
		3.80		HVP=86	4.00	116.03		NO RECOVERY.	4
	4.25	D		4.25	115.43		Stiff orangeish brown very gravelly CLAY. Gravel is angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]		
	4.70		HVP=70	4.80	115.18				
	5.00	D		5.00	114.63		Stiff orangeish brown with white specks very gravelly CLAY. Gravel is subangular to rounded with fine to medium flint and subangular to subrounded fine chalk. [CLAY-WITH-FLINTS FORMATION]	5	
							End of Borehole at 5.00m	6	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Borehole Log

Borehole No.

WS204

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503302.89 Northing: 207306.60	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 127.18 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 14/04/2016 End Date: 14/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	127.18		Grass over very soft brown slitty gravelly CLAY with frequent rootlets. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]	
					1.00			Soft to firm orangeish brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.30	126.78			
				HVP=72 HVP=60	1.45	125.88			
					1.60	125.73		Firm orangeish brown mottled white gravelly CLAY. Gravel is subangular to rounded with fine to medium flint and angular to subangular fine to medium weak chalk. [CLAY-WITH-FLINTS FORMATION]	
			D		2.00			Firm, medium strength light orangeish brown gravelly CLAY. Gravel is angular to subrounded with fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	2
					2.90			CHALK recovered as white to off white with brown veins gravelly silt. Gravel is subangular to subrounded with fine to coarse very weak to weak chalk and angular to subangular medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
			D		3.10	125.58		NO RECOVERY.	3
					4.00	124.08		CHALK recovered as white to off white with brown veins gravelly silt. Gravel is subangular to subrounded with fine to coarse very weak to slightly weak chalk and angular to subangular medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
			D		5.00	123.18		End of Borehole at 5.00m	5
								6	

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Borehole Log

Borehole No.

WS205

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502726.48 Northing: 207411.72	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 151.44 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 12/04/2016 End Date: 12/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	151.44		Grass over soft dark brown gravelly SILT. Gravel is subangular to rounded with fine to medium flint. [TOPSOIL]	
					0.90	151.04		Soft to firm orangeish brown gravelly CLAY. Gravel is subangular to rounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		0.90		HVP=37	0.90	151.04			
		1.00	D						1
		1.20		HVP=60				Soft to firm, medium strength reddish brown mottled grey slightly gravelly CLAY. Gravel is angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		1.80		HVP=90				... below 1.80mbgl: high strength.	
		2.00	D						2
	2.30		HVP=95						
	3.00	D						3	
	3.95		HVP=116		3.80	150.54		Very stiff, high strength brown gravelly CLAY. Gravel is angular to subangular with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
					4.00	147.64		NO RECOVERY.	4
					5.00	147.44		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Borehole Log

Borehole No.

WS206

Sheet 1 of 1

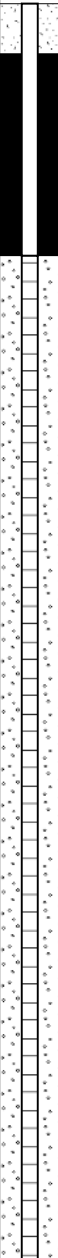
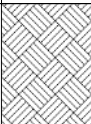
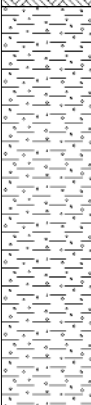

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502821.55 Northing: 207367.48	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 146.09 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 12/04/2016 End Date: 12/04/2016	REC Engineer: RH


Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	146.09		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	
		0.80		HVP=35				Soft, low strength, brown gravelly CLAY. Gravel is angular to rounded with fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.00	D						
		1.35		HVP=66	1.30	145.59		Firm to stiff, medium strength, reddish brown mottled orange and grey CLAY. [CLAY-WITH-FLINTS FORMATION]	
		1.70		HVP=64					
		2.00	D						2
		2.30		HVP=63					
		2.60		HVP=81					
		2.90		HVP=90	2.70	144.79		Stiff, high strength greyish brown mottled orange with black specks CLAY. [CLAY-WITH-FLINTS FORMATION]	3
		3.00	D						
	3.30		HVP=94						
	3.80		HVP=88						
	4.00	D		4.00	143.39		Stiff to brittle greyish brown mottled orange with pink veins and black specks slightly gravelly CLAY. Gravel is subrounded to rounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	4	
	5.00	D		5.00	142.09		End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Unable to carry out shear vane tests below 4.00mbgl due to brittle clay. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502809.17 Northing: 207256.00	Hole Type WS
Location: Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 141.36 Final Depth (m): 5.00	Scale: 1:30
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 12/04/2016 End Date: 12/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	141.36		Grass over soft grey gravelly SILT. Gravel is subangular to rounded with fine to coarse CHALK. [TOPSOIL]	1
								Firm brown gravelly CLAY. Gravel is angular to rounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	2
	1.20	D			2.10	140.86		CHALK recovered as soft white, very weak to weak, angular to subrounded, fine to coarse chalk and angular to rounded, fine to coarse flint GRAVEL. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
	2.30	D							4
	3.00	D							5
		4.00	D						6
					5.00	139.26		End of Borehole at 5.00m	5

Remarks: Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>
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Borehole Log

Borehole No.

WS208

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502891.64 Northing: 207201.48	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 140.18 Final Depth (m): 2.80	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 12/04/2016 End Date: 12/04/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35	140.18		Grass over soft dark brown gravelly SILT. Gravel is subangular to rounded with fine to medium flint. [TOPSOIL]	
					0.80	139.83		Soft to firm orangish brown gravelly CLAY with low cobble content. Gravel is subangular to rounded with fine to coarse flint. Cobbles are subrounded. [CLAY-WITH-FLINTS FORMATION]	
		1.00	D					Firm, high strength reddish brown very gravelly CLAY. Gravel is subangular to rounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.20		HVP=84					
		1.40		HVP=78		1.45	139.38		Firm to stiff, reddish brown gravelly CLAY. Gravel is angular to subrounded with fine to medium flint. [CLAY-WITH-FLINTS FORMATION]
	2.00	D							2
					2.80	138.73		End of Borehole at 2.80m	3
									4
									5
									6

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at refusal on very dense gravel at 2.8mbgl. 50mm internal diameter monitoring standpipe installed to 2.80mbgl.



Well		Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
Water Strikes	Depth (m)	Type	Results						
				0.60	137.04		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]		
		0.80	D	HVP=86				Stiff, high strength, brown gravelly CLAY with low cobble content. Gravel is angular to rounded with fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.00							
		1.80	D		1.80	136.44		Reddish brown clayey angular to rounded with fine to coarse flint GRAVEL. [CLAY-WITH-FLINTS FORMATION]	2
				2.70	135.24		End of Borehole at 2.70m	3	
								4	
								5	
								6	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Hole terminated at 2.70mbgl due to refusal on dense gravel. 50mm internal diameter monitoring standpipe installed to 2.70mbgl.

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502925.53 Northing: 207119.80	Hole Type WS
Location: Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 137.04 Final Depth (m): 2.70	Scale: 1:30
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 13/04/2016 End Date: 13/04/2016	REC Engineer: MR



Borehole Log

Borehole No.

WS210

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502901.67 Northing: 207009.34	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 130.79 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 13/04/2016 End Date: 13/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	130.79		Grass over soft grey gravelly SILT. [TOPSOIL]	
								Firm to stiff medium to high strength brown gravelly CLAY with low cobble content. Gravel is angular to rounded with fine to coarse flint. Cobbles are subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.30	D						
		1.50		HVP=73					
		1.80		HVP=101					2
					2.20	130.39		CHALK recovered as soft white gravelly CLAY. Gravel is very weak to weak, angular to subrounded, fine to coarse chalk and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		2.30		HVP=102					
		2.60		HVP=88					
		2.70	D	HVP=52					
		2.80							
		3.00	D						3
		3.70		HVP=62					
		3.90		HVP=26					
		4.00	D						4
		4.80		HVP=10					
					5.00	128.59		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Borehole Log

Borehole No.

WS211





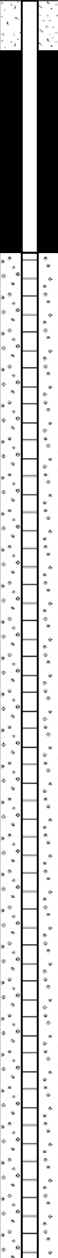
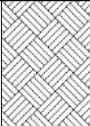
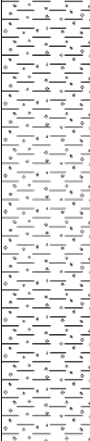

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502992.20 Northing: 207076.21	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 134.58 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 13/04/2016 End Date: 13/04/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	134.58		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	
		1.00	D					Firm to stiff, medium to high strength, brown gravelly CLAY. Gravel is angular to rounded with fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.20		HVP=56					
		1.50		HVP=91					
		2.00	D						2
		3.00	D						3
					3.50	134.18		NO RECOVERY.	
					4.00	131.08		Firm to stiff brown gravelly CLAY with white mottling. Gravel is angular to rounded with fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	4
					5.00	130.58		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. Terminated at target depth. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



   		<h1>Borehole Log</h1>			Borehole No. WS212 Sheet 1 of 1				
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 503152.90 Northing: 207055.52		Hole Type WS			
Location: Hemel Hempstead		Plant: Dando Terrier Rig		Level (m AOD): 130.49 Final Depth (m): 5.00		Scale: 1:30			
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Borehole Solutions		Start Date: 13/04/2016 End Date: 13/04/2016		REC Engineer: MR			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	130.49		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded with fine to coarse flint. [TOPSOIL]	
		1.20 1.30	D	HVP=65				Firm to stiff, medium strength, brown gravelly CLAY with low cobble content. Gravel is angular to rounded with fine to coarse flint. Cobbles are subangular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.80 2.00	D	HVP=55				CHALK recovered as soft white gravelly CLAY. Gravel is very weak to weak, angular to rounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	2
		3.00	D		2.30	129.99			3
					5.00	128.19		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Borehole Log

Borehole No.

WS213

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503060.02 Northing: 207336.06	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 141.46 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: GSTL	Start Date: 04/05/2016 End Date: 04/05/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	141.46		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		1.00	D					Orangeish brown clayey GRAVEL with low cobble content. Gravel is subangular to rounded, fine to coarse flint. Cobbles are angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.40	141.26		Stiff, medium strength brown with black specks gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		1.80		HVP=62					
		2.00	D						2
		2.10		HVP=66					
								... between 2.20 - 2.30mbgl: very gravelly.	
		2.70		HVP=75					
		2.90	D		2.80	140.06		CHALK recovered as white to off white with brown veins gravelly CLAY. Gravel is weak, angular to subrounded, fine to coarse chalk, and angular to rounded, fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
					3.30	138.66		Brown very clayey GRAVEL. Gravel is angular to subrounded medium to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					3.60	138.16		NO RECOVERY.	
		4.00	D		4.00	137.86		Stiff, high strength brown with black specks gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	4
		4.10		HVP=118	4.20	137.46		White to off white with brown veins gravelly putty CLAY. Gravel is subangular to subrounded with fine to coarse very weak to slightly weak chalk and angular to subangular fine to coarse flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		4.90	D						5
					5.00	137.26		End of Borehole at 5.00m	6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Borehole Log

Borehole No.

WS214

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503055.93 Northing: 206845.54	Hole Type WS
Location:	Hemel Hempstead	Plant: Dando Terrier Rig	Level (m AOD): 116.32 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: GSTL	Start Date: 04/05/2016 End Date: 04/05/2016	REC Engineer: RH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	116.32		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		1.00	D					Orangeish brown gravelly CLAY with medium cobble content. Gravel is subangular to rounded, fine to coarse flint. Cobbles are angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	
		1.20		HVP=66				<i>... at 1.20mbgl: becoming firm to stiff.</i>	1
		1.75		HVP=72					
		2.00	D						2
		2.25		HVP=48				<i>... at 2.20mbgl: becoming soft to firm.</i>	
		2.40			2.40	116.12		CHALK recovered as white to off white with frequent black specks and brown veins, gravelly CLAY. Gravel is subangular to subrounded with fine to medium very weak to slightly weak chalk and angular to subangular fine to medium flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		3.00	D					<i>... below 3.70mbgl: occasional pockets of light brown clay.</i>	3
		4.00	D					<i>... below 4.00mbgl: no flint present.</i>	4
		4.90	D		5.00	113.92		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Borehole Log

Borehole No.

WS215

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502992.73	Hole Type	WS
Location:	Hemel Hempstead	Plant:	Dando Terrier Rig	Northing:	206683.84	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	GSTL	Level (m AOD):	106.18	REC Engineer:	RH
				Final Depth (m):	5.00		
				Start Date:	04/05/2016		
				End Date:	04/05/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20			106.18		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
		0.35			105.98		Orangeish brown clayey GRAVEL with medium cobble content. Gravel is subangular to rounded, fine to coarse flint. Cobbles are angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]		
		1.00	D					CHALK recovered as white to off white mottled brown very gravelly CLAY with occasional cobbles. Gravel is angular to subrounded fine to coarse weak to moderately strong chalk. Cobbles are angular to subrounded weak to slightly strong chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	1
		1.20	SPT	N=14 (3,3/4,4,3,3)	1.10	105.83		CHALK recovered as white to off white mottled brown, clayey GRAVEL. Gravel is subangular to subrounded fine to medium very weak to moderately strong chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
			1.40			105.08		CHALK recovered as soft to firm white to off white mottled brown, gravelly CLAY. Gravel is subangular to subrounded fine to medium very weak to moderately weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
			1.80			104.78		CHALK recovered as soft to firm white to off white mottled brown, gravelly CLAY. Gravel is subangular to subrounded fine to medium very weak to moderately weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	2
		2.00	D					CHALK recovered as white to off white mottled brown clayey GRAVEL. Gravel is subangular to subrounded fine to medium very weak to moderately strong chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		2.00	SPT	N=12 (2,2/2,4,3,3)				CHALK recovered as white to off white mottled brown clayey GRAVEL. Gravel is subangular to subrounded fine to medium very weak to moderately strong chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		2.00	U	Ublow=49				CHALK recovered as white to off white mottled brown clayey GRAVEL. Gravel is subangular to subrounded fine to medium very weak to moderately strong chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
			3.00	D				... below 2.60mbgl: occasional interbedded pockets of very soft to soft, white, slightly gravelly clay. ... at 2.80mbgl: cobble of slightly weak chalk.	3
		3.00	SPT	N=16 (3,2/3,4,5,4)	3.10	104.38	CHALK recovered as soft to very soft white to off white gravelly clay. Gravel is very weak to slightly strong subangular to subrounded fine to medium chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
		4.00	D				... between 4.40 - 4.50mbgl: band of clayey gravel.		
		4.00	SPT	N=17 (2,2/6,5,4,2)			... between 4.70 - 4.80mbgl: gravel is angular to subrounded fine to medium flint.	4	
		4.90	D						
		5.00	SPT	N=10 (2,2/2,3,2,3)	5.00	103.08	End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.



Borehole Log

Borehole No.

WS216

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503076.62	Hole Type:	WS
Location:	Hemel Hempstead	Plant:	Dando Terrier Rig	Northing:	206554.23	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	GSTL	Level (m AOD):	96.36	REC Engineer:	RH
				Final Depth (m):	5.00		
				Start Date:	04/05/2016		
				End Date:	04/05/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40			96.36		Grass over soft brown mottled white to off white gravelly CLAY. Gavel is subangular to rounded, fine to coarse flint and very weak subangular to subrounded fine to medium chalk. [TOPSOIL]		
		1.00	D				Soft to firm, medium strength orangeish brown very gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse flint. Cobbles are subangular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
		1.90							
		2.00	D	HVP=42					2
		2.40		HVP=44					
		2.70				95.96		CHALK recovered as firm white to off white mottled brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium very weak chalk and angular to subrounded fine to medium flint [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
		3.00	D	N=19 (4,5/5,5,5,4)					
	3.00	SPT							
	4.00	SPT	N=13 (3,2/3,3,4,3)					4	
	4.10	D							
	4.90	D	N=12 (4,3/3,3,3,3)						
	5.00	SPT		5.00	93.66		End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using a Cable Avoidance Tool [CAT]. Inspection pit to 1.20mbgl to clear services. No groundwater encountered. 50mm internal diameter monitoring standpipe installed to 5.00mbgl.





Trial Pit Log

Borehole No.

TP301

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502934.15	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206543.47	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	100.63	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	03/10/2016		
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.10	D		0.30	100.63		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					1.70	100.33		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION] ...Between 0.40 - 0.7mbgl: Band of angular to rounded fine to coarse chalk gravel.	1
					2.10	100.33		Structureless CHALK composed of soft white gravelly CLAY. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and rare flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm] ...Between 1.70 - 2.20mbgl: Chalk visible in south western corner of pit only.	2
									3
							Continued on Next Sheet	4	

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.20mbgl. Where chalk absent between 1.70 and 2.20mbgl, clay-with-flints formation observed. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m) Length: 5.10 Width: 0.70 Depth: 5.20	



Trial Pit Log

Borehole No.

TP301

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502934.15	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206543.47	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	100.63	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	03/10/2016		
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	98.93		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.20mbgl. Where chalk absent between 1.70 and 2.20mbgl, clay-with-flints formation observed. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m) Length: 5.10 Width: 0.70 Depth: 5.20	



Trial Pit Log

Borehole No.

TP302

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502830.64 Northing: 206504.64	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 98.05 Final Depth (m): 5.30	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.50	D		0.20	98.05		Grass over dry and friable light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded, fine to coarse flint and occasional chert. Rootlets throughout. [TOPSOIL]	
					0.60	97.85		Firm light orangeish brown slightly gravelly CLAY with low cobble content. Gravel is angular to sub-rounded, fine to coarse flint. Cobbles are subangular to well rounded flint. [CLAY-WITH-FLINTS FORMATION]	
								Firm light orangeish brown gravelly CLAY with medium cobble content. Gravel is very angular to, sub-rounded fine to coarse flint. Cobbles are very angular to rounded flint [CLAY-WITH-FLINTS FORMATION]	1
								...Below 0.90mbgl: Very gravelly. ...Between 0.90 and 1.50mbgl: Very gravelly.	
								...Below 1.50mbgl: Gravelly.	2
								...Below 3.00mbgl: Firm to stiff.	3
					3.30	97.45		Firm to stiff light brown gravelly silty CLAY with low cobble content. Gravel is angular to sub-rounded, fine to coarse flint. Cobbles are subangular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
								Continued on Next Sheet	4

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.30mbgl. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions		
		(m)		
		Length:	6.80	
		Width:	0.70	
		Depth:	5.30	



Trial Pit Log

Borehole No.

TP302

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502830.64 Northing: 206504.64	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 98.05 Final Depth (m): 5.30	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.30	94.75		End of Borehole at 5.30m	5
									6
									7
									8

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.30mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.80	
	Width:	0.70	
Stability: Stable	Depth:	5.30	



Trial Pit Log

Borehole No.

TP303

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502820.92 Northing: 206505.66	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 97.90 Final Depth (m): 5.35	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35	97.90	 Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							 Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
							 ...Below 2.00mbgl: Orangish brown.	2	
							 ...Below 2.90mbgl: Slightly gravelly.	3	
							 ...Below 3.00mbgl: Light brown.		
							 ...Below 3.20mbgl: Gravelly.	4	
							Continued on Next Sheet		

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.35mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m) Length: 7.20 Width: 0.70 Depth: 5.35	 CONCEPT LIFE SCIENCES DELIVERING SCIENCE



Trial Pit Log

Borehole No.

TP303

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502820.92 Northing: 206505.66	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 97.90 Final Depth (m): 5.35	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.35	97.55		End of Borehole at 5.35m	

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.35mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	7.20	
	Width:	0.70	
	Depth:	5.35	
Stability: Stable			



Trial Pit Log

Borehole No.

TP304

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502885.89	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206664.13	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	110.19	REC Engineer:	MR
				Final Depth (m):	5.00		
				Start Date:	03/10/2016		
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25	110.19		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Soft light brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint and chalk. [CLAY-WITH-FLINTS FORMATION]	
					0.90	109.94		Structured CHALK composed of white clayey GRAVEL with medium cobble content. Gravel is angular to rounded, fine to coarse, weak chalk and flint. Cobbles are sub-angular weak chalk and flint. Occasional weak subangular chalk boulders. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade C5]	1
								<i>...Between 2.10 - 4.60mbgl: Band of light brown CLAY in eastern end of pit.</i>	2
								3	
		4.00	D					4	

Continued on Next Sheet

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.00mbgl due to collapsing sides. Hole backfilled with arisings and compacted in layers. Stability: Some Collapse at 5.00mbgl	Pit Dimensions (m)		
	Length:	5.80	
	Width:	0.70	
	Depth:	5.00	



Trial Pit Log

Borehole No.

TP304

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502885.89	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206664.13	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	110.19	REC Engineer:	MR
				Final Depth (m):	5.00		
				Start Date:	03/10/2016		
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00	109.29		End of Borehole at 5.00m	5
									6
									7
									8

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.00mbgl due to collapsing sides. Hole backfilled with arisings and compacted in layers. Stability: Some Collapse at 5.00mbgl	Pit Dimensions (m)		
	Length:	5.80	
	Width:	0.70	
	Depth:	5.00	



Trial Pit Log

Borehole No.

TP305

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503004.26 Northing: 206748.22	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 107.35 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 03/10/2016 End Date: 03/10/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30	107.35		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1	
					0.70	107.05		Soft brown gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]		
					2.60	106.65		Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint and chalk. Cobbles of angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]		2
					3.50	D		Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk and flint. [Grade Dm]. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] <i>... Between 2.60 - 3.30mbgl: Chalk encountered on eastern end of pit only.</i>		3
								Continued on Next Sheet	4	

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.30mbgl. Where chalk absent between 2.60 and 3.30mbgl, clay-with-flints formation observed. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m) Length: 5.90 Width: 0.70 Depth: 5.20	



Trial Pit Log

Borehole No.

TP305

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503004.26	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206748.22	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	107.35	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	03/10/2016		
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	104.75		End of Borehole at 5.20m

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.30mbgl. Where chalk absent between 2.60 and 3.30mbgl, clay-with-flints formation observed. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:		5.90
	Width:		0.70
	Depth:		5.20



Trial Pit Log

Borehole No.

TP306

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503004.71 Northing: 206760.30	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 108.45 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 03/10/2016 End Date: 03/10/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	108.45		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.60	108.15	x x x x x x x x x x	Soft brown gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					2.10	107.85	x x x x x x x x x x	Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					3.50	D		Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm] <i>...Between 2.10 - 2.20mbgl: Chalk encountered on eastern end of pit only.</i>	2
									3
									4

Continued on Next Sheet

<p>Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m) Length: 6.10 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP306


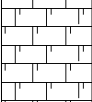
Sheet 2 of 2


Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503004.71	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206760.30	Level (m AOD):	108.45
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	03/10/2016	REC Engineer:	MR
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	106.35		End of Borehole at 5.20m

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.10	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503054.59 Northing: 206865.65	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 117.70 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	117.70	 Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							 Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [Grade Dc] [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]		
									1
									2
									3
									4
Continued on Next Sheet									

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions Length: 6.40 Width: 0.70 Depth: 5.20	
Stability: Stable		



Trial Pit Log

Borehole No.

TP307E

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503054.59	Hole Type:	TP
				Northing:	206865.65		
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	117.70	Scale:	1:20
				Final Depth (m):	5.20		
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Start Date:	30/09/2016	REC Engineer:	MR
				End Date:	30/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	117.50		End of Borehole at 5.20m

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.40	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP307W

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503054.59 Northing: 206865.65	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 117.70 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 30/09/2016 End Date: 30/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.80	D		0.20	117.70		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.70	117.50		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade DC]	1
									2
									3
									4

Continued on Next Sheet

<p>Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Holebackfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.40 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP307W

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503054.59	Hole Type:	TP
				Northing:	206865.65		
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	117.70	Scale:	1:20
				Final Depth (m):	5.20		
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Start Date:	30/09/2016	REC Engineer:	MR
				End Date:	30/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	117.00		End of Borehole at 5.20m

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Holebackfilled with arisings and compacted in layers.	Pit Dimensions	
	(m)	
	Length: 6.40	
	Width: 0.70	
Stability: Stable	Depth: 5.20	



Trial Pit Log

Borehole No.

TP308

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503059.41	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206875.79	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	117.63	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	29/09/2016		
				End Date:	29/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.70	D		0.30	117.63		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	1 2 3 4
Continued on Next Sheet									

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.20	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP308

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503059.41 Northing: 206875.79	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 117.63 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	117.33		End of Borehole at 5.20m

Remarks: Location cleared of services utilising a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole terminated at 5.20mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.20	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP309

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503050.44 Northing: 206882.29	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 119.07 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.00	D		0.30	119.06		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.60	118.76		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	1
									2
									3
									4
Continued on Next Sheet									

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Some Collapse</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.50 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP309

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503050.44 Northing: 206882.29	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 119.07 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									5
				5.20	118.46		End of Borehole at 5.20m		6
									7
									8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Some Collapse</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.50</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP310

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503039.48	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206884.16	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	119.96	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	29/09/2016		
				End Date:	29/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	119.96		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					0.90	119.56		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	1
								...Between 2.20 - 2.90mbgl: Brown staining of chalk on western pit wall.	2
								3	
		4.00	D					4	

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.70	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP310

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503039.48	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206884.16	Level (m AOD):	119.96
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	29/09/2016	REC Engineer:	MR
				End Date:	29/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	119.06		
							End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.70	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP311

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503051.50	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206960.99	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	125.04	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	27/09/2016		
				End Date:	27/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	125.04		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.20	124.74		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>... Between 1.20 - 1.70mbgl: Chalk visible in the southern end of pit only.</i>	2
			3.50	D					3
								Continued on Next Sheet	4

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP311

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503051.50 Northing: 206960.99	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 125.04 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	123.84		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.70m bgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP312

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503082.15 Northing: 206980.74	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 125.76 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	125.76		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					1.30	125.36		Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
									Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]
									3
									4

Continued on Next Sheet

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.70m bgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.00 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP312

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503082.15 Northing: 206980.74	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 125.76 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	124.46		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP313

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503150.66 Northing: 206963.17	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 121.73 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.00	D		0.30	121.73		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1 2 3 4
					0.70	121.43		Soft dark brown gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					0.80	121.03		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ... Between 0.80 - 1.30mbgl: Chalk visible in the western end of pit.	
Continued on Next Sheet									

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP313

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503150.66 Northing: 206963.17	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 121.73 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									5
					5.20	120.93		End of Borehole at 5.20m	6
									7
									8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.00</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP314

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503136.80 Northing: 206912.56	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 117.12 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/09/2016 End Date: 28/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	117.12		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.80	116.82		Soft brown gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					2.50	116.32		Firm to stiff brown gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION] <i>...Between 0.80 - 1.00mbgl: Band of subangular to subrounded, fine to medium chalk gravel.</i>	1 2
								Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm]	3
							Continued on Next Sheet	4	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions		
		(m)		
		Length:	6.00	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP314

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503136.80	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206912.56	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	117.12	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	28/09/2016		
				End Date:	28/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	D		5.00	114.62		Stiff light brown CLAY. [CLAY-WITH-FLINTS FORMATION]	5
					5.20	112.12			End of Borehole at 5.20m
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m) Length: 6.00 Width: 0.70 Depth: 5.20	
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Trial Pit Log

Borehole No.

TP315

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503193.63 Northing: 206935.46	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 121.77 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/09/2016 End Date: 28/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	121.77		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					1.60	121.47		Structureless CHALK composed of soft light brown gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm] <i>...Between 0.30 and 0.60mbgl: Chalk is brownish white.</i> <i>...Below 0.60mbgl: Brownish white.</i>	1
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Some Collapse	Pit Dimensions		
		(m)		
		Length:	6.00	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP315

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503193.63	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	206935.46	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	121.77	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	28/09/2016		
				End Date:	28/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Pattern]					4.20	120.17	[Pattern]	Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]
					5.20	117.57		
							End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Some Collapse	Pit Dimensions	
		(m)	
		Length:	6.00
		Width:	0.70
		Depth:	5.20





Trial Pit Log

Borehole No.

TP316

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503186.44 Northing: 207001.07	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 126.67 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.00	D		0.30	126.67		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					1.30	126.37		Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions		
		(m)		
		Length:	6.00	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP316

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503186.44 Northing: 207001.07	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 126.67 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	125.37		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m)		
		Length:	6.00	
		Width:	0.70	
		Depth:	5.20	



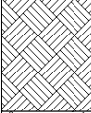
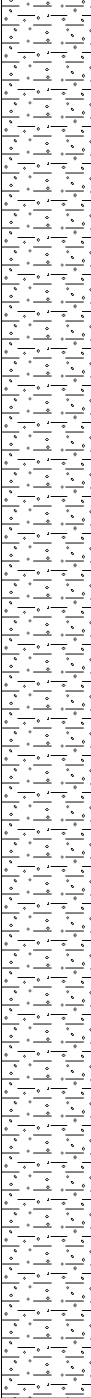
Trial Pit Log

Borehole No.


TP317

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503188.19 Northing: 207049.80	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 130.26 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	130.26	 Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							 Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
							<p>...Below 2.00mbgl: Clay is friable.</p>	2	
								3	
								4	

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
	(m)		
	Length:	5.60	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP317

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503188.19 Northing: 207049.80	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 130.26 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Hatched Pattern]		4.70	D		4.20	129.96	[Hatched Pattern]	Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]
					5.20	126.06		
							End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions	
		(m)	
		Length:	5.60
		Width:	0.70
		Depth:	5.20





Trial Pit Log

Borehole No.

TP318

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503190.15	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207063.62	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	130.93	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	26/09/2016		
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					0.30	130.93		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]				
								1.20	130.63		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
											Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ... Between 1.20 - 2.30mbgl: Chalk visible in the centre of the pit only.	2
		3.00	D						3			
									4			

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP318

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503190.15 Northing: 207063.62	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 130.93 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									5
					5.20	129.73		End of Borehole at 5.20m	6
									7
									8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.00</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP319

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503169.57	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	130.49	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	REC Engineer:	MR
				Start Date:	27/09/2016		
				End Date:	27/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	130.49		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY. With medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.70	130.18		Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>...Between 1.70 - 3.00mbgl: Chalk visible in eastern end of pit only.</i>	2
			3.50	D					3
								Continued on Next Sheet	4

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.00mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP319

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503169.57	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207055.36	Level (m AOD):	130.49
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	27/09/2016	REC Engineer:	MR
				End Date:	27/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	128.78		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.00mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP320

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503146.96	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	134.03	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	REC Engineer:	MR
				Start Date:	26/09/2016		
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					0.30	134.03		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]				
											Stiff and friable brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
								2.80	133.73		Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	2
		3.50	D						3			
									4			

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions		
		(m)		
		Length:	6.10	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP320

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503146.96	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207118.85	Level (m AOD):	134.03
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	26/09/2016	REC Engineer:	MR
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	131.23		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m)	
		Length:	6.10
		Width:	0.70
		Depth:	5.20





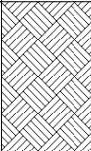
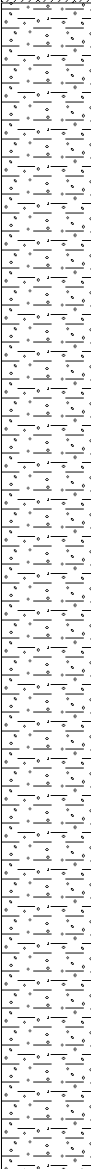
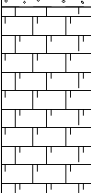
Trial Pit Log


Borehole No.

TP322

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502958.22	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207229.03	Level (m AOD):	140.80
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	26/09/2016	REC Engineer:	MR
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	140.80	 <p>Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]</p>		
							 <p>Stiff and friable brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]</p>	1	
					3.50	140.40	 <p>Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm] <i>...Between 3.50 - 5.00mbgl: Chalk visible on southern end of pit.</i></p>	2	
		4.00	D					3	
							Continued on Next Sheet	4	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	5.40	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP322

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502958.22 Northing: 207229.03	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 140.80 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	137.30		End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions		
		(m)		
		Length:	5.40	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP323

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502953.98	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207245.94	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	141.26	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	26/09/2016		
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	141.26		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
								Stiff and friable brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
									2
									3
									4

Continued on Next Sheet

Remarks:

Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.

Stability: Stable

Pit Dimensions

(m)
 Length: 5.80
 Width: 0.70
 Depth: 5.20





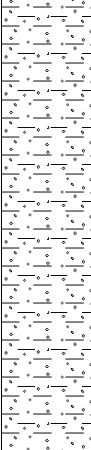
Trial Pit Log

Borehole No.

TP323

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502953.98	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207245.94	Level (m AOD):	141.26
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	26/09/2016	REC Engineer:	MR
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	140.86		<p>...Below 5.00mbgl: Dark blueish grey mottling.</p>	5
								End of Borehole at 5.20m	6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m) Length: 5.80 Width: 0.70 Depth: 5.20	



Trial Pit Log

Borehole No.

TP324

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502960.53 Northing: 207323.76	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 143.07 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	143.07		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					3.00	142.67		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>...Between 3.00 - 4.30mbgl: Chalk visible in centre of pit only.</i>	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP324

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502960.53 Northing: 207323.76	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 143.07 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	140.07		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP325

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502950.43	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207342.79	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	143.73	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	26/09/2016		
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	143.73		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
					2.30	143.33		Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ...Between 2.30 - 5.10mbgl, chalk visible on western pit wall.	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 5.10mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	5.30	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP325

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502950.43	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207342.79	Level (m AOD):	143.73
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	26/09/2016	REC Engineer:	MR
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		4.80	D					
				5.20	141.43		End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 5.10mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		 CONCEPT LIFE SCIENCES
	Length:	5.30	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP326

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502945.18 Northing: 207362.14	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 144.50 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 24/09/2016 End Date: 24/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	144.50		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.90	144.10		Soft brown gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					2.00	143.60		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
								Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ...Below 2.00mbgl: Chalk visible on northern end of pit. ...Between 2.70 - 3.70mbgl: Chalk visible in southeastern corner of pit.	2
								3	
								4	

Continued on Next Sheet

Remarks:

Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Chalk absent along eastern face of trial pit. Hole backfilled with arisings and compacted in layers.

Stability: Stable

Pit Dimensions

(m)
Length: 5.20
Width: 0.70
Depth: 5.20





Trial Pit Log

Borehole No.

TP326

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502945.18 Northing: 207362.14	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 144.50 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 24/09/2016 End Date: 24/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	142.50		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Chalk absent along eastern face of trial pit. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP327E

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502751.27 Northing: 207415.69	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 150.60 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/09/2016 End Date: 28/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	150.60		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
								Stiff brown mottled grey gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
					2.40	150.30		Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [Grade Dm]. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
								Continued on Next Sheet	4

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP327E

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502751.27	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207415.69	Level (m AOD):	150.60
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	28/09/2016	REC Engineer:	MR
				End Date:	28/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	148.20		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	6.00	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



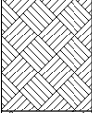
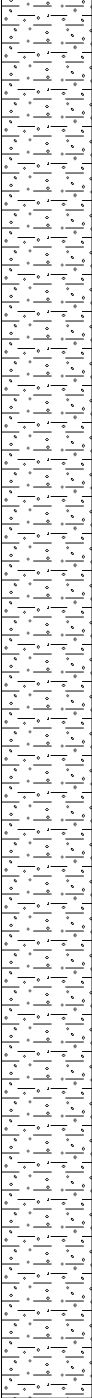
Trial Pit Log

Borehole No.

TP327W

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502945.18	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	150.60	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	REC Engineer:	MR
				Start Date:	28/09/2016		
				End Date:	28/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	150.60	 Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							 Stiff brown mottled grey gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
							<p>...Between 1.60 - 2.00mbgl: Red mottling of clay.</p>		
							<p>...Below 2.00mbgl: Chalk visible on eastern end of pit.</p>	2	
								3	
								4	

Continued on Next Sheet

Remarks:
 Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.

Stability: Stable

Pit Dimensions
 (m)
 Length: 6.00
 Width: 0.70
 Depth: 5.20





Trial Pit Log

Borehole No.

TP327W

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502945.18 Northing: 207362.14	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 150.60 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/09/2016 End Date: 28/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	150.30		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.00	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP328

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380	Easting: 502778.07 Northing: 207421.01	Hole Type: TP
Location: Hemel Hempstead		Plant: 14T Excavator	Level (m AOD): 150.05 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	150.05			
									1
									2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Chalk absent along the western face of the trial pit. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		<p>CONCEPT LIFE SCIENCES DELIVERING SCIENCE</p>
	(m)		
	Length:	6.00	
	Width:	0.70	
Depth:	5.20		



Trial Pit Log

Borehole No.

TP328

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502778.07 Northing: 207421.01	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 150.05 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					4.30	149.65		Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm]
					5.20	145.75		
							End of Borehole at 5.20m	

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Chalk absent along the western face of the trial pit. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 6.00 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP329

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502811.56 Northing: 207440.34	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 149.74 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	149.74		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
								Stiff brown mottled grey gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.40	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP329

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502811.56 Northing: 207440.34	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 149.74 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	149.44		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.40	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



Trial Pit Log

Borehole No.

TP330

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502943.57 Northing: 207576.08	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 148.82 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 23/09/2016 End Date: 23/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	148.82		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown mottled grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
									...Between 0.90 - 1.50mbgl: High gravel content in pit. Gravel absent in eastern end of pit.
					2.00	148.42		Structureless CHALK composed of soft gravelly CLAY. Gravel is angular to rounded, fine to coarse very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dm]	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			



Trial Pit Log

Borehole No.

TP330

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502943.57 Northing: 207576.08	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 148.82 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 23/09/2016 End Date: 23/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					4.10	146.82		Stiff brown mottled grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					5.00	144.72		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint.	5
					5.20	143.82		[LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] End of Borehole at 5.20m	6 7 8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.80</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP331

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502932.33	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207602.37	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	150.79	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	29/09/2016		
				End Date:	29/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	150.79		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.40	150.39		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Brown staining observed throughout the chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ... Between 1.40 - 2.20mbgl: Chalk visible on northern end of pit.	2
								... At 2.00mbgl: Fossils observed within the chalk.	3
								4	

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.20mbgl. Chalk absent between 1.40 and 2.20mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.30	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP331

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502932.33 Northing: 207602.37	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 150.79 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 29/09/2016 End Date: 29/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									5
				5.20	149.39		End of Borehole at 5.20m		6
									7
									8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.20mbgl. Chalk absent between 1.40 and 2.20mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 5.30</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	
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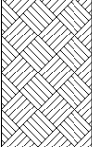
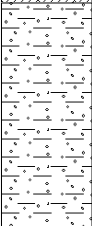
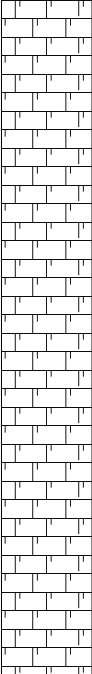
Trial Pit Log


Borehole No.

TP332

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502954.61	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	149.20	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	REC Engineer:	MR
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	149.20	 <p>Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]</p>		
							 <p>Stiff brown mottled grey gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]</p> <p>...Between 1.00 - 1.70mbgl: High gravel content on the northern side of the pit.</p> <p>...Below 2.00mbgl: Clay is friable.</p>	1 2	
					2.20	148.80	 <p>Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]</p> <p>...Between 2.20 - 4.70mbgl: Chalk visible on southern side of pit.</p>	3 4	
Continued on Next Sheet									

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.70mbgl. Chalk absent between 2.20 and 4.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP332

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502954.61	Hole Type:	TP
				Northing:	207595.33		
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	149.20	Scale:	1:20
				Final Depth (m):	5.20		
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Start Date:	23/09/2016	REC Engineer:	MR
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	147.00		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.70mbgl. Chalk absent between 2.20 and 4.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:		5.20
	Width:		0.70
	Depth:		5.20



Trial Pit Log

Borehole No.

TP333

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503174.19 Northing: 207434.31	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 136.91 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 23/09/2016 End Date: 23/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	136.91		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					1.00	136.61		Stiff brown gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
								Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>...Between 1.00 - 2.40mbgl: Chalk visible on eastern side of pit.</i>	1
									2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.40mbgl. Chalk absent between 1.00 and 2.40mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP333

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503174.19	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207434.31	Level (m AOD):	136.91
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	23/09/2016	REC Engineer:	MR
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	135.91		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.40mbgl. Chalk absent between 1.00 and 2.40mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP334

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503233.13	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207482.16	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	140.58	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	140.58		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
					1.80	140.18		Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ...Between 1.80 - 3.60mbgl: Chalk visible on western side of pit.	2
									3
								Continued on Next Sheet	4

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.60mbgl. Chalk absent between 1.0 and 3.60mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions		
	(m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP334

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead

Proj. ID: 1CO101380

Easting: 503233.13
Northing: 207482.16

Hole Type
TP

Location: Hemel Hempstead

Plant: 14T Excavator

Level (m AOD): 140.58
Final Depth (m): 5.20

Scale:
1:20

Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)

Crew: Lynch Plant Hire

Start Date: 23/09/2016
End Date: 23/09/2016

REC Engineer:
MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	138.78		End of Borehole at 5.20m	5
									6
									7
									8

Remarks:

Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 3.60mbgl. Chalk absent between 1.0 and 3.60mbgl. Hole backfilled with arisings and compacted in layers.

Stability: Stable

Pit Dimensions

(m)
Length: 5.20
Width: 0.70
Depth: 5.20





Trial Pit Log

Borehole No.

TP335

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503230.39	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207500.37	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	141.35	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	141.35	<p>Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]</p>		
							<p>Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]</p>	1	
					1.90	140.95	<p>Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>...Between 1.90 - 4.20mbgl: Chalk visible on northern end of pit.</i></p>	2	
								3	
								4	

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.20mbgl. Chalk absent between 1.90 and 4.20mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP335

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503230.39	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207500.37	Level (m AOD):	141.35
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	23/09/2016	REC Engineer:	MR
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	139.45		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.20mbgl. Chalk absent between 1.90 and 4.20mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP336

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503117.07	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207638.36	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	145.32	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	22/09/2016		
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	145.32		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
								Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					1.00	144.82		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ...Between 1.00 - 2.00mbgl: Chalk absent on western pit wall.	1
								...Between 3.50 - 4.20mbgl: Brown staining of chalk in western side of pit.	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.00mbgl. Chalk absent between 1.00 and 2.00mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m) Length: 5.50 Width: 0.70 Depth: 5.20	



Trial Pit Log

Borehole No.

TP336

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503117.07	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207638.36	Level (m AOD):	145.32
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	22/09/2016	REC Engineer:	MR
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	144.32		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.00mbgl. Chalk absent between 1.00 and 2.00mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.50	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP337

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503129.36	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207638.88	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	145.57	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	145.57		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
					0.60	145.17		Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
								Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ... Between 0.60 - 1.50mbgl: Chalk absent along eastern pit wall.	1
								... Between 2.60 - 3.00mbgl: Brown staining of chalk at western side of pit.	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.50mbgl. Chalk absent between 0.60 and 1.50mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.00	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP337

Sheet 2 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503129.36 Northing: 207638.88	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 145.57 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 23/09/2016 End Date: 23/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									5
				5.20	144.97		End of Borehole at 5.20m		6
									7
									8

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.50mbgl. Chalk absent between 0.60 and 1.50mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 5.00</p> <p>Width: 0.70</p> <p>Depth: 5.20</p>	<p>CONCEPT LIFE SCIENCES DELIVERING SCIENCE</p>
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Trial Pit Log

Borehole No.

TP338

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503111.20 Northing: 207652.32	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 145.84 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
					0.30	145.84		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]				
											Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
					0.80	145.54		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] <i>...Between 0.80 - 1.30mbgl: Chalk visible in northern side of pit.</i>	1			
								<i>...Between 1.50 - 1.90mbgl: Brown staining.</i>	2			
							<i>...Between 3.10 - 4.00mbgl: Brown staining.</i>	3				
							Continued on Next Sheet	4				

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. chalk absent between 0.80 and 1.30mbgl. Hole backfilled with arisings and compacted in layers.</p> <p>Stability: Stable</p>	<p>Pit Dimensions (m)</p> <p>Length: 4.80 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP338

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503111.20 Northing: 207652.32	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 145.84 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	145.04		End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 1.30mbgl. chalk absent between 0.80 and 1.30mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	4.80	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP339

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503098.12 Northing: 207691.62	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 147.26 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	147.26		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	1
								Stiff brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are subangular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	
					1.20	146.86		Structureless CHALK composed of white clayey GRAVEL with low cobble content. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. Cobbles are angular to rounded, very weak to weak chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc]	2
									3
									4

Continued on Next Sheet

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.60mbgl. Chalk absent between 1.20 and 2.60mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.






TP339

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503098.12	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207691.62	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	147.26	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	22/09/2016		
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	146.06		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 2.60mbgl. Chalk absent between 1.20 and 2.60mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	

								<h1>Trial Pit Log</h1>		Borehole No. <h2>TP340</h2>	
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 503105.92 Northing: 207755.80		Hole Type TP					
Location: Hemel Hempstead		Plant: 14T Excavator		Level (m AOD): 149.22 Final Depth (m): 5.20		Scale: 1:20					
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 22/09/2016 End Date: 22/09/2016		REC Engineer: MR					
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		3.00	B		0.50	149.22		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]			
								Stiff and friable brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]			
								1			
								2			
								3			
								4			
Continued on Next Sheet											
Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.							Pit Dimensions (m) Length: 5.60 Width: 0.70 Depth: 5.20				
Stability: Stable											



Trial Pit Log

Borehole No.

TP340

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503105.92 Northing: 207755.80	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 149.22 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	148.72		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	5.60	
	Width:	0.70	
Stability: Stable	Depth:	5.20	



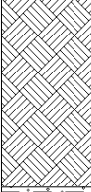
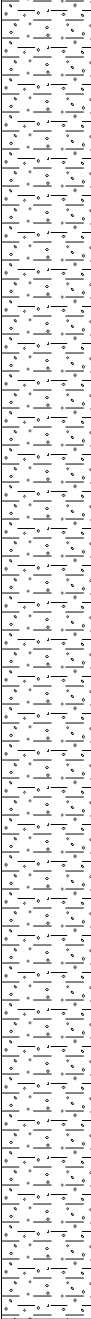
Trial Pit Log


Borehole No.

TP341

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503090.01	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Level (m AOD):	150.28	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	REC Engineer:	MR
				Start Date:	22/09/2016		
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	150.28	 <p>Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]</p>		
							 <p>Stiff and friable brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]</p> <p>...Between 0.80 - 1.20mbgl: High gravel content.</p> <p>...Below 1.20mbgl: Low gravel content and clay is light brown.</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	
Continued on Next Sheet									

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m)		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
		Length:	5.20	
		Width:	0.70	
		Depth:	5.20	



Trial Pit Log

Borehole No.

TP341

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503090.01	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207776.15	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	150.28	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	22/09/2016		
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	149.78		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Stability: Stable	Pit Dimensions (m) Length: 5.20 Width: 0.70 Depth: 5.20	
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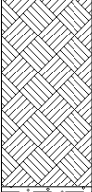
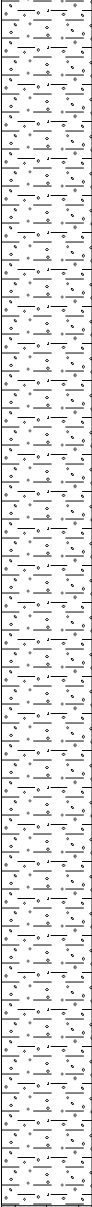
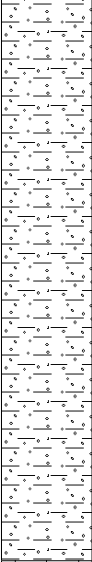
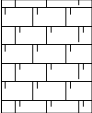
Trial Pit Log


Borehole No.

TP342

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503071.94	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207806.20	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	151.57	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	22/09/2016		
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	151.57	 Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							 Stiff brown mottled grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1	
							<p>...Between 2.20 - 3.70mbgl: Red mottling.</p> 	2	
					3.70	151.07	 Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION]	3	
							Continued on Next Sheet	4	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.70mbgl. Chalk absent between 3.70 and 4.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m) Length: 4.90 Width: 0.70 Depth: 5.20	 CONCEPT LIFE SCIENCES <small>DELIVERING SCIENCE</small>



Trial Pit Log

Borehole No.

TP342

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503071.94	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207806.20	Level (m AOD):	151.57
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	22/09/2016	REC Engineer:	MR
				End Date:	22/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							(UNDIFFERENTIATED) [Grade Dc] ...Between 3.70 - 4.70mbgl: Chalk visible on northern half of pit.	
				5.20	147.87		End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Full trial pit coverage of chalk encountered at 4.70mbgl. Chalk absent between 3.70 and 4.70mbgl. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	4.90	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP343

Sheet 1 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502872.19	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207186.28	Level (m AOD):	139.41
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	03/10/2016	REC Engineer:	MR
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	139.41	Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
							Stiff and friable brown mottled grey gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]		
Continued on Next Sheet								4	

Remarks:

Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.

Stability: Stable**Pit Dimensions**

(m)
 Length: 5.20
 Width: 0.70
 Depth: 5.20





Trial Pit Log

Borehole No.






TP343

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502872.19	Hole Type:	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207186.28	Level (m AOD):	139.41
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Final Depth (m):	5.20	Scale:	1:20
				Start Date:	03/10/2016	REC Engineer:	MR
				End Date:	03/10/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	139.01		End of Borehole at 5.20m

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.	Pit Dimensions (m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	
Stability: Stable			

		  		<h1>Trial Pit Log</h1>			Borehole No. <h2>TP344</h2>	
Project Name: Land West of Hemel Hempstead		Proj. ID: 1CO101380		Easting: 502883.97 Northing: 207189.81		Sheet 1 of 2 Hole Type TP		
Location: Hemel Hempstead		Plant: 14T Excavator		Level (m AOD): 139.61 Final Depth (m): 5.20		Scale: 1:20		
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)		Crew: Lynch Plant Hire		Start Date: 28/09/2016 End Date: 28/09/2016		REC Engineer: MR		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	139.61		Grass over soft dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]
								Stiff and friable brown gravelly CLAY with medium cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]
								1
								2
								3
								4
Continued on Next Sheet								
Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers.							Pit Dimensions (m) Length: 5.20 Width: 0.70 Depth: 5.20	
Stability: Stable								



Trial Pit Log

Borehole No.

TP344

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502883.97 Northing: 207189.81	Hole Type TP
Location:	Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 139.61 Final Depth (m): 5.20	Scale: 1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 28/09/2016 End Date: 28/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.20	139.21		End of Borehole at 5.20m	5
									6
									7
									8

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Hole backfilled with arisings and compacted in layers. Stability: Stable	Pit Dimensions (m)		
	Length:	5.20	
	Width:	0.70	
	Depth:	5.20	



Trial Pit Log

Borehole No.

TP345

Sheet 1 of 2

Project Name: Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503026.30 Northing: 207595.34	Hole Type TP
Location: Hemel Hempstead	Plant: 14T Excavator	Level (m AOD): 145.40 Final Depth (m): 5.20	Scale: 1:20
Client: Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Lynch Plant Hire	Start Date: 23/09/2016 End Date: 23/09/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.50	145.40		Ploughed fields over soft dark grey gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]		
								Stiff brown mottled grey gravelly CLAY with low cobble content. Gravel is angular to rounded, fine to coarse flint. Cobbles are angular to rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
										2
						3.60	144.90		Structureless CHALK composed of white clayey GRAVEL. Gravel is angular to rounded, fine to coarse, very weak to weak chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] [Grade Dc] ...Between 3.60 - 4.60mbgl: Chalk visible on	3
							Continued on Next Sheet	4		

<p>Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Land drain encountered at 0.70mbgl at northern end of trial pit. Pit extended south to avoid damaging the land drain. Full trial pit coverage of chalk encountered at 4.60mbgl. Chalk absent between 3.60mbgl - 4.60mbgl. Hole backfilled with arisings and compacted in layers.</p>	<p>Pit Dimensions (m) Length: 6.80 Width: 0.70 Depth: 5.20</p>	
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Trial Pit Log

Borehole No.

TP345

Sheet 2 of 2

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503026.30	Hole Type	TP
Location:	Hemel Hempstead	Plant:	14T Excavator	Northing:	207595.34	Scale:	1:20
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Lynch Plant Hire	Level (m AOD):	145.40	REC Engineer:	MR
				Final Depth (m):	5.20		
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							...Between 3.60 - 4.60mbgl: Chalk visible on eastern side of pit.	
					5.20	141.80	End of Borehole at 5.20m	

Remarks: Location cleared of services using a Cable Avoidance Tool [CAT] prior to advancement. No groundwater encountered. Land drain encountered at 0.70mbgl at northern end of trial pit. Pit extended south to avoid damaging the land drain. Full trial pit coverage of chalk encountered at 4.60mbgl. Chalk absent between 3.60mbgl - 4.60mbgl. Hole backfilled with arisings and compacted in layers.	Pit Dimensions		
	(m)		
	Length:	6.80	
	Width:	0.70	
	Depth:	5.20	



Borehole Log

Borehole No.

WS346

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503014.40 Northing: 206541.11	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 96.75 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15	96.75		Grass over dry and friable brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint and occasional chert. Rootlets throughout. [TOPSOIL]	
					0.50	96.60		Dry and friable brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flint and chert. [CLAY-WITH-FLINTS FORMATION]	
					1.20			Dry and friable light brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flint and chalk. [CLAY-WITH-FLINTS FORMATION]	
					1.35	96.25		...Below 0.80mbgl: Chalk content increases. ...Below 0.90mbgl: Light whitish brown.	
					1.40			Firm light brown to off white slightly gravelly silty CLAY. Gravel is sub-angular to well rounded fine to medium flint and chalk. [CLAY-WITH-FLINTS FORMATION]	
					1.70	95.40		CHALK recovered as: Firm white with occasional light brown mottling slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
					2.00			...At 2.50mbgl: High gravel content.	
					2.00				
					3.00			...Below 3.30mbgl: Flint gravel. Gravel is subrounded to rounded fine to coarse.	
					4.00				
				4.40	95.05		CHALK recovered as: White to off white clayey GRAVEL with interbedded layers of light brown CLAY. Gravel is subangular to subrounded fine to coarse chalk and occasional flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
				5.00	92.35		End of Borehole at 5.00m		

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.





Borehole Log

Borehole No.

WS347

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503111.83 Northing: 206560.11	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 96.67 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
▼					0.20	96.67	Grass over dry and friable slightly sandy gravelly silty CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. [TOPSOIL]		
		0.60	D		0.75	96.47	Firm to stiff orangeish brown slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and occasional brick. [MADE GROUND]		
		1.20	SPT	N=17 (3,3/3,4,5,5)			Stiff orangeish brown gravelly CLAY. Gravel is very angular to subrounded fine to coarse flint and occasional chalk clasts. [CLAY-WITH-FLINTS FORMATION] ...Below 0.75mbgl: No brick. ...At 0.80mbgl: Angular to sub-angular cobbles of flint. ...Below 0.85mbgl: Occasional subangular to subrounded clasts of chalk. ...At 1.10mbgl: Laminations of fine dark brown sand. ...At 1.25mbgl: Occasional fine chert gravel. ...At 1.70mbgl: Large cobbles very angular to subrounded flint. ...At 1.95mbgl: Pocket of off white putty chalk.	1	
		2.00	SPT	N=15 (3,4/3,3,4,5)					2
		2.90	D		2.35	95.92	CHALK recovered as: soft to firm white to off white mottled light brown silty CLAY. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
		3.00	SPT	N=11 (1,2/2,3,3,3)					3
		4.00	SPT	N=9 (2,2/2,2,3,2)				...Below 3.70mbgl: Occasional clasts of subangular to subrounded fine to medium chalk.	4
	5.00	SPT	N=15 (2,2/3,3,4,5)	5.00	94.32	End of Borehole at 5.00m		5	
								6	

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. Groundwater seepage encountered at 3.30mbgl. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS348

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503017.04 Northing: 206590.46	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 97.85 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.15	97.85		Grass over dry and friable light brown to brown slightly sandy slightly gravelly CLAY with occasional rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint and chert. [TOPSOIL]		
					0.60	97.70		Firm to stiff light brown slightly gravelly CLAY with occasional rootlets. Gravel is angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION] <i>...Below 0.40mbgl: Large very angular flint.</i>		
			1.20	SPT	N=13 (2,3/3,3,3,4)	1.10	97.25		Dry and friable light brown to yellowish brown slightly sandy slightly gravelly CLAY. [CLAY-WITH-FLINTS FORMATION]	1
			1.70	D						
			2.00	SPT	N=10 (1,2/2,2,3,3)				<i>...At 2.20mbgl: Flint cobble encountered.</i>	2
									<i>...Below 2.70mbgl: Very light brown to white.</i>	
			3.00	SPT	N=18 (2,3/4,4,5,5)				<i>...Between 3.00 and 3.45mbgl: Dry and friable.</i>	3
		▼				3.70	96.75		CHALK recovered as: Firm white to off white gravelly CLAY. Gravel is very angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)] <i>...Between 4.00 and 4.45mbgl: Dry and friable.</i>	4
			4.00	SPT	N=13 (2,3/2,3,4,4)				<i>...Below 4.85mbgl: Stiff.</i>	
			5.00	SPT	N=15 (3,4/3,4,4,4)	5.00	94.15		End of Borehole at 5.00m	5
									6	

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. Groundwater seepage encountered at 3.20mbgl. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS349

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503033.70 Northing: 206696.26	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 103.52 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 04/10/2016 End Date: 04/10/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	103.52		Grass over dark grey gravelly SILT. Gravel is angular to rounded, fine to coarse flint. [TOPSOIL]	
		1.20	SPT	N=16 (2,2/3,3,5,5)				Dry and friable gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.40			1.40	103.22		CHALK recovered as: Soft white to light brown gravelly CLAY. Gravel is angular to subrounded fine to medium chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		1.60	D						
		2.00	SPT	N=19 (4,5/3,4,6,6)					2
		3.00	SPT	N=17 (4,5/6,5,3,3)					3
		4.00	SPT	N=17 (2,2/3,6,4,4)					4
		5.00	SPT	N=8 (1,2/2,2,2,2)	5.00	102.12		End of Borehole at 5.00m	5
									6

Remarks:

Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS350

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	502813.92	Hole Type:	WS
Location:	Hemel Hempstead	Plant:	Archway Dart	Northing:	207000.24	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Level (m AOD):	126.72	REC Engineer:	RL
				Final Depth (m):	5.00		
				Start Date:	23/09/2016		
				End Date:	23/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.05			0.05	126.72		Grass over sandy silty CLAY. Sand is fine to medium. [TOPSOIL]		
					0.60	126.67		Soft to firm brown very gravelly CLAY with frequent rootlets. Gravel is very angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]		
					0.90	126.12		Brown very clayey GRAVEL with low cobble content. Gravel is angular to subrounded fine to coarse flint. Cobbles are very angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
			1.20	SPT	N=4 (1,0/1,1,1,1)	1.30	125.82		Soft to firm brown very gravelly CLAY with frequent rootlets. Gravel is very angular to subrounded flint. [CLAY-WITH-FLINTS FORMATION]	
			1.40	D				Firm to stiff brown gravelly CLAY. Gravel is very angular to angular fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]		
								...Between 1.60 and 1.70mbgl: Very gravelly.		
			2.00	SPT	N=18 (3,3/4,5,5,4)			...At 1.90mbgl: Flint cobble.	2	
								...Below 2.30mbgl: Stiff and occasional black specs.		
			3.00	SPT	N=13 (2,2/3,3,3,4)			...At 2.85mbgl: Chalk gravel. ...At 2.90mbgl: Shattered flint cobble.	3	
								...At 3.70mbgl: Shattered flint cobble. ...Between 3.70 and 3.80mbgl: Very gravelly.		
		4.00	SPT	N=9 (1,2/3,2,2,2)	3.80	125.42		CHALK recovered as: Soft light brown to white gravelly CLAY. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4	
							CHALK recovered as: Soft to very soft slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]			
		4.70	D		4.30	122.92				
		5.00	SPT	N=7 (2,3/2,1,2,2)	5.00	122.42		End of Borehole at 5.00m	5	
									6	

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.




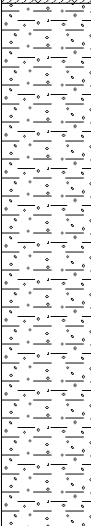
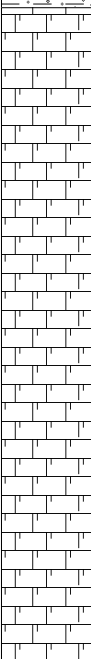
Borehole Log

Borehole No.

WS351

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502802.65 Northing: 207109.37	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 133.41 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 05/10/2016 End Date: 05/10/2016	REC Engineer: MR

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	133.41	 Grass over soft to firm slightly gravelly SILT. Gravel is angular to subrounded fine to coarse flint. [TOPSOIL]		
		1.20	SPT	N=11 (2,2/2,3,3,3)			 Stiff brown gravelly CLAY. Gravel is angular to rounded, fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	1	
		2.00	SPT	N=6 (1,1/1,2,1,2)				2	
					2.40	133.11	 CHALK recovered as: White gravelly CLAY. Gravel is angular to subrounded chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3	
		3.00	SPT	N=9 (1,2/2,2,3,2)					
		4.00	SPT	N=10 (1,1/2,2,3,3)				4	
		5.00	SPT	N=9 (2,2/3,2,2,2)	5.00	131.01	End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



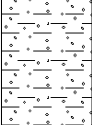
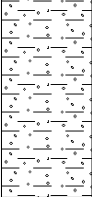
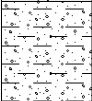
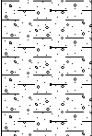

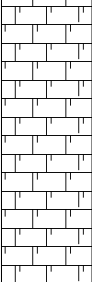


Borehole Log

Borehole No.

WS352

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 502901.16 Northing: 207389.15	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 145.69 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25	145.69		Ploughed fields over soft brown to dark brown slightly gravelly CLAY with low cobble content. Gravel is subangular to well rounded fine to coarse flint. Cobbles are rounded to well rounded flint. [TOPSOIL]	
		0.70	D					Firm light orangish brown very gravelly CLAY with low cobble content. Gravel is angular to well rounded fine to coarse flint. Cobbles are subangular to well rounded flint. [CLAY-WITH-FLINTS FORMATION] ...At 0.80mbgl: <i>Very angular to angular cobbles.</i> ...Below 0.90mbgl: <i>Firm to stiff.</i>	1
		1.20	SPT	N=13 (1,2/3,3,3,4)					
					1.55	145.44		Firm to stiff light orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to well rounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	
		2.00	SPT	N=16 (4,5/4,4,4,4)				...Between 2.00 and 2.20mbgl: <i>High gravel content.</i>	2
								...Below 2.50mbgl: <i>Thin black laminations.</i>	
		2.80	D		2.70	144.14		Stiff light orangish brown gravelly CLAY with thinly bedded black laminations. Gravel is very angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		3.00	SPT	N=18 (2,3/4,4,5,5)	3.00	142.99		Stiff orangish brown mottled black slightly gravelly CLAY. Gravel is subangular to well rounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	3
								...Below 3.50mbgl: <i>Light brown.</i> ...Between 3.50 and 3.75mbgl: <i>Grey mottling.</i>	
		4.00	SPT	N=3 (1,0/0,2,1,0)	3.70	142.69		CHALK recovered as: Firm white gravelly CLAY. Gravel is angular to subrounded fine to coarse chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
								...At 4.85mbgl: <i>Medium thickness brown clay lamination.</i>	
		5.00	SPT	N=5 (1,0/1,1,2,1)	5.00	141.99		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS353

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503078.92 Northing: 207519.97	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 139.13 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35	139.13	Ploughed fields over soft to firm light greyish brown slightly sandy slightly gravelly silty CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular subrounded fine to medium flint. [TOPSOIL]		
					0.85	138.78	Firm light orangish brown slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]		
		1.20	SPT	N=9 (4,5/2,2,2,3)	1.35	138.28	Firm light brown gravelly CLAY with low cobble content. Gravel is angular to well rounded fine to coarse flint. Cobbles of angular to well rounded flint. [CLAY-WITH-FLINTS FORMATION]	1	
					1.50	137.78	Soft brown gravelly CLAY. Gravel is very angular to subrounded fine to coarse flint and chalk. [CLAY-WITH-FLINTS FORMATION]		
					1.95	137.63	Soft to firm light brown mottled white slightly gravelly CLAY. Gravel is angular to well rounded fine to medium flint and chalk. [CLAY-WITH-FLINTS FORMATION]	2	
		2.00	SPT	N=12 (1,2/3,3,3,3)	2.20	137.18	Soft white mottled light brown slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and chalk. [CLAY-WITH-FLINTS FORMATION] ..At 1.95mbgl: Flint cobble.		
					2.70	136.93	CHALK recovered as: White to off white slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
		2.80	D						
		3.00	SPT	N=9 (1,2/2,1,2,4)	3.10	136.43	CHALK recovered as: White to off white clayey GRAVEL. Gravel is subangular to subrounded fine to coarse chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3	
					3.60	136.03	CHALK recovered as: White to off white slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
		4.00	SPT	N=6 (1,2/1,1,2,2)	4.00	135.53	CHALK recovered as: White to off white clayey GRAVEL. Gravel is subangular to subrounded fine to coarse chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4	
		4.20	D						
		5.00	SPT	N=8 (1,2/2,2,2,2)	5.00	135.13	CHALK recovered as: White to off white slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	5	
							End of Borehole at 5.00m		

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.





Borehole Log

Borehole No.

WS354

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503236.47 Northing: 207387.27	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 134.21 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	134.21		Grass over soft dark grey gravelly SILT. Gravel is angular to well rounded fine to coarse flint. [TOPSOIL]	
		1.00	D					Firm brown to light brown slightly gravelly CLAY with frequent rootlets. Gravel is angular to subrounded fine to coarse flint and chert. [CLAY-WITH-FLINTS FORMATION] ...Below 0.30mbgl: Gravelly. ...At 0.60mbgl: Subrounded flint cobble. ...Below 0.80mbgl: Occasional fine chalk clast and white staining.	1
		1.20	SPT	N=8 (1,2/2,2,2,2)	1.30	133.91		CHALK recovered as: White to brown mottled light brown gravelly CLAY. Gravel is subangular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
		1.70	D					...At 2.30mbgl: Large flat subrounded to rounded cobble.	
		2.00	SPT	N=8 (1,2/2,2,2,2)					2
		3.00	SPT	N=12 (2,2/3,3,3,3)					3
					3.60	132.91		CHALK recovered as: White to off white very clayey GRAVEL. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
					4.00	130.61		CHALK recovered as: White to brown mottled light brown gravelly CLAY. Gravel is subangular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
					5.00	130.21		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole backfilled with arisings.





Borehole Log

Borehole No.

WS355

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503319.00 Northing: 207324.51	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 127.52 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	127.52	Grass over soft to firm slightly gravelly silty CLAY. Gravel is angular to subrounded fine to coarse flint and brick. [TOPSOIL]		
		1.20	SPT	N=19 (1,2/5,5,7)			Firm to stiff light brown gravelly CLAY with low cobble content. Gravel is subangular to well rounded fine to coarse flint and chalk. Cobbles are subangular to subrounded flint. [CLAY-WITH-FLINTS FORMATION] ...Below 0.80mbgl: Brown.	1	
		1.40			1.40	127.32	CHALK recovered as: White to off white very clayey GRAVEL. Gravel is angular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]		
		1.70	D		1.80	126.12	CHALK recovered as: Firm white to off white gravelly CLAY with occasional black specs. Gravel is subangular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	2	
		2.00	SPT	N=18 (2,3/4,5,5,4)			... Between 2.65 and 2.80mbgl: Light brown laminations. ...At 2.75mbgl: Flint cobble.		
		3.00	SPT	N=11 (1,0/2,2,3,4)			... Between 3.60 and 3.70mbgl: Light brown laminations.	3	
		4.00	SPT	N=6 (1,0/1,1,2,2)			...Below 4.00mbgl: Soft to very soft.	4	
		4.40	D				...At 4.60mbgl: Flint cobble. ...Between 4.65 to 5.00mbgl: Light brown laminations.		
		5.00	SPT	N=7 (1,1/2,1,2,2)	5.00	125.72	End of Borehole at 5.00m	5	
								6	

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS356

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503257.14 Northing: 207298.36	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 128.19 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 26/09/2016 End Date: 26/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.07	128.19		Grass over dry and friable grey to light brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to well rounded fine to medium flint. [TOPSOIL]	
					0.80	128.12		Dry and friable light brown to off white gravelly CLAY with low cobble content. Gravel is angular to well rounded fine to coarse flint and chalk. Cobbles are subangular to well rounded flint. [CLAY-WITH-FLINTS FORMATION]	1
		1.20	SPT	N=15 (2,3/4,4,4,3)				Dry and friable light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to well rounded fine to coarse flint and chalk. Cobbles are subangular to well rounded flint. [CLAY-WITH-FLINTS FORMATION] <i>...Below 1.20mbgl: Firm to stiff.</i> <i>...Between 1.30 and 1.60mbgl: Slightly gravelly.</i>	
		1.75	D						
		2.00	SPT	N=12 (1,2/2,3,3,4)					2
		2.15				127.39		Firm light brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION] <i>...At 2.50mbgl: Large flat cobble.</i>	
		2.85	SPT	N=14 (2,2/3,3,4,4)		126.04		Firm light brown mottled brown CLAY. [CLAY-WITH-FLINTS FORMATION]	3
		3.20	D			125.34		Firm light brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
	4.00	SPT	N=19 (3,3/4,4,5,6)				<i>...Below 4.10mbgl: Firm to stiff.</i> <i>...Below 4.20mbgl: Mottled dark brown.</i>	4	
	5.00	SPT	N=17 (2,2/3,4,4,6)		5.00	124.99		End of Borehole at 5.00m	5
									6

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS357

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID:	1CO101380	Easting:	503307.42	Hole Type:	WS
Location:	Hemel Hempstead	Plant:	Archway Dart	Northing:	207247.55	Scale:	1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew:	Borehole Solutions	Level (m AOD):	128.16	REC Engineer:	RL
				Final Depth (m):	5.00		
				Start Date:	26/09/2016		
				End Date:	26/09/2016		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	128.16	Grass over soft dark grey slightly gravelly silty CLAY. Gravel is angular to well rounded fine to coarse flint. [TOPSOIL]		
							Firm light brown to brown gravelly CLAY. Gravel is angular to well rounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]		
							...Below 0.60mbgl: Frequent rootlets.		
		1.20	SPT	N=4 (1,1/1,1,1,1)			...Below 1.40mbgl: Soft to firm.	1	
							...At 1.65mbgl: Chalk pocket.		
		1.85	D		1.85	127.86	Soft dark greyish brown organic slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [CLAY-WITH-FLINTS FORMATION]	2	
		2.00	SPT	N=22 (3,4/6,6,6,4)			...Between 2.00 and 2.15mbgl: Tree root encountered.		
					2.20	126.31	Firm to stiff light brown gravelly CLAY. Gravel is angular to well rounded fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]		
							...Between 2.50 and 2.55mbgl: Tree root encountered.		
		3.00	SPT	N=16 (2,3/4,4,4,4)			...Between 2.60 and 2.75mbgl: Very gravelly.	3	
							...Between 3.10 and 3.20mbgl: Tree root encountered.		
		3.60	D		3.60	125.96	Firm to stiff light brown mottled dark brown slightly gravelly CLAY. Gravel is angular to well rounded fine to coarse flint and chert. [CLAY-WITH-FLINTS FORMATION]	4	
		4.00	SPT	N=8 (1,2/2,2,2,2)			...Below 3.85mbgl: Gravelly.		
							...Between 4.50 and 4.75mbgl: Dark brown.		
							...At 4.75mbgl: Flint Cobble.		
		5.00	SPT	N=11 (2,2/2,3,3,3)	5.00	124.56	End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS358

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503149.06 Northing: 207416.32	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 133.89 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 27/09/2016 End Date: 27/09/2016	REC Engineer: RL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35	133.88		Ploughed fields over soft brown slightly sandy, slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to medium flint and chert. [TOPSOIL]	
		1.00	D		0.90	133.54		Firm to stiff lightish brown slightly gravelly CLAY with low cobble content. Gravel is angular to well rounded fine to coarse flint. Cobbles are subangular to well rounded flint. [CLAY-WITH-FLINTS FORMATION] ...Below 0.50mbgl: Slightly orange.	1
		1.20	SPT	N=8 (1,1/2,2,2,2)	1.40	132.99		Firm light brown to white gravelly CLAY with medium cobble content. Gravel is angular to subrounded fine to coarse flint and chalk. Cobbles are subangular flint. [CLAY-WITH-FLINTS FORMATION] ...At 1.20mbgl: Increase in gravel content.	
		2.00	SPT	N=6 (1,2/1,1,2,2)	2.40	132.49		CHALK recovered as: Soft white to light brown gravelly CLAY. Gravel is angular to subrounded fine to medium chalk and flint. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	2
		2.95	D		2.65	131.49		Stiff brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium chalk and flint. [CLAY-WITH-FLINTS FORMATION]	
		3.00	SPT	N=7 (1,2/2,1,2,2)	2.90	131.24		CHALK recovered as: Very soft to soft white slightly gravelly CLAY. Gravel is subrounded chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	3
					3.25	130.99		Firm to stiff light orangish brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded fine flint. [CLAY-WITH-FLINTS FORMATION]	
					3.80	130.64		CHALK recovered as: Very soft to soft white slightly gravelly CLAY. Gravel is subrounded chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
					4.00	130.08		CHALK recovered as: White to off white clayey GRAVEL. Gravel is angular to subrounded fine to coarse chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	4
					4.10	130.08		CHALK recovered as: White to off white gravelly CLAY. Gravel is subangular to subrounded fine to medium flint and chalk. [LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)]	
			5.00	129.78			End of Borehole at 5.00m	5	
								6	

Remarks:
 Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to a refusal at 13.80mbgl. Hole backfilled with arisings.



Borehole Log

Borehole No.

WS359

Sheet 1 of 1

Project Name:	Land West of Hemel Hempstead	Proj. ID: 1CO101380	Easting: 503066.85 Northing: 207621.21	Hole Type WS
Location:	Hemel Hempstead	Plant: Archway Dart	Level (m AOD): 143.77 Final Depth (m): 5.00	Scale: 1:30
Client:	Taylor Wimpey (Strategic Land) & Barratt Homes (North Thames)	Crew: Borehole Solutions	Start Date: 22/09/2016 End Date: 22/09/2016	REC Engineer: RL

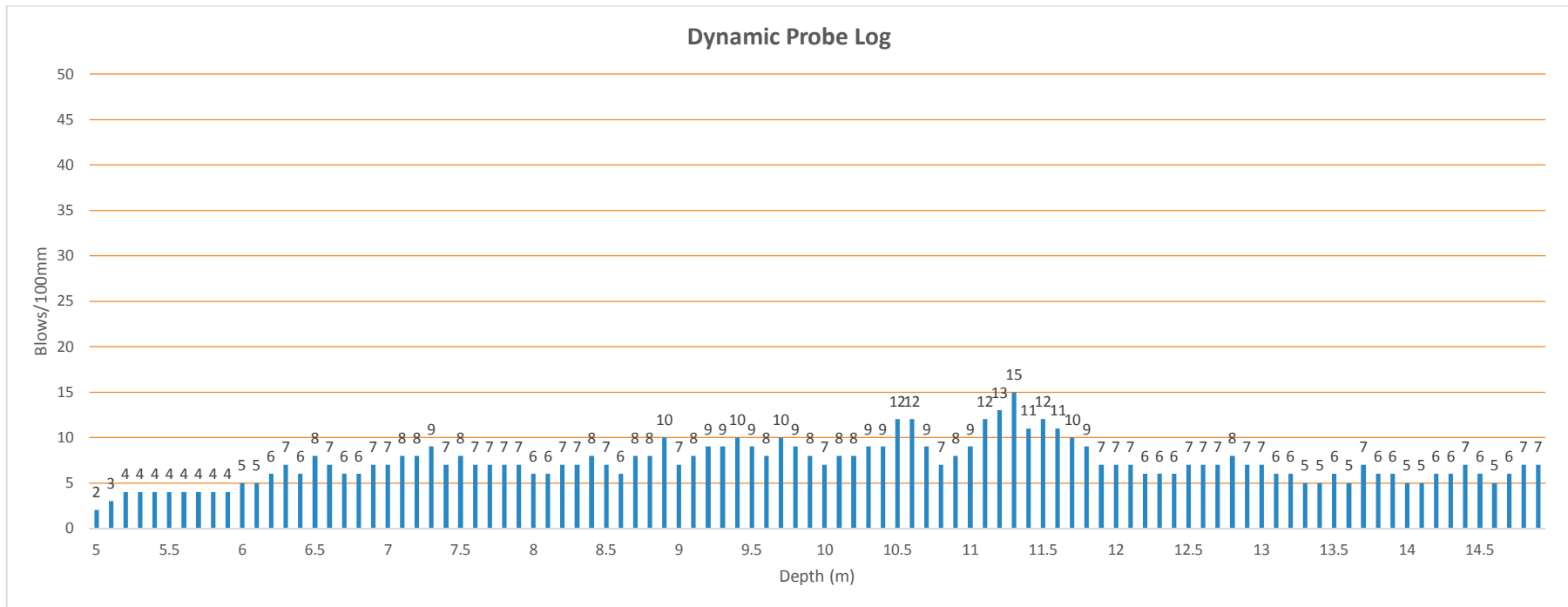
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	143.77		Ploughed fields over soft dark grey gravelly SILT. Gravel is subangular to well rounded fine to medium flint. [TOPSOIL]	
		1.20	SPT	N=4 (1,1/1,1,1,1)				...Below 1.10mbgl: No sand and slightly gravelly.	1
		1.50	D					...At 1.50mbgl: Organic black staining and occasional chalk gravel.	
		2.00	SPT	N=16 (4,5/2,4,5,5)				...At 2.10mbgl: Light brown mottling of clay.	2
		2.40			2.40	143.47		Light brown clayey GRAVEL with low cobble content. Gravel is very angular to subangular fine to coarse flint. [CLAY-WITH-FLINTS FORMATION]	
		3.00	SPT	N=14 (3,3/3,3,4,4)					3
		3.40	D						
		4.00	SPT	N=21 (3,4/4,4,5,8)				...At 3.80mbgl: Flint cobble.	4
		5.00	SPT	N=23 (6,6/4,4,7,8)	5.00	140.67		End of Borehole at 5.00m	5
									6

Remarks:
Location cleared for services using Cable Avoidance Tool [CAT]. Service inspection pit hand excavated to 1.20mbgl. No groundwater encountered. Hole continued as a dynamic probe to 15.00mbgl. Hole backfilled with arisings.





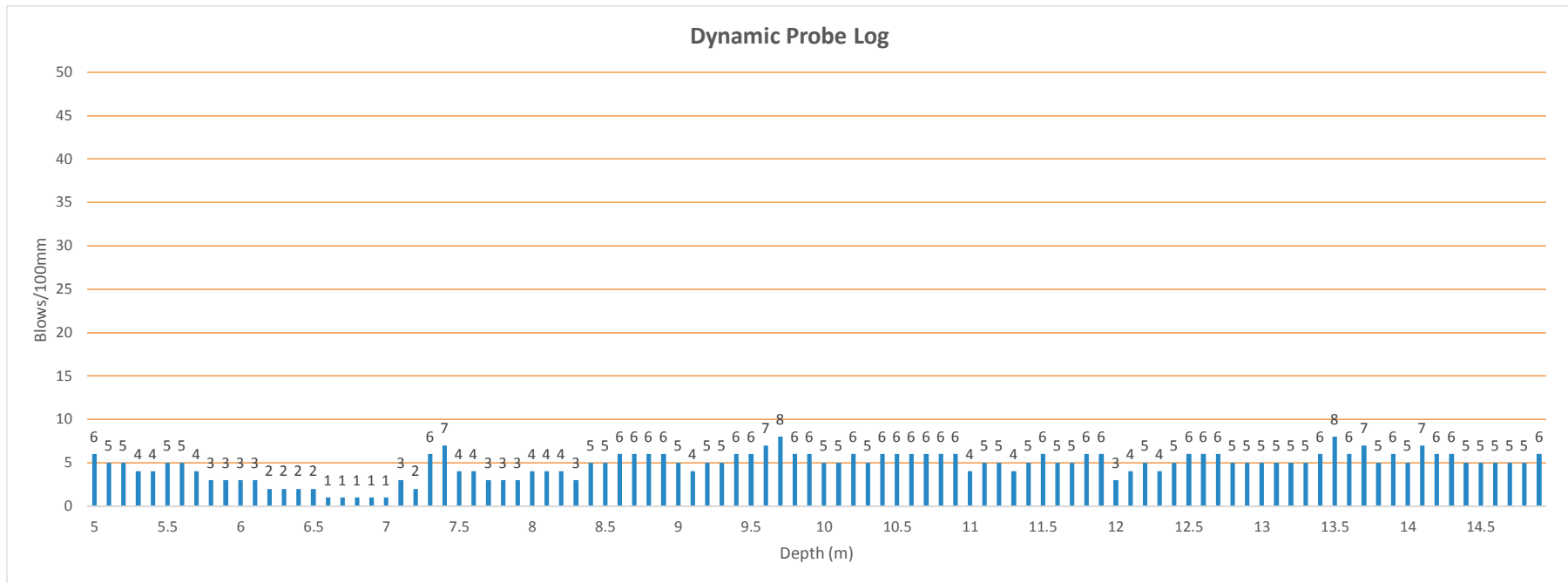
Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP301



Fall height (mm)	750	Cone Base Diameter	35	Torque Reading s At 6mbgl: 87 Ft/16s At 8mbgl: 88Ft/16s At 10mbgl: 76ft/16s At 12mbgl: 75Ft/16s At 14mbgl: 67Ft/16s
Hammer Weight (kg)	63.5	Final Depth (m)	2.00	
Probe Type	DPSH-B			



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP302



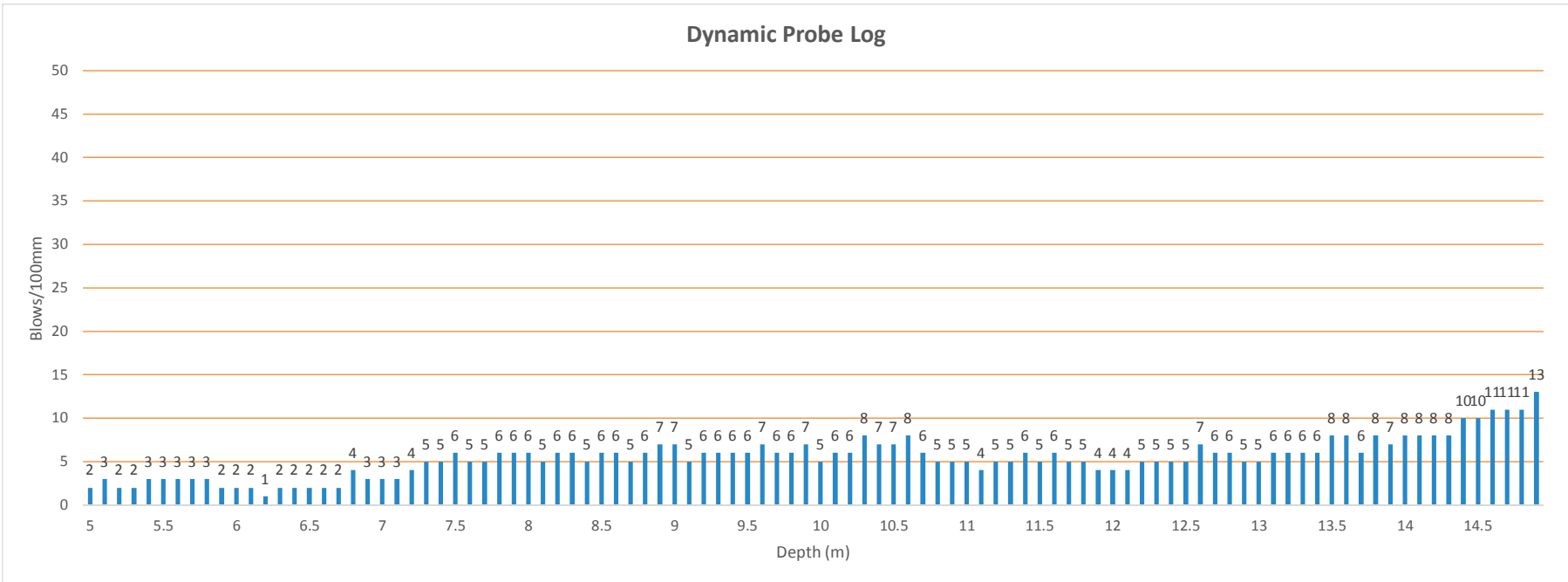
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 52 Ft/16s
 At 8mbgl: 71Ft/16s
 At 10mbgl: 60ft/16s
 At 12mbgl: 53Ft/16s
 At 14mbgl: 46Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP303



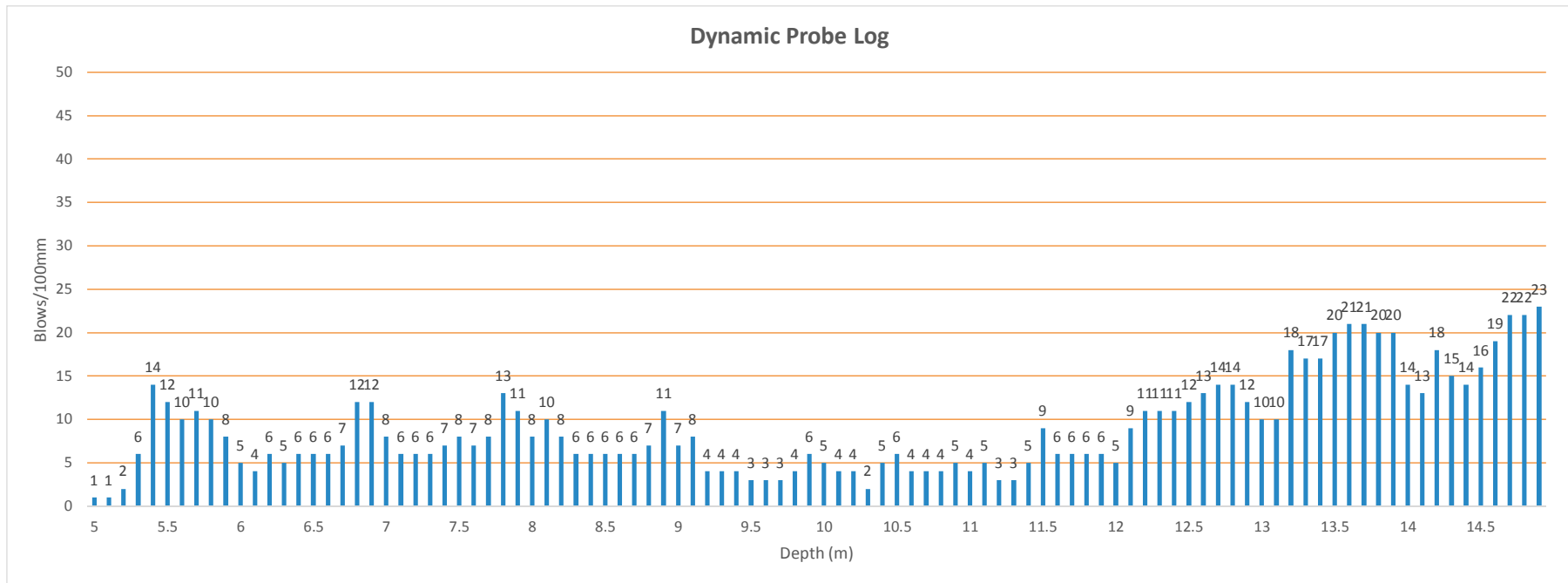
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 46Ft/16s
 At 8mbgl: 46Ft/16s
 At 10mbgl: 50Ft/16s
 At 12mbgl: 50Ft/16s
 At 14mbgl: 45Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP304



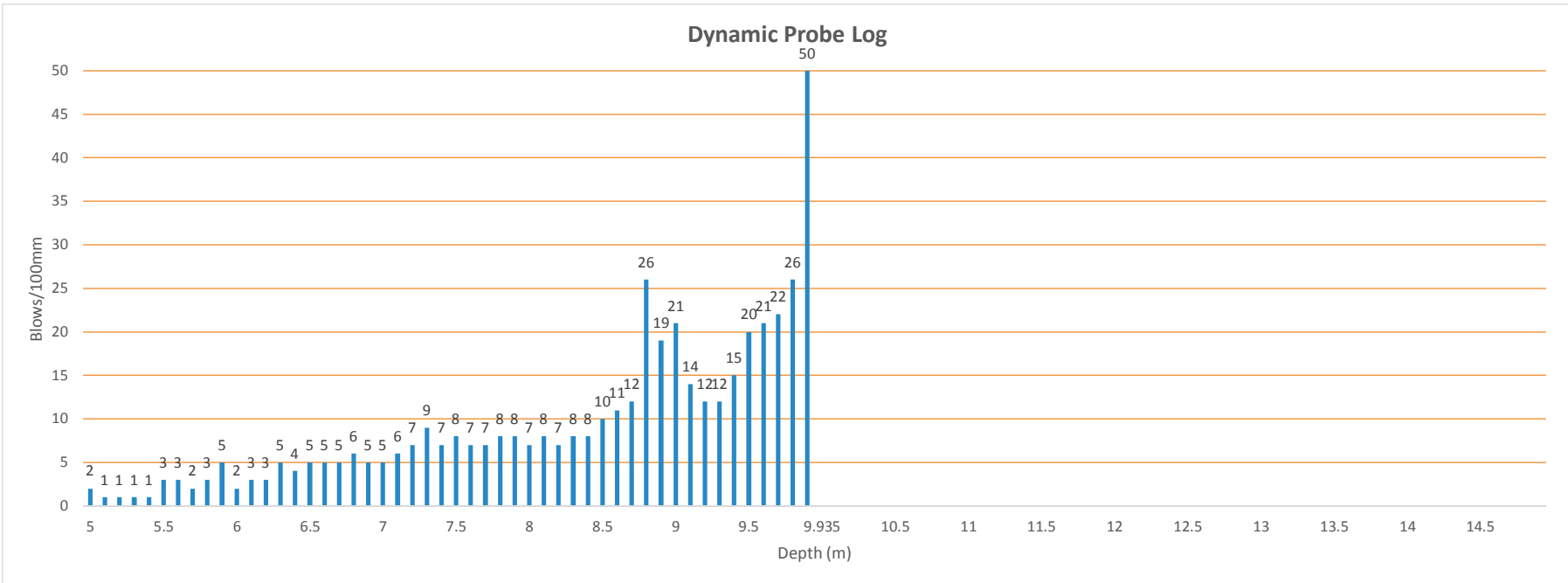
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 46Ft/16s
 At 8mbgl: 42Ft/16s
 At 10mbgl: 49Ft/16s
 At 12mbgl: 62Ft/16s
 At 14mbgl: 54Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP305



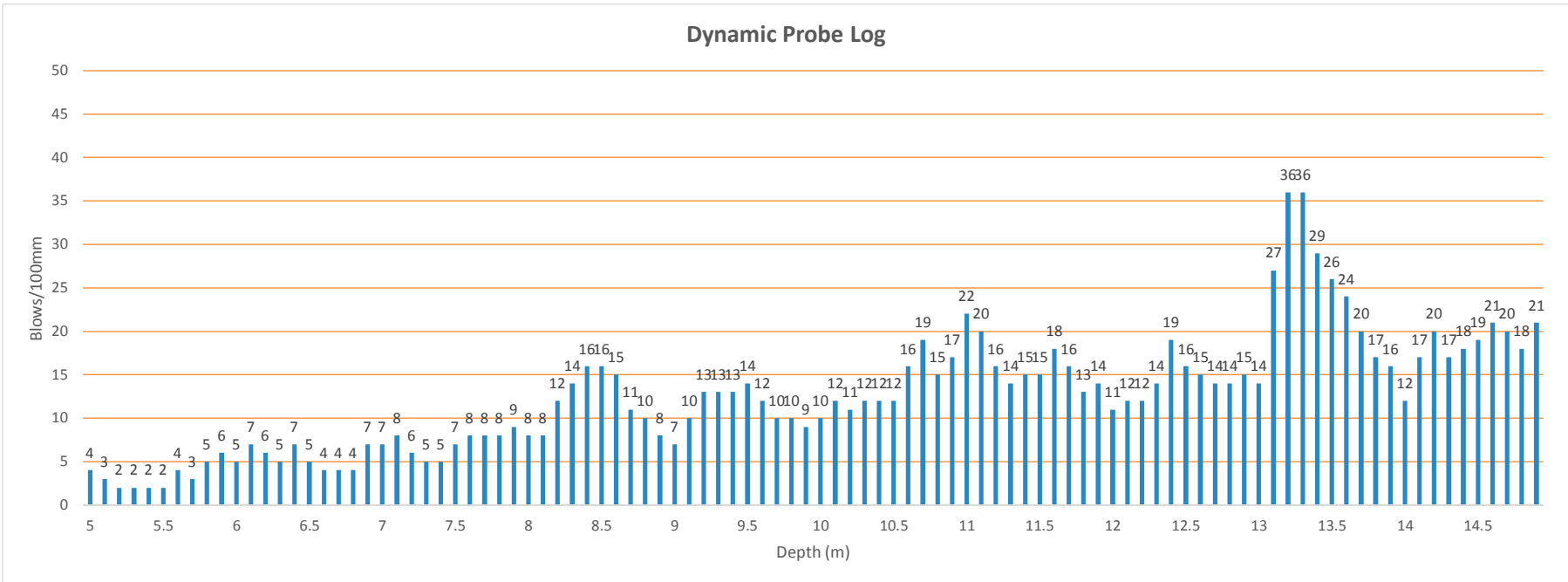
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 35Ft/16s
 At 8mbgl: 52Ft/16s
 Probing terminated at Dynamic Probe refusal at 9.935mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP306



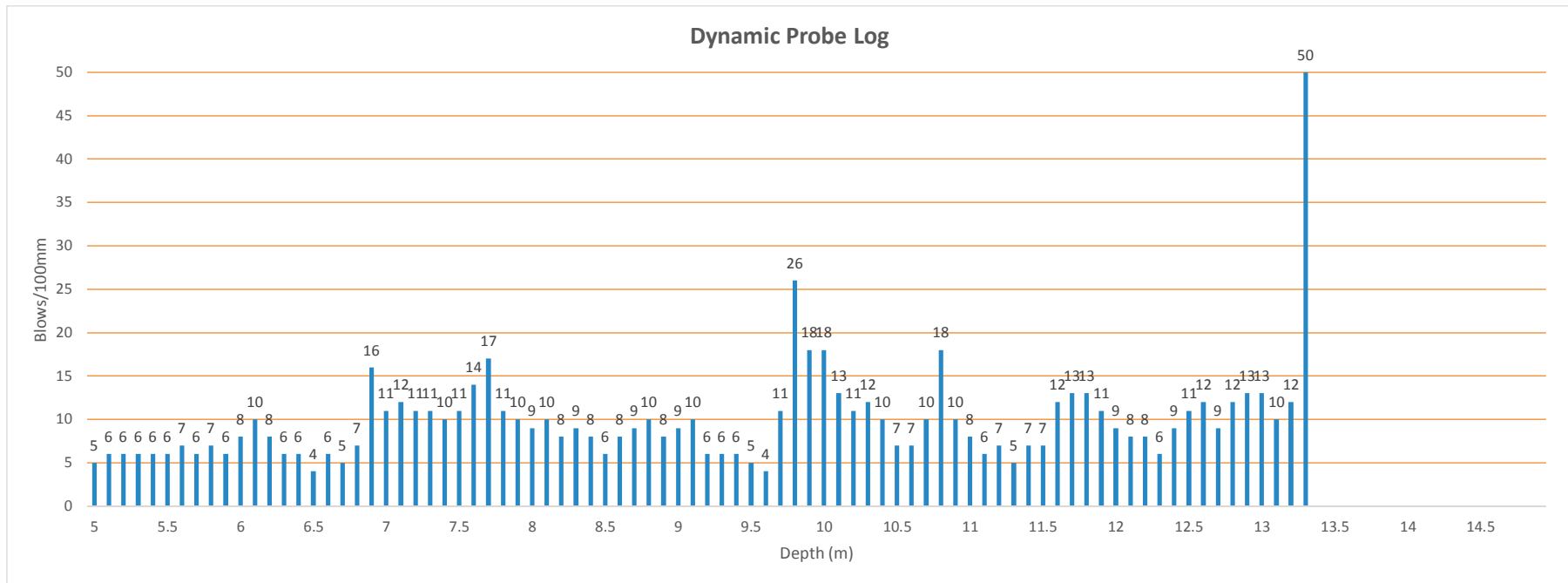
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 55Ft/16s
 At 8mbgl: 46Ft/16s
 At 10mbgl: 45Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 55Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP307



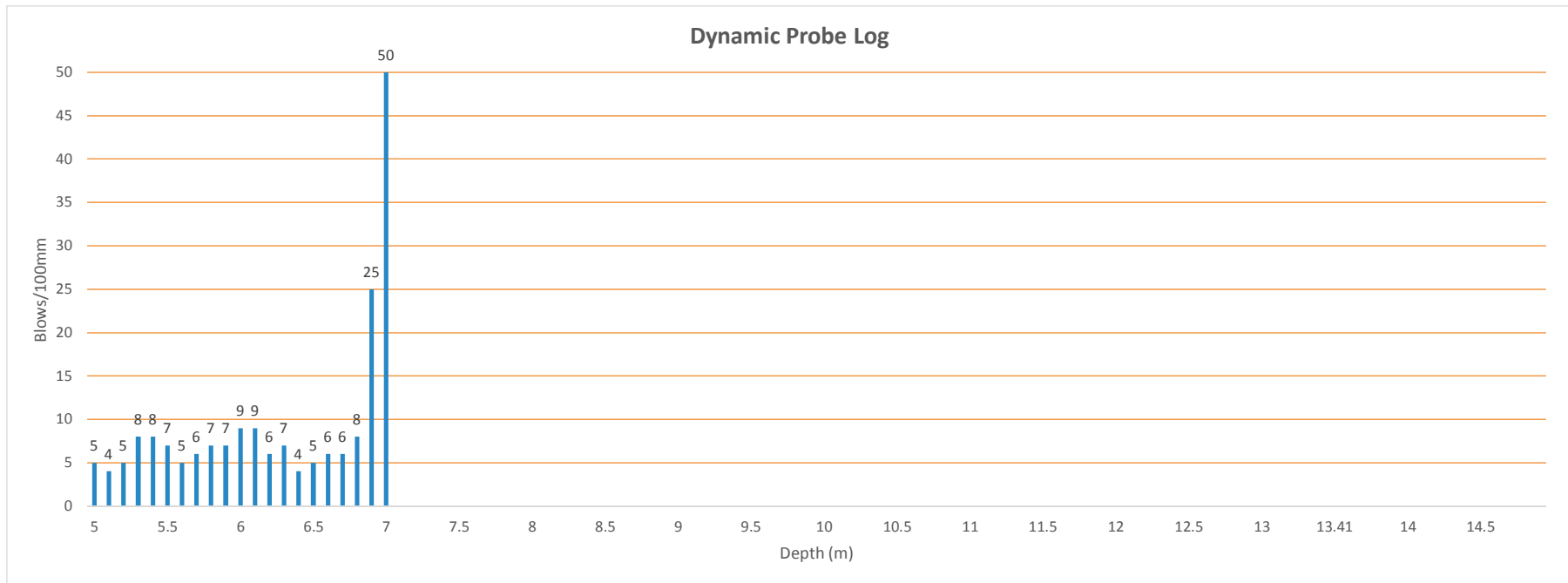
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 80Ft/16s
 At 8mbgl: 76Ft/16s
 At 10mbgl: 55Ft/16s
 At 12mbgl: 70Ft/16s
 Probing terminated at Dynamic Probe refusal at 13.410mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP308



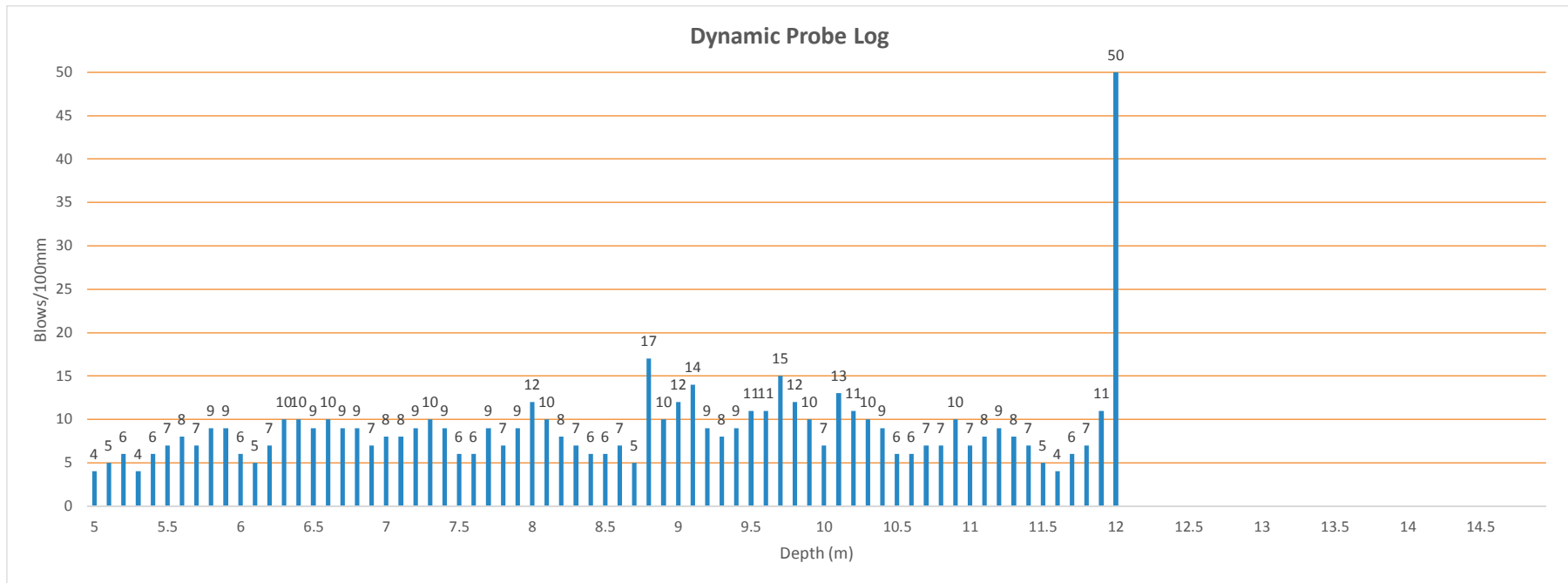
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 62Ft/16s
 Probing terminated at Dynamic Probe Refusal at 7.030mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP309



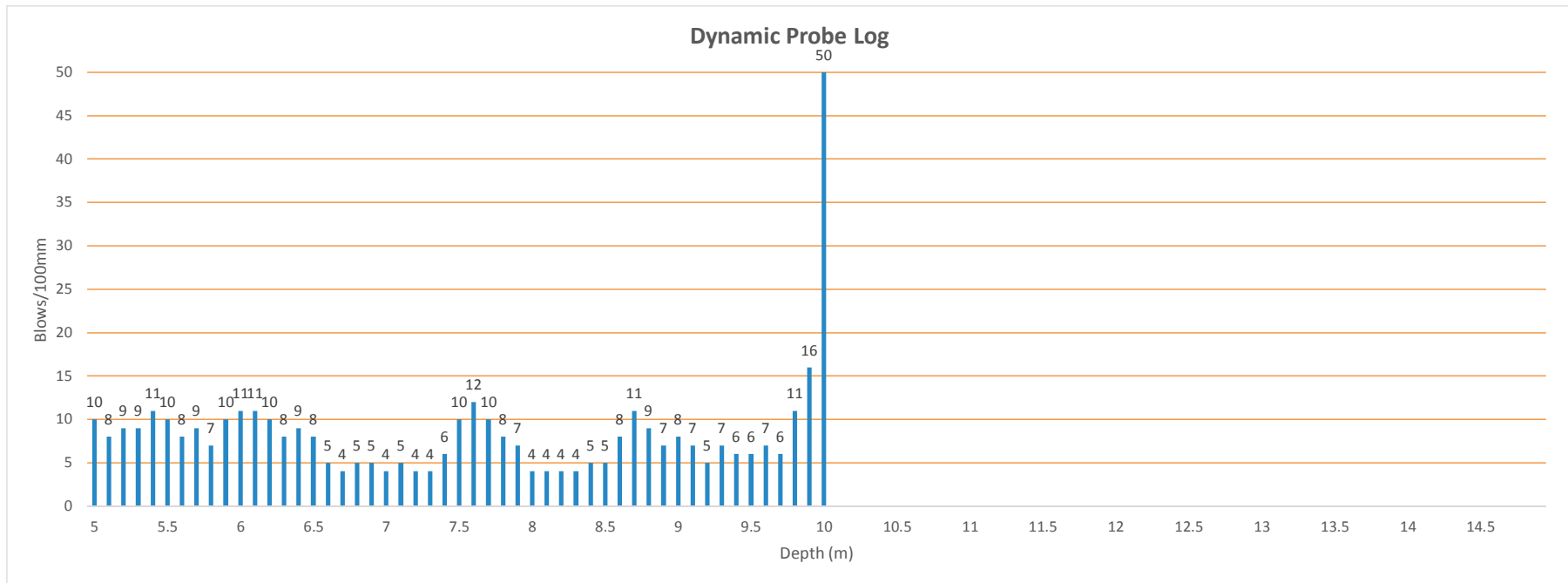
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 45Ft/16s
 At 8mbgl: 53Ft/16s
 At 10mbgl: 55Ft/16s
 At 12mbgl: 55Ft/16s
 Probing terminated at Dynamic Probe Refusal at 12.010mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP310



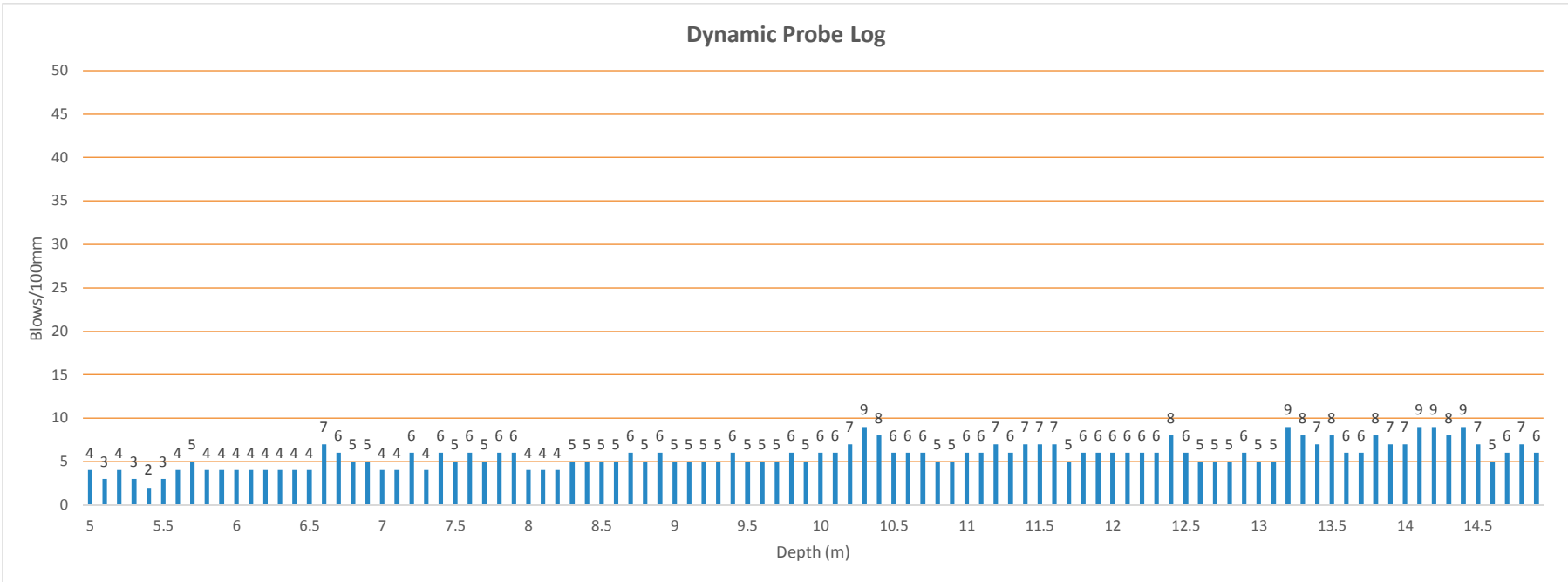
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 40Ft/16s
 At 8mbgl: 42Ft/16s
 At 10mbgl: 43Ft/16s
 Probing terminated at Dynamic Probe
 Refusal at 10.020mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP311



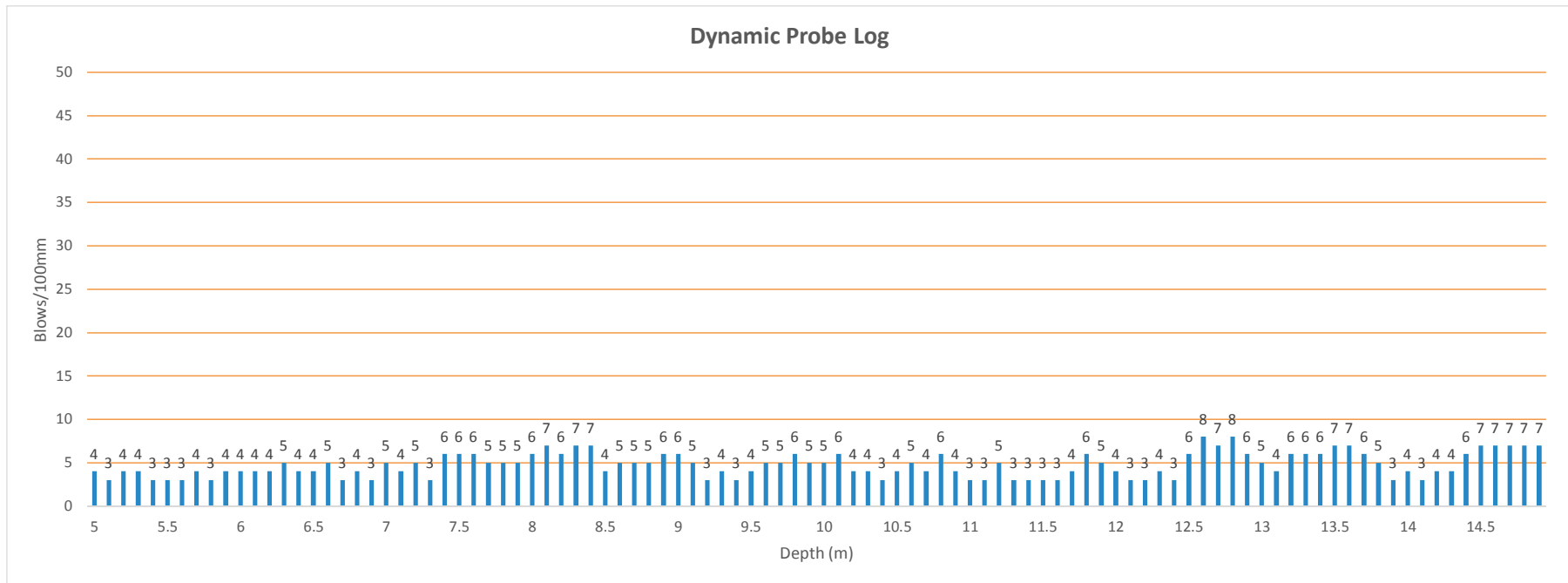
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 35Ft/16s
 At 8mbgl: 41Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 43Ft/16s
 At 14mbgl: 45Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP312



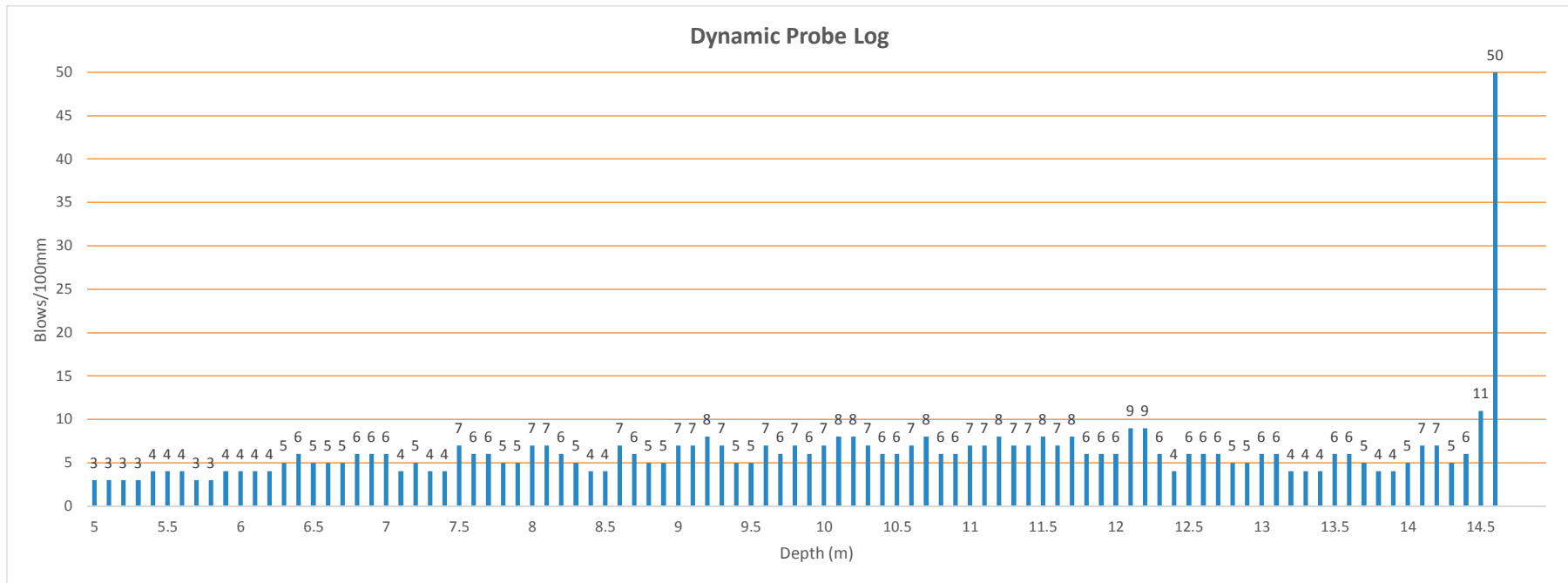
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 42Ft/16s
 At 8mbgl: 44Ft/16s
 At 10mbgl: 44Ft/16s
 At 12mbgl: 49Ft/16s
 At 14mbgl: 51Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP313



Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

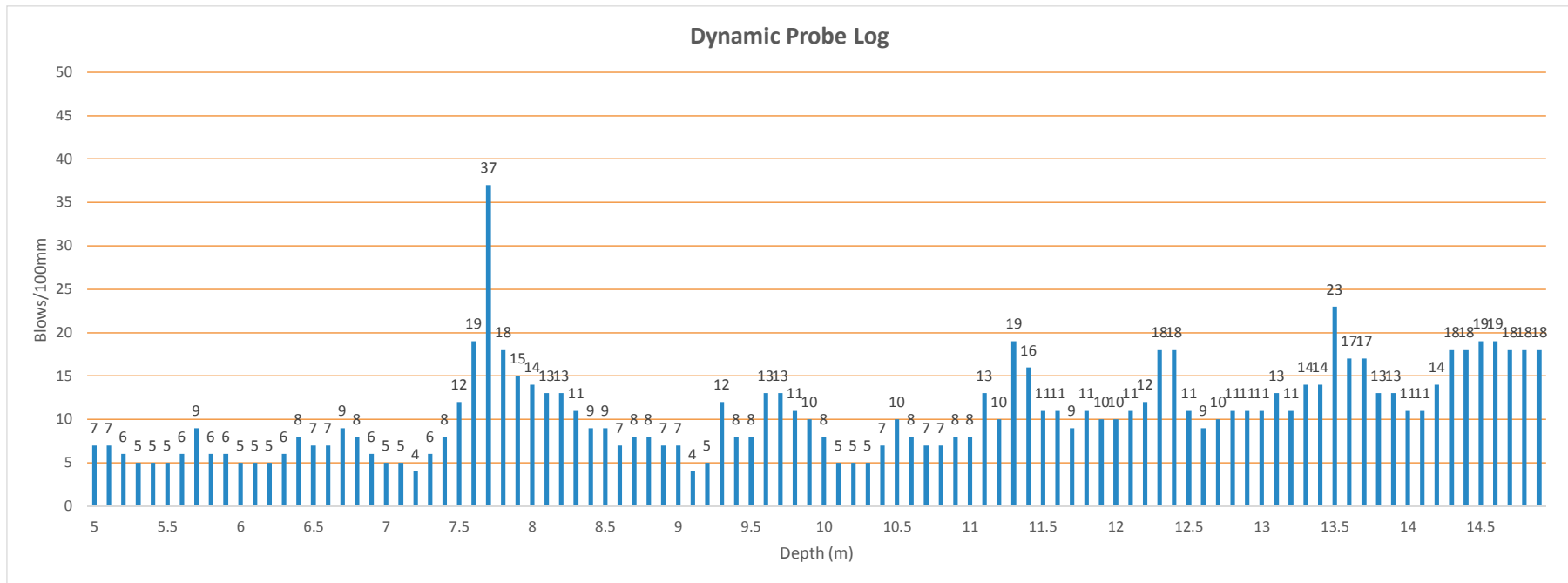
Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 58Ft/16s
 At 8mbgl: 58Ft/16s
 At 10mbgl: 54Ft/16s
 At 12mbgl: 49Ft/16s
 At 14mbgl: 44Ft/16s

Probing terminated at Dynamic Probe
 Refusal at 14.710mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP314



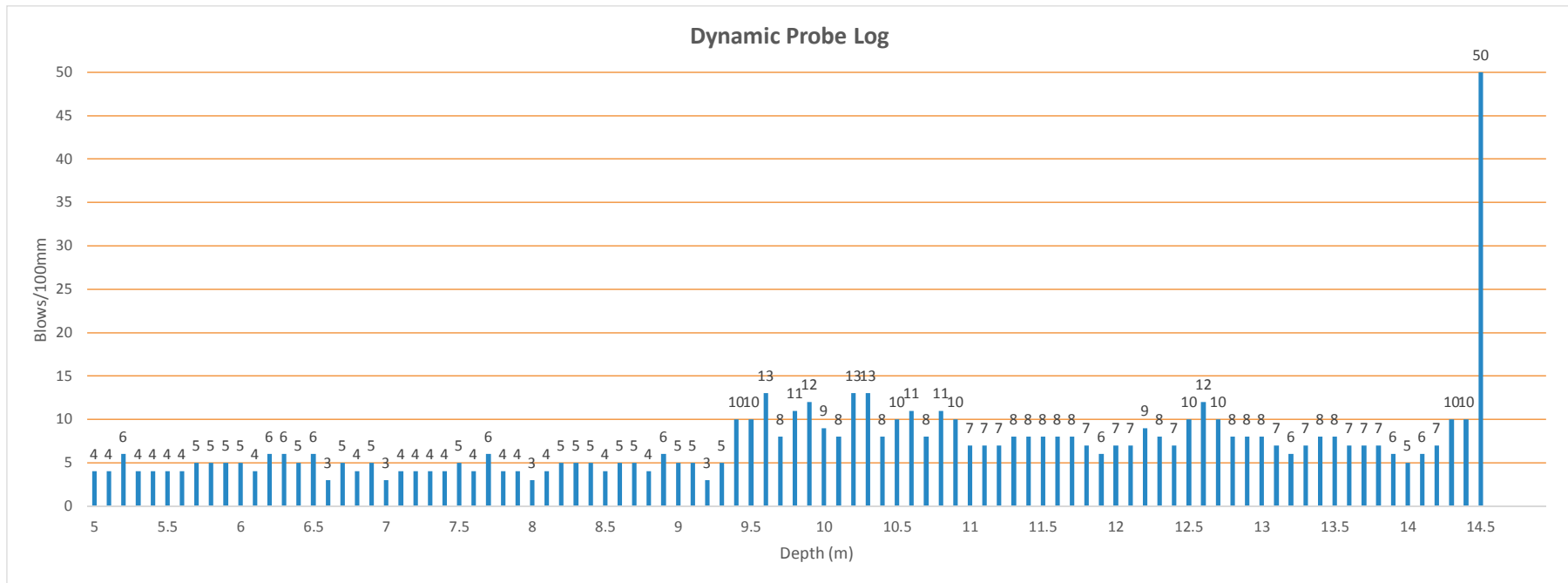
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 37Ft/16s
 At 8mbgl: 45Ft/16s
 At 10mbgl: 43Ft/16s
 At 12mbgl: 42Ft/16s
 At 14mbgl: 42Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP315



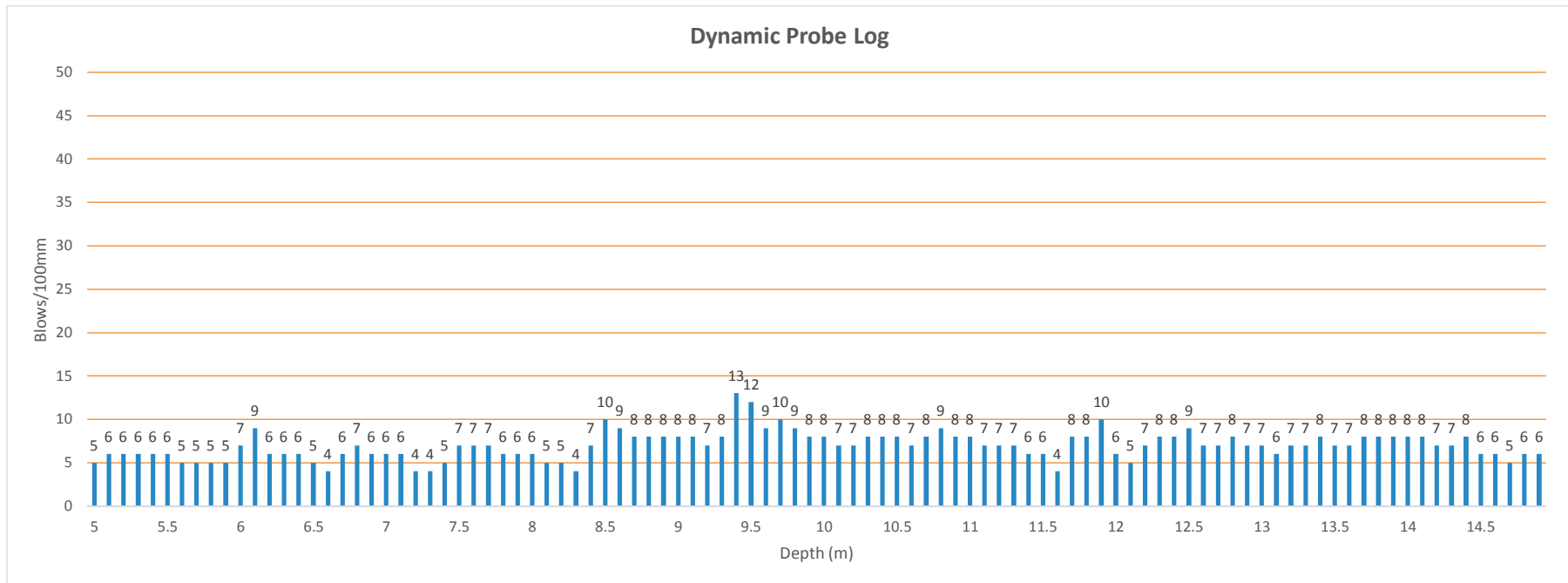
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 72Ft/16s
 At 8mbgl: 59Ft/16s
 At 10mbgl: 56Ft/16s
 At 12mbgl: 61Ft/16s
 At 14mbgl: 63Ft/16s
 Probing terminated at Dynamic Probe Refusal at 14.515mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP316



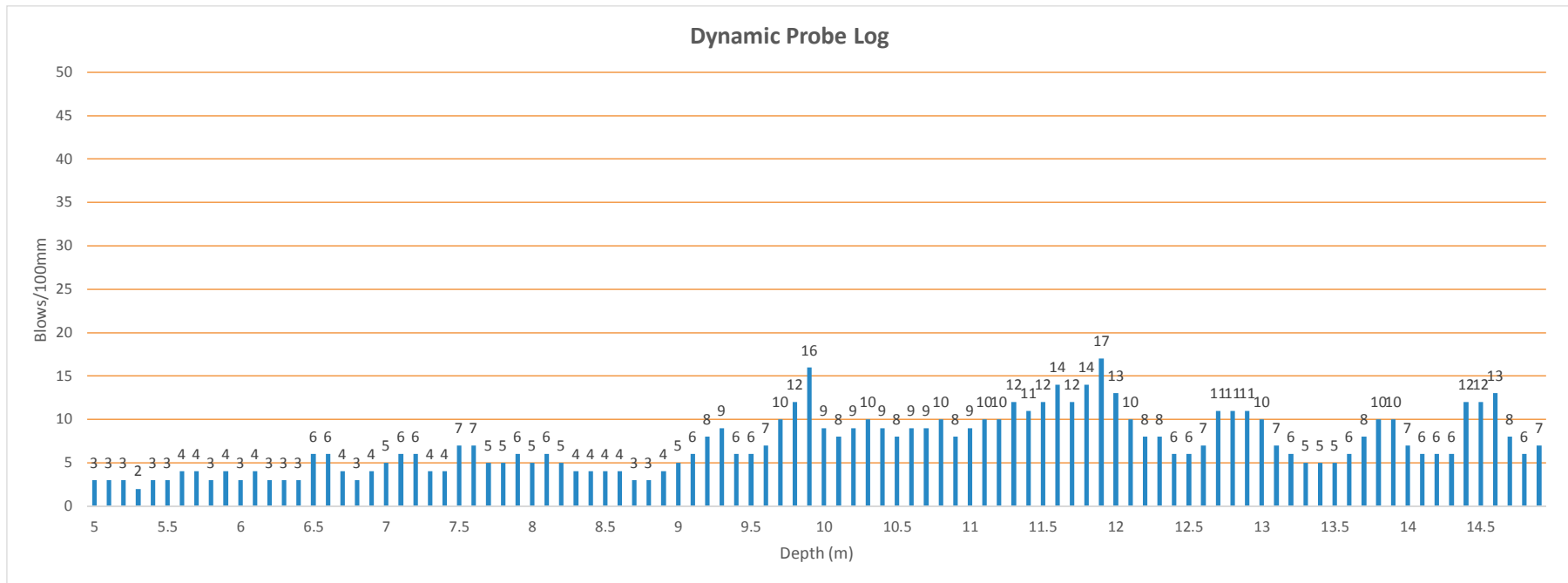
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 57Ft/16s
 At 8mbgl: 54Ft/16s
 At 10mbgl: 48Ft/16s
 At 12mbgl: 62Ft/16s
 At 14mbgl: 61Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP317



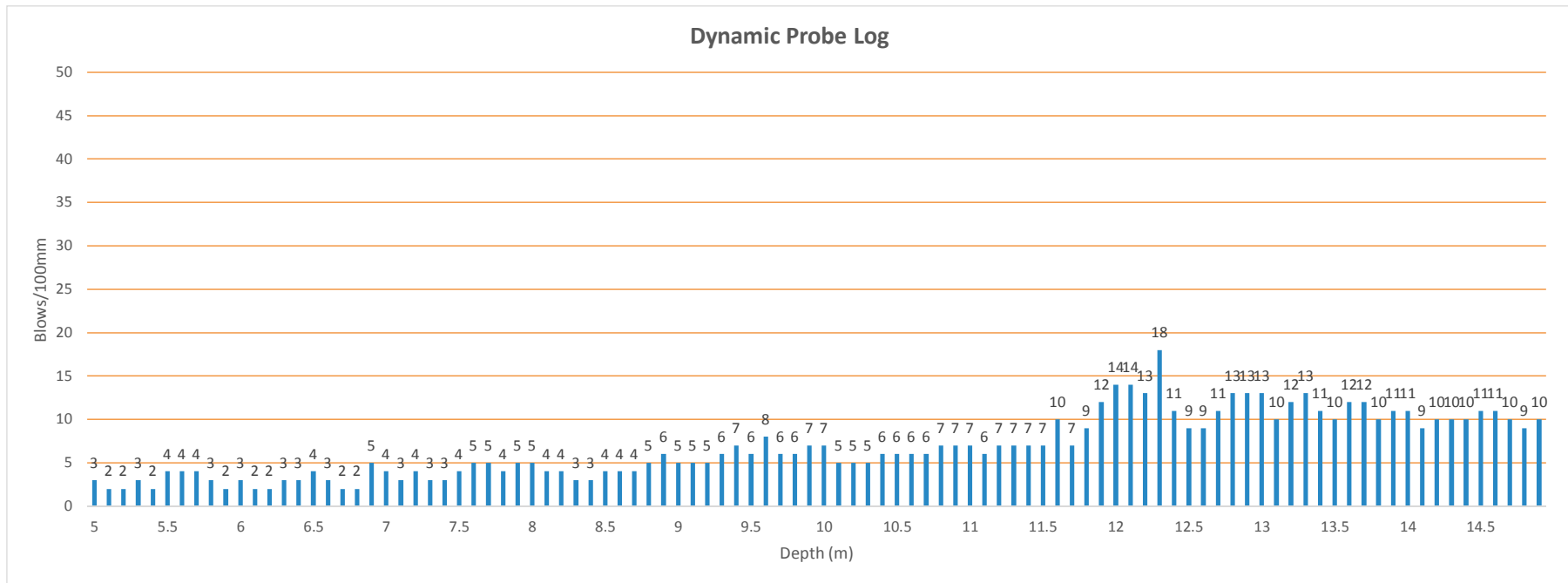
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 35Ft/16s
 At 8mbgl: 42Ft/16s
 At 10mbgl: 44Ft/16s
 At 12mbgl: 54Ft/16s
 At 14mbgl: 83Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP318



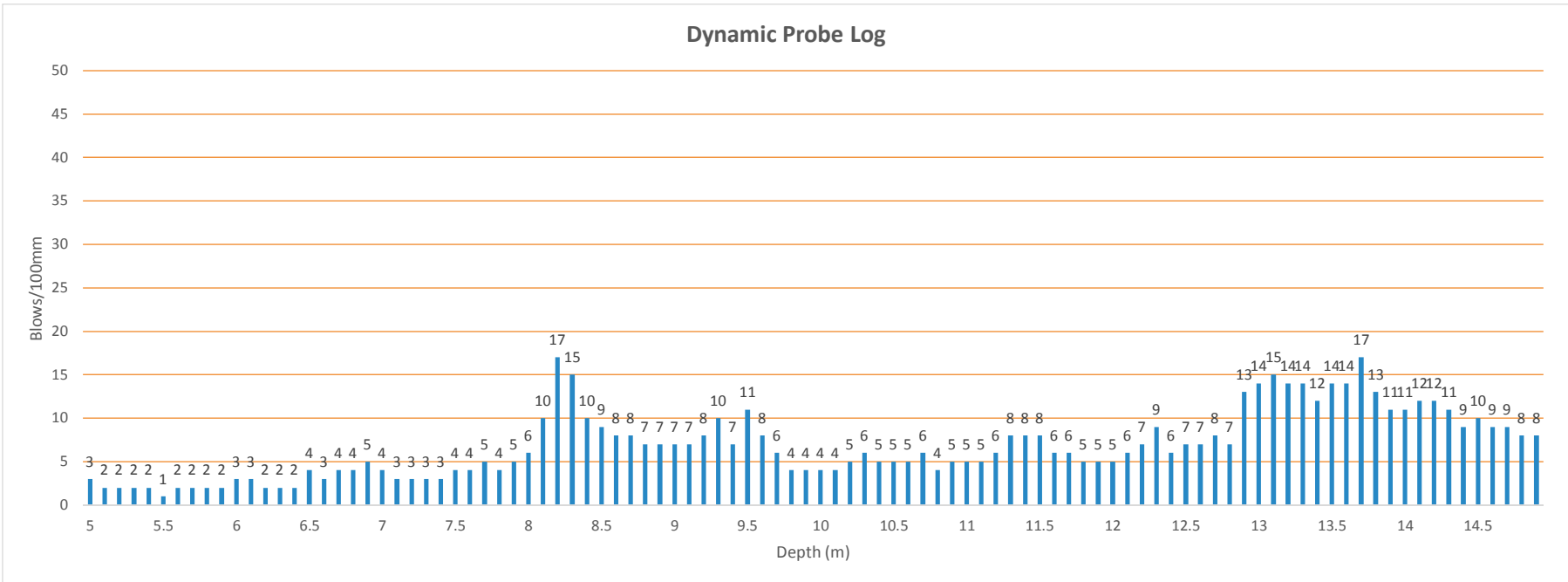
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 82Ft/16s
 At 8mbgl: 67Ft/16s
 At 10mbgl: 68Ft/16s
 At 12mbgl: 74Ft/16s
 At 14mbgl: 82Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP319



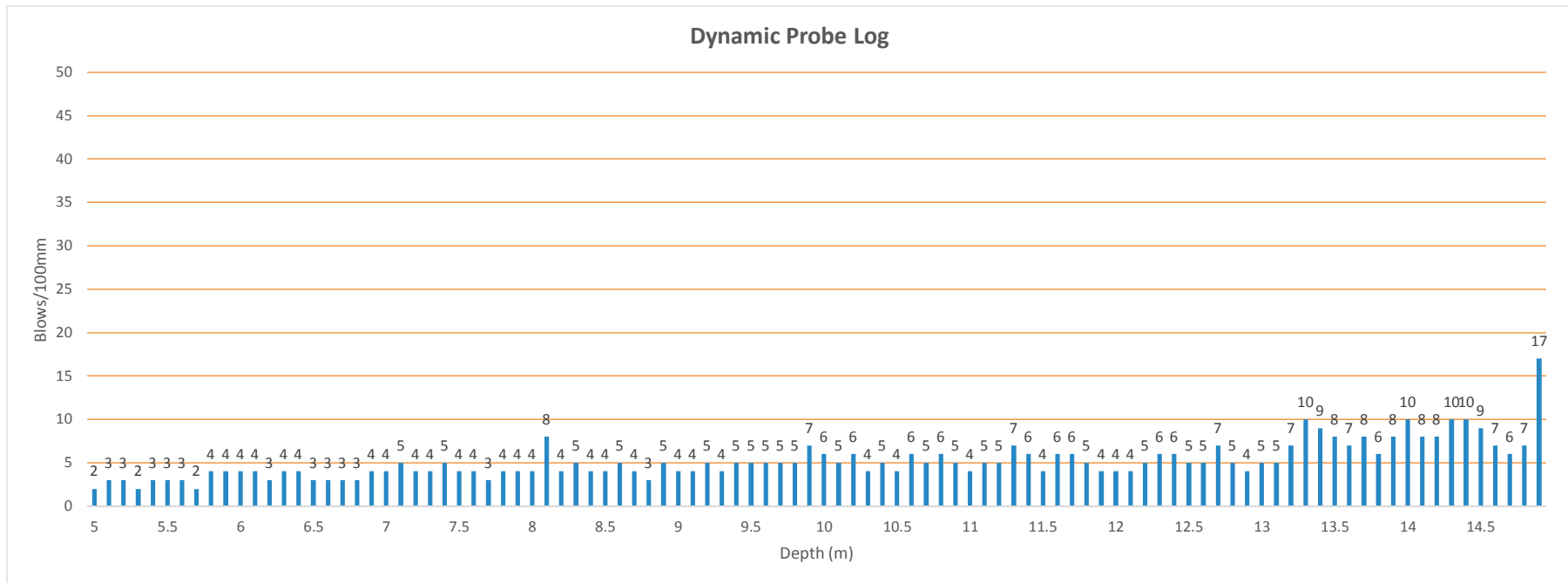
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 38Ft/16s
 At 8mbgl: 41Ft/16s
 At 10mbgl: 36Ft/16s
 At 12mbgl: 43Ft/16s
 At 14mbgl: 38Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP320



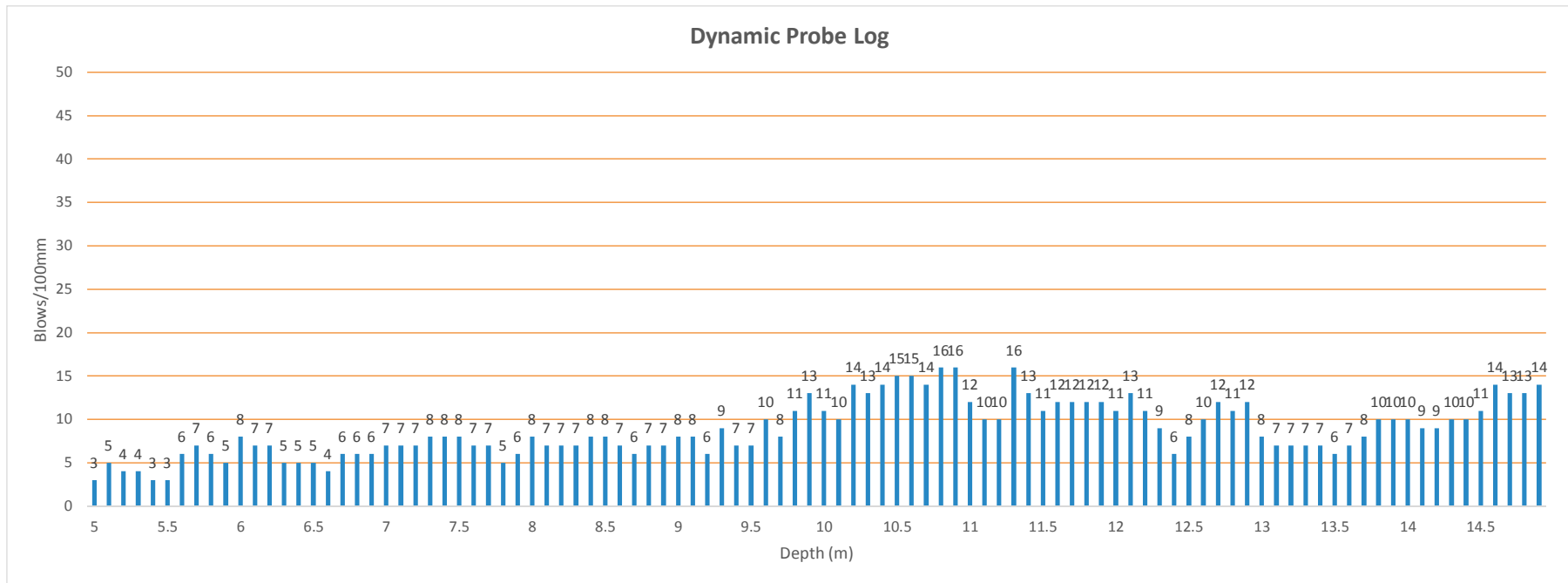
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 43Ft/16s
 At 8mbgl: 58Ft/16s
 At 10mbgl: 58Ft/16s
 At 12mbgl: 53Ft/16s
 At 14mbgl: 57Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP322



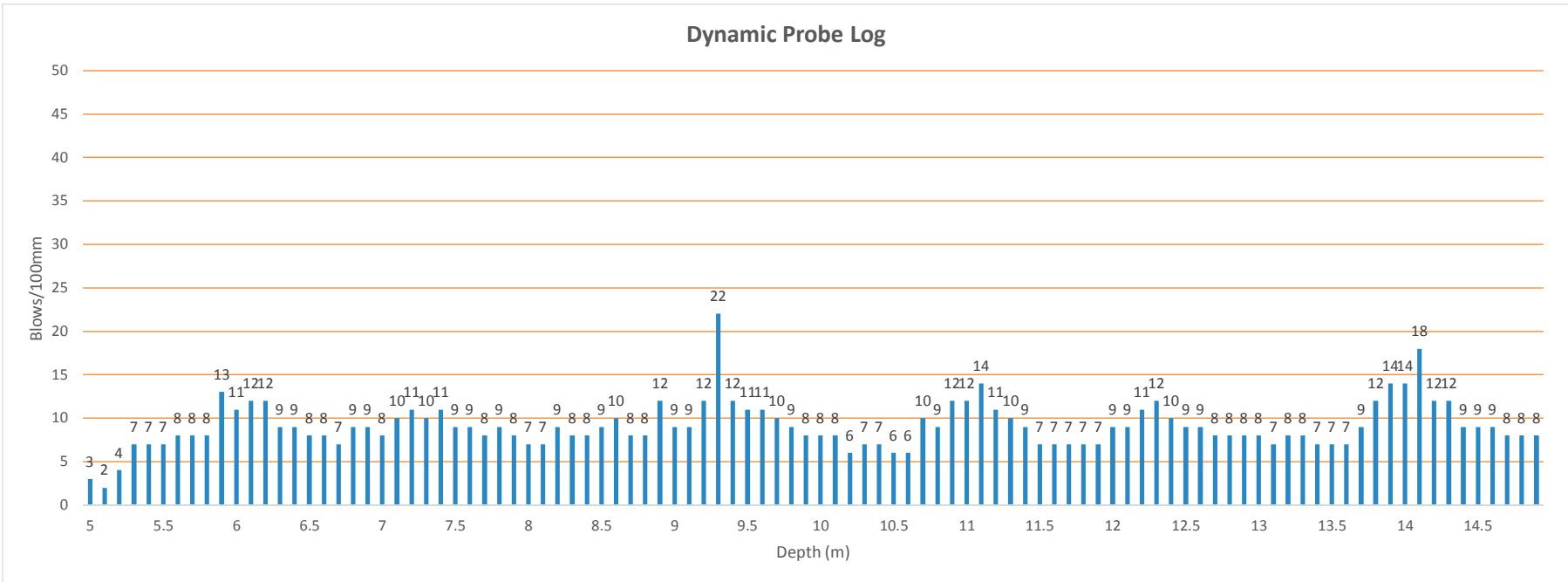
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 35Ft/16s
 At 8mbgl: 35Ft/16s
 At 10mbgl: 37Ft/16s
 At 12mbgl: 40Ft/16s
 At 14mbgl: 45Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP323



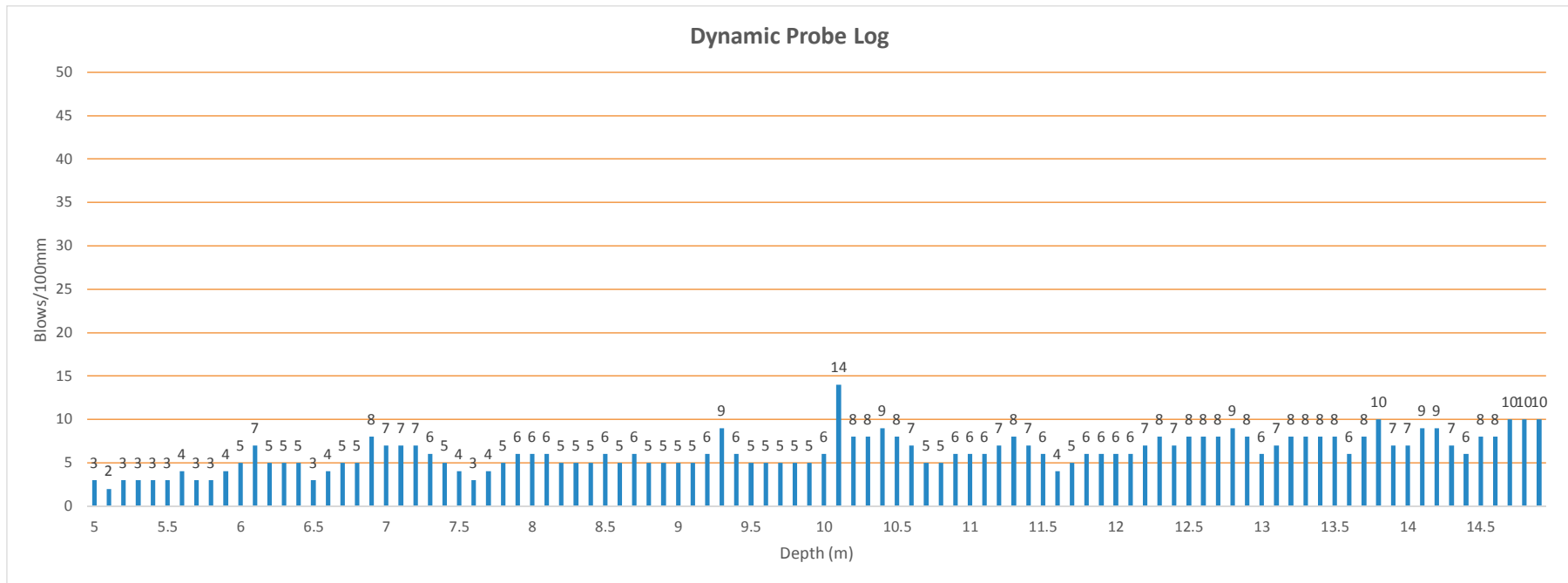
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 38Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 48Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP324



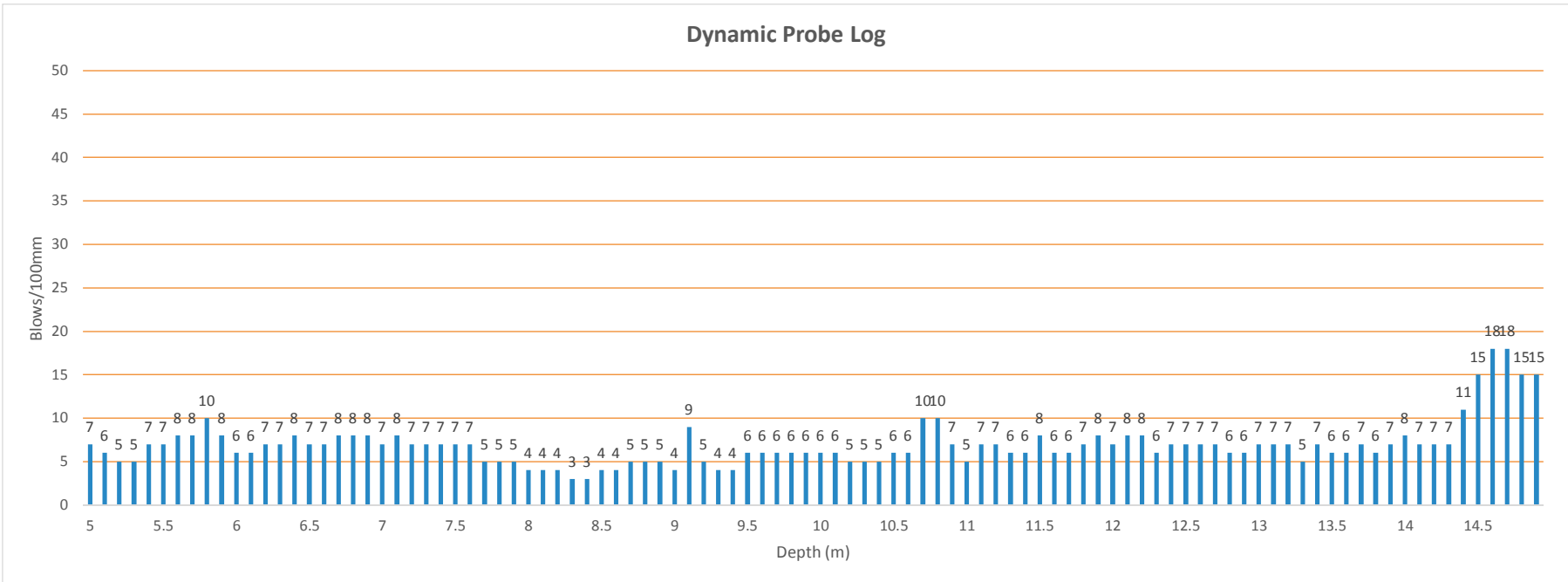
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 40Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 35Ft/16s
 At 12mbgl: 40Ft/16s
 At 14mbgl: 48Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP325



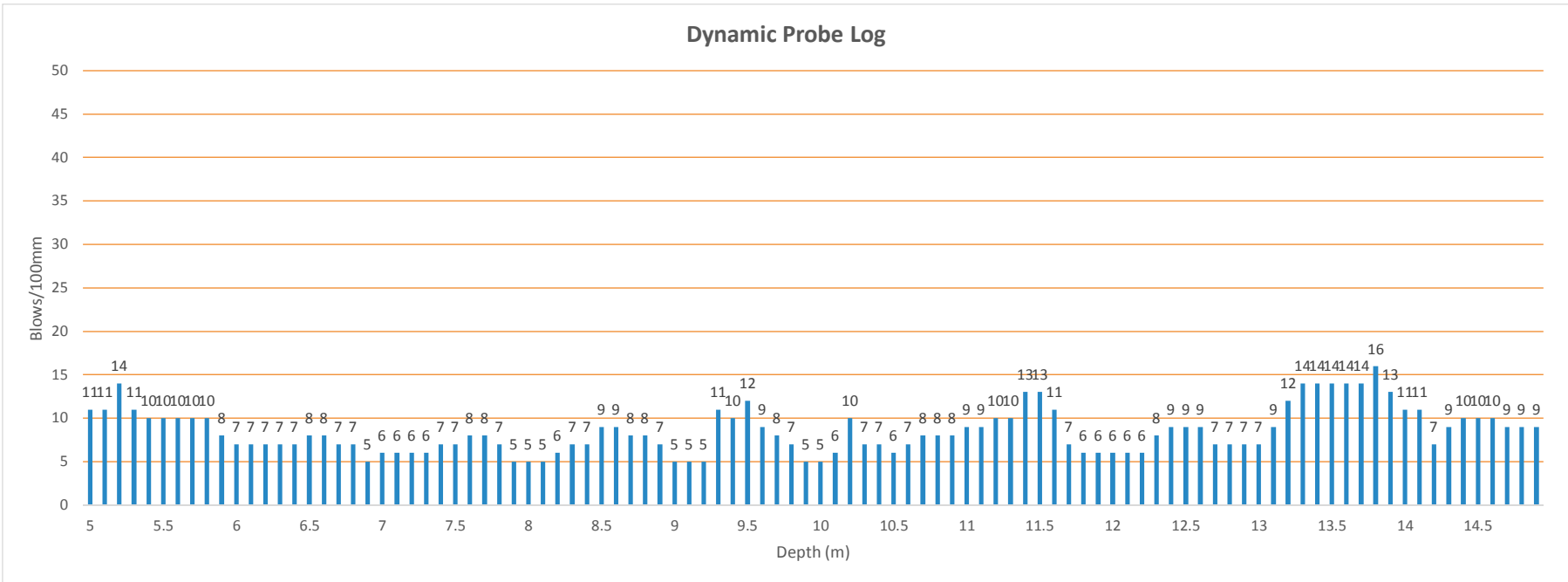
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 45Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 42Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 50Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP326



Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

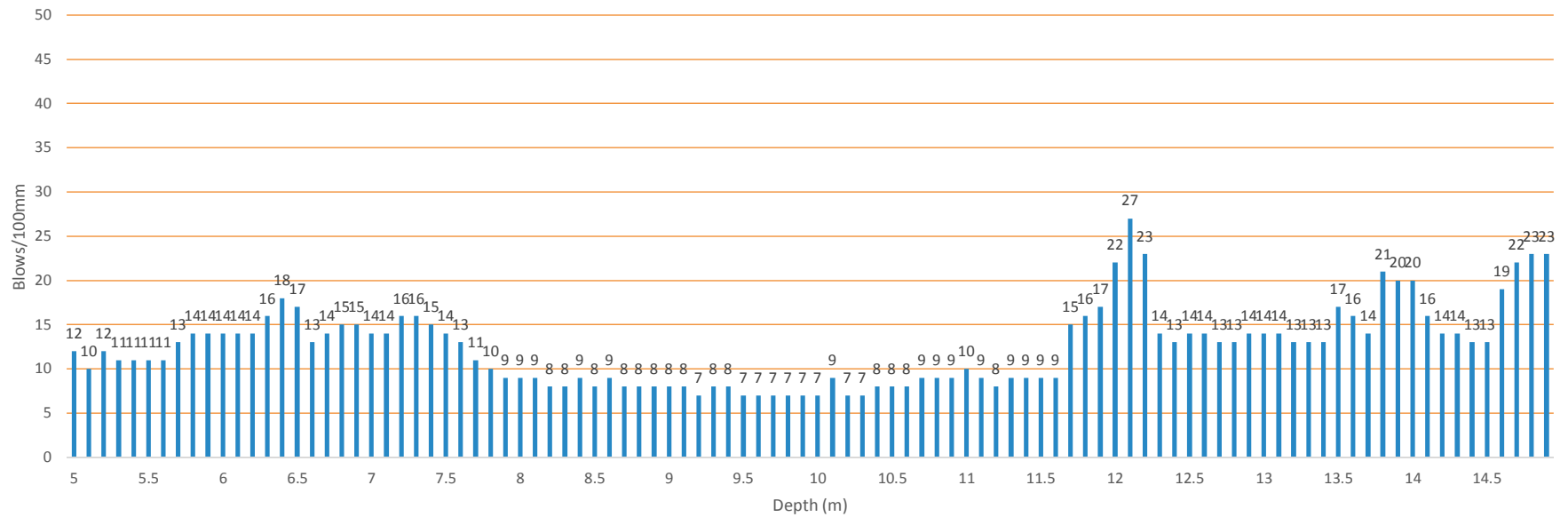
Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 110Ft/16s
 At 8mbgl: 105Ft/16s
 At 10mbgl: 85Ft/16s
 At 12mbgl: 85Ft/16s
 At 14mbgl: 90Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP327

Dynamic Probe Log



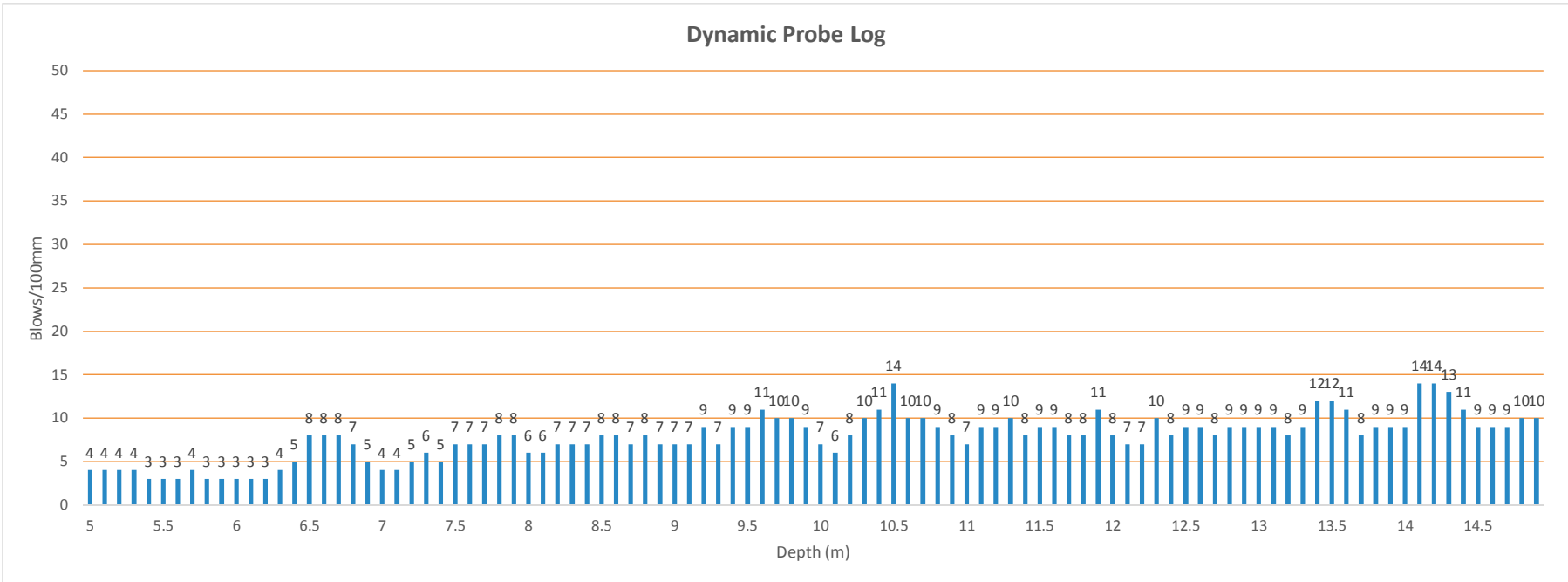
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 82Ft/16s
 At 8mbgl: 76Ft/16s
 At 10mbgl: 94Ft/16s
 At 12mbgl: 64Ft/16s
 At 14mbgl: 71Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP328



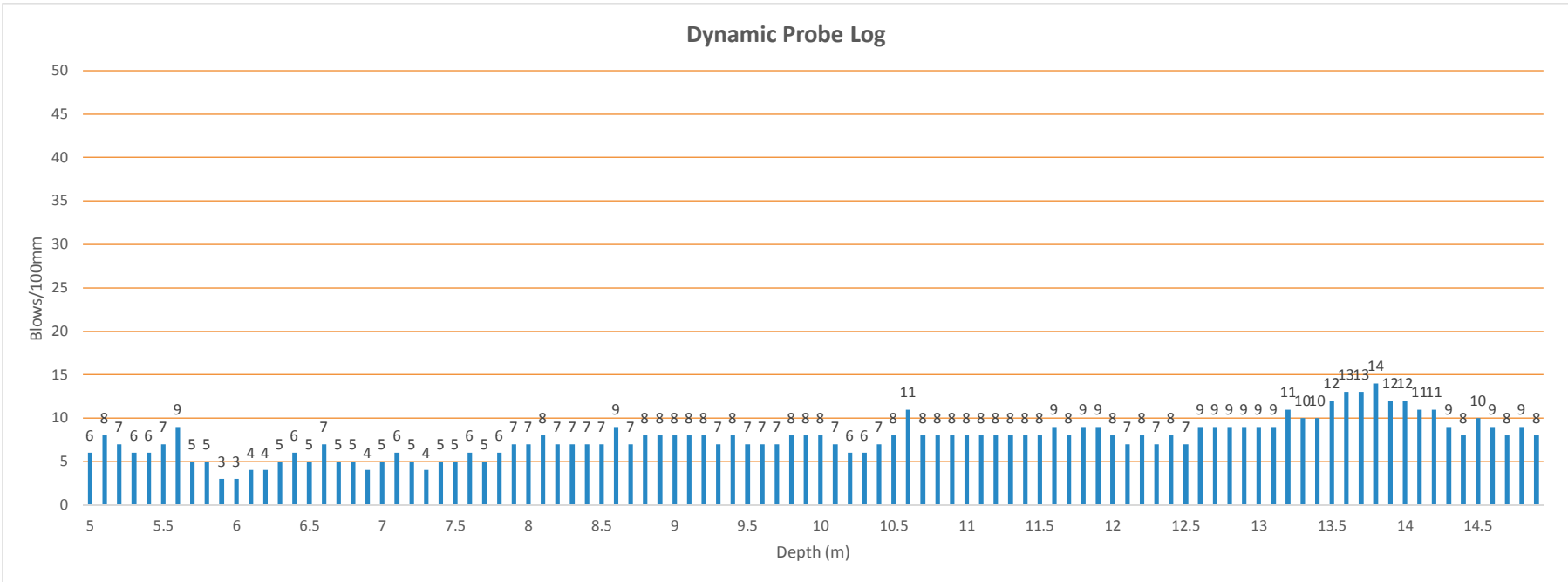
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 34Ft/16s
 At 8mbgl: 41Ft/16s
 At 10mbgl: 34Ft/16s
 At 12mbgl: 36Ft/16s
 At 14mbgl: 39Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP329



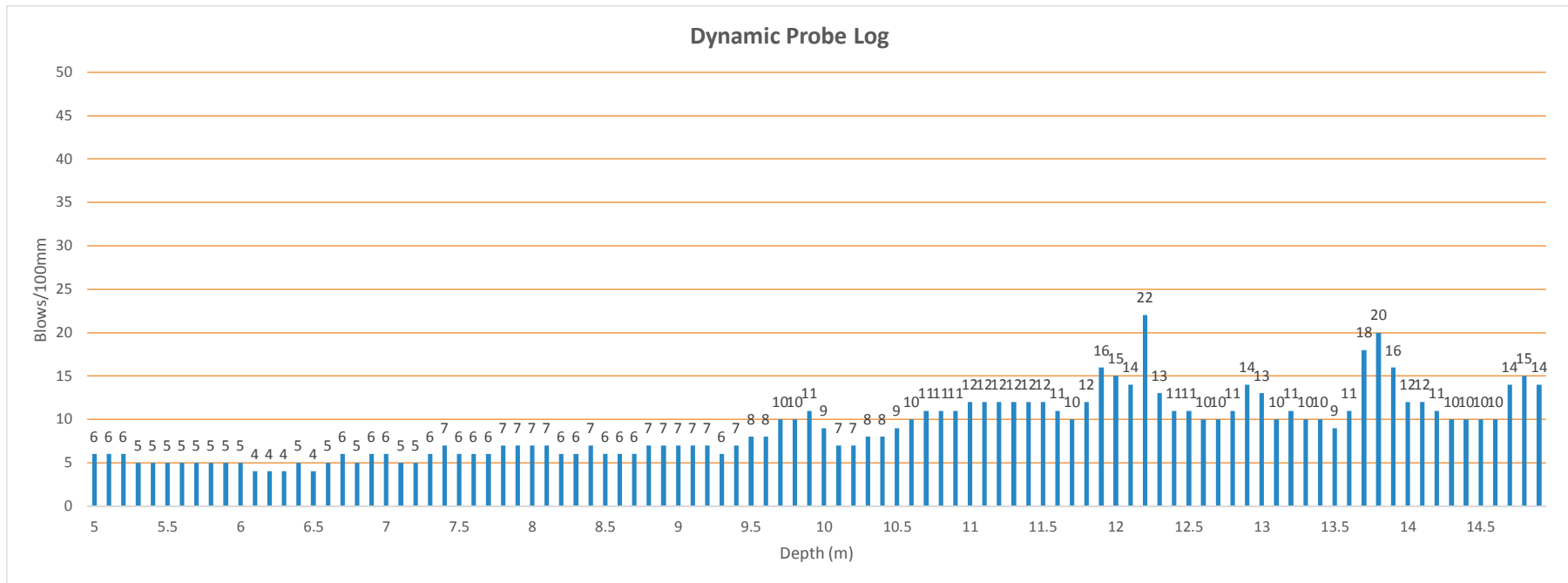
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 57Ft/16s
 At 8mbgl: 104Ft/16s
 At 10mbgl: 107Ft/16s
 At 12mbgl: 104Ft/16s
 At 14mbgl: 82Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP330



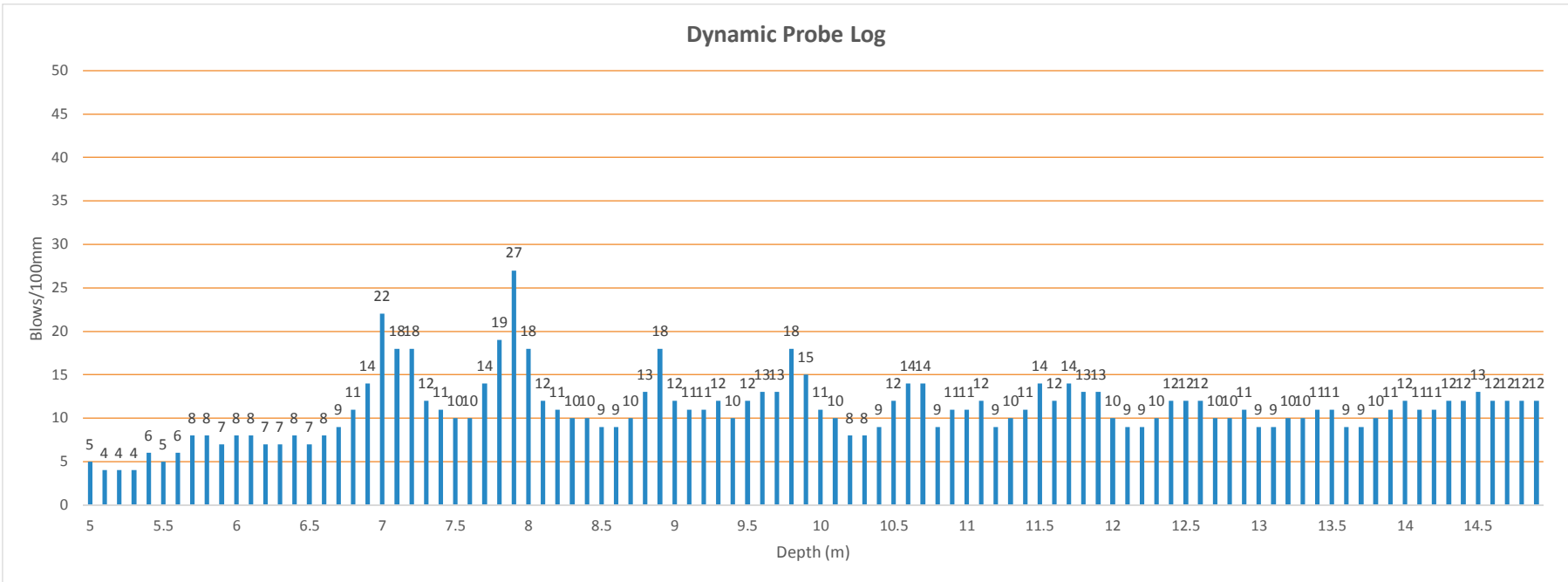
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 110Ft/16s
 At 8mbgl: 78Ft/16s
 At 10mbgl: 85Ft/16s
 At 12mbgl: 67Ft/16s
 At 14mbgl: 65Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP331



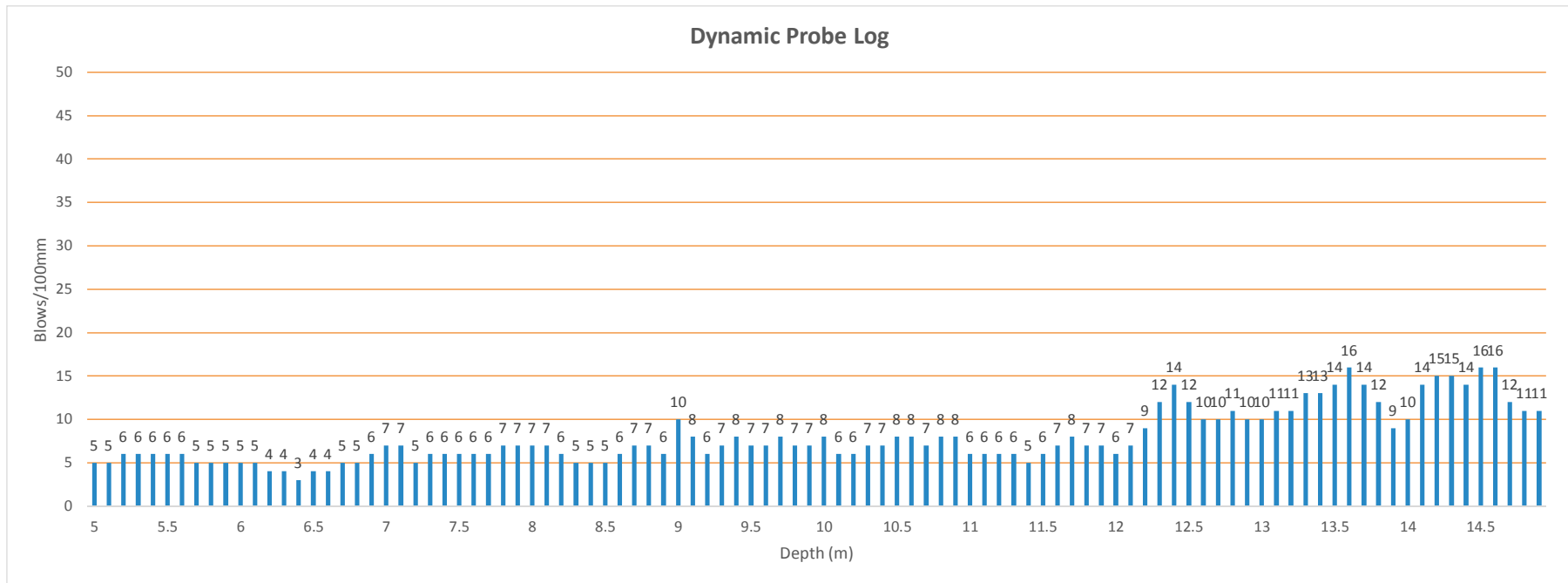
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 51Ft/16s
 At 8mbgl: 54Ft/16s
 At 10mbgl: 55Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 42Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP332



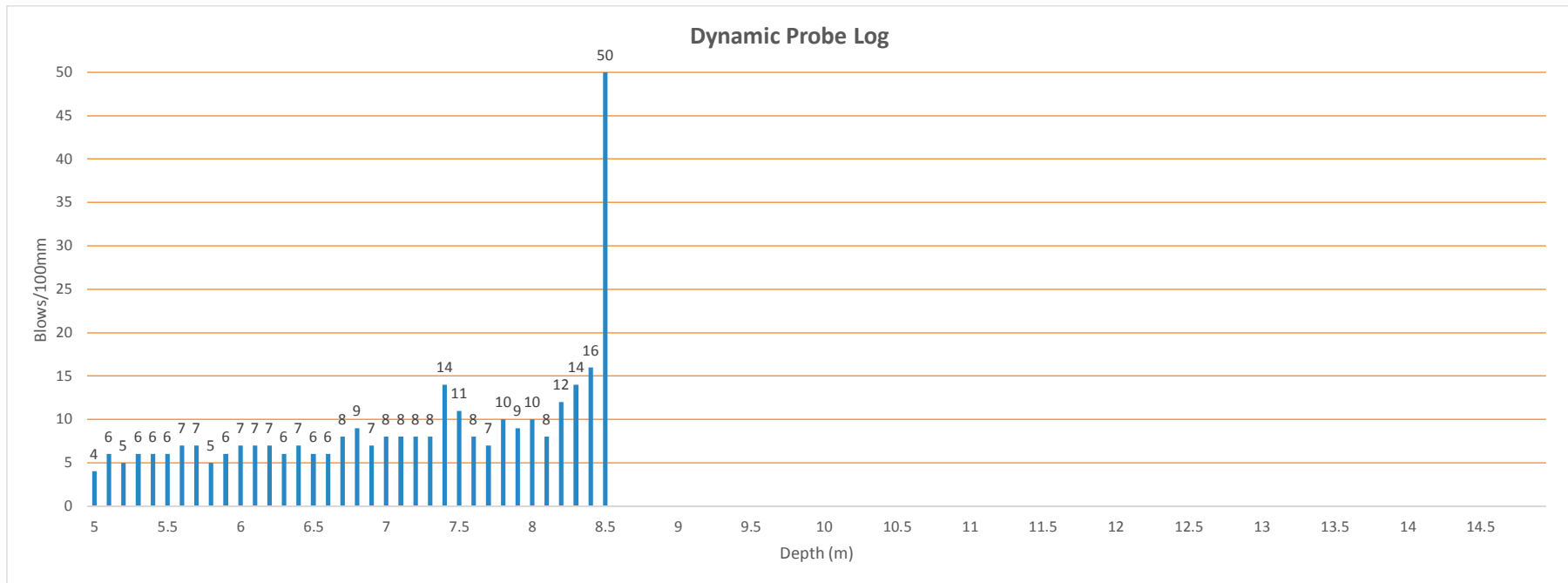
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 50Ft/16s
 At 8mbgl: 53Ft/16s
 At 10mbgl: 45Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 43Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP333



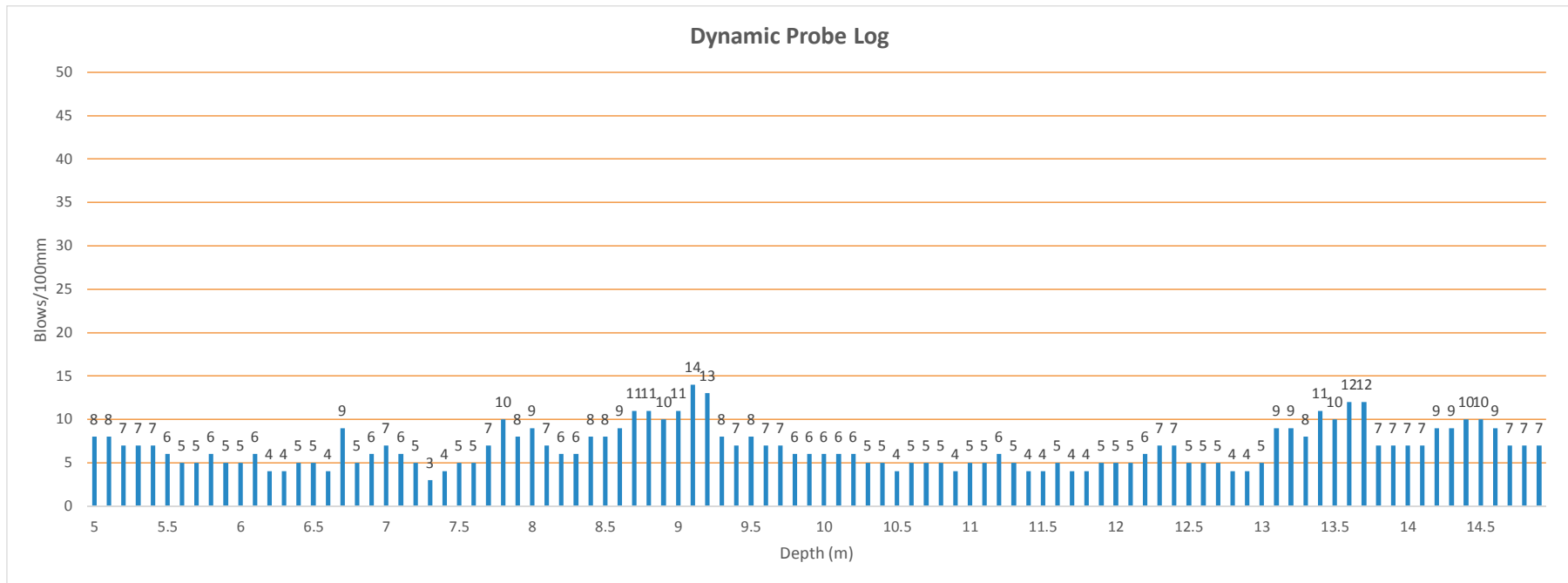
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 38Ft/16s
 At 8mbgl: 38Ft/16s
 Probing terminated at Dynamic Probing Refusal at 8.600mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP334



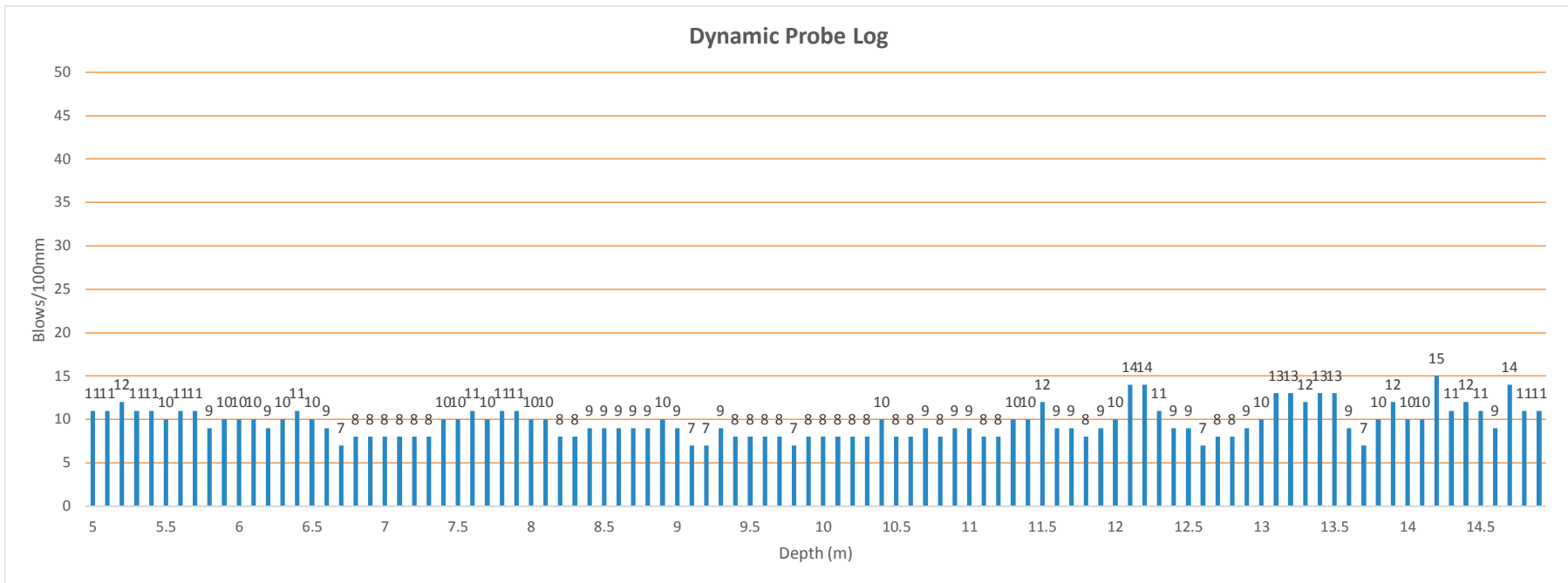
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 40Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 47Ft/16s
 At 12mbgl: 47Ft/16s
 At 14mbgl: 50Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP335



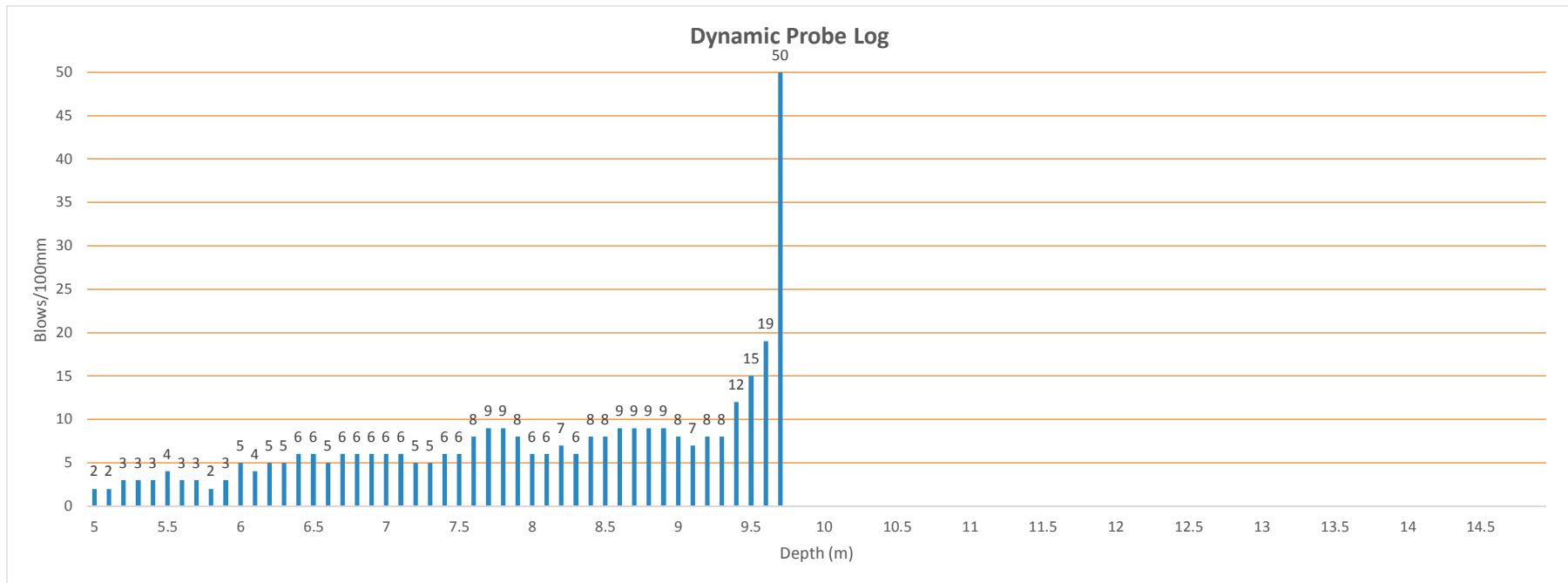
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 130Ft/16s
 At 8mbgl: 123Ft/16s
 At 10mbgl: 110Ft/16s
 At 12mbgl: 92Ft/16s
 At 14mbgl: 90Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP336



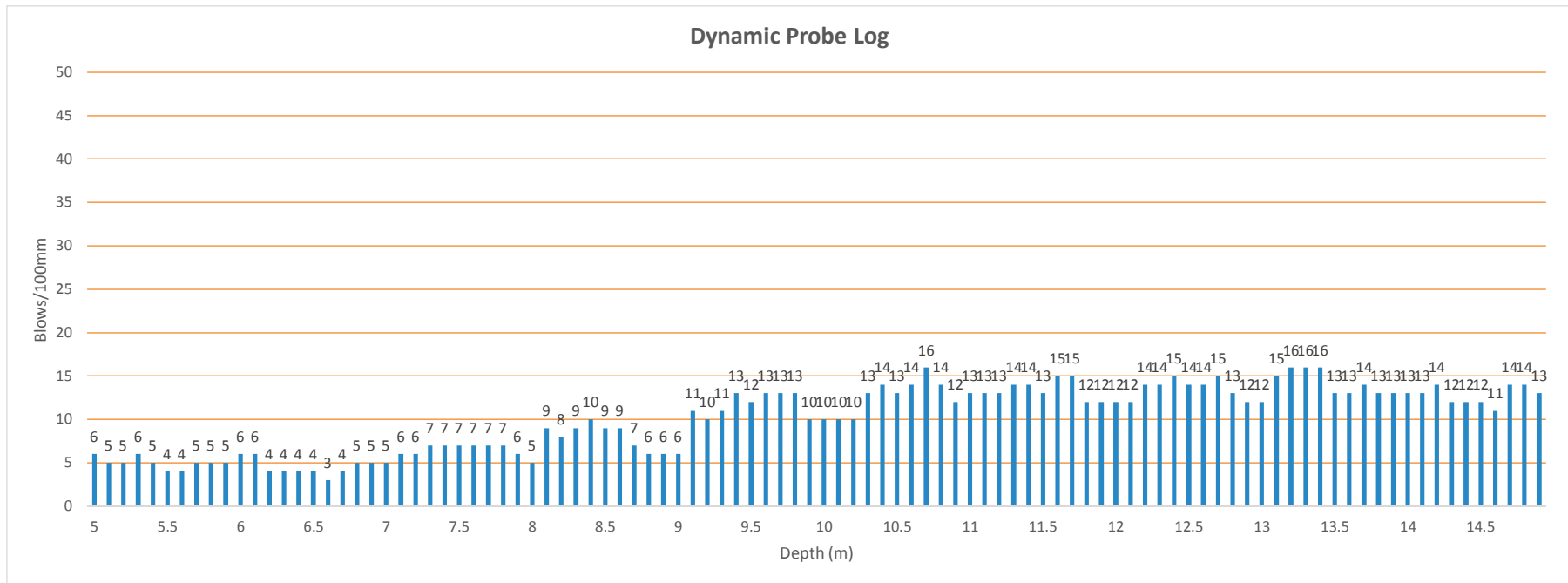
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 80Ft/16s
 At 8mbgl: 80Ft/16s
 Probe terminated at Dynamic probing Refusal at 9.720mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP337



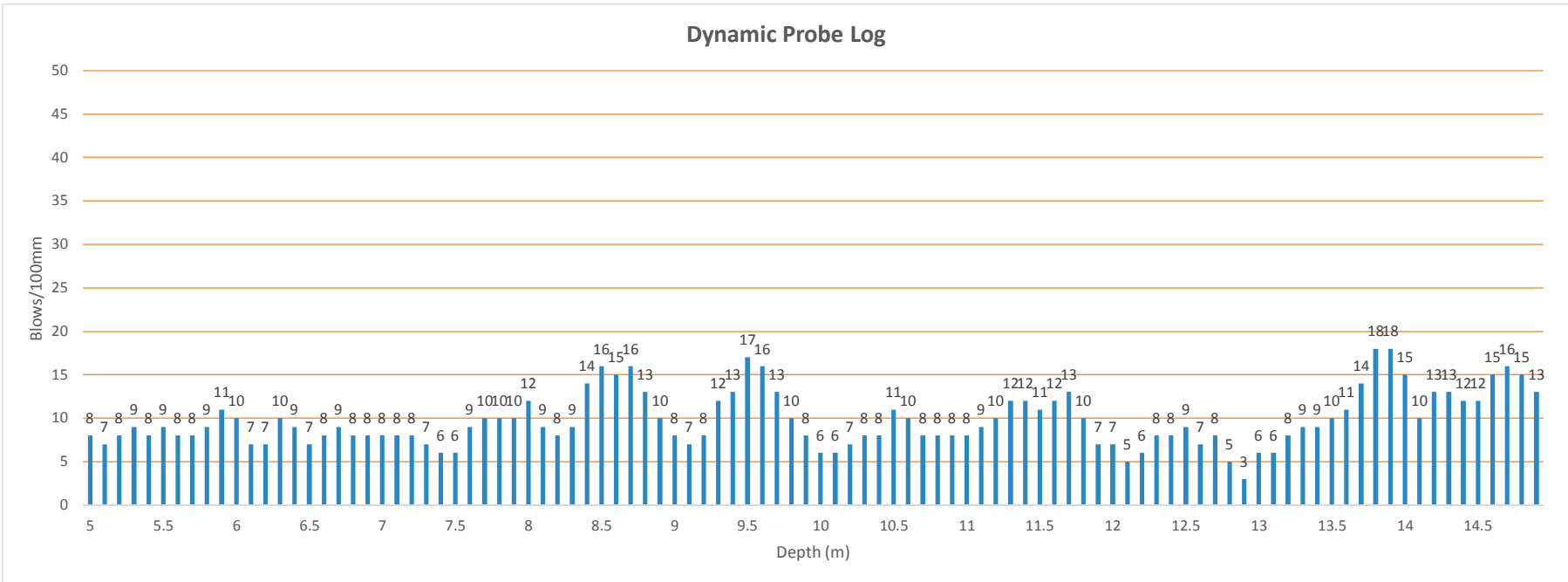
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 100Ft/16s
 At 8mbgl: 92Ft/16s
 At 10mbgl: 75Ft/16s
 At 12mbgl: 70Ft/16s
 At 14mbgl: 70Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP338



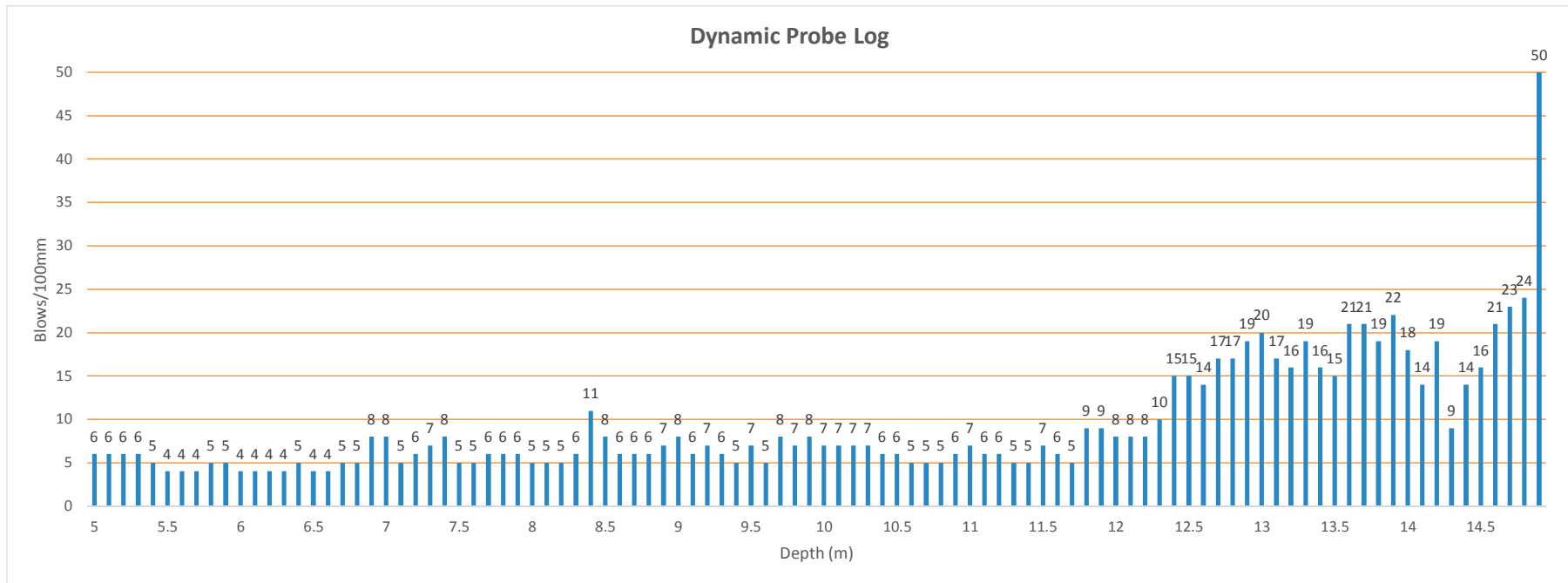
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 47Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 40Ft/16s
 At 14mbgl: 36Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP339



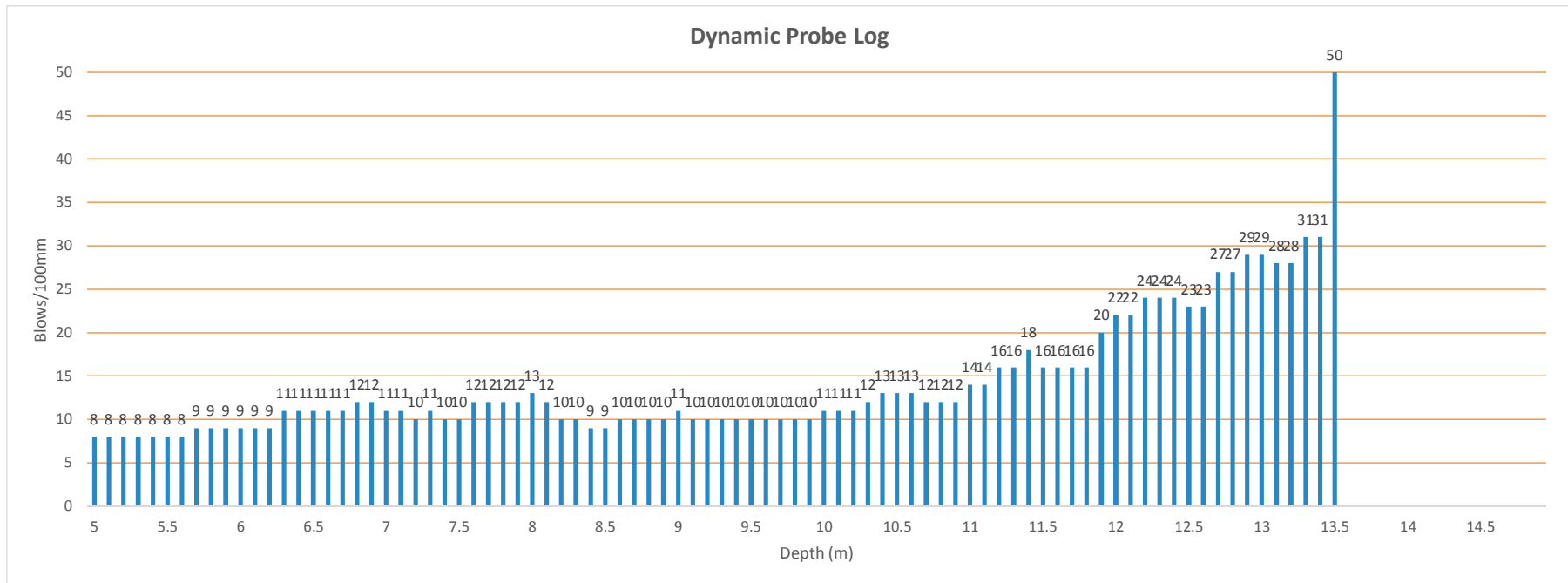
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 130Ft/16s
 At 8mbgl: 80Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 35Ft/16s
 At 14mbgl: 35Ft/16s
 Probing terminated at Dynamic Probe Refusal at 14.915mbgl



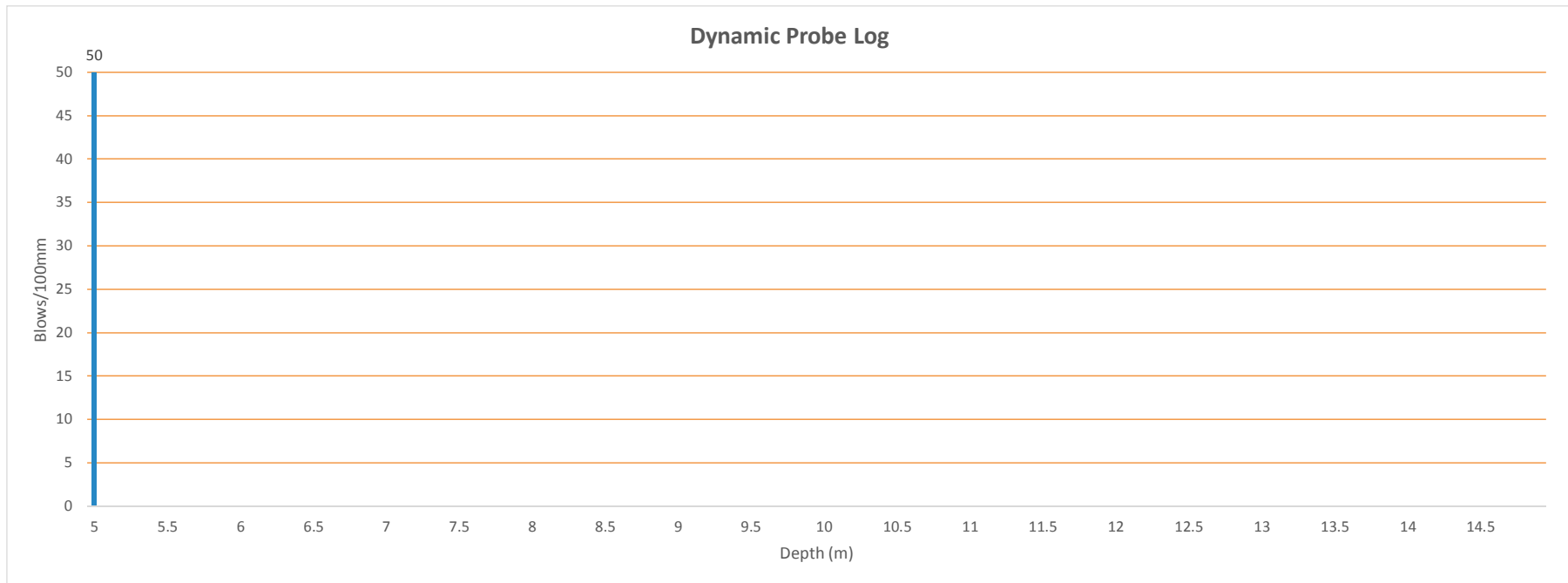
Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP340



Fall height (mm)	750	Cone Base Diameter	35	Probing terminated at Dynamic Probe Refusal at 13.530mbgl
Hammer Weight (kg)	63.5	Final Depth (m)	2.00	
Probe Type	DPSH-B			



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP341



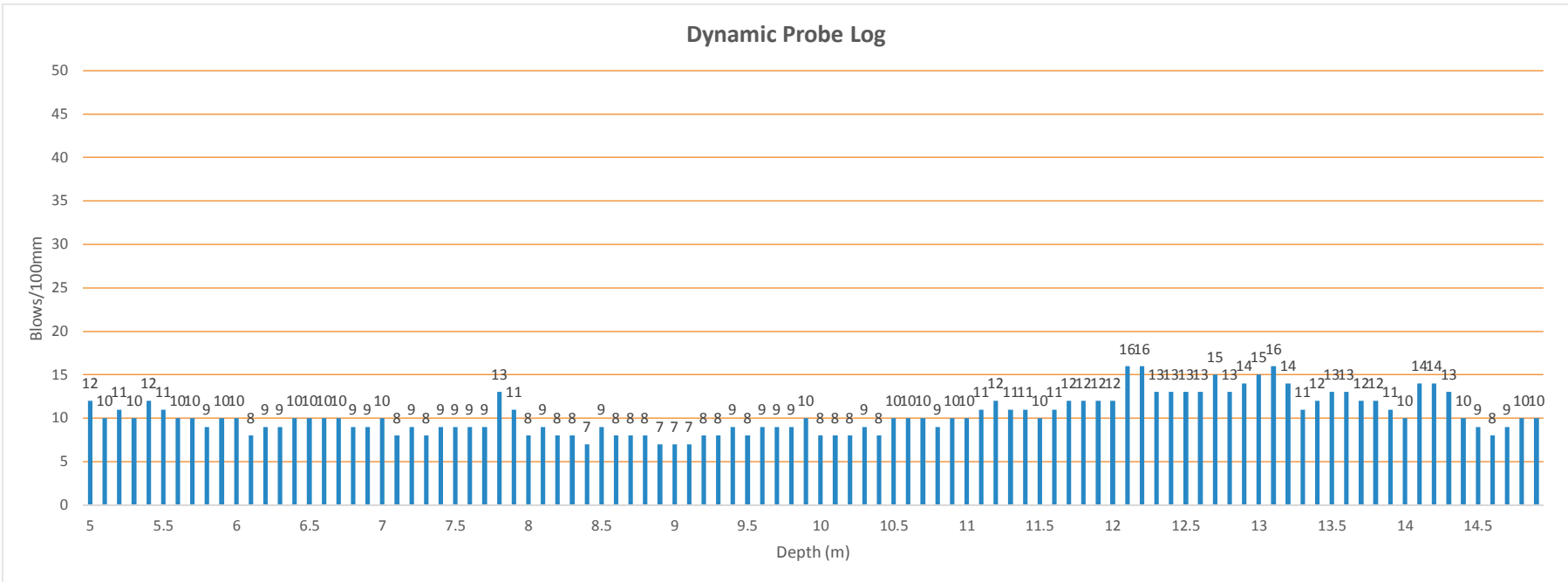
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Probing terminated at Dynamic Probe Refusal at 5.030mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP342



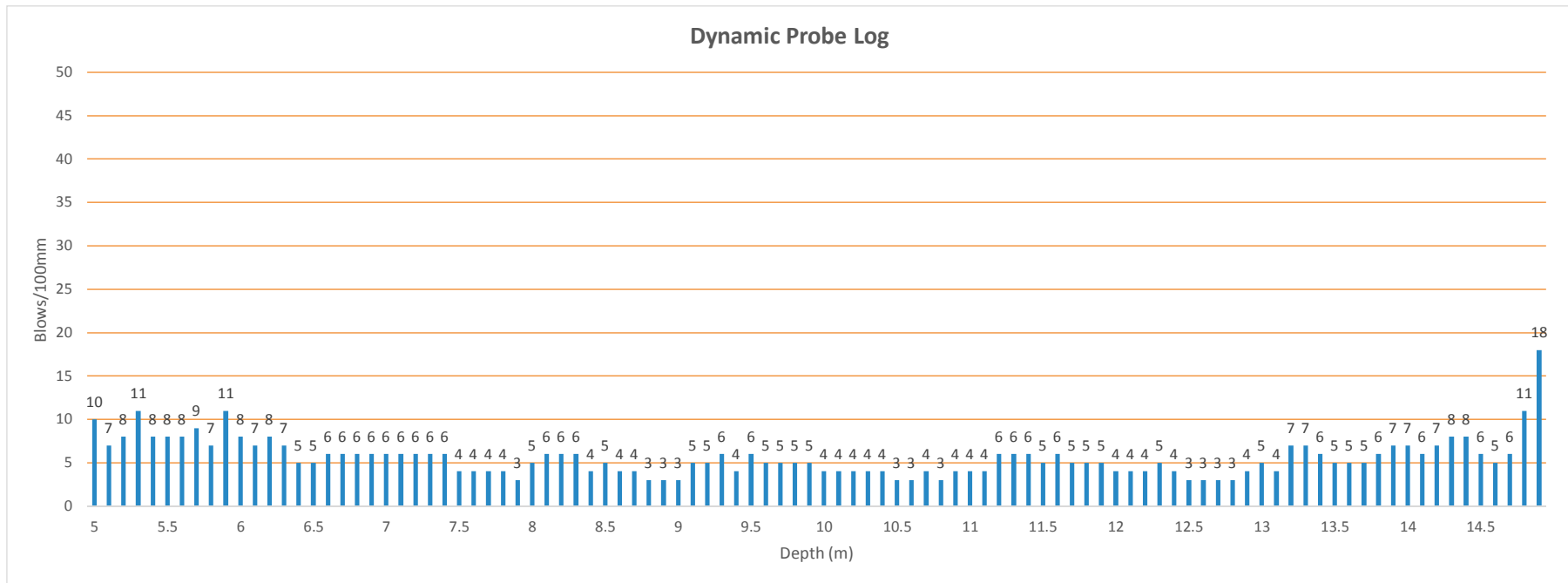
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 130Ft/16s
 At 8mbgl: 90Ft/16s
 At 10mbgl: 65Ft/16s
 At 12mbgl: 60Ft/16s
 At 14mbgl: 56Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP343



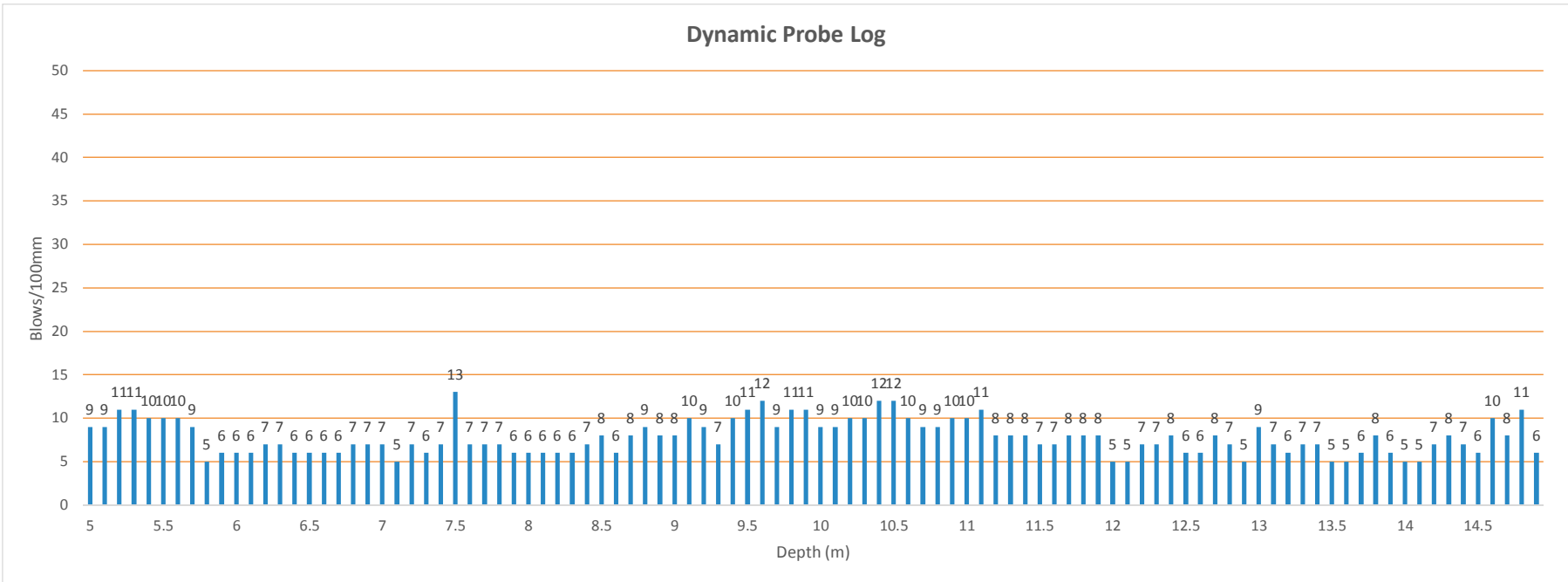
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 64Ft/16s
 At 8mbgl: 57Ft/16s
 At 10mbgl: 58Ft/16s
 At 12mbgl: 67Ft/16s
 At 14mbgl: 55Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP344



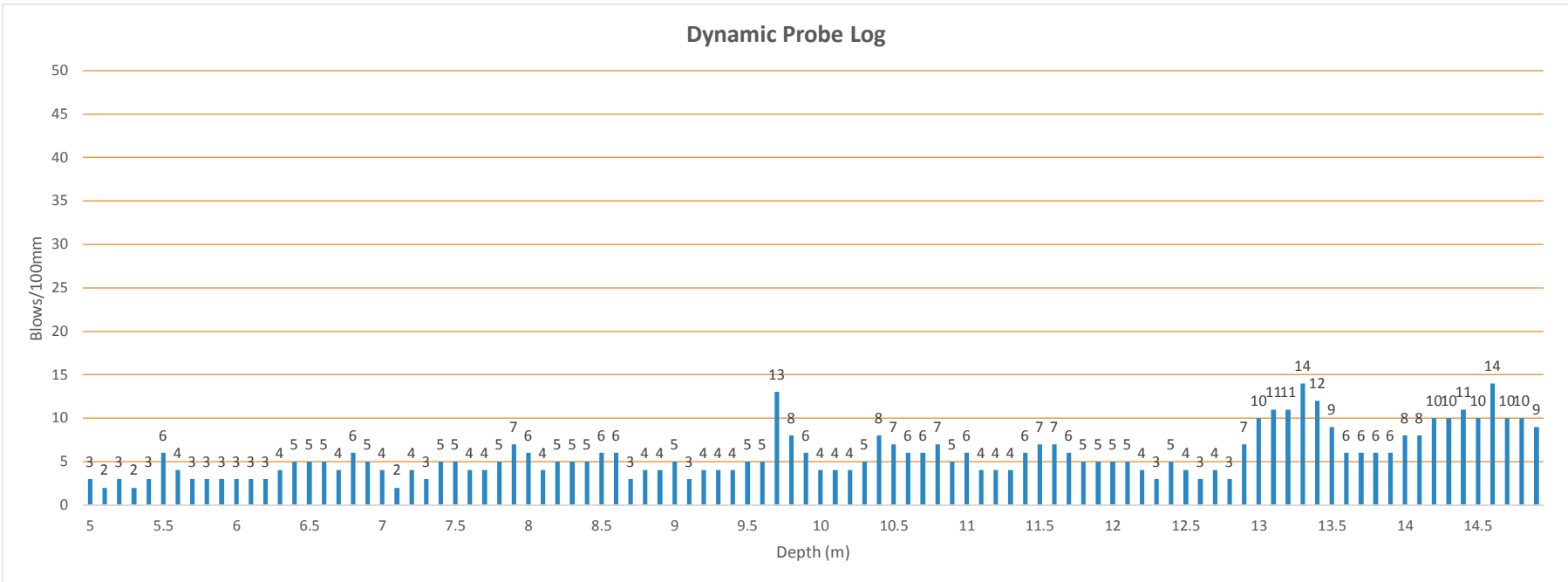
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 39Ft/16s
 At 8mbgl: 28Ft/16s
 At 10mbgl: 30Ft/16s
 At 12mbgl: 34Ft/16s
 At 14mbgl: 34Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP345



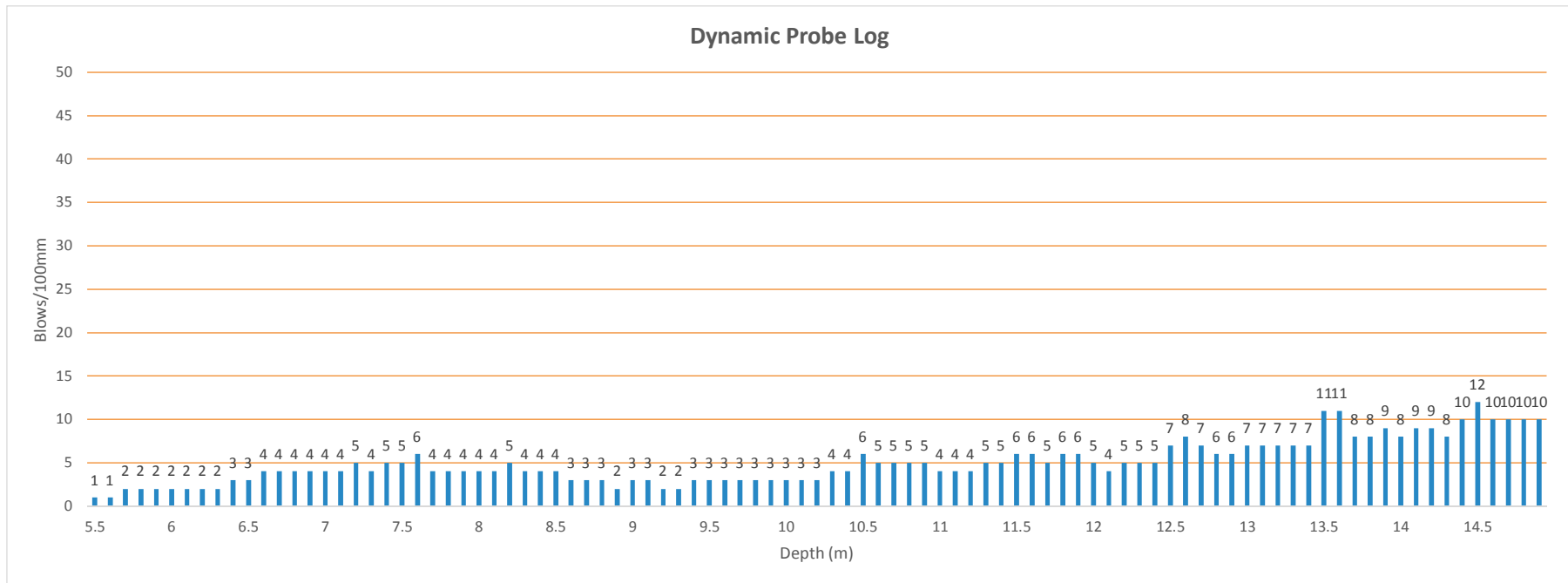
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 54Ft/16s
 At 8mbgl: 56Ft/16s
 At 10mbgl: 60Ft/16s
 At 12mbgl: 62Ft/16s
 At 14mbgl: 65Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP346



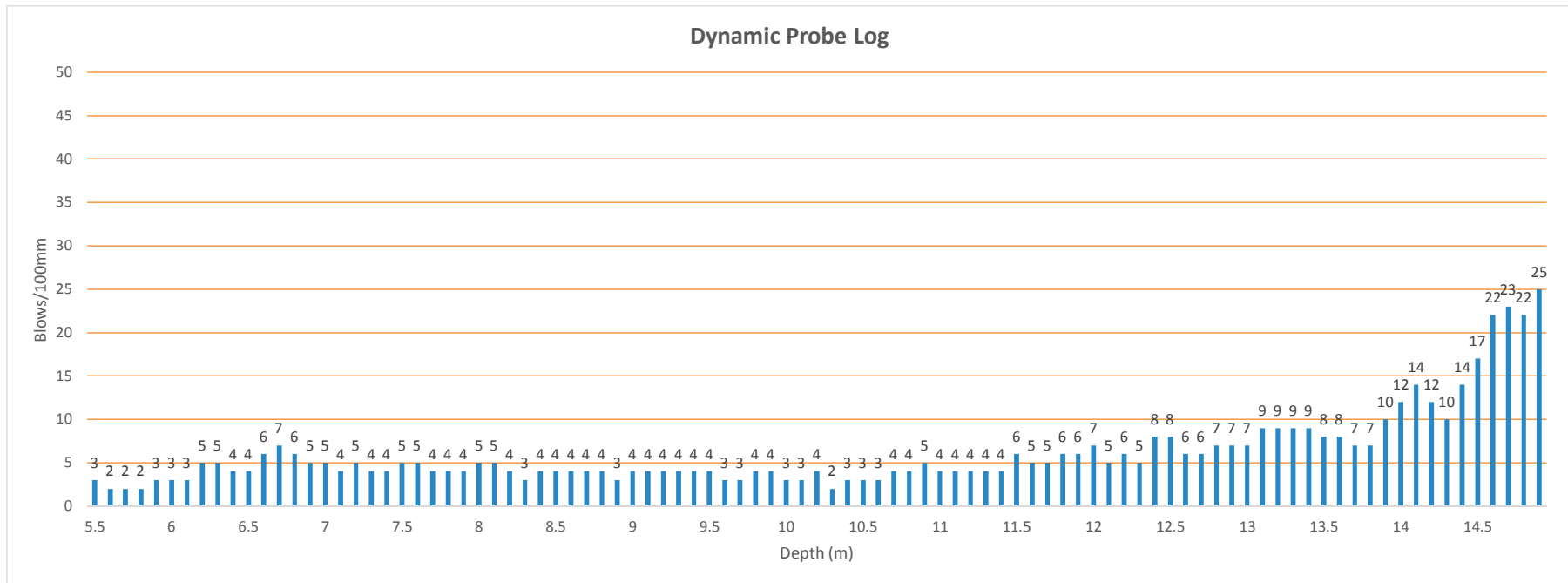
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 30Ft/16s
 At 8mbgl: 40Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 46Ft/16s
 At 14mbgl: 46Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP347

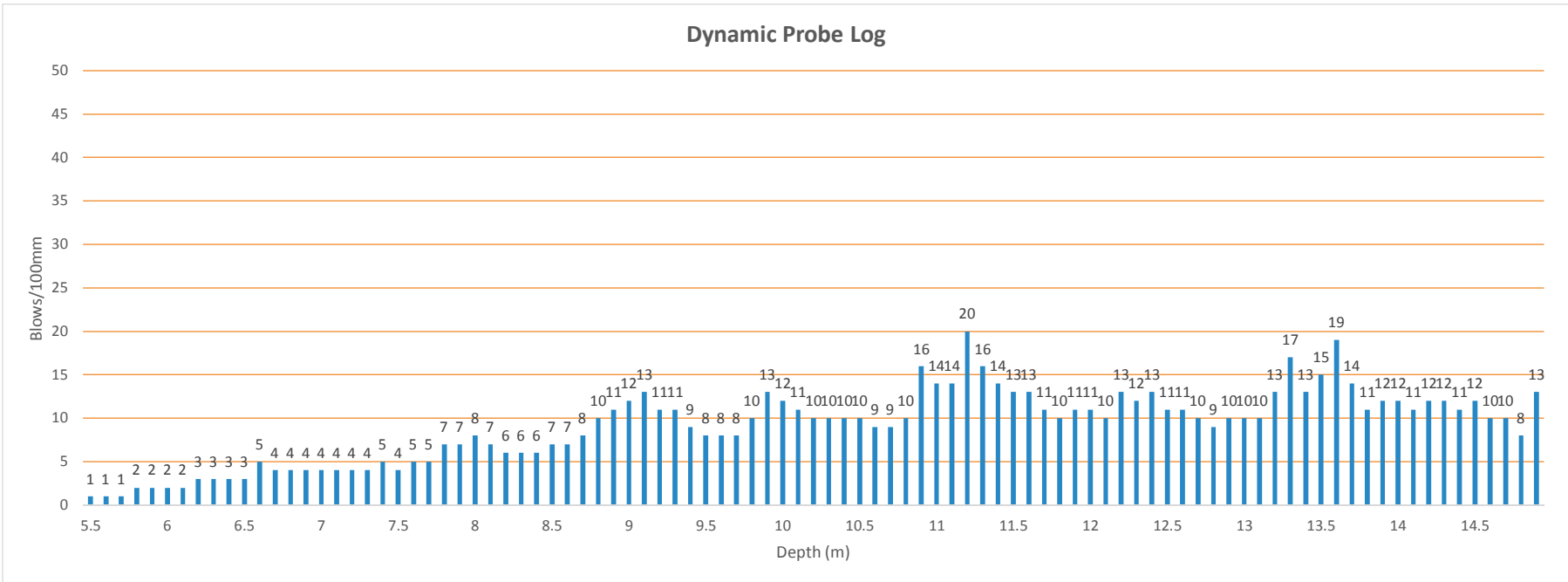


Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP348



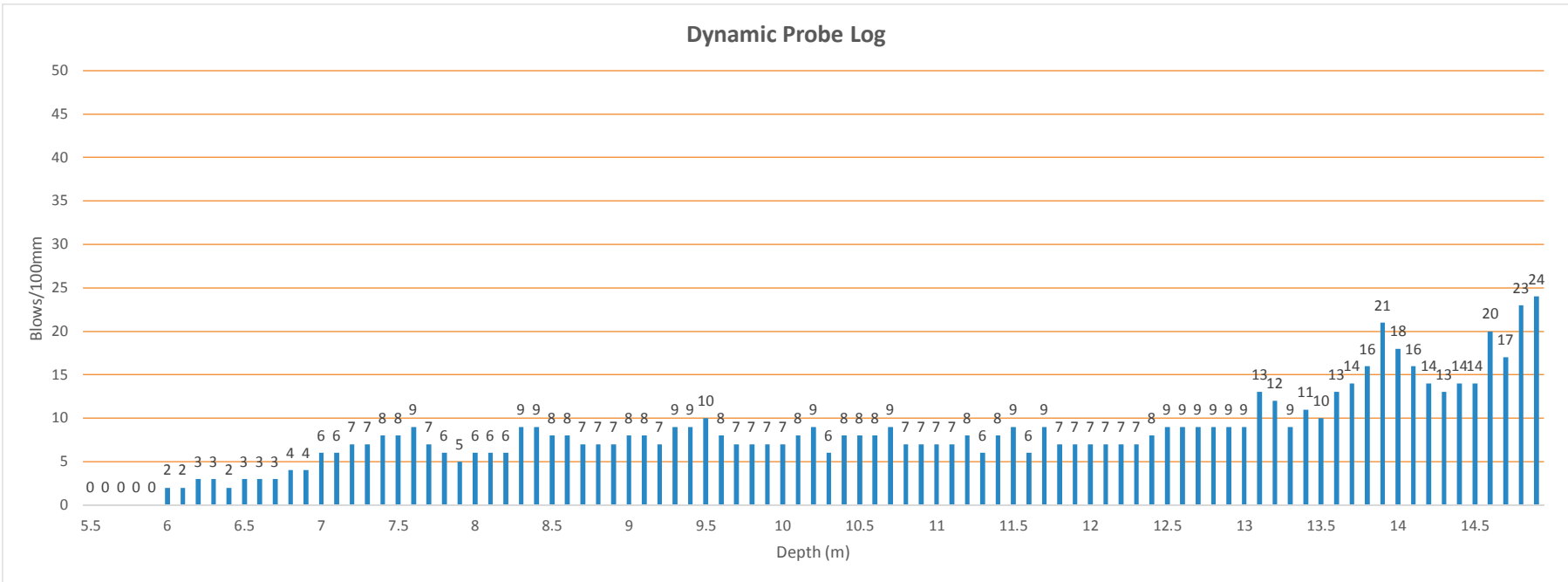
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 28Ft/16s
 At 8mbgl: 34Ft/16s
 At 10mbgl: 45Ft/16s
 At 12mbgl: 81Ft/16s
 At 14mbgl: 81Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP349



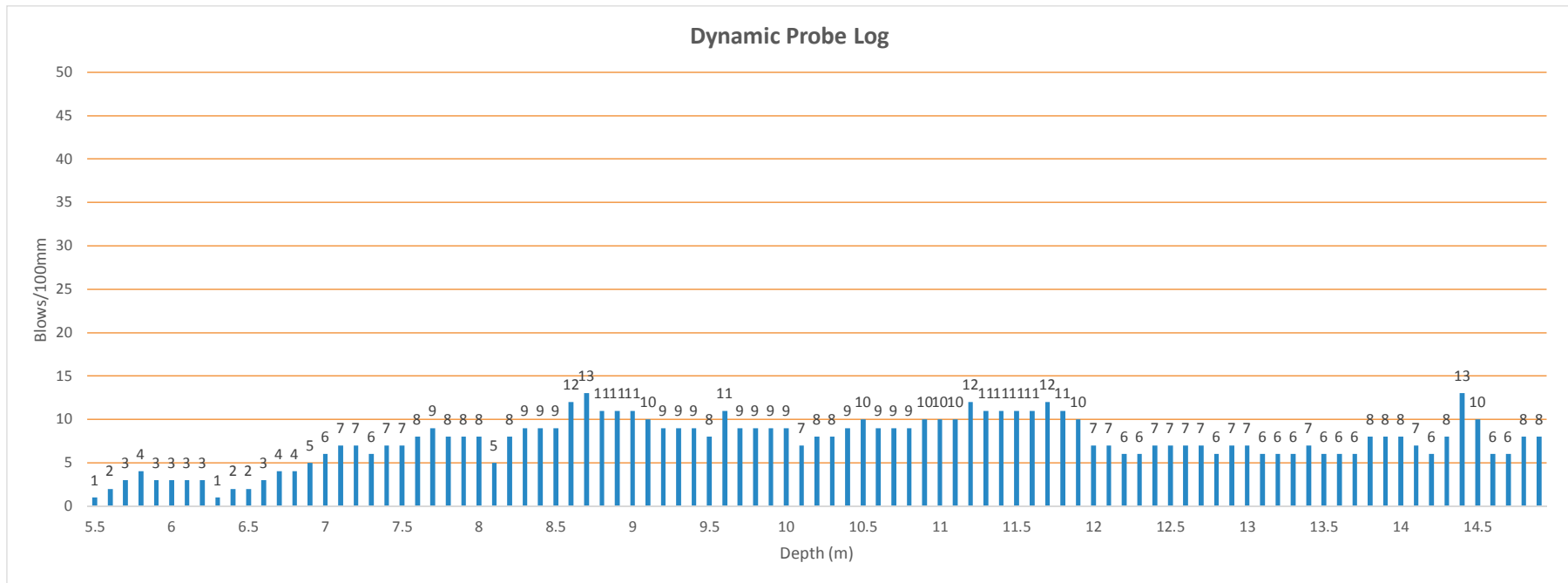
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 36Ft/16s
 At 8mbgl: 41Ft/16s
 At 10mbgl: 44Ft/16s
 At 12mbgl: 48Ft/16s
 At 14mbgl: 48Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Marc Roberts
Location DP351



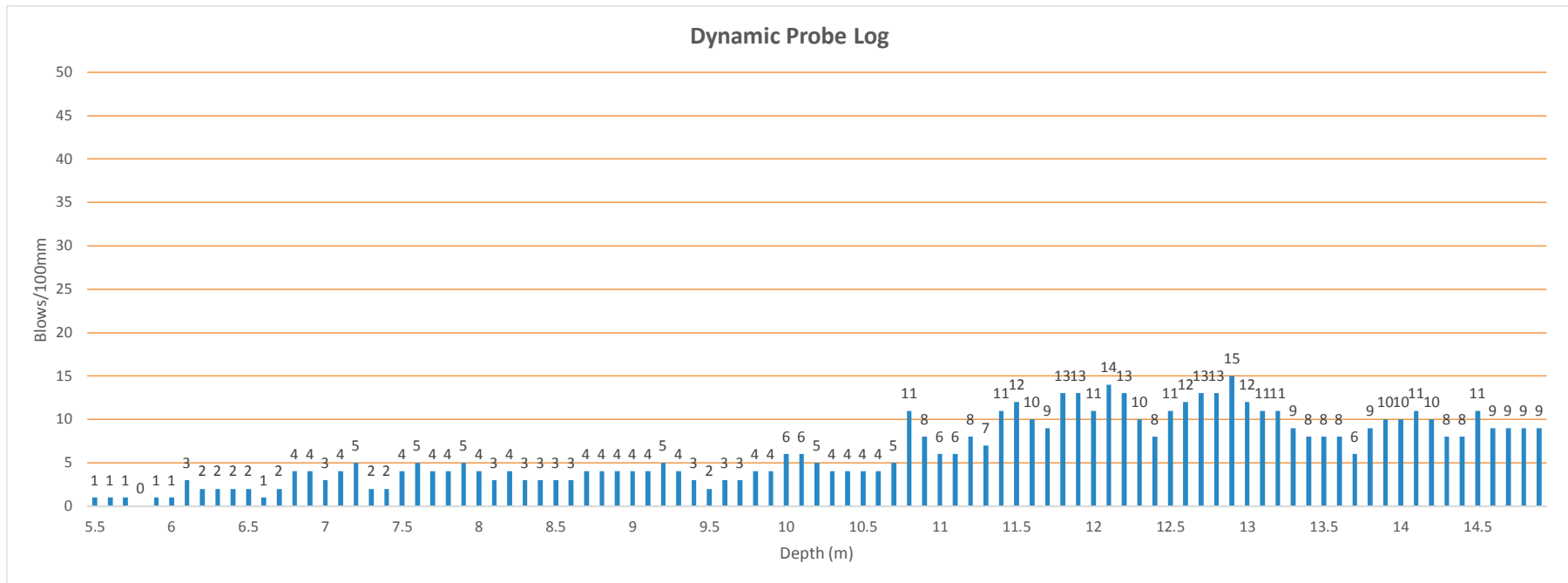
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 33Ft/16s
 At 8mbgl: 36Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 40Ft/16s
 At 14mbgl: 42Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP352



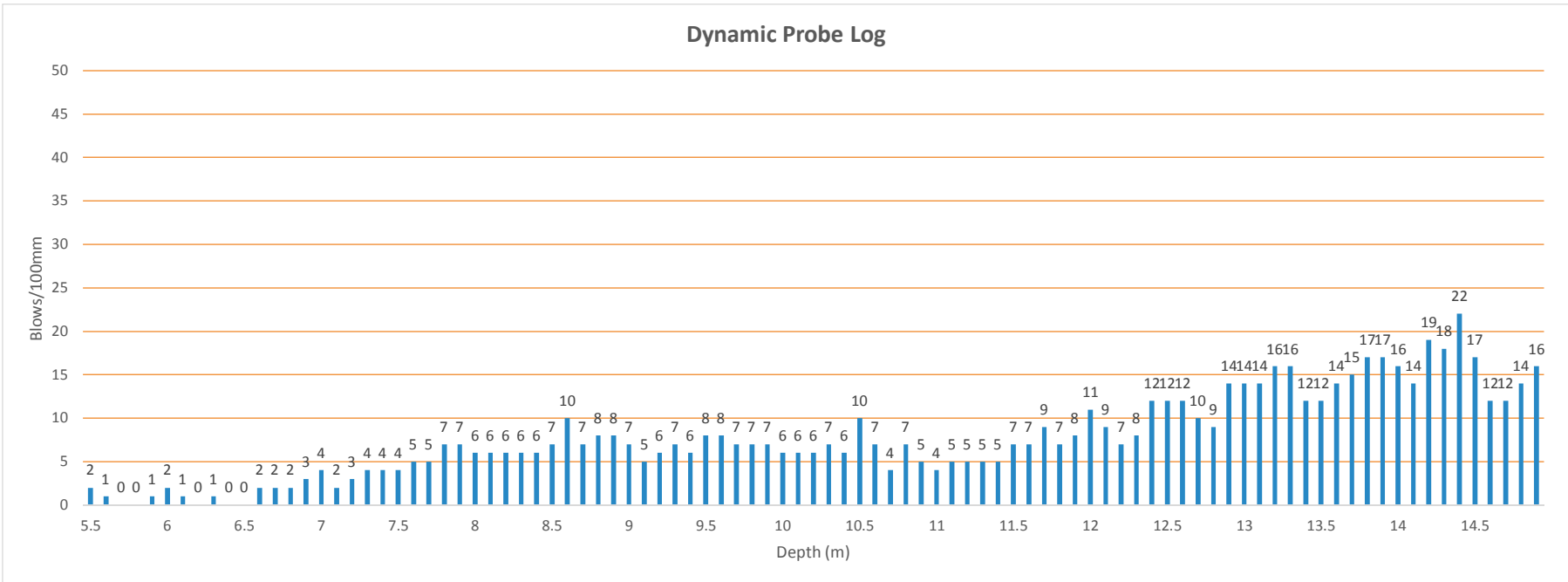
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 18Ft/16s
 At 8mbgl: 50Ft/16s
 At 10mbgl: 53Ft/16s
 At 12mbgl: 55Ft/16s
 At 14mbgl: 45Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP353



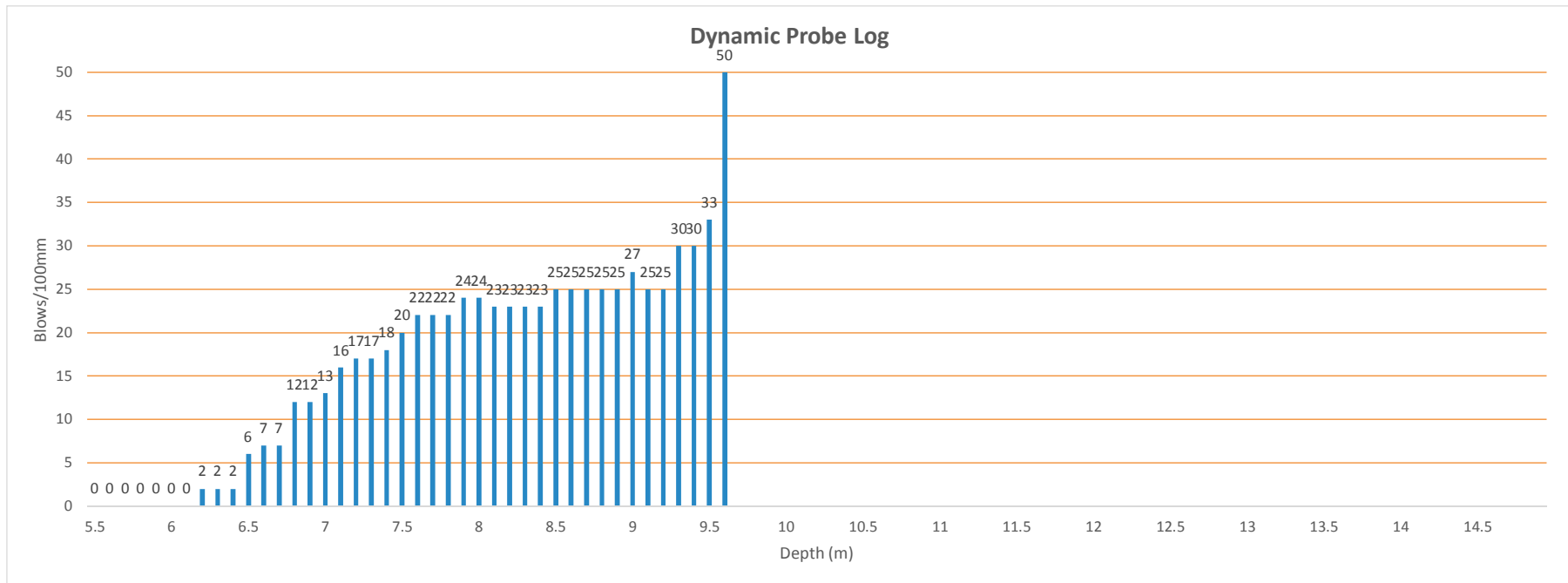
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 15Ft/16s
 At 8mbgl: 45Ft/16s
 At 10mbgl: 42Ft/16s
 At 12mbgl: 45Ft/16s
 At 14mbgl: 57Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP354



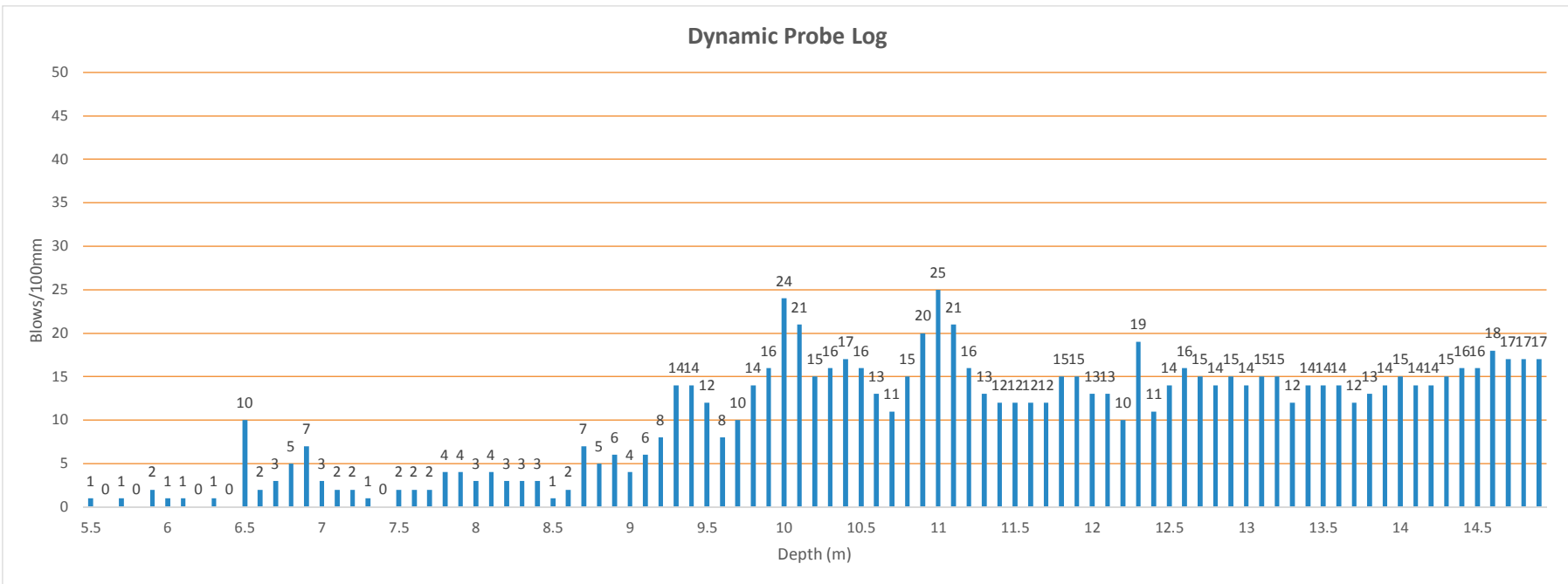
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Probing terminated at Dynamic Probe
 Refusal at 9.640mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP355



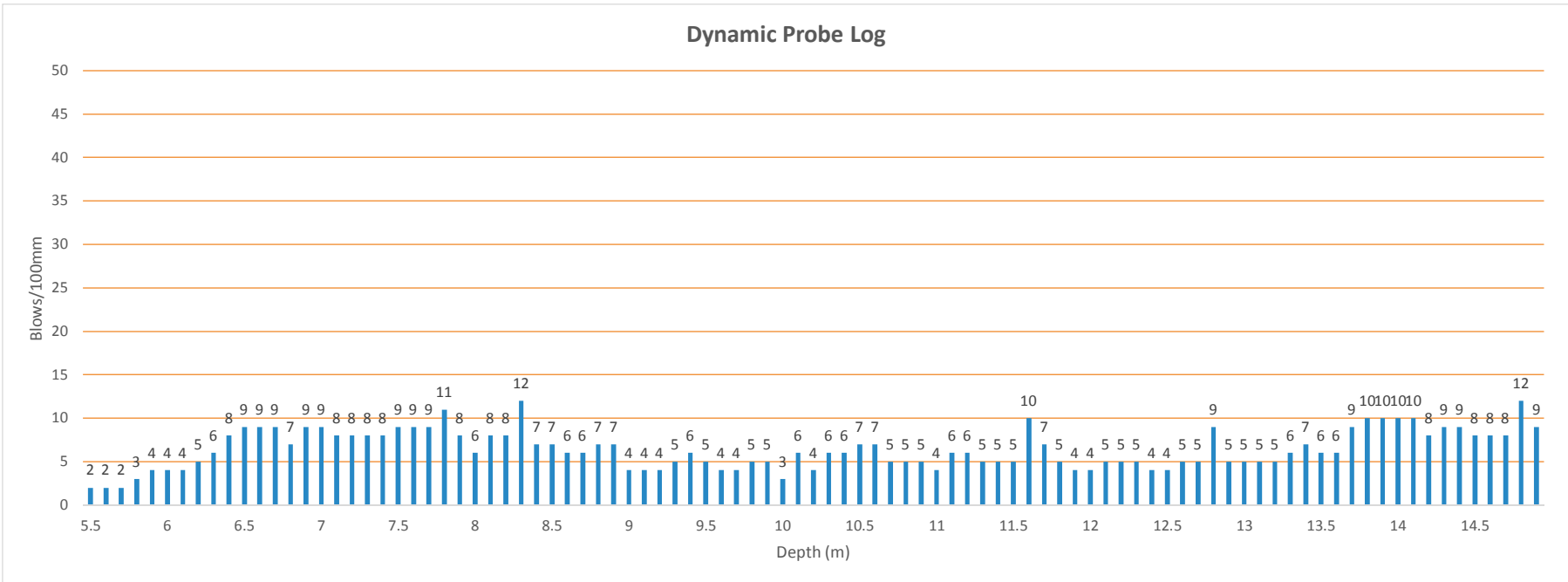
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 10Ft/16s
 At 8mbgl: 35Ft/16s
 At 10mbgl: 40Ft/16s
 At 12mbgl: 40Ft/16s
 At 14mbgl: 46Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP356



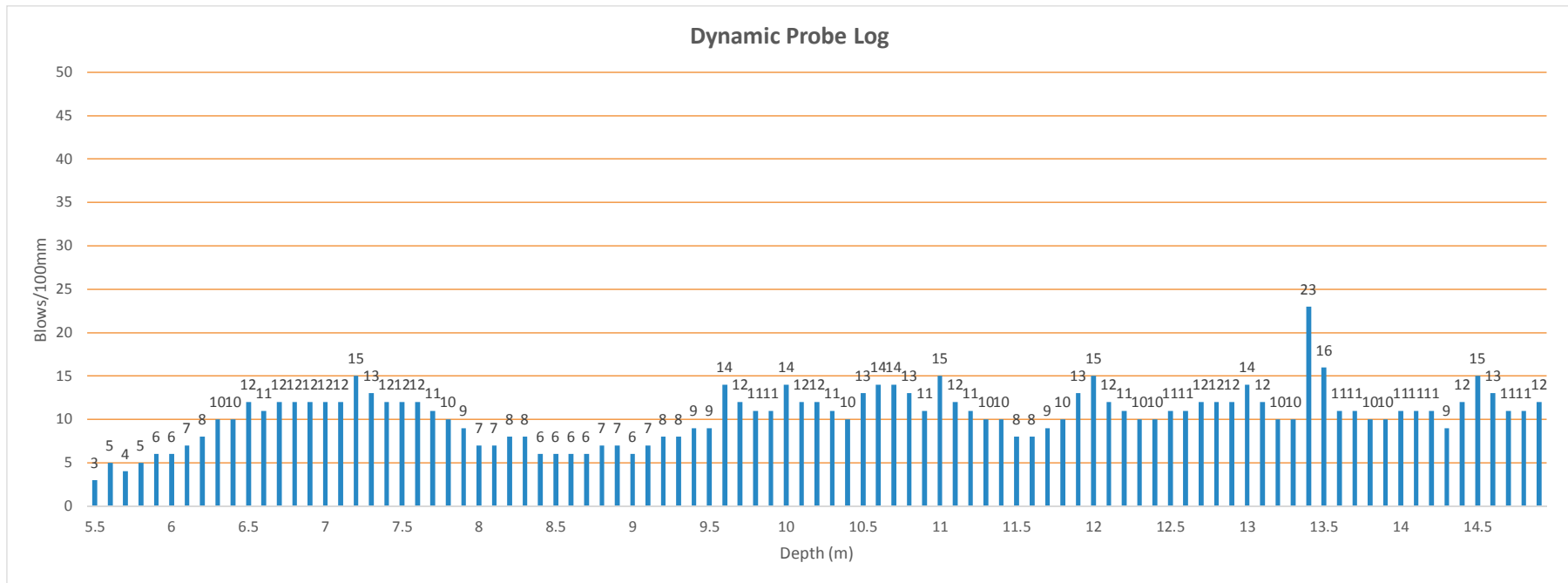
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 20Ft/16s
 At 8mbgl: 20Ft/16s
 At 10mbgl: 20Ft/16s
 At 12mbgl: 36Ft/16s
 At 14mbgl: 29Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP357



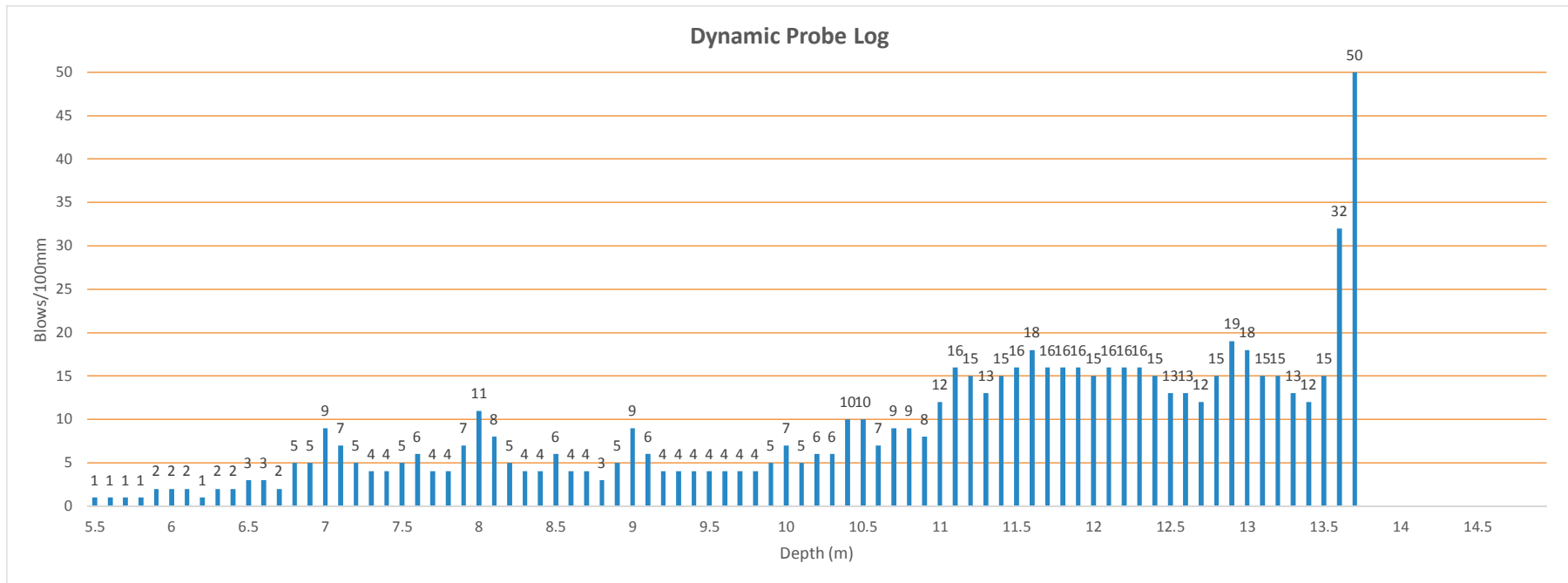
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 50Ft/16s
 At 8mbgl: 63Ft/16s
 At 10mbgl: 63Ft/16s
 At 12mbgl: 63Ft/16s
 At 14mbgl: 47Ft/16s



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP358



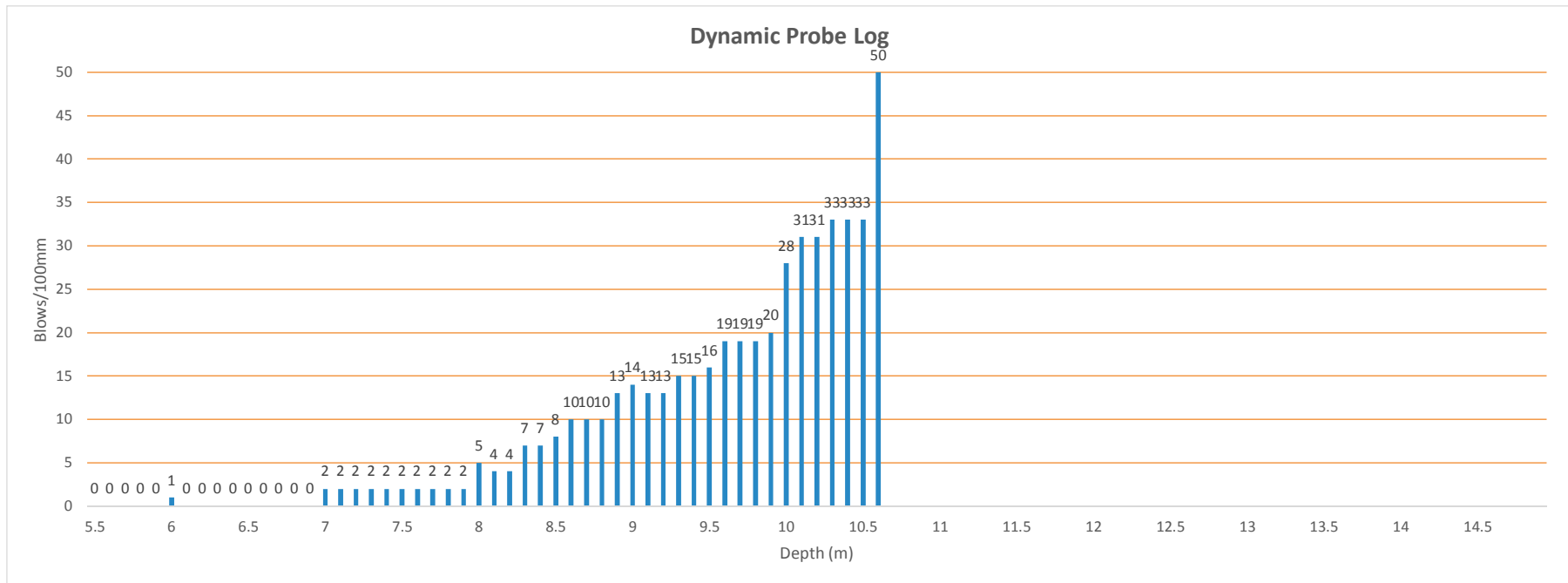
Fall height (mm) 750
Hammer Weight (kg) 63.5
Probe Type DPSH-B

Cone Base Diameter 35
Final Depth (m) 2.00

Torque Reading s
 At 6mbgl: 10Ft/16s
 At 8mbgl: 28Ft/16s
 At 10mbgl: 30Ft/16s
 At 12mbgl: 35Ft/16s
 Probing terminated at Dynamic Probe Refusal at 13.732mbgl



Site Name Land West of Hemel Hempstead
Client Taylor Wimpey (Strategic Land) and Barratt Homes (North Thames)
Logged by Ross Lawton
Location DP359



Fall height (mm)	750	Cone Base Diameter	35	Probing terminated at Dynamic Probe Refusal at 10.620mbgl
Hammer Weight (kg)	63.5	Final Depth (m)	2.00	
Probe Type	DPSH-B			

APPENDIX VII
CHEMICAL TESTING RESULTS



Scientific Analysis Laboratories Ltd

Certificate of Analysis

3 Crittall Drive
Springwood Industrial
Estate
Braintree
Essex
CM7 2RT
Tel : 01376 560120
Fax : 01376 552923

Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 565735-1

Date of Report: 05-May-2016

Customer: Resource Environmental Consultants Ltd
Capital Business Centre
22 Carlton Road
South Croydon
CR2 0BS

Customer Contact: Mr Tim Conibear

Customer Job Reference: 1CO101380

Customer Purchase Order: 1014

Customer Site Reference: Hemel Hempstead

Date Job Received at SAL: 27-Apr-2016

Date Analysis Started: 28-Apr-2016

Date Analysis Completed: 05-May-2016

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

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

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

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked
and authorised by :
Simi Okanlami
Project Manager

Issued by :
Simi Okanlami
Project Manager

SAL Reference: 565735 Project Site: Hemel Hempstead Customer Reference: 1CO101380										
Soil					Analysed as Soil					
REC002 (SE)										
SAL Reference					565735 005	565735 007	565735 008	565735 011	565735 013	565735 015
Customer Sample Reference					TP217 ES1 @ 0.2m	TP218 ES1 @ 0.2m	TP218 ES2 @ 1.4m	TP221 ES1 @ 0.3m	TP222 ES1 @ 0.3m	WS203 ES1 @ 0.38m
Date Sampled					22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	14-APR-2016
Type					Topsoil	Topsoil	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units						
Arsenic	T257	A40	2	mg/kg	12	11	29	15	16	15
Cadmium	T257	A40	0.1	mg/kg	1.0	0.8	0.2	0.9	0.8	0.5
Chromium	T257	A40	0.5	mg/kg	19	19	43	23	25	27
Copper	T257	A40	2	mg/kg	26	26	31	34	37	24
Lead	T257	A40	2	mg/kg	83	81	21	110	100	51
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	T257	A40	0.5	mg/kg	23	18	22	25	32	35
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3	<3
Zinc	T257	A40	2	mg/kg	77	70	59	79	91	78
Asbestos ID	T27	A40			Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1	<1	<1
pH	T7	A40			7.5	6.6	7.5	7.4	7.1	7.4
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.01	<0.01	<0.01	<0.01	<0.01	0.02
SO4(Total)	T102	A40	0.02	%	0.06	0.07	<0.02	0.07	0.08	0.07
Cyanide(Total)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1	<1
Phenols(Mono)	T921	AR	1	mg/kg	<1	1	<1	<1	<1	<1
Moisture @ 105C	T162	AR	0.1	%	9.1	11	22	13	20	15
Retained on 2mm	T2	A40	0.1	%	48.3	71.1	47.9	57.9	56.1	41.7

SAL Reference: 565735 Project Site: Hemel Hempstead Customer Reference: 1CO101380											
Soil					Analysed as Soil						
Miscellaneous											
SAL Reference					565735 007	565735 011	565735 015				
Customer Sample Reference					TP218 ES1 @ 0.2m	TP221 ES1 @ 0.3m	WS203 ES1 @ 0.38m				
Date Sampled					22-APR-2016	22-APR-2016	14-APR-2016				
Type					Topsoil	Clay	Clay				
Determinand	Method	Test Sample	LOD	Units							
Total Organic Carbon	T21	A40	0.1	%	2.0	2.3	1.6				

SAL Reference: 565735
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 Analysed as Soil
 Total and Speciated USEPA16 PAH (SE) (MCERTS)

SAL Reference		565735 005	565735 007	565735 008	565735 011	565735 013	565735 015			
Customer Sample Reference		TP217 ES1 @ 0.2m	TP218 ES1 @ 0.2m	TP218 ES2 @ 1.4m	TP221 ES1 @ 0.3m	TP222 ES1 @ 0.3m	WS203 ES1 @ 0.38m			
Date Sampled		22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	14-APR-2016			
Type		Topsoil	Topsoil	Clay	Clay	Clay	Clay			
Determinand	Method	Test Sample	LOD	Units						
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1	<0.1

SAL Reference: 565735
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 Analysed as Soil
 Suite C

SAL Reference		565735 005	565735 007	565735 008	565735 011	565735 013	565735 015			
Customer Sample Reference		TP217 ES1 @ 0.2m	TP218 ES1 @ 0.2m	TP218 ES2 @ 1.4m	TP221 ES1 @ 0.3m	TP222 ES1 @ 0.3m	WS203 ES1 @ 0.38m			
Date Sampled		22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	22-APR-2016	14-APR-2016			
Type		Topsoil	Topsoil	Clay	Clay	Clay	Clay			
Determinand	Method	Test Sample	LOD	Units						
TPH (C5-C6)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C12-C16)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C16-C21)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C21-C35)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2

Index to symbols used in 565735-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Reported results on as received samples are corrected to a 105 degree centigrade dry weight basis except TPH Banded
Retained on 2mm is removed before analysis
Asbestos subcontracted to REC Limited

Method Index

Value	Description
T257	ICP/OES (SIM) (Aqua Regia Extraction)
T102	ICP/OES (HCl extract)
T219	GC/FID (SE)
T16	GC/MS
T27	PLM
T82	ICP/OES (Sim)
T2	Grav
T54	GC/MS (Headspace)
T162	Grav (1 Dec) (105 C)
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T245	ICP/OES (Aqua Regia Extraction)
T21	OX/IR
T921	Colorimetry (CF) (MCERT)
T7	Probe

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Total Organic Carbon	T21	A40	0.1	%	N	007,011,015
Arsenic	T257	A40	2	mg/kg	M	005,007-008,011,013,015
Cadmium	T257	A40	0.1	mg/kg	M	005,007-008,011,013,015
Chromium	T257	A40	0.5	mg/kg	M	005,007-008,011,013,015
Copper	T257	A40	2	mg/kg	M	005,007-008,011,013,015
Lead	T257	A40	2	mg/kg	M	005,007-008,011,013,015
Mercury	T245	A40	1.0	mg/kg	N	005,007-008,011,013,015
Nickel	T257	A40	0.5	mg/kg	M	005,007-008,011,013,015
Selenium	T257	A40	3	mg/kg	U	005,007-008,011,013,015
Zinc	T257	A40	2	mg/kg	M	005,007-008,011,013,015
Asbestos ID	T27	A40			SU	005,007-008,011,013,015
Chromium VI	T82	A40	1	mg/kg	N	005,007-008,011,013,015
pH	T7	A40			M	005,007-008,011,013,015
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	M	005,007-008,011,013,015
SO4(Total)	T102	A40	0.02	%	M	005,007-008,011,013,015
Cyanide(Total)	T921	AR	1	mg/kg	M	005,007-008,011,013,015
Phenols(Mono)	T921	AR	1	mg/kg	M	005,007-008,011,013,015
Moisture @105C	T162	AR	0.1	%	N	005,007-008,011,013,015
Retained on 2mm	T2	A40	0.1	%	N	005,007-008,011,013,015
TPH (C5-C6)	T54	AR	0.10	mg/kg	N	005,007-008,011,013,015
TPH (C6-C8)	T54	AR	0.10	mg/kg	N	005,007-008,011,013,015
TPH (C8-C10)	T54	AR	0.10	mg/kg	N	005,007-008,011,013,015
TPH (C10-C12)	T219	AR	2	mg/kg	U	005,007-008,011,013,015
TPH (C12-C16)	T219	AR	2	mg/kg	U	005,007-008,011,013,015
TPH (C16-C21)	T219	AR	2	mg/kg	U	005,007-008,011,013,015
TPH (C21-C35)	T219	AR	2	mg/kg	U	005,007-008,011,013,015
Naphthalene	T16	AR	0.1	mg/kg	U	005,007-008,011,013,015
Acenaphthylene	T16	AR	0.1	mg/kg	U	005,007-008,011,013,015
Acenaphthene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Fluorene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Phenanthrene	T16	AR	0.1	mg/kg	U	005,007-008,011,013,015
Anthracene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Fluoranthene	T16	AR	0.1	mg/kg	N	005,007-008,011,013,015
Pyrene	T16	AR	0.1	mg/kg	N	005,007-008,011,013,015
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Chrysene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	U	005,007-008,011,013,015
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	N	005,007-008,011,013,015
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	M	005,007-008,011,013,015
PAH(total)	T16	AR	0.1	mg/kg	U	005,007-008,011,013,015



Scientific Analysis Laboratories Ltd

Certificate of Analysis

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Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 568235-3

Date of Report: 18-May-2016

Customer: Resource Environmental Consultants Ltd
Capital Business Centre
22 Carlton Road
South Croydon
CR2 0BS

Customer Contact: Mr Richard Hodkin

Customer Job Reference: 1CO101380

Customer Purchase Order: 1CO101380 - 001051

Customer Site Reference: Hemel Hempstead

Date Job Received at SAL: 03-May-2016

Date Analysis Started: 10-May-2016

Date Analysis Completed: 18-May-2016

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

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

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

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked
and authorised by :
Simi Okanlami
Project Manager

Issued by :
Simi Okanlami
Project Manager

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil					Analysed as Soil						
REC002 (SE)											
SAL Reference		568235 006		568235 008		568235 010		568235 015		568235 016	
Customer Sample Reference		TP207 ES1 @ 0.3m		TP208 ES1 @ 0.3m		TP209 ES1 @ 0.3m		TP211 ES1 @ 0.3m		TP211 ES2 @ 0.5m	
Date Sampled		25-APR-2016		25-APR-2016		25-APR-2016		25-APR-2016		25-APR-2016	
Type		Clay		Clay		Topsoil		Clay		Clay	
Determinand	Method	Test Sample	LOD	Units							
Arsenic	T257	A40	2	mg/kg	19	12	9	14	16		
Cadmium	T257	A40	0.1	mg/kg	0.2	0.6	0.7	0.9	0.1		
Chromium	T257	A40	0.5	mg/kg	43	22	16	22	39		
Copper	T257	A40	2	mg/kg	18	27	16	39	17		
Lead	T257	A40	2	mg/kg	22	82	54	150	21		
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0		
Nickel	T257	A40	0.5	mg/kg	16	19	18	23	15		
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3		
Zinc	T257	A40	2	mg/kg	47	67	56	75	32		
Asbestos ID	T27	A40			Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected		
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1	<1		
Total Organic Carbon	T21	A40	0.1	%	-	-	1.0	2.6	-		
pH	T7	A40			6.7	6.1	6.8	6.8	7.2		
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	<0.01	0.01	<0.01	0.01	<0.01		
SO4(Total)	T102	A40	0.02	%	0.02	0.07	0.05	0.06	<0.02		
Cyanide(Total)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1		
Phenols(Mono)	T921	AR	1	mg/kg	2	1	3	2	<1		
Moisture @105C	T162	AR	0.1	%	23	22	17	13	20		
Retained on 2mm	T2	A40	0.1	%	24.7	51.9	25.0	51.4	27.6		

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil					Analysed as Soil						
REC002 (SE)											
SAL Reference		568235 018		568235 023		568235 025		568235 030		568235 032	
Customer Sample Reference		TP212 ES2 @ 0.6m		TP214 ES2 @ 0.5m		TP215 ES1 @ 0.3m		TP220 ES2 @ 0.5m		TP223 ES1 @ 0.4m	
Date Sampled		28-APR-2016		27-APR-2016		27-APR-2016		27-APR-2016		26-APR-2016	
Type		Clay		Clay		Clay		Clay		Clay	
Determinand	Method	Test Sample	LOD	Units							
Arsenic	T257	A40	2	mg/kg	16	17	20	22	16		
Cadmium	T257	A40	0.1	mg/kg	0.2	0.6	1.0	0.5	1.1		
Chromium	T257	A40	0.5	mg/kg	38	32	30	38	26		
Copper	T257	A40	2	mg/kg	18	29	42	38	49		
Lead	T257	A40	2	mg/kg	20	27	120	34	100		
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0		
Nickel	T257	A40	0.5	mg/kg	15	55	46	76	40		
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3		
Zinc	T257	A40	2	mg/kg	37	90	99	100	96		
Asbestos ID	T27	A40			Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected		
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1	<1		
Total Organic Carbon	T21	A40	0.1	%	-	-	2.4	-	-		
pH	T7	A40			5.9	6.7	6.7	7.0	6.7		
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	<0.01	<0.01	0.01	<0.01	0.01		
SO4(Total)	T102	A40	0.02	%	0.02	0.02	0.08	0.03	0.07		
Cyanide(Total)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1		
Phenols(Mono)	T921	AR	1	mg/kg	<1	<1	2	<1	<1		
Moisture @105C	T162	AR	0.1	%	20	24	19	18	17		
Retained on 2mm	T2	A40	0.1	%	9.9	30.6	32.2	25.6	51.0		

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil					Analysed as Soil						
REC002 (SE)											
SAL Reference		568235 034		568235 035		568235 036		568235 038		568235 039	
Customer Sample Reference		TP224 ES1 @ 0.3m		TP224 ES2 @ 0.5m		TP225 ES1 @ 0.2m		TP226 ES2 @ 0.7m		TP227 ES1 @ 0.1m	
Date Sampled		26-APR-2016		26-APR-2016		26-APR-2016		26-APR-2016		27-APR-2016	
Type		Clay		Clay		Clay		Clay		Clay	
Determinand	Method	Test Sample	LOD	Units							
Arsenic	T257	A40	2	mg/kg	16	25	20	26	19		
Cadmium	T257	A40	0.1	mg/kg	1.2	0.3	0.8	0.2	0.7		
Chromium	T257	A40	0.5	mg/kg	27	41	36	40	34		
Copper	T257	A40	2	mg/kg	43	40	44	37	46		
Lead	T257	A40	2	mg/kg	83	27	68	30	82		
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0		
Nickel	T257	A40	0.5	mg/kg	44	110	54	40	41		
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3		
Zinc	T257	A40	2	mg/kg	100	110	120	74	100		
Asbestos ID	T27	A40			Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected	Asbestos not detected		
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1	<1		
Total Organic Carbon	T21	A40	0.1	%	2.4	-	-	-	2.7		
pH	T7	A40			6.9	7.3	7.3	7.3	7.0		
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.02	<0.01	0.01	<0.01	0.01		
SO4(Total)	T102	A40	0.02	%	0.08	0.03	0.09	0.02	0.09		
Cyanide(Total)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1		
Phenols(Mono)	T921	AR	1	mg/kg	2	<1	2	<1	<1		
Moisture @105C	T162	AR	0.1	%	16	24	23	19	20		
Retained on 2mm	T2	A40	0.1	%	38.1	33.9	40.8	46.5	52.8		

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil					Analysed as Soil						
REC002 (SE)											
SAL Reference		568235 041		568235 044		568235 045		568235 046		568235 049	
Customer Sample Reference		TP228 ES1 @ 0.1m		TP229 ES2 @ 0.5m		TP230 ES1 @ 0.3m		TP230 ES2 @ 0.5m		TP232 ES1 @ 0.2m	
Date Sampled		27-APR-2016		26-APR-2016		27-APR-2016		27-APR-2016		26-APR-2016	
Type		Clay		Other		Topsoil		Clay		Topsoil	
Determinand	Method	Test Sample	LOD	Units							
Arsenic	T257	A40	2	mg/kg	21	<2	19	21	13		
Cadmium	T257	A40	0.1	mg/kg	0.9	0.2	0.8	0.3	0.8		
Chromium	T257	A40	0.5	mg/kg	36	3.1	36	45	25		
Copper	T257	A40	2	mg/kg	52	4	48	29	43		
Lead	T257	A40	2	mg/kg	89	3	69	20	110		
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0		
Nickel	T257	A40	0.5	mg/kg	54	13	48	57	28		
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3		
Zinc	T257	A40	2	mg/kg	120	21	110	94	86		
Asbestos ID	T27	A40			Asbestos not detected	-	Asbestos not detected	Asbestos not detected	Asbestos not detected		
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1	<1		
Total Organic Carbon	T21	A40	0.1	%	-	-	2.9	-	-		
pH	T7	A40			7.4	8.7	7.6	8.1	6.9		
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.02	<0.01	0.01	<0.01	<0.01		
SO4(Total)	T102	A40	0.02	%	0.11	0.06	0.12	0.05	0.08		
Cyanide(Total)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1		
Phenols(Mono)	T921	AR	1	mg/kg	<1	<1	<1	<1	<1		
Moisture @105C	T162	AR	0.1	%	23	15	21	24	17		
Retained on 2mm	T2	A40	0.1	%	43.9	<0.1	58.5	41.3	30.7		

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil											
Analysed as Soil											
Total and Speciated USEPA16 PAH (SE)											
SAL Reference		568235 006		568235 008		568235 010		568235 015		568235 016	
Customer Sample Reference		TP207 ES1 @ 0.3m		TP208 ES1 @ 0.3m		TP209 ES1 @ 0.3m		TP211 ES1 @ 0.3m		TP211 ES2 @ 0.5m	
Date Sampled		25-APR-2016		25-APR-2016		25-APR-2016		25-APR-2016		25-APR-2016	
Type		Clay		Clay		Topsoil		Clay		Clay	
Determinand	Method	Test Sample	LOD	Units							
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil											
Analysed as Soil											
Total and Speciated USEPA16 PAH (SE)											
SAL Reference		568235 018		568235 023		568235 025		568235 030		568235 032	
Customer Sample Reference		TP212 ES2 @ 0.6m		TP214 ES2 @ 0.5m		TP215 ES1 @ 0.3m		TP220 ES2 @ 0.5m		TP223 ES1 @ 0.4m	
Date Sampled		28-APR-2016		27-APR-2016		27-APR-2016		27-APR-2016		26-APR-2016	
Type		Clay		Clay		Clay		Clay		Clay	
Determinand	Method	Test Sample	LOD	Units							
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 Analysed as Soil
 Total and Speciated USEPA16 PAH (SE)

SAL Reference					568235 034	568235 035	568235 036	568235 038	568235 039
Customer Sample Reference					TP224 ES1 @ 0.3m	TP224 ES2 @ 0.5m	TP225 ES1 @ 0.2m	TP226 ES2 @ 0.7m	TP227 ES1 @ 0.1m
Date Sampled					26-APR-2016	26-APR-2016	26-APR-2016	26-APR-2016	27-APR-2016
Type					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 Analysed as Soil
 Total and Speciated USEPA16 PAH (SE)

SAL Reference					568235 041	568235 044	568235 045	568235 046	568235 049
Customer Sample Reference					TP228 ES1 @ 0.1m	TP229 ES2 @ 0.5m	TP230 ES1 @ 0.3m	TP230 ES2 @ 0.5m	TP232 ES1 @ 0.2m
Date Sampled					27-APR-2016	26-APR-2016	27-APR-2016	27-APR-2016	26-APR-2016
Type					Clay	Other	Topsoil	Clay	Topsoil
Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 568235										
Project Site: Hemel Hempstead										
Customer Reference: 1CO101380										
Soil					Analysed as Soil					
Suite C										
SAL Reference					568235 006	568235 008	568235 010	568235 015	568235 016	
Customer Sample Reference					TP207 ES1 @ 0.3m	TP208 ES1 @ 0.3m	TP209 ES1 @ 0.3m	TP211 ES1 @ 0.3m	TP211 ES2 @ 0.5m	
Date Sampled					25-APR-2016	25-APR-2016	25-APR-2016	25-APR-2016	25-APR-2016	
Type					Clay	Clay	Topsoil	Clay	Clay	
Determinand	Method	Test Sample	LOD	Units						
TPH (C5-C6)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C12-C16)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C16-C21)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C21-C35)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2

SAL Reference: 568235										
Project Site: Hemel Hempstead										
Customer Reference: 1CO101380										
Soil					Analysed as Soil					
Suite C										
SAL Reference					568235 018	568235 023	568235 025	568235 030	568235 032	
Customer Sample Reference					TP212 ES2 @ 0.6m	TP214 ES2 @ 0.5m	TP215 ES1 @ 0.3m	TP220 ES2 @ 0.5m	TP223 ES1 @ 0.4m	
Date Sampled					28-APR-2016	27-APR-2016	27-APR-2016	27-APR-2016	26-APR-2016	
Type					Clay	Clay	Clay	Clay	Clay	
Determinand	Method	Test Sample	LOD	Units						
TPH (C5-C6)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C12-C16)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C16-C21)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C21-C35)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2

SAL Reference: 568235										
Project Site: Hemel Hempstead										
Customer Reference: 1CO101380										
Soil					Analysed as Soil					
Suite C										
SAL Reference					568235 034	568235 035	568235 036	568235 038	568235 039	
Customer Sample Reference					TP224 ES1 @ 0.3m	TP224 ES2 @ 0.5m	TP225 ES1 @ 0.2m	TP226 ES2 @ 0.7m	TP227 ES1 @ 0.1m	
Date Sampled					26-APR-2016	26-APR-2016	26-APR-2016	26-APR-2016	27-APR-2016	
Type					Clay	Clay	Clay	Clay	Clay	
Determinand	Method	Test Sample	LOD	Units						
TPH (C5-C6)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C12-C16)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C16-C21)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C21-C35)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2

SAL Reference: 568235											
Project Site: Hemel Hempstead											
Customer Reference: 1CO101380											
Soil					Analysed as Soil						
Suite C											
SAL Reference		568235 041		568235 044		568235 045		568235 046		568235 049	
Customer Sample Reference		TP228 ES1 @ 0.1m		TP229 ES2 @ 0.5m		TP230 ES1 @ 0.3m		TP230 ES2 @ 0.5m		TP232 ES1 @ 0.2m	
Date Sampled		27-APR-2016		26-APR-2016		27-APR-2016		27-APR-2016		26-APR-2016	
Type		Clay		Other		Topsoil		Clay		Topsoil	
Determinand	Method	Test Sample	LOD	Units							
TPH (C5-C6)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C6-C8)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10)	T54	AR	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2	<2
TPH (C12-C16)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2	<2
TPH (C16-C21)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2	<2
TPH (C21-C35)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2	<2

SAL Reference: 568235									
Project Site: Hemel Hempstead									
Customer Reference: 1CO101380									
Soil					Analysed as Soil				
BS 3882:2015 Topsoil (SE)									
SAL Reference		568235 054		568235 055					
Customer Sample Reference		Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m		Composite TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m					
Date Sampled		Deviating		Deviating					
Type		Clay		Clay					
Determinand	Method	Test Sample	LOD	Units					
Copper	T312	A40	1	mg/kg	23	26			
Nickel	T312	A40	1	mg/kg	33	36			
Zinc	T312	A40	1	mg/kg	56	66			
Mg (Extractable BS 3882)	T272	A40	10	mg/l	220	130			
Phosphorous	T956	A40	10	mg/l	<10	63			
K (Extractable BS 3882)	T272	A40	10	mg/l	180	220			
Carbon / Nitrogen ratio	T85	A40			Ratio 21:1	Ratio 17:1			
Electrical Conductivity	T271	A40	10	µS/cm	2000	2000			
Neutralising Value (expressed as CaCO3)	T22	AR	0.1	%	1.8	1.8			
Nitrogen (Total)	T267	A40		%m/m	0.14	0.17			
LOI (OM) (125-440)C	T873	A40		%	5.0	4.9			
pH (2.5:1 extract)	T274	A40			7.2	6.9			
Sand Content	T2	A40	1.0	%	59	54			
Silt Content	T2	A40	1.0	%	19	26			
Clay Content	T2	A40	1.0	%	22	20			
Retained on 2mm	T2	A40	0.1	%	37.6	28.0			
Retained on 20mm	T2	A40	0.1	%	<0.1	<0.1			
Retained on 50mm	T2	A40	0.1	%	<0.1	<0.1			
Texture	T26	A40			Sandy Clay Loam	Sandy Clay Loam			
Visible Contaminants	T161	AR		%	N.D.	N.D.			

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil Analysed as Soil
 Phenoxy Acetic acid herbicides

SAL Reference		568235 052	568235 053			
Customer Sample Reference		Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m			
Date Sampled		Deviating	Deviating			
Type		Clay	Clay			
Determinand	Method	Test Sample	LOD	Units		
Phenoxy Acetic acid herbicide: 2,4,5-T	T16	AR	0.01	mg/kg	(162) <0.05	(162) <0.05
Phenoxy Acetic acid herbicide: 2,4-D	T16	AR	0.01	mg/kg	(162) <0.05	(162) <0.05
Dichlorprop	T16	AR	0.01	mg/kg	0.27	0.01
Fenoprop	T16	AR	0.01	mg/kg	(162) <0.02	(162) <0.02
Phenoxy Acetic acid herbicide: MCPA	T16	AR	0.01	mg/kg	(162) <0.02	(162) <0.02
Mecoprop	T16	AR	0.01	mg/kg	0.08	<0.01



SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
2,4,6-Trichlorophenol	T826	AR	0.01	mg/kg	<0.01	<0.01
2-Methyl-4,6-dinitrophenol	T826	AR	0.01	mg/kg	<0.01	<0.01
2-Phenylphenol	T826	AR	0.01	mg/kg	<0.01	<0.01
9,10-Anthraquinone	T826	AR	0.01	mg/kg	<0.01	<0.01
Acetochlor	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Aclonifen	T826	AR	0.01	mg/kg	<0.01	<0.01
Acrinathrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Alachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Aldrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Ametryn	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Atraton	T826	AR	0.01	mg/kg	<0.01	<0.01
Atrazine	T826	AR	0.01	mg/kg	<0.01	<0.01
Azaconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Azobenzene	T826	AR	0.01	mg/kg	<0.01	<0.01
Azoxystrobin	T826	AR	0.01	mg/kg	<0.01	<0.01
Benalaxyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Benfluralin	T826	AR	0.01	mg/kg	<0.01	<0.01
Bifenox	T826	AR	0.01	mg/kg	<0.01	<0.01
Bifenthrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Binapacryl	T826	AR	0.01	mg/kg	<0.01	<0.01
Biphenyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Bitertanol	T826	AR	0.01	mg/kg	<0.01	<0.01
Boscalid	T826	AR	0.01	mg/kg	<0.01	<0.01
Bromacil	T826	AR	0.01	mg/kg	<0.01	<0.01
Bromophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Bromophos-Ethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Bromopropylate	T826	AR	0.01	mg/kg	<0.01	<0.01
Bupirimate	T826	AR	0.01	mg/kg	<0.01	<0.01
Buprofezine	T826	AR	0.01	mg/kg	<0.01	<0.01
Butachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Cadusafos	T826	AR	0.01	mg/kg	<0.01	<0.01
Captan	T826	AR	0.01	mg/kg	<0.01	<0.01
Carbaryl	T826	AR	0.01	mg/kg	<0.01	<0.01
Carbophenothion	T826	AR	0.01	mg/kg	<0.01	<0.01
Carboxine	T826	AR	0.01	mg/kg	<0.01	<0.01
Carfentrazone Ethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorbenzilate	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorbufam	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Chlordane	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlordimeform	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorethoxyfos	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorfenapyr	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorfenson	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorfenvinphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlormephos	T826	AR	0.01	mg/kg	<0.01	<0.01
Chloropropylate	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorothalonil	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorpropham	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorpyrifos	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Chlorpyrifos methyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorthal Dimethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorthion	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlorthiophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Chlozolinate	T826	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
cis-1,2,3,6-Tetrahydrophthalimide	T826	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Clodinafop propargy	T826	AR	0.01	mg/kg	<0.01	<0.01
Clomazone	T826	AR	0.01	mg/kg	<0.01	<0.01
Cloquintocet mexyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Coumaphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Cyflufenamid	T826	AR	0.01	mg/kg	<0.01	<0.01
Cyfluthrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Cypermethrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Cyphenothrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Cyproconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Cyprodinil	T826	AR	0.01	mg/kg	<0.01	<0.01
DEET	T826	AR	0.01	mg/kg	<0.01	<0.01
Deltamethrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Desmetryn	T826	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Diafenthiuron	T826	AR	0.01	mg/kg	<0.01	<0.01
Dialifos	T826	AR	0.01	mg/kg	<0.01	<0.01
Diazinon	T826	AR	0.01	mg/kg	<0.01	<0.01
Dichlobenil	T826	AR	0.01	mg/kg	<0.01	<0.01
Dichlofenthion	T826	AR	0.01	mg/kg	<0.01	<0.01
Dichlorvos	T826	AR	0.01	mg/kg	<0.01	<0.01
Diclobutrazol	T826	AR	0.01	mg/kg	<0.01	<0.01
Dicloran	T826	AR	0.01	mg/kg	<0.01	<0.01
Dicofof	T826	AR	0.01	mg/kg	<0.01	<0.01
Dieldrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Difenoconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Diflufenican	T826	AR	0.01	mg/kg	<0.01	<0.01
Dimethenamid	T826	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Dimethomorph	T826	AR	0.01	mg/kg	<0.01	<0.01
Dimoxystrobin	T826	AR	0.01	mg/kg	<0.01	<0.01
Dinoterb	T826	AR	0.01	mg/kg	<0.01	<0.01
Dioxabenzofos	T826	AR	0.01	mg/kg	<0.01	<0.01
Diphenamid	T826	AR	0.01	mg/kg	<0.01	<0.01
Diphenylamine	T826	AR	0.01	mg/kg	<0.01	<0.01
Disulfoton	T826	AR	0.01	mg/kg	<0.01	<0.01
Ditalimfos	T826	AR	0.01	mg/kg	<0.01	<0.01
Edifenphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Endosulphan alpha	T826	AR	0.01	mg/kg	<0.01	<0.01
Endosulphan beta	T826	AR	0.01	mg/kg	<0.01	<0.01
Endosulphan sulphate	T826	AR	0.01	mg/kg	<0.01	<0.01
Endrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Epn	T826	AR	0.01	mg/kg	<0.01	<0.01
Epoxiconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
EPTC	T826	AR	0.01	mg/kg	<0.01	<0.01
Etaconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Ethion	T826	AR	0.01	mg/kg	<0.01	<0.01
Ethofumesate	T826	AR	0.01	mg/kg	<0.01	<0.01
Ethoprophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Ethoxyquin	T826	AR	0.01	mg/kg	<0.01	<0.01
Etofenprox	T826	AR	0.01	mg/kg	<0.01	<0.01
Etoxazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Etridiazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Etrimfos	T826	AR	0.01	mg/kg	<0.01	<0.01
Famoxadone	T826	AR	0.01	mg/kg	<0.01	<0.01
Famphur	T826	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
Fenamidone	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenamiphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenarimol	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenbuconazole	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Fenchlorphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenhexamid	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenitrothion	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenpiclonil	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenpropathrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenson	T826	AR	0.01	mg/kg	<0.01	<0.01
Fensulfothion	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenthion	T826	AR	0.01	mg/kg	<0.01	<0.01
Fenvalerate	T826	AR	0.01	mg/kg	<0.01	<0.01
Fipronil	T826	AR	0.01	mg/kg	<0.01	<0.01
Fipronil sulphone	T826	AR	0.01	mg/kg	<0.01	<0.01
Flamprop isopropyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Fluazifop-P-Butyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Flucythrinate	T826	AR	0.01	mg/kg	<0.01	<0.01
Fludioxonil	T826	AR	0.01	mg/kg	<0.01	<0.01
Flufenacet	T826	AR	0.01	mg/kg	<0.01	<0.01
Flumetralin	T826	AR	0.01	mg/kg	<0.01	<0.01
Flumioxazin	T826	AR	0.01	mg/kg	<0.01	<0.01
Flumorph	T826	AR	0.01	mg/kg	<0.01	<0.01
Fluopyram	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Fluquinconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Fluroxypyr-1-methylheptyl ester	T826	AR	0.01	mg/kg	<0.01	<0.01
Flusilazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Flutolanil	T826	AR	0.01	mg/kg	<0.01	<0.01
Fluxapyroxad	T826	AR	0.01	mg/kg	<0.01	<0.01
Folpet	T826	AR	0.01	mg/kg	<0.01	<0.01
Fonophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Formothion	T826	AR	0.01	mg/kg	<0.01	<0.01
Furalaxyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Haloxfop etotyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Haloxfop Methyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Heptachlor	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Heptachlor epoxide	T826	AR	0.01	mg/kg	<0.01	<0.01
Heptachlor exo Epoxide	T826	AR	0.01	mg/kg	<0.01	<0.01
Heptenophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexachlorobenzene	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexachlorocyclohexane (alpha)	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexachlorocyclohexane (beta)	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexachlorocyclohexane (delta)	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexaconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Hexazinone	T826	AR	0.01	mg/kg	<0.01	<0.01
Imazail	T826	AR	0.01	mg/kg	<0.01	<0.01
Iodofenphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Iprodione	T826	AR	0.01	mg/kg	<0.01	<0.01
Isazofos	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Isocarbophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Isodrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Isufenphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Isufenphos Methyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Isomethiozin	T826	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
Isoprothiolane	T826	AR	0.01	mg/kg	<0.01	<0.01
Isopyrazam	T826	AR	0.01	mg/kg	<0.01	<0.01
Isothiazolinone	T826	AR	0.01	mg/kg	<0.01	<0.01
Kresoxim Methyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Lambda Cyhalothrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Lenacil	T826	AR	0.01	mg/kg	<0.01	<0.01
Leptophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Lindane	T826	AR	0.01	mg/kg	<0.01	<0.01
Malathion	T826	AR	0.01	mg/kg	<0.01	<0.01
MCPA-thioethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Mecarbam	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Mepanipyrim	T826	AR	0.01	mg/kg	<0.01	<0.01
Mephosfolan	T826	AR	0.01	mg/kg	<0.01	<0.01
Mepronil	T826	AR	0.01	mg/kg	<0.01	<0.01
Metalaxyl	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Metazachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Methacrifos	T826	AR	0.01	mg/kg	<0.01	<0.01
Methidathion	T826	AR	0.01	mg/kg	<0.01	<0.01
Methoxychlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Methyl Paraoxon	T826	AR	0.01	mg/kg	<0.01	<0.01
Metolachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Metolcarb	T826	AR	0.01	mg/kg	<0.01	<0.01
Metrafenone	T826	AR	0.01	mg/kg	<0.01	<0.01
Metribuzin	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Mevinphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Mirex	T826	AR	0.01	mg/kg	<0.01	<0.01
Molinate	T826	AR	0.01	mg/kg	<0.01	<0.01
Myclobutanil	T826	AR	0.01	mg/kg	<0.01	<0.01
Napropamide	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Nitrofen	T826	AR	0.01	mg/kg	<0.01	<0.01
Nitrothal isopropyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Nuarimol	T826	AR	0.01	mg/kg	<0.01	<0.01
o,p'-DDT	T826	AR	0.01	mg/kg	<0.01	<0.01
Octhilinone	T826	AR	0.01	mg/kg	<0.01	<0.01
Ofurace	T826	AR	0.01	mg/kg	<0.01	<0.01
Orysastrubin	T826	AR	0.01	mg/kg	<0.01	<0.01
Oxadiazon	T826	AR	0.01	mg/kg	<0.01	<0.01
Oxadixyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Oxyfluorfen	T826	AR	0.01	mg/kg	<0.01	<0.01
p,p'-DDD	T826	AR	0.01	mg/kg	<0.01	<0.01
p,p'-DDE	T826	AR	0.01	mg/kg	<0.01	<0.01
p,p'-DDT	T826	AR	0.01	mg/kg	<0.01	<0.01
Paclobutrazol	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Paraoxon	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Parathion	T826	AR	0.01	mg/kg	<0.01	<0.01
Parathion methyl	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Penconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Pendimethalin	T826	AR	0.01	mg/kg	<0.01	<0.01
Pentachloroaniline	T826	AR	0.01	mg/kg	<0.01	<0.01
Pentachlorophenol	T826	AR	0.01	mg/kg	<0.01	<0.01
Pentachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Permethrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Pethoxamid	T826	AR	0.01	mg/kg	<0.01	<0.01
Phenothrin	T826	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

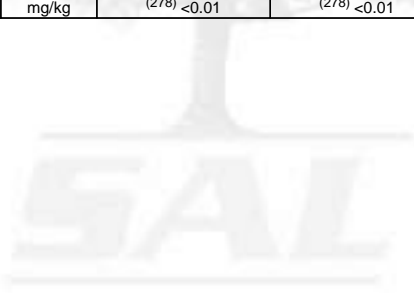
Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
Phenthoate	T826	AR	0.01	mg/kg	<0.01	<0.01
Phorate	T826	AR	0.01	mg/kg	<0.01	<0.01
Phosalone	T826	AR	0.01	mg/kg	<0.01	<0.01
Phosfolan	T826	AR	0.01	mg/kg	<0.01	<0.01
Phosmet	T826	AR	0.01	mg/kg	<0.01	<0.01
Phthalimide	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Picoxystrobin	T826	AR	0.01	mg/kg	<0.01	<0.01
Piperonyl Butoxide	T826	AR	0.01	mg/kg	<0.01	<0.01
Pirimicarb	T826	AR	0.01	mg/kg	<0.01	<0.01
Pirimiphos Ethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Pirimiphos methyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Pretilachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Prochloraz	T826	AR	0.01	mg/kg	<0.01	<0.01
Procymidone	T826	AR	0.01	mg/kg	<0.01	<0.01
Profenofos	T826	AR	0.01	mg/kg	<0.01	<0.01
Prometon	T826	AR	0.01	mg/kg	<0.01	<0.01
Prometryn	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Propachlor	T826	AR	0.01	mg/kg	<0.01	<0.01
Propanil	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Propaphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Propargite	T826	AR	0.01	mg/kg	<0.01	<0.01
Propazine	T826	AR	0.01	mg/kg	<0.01	<0.01
Propetamphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Propham	T826	AR	0.01	mg/kg	<0.01	<0.01
Propiconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Propyzamide	T826	AR	0.01	mg/kg	<0.01	<0.01
Proquinazid	T826	AR	0.01	mg/kg	<0.01	<0.01
Prosulfocarb	T826	AR	0.01	mg/kg	<0.01	<0.01
Prothiofos	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyraclostrobin	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyraflufen ethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyrazophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyridaben	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyridaphenthion	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyrimethanil	T826	AR	0.01	mg/kg	<0.01	<0.01
Pyriproxyfen	T826	AR	0.01	mg/kg	<0.01	<0.01
Quinalphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Quinoxifen	T826	AR	0.01	mg/kg	<0.01	<0.01
Quintozene	T826	AR	0.01	mg/kg	<0.01	<0.01
Quizalofop-ethyl	T826	AR	0.01	mg/kg	<0.01	<0.01
S421	T826	AR	0.01	mg/kg	<0.01	<0.01
Secbumeton	T826	AR	0.01	mg/kg	<0.01	<0.01
Silafluofen	T826	AR	0.01	mg/kg	<0.01	<0.01
Simazine	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Simeconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Sulfallate	T826	AR	0.01	mg/kg	<0.01	<0.01
Sulfentrazone	T826	AR	0.01	mg/kg	<0.01	<0.01
Sulprofos	T826	AR	0.01	mg/kg	<0.01	<0.01
Tau-Fluvalinate	T826	AR	0.01	mg/kg	<0.01	<0.01
Tebuconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Tebufenpyrad	T826	AR	0.01	mg/kg	<0.01	<0.01
Tebupirimiphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Tecnazene	T826	AR	0.01	mg/kg	<0.01	<0.01
Tefluthrin	T826	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by GC (CSOPP611) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
Terbacil	T826	AR	0.01	mg/kg	<0.01	<0.01
Terbufos	T826	AR	0.01	mg/kg	<0.01	<0.01
Terbumeton	T826	AR	0.01	mg/kg	<0.01	<0.01
Terbutylazine	T826	AR	0.01	mg/kg	<0.01	<0.01
Terbutryn	T826	AR	0.01	mg/kg	<0.01	<0.01
Tetrachlorvinphos	T826	AR	0.01	mg/kg	<0.01	<0.01
Tetraconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Tetradifon	T826	AR	0.01	mg/kg	<0.01	<0.01
sulfotep	T826	AR	0.01	mg/kg	<0.01	<0.01
Tetramethrin	T826	AR	0.01	mg/kg	<0.01	<0.01
Tetrasul	T826	AR	0.01	mg/kg	<0.01	<0.01
Thiamethoxam	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Thiobencarb	T826	AR	0.01	mg/kg	<0.01	<0.01
Thiocyclam	T826	AR	0.01	mg/kg	<0.01	<0.01
Thiometon	T826	AR	0.01	mg/kg	<0.01	<0.01
Tolclofos methyl	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Triadimefon	T826	AR	0.01	mg/kg	<0.01	<0.01
Triadimenol	T826	AR	0.01	mg/kg	<0.01	<0.01
Triallate	T826	AR	0.01	mg/kg	<0.01	<0.01
Triazamate	T826	AR	0.01	mg/kg	<0.01	<0.01
Triazophos	T826	AR	0.01	mg/kg	<0.01	<0.01
Trietazine	T16	AR	0.01	mg/kg	<0.01	<0.01
Trifloxystrobin	T826	AR	0.01	mg/kg	<0.01	<0.01
Triflumizole	T826	AR	0.01	mg/kg	<0.01	<0.01
Trifluralin	T826	AR	0.01	mg/kg	<0.01	<0.01
Uniconazole	T826	AR	0.01	mg/kg	<0.01	<0.01
Vinclozolin	T826	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01



SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by LC (CSOPP603) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
2-(1-Naphthyl)acetamide	T310	AR	0.01	mg/kg	<0.01	<0.01
3-hydroxycarbofuran	T310	AR	0.01	mg/kg	<0.01	<0.01
6-Benzyladenine	T310	AR	0.01	mg/kg	<0.01	<0.01
Abamectin	T310	AR	0.01	mg/kg	<0.01	<0.01
Acephate	T310	AR	0.01	mg/kg	<0.01	<0.01
Acetamiprid	T310	AR	0.01	mg/kg	<0.01	<0.01
Acibenzolar-S-methyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Aldicarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Aldicarb sulphone	T310	AR	0.01	mg/kg	<0.01	<0.01
Aldicarb sulphoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Aminocarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Amitraz	T310	AR	0.01	mg/kg	<0.01	<0.01
Azinphos ethyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Azinphos methyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Azoxystrobin	T310	AR	0.01	mg/kg	<0.01	<0.01
Bendiocarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Benfuracarb	T310	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Bifenazate	T310	AR	0.01	mg/kg	<0.01	<0.01
Butoxycarboxim	T310	AR	0.01	mg/kg	<0.01	<0.01
Butralin	T310	AR	0.01	mg/kg	<0.01	<0.01
Carbaryl	T310	AR	0.01	mg/kg	<0.01	<0.01
Carbendazim	T310	AR	0.01	mg/kg	<0.01	<0.01
Carbetamide	T310	AR	0.01	mg/kg	<0.01	<0.01
Carbofuran	T310	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
Carpropamid	T310	AR	0.01	mg/kg	<0.01	<0.01
Chinomethionat	T310	AR	0.01	mg/kg	⁽²⁷⁸⁾ <0.01	⁽²⁷⁸⁾ <0.01
chlorantraniliprole	T310	AR	0.01	mg/kg	<0.01	<0.01
Chlorbromuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Chlorfluazuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Chloridazon	T310	AR	0.01	mg/kg	<0.01	<0.01
Chlorotoluron	T310	AR	0.01	mg/kg	<0.01	<0.01
Chlorpropham	T310	AR	0.01	mg/kg	<0.01	<0.01
Clofentezine	T310	AR	0.01	mg/kg	<0.01	<0.01
Clothianidin	T310	AR	0.01	mg/kg	<0.01	<0.01
Cyanazine	T310	AR	0.01	mg/kg	<0.01	<0.01
Cyazofamid	T310	AR	0.01	mg/kg	<0.01	<0.01
Cycluron	T310	AR	0.01	mg/kg	<0.01	<0.01
Cymoxanil	T310	AR	0.01	mg/kg	<0.01	<0.01
Cyromazine	T310	AR	0.01	mg/kg	<0.01	<0.01
Cythioate	T310	AR	0.01	mg/kg	<0.01	<0.01
Demeton	T310	AR	0.01	mg/kg	<0.01	<0.01
Demeton-s-methyl sulphone	T310	AR	0.01	mg/kg	<0.01	<0.01
Desmedipham	T310	AR	0.01	mg/kg	<0.01	<0.01
Diclotophos	T310	AR	0.01	mg/kg	<0.01	<0.01
Diethofencarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Diffubenzuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Dimefuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Dimethoate	T310	AR	0.01	mg/kg	<0.01	<0.01
Diniconazole	T310	AR	0.01	mg/kg	<0.01	<0.01
Dinotefuran	T310	AR	0.01	mg/kg	<0.01	<0.01
Dioxacarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Disulfoton sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Disulfoton sulphone	T310	AR	0.01	mg/kg	<0.01	<0.01
Diuron	T310	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by LC (CSOPP603) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
DMSA	T310	AR	0.01	mg/kg	<0.01	<0.01
DMST	T310	AR	0.01	mg/kg	<0.01	<0.01
Dodemorph	T310	AR	0.01	mg/kg	<0.01	<0.01
Emamectin	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethidimuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethiofencarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethiofencarb sulfone	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethiofencarb sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethiprole	T310	AR	0.01	mg/kg	<0.01	<0.01
Ethirimol	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenamiphos sulfone	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenamiphos sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenazaquin	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenchlorphos oxon	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenhexamid	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenpropidin	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenpropimorph	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenpyroximate	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenthion Sulphone	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenthion Sulphoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Fenuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Fonicamid	T310	AR	0.01	mg/kg	<0.01	<0.01
Fluazinam	T310	AR	0.01	mg/kg	<0.01	<0.01
Flufenoxuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Fluometuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Fluopicolide	T310	AR	0.01	mg/kg	<0.01	<0.01
Flurochloridone	T310	AR	0.01	mg/kg	<0.01	<0.01
Flurtamone	T310	AR	0.01	mg/kg	<0.01	<0.01
Flutriafol	T310	AR	0.01	mg/kg	<0.01	<0.01
Forchlorfenuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Formetanate	T310	AR	0.01	mg/kg	<0.01	<0.01
Fuberidazole	T310	AR	0.01	mg/kg	<0.01	<0.01
Furathiocarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Hexaflumuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Hexythiazox	T310	AR	0.01	mg/kg	<0.01	<0.01
Imazalil	T310	AR	0.01	mg/kg	<0.01	<0.01
Imidacloprid	T310	AR	0.01	mg/kg	<0.01	<0.01
Indoxacarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Iprovalicarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Isoprocarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Isoproturon	T310	AR	0.01	mg/kg	<0.01	<0.01
Isoxaben	T310	AR	0.01	mg/kg	<0.01	<0.01
Karbutylate	T310	AR	0.01	mg/kg	<0.01	<0.01
Linuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Lufenuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Malaoxon	T310	AR	0.01	mg/kg	<0.01	<0.01
Mandipropamid	T310	AR	0.01	mg/kg	<0.01	<0.01
Mefenacet	T310	AR	0.01	mg/kg	<0.01	<0.01
Metaflumizone	T310	AR	0.01	mg/kg	<0.01	<0.01
Metamitron	T310	AR	0.01	mg/kg	<0.01	<0.01
Metconazole	T310	AR	0.01	mg/kg	<0.01	<0.01
Methabenzthiazuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Methamidophos	T310	AR	0.01	mg/kg	<0.01	<0.01
Methiocarb	T310	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 MRPS by LC (CSOPP603) Analysed as Soil

SAL Reference					568235 052	568235 053
Customer Sample Reference					Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m	Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled					Deviating	Deviating
Type					Clay	Clay
Determinand	Method	Test Sample	LOD	Units		
Methiocarb sulfone	T310	AR	0.01	mg/kg	<0.01	<0.01
Methiocarb Sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Methomyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Methoxyfenozide	T310	AR	0.01	mg/kg	<0.01	<0.01
Metobromuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Monocrotophos	T310	AR	1	mg/kg	<1	<1
Monolinuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Monuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Neburon	T310	AR	0.01	mg/kg	<0.01	<0.01
Nicotine	T310	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Nitenpyram	T310	AR	0.01	mg/kg	<0.01	<0.01
Novaluron	T310	AR	0.01	mg/kg	<0.01	<0.01
Omethoate	T310	AR	0.01	mg/kg	<0.01	<0.01
Oxadiazyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Oxamyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Oxycarboxin	T310	AR	0.01	mg/kg	<0.01	<0.01
Pencycuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Phenmedipham	T310	AR	0.01	mg/kg	<0.01	<0.01
Phorate sulfone	T310	AR	0.01	mg/kg	<0.01	<0.01
Phorate sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Phosmet	T310	AR	0.01	mg/kg	<0.01	<0.01
Phosphamidon	T310	AR	0.01	mg/kg	<0.01	<0.01
Phoxim	T310	AR	0.01	mg/kg	<0.01	<0.01
Pirimicarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Pirimicarb desmethyl	T310	AR	0.01	mg/kg	<0.01	<0.01
Prochloraz	T310	AR	0.01	mg/kg	<0.01	<0.01
Propamocarb	T310	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Propaquizafop	T310	AR	0.01	mg/kg	<0.01	<0.01
Propargite	T310	AR	0.01	mg/kg	<0.01	<0.01
Propoxur	T310	AR	0.01	mg/kg	<0.01	<0.01
Prothioconazole desthio	T310	AR	0.01	mg/kg	<0.01	<0.01
Pyraclostrobin	T310	AR	0.01	mg/kg	<0.01	<0.01
Pyrethrin I	T310	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Pyrifenoxy	T310	AR	0.01	mg/kg	<0.01	<0.01
Resmethrin	T310	AR	0.01	mg/kg	(278) <0.01	(278) <0.01
Spinetoram	T310	AR	0.01	mg/kg	<0.01	<0.01
Spinosad	T310	AR	0.01	mg/kg	<0.01	<0.01
Spirodiclofen	T310	AR	0.01	mg/kg	<0.01	<0.01
Spiromesifen	T310	AR	0.01	mg/kg	<0.01	<0.01
Spirotetramat	T310	AR	0.01	mg/kg	<0.01	<0.01
Spiroxamine	T310	AR	0.01	mg/kg	<0.01	<0.01
Tebufenozide	T310	AR	0.01	mg/kg	<0.01	<0.01
Teflubenzuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Temephos	T310	AR	0.1	mg/kg	(278) <0.1	(278) <0.1
Terbufos sulfone	T310	AR	0.01	mg/kg	<0.01	<0.01
Terbufos sulfoxide	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiabendazole	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiacloprid	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiamethoxam	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiazafurion	T310	AR	0.01	mg/kg	<0.01	<0.01
Thidiazuron	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiodicarb	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiofanox	T310	AR	0.01	mg/kg	<0.01	<0.01
Thiophanate Methyl	T310	AR	0.01	mg/kg	<0.01	<0.01

SAL Reference: 568235 Project Site: Hemel Hempstead Customer Reference: 1CO101380 Soil Analysed as Soil MRPS by LC (CSOPP603)					
SAL Reference			568235 052		568235 053
Customer Sample Reference			Composite TP201 ES1 @ 0.3m, TP203 ES1 @ 0.2m		Composite TP211 D1 @ 0.5m, TP214 D1 @ 0.5m, TP215 D1 @ 0.3m, TP216 D1 @ 0.4m, TP223 D1 @ 0.6m, TP226 ES1 @ 0.2m, TP232 D1 @ 0.5m
Date Sampled			Deviating		Deviating
Type			Clay		Clay
Determinand	Method	Test Sample	LOD	Units	
Tolylfluamid	T310	AR	0.01	mg/kg	<0.01
Tribenuron methyl	T310	AR	0.01	mg/kg	<0.01
Tridemorph	T310	AR	0.01	mg/kg	<0.01
Triflumuron	T310	AR	0.01	mg/kg	<0.01
Triflusaluron-methyl	T310	AR	0.01	mg/kg	<0.01
Triforine	T310	AR	0.01	mg/kg	<0.01
Triticonazole	T310	AR	0.01	mg/kg	<0.01
Vamidothion	T310	AR	0.01	mg/kg	<0.01
Vernolate	T310	AR	0.01	mg/kg	<0.01
Zoxamide	T310	AR	0.01	mg/kg	<0.01

Index to symbols used in 568235-3

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
278	Data reported is qualitative as recovery is outside the 60 to 140% range
162	LOD determined by matrix spike recovery
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

006,008,010,015,016 PAH & TPH - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.
006,008,010,015,016,018,032,034,035,036,038,044,049 Phenols - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.
Asbestos subcontracted to REC Limited
Retained on 2mm is removed before analysis
Reported results on as received samples are corrected to a 105 degree centigrade dry weight basis except TPH Banded, MRPS & PAAH
Nitrogen and MRPS analysis transferred to SAL Cambridge
PSD (laser) analysis subcontracted to NRM
PAAH analysis transferred to SAL Manchester

Method Index

Value	Description
T21	OX/IR
T7	Probe
T921	Colorimetry (CF) (MCERT)
T257	ICP/OES (SIM) (Aqua Regia Extraction)
T873	Grav (4 Dec) (Dry 125 C)(Ign 440 C)
T826	SOP611 (GC MSMS)
T956	Colorimetry (Sodium Hydrogen Carbonate Extract)
T245	ICP/OES (Aqua Regia Extraction)
T271	Probe CaSO4
T312	ICP-OES (Nitric Acid Extraction)
T161	Visual
T310	LC/MS/MS
T267	GC/TCD (Dumas)

T27	PLM
T54	GC/MS (Headspace)
T85	Calc
T272	ICP/OES (Ammonium Nitrate)
T2	Grav
T82	ICP/OES (Sim)
T102	ICP/OES (HCl extract)
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T16	GC/MS
T26	Microscopy (Low Mag.)
T274	Probe (BS 3882)
T22	Titration
T162	Grav (1 Dec) (105 C)
T219	GC/FID (SE)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Copper	T312	A40	1	mg/kg	N	054-055
Nickel	T312	A40	1	mg/kg	N	054-055
Zinc	T312	A40	1	mg/kg	N	054-055
Mg (Extractable BS 3882)	T272	A40	10	mg/l	N	054-055
Phosphorous	T956	A40	10	mg/l	N	054-055
K (Extractable BS 3882)	T272	A40	10	mg/l	N	054-055
Carbon / Nitrogen ratio	T85	A40			N	054-055
Electrical Conductivity	T271	A40	10	µS/cm	N	054-055
Neutralising Value (expressed as CaCO3)	T22	AR	0.1	%	N	054-055
Nitrogen (Total)	T267	A40		%m/m	N	054-055
LOI (OM) (125-440)C	T873	A40		%	N	054-055
pH (2.5:1 extract)	T274	A40			N	054-055
Sand Content	T2	A40	1.0	%	SN	054-055
Silt Content	T2	A40	1.0	%	SN	054-055
Clay Content	T2	A40	1.0	%	SN	054-055
Retained on 20mm	T2	A40	0.1	%	N	054-055
Retained on 50mm	T2	A40	0.1	%	N	054-055
Texture	T26	A40			SN	054-055
Visible Contaminants	T161	AR		%	N	054-055
2,4,6-Trichlorophenol	T826	AR	0.01	mg/kg	N	052-053
2-Methyl-4,6-dinitrophenol	T826	AR	0.01	mg/kg	N	052-053
2-Phenylphenol	T826	AR	0.01	mg/kg	N	052-053
9,10-Anthraquinone	T826	AR	0.01	mg/kg	N	052-053
Acetochlor	T826	AR	0.01	mg/kg	N	052-053
Aclonifen	T826	AR	0.01	mg/kg	N	052-053
Acrinathrin	T826	AR	0.01	mg/kg	N	052-053
Alachlor	T826	AR	0.01	mg/kg	N	052-053
Aldrin	T826	AR	0.01	mg/kg	N	052-053
Ametryn	T826	AR	0.01	mg/kg	N	052-053
Atraton	T826	AR	0.01	mg/kg	N	052-053
Atrazine	T826	AR	0.01	mg/kg	N	052-053
Azaconazole	T826	AR	0.01	mg/kg	N	052-053
Azobenzene	T826	AR	0.01	mg/kg	N	052-053
Azoxystrobin	T826	AR	0.01	mg/kg	N	052-053
Benalaxyl	T826	AR	0.01	mg/kg	N	052-053
Benfluralin	T826	AR	0.01	mg/kg	N	052-053
Bifenox	T826	AR	0.01	mg/kg	N	052-053
Bifenthrin	T826	AR	0.01	mg/kg	N	052-053
Binapacryl	T826	AR	0.01	mg/kg	N	052-053
Biphenyl	T826	AR	0.01	mg/kg	N	052-053
Bitertanol	T826	AR	0.01	mg/kg	N	052-053
Boscalid	T826	AR	0.01	mg/kg	N	052-053
Bromacil	T826	AR	0.01	mg/kg	N	052-053
Bromophos	T826	AR	0.01	mg/kg	N	052-053
Bromophos-Ethyl	T826	AR	0.01	mg/kg	N	052-053
Bromopropylate	T826	AR	0.01	mg/kg	N	052-053
Bupirimate	T826	AR	0.01	mg/kg	N	052-053
Buprofezine	T826	AR	0.01	mg/kg	N	052-053
Butachlor	T826	AR	0.01	mg/kg	N	052-053
Cadusafos	T826	AR	0.01	mg/kg	N	052-053
Captan	T826	AR	0.01	mg/kg	N	052-053
Carbaryl	T826	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Carbophenothion	T826	AR	0.01	mg/kg	N	052-053
Carboxine	T826	AR	0.01	mg/kg	N	052-053
Carfentrazone Ethyl	T826	AR	0.01	mg/kg	N	052-053
Chlorbenzilate	T826	AR	0.01	mg/kg	N	052-053
Chlorbufam	T826	AR	0.01	mg/kg	N	052-053
Chlordane	T826	AR	0.01	mg/kg	N	052-053
Chlordimeform	T826	AR	0.01	mg/kg	N	052-053
Chlorethoxyfos	T826	AR	0.01	mg/kg	N	052-053
Chlorfenapyr	T826	AR	0.01	mg/kg	N	052-053
Chlorfenson	T826	AR	0.01	mg/kg	N	052-053
Chlorfenvinphos	T826	AR	0.01	mg/kg	N	052-053
Chlormephos	T826	AR	0.01	mg/kg	N	052-053
Chloropropylate	T826	AR	0.01	mg/kg	N	052-053
Chlorothalonil	T826	AR	0.01	mg/kg	N	052-053
Chlorpropham	T826	AR	0.01	mg/kg	N	052-053
Chlorpyrifos	T826	AR	0.01	mg/kg	N	052-053
Chlorpyrifos methyl	T826	AR	0.01	mg/kg	N	052-053
Chlorthal Dimethyl	T826	AR	0.01	mg/kg	N	052-053
Chlorthion	T826	AR	0.01	mg/kg	N	052-053
Chlorthiophos	T826	AR	0.01	mg/kg	N	052-053
Chlozolinate	T826	AR	0.01	mg/kg	N	052-053
cis-1,2,3,6-Tetrahydrophthalimide	T826	AR	0.01	mg/kg	N	052-053
Clodinafop propargy	T826	AR	0.01	mg/kg	N	052-053
Clomazone	T826	AR	0.01	mg/kg	N	052-053
Cloquintocet mexyl	T826	AR	0.01	mg/kg	N	052-053
Coumaphos	T826	AR	0.01	mg/kg	N	052-053
Cyflufenamid	T826	AR	0.01	mg/kg	N	052-053
Cyfluthrin	T826	AR	0.01	mg/kg	N	052-053
Cypermethrin	T826	AR	0.01	mg/kg	N	052-053
Cyphenothrin	T826	AR	0.01	mg/kg	N	052-053
Cyproconazole	T826	AR	0.01	mg/kg	N	052-053
Cyprodinil	T826	AR	0.01	mg/kg	N	052-053
DEET	T826	AR	0.01	mg/kg	N	052-053
Deltamethrin	T826	AR	0.01	mg/kg	N	052-053
Desmetryn	T826	AR	0.01	mg/kg	N	052-053
Diafenthiuron	T826	AR	0.01	mg/kg	N	052-053
Dialifos	T826	AR	0.01	mg/kg	N	052-053
Diazinon	T826	AR	0.01	mg/kg	N	052-053
Dichlobenil	T826	AR	0.01	mg/kg	N	052-053
Dichlofenthion	T826	AR	0.01	mg/kg	N	052-053
Dichlorvos	T826	AR	0.01	mg/kg	N	052-053
Diclobutrazol	T826	AR	0.01	mg/kg	N	052-053
Dicloran	T826	AR	0.01	mg/kg	N	052-053
Dicofol	T826	AR	0.01	mg/kg	N	052-053
Dieldrin	T826	AR	0.01	mg/kg	N	052-053
Difenoconazole	T826	AR	0.01	mg/kg	N	052-053
Diffluenican	T826	AR	0.01	mg/kg	N	052-053
Dimethenamid	T826	AR	0.01	mg/kg	N	052-053
Dimethomorph	T826	AR	0.01	mg/kg	N	052-053
Dimoxystrobin	T826	AR	0.01	mg/kg	N	052-053
Dinoterb	T826	AR	0.01	mg/kg	N	052-053
Dioxabenzofos	T826	AR	0.01	mg/kg	N	052-053
Diphenamid	T826	AR	0.01	mg/kg	N	052-053
Diphenylamine	T826	AR	0.01	mg/kg	N	052-053
Disulfoton	T826	AR	0.01	mg/kg	N	052-053
Ditalimfos	T826	AR	0.01	mg/kg	N	052-053
Edifenphos	T826	AR	0.01	mg/kg	N	052-053
Endosulphan alpha	T826	AR	0.01	mg/kg	N	052-053
Endosulphan beta	T826	AR	0.01	mg/kg	N	052-053
Endosulphan sulphate	T826	AR	0.01	mg/kg	N	052-053
Endrin	T826	AR	0.01	mg/kg	N	052-053
Epn	T826	AR	0.01	mg/kg	N	052-053
Epoxiconazole	T826	AR	0.01	mg/kg	N	052-053
EPTC	T826	AR	0.01	mg/kg	N	052-053
Etaconazole	T826	AR	0.01	mg/kg	N	052-053
Ethion	T826	AR	0.01	mg/kg	N	052-053
Ethofumesate	T826	AR	0.01	mg/kg	N	052-053
Ethoprophos	T826	AR	0.01	mg/kg	N	052-053
Ethoxyquin	T826	AR	0.01	mg/kg	N	052-053
Etofenprox	T826	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Etoazole	T826	AR	0.01	mg/kg	N	052-053
Etridiazole	T826	AR	0.01	mg/kg	N	052-053
Etrinfos	T826	AR	0.01	mg/kg	N	052-053
Famoxadone	T826	AR	0.01	mg/kg	N	052-053
Famphur	T826	AR	0.01	mg/kg	N	052-053
Fenamidone	T826	AR	0.01	mg/kg	N	052-053
Fenamiphos	T826	AR	0.01	mg/kg	N	052-053
Fenarimol	T826	AR	0.01	mg/kg	N	052-053
Fenbuconazole	T826	AR	0.01	mg/kg	N	052-053
Fenchlorphos	T826	AR	0.01	mg/kg	N	052-053
Fenhexamid	T826	AR	0.01	mg/kg	N	052-053
Fenitrothion	T826	AR	0.01	mg/kg	N	052-053
Fenpiclonil	T826	AR	0.01	mg/kg	N	052-053
Fenproprathrin	T826	AR	0.01	mg/kg	N	052-053
Fenson	T826	AR	0.01	mg/kg	N	052-053
Fensulfothion	T826	AR	0.01	mg/kg	N	052-053
Fenthion	T826	AR	0.01	mg/kg	N	052-053
Fenvalerate	T826	AR	0.01	mg/kg	N	052-053
Fipronil	T826	AR	0.01	mg/kg	N	052-053
Fipronil sulphone	T826	AR	0.01	mg/kg	N	052-053
Flamprop isopropyl	T826	AR	0.01	mg/kg	N	052-053
Fluazifop-P-Butyl	T826	AR	0.01	mg/kg	N	052-053
Flucythrinate	T826	AR	0.01	mg/kg	N	052-053
Fludioxonil	T826	AR	0.01	mg/kg	N	052-053
Flufenacet	T826	AR	0.01	mg/kg	N	052-053
Flumetralin	T826	AR	0.01	mg/kg	N	052-053
Flumioxazin	T826	AR	0.01	mg/kg	N	052-053
Flumorph	T826	AR	0.01	mg/kg	N	052-053
Fluopyram	T826	AR	0.01	mg/kg	N	052-053
Fluquinconazole	T826	AR	0.01	mg/kg	N	052-053
Fluroxypyr-1-methylheptyl ester	T826	AR	0.01	mg/kg	N	052-053
Flusilazole	T826	AR	0.01	mg/kg	N	052-053
Flutolanil	T826	AR	0.01	mg/kg	N	052-053
Fluxapyroxad	T826	AR	0.01	mg/kg	N	052-053
Folpet	T826	AR	0.01	mg/kg	N	052-053
Fonophos	T826	AR	0.01	mg/kg	N	052-053
Formothion	T826	AR	0.01	mg/kg	N	052-053
Furalaxyl	T826	AR	0.01	mg/kg	N	052-053
Haloxyfop etotyl	T826	AR	0.01	mg/kg	N	052-053
Haloxyfop Methyl	T826	AR	0.01	mg/kg	N	052-053
Heptachlor	T826	AR	0.01	mg/kg	N	052-053
Heptachlor epoxide	T826	AR	0.01	mg/kg	N	052-053
Heptachlor exo Epoxide	T826	AR	0.01	mg/kg	N	052-053
Heptenophos	T826	AR	0.01	mg/kg	N	052-053
Hexachlorobenzene	T826	AR	0.01	mg/kg	N	052-053
Hexachlorocyclohexane (alpha)	T826	AR	0.01	mg/kg	N	052-053
Hexachlorocyclohexane (beta)	T826	AR	0.01	mg/kg	N	052-053
Hexachlorocyclohexane (delta)	T826	AR	0.01	mg/kg	N	052-053
Hexaconazole	T826	AR	0.01	mg/kg	N	052-053
Hexazinone	T826	AR	0.01	mg/kg	N	052-053
Imazalil	T826	AR	0.01	mg/kg	N	052-053
Iodofenphos	T826	AR	0.01	mg/kg	N	052-053
Iprodione	T826	AR	0.01	mg/kg	N	052-053
Isazofos	T826	AR	0.01	mg/kg	N	052-053
Isocarboxiphos	T826	AR	0.01	mg/kg	N	052-053
Isodrin	T826	AR	0.01	mg/kg	N	052-053
Isofenphos	T826	AR	0.01	mg/kg	N	052-053
Isofenphos Methyl	T826	AR	0.01	mg/kg	N	052-053
Isomethiozin	T826	AR	0.01	mg/kg	N	052-053
Isoprothiolane	T826	AR	0.01	mg/kg	N	052-053
Isopyrazam	T826	AR	0.01	mg/kg	N	052-053
Isothiazolinone	T826	AR	0.01	mg/kg	N	052-053
Kresoxim Methyl	T826	AR	0.01	mg/kg	N	052-053
Lambda Cyhalothrin	T826	AR	0.01	mg/kg	N	052-053
Lenacil	T826	AR	0.01	mg/kg	N	052-053
Leptophos	T826	AR	0.01	mg/kg	N	052-053
Lindane	T826	AR	0.01	mg/kg	N	052-053
Malathion	T826	AR	0.01	mg/kg	N	052-053
MCPA-thioethyl	T826	AR	0.01	mg/kg	N	052-053
Mecarbam	T826	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Mepanipyrim	T826	AR	0.01	mg/kg	N	052-053
Mephosfolan	T826	AR	0.01	mg/kg	N	052-053
Mepronil	T826	AR	0.01	mg/kg	N	052-053
Metalaxyl	T826	AR	0.01	mg/kg	N	052-053
Metazachlor	T826	AR	0.01	mg/kg	N	052-053
Methacrifos	T826	AR	0.01	mg/kg	N	052-053
Methidathion	T826	AR	0.01	mg/kg	N	052-053
Methoxychlor	T826	AR	0.01	mg/kg	N	052-053
Methyl Paraoxon	T826	AR	0.01	mg/kg	N	052-053
Metolachlor	T826	AR	0.01	mg/kg	N	052-053
Metolcarb	T826	AR	0.01	mg/kg	N	052-053
Metrafenone	T826	AR	0.01	mg/kg	N	052-053
Metribuzin	T826	AR	0.01	mg/kg	N	052-053
Mevinphos	T826	AR	0.01	mg/kg	N	052-053
Mirex	T826	AR	0.01	mg/kg	N	052-053
Molinate	T826	AR	0.01	mg/kg	N	052-053
Myclobutanil	T826	AR	0.01	mg/kg	N	052-053
Napropamide	T826	AR	0.01	mg/kg	N	052-053
Nitrofen	T826	AR	0.01	mg/kg	N	052-053
Nitrothal isopropyl	T826	AR	0.01	mg/kg	N	052-053
Nuarimol	T826	AR	0.01	mg/kg	N	052-053
o,p'-DDT	T826	AR	0.01	mg/kg	N	052-053
Octhilinone	T826	AR	0.01	mg/kg	N	052-053
Ofurace	T826	AR	0.01	mg/kg	N	052-053
Oryastrobin	T826	AR	0.01	mg/kg	N	052-053
Oxadiazon	T826	AR	0.01	mg/kg	N	052-053
Oxadixyl	T826	AR	0.01	mg/kg	N	052-053
Oxyfluorfen	T826	AR	0.01	mg/kg	N	052-053
p,p'-DDD	T826	AR	0.01	mg/kg	N	052-053
p,p'-DDE	T826	AR	0.01	mg/kg	N	052-053
p,p'-DDT	T826	AR	0.01	mg/kg	N	052-053
Paclobutrazol	T826	AR	0.01	mg/kg	N	052-053
Paraoxon	T826	AR	0.01	mg/kg	N	052-053
Parathion	T826	AR	0.01	mg/kg	N	052-053
Parathion methyl	T826	AR	0.01	mg/kg	N	052-053
Penconazole	T826	AR	0.01	mg/kg	N	052-053
Pendimethalin	T826	AR	0.01	mg/kg	N	052-053
Pentachloroaniline	T826	AR	0.01	mg/kg	N	052-053
Pentachlorophenol	T826	AR	0.01	mg/kg	N	052-053
Pentanochlor	T826	AR	0.01	mg/kg	N	052-053
Permethrin	T826	AR	0.01	mg/kg	N	052-053
Pethoxamid	T826	AR	0.01	mg/kg	N	052-053
Phenothrin	T826	AR	0.01	mg/kg	N	052-053
Phenthoate	T826	AR	0.01	mg/kg	N	052-053
Phorate	T826	AR	0.01	mg/kg	N	052-053
Phosalone	T826	AR	0.01	mg/kg	N	052-053
Phosfolan	T826	AR	0.01	mg/kg	N	052-053
Phosmet	T826	AR	0.01	mg/kg	N	052-053
Phthalimide	T826	AR	0.01	mg/kg	N	052-053
Picoxystrobin	T826	AR	0.01	mg/kg	N	052-053
Piperonyl Butoxide	T826	AR	0.01	mg/kg	N	052-053
Pirimicarb	T826	AR	0.01	mg/kg	N	052-053
Pirimiphos Ethyl	T826	AR	0.01	mg/kg	N	052-053
Pirimiphos methyl	T826	AR	0.01	mg/kg	N	052-053
Pretilachlor	T826	AR	0.01	mg/kg	N	052-053
Prochloraz	T826	AR	0.01	mg/kg	N	052-053
Procymidone	T826	AR	0.01	mg/kg	N	052-053
Profenofos	T826	AR	0.01	mg/kg	N	052-053
Prometon	T826	AR	0.01	mg/kg	N	052-053
Prometryn	T826	AR	0.01	mg/kg	N	052-053
Propachlor	T826	AR	0.01	mg/kg	N	052-053
Propanil	T826	AR	0.01	mg/kg	N	052-053
Propaphos	T826	AR	0.01	mg/kg	N	052-053
Propargite	T826	AR	0.01	mg/kg	N	052-053
Propazine	T826	AR	0.01	mg/kg	N	052-053
Propetamphos	T826	AR	0.01	mg/kg	N	052-053
Propham	T826	AR	0.01	mg/kg	N	052-053
Propiconazole	T826	AR	0.01	mg/kg	N	052-053
Propyzamide	T826	AR	0.01	mg/kg	N	052-053
Proquinazid	T826	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Prosulfocarb	T826	AR	0.01	mg/kg	N	052-053
Prothiofos	T826	AR	0.01	mg/kg	N	052-053
Pyraclostrobin	T826	AR	0.01	mg/kg	N	052-053
Pyraflufen ethyl	T826	AR	0.01	mg/kg	N	052-053
Pyrazophos	T826	AR	0.01	mg/kg	N	052-053
Pyridaben	T826	AR	0.01	mg/kg	N	052-053
Pyridaphenthion	T826	AR	0.01	mg/kg	N	052-053
Pyrimethanil	T826	AR	0.01	mg/kg	N	052-053
Pyriproxyfen	T826	AR	0.01	mg/kg	N	052-053
Quinalphos	T826	AR	0.01	mg/kg	N	052-053
Quinoxifen	T826	AR	0.01	mg/kg	N	052-053
Quintozene	T826	AR	0.01	mg/kg	N	052-053
Quizalofop-ethyl	T826	AR	0.01	mg/kg	N	052-053
S421	T826	AR	0.01	mg/kg	N	052-053
Secbumeton	T826	AR	0.01	mg/kg	N	052-053
Silafluofen	T826	AR	0.01	mg/kg	N	052-053
Simazine	T826	AR	0.01	mg/kg	N	052-053
Simeconazole	T826	AR	0.01	mg/kg	N	052-053
Sulfallate	T826	AR	0.01	mg/kg	N	052-053
Sulfentrazone	T826	AR	0.01	mg/kg	N	052-053
Sulprofos	T826	AR	0.01	mg/kg	N	052-053
Tau-Fluvalinate	T826	AR	0.01	mg/kg	N	052-053
Tebuconazole	T826	AR	0.01	mg/kg	N	052-053
Tebufenpyrad	T826	AR	0.01	mg/kg	N	052-053
Tebupirimiphos	T826	AR	0.01	mg/kg	N	052-053
Tecnazene	T826	AR	0.01	mg/kg	N	052-053
Tefluthrin	T826	AR	0.01	mg/kg	N	052-053
Terbacil	T826	AR	0.01	mg/kg	N	052-053
Terbufos	T826	AR	0.01	mg/kg	N	052-053
Terbumeton	T826	AR	0.01	mg/kg	N	052-053
Terbutylazine	T826	AR	0.01	mg/kg	N	052-053
Terbutryn	T826	AR	0.01	mg/kg	N	052-053
Tetrachlorvinphos	T826	AR	0.01	mg/kg	N	052-053
Tetraconazole	T826	AR	0.01	mg/kg	N	052-053
Tetradifon	T826	AR	0.01	mg/kg	N	052-053
sulfotep	T826	AR	0.01	mg/kg	N	052-053
Tetramethrin	T826	AR	0.01	mg/kg	N	052-053
Tetrasul	T826	AR	0.01	mg/kg	N	052-053
Thiamethoxam	T826	AR	0.01	mg/kg	N	052-053
Thiobencarb	T826	AR	0.01	mg/kg	N	052-053
Thiocyclam	T826	AR	0.01	mg/kg	N	052-053
Thiometon	T826	AR	0.01	mg/kg	N	052-053
Tolclofos methyl	T826	AR	0.01	mg/kg	N	052-053
Triadimefon	T826	AR	0.01	mg/kg	N	052-053
Triadimenol	T826	AR	0.01	mg/kg	N	052-053
Triallate	T826	AR	0.01	mg/kg	N	052-053
Triazamate	T826	AR	0.01	mg/kg	N	052-053
Triazophos	T826	AR	0.01	mg/kg	N	052-053
Trietazine	T16	AR	0.01	mg/kg	N	052-053
Trifloxystrobin	T826	AR	0.01	mg/kg	N	052-053
Triflumizole	T826	AR	0.01	mg/kg	N	052-053
Trifluralin	T826	AR	0.01	mg/kg	N	052-053
Uniconazole	T826	AR	0.01	mg/kg	N	052-053
Vinclozolin	T826	AR	0.01	mg/kg	N	052-053
2-(1-Naphthyl)acetamide	T310	AR	0.01	mg/kg	N	052-053
3-hydroxycarbofuran	T310	AR	0.01	mg/kg	N	052-053
6-Benzyladenine	T310	AR	0.01	mg/kg	N	052-053
Abamectin	T310	AR	0.01	mg/kg	N	052-053
Acephate	T310	AR	0.01	mg/kg	N	052-053
Acetamiprid	T310	AR	0.01	mg/kg	N	052-053
Acibenzolar-S-methyl	T310	AR	0.01	mg/kg	N	052-053
Aldicarb	T310	AR	0.01	mg/kg	N	052-053
Aldicarb sulphone	T310	AR	0.01	mg/kg	N	052-053
Aldicarb sulphoxide	T310	AR	0.01	mg/kg	N	052-053
Aminocarb	T310	AR	0.01	mg/kg	N	052-053
Amitraz	T310	AR	0.01	mg/kg	N	052-053
Azinphos ethyl	T310	AR	0.01	mg/kg	N	052-053
Azinphos methyl	T310	AR	0.01	mg/kg	N	052-053
Azoxystrobin	T310	AR	0.01	mg/kg	N	052-053
Bendiocarb	T310	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Benfuracarb	T310	AR	0.01	mg/kg	N	052-053
Bifenazate	T310	AR	0.01	mg/kg	N	052-053
Butoxycarboxim	T310	AR	0.01	mg/kg	N	052-053
Butralin	T310	AR	0.01	mg/kg	N	052-053
Carbaryl	T310	AR	0.01	mg/kg	N	052-053
Carbendazim	T310	AR	0.01	mg/kg	N	052-053
Carbetamide	T310	AR	0.01	mg/kg	N	052-053
Carbofuran	T310	AR	0.01	mg/kg	N	052-053
Carpropamid	T310	AR	0.01	mg/kg	N	052-053
Chinomethionat	T310	AR	0.01	mg/kg	N	052-053
chlorantraniliprole	T310	AR	0.01	mg/kg	N	052-053
Chlorbromuron	T310	AR	0.01	mg/kg	N	052-053
Chlorfluazuron	T310	AR	0.01	mg/kg	N	052-053
Chloridazon	T310	AR	0.01	mg/kg	N	052-053
Chlorotoluron	T310	AR	0.01	mg/kg	N	052-053
Chlorpropham	T310	AR	0.01	mg/kg	N	052-053
Clofentezine	T310	AR	0.01	mg/kg	N	052-053
Clothianidin	T310	AR	0.01	mg/kg	N	052-053
Cyanazine	T310	AR	0.01	mg/kg	N	052-053
Cyazofamid	T310	AR	0.01	mg/kg	N	052-053
Cycluron	T310	AR	0.01	mg/kg	N	052-053
Cymoxanil	T310	AR	0.01	mg/kg	N	052-053
Cyromazine	T310	AR	0.01	mg/kg	N	052-053
Cythioate	T310	AR	0.01	mg/kg	N	052-053
Demeton	T310	AR	0.01	mg/kg	N	052-053
Demeton-s-methyl sulphone	T310	AR	0.01	mg/kg	N	052-053
Desmedipham	T310	AR	0.01	mg/kg	N	052-053
Dicrotophos	T310	AR	0.01	mg/kg	N	052-053
Diethofencarb	T310	AR	0.01	mg/kg	N	052-053
Diflubenzuron	T310	AR	0.01	mg/kg	N	052-053
Dimefuron	T310	AR	0.01	mg/kg	N	052-053
Dimethoate	T310	AR	0.01	mg/kg	N	052-053
Diniconazole	T310	AR	0.01	mg/kg	N	052-053
Dinotefuran	T310	AR	0.01	mg/kg	N	052-053
Dioxacarb	T310	AR	0.01	mg/kg	N	052-053
Disulfoton sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Disulfoton sulphone	T310	AR	0.01	mg/kg	N	052-053
Diuron	T310	AR	0.01	mg/kg	N	052-053
DMSA	T310	AR	0.01	mg/kg	N	052-053
DMST	T310	AR	0.01	mg/kg	N	052-053
Dodemorph	T310	AR	0.01	mg/kg	N	052-053
Emamectin	T310	AR	0.01	mg/kg	N	052-053
Ethidimuron	T310	AR	0.01	mg/kg	N	052-053
Ethiofencarb	T310	AR	0.01	mg/kg	N	052-053
Ethiofencarb sulfone	T310	AR	0.01	mg/kg	N	052-053
Ethiofencarb sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Ethiprole	T310	AR	0.01	mg/kg	N	052-053
Ethirimol	T310	AR	0.01	mg/kg	N	052-053
Fenamiphos sulfone	T310	AR	0.01	mg/kg	N	052-053
Fenamiphos sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Fenazaquin	T310	AR	0.01	mg/kg	N	052-053
Fenchlorphos oxon	T310	AR	0.01	mg/kg	N	052-053
Fenhexamid	T310	AR	0.01	mg/kg	N	052-053
Fenpropidin	T310	AR	0.01	mg/kg	N	052-053
Fenpropimorph	T310	AR	0.01	mg/kg	N	052-053
Fenpyroximate	T310	AR	0.01	mg/kg	N	052-053
Fenthion Sulphone	T310	AR	0.01	mg/kg	N	052-053
Fenthion Sulphoxide	T310	AR	0.01	mg/kg	N	052-053
Fenuron	T310	AR	0.01	mg/kg	N	052-053
Fonicamid	T310	AR	0.01	mg/kg	N	052-053
Fluazinam	T310	AR	0.01	mg/kg	N	052-053
Flufenoxuron	T310	AR	0.01	mg/kg	N	052-053
Fluometuron	T310	AR	0.01	mg/kg	N	052-053
Fluopicolide	T310	AR	0.01	mg/kg	N	052-053
Flurochloridone	T310	AR	0.01	mg/kg	N	052-053
Flurtamone	T310	AR	0.01	mg/kg	N	052-053
Flutriafol	T310	AR	0.01	mg/kg	N	052-053
Forchlorfenuron	T310	AR	0.01	mg/kg	N	052-053
Formetanate	T310	AR	0.01	mg/kg	N	052-053
Fuberidazole	T310	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Furathiocarb	T310	AR	0.01	mg/kg	N	052-053
Hexaflumuron	T310	AR	0.01	mg/kg	N	052-053
Hexythiazox	T310	AR	0.01	mg/kg	N	052-053
Imazalil	T310	AR	0.01	mg/kg	N	052-053
Imidacloprid	T310	AR	0.01	mg/kg	N	052-053
Indoxacarb	T310	AR	0.01	mg/kg	N	052-053
Iprovalicarb	T310	AR	0.01	mg/kg	N	052-053
Isoprocarb	T310	AR	0.01	mg/kg	N	052-053
Isoproturon	T310	AR	0.01	mg/kg	N	052-053
Isoxaben	T310	AR	0.01	mg/kg	N	052-053
Karbutylate	T310	AR	0.01	mg/kg	N	052-053
Linuron	T310	AR	0.01	mg/kg	N	052-053
Lufenuron	T310	AR	0.01	mg/kg	N	052-053
Malaoxon	T310	AR	0.01	mg/kg	N	052-053
Mandipropamid	T310	AR	0.01	mg/kg	N	052-053
Mefenacet	T310	AR	0.01	mg/kg	N	052-053
Metaflumizone	T310	AR	0.01	mg/kg	N	052-053
Metamitron	T310	AR	0.01	mg/kg	N	052-053
Metconazole	T310	AR	0.01	mg/kg	N	052-053
Methabenzthiazuron	T310	AR	0.01	mg/kg	N	052-053
Methamidophos	T310	AR	0.01	mg/kg	N	052-053
Methiocarb	T310	AR	0.01	mg/kg	N	052-053
Methiocarb sulfone	T310	AR	0.01	mg/kg	N	052-053
Methiocarb Sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Methomyl	T310	AR	0.01	mg/kg	N	052-053
Methoxyfenozide	T310	AR	0.01	mg/kg	N	052-053
Metobromuron	T310	AR	0.01	mg/kg	N	052-053
Monocrotophos	T310	AR	1	mg/kg	N	052-053
Monolinuron	T310	AR	0.01	mg/kg	N	052-053
Monuron	T310	AR	0.01	mg/kg	N	052-053
Neburon	T310	AR	0.01	mg/kg	N	052-053
Nicotine	T310	AR	0.01	mg/kg	N	052-053
Nitenpyram	T310	AR	0.01	mg/kg	N	052-053
Novaluron	T310	AR	0.01	mg/kg	N	052-053
Omethoate	T310	AR	0.01	mg/kg	N	052-053
Oxadiazyl	T310	AR	0.01	mg/kg	N	052-053
Oxamyl	T310	AR	0.01	mg/kg	N	052-053
Oxycarboxin	T310	AR	0.01	mg/kg	N	052-053
Pencycuron	T310	AR	0.01	mg/kg	N	052-053
Phenmedipham	T310	AR	0.01	mg/kg	N	052-053
Phorate sulfone	T310	AR	0.01	mg/kg	N	052-053
Phorate sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Phosmet	T310	AR	0.01	mg/kg	N	052-053
Phosphamidon	T310	AR	0.01	mg/kg	N	052-053
Phoxim	T310	AR	0.01	mg/kg	N	052-053
Pirimicarb	T310	AR	0.01	mg/kg	N	052-053
Pirimicarb desmethyl	T310	AR	0.01	mg/kg	N	052-053
Prochloraz	T310	AR	0.01	mg/kg	N	052-053
Propamocarb	T310	AR	0.01	mg/kg	N	052-053
Propaquizafop	T310	AR	0.01	mg/kg	N	052-053
Propargite	T310	AR	0.01	mg/kg	N	052-053
Propoxur	T310	AR	0.01	mg/kg	N	052-053
Prothioconazole desthio	T310	AR	0.01	mg/kg	N	052-053
Pyralostrobil	T310	AR	0.01	mg/kg	N	052-053
Pyrethrin I	T310	AR	0.01	mg/kg	N	052-053
Pyrifenoxy	T310	AR	0.01	mg/kg	N	052-053
Resmethrin	T310	AR	0.01	mg/kg	N	052-053
Spinetoram	T310	AR	0.01	mg/kg	N	052-053
Spinosad	T310	AR	0.01	mg/kg	N	052-053
Spirodiclofen	T310	AR	0.01	mg/kg	N	052-053
Spiromesifen	T310	AR	0.01	mg/kg	N	052-053
Spirotetramat	T310	AR	0.01	mg/kg	N	052-053
Spiroxamine	T310	AR	0.01	mg/kg	N	052-053
Tebufozide	T310	AR	0.01	mg/kg	N	052-053
Teflubenzuron	T310	AR	0.01	mg/kg	N	052-053
Temephos	T310	AR	0.1	mg/kg	N	052-053
Terbufos sulfone	T310	AR	0.01	mg/kg	N	052-053
Terbufos sulfoxide	T310	AR	0.01	mg/kg	N	052-053
Thiabendazole	T310	AR	0.01	mg/kg	N	052-053
Thiacloprid	T310	AR	0.01	mg/kg	N	052-053

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Thiamethoxam	T310	AR	0.01	mg/kg	N	052-053
Thiazafurion	T310	AR	0.01	mg/kg	N	052-053
Thidiazuron	T310	AR	0.01	mg/kg	N	052-053
Thiodicarb	T310	AR	0.01	mg/kg	N	052-053
Thiofanox	T310	AR	0.01	mg/kg	N	052-053
Thiophanate Methyl	T310	AR	0.01	mg/kg	N	052-053
Tolyfluanid	T310	AR	0.01	mg/kg	N	052-053
Tribenuron methyl	T310	AR	0.01	mg/kg	N	052-053
Tridemorph	T310	AR	0.01	mg/kg	N	052-053
Triflumuron	T310	AR	0.01	mg/kg	N	052-053
Triflusaluron-methyl	T310	AR	0.01	mg/kg	N	052-053
Triforine	T310	AR	0.01	mg/kg	N	052-053
Triticonazole	T310	AR	0.01	mg/kg	N	052-053
Vamidothion	T310	AR	0.01	mg/kg	N	052-053
Vernolate	T310	AR	0.01	mg/kg	N	052-053
Zoxamide	T310	AR	0.01	mg/kg	N	052-053
Phenoxy Acetic acid herbicide: 2,4,5-T	T16	AR	0.01	mg/kg	N	052-053
Phenoxy Acetic acid herbicide: 2,4-D	T16	AR	0.01	mg/kg	N	052-053
Dichlorprop	T16	AR	0.01	mg/kg	N	052-053
Fenoprop	T16	AR	0.01	mg/kg	N	052-053
Phenoxy Acetic acid herbicide: MCPA	T16	AR	0.01	mg/kg	N	052-053
Mecoprop	T16	AR	0.01	mg/kg	N	052-053
Arsenic	T257	A40	2	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Arsenic	T257	A40	2.0	mg/kg	N	044
Cadmium	T257	A40	0.1	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Cadmium	T257	A40	0.1	mg/kg	N	044
Chromium	T257	A40	0.5	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Chromium	T257	A40	0.5	mg/kg	N	044
Copper	T257	A40	2	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Copper	T257	A40	2	mg/kg	N	044
Lead	T257	A40	2	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Lead	T257	A40	2	mg/kg	N	044
Mercury	T245	A40	1.0	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Nickel	T257	A40	0.5	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Nickel	T257	A40	0.5	mg/kg	N	044
Selenium	T257	A40	3	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Selenium	T257	A40	3	mg/kg	N	044
Zinc	T257	A40	2	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Zinc	T257	A40	2	mg/kg	N	044
Asbestos ID	T27	A40			SU	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Chromium VI	T82	A40	1	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Total Organic Carbon	T21	A40	0.1	%	N	010,015,025,034,039,045
pH	T7	A40			M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
pH	T7	A40			N	044
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	N	044
SO4(Total)	T102	A40	0.02	%	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
SO4(Total)	T102	A40	0.02	%	N	044
Cyanide(Total)	T921	AR	1	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Cyanide(Total)	T921	AR	1	mg/kg	N	044
Phenols(Mono)	T921	AR	1	mg/kg	M	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Phenols(Mono)	T921	AR	1	mg/kg	N	044
Moisture @105C	T162	AR	0.1	%	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Retained on 2mm	T2	A40	0.1	%	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049,054-055
TPH (C5-C6)	T54	AR	0.10	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
TPH (C6-C8)	T54	AR	0.10	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
TPH (C8-C10)	T54	AR	0.10	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
TPH (C10-C12)	T219	AR	2	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
TPH (C10-C12)	T219	AR	2	mg/kg	N	044
TPH (C12-C16)	T219	AR	2	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
TPH (C12-C16)	T219	AR	2	mg/kg	N	044
TPH (C16-C21)	T219	AR	2	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
TPH (C16-C21)	T219	AR	2	mg/kg	N	044
TPH (C21-C35)	T219	AR	2	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
TPH (C21-C35)	T219	AR	2	mg/kg	N	044
Naphthalene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Naphthalene	T16	AR	0.1	mg/kg	N	044
Acenaphthylene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Acenaphthylene	T16	AR	0.1	mg/kg	N	044

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Acenaphthene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Acenaphthene	T16	AR	0.1	mg/kg	N	044
Fluorene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Fluorene	T16	AR	0.1	mg/kg	N	044
Phenanthrene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Phenanthrene	T16	AR	0.1	mg/kg	N	044
Anthracene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Anthracene	T16	AR	0.1	mg/kg	N	044
Fluoranthene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Pyrene	T16	AR	0.1	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	N	044
Chrysene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Chrysene	T16	AR	0.1	mg/kg	N	044
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	N	044
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	N	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,044-046,049
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	N	044
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	N	044
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	N	044
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	N	044
PAH(total)	T16	AR	0.1	mg/kg	U	006,008,010,015-016,018,023,025,030,032,034-036,038-039,041,045-046,049
PAH(total)	T16	AR	0.1	mg/kg	N	044



APPENDIX VIII
GEOTECHNICAL TESTING RESULTS



LABORATORY REPORT



4043

Contract Number: PSL16/2188

Report Date: 09 June 2016

Client's Reference: 1CO101380

Client Name: REC Croydon
Osprey House
Pacific Quay
Broadway
Manchester
M50 2UE

For the attention of: Marc Roberts

Contract Title: Land West of Hemel Hempstead

Date Received: 16/5/2016

Date Commenced: 16/5/2016

Date Completed: 9/6/2016

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

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(Director)

A Watkins
(Director)

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(Quality Manager)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP202	1	B	1.60		Brown gravelly sandy CLAY.
TP205	1	B	0.70		Brown very gravelly sandy CLAY.
TP204	1	B	0.50		Brown very gravelly sandy CLAY.
TP207	1	B	1.50		Brown gravelly slightly sandy CLAY.
TP210	1	B	1.00		Brown very gravelly slightly sandy CLAY.
TP214	1	B	0.50		Brown very gravelly slightly sandy CLAY.
TP218	1	B	1.40		Brown very gravelly sandy CLAY.
TP229	1	B	0.70		White CHALK.
TP230	1	B	0.50		Brown very gravelly slightly sandy CLAY.
TP227	2	B	1.40		White CHALK.
TP226	2	B	2.00		Brown very gravelly slightly sandy CLAY.
BH202	1	U	1.20		Stiff reddish brown gravelly slightly sandy CLAY.
BH202		U	3.00		Stiff reddish brown gravelly slightly sandy CLAY.
BH203	1	U	1.20		Firm reddish brown sandy CLAY.
BH203		U	3.00		Stiff brown gravelly slightly sandy CLAY.
BH205		U	1.20		Stiff reddish brown very gravelly slightly sandy CLAY.
BH205		U	3.00		Stiff reddish brown gravelly slightly sandy CLAY.
BH203		U	8.00		Stiff reddish brown gravelly slightly sandy CLAY.
BH203		U	11.00		Stiff reddish brown slightly gravelly slightly sandy CLAY.

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH202		U	20.00		Very stiff brown gravelly slightly sandy CLAY.
WS201		D	1.20		Brown gravelly sandy CLAY.
WS207		D	1.20		Brown gravelly slightly sandy CLAY.
WS209		D	1.80		Brown gravelly slightly sandy CLAY.
TP230		D	1.50		Brown gravelly slightly sandy CLAY.
TP226		B	0.70		Brown gravelly slightly sandy CLAY.
WS211		D	1.00		Brown gravelly slightly sandy CLAY.
WS208		D	2.00		Brown gravelly slightly sandy CLAY.
WS206		D	2.00		Brown gravelly sandy CLAY.
WS205		D	1.00		Brown slightly gravelly slightly sandy CLAY.
TP223		D	2.00		Brown gravelly slightly sandy CLAY.



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SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP202	1	B	1.60		20			57	23	34	80	High plasticity CH.
TP205	1	B	0.70		15			58	23	35	53	High plasticity CH.
TP204	1	B	0.50		23			59	25	34	60	High plasticity CH.
TP207	1	B	1.50		33			75	31	44	89	Very high plasticity CV.
TP210	1	B	1.00		22			67	27	40	69	High plasticity CH.
TP214	1	B	0.50		22			65	26	39	48	High plasticity CH.
TP218	1	B	1.40		18			60	25	35	45	High plasticity CH.
TP230	1	B	0.50		18			62	26	36	50	High plasticity CH.
TP226	2	B	2.00		17			69	29	40	61	High plasticity CH.
WS201			1.20		22			58	24	34	80	High plasticity CH.
WS207			1.20		20			61	25	36	79	High plasticity CH.
WS209			1.80		19			63	25	38	83	High plasticity CH.
TP230			1.50		18			64	26	38	81	High plasticity CH.
TP226			0.70		16			67	26	41	83	High plasticity CH.
WS211			1.00		34			73	30	43	84	Very high plasticity CV.
WS208			2.00		16			66	27	39	81	High plasticity CH.
WS206			2.00		18			56	23	33	87	High plasticity CH.
WS205			1.00		26			68	28	40	91	High plasticity CH.
TP223			2.00		17			64	27	37	92	High plasticity CH.

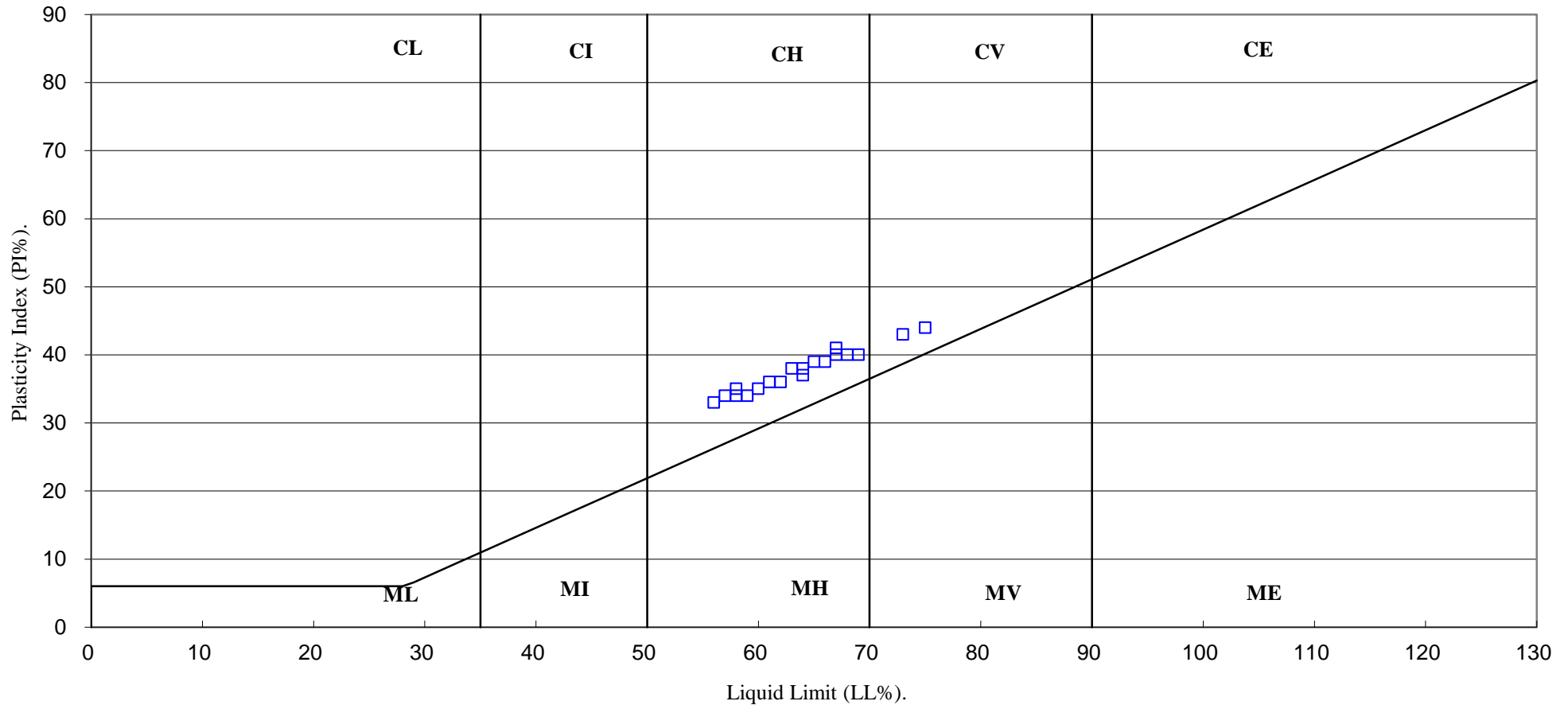
SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



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PARTICLE SIZE DISTRIBUTION TEST

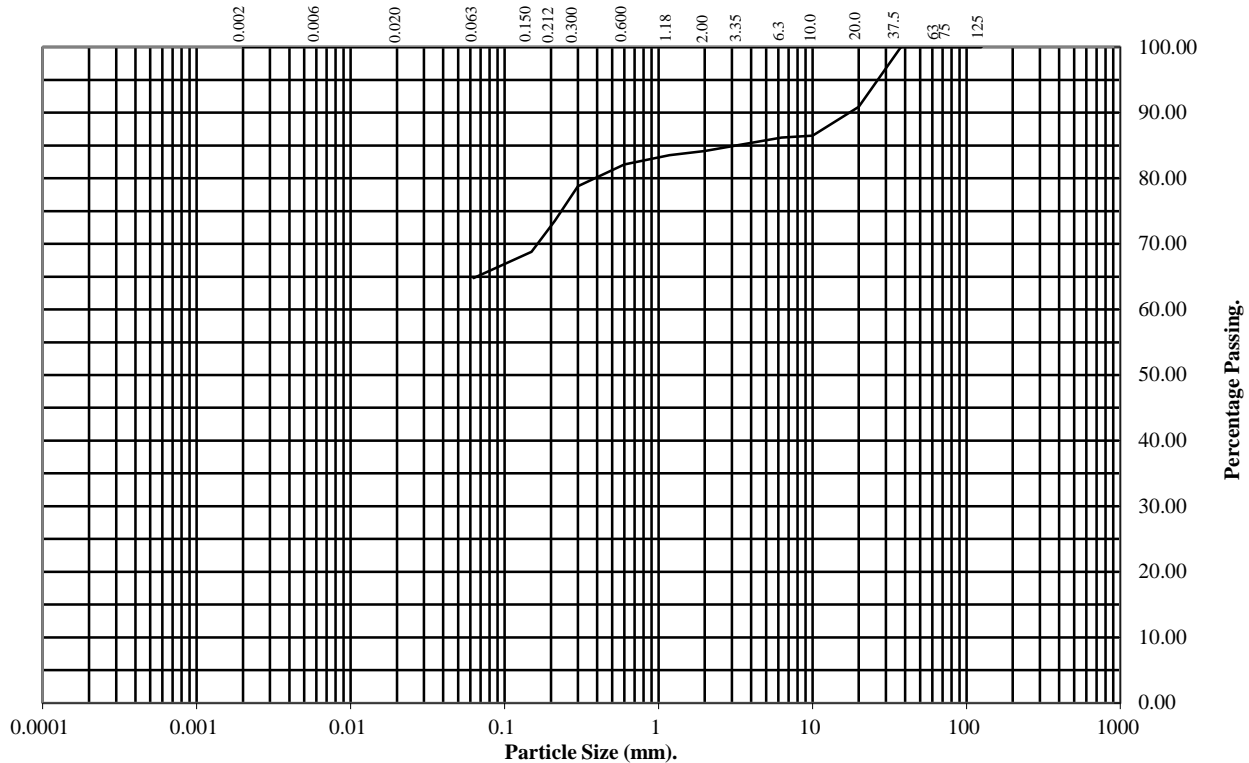
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP202 Top Depth (m): 1.60

Sample Number: 1 Base Depth(m):

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	87
6.3	86
3.35	85
2	84
1.18	84
0.6	82
0.3	79
0.212	74
0.15	69
0.063	65

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	19
Silt/Clay	65

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

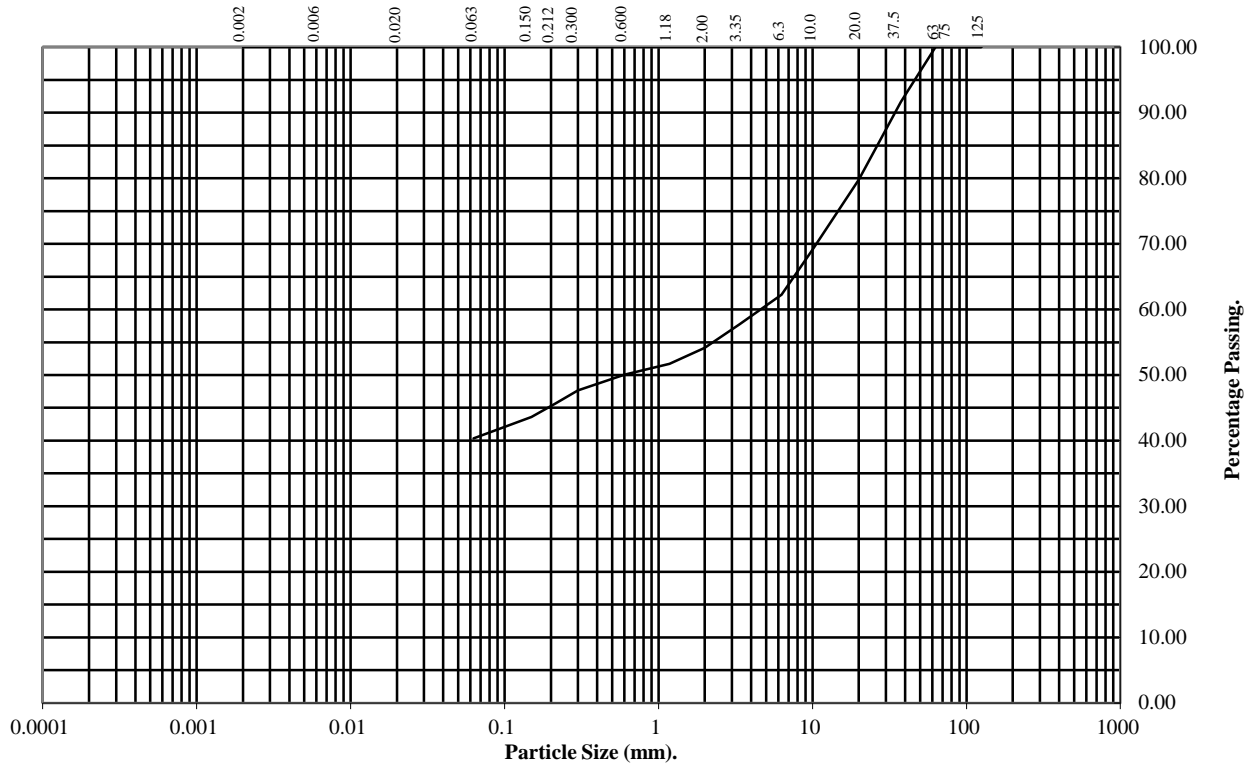
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP205 Top Depth (m): 0.70

Sample Number: 1 Base Depth(m):

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	92
20	80
10	69
6.3	62
3.35	58
2	54
1.18	52
0.6	50
0.3	48
0.212	46
0.15	44
0.063	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	14
Silt/Clay	40

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

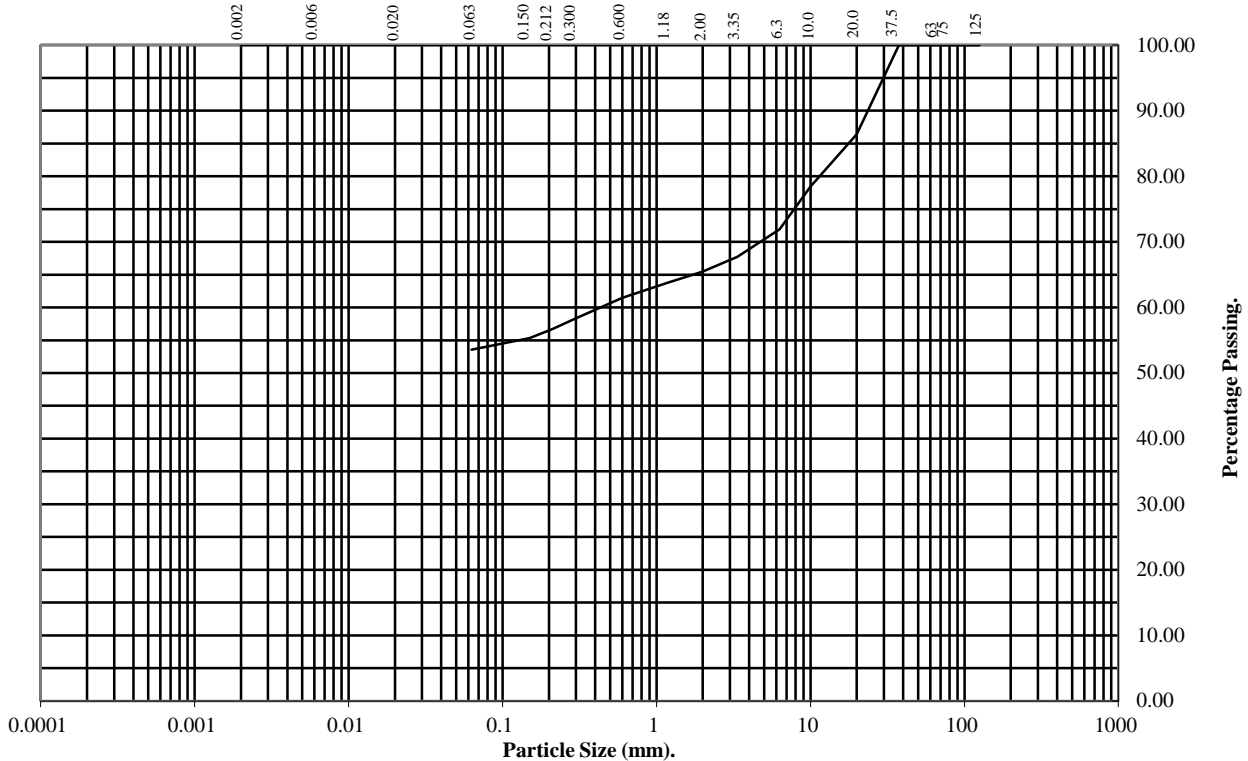
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP204 **Top Depth (m):** 0.50

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	86
10	78
6.3	72
3.35	68
2	65
1.18	64
0.6	61
0.3	58
0.212	57
0.15	55
0.063	54

Soil Fraction	Total Percentage
Cobbles	0
Gravel	35
Sand	11
Silt/Clay	54

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

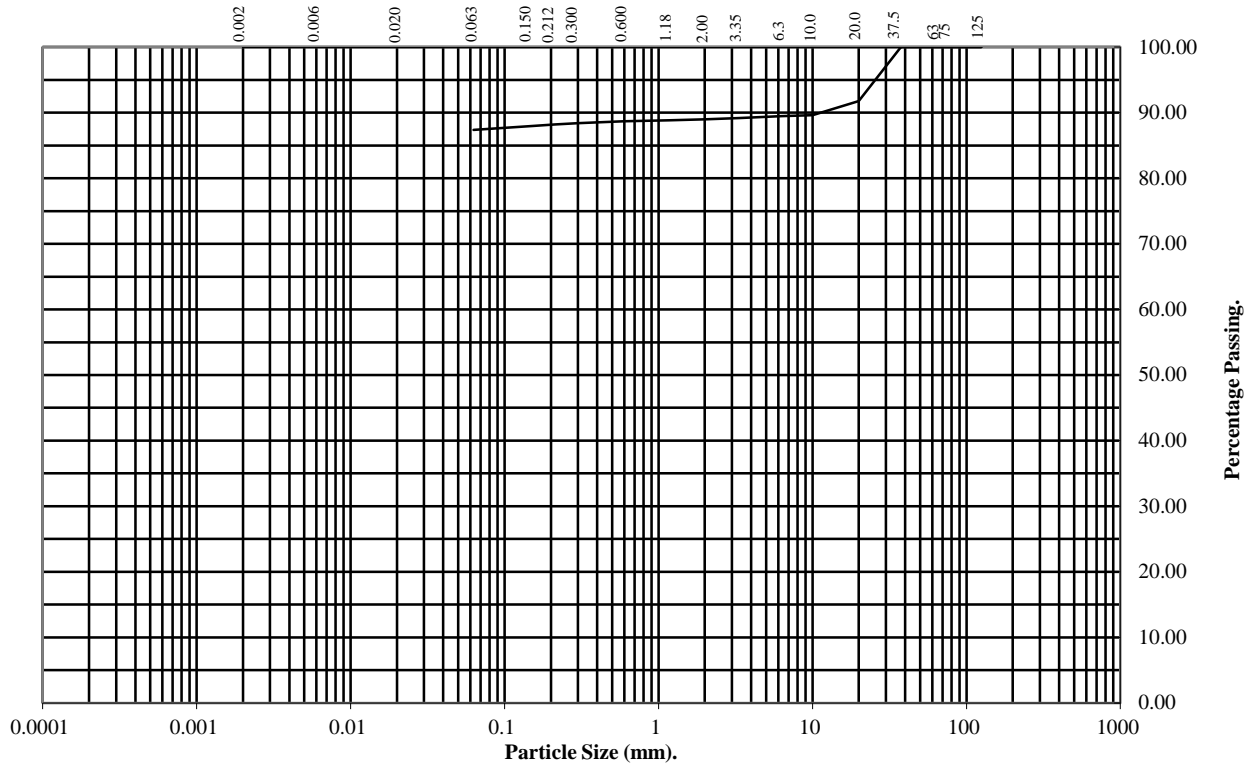
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP207 **Top Depth (m):** 1.50

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	90
6.3	89
3.35	89
2	89
1.18	89
0.6	89
0.3	88
0.212	88
0.15	88
0.063	87

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	2
Silt/Clay	87

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

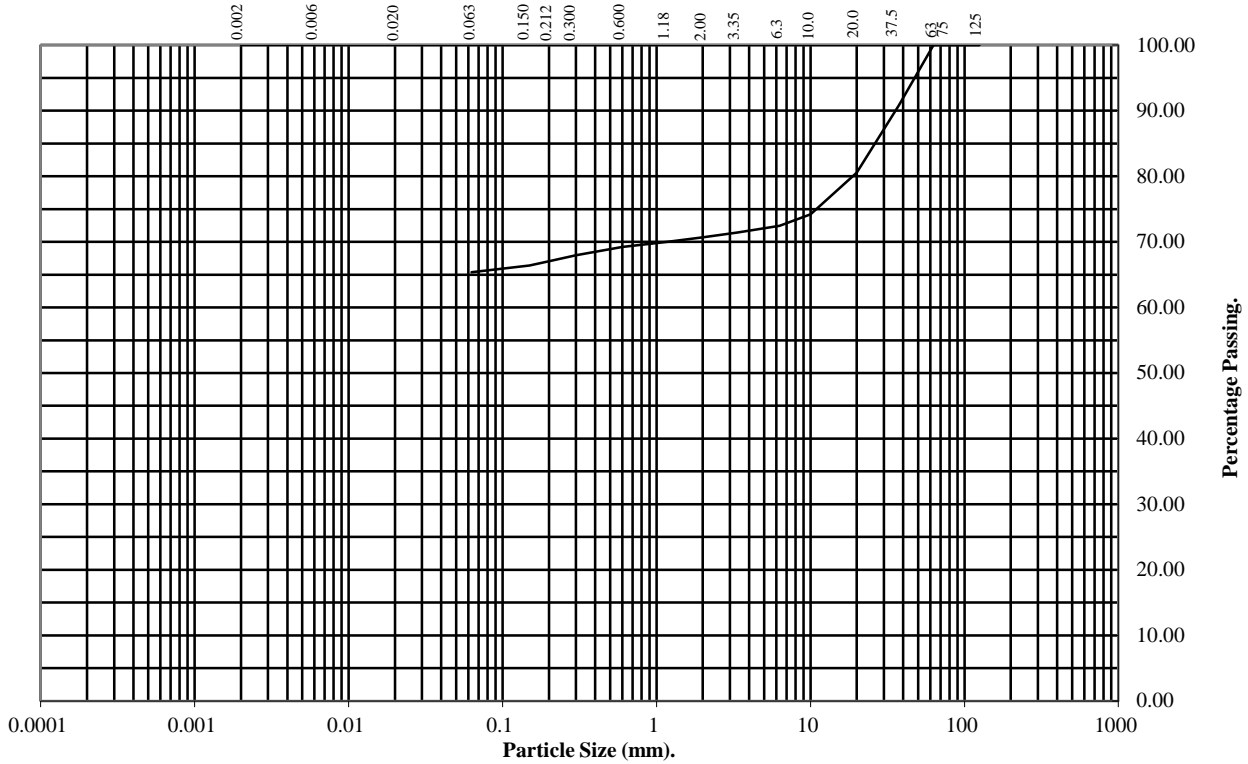
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP210 **Top Depth (m):** 1.00

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	91
20	81
10	74
6.3	72
3.35	71
2	71
1.18	70
0.6	69
0.3	68
0.212	67
0.15	66
0.063	65

Soil Fraction	Total Percentage
Cobbles	0
Gravel	29
Sand	6
Silt/Clay	65

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

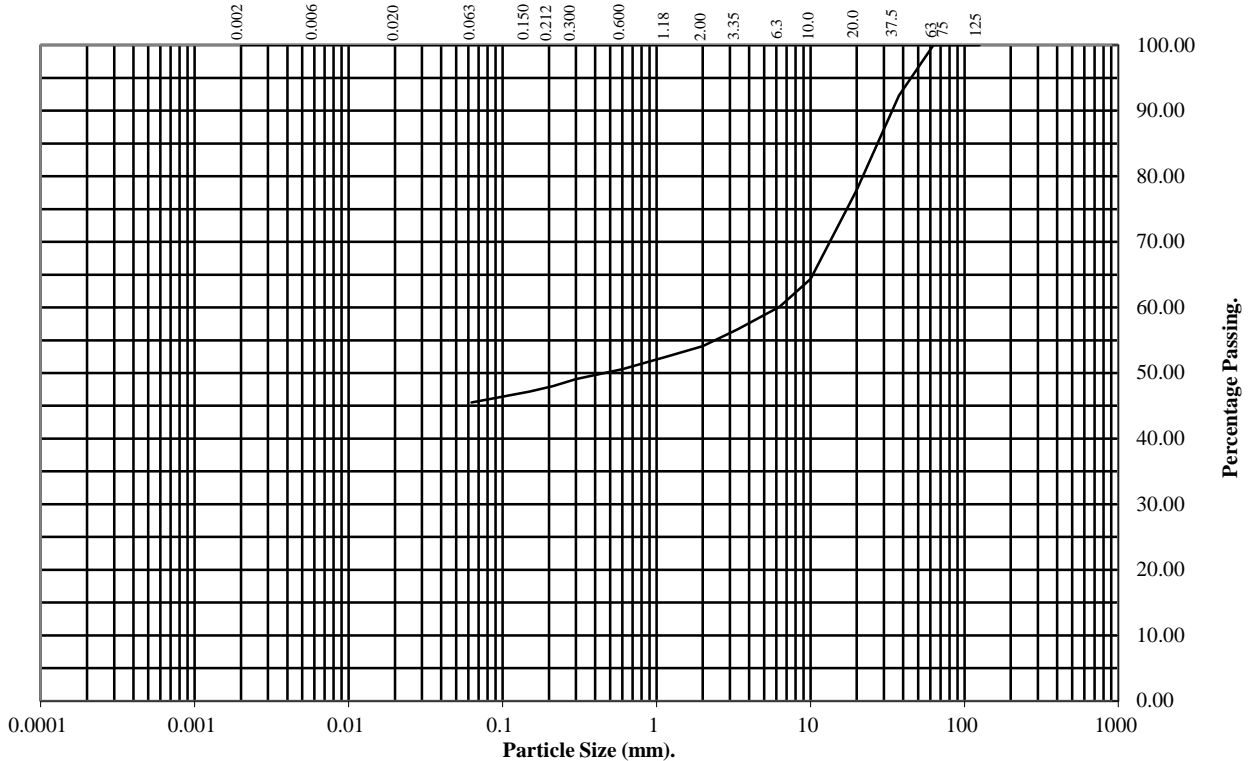
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP214** Top Depth (m): **0.50**

Sample Number: **1** Base Depth(m):

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	92
20	78
10	64
6.3	60
3.35	57
2	54
1.18	53
0.6	51
0.3	49
0.212	48
0.15	47
0.063	46

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	8
Silt/Clay	46

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

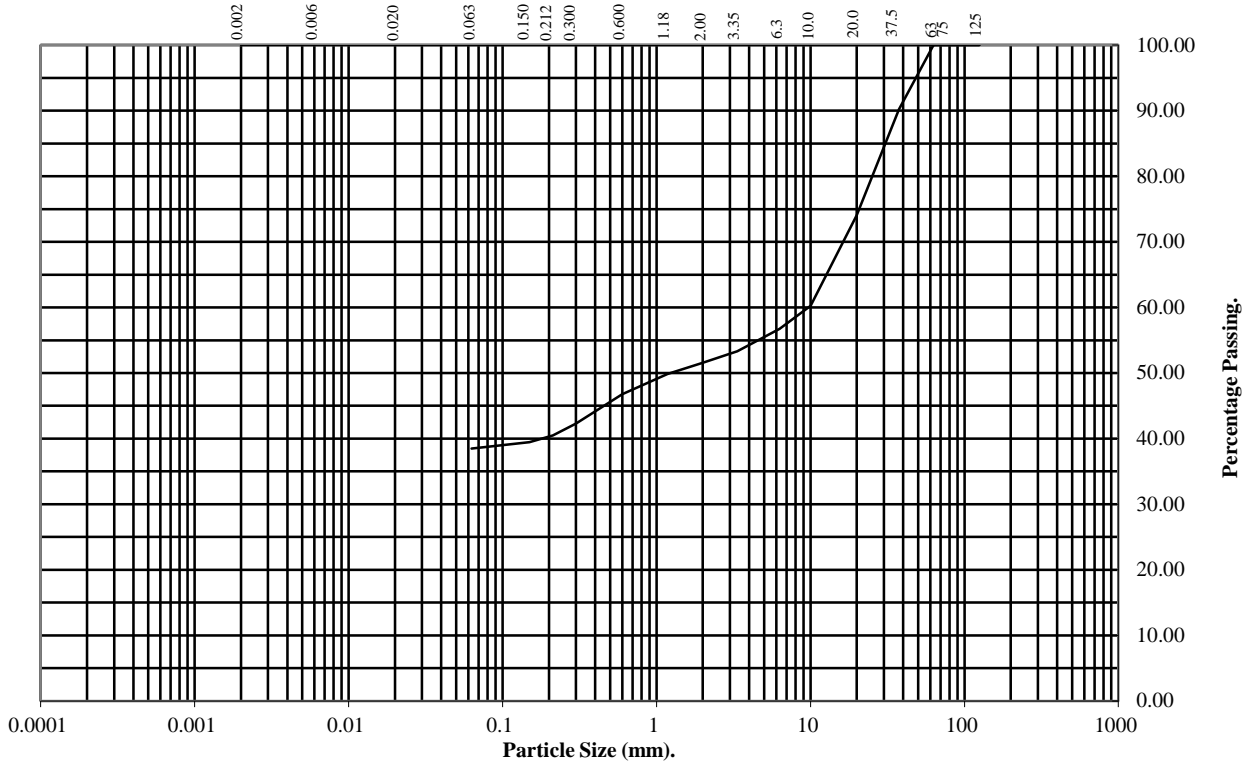
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP218 **Top Depth (m):** 1.40

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	90
20	74
10	60
6.3	57
3.35	53
2	52
1.18	50
0.6	47
0.3	42
0.212	40
0.15	39
0.063	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	48
Sand	13
Silt/Clay	39

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

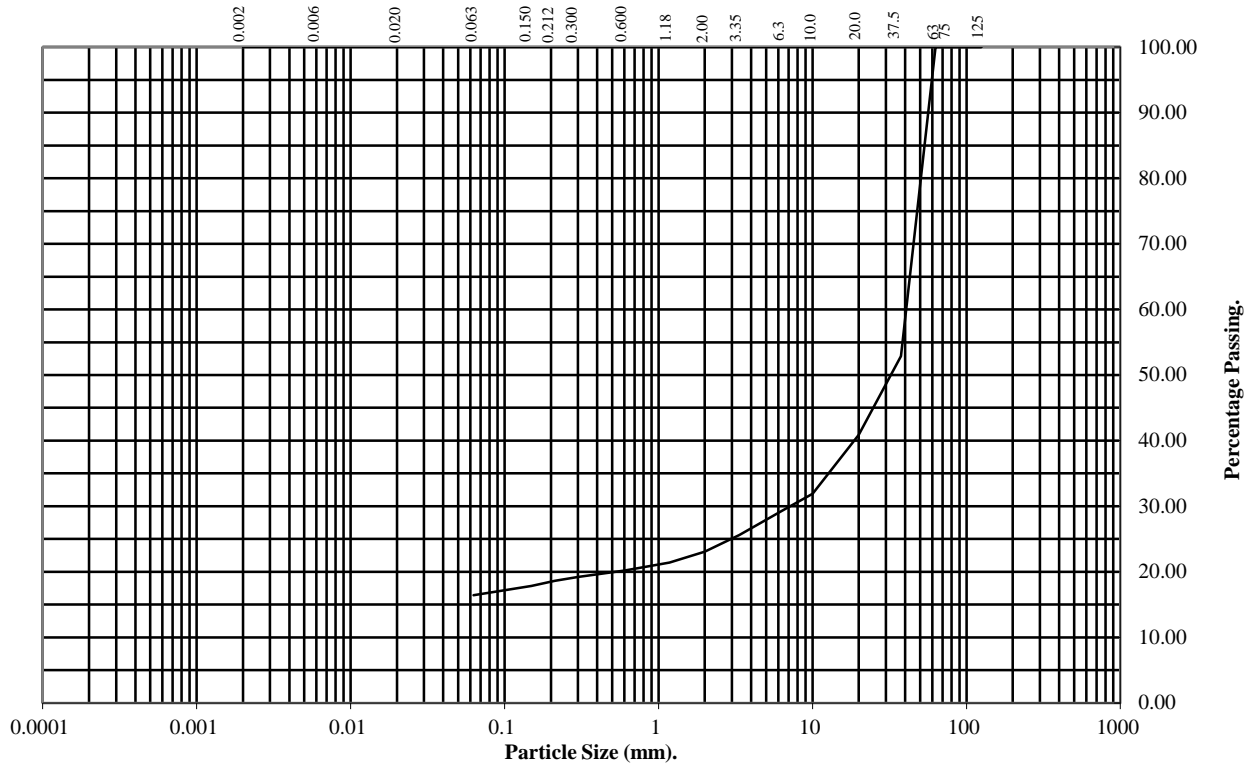
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP229 **Top Depth (m):** 0.70

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	53
20	41
10	32
6.3	29
3.35	26
2	23
1.18	21
0.6	20
0.3	19
0.212	19
0.15	18
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	77
Sand	7
Silt/Clay	16

Remarks:
See summary of soil descriptions.



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PARTICLE SIZE DISTRIBUTION TEST

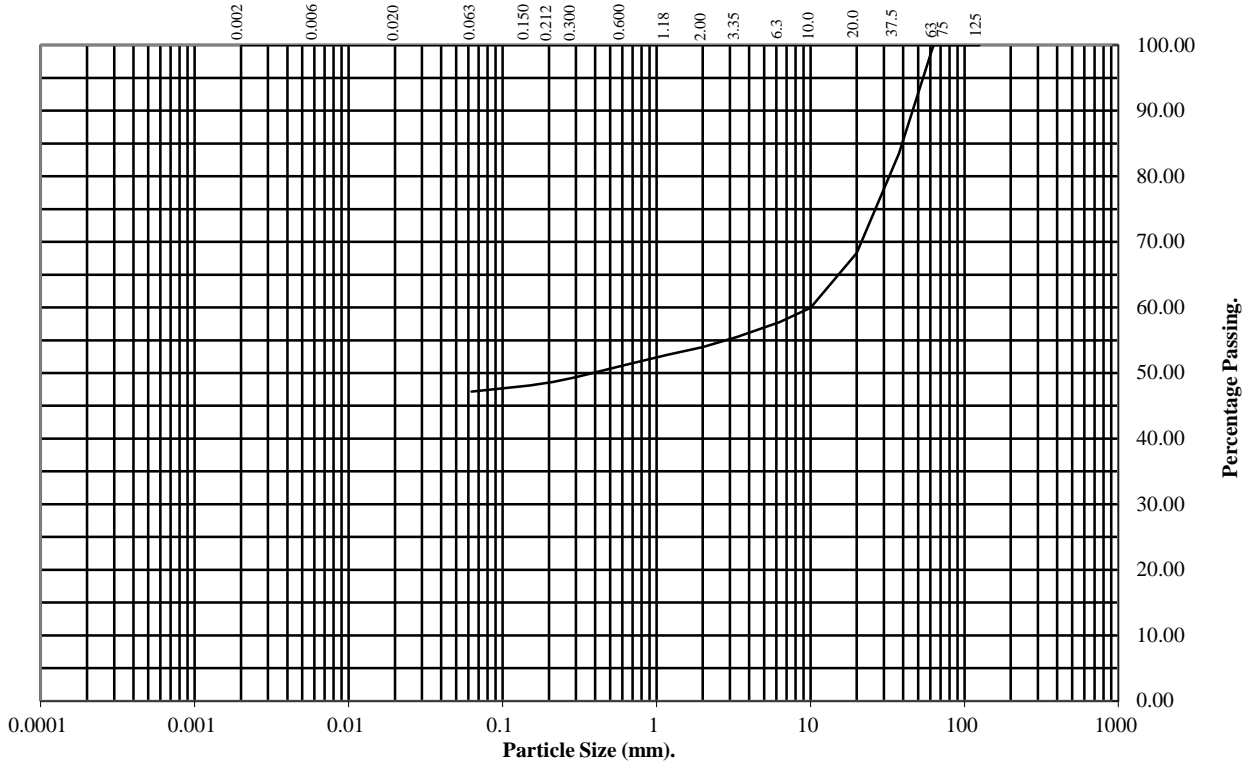
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP230 **Top Depth (m):** 0.50

Sample Number: 1 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	83
20	68
10	60
6.3	58
3.35	56
2	54
1.18	53
0.6	51
0.3	49
0.212	49
0.15	48
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	7
Silt/Clay	47

Remarks:
See summary of soil descriptions.



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				Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

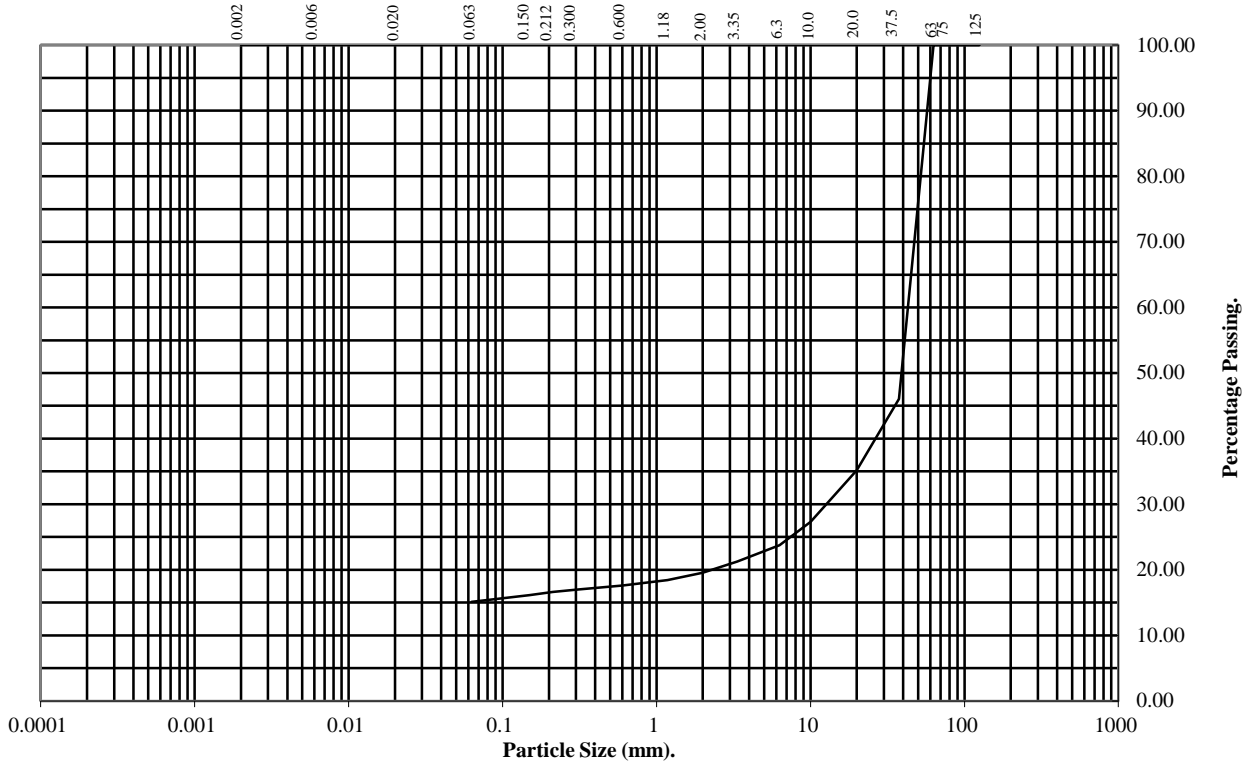
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP227 **Top Depth (m):** 1.40

Sample Number: 2 **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	46
20	35
10	27
6.3	24
3.35	21
2	20
1.18	18
0.6	18
0.3	17
0.212	17
0.15	16
0.063	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	80
Sand	5
Silt/Clay	15

Remarks:
See summary of soil descriptions.



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				Client Ref:

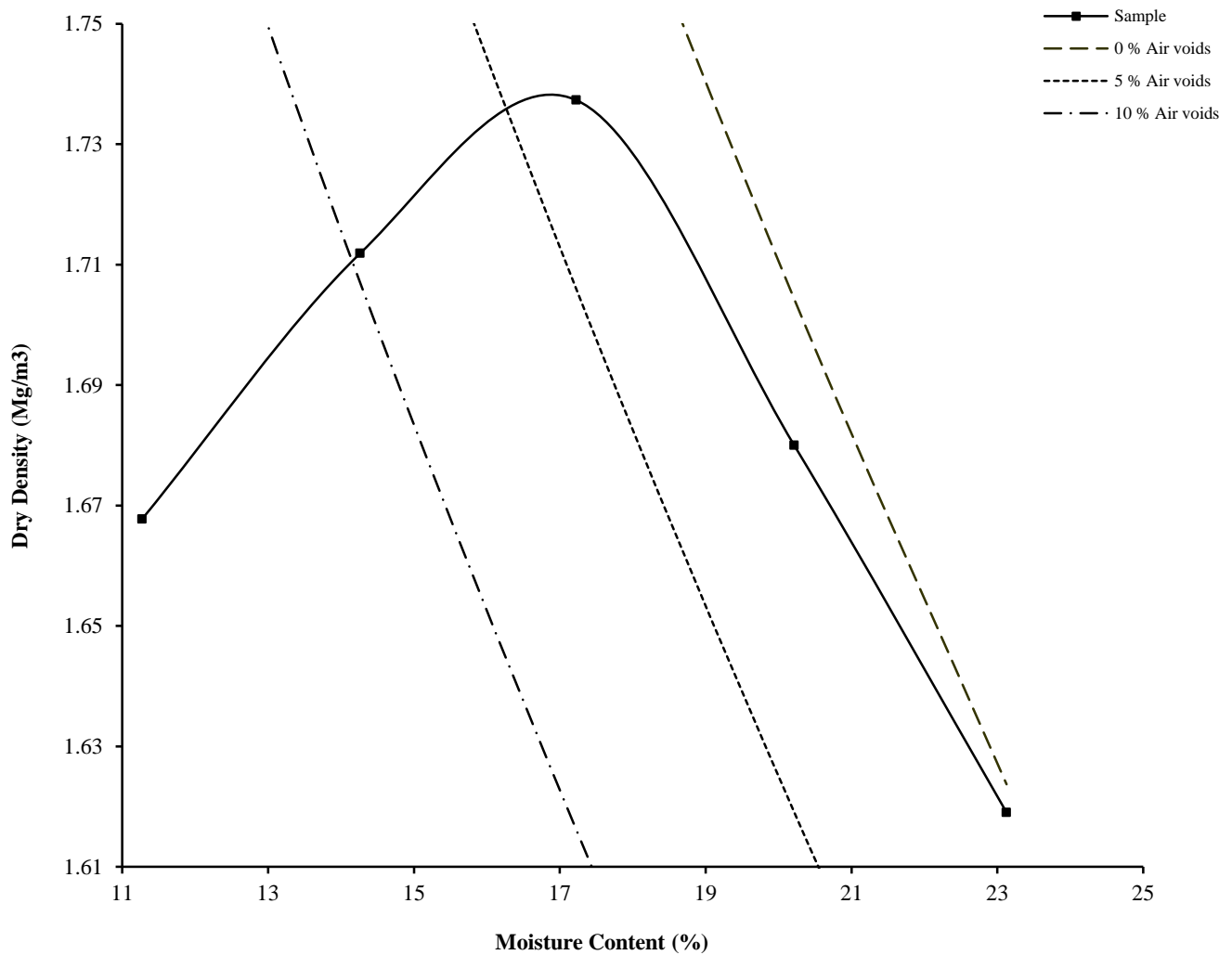
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP202 Top Depth (m) : 1.60

Sample Number: 1 Base Depth (m) :

Sample Type: B



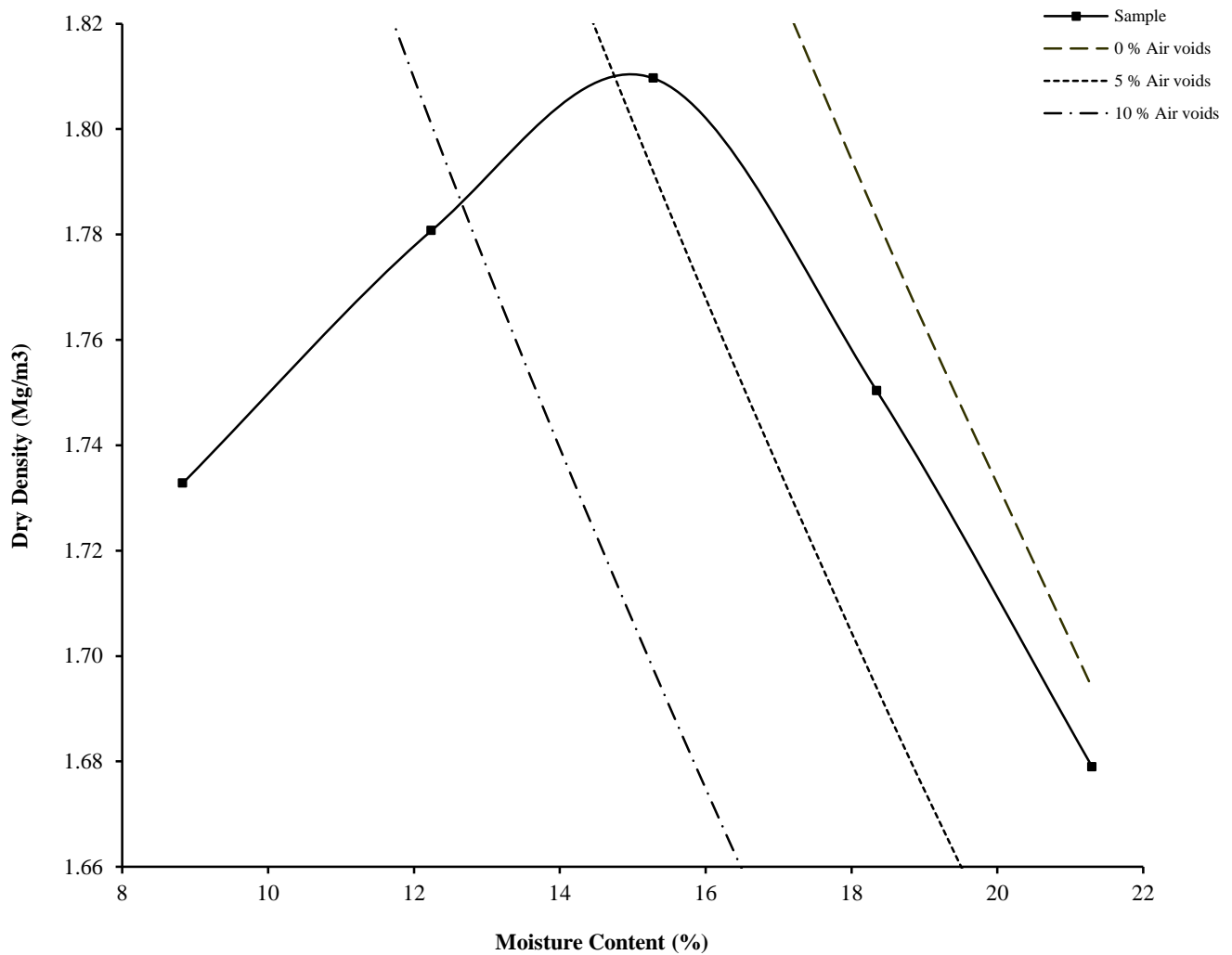
Initial Moisture Content:	20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.74		Material Retained on 20.0 mm Test Sieve (%):	9
Optimum Moisture Content (%):	17			
Remarks				
See summary of soil descriptions				

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP205 Top Depth (m) : 0.70
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



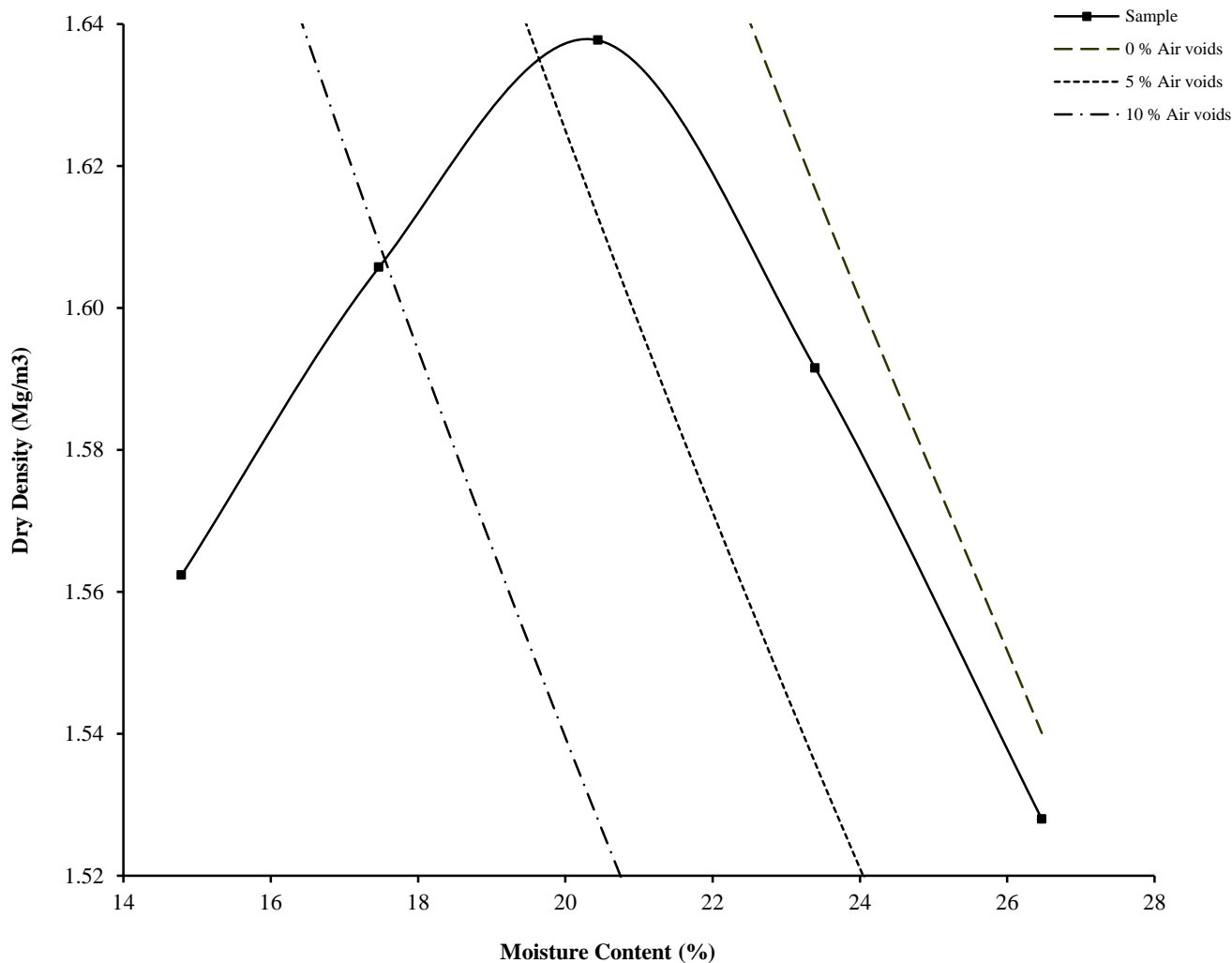
Initial Moisture Content:	15	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	8
Maximum Dry Density (Mg/m ³):	1.81		Material Retained on 20.0 mm Test Sieve (%):	12
Optimum Moisture Content (%):	15			
Remarks				
See summary of soil descriptions				

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP204 Top Depth (m) : 0.50
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



Initial Moisture Content:	23	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.64		Material Retained on 20.0 mm Test Sieve (%):	14
Optimum Moisture Content (%):	20			
Remarks See summary of soil descriptions				

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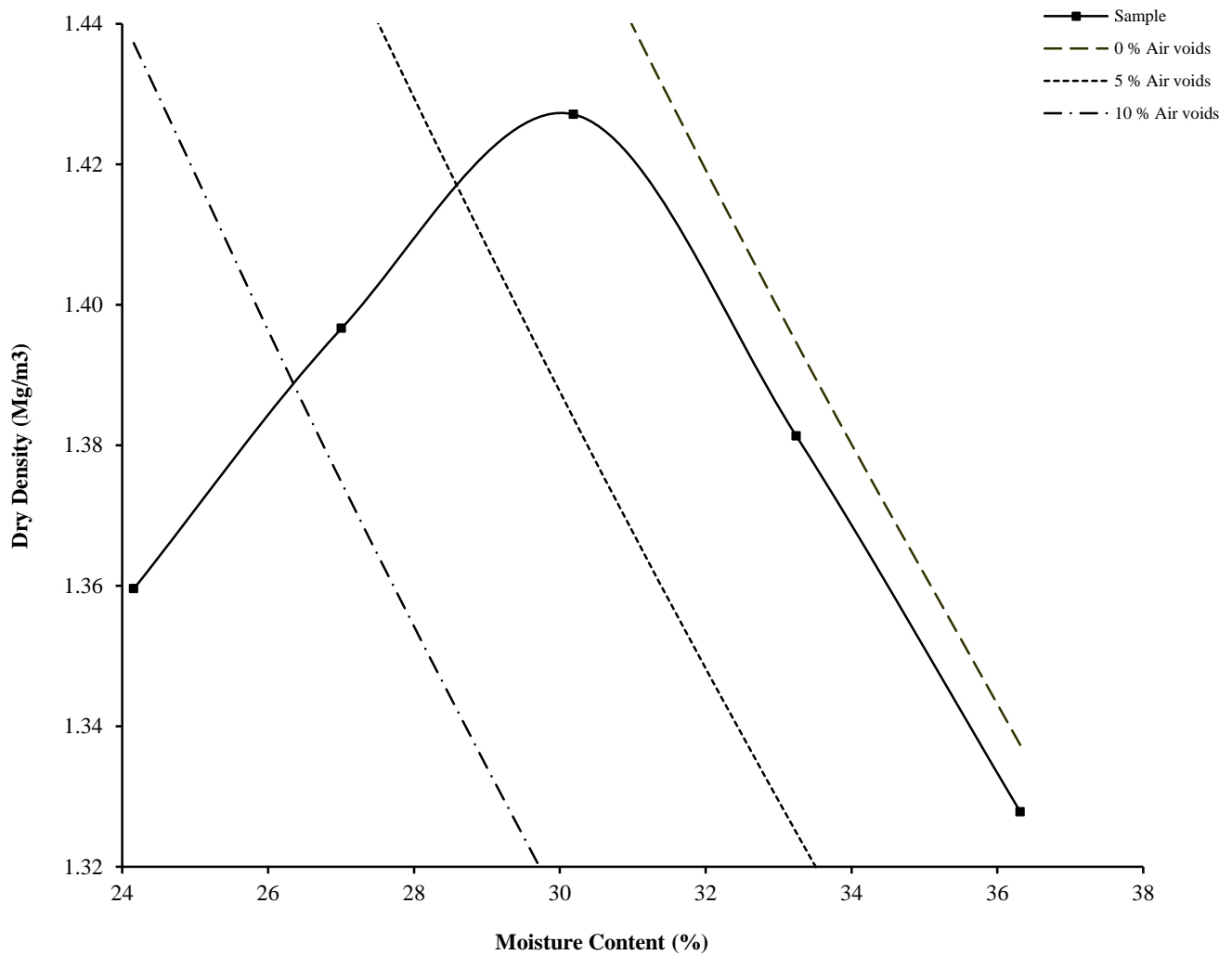
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP207 Top Depth (m) : 1.50

Sample Number: 1 Base Depth (m) :

Sample Type: B



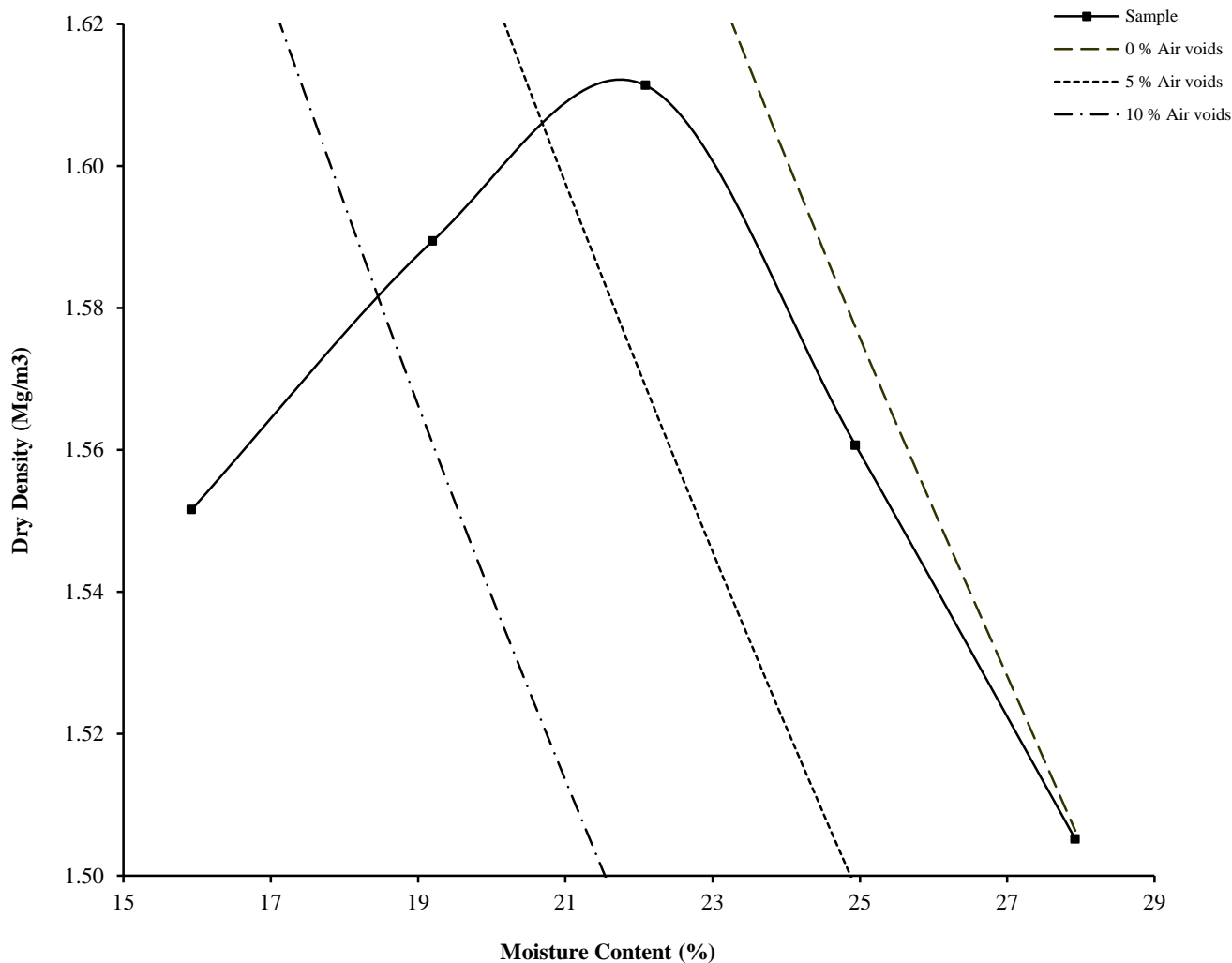
Initial Moisture Content:	33	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.43		Material Retained on 20.0 mm Test Sieve (%):	8
Optimum Moisture Content (%):	30			
Remarks				
See summary of soil descriptions				

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					Client Ref

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP210 Top Depth (m) : 1.00
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



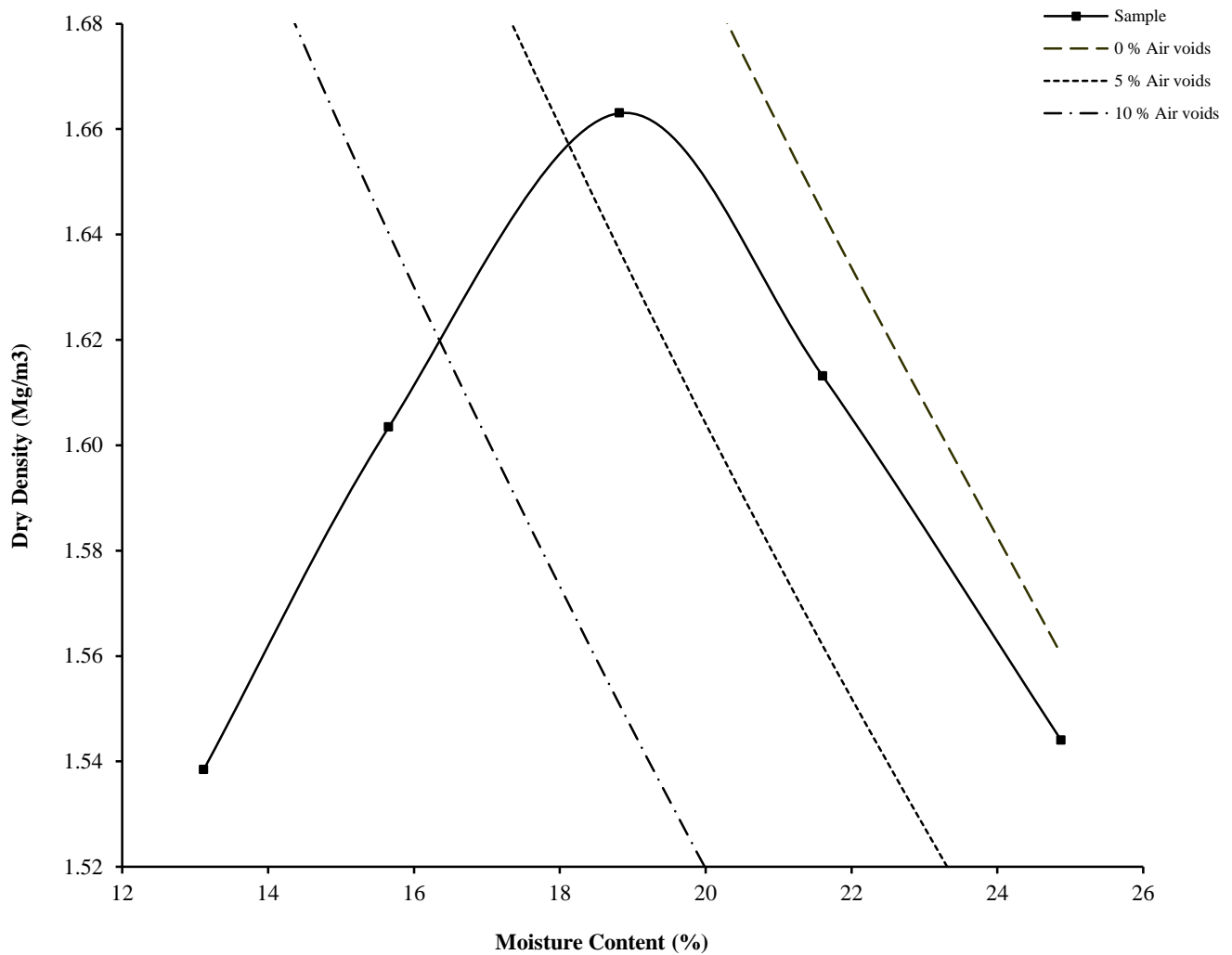
Initial Moisture Content:	22	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	9
Maximum Dry Density (Mg/m ³):	1.61		Material Retained on 20.0 mm Test Sieve (%):	10
Optimum Moisture Content (%):	22			
Remarks				
See summary of soil descriptions				

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP214 Top Depth (m) : 0.50
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



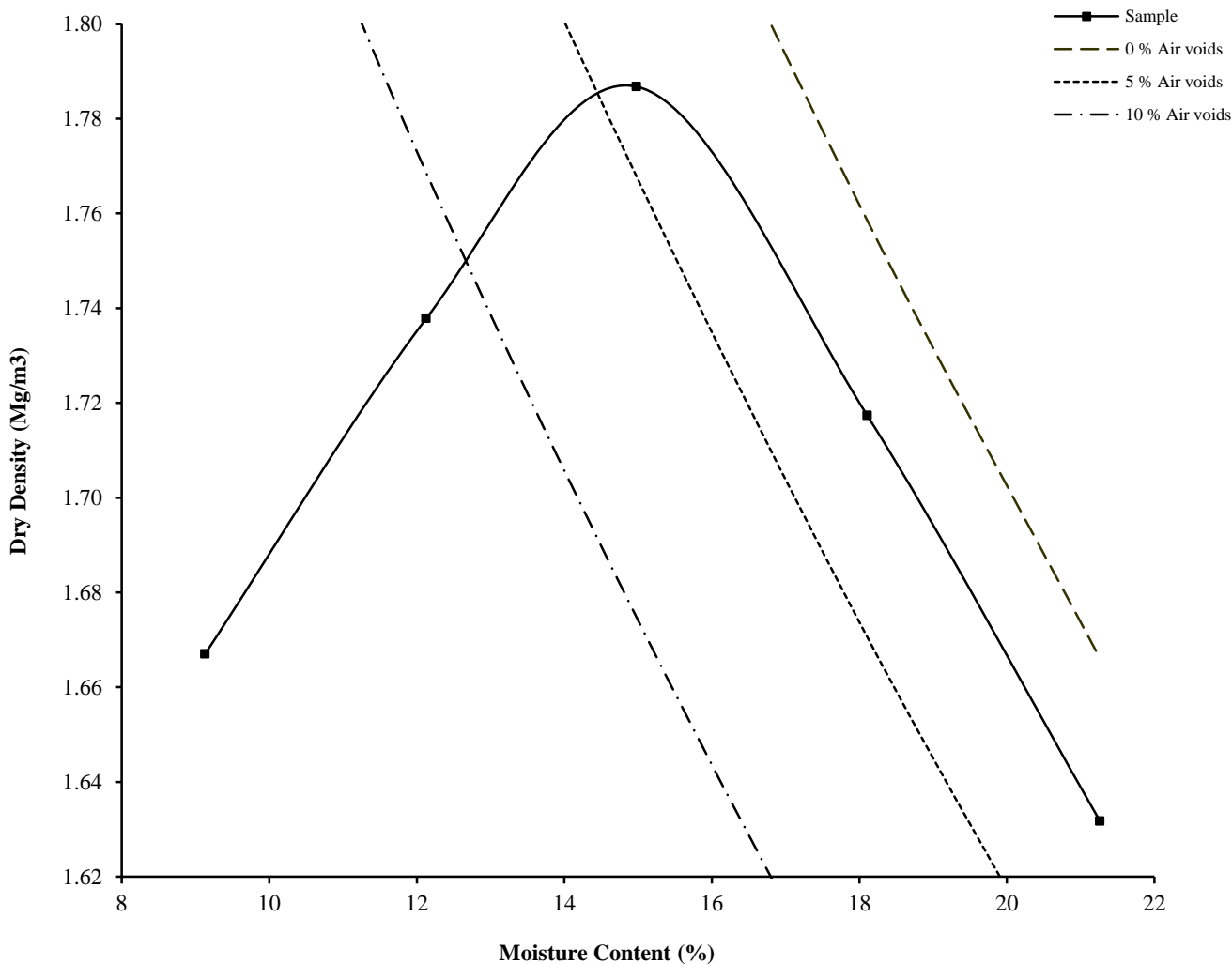
Initial Moisture Content:	22	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.55	Assumed	Material Retained on 37.5 mm Test Sieve (%):	8
Maximum Dry Density (Mg/m ³):	1.66		Material Retained on 20.0 mm Test Sieve (%):	14
Optimum Moisture Content (%):	19			
Remarks				
See summary of soil descriptions				

	Checked / Approved		Date	09/06/16	Contract No.
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					Client Ref

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number: TP218 Top Depth (m) : 1.40
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



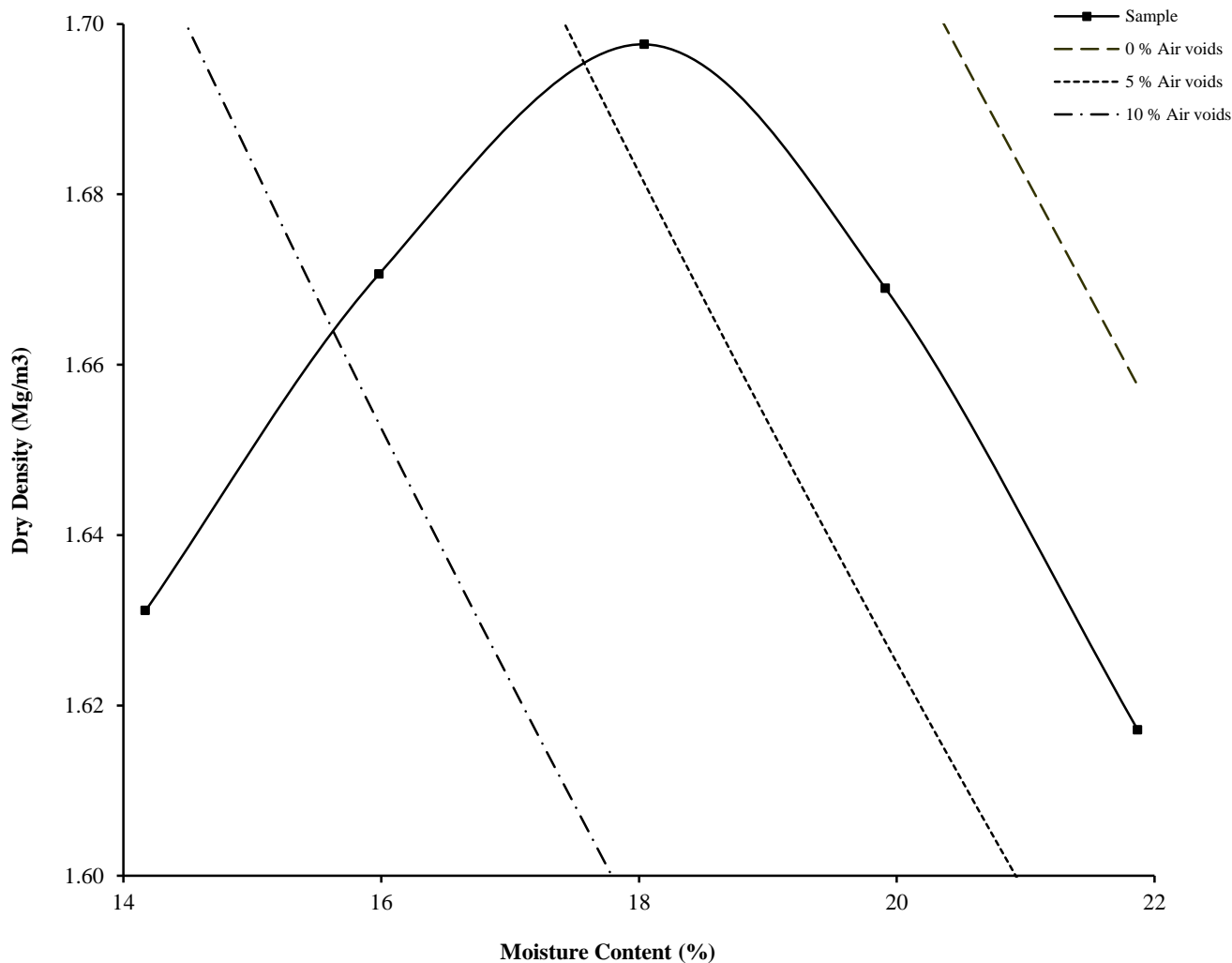
Initial Moisture Content:	18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.58	Assumed	Material Retained on 37.5 mm Test Sieve (%):	10
Maximum Dry Density (Mg/m ³):	1.79		Material Retained on 20.0 mm Test Sieve (%):	16
Optimum Moisture Content (%):	15			
Remarks				
See summary of soil descriptions				

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					Client Ref

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : 1990

Hole Number: TP229 Top Depth (m) : 0.70
 Sample Number: 1 Base Depth (m) :
 Sample Type: B



Initial Moisture Content:	20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	47
Maximum Dry Density (Mg/m ³):	1.70		Material Retained on 20.0 mm Test Sieve (%):	12
Optimum Moisture Content (%):	18			
Remarks				
See summary of soil descriptions				

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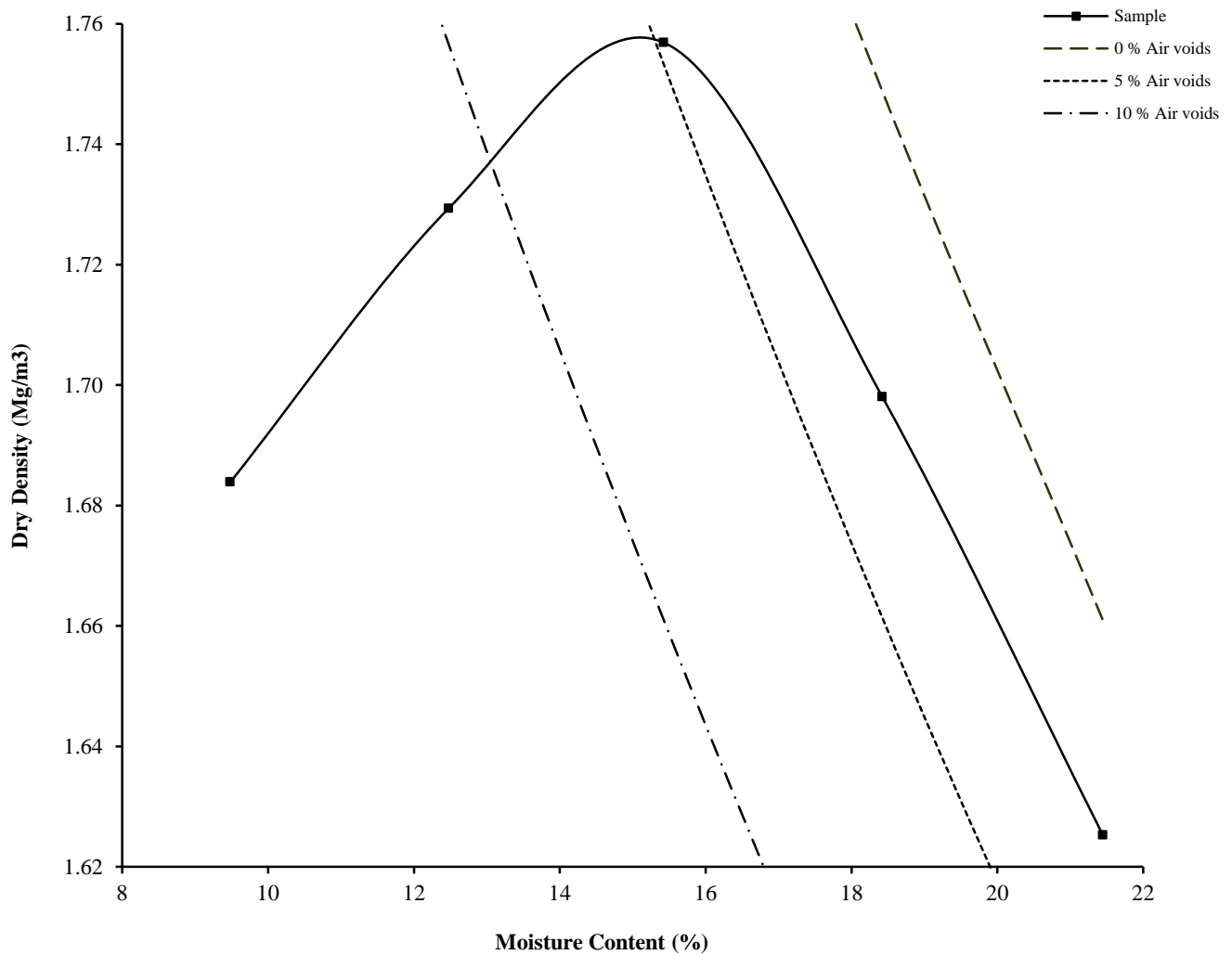
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : 1990

Hole Number: TP230 Top Depth (m) : 0.50

Sample Number: 1 Base Depth (m) :

Sample Type: B



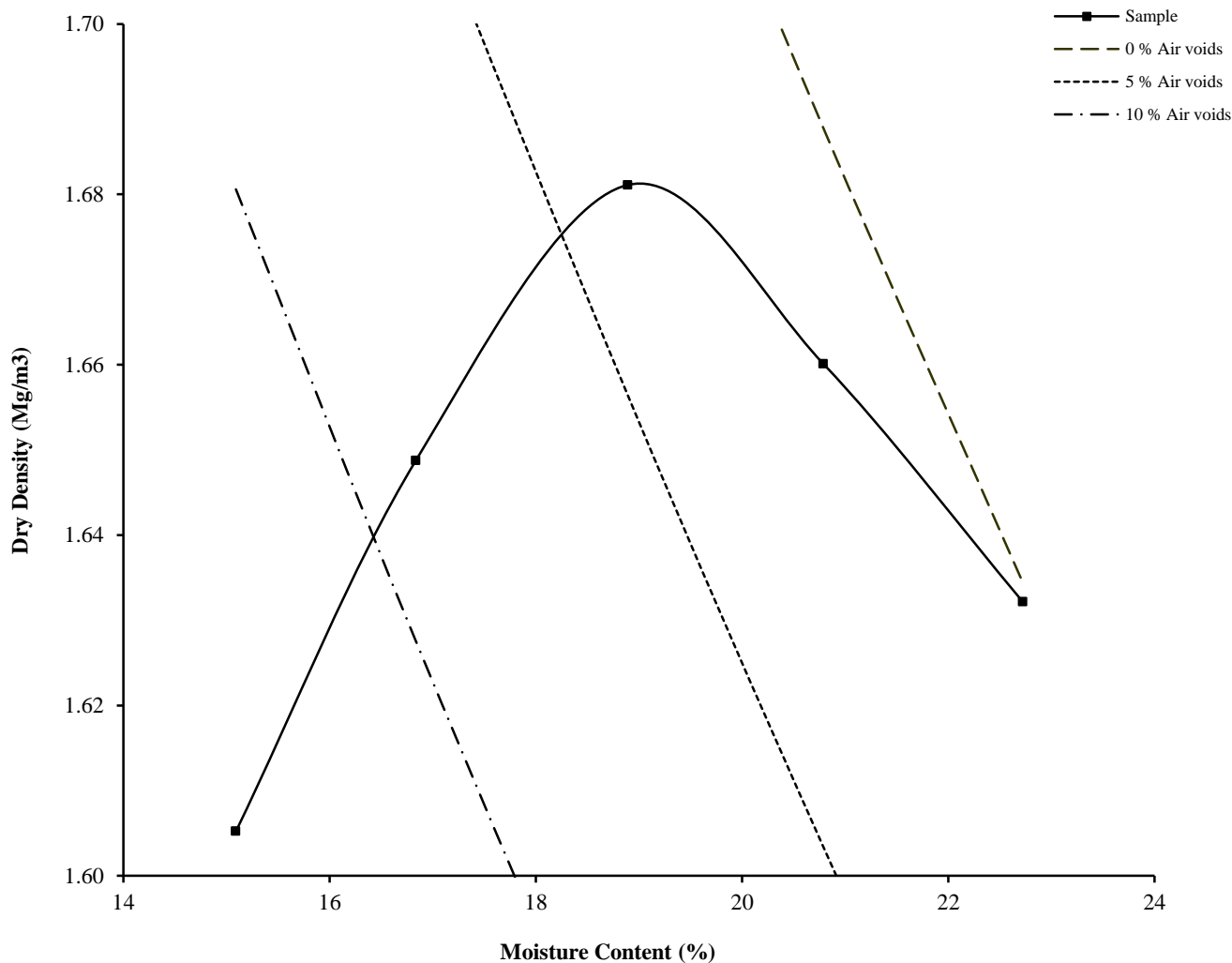
Initial Moisture Content:	18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.58	Assumed	Material Retained on 37.5 mm Test Sieve (%):	17
Maximum Dry Density (Mg/m ³):	1.76		Material Retained on 20.0 mm Test Sieve (%):	15
Optimum Moisture Content (%):	15			
Remarks				
See summary of soil descriptions				

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : 1990

Hole Number: TP227 Top Depth (m) : 1.40
 Sample Number: 2 Base Depth (m) :
 Sample Type: B



Initial Moisture Content:	21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	54
Maximum Dry Density (Mg/m ³):	1.68	Material Retained on 20.0 mm Test Sieve (%):	11	
Optimum Moisture Content (%):	19			
Remarks				
See summary of soil descriptions				

	Checked / Approved		Date	09/06/16	Contract No.
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

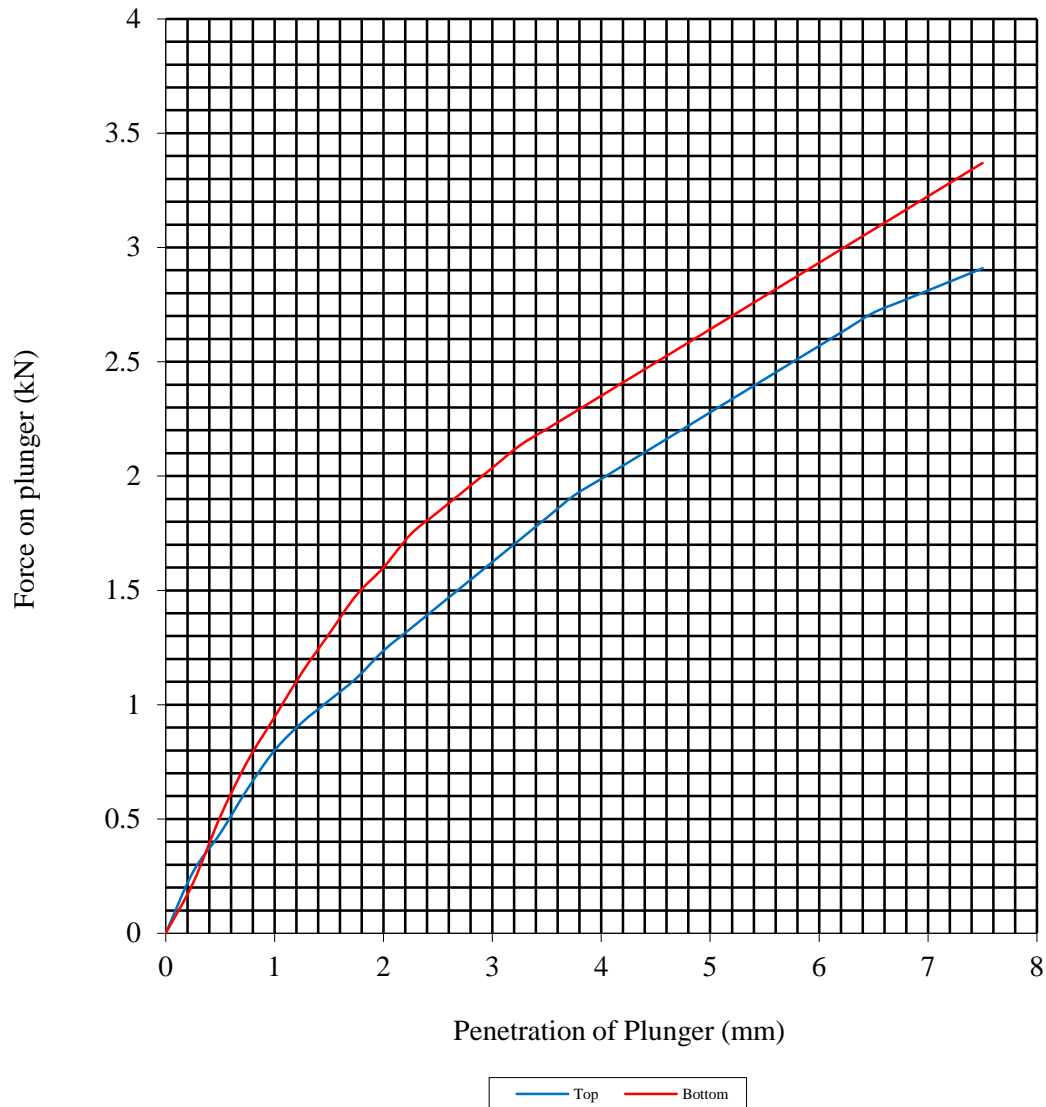
Hole Number: TP202

Top Depth (m): 1.60




Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	17	Surcharge Kg:	4.20	Sample Top	17	Sample Top	11.4
Bulk Density Mg/m ³ :	2.04	Soaking Time hrs	0	Sample Bottom	17	Sample Bottom	14.0
Dry Density Mg/m ³ :	1.74	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			9				
Compaction Conditions		2.5kg Rammer					

 	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

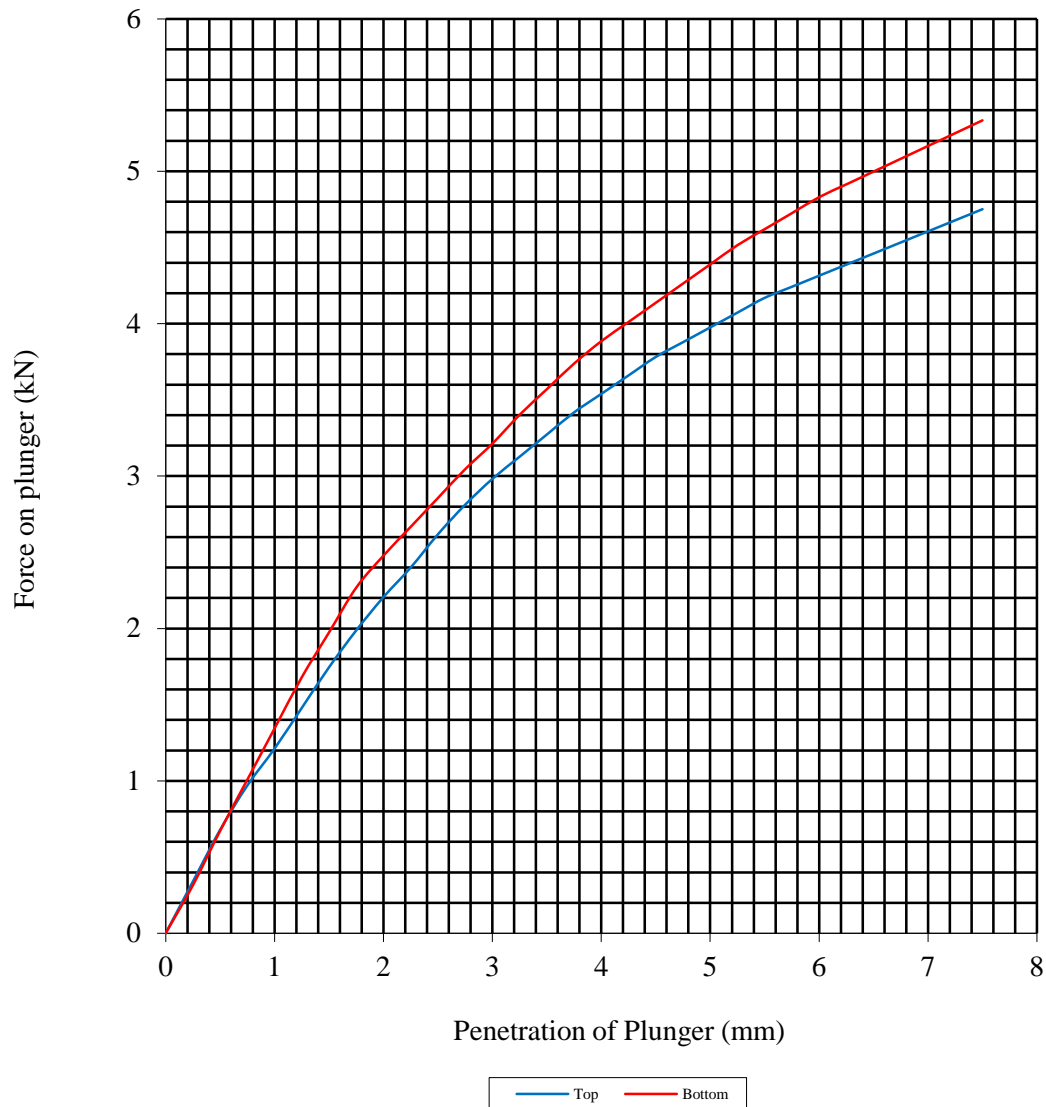
Hole Number: TP205

Top Depth (m): 0.70



Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	19.9
Bulk Density Mg/m ³ :	2.07	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	21.9
Dry Density Mg/m ³ :	1.81	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			20				
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

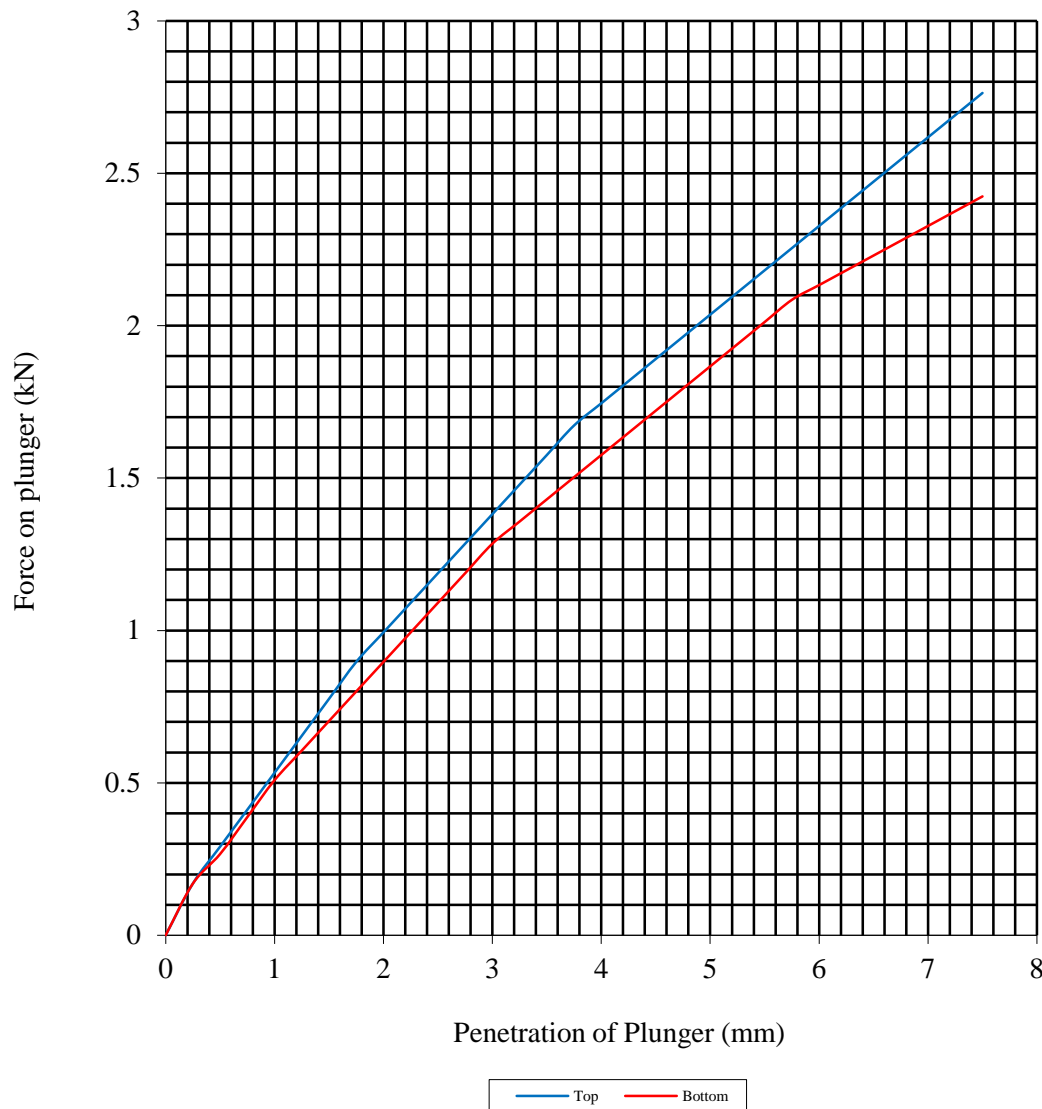
Hole Number: **TP204**

Top Depth (m): **0.50**



Sample Number: **1**

Base Depth (m):

Sample Type: **B**



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	20	Surcharge Kg:	4.20	Sample Top	20	Sample Top	10.2
Bulk Density Mg/m ³ :	1.98	Soaking Time hrs	0	Sample Bottom	20	Sample Bottom	9.3
Dry Density Mg/m ³ :	1.64	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:		14					
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

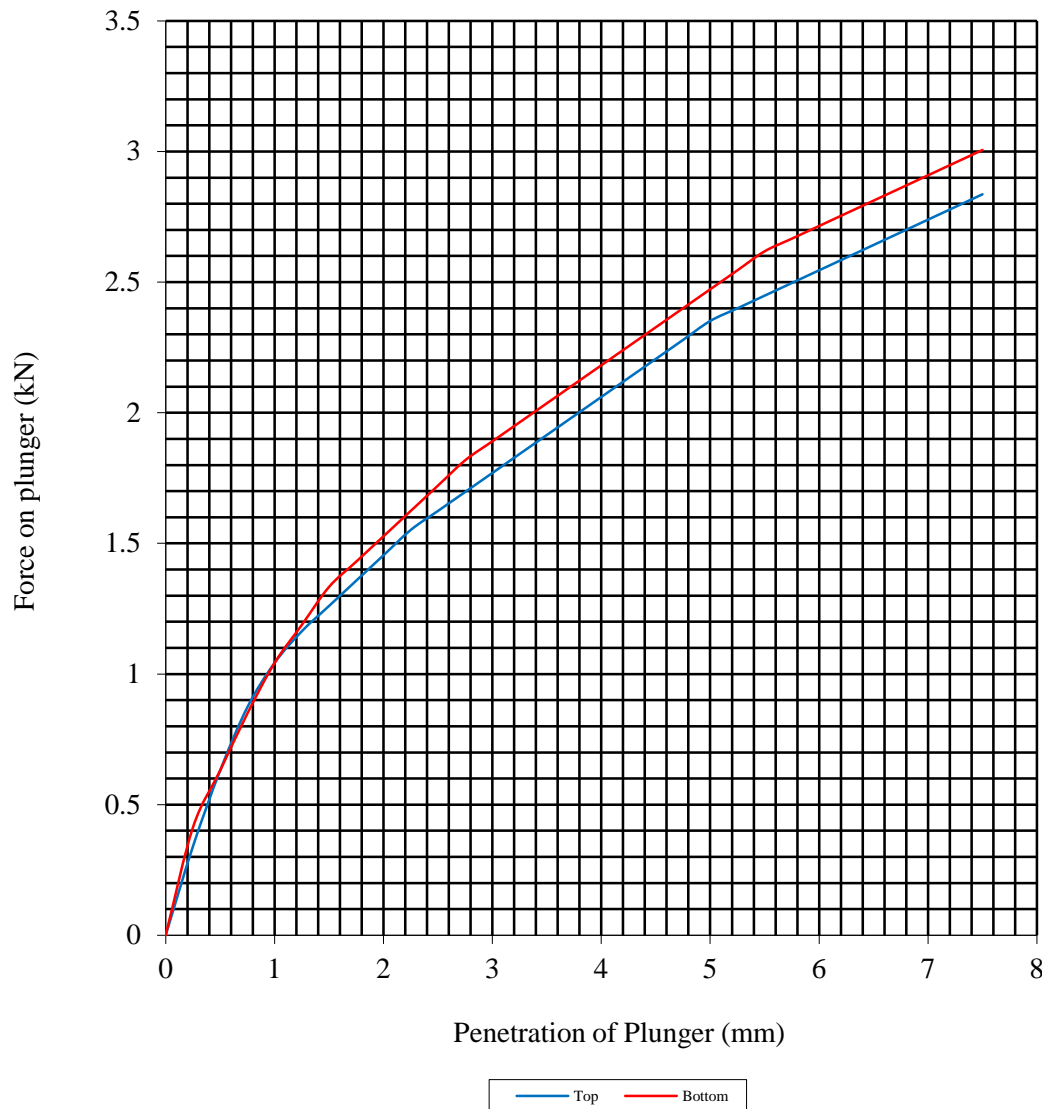
Hole Number: TP207

Top Depth (m): 1.50



Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	30	Surcharge Kg:	4.20	Sample Top	30	Sample Top	12.3
Bulk Density Mg/m ³ :	1.85	Soaking Time hrs	0	Sample Bottom	30	Sample Bottom	13.0
Dry Density Mg/m ³ :	1.43	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			8				
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

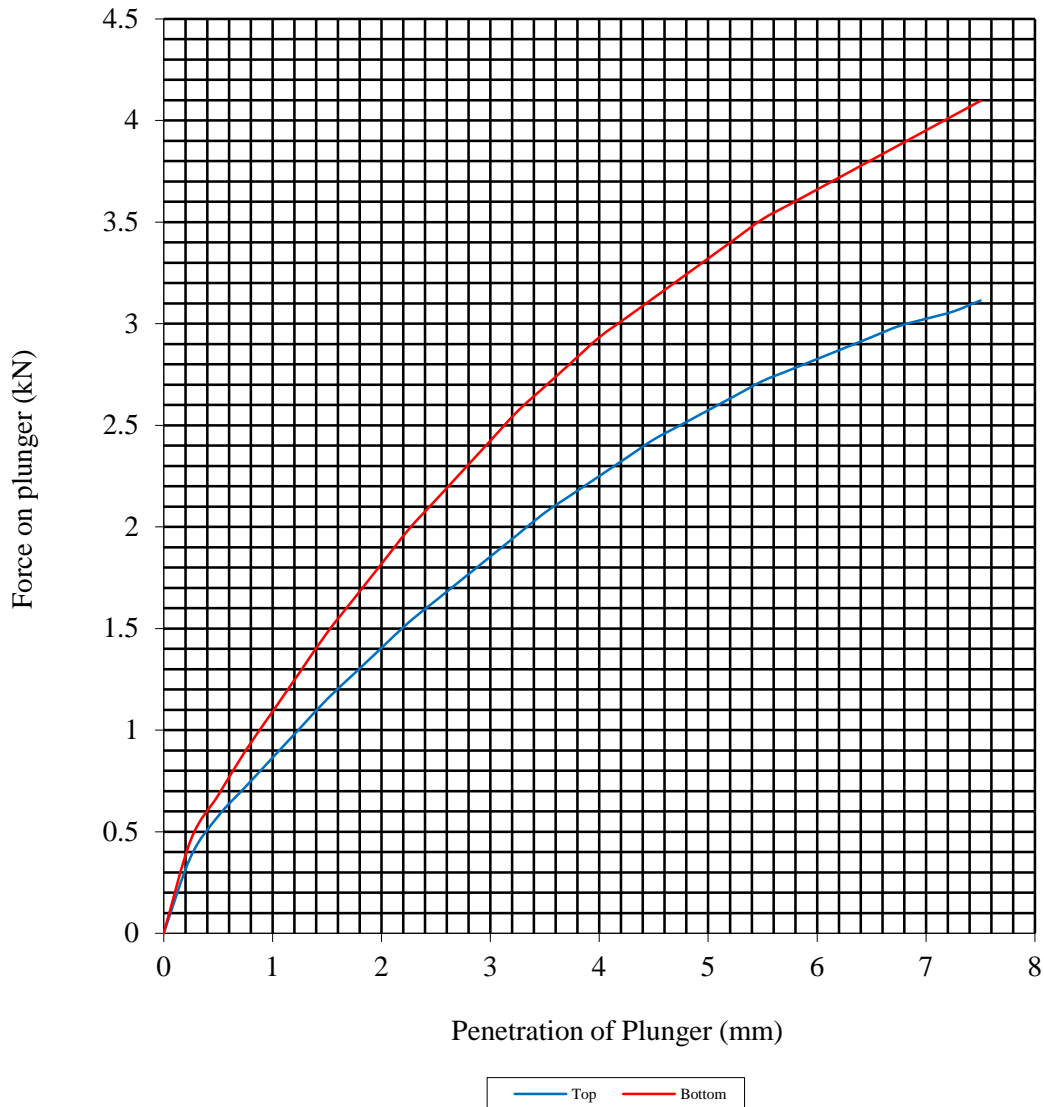
Hole Number: **TP210**

Top Depth (m): **1.00**



Sample Number: **1**

Base Depth (m):

Sample Type: **B**



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	22	Surcharge Kg:	4.20	Sample Top	22	Sample Top	12.9
Bulk Density Mg/m ³ :	1.97	Soaking Time hrs	0	Sample Bottom	22	Sample Bottom	16.6
Dry Density Mg/m ³ :	1.61	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:		19					
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

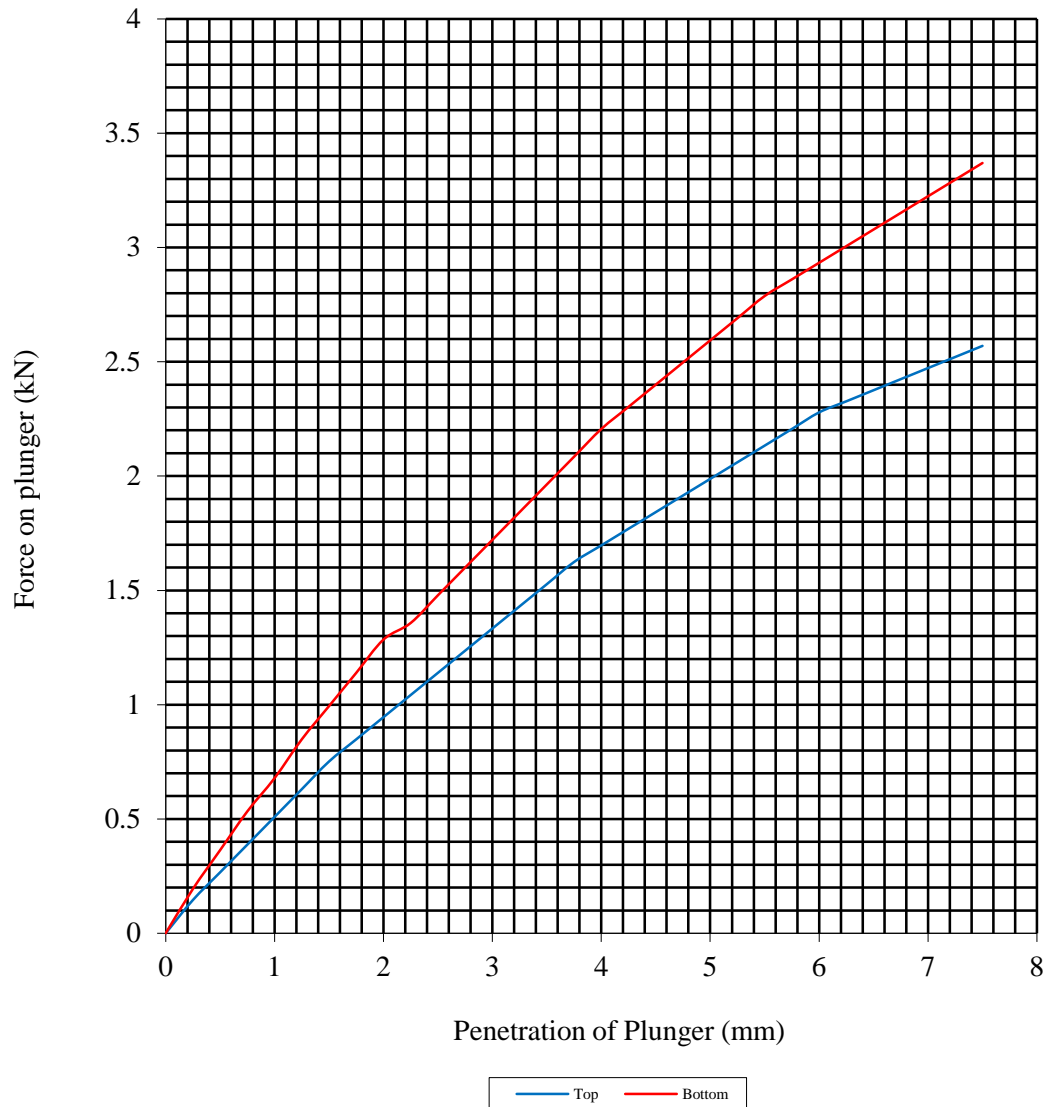
Hole Number: **TP214**

Top Depth (m): **0.50**



Sample Number: **1**

Base Depth (m):

Sample Type: **B**



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	19	Surcharge Kg:	4.20	Sample Top	19	Sample Top	9.9
Bulk Density Mg/m ³ :	1.98	Soaking Time hrs	0	Sample Bottom	19	Sample Bottom	13.0
Dry Density Mg/m ³ :	1.66	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			22				
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

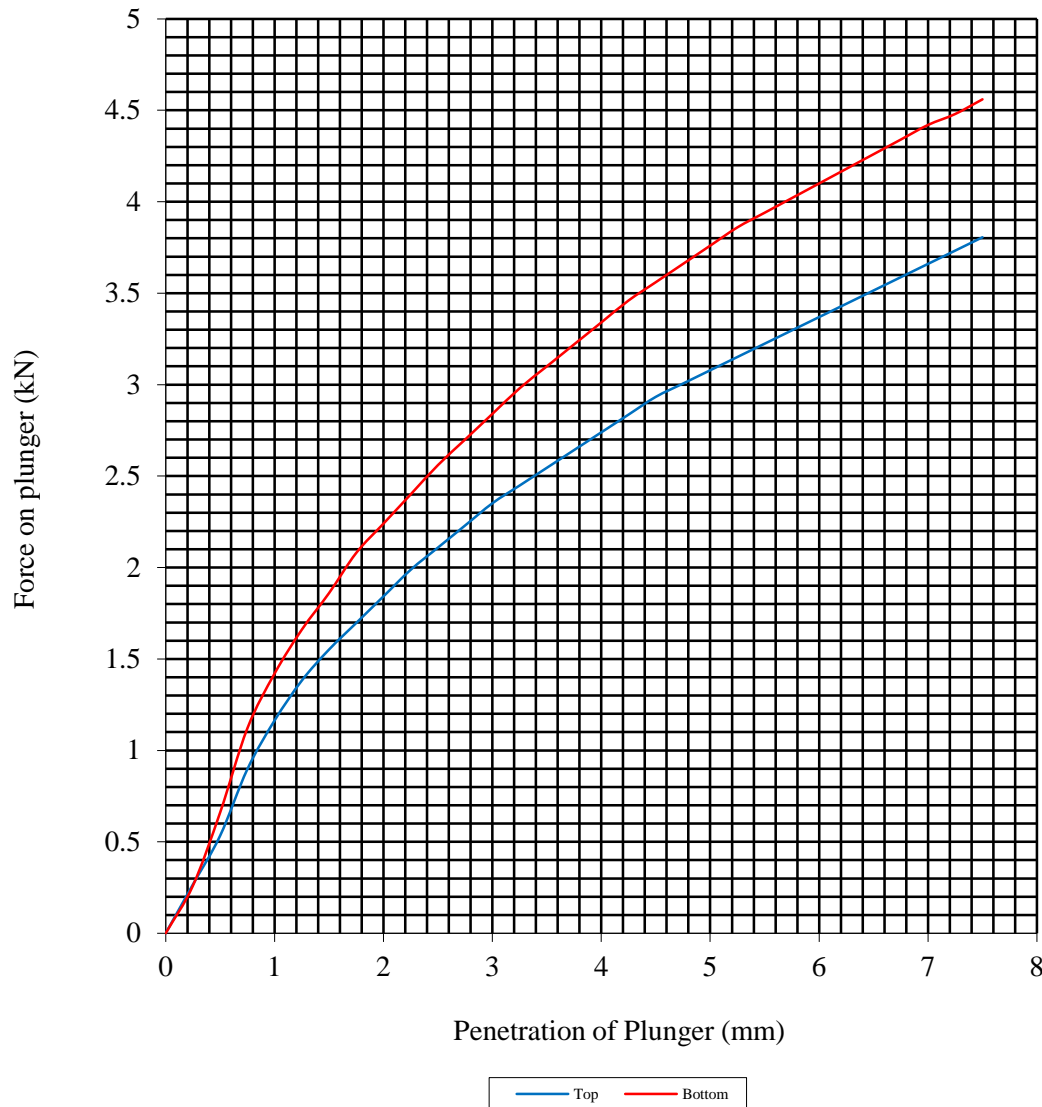
Hole Number: TP218

Top Depth (m): 1.40



Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	16.0
Bulk Density Mg/m ³ :	2.06	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	19.4
Dry Density Mg/m ³ :	1.79	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			26				
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

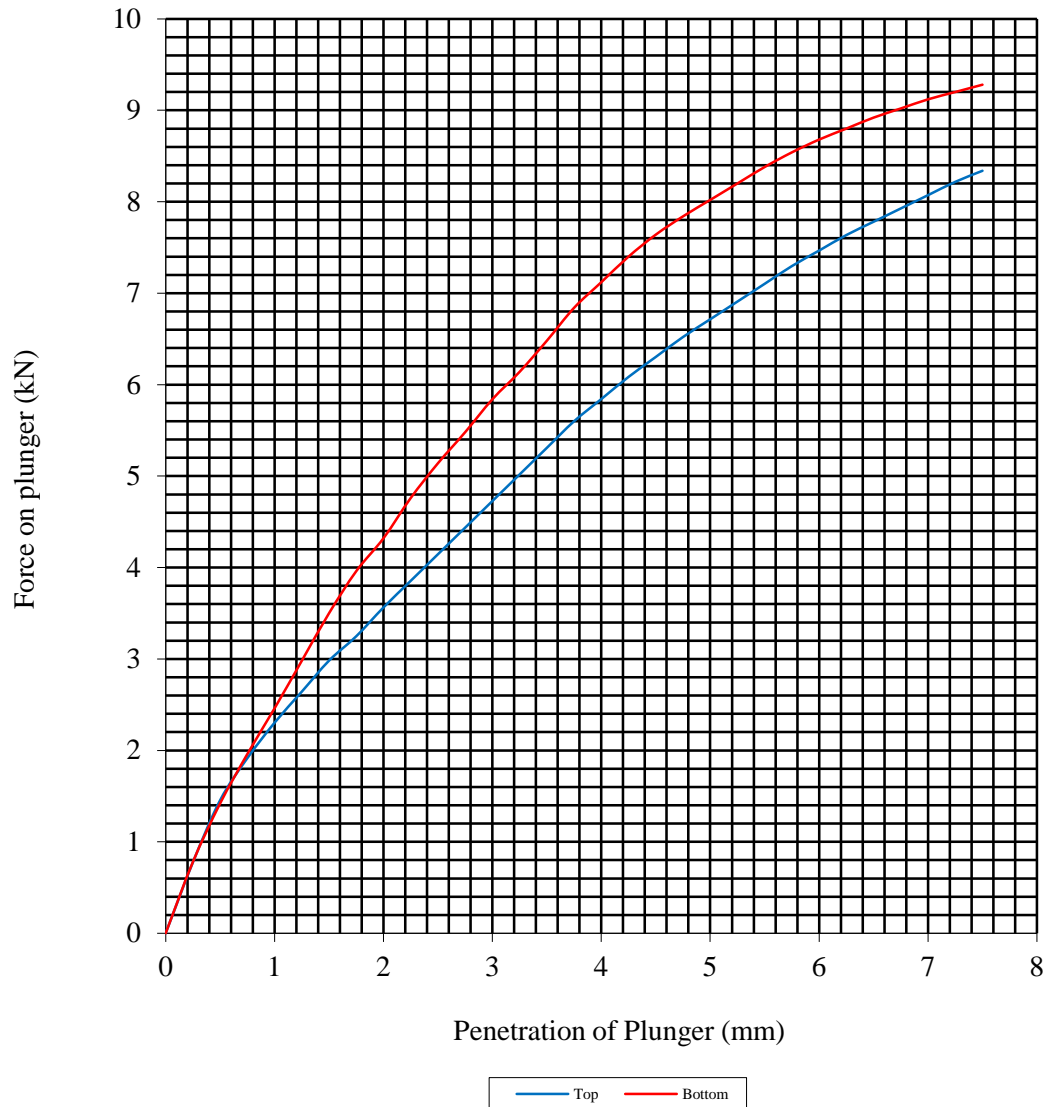
Hole Number: TP229

Top Depth (m): 0.70




Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.20	Sample Top	18	Sample Top	33.6
Bulk Density Mg/m3:	2.01	Soaking Time hrs	0	Sample Bottom	18	Sample Bottom	40.1
Dry Density Mg/m3:	1.70	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			59				
Compaction Conditions		2.5kg Rammer					

 	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

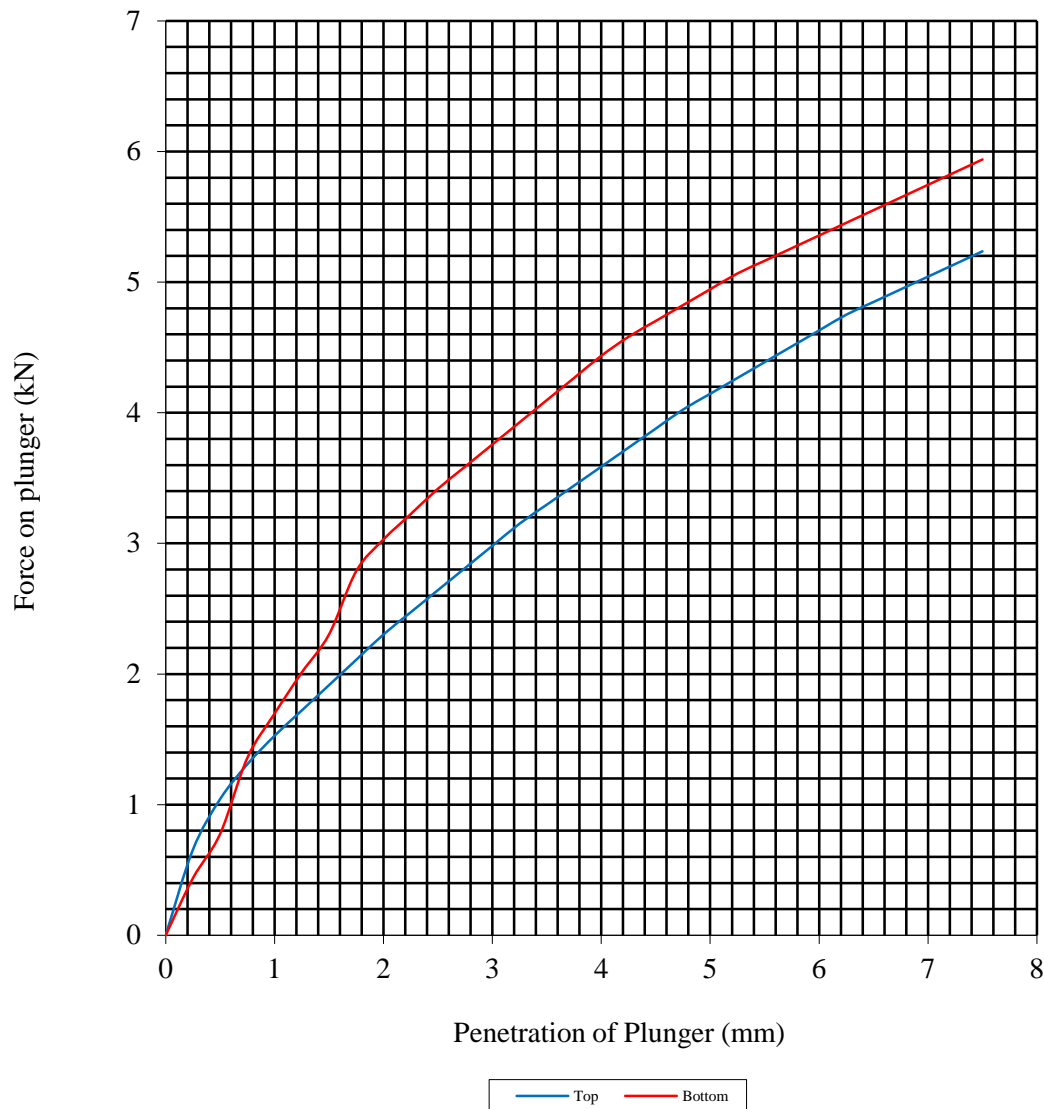
Hole Number: TP230

Top Depth (m): 0.50



Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	20.7
Bulk Density Mg/m ³ :	2.03	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	25.9
Dry Density Mg/m ³ :	1.76	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:			32				
Compaction Conditions		2.5kg Rammer					

 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

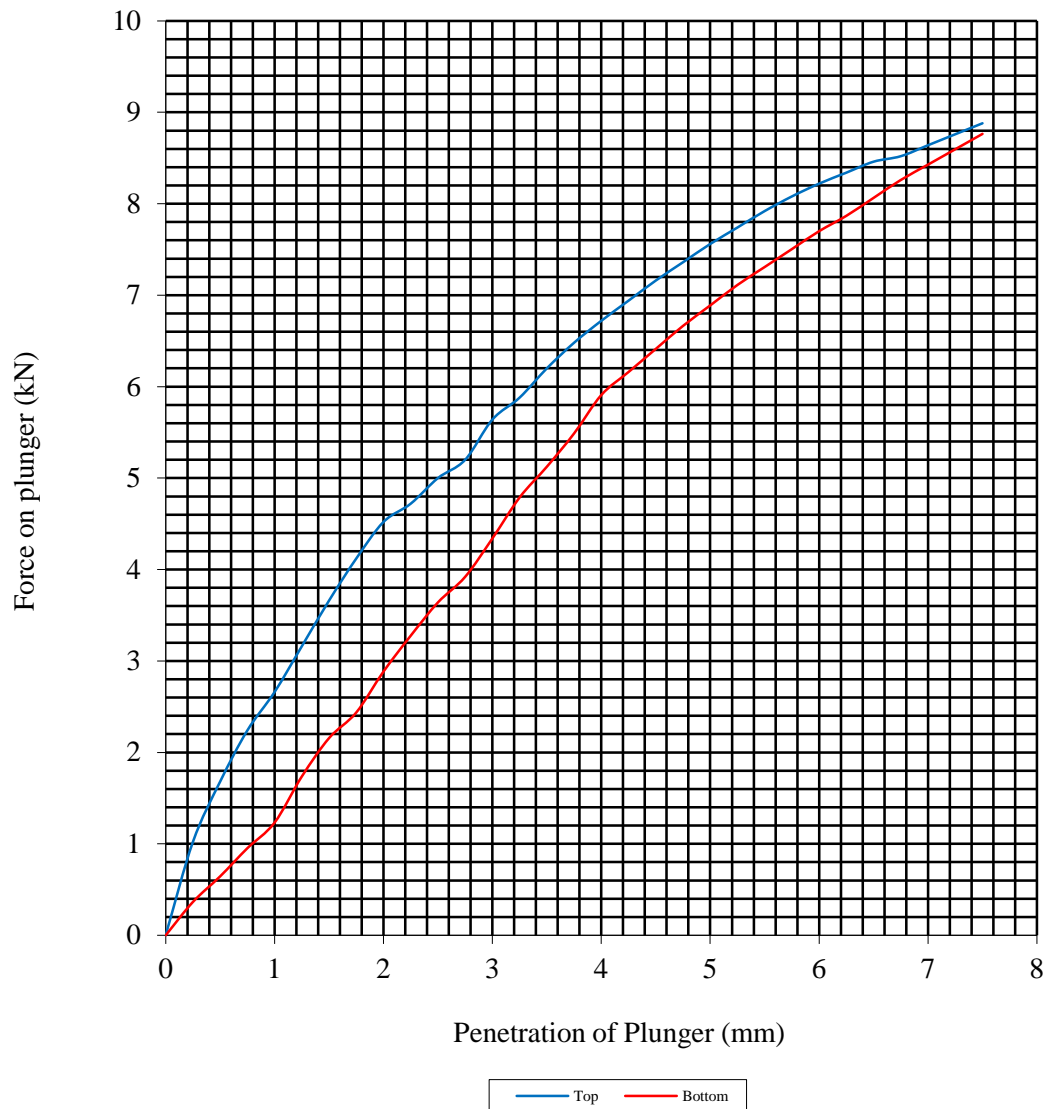
Hole Number: TP227

Top Depth (m): 1.40



Sample Number: 2

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	19	Surcharge Kg:	4.20	Sample Top	19	Sample Top	37.9
Bulk Density Mg/m3:	2.00	Soaking Time hrs	0	Sample Bottom	19	Sample Bottom	34.4
Dry Density Mg/m3:	1.68	Swelling mm:	0	Remarks: See summary of soil descriptions. Sample recompacted at Optimum Moisture Content.			
Percentage retained on 20mm BS test sieve:		65					
Compaction Conditions		2.5kg Rammer					

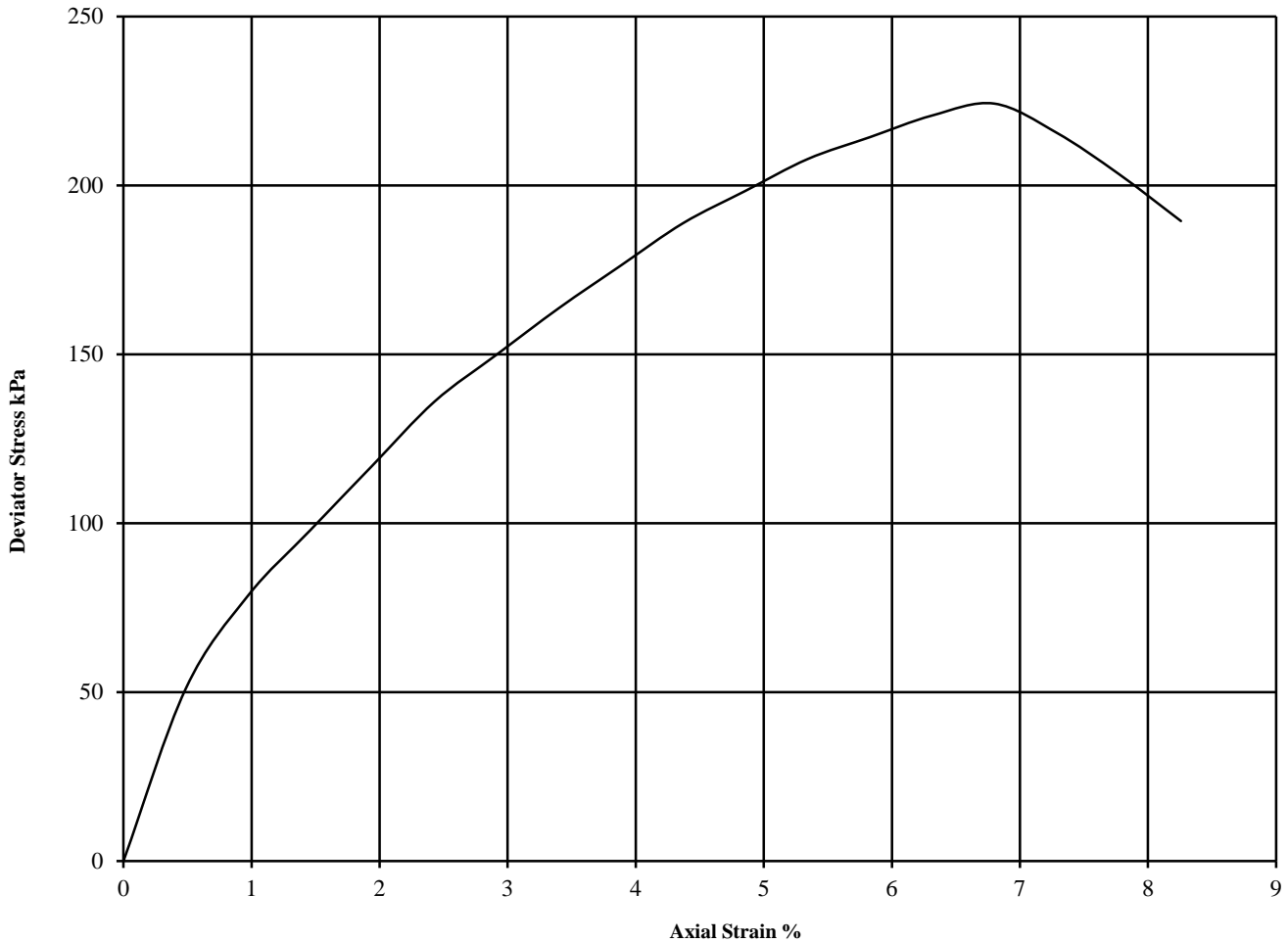
 PSL Professional Soils Laboratory	Checked / Approved		Date	09/06/16	Contract No:
	Land West of Hemel Hempstead (ICO101380)				PSL16/2188
					Client Ref:

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: BH202 Top Depth (m): 1.20
 Sample Number: 1 Base Depth (m):
 Sample Type: U



Diameter (mm):		102.0		Height (mm):		210.0		Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions.		
1	31	1.82	1.39	20	224	112	6.8	Brittle			

	Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
	Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

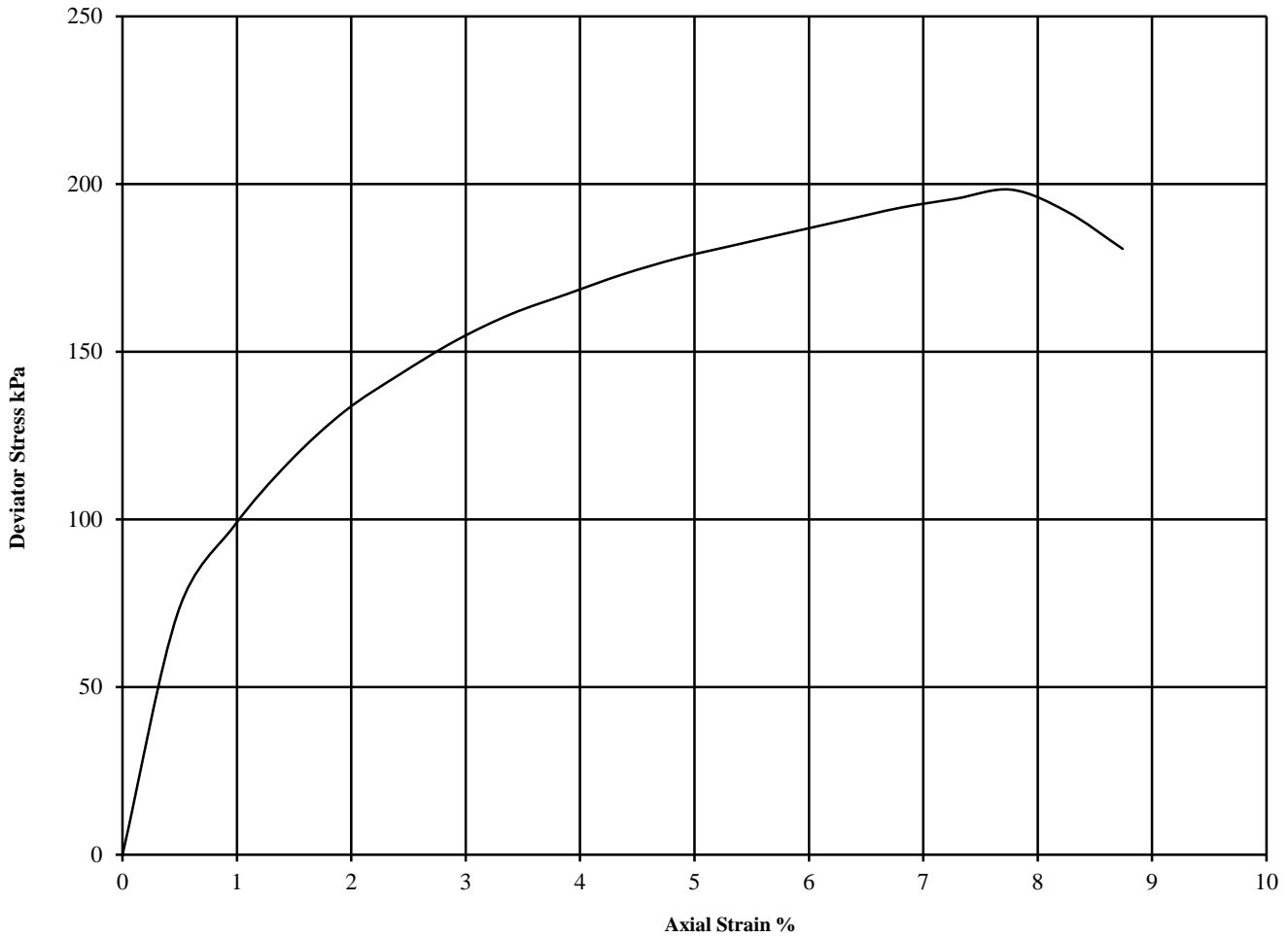
Hole Number: BH202

Top Depth (m): 3.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0		Height (mm):		210.0		Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions.		
1	27	1.85	1.45	60	198	99	7.8	Brittle			



Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

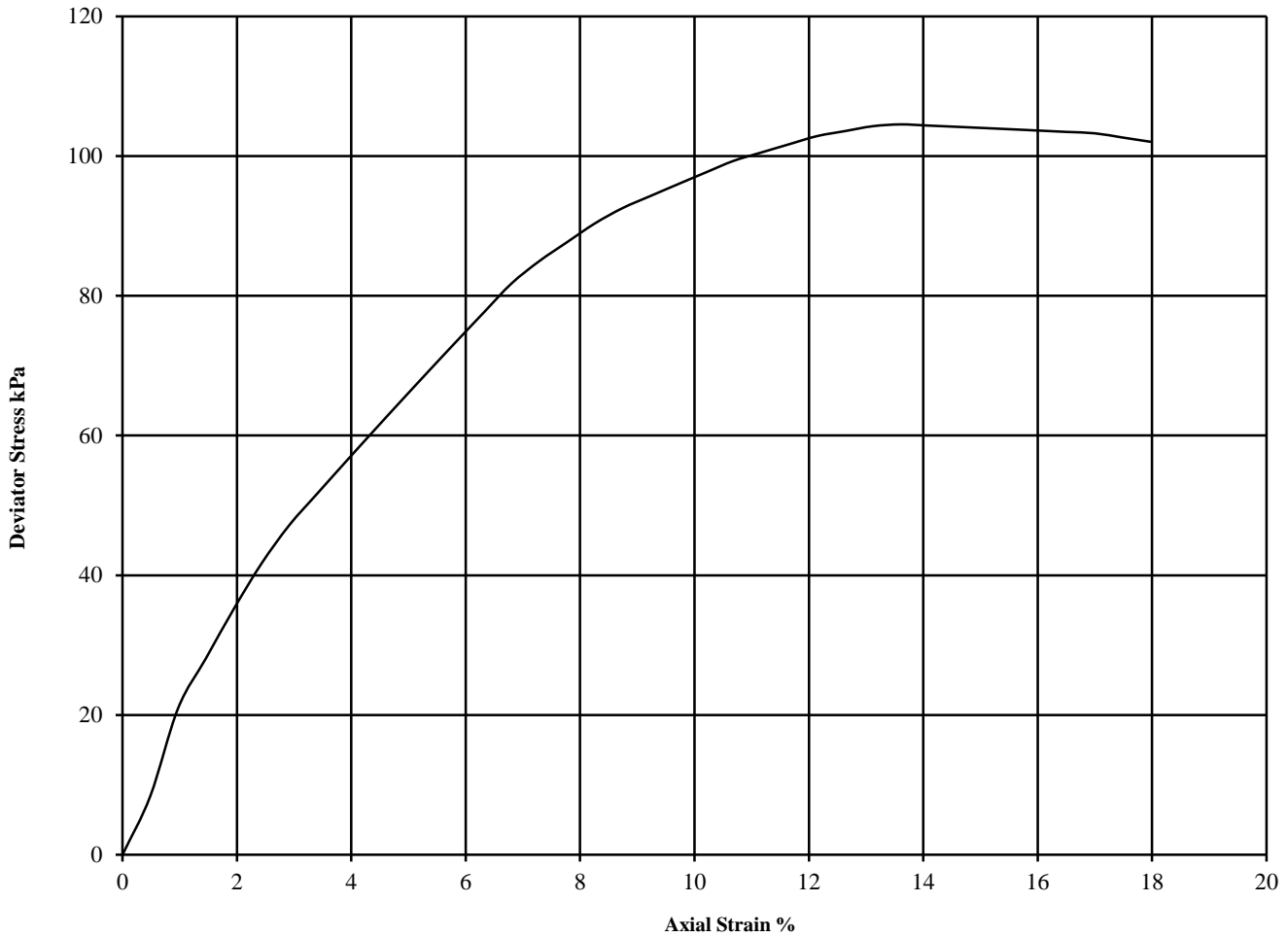
Hole Number: BH203

Top Depth (m): 1.20

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions.
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	25	1.99	1.59	20	105	52	13.6	Plastic	



Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

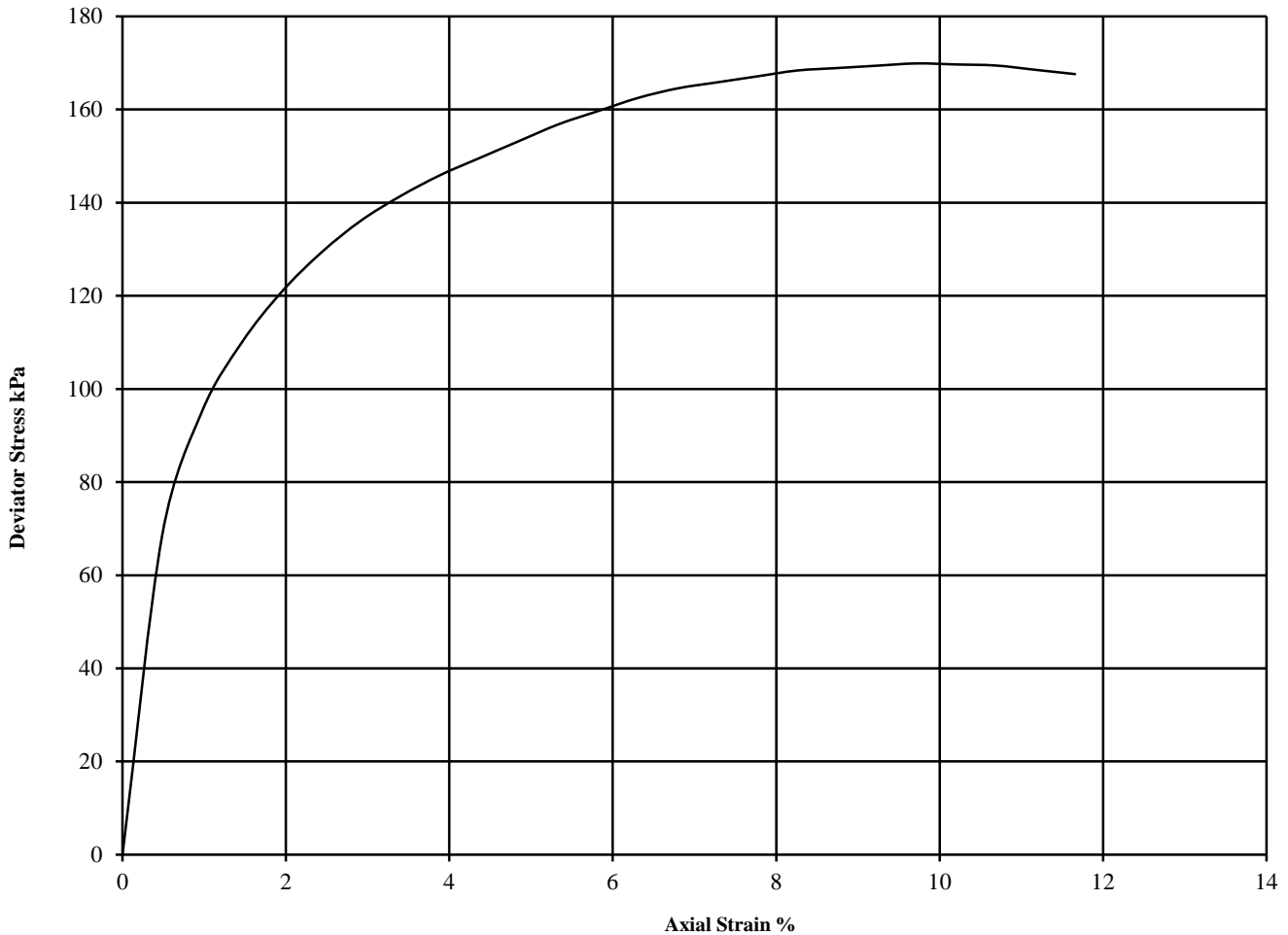
Hole Number: BH203

Top Depth (m): 3.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions.
			θ_3	θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	25	1.82	1.45	60	170	85	9.7	Plastic	



Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

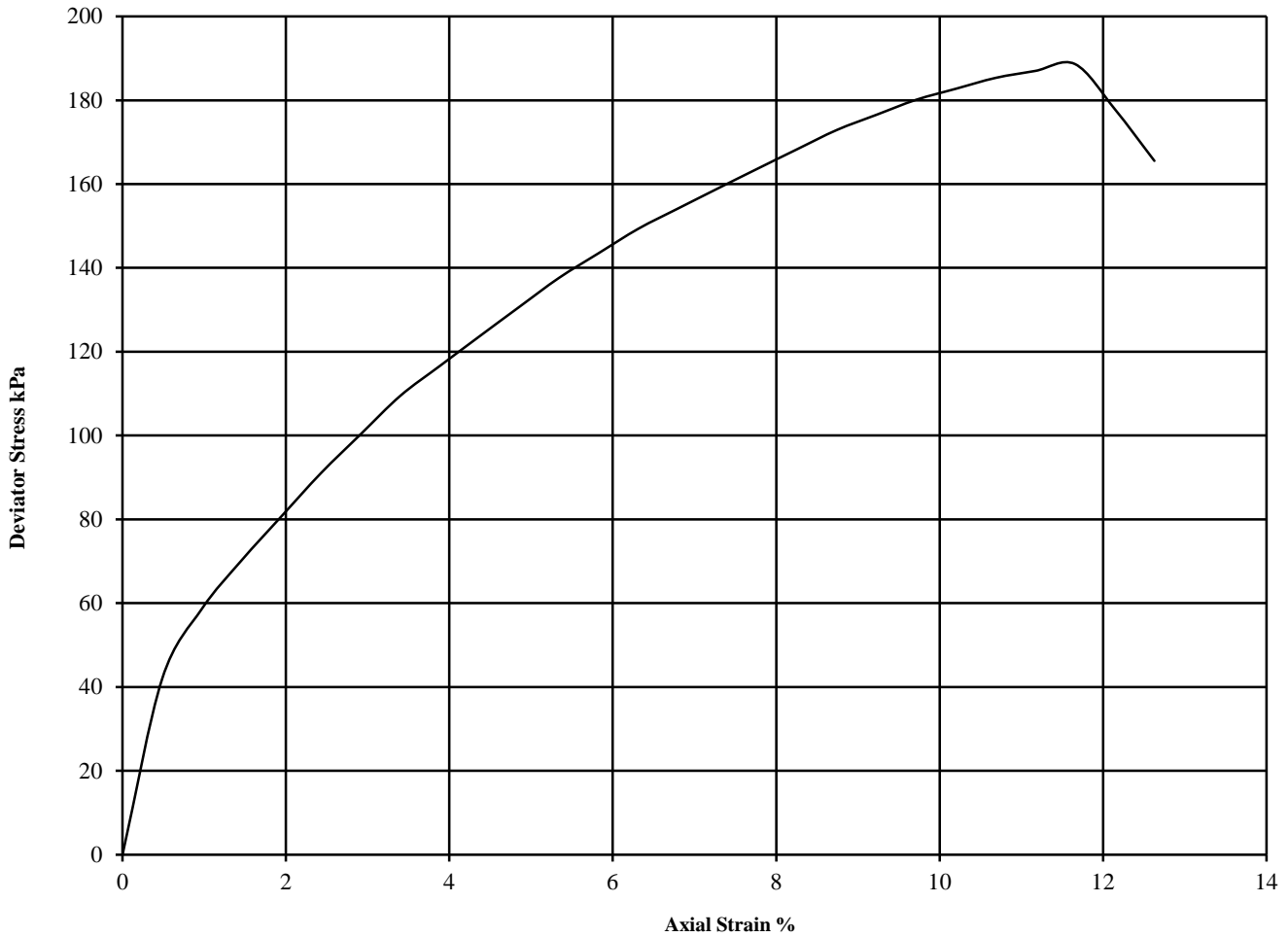
Hole Number: BH205

Top Depth (m): 1.20

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions.
			θ_3	θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	24	1.94	1.56	20	189	94	11.7	Brittle	



Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

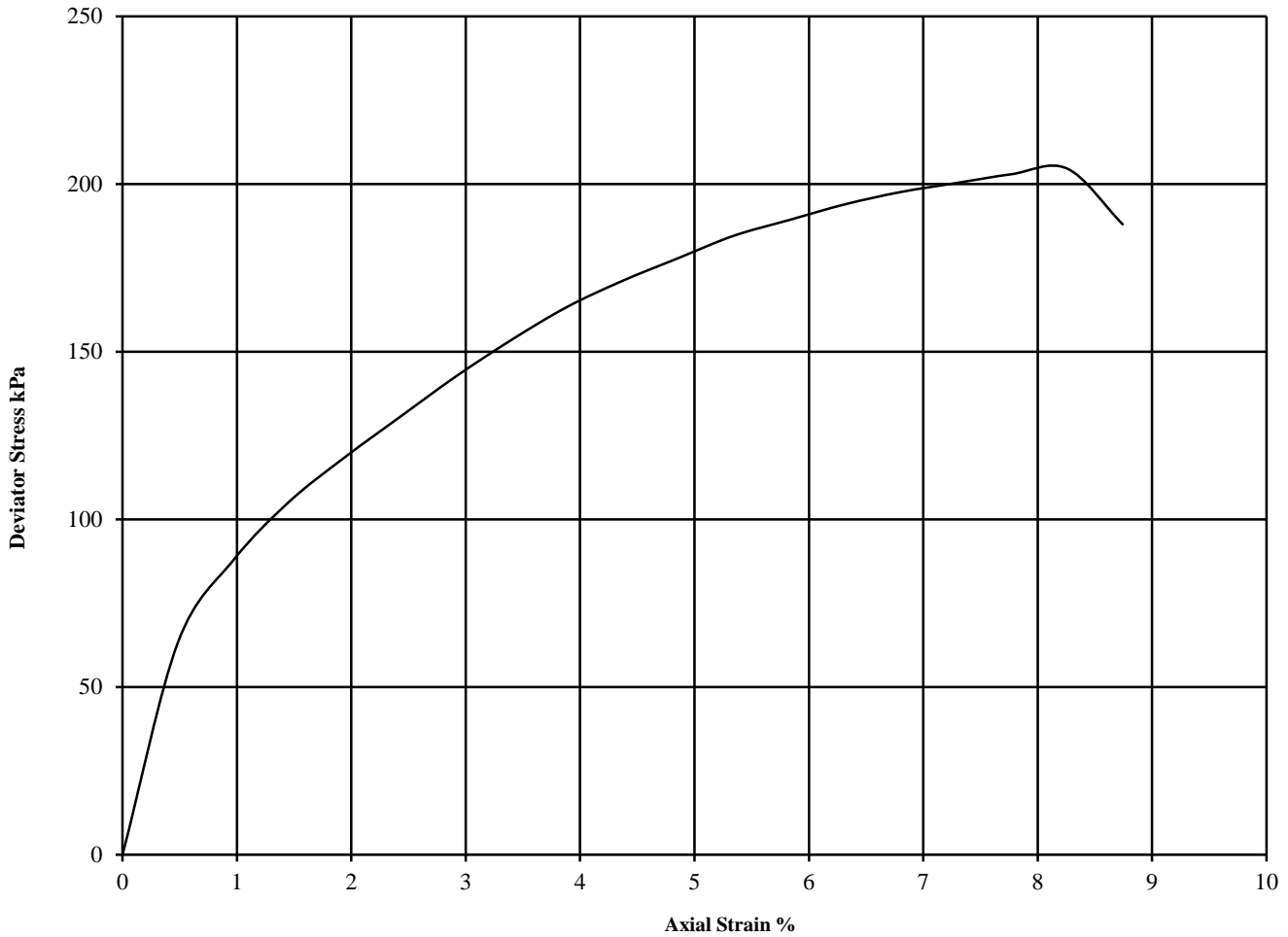
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: BH205 Top Depth (m): 3.00

Sample Number: Base Depth (m):

Sample Type U



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions.
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	31	1.81	1.38	60	205	102	8.3	Brittle	

		Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188	
		Land West of Hemel Hempstead (ICO101380)					Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

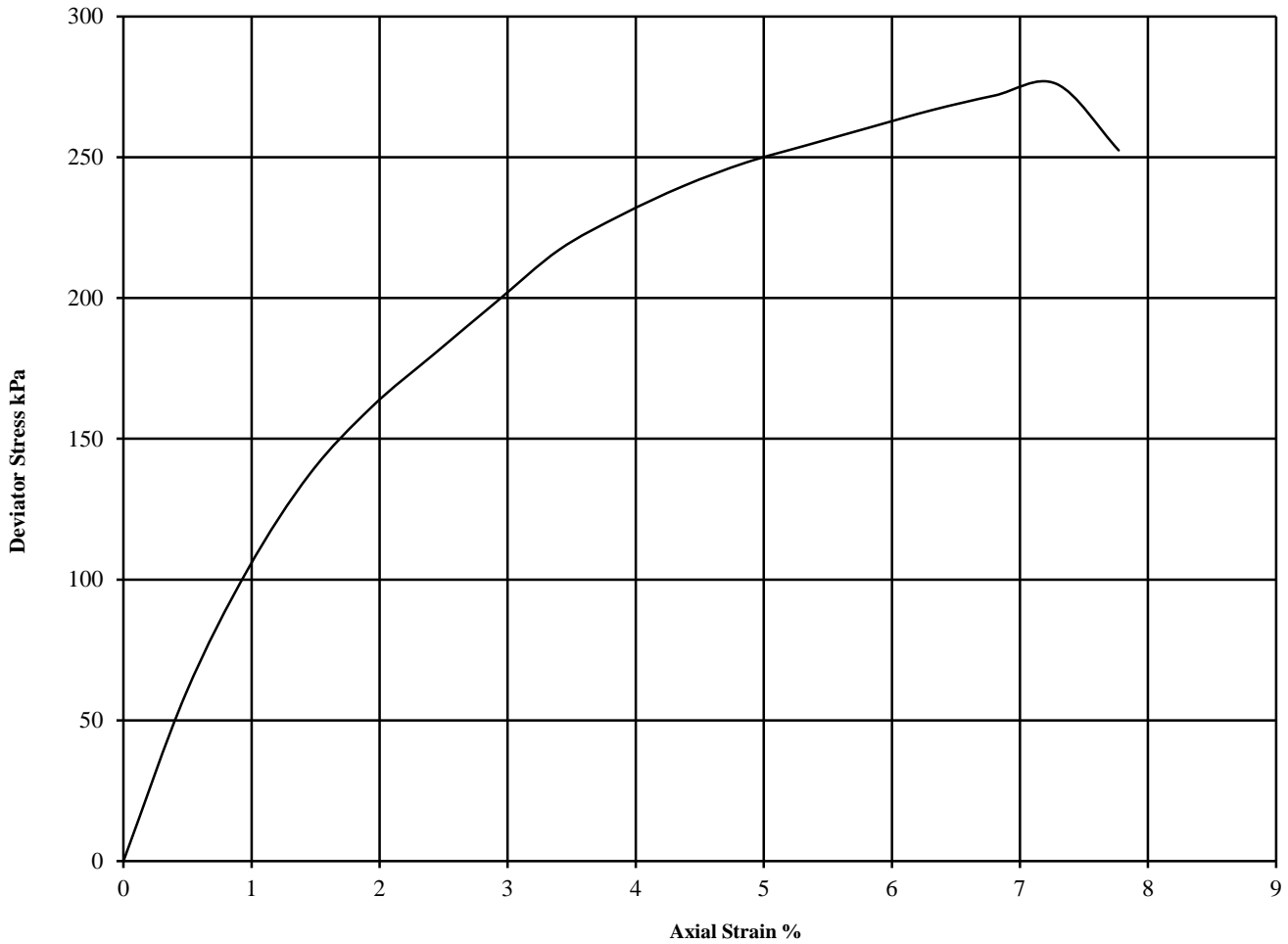
Hole Number: BH203

Top Depth (m): 8.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0		Height (mm):		210.0		Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36		
1	25	1.88	1.50	160	276	138	7.3	Brittle	See summary of soil descriptions.		

		Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188	
		Land West of Hemel Hempstead (ICO101380)					Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

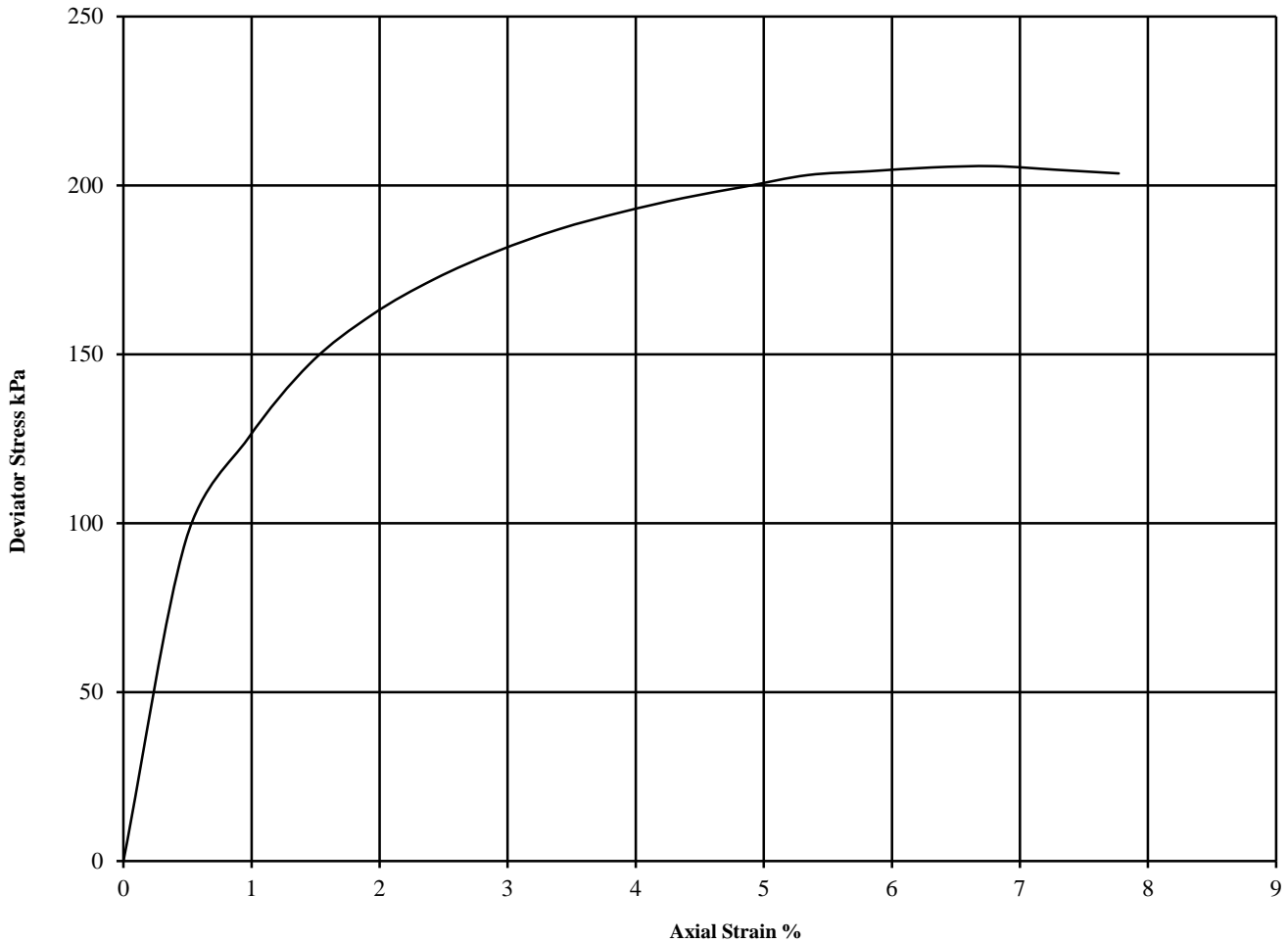
Hole Number: BH203

Top Depth (m): 11.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102.0		Height (mm):		210.0		Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36 See summary of soil descriptions.		
			θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$						
1	34	1.92	1.43	220	206	103	6.8	Plastic			

	Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188
	Land West of Hemel Hempstead (ICO101380)				Client Ref:	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

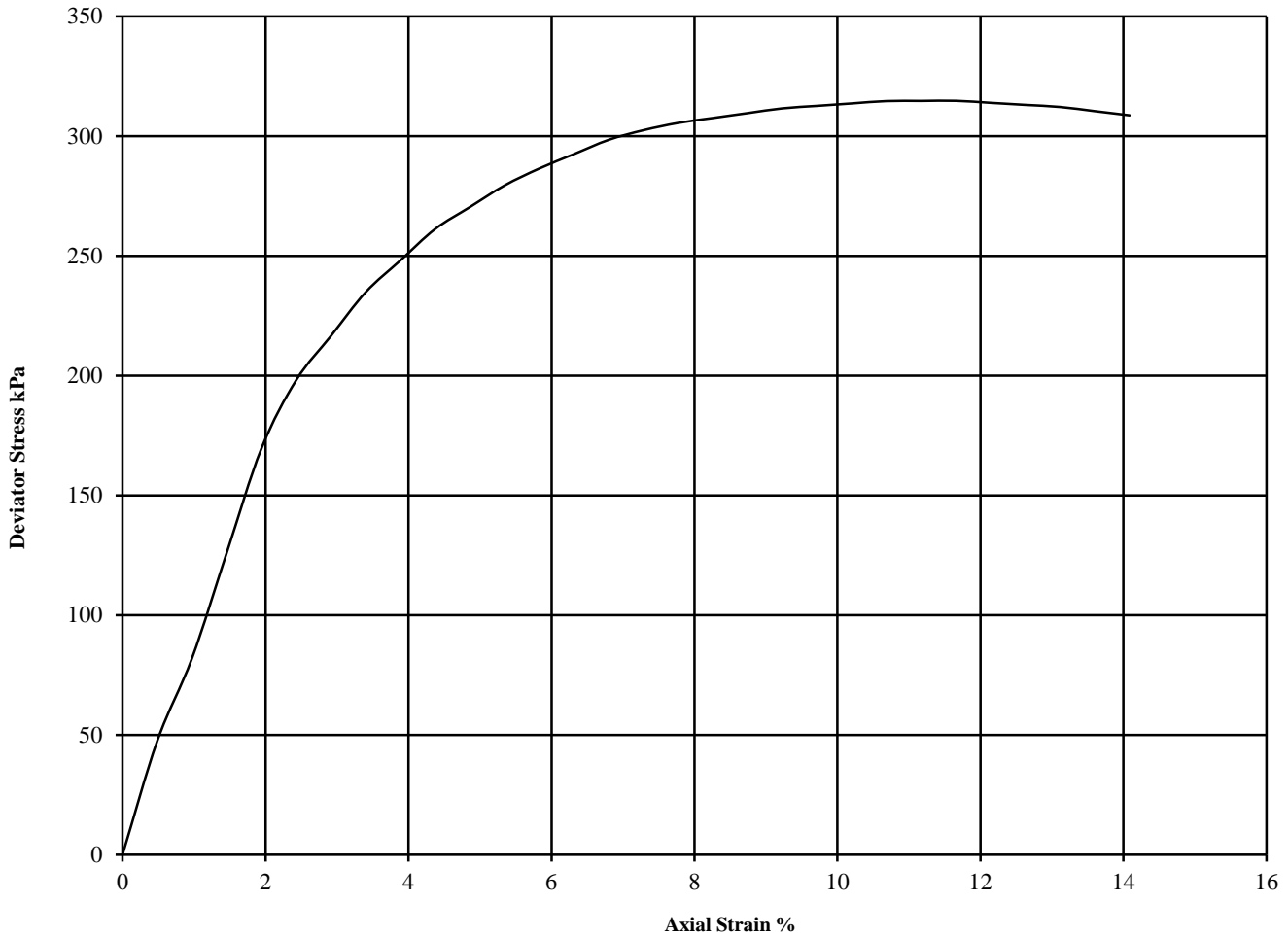
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: BH202 Top Depth (m): 20.00

Sample Number: Base Depth (m):

Sample Type U



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions.
			θ_3	θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	27	1.93	1.53	400	315	157	11.7	Plastic	

		Checked / Approved		Date	09/06/16	Contract No:	PSL16/2188	
		Land West of Hemel Hempstead (ICO101380)					Client Ref:	



Scientific Analysis Laboratories Ltd

Certificate of Analysis

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Tel : 01376 560120
Fax : 01376 552923

Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 571237-1

Date of Report: 26-May-2016

Customer: Resource Environmental Consultants Ltd
Capital Business Centre
22 Carlton Road
South Croydon
CR2 0BS

Customer Contact: Mr Marc Roberts

Customer Job Reference: 1CO101380

Customer Site Reference: Hemel Hempstead

Date Job Received at SAL: 12-May-2016

Date Analysis Started: 24-May-2016

Date Analysis Completed: 26-May-2016

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

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

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

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual



Report checked
and authorised by :
Simi Okanlami
Project Manager

Issued by :
Simi Okanlami
Project Manager

SAL Reference: 571237 Project Site: Hemel Hempstead Customer Reference: 1CO101380									
Soil		Analysed as Soil							
Miscellaneous									
SAL Reference					571237 001	571237 002	571237 003	571237 004	571237 005
Customer Sample Reference					BH203 D4 @ 1.20m	BH203 D11 @ 5.00m	BH203 D18 @ 10.00m	BH203 D24 @ 15.00m	BH203 D31 @ 20.00m
Date Sampled					15-APR-2016	15-APR-2016	15-APR-2016	15-APR-2016	18-APR-2016
Type					Clay	Clay	Clay	Clay	Other
Determinand	Method	Test Sample	LOD	Units					
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	<0.01	0.01	<0.01	<0.01	0.01
pH	T7	A40			7.9	7.6	7.3	7.9	8.9
Moisture @105C	T162	AR	0.1	%	19	27	24	20	22
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 571237 Project Site: Hemel Hempstead Customer Reference: 1CO101380									
Soil		Analysed as Soil							
Miscellaneous									
SAL Reference					571237 006	571237 007	571237 008	571237 009	571237 010
Customer Sample Reference					BH203 D38 @ 25.00m	BH203 D44 @ 30.00m	BH204 @ 1.00-1.20m	BH205 D16 @ 9.00m	BH205 D31 @ 20.00m
Date Sampled					18-APR-2016	18-APR-2016	14-APR-2016	19-APR-2016	19-APR-2016
Type					Other	Other	Clay	Other	Other
Determinand	Method	Test Sample	LOD	Units					
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.01	<0.01	0.01	0.01	0.01
pH	T7	A40			8.4	8.9	7.4	8.5	8.7
Moisture @105C	T162	AR	0.1	%	24	18	30	26	22
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	1.0	<0.1	1.2

SAL Reference: 571237 Project Site: Hemel Hempstead Customer Reference: 1CO101380									
Soil		Analysed as Soil							
Miscellaneous									
SAL Reference					571237 011	571237 012	571237 013	571237 014	571237 015
Customer Sample Reference					WS206 D1 @ 1.00m	WS208 D1 @ 1.00m	WS208 @ 1.60-1.70m	WS210 D2 @ 1.80m	BH210 D5 @ 2.00m
Date Sampled					12-APR-2016	12-APR-2016	20-APR-2016	13-APR-2016	20-APR-2016
Type					Clay	Clay	Clay	Clay	Other
Determinand	Method	Test Sample	LOD	Units					
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	<0.01	0.02	<0.01	0.06	<0.01
pH	T7	A40			7.8	7.0	7.7	6.1	8.8
Moisture @105C	T162	AR	0.1	%	19	20	28	6.4	19
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	46.7	<0.1	<0.1

SAL Reference: 571237
 Project Site: Hemel Hempstead
 Customer Reference: 1CO101380

Soil
 Miscellaneous Analysed as Soil

SAL Reference					571237 016	571237 017	571237 018	571237 019	571237 020
Customer Sample Reference					WS210 D4 @ 4.00m	WS210 D17 @ 9.50m	WS211 D2 @ 2.00m	WS212 D1 @ 1.00m	NO LABEL
Date Sampled					12-APR-2016	21-APR-2016	13-APR-2016	13-APR-2016	Deviating
Type					Other	Other	Clay	Clay	Other
Determinand	Method	Test Sample	LOD	Units					
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.01	<0.01	0.10	<0.01	<0.01
pH	T7	A40			8.8	8.8	6.2	7.8	9.1
Moisture @105C	T162	AR	0.1	%	24	20	27	13	26
Retained on 2mm	T2	A40	0.1	%	<0.1	⁽³²⁾ <0.1	<0.1	<0.1	⁽³²⁾ <0.1

Index to symbols used in 571237-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
32	Whole sample was crushed
M	Analysis is MCERTS accredited
N	Analysis is not UKAS accredited

Notes

Retained on 2mm is removed before analysis
Reported results on as received samples are corrected to a 105 degree centigrade dry weight basis

Method Index

Value	Description
T7	Probe
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T162	Grav (1 Dec) (105 C)
T2	Grav

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	N	005-007,009-010,015-017,020
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	M	001-004,008,011-014,018-019
pH	T7	A40			N	005-007,009-010,015-017,020
pH	T7	A40			M	001-004,008,011-014,018-019
Moisture @105C	T162	AR	0.1	%	N	001-020
Retained on 2mm	T2	A40	0.1	%	N	001-020

APPENDIX IX
SOIL INFILTRATION TESTING RESULTS

Location	Receiving Depth (m)	Receiving Stratum	Test Type	Soil Infiltration Rate (m/s)
BH201	10.00	Seaford and Lewes (Nodular) Chalk Formation	Variable Head	1.96×10^{-5}
	15.00			1.00×10^{-5}
BH202	6.00			1.29×10^{-5}
	10.0			300l of water soaked immediately after delivery
	11.0			7.62×10^{-6}
BH203	15.3			300l of water soaked immediately after delivery
	25.0			2.40×10^{-6}
BH204	10.0			7.06×10^{-6}
	15.3			8.34×10^{-6}
BH205	10.0			1.21×10^{-5}
	9.0			3.14×10^{-5}
	13.2			2.21×10^{-5}
BH206	10.50			1.86×10^{-5}
BH207	10.50			5.12×10^{-6}
	15.60			7.75×10^{-6}
BH208	10.0			8.02×10^{-6}
	15.0			8.57×10^{-6}
BH209	10.0			1.37×10^{-6}
BH210	8.00			7.16×10^{-6}
TP204	5.50			Clay-With-Flints Formation (slightly sandy clayey GRAVEL)
TP205	3.00	Clay-With-Flints Formation (gravelly CLAY)	No Soakage	
	5.50	Seaford and Lewes (Nodular) Chalk Formation	No Soakage	
TP206	5.50	Clay-With-Flints Formation (slightly sandy gravelly CLAY)	No Soakage	
TP207	3.00	Chalk in the northeast corner of the trial pit, Clay-With-Flints Formation (gravelly CLAY) across the rest of the trial pit.	No Soakage	
	5.50	Seaford and Lewes (Nodular) Chalk Formation	7.90×10^{-5}	
TP209	3.20	Chalk in the east side of the trial pit, Clay-With-Flints Formation (gravelly CLAY) across the rest of the trial pit	No Soakage	

TP209	5.50	Seaford and Lewes (Nodular) Chalk Formation	Trial pit Soakaways	6.40×10^{-5}
TP211	3.00	Seaford and Lewes (Nodular) Chalk Formation		2.82×10^{-5}
TP217	3.20	Clay-With-Flints Formation (clayey GRAVEL) with chalk on the northern side of the trial pit		No Soakage
	5.50	Seaford and Lewes (Nodular) Chalk Formation		1.33×10^{-5}
TP219	3.00	Clay-With-Flints Formation (clayey GRAVEL)		3.64×10^{-6}
TP222	3.14	Seaford and Lewes (Nodular) Chalk Formation		1.31×10^{-5}
TP223	3.10	Clay-With-Flints Formation (gravelly CLAY)		No Soakage
	5.50	Seaford and Lewes (Nodular) Chalk Formation		1.88×10^{-5}
TP226	3.20	Clay-With-Flints Formation (gravelly CLAY)		No Soakage
	5.40	Seaford and Lewes (Nodular) Chalk Formation		No Soakage
TP232	3.00	Seaford and Lewes (Nodular) Chalk Formation		3.00×10^{-6}

APPENDIX X
IN-SITU TESTING RESULTS

Borehole	Start Depth (m bgl)	Strata Type	SPT "N" Value	Soil Strength (Cohesive)	Consistency (Cohesive)	Approximate Undrained Shear Strength (kN/m ²) derived from SPT values	Undrained Shear Strength (kN/m ²) derived from hand shear vane results	Undrained Shear Strength (kN/m ²) derived from undrained triaxials
BH201	1.2	Cohesive	18	High	Firm to Stiff	81	-	-
	3.0	Cohesive	16	Medium	Firm	72	-	-
	5.0	Chalk	15	-	-	-	-	-
	8.2	Chalk	16	-	-	-	-	-
	11.6	Chalk	6	-	-	-	-	-
	15.2	Chalk	12	-	-	-	-	-
	18.2	Chalk	17	-	-	-	-	-
BH202	19.6	Chalk	23	-	-	-	-	-
	1.2	Cohesive	-	High	Stiff	-	-	112
	2.0	Cohesive	12	Medium	Firm	-	-	-
	3.0	Cohesive	-	High	Firm to Stiff	-	-	99
	4.0	Cohesive	14	Medium	Firm	-	-	-
	6.5	Chalk	8	-	-	-	-	-
	9.5	Chalk	12	-	-	-	-	-
	12.5	Chalk	12	-	-	-	-	-
	15.5	Chalk	17	-	-	-	-	-
	16.0	Chalk	19	-	-	-	-	-
	18.0	Chalk	25	-	-	-	-	-
	18.5	Cohesive	24	High	Stiff	108	-	-
	20.0	Cohesive	-	Very High	Very Stiff	-	-	157
	21.0	Chalk	1	-	-	-	-	-
	23.0	Chalk	6	-	-	-	-	-
	24.5	Chalk	16	-	-	-	-	-
26.0	Chalk	17	-	-	-	-	-	
27.5	Chalk	12	-	-	-	-	-	
29.0	Chalk	15	-	-	-	-	-	
30.0	Chalk	21.5	-	-	-	-	-	
31.5	Chalk	14	-	-	-	-	-	

BH203	1.2	Cohesive	-	Medium	Firm	-	-	52
	2.0	Cohesive	21	High	Firm to Stiff	95.5	-	-
	3.0	Cohesive	-	Medium	Firm to Stiff	-	-	85
	4.0	Cohesive	19	High	Firm to Stiff	85.5	-	-
	6.5	Cohesive	13	Medium	Firm	59.5	-	-
	8.0	Cohesive	-	High	Stiff	138	-	138
	9.5	Cohesive	21	High	Firm to Stiff	95.5	-	-
	11.0	Cohesive	-	High	Stiff	-	-	103
	12.5	Cohesive	23	High	Stiff	103.5	-	-
	15.5	Chalk	9	-	-	-	-	-
	18.5	Chalk	18	-	-	-	-	-
	20.0	Chalk	18	-	-	-	-	-
	21.5	Chalk	18	-	-	-	-	-
	23.0	Chalk	22	-	-	-	-	-
	24.5	Chalk	21	-	-	-	-	-
	26.0	Chalk	15	-	-	-	-	-
27.5	Chalk	21	-	-	-	-	-	
29.0	Chalk	13	-	-	-	-	-	
30.0	Chalk	24	-	-	-	-	-	
BH204	2.0	Chalk	17	-	-	-	-	-
	4.0	Chalk	8	-	-	-	-	-
	6.5	Chalk	19	-	-	-	-	-
	9.8	Chalk	19	-	-	-	-	-
	12.0	Chalk	50	-	-	-	-	-
	15.0	Chalk	20	-	-	-	-	-
	18.0	Chalk	24	-	-	-	-	-
19.8	Chalk	50	-	-	-	-	-	
BH205	1.2	Cohesive	-	High	Firm to Stiff	-	-	94
	2.0	Cohesive	21	High	Firm to Stiff	95.5	-	-
	3.0	Cohesive	-	High	Stiff	-	-	102
	4.0	Cohesive	21	High	Firm to Stiff	95.5	-	-
	6.5	Chalk	30	-	-	-	-	-

BH205	9.5	Chalk	15	-	-	-	-	-
	12.5	Chalk	16	-	-	-	-	-
	14.0	Chalk	19	-	-	-	-	-
	15.5	Chalk	16	-	-	-	-	-
	17.0	Chalk	19	-	-	-	-	-
	18.5	Chalk	22	-	-	-	-	-
	20.0	Chalk	22	-	-	-	-	-
BH206	2.6	Chalk	5	-	-	-	-	-
	4.2	Chalk	9	-	-	-	-	-
	6.7	Chalk	18	-	-	-	-	-
	9.8	Chalk	19	-	-	-	-	-
	13.2	Chalk	24	-	-	-	-	-
	16.3	Chalk	26	-	-	-	-	-
	19.6	Chalk	31	-	-	-	-	-
BH207	2.0	Cohesive	50	Very High	Very Stiff	225	-	-
	3.0	Cohesive	50	Very High	Very Stiff	225	-	-
	4.0	Cohesive	49	Very High	Very Stiff	220.5	-	-
	5.0	Cohesive	50	Very High	Very Stiff	225	-	-
	6.5	Chalk	11	-	-	-	-	-
	9.7	Chalk	28	-	-	-	-	-
	13.8	Chalk	18	-	-	-	-	-
	16.5	Chalk	26	-	-	-	-	-
BH208	19.7	Chalk	32	-	-	-	-	-
	2.0	Chalk	24	-	-	-	-	-
	3.0	Chalk	26	-	-	-	-	-
	5.0	Chalk	21	-	-	-	-	-
	8.0	Chalk	17	-	-	-	-	-
	9.6	Chalk	18	-	-	-	-	-
	12.5	Chalk	15	-	-	-	-	-
	16.0	Chalk	21	-	-	-	-	-
18.8	Chalk	28	-	-	-	-	-	
20.0	Chalk	43	-	-	-	-	-	

BH209	2.0	Chalk	14	-	-	-	-	-
	3.0	Chalk	15	-	-	-	-	-
	4.0	Chalk	18	-	-	-	-	-
	6.5	Chalk	17	-	-	-	-	-
	8.0	Chalk	15	-	-	-	-	-
	11.0	Chalk	11	-	-	-	-	-
	12.5	Chalk	13	-	-	-	-	-
	14.0	Chalk	19	-	-	-	-	-
	15.5	Chalk	20	-	-	-	-	-
	17.0	Chalk	15	-	-	-	-	-
	18.5	Chalk	20	-	-	-	-	-
	20.0	Chalk	21	-	-	-	-	-
21.5	Chalk	22	-	-	-	-	-	
BH210	2.0	Chalk	10	-	-	-	-	-
	3.0	Chalk	11	-	-	-	-	-
	4.0	Chalk	15	-	-	-	-	-
	6.5	Chalk	15	-	-	-	-	-
	8.0	Chalk	17	-	-	-	-	-
	12.5	Chalk	19	-	-	-	-	-
	14.0	Chalk	21	-	-	-	-	-
	15.5	Chalk	22	-	-	-	-	-
	17.0	Chalk	24	-	-	-	-	-
	18.5	Chalk	25	-	-	-	-	-
20.0	Chalk	28	-	-	-	-	-	
TP201	1.1	Cohesive	-	High	Firm to Stiff	-	80	-
	2.3	Cohesive	-	High	Stiff	-	110	-
TP202	1.5	Cohesive	-	High	Firm to Stiff	-	95	-
	2.2	Cohesive	-	High	Stiff	-	120	-
TP203	0.8	Cohesive	-	Medium	Firm	-	60	-
	1.9	Cohesive	-	High	Stiff	-	115	-
TP204	0.7	Cohesive	-	Medium	Firm	-	70	-
TP205	2.0	Cohesive	-	High	Stiff	-	130	-

TP206	1.0	Cohesive	-	Medium	Firm	-	52	-
TP207	0.7	Cohesive	-	Medium	Firm	-	68	-
	1.5	Cohesive	-	Medium	Firm	-	60	-
TP208	1.0	Cohesive	-	Medium	Firm	-	65	-
	1.5	Cohesive	-	High	Firm to Stiff	-	80	-
	2.0	Cohesive	-	High	Firm to Stiff	-	80	-
TP209	1.0	Cohesive	-	Medium	Firm	-	75	-
	1.5	Cohesive	-	Medium	Firm	-	70	-
TP210	0.7	Cohesive	-	Medium	Firm	-	62	-
	1.0	Cohesive	-	High	Firm to Stiff	-	90	-
	2.0	Cohesive	-	High	Firm to Stiff	-	90	-
	2.6	Cohesive	-	High	Firm to Stiff	-	88	-
TP211	0.7	Cohesive	-	High	Firm to Stiff	-	87	-
TP212	1.0	Cohesive	-	Medium	Firm	-	72	-
	1.7	Cohesive	-	Medium	Firm	-	70	-
	2.7	Cohesive	-	High	Firm to Stiff	-	82	-
	3.7	Cohesive	-	High	Firm to Stiff	-	93	-
TP213	1.4	Cohesive	-	Medium	Firm	-	60	-
	2.4	Cohesive	-	High	Firm to Stiff	-	88	-
TP214	1.2	Cohesive	-	Medium	Firm	-	70	-
TP215	0.8	Cohesive	-	Medium	Firm	-	75	-
	1.1	Cohesive	-	High	Firm to Stiff	-	85	-
TP216	1.5	Cohesive	-	Medium	Firm	-	75	-
TP218	1.2	Cohesive	-	Medium	Firm	-	74	-
TP219	1.0	Cohesive	-	Medium	Firm	-	73	-
TP220	0.7	Cohesive	-	Medium	Firm	-	70	-
	1.2	Cohesive	-	High	Firm to Stiff	-	80	-
TP221	0.5	Cohesive	-	Medium	Firm	-	58	-
TP222	1.2	Cohesive	-	Medium	Firm	-	51	-
	1.3	Cohesive	-	Medium	Firm	-	66	-
	2.1	Chalk	-	Low	Soft	-	27	-
TP227	0.4	Cohesive	-	Medium	Firm	-	70	-

TP228	0.5	Cohesive	-	Medium	Firm	-	68	-
TP230	1.4	Cohesive	-	High	Firm to Stiff	-	78	-
	2.1	Cohesive	-	High	Firm to Stiff	-	78	-
TP231	1.0	Cohesive	-	Medium	Firm	-	64	-
WS201	0.8	Cohesive	-	Medium	Soft to Firm	-	48	-
	1.3	Cohesive	-	High	Firm to Stiff	-	88	-
	1.9	Cohesive	-	High	Stiff	-	106	-
	2.4	Cohesive	-	High	Firm to Stiff	-	100	-
	2.8	Cohesive	-	High	Stiff	-	108	-
	3.7	Cohesive	-	High	Firm to Stiff	-	98	-
WS202	4.2	Cohesive	-	Medium	Firm	-	75	-
	1.3	Cohesive	-	Medium	Firm	-	74	-
	1.8	Cohesive	-	High	Stiff	-	106	-
	2.2	Cohesive	-	High	Firm to Stiff	-	94	-
	2.8	Cohesive	-	High	Stiff	-	120	-
	3.5	Cohesive	-	High	Stiff	-	108	-
	3.8	Cohesive	-	High	Stiff	-	116	-
WS203	4.3	Cohesive	-	High	Firm to Stiff	-	90	-
	4.9	Cohesive	-	High	Stiff	-	116	-
	0.7	Cohesive	-	Medium	Soft to Firm	-	45	-
	1.1	Cohesive	-	High	Firm to Stiff	-	98	-
	1.8	Cohesive	-	High	Firm to Stiff	-	86	-
	2.75	Cohesive	-	High	Firm to Stiff	-	84	-
WS204	3.4	Cohesive	-	High	Firm to Stiff	-	84	-
	3.8	Cohesive	-	High	Firm to Stiff	-	86	-
	4.7	Cohesive	-	Medium	Firm	-	70	-
WS205	1.5	Cohesive	-	Medium	Firm	-	72	-
	1.6	Cohesive	-	Medium	Firm	-	60	-
WS205	0.9	Cohesive	-	Low	Soft	-	37	-
	1.2	Cohesive	-	Medium	Firm	-	60	-
	1.8	Cohesive	-	High	Firm to Stiff	-	90	-
	2.3	Cohesive	-	High	Firm to Stiff	-	95	-

WS205	3.95	Cohesive	-	High	Stiff	-	116	-
WS206	0.8	Cohesive	-	Low	Soft	-	35	-
	1.35	Cohesive	-	Medium	Firm	-	66	-
	1.7	Cohesive	-	Medium	Firm	-	64	-
	2.3	Cohesive	-	Medium	Firm	-	63	-
	2.6	Cohesive	-	High	Firm to Stiff	-	81	-
	2.9	Cohesive	-	High	Firm to Stiff	-	90	-
	3.3	Cohesive	-	High	Firm to Stiff	-	94	-
	3.8	Cohesive	-	High	Firm to Stiff	-	88	-
WS208	4.3	Cohesive	-	Medium	Soft to Firm	-	50	-
	1.2	Cohesive	-	High	Firm to Stiff	-	84	-
WS209	1.4	Cohesive	-	High	Firm to Stiff	-	78	-
	1.0	Cohesive	-	High	Firm to Stiff	-	86	-
WS210	1.5	Cohesive	-	Medium	Firm	-	73	-
	1.8	Cohesive	-	High	Stiff	-	101	-
	2.3	Cohesive	-	High	Stiff	-	102	-
	2.6	Cohesive	-	High	Firm to Stiff	-	88	-
	2.8	Cohesive	-	Medium	Firm	-	52	-
	3.7	Cohesive	-	Medium	Firm	-	62	-
	3.9	Chalk	-	-	-	-	-	-
WS211	4.8	Chalk	-	-	-	-	-	-
	1.2	Cohesive	-	Medium	Firm	-	56	-
WS212	1.5	Cohesive	-	High	Firm to Stiff	-	91	-
	1.3	Cohesive	-	Medium	Firm	-	65	-
WS213	1.8	Cohesive	-	Medium	Firm	-	55	-
	1.5	Cohesive	-	Medium	Firm	-	75	-
	1.8	Cohesive	-	Medium	Firm	-	62	-
	2.1	Cohesive	-	Medium	Firm	-	66	-
	2.7	Cohesive	-	Medium	Firm	-	75	-
WS214	4.1	Cohesive	-	High	Stiff	-	118	-
	1.2	Cohesive	-	Medium	Firm	-	66	-
	1.75	Cohesive	-	Medium	Firm	-	72	-

WS214	2.25	Cohesive	-	Medium	Soft to Firm	-	48	-
WS215	1.2	Chalk	14	-	-	-	-	-
	2.0	Chalk	12	-	-	-	-	-
	3.0	Chalk	16	-	-	-	-	-
	4.0	Chalk	17	-	-	-	-	-
	5.0	Chalk	10	-	-	-	-	-
WS216	1.9	Cohesive	-	Medium	Soft to Firm	-	42	-
	2.4	Cohesive	-	Medium	Soft to Firm	-	44	-
	3.0	Chalk	19	-	-	-	-	-
	4.0	Chalk	13	-	-	-	-	-
	5.0	Chalk	12	-	-	-	-	-
WS346	1.2	Cohesive	12	Medium	Firm	-	54	-
	2	Chalk	15	-	-	-	-	-
	3	Chalk	16	-	-	-	-	-
	4	Chalk	28	-	-	-	-	-
	5	Chalk	20	-	-	-	-	-
WS347	1.2	Cohesive	17	High	Firm to Stiff	-	76.5	-
	2	Cohesive	15	Medium	Firm	-	67.5	-
	3	Chalk	11	-	-	-	-	-
	4	Chalk	9	-	-	-	-	-
	5	Chalk	15	-	-	-	-	-
WS348	1.2	Cohesive	13	Medium	Firm	-	58.5	-
	2	Cohesive	10	Medium	Soft to Firm	-	45	-
	3	Cohesive	18	High	Firm to Stiff	-	81	-
	4	Chalk	13	-	-	-	-	-
	5	Chalk	15	-	-	-	-	-
WS349	1.2	Cohesive	16	Medium	Firm	-	72	-
	2	Chalk	19	-	-	-	-	-
	3	Chalk	17	-	-	-	-	-
	4	Chalk	17	-	-	-	-	-
	5	Chalk	8	-	-	-	-	-
WS350	1.2	Cohesive	4	Very Low	Soft to Firm	-	18	-

WS350	2	Cohesive	18	High	Firm to Stiff	-	81	-
	3	Cohesive	13	Medium	Firm	-	58.5	-
	4	Chalk	9	-	-	-	-	-
	5	Chalk		-	-	-	-	-
WS351	1.2	Cohesive	11	Medium	Firm	-	50.5	-
	2	Cohesive	6	Low	Soft	-	27	-
	3	Chalk	9	-	-	-	-	-
	4	Chalk	10	-	-	-	-	-
	5	Chalk	9	-	-	-	-	-
WS352	1.2	Cohesive	13	Medium	Firm	-	58.5	-
	2	Cohesive	16	Medium	Firm	-	72	-
	3	Cohesive	18	High	Firm to Stiff	-	81	-
	4	Chalk	3	-	-	-	-	-
	5	Chalk	5	-	-	-	-	-
WS353	1.2	Cohesive	9	Medium	Soft to Firm	-	40.5	-
	2	Cohesive	12	Medium	Firm	-	56	-
	3	Chalk	9	-	-	-	-	-
	4	Chalk	6	-	-	-	-	-
	5	Chalk	8	-	-	-	-	-
WS354	1.2	Chalk	8	-	-	-	-	-
	2	Chalk	8	-	-	-	-	-
	3	Chalk	12	-	-	-	-	-
	4	Chalk	10	-	-	-	-	-
	5	Chalk	15	-	-	-	-	-
WS355	1.2	Cohesive	19	High	Firm to Stiff	-	87.5	-
	2	Chalk	18	-	-	-	-	-
	3	Chalk	11	-	-	-	-	-
	4	Chalk	6	-	-	-	-	-
	5	Chalk	7	-	-	-	-	-
WS356	1.2	Cohesive	15	Medium	Firm	-	67.5	-
	2	Cohesive	12	Medium	Firm	-	54	-
	3	Cohesive	14	Medium	Firm	-	63	-

WS356	4	Cohesive	19	High	Firm to Stiff	-	87.5	-
	5	Cohesive	17	High	Firm to Stiff	-	76.5	-
WS357	1.2	Cohesive	4	Very Low	Soft to Firm	-	18	-
	2	Cohesive	22	High	Stiff	-	99	-
	3	Cohesive	16	Medium	Firm	-	72	-
	4	Cohesive	8	Low	Soft	-	36	-
	5	Cohesive	11	Medium	Firm	-	50.5	-
WS358	1.2	Chalk	8	-	-	-	-	-
	2	Chalk	6	-	-	-	-	-
	3	Chalk	7	-	-	-	-	-
	4	Chalk	9	-	-	-	-	-
	5	Chalk	9	-	-	-	-	-
WS359	1.2	Cohesive	4	Very Low	Soft to Firm	-	18	-
	2	Cohesive	16	Medium	Firm	-	72	-
	3	Cohesive	14	Medium	Firm	-	63	-
	4	Cohesive	21	High	Firm to Stiff	-	94.5	-
	5	Cohesive	23	High	Stiff	-	103.5	-

APPENDIX XI

GROUNDWATER LEVEL MONITORING RESULTS AT THE TIME OF WRITING THIS REPORT

Location	Level (AOD) (m)	Date	Observed Water Level (m)
WS201	154.44	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	4.46
		22/07/2016	4.43
		17/08/2016	4.52
		21/10/2016	4.40
WS202	141.46	09/05/2016	Dry
		24/05/2016	4.50
		07/06/2016	4.42
		22/07/2016	4.11
		17/08/2016	4.43
		21/10/2016	2.34
WS203	137.80	09/05/2016	Dry
		24/05/2016	4.77
		07/06/2016	4.60
		22/07/2016	2.69
		17/08/2016	3.42
		21/10/2016	2.05
WS204	127.18	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
WS205	151.44	09/05/2016	0.39
		24/05/2016	4.74
		07/06/2016	Unable to access
		22/07/2016	3.16
		17/08/2016	3.37
		21/10/2016	1.10
WS206	146.09	09/05/2016	4.02
		24/05/2016	4.79
		07/06/2016	Unable to access
		22/07/2016	Unable to access
		17/08/2016	4.79
		21/10/2016	4.65
WS207	141.36	09/05/2016	Dry
		24/05/2016	4.83
		07/06/2016	4.76
		22/07/2016	4.77
		17/08/2016	4.77
		21/10/2016	Dry
WS208	140.18	09/05/2016	1.04
		24/05/2016	2.49
		07/06/2016	2.26
		22/07/2016	1.75
		17/08/2016	1.88
		21/10/2016	Unable to access
WS209	137.04	09/05/2016	1.00

		24/05/2016	2.10
		07/06/2016	1.84
		22/07/2016	0.87
		17/08/2016	1.02
		21/10/2016	0.80
WS210	130.79	09/05/2016	Dry
		24/05/2016	4.79
		07/06/2016	4.75
		22/07/2016	4.74
		17/08/2016	4.74
		21/10/2016	4.79
WS211	134.58	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
WS212	130.49	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
WS213	119.43	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
WS214	116.31	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	4.86
		17/08/2016	4.87
		21/10/2016	Dry
WS215	106.18	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	4.89
WS216	96.36	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
BH201	150.85	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry

		17/08/2016	Dry
		21/10/2016	Dry
BH202	147.96	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
BH203	142.42	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
BH204	134.77	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
BH205	145.40	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	19.10
BH206	133.49	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Unable to access
BH207	132.88	09/05/2016	Dry
		24/05/2016	Dry
		07/06/2016	Dry
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	Dry
BH208	110.35	09/05/2016	Dry
		24/05/2016	19.03
		07/06/2016	19.22
		22/07/2016	Dry
		17/08/2016	Dry
		21/10/2016	19.22
BH209	104.92	09/05/2016	Dry
		24/05/2016	17.82
		07/06/2016	17.86
		22/07/2016	18.00
		17/08/2016	18.09
		21/10/2016	18.17

BH210	99.61	09/05/2016	Dry
		24/05/2016	13.73
		07/06/2016	12.78
		22/07/2016	12.91
		17/08/2016	13.02
		21/10/2016	13.07
RBH201	154.90	09/05/2016	N/A
		24/05/2016	64.80
		07/06/2016	64.93
		22/07/2016	65.24
		17/08/2016	65.48
		21/10/2016	65.80
RBH202	131.19	09/05/2016	N/A
		24/05/2016	43.62
		07/06/2016	43.18
		22/07/2016	44.87
		17/08/2016	44.02
		21/10/2016	44.15

APPENDIX XII
SITE PHOTOGRAPHS



Cross section of the ecological boundary between Phase 1A and Phase 1B. It was necessary to agree a designated pathway with ecological surveyors from CSA Environmental in order not to disturb badger setts or nesting birds.



An existing marker post marking the Hemel Hempstead to Picketts high Pressure Gas Pipeline. This marker post is located within Phase 3 at the boundary of the land owned by Hertfordshire County Council and the land owned by Pouchen End Farm.



Overview of the Eastern Phase 1B field at the time of the site walkover (5th April 2016), facing south west from the gate interlinking the two fields that form Phase 1B. The same field also forms Phase 2 although this area would be to the off this photograph to the right. This field at the time of the ground investigation was used as a horse riding area for visitors of Pouchen End Farm. During the groundwater level monitoring visits over Summer 2016, this field was overgrown with tall grass though this had been cut by the time of the Autumn 2016 Ground Investigation.



The boundary between the two fields forming Phase 1B facing west. This track and gate currently forms the only access route between the two fields linking Phase 1B.



Overview of the Eastern Phase 1B field at the time of the site walkover (5th April 2016), facing east from the gate interlinking the two fields that form Phase 1B. This field was not being used at the time of the ground investigation. In April 2016, skylarks were noted by CSA Environmental to be nesting within this field which meant that all exploratory holes within this field needed to be agreed with them prior to undertaking the works in this field during the initial ground investigation. By September 2016, slow worms were noted by CSA Environmental to be present within this field, resulting in the requirement for the grass to be strimmed before any works could be undertaken there during the Autumn 2016 Ground Investigation.



Overview of Phase 2 facing north from Phase 1B as of 5th April 2016. This is a continuation of the Eastern Phase 1B Field and was also at the time of the ground investigation used as a horse riding area for visitors of Pouchen End Farm. There are no fence lines, features or marker posts marking the boundary between the areas of this field belonging in Phase 1B and 2. During the Summer 2016 groundwater level monitoring visits, this field was overgrown with tall grass although the grass was cut at the end of July 2016.



Overview of the barley field in Phase 1A from the southern boundary facing north as of 5th April 2016. The line of trees to the right of this photograph marks the boundary between the barley field and the rest of Phase 1A with a drainage channel being present along this boundary.



The bean field facing east from a drainage channel crossing point between the crop fields on 5th April 2016.



This gate is the access point to the north of the bean field from other fields belonging to Fields End Farm. Due to access constraints, it was necessary to use Pouchen End Lane to access the site but in its present configuration, it was only deemed appropriate to deliver heavy machinery to the Fields End Farmyard. In order to avoid travelling down Pouchen End Lane, the designated access route for heavy machinery was along the field behind this gate and through this gate.



View along Pouchen End Lane along the section forming the north western boundary to the site. Due to the size of Pouchen End Lane, it was deemed unsuitable to allow heavy vehicles to access this road south of Fields End Farm hence the requirement to cut through the ecological corridor at the boundary of Phase 1A and Phase 1B when the 14 tonne tracked excavator was in use across the site.



Overview of the northern portion of Phase 3 taken from its north western corner, facing south east. The fence line crossing the field in this photograph separates the northern and southern portions of Phase 3. Due to the presence of horses in the northern portion, access to this area was not possible until the second week of the ground investigation (week beginning 18th April 2016). Due to liability issues, National Grid were not able to mark out the Hemel Hempstead to Picketts pipeline in the northern portion until that week by the time the cable percussive drilling moved to Phase 3 so all three boreholes were located in the southern portion where the pipeline was marked out. All marker posts were surveyed prior to removal following the initial ground investigation with the coordinates of the pipeline used to designate safe locations for TP307-310.



Overview of the southern portion of Phase 3 taken from its north western corner, facing south east. No horses were present in this area of Phase 3 allowing the Hemel Hempstead to Picketts High Pressure Gas Pipeline to be marked out in this area of Phase 3 during the first week of the ground investigation (week beginning 11th April 2016). This area was however used at the time of the ground investigation was used as a horse riding area for visitors of Pouchen End Farm. During the Summer 2016 groundwater level monitoring visits, this field was overgrown with tall grass although the grass was cut at the end of July 2016. The hedgerow on the right of this photograph separates the Hertfordshire County Council owned land to the rest of Phase 3.



View facing east along the hedgerow that forms the boundary between the Hertfordshire County Council owned land and Pouchen End Farm. Pouchen End Farm is located to the left of the hedgerow while the Hertfordshire County Council owned land lies to the right of the hedgerow. The grey mat was one of a number of reptile traps placed around the site by CSA Environmental in initial ground investigation as part of their ecological surveying works.



View of the Hertfordshire County Council owned land from its south eastern corner facing north west. Access to that land is only possible through a gate on Chaulden Lane. At the time of the site walkover horses occupied this land, but after access was granted on 4th May 2016, no horses were observed to have been kept in this field until 7th October 2016 – the final day of the Autumn 2016 Ground Investigation.



TP215 facing south



TP215 facing east



TP215 facing west

A vertical boundary was observed between the chalk and the gravelly clay within this trial pit. The base of the gravelly clay was not found in the western side of the trial pit while the chalk was encountered on the eastern side of the trial pit at 1.2mbgl. The depth of this trial pit depth was 5.50mbgl.



TP201 facing east



TP201 facing west



TP201 facing south

The first encounter with the chalk was at 1.80mbgl with the chalk becoming visible across the trial pit at 4.50mbgl resulting in a 2.80mbgl variation between the chalk encounters within this trial pit. The depth of this trial pit was 5.00mbgl.



TP213 facing north. In this trial pit, chalk was first encountered at 1.70mbgl in the north western corner of the trial pit while the chalk was visible throughout the trial pit at 4.00mbgl resulting in a 2.30mbgl variation between the chalk encounters within this trial pit. The depth of this trial pit was 4.60mbgl.



TP207 facing west at 3.00mbgl. After this photo was taken a soakaway test was undertaken making this trial pit one of three trial pits where the receiving stratum was both the Clay-with-Flints Formation and the Seaford and Lewes Nodular (Undifferentiated) Chalk Formation. No soakage was observed at this depth. The chalk was first encountered at 2.60mbgl at the north eastern corner of the trial pit only.



TP229 facing south. This trial pit was located to target a bonfire area which also contained rusted metallic cans. Following chemical testing of soils at 0.20 and 0.50mbgl, no exceedances in guideline acceptance criteria was encountered.



TP231 facing south. This was one of the trial pits within Phase 3 where grade C5 structured chalk was encountered.



TP301 facing west



TP301 facing east



TP301 facing north

TP301 is an example where chalk of grade Dm was encountered during the Autumn 2016 Ground Investigation.



TP327 facing south



TP327 facing north



TP327 facing east

A vertical boundary was observed between the chalk and the gravelly clay within this trial pit. The base of the gravelly clay was not found in the western side of the trial pit while the chalk was encountered on the eastern side of the trial pit at 2.40mbgl. The depth of this trial pit depth was 5.20mbgl.



TP304 facing north. This was the only trial pit excavated during the Autumn 2016 Ground Investigation where structured chalk was encountered.



A chalk boulder extracted from TP304. TP304 was also the only trial pit excavated during the Autumn 2016 Ground Investigation where boulders were encountered.