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A different perspective

**SUMMARY SITE INVESTIGATION REPORT
DESK STUDY AND SAMPLING
THE QUADRANT, TYTTON LANE EAST,
BOSTON, LINCOLNSHIRE**

**FOR
CHESTNUT HOMES LTD**

DELTA-SIMONS PROJECT NO. 13-0525.03



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1.0 INTRODUCTION

1.1 Authorisation

Delta-Simons Environmental Consultants Limited (Delta-Simons) was instructed by Chestnut Homes Ltd to carry out a site investigation at land off Tytton Lane East, Boston, Lincolnshire (hereafter referred to as the 'Site'), prior to the redevelopment of the Site. The location and layout of this Site are shown on Figure 1 and 2. A proposed development plan is presented as Figure 3.

1.2 Context & Purpose

At the time of the work, the land concerned had not been identified as requiring detailed site investigation for the purposes of planning conditions associated with either contaminated or unstable land. The purpose of this investigation was to undertake an initial limited appraisal of the geo-environmental conditions and obtain data on chemical and geotechnical conditions at the Site for use by the developer and contractors considering potential development abnormalities and cost/timescales planning. This Report has been based on a brief desk study together with fieldworks comprising soil sampling, ground gas monitoring and in-situ geotechnical testing. Selected soil samples were scheduled for a suite of chemical analysis for common contaminants, and some samples were scheduled for geotechnical testing. Monitoring was carried out on the Site for water levels and hazardous ground gas.

The results of the desk study and the sampling with the relevant laboratory work have been presented in the Appendices.

The methods of desk study and fieldworks have been described in Section 2.

The interpretation of the results has been presented as a table in Section 3 with desk study, a conceptual site model (CSM) and initial risk assessment based on the source-pathway-receptor principle and recommendations for aspects of design and construction.

1.3 Scope

The scope of works performed for this Summary Site Investigation (SSI) comprised the following:

- Δ Desk Study;
- Δ Soil sampling;
- Δ In-situ penetration testing;
- Δ In-situ permeability testing;
- Δ Laboratory testing;
- Δ Ground gas monitoring;
- Δ Contamination assessment; and
- Δ Geotechnical assessment.

2.0 INVESTIGATION METHODOLOGY

2.1 Desk Study

Guidance on desk study practice and interpretation is provided in British Standard BS10175 “Investigation of potentially contaminated sites – Code of practice”, BS5930 “Code of practice for site investigations”, and the Environment Agency publication CLR11 “Model Procedures for the management of land contamination” and associated documents including Industry Profiles. As the Site has not been identified as potentially contaminated, the full risk assessment process has not been undertaken at this stage.

Basic risk assessment in geotechnics and contamination is provided by the third party supplied data in Appendix I. A walkover has been conducted by an experienced scientist or engineer to a standard methodology. Historical maps of the Site since circa 1890 to recent were inspected and representative and informative examples have been reproduced in Appendix II.

2.2 Conceptual Site Model

A conceptual exposure model represents the relationships between contaminant sources, pathways and receptors, to support the identification and assessment of possible pollutant linkages (PPL) - and an assessment of known pollutant linkages, where identified from existing information.

Where PPLs are identified, a preliminary risk assessment is carried out to assess the likelihood that each possible linkage exists and to decide whether these pose potentially unacceptable risks to identified receptors and require further assessment. Where this linkage is of a form that subsequently leads to land being identified as ‘contaminated land’ under the terms of Part 2A of the Environmental Protection Act 1990, the linkage is termed a *significant pollutant linkage*.

At the preliminary risk assessment stage, which is usually based upon desk top information, the decision on whether a PPL poses a potentially unacceptable risk is based upon professional judgement. The significance of the PPL will also be determined dependant on the context of the land use and the purpose of the assessment.

Assessing risks from land contamination underpins the “suitable for use” approach adopted for Part 2A of the Environmental Protection Act 1990 regulatory regime and the National Planning Policy Framework (NPPF), March 2012.

Based on the information obtained from this assessment, a preliminary risk assessment using the source-pathway-receptor approach has been formulated, which identifies possible pollutant linkages at the Site in the context of the proposed end-use. The CSM is presented at the end of Section 3 and it takes into account the relevant findings of the fieldwork. Appendix III contains risk assessment definitions.

2.3 Setting Out & Services

Exploratory hole and subsequent sample locations were selected to provide suitable coverage of the Site, having regard for the likely presence of services and any other Site-specific constraints such as existing structures and finishes.

Prior to any excavation being undertaken, a cable detector was used at sampling positions to avoid electric cables. Where there was still concern over services a hand auger was used to excavate the initial 1 m depth.

The locations of the boreholes and penetration tests are shown on Figure 4 and the records of the fieldworks are shown in Appendix IV.

2.4 Cable Percussive Borehole

Cable percussive borehole drilling is capable of obtaining disturbed and undisturbed soil samples down to approximately 40 m depth. The hole may be formed at a diameter of 200 mm or most typically 150 mm, with samples obtained direct from the drilling tools. Undisturbed samples (U100) may be obtained, and in-situ testing may include Standard or Cone Penetration Tests (SPT/ CPT).

The technique can penetrate dense Made Ground, rubble and concrete or weathered rock/thin bands of rock using a chisel. However, in some cases these materials can form obstructions.

2.5 Dynamic Sampler Boreholes

The dynamic sampler system comprises a series of varying diameter metal tubes of 1 m or 2 m length, which have a window cut into the side. The tubes are driven into the ground using a percussive weight falling through a standard drop onto an anvil

attached to solid rods, and withdrawn by use of a hydraulic jack. The soil is pushed into the tube during the driving, and samples are taken by a trowel directly through the window. In the windowless system a 1 m or 2 m long thick-walled open-tube sampler with plastic liner is driven into the ground by the same method. The windowless method offers a lower degree of sample disturbance and therefore can provide a better quality sample.

The system can achieve typical depths of around 3 m to 5 m in favourable soil conditions. The system is limited by coarse gravel or other large fragments, and also in wet sands where the hole collapses.

The details of the ground conditions encountered are presented on the relevant record sheets, which also detail the type and depths of samples taken and the results of any in-situ tests. Other relevant information may also be recorded including groundwater levels and details of any standpipe installations.

2.6 Standpipe Installations

Four of the dynamic sampler boreholes and all three cable percussion boreholes have been fitted with a gas/water monitoring standpipe of 50 mm internal diameter UPVC slotted and plain casing to the required depth as appropriate, capped by a gas tap bung and cover. The locations of the monitoring installations are shown on Figure 4.

2.7 Dynamic Penetration Tests

Dynamic penetration testing is undertaken in accordance with BS1377 Part 9:1990:3.2 DPSH, where 1 m threaded metal rods with a sacrificial cone tip are driven into the ground via a 63.5 kg weight falling over a 750 mm distance onto an anvil resting on the rods. The number of blows taken for 100 mm penetration is recorded until the required depth is reached. The rods are removed using a jack, and the results presented graphically.

2.8 BRE365 Soakaway Testing

Soakaway testing is undertaken in accordance to BRE Digest 365. A trial pit is excavated with a mechanical excavator to the required depth. A gravel pack is then installed along with two monitoring pipes. The remaining hole is backfilled with arisings. The gravel pack is filled with water and the water level measured at suitable intervals until either sufficiently empty or the time exceeds twenty four hours. The

test is repeated three times and the infiltration rate calculated following BRE365 methods. The results are presented graphically.

2.9 Gas/Groundwater Monitoring

Groundwater monitoring is undertaken using an electronic dip meter, which records the depth to water in a standpipe. Ground gas composition and flow monitoring may be undertaken where semi-permanent standpipes have been installed. Both flow (litres per hour) and composition (%) are measured using an infra-red gas monitor, calibrated for methane, carbon dioxide & oxygen. Records are also taken of atmospheric pressure.

2.10 Chemical Analysis

The results of the chemical analysis are provided in Appendix V.

2.11 Geotechnical Testing

The results of the geotechnical testing are provided in Appendix VI.

3.0 RESULTS & INTERPRETATION

3.1 Desk Study

<p>Site Description & Walkover</p>	<p>The Site is located on the south-western outskirts of Boston, Lincolnshire, approximately 2.6 km south-west of Boston Town Centre. A location map is provided as Figure 1.</p> <p>A walkover was undertaken on 17th September 2013. The Site layout is shown in Figure 2 and relevant features identified during the walkover are described below.</p> <p>The Site is agricultural land with a total area of approximately 69 acres. The Site is divided into four areas, with three areas separated by field drains located to the west of the A16, and a further section located to the east of the A16. At the time of the Site inspection, all four sections of the Site had recently been harvested and straw stubble was present. An electricity pylon is present in the south-eastern corner of the Site.</p> <p>The three sections of the Site to the west of the A16 are bordered to the west and north by residential properties on London Road and Tytton Lane East respectively, with the boundaries of the rear gardens forming the Site boundary; and to the east, by the A16 road, with a timber fence boundary; and to the south, by Towns Drain watercourse, beyond which are residential properties and Wyberton Playing Fields.</p> <p>The section of the Site to the east of the A16 is bordered to the north by residential properties on Tytton Lane East, and by further agricultural fields to the east and south, and by the A16 to the west.</p> <p>The topography of the Site and surrounding area is generally flat and level and the surrounding land use is a mixture of agricultural land and residential properties.</p>
<p>Current Land Feature Sources</p>	<p>A review of the Sitecheck data has identified the following:</p> <ul style="list-style-type: none"> △ Contemporary Trade Directory Entries within 250 m of the Site include joinery manufacturers; washing machine service and repairs; medical and dental laboratories; and lawnmower and garden machinery sales and servicing; △ An obsolete fuel station approximately 250 m north-west of the Site; △ Four electrical sub-stations within 250 m of the Site; the closest of which is located 50 m east of the north-east corner of the Site, across the A16; △ Historical and/or current tanks approximately 250 m north of the Site, likely associated with the timber engineering site; and △ Two areas of in-filled land associated with the former brickworks, approximately 140 m north-west of the Site. <p>Given their distances from the Site, these entries are not considered to represent a significant concern to the relevant receptors.</p> <p>See Appendix I for further details.</p>

Proposed Development	It is understood that current proposals include the redevelopment of the Site with approximately 500 residential units with private gardens, commercial properties including a food store outlet, and a football stadium with associated amenity spaces and access roads. The proposed development scheme provided by the Client is shown in Figure 3.
Historical Land Feature Sources	<p>From historical mapping, the Site is indicated to have been agricultural from the earliest map edition to the current map edition.</p> <p>The 1889 map edition identifies the presence of London Road and Tytton Lane East to the west and north of the Site and a railway line, routed north-south, running between western and eastern sections of the Site. A pump is present immediately adjacent to the centre of the northern boundary of the Site; two brickworks are present approximately 140 m north-west of the Site; and Causeway House (possible farmhouse) is present adjacent to the western extent of the southern boundary. By 1951, the brickworks are no longer present, and residential development has been undertaken to the west and north of the Site. By 1974, the railway line is identified as dismantled (now occupied by the A16); further residential development has been undertaken to the north and south-west of the Site; poultry houses are present to the west and south of the south-western corner of the Site; and a timber yard is present approximately 125 m north of the Site.</p> <p>Current mapping indicates that the poultry houses to the west of the Site remain present and that Causeway House has been demolished and residential properties constructed in its former location. The timber yard to the north of the Site remains present and internet research has identified this as a 15 acre timber engineering site.</p>
Map Geology & Commentary	<p>Reference to the BGS website indicates that the Site is underlain by Tidal Flats (clay and silts) which is in turn underlain by Mudstone of the Ampthill Clay Formation.</p> <p>The Site is not in a radon affected area and no radon protection measures are required according to the Sitecheck Data.</p> <p>On-Site geotechnical hazards include a moderate potential of encountering compressible ground and running sand, and a low potential for shrinking or swelling clay.</p> <p>Low permeability geology also limits the potential for migration of any off-Site or on-Site mobile contaminants.</p> <p>See Appendix I for more details.</p>
Topographic Elevation	Approximately 4-5 m above Ordnance Datum (m aOD).
Depth to Groundwater	Expected to be present at shallow depth and possibly within typical foundation excavations.
Surface Water	The Site and surrounding area are within an area with a large network of field drains and a 'Y' shaped drainage channel is present on-Site.
Wider Environment Sensitive Receptors	<p>The Environment Agency aquifer designation maps indicate that the superficial and bedrock beneath the Site are classified as being Unproductive Strata.</p> <p>The Site does not lie within a groundwater Source Protection Zone.</p>

	<p>The Site and the immediate surrounding area are considered by the Environment Agency to be at risk from flooding from rivers or seas without flood defences.</p>
Key Contaminants and CSM Aspects	<p>Potential sources of contamination have not been identified on-Site.</p> <p>The Site is currently used as agricultural farm land.</p> <p>Limited off-Site potential sources of contamination have been identified. Given the underlying geology these are considered to pose a negligible risk to the receptors considered.</p> <p>The superficial Tidal Flat deposits and underlying bedrock Ampthill Clay Formation have been classified as Unproductive Strata.</p> <p>There is uncertainty because unrecorded potentially contaminative activities could have taken place.</p>

3.2 Fieldworks Interpretation

Geology from the Boreholes	<p>The Site was underlain by topsoil comprising silty sandy clay across the Site from ground level to depths of between 0.20 and 0.30 m bgl.</p> <p>The underlying natural soils consisted of brown, mottled grey organic sandy silty, occasionally peaty clay to depths of between 5.9 and 6.80 m bgl. These are considered representative of Tidal Flat Deposits. Underlying the clay at the locations of CP101 and CP102, was a band of very gravelly sand and very sandy very gravelly clay respectively.</p> <p>From depths of between 6.3 and 6.8 m bgl, brown, grey sandy silty gravelly clay, with gravel of chalk and flint was identified to the base of the cable percussion boreholes. These soils are considered to be representative of Glacial Till.</p> <p>The bedrock geology was not encountered in the boreholes.</p> <p>Water was encountered in CP101 and CP102 at depths of 6.10 and 6.20 m bgl respectively within the gravelly sand or very sandy very gravelly clay.</p> <p>No olfactory or visual evidence of contamination was noted.</p> <p>The ground conditions are considered to be generally representative of the superficial deposits anticipated from the geological mapping.</p>
Standard Penetration Testing (SPTs)	<p>SPTs initially indicated low resistance to penetration increasing to moderate and high penetration with depth.</p> <p>SPT 'N' values of between 2 to 10 were recorded within Tidal Flat clays to a depth of 5.00 m bgl indicating very soft to firm conditions.</p> <p>Uncorrected N values in the underlying gravelly clay at depths below 7 m, were in the range 33 to >50 indicative of very stiff clay.</p>
Dynamic Penetration Test Data (DPTs)	<p>The penetration testing recorded reasonably consistent very low resistance to penetration to depths of between 4.70 to 5.30 m bgl. Low to moderate resistance to penetration has been identified below these depths to 6.00 m bgl.</p>

<p>BRE365 Soakaway Test Data</p>	<p>Soakaway testing was carried out in general accordance with BRE365 at the location of SA101, SA102 and SA103. Two fills of each pit were completed in the time allowed.</p> <p>Soil infiltration rates of between approximately 1×10^{-6} and 7×10^{-7} m/s were calculated. Overall, poor drainage was indicated as would be expected in the geology at the Site.</p> <p>The result from trial pit SA101 recorded very rapid soakage in the first few minutes which is not considered representative of the natural soils. The most likely explanation is an underground feature has affected the data (such as a drain not apparent in constructing the trial), and we do not recommend the best case results are adopted for design unless further validated.</p>
<p>Groundwater in Standpipes</p>	<p>Groundwater was recorded at depths of between 1.6 to 2.9 m bgl. DS105 was dry to the base at 3.0 m.</p>
<p>Gas in Standpipes</p>	<p>One re-visit was made to seven standpipes on the 26th September 2013, and the worst-case data set has been presented below.</p> <p><0.1 % v.v. methane, 1.6 % v.v. carbon dioxide, 18.4 % v.v. oxygen and flow of 1.6 l/hr.</p> <p>Atmospheric pressure at ground level was identified at 1018 mb.</p>
<p>Chemical Analysis</p>	<p>Six samples were scheduled for the following analytes: CLEA metals suite, TPH (total), speciated PAH (EPA-16) and an asbestos screen.</p> <p>None of the samples tested exceeded the associated UK criteria for the proposed end-use scenario, which is residential (for criteria see Appendix VII).</p> <p>Concentrations of TPH were below the laboratory method detection limit.</p> <p>Asbestos fibres were not detected in the samples tested.</p>
<p>Geotechnical Testing</p>	<p>Moisture content determinations, liquid and plastic limits and a California Bearing Ratio (CBR) test were carried out.</p> <p>Clay of medium volume change potential has been identified according to NHBC guidance.</p> <p>Moisture content in the Tidal Flat deposits was in the range 22 to 63 %. The underlying Glacial Till generally had lower moisture content typically in the range 5 to 23 %</p> <p>CBR was 14 % for clay from CP101 at 1.0 to 1.3 m bgl.</p>
<p>Foundation Recommendations</p>	<p>The boreholes encountered a generally weak and compressible shallow geology, extending to depths beyond normal feasibility for traditional strip or pad foundations to typical low-rise structures.</p> <p>There is nearby low-rise housing on assumed similar ground conditions, which may be constructed on rafts, alternative foundations, or to different building codes.</p> <p>In Tidal Flat geology, there is often a firm clay “crust” beneath topsoil that has been used in the past for shallow spread foundations. The “crust” may be indicated by the first few blowcounts in the DPT records. Local Building Control may have details of nearby foundation designs and any problems associated. For medium shrinkability clay soil, the minimum footing depth in</p>

	<p>NHBC Standards is 0.9 m, which is likely to preclude the use of any "crust" that may exist. Dependent on the developer's preferred foundation system, it may be economic to carry out further investigation into shear strengths and settlements for a traditional foundation type.</p> <p>Suitable alternative foundation types may include ground improvement, driven or bored piles or a raft system. Further deep boreholes may be required for alternative foundation design.</p> <p>Specialist pile contractors should be approached to provide their most efficient and suitable designs given the ground conditions.</p> <p>Ground floor slabs are recommended to be suspended with a naturally ventilated void and damp proof membrane (DPM) provision.</p>
Pavement Design	<p>The CBR result of 14% was considered to be much higher than expected and an initial design CBR of 2% is recommended subject to further investigation.</p> <p>CBR is dependent on the condition of the strata and could be different upon excavation to the formation subject to seasonal conditions. Clay soils are likely to be frost susceptible.</p> <p>The use of a geotextile is recommended where variable ground conditions are encountered or across changes in strata to protect against potential differential settlement.</p>
Contamination	<p>Current or historical potential sources of contamination have not been identified at the Site or immediate surrounding area.</p> <p>Concentrations of potential contaminants have either been identified below guidance values and/or laboratory detection limits.</p> <p>A hotspot protocol should be put in place to deal with any previously unidentified hotspots of contamination.</p>
Fresh Water Pipes	<p>The local water authority should be contacted at an early stage in order that any abnormal costs can be calculated, if required.</p>
Concrete Grade	<p>Samples analysed identified the presence of chemicals potentially aggressive to concrete.</p> <p>The Site can provisionally be classified as Design Sulfate Class DS-2 and Aggressive Chemical Environment for Concrete Class ACEC AC-2 for natural ground in accordance with the BRE Special Digest 1.</p> <p>Further testing may be prudent in order to fully characterise the geology.</p>
Ground Gas	<p>There are no significant potential sources of ground gas on or off-Site. The gas monitoring revealed low levels of ground gases and low flow. The provisional NHBC Traffic Light Classification is Green.</p> <p>The foundation recommendations incorporate a degree of inherent gas protection in accordance with BS 8485:2007.</p>
Groundwater/ Drainage	<p>The ground conditions at the Site were found to be cohesive with groundwater present at between 1.6 and 2.9 m depth.</p> <p>Generally poor permeability soils were identified in soakaway tests. Surface water disposal via traditional soakaways is not likely to be possible at this location.</p>

	<p>However, the results suggest that some soakage did occur at shallow depths. Further targeted testing is recommended to confirm suitability and design parameters if permeable paving or other sustainable drainage system is required.</p> <p>Alternatives such as discharge to existing facility should also be investigated.</p>
Excavations	<p>Trench excavation sides are unlikely to be stable at this Site, therefore, batters and/or suitable support would be required for excavations.</p> <p>This would also be required where human entry is necessary.</p>
Materials Management	<p>Excavated soils may be suitable for use elsewhere subject to suitability for use and any necessary regulator protocols. Additional testing may be required for optimised off-Site disposal of spoil.</p>

3.3 Conclusions and Actions

Geotechnics	<p>The ground conditions are considered to be unsuitable for traditional strip or pad foundations for typical low-rise structures.</p> <p>Suitable alternative foundation types may include ground improvement, driven or bored piles, or a raft system</p> <p>Specialist pile contractors should be approached to provide their most efficient and suitable designs given the ground conditions.</p> <p>Ground floor slabs are recommended to be suspended with a naturally ventilated void and DPM provision.</p> <p>Clay soils have been encountered and foundation depth should be reviewed in accordance with NHBC guidance.</p> <p>Surface water disposal via traditional soakaways is not likely to be possible at this location. Further targeted testing is recommended.</p>
Contamination	<p>Current or historical potential sources of contamination have not been identified at the Site or immediate surrounding area.</p> <p>Concentrations of potential contaminants have either been identified below guidance values for a residential with assumed plant uptake end-use or laboratory detection limits.</p> <p>It should be ensured that a suitable covering of clean topsoil is positioned in residential gardens and regions of soft landscaping. It may be possible to reuse current topsoil on-Site for this purpose. Due to the size of the Site, further checks on topsoil quality are recommended.</p> <p>The provisional NHBC Traffic Light Classification is Green.</p> <p>A hotspot protocol should be put in place to deal with any previously unidentified hotspots of contamination.</p> <p>Best working practices, including dust suppression should be employed during any construction activities at the Site.</p>
Materials Management	<p>Contractors may require additional advice on materials management and waste classification which is not covered by this Report.</p>

Table 1: Initial Conceptual Site Model

Source	Pathway	Receptor	Matrix Assessment	Justification
Previously unidentified sources of contamination.	Direct contact/ ingestion and inhalation of dust and vapours	Future Site users (workers and visitors) Off-Site users Groundworkers during any future landscaping works	Low Risk	Absence of identified sources. Also concentrations of contaminants below the relevant UK guidance thresholds. Sample spacing is sparse for a large area.
	Leaching and migration through any perched/shallow groundwater present beneath the Site	Controlled Waters (Towns Drain and field drains)	Very Low Risk	Absence of sources, low permeability geology, low sensitivity of receptors.
	Direct contact and permeation	Service conduits, Human Health	Low Risk	Though the need for upgraded pipework is considered unlikely, the local water authority should be liaised with in order to confirm any requirement for upgraded pipework.
	Direct contact and leaching	Buildings and structures	Low Risk	Sulphates present in groundwater. Generally robust receptors.
Potential ground gas (from on-Site sources)	Vertical & lateral migration	Human Health	Very Low Risk	No significant on-Site or off-Site sources, or concentrations of ground gas or flow rates have been identified.

Standard risk definitions and matrices are presented in Appendix III.

4.0 LIMITATIONS TO ENVIRONMENTAL ASSESSMENTS

Comments contained within the Report regarding the hydrology of the Site and the surrounding area, do not constitute a full flood risk assessment.

In addition, comments contained within the Report regarding the absence of invasive plants should not be considered to represent a full invasive plant assessment.

It should also be noted that this Report does not constitute a full Site Investigation, waste classification exercise, contamination, geotechnical or asbestos survey.

Information was obtained, reviewed and evaluated in preparing this Report from Landmark Information Group. Our conclusions, opinions and recommendations are based upon this information and the information obtained during the Site walkover, the Consultant does not warrant the accuracy of the information provided and will not be responsible for any opinions expressed, or conclusions reached in reliance upon information which is subsequently proven to be inaccurate.

The recommendations contained in this Report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices and hydrological and engineering practices at this time and location and as such are not a guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

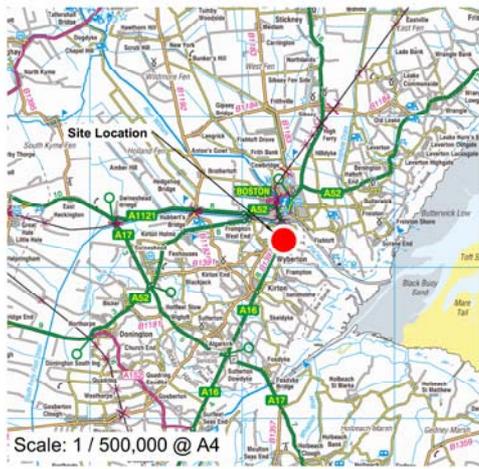
This Report was prepared for the sole and exclusive use of the Client and for the specific purpose instructed as defined in Section 1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than ourselves and the Client, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, this Report should not 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 the authors 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.

In the absence of a full regulatory set of screening values derived using the new CLEA Framework, this Report will refer to the following:

- Δ The Soil Guidance Values (SGVs) published by the Environment Agency;
- Δ Former SGVs for which no updated SGV has been published;
- Δ The 2009 Chartered Institute of Environmental Health (CIEH)/Land Quality Management (LQM) Generic Assessment Criteria (GAC);
- Δ 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
- Δ In house Generic Screening Values (HH-GSVs) and other non UK values where considered relevant.

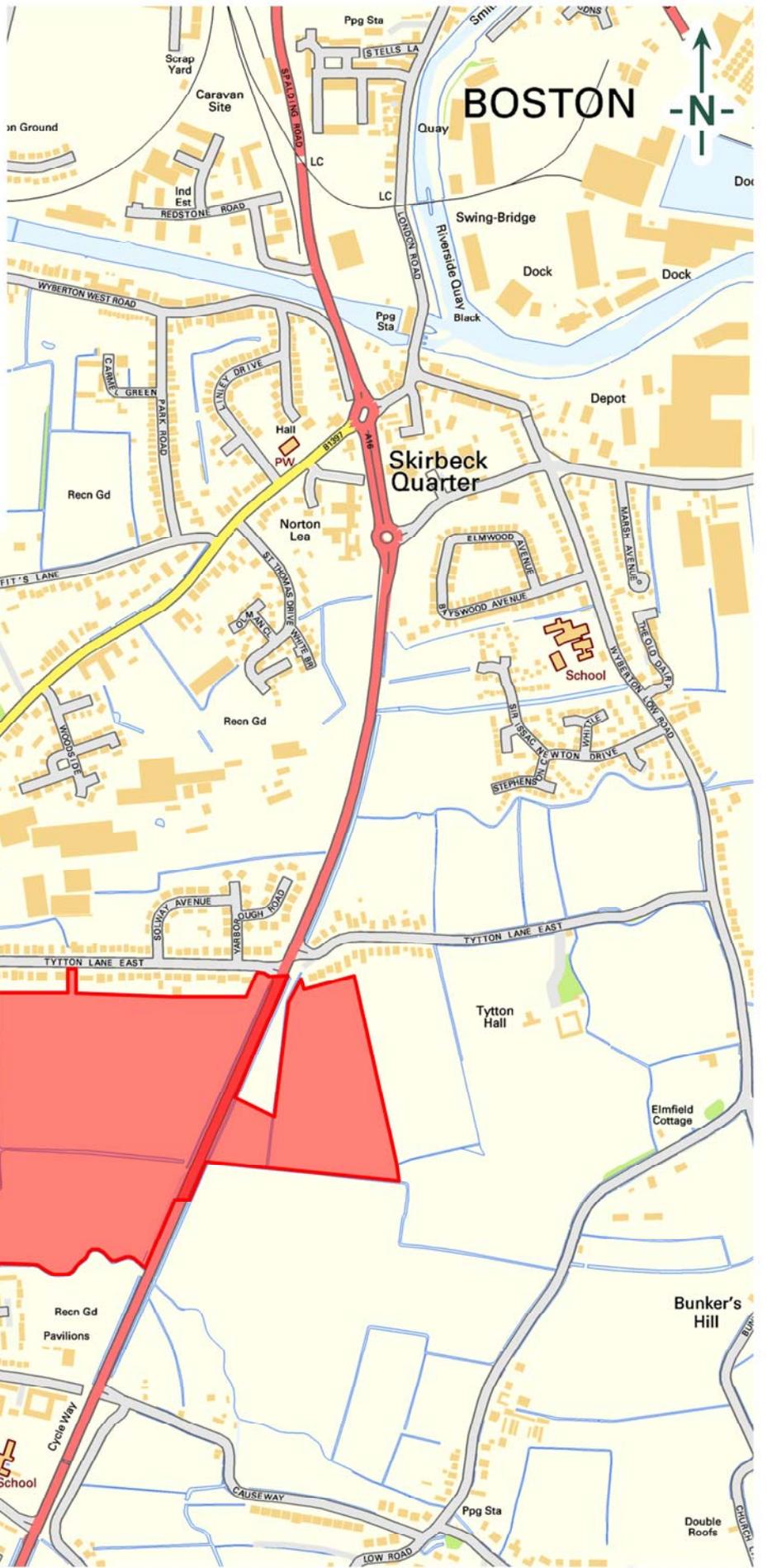
These guidance values are presented in Appendix VII.

Figures



LEGEND

 Site Boundary



Scale: 1 / 10,000 @ A4

Ordnance Survey, (c) Crown Copyright 2014. All rights reserved.



TITLE:
Site Location Map
Tyton Lane East
Boston

DWN: DE	SCA: To Scale@A4
CHK: AW	REV: 1
DATE: 07 April 2014	

PROJECT NO: 13-0525.03
FIGURE NO: 1



Not to Scale

Data provided by Signet Planning. Drawing Reference: HG0249 / 002.



TITLE:
Site Layout Plan
Tytton Lane East
Boston

DRAWN BY: DE	DESIGNED BY: -	PROJECT NO.: 13-0525.03
CHECKED BY: AW	APPROVED BY: -	FIGURE: 2
DATE: 07 April 2014	REVISION NO.: 1	



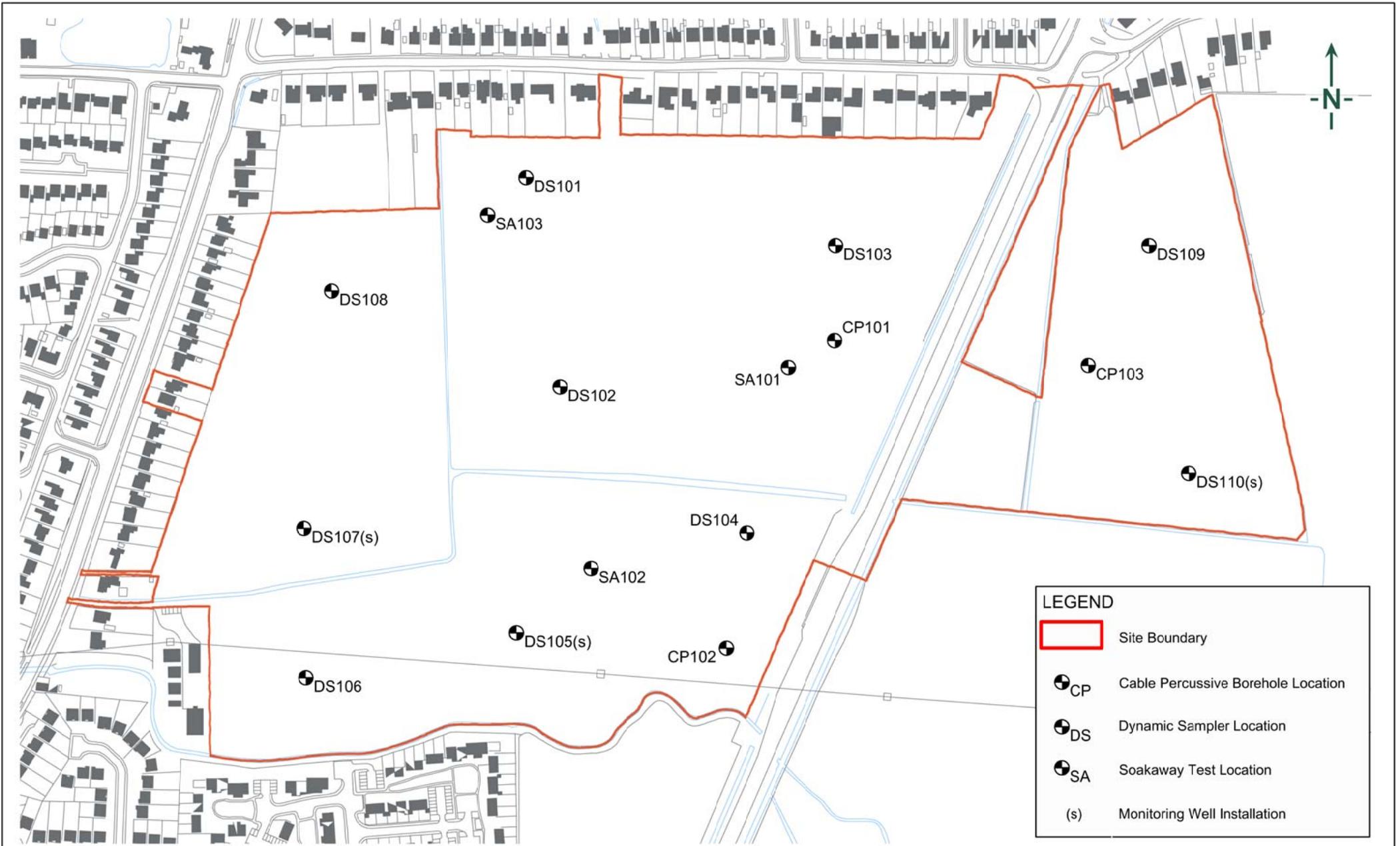
Not to Scale

Data provided by Signet Urban Design. Drawing No: HG0249 / 001 / REV C.



TITLE:
 Proposed Development Plan
 Tytton Lane East
 Boston

DRAWN BY: DE	DESIGNED BY: -	PROJECT NO: 13-0525.03
CHECKED BY: AW	APPROVED BY: -	FIGURE: 3
DATE: 07 April 2014	REVISION NO: 1	



LEGEND	
	Site Boundary
	CP Cable Percussive Borehole Location
	DS Dynamic Sampler Location
	SA Soakaway Test Location
	(s) Monitoring Well Installation

Not to Scale

Data provided by Signet Planning. Drawing Reference: HG0249 / 002.



TITLE:
Site Layout Plan
Tytton Lane East
Boston

DRAWN BY: DE	DESIGNED BY: -	PROJECT NO.: 13-0525.03
CHECKED BY: AW	APPROVED BY: -	FIGURE: 4
DATE: 07 April 2014	REVISION NO.: 1	

Appendix I



A different perspective

The Quadrant Phase 1, Tytton Lane, Boston, PE21 7HW

Prepared for:

**Ms J Pearson
Delta Simons
The Lawn
Union Road
Lincoln
LN1 3BL**

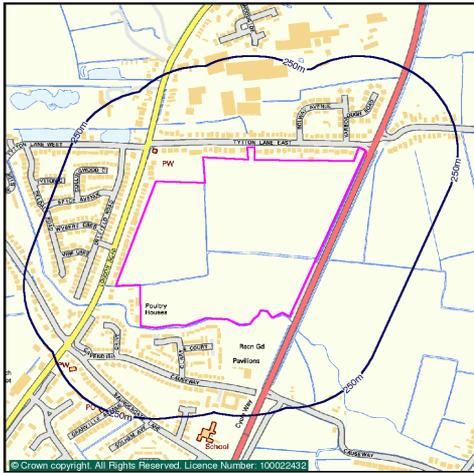
Report Reference: SCD_36393346_1_1

Report Date: 17-OCT-2011

Customer Reference: 11-0563.01

National Grid Reference: 532070 341590

Site Area: 215788 m²



If you have any questions on the contents of this Report please contact Landmark Customer Helpdesk which is open from 9:00am - 5:30pm, Monday - Friday, via one of the following channels:

Telephone: 0844 844 9966
Fax: 0844 844 9980
Email: info@landmarkinfo.co.uk
Website: www.sitecheck.co.uk

Report Sections and Details		Page
Summary of Site		-
This section comprises source, pathway and receptor information found on site. Other factors which may affect the site are also included.		
Aerial Photo		1
The aerial photo gives an overall view of the area. The smaller large-scale Ordnance Survey map includes the site boundary and search zone buffer at 250m.		
Location Map		2
The accurate large-scale Ordnance Survey map confirms the boundary of the subject site. The descriptive text may identify other features which could be of relevance but not reported. The smaller aerial photo includes the site boundary.		
Summary Table		3
This section comprises of a summary table of the information found on site and in its vicinity.		
Current Land Use		7
This section contains a map, which shows current land use features. The following pages detail these features and identify the Reference Number and direction.		
Historical Land Use		10
This section contains a map, which shows historical land use features. The following pages detail these features and identify the Reference Number and direction. A table listing all the maps used to source this information is included.		
Sensitivity		13
This section contains a map, which shows pathway and receptor features. The following pages detail these features and identify the Reference Number and direction. This section also contains a separate Flood Map and flood details.		
Other Factors		16
This section contains information on other factors which may affect the site and its vicinity.		
Useful Information		17
This section contains information which may be of use when interpreting the report.		
Useful Contacts		18
All textual information is linked by the 'Contact Ref' to this quick reference list of contacts. These contacts may be able to supply additional information or answer any subsequent query relating to that record.		

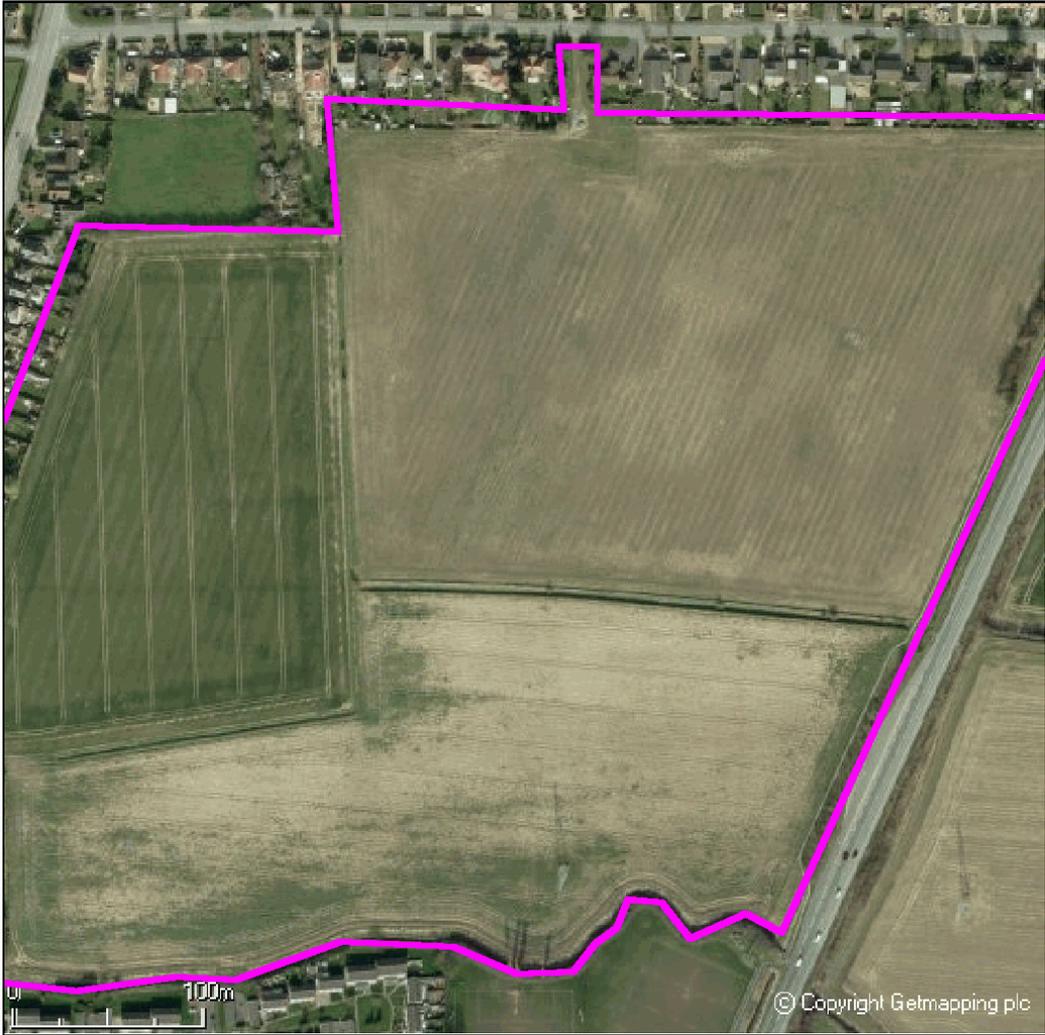
Historical Land Use	Page No.	Reference Number (Map ID)
Potentially Contaminative Uses		
Potentially Contaminative Industrial Uses (Past Land Use)		
Railways, Date of Mapping: 1890 - 1956	11	1

Sensitivity	Page No.	Reference Number (Map ID)
Pathways		
Groundwater Vulnerability		
Geological Classification: Non Aquifer (Negligibly permeable) - Formations which are generally regarded as containing insignificant quantities of groundwater. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants, Soil Classification: Not classified, Map Scale: 1:100,000, Map Name: Sheet 19 Lincolnshire, Contact Ref: 1	15	-
Extreme Flooding from Rivers or Sea without Defences		
Type: Extent of Extreme Flooding from Rivers or Sea without Defences, Flood Plain Type: Fluvial Events, Contact Ref: 1	15	-
Flooding from Rivers or Sea without Defences		
Type: Extent of Flooding from Rivers or Sea without Defences, Flood Plain Type: Fluvial/Tidal Models, Contact Ref: 1	15	-

Sensitivity	Page No.	Reference Number (Map ID)
Environmentally Sensitive Receptors		
Nearest Surface Water Feature		
Distance: 0m	15	2

Other Factors	Page No.	Reference Number (Map ID)
Geological		
Radon Potential - Radon Affected Areas		
Affected Areas: The property is in a lower probability radon area, as less than 1% of homes are above the action level, Source: British Geological Survey, National Geoscience Information Service, Contact Ref: 2	16	-

Other Factors	Page No.	Reference Number (Map ID)
Geological		
Radon Potential - Radon Protection Measures		
Radon Protection Measures: None, Source: British Geological Survey, National Geoscience Information Service, Contact Ref: 2	16	-
Potential for Compressible Ground Stability Hazards		
Hazard Potential: Moderate, Contact Ref: 2	16	-
Potential for Landslide Ground Stability Hazards		
Hazard Potential: Very Low, Contact Ref: 2	16	-
Potential for Running Sand Ground Stability Hazards		
Hazard Potential: Moderate, Contact Ref: 2	16	-
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
Hazard Potential: Low, Contact Ref: 2	16	-



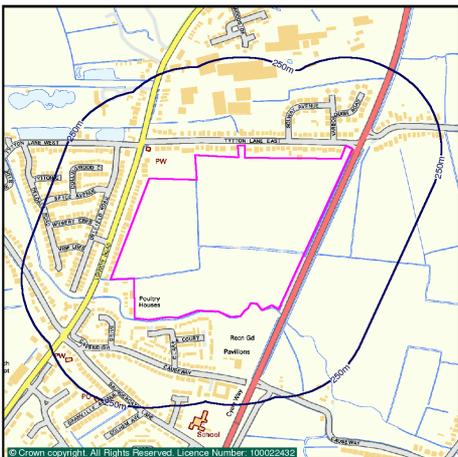
Site
The Quadrant Phase 1, Tytton Lane, Boston, PE21 7HW

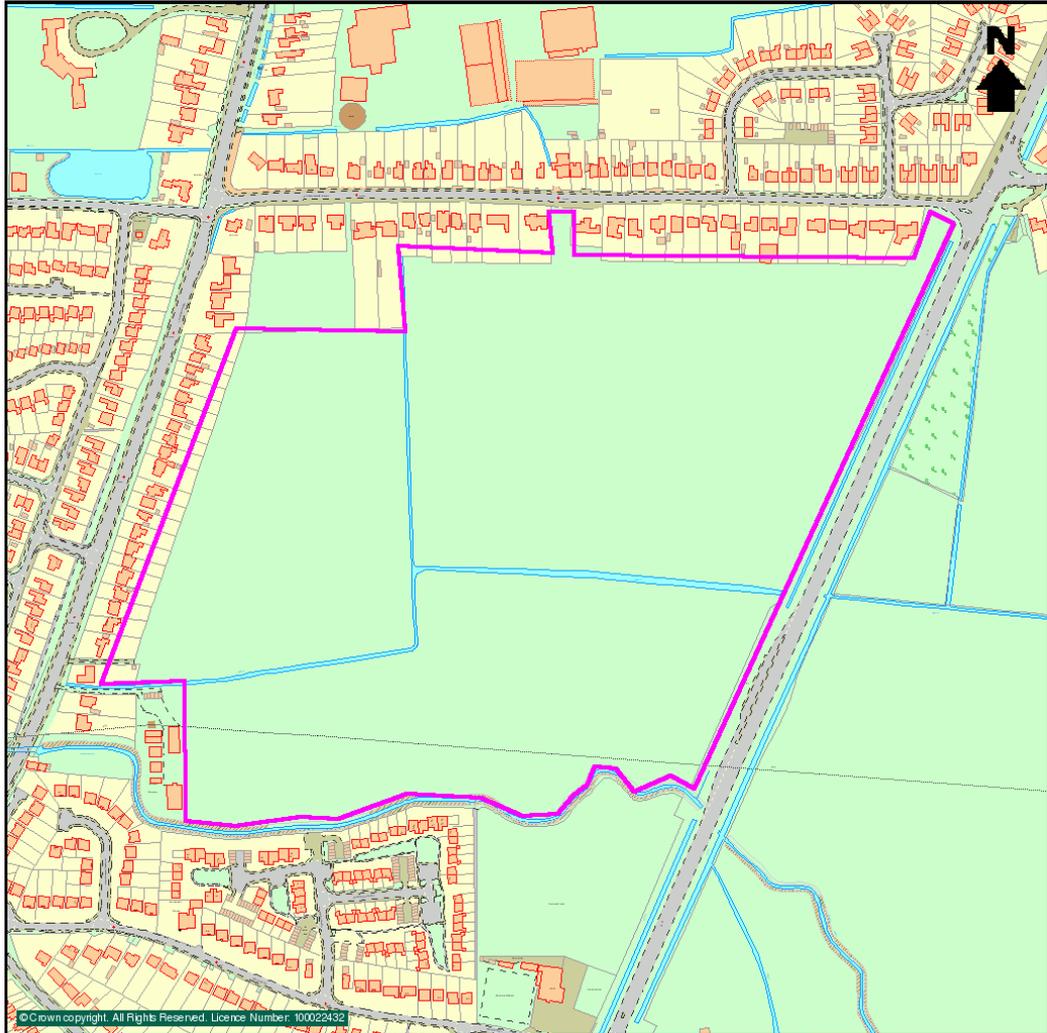
Grid Reference
532070, 341590

Report Reference
SCD_36393346_1_1

Customer Reference
11-0563.01

Size of Site
215788 m²





Site
The Quadrant Phase 1, Tytton Lane, Boston, PE21 7HW

Grid Reference
532070, 341590

Report Reference
SCD_36393346_1_1

Customer Reference
11-0563.01

Size of Site
215788 m²



Current Land Use	On Site	0-250m
Sources	0	9
Waste / Landfill Sites		
BGS Recorded Landfill Sites	0	0
Licensed Waste Management Facilities (Landfill Boundaries)	0	0
Licensed Waste Management Facilities (Locations)	0	0
Local Authority Recorded Landfill Sites	0	0
Registered Landfill Sites	0	0
Registered Waste Transfer Sites	0	0
Registered Waste Treatment or Disposal Sites	0	0
Statutory Authorisations		
Local Authority Pollution Prevention and Controls	0	0
Contaminated Land Register Entries and Notices	0	0
Registered Radioactive Substances	0	0
Discharge Consents		
Discharge Consents	0	4
Water Industry Act Referrals	0	0
Industrial Processes		
Integrated Pollution Controls	0	0
Integrated Pollution Control Registered Waste Sites	0	0
Integrated Pollution Prevention And Control	0	0
Local Authority Integrated Pollution Prevention And Control	0	0
Storage of Hazardous Substances		
Control of Major Accident Hazards Sites (COMAH)	0	0
Explosive Sites	0	0
Notification of Installations Handling Hazardous Substances (NIHHS)	0	0
Planning Hazardous Substance Consents	0	0
Contraventions		
Local Authority Pollution Prevention and Control Enforcements	0	0
Enforcement and Prohibition Notices	0	0
Planning Hazardous Substance Enforcements	0	0
Prosecutions Relating to Authorised Processes	0	0
Prosecutions Relating to Controlled Waters	0	0
Substantiated Pollution Incident Register	0	0

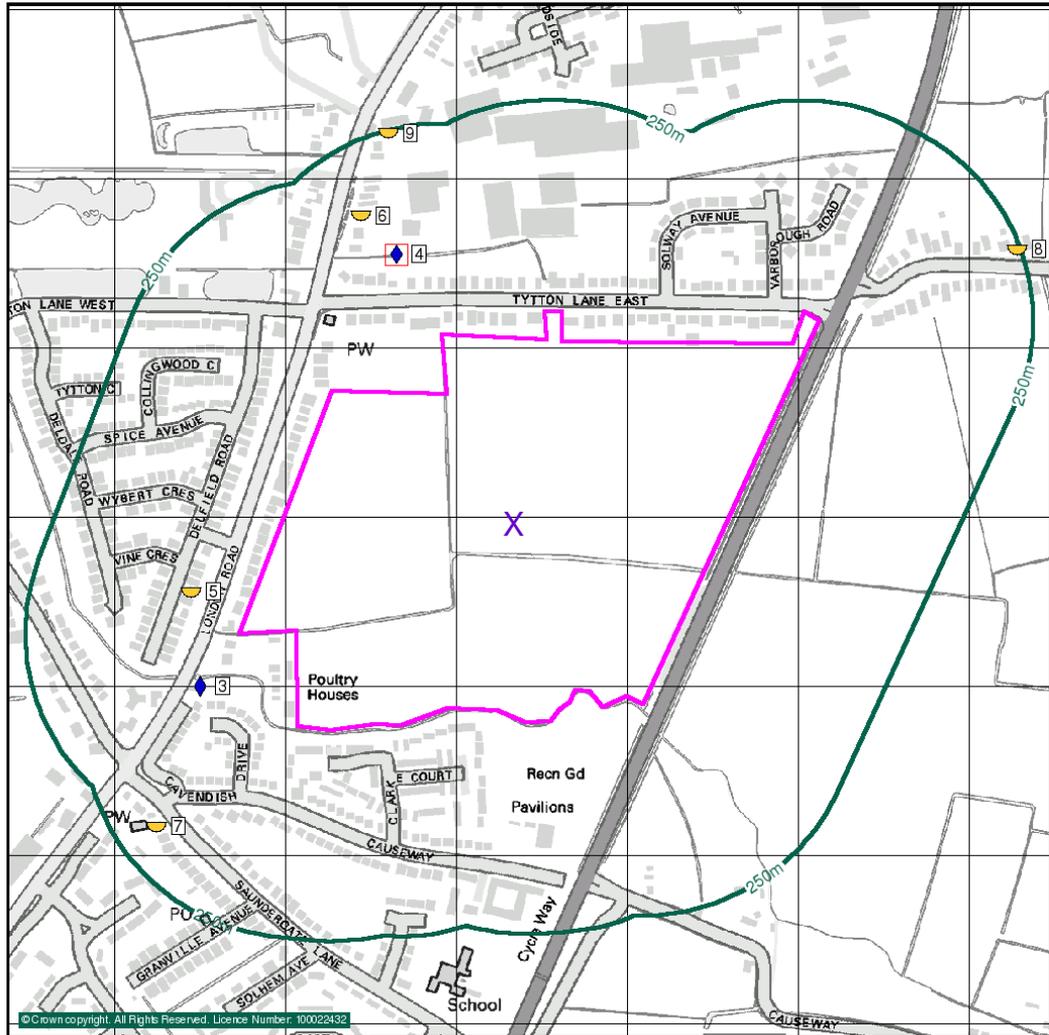
Current Land Use	On Site	0-250m
Sources	0	9
Potentially Contaminative Uses		
Contemporary Trade Directory Entries	0	4
Fuel Station Entries	0	1
Miscellaneous		
BGS Recorded Mineral Sites	0	0

Historical Land Use	On Site	0-250m
Sources	1	14
Potentially Contaminative Uses		
Historical Tanks And Energy Facilities	0	9
Potentially Contaminative Industrial Uses (Past Land Use)	1	3
Potentially Infilled Land		
Former Marshes	0	0
Potentially Infilled Land (Non-Water)	0	2
Potentially Infilled Land (Water)	0	0

Sensitivity	On Site	0-250m
Pathways and Receptors	4	0
Pathways		
Groundwater Vulnerability	1	n/a
Drift Deposits	0	n/a
Historical Flood Liabilities	0	0
Extreme Flooding from Rivers or Sea without Defences	1	0
Flooding from Rivers or Sea without Defences	1	0
Areas Benefiting from Flood Defences	0	0
Flood Water Storage Areas	0	0
Flood Defences	0	0

Sensitivity	On Site	0-250m
Pathways and Receptors	4	0
Environmentally Sensitive Receptors		
Areas of Outstanding Natural Beauty	0	0
Environmentally Sensitive Areas	0	0
Local Nature Reserves	0	0
Marine Nature Reserves	0	0
National Nature Reserves	0	0
Nearest Surface Water Feature	1	0
Ramsar Sites	0	0
Sites of Special Scientific Interest	0	0
Source Protection Zones	0	0
Special Areas of Conservation	0	0
Special Protection Areas	0	0
Water Abstractions	0	0
Protected Countryside Areas		
Forest Parks	0	0
National Parks	0	0
National Scenic Areas	0	0

Other Factors	On Site	0-250m
Geological	7	0
Brine Compensation Area	0	n/a
Coal Mining Affected Areas	0	n/a
Mining Instability	0	0
Man-Made Mining Cavities	0	0
Natural Cavities	0	0
Potential for Collapsible Ground Stability Hazards	1	0
Radon Potential - Radon Affected Areas	1	n/a
Radon Potential - Radon Protection Measures	1	n/a
Potential for Compressible Ground Stability Hazards	1	0
Potential for Ground Dissolution Stability Hazards	0	0
Potential for Landslide Ground Stability Hazards	1	0
Potential for Running Sand Ground Stability Hazards	1	0
Potential for Shrinking or Swelling Clay Ground Stability Hazards	1	0
Non Coal Mining Areas of Great Britain	0	0



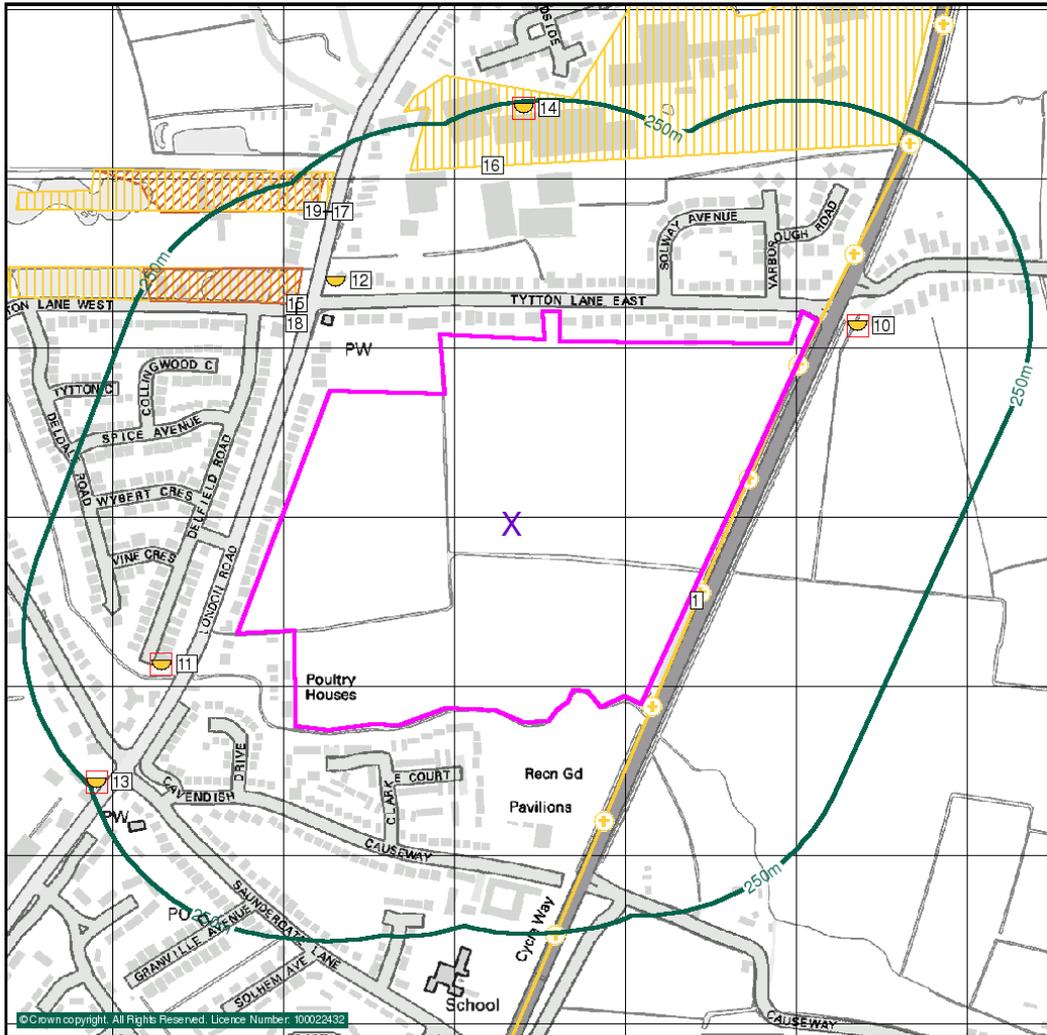
General	Waste/Landfill Sites	Contraventions	Storage Of Hazardous Substances	Statutory Authorisations	
<ul style="list-style-type: none"> Site Boundary Search Buffer Bearing Reference Point Reference Number 	<ul style="list-style-type: none"> BGS Recorded Landfill Site Licensed Waste Management Facilities (Landfill) Local Authority Recorded Landfill Site Registered Waste Transfer Site Registered Waste Treatment or Disposal Site Registered Landfill Site Point Location of Registered Landfill Site 	<ul style="list-style-type: none"> BGS Recorded Landfill Site (Point) Licensed Waste Management Facilities (Location) Local Authority Recorded Landfill Site (Point) Registered Waste Transfer Site (Point) Registered Waste Treatment or Disposal Site (Point) Registered Landfill Site Potential Landfill Buffer 	<ul style="list-style-type: none"> Local Authority Pollution Prevention and Control Enforcement Planning Hazardous Substance Enforcement Prosecution Relating to Authorised Processes Enforcement and Prohibition Notice Substantiated Pollution Incident Register Prosecution Relating to Controlled Waters 	<ul style="list-style-type: none"> COMAH Planning Hazardous Substance Consent Explosive Site NHHS Integrated Pollution Control Integrated Pollution Prevention Control Integrated Pollution Control Registered Waste Site Local Authority Integrated Pollution Prevention and Control 	<ul style="list-style-type: none"> Local Authority Pollution Prevention and Control Contaminated Land Register Entry or Notice (Point) Contaminated Land Register Entry or Notice Registered Radioactive Substance Discharge Consents Discharge Consent Water Industry Act Referral
<ul style="list-style-type: none"> Miscellaneous BGS Recorded Mineral Site Potentially Contaminative Use Potentially Contaminative Use 	<ul style="list-style-type: none"> Registered Waste Treatment or Disposal Site Registered Landfill Site Registered Landfill Site Registered Landfill Site 	<ul style="list-style-type: none"> Local Authority Pollution Prevention and Control Enforcement Planning Hazardous Substance Enforcement Prosecution Relating to Authorised Processes Enforcement and Prohibition Notice Substantiated Pollution Incident Register Prosecution Relating to Controlled Waters 	<ul style="list-style-type: none"> COMAH Planning Hazardous Substance Consent Explosive Site NHHS Integrated Pollution Control Integrated Pollution Prevention Control Integrated Pollution Control Registered Waste Site Local Authority Integrated Pollution Prevention and Control 	<ul style="list-style-type: none"> Local Authority Pollution Prevention and Control Contaminated Land Register Entry or Notice (Point) Contaminated Land Register Entry or Notice Registered Radioactive Substance Discharge Consents Discharge Consent Water Industry Act Referral 	

Sources	Ref No.	Search Buffer	Direction
Waste / Landfill Sites			
Local Authority Landfill Coverage			
Name: Boston Borough Council, - Has supplied landfill data, Contact Ref: 4	-	On Site	W
Name: Lincolnshire County Council, - Had landfill data but passed it to the relevant environment agency, Contact Ref: 3	-	On Site	W

Discharge Consents	Ref No.	Search Buffer	Direction
Discharge Consents			
Anglian Water Services Limited, Mh No 140a Wyberton, Boston, Pe21, Sewage Discharge, Reference: Aw3nff597, Version: 1, Status: Consent revoked or revised: New Consent issued (Section 37(1)), Positional Accuracy: Located by supplier to within 100m, Contact ref: 1	3	0-250m	SW
Saint Gobain Building Distribution Ltd, Calders & Grandidge London Rd, Boston, Lincs, Pe21 7hj, Trade Discharge, Reference: Prnnf09521, Version: 3, Status: Post National Rivers Authority Legislation where issue date > 31/08/1989, Positional Accuracy: Located by supplier to within 10m, Contact ref: 1	4	0-250m	NW
Meyer Forest Products, Calders & Grandidge London Rd, Boston, Lincs, Pe21 7hj, Trade Discharge, Reference: Prnnf09521, Version: 2, Status: Post National Rivers Authority Legislation where issue date > 31/08/1989, Positional Accuracy: Located by supplier to within 100m, Contact ref: 1	4	0-250m	NW
Meyer Forest Products Ltd, Calders & Grandidge London Rd, Boston, Lincs, Pe21 7hj, Trade Discharge, Reference: Prnnf09521, Version: 1, Status: Post National Rivers Authority Legislation where issue date > 31/08/1989, Positional Accuracy: Located by supplier to within 10m, Contact ref: 1	4	0-250m	NW

Potentially Contaminative Uses	Ref No.	Search Buffer	Direction
Contemporary Trade Directory Entries			
Epton, 267, London Road, Boston, Lincolnshire, PE21 7BA, Joinery Manufacturers, Status: Active, Positional Accuracy: Automatically positioned to the address	5	0-250m	W
Paul Gurton, 218, London Road, Boston, Lincolnshire, PE21 7HQ, Washing Machines - Servicing & Repairs, Status: Active, Positional Accuracy: Automatically positioned to the address	6	0-250m	NW
A Z Lab, 1b, Saundergate Lane, Boston, Lincolnshire, PE21 7BX, Medical & Dental Laboratories, Status: Active, Positional Accuracy: Automatically positioned to the address	7	0-250m	SW
Wyberton Mowers, 106, Tytton Lane East, Wyberton, Boston, Lincolnshire, PE21 7TD, Lawnmowers & Garden Machinery - Sales & Service, Status: Active, Positional Accuracy: Automatically positioned to the address	8	0-250m	NE

Sources Potentially Contaminative Uses	Ref No.	Search Buffer	Direction
Fuel Station Entries			
London Road Garage, 200 London Road, BOSTON, Lincolnshire, PE21 7HH, Fuel Station, Status: Obsolete, Positional Accuracy: Automatically positioned to the address	9	0-250m	N



General	Potentially Contaminative Use	Potentially Infilled Land
Site Boundary	Point Feature	Point Feature
Search Buffer	Area Feature	Area Feature
Bearing Reference Point	Line Feature	Line Feature
Reference Number		

Sources	Ref No.	Search Buffer	Direction
Potentially Contaminative Uses			
Historical Tanks And Energy Facilities			
Electrical Sub Station Facilities, Scale of Mapping: 1:2,500, Date of Mapping: 1971	10	0-250m	NE
Electrical Sub Station Facilities, Scale of Mapping: 1:1,250, Date of Mapping: 1967	10	0-250m	NE
Electrical Sub Station Facilities, Scale of Mapping: 1:2,500, Date of Mapping: 1970	11	0-250m	W
Electrical Sub Station Facilities, Scale of Mapping: 1:1,250, Date of Mapping: 1967 - 1969	11	0-250m	W
Electrical Sub Station Facilities, Scale of Mapping: 1:1,250, Date of Mapping: 1967	12	0-250m	NW
Electrical Sub Station Facilities, Scale of Mapping: 1:1,250, Date of Mapping: 1967 - 1969	13	0-250m	SW
Electrical Sub Station Facilities, Scale of Mapping: 1:2,500, Date of Mapping: 1970	13	0-250m	SW
Tanks, Scale of Mapping: 1:2,500, Date of Mapping: 1971	14	0-250m	N
Tanks, Scale of Mapping: 1:1,250, Date of Mapping: 1967	14	0-250m	N
Potentially Contaminative Industrial Uses (Past Land Use)			
Railways, Date of Mapping: 1890 - 1956	1	On Site	SE
Clay bricks & tiles [manufacture], Date of Mapping: 1890 - 1906	15	0-250m	NW
Railways, Date of Mapping: 1956 - 1985	16	0-250m	N
Clay bricks & tiles [manufacture], Date of Mapping: 1890 - 1906	17	0-250m	NW

Potentially Infilled Land	Ref No.	Search Buffer	Direction
Potentially Infilled Land (Non-Water)			
Unknown Filled Ground (Pit, quarry etc), Date of Mapping: 1985	18	0-250m	NW
Unknown Filled Ground (Pit, quarry etc), Date of Mapping: 1985	19	0-250m	NW

Map Details

The following maps have been analysed for Historical Tanks and Energy Facilities

1:1,250	Mapsheet	Published
Ordnance Survey Plan	TF3141NE	1967
Ordnance Survey Plan	TF3141SE	1967
Ordnance Survey Plan	TF3241NW	1967
Ordnance Survey Plan	TF3141SE	1969
1:2,500	Mapsheet	Published
Ordnance Survey Plan	TF3141	1970
Ordnance Survey Plan	TF3241	1971

The following maps have been analysed for Potentially Contaminative Uses and Potentially Infilled Land information

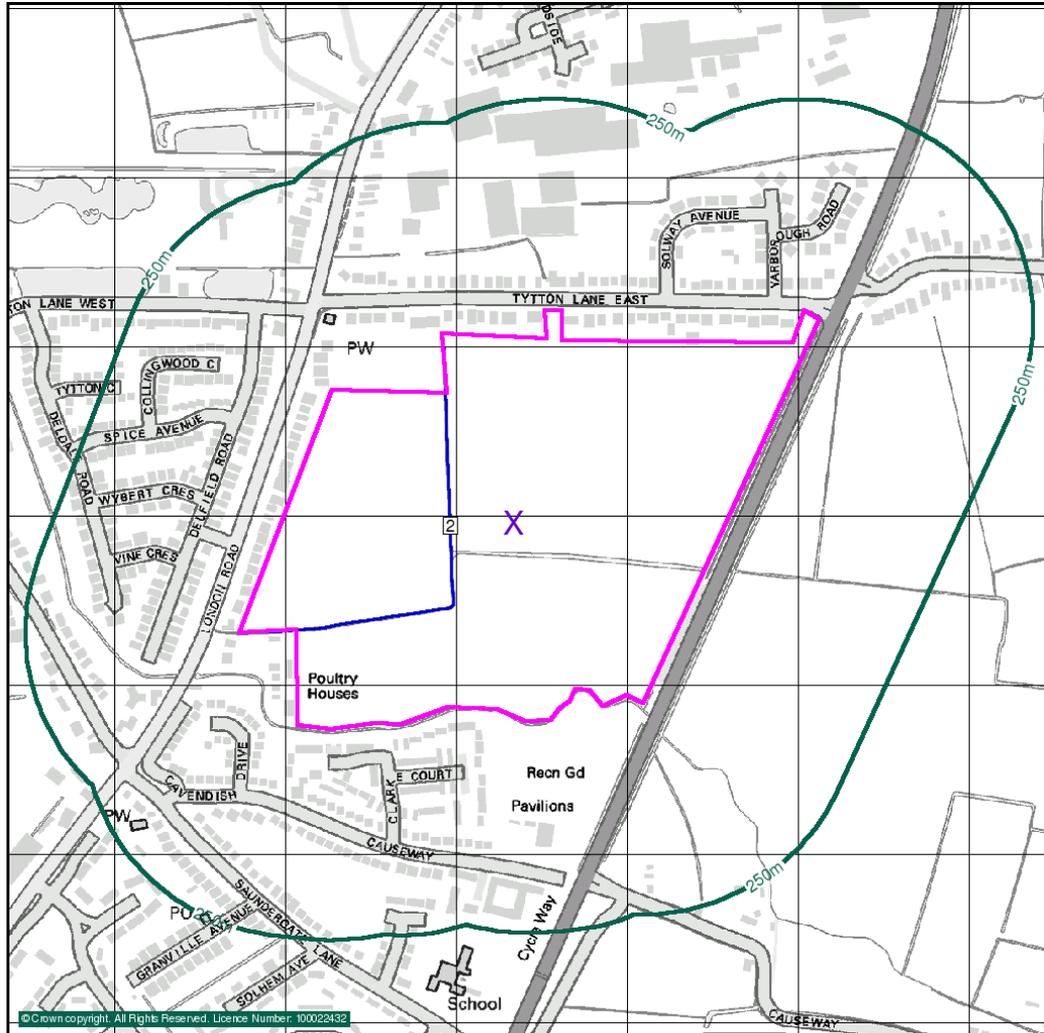
1:10,000	Mapsheet	Published
Ordnance Survey Plan	TF34SW	1985
1:10,560	Mapsheet	Published
Lincolnshire	118_NW	1890
Lincolnshire	118_NW	1906
Lincolnshire	118_NW	1951
Ordnance Survey Plan	TF34SW	1956

Flood Map



General		Area of Floodplain	
Site Boundary	Areas Benefiting from Flood Defences	Extreme Flooding from Rivers or Sea without Defences (Zone 2)	Flooding from Rivers or Sea without Defences (Zone 3)
Search Buffer	Flood Water Storage Areas		
Bearing Reference Point	Flood Defences		
Reference Number			

Sensitivity Map



General	Environmentally Sensitive Land Use	Protected Countryside Areas
Site Boundary	Area of Outstanding Natural Beauty	Forest Park
Search Buffer	Environmentally Sensitive Area	National Park
Bearing Reference Point	Local Nature Reserve	National Scenic Area
Reference Number	Marine Nature Reserve	
	National Nature Reserve	
	Ramsar Site	
	Site of Special Scientific Interest	
	Special Area of Conservation	
	Special Protection Area	
	Nearest Surface Water Feature	
	Water Abstractions	

Pathways and Receptors	Ref No.	Search Buffer	Direction
Pathways			
Groundwater Vulnerability			
Geological Classification: Non Aquifer (Negligibly permeable) - Formations which are generally regarded as containing insignificant quantities of groundwater. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants, Soil Classification: Not classified, Map Scale: 1:100,000, Map Name: Sheet 19 Lincolnshire, Contact Ref: 1	-	On Site	W
Drift Deposits			
None	-		-
Extreme Flooding from Rivers or Sea without Defences			
Type: Extent of Extreme Flooding from Rivers or Sea without Defences, Flood Plain Type: Fluvial Events, Contact Ref: 1	-	On Site	W
Flooding from Rivers or Sea without Defences			
Type: Extent of Flooding from Rivers or Sea without Defences, Flood Plain Type: Fluvial/Tidal Models, Contact Ref: 1	-	On Site	NW
Areas Benefiting from Flood Defences			
None	-		-
Flood Water Storage Areas			
None	-		-
Flood Defences			
None	-		-

Environmentally Sensitive Receptors	Ref No.	Search Buffer	Direction
Nearest Surface Water Feature			
Distance: 0m	2	On Site	W

Other Factors	Search Buffer	Direction
Geological		
Brine Compensation Area		
No		-
Coal Mining Affected Areas		
In an area which may not be affected by Coal Mining		-
Non Coal Mining Areas of Great Britain		
No Hazard		-
Radon Potential - Radon Affected Areas		
Affected Areas: The property is in a lower probability radon area, as less than 1% of homes are above the action level, Source: British Geological Survey, National Geoscience Information Service, Contact Ref: 2	On Site	W
Radon Potential - Radon Protection Measures		
Radon Protection Measures: None, Source: British Geological Survey, National Geoscience Information Service, Contact Ref: 2	On Site	W
Potential for Collapsible Ground Stability Hazards		
Hazard Potential: No Hazard Contact Ref: 2	On Site	W
Potential for Compressible Ground Stability Hazards		
Hazard Potential: Moderate, Contact Ref: 2	On Site	W
Potential for Ground Dissolution Stability Hazards		
No Hazard		-
Potential for Landslide Ground Stability Hazards		
Hazard Potential: Very Low, Contact Ref: 2	On Site	W
Potential for Running Sand Ground Stability Hazards		
Hazard Potential: Moderate Contact Ref: 2	On Site	W
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
Hazard Potential: Low Contact Ref: 2	On Site	W

Registered Landfill Sites

At present no complete national data set exists for landfill site boundaries, therefore a point grid reference, provided by the data supplier, is used for some landfill sites. In certain cases the point grid references supplied provide only an approximate position and can vary from the site entrance to the centre of the site. Where the exact position of the site is unclear, Landmark construct either a 100 metre or 250 metre "buffer" around the point to warn of the possible presence of landfill. The size of this "buffer" relates to the positional accuracy that can be attributed to the site. The "buffer" is shown on the map as an orange cross-hatched circle and is referred to in the map legend as Potential Landfill Buffer. Where actual boundaries are available, the landfill site area is shown on the map as a red diagonal hatched polygon and referred to in the map legend as Registered Landfill Site.

Local Authority Recorded Landfill Sites

Local Authority landfill data are sourced from individual local authorities that were able to provide information on sites operating prior to the introduction of the Control of Pollution Act (COPA) in 1974. Appropriate authorities are listed under Local Authority Landfill Coverage with an indication of whether or not they were able to make landfill data available. Details of any records identified are disclosed. You should be aware that if the local authority 'Had landfill data but passed it to the relevant environment agency' it does not necessarily mean that local authority landfill data is included in our other Landfill datasets. In addition if no data has been made available, for all or part of the search area, you should be aware that a negative response under 'Local Authority Recorded Landfill Sites' does not necessarily confirm that no local authority landfills exist.

Flooding

The Sitecheck report flood map plots all flood related features revealed within the search area as supplied by the relevant agency. However, to avoid confusion, the text entry in the body of the report only reveals the detail of the nearest feature in each flood data set. This is also reflected in the summary table where only a single entry is included to indicate the search buffer of the nearest occurrence.

Mining Instability Data

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The Sitecheck Data User guide is available free of charge from our website www.sitecheck.co.uk

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Contact Names and Addresses**1 Environment Agency National Customer Contact Centre (NCCC)**

PO Box 544
Templeborough
Rotherham
S60 1BY

Telephone 08708 506 506

enquiries@environment-agency.gov.uk

Please note that the Environment Agency/SEPA have a charging policy in place for enquiries.

2 British Geological Survey Enquiry Service

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
Nottinghamshire
NG12 5GG

Telephone 0115 936 3143
Fax 0115 936 3276

enquiries@bgs.ac.uk
www.bgs.ac.uk

3 Lincolnshire County Council

4th Floor
City Hall
Lincoln
Lincolnshire
LN1 1DN

Telephone 01522 552222
Fax 01522 552288

PublicRelations@lincolnshire.gov.uk
www.lincolnshire.gov.uk

4 Boston Borough Council Pollutions Section, Environmental Health

Municipal Buildings
West Street
Boston
Lincolnshire
PE21 8QR

Telephone 01205 314200
Fax 01205 364604

www.boston.gov.uk

Other Contacts**Landmark Information Group Limited**

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RG9 6AB

Telephone 0844 844 9966
Fax 0844 844 9980

info@landmarkinfo.co.uk
www.landmarkinfo.co.uk

Search Code



Important Consumer Protection Information

This search has been produced by Landmark Information Group Ltd, The Smith Centre, Fairmile, Henley on Thames, RG9 6AB. Telephone 0844 844 9966, email helpdesk@landmark.co.uk which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered firms maintain compliance with the Code.

The Search Code provides protection for homebuyers, sellers, conveyancers and mortgage lenders who rely on property search reports carried out on residential property within the United Kingdom. It sets out minimum standards which firms compiling and/or selling search reports have to meet. By giving you this information, your search provider is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Search providers which subscribe to the Code will:

- Display the Code logo prominently on their search reports.
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- At all times maintain adequate and appropriate insurance to protect consumers.
- Conduct business in an honest, fair and professional manner.
- Handle complaints speedily and fairly.
- Ensure that all search services comply with the law, registration rules and standards.
- Monitor their compliance with the Code.

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How search organisations maintain compliance with the Search Code is monitored independently by the Property Codes Compliance Board (PCCB). If you have a query or complaint about your search, you should raise it directly with the firm, and if appropriate ask for your complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final resolution after your complaint has been formally considered or if the firm has exceeded the response timescales, you may refer your complaint to The Property Ombudsman (TPO). TPO can award compensation of up to £5,000 to you if it finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details:

The Property Ombudsman Scheme
Beckett House
4 Bridge Street
Salisbury
Wiltshire SP1 2LX
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

Search Code



Complaints Procedure - Information for customers

If you wish to make a complaint, we will deal with it speedily and fairly. We will:

- Produce a formal written complaints procedure and tell you what this is.
- Acknowledge a complaint within 5 working days of its receipt.
- Normally deal with a complaint fully and in writing within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final written response at the latest within 40 days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with the final decision, you may refer the complaint to The Property Ombudsman scheme (TPOs).

You can get more information about the PCCB from www.propertycodes.org.uk

Please contact our Customer Service Team on 0844 844 9966 if you would like a copy of the full search code.

Complaints should be sent to:

Customer Relationship Manager
Landmark Information Group Ltd
Landmark UK Property
The Smith Centre
Fairmile
Henley-On-Thames
RG9 6AB

Telephone: 0844 844 9966

E-mail: helpdesk@landmark.co.uk

LANDMARK TERMS AND CONDITIONS

Definitions

"Authorised Reseller" means an agent or reseller of Landmark whom Landmark has duly appointed to resell its Reports and Services.

"Content" means any data, computing and information services and software, and other content and documentation or support materials and updates included in and/or supplied by or through the Websites, in Reports or Services or in any other way by Landmark and shall include Landmark developed and Third Party Content.

"First Purchaser" means the first person, or legal entity to purchase the Property Site following provision of a Report.

"First Purchaser's Lender" means the funding provider for the First Purchaser

"Information Pack" means a pack compiled by or on behalf of the owner or prospective buyer of the Property Site, designed to aid the marketing or purchase of the Property Site and containing information provided by or on behalf of the owner or prospective buyer of the Property Site.

"Intellectual Property Rights" means copyright, patent, design right (registered or unregistered), service or trade mark (registered or unregistered), database right or other data right, moral right or know how or any other intellectual property right.

"Order" means the request for Services from Landmark by You.

"Property Site" means a land site on which Landmark provides a Service.

References to **"We"**, **"Us"** and **"Our"** are references to Landmark Information Group Limited ("Landmark"), whose registered office is 7 Abbey Court, Eagle Way, Exeter, EX2 7HY. Where You are not ordering the Services directly from Landmark, but from an Authorised Reseller, references to "Landmark" or "We", "Us" and "Our" shall be construed so as to mean either Landmark and/or the Authorised Reseller as the context shall indicate.

References to **"You/Your/yourself"** refer to the contracting party who accesses the Website or places an Order with Landmark.

"Report" includes any information that Landmark supplies to You including all reports, services, datasets, software or information contained in them.

"Services" means the provision of any service by Landmark pursuant to these Terms, including without limitation, any Report.

"Landmark Fees" means any charges levied by Landmark for Services provided to You.

"Suppliers" means any organisation who provides data or information of any form to Landmark.

"Terms" means these Terms & Conditions.

"Third Party Content" means the services, software, information and other content or functionality provided by third parties and linked to or contained in the Services.

"Websites" means websites hosted by Landmark and includes the Content and any report, service, document, data-set, software or information contained therein, derived there from or thereby.

1. Terms & Conditions

- a. These Terms govern the relationship between You and Landmark whether You are an unregistered visitor to the Website or are purchasing Services. Where these Terms are not expressly accepted by You they will be deemed to have been accepted by You, and You agree to be bound by these Terms when You place any Order, or pay for any Services provided
- b. If the person communicating with Landmark is an Authorised Reseller, they must ensure that You agree to these Terms.
- c. The headings in these Terms are for convenience only and shall not affect the meaning or interpretation of any part of these Terms.
- d. Landmark may modify these Terms, and may discontinue or revise any or all other aspects of the Services at our sole discretion, with immediate effect and without prior notice, including without limitation changing the Services available at any given time. Any amendment or variation to these Terms shall be posted on our Websites. Continued use of the Services by You shall be deemed an acceptance by You to be bound by any such amendments to the Terms.
- e. These Terms, together with the prices and delivery details set out on our Websites, Landmark's Privacy Policy and Your Order comprise the whole agreement relating to the supply of Services to You by Landmark. No prior stipulation, agreement, promotional material or statement whether written or oral made by any sales or other person or representative on our behalf should be understood as a variation of these Terms. Save for fraud or misrepresentation, Landmark shall have no liability for any such representation being untrue or misleading.
- f. These Terms shall prevail at all times to the exclusion of all other terms and conditions including any terms and conditions which You may purport to apply even if such other provisions are submitted in a later document or purport to exclude or override these Terms and neither the course of conduct between parties nor trade practice shall act to modify these Terms.

2. Services

- a. Landmark will use reasonable care and skill in providing the Services to You, however, the Services are provided on the express basis that the information and data supplied in the Services are derived from third party sources and Landmark does not warrant the accuracy or completeness of such information or data. Such information is derived solely from those sources specifically cited in the Services and Landmark does not claim that these sources represent an exhaustive or comprehensive list of all sources that might be consulted.

3. Intellectual Property

- a. You acknowledge that all Intellectual Property Rights in the Services are and shall remain owned by either Landmark or our Suppliers and nothing in these Terms purports to transfer, assign or grant any rights to You in respect of the Intellectual Property Rights.
- b. Subject always to these Terms You may, without further charge, make the Services available to:
 - i. the owner of the Property at the date of the Report,
 - ii. any person who purchases the whole of the Property Site,
 - iii. any person who provides funding secured on the whole of the Property Site,
 - iv. any person for whom You act in a professional or commercial capacity,
 - v. any person who acts for You in a professional or commercial capacity; and
 - vi. prospective buyers of the Property Site as part of an Information Pack but for the avoidance of doubt, Landmark shall have no liability to such prospective buyer unless the prospective buyer subsequently purchases the Property Site, and the prospective (or actual) buyer shall not be entitled to make the Service available to any other third party.Accordingly Landmark shall have the same duties and obligations to those persons in respect of the Services as it has to You.
- c. Each of those persons referred to in clause 3.b. shall have the benefit and the burden of Your rights and obligations under these Terms. The limitations of Landmark's liability as set out in clause 6 shall apply to all users of the Service in question in aggregate and Landmark shall not be liable to any other person.
- d. All parties given access to the Services agree that they will treat as strictly private and confidential the Services and all information which they obtain from the Services and shall restrict any disclosure to employees or professional advisors to enable the relevant party to conduct its internal business. The requirement in this clause to treat the Services as confidential shall include a requirement to maintain adequate security measures to safeguard the Services from unauthorised access, use or copying.
- e. Each recipient of the Services agrees (and agrees it will cause its employees, agents or contractors who may from time to time have access to the Services to agree) it will not, except as permitted herein or by separate agreement with Landmark:-

- i. effect or attempt to effect any modification, merger or change to the Service, nor permit any other person to do so; or
- ii. copy, use, market, re-sell, distribute, merge, alter, add to or carry on any redistribution, reproduction, translation, publication, reduction to any electronic medium or machine readable form or commercially exploit or in any other way deal with or utilise or (except as expressly permitted by applicable law) reverse engineer, decompile or disassemble the Services, Content or Website; or
- iii. remove, alter or in any way change any trademark or proprietary marking in any element of the Services and You shall acknowledge the ownership of the Content, where such Content is incorporated or used into Your own documents, reports, systems or services whether or not these are supplied to any third party.
- iv. create any product which is derived directly or indirectly from the data contained in the Services
- f. The mapping contained in any Services is protected by Crown Copyright and must not be used for any purpose outside the context of the Services or as specifically provided by these Terms.
- g. You are permitted to make five copies of any Report, but are not authorised to re-sell the Report, any part thereof or any copy thereof unless you are an Authorised Reseller. Further copies may not be made in whole or in part without the prior written permission of Landmark who shall be entitled to make a charge for each additional copy.

4. Charges

- a. VAT at the prevailing rate shall be payable in addition to the Landmark Fees. You shall pay any other applicable indirect taxes related to Your use of the Services.
- b. An individual or a monthly invoice showing all Orders created by You will be generated subject to these Terms. You will pay the Landmark Fees at the rates set out in Landmark's or its Authorised Reseller's invoice. The Landmark Fees are payable in full within 30 days without deduction, counterclaim or set off. You acknowledge that time is of the essence with respect to the payment of such invoices. Landmark reserve the right to amend the Landmark Fees from time to time and the Services will be charged at the Landmark Fee applicable at the date on which the Service is ordered.
- c. We may charge interest on late payment at a rate equal to 3% per annum above the base lending rate of National Westminster Bank plc.
- d. Landmark or its Authorised Reseller shall not be obliged to invoice any party other than You for the provision of Services, but where Landmark or its Authorised Reseller does so invoice any third party at Your request, and such invoice is not accepted or remains unpaid, Landmark or its Authorised Reseller shall have the option at any time to cancel such invoice and invoice You direct for such Services. Where Your order comprises a number of Services or severable elements within any one or more Services, any failure by Landmark or its Authorised Reseller to provide an element or elements of the Services shall not prejudice Landmark's or its Authorised Reseller's ability to require payment in respect of the Services delivered to You.

5. Termination

- a. Landmark may suspend or terminate Your rights under these Terms without any liability to You with immediate effect if at any time:-
 - i. You fail to make any payment due in accordance with clause 4;
 - ii. You repeatedly breach or commit or cause to be committed any material breach of these Terms; or
 - iii. You commit a breach and You fail to remedy the breach within 7 days of receipt of a written notice to do so; additionally, without prejudice to the foregoing, Landmark may remedy the breach and recover the costs thereof from You.
- b. If Your rights are terminated under this clause and You have made an advance payment We will refund You a reasonable proportion of the balance as determined by Us in relation to the value of Services previously purchased.
- c. Landmark reserves the right to refuse to supply any or all Services to You without notice or reason.

6. Liability

- a. We provide warranties and accept liability only to the extent stated in this clause 6 and clause 7.
- b. Nothing in these Terms excludes either party's liability for death or personal injury caused by that party's negligence or wilful default, and the remainder of this clause 6 is subject to this provision and Your statutory rights.
- c. As most of the information contained in the Services is provided to Landmark by others, Landmark cannot control its accuracy or completeness, nor is it within the scope of Landmark's Services to check the information on the ground. Accordingly, Landmark will only be liable to You for any loss or damage caused by its negligence or wilful default and subject to clause 6.0 below neither Landmark nor any person providing information contained in any Services shall in any circumstances be liable for any inaccuracies, faults or omissions in the Services, nor shall Landmark have any liability if the Services are used otherwise than in accordance with these Terms.
- d. Save as precluded by law, Landmark shall not be liable for any indirect or consequential loss, damage or expenses (including loss of profits, loss of contracts, business or goodwill) howsoever arising out of any problem, event, action or default by Landmark.
- e. In any event, and notwithstanding anything contained in these Terms, Landmark's liability in contract, tort (including negligence or breach of statutory duty) or otherwise howsoever arising by reason or in connection with this Contract (except in relation to death or personal injury) shall be limited to an aggregate amount not exceeding £1 million if the complaint is in relation to a Report on residential property and an aggregate amount not exceeding £10 million in respect of any other Report or Service purchased from Landmark.
- f. Landmark will not be liable for any defect, failure or omission relating to Services that is not notified to Landmark within six months of the date of the issue becoming apparent and in any event, within twelve years of the date of the Service.
- g. You acknowledge that:-
 - i. Subject to clause 6.0 below You shall have no claim or recourse against any Third Party Content supplier nor any of our other Suppliers. You will not in any way hold us responsible for any selection or retention of, or the acts of omissions of Third Party Content suppliers or other Suppliers (including those with whom We have contracted to operate various aspects or parts of the Service) in connection with the Services (for the avoidance of doubt Landmark is not a Third Party Content supplier). Landmark does not promise that the supply of the Services will be uninterrupted or error free or provide any particular facilities or functions, or that the Content will always be complete, accurate, precise, free from defects of any other kind, computer viruses, software locks or other similar code although Landmark will use reasonable efforts to correct any inaccuracies within a reasonable period of them becoming known to us;
 - ii. Landmark's only obligation is to exercise reasonable skill and care in providing environmental property risk information to persons acting in a professional or commercial capacity who are skilled in the use of property and environmental information and You hereby acknowledge that You are such a person;
 - iii. no physical inspection of the Property Site reported on is carried out as part of any Services offered by Landmark and Landmark do not warrant that all land uses or features whether past or current will be identified in the Services. The Services do not include any information relating to the actual state or condition of any Property Site nor should they be used or taken to indicate or exclude actual fitness or unfitness of a Property Site

- for any particular purpose nor should it be relied upon for determining saleability or value or used as a substitute for any physical investigation or inspection. Landmark recommends that You inspect and take other advice in relation to the Property Site and not rely exclusively on the Services.
- iv. Subject to clause 6.o below, Landmark shall not be responsible for error or corruption in the Services resulting from inaccuracy or omission in primary or secondary information and data, inaccurate processing of information and data by third parties, computer malfunction or corruption of data whilst in the course of conversion, geo-coding, processing by computer or electronic means, or in the course of transmission by telephone or other communication link, or printing.
 - v. Landmark will not be held liable in any way if a Report on residential property is used for commercial property or more than the one residential property for which it was ordered.
 - vi. the Services have not been prepared to meet Your or anyone else's individual requirements; that You assume the entire risk as to the suitability of the Services and waive any claim of detrimental reliance upon the same; and You confirm You are solely responsible for the selection or omission of any specific part of the Content;
 - vii. Landmark offer no warranty for the performance of any linked internet service not operated by Landmark;
 - viii. You will on using the Services make a reasonable inspection of any results to satisfy Yourself that there are no defects or failures. In the event that there is a material defect You will notify us in writing of such defect within seven days of its discovery;
 - ix. Any support or assistance provided to You in connection with these Terms is at Your risk;
 - h. All liability for any insurance products purchased by You rests solely with the insurer. Landmark does not endorse any particular product or insurer and no information contained within the Services should be deemed to imply otherwise. You acknowledge that if You Order any such insurance Landmark will deem such as Your consent to forward a copy of the Report to the insurers. Where such policy is purchased, all liability remains with the insurers and You are entirely responsible for ensuring that the insurance policy offered is suitable for Your needs and should seek independent advice. Landmark does not guarantee that an insurance policy will be available on a Property Site. All decisions with regard to the offer of insurance policies for any premises will be made solely at the discretion of the insurers and Landmark accepts no liability in this regard. The provision of a Report does not constitute any indication by Landmark that insurance will be available on the property.
 - i. Professional opinions contained in Reports are provided to Landmark by third parties, and such third parties are solely liable for the opinion provided. For the avoidance of doubt, those parties providing assessments or professional opinions on Landmark products include RPS Plc & Wilbourn Associates Limited, and any issues with regard to the provision of such opinion should be taken up with the relevant third party.
If Landmark provides You with any additional service obtained from a third party, including but not limited to any interpretation or conclusion, risk assessment or environmental report or search carried out in relation to a Report on Your Property Site, subject to clause 6.o below Landmark will not be liable in any way for any information contained therein or any issues arising out of the provision of those additional services to You. Landmark will be deemed to have acted as an agent in these circumstances and the supply of these additional services will be governed by the terms and conditions of those Third Parties.
 - j. In any event no person may rely on a Service more than 12 months after its original date.
 - k. If You wish to vary any limitation of liability as set out in these Terms, You must request such variation prior to ordering the Service. Landmark shall use its reasonable endeavours to agree such variation but shall not be obliged to do so.
 - l. Time shall not be of the essence with respect to the provision of the Services.
 - m. Ordnance Survey have undertaken a positional accuracy improvement programme which may result in discrepancies between the positioning of features used in datasets in the Services and the updated Ordnance Survey mapping. Subject to clause 6.o below, Landmark and its Suppliers exclude all and any liability incurred as a result of the implementation of such positional accuracy improvement programme.
 - n. Where Landmark provides its own risk assessment in connection with any Report, Landmark shall carry out such assessment with all reasonable skill and care but shall have no liability for any such risk assessment conclusion which is provided for information only, save where Landmark conducted the same negligently, in which case the provisions of clause 6 shall apply. Notwithstanding the provision of any such risk assessment conclusion you should carefully examine the remainder of the Report and should not take or refrain from taking any action based solely on the basis of the risk assessment. For the avoidance of doubt, the provisions of this clause 6n apply solely to risk assessments conducted by Landmark, and the provision of any other risk assessment by a third party shall be governed by such third party's terms in accordance with the provisions of clause 6i above.
 - o. Landmark obtains much of the information contained in its Report from third parties. Landmark will not accept any liability to You for any negligent or incorrect entry, or error or corruption in the Third Party Content supplied to Landmark, but Landmark's Suppliers may be liable for such negligent or incorrect entries, or errors or corruptions, subject to the terms and conditions on which they supply the Third Party Content to Landmark.

7. Contribution

- a. Save where expressly provided, this clause 7 shall apply solely to Envirosearch Residential Reports (regardless of the result of such Report). Nothing in this clause 7 shall operate to override or vary the provisions of clause 6.
- b. Landmark are prepared to offer, at their sole discretion, and without any admission or inference of liability a contribution towards the costs of any remediation works required under a Notice (as defined below) on the terms of this clause 7 ("the Contribution")
- c. In the event that a Remediation Notice is served on the First Purchaser or First Purchaser's Lender of a Property Site under Part II(A) of the Environmental Protection Act 1990 ("the Notice") Landmark will contribute to the cost of such works as either the First Purchaser or First Purchaser's Lender (but not both) are required to carry out under the Notice subject to the provisions of this clause 7 and on the following terms:
 - i. the Contribution shall only apply to contamination or a pollution incident present or having occurred prior to the date of the Report;
 - ii. the Contribution shall only apply where the Property Site is a single residential dwelling house or a single residential flat within a block of flats. For the avoidance of doubt, this obligation does not apply to any commercial property, nor to any Property Site being developed or redeveloped whether for residential purposes or otherwise;
 - iii. the Contribution is strictly limited to the cost of works at the Property Site and at no other site.
 - iv. the Contribution will not be paid in respect of any of the following:
 - Radioactive contamination of whatsoever nature, directly or indirectly caused by or contributed to or arising from ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel or the radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.
 - Asbestos arising out of or related in any way to asbestos or asbestos-containing materials on or in structures or services serving the structures. Naturally occurring materials arising from the presence or required removal of naturally occurring materials except in circumstances where such materials are present in concentrations which are in excess of their natural concentration.
 - Intentional non-compliance arising from the intentional disregard of or knowing wilful or deliberate non-compliance by any owner or occupier of

the Property Site with any statute, regulation, administrative complaint, notice of violation, or notice letter of any Regulatory Authority.

Any condition which is known or ought reasonably to have been known to the First Purchaser or the First Purchaser's Lender prior to the purchase of the Report.

Any condition which is caused by acts of War or an Act of Terrorism.

Any property belonging to or in the custody or control of the First Purchaser which does not form a fixed part of the Property Site or the structure.

Any fines liquidated damages punitive or exemplary damages.

Any bodily injury including without limitation, death, illness or disease, mental injury, anguish or nervous shock.

Any financial loss in respect of any rental, profit, revenue, savings or business or any consequential indirect or economic loss damage or expense including the cost of rent of temporary premises or business interruption.

Any losses incurred following a material change in use of, alteration or development of the Property Site.

- d. The maximum sum that shall be contributed by Landmark in respect of any Contribution shall be limited to £60,000. In the event that more than one Report is purchased on the Property Site the Contribution will only be payable under the first Report purchased by or on behalf of any First Purchaser or First Purchaser's Lender and no Contribution will be made in respect of subsequent Reports purchased by or on behalf of such First Purchaser, First Purchaser's Lender or any person connected to them.
- e. Landmark shall only pay a Contribution where the Notice is served within 36 months of the date of the Report.
- f. Any rights to a Contribution under this Clause 7 are not assignable in the event of a sale of the Property Site and Landmark will not make any Contribution after the date of completion of such sale.
- g. In the event the First Purchaser or First Purchaser's Lender wishes to claim any Contribution, it shall notify Landmark in writing within 3 months of the date of the Notice. The First Purchaser or First Purchaser's Lender (as applicable) shall comply with all reasonable requirements of Landmark with regard to the commission and conduct of the remediation works to be carried out under the Notice, and in the event the First Purchaser or First Purchaser's Lender (as applicable) does not do so, including without limitation, obtaining Landmark's prior written consent to any estimates for such works or complying with any other reasonable request by Landmark, Landmark shall not be required to pay any Contribution. Notwithstanding the payment of the Contribution by Landmark the First Purchaser or First Purchaser's Lender as applicable shall take all reasonable steps to mitigate any costs incurred in connection with the conduct of works required under the terms of any Notice.
- h. In the event that the First Purchaser or First Purchaser's Lender receives any communication from a statutory authority to the effect that there is an intent to serve a notice received under PartII(A) of the Environmental Protection Act 1990 they will advise Landmark within a maximum period of two months from receipt of such communication. This clause 7h and the service of any notice under it shall not affect the provisions of clauses 7 e and g, and any such communications, even if advised to Landmark will not operate as notice under clause 7e.
- i. Landmark reserve the right at any time prior to a claim for Contribution being made in accordance with clause 7 g) above, to withdraw the offer of payment of Contributions without further notice.

8. Events Beyond Our Control

- a. You acknowledge that Landmark shall not be liable for any delay, interruption or failure in the provision of the Services which are caused or contributed to by any circumstance which is outside our reasonable control including but not limited to, lack of power, telecommunications failure or overload, computer malfunction, inaccurate processing of data, or delays in receiving, loading or checking data, corruption of data whilst in the course of conversion, geo-coding, processing by computer in the course of electronic communication, or printing.

9. Severability

- a. If any provision of these Terms are found by either a court or other competent authority to be void, invalid, illegal or unenforceable, that provision shall be deemed to be deleted from these Terms and never to have formed part of these Terms and the remaining provisions shall continue in full force and effect.

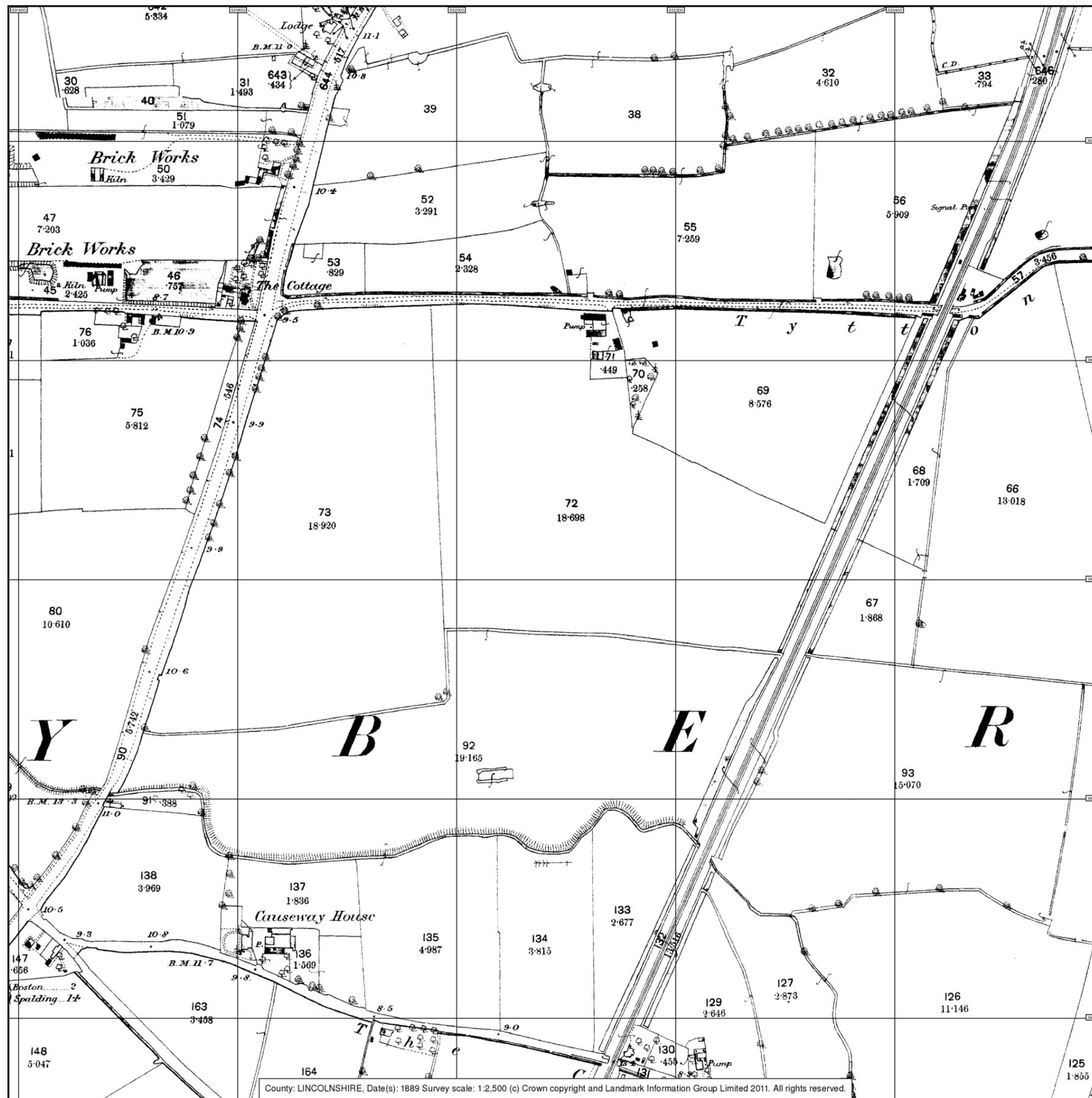
10. Governing Law

- a. These terms shall be governed by and construed in accordance with English law and each party agrees irrevocably submit to the exclusive jurisdiction of the English courts if any dispute arises out of or in connection with this agreement (a "Dispute") the parties undertake that, prior to the commencement of Court proceedings, they will seek to have the Dispute resolved amicably by use of an alternative dispute resolution procedure acceptable to both parties with the assistance of the Centre for Dispute Resolution (CEDR) if required, by written notice initiating that procedure. If the Dispute has not been resolved to the satisfaction of either party within 60 days of initiation of the procedure or if either party fails or refuses to participate in or withdraws from participating in the procedure then either party may refer the Dispute to the Court.

11. General: Complaints

- a. Landmark may assign its rights and obligations under these Terms without prior notice or any limitation.
- b. Landmark may authorise or allow our contractors and other third parties to provide to Landmark and/or to You services necessary or related to the Services and to perform Landmark's obligations and exercise Landmark's rights under these Terms, which may include collecting payment on Landmark's behalf.
- c. No waiver on Landmark's part to exercise, and no delay in exercising, any right, power or provision hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or provision hereunder preclude the exercise of that or any other right, power or provision.
- d. Unless otherwise stated in these Terms, all notices from You to Landmark must be in writing and sent to the Landmark registered office (or in the case of an Authorised Reseller, to its registered office address) and subject to paragraph e below all notices from Landmark to You will be displayed on our Websites from time to time.
- e. Any complaints in relation to the Services should, in the first instance, be in writing addressed to the Customer Service Support Manager at the Landmark registered office. Landmark or its agents will respond to any such complaints in writing as soon as practicable possible.
- f. A person who is not a party to any contract made pursuant to these Terms shall have no right under the Contract (Right of Third Parties) Act 1999 to enforce any terms of such contract and Landmark shall not be liable to any such third party in respect of any Services supplied.
- g. Landmark's Privacy Policy as displayed on the Website governs the use made of any information You supply to Landmark.

Appendix II



County: LINCOLNSHIRE, Date(s): 1889 Survey scale: 1:2,500 (c) Crown copyright and Landmark Information Group Limited 2011. All rights reserved.



Landmark
Information Group

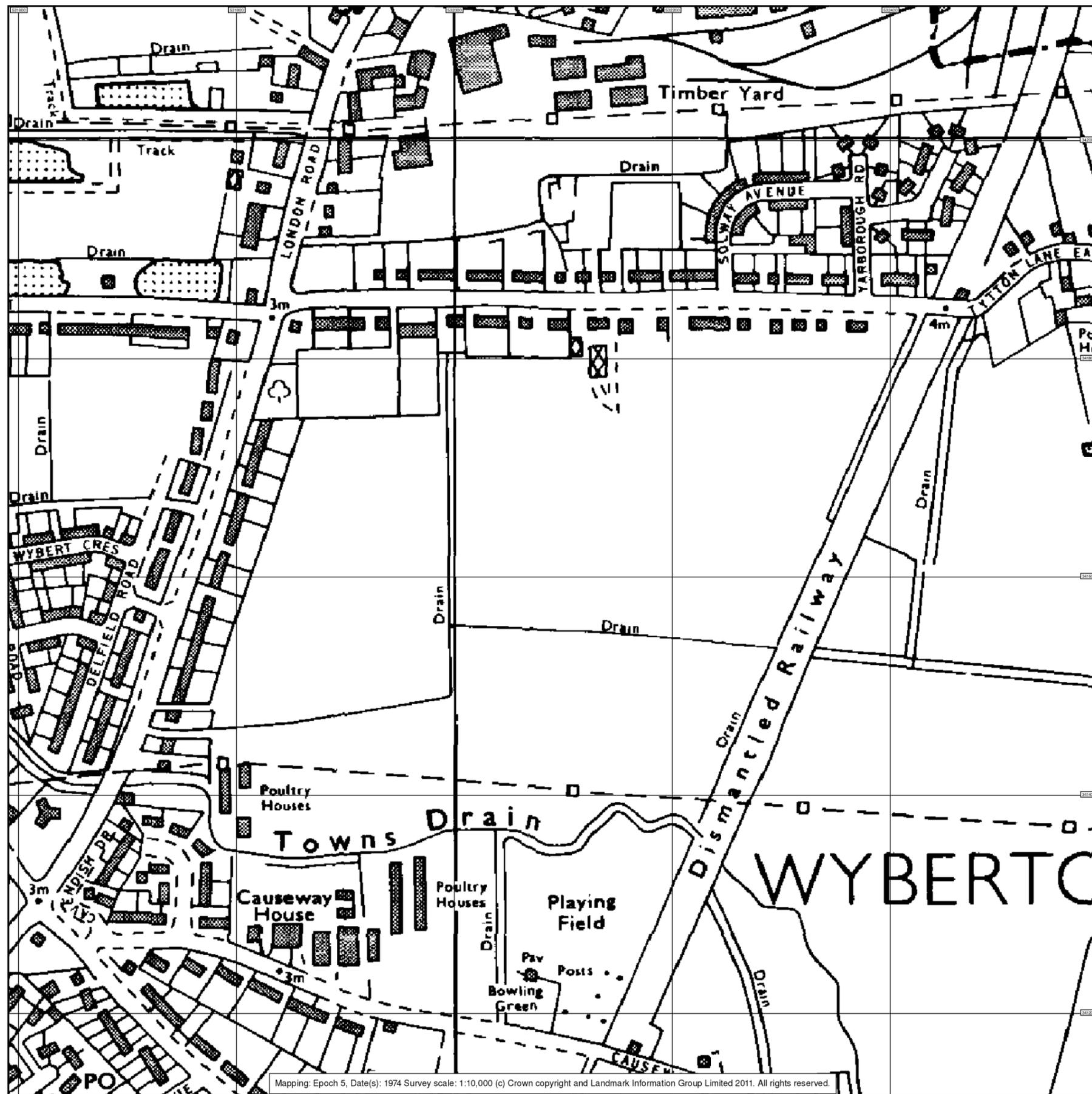
Landmark Historical Map
County: LINCOLNSHIRE
Published Date(s): 1889
Originally plotted at: 1:2,500



County: LINCOLNSHIRE, Date(s): 1951 Survey scale: 1:10,560 (c) Crown copyright and Landmark Information Group Limited 2011. All rights reserved.



Landmark Historical Map
County: LINCOLNSHIRE
Published Date(s): 1951
Originally plotted at: 1:10,560



Mapping: Epoch 5, Date(s): 1974 Survey scale: 1:10,000 (c) Crown copyright and Landmark Information Group Limited 2011. All rights reserved.



Landmark
Information Group

Landmark Historical Map
 Mapping: Epoch 5
 Published Date(s): 1974
 Originally plotted at: 1:10,000

Appendix III

Appendix III



A different perspective



APPENDIX III : 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 IV

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DS101
DYNAMIC SAMPLER LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25)					
Brown sandy silty CLAY.				0.25	ES	1	0.50		
				(0.95)	ES	2	1.00		
Very soft brown silty CLAY.				1.20					
				(1.80)	ES	3	2.00		
				3.00	ES	4	3.00		
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 63 mm HDPE standpipe to 2.50 m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page	Scale: 1:31.25	No Coordinate Data Available No Datum Information Available		Page 1 of 1
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB	

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: Tytton Lane East, Boston	Project No: 13-0525.03	Hole ID: DS102
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DYNAMIC SAMPLER LOG	Date: 17/09/2013	Client: Chestnut Homes Ltd
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DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25) 0.25					
Firm dark brown sandy CLAY.				(0.95)	ES	1	0.50		
				1.20	ES	2	1.00		
Very soft brown CLAY.				(1.80)	ES	3	2.00		
				3.00	ES	4	3.00		
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Back filled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page Scale: 1:31.25	No Coordinate Data Available No Datum Information Available	Page 1 of 1
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Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB
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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DS103
DYNAMIC SAMPLER LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25) 0.25					
Dark brown CLAY.				(1.00)	ES	1	0.50		
					ES	2	1.00		
				1.25					
Very soft brown CLAY.				(1.75)	ES	3	2.00		
				3.00	ES	4	3.00		
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Back filled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page Scale: 1:31.25	No Coordinate Data Available No Datum Information Available		Page 1 of 1
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB

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Project: **Tytton Lane East, Boston** Project No: **13-0525.03** Hole ID: **DS104**

DYNAMIC SAMPLER LOG Date: 17/09/2013 Client: **Chestnut Homes Ltd**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25) 0.25					
Firm brown CLAY.				(1.00)	ES	1	0.50		
					ES	2	1.00		
				1.25					
Very soft brown CLAY.				(1.75)	ES	3	2.00		
				3.00					
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Back filled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated 5m/page Scale: 1:31.25 No Coordinate Data Available No Datum Information Available Page 1 of 1

Plant Used: Competitor Rig Coordinates / Level (mAOD): Logged By: SS Checked By: AW Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DS105
DYNAMIC SAMPLER LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.30) 0.30					
Soft brown silty sandy CLAY.				(1.10) 1.40					
Very soft brown silty CLAY.				(1.60) 3.00	ES	1	2.00		
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 63 mm HDPE standpipe to 3.00 m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page	Scale: 1:31.25	No Coordinate Data Available No Datum Information Available			Page 1 of 1
Plant Used: Competitor Rig	Coordinates / Level (mAOD):		Logged By: SS	Checked By: AW	Approved By: PB	

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Project: **Tytton Lane East, Boston** Project No: **13-0525.03** Hole ID: **DS107**

DYNAMIC SAMPLER LOG Date: 17/09/2013 Client: **Chestnut Homes Ltd**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25) 0.25					
Brown very clayey SILT.				(0.50) 0.75					
Soft to firm brown CLAY.				(0.55) 1.30					
Very soft brown CLAY.				(1.70) 3.00					
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 63 mm HDPE standpipe to 3.00 m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED

All measurements in metres unless otherwise stated 5m/page Scale: 1:31.25 No Coordinate Data Available No Datum Information Available Page 1 of 1

Plant Used: Competitor Rig Coordinates / Level (mAOD): Logged By: SS Checked By: AW Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DS108
DYNAMIC SAMPLER LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.30) 0.30					
Firm brown CLAY.				(1.05) 1.35					
Very soft brown silty CLAY.				(1.65) 3.00					
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Back filled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page	Scale: 1:31.25	No Coordinate Data Available No Datum Information Available			Page 1 of 1
Plant Used: Competitor Rig	Coordinates / Level (mAOD):		Logged By: SS	Checked By: AW	Approved By: PB	

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Project: **Tytton Lane East, Boston** Project No: **13-0525.03** Hole ID: **DS109**

DYNAMIC SAMPLER LOG Date: 17/09/2013 Client: **Chestnut Homes Ltd**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.30) 0.30					
Firm brown silty CLAY.				(1.10) 1.40					
Very soft brown silty CLAY.				(1.60) 3.00					
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Back filled with arisings.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated 5m/page Scale: 1:31.25 No Coordinate Data Available No Datum Information Available Page 1 of 1

Plant Used: Competitor Rig Coordinates / Level (mAOD): Logged By: SS Checked By: AW Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DS110
DYNAMIC SAMPLER LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				(0.25) 0.25					
Firm brown silty CLAY.				(0.95)	ES	1	0.50		
				1.20	ES	2	1.00		
Very soft brown silty CLAY.				(1.80)	ES	3	2.00		
				3.00					
Borehole complete at 3.00 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 63 mm HDPE standpipe to 3.00 m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	5m/page	Scale: 1:31.25	No Coordinate Data Available No Datum Information Available		Page 1 of 1
Plant Used: Competitor Rig	Coordinates / Level (mAOD):		Logged By: SS	Checked By: AW	Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	CP101
CABLE PERCUSSION BOREHOLE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details		
					TYPE	REF	Depth	SPT N Value/Drive mm			
TOPSOIL.				0.30							
Firm dark brown CLAY.				(1.80)	B	1	1.00 - 1.30	SPT N=9 2,2/2,2,2,3			
					B	2	1.50 - 1.95 1.50 - 1.95				
				2.10	B	3	2.00 - 2.50				
Very soft brown CLAY.				(1.50)	D	4	3.00 - 3.45 3.00 - 3.45	SPT N=2 1,0/1,0,0,1			
Soft brown mottled grey slightly organic silty CLAY.				3.60	B	5	3.60 - 4.20				
Soft light brown slightly silty CLAY.				4.60	D	6	4.50 - 4.95 4.50 - 4.95	SPT N=5 1,1/1,1,1,2			
Brown mottled grey slightly organic gravelly sandy silty CLAY. Gravel is fine to medium subrounded to angular flint.				4.95	B	7	5.00 - 5.50				
Brown gravelly silty fine to coarse SAND. Gravel is fine to medium subrounded to angular flint.				(1.15)	D	8	6.00 - 6.45 6.00 - 6.45	SPT N=14 1,2/2,2,4,6			
Very stiff brown becoming grey gravelly silty CLAY. Gravel is fine to medium rounded to subrounded chalk.				6.10	D	9	6.80 - 7.20				
				6.30							
					B	10	7.50 - 7.95 7.50 - 7.95	SPT N=50 4,4/6,10,16,18			
					B	11	8.00 - 8.50				
					U	12	9.00 - 9.45	U=88/450mm			
					B	13	9.50 - 10.00				

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 6.10m bgl.
4. Installed with a 50mm HDPE standpipe to 6.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
			1	17-09-13		6.10	4.20	6.00
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available No Datum Information Available		Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	CP101
CABLE PERCUSSION BOREHOLE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Very stiff brown becoming grey gravelly silty CLAY. Gravel is fine to medium rounded to subrounded chalk. (BH Continued)				(8.50)	D	14	10.50 - 10.95 10.50 - 10.95	SPT N=57 5,5/8,10,17,22	
					B	15	11.00 - 12.00		
					D	16	13.00 - 13.45 13.00 - 13.45	SPT N=63 4,5/9,13,18,23	
					B	17	14.00 - 14.50		
				14.80	D	18	14.50 - 14.80 14.50 - 14.95	SPT N=41 6,11/18,23	
Borehole complete at 14.80 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 6.10m bgl.
4. Installed with a 50mm HDPE standpipe to 6.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
			1	17-09-13		6.10	4.20	6.00
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		

All measurements in metres unless otherwise stated	10m/page	Scale: 1:62.50	No Coordinate Data Available No Datum Information Available		Page 2 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD):		Logged By: SS	Checked By: AW	Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	CP102
CABLE PERCUSSION BOREHOLE LOG		Date:	18/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				0.30					
Brown sandy silty CLAY.				(0.60)	B	1	0.50 - 1.00		
Soft light brown silty CLAY.				0.90					
Soft brown silty CLAY.				(0.90)	D	2	1.50 - 1.95 1.50 - 1.95	SPT N=7 2,1/2,3,1,1	
Soft brown silty CLAY.				1.80	B	3	2.00 - 2.50		
Very soft brownish grey silty CLAY.				(1.10)					
Very soft brownish grey silty CLAY.				2.90	D	4	3.00 - 3.45 3.00 - 3.45	SPT N=4 1,1/1,0,1	
Very soft brownish grey silty CLAY.				(2.50)	B	5	4.00 - 4.50		
Very soft brownish grey silty CLAY.					D	6	4.50 - 4.95 4.50 - 4.95	SPT N=4 1,1/1,0,2,1	
Very soft brownish grey silty CLAY.				5.40	B	7	5.40 - 5.90		
Dark grey sandy silty organic peaty CLAY with frequent fine to medium gravel sized shell fragments.				(0.50)					
Firm brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subrounded to subangular flint.				5.90	D	8	6.00 - 6.45 6.00 - 6.45	SPT N=13 3,4/5,3,2,3	
Firm brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subrounded to subangular flint.				(0.85)					
Firm brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subrounded to subangular flint.				6.75	B	9	6.75 - 7.00		
Stiff to very stiff grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.					D	10	7.50 - 7.95 7.50 - 7.95	SPT N=33 4,5/9,7,6,11	
Stiff to very stiff grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.					B	11	8.20 - 8.50		
Stiff to very stiff grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.					D	12	9.00 - 9.45 9.00 - 9.45	SPT N=47 11,11/9,15,8,15	
Stiff to very stiff grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.				(5.65)	B	13	9.50 - 10.00		

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 6.20m bgl.
4. Installed with a 50mm HDPE standpipe to 6.50m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
			17-09-13		6.20	4.20	6.00	

NO CHISELLING UNDERTAKEN:

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available No Datum Information Available		Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	CP102
CABLE PERCUSSION BOREHOLE LOG		Date:	18/09/2013	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Stiff to very stiff grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk. (BH Continued)					D	14	10.50 - 10.95 10.50 - 10.95	SPT N=60 5,6/11,13,18,18	
					B	15	11.10 - 12.00		
					D	16	12.10 - 12.40 12.10 - 12.55	SPT N=60 5,6/11,13,18,18	
Borehole complete at 12.40 m bgl.				12.40					

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 6.20m bgl.
4. Installed with a 50mm HDPE standpipe to 6.50m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
			1	17-09-13		6.20	4.20	6.00

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available No Datum Information Available		Page 2 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB

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Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	CP103
CABLE PERCUSSION BOREHOLE LOG		Date:	19/09/2012	Client:	Chestnut Homes Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
TOPSOIL.				0.20					
Firm brown silty CLAY.				(2.20)	B	1	0.50 - 1.00		
					D	2	1.50 - 1.95 1.50 - 1.95	SPT N=10 2,2/3,2,2,3	
				2.40	B	3	2.30 - 2.80		
Very soft brown mottled grey silty CLAY.				(3.00)	D	4	3.00 - 3.45 3.00 - 3.45	SPT N=2 1,0/1,0,1,0	
					B	5	3.50 - 4.00		
				5.40	B	7	5.40 - 5.60		
Stiff grey peaty CLAY.				(1.40)	D	8	6.00 - 6.45 6.00 - 6.45	SPT N=18 2,3/3,5,6,4	
					B	9	6.50 - 6.80		
				6.80	B	10	7.00 - 7.50		
Very stiff greyish brown very sandy gravelly CLAY. Gravel is fine to coarse subrounded to subangular flint.				(3.90)	D	11	7.50 - 7.95 7.50 - 7.95	SPT N=34 5,6/7,8,9,10	
					B	12	8.50 - 9.00		
					D	13	9.00 - 9.45 9.00 - 9.45	SPT N=51 4,7/7,11,15,18	
					B	14	10.00 - 10.50		

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 50mm HDPE standpipe to 6.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS				
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
10.65	10.70	00:50					

NO WATER ENCOUNTERED:

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available No Datum Information Available	Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW Approved By: PB

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Project: Tytton Lane East, Boston	Project No: 13-0525.03	Hole ID: CP103
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CABLE PERCUSSION BOREHOLE LOG	Date: 19/09/2012	Client: Chestnut Homes Ltd
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DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Very stiff greyish brown very sandy gravelly CLAY. Gravel is fine to coarse subrounded to subangular flint. (BH Continued)				10.70	D D	15 16	10.50 - 10.65 10.50 - 10.95 10.65 - 10.70	SPT N=50+/145mm (26,28/70mm)	
Borehole complete at 10.70 m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with a 50mm HDPE standpipe to 6.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS				
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
10.65	10.70	00:50					

NO WATER ENCOUNTERED:

BOREHOLE DIAMETER	CASING DIAMETER	DEPTH SEALED

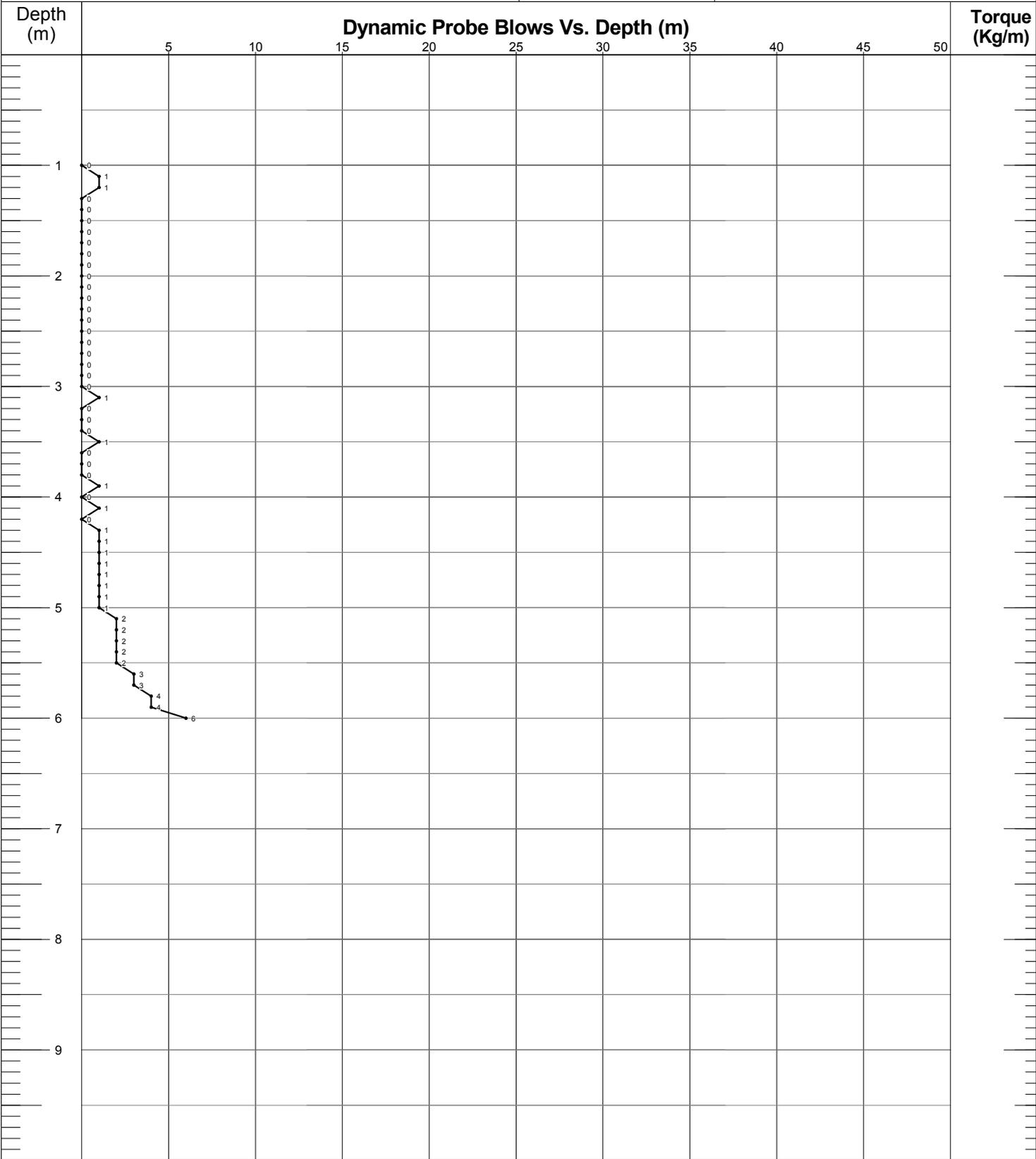
All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	No Coordinate Data Available No Datum Information Available	Page 2 of 2
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Plant Used: Dando 2000	Coordinates / Level (mAOD):	Logged By: SS	Checked By: AW	Approved By: PB
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Delta-Simons Environmental Consultants Ltd
 The Lawn, Union Road,
 Lincoln LN1 3BL
 Tel: 08700 400 012
 Fax: 01522 882 567
 Email: info@deltasimons.com



Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT101
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

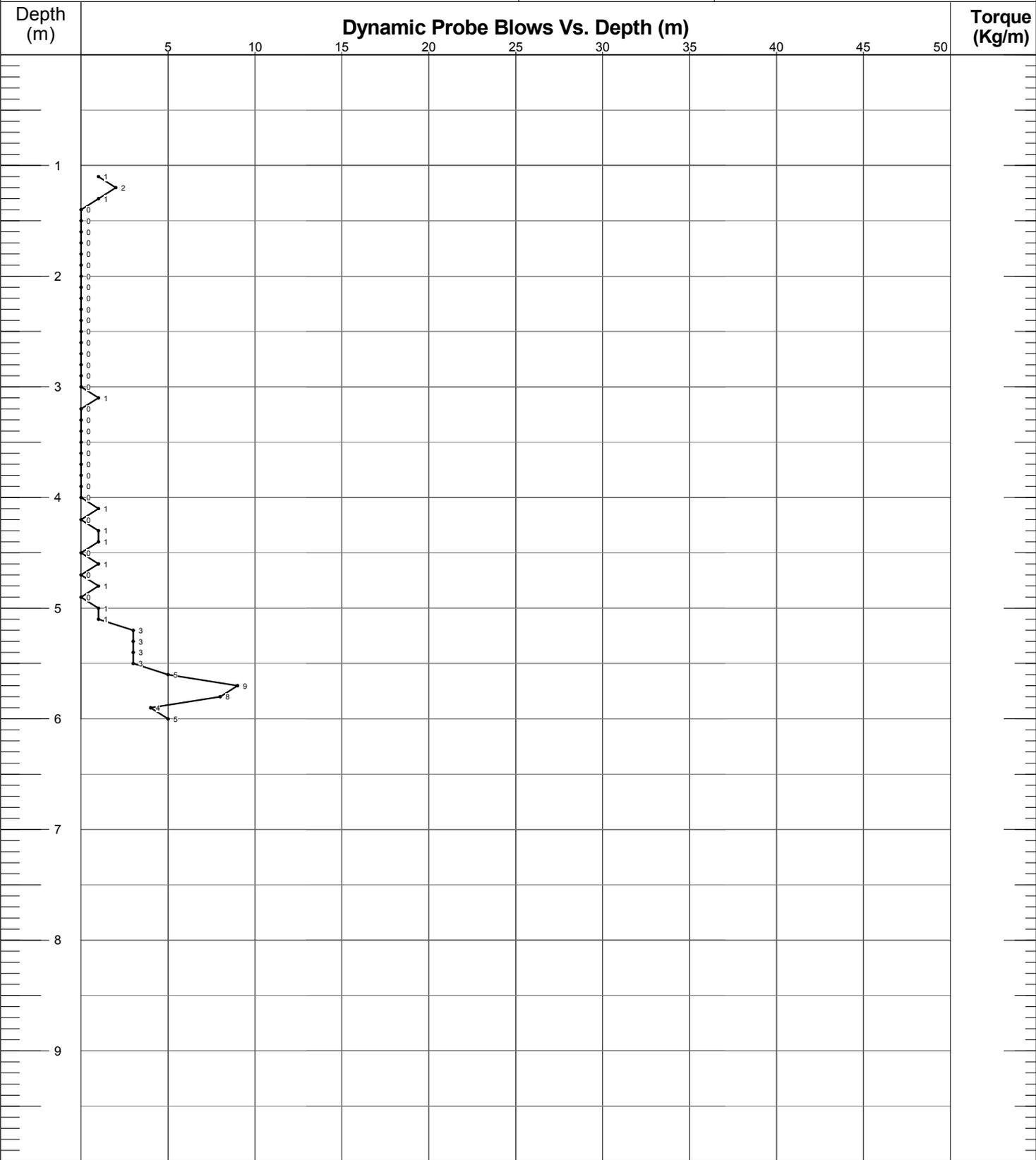


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

Delta-Simons Environmental Consultants Ltd
 The Lawn, Union Road,
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 Tel: 08700 400 012
 Fax: 01522 882 567
 Email: info@deltasimons.com



Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT102
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

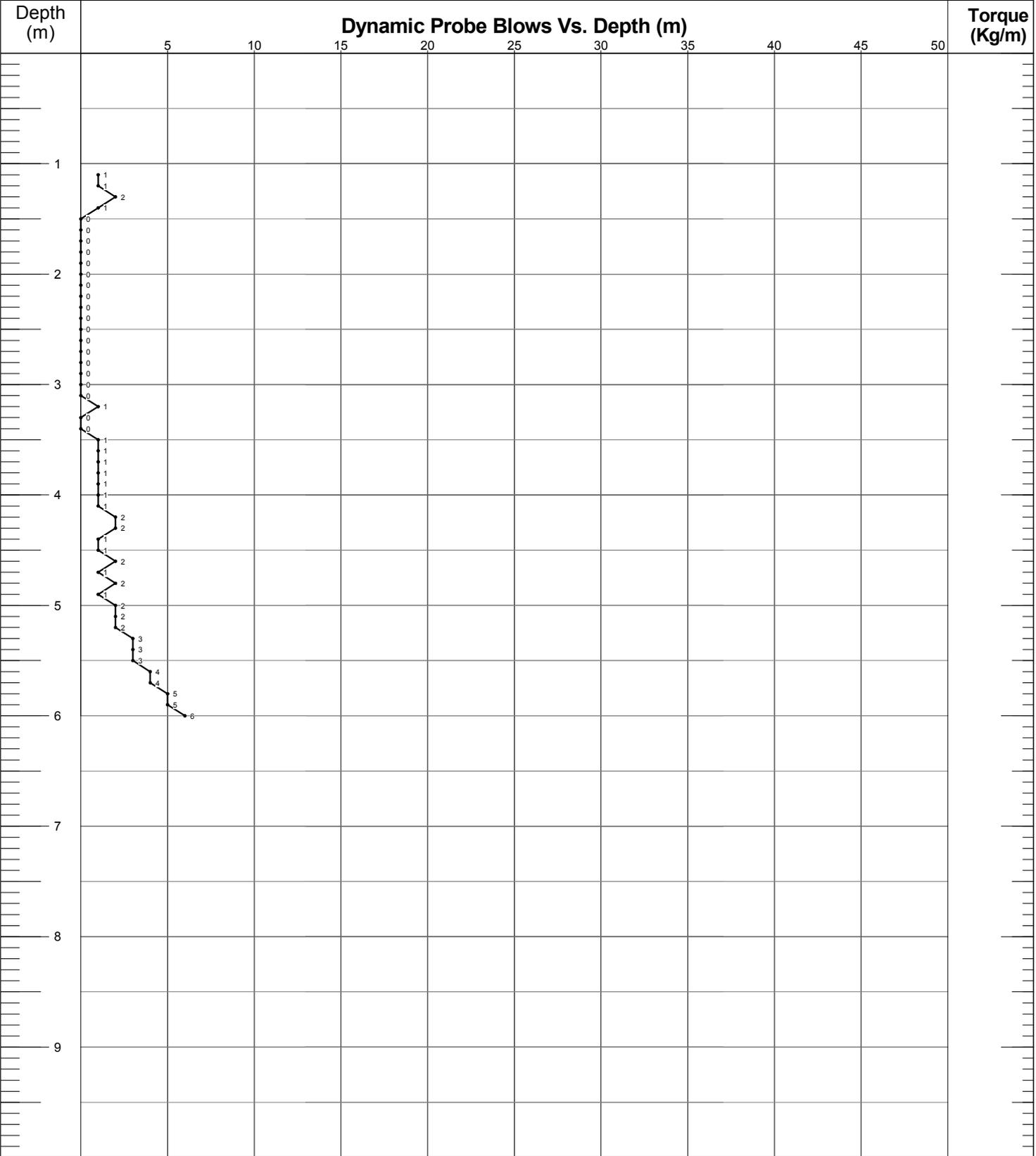


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

Delta-Simons Environmental Consultants Ltd
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 Email: info@deltasimons.com



Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT103
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

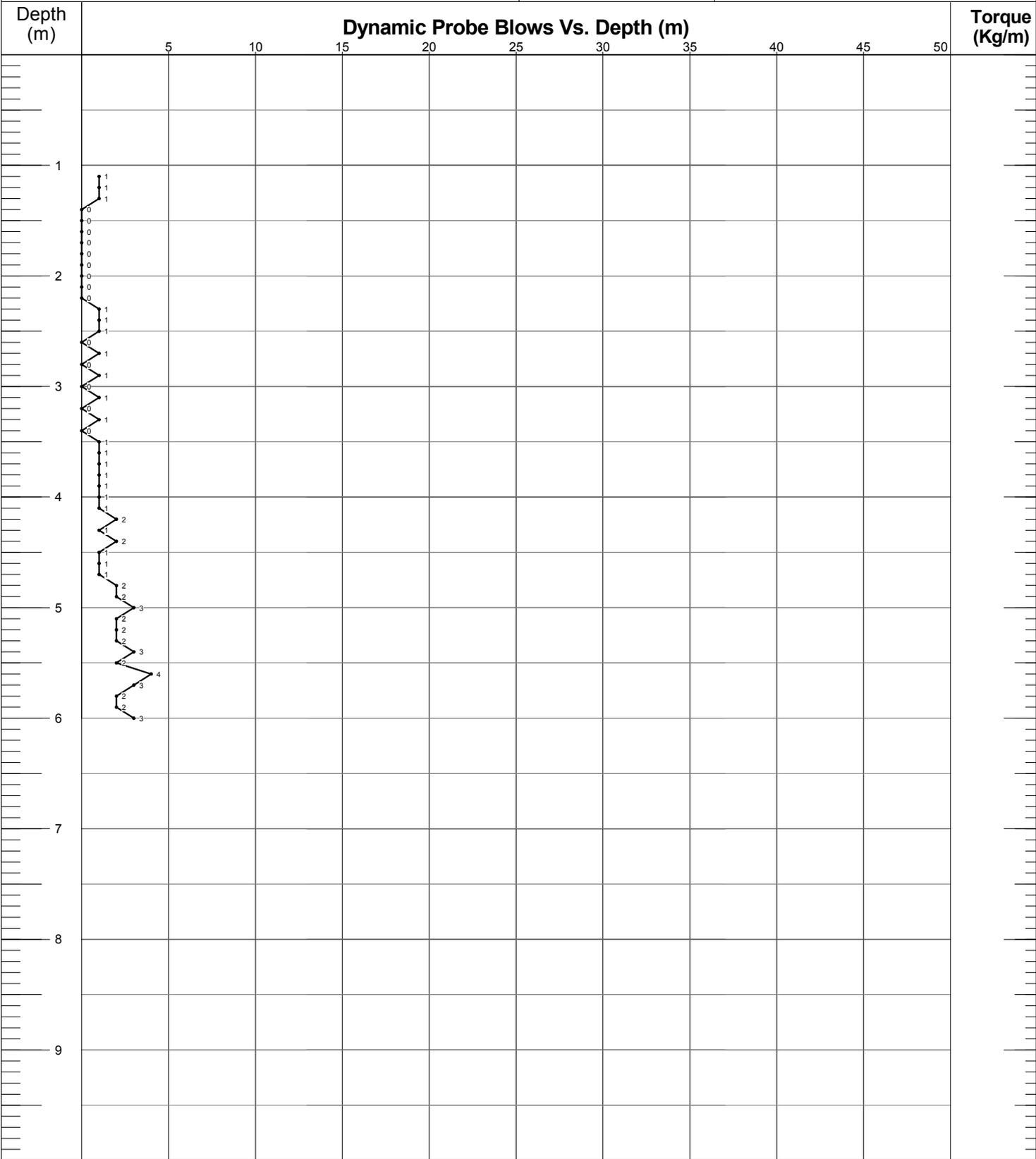


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT104
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

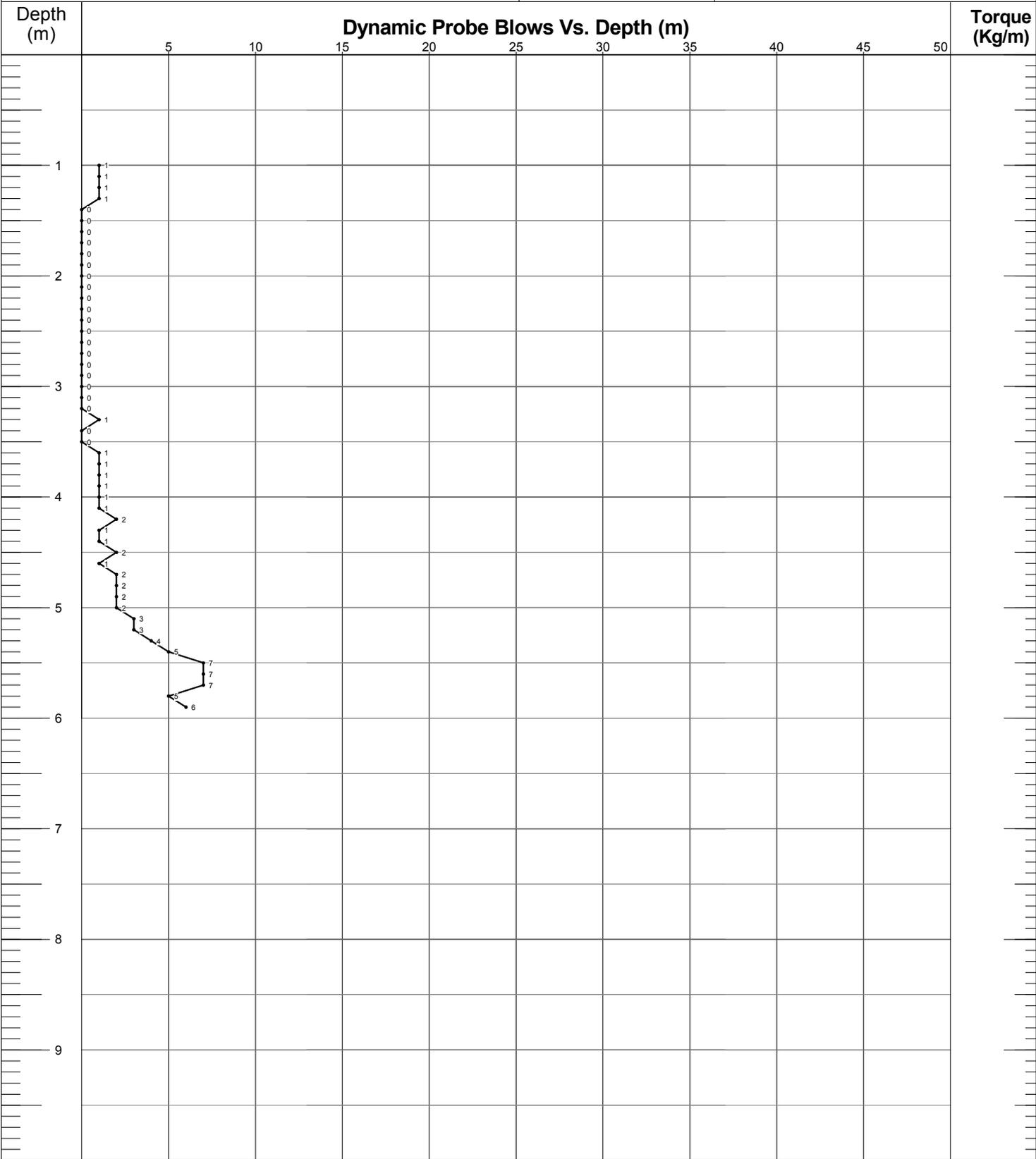


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT105
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

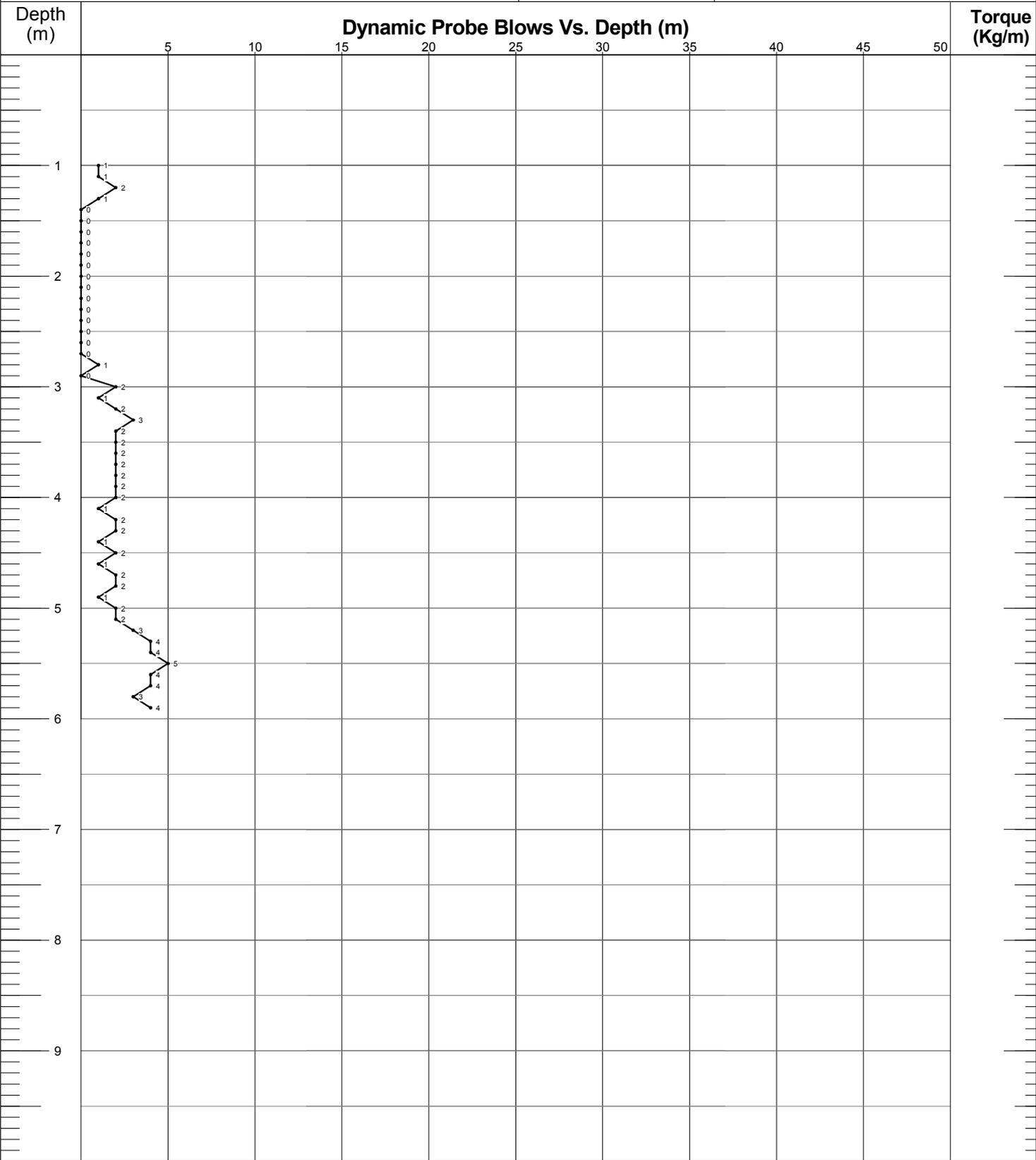


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT106
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

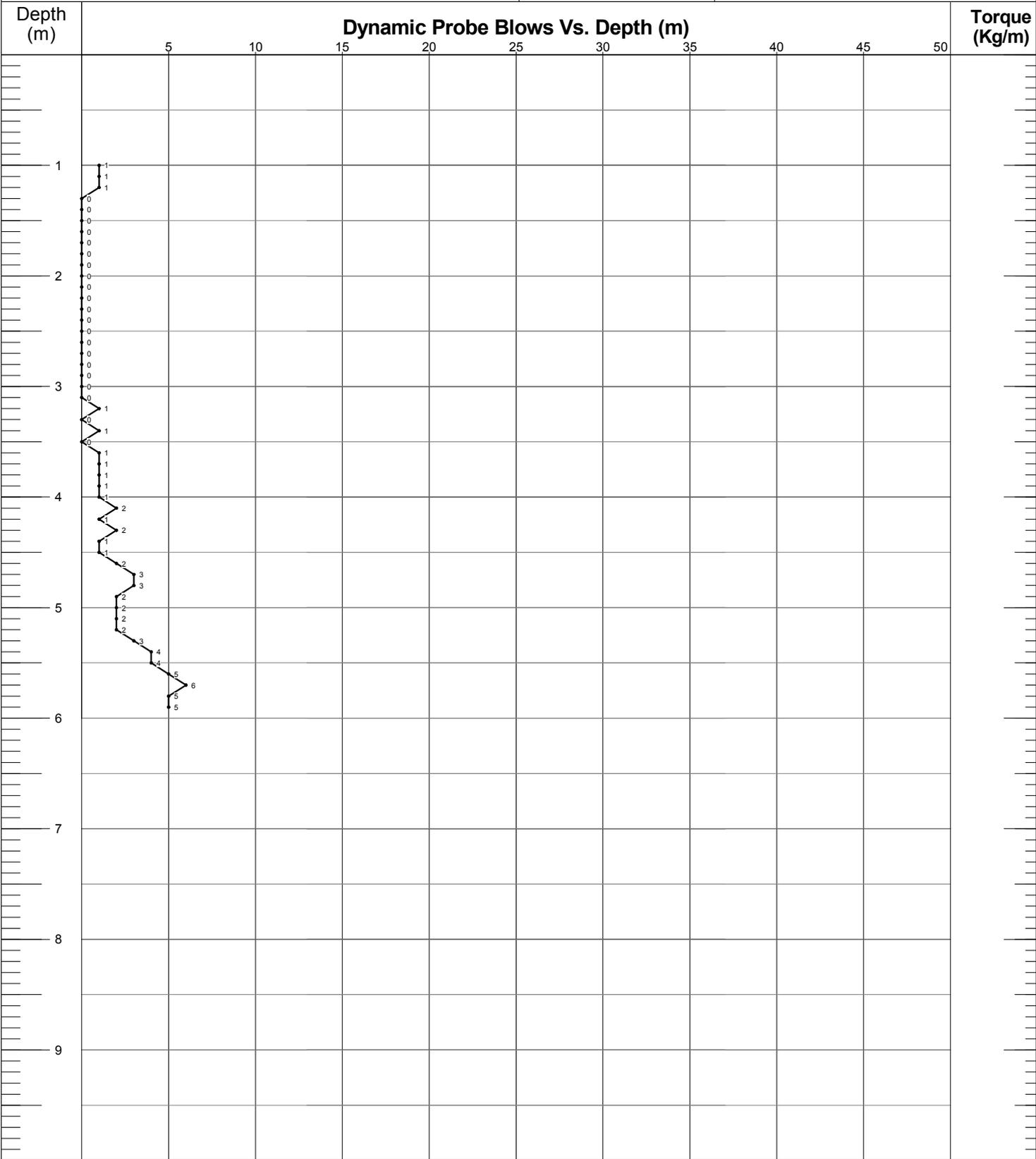


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT107
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

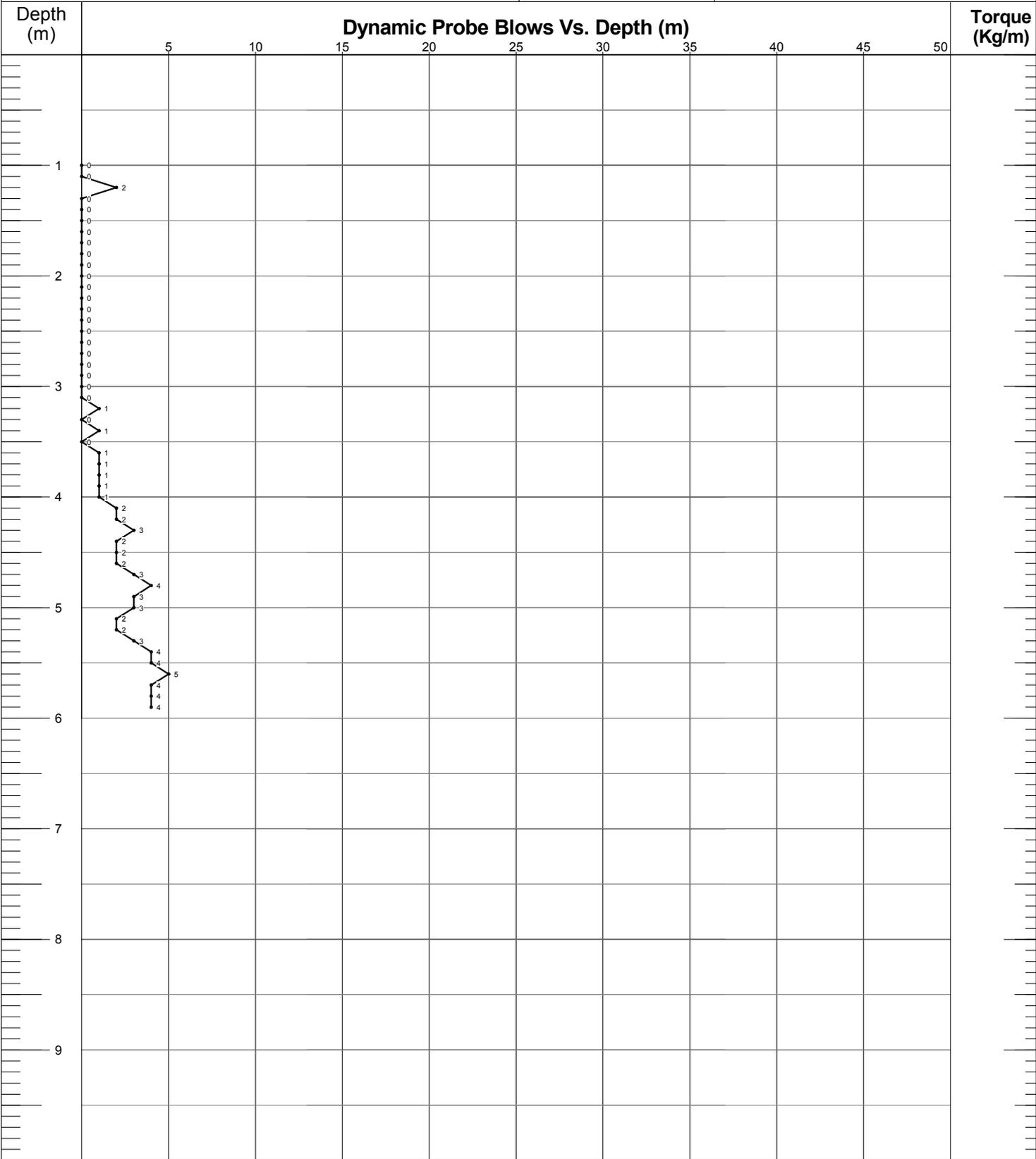


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT108
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

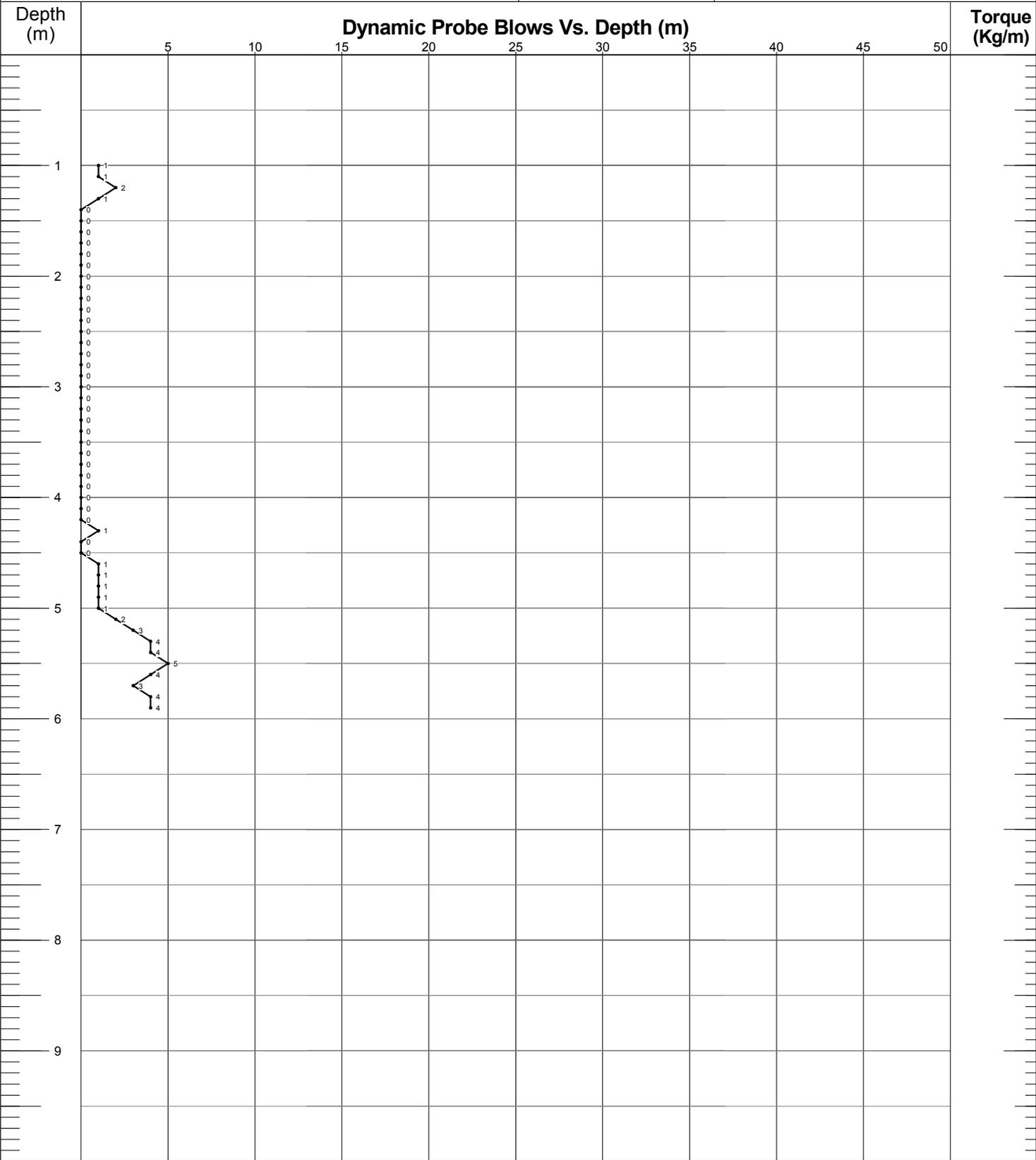


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

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:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT109
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd

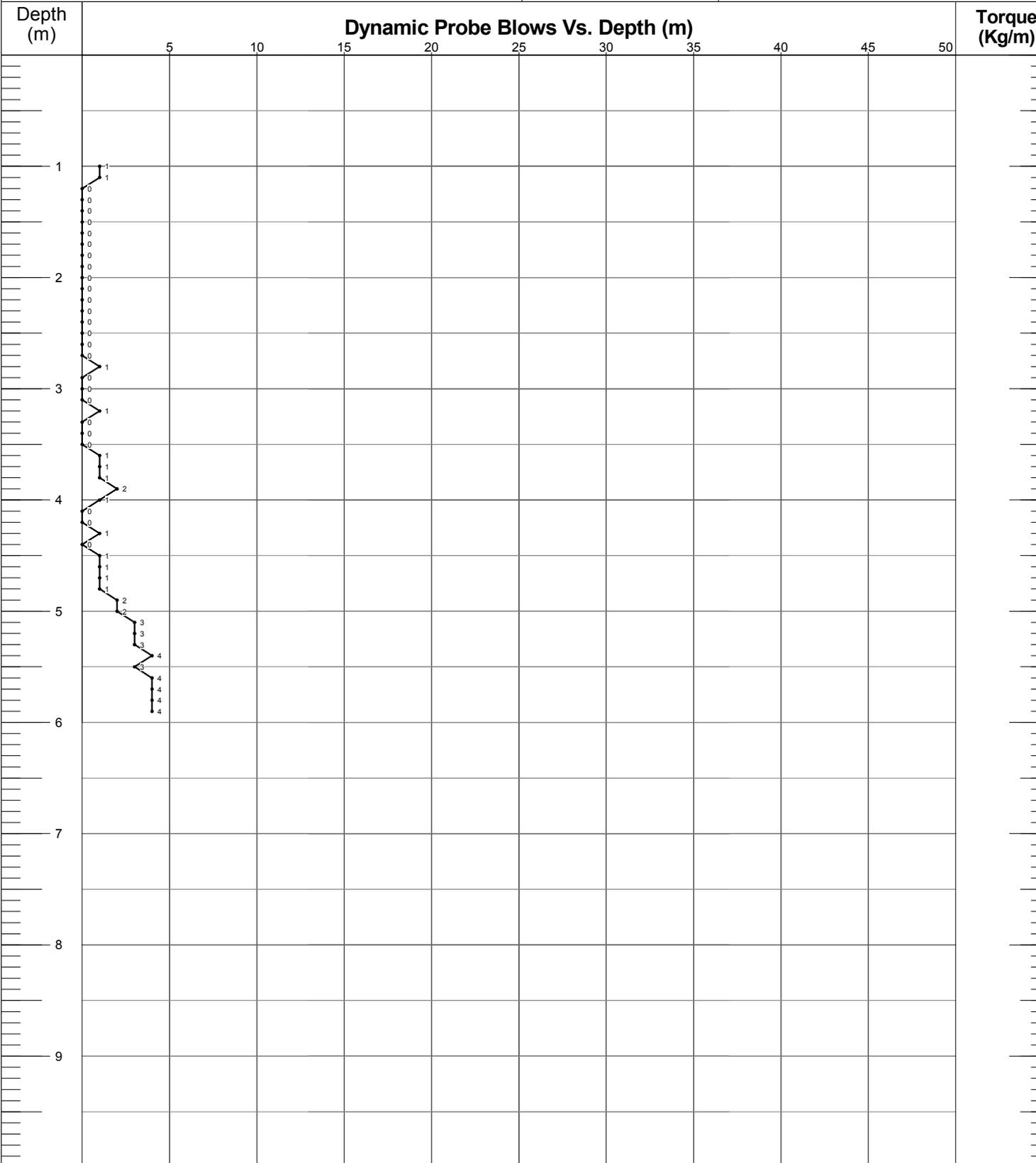


BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

Delta-Simons Environmental Consultants Ltd
 The Lawn, Union Road,
 Lincoln LN1 3BL
 Tel: 08700 400 012
 Fax: 01522 882 567
 Email: info@deltasimons.com



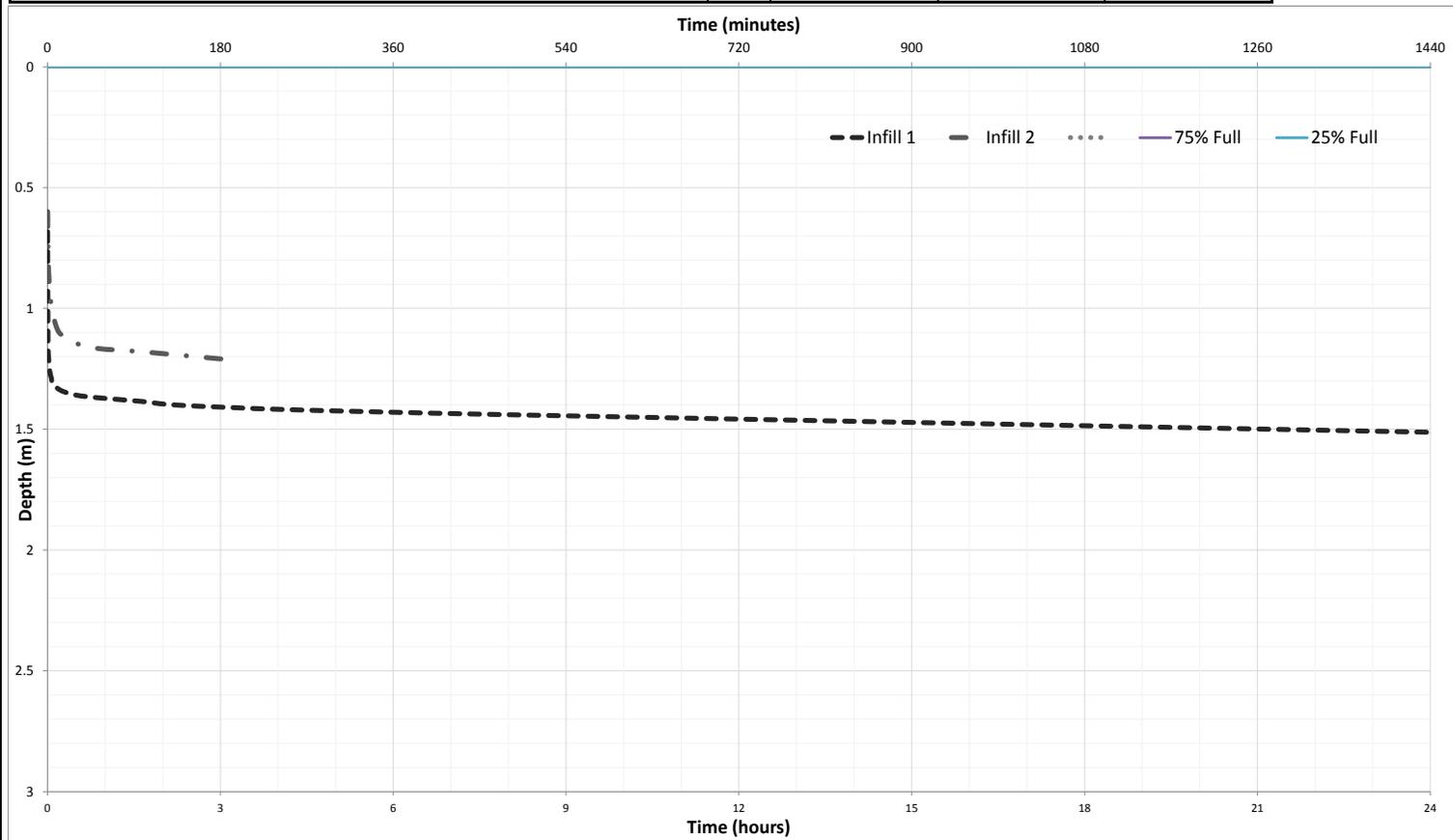
Project:	Tytton Lane East, Boston	Project No:	13-0525.03	Hole ID:	DPT110
DYNAMIC PROBE LOG		Date:	17/09/2013	Client:	Chestnut Homes Ltd



BS EN ISO 22476-2:2005	63.5kg Hammer Mass	750mm Standard Drop	50mm Cone Base Diameter	35mm Rod Diameter
Plant Used: Competitor Rig	Coordinates / Level (mAOD):	Drilled By: SS	Checked By: AW	Approved By: PB

	units	Fill 1	Fill 2	Fill 3
Depth (final reading)	m	1.53	1.21	
Pit depth	m		1.60	
Pit length	m		1.50	
Pit width	m		0.60	
Depth to first reading	m	0.60	0.60	
Maximum effective depth	m	0.93	0.61	
Depth at 75% full	m	0.83	0.75	
Depth at 25% full	m	1.30	1.06	
Time at 75% full	mins	0.22	1.17	
Time at 25% full	mins	21.67	183.00	
Vp75 - 25 (volume outflow between 75% and 25% effective depth)	m3	0.158	0.113	
Mean surface area for outflow (50% effective depth)	m2	3.00	3.29	
Time for outflow	mins	21.44	181.83	
Soil infiltration rate, f =		0.0000408050	0.0000736288	
or		4.08E-05	7.36E-05	

Recommended soil infiltration rate	
0.0000408050	m/s
or	
4.08E-05	m/s



LOG		BACKFILL	
DEPTH (m)		DEPTH (m)	
0.0	Dark brown silty CLAY	0.0	Arisings
0.5	Light brown slightly clayey SILT	0.6	Gravel (10mm)
0.9	Brown grey CLAY	1.6	
1.6		1.6	



PROJECT NAME	Tyton Lane, Boston
CLIENT	Chestnut Homes

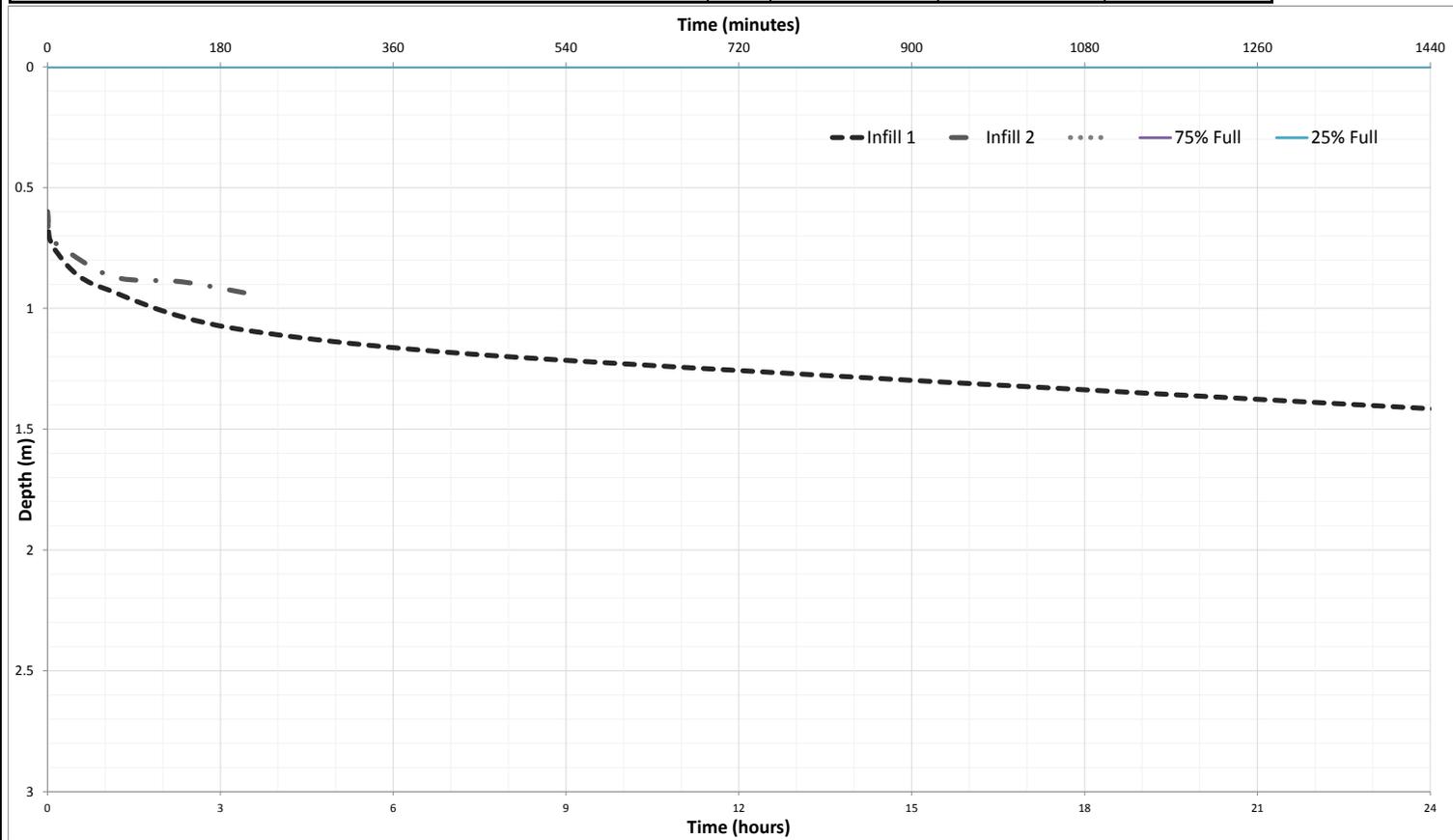
SOAKAWAY TEST RESULTS

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DATE	PROJECT NUMBER
Sep-13	13-0525.03
SOAKAWAY NUM	FILL NUMBER
SA101	1-2

	units	Fill 1	Fill 2	Fill 3
Depth (final reading)	m	1.46	0.94	
Pit depth	m		1.50	
Pit length	m		1.50	
Pit width	m		0.60	
Depth to first reading	m	0.60	0.60	
Maximum effective depth	m	0.86	0.34	
Depth at 75% full	m	0.82	0.69	
Depth at 25% full	m	1.25	0.86	
Time at 75% full	mins	21.40	48.75	
Time at 25% full	mins	816.35	211.00	
Vp75 - 25 (volume outflow between 75% and 25% effective depth)	m3	0.142	0.036	
Mean surface area for outflow (50% effective depth)	m2	2.79	3.49	
Time for outflow	mins	794.95	162.25	
Soil infiltration rate, f =		0.0000010652	0.0000052180	
or		1.07E-06	5.22E-06	

Recommended soil infiltration rate	
0.0000010652	m/s
or	
1.07E-06	m/s



LOG		BACKFILL	
	DEPTH (m)		DEPTH (m)
Dark brown silty CLAY	0.0	Arisings	0.0
Light brown SILT	0.5	Gravel (10mm)	0.6
Light brown slightly clayey SILT	1.2		
	1.5		1.5



PROJECT NAME	Tyton Lane, Boston
CLIENT	Chestnut Homes

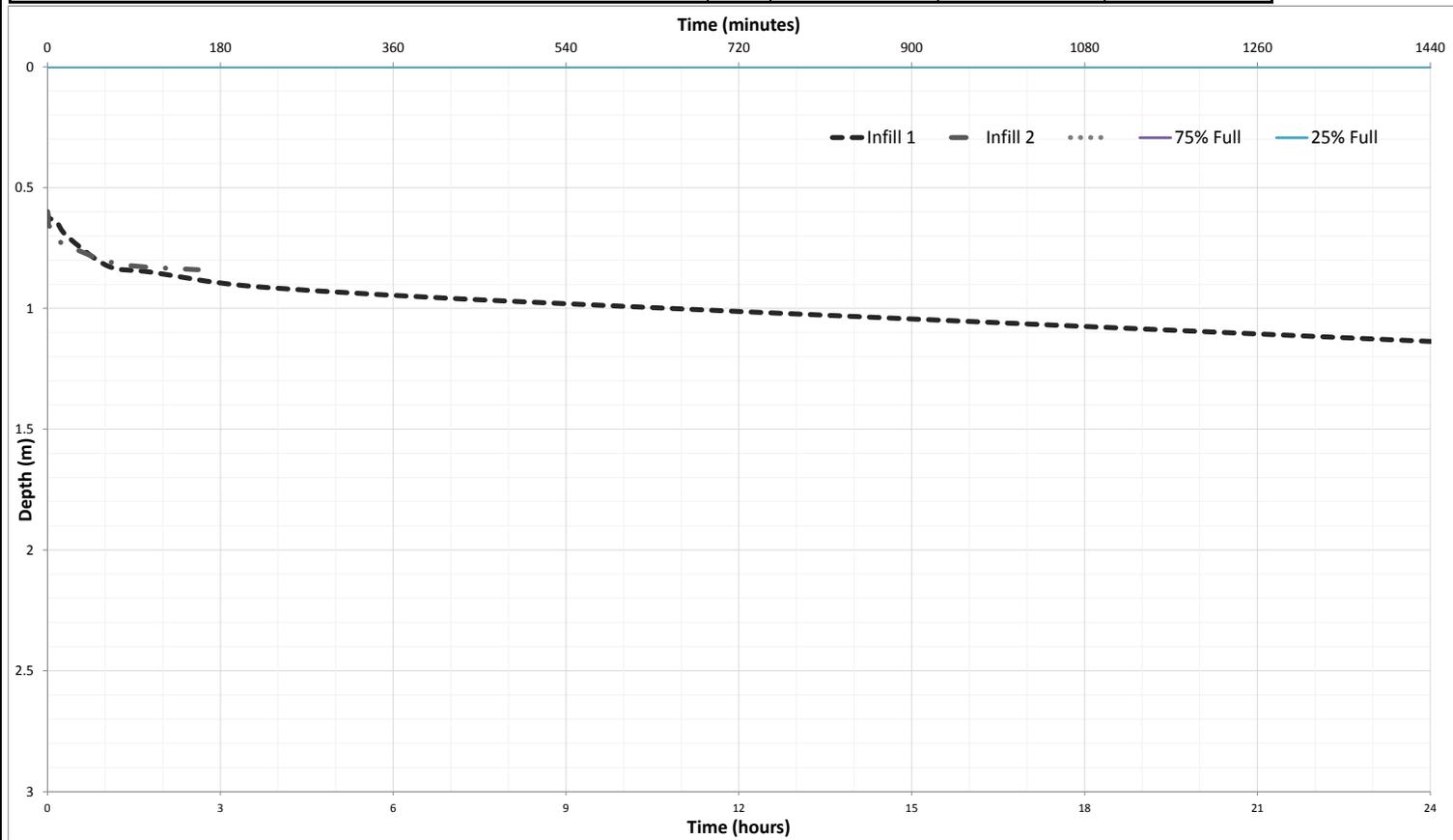
SOAKAWAY TEST RESULTS

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DATE	PROJECT NUMBER
Sep-13	13-0525.03
SOAKAWAY NUMBER	FILL NUMBER
SA102	1-2

	units	Fill 1	Fill 2	Fill 3
Depth (final reading)	m	1.18	0.84	
Pit depth	m		1.50	
Pit length	m		1.50	
Pit width	m		0.60	
Depth to first reading	m	0.60	0.60	
Maximum effective depth	m	0.58	0.24	
Depth at 75% full	m	0.75	0.66	
Depth at 25% full	m	1.04	0.78	
Time at 75% full	mins	35.48	2.00	
Time at 25% full	mins	855.14	49.12	
Vp75 - 25 (volume outflowing between 75% and 25% effective depth)	m3	0.091	0.038	
Mean surface area for outflow (50% effective depth)	m2	2.79	2.79	
Time for outflow	mins	819.66	47.12	
Soil infiltration rate, f =		0.0000006658	0.0000047924	
or		6.66E-07	4.79E-06	

Recommended soil infiltration rate	
0.0000006658	m/s
or	
6.66E-07	m/s



LOG		BACKFILL	
DEPTH (m)		DEPTH (m)	
0.0	Dark brown silty CLAY	0.0	Arisings
0.5	Light brown SILT	0.6	Gravel (10mm)
1.2	Light brown clayey SILT	1.5	
1.5		1.5	



PROJECT NAME	Tyton Lane, Boston
CLIENT	Chestnut Homes

SOAKAWAY TEST RESULTS

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DATE	PROJECT NUMBER
Sep-13	13-0525.03
SOAKAWAY NUM	FILL NUMBER
SA103	1-2

Appendix V

Delta Simons
The Lawn
Union Road
Lincoln
LN1 3BLFAO A Worley
14 October 2013

Dear A Worley

Test Report Number **240189**
Your Project Reference **13-0525.03 Tytton Lane East**

Please find enclosed the results of analysis for the samples received 4 October 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



Keith Jones, Technical Manager



2183

*Notes to accompany report:*

- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are outside of the scope of UKAS accreditation
- The results relate only to the items tested
- Stones represent the quantity of material removed prior to analysis
- All results are expressed on a dry weight basis
- The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols
- For all other tests the samples were dried at < 37°C prior to analysis
- Uncertainties of measurement for the determinands tested are available upon request
- Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation
- None of the test results included in this report have been recovery corrected

Test Report 240189 Cover Sheet

LABORATORY TEST REPORT

Results of analysis of 6 samples
received 4 October 2013

Report Date
14 October 2013

FAO A Worley

13-0525.03 Tytton Lane East

					240189					
					AJ25048	AJ25055	AJ25057	AJ25060	AJ25063	AJ25064
					DS101	DS102	DS103	DS104	DS105	DS110
					Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided
					0.50m	3.00m	1.00m	0.50m	2.00m	0.50m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SOP↓	Determinand↓	CAS No↓	Units↓	*						
2030	Moisture		%	M	14.5	30.3	19.8	16.7	27.5	15
	Stones content (>50mm)		%	M	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2040	Soil colour			M	brown	brown	brown	brown	brown	brown
	Soil texture			M	sand	clay	clay	clay	clay	clay
	Other material			M	stones	stones	stones	stones	stones	stones
2010	pH			M	8.5	8.3	8.2	7.4	8.1	8.0
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	M	0.8	5.4	2.7	1.2	4.1	2.1
	Sulfate (2:1 water soluble) as SO ₄	14808798	g l ⁻¹	M	0.04	0.78	0.04	0.06	0.09	<0.01
2420	Magnesium (soluble)	7439954	g l ⁻¹	N	<0.01	0.05	<0.01	<0.01	0.01	<0.01
2450	Arsenic	7440382	mg kg ⁻¹	M	6.2	15	19	6.5	17	12
	Cadmium	7440439	mg kg ⁻¹	M	<0.10	<0.10	<0.10	0.14	<0.10	<0.10
	Chromium	7440473	mg kg ⁻¹	M	12	24	33	11	26	23
	Copper	7440508	mg kg ⁻¹	M	11	15	17	7.6	14	12
	Mercury	7439976	mg kg ⁻¹	M	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	Nickel	7440020	mg kg ⁻¹	M	14	29	41	20	32	27
	Lead	7439921	mg kg ⁻¹	M	14	17	24	11	18	16
	Selenium	7782492	mg kg ⁻¹	M	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Zinc	7440666	mg kg ⁻¹	M	41	59	78	35	65	60
2670	Total Petroleum Hydrocarbons		mg kg ⁻¹	M	< 10 ¹	< 10 ^{1 2}	< 10 ¹	< 10 ¹	< 10 ^{1 2}	< 10 ^{1 2}
2700	Naphthalene	91203	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Acenaphthylene	208968	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Acenaphthene	83329	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Fluorene	86737	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Phenanthrene	85018	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

¹No sampling date was specified, stability times for this analyte may have been exceeded and these results may be compromised. The accreditation for these results remains unaffected.

²The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

LABORATORY TEST REPORT

Results of analysis of 6 samples
received 4 October 2013

Report Date
14 October 2013

FAO A Worley

13-0525.03 Tytton Lane East

				240189						
				AJ25048	AJ25055	AJ25057	AJ25060	AJ25063	AJ25064	
				DS101	DS102	DS103	DS104	DS105	DS110	
				Not Provided						
				0.50m	3.00m	1.00m	0.50m	2.00m	0.50m	
				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
2700	Anthracene	120127	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Fluoranthene	206440	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Pyrene	129000	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo[a]anthracene	56553	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Chrysene	218019	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo[b]fluoranthene	205992	mg kg ⁻¹	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo[a]pyrene	50328	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Total (of 16) PAHs		mg kg ⁻¹	M	< 2	< 2	< 2	< 2	< 2	< 2

¹No sampling date was specified, stability times for this analyte may have been exceeded and these results may be compromised. The accreditation for these results remains unaffected.

²The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

Delta Simons
The Lawn
Union Road
Lincoln
LN1 3BL

FAO A Worley
14 October 2013

Dear A Worley

Test Report Number **240189**
Your Project Reference **13-0525.03 Tytton Lane East**

Please find enclosed the results of analysis for the samples received 4 October 2013.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



Keith Jones, Technical Manager



2183

Notes to accompany report:

- *The in-house procedure is employed to identify materials and fibres in soils*
- *The sample is examined by stereo-binocular and polarised light microscopy*
- *Sample size is reduced by coning and quartering to obtain a representative sub-sample if necessary*
- *The bulk identification is in accordance with the requirements of the analyst guide (HSG 248)*
- *Samples associated with asbestos are retained for six months*
- *The results relate only to the items tested as supplied by the client*
- *Comments or interpretations are beyond the scope of UKAS accreditation*

LABORATORY TEST REPORT

Asbestos in Soils

Results of analysis of 6 samples
received 4 October 2013
13-0525.03 Tytton Lane East

Report Date
14 October 2013

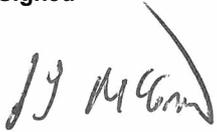
Login Batch No: 240189

Qualitative Results

Chemtest ID	Sample ID	Sample Desc	Depth (m)	SOP 2190	
				ACM Type UKAS Accredited	Asbestos Identification UKAS Accredited
AJ25048	DS101		0.50	-	No Asbestos Detected
AJ25055	DS102		3.00	-	No Asbestos Detected
AJ25057	DS103		1.00	-	No Asbestos Detected
AJ25060	DS104		0.50	-	No Asbestos Detected
AJ25063	DS105		2.00	-	No Asbestos Detected
AJ25064	DS110		0.50	-	No Asbestos Detected

The detection limit for this method is 0.001%

Signed



Steve McGrath
Asbestos Analyst

Appendix VI



LABORATORY REPORT



4043

Contract Number: PSL13/3677

Client's Reference:

Report Date: 22 October 2013

Client Name: Delta Simons
The Lawn
Union Road
Lincoln

LN1 3BL

For the attention of: Adam Worley

Contract Title: Tytton Lane, Boston (The Quadrant)

Date Received: 2/10/2013
Date Commenced: 2/10/2013
Date Completed: 22/10/2013

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)

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
CP101	1	B	1.00-1.30	Dark brown CLAY.
CP101	3	B	2.00-2.50	Brown CLAY.
CP101	5	B	3.60-4.20	Brown mottled grey slightly organic silty CLAY.
CP101	7	B	5.00-5.50	Brown mottled grey slightly organic gravelly sandy silty CLAY. Gravel is fine to medium subrounded to angular flint.
CP101	8	D	6.00-6.45	Brown gravelly silty fine to coarse SAND. Gravel is fine to medium subrounded to angular flint.
CP101	10	D	7.50-7.95	Brownish grey gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk and flint.
CP101	12	U	9.00-9.45	Brown silty CLAY.
CP101	16	D	13.00-13.45	Grey gravelly silty CLAY. Gravel is fine to coarse rounded to subangular chalk.
CP101	18	D	14.50-14.80	Grey gravelly silty CLAY. Gravel is fine to coarse rounded to subangular chalk.
CP102	1	B	0.50-1.00	Brown sandy silty CLAY.
CP102	5	B	4.00-4.50	Brownish grey silty CLAY.
CP102	7	B	5.40-5.90	Dark grey sandy silty organic CLAY with frequent fine to medium gravel sized shell fragments.
CP102	8	D	6.00-6.45	Brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subrounded to subangular flint.
CP102	10	D	7.50-7.95	Grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.
CP102	13	B	9.50-10.00	Grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to angular chalk.
CP102	16	D	12.10-12.40	Grey slightly clayey sandy fine to coarse subrounded to angular flint gravel.
CP103	1	B	0.50-1.00	Brown silty CLAY.
CP103	2	D	1.50-1.95	Brown mottled grey silty CLAY.
CP103	4	D	3.00-3.45	Brown mottled grey silty CLAY.

 Professional Soils Laboratory	Compiled by	Date	Checked by	Date	Approved by	Date
		22/10/13		22/10/13		22/10/13
	TYTTON LANE, BOSTON (THE QUADRANT).				Contract No:	PSL13/3677
					Client Ref:	13-0588.03

SUMMARY OF SOIL CLASSIFICATION TESTS

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

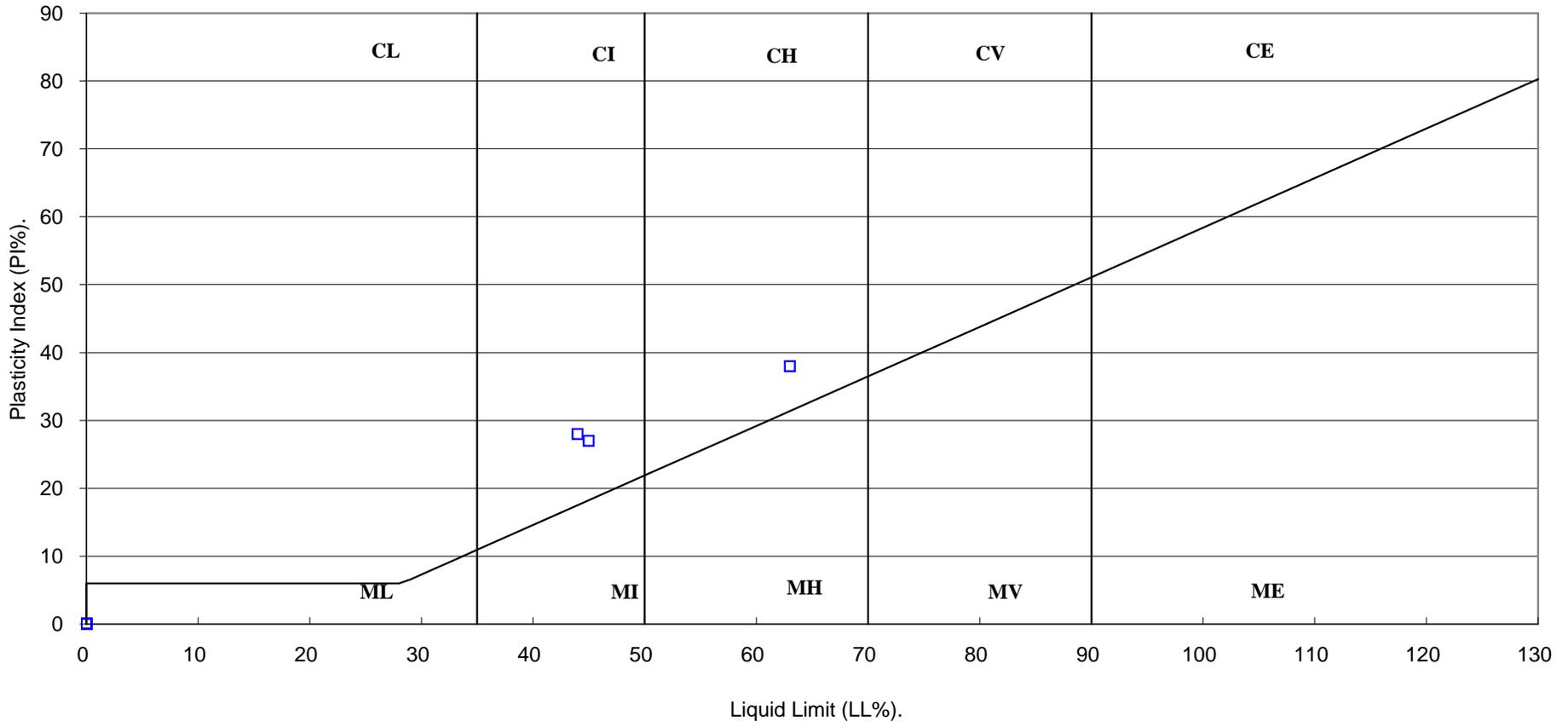
Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % <small>Clause 3.2</small>	Bulk Density Mg/m ³ <small>Clause 7.2</small>	Dry Density Mg/m ³ <small>Clause 7.2</small>	Particle Density Mg/m ³ <small>Clause 8.</small>	Liquid Limit % <small>Clause 4.3/4.4</small>	Plastic Limit % <small>Clause 5.</small>	Plasticity Index % <small>Clause 5.4</small>	% Passing .425mm	Remarks
CP101	1	B	1.00-1.30	23								
CP101	3	B	2.00-2.50	40				63	25	38	100	High plasticity CH.
CP101	5	B	3.60-4.20	56								
CP101	7	B	5.00-5.50	37								
CP101	8	D	6.00-6.45	16								
CP101	10	D	7.50-7.95	19				45	18	27	87	Intermediate plasticity CI.
CP101	12	U	9.00-9.45	43								
CP101	16	D	13.00-13.45	16								
CP101	18	D	14.50-14.80	13								
CP102	1	B	0.50-1.00	29								
CP102	5	B	4.00-4.50	50								
CP102	7	B	5.40-5.90	56								
CP102	8	D	6.00-6.45	13								
CP102	10	D	7.50-7.95	19				44	16	28	86	Intermediate plasticity CI.
CP102	13	B	9.50-10.00	21								
CP102	16	D	12.10-12.40	5					NP			
CP103	1	B	0.50-1.00	22								
CP103	2	D	1.50-1.95	42								
CP103	4	D	3.00-3.45	63								

SYMBOLS : NP : Non Plastic

 Professional Soils Laboratory	Compiled by	Date	Checked by	Date	Approved by	Date	
	<i>[Signature]</i>	22/10/13	<i>[Signature]</i>	22/10/13	<i>[Signature]</i>	22/10/13	
	TYTTON LANE, BOSTON (THE QUADRANT).					Contract No:	PSL13/3677
						Client Ref:	13-0588.03

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

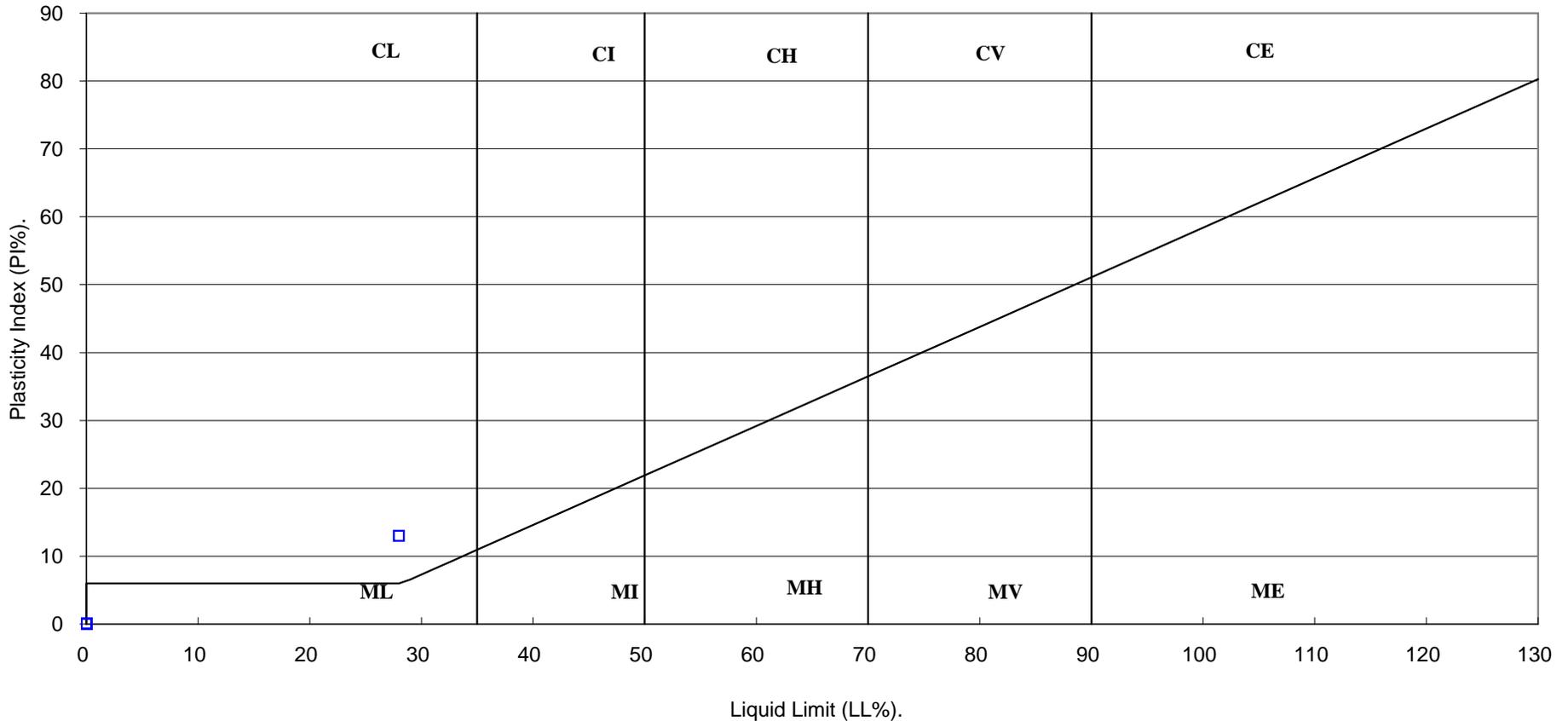
(B.S.5930 : 1999)



	Compiled by	Date	Checked by	Date	Approved by	Date
	<i>[Signature]</i>	22/10/13	<i>[Signature]</i>	22/10/13	<i>[Signature]</i>	22/10/13
	TYTTON LANE, BOSTON (THE QUADRANT).				Contract No:	PSL13/3677
					Client Ref:	13-0588.03

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)

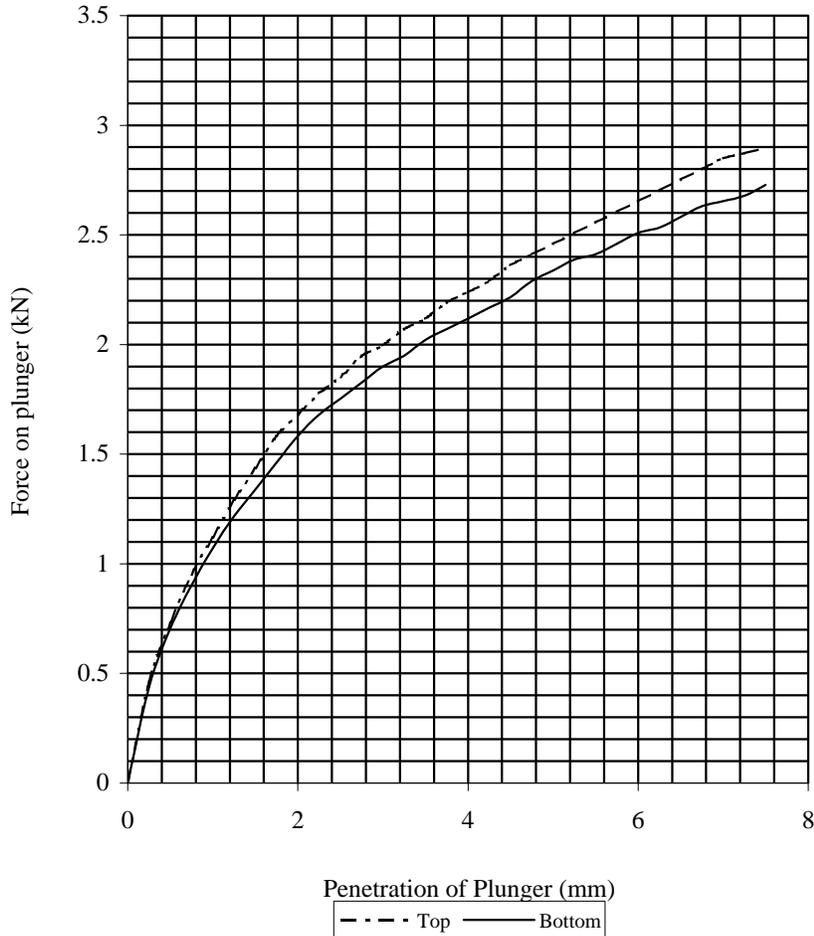


	Compiled by	Date	Checked by	Date	Approved by	Date
	<i>[Signature]</i>	22/10/13		22/10/13		22/10/13
	TYTTON LANE, BOSTON (THE QUADRANT).				Contract No:	PSL13/3677
					Client Ref:	13-0588.03

California Bearing Ratio Test.

BS 1377 : Part 4 : 1990

Hole Number: CP101 **Depth (m):** 1.00-1.30
Sample Number: 1 **Sample Type:** B



Initial Sample Conditions		Test Conditions		Method of compaction 2.5Kg Rammer			
Moisture Content:	20	Surcharge Kg:	4.20	Final Moisture Content %		C.B.R. Value %	
Bulk Density Mg/m3:	1.90	Soaking Time hrs	0	Sample Top	19	Sample Top	14.0
Dry Density Mg/m3:	1.59	Swelling mm:	0	Sample Bottom	20	Sample Bottom	13.3
Percentage retained on 20mm BS test sieve:	0	Remarks: See Summary of Soil Description.					

Checked by	Date	Approved By	Date
<i>H. b. S.</i>	22/10/13	<i>H. b. S.</i>	22/10/13

	TYTTIN LANE, BOSTON (THE QUADRANT).	Contract No. PSL13/3677
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2139

Certificate of Analysis

Date: 22/10/2013

Certificate Number: 13-90728

Client: Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference: 13-90728

Client Reference: PSL13/3677

Contract Title: Tytton Lane, Boston (The Quadrant)

Description: 3 soil samples

Date Received: 16 October 2013

Date Started: 16 October 2013

Date Completed: 22 October 2013

Test Procedures: Identified by prefix DETSn, details available upon request.

Notes: Observations and interpretations are outside the scope of UKAS accreditation

Approved By: 
Rob Brown, Business Manager

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 except in full, without the prior written approval of the laboratory.

Information in Support of the Analytical Results

Analysis

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425um sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28oC +/-2oC.

Key

- * Denotes test not included in laboratory scope of accreditation
- # Denotes test that holds MCERTS accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
- \$ Denotes tests completed by an approved subcontractor
- I/S Denotes insufficient sample to carry out test
- U/S Denotes that the sample is not suitable for testing

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month

Liquids - 2 weeks

Asbestos (test portion) - 6 months

Summary of Chemical Analysis

Soil Samples

Our Ref: 13-90728

Client Ref: PSL13/3677

Contract Title: Tytton Lane, Boston (The Quadrant)

				Lab No.	566313	566314	566315
				Sample ID	CP101	CP102	CP103
				Depth	9.50-10.00	12.10-12.40	7.00-7.50
				Sample Ref			
				Sample Type			
				Sampling Date	/ /	/ /	/ /
				Sampling Time			
Test	Units	DETSxx	LOD				
Total Sulphate as SO4	%	DETSC 2321#	0.01	0.24	0.11	0.10	
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	720	170	240	
Total Sulphur as S	%	DETSC 2320	0.01	1.2	0.21	0.35	
pH		DETSC 2008#		8.5	8.7	8.7	

Sample Comments

DETS cannot be held responsible for the integrity of sample(s) received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating.

Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note "Guidance on Deviating Samples".

All samples received are listed below. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations.

If no sampled date (soils) or date/time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters), this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Lab No.	Sample ID	Date Sampled	Containers Received	Deviating due to holding time being exceeded for test(s)	Deviating due to inappropriate container for test(s)	Deviating due to headspace presence in container for test(s)
566313	CP101 9.50-10.00 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
566314	CP102 12.10-12.40 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
566315	CP103 7.00-7.50 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		

Appendix VII



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			
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			
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			
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			
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			
	DS GAC 6% SOM	DS GAC 1% SOM	DS 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) *	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			
	DS GAC 6% SOM	DS GAC 1% SOM	DS GAC 2.5% SOM
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
Cis 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
Cis 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
	(pH6) 1	(pH7) 2	(pH8) 8		(pH6) 1	(pH7) 2	(pH8) 8	
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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