Geotechnical & Environmental Consultants

Our ref: D38041/SS

24th May 2018

Seagate Homes
Seagate Hall
Vicarage Lane
Spalding
PE12 9AF

For the attention of Mr N. Marshall

Dear Nathan

Re: Banbury Close, Spalding

Following the recent completion of investigation works at the above site, we are now pleased to make the following comments.

THE SITE

The site comprises a small parcel of land (approximately 0.4 Hectares in area) located to the north of Banbury Close, Spalding, Lincolnshire. A Site Location Plan (Figure No. D38041/01) is presented in Appendix I.

At the time of our intrusive works (April 2018) the site principally comprised sensibly level ground occupied by light scrub, indicative of early recolonisation following recent demolition activities. A metal shipping container was located in the south of the site. The site was generally surrounded by residential properties with gardens. A small metal clad warehouse with associated external hardstanding was located to the immediate south of the site. At the time of our works, the warehouse was being used by a Ford Mustang dealer to store cars. The site was bordered to its west by an open drain with wooded embankments. The water level within the drain was noted to be of the order 1.5m below existing site levels. An Annotated Site Plan (Figure No. D38041/02) is presented in Appendix II. General views of the site are included on the plan (Figure No. D38041/03) presented in Appendix III.

Based on information provided by the Client, Seagate Homes, the site has been occupied by a builders yard from the 1960's and more recently by offices. The buildings were demolished post 2009.

PROJECT UNDERSTANDING

It is understood that the site is to be redeveloped with low-rise residential properties with gardens.

Where the proposed site end-use is not consistent with our current understanding (for example if a commercial end-use was proposed) it would be necessary to review our assessment to ensure it continues to apply.

PREVIOUS REPORTS

The Client provided GeoDyne (in March of this year) with two previous reports relating to the site, for review/ comment:

- Abatech International Ltd report *'Phase I & II Geo-Environmental Site Investigation – Allison Homes Existing Offices, Banbury Close, Spalding'*, reference 03346, dated November 2003.

- South Lincs Consulting Ltd report *'Soil Report – Former Allison Homes Site, Banbury Close, Spalding, Lincolnshire'*, reference 09-0156, dated May 2009.

Based on our review of the foregoing reports, our recommendations for taking the site forward were in general accordance with the Abatech report. With respect to recommended further works, at this stage, we have previously made the following comments:

The Abatech report (Section 11.16) states that *'Once the site is demolished and cleared, further investigation works comprising trial pitting will be required below the existing buildings to enable further samples to be collected for chemical analysis, additionally trial pitting will provide supplementary geotechnical data to enable the foundation requirements to be confirmed or altered accordingly'.* We would note that the subsequent trial pitting works, undertaken by South Lincs Consulting, were excavated prior to demolition and in the general vicinity of the window sample boreholes already advanced by Abatech in the central area of the site. Therefore, the South Lincs Consulting report offers little supplementary information to the Abatech findings. The approximate area where previous works have been undertaken (by others) is also shown on the plan in Appendix II.

Furthermore, the Abatech report has identified a potential 'hotspot' of hydrocarbon contamination in the central area of the site. The soils recovered from this area (by Abatech) were subjected to laboratory Extractable Petroleum Hydrocarbon (EPH) testing. Whilst this testing can give an initial indication as to the general presence of hydrocarbons within the soils, in accordance with current good practice it is considered that speciated total petroleum hydrocarbon (TPH) testing would provide a more suitable dataset to allow specific hydrocarbon determinands to be compared with their respective generic acceptance criteria (GAC). The results of speciated TPH testing would determine the need and type of any potential hydrocarbon remediation which may be required at the site. It is noted that the Abatech testing indicates the identified hydrocarbons to comprise biodegradable diesel.

SCOPE OF WORKS

Based on our review of the previous reports for the site (as detailed above), the following further works were deemed appropriate at this stage and agreed with the Client:

- A sub-contracted utility service scan of proposed exploratory hole locations (for Health & Safety purposes).
- One days trial pitting with JCB 3CX or similar, to confirm the shallow ground conditions beneath the former buildings.
- One days window sampling to recover samples from the area of potential hydrocarbon contamination.
- Laboratory testing to include speciated TPH analysis, supplementary general contamination suites, geotechnical analysis of the soils beneath the former buildings, and asbestos screens of the existing Made Ground.
- Supervision of the works by an engineer from GeoDyne Limited.

This report provides a description of the soils logged by the attending Engineer, as well as comments and recommendations in relation to foundation design and contamination issues only. Please note that all other environmental and geotechnical considerations were specifically excluded from our current remit.

POST-DEMOLITION INTRUSIVE INVESTIGATION

Prior to the commencement of our works, a sub-contracted sub-surface utility scan was undertaken to attempt to avoid buried services during the intrusive works. Based on the results of the service scan, and taking account of the requirement to avoid buried services, the exploratory holes were positioned to maximise the amount of information obtained at the site.

A total of seven mechanically excavated trial pits (designated TP1 to TP7) were advanced at the site on 12th April 2018. The trial pits were excavated to depths of between 0.80m and 3.05m below existing ground level (begl). TP1 to TP6 were excavated beneath the former buildings; TP7 was excavated in the vicinity of the potential hydrocarbon hotspot in an attempt to provide an initial indication of the presence (or non-presence) of hydrocarbon impacted soils based on visual and olfactory evidence only.

A total of six window sample boreholes (designated WS1 to WS6) were advanced at the site on 13th April 2018. Each of the boreholes was advanced to a depth of 5.00m begl. WS1 was advanced in the area of the potential hydrocarbon hotspot identified by Abatech. The remaining five boreholes (WS2 to WS6) were advanced in an attempt to delineate the extent of any hydrocarbon impacted soils.

The approximate locations of the exploratory holes are shown on the plan presented in Appendix IV (Figure No. D38041/04). The borehole logs are included in Appendix V.

GROUND CONDITIONS

Please note that the ground conditions discussed in this section refer exclusively to the trial pits and window sample boreholes advanced at the site by GeoDyne during our programme of post-demolition works.

Made Ground

Made Ground was encountered in each of the exploratory holes advanced at the site. The Made Ground generally comprised firm silt (locally loose to medium dense gravel) with topsoil and anthropogenic materials including brick fragments and broken concrete. The Made Ground was encountered to typical depths of between 0.30m and 0.60m begl. In TP7 the Made Ground was encountered to a depth in excess of 0.80m begl (i.e. depth not fully proven), having been excavated in the location of a probable former soakaway pit.

Natural Strata

Natural Strata was encountered in each exploratory hole beneath the Made Ground and generally comprised firm clayey sandy SILT locally interbedded with firm CLAY. The Silt/Clay strata typically became soft or soft to firm at depths in excess of 1.50m begl.

In the window sample boreholes, loose to medium dense very silty predominantly fine grained SAND was recorded from typical depths of between 2.80m and 3.20m begl, underlying the Silt/Clay strata. In WS4, the Sand was encountered from 3.70m begl.

Water

Slight water seepages were typically encountered at depths in excess of 1.80m begl (typically 1.80m to 2.10m). In TP7 steady water seepages were encountered below 0.45m begl, however this was considered to represent stored water from within the probable former soakaway. The presence of water generally coincided with a reduction in strength of the Natural Strata, and resulted in excavation instability with depth (see below).

Stability

Collapsing of pit walls was recorded from depths in excess of 1.80m within five of the trial pits during their excavation. The collapsing typically caused undermining of shallower strata. The sides of TP5 remained generally stable. TP7 (advanced through the probable former soakaway) collapsed from 0.25m begl, causing collapse from ground level.

The sides of the boreholes were cased to their full depth as a precautionary measure to facilitate the retrieval of cores to 5.00m begl.

Visual & Olfactory Evidence of Contamination

WS1 was advanced in the approximate location of where the potential hydrocarbon hotspot was shown within the reviewed Abatech report. A slight hydrocarbon odour was recorded in the natural Silt strata recovered from WS1 below 1.00m begl. The odour was recorded as strong between 1.90m and 2.50m begl. No hydrocarbon odour was detected in WS1 below 2.80m begl. No visual evidence of significant soil contamination was identified within the soils recovered from WS1.

Boreholes WS2 to WS6 were advanced in the area surrounding WS1, in an attempt to delineate the extent of any hydrocarbon impacted soils. No obvious visual or olfactory evidence of significant soil contamination was identified within the soils recovered from WS2 to WS6.

All window sample borehole positions were located with a hand held GPS with a claimed nominal accuracy of +/- 2m. The results are tabulated in Table 1 below.

TABLE 1 – SUMMARY OF GPS DATA

Window Sample Borehole	Grid Reference
WS1	TF24958,23608 +/- 2m
WS2	TF24956,23600 +/- 2m
WS3	TF24957,23612 +/- 2m
WS4	TF24965,23609 +/- 2m
WS5	TF24967,23599 +/- 2m
WS6	TF24952,23606 +/- 2m

We would further note that no obvious visual or olfactory evidence of significant soil contamination was identified during the course of the trial pitting works.

Photo-Ionisation Detector Screening

Following the intrusive works, selected soil samples were analysed using a portable MiniRAE 2000 Photo Ionisation Detector (PID).

The MiniRAE 2000 is a robust, portable PID used to investigate the potential presence of Volatile Organic Compounds (VOCs) and hydrocarbon vapours. Whilst the PID does not quantitatively discriminate between discrete VOCs, the gross presence of VOCs is taken to be a reliable indicator of soil impaction.

The selected soil samples were placed in sealed containers, agitated, and the headspace in each container aspirated into the PID for analysis.

Screening revealed values of 0.0 parts per million (ppm) in the majority of the soil samples analysed, indicating a general absence of significant volatile hydrocarbon impaction. Values of between 8.7ppm and 50.2ppm were recorded within two of the samples recovered from WS1. The PID readings are summarised in Table 2 below:

TABLE 2 – SUMMARY OF PID READINGS

Sample Ref	Depth	Material	Peak Reading (ppm)	Steady Reading (ppm)
WS1 – J1	1.10	Silt	21.4	8.7
WS1 – J2	2.10	Silt	50.2	15.7
WS1 – J3	3.10	Sand	0.0	0.0
WS2 – J4	2.00	Silt	0.0	0.0
WS4 – J5	4.00	Sand	0.0	0.0
WS3 – J6	1.50	Silt	0.0	0.0
WS3 – J7	3.50	Sand	0.0	0.0
WS3 – J8	4.95	Sand	0.0	0.0
WS4 – J9	0.80	Silt	0.0	0.0
WS4 – J10	1.80	Silt	0.0	0.0
WS5 – J11	0.30	Made Ground	0.0	0.0
WS5 – J12	2.30	Silt	0.0	0.0
WS5 – J13	4.30	Sand	0.0	0.0
WS6 – J14	1.30	Silt	0.0	0.0
WS6 – J15	3.30	Sand	0.0	0.0

Photographic Records

Selected photographs of the intrusive works are shown on the Plates presented in Appendix VII of this report.

Shear Vane Values

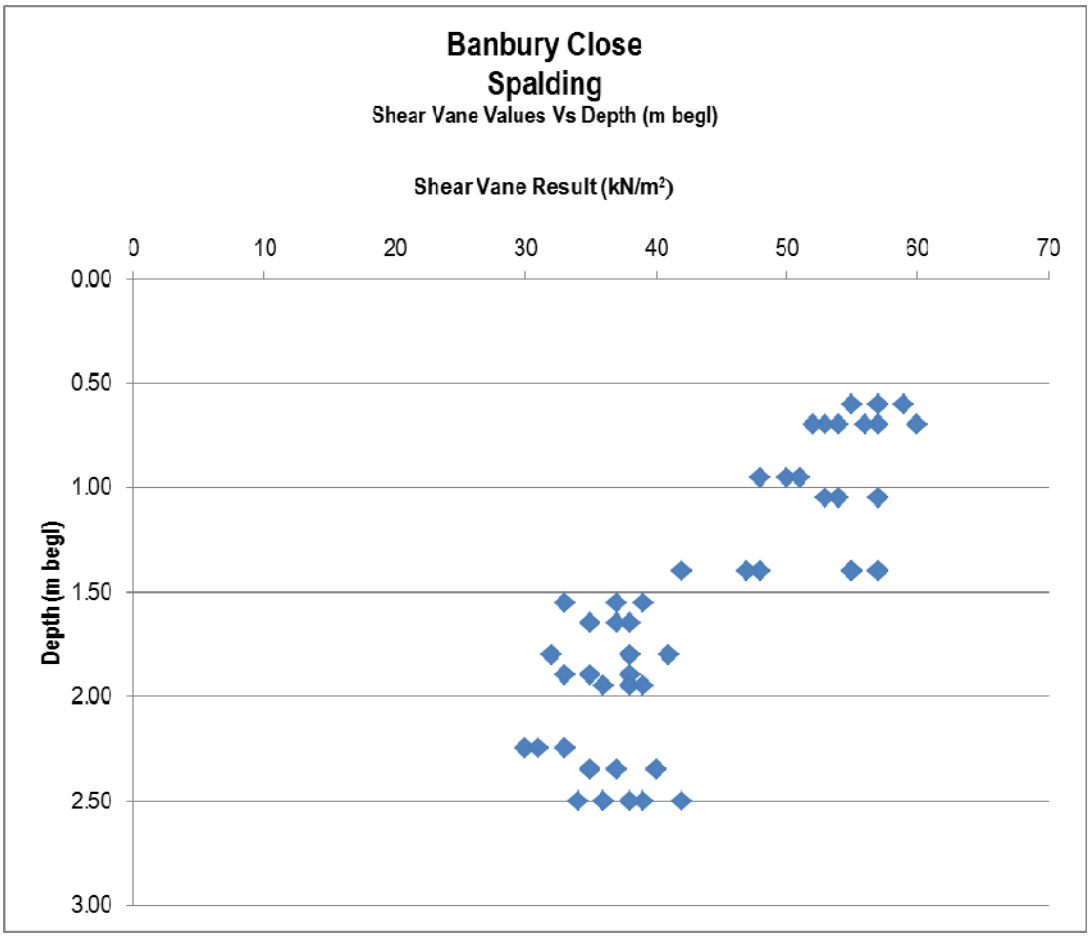
Shear vane testing was undertaken within the visually cohesive natural soils (clayey Silt and Clay) encountered within selected exploratory holes. At depths of up to 1.50m begl, the results typically revealed soil shear strength values of between 47kN/m^2 and 60kN/m^2. A slightly lower value of 42kN/m^2 was encountered at a depth of 1.40m begl in TP4.

At depths in excess of 1.50m begl, the results revealed soil shear strength values of between 30kN/m^2 and 42kN/m^2.

The results show the shear strength values to generally decrease with greater depth.

It should be noted that shear vane testing undertaken at depths greater than 1.10m was carried out ex-situ for health and safety reasons.

The shear vane values are detailed on the logs presented in Appendix V. A graph showing shear vane results in relation to depth is presented below.



GEOTECHNICAL SOIL TEST RESULTS

To assist in the design of the foundations for the proposed development, selected soil samples were subjected to geotechnical soil testing; which comprised the following:

- 2 No. Plasticity Index (PI) tests.

The laboratory geotechnical soil test results are presented in Appendix VI of this report.

Plasticity Index (PI) Testing

Plasticity Index (PI) analysis was undertaken on two samples of the visually cohesive Natural Strata (i.e. clayey Silt and Clay). In accordance with NHBC standards Chapter 4.2 *'Building Near Trees'* the reported PI values may be modified based on the portion of the sample passing the 425μm sieve. The results of the Plasticity Index analysis are summarised in Table 3.

TABLE 3 – SUMMARY OF PLASTICITY INDEX (PI) DATA

Sample Ref.	Reported PI Value (%)	Portion <425μm (%)	Modified PI Value (%)	Volume Change Potential
TP1, 0.70m (clayey SILT)	19	100	19	Low
TP2, 1.25m (CLAY)	38	100	38	Medium

In accordance with NHBC Guidance, Table 3 confirms that the cohesive soils analysed may be regarded as having low and medium volume change potential. On this basis we would recommend that soils of medium volume change potential are assumed for design purposes.

CONTAMINATION SOIL TEST RESULTS

In order to provide a confirmatory assessment on the chemical status of the near surface soils, visually representative samples were obtained from the exploratory holes. Testing comprised the following:

- 6 No. Standard contamination suites (including metals, speciated PAH and TOC).
- 10 No. Speciated Total Petroleum Hydrocarbon (TPHCWG) suites.
- 6 No. Asbestos screens.

The laboratory chemical soil test results are also included in Appendix VI of this report.

Sampling Strategy

Representative samples of the suspected hydrocarbon impacted soils (recovered from WS1) were selected for speciated TPH analysis. In addition, samples within the vicinity of the suspected hydrocarbon impacted soils were recovered for testing, in an attempt to delineate any potential hotspot.

Representative samples of the Made Ground (4No.) and Natural Strata (2No.), obtained from the trial pits excavated in previously inaccessible areas of the site, were tested for a standard suite of determinands (i.e. metals and speciated PAH), to provide confirmation of the baseline contaminant levels at the site (as revealed by others as part of previous phases of work). In addition, 6No. samples of the Made Ground were selected for asbestos screening.

Appropriate Guidance

For indicative purposes, reference has been made to documents reflecting current good practice with regards to assessment of soil contamination and risk to human health, including (but not limited to) the following:

- Environment Agency Contaminated Land Report 11 '*Model Procedures for the Management of Land Contamination*', September 2004, ISBN: 1844322955.
- British Standard BS10175:2011+A1:2013, '*Investigation of potentially contaminated sites. Code of practice*', March 2011.
- Nathanail, C.P., McCaffrey, C. Gillett, A.G. Ogden, R.C. and Nathanail, J.F 2015. '*The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. "Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved.*"'
- DEFRA publication '*SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*', Final Project Report (Revision 2), dated 24th September 2014 and Erratum dated December 2014.

- DEFRA publication '*SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*' – Policy Companion Document, dated December 2014.
- EIC/AGS/CL:AIRE publication '*Soil Generic Assessment Criteria for Human Health Risk Assessment*', January 2010, ISBN 978-1-905046-20-1.

Based on our understanding of current good practice within the contaminated land field, we have adopted the S4UL values as our initial Generic Assessment Criteria (GAC) values for human health for a residential with plant uptake setting, for indicative purposes only. In the absence of a suitable S4UL value (such as for lead), reference has been made to the relevant C4SL and Soil Generic Assessment Criteria, and these have been adopted where considered justifiable and as appropriate.

Soil Test Results

The contamination assessment for the Made Ground and Natural Strata analysed at the site is summarised in Table 4. Please note that determinands are only listed where they are present at or above the limit of detection.

TABLE 4 – SUMMARY OF TIER 1 GENERIC ACCEPTANCE CRITERIA DATA ASSESSMEN (RESIDENTIAL WITH PLANT UPTAKE END-USE)

Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	C4SL (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals					
Arsenic	6	8 – 15	37 S4UL	37	No
Chromium III	6	10 – 21	910 S4UL	-	No
Copper	6	4 – 23	2400 S4UL	-	No
Lead	6	7 – 93	200 C4SL	200	No
Nickel	6	10 – 23	130 S4UL	-	No
Zinc	6	24 – 68	3700 S4UL	-	No
PAH					
Phenanthrene	6	<0.1 – 0.1	95 S4UL	-	No
Fluoranthene	6	<0.1 – 0.5	280 S4UL	-	No
Pyrene	6	<0.1 – 0.5	620 S4UL	-	No
Benzo(a)anthracene	6	<0.1 – 0.3	7.2 S4UL	-	No
Chrysene	6	<0.1 – 0.4	15 S4UL	-	No
Benzo(b)fluoranthene	6	<0.1 – 0.3	2.6 S4UL	-	No
Benzo(k)fluoranthene	6	<0.1 – 0.4	77 S4UL	-	No
Benzo(a)pyrene	6	<0.1 – 0.4	2.2 S4UL	5	No
Indeno(123-cd)pyrene	6	<0.1 – 0.2	27 S4UL	-	No
Benzo(ghi)perylene	6	<0.1 – 0.2	320 S4UL	-	No
BTEX					
Toluene	10	<0.010 – 0.015	130 S4UL	-	No
Speciated TPH					
Aliphatic (C5 – C6)	10	<0.1 – 0.355	42 S4UL	-	No
Aliphatic (C6 – C8)	10	<0.1 – 2.0	100 S4UL	-	No
Aliphatic (C8 – C10)	10	<0.1 – 17.0	27 S4UL	-	No
Aliphatic (C10 – C12)	10	<1 – 62	130 S4UL	-	No
Aliphatic (C12 – C16)	10	<2 – 350	1100 S4UL	-	No
Aliphatic (C16 – C35)	10	6 – 659	65000 S4UL	-	No
Aromatic (C8 – C10)	10	<0.1 – 0.69	34 S4UL	-	No
Aromatic (C10 – C12)	10	<1 – 25	74 S4UL	-	No
Aromatic (C12 – C16)	10	<1 – 86	140 S4UL	-	No
Aromatic (C16 – C21)	10	1 – 110	260 S4UL	-	No
Aromatic (C21 – C35)	10	<1 – 5	1100 S4UL	-	No

Key

S4UL – CIEH/LQM Suitable 4 Use Levels (2015). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved.
C4SL – value for Lead taken from DEFRA publication SP1010 and based on a residential (with home-grown produce) end-use.

All of the determinands assessed were present at individual concentrations below the appropriate GAC for the Made Ground and Natural Strata based on a residential with plant uptake end-use.

It is noted that Abatech previously identified the hydrocarbons as biodegraded diesel, which seemingly corresponds to the fuels stored historically on site within above ground fuel storage tanks (ASTs), as stated within the Abatech report. By comparison of the soil test data between our own works and those undertaken by Abatech, a reduction of 90% of the total diesel range organic (DRO) loading of the soils appears to have taken place over the last fifteen years (i.e. from 10,000mg/kg to 1,000mg/kg). However residual soil impaction remains, as has been proven by our findings.

Asbestos Screening

Asbestos was not detected in the samples of Made Ground tested by the laboratory.

FOUNDATION CONSIDERATIONS

The natural near surface Silt and Clay soils underlying the site at shallow depth appear suitable to support a nett allowable ground bearing pressure of up to 75kN/m^2. Foundations for the proposed development are likely to comprise Engineer designed strip or raft foundations to suit the loading characteristics of the proposed structures.

We would note that softening of the soils was observed across the majority of the site at depths generally in excess of 1.50m begl. On the basis of the foregoing, it is important to ensure that all foundation excavations are kept as shallow as possible to avoid potential decreases in soil strength from affecting foundation integrity.

Based on the results of the geotechnical laboratory analysis, the near surface cohesive soils may be considered to be of medium volume change potential for design purposes. In all circumstances, foundations should be advanced to a minimum depth of 0.90m below existing or proposed ground level (whichever being the deeper) and founded within undisturbed suitably competent natural soils.

Some foundations may require deepening in accordance with NHBC Standards due to the effects of trees. To avoid excessive deepening into the geotechnically less competent soils at depth, it is anticipated that arboreally affected foundations are likely to comprise rafts rather than strips.

Floor Slabs

Where strip foundations are considered appropriate, ground bearing floor slabs may be adopted at the site provided that there is less than 0.60m of suitably compacted geotechnically competent sub-slab fill beneath proposed slabs and subject to NHBC Standards Chapter 4.2. Alternatively, a suspended slab may be adopted, which may be either cast in-situ or a pre-cast suspended floor with a clear ventilated void (i.e. beam and block).

Water

Water seepages were encountered within the majority of the exploratory holes from depths typically in excess of 1.80m begl. On this basis, it is considered unlikely that shallow foundation excavations will require significant dewatering, however any deeper excavations (e.g. for services) may require dewatering. Excavations within shallow soils may be susceptible to standing water following periods of wet weather.

Excavations

Collapsing of pit walls was recorded from depths in excess of 1.80m within the majority of the trial pits excavated at the site. On this basis, it is considered that shallow foundation excavations are unlikely to require trench support, however any deeper excavations (e.g. for services) may require trench support. The assessment of excavations and provision of support will be the responsibility of the contractor on site. The natural soils may be subject to deterioration and softening if excavations are left open and exposed to wet weather. Any softened soils should be removed from excavations prior to the pouring of concrete and foundation construction.

CONTAMINATION CONSIDERATIONS

Based on the evidence of the laboratory soil test results, there does not appear to be any significant widespread contamination based on a residential with plant uptake end-use.

However, localised hydrocarbons have been identified at depth, albeit at relatively low concentrations, and residual odour may result from the retention of these soils in-situ, should plots be proposed immediately above the area of impaction.

In view of this, it is recommended that one of the following be considered:

Option 1 *(hydrocarbon impacted soils to remain in-situ)*

Vapour protection measures to be incorporated into the foundation design of any plot(s) situated in the area of the hydrocarbon impacted soils (i.e. in the immediate vicinity of WS1), in order to mitigate against the potential ingress of nuisance hydrocarbon odours into the proposed buildings.

Where a vapour membrane is proposed for adoption, it is recommended that a proprietary gas/vapour resistant membrane is installed within any plot(s) straddling (or in the immediate vicinity of) the hydrocarbon impacted soils, irrespective of the contamination assessment. It is recommended that the gas resistant membrane has a proven resistance to volatile hydrocarbons. Furthermore, the membrane should extend continuously over the entire footprint of the building(s) and all joints sealed in accordance with the manufacturers instructions. All membrane penetrating service entry points (which should be kept to a minimum or avoided wherever possible) should be sealed by the use of appropriate 'top hat' or similar collar seals.

Option 2 *(hydrocarbon impacted soils to remain in-situ)*

Consider revision of the site layout within the area of WS1 to avoid any plot(s) being situated within the area of hydrocarbon impacted soils. (Please note that GeoDyne has not been provided within any proposed layout plans during the production of this report).

Option 3

Potentially undertake localised soil removal to remove odorous soils.

Any option other than Option 3 may also require the provision of protected supply pipes (for water etc), subject to comment by the relevant suppliers. Consideration of health risks to workers should also be provided within the Contractor RAMS where confined space working is required in the vicinity of WS1.

COMMENTS

We are only able to provide foundation recommendations and contamination comments based solely on the ground conditions encountered in the exploratory holes, and we trust that this is acceptable. This report provides supplementary information to support and enhance understanding of previous ground investigation findings reported by others. The post-demolition phase of investigation detailed herein has not been designed to fulfil (by itself) any specific planning requirements or conditions applicable to the proposed scheme.

Following finalisation of the proposed layout, it is recommended that the findings of our works be assessed in the context of the proposals, following which the most appropriate remedial option for the localised area of hydrocarbon impacted soils can be ascertained.

We trust that the foregoing comments are in accordance with your requirements; however should you have any questions or queries, please do not hesitate to contact us.

Yours sincerely
For and on the behalf of GeoDyne Limited



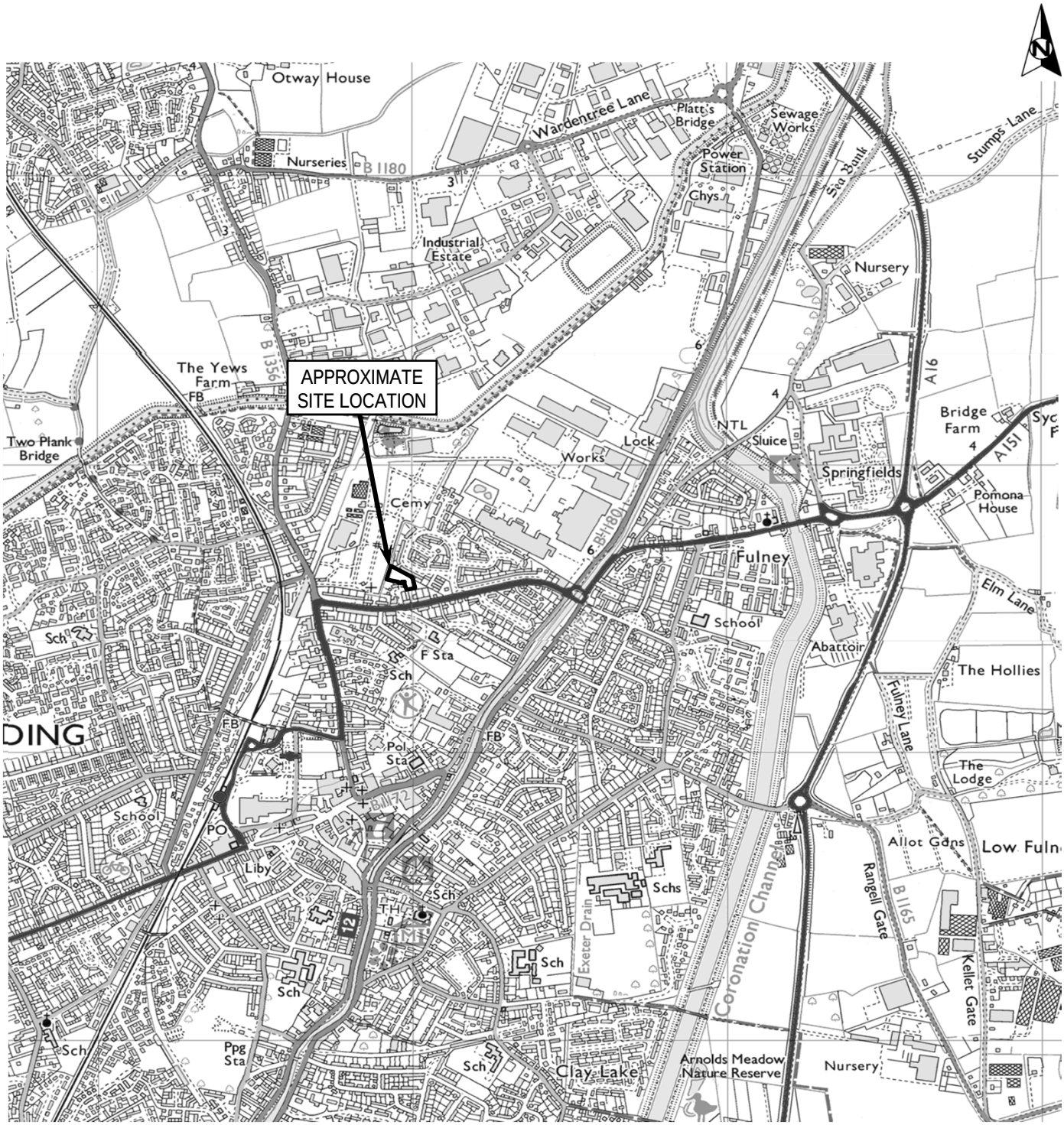
Stephen Sellers
Senior Geo-Environmental Engineer

Appendix I	Site Location Plan
Appendix II	Annotated Site Plan
Appendix III	General Site Views
Appendix IV	Exploratory Hole Location Plan
Appendix V	Exploratory Hole Logs
Appendix VI	Laboratory Soil Test Results
Appendix VII	Plates
Appendix VIII	Conditions & Limitations

Cc Kris Baxter – Eleven Consultants

APPENDIX I

Site Location Plan
(Figure No. D38041/01)



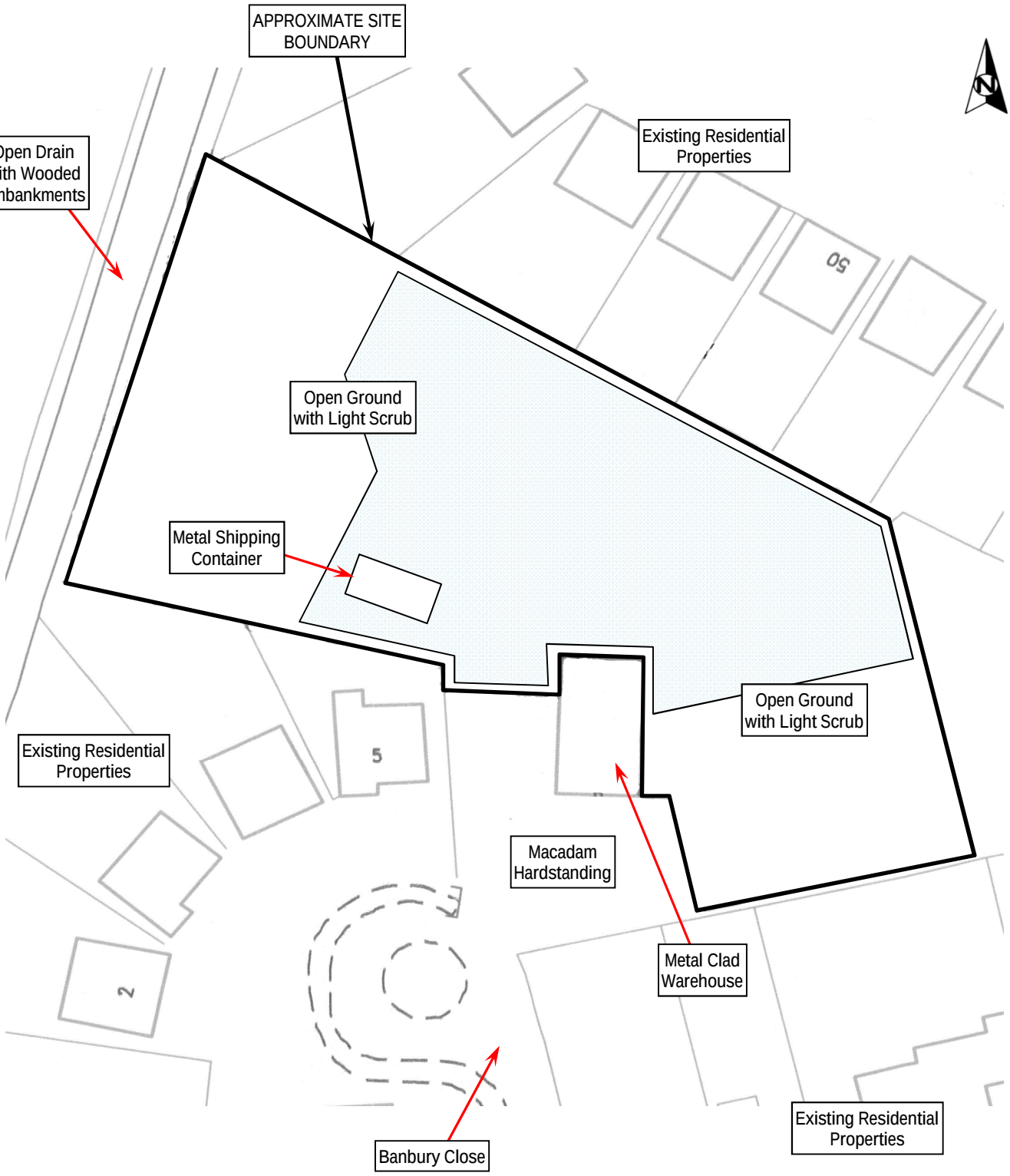
REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE.
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Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
Project	Banbury Close Spalding	Approved	PK
		Scale	NTS
		Date Drawn	23/05/2018
Title	Site Location Plan	Rev.	
		Figure No.	D38041/01

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APPENDIX II

Annotated Site Plan
(Figure No. D38041/02)



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Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
Project	Banbury Close Spalding	Approved	PK
		Scale	NTS
		Date Drawn	22/05/2018
Title	Annotated Site Plan	Rev.	
		Figure No.	D38041/02

GeoDyne

APPENDIX III

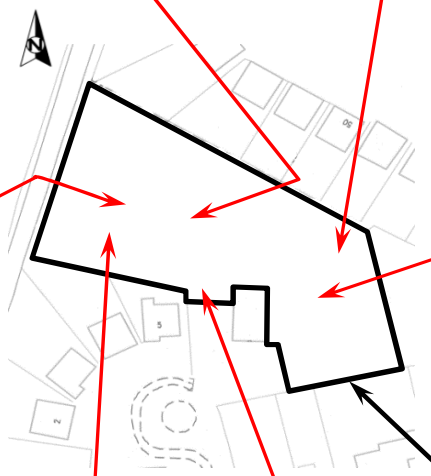
Site Plan Showing General Site Views
(Figure No. D38041/03)















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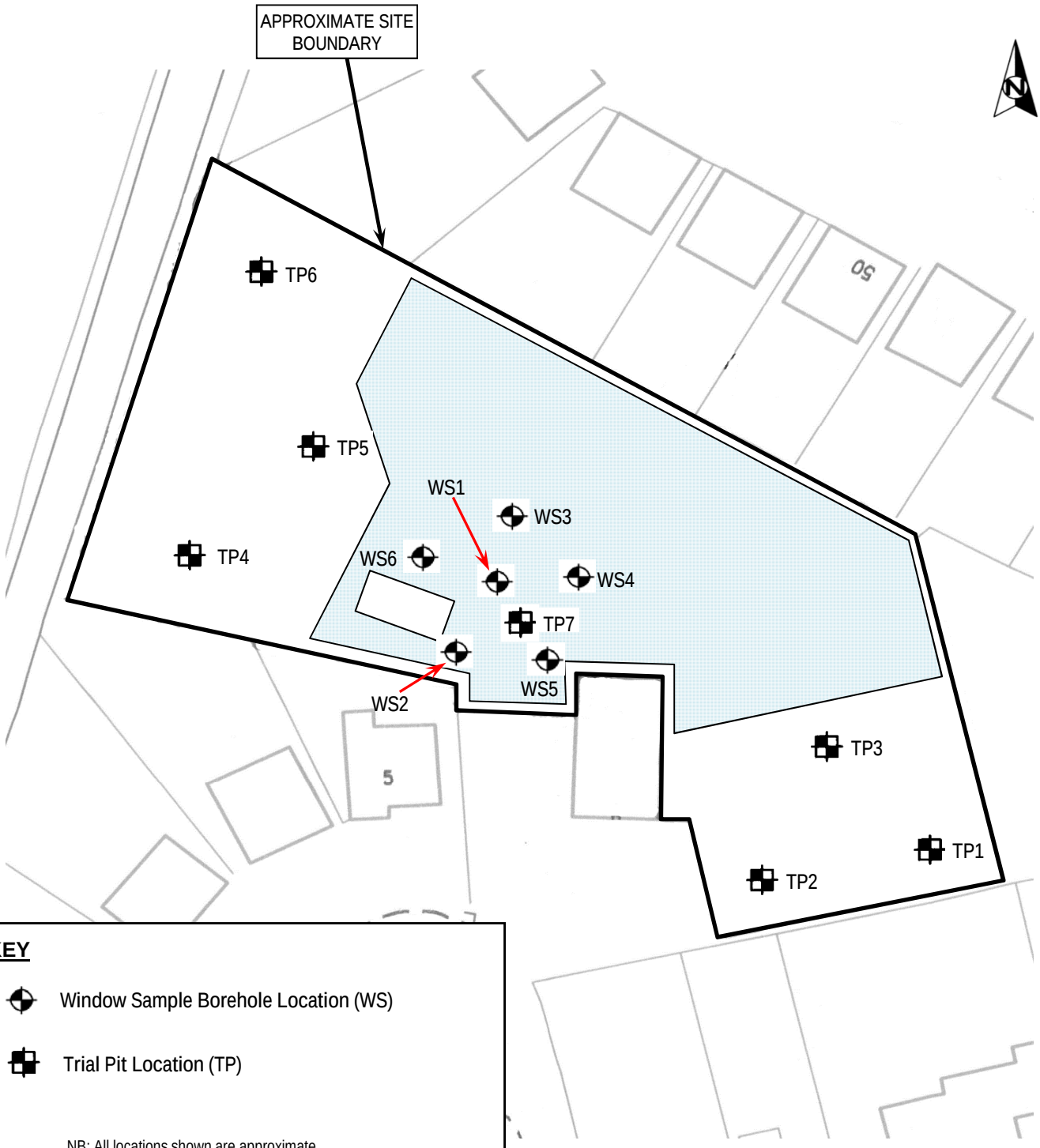
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Project	Banbury Close Spalding	Approved	PK
		Scale	NTS
		Date Drawn	22/05/2018
Title	Site Plan Showing General Site Views	Rev.	
		Figure No.	D38041/03

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APPENDIX IV

Exploratory Hole Location Plan
(Figure No. D38041/04)



KEY

Window Sample Borehole Location (WS)

Trial Pit Location (TP)

NB: All locations shown are approximate

Approximate area of previous works (by others)

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Project No.	D38041	Drawn	SS
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Project	Banbury Close Spalding	Approved	PK
		Scale	NTS
		Date Drawn	22/05/2018
Title	Exploratory Hole Location Plan (Post-demolition investigation)	Rev.	
		Figure No.	D38041/04

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APPENDIX V

Exploratory Hole Logs
(TP1 to TP7 & WS1 to WS6)

GeoDyne
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Tel: 01332 290798
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TP1

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey-brown gravelly silt with much topsoil, roots and occasional pieces of broken tile (MADE GROUND)		0.30	T1	D			
Firm grey-brown clayey locally slightly sandy SILT (TERRINGTON BEDS)		0.40					
		0.60			SV	55	
		0.70	B1	B		57	
						59	
		1.05			SV	53	
						54	
						57	
...becoming soft to firm and friable below 1.55m							
...grey between 1.70m and 2.10m							▼
...very sandy below 2.60m							
End of Trial Pit at 2.80m		2.80					

Remarks:

1.Collapsing of Trial Pit walls below 1.80m causing undermining of shallower strata.
2.Slight water seepages below 1.80m.
3.Could not deepen Trial Pit further with mechanical excavator due to collapsing of Trial Pit walls.
4.Ex-situ shear vane readings not possible due to soils breaking up upon excavation.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP1
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

GeoDyne
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TP2

Project No: D38041

Sheet 1 of 1

Description of Strata	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey sandy slightly gravelly silt with much topsoil and some roots (MADE GROUND)	0.30					
Firm brown slightly sandy SILT (TERRINGTON BEDS)	0.40	T2	D			
...becoming clayey with increasing depth	0.70			SV	52 53 60	
Firm grey-brown very silty CLAY (TERRINGTON BEDS)	0.95					
	1.25	B2	B			
	1.40			Ex-Situ SV	48 55 57	
...becoming soft below 1.55m	1.90			Ex-Situ SV	33 35 38	▼
Soft to firm grey-brown locally clayey SILT (TERRINGTON BEDS)	1.95					
...very sandy below 2.40m	2.35			Ex-Situ SV	35 37 40	
End of Trial Pit at 2.60m	2.60					

Remarks:

1.Collapsing of Trial Pit walls below 1.95m causing undermining of shallower strata.
2.Slight water seepages below 1.95m.
3.Could not deepen Trial Pit further with mechanical excavator due to collapsing of Trial Pit walls.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP2
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

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TP3

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey sandy silt with much topsoil, some roots, pockets of gravel and occasional brick fragments (MADE GROUND)		0.15	T3	D			
Firm brown very sandy SILT (TERRINGTON BEDS)		0.35 0.45	T4	D			
...becoming grey-brown with increasing depth							▼
Soft grey-brown very silty CLAY (TERRINGTON BEDS)		1.90 1.95			Ex-Situ SV	36 38 39	
End of Trial Pit at 2.45m		2.45					

Remarks:

1.Collapsing of Trial Pit walls below 1.90m causing undermining of shallower strata.
2.Slight water seepages below 1.90m.
3.Could not deepen Trial Pit further with mechanical excavator due to collapsing of Trial Pit walls.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP3
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

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TP4

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm grey-brown sandy silt with large pockets of topsoil, occasional roots, small pockets of gravel and occasional concrete fragments (MADE GROUND)		0.20	T5	D			
...with a concrete block 0.60m x 0.60m x 0.20m		0.55					
Firm brown slightly sandy locally slightly clayey SILT (TERRINGTON BEDS)		0.70			SV	54 56 57	
		1.40			Ex-Situ SV	42 47 55	
...becoming soft to firm and very clayey below 1.65m		1.70	B3	B			
		1.80			Ex-Situ SV	32 38 41	▼
...becoming grey and less clayey below 2.30m		2.25			Ex-Situ SV	30 31 33	
End of Trial Pit at 2.65m		2.65					

Remarks:

1.Collapsing of Trial Pit walls below 2.10m causing undermining of shallower strata.
2.Slight water seepages below 2.10m.
3.Could not deepen Trial Pit further with mechanical excavator due to collapsing of Trial Pit walls.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP4
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

GeoDyne
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TP5

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey clayey slightly gravelly silt with much topsoil and occasional brick fragments (MADE GROUND)		0.25	T6	D			
		0.35					
Firm brown sandy SILT (TERRINGTON BEDS)							
...becoming clayey below 0.90m		0.95			SV	48	
						50	
		1.10	T7	D		51	
		1.50					
Soft grey-brown very silty CLAY (TERRINGTON BEDS)		1.55			Ex-Situ SV	33	
						37	
						39	
		2.20					
Soft to firm sandy locally clayey SILT (TERRINGTON BEDS)							▼
...very sandy below 2.55m		2.50			Ex-Situ SV	36	
						39	
						42	
End of Trial Pit at 3.05m		3.05					

Remarks:
1.Sides generally stable.
2.Slight water seepages below 2.45m.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP5
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

GeoDyne
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TP6

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Firm dark grey sandy silt with much topsoil, occasional roots, pockets of gravel and rare pieces of broken tile (MADE GROUND)		0.40	T8	D			
Firm grey very sandy SILT (TERRINGTON BEDS)		0.45					
		1.50	T9	D			
...becoming soft and clayey below 1.60m		1.65			Ex-Situ SV	35 37 38	▼
...grey-brown below 2.25m							
...very sandy below 2.55m		2.50			Ex-Situ SV	34 36 38	
End of Trial Pit at 2.80m		2.80					

Remarks:

1.Collapsing of Trial Pit walls below 2.10m causing undermining of shallower strata.
2.Slight water seepages below 2.10m.
3.Could not deepen Trial Pit further with mechanical excavator due to collapsing of Trial Pit walls.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP6
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

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TP7

Project No: D38041

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-water
Medium dense grey-brown gravelly sand with occasional broken brick (MADE GROUND)							
Loose grey-brown silty slightly sandy medium to coarse subrounded to subangular gravel with occasional broken brick; probable former soakaway pit (MADE GROUND)		0.25					
End of Trial Pit at 0.80m		0.80					

Remarks:

1.Collapsing of Trial Pit walls below 0.25m causing collapsing from ground level.
2.Steady water seepages below 0.45m. Steady water level at 0.40m after 5 minutes.
3.Trial pit terminated at shallow depth due to collapsing/water ingress.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m2) P = Penetrometer (kN/m2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Banbury Close, Spalding			**Client:** Seagate Homes	
Logged: SS	**Checked:** DH	**Field Book Ref:** SS/11	**Plant:** JCB 3CX	**Drawing No.** TP7
Date: 12/04/2018	**Approved:** DH		**Scale:** 1:25	

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WS1

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Medium dense wet clayey fine to medium subangular gravel (MADE GROUND)		0.10			
				Loose to medium dense light brown sandy fine to coarse subrounded to subangular gravel (MADE GROUND)		(0.45)			
				Firm grey-brown clayey slightly sandy SILT (TERRINGTON BEDS)		0.55			
1.10	J	J1		...with a slight hydrocarbon odour below 1.00m					
				...very clayey between 1.30m and 1.80m					
				...soft to firm below 1.70m		(2.25)		▼	
2.10	J	J2		...with a strong hydrocarbon odour between 1.90m and 2.50m					
				Medium dense grey very silty fine grained SAND (TERRINGTON BEDS)		2.80			
3.10	J	J3							
						(2.20)			
				...becoming fine to medium grained below 4.60m					
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 1.80m.
3.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS1

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email: info@geodyne.co.uk

WS2

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Loose to medium dense grey-brown sandy fine to coarse subangular gravel with occasional cobbles (MADE GROUND)		(0.40)			
				Firm brown clayey SILT (TERRINGTON BEDS)		0.40			
				...becoming grey-brown and less clayey with increasing depth		(1.65)			
2.00	J	J4		...very sandy below 1.95m				▼	
				Soft to firm grey-brown very sandy SILT (TERRINGTON BEDS)		2.05 (0.80)			
				Loose to medium dense grey very silty fine grained SAND (TERRINGTON BEDS)		2.85			
4.00	J	J5		...locally clayey below 3.90m		(2.15)			
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 2.00m.
3.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample

S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS2

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
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WS3

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Loose light brown sandy fine to coarse subangular gravel with occasional brick fragments (MADE GROUND)		(0.35)			
						0.35			
				Firm grey-brown clayey locally slightly sandy SILT (TERRINGTON BEDS)					
				...becoming more sandy with increasing depth					
1.50	J	J6				(2.55)			
				...with a band of soft silty clay between 1.80m and 2.00m				▼	
						2.90			
				Medium dense grey very silty fine grained SAND (TERRINGTON BEDS)					
3.50	J	J7				(2.10)			
4.95	J	J8							
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 2.05m.
3.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample

S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS3

GeoDyne
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email: info@geodyne.co.uk

WS4

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Medium dense light brown sandy fine to coarse subangular gravel (MADE GROUND)		(0.30)			
						0.30			
				Firm grey-brown locally clayey SILT (TERRINGTON BEDS)					
0.80	J	J9							
						(2.25)			
				...becoming soft to firm and sandy below 1.70m					
1.80	J	J10						▼	
						2.55			
				Soft to firm grey-brown very silty sandy CLAY (TERRINGTON BEDS)		(0.45)			
						3.00			
				Soft to firm grey very sandy SILT (TERRINGTON BEDS)		(0.70)			
						3.70			
				Medium dense grey very silty fine grained SAND (TERRINGTON BEDS)					
						(1.30)			
				...with occasional bivalve fossils below 4.40m					
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 1.95m.
3.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS4

GeoDyne
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WS5

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Medium dense grey-brown and light brown very silty fine to coarse subangular gravel (MADE GROUND)		(0.35)			
0.30	J	J11				0.35			
				Firm grey-brown clayey SILT (TERRINGTON BEDS)					
				...very clayey between 1.30m and 1.55m		(2.50)			
				...soft below 2.00m				▼	
2.30	J	J12							
				Loose to medium dense very silty fine grained SAND (TERRINGTON BEDS)		2.85			
						(2.15)			
4.30	J	J13							
				...sand becoming locally medium grained below 4.55m					
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 2.00m.
3.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample

S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS5

GeoDyne
9 Brunel Parkway, Pride Park, Derby DE24 8HR
Tel: 01332 290798
email: info@geodyne.co.uk

WS6

Project No. D38041

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Firm grey-brown sandy clayey silt with much fine to coarse subangular gravel, occasional broken brick and some broken tile (MADE GROUND)		(0.60)			
				Firm brown slightly sandy SILT (TERRINGTON BEDS)		0.60			
1.30	J	J14		...clayey between 1.20m and 1.70m					
				...very sandy below 1.80m		(2.60)		▼	
				...becoming soft to firm and grey below 2.60m					
3.30	J	J15		Loose very silty fine grained SAND (TERRINGTON BEDS)		3.20			
				...becoming medium dense with increasing depth		(1.80)			
				End of Borehole at 5.00m		5.00	5.00		

Remarks

1.Borehole cased to 5.00m.
2.Slight water seepages below 2.10m.
3.Borehole hand dug to 1.00m due to possible presence of services.
4.Borehole backfilled with arisings upon completion.

Key

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
V = Vial Sample
W = Water Sample

S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project:	Banbury Close, Spalding			**Client:**	Seagate Homes		
Logged:	SS	**Checked:**	DH	**Field Book Ref:**	**Plant:**	Competitor Rig	**Drawing Ref:**
Date:	13/04/2018	**Approved:**	DH	SS/11	**Scale:**	1:25	WS6

GeoDyne

APPENDIX VI

Laboratory Soil Test Results

LABORATORY REPORT

4043

Contract Number: PSL18/1819

Report Date: 04 May 2018

Client's Reference: D38041

Client Name: Geodyne Derby
9 Brunel Parkway
Pride Park
Derby
DE24 8HR

For the attention of: Steve Sellers

Contract Title: Banbury Close, Spalding

Date Received: 19/4/2018
Date Commenced: 19/4/2018
Date Completed: 4/5/2018

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

R Gunson (Director)	A Watkins (Director)	R Berriman (Quality Manager)
L Knight (Senior Technician)	S Eyre (Senior Technician)	A Fry (Senior Technician)

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awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP1	B1		0.70		Brown sandy CLAY.
TP2	B2		1.25		Brown CLAY.

UKAS TESTING 4043	PSL Professional Soils Laboratory	Banbury Close, Spalding	Contract No: PSL18/1819 Client Ref: D38041

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP1	B1		0.70		22			39	20	19	100	Intermediate plasticity CI.
TP2	B2		1.25		37			66	28	38	100	High plasticity CH.

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Banbury Close, Spalding

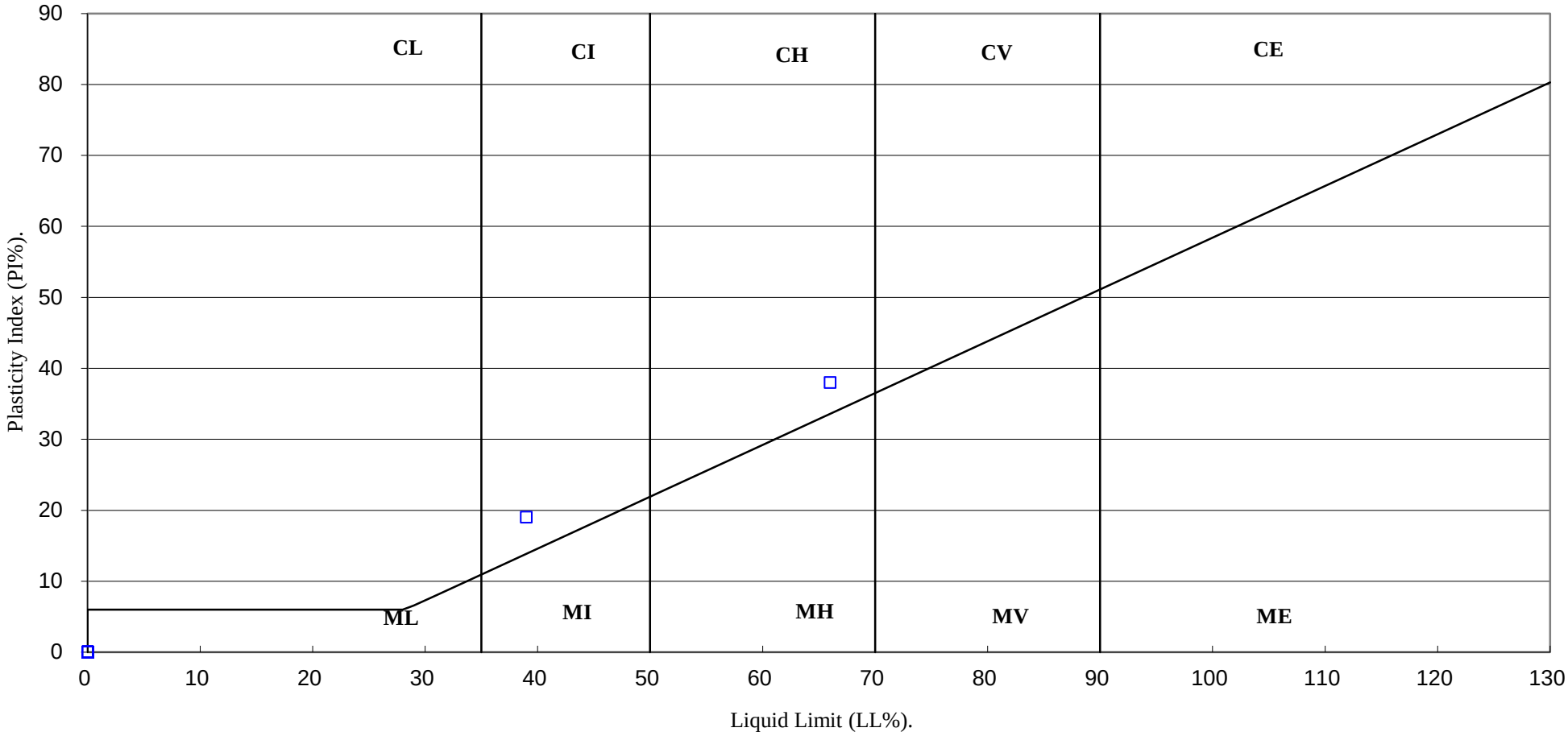
Contract No:

PSL18/1819

Client Ref:

D38041

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	**Banbury Close, Spalding**	**Contract No:**
			PSL18/1819
			Client Ref:
			D38041

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Concept Life Sciences

Certificate of Analysis

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Report Number: 730969-1

Date of Report: 09-May-2018

Customer: Geodyne Ltd
9 Brunel Parkway
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DE24 8HR

Customer Contact: Mr Steve Sellers

Customer Job Reference: D38041
Customer Site Reference: Banbury Close, Spalding
Date Job Received at Concept: 19-Apr-2018
Date Analysis Started: 24-Apr-2018
Date Analysis Completed: 04-May-2018

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

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

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

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

UKAS TESTING
1549

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report checked
and authorised by :
Chloe Kitto
Customer Service Advisor

Issued by :
Jack Nagy
Customer Service Advisor

Concept Reference: 730969
Project Site: Banbury Close, Spalding
Customer Reference: D38041

Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**730969 002**	**730969 003**	**730969 004**	**730969 005**	**730969 006**
				Customer Sample Reference	**T2 TP2**	**T3 TP3**	**T4 TP3**	**T5 TP4**	**T6 TP5**
				Depth	**0.40**	**0.15**	**0.45**	**0.20**	**0.25**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Topsoil**	**Sandy Soil**	**Topsoil**	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Moisture @105C	T162	AR	0.1	%	**20**	**17**	**22**	**20**	**18**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

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Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**730969 008**	**730969 010**	**730969 011**	**730969 012**	**730969 013**
				Customer Sample Reference	**T8 TP6**	**J1 WS1**	**J2 WS1**	**J3 WS1**	**J4 WS2**
				Depth	**0.40**	**1.10**	**2.10**	**3.10**	**2.00**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Topsoil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Moisture @105C	T162	AR	0.1	%	**20**	**22**	**23**	**26**	**26**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

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Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**730969 016**	**730969 019**	**730969 020**	**730969 021**	**730969 022**
				Customer Sample Reference	**J7 WS3**	**J10 WS4**	**J11 WS5**	**J12 WS5**	**J13 WS5**
				Depth	**3.50**	**1.80**	**0.30**	**2.30**	**4.30**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Moisture @105C	T162	AR	0.1	%	**22**	**23**	**7.7**	**24**	**22**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

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Soil Analysed as Soil
MCERTS Preparation

				Concept Reference	**730969 024**
				Customer Sample Reference	**J15 WS6**
				Depth	**3.30**
				Date Sampled	**19-APR-2018**
				Matrix Class	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**	
Moisture @105C	T162	AR	0.1	%	**24**
Retained on 10mm sieve	T2	M40	0.1	%	<0.1

Concept Reference: 730969
Project Site: Banbury Close, Spalding
Customer Reference: D38041

Soil Analysed as Soil
Geodyne Suite 1

				Concept Reference	**730969 002**	**730969 003**	**730969 004**	**730969 005**	**730969 006**
				Customer Sample Reference	**T2 TP2**	**T3 TP3**	**T4 TP3**	**T5 TP4**	**T6 TP5**
				Depth	**0.40**	**0.15**	**0.45**	**0.20**	**0.25**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Topsoil**	**Sandy Soil**	**Topsoil**	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
pH	T7	A40			**8.3**	**8.2**	**8.3**	**8.2**	**7.9**
Arsenic	T6	M40	2	mg/kg	**15**	**11**	**8**	**9**	**15**
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	**21**	**16**	**10**	**15**	**18**
Chromium VI	T6	A40	1	mg/kg	<1	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	**9**	**19**	**4**	**11**	**23**
Lead	T6	M40	1	mg/kg	**14**	**89**	**7**	**26**	**93**
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	**23**	**15**	**10**	**14**	**17**
Selenium	T6	M40	3	mg/kg	<3	<3	<3	<3	<3
Zinc	T6	M40	1	mg/kg	**50**	**59**	**24**	**44**	**68**
Total Organic Carbon	T21	A40	0.1	%	**0.2**	**1.4**	**0.2**	**0.6**	**1.5**

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Soil Analysed as Soil
Geodyne Suite 1

				Concept Reference	**730969 008**
				Customer Sample Reference	**T8 TP6**
				Depth	**0.40**
				Date Sampled	**19-APR-2018**
				Matrix Class	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**	
pH	T7	A40			**7.9**
Arsenic	T6	M40	2	mg/kg	**10**
Cadmium	T6	M40	1	mg/kg	<1
Chromium	T6	M40	1	mg/kg	**15**
Chromium VI	T6	A40	1	mg/kg	<1
Copper	T6	M40	1	mg/kg	**10**
Lead	T6	M40	1	mg/kg	**31**
Mercury	T6	M40	1	mg/kg	<1
Nickel	T6	M40	1	mg/kg	**14**
Selenium	T6	M40	3	mg/kg	<3
Zinc	T6	M40	1	mg/kg	**46**
Total Organic Carbon	T21	A40	0.1	%	**0.8**

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Soil Analysed as Soil
Miscellaneous

				Concept Reference	**730969 001**	**730969 003**	**730969 005**	**730969 006**	**730969 008**
				Customer Sample Reference	**T1 TP1**	**T3 TP3**	**T5 TP4**	**T6 TP5**	**T8 TP6**
				Depth	**0.30**	**0.15**	**0.20**	**0.25**	**0.40**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class		**Topsoil**	**Topsoil**	**Topsoil**	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Asbestos ID	T27	A40			N.D.	N.D.	N.D.	N.D.	N.D.

Concept Reference: 730969
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Soil Analysed as Soil
Miscellaneous

Concept Reference	**730969 020**
Customer Sample Reference	**J11 WS5**
Depth	**0.30**
Date Sampled	**19-APR-2018**
Matrix Class	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Asbestos ID	T27	A40			N.D.

Concept Reference: 730969
Project Site: Banbury Close, Spalding
Customer Reference: D38041

Soil Analysed as Soil
BTEX GRO MTBE

Concept Reference					**730969 010**	**730969 011**	**730969 012**	**730969 013**	**730969 016**
Customer Sample Reference					**J1 WS1**	**J2 WS1**	**J3 WS1**	**J4 WS2**	**J7 WS3**
Depth					**1.10**	**2.10**	**3.10**	**2.00**	**3.50**
Date Sampled					**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
Matrix Class					**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	**(13) 0.015**	**(13) 0.014**	(13) <0.010	**(13) 0.015**
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
Gasoline Range Organics	T54	M105	0.10	mg/kg	<0.10	**20**	<0.10	<0.10	<0.10

Concept Reference: 730969
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Soil Analysed as Soil
BTEX GRO MTBE

Concept Reference					**730969 019**	**730969 020**	**730969 021**	**730969 022**	**730969 024**
Customer Sample Reference					**J10 WS4**	**J11 WS5**	**J12 WS5**	**J13 WS5**	**J15 WS6**
Depth					**1.80**	**0.30**	**2.30**	**4.30**	**3.30**
Date Sampled					**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
Matrix Class					**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	**(13) 0.011**	(13) <0.010	**(13) 0.014**	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
Gasoline Range Organics	T54	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10

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Soil Analysed as Soil
GeoDyne USEPA16 PAHs

				Concept Reference	**730969 002**	**730969 003**	**730969 004**	**730969 005**	**730969 006**
				Customer Sample Reference	**T2 TP2**	**T3 TP3**	**T4 TP3**	**T5 TP4**	**T6 TP5**
				Depth	**0.40**	**0.15**	**0.45**	**0.20**	**0.25**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Topsoil**	**Sandy Soil**	**Topsoil**	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	**0.1**	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	**0.5**	<0.1	<0.1	**0.3**
Pyrene	T207	M105	0.1	mg/kg	<0.1	**0.5**	<0.1	<0.1	**0.3**
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	**0.2**
Chrysene	T207	M105	0.1	mg/kg	<0.1	**0.4**	<0.1	<0.1	**0.2**
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	**0.2**
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	**0.4**	<0.1	<0.1	**0.2**
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	**0.4**	<0.1	<0.1	**0.2**
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	**0.2**	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T99	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	**0.2**	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	**3.3**	<0.1	<0.1	**1.6**

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Soil Analysed as Soil
GeoDyne USEPA16 PAHs

				Concept Reference	**730969 008**
				Customer Sample Reference	**T8 TP6**
				Depth	**0.40**
				Date Sampled	**19-APR-2018**
				Matrix Class	**Topsoil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**	
Naphthalene	T207	M105	0.1	mg/kg	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	**0.2**
Pyrene	T207	M105	0.1	mg/kg	**0.1**
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1
Dibenzo(ah)Anthracene	T99	M105	0.10	mg/kg	<0.10
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1
PAH(total)	T207	M105	0.1	mg/kg	**0.3**

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Soil Analysed as Soil
Geodyne TPH (CWG)

				Concept Reference	**730969 010**	**730969 011**	**730969 012**	**730969 013**	**730969 016**
				Customer Sample Reference	**J1 WS1**	**J2 WS1**	**J3 WS1**	**J4 WS2**	**J7 WS3**
				Depth	**1.10**	**2.10**	**3.10**	**2.00**	**3.50**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
TPH (C5-C6 aliphatic)	T209	M105	100	µg/kg	<100	**355**	<100	<100	<100
TPH (C6-C8 aliphatic)	T209	M105	100	µg/kg	<100	**2000**	<100	<100	<100
TPH (C8-C10 aliphatic)	T209	M105	100	µg/kg	<100	**17000**	<100	<100	<100
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	**(13) 52**	**(13) 62**	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	**(13) 210**	**(13) 350**	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	**(13) 460**	**(13) 560**	**(13) 3**	**(13) 3**	**(13) 4**
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	**(13) 81**	**(13) 99**	**(13) 6**	(13) <4	**(13) 8**
TPH (C35-C44 aliphatic)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C6-C7 aromatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C7-C8 aromatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C8-C10 aromatic)	T209	M105	100	µg/kg	<100	**690**	<100	<100	<100
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	**(13) 20**	**(13) 25**	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	**(13) 80**	**(13) 86**	**(13) 2**	**(13) 2**	**(13) 2**
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	**(13) 96**	**(13) 110**	**(13) 2**	**(13) 3**	**(13) 2**
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	**(13) 5**	**(13) 5**	(13) <1	(13) <1	(13) <1
TPH (C35-C44 aromatic)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (Aliphatic) total	T85	M105		mg/kg	**(13) 800**	**(13) 1100**	**(13) 9.4**	(13) <4.0	**(13) 12**
TPH (Aromatic) total	T85	M105		mg/kg	**(13) 200**	**(13) 230**	**(13) 3.7**	**(13) 4.7**	**(13) 3.5**
TPH (Aliphatic+Aromatic) (sum)	T85	M105		mg/kg	**(13) 1000**	**(13) 1300**	**(13) 13**	**(13) 4.7**	**(13) 15**

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Soil Analysed as Soil
Geodyne TPH (CWG)

				Concept Reference	**730969 019**	**730969 020**	**730969 021**	**730969 022**	**730969 024**
				Customer Sample Reference	**J10 WS4**	**J11 WS5**	**J12 WS5**	**J13 WS5**	**J15 WS6**
				Depth	**1.80**	**0.30**	**2.30**	**4.30**	**3.30**
				Date Sampled	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**	**19-APR-2018**
				Matrix Class	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**					
TPH (C5-C6 aliphatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C6-C8 aliphatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C8-C10 aliphatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	**(13) 2**	**(13) 4**	**(13) 2**	**(13) 2**	**(13) 5**
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	**(13) 9**	**(13) 5**	**(13) 4**	**(13) 5**
TPH (C35-C44 aliphatic)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C6-C7 aromatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C7-C8 aromatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C8-C10 aromatic)	T209	M105	100	µg/kg	<100	<100	<100	<100	<100
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	**(13) 1**	(13) <1	(13) <1	**(13) 1**
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	**(13) 2**	**(13) 2**	**(13) 1**	**(13) 2**	**(13) 1**
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	**(13) 4**	(13) <1	(13) <1	(13) <1
TPH (C35-C44 aromatic)	T8	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1	(13) <1
TPH (Aliphatic) total	T85	M105		mg/kg	(13) <4.0	**(13) 13**	**(13) 6.6**	**(13) 5.9**	**(13) 11**
TPH (Aromatic) total	T85	M105		mg/kg	**(13) 1.7**	**(13) 7.6**	**(13) 1.4**	**(13) 2.4**	**(13) 2.4**
TPH (Aliphatic+Aromatic) (sum)	T85	M105		mg/kg	(13) <4.0	**(13) 21**	**(13) 8.0**	**(13) 8.3**	**(13) 13**

Index to symbols used in 730969-1

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

Notes

Asbestos testing was subcontracted to REC.
Samples submitted for GC/MS (Headspace) analysis were submitted in inappropriate containers. It is possible therefore that the results provided may be compromised.

Method Index

Value	Description
T27	PLM
T21	OX/IR
T85	Calc
T2	Grav
T7	Probe
T162	Grav (1 Dec) (105 C)
T209	GC/MS (Head Space)(MCERTS)
T8	GC/FID
T206	GC/FID (MCERTS)
T54	GC/MS (Headspace)
T207	GC/MS (MCERTS)
T6	ICP/OES
T99	GC/MS (LV)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Asbestos ID	T27	A40			SU	001,003,005-006,008,020
pH	T7	A40			M	002-006,008
Arsenic	T6	M40	2	mg/kg	M	002-006,008
Cadmium	T6	M40	1	mg/kg	M	002-006,008
Chromium	T6	M40	1	mg/kg	M	002-006,008
Chromium VI	T6	A40	1	mg/kg	N	002-006,008
Copper	T6	M40	1	mg/kg	M	002-006,008
Lead	T6	M40	1	mg/kg	M	002-006,008
Mercury	T6	M40	1	mg/kg	M	002-006,008
Nickel	T6	M40	1	mg/kg	M	002-006,008
Selenium	T6	M40	3	mg/kg	M	002-006,008
Zinc	T6	M40	1	mg/kg	M	002-006,008
Total Organic Carbon	T21	A40	0.1	%	N	002-006,008
Naphthalene	T207	M105	0.1	mg/kg	M	002-006,008
Acenaphthylene	T207	M105	0.1	mg/kg	U	002-006,008
Acenaphthene	T207	M105	0.1	mg/kg	M	002-006,008
Fluorene	T207	M105	0.1	mg/kg	M	002-006,008
Phenanthrene	T207	M105	0.1	mg/kg	M	002-006,008
Anthracene	T207	M105	0.1	mg/kg	U	002-006,008
Fluoranthene	T207	M105	0.1	mg/kg	M	002-006,008
Pyrene	T207	M105	0.1	mg/kg	M	002-006,008
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	002-006,008
Chrysene	T207	M105	0.1	mg/kg	M	002-006,008
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	002-006,008
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	002-006,008

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	002-006,008
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	002-006,008
Dibenzo(ah)Anthracene	T99	M105	0.10	mg/kg	M	002-006,008
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	002-006,008
PAH(total)	T207	M105	0.1	mg/kg	U	002-006,008
Moisture @105C	T162	AR	0.1	%	N	002-006,008,010-013,016,019-022,024
Retained on 10mm sieve	T2	M40	0.1	%	N	002-006,008,010-013,016,019-022,024
TPH (C5-C6 aliphatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C6-C8 aliphatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C8-C10 aliphatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	010-013,016,019-022,024
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	010-013,016,019-022,024
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	010-013,016,019-022,024
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	010-013,016,019-022,024
TPH (C35-C44 aliphatic)	T8	M105	1	mg/kg	N	010-013,016,019-022,024
TPH (C6-C7 aromatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C7-C8 aromatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C8-C10 aromatic)	T209	M105	100	µg/kg	N	010-013,016,019-022,024
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	010-013,016,019-022,024
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	010-013,016,019-022,024
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	010-013,016,019-022,024
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	010-013,016,019-022,024
TPH (C35-C44 aromatic)	T8	M105	1	mg/kg	N	010-013,016,019-022,024
TPH (Aliphatic) total	T85	M105		mg/kg	N	010-013,016,019-022,024
TPH (Aromatic) total	T85	M105		mg/kg	N	010-013,016,019-022,024
TPH (Aliphatic+Aromatic) (sum)	T85	M105		mg/kg	N	010-013,016,019-022,024
Benzene	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
Toluene	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
EthylBenzene	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
M/P Xylene	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
O Xylene	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	010-013,016,019-022,024
Gasoline Range Organics	T54	M105	0.10	mg/kg	N	010-013,016,019-022,024

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APPENDIX VII

Plates



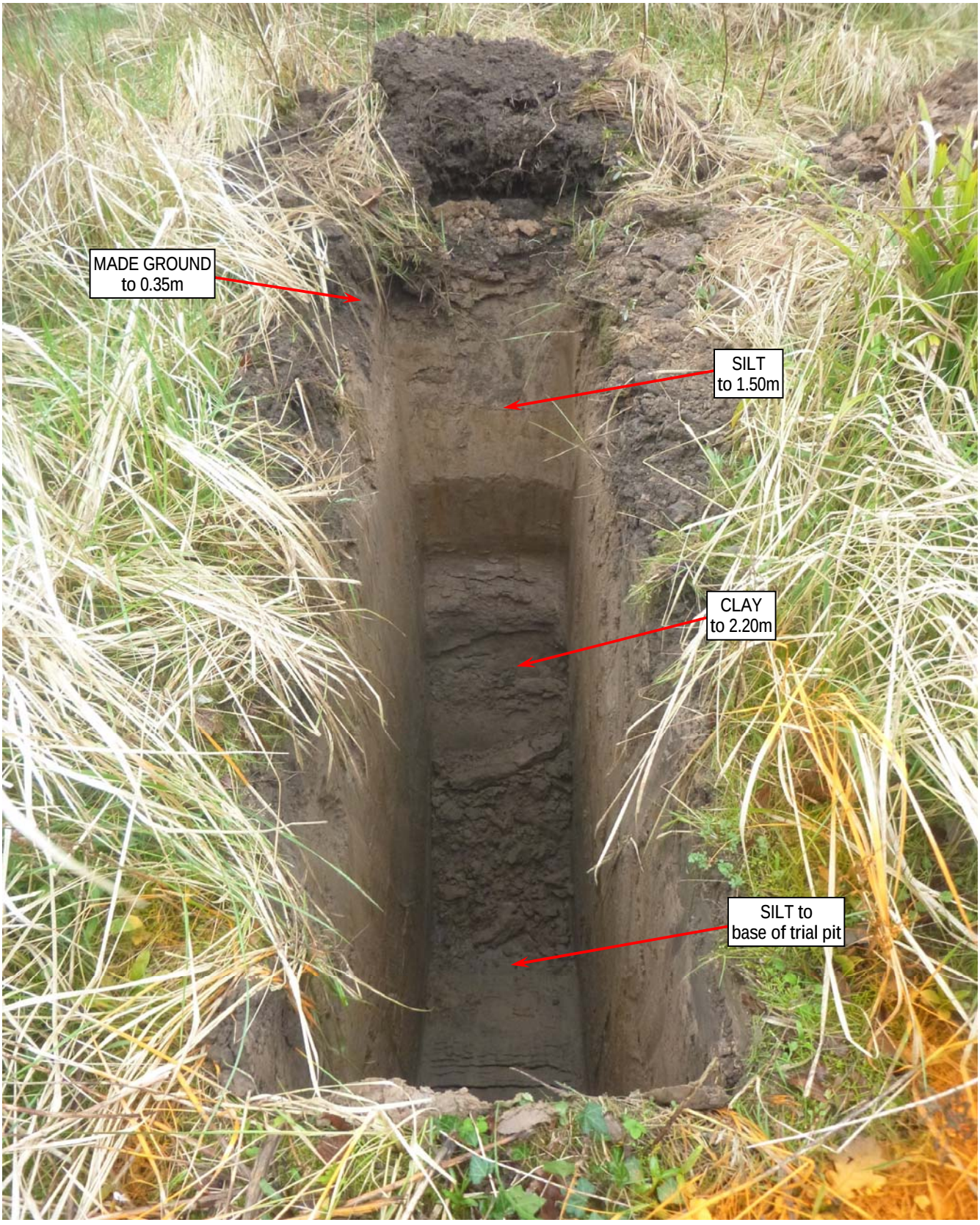
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Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Partially Completed Excavation (TP1)	Rev.	
		Plate No.	1

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Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Completed Excavation (TP4)	Rev.	
		Plate No.	2

GeoDyne



Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Completed Excavation (TP5)	Rev.	
		Plate No.	3

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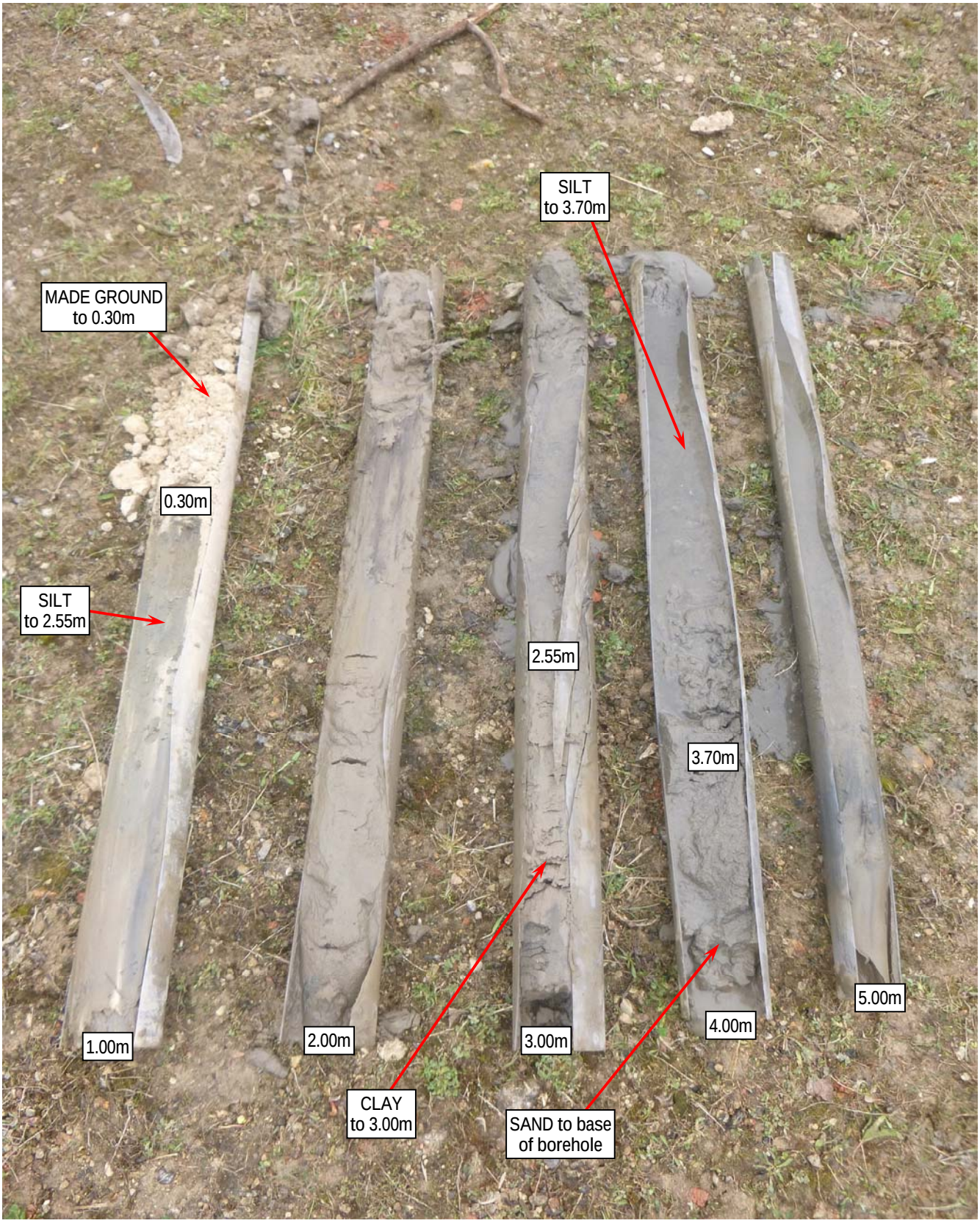
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Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Recovered Cores from WS1	Rev.	
		Plate No.	4

GeoDyne



Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Recovered Cores from WS3	Rev.	
		Plate No.	5

GeoDyne



Project No.	D38041	Drawn	SS
Client	Seagate Homes	Checked	DH
		Approved	PK
Project	Banbury Close Spalding	Scale	NTS
		Date Drawn	22/05/2018
Title	Recovered Cores from WS4	Rev.	
		Plate No.	6

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APPENDIX VIII

Conditions & Limitations

Conditions & Limitations

Phase I Desk Studies

1. Works undertaken to provide the basis of the Phase I Desk Study report comprise a review of information available from a number of sources/parties (potentially also including the Client) together with a walk over of the site (where applicable and included within the quotation). The opinions given in the Phase I Desk Study are based on the information available from third parties/sources that has been obtained within the available timeframe. GeoDyne Limited assumes all third party information to be true and correct and therefore cannot accept liability for the accuracy of such information supplied.

2. Should additional information become available that may affect the comments and opinions made within the Phase I Desk Study, GeoDyne Limited reserves the right to review such information and make modifications to comments/opinions as appropriate.

3. It should be borne in mind that a Phase I Desk Study collates available information to generate a conceptual model of the site. The actual geotechnical and environmental considerations can only be fully quantified by intrusive investigation works to confirm the accuracy of the conceptual site model.

Phase II Intrusive Investigations

1. Our quotation assumes that access to the site will be arranged by others at no cost to ourselves.

2. We have assumed that free access is available throughout to the entire site and that works can be undertaken during a single mobilisation. Where restricted access is encountered, or where additional unscheduled mobilisations are required, additional costs may be incurred to the client.

3. We have assumed that all available information relating to buried services will be supplied by the Client at no cost to ourselves. No responsibility will be accepted for damage to underground services that have not been brought to our prior attention by the Client.

4. All excavations/boreholes will be backfilled with compacted arisings upon completion, with any excess arisings left proud of ground levels. Excess arisings will not be removed from the site unless specifically requested by the Client. Where we are requested to remove excess arisings, all associated costs will be passed to the Client.

5. We will attempt to leave the site in a clean and tidy state, however, it must be understood that some disturbance of the site is unavoidable during intrusive works.

6. Exploratory holes are positioned approximately on site by GeoDyne Limited. Should the client require precise locations of all exploratory points, additional fees will be incurred. It must be borne in mind that backfilled trial pits can create ‘soft spots’, therefore, should the Client wish to designate ‘no dig’ zones, for example under the footprint of proposed structures, these must be brought to our attention prior to commencement of works.

7. Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions or seasonal variation.

8. Trial pits and boreholes examine only a small proportion of the total site area. No liability can be accepted for conditions not revealed in exploratory holes, particularly between positions. All extrapolations of available data are given in good faith.

Payment

1 Payment terms are strictly 28 days from the invoice date.

2 Prior to commencement of works, we require receipt of formal written instruction from the party accepting full financial responsibility for the work. In the absence of such an instruction, we would expect the instructing Consulting Engineers/Architects to accept full financial responsibility for the works.

3 Receipt of instruction to commence work shall be taken as acceptance and compliance of the foregoing conditions.

Liability

1. GeoDyne Limited offer £5,000,000.00 Professional Indemnity Insurance (in aggregate over the year). This shall be the limit of our liability for works undertaken. No individual liability shall be implied to, or accepted by, any employee for works undertaken for and on the behalf of GeoDyne Limited.