6 Detillens Lane
Limpsfield
Surrey

Brief Geotechnical Assessment Report

Report Beneficiary:
St Marks Properties (XV) Ltd
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London
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1. INTRODUCTION

It is proposed to construct a new two-storey house, with habitable loft space, to the rear of 6 Detillens Lane, Limpsfield, Surrey, together with an associated new access road and driveway. A copy of the proposed development layout is presented in Appendix A.

Ashdown Site Investigation Ltd was requested to undertake a ground investigation and to provide advice to assist with the structural design.

The specific objectives of the works were to:

a) Establish the expected geology and hydrogeology at the site;
b) Investigate the shallow ground and groundwater conditions in the area of the proposed development; and
c) Provide advice to assist others in undertaking design of spread foundations and ground floors.

The scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q14286, dated 4th July 2024. The instruction to proceed was received from the client, St Marks Properties (XV) Ltd.

2. SITE CONTEXT

2.1 Site Location

The site is located at Detillens Lane, Limpsfield, Surrey, and is centred on the approximate Ordnance Survey national grid reference 540198, 152771. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively.

2.2 Geological Setting

2.2.1 Expected Geology and Aquifer Designation

The stratigraphic unit that may be expected to underlie the site has been established by reference to British Geological Survey (BGS) mapping and the BGS Lexicon of Named Rock Units. The expected stratigraphy is presented in the following table.

Table 1. Expected Strata and Aquifer Designation

Type	Stratum	Aquifer Designation
Bedrock	Folkestone Formation	Principal Aquifer

The Folkestone Formation forms part of the Lower Greensand Group. The formation is of Aptian to Albion age (100.5 to 126.3 million years old; Early Cretaceous). In Sussex, Kent and Surrey the Folkestone Formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. Elsewhere the formation also includes calcareous sandstones. There are no formal divisions in the Weald, but equivalent beds in the west are termed the Child Okeford Sand Member and the Bedchester Sands Member. The formation is recorded by the BGS to range in thickness up to 80m.

2.2.2 Groundwater Source Protection Zones (SPZ)

The Environment Agency defines SPZs as those areas where groundwater supplies are at risk from potentially polluting activities and accidental releases of pollutants. SPZs are primarily a policy tool used to control activities close to water supplies intended for human consumption.

The site lies within a Total catchment – SPZ3.

3. SITE AND LABORATORY WORKS

The intrusive site works comprised a series of boreholes, together with accompanying in-situ geotechnical strength testing. The intrusive work was carried out on 19th July 2024. The exploratory hole locations are shown on Figure 2.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the exploratory hole records given in Appendix B, together with explanatory notes to assist in their interpretation.

Laboratory testing was scheduled by Ashdown Site Investigation Ltd. Results from the laboratory tests are provided in Appendix C. Geotechnical testing was undertaken by Ashdown Site Investigation Ltd. Chemical testing was undertaken by a laboratory with recognised (UKAS and MCERTS) accreditation for quality control.

4. GROUND CONDITIONS

4.1 Stratigraphy

4.1.1 Surface Covering

Each of the exploratory holes was excavated through a surface cover of topsoil some 150mm in thickness.

4.1.2 Made Ground

A shallow thickness of made ground, comprising slightly gravelly sandy clay, was recorded to a depth of 0.40m below ground level within borehole WS01. The gravel fraction comprised variable quantities of brick, clinker-like material and flint.

4.1.3 Folkestone Formation

Underlying the topsoil and/or made ground, the boreholes progressed into generally firm clays containing a variable proportion of sand and gravel; the soils became stiff below depths of between 0.60m and 1.70m below ground level. Local horizons of medium dense to very dense very sandy gravel soils were encountered in boreholes WS02 and WS03.

These deposits are considered to represent the Folkestone Formation indicated to underlie the site on BGS geological maps and continued to the full depth of investigation.

4.2 Groundwater and Stability

Each of the exploratory holes was recorded to remain dry and stable during the course of drilling.

5. GEOTECHNICAL ASSESSMENT

The geotechnical assessment has been prepared in connection with the development proposals shown on the drawings included in Appendix A.

In summary, the proposed development is to comprise the construction of a two-storey house with habitable loft space and associated access road and driveway.

At the time of writing, no details were available concerning the specific loads likely to be applied to the foundations.

5.1 Foundations

5.1.1 Soil Shrinkage/Heave Potential

The fine-grained soils of the Folkestone Formation have been classified as clays, and with plasticity indices of up to 27%, the soils may be expected to exhibit up to a medium volume change potential.

It is recommended that the design of precautions against shrinkage and heave for any new foundation system (spread footings and ground beams etc.) should assume a medium volume change potential for the fine-grained Folkestone Formation soils and take into account current guidance such as that given by the Building Research Establishment (BRE)[1] or the National House Builders Council (NHBC)[2].

Whilst the undisturbed sand and gravel soils of the Folkestone Formation may be considered to be non-plastic and hence non-shrinkable, their presence and thickness was found to be variable across the three boreholes.

Whilst this report has been prepared to provide advice to assist designers in undertaking detailed design, the report itself does not represent a detailed design statement. Detailed foundation design, including assessment of foundation type, minimum founding depths for spread foundations, and requirements for placement of void formers et cetera, should take into account the findings of this report and the presence of trees (previous, present and proposed). In connection with the latter, it is recommended that an arboricultural survey of the site that identifies the species and maturity of the existing or any recently felled trees in the areas of the proposed new buildings should be provided to engineers responsible for the foundation design. Information on proposed planting schemes that may affect foundation design should also be provided.

5.1.2 Spread Foundations

5.1.2.1 Foundation Depths for Spread Foundations

Foundations should be constructed to bear below soils that are likely to be affected by significant soil volume changes caused by seasonal changes in moisture content to avoid damage to foundations that could otherwise arise. In addition, all made ground should be regarded as being variable in nature and state of compaction and, as such, unsuitable as a founding medium for shallow footings. New footings should be constructed so as to bear below made ground /

[1] www.bre.co.uk : BRE Digests 240, 241 and 242, Low rise buildings on shrinkable clay soils, parts 1, 2 and 3; and BRE Digest 298 , The influence of trees on house foundations in clay soils and BRE Digest 412, Desiccation in clay soils.
[2] http://www.nhbc.co.uk/ : NHBC Standards, Chapter 4.2.

disturbed natural soils and soil subject to seasonal soil volume changes, whichever is the deeper, and onto undisturbed, competent, natural deposits.

Summary guidance on suitable minimum foundation depths to protect against the effects of seasonal soil volume changes is presented in the table below but designers undertaking detailed design of foundations should follow the detailed guidance provided within Chapter 4.2 of the NHBC Standards.

Table 2. Indicative Minimum Foundation Depths

Tree Type	Water Demand of Tree	Tree Distance to Tree Height Ratio (D/H)									
		0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.25
		Minimum Foundation Depth Required in Medium Volume Change Potential Soils (m)									
Broad Leaf	High	†			2.50	2.35	2.20	2.00	1.70	1.35	0.90*
	Moderate	2.00	1.85	1.70	1.60	1.45	1.30	1.15	0.90*	0.90*	0.90*
	Low	1.50	1.40	1.30	1.15	1.05	0.90*	0.90*	0.90*	0.90*	0.90*
Coniferous	High	†		2.30	1.95	1.60	1.25	0.90*	0.90*	0.90*	0.90*
	Moderate	2.00	1.70	1.40	1.10	0.90*	0.90*	0.90	0.90*	0.90*	0.90*

* Minimum foundation depth required to protect against soil volume changes.
† Foundations deeper than 2.50m require specialist design to protect against soil volume changes.

Where specialist foundation design is required (foundation depths exceeding the maximum permitted by the guidance) then piled foundations are likely to be needed, though commercial considerations may also dictate that piled foundations may be more economic even in comparison with conventional spread foundations constructed to depths less than the maximum permitted by guidance. Further works including deep boreholes would be required if structural engineers or quantity surveyors decide that piled foundations should be adopted.

Details on the water demand and mature height of common trees is given within Table 3 of Chapter 4.2 of the NHBC standards which should be referred to when assessing minimum foundation depths required for the proposed development. A summary is provided in the table below.

Table 3. Indicative Summary of Water Demand and Mature Height of Common Trees

Tree Type	High Water Demand		Moderate Water Demand		Low Water Demand	
	Tree	Height (m)	Tree	Height (m)	Tree	Height (m)
Broad Leaf	Elm	18 – 24*	Acacia	18	Birch	14
	Oak	16 – 24*	Alder	18	Elder	10
	Poplar	15 – 28*	Apple	10	Fig	8
	Willow	16 – 24*	Ash	11 – 23*	Hazel	8
	Eucalyptus	18	Laurel	10	Holly	12
	Hawthorn	10	Beech	20	Honey Locust	14
			Blackthorn	8	Hornbeam	17
			Cherry	8 – 17*	Laburnum	12
			Chestnut	20 – 24*	Magnolia	9
			Lime	22	Mulberry	9

Tree Type	High Water Demand		Moderate Water Demand		Low Water Demand	
	Tree	Height (m)	Tree	Height (m)	Tree	Height (m)
			Maple	8 – 18*	Tulip Tree	20
			Pear	12		
			Plane	26		
			Plum	10		
			Sycamore	22		
			Tree of Heaven	20		
			Walnut	18		
			Whitebeam	12		
Coniferous	Cypress	18 – 20*	Cedar	20		
			Douglas Fir	20		
			Larch	20		
			Monkey Puzzle	18		
			Pine	20		
			Spruce	18		
			Wellingtonia	30		
			Yew	12		

* Dependent on particular species.

5.1.2.2 *Bearing Capacity for Spread Foundations*

For design purposes, a net allowable bearing capacity of 100kN/m^2 may be assumed for spread (pad or strip) foundations up to 1.0m across bearing within the Folkestone Formation of at least firm consistency. An increased net allowable bearing capacity of 150kN/m^2 may be assumed for similar size footings deepened to bear within the Folkestone Formation soils of at least stiff consistency or medium dense relative density, which were encountered by the boreholes below depths of between 0.60m and 1.70m. The quoted bearing capacities are expected to limit settlement to less than 25mm.

Attention is drawn to the presence of interbedded fine-grained soils and coarse-grained soils beneath the site within the Folkestone Formation. As there is the potential for mixed soil conditions to be present beneath footings, designers should consider the need for foundations to be reinforced due to the potential for differential cracking to develop as a result of coarse-grained and fine-grained soils settling at different rates under loading.

5.2 Ground Floors

In view of the presence of soils of medium volume change potential underlying the site, it is recommended that ground floors should be suspended.

Current guidance[3] suggests that ground bearing floor slabs may, however, be considered where:

1. All made ground is removed from beneath the building footprint;

[3] http://www.nhbc.co.uk/ : NHBC Standards, Chapter 4.2.

2. The depth of foundations required to protect against seasonal soil volume changes close to trees is less than 1.5m; and
3. Further works demonstrate that close to the time of construction, no significant soil desiccation is present.

Where the above criteria cannot be met ground floors should be suspended.

If ground bearing floors are adopted it is recommended that the potential for differential movement, both between the floor slab and walls and across the floor slab itself, should be anticipated. Such floors should be fully debonded from walls. Formations should be adequately proof rolled and any excessively soft materials excavated and replaced with a suitable, well graded granular fill. The depth of any fill should be limited to a maximum of 600mm unless placed to an engineering specification designed to limit internal settlement of the fill materials to a tolerance to be advised by the designer.

5.3 Groundwater

Groundwater was not recorded within the exploratory holes during the short period of the intrusive works. However, it should be noted that water levels within the exploratory holes may not have equilibrated with the groundwater table at the time the readings were recorded and that groundwater levels should be expected to fluctuate seasonally.

It is possible that heavy precipitation during construction could lead to the ingress of perched groundwater or surface water run-off into excavations. In such circumstances it would be expected that water entering excavations would be adequately managed by either pumping from sumps or natural drainage, or a combination of the two.

5.4 Stability of Excavations

All made ground or coarse-grained natural soils exposed in excavations should be assumed to be unstable, even in the short term. Whilst fine-grained natural soils may remain stable for a short period of time if not subjected to surcharge loads (such as may be imposed by existing foundations, traffic or storage of materials), the stability of these deposits if left unsupported should be assumed to have the potential to deteriorate. Where stable excavations are required, excavations should either be suitably supported or, where space permits, side slopes could be battered back to a safe angle of repose.

All excavations requiring human entry must be shored or battered as necessary to conform to current best practice, as accepted by the Health and Safety Executive (HSE)[4]. Current legislation requires that where personnel access is required into any excavation a competent person must inspect excavation supports or battering of slopes at the start of the working shift and at other specified times. No work should take place until the excavation is safe. Excavations should also be inspected after any event that may have affected their stability, such as a significant weather event, changes in surcharge loadings imposed by temporary storage of materials or changes in site traffic plans or alteration of support systems. Inspections should be formally recorded and any faults that are found should be corrected immediately.

Particular attention must be paid to ensuring the stability of nearby structures, services, road frontages and neighbouring sites.

[4] Relevant guidance is given on the HSE website, www.hse.gov.uk

5.5 Aggressivity to Concrete

The aggressivity of the soils to concrete has been assessed in accordance with guidance published by the BRE[5].

In consideration of the soils encountered beneath the site it is considered that 'natural ground conditions' may be assumed for the purpose of assessing the aggressivity of the chemical environment for concrete classification (ACEC class). Whilst groundwater was not encountered during the short period of the works, in the absence of long term monitoring data, 'mobile groundwater' conditions should be conservatively assumed.

The following table summarises the characteristic values indicated from the chemical analysis of the soils present beneath the site.

Table 4. Assessment of the Chemical Analysis of the Soil

	Characteristic Value	Design Sulfate Class	ACEC Classification
pH	5.8	-	-
Water Soluble Sulphate (mg/l as SO4) *	<100	DS-1	AC-1

Notes: * Characteristic value rounded to nearest 100.

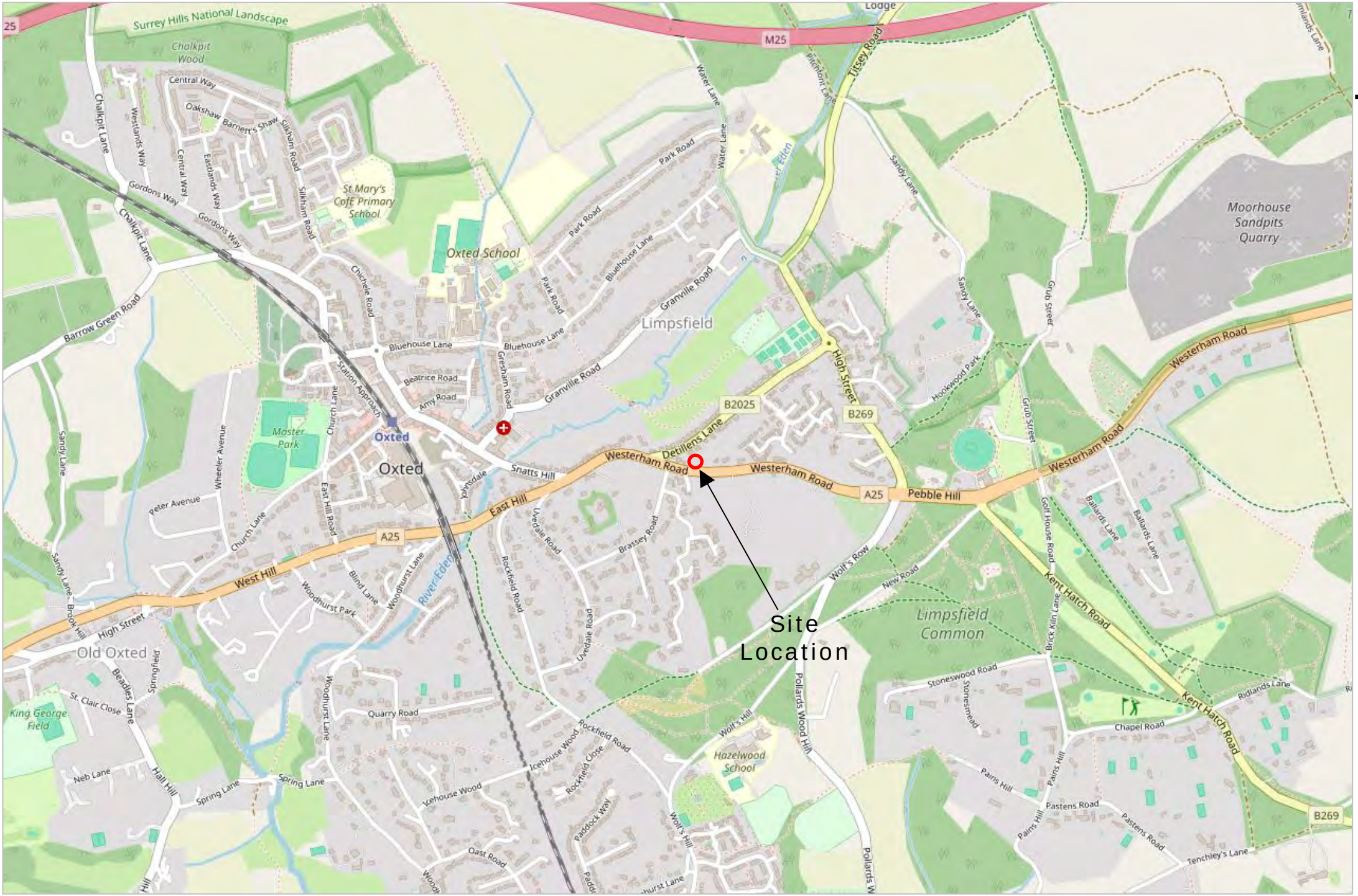
In accordance with the guidance, a DS-1 Design Sulfate Class and an AC-1 ACEC classification may be assumed for the design of concrete in contact with the ground.

Ashdown Site Investigation Ltd.

[5] BRE Special Digest 1:2005 Concrete in Aggressive Ground.

FIGURES

Figure 1 Site Location Plan
Figure 2 Site Plan



ASHDOWN SITE INVESTIGATION LIMITED	Site Location Plan	Site Name	Figure No.	Project Reference
		6 Detillens Lane, Limpsfield, Surrey	1	P16715

N

WS01

WS02

WS03

WS04

No.6

Brick paving

Gully

RWP

Grille

Eaves 103.56

Ridge 105.52

Garage

Eaves 102.60

Close board fence h=1.6

Beech hedge h=2.5

Bush h=2.5

Gate

Eaves 106.04

Ridge 107.92

Ridge 109.26

Eaves 105.93

Ridge 108.71

Eaves 107.31

Ridge 105.14

Eaves 103.32

Paving

Bed

Step

Brick wall h=1.8

Stone ret. wall

Close board fence h=1.8

Grass

Steps

Area of mixed bushes ave h=4.0

Bush h=2.0

Stump

Private garden

Garage
Limited visibility

Ridge 106.02

Shed

Dpc 102.34
Ridge 105.87
Wooden building
Eaves 104.82

Privet hedge h=1.0

Cypress hedge h=10.0

Bush h=1.5

Concrete panel fence h=1.8

Close board fence h=1.8

Tarmac

Telecom

IC
CL 104.38

Kerb Inlet

Bollard

Bus Stop

Shed

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Site:

6 Detillens Lane
Limpsfield
Surrey

Project Ref:

P16715

Figure No.

2

Drawing Title

Site Plan

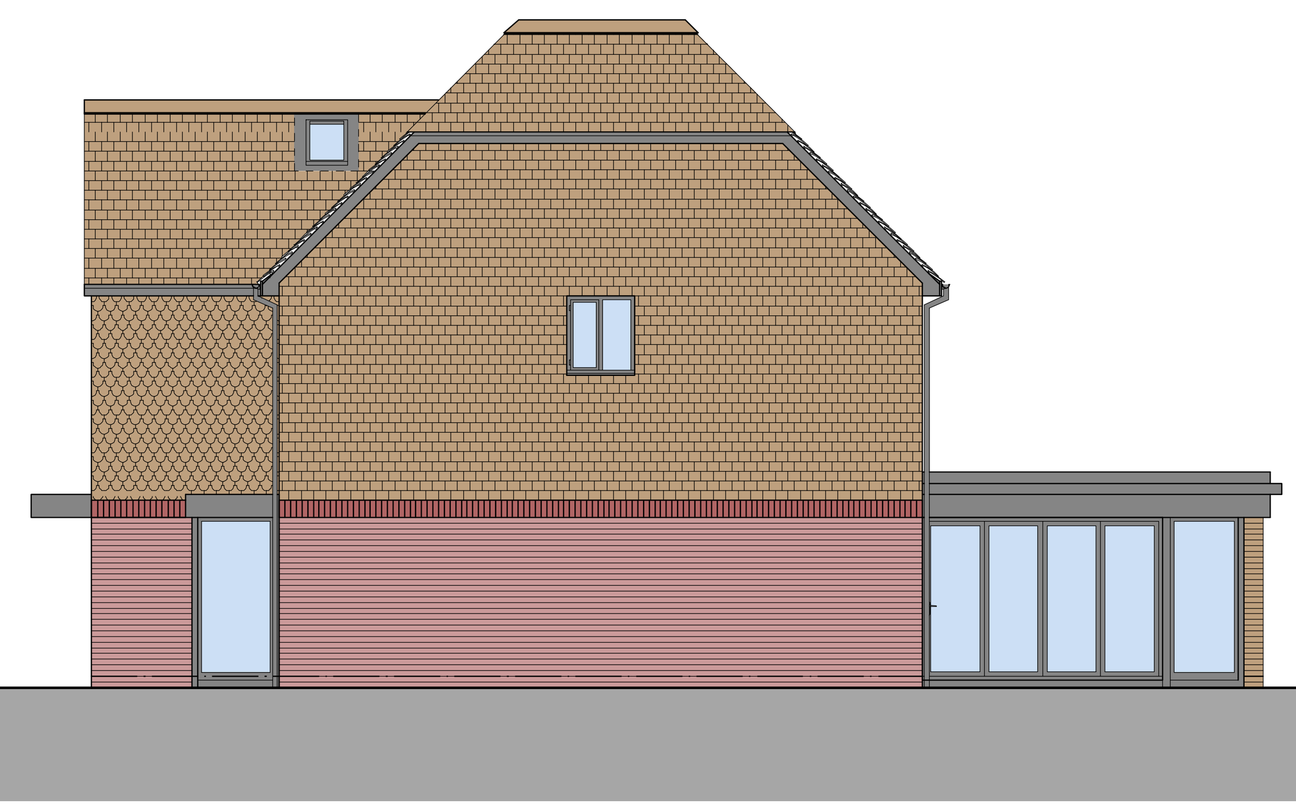
Scale

NTS

APPENDIX A

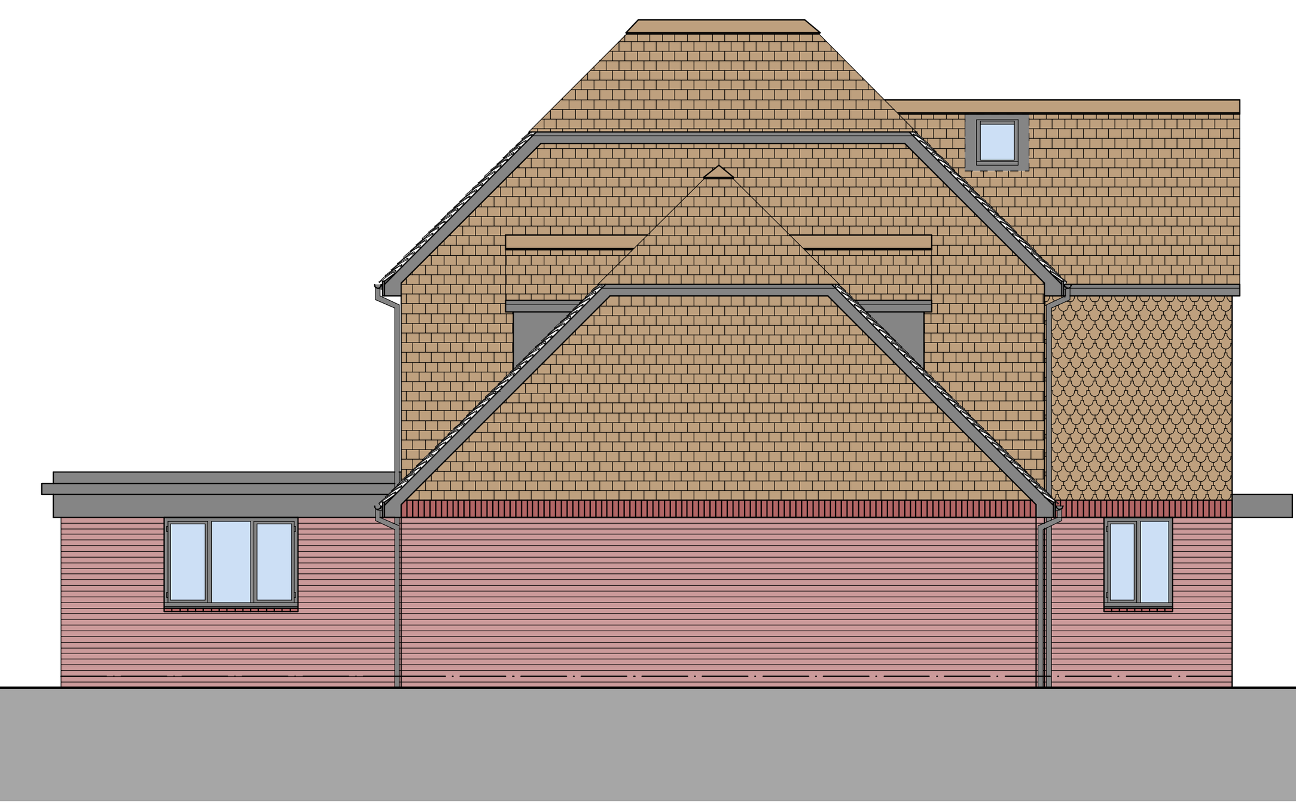
Proposed Development Layout

WEST ELEVATION
scale 1-100

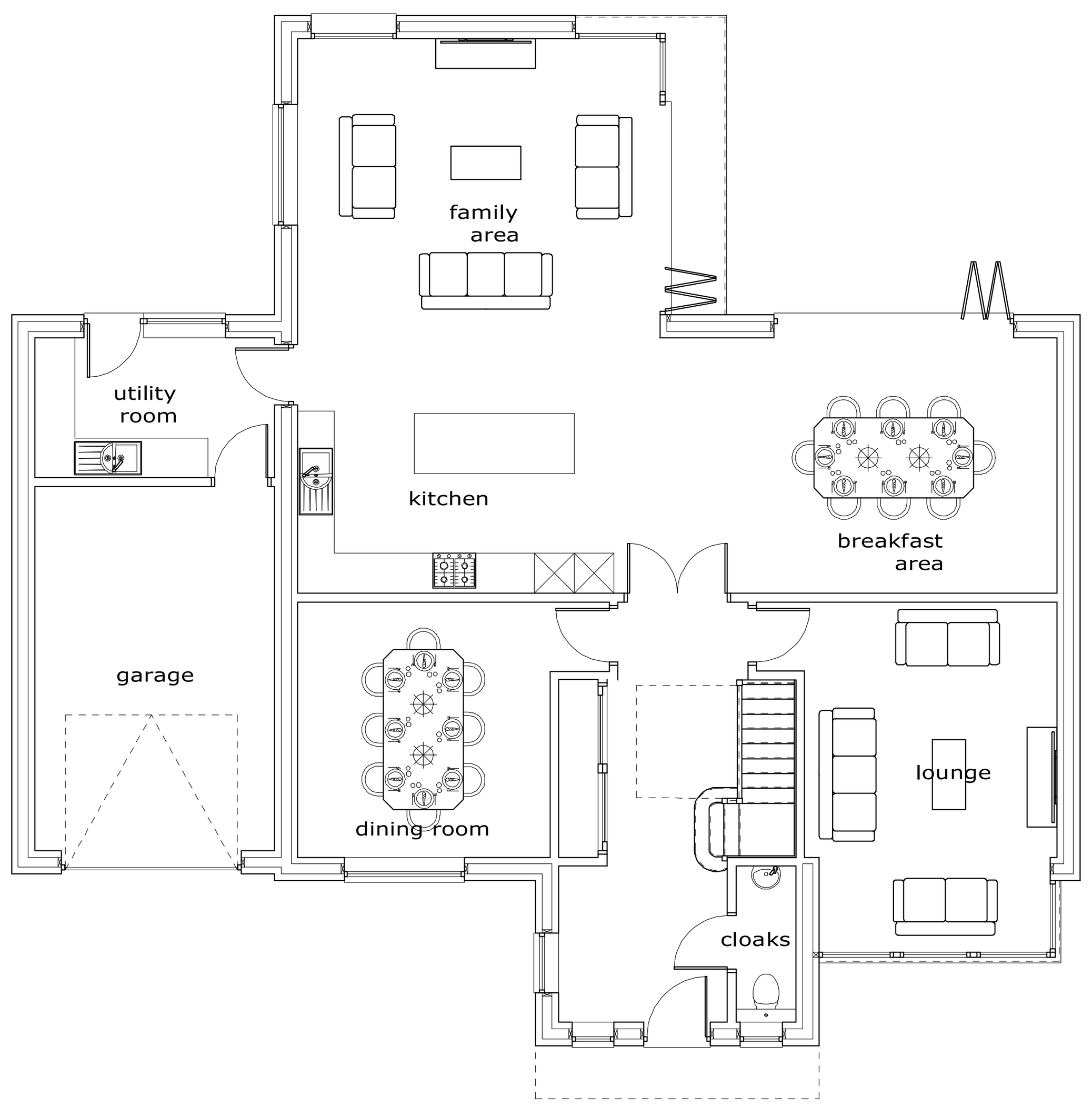


SOUTH ELEVATION
scale 1-100

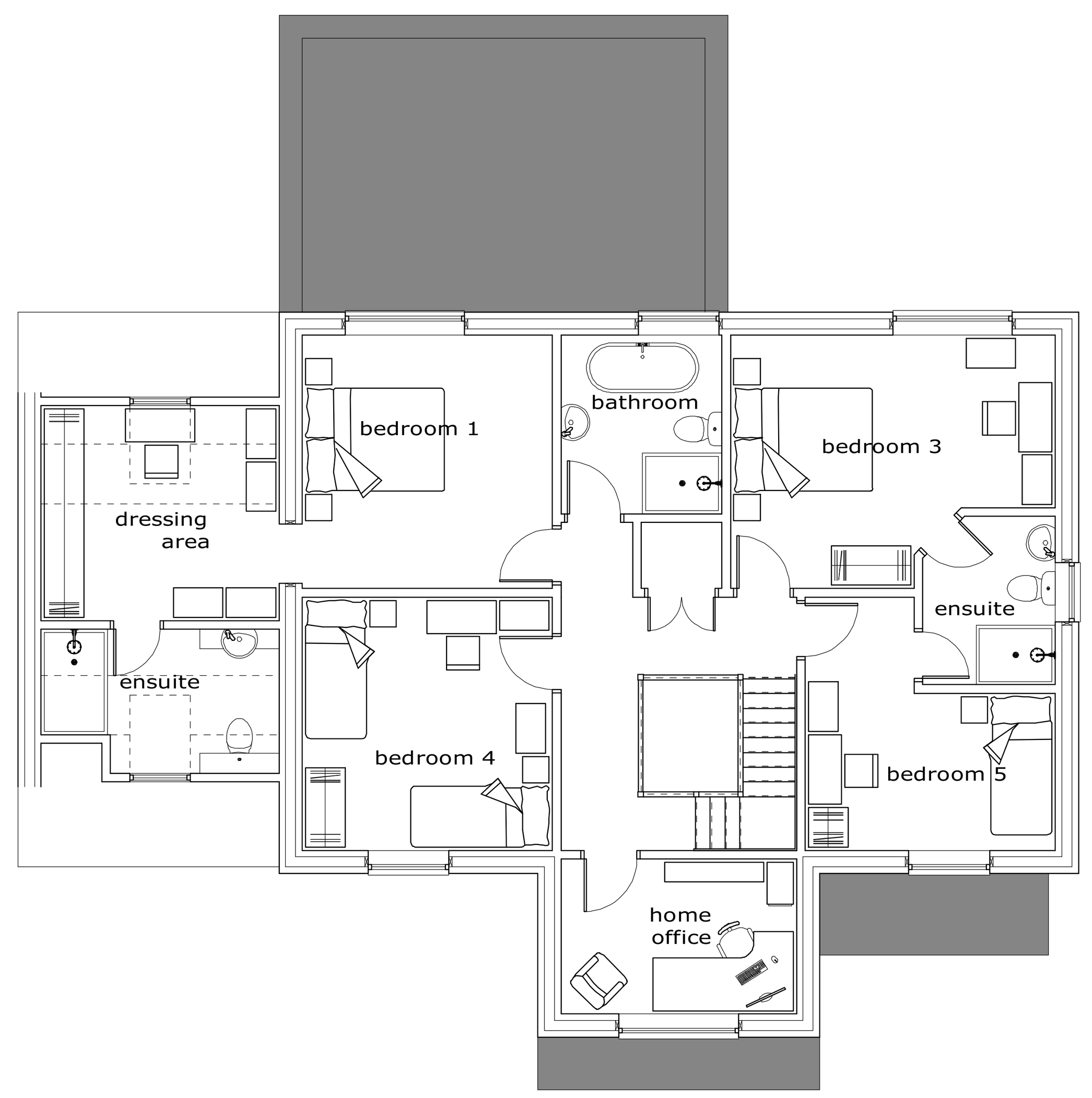
EAST ELEVATION
scale 1-100



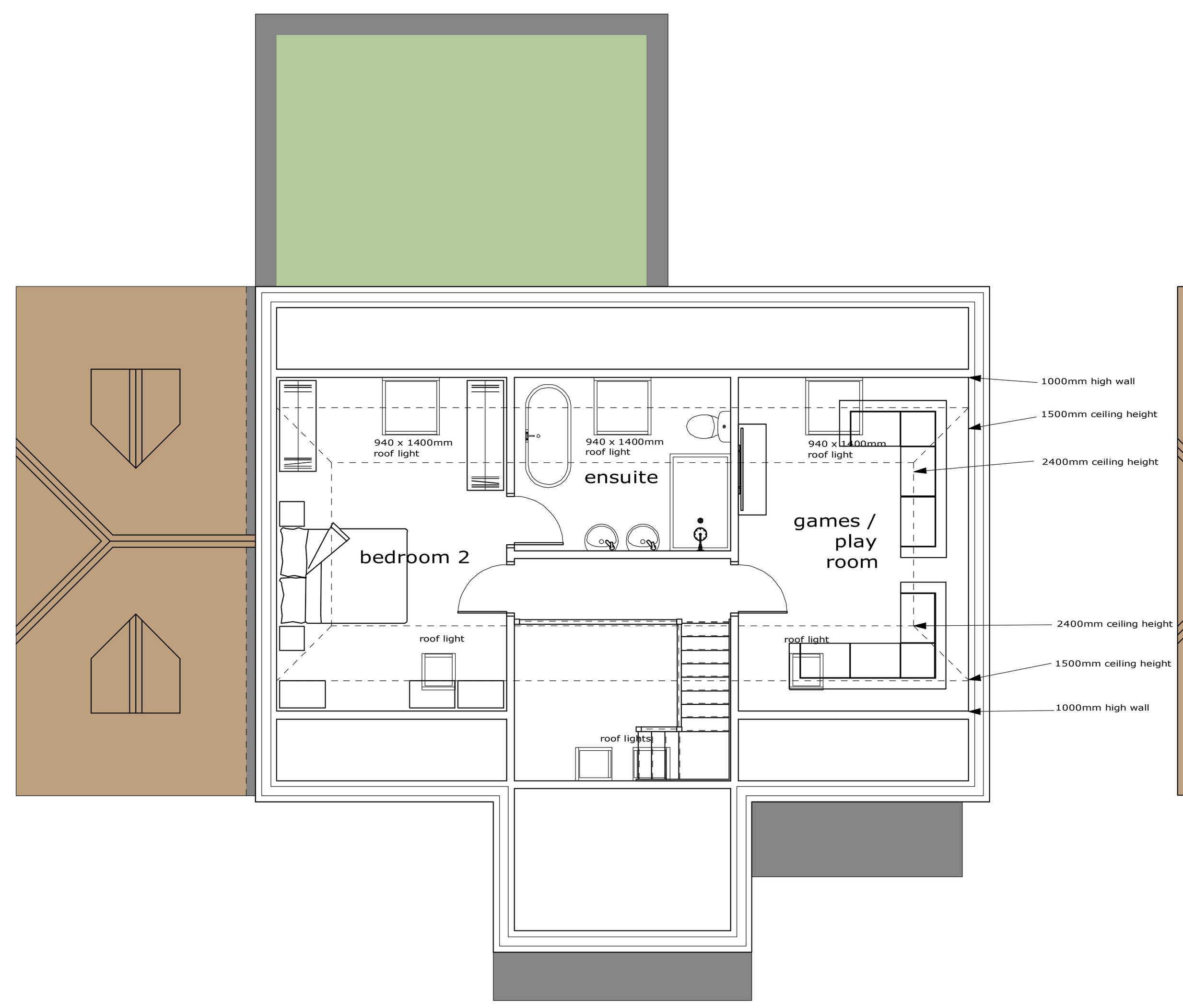
NORTH ELEVATION
scale 1-100



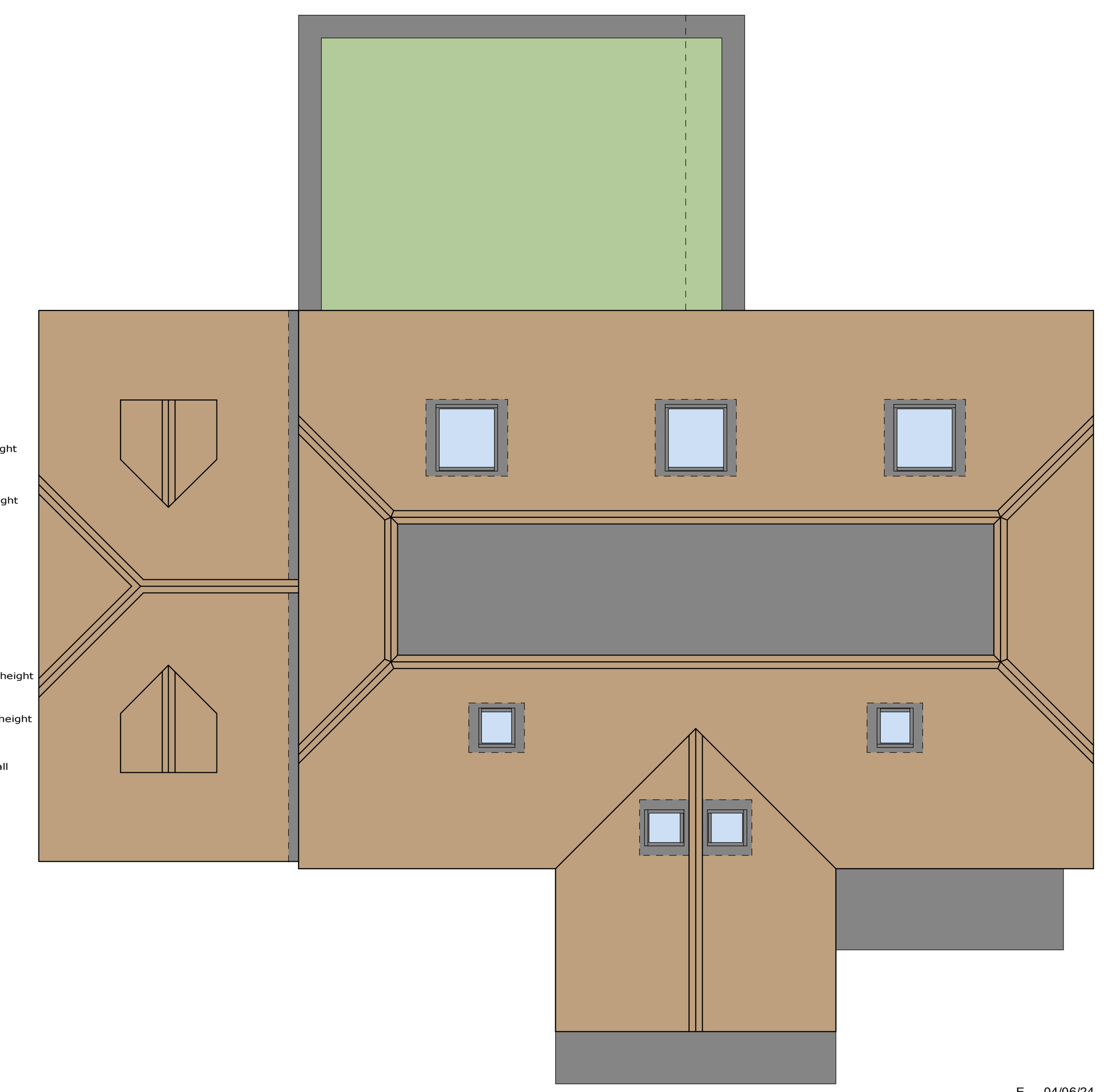
GROUND FLOOR PLAN
scale 1-100



FIRST FLOOR PLAN
scale 1-100



SECOND FLOOR PLAN
scale 1-100



ROOF PLAN
scale 1-100

Rev.	Date	Description
E	04/06/24	DORMER RECONFIGURATION
D	14/03/24	DESIGN DEVELOPMENT
C	05/03/24	DESIGN DEVELOPMENT
B	07/02/24	DESIGN DEVELOPMENT
A	06/02/24	DESIGN DEVELOPMENT

Client
ST MARKS PROPERTIES LTD

Project
LAND AT
6 DETILLENS LANE
LIMPSFIELD
SURREY
RH8 0DJ

Drawing Title
DWELLING:
PLANS & ELEVATIONS

Scale	1:100 @ A1 size	Job No.	3372
Date	JAN'24	Drawing No.	16
Drawn	KLS	Revision	E

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APPENDIX B

Explanatory Notes
Exploratory Hole Records
DPSH-B Dynamic Probe Records

Explanatory Notes

Symbols and abbreviations on Exploratory Hole Records

Samples

U 'Undisturbed' Sample: - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
Pi Piston Sample: 'Undisturbed' sample 100mm diameter by 600mm long.
D Disturbed Sample
R Root Sample
B Bulk Disturbed Sample
W Water Sample
ES Environmental Suite (on older records may be referenced J T)

In Situ Testing

S Standard penetration test (SPT): Using the split spoon sampler.
C Standard Penetration Test (SPT): Using a solid cone instead of the sampler – conducted usually in coarse grained soils or weak rocks.
V Shear Vane Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.
H Hand penetrometer Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.
P Perth Penetrometer Test: Number of blows for 300mm penetration shown under Vane/Pen Test and N Value column.

Excavation Method

CP Cable Percussion Borehole
RC Rotary Cored Borehole
WLS Dynamic Sampler Borehole using windowless sampler tubes
WS Dynamic Sampler Borehole using window sampler tubes
TP Trial Pit excavated using mechanic excavator
HDP Trial Pit excavated using hand tools

Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1) and Part 2 Principles of classification (BS EN 14688-2) as well as the BS5930 code of Practice for Ground Investigations.

Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1) as well as the BS5930 code of Practice for Ground Investigations. TCR – Total Core Recovery, SCR – Solid Core Recovery, RQD – Rock Quality Designation, NI – Non Intact, If – indicative fracture spacing (min/ave/max), FI – Fracture Index.

Chalk Description

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk.

In Situ Strength Testing

Standard penetration testing (SPT) carried out in accordance with BS EN ISO 22476-3:2005.

Continuous dynamic probe testing conducted using a super heavy DPSH-B (As defined by BS EN ISO 22476-2:2005) probing geometry. The DPSH-B configuration is similar to that of the standard penetration test (SPT); the main differences being that the tip comprises a 90° cone, the driving rods are lighter than those used for SPT testing and the blow counts are recorded over 100mm increments rather than 300mm, as is the case for the SPT.

Perth penetrometer tests carried out in accordance with Australian Standard AS 1289:6.3.3-1997, Method of Testing Soils for Engineering Purposes; no equivalent European or British Standard having been published to date.

Undrained shear strength determinations made in-situ using a Geonor hand shear vane or a hand penetrometer.

Testing to determine the in-situ California Bearing Ratio (CBR) of soils conducted at shallow depths using a hand-held Transport Research Laboratory (TRL) cone penetrometer.

ASHDOWN SITE INVESTIGATION LIMITED
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Site Name: 6 Detillens Lane, Limpsfield, Surrey

Job Number: P16715

Start Date: 19/07/2024

End Date: 19/07/2024

Borehole Number: **WS01**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
							0.15	MADE GROUND: Dark brown slightly gravelly slightly sandy clay. Gravel is subangular to subrounded fine to medium flint, brick and clinker-like material
	D	0.30					0.40	Firm brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium chert and ironstone. (Folkestone Formation)
	H	0.60		60				
	D	1.00						
	D	1.60					1.50	Stiff light brown and grey sandy CLAY. (Folkestone Formation)
	D	2.00						
	V	2.00		80				
	H	2.10		75				
	H	2.50		100				
	D	2.70						
	V	3.00		110			3.00	End of borehole at 3.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: JN

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Tel: 01273 483119

Site Name: 6 Detillens Lane, Limpsfield, Surrey

Job Number: P16715

Start Date: 19/07/2024

End Date: 19/07/2024

Borehole Number: **WS02**

Standpipe	Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
							0.15	Firm brown slightly sandy CLAY with occasional gravel of ironstone and rare rootlets. (Folkestone Formation)
	H	0.30		60				
	D	0.50						
	H	0.60		110				becoming stiff below 0.60m depth.
	D	0.80					0.70	Stiff brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium ironstone. (Folkestone Formation)
							0.95	Dense to very dense dark brown very sandy clayey subangular to subrounded fine to coarse GRAVEL of chert and ironstone. (Folkestone Formation)
	D	1.30						
	D	2.00						becoming medium dense below 2.10m depth.
							2.40	Stiff brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium ironstone. (Folkestone Formation)
	D	2.70						
	H	2.70		90				
							3.00	End of borehole at 3.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: JN

ASHDOWN SITE INVESTIGATION LIMITED
E-mail: contact@ashdownsi.co.uk
Web: www.ashdownsi.co.uk
Tel: 01273 483119

Site Name: 6 Detillens Lane, Limpsfield, Surrey

Job Number: P16715

Start Date: 19/07/2024

End Date: 19/07/2024

Borehole Number: **WS03**

Standpipe	Samples and In Situ Testing: Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
							0.15	Firm brown slightly sandy CLAY with occasional gravel of ironstone and rare rootlets. (Folkestone Formation)
	H	0.30		60				
	D	0.40						
	H	0.70		90				
	D	1.00					0.90	Dense to very dense very sandy clayey brown gravelly slightly clayey subangular to subrounded fine to medium GRAVEL of chert and ironstone. (Folkestone Formation)
	D	1.40						
							1.60	Stiff orange brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium chert. (Folkestone Formation)
	D	1.80						
	H	1.80		90				
	V	2.00		80				becoming sandy below 2.00m depth.
	D	2.20						
	H	2.20		100				
	H	2.70		110				
	D	3.00					3.00	End of borehole at 3.00m
	V	3.00		110				

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: JN

ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D
E-mail: contact@ashdownsi.co.uk
Web: www.ashdownsi.co.uk
Tel: 01273 483119

Site Name: 6 Detillens Lane, Limpsfield, Surrey

Job Number: P16715

Start Date: 19/07/2024

End Date: 19/07/2024

Borehole Number: **WS04**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Topsoil.
							0.15	Firm brown slightly sandy CLAY with occasional gravel of ironstone, rare roots and rootlets. (Folkestone Formation)
	H	0.25		60				
	D	0.30						
	H	0.60		50				
	D	0.70						becoming slightly gravelly below 0.80m depth.
	H	1.20		40				
	D	1.40						becoming gravelly below 1.30m depth.
							1.70	Stiff light brown sandy CLAY. (Folkestone Formation)
	D	1.90						
	H	1.90		90				
	V	2.00		100				
	H	2.20		75				with a pocket of sandy gravel at 2.30m depth
	D	2.50						
	H	2.80		75				
	D	3.00					3.00	End of borehole at 3.00m
	V	3.00		>130				

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: JN

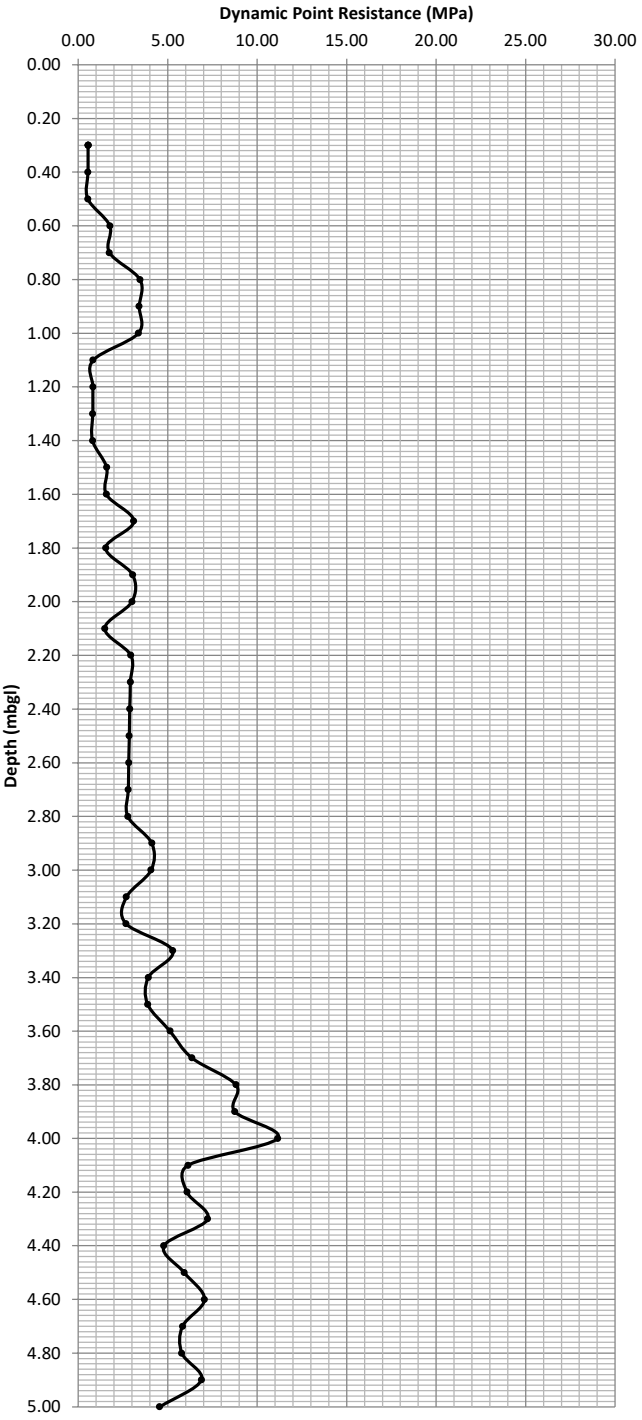
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 6 Detillens Lane, Limpsfield, Surrey **Report Ref.** P16715

Test Location Reference	WS01

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20				
0.30	0.3	0.33	0.58	0.55
0.40	0.3	0.33	0.58	0.54
0.50	0.3	0.33	0.58	0.54
0.60	1	0.10	1.94	1.77
0.70	1	0.10	1.94	1.75
0.80	2	0.05	3.89	3.45
0.90	2	0.05	3.89	3.41
1.00	2	0.05	3.89	3.37
1.10	0.5	0.20	0.97	0.83
1.20	0.5	0.20	0.97	0.82
1.30	0.5	0.20	0.97	0.81
1.40	0.5	0.20	0.97	0.80
1.50	1	0.10	1.94	1.59
1.60	1	0.10	1.94	1.57
1.70	2	0.05	3.89	3.11
1.80	1	0.10	1.94	1.54
1.90	2	0.05	3.89	3.04
2.00	2	0.05	3.89	3.01
2.10	1	0.10	1.94	1.49
2.20	2	0.05	3.89	2.94
2.30	2	0.05	3.89	2.91
2.40	2	0.05	3.89	2.88
2.50	2	0.05	3.89	2.85
2.60	2	0.05	3.89	2.83
2.70	2	0.05	3.89	2.80
2.80	2	0.05	3.89	2.77
2.90	3	0.03	5.83	4.11
3.00	3	0.03	5.83	4.08
3.10	2	0.05	3.89	2.69
3.20	2	0.05	3.89	2.67
3.30	4	0.03	7.77	5.28
3.40	3	0.03	5.83	3.92
3.50	3	0.03	5.83	3.89
3.60	4	0.03	7.77	5.14
3.70	5	0.02	9.72	6.36
3.80	7	0.01	13.60	8.83
3.90	7	0.01	13.60	8.75
4.00	9	0.01	17.49	11.15
4.10	5	0.02	9.72	6.14
4.20	5	0.02	9.72	6.09
4.30	6	0.02	11.66	7.24
4.40	4	0.03	7.77	4.79
4.50	5	0.02	9.72	5.93
4.60	6	0.02	11.66	7.06
4.70	5	0.02	9.72	5.83
4.80	5	0.02	9.72	5.79
4.90	6	0.02	11.66	6.89
5.00	4	0.03	7.77	4.55



Notes:

Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m^2
E_{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

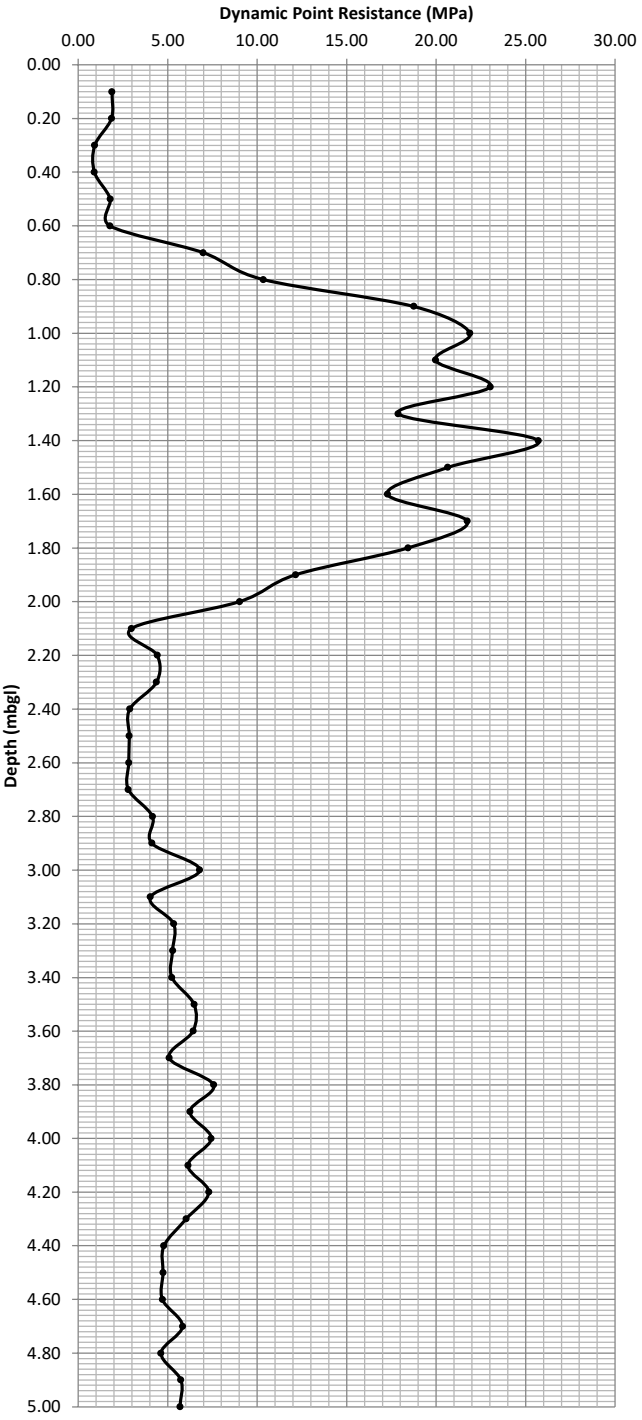
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 6 Detillens Lane, Limpsfield, Surrey **Report Ref.** P16715

Test Location Reference	WS02

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10	1	0.10	1.94	1.89
0.20	1	0.10	1.94	1.86
0.30	0.5	0.20	0.97	0.92
0.40	0.5	0.20	0.97	0.91
0.50	1	0.10	1.94	1.79
0.60	1	0.10	1.94	1.77
0.70	4	0.03	7.77	6.99
0.80	6	0.02	11.66	10.35
0.90	11	0.01	21.38	18.75
1.00	13	0.01	25.27	21.89
1.10	12	0.01	23.32	19.97
1.20	14	0.01	27.21	23.02
1.30	11	0.01	21.38	17.88
1.40	16	0.01	31.10	25.71
1.50	13	0.01	25.27	20.65
1.60	11	0.01	21.38	17.28
1.70	14	0.01	27.21	21.75
1.80	12	0.01	23.32	18.44
1.90	8	0.01	15.55	12.16
2.00	6	0.02	11.66	9.02
2.10	2	0.05	3.89	2.98
2.20	3	0.03	5.83	4.42
2.30	3	0.03	5.83	4.37
2.40	2	0.05	3.89	2.88
2.50	2	0.05	3.89	2.85
2.60	2	0.05	3.89	2.83
2.70	2	0.05	3.89	2.80
2.80	3	0.03	5.83	4.16
2.90	3	0.03	5.83	4.11
3.00	5	0.02	9.72	6.79
3.10	3	0.03	5.83	4.04
3.20	4	0.03	7.77	5.33
3.30	4	0.03	7.77	5.28
3.40	4	0.03	7.77	5.23
3.50	5	0.02	9.72	6.48
3.60	5	0.02	9.72	6.42
3.70	4	0.03	7.77	5.09
3.80	6	0.02	11.66	7.57
3.90	5	0.02	9.72	6.25
4.00	6	0.02	11.66	7.43
4.10	5	0.02	9.72	6.14
4.20	6	0.02	11.66	7.30
4.30	5	0.02	9.72	6.03
4.40	4	0.03	7.77	4.79
4.50	4	0.03	7.77	4.75
4.60	4	0.03	7.77	4.71
4.70	5	0.02	9.72	5.83
4.80	4	0.03	7.77	4.63
4.90	5	0.02	9.72	5.74
5.00	5	0.02	9.72	5.69



Notes:

Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m^2
E_{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

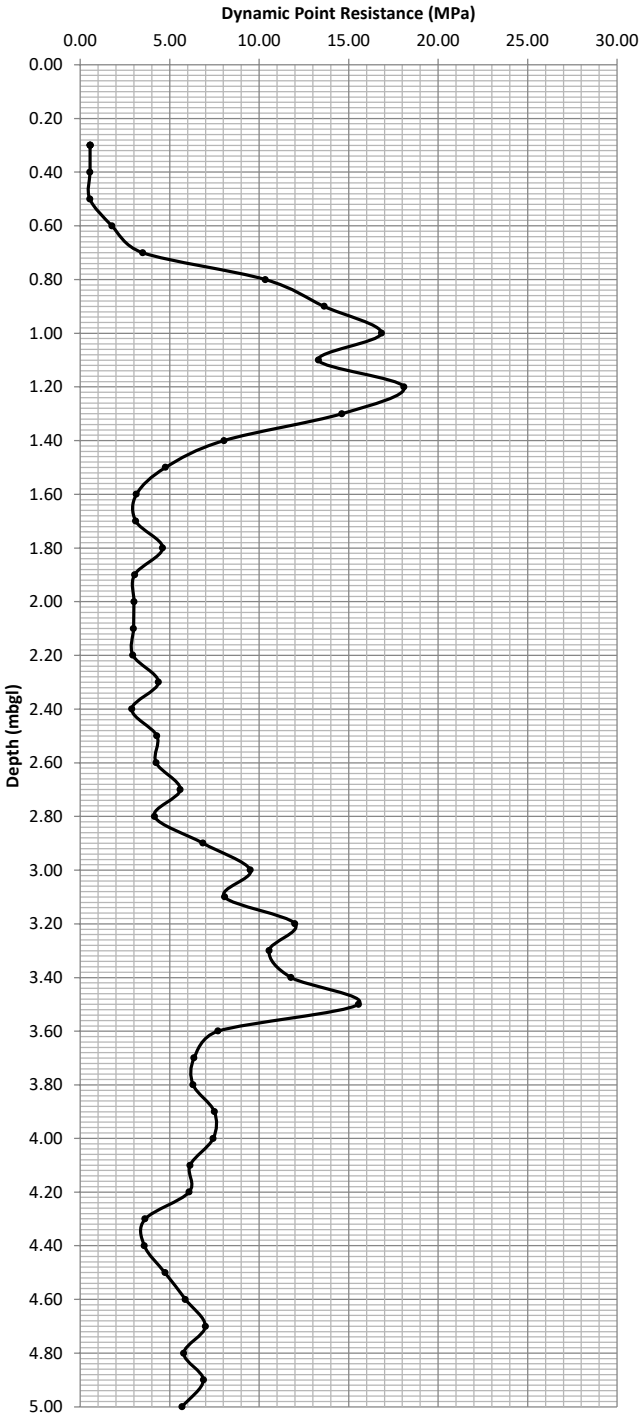
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 6 Detillens Lane, Limpsfield, Surrey **Report Ref.** P16715

Test Location Reference	WS03

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20				
0.30	0.3	0.33	0.58	0.55
0.40	0.3	0.33	0.58	0.54
0.50	0.3	0.33	0.58	0.54
0.60	1	0.10	1.94	1.77
0.70	2	0.05	3.89	3.49
0.80	6	0.02	11.66	10.35
0.90	8	0.01	15.55	13.64
1.00	10	0.01	19.44	16.84
1.10	8	0.01	15.55	13.31
1.20	11	0.01	21.38	18.09
1.30	9	0.01	17.49	14.63
1.40	5	0.02	9.72	8.03
1.50	3	0.03	5.83	4.77
1.60	2	0.05	3.89	3.14
1.70	2	0.05	3.89	3.11
1.80	3	0.03	5.83	4.61
1.90	2	0.05	3.89	3.04
2.00	2	0.05	3.89	3.01
2.10	2	0.05	3.89	2.98
2.20	2	0.05	3.89	2.94
2.30	3	0.03	5.83	4.37
2.40	2	0.05	3.89	2.88
2.50	3	0.03	5.83	4.28
2.60	3	0.03	5.83	4.24
2.70	4	0.03	7.77	5.60
2.80	3	0.03	5.83	4.16
2.90	5	0.02	9.72	6.86
3.00	7	0.01	13.60	9.51
3.10	6	0.02	11.66	8.07
3.20	9	0.01	17.49	11.99
3.30	8	0.01	15.55	10.56
3.40	9	0.01	17.49	11.77
3.50	12	0.01	23.32	15.55
3.60	6	0.02	11.66	7.70
3.70	5	0.02	9.72	6.36
3.80	5	0.02	9.72	6.30
3.90	6	0.02	11.66	7.50
4.00	6	0.02	11.66	7.43
4.10	5	0.02	9.72	6.14
4.20	5	0.02	9.72	6.09
4.30	3	0.03	5.83	3.62
4.40	3	0.03	5.83	3.59
4.50	4	0.03	7.77	4.75
4.60	5	0.02	9.72	5.88
4.70	6	0.02	11.66	7.00
4.80	5	0.02	9.72	5.79
4.90	6	0.02	11.66	6.89
5.00	5	0.02	9.72	5.69



Notes:

Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m^2
E_{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

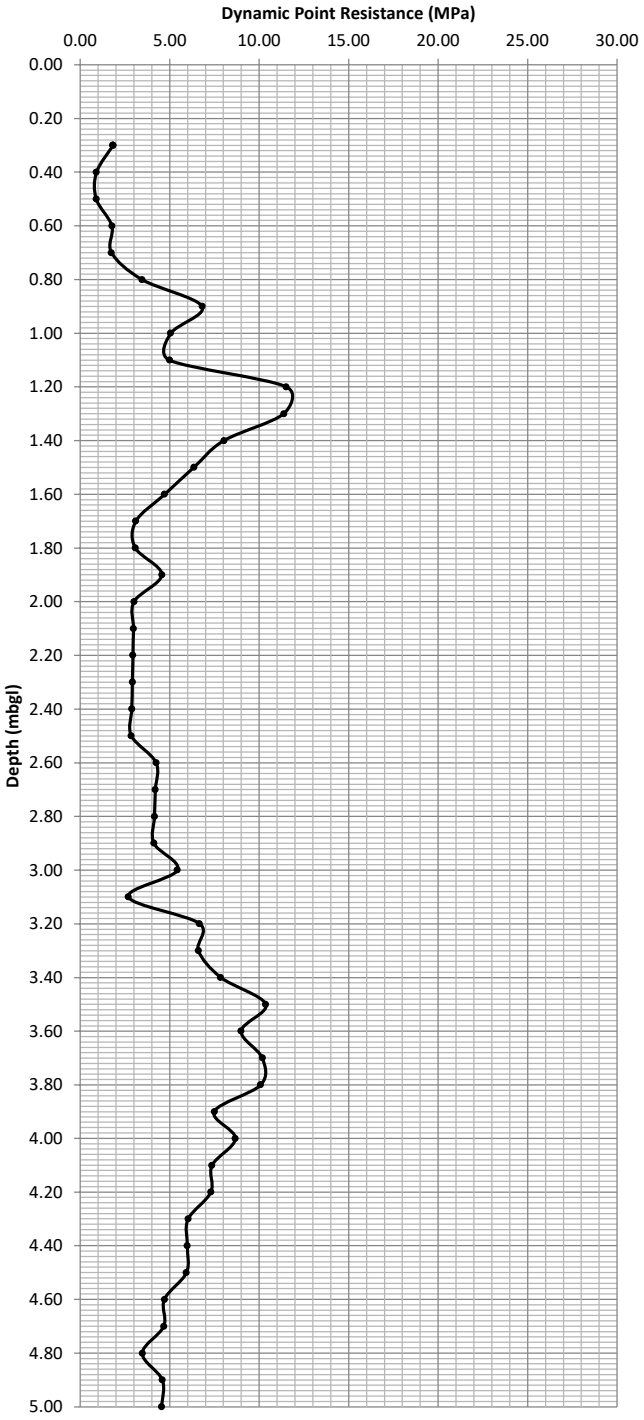
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 6 Detillens Lane, Limpsfield, Surrey **Report Ref.** P16715

Test Location Reference	WS04

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20				
0.30	1	0.10	1.94	1.84
0.40	0.5	0.20	0.97	0.91
0.50	0.5	0.20	0.97	0.90
0.60	1	0.10	1.94	1.77
0.70	1	0.10	1.94	1.75
0.80	2	0.05	3.89	3.45
0.90	4	0.03	7.77	6.82
1.00	3	0.03	5.83	5.05
1.10	3	0.03	5.83	4.99
1.20	7	0.01	13.60	11.51
1.30	7	0.01	13.60	11.38
1.40	5	0.02	9.72	8.03
1.50	4	0.03	7.77	6.36
1.60	3	0.03	5.83	4.71
1.70	2	0.05	3.89	3.11
1.80	2	0.05	3.89	3.07
1.90	3	0.03	5.83	4.56
2.00	2	0.05	3.89	3.01
2.10	2	0.05	3.89	2.98
2.20	2	0.05	3.89	2.94
2.30	2	0.05	3.89	2.91
2.40	2	0.05	3.89	2.88
2.50	2	0.05	3.89	2.85
2.60	3	0.03	5.83	4.24
2.70	3	0.03	5.83	4.20
2.80	3	0.03	5.83	4.16
2.90	3	0.03	5.83	4.11
3.00	4	0.03	7.77	5.43
3.10	2	0.05	3.89	2.69
3.20	5	0.02	9.72	6.66
3.30	5	0.02	9.72	6.60
3.40	6	0.02	11.66	7.85
3.50	8	0.01	15.55	10.37
3.60	7	0.01	13.60	8.99
3.70	8	0.01	15.55	10.18
3.80	8	0.01	15.55	10.09
3.90	6	0.02	11.66	7.50
4.00	7	0.01	13.60	8.67
4.10	6	0.02	11.66	7.37
4.20	6	0.02	11.66	7.30
4.30	5	0.02	9.72	6.03
4.40	5	0.02	9.72	5.98
4.50	5	0.02	9.72	5.93
4.60	4	0.03	7.77	4.71
4.70	4	0.03	7.77	4.67
4.80	3	0.03	5.83	3.47
4.90	4	0.03	7.77	4.59
5.00	4	0.03	7.77	4.55



Notes:

Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m^2
E_{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

APPENDIX C

Geotechnical Laboratory Test Results

ASHDOWN SITE INVESTIGATION LIMITED

Soil Classification Summary

Site Name:	6 Detillens Lane, Limpsfield, Surrey	Job No:	P16715

BH/TP No.	Depth (m)	Nat. Moist. Cont. (w %)	Equiv. Moist. Cont. (w_a %)	Atterberg Limits			Class'n	Cons. Index (I_c)	% passing 425 µm sieve	Visual Description of Sample
				W_l %	W_p %	I_p %				
WS01	2.70	27		46	21	25	CIM		100	Brown sandy CLAY.
WS03	1.80	25		45	18	27	CIM		100	Brown slightly sandy CLAY.
WS04	0.70	16		23	14	9	CIL		85	Brown slightly gravelly sandy CLAY. Gravel is fine to medium chert and sandstone.

Test Method: Classification Tests BS1377: Part 2: 1990: Method 4.4, 5.3 and 5.4

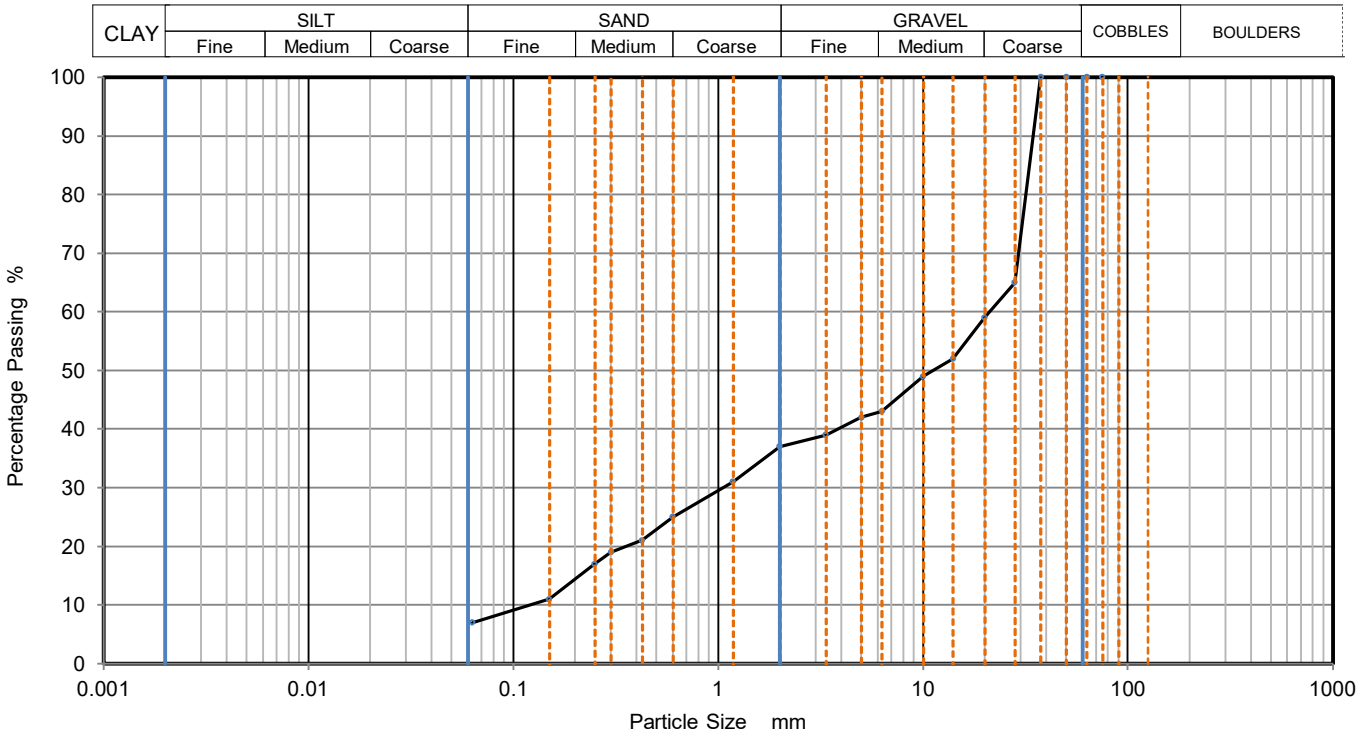
Sheet No. 1

* Consistency index based on natural moisture content and not the equivalent moisture content.

ASHDOWN SITE INVESTIGATION LIMITED

Particle Size Distribution

Site Name:	6 Detillens Lane, Limpsfield, Surrey	Job No.:	P16715
Soil Description:	Very sandy clayey GRAVEL.	Borehole/Pit No.	WS02
Test Method	BS1377:Part2:1990, Clause 9.2	Depth (m)	1.30



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100	0.0200	
63	100	0.0060	
50	100	0.0020	
37.5	100		
28	65		
20	59		
14	52		
10	49		
6.3	43		
5	42		
3.35	39		
2	37		
1.18	31		
0.6	25		
0.425	21		
0.3	19		
0.25	17		
0.15	11		
0.063	7		

Dry Mass of sample (g)	638

Sample Proportions	% dry mass
Very coarse	0
Gravel	63
Sand	30
Fines <0.063mm	7

Grading Analysis		
D_{100}	mm	37.500
D_{60}	mm	21.154
D_{30}	mm	1.054
D_{10}	mm	0.121
Uniformity Coefficient		175.2
Curvature Coefficient		0.4

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Sheet No.: 1

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-08344

Site Reference:	6 Detillens Lane, Limpsfield, Surrey
Project / Job Ref:	P16715 2338
Order No:	11754
Sample Receipt Date:	23/07/2024
Sample Scheduled Date:	23/07/2024
Report Issue Number:	1
Reporting Date:	29/07/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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.

Normec DETS Limited '
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 24-08344	~Date Sampled	19/07/24	19/07/24	19/07/24		
Ashdown Site Investigations Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: 6 Detillens Lane, Limpsfield, Surrey	~TP / BH No	WS01	WS02	WS03		
~Project / Job Ref: P16715_2338	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: 11754	~Depth (m)	1.00	2.00	3.00		
Reporting Date: 29/07/2024	DETS Sample No	727877	727878	727879		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.4	7.0	5.8		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	31	13		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.03	0.01		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-08344	
Ashdown Site Investigations Ltd	
~Site Reference: 6 Detillens Lane, Limpsfield, Surrey	
~Project / Job Ref: P16715_2338	
~Order No: 11754	
Reporting Date: 29/07/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
727877	WS01	None Supplied	1.00	9.6	Brown sandy clay with stones
727878	WS02	None Supplied	2.00	6.1	Brown clayey sand with stones
727879	WS03	None Supplied	3.00	16.7	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-08344
Ashdown Site Investigations Ltd
~Site Reference: 6 Detillens Lane, Limpsfield, Surrey
~Project / Job Ref: P16715_2338
~Order No: 11754
Reporting Date: 29/07/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

~Sample details provided by customer and can affect the validity of results

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List of HWOL Acronyms and Operators
DETS Report No: 24-08344
Ashdown Site Investigations Ltd
~Site Reference: 6 Detillens Lane, Limpsfield, Surrey
~Project / Job Ref: P16715_2338
~Order No: 11754
Reporting Date: 29/07/2024

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Det - Acronym