DRAINAGE STRATEGY

7A THE RIDGEWAY, WOODLEY, READING,
RG5 3QD
GRESFORD
OCTOBER 2025
6508-RIDGE-ICS-XX-RP-C-07.001

Infrastruct CS

Infrastruct CS Ltd, The Stable, High Cogges Farm, High Cogges, Witney, Oxon, OX29 6UN

DRAINAGE STRATEGY

6508-RIDGE-ICS-XX-RP-C-07.001

REPORT ISSUE

Revision	Date	Notes
P01	24/10/2025	First Issue

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DISCLAIMER

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Infrastruct CS

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1 DRAINAGE STRATEGY

Item	Details
Method of Foul Water Discharge	Foul water flows are to drain to the existing foul sewer in The Ridgeway to the north of the site via gravity, subject to S106 consent & confirmation of capacity by Thames Water. The on-site system will be privately maintained by the owners of the freehold or their representatives.
Foul Water Discharge Volumes	British Water "Flows and load 4" estimate the flows per person to be 150 litres/person/day (higher than the water usage in a new dwelling of 125 litres/person/day required by Building Regulations Part G. The estimated population for: 1 x 3-bedrooms dwellings is 1 x 5 = 5 People 5 domestic residents can be expected to generate a flow of 750 litres per day
Method of Surface Water Discharge	The surface water drainage design proposed for the new dwellings is to follow the drainage hierarchy to ensure the site reflects the natural flows from the site as closely as possible: 1. Rainwater reuse – can be implemented but will not be sufficient as the main source of drainage 2. Infiltration – will be the main source of drainage 3. Discharge to Surface Water or a Watercourse 4. Discharge to a Surface Water sewer or a Highway Drain 5. Discharge to a Foul Sewer Surface water falling onto the roof is to drain to the ground via a soakaway to the rear of the property. Run off onto the gravel driveway will self drain at a 1:1 ratio replicating greenfield. Rainwater harvesting will be utilised to capture roof run off in accordance with the SuDs hierarchy. The on-site system will be privately maintained in line with the guidance to the rear of this document by the owners of the freehold.
Local Ground Conditions	A Site Investigation Report (Ref: P25-281gi, Dated: October 2025) has been undertaken on site by Paddock Geo Engineering and found the site to be underlaid by topsoil from surface level to depths of 0.20m bgl and can be described as dark grey organic gravelly clayey fine to coarse sand with frequent rootlets with gravel composed of fine to coarse subangular to subrounded quartzite. The made ground was encountered from a surface level to depths between 0.20m and 0.40m bgl and is confined to the northern area of the site. These soils can be generally described either as dark grey, gravelly fine to coarse sand with gravel composed of fine to medium subangular to subrounded quartzite, brick and tarmac; or as olive grey slightly gravelly, slightly organic sandy silty clay with gravel composed of fine to medium subangular to subrounded quartzite and rare brick and ash fragments.

Item	Details
	The superficial River Terrace Deposit soils were encountered below the topsoil or made ground to the proven depths between 1.70m and 3.00mbgl. These deposits has been shown to be notable variable both horizontally and vertically, with significant variation in terms of grain size and basal depth. It can be divided into three main subunits: • Firm orange brown slightly gravelly sandy silty clay with gravel composed of fine to coarse subangular to subrounded quartzite. This subunit is present within all the exploration point except SA1 to proven depth between 0.50m and 2.00m bgl. • Medium dense orange brown slightly silty sand and gravel. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded quartzite. These soils were encountered within the central and southern area of the site and extend to max depth between 0.90m and 1.10m bgl. • Medium dense orange brown clayey silty fine to medium sand with occasional grey clay pockets gradually becoming, with depth, medium dense to dense yellow, brown slightly silty fine to medium sand. The bedrock soils of the London Clay formation were encountered directly below the superficial River Terrace Deposit to the depth of 5.00mbgl. It can generally be described as firm to stiff brown mottled orange brown to grey brown slightly sandy, silty clay.
Infiltration Rate	On site testing to BRE365 (Dated: 26/09/2025) has been undertaken on site by Paddock Geo Engineering and found the site-specific infiltration rate to be: $1.04x10^{-5}$ m/s, $8.06 x10^{-6}$ m/s, $7.71x10^{-6}$ m/s, the slowest rate of $7.71x10^{-6}$ has been used to calculate the size of the soakaway.
Surface Water Calculations	The surface water drainage system has been designed for a 1 in 100-year event, plus an allowance of 40% for climate change. Impermeable areas have had an additional 10% added for urban creep in line with Ciria C753. Contributing Areas Roof Areas = 97.0 m^2
Ground Water	The site investigation report confirmed that groundwater was not encountered in any of the exploratory holes. Groundwater monitoring has been advised.

Item	Details
Exceedance Flows	It is proposed that finished floor levels will be raised 150mm above the average ground level to mitigate against the risk of any surface water flooding. Exceedance flows will replicate the existing and flow at a surface level from the highest point on the site towards the lowest. The proposed surface water drainage measures will be designed to contain the peak storm event that can be expected for a 1 in 100-year situation. A 40% allowance has already been applied to the site to account for future climate change and a further 10% added to the impermeable areas to allow for urban creep.
Fluvial Flood Risk/ Environment Agency Flood Mapping	The Environment Agency flood map for the development site suggests that the site wholly falls within Flood zone 1, which is defined as land assessed as having a less than 1 in 1000 annual probability of river flooding in any one year
SuDS Maintenance	During construction, the SuDS systems will be maintained by the contractor. Upon sale of the last plot, the SuDS drainage system inclusive of access road, permeable paving and silt traps are to be maintained by the owner of the freehold
Other	

Table 1 Drainage Strategy

Appendix A - Maintenance Schedule

Item	Required Maintenance	Frequency
Pipe and chambers	CCTV camera survey, flush, descale, repair as necessary	5 Years or upon poor performance
Pervious Pavements (Gravels)	Inspect gravel for siltation and weed growth	As required or upon poor performance
	Remove Weeds and rake	As required or upon poor performance
	For heavy siltation or petrochemical spills lift surface gravel, wash and replace	As required or upon poor performance
	Stabilise and mow contributing and adjacent areas.	As required.
	Initial inspection.	Monthly for 3 months after installation
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action.	3-monthly, 48 h after large storms.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.
Geocellular/ modular systems (Crates)	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Where rainfall infiltrates into blocks from above, check surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary.	Monthly (and after large storms)
	Remove sediment from pre-treatment structures	Annually, or as required
	Repair/rehabilitation of inlets, outlet, overflows and vents	As required
	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms
Silt traps and catchpits	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Inspection of silt traps and catch pits to assess silt accumulation	Monthly (and after large storms)
	Removal of accumulated silt from silt trap and catch pit sumps	Annually, or as required
	Repair/rehabilitation of inlets, outlet, overflows and vents	As required
	Inspect/check all inlets, outlets, and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms

Table 2 SuDS Maintenance

Appendix B - Infiltration Testing

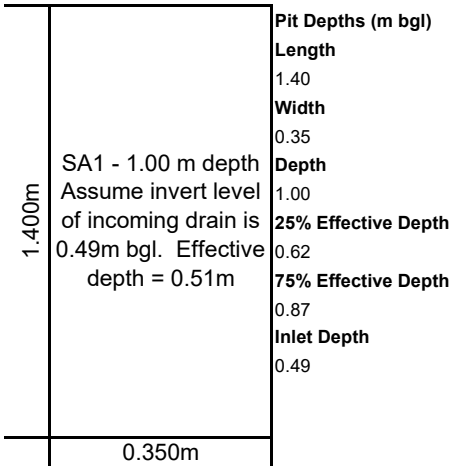
Infiltration Test to BRE365 - SA1 - TEST 1

Field Data

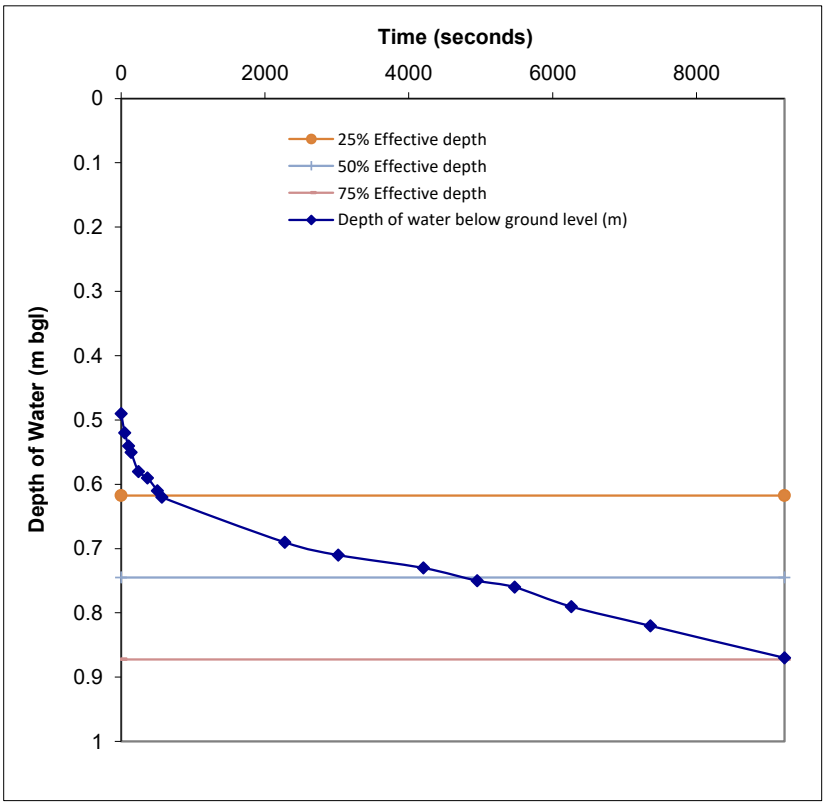
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.49
	0.80	48.00	0.52
	1.70	102.00	0.54
	2.30	138.00	0.55
	4.00	240.00	0.58
	6.10	366.00	0.59
	8.40	504.00	0.61
	9.40	564.00	0.62
	37.90	2274.00	0.69
	50.30	3018.00	0.71
	70.00	4200.00	0.73
	82.50	4950.00	0.75
	91.20	5472.00	0.76
	104.30	6258.00	0.79
	122.60	7356.00	0.82
	153.70	9222.00	0.87

Location: **SA1** **TEST 1**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.49



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.8725-0.6175)
= **0.12495**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.3825**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **8718** secs

f= **1.04E-05** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

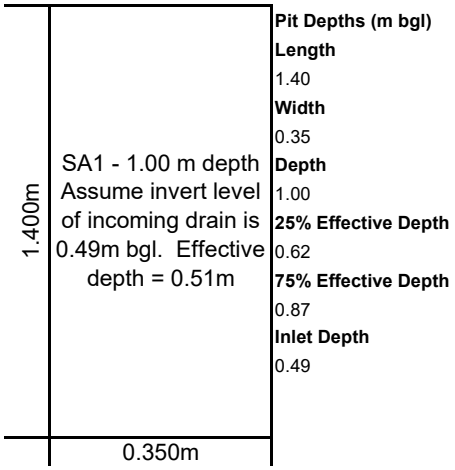
Infiltration Test to BRE365 - SA1 - TEST 2

Field Data

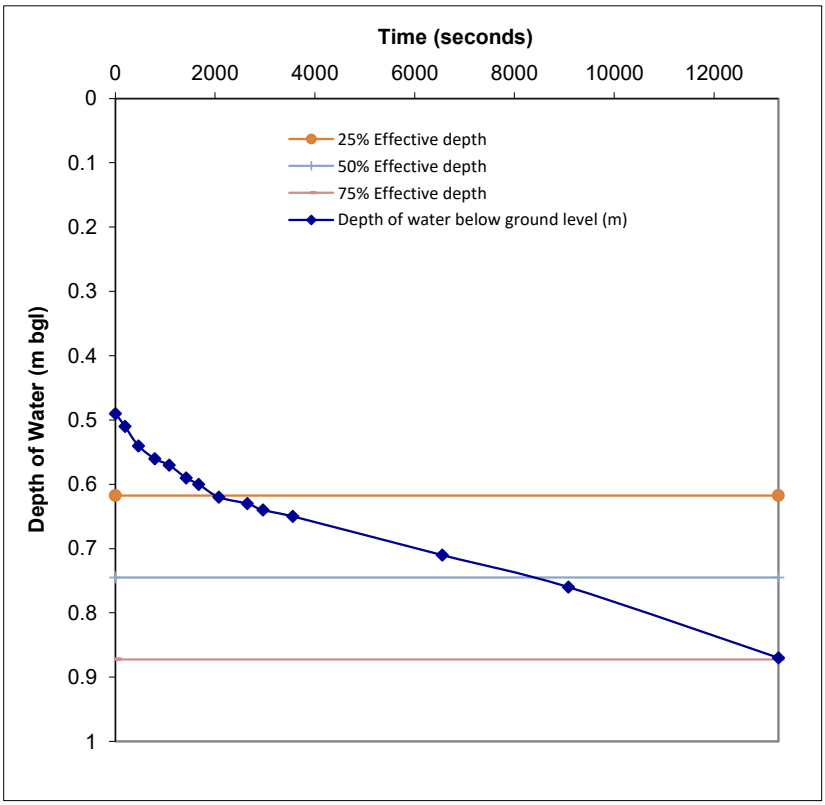
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.49
	3.20	192.00	0.51
	7.70	462.00	0.54
	13.20	792.00	0.56
	18.00	1080.00	0.57
	23.70	1422.00	0.59
	27.80	1668.00	0.60
	34.60	2076.00	0.62
	44.10	2646.00	0.63
	49.30	2958.00	0.64
	59.30	3558.00	0.65
	109.20	6552.00	0.71
	151.30	9078.00	0.76
	221.50	13290.00	0.87

Location: **SA1** **TEST 2**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.49



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.8725-0.6175)
= **0.12495**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.3825**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **11214** secs

f= **8.06E-06** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

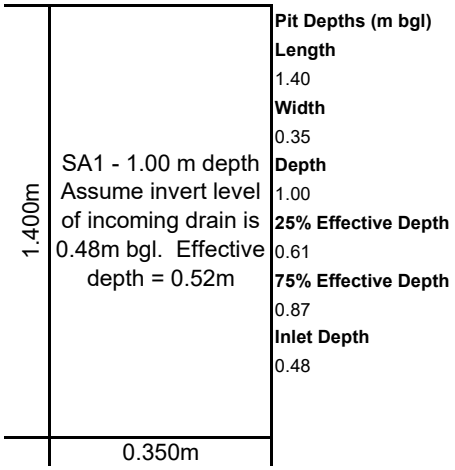
Infiltration Test to BRE365 - SA1 - TEST 3

Field Data

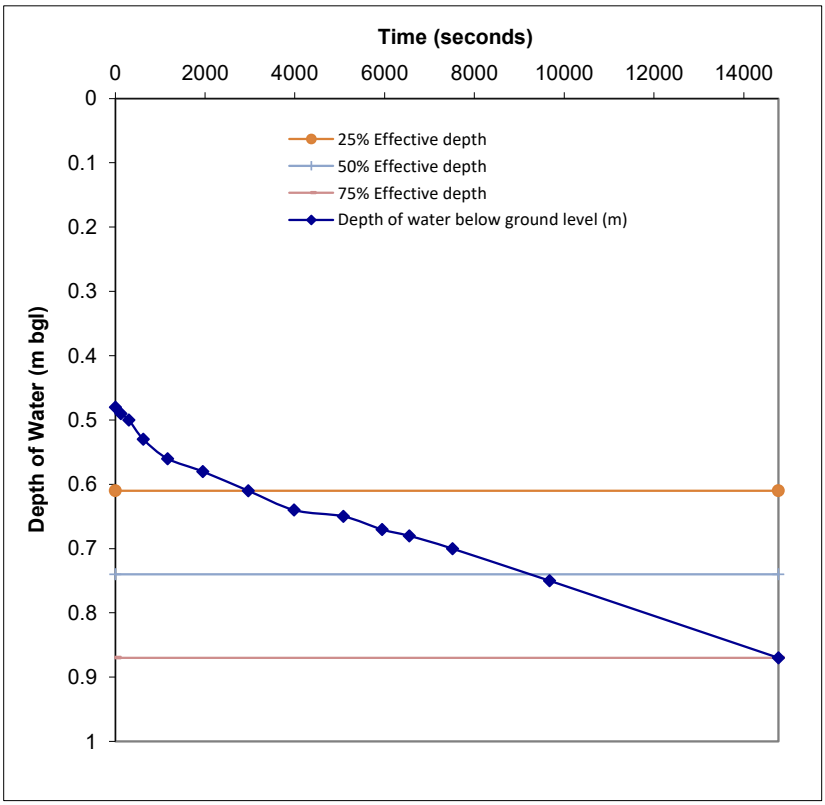
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.48
	2.00	120.00	0.49
	5.00	300.00	0.50
	10.40	624.00	0.53
	19.40	1164.00	0.56
	32.50	1950.00	0.58
	49.40	2964.00	0.61
	66.30	3978.00	0.64
	84.70	5082.00	0.65
	99.00	5940.00	0.67
	109.10	6546.00	0.68
	125.20	7512.00	0.70
	161.20	9672.00	0.75
	246.20	14772.00	0.87

Location: **SA1** **TEST 3**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.48



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.87-0.61)
= **0.1274**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.4**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **11808** secs

f= **7.71E-06** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

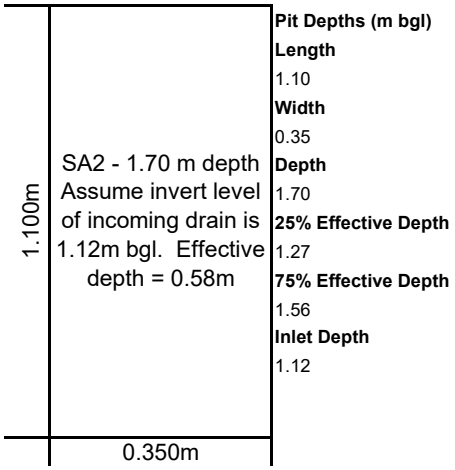
Infiltration Test to BRE365 - SA2 - TEST 1

Field Data

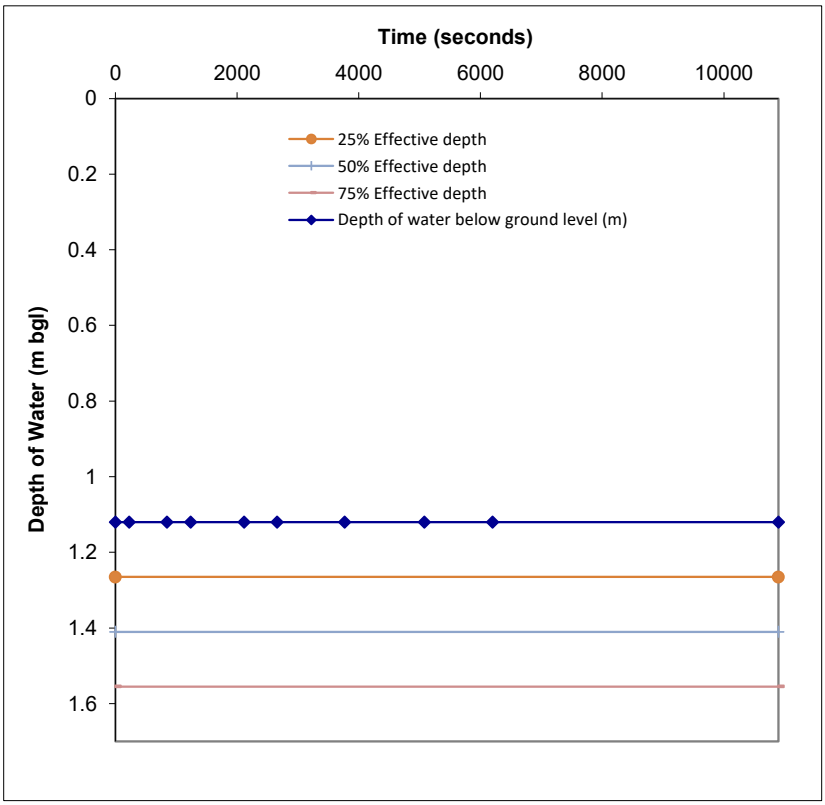
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	1.12
	3.80	228.00	1.12
	14.10	846.00	1.12
	20.60	1236.00	1.12
	35.30	2118.00	1.12
	44.30	2658.00	1.12
	62.80	3768.00	1.12
	84.60	5076.00	1.12
	103.30	6198.00	1.12
	181.60	10896.00	1.12

Location: **SA2** **TEST 1**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 1.12



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.10x0.35x(1.555-1.265)
= **0.11165**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.10 x) + 2(0.35 x) + (1.10 x 0.35)
= **1.226**

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

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

Comment

Infiltration test terminated after c.3hrs due to failure to reach 50% in the allowed time.

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

Appendix C - Ground Investigation

PADDOCK GEO ENGINEERING

7a The Ridgeway, Woodley, Reading, RG5 3QD

Ground Investigation

Kevin McManus

October 2025

P25-281gi

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- Geotechnical Laboratory Testing Results
- Geochemical Laboratory Testing Results

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- BRE365 Infiltration Test Results

E **In-situ Geotechnical Assessment Data**

- Dynamic Cone Penetrometer Results

ISSUE	DATE	Written By	Comments
1	21/10/2025	Edoardo Angelone MSc FGS	-
		Checked by	
		Matthew Paddock MSc FGS	
For and on behalf of Paddock Geo Engineering Limited			

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) were instructed by Kevin McManus; the Client, to undertake an Intrusive Ground Investigation in relation to the redevelopment at the subject site referred as 7a The Ridgeway, Woodley, Reading, RG5 3QD.

1.1 Terms of Reference

- BS 5930:2015 Site Investigation Code of Practice
- BS EN 1997-2, Eurocode 7. Geotechnical design. Ground investigation and Testing
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- TRL Laboratory Report 1132:1984 – The Structure of Bituminous Road, Appendix C Table C1
- BS 5930:1999+A2:2010 Site Investigation Code of Practice
- BS EN 1997-2, Eurocode 7. Geotechnical design. Ground investigation and testing
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- BRE412 1996 Desiccation in Clay Soils
- BRE240 1993 Low Rise Buildings on Shrinkable Clay Soils: Part 1
- BRE241 1990 Low Rise Buildings on Shrinkable Clay Soils: Part 2

1.2 Objectives

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

- An Intrusive Investigation
- A Geotechnical Appraisal
    - In situ CBR determinations
    - Soil Infiltration Testing

The scope of work was discussed and agreed with the Client prior to commencement. The investigation was carried out in order to provide data on the sub-soil characteristics of the site, the groundwater regime and also to recover samples for geotechnical and geochemical laboratory testing. This data was employed to derive a ground model for the site and a geotechnical appraisal including foundation design criteria and also, assess the infiltration properties of the near surface strata and determine feasibility of soakaways design if applicable.

2.0 THE SITE

2.1 Site Description

The site is located within a residential setting on the southern outskirts of the Woodley, approximately 5.6km southeast of the Reading town centre and c.5.80km northwest of Wokingham town centre. The site comprises a rectangular parcel of land, generally level currently occupied by a masonry construction residential garage on the northern area and 2no. wooden outbuildings on the southern area.

The site is bounded by wooden fences to the east, south and west sides while the north boundary fronts the public highway. The surrounding area is predominantly residential in character in all directions. Access to the site is gained directly off The Ridgeway.

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

2.2 Proposed Development

The proposed development scheme is understood to comprise the demolition of the existing garage on the northern portion of the site and the construction of 1no. detached two-storey 3- bedroom dwelling partially located on the previous building footprint along with private rear gardens and front parking area.

The proposed development plan is presented within the Appendix A.

2.3 Tree Locations

No arboricultural reports or tree surveys were available at the time of writing to confirm the species and height of trees on site that may be within influencing distance of the proposed structures. However, based on site observations and a review of satellite imagery, numerous mature and semi-mature trees are present within the southern portion of the site with additional mature and semi-mature trees on the adjoining property to the west, adjacent to the western boundary.

2.4 Previous Ground Investigations

PGE are not aware of any intrusive ground investigation or contamination risk assessment being carried out on the subject site previously.

3.0 GEOTECHNICAL DESK STUDY SUMMARY

A full Preliminary Geotechnical Desk Study and Risk Assessment was outside the scope of this report, however, salient geological and historical data for the site has been sourced from freely available sources and this data is summarised in the following sections.

3.1 Geology and Hydrogeology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) relevant map sheet and the BGS Geology Viewer.

The geological maps indicate that the site is underlain by the River Terrace Deposit, a sedimentary superficial deposit comprising sand and gravel formed between 2.588 million years ago and the present during the Quaternary period.

The bedrock underlying the site is indicated to be London Clay Formation a sedimentary bedrock comprising Clay, Silt and Sand formed between 56 and 47.8 million years ago during the Palaeogene period.

Geological mapping by the BGS shows the surface expression of local geology, typically within the top 1.2m of the surface. As such the soils encountered at depth may vary from those shown on the mapping.

4.0 INTRUSIVE INVESTIGATION FIELDWORKS

An intrusive investigation was designed to establish the ground conditions beneath the site in relation to the development of a Ground Model for the proposed development. The works were also employed to gather geotechnical data to derive geotechnical design parameters.

The main fieldworks were carried on 26th September 2025 and comprised the forming of 4no. boreholes (WS01 – WS04) to a targeted depth of 5.00m below ground level (bgl) using a percussion liner sampling rig to determine the ground conditions and carry out in-situ soil strength testing. It should be noted that the borehole WS01, WS02 and WS04 were terminated at a depth between 2.00m and 3.00m bgl due to refusal onto impenetrable dense strata.

Additionally, 2no. trial pits (SA1-SA2) were formed with infiltration testing carried out to the BRE365 methodology.

The exploratory positions were located with reference to the proposal development plan provided by the Client's Engineer and in open and accessible locations identified as being clear of buried services, following a Cable Avoidance Tool (CAT) survey and a review of available underground service plans.

Standard Penetration Tests (SPTs), as described in BS EN ISO 22476-3:2005+A1:2011, were undertaken in all boreholes at approximate 1.00m intervals during drilling to give an indication of the in-situ strength/density profile of the encountered material.

Hand Vane shear tests were undertaken where suitable fine-grained arisings were encountered, and the result are provided in the borehole logs.

The depths of the exploratory positions, sample details, strata descriptions and comments on the groundwater conditions are detailed on the logs, which are presented in Appendix B along with an Exploratory Point Location Plan.

Further to this, 4no. TRL DCP tests were also carried out in areas designated as proposed access road and parking spaces. The testing was carried out in general accordance with the Section 6 of the Highways Agency document CS229 (2020) and Appendix F of the TRL technical document ORN18 (1999). The location tested are shown on the exploratory point location plan presented in Appendix B.

The exploratory points were formed to assess the geological succession beneath the site to gather geotechnical and groundwater data to derive geotechnical design parameters, to undertake infiltration testing and to add data to the Ground Model for the site.

The details, locations and rationale of the exploratory point placement is summarised below.

Table 1: Exploratory Location Details and Rationale

Exploratory Location (Depth)	Location Details
WS01(3.00m)	Nearby the southeast corner of the proposed dwelling to assess the general ground conditions.
WS02(2.00m)	Nearby the southwest corner of the proposed dwelling to assess the general ground conditions.
WS03(5.00m)	Nearby the northwest corner of the proposed dwelling to assess the general ground conditions.
WS04(3.00m)	Nearby the northeast corner of the proposed dwelling to assess the general ground conditions.
SA1 (1.00m)	Within the southern portion (Rear) of the site to assess the general ground conditions and carry out an infiltration test.
SA2 (1.70m)	Within the northern portion (Front) of the site to assess the general ground conditions and carry out an infiltration test.

Disturbed samples were recovered from the borehole and trial pit arisings at regular intervals and at changes in strata.

The exploratory hole positions were backfilled with arisings once logged and tested.

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

4.1 Encountered Strata

The exploratory point arisings were logged by a suitably qualified Geo-Environmental Engineer generally in accordance with BS5930:2015.

The geology beneath the site generally indicated Topsoil or Made Ground overlying the superficial River Terrace Deposit overlying the bedrock of the London Clay Formation.

TOPSOIL

The Topsoil was encountered within exploration points WS01, WS02 and SA1 from surface level to depths of 0.20m bgl and can be described as dark grey organic gravelly clayey fine to coarse SAND with frequent rootlets with gravel composed of fine to coarse subangular to subrounded quartzite.

MADE GROUND

The Made Ground was encountered within exploration points WS03, WS04 and SA2 from surface level to depths between 0.20m and 0.40m bgl and it is confined to the northern area of the site, in front of the existing garage, and is interpreted as hardstanding build-up associated with the garage driveway.

These soils can be generally described either as dark grey very gravelly fine to coarse SAND with gravel composed of fine to medium subangular to subrounded quartzite, brick and tarmac; or as olive grey slightly gravelly slightly organic sandy silty CLAY with gravel composed of fine to medium subangular to subrounded quartzite and rare brick and ash fragments.

RIVER TERRACE DEPOSIT

The superficial River Terrace Deposit soils were encountered with all exploratory points below the Topsoil or Made Ground to the proven depths between 1.70m and 3.00m bgl. These deposits has been shown to be notable variable both horizontally and vertically, with significant variation in terms of grain size and basal depth. It can generally be divided into three main subunits, with generally gradational and not always clearly defined contacts, and described as:

- Firm orange brown slightly gravelly sandy silty CLAY with gravel composed of fine to coarse subangular to subrounded quartzite. This subunit is present within all the exploration point except SA1 to proven depth between 0.50m and 2.00m bgl.
- Medium dense orange brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded quartzite. These soils were encountered within the central and southern area of the site and extend to max depth between 0.90m and 1.10m bgl.
- Medium dense orange brown clayey silty fine to medium SAND with occasional grey CLAY pockets gradually becoming with depth medium dense to dense yellow brown slightly silty fine to medium SAND. This subunit is present within explorations point WS01 and WS04 to proven depth of 3.00m bgl.

The boreholes WS01, WS02 and WS03 were terminated at depth between 2.00m and 3.00m bgl due to refusal onto dense River Terrace Deposit.

LONDON CLAY FORMATION

The bedrock soils of the London Clay Formation were encountered directly below the superficial River Terrace Deposit only within exploratory point WS03 to the proven depth of 5.00m bgl. It can generally be described as firm to stiff brown mottled orange brown to grey brown slightly sandy silty CLAY.

ROOTS

Frequent to occasional rootlets were observed within the Topsoil within all exploration point WS01, WS02 and SA1 during the ground investigation to a maximum depth of 0.20m bgl.

4.2 Groundwater Conditions

The following table summarises the depth of groundwater strikes across the site and associated standing water levels on completion of the borehole.

The groundwater observations are summarised below.

Table 2: Water Strike Details

Exploratory Location (Depth)	Water Strike Details
WS01(3.00m)	No groundwater encountered.
WS02(2.00m)	No groundwater encountered.
WS03(5.00m)	No groundwater encountered.
WS04(3.00m)	No groundwater encountered.
SA1 (1.00m)	No groundwater encountered.
SA2 (1.70m)	No groundwater encountered.

It should be noted that groundwater levels may vary seasonally and with other factors. The reviewer should satisfy themselves with the groundwater levels at the time of any construction works.

4.3 Soil Sampling Strategy

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

These were used to gather soil data to allow classification of the soils encountered in relation to the derivation of foundation design criteria.

5.0 FOUNDATION DESIGN CRITERIA

5.1 Geotechnical Laboratory Testing

Representative samples were sent to an external UKAS accredited laboratory following visual assessment and logging of the borehole arisings.

The testing programme was designed to classify the properties of the encountered soils and to determine the chemistry of the soil in relation to the design of buried concrete.

5.1.1 Atterberg Limits

Atterberg Limit determinations were carried out on a total of 5no. fine-grained soil samples recovered from the River Terrace Deposit and London Caly Formation. The results are presented in Appendix D.

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

Table 3: Atterberg Limits Testing

Exploratory Point and Strata	Depth (m)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm	NHBC Modified Plasticity Index	NHBC Volume Change Potential
WS01 (RTD)	2.00	15.0	28	19	9	100	9	Non-Shrinkable
WS01 (RTD)	2.50	15.4	24	17	7	100	7	Non-Shrinkable
WS03 (RTD)	1.50	16.5	32	14	18	83	15	Low

Exploratory Point and Strata	Depth (m)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm	NHBC Modified Plasticity Index	NHBC Volume Change Potential
WS03 (LCF)	2.50	24.1	64	25	39	100	39	Medium
WS04 (RTD)	1.50	15.3	27	17	10	98	10	Low

RTD River Terrace Deposit
LCF London Clay Formation

The determinations on fine-grained samples of the River Terrace Deposit soils have Modified Plasticity Indices ranging between 7% and 10%, classifying them variable from Non shrinkable to Low VCP employing the NHBC classification scheme.

The single determination on fine-grained sample of the bedrock of the London Clay Formation soils have Modified Plasticity Index of 39%, classifying them as Medium VCP employing the NHBC classification scheme.

Given the variable basal depth of the River Terrace deposit overlying the bedrock soils of the London Clay Formation with Medium VCP, the site should be conservatively classified as having **Medium VCP** for worst-case design purposes, in accordance with the guidance provided within the NHBC Standards classification scheme.

5.1.2 Natural Moisture Content

Testing was performed to determine the natural moisture content (NMC) of the samples subjected to Atterberg Limit testing. These results are presented in the Laboratory Test Result Summaries in Appendix D.

5.1.3 Particle Size Distribution

A single Particle Size Distribution (PSD) tests was undertaken on composite sample recovered from the River Terrace Deposit soils at depth between 0.80m and 2.00m bgl.

The result of the testing is summarised in Table 4 below.

Table 4: Particle Size Distribution

Location (Depth m bgl)	Soil Type	Fraction (%) Size Range (mm)			
		cobbles 200-60	gravel 60-2	sand 2-0.06	silt & clay <0.063
WS01+WS02+WS04	White, black and brown angular to rounded chert slightly clayey silty very sandy GRAVEL.	0	56	32	12

Soils with a fine content less than 35% can be considered as not shrinkable as outlined in NHBC and LABC guidance.

5.1.4 pH and SOx

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

The findings of the assessment, along with a summary of the reported pH values, Total Sulphate and 2:1 Water Soluble Sulphate concentrations are included within Table below.

Table 5: Design Sulphate Class

Strata characteristic	River Terrace Deposit	London Clay Formation
pH	6.9	8.1
Total Sulphate (%)	0.031	0.020
Water Soluble Sulphate (2:1 Water Extract) (mg/l)	78	22.4
Appropriate Design Sulphate Class	**DS-1 / AC-1s**	**DS-1 / AC-1s**

The chemical testing on the soils underlying the site indicate an overall Design Sulphate Class DS-1 with corresponding Aggressive Chemical Environment for Concrete AC-1s assuming static groundwater.

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

5.2 In-Situ Testing

Standard Penetration Testing (SPT) was carried out at 1.0m centres within the Window Sample boreholes. The SPT values are presented with the Exploratory Point Logs in Appendix B.

The SPT 'N' values within the superficial fine grained River Terrace Deposit soils return values between 12 and 16 (Firm to Stiff), indicating corresponding soil strengths of between 60kPa and 80kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

The SPT 'N' values within the superficial coarse grained River Terrace Deposit soils return values between 29 and >50 indicating soils with relative density variable between Medium Dense to Very Dense.

The SPT 'N' values within the fine-grained bedrock of the London Clay Formation soils return values between 22 and 34 (Stiff to Very Stiff), indicating corresponding soil strengths of between 110kPa and 170kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

Soil strength testing was undertaken in the field employing Hand Shear Vane (HSV) testing carried out where appropriate within the intact Window Sample boreholes soils that were identified to be predominantly fine grained. The HSV test results are presented with the Borehole Logs presented in Appendix B.

The Hand Shear Vane results within the boreholes at depth comprised between 0.70m and 1.50m bgl on fine-grained River Terrace Deposit soils ranging between 15kPa and 140kPa indicating soils ranging from Very Low to High strength. In contrast, HSV results within fine-grained London Clay Deposit soils ranging between 80kPa and 130kPa indicating soils with High strength.

6.0 ENGINEERING EVALUATION

6.1 Introduction

The proposed development scheme is understood to comprise the demolition of the existing garage on the northern portion of the site and the construction of 1no. detached two-storey 3- bedroom dwelling partially located on the previous building footprint along with private rear gardens and front parking area.

The proposed development plan is presented within the Appendix A.

From a geotechnical viewpoint this is deemed to be a Ground Investigation Report (GIR) as set out in BS EN 1997:2. Therefore, this report does not constitute a Geotechnical Design Report as defined in section 2.8 of BS EN 1997-1:2004+A1:2013 'Eurocode 7 – Geotechnical Design – Part 1: General Rules' and in particular will exclude assessment of lifetime actions to buildings from geotechnical influences.

6.2 Foundation Design Considerations

The geology beneath the site generally indicated Topsoil or Made Ground overlying the superficial River Terrace Deposit overlying the bedrock of the London Clay Formation.

The Topsoil was encountered within exploration points WS01, WS02 and SA1 from surface level to depths of 0.20m bgl.

The Made Ground was encountered within exploration points WS03, WS04 and SA2 from surface level to depths between 0.20m and 0.40m bgl and it is confined to the northern area of the site, in front of the existing garage, and is interpreted as hardstanding build-up associated with the garage driveway.

The superficial River Terrace Deposit soils were encountered with all exploratory points below the Topsoil or Made Ground to the proven depths between 1.70m and 3.00m bgl. These deposits has been shown to be notable variable both horizontally and vertically, with significant variation in terms of grain size and basal depth. It can generally be divided into three main subunits, with generally gradational and not always clearly defined contacts, and described as:

- Firm orange brown slightly gravelly sandy silty CLAY with gravel composed of fine to coarse subangular to subrounded quartzite. This subunit is present within all the exploration point except SA1 to proven depth between 0.50m and 2.00m bgl.
- Medium dense orange brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded quartzite. These soils were encountered within the central and southern area of the site and extend to max depth between 0.90m and 1.10m bgl.

- Medium dense orange brown clayey silty fine to medium SAND with occasional grey CLAY pockets gradually becoming with depth medium dense to dense yellow brown slightly silty fine to medium SAND. This subunit is present within explorations point WS01 and WS04 to proven depth of 3.00m bgl.

The boreholes WS01, WS02 and WS03 were terminated at depth between 2.00m and 3.00m bgl due to refusal onto dense River Terrace Deposit.

The bedrock soils of the London Clay Formation were encountered directly below the superficial River Terrace Deposit only within exploratory point WS03 to the proven depth of 5.00m bgl. It can generally be described as firm to stiff brown mottled orange brown to grey brown slightly sandy silty CLAY.

Groundwater was not encountered within any of the boreholes to the maximum depth investigated of 5.00m bgl. It should be noted that groundwater levels may vary seasonally and with other factors. The reviewer should satisfy themselves with the groundwater levels at the time of any construction works.

Frequent to occasional rootlets were observed within the Topsoil within all exploration points during the ground investigation to a maximum depth of 0.20m bgl.

Given the variable basal depth of the River Terrace deposit overlying the bedrock soils of the London Clay Formation with Medium VCP, the site should be conservatively classified as having **Medium VCP** for worst-case design purposes, in accordance with the guidance provided within the NHBC Standards classification scheme.

A single Particle Size Distribution (PSD) tests undertaken on composite sample recovered from the River Terrace Deposit soils at depth between 0.80m and 2.00m bgl indicating a gravel content of 56%, sand content of 32% and silt and clay content of 12%

The SPT 'N' values within the superficial fine grained River Terrace Deposit soils return values between 12 and 16 (Soft to Stiff), indicating corresponding soil strengths of between 60kPa and 80kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

The SPT 'N' values within the superficial coarse grained River Terrace Deposit soils return values between 29 and >50 indicating soils with relative density variable between Medium Dense to Very Dense.

The SPT 'N' values within the fine-grained bedrock of the London Clay Formation soils return values between 22 and 34 (Stiff to Very Stiff), indicating corresponding soil strengths of between 110kPa and 170kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

The Hand Shear Vane results within the boreholes at depth comprised between 0.70m and 1.50m bgl on fine-grained River Terrace Deposit soils ranging between 15kPa and 140kPa indicating soils ranging from Very Low to High strength. In contrast, HSV results within fine-grained London Clay Deposit soils ranging between 80kPa and 130kPa indicating soils with High strength.

6.3 Foundation Options Discussion

Conventional foundations, such as spread and isolated pads, placed into soft and/or variable soils are generally subjected to increased risk of settlement, especially differential settlement. Therefore, it is not recommended that foundations be placed into the Topsoil.

Although no final structural loading or finished floor level (FFL) information was available at the time of reporting, it is assumed that site levels will remain largely unchanged. Based on the ground conditions encountered and assuming typical low to medium-rise residential loading, shallow foundations may be considered suitable across the site.

Due to the variable nature of the River Terrace Deposit soils in terms of basal depth, strength and grainsize overlying the more uniform bedrock soils of the London Clay Formation with Medium VCP and with reference to NHBC Standards Chapter 4.2, conventional shallow spread foundations (strips / pads) should be bearing at minimum depth of 1.25m bgl in areas outside the zone of influence of any trees. However, given the high variability of the River Terrace Deposit across of the proposal dwelling footprint, adequate Engineer designed foundation reinforcement is recommended given the potential for foundation stress bulbs interacting with incompressible sand and gravel horizons, causing point loading and possible significant differential settlement. Foundations should also be deepened locally to bypass any possible ground disturbance induced by removal of existing footings of the former garage foundations.

Alternatively, if conventional foundation are considered not suitable or offer insufficient bearing capacities, a raft foundation may be considered across the entire structure, offering a robust solution capable of accommodating variable ground conditions and differential settlement by distributing structural loads over a larger area, and given that the shallow Clay of the River Terrace Deposit have been classified as having a worst case of Low VCP, any raft foundation should be designed to accommodate potential seasonal tree influence (considered a feasible risk presented by the trees to the west in the adjoining properties).

In conclusion, foundation design should be informed by a detailed Building Near Trees assessment in accordance with current guidance given the presence of trees to the west in the adjoining properties.

Therefore, conventional foundations may be considered suitable for the proposed development, provided they are provided with adequate reinforcement at a minimum depth of 1.25m bgl where outside the zone of influence of any trees or to bypass any ground disturbance from the former structure present on site. The final foundation depth should also be determined with reference to a Building Near Trees assessment.

If, during excavations, there is any ambiguity of material type a representative of PGE should attend site to inspect the foundations and advise on deepening the foundations or if the founding material is suitable for foundations to be laid.

The above foundation options and design approaches are subject to detailed Structural Engineer design and regulator agreement. It is recommended that the above conclusions are agreed with relevant parties before excavation for foundation takes place.

6.4 New Structure Foundation Design Criteria

6.4.1 Bearing Capacity

Shallow pad and/or strip foundations provided with adequate reinforcement constructed at a minimum depth of 1.25m bgl into the River Terrace Deposit are considered feasible. For foundation purposes, any soft, organic or otherwise unfavourable materials should be removed and replaced with suitably compacted granular fill or mass concrete.

It is recommended that foundation excavations should be inspected by a suitably qualified Engineer.

The estimated soil bearing resistances for isolated square pad and strip foundations at a depth of 1.25m bgl and 2.00m bgl, for a calculated settlement limited to 25mm are included within Tables 6 and 7.

Table 6: Bearing Resistance for Strip Foundations

Depth (m bgl)	**1.25**	**2.00**	**1.25**	**2.00**	**1.25**	**2.00**
Foundation breadth B (m)	**0.45**		**0.60**		**1.00**	
Design bearing resistance (kPa)	140	150	135	145	125	135

Table 7: Bearing Resistance for Isolated Pad Foundations

Depth (m bgl)	**1.25**	**2.00**	**1.25**	**2.00**	**1.25**	**2.00**
Foundation Width (m)	**1.00x1.00**		**1.25x 1.25**		**2.00x2.00**	
Design bearing resistance (kPa)	155	160	150	155	145	150

These estimates further include a factor of safety of 3 against general shear failure and should keep settlements within tolerable limits.

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

6.4.2 Piled Foundations

In the event that the assessed minimum foundation depths are too deep for conventional foundations, or the bearing capacities derived above not be sufficient for the proposed development then consideration of alternative foundation solutions such as piles may provide the required improvement in bearing capacities.

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

6.4.3 Soil Volume Change Assessment

No arboricultural reports or tree surveys were available at the time of writing to confirm the species and height of trees on site that may be within influencing distance of the proposed structures. However, based on site observations and a review of satellite imagery, numerous mature and semi-mature trees are present within the southern portion of the site with additional mature and semi-mature trees on the adjoining property to the west, adjacent to the western boundary.

The location, type and distance of the trees to the proposed foundations should be taken into account in determining the founding depths given the Medium volume change potential of the shallow natural Clay and foundation depths increased where necessary. Additional guidance is provided in NHBC Standards and also in BRE Digests 298 and 412.

Given the worst case of Medium VCP encountered on site a detailed assessment should be carried out using the data within this report once a dedicated tree survey has been submitted and a final development plan has been produced by the scheme foundation design Engineer. This will allow a detailed reassessment of the required minimum foundation depths for the proposed development.

Where foundations lay outside the zone of influence of any trees, a worst-case minimum foundation depth of 1.25m bgl is recommended to be considerate of restrictive new planting given the worst case Medium VCP soils encountered beneath the site.

6.4.4 Shallow Excavations

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

All the exploration points formed remained stable during and after the completion.

Groundwater was not encountered within any of the other exploration points to the maximum depth investigated of 5.00m bgl. However, it should be noted that groundwater tables can fluctuate seasonally and can vary rapidly during inclement weather. As such, the reviewer should satisfy themselves with the groundwater levels at the time of any construction works.

Foundation excavations should not be left exposed to the elements for long periods of time, in order to avoid softening/loosening the natural River Terrace Deposit. If it is not possible for foundation concrete to be poured immediately after excavation, either the bases of the excavations could be protected with a blinding layer of concrete or the last 150mm of soil could be left in place and removed only when concreting is about to start.

It is recommended that foundation excavations should be inspected by a suitably qualified Engineer. For foundation purposes, any soft, organic or otherwise unfavourable materials should be removed and replaced with suitably compacted granular fill or mass concrete.

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

6.4.5 Ground Floor Slabs

Where fine-grained material is present below proposed floor slabs, then the use of ground bearing floors is not recommended for ***movement sensitive structures*** as detailed in Section 5.1 of the NHBC Standards.

6.5 Sub-Surface Concrete

The Design Sulphate Class was relatively consistent beneath the site and with a worst-case Design Sulphate Class of DS-1 for all soils.

A worst case Aggressive Chemical Environment for Concrete (ACEC) site classification is AC-1s assuming static groundwater.

7.0 SURFACE WATER SOAKAWAYS AND SOIL PERMEABILITY

Infiltration testing was carried out within 2no. trial pits (SA1 and SA2) to the BRE365 methodology to allow an estimated infiltration factor.

The trial pits were formed to depth between 1.00m and 1.70m bgl and filled with between c. 0.50m and 0.58m of water at the base to limit the water used and trial pit instability.

Three infiltration cycle were carried out within the trial pit SA1.

The infiltration tests was terminated party way through the first cycle within trial pits SA2 due to low infiltration rate and lack of water movement over a period of c.3 hrs.

The results are presented in Appendix D and are summarised in the table below.

Table 8: Infiltration Factors

Trial Pit	Soil Tested	Test Depth (m)	Infiltration Factor (ms^{-1})		
			Cycle 1	Cycle 2	Cycle 3
SA1	River Terrace Deposit	0.51 – 1.00	$1.04x10^{-5}$	$8.06x10^{-6}$	$7.71x10^{-6}$
SA2		1.21 – 1.70	Test Failed	-	-

Given the result of the infiltration tests, it is considered that conventional soakaways may be effective within the coarse-grained superficial River Terrace Deposit soils underlying the southern area of the site.

8.0 ACCESS ROADWAYS AND PARKING AREAS

In-situ CBR determinations were carried out at 4no. locations across the site in areas indicated to be access roads.

The determinations were carried out using the TRL DCP Light weight penetrometer apparatus. The CBR results have been derived following ORN8:1990, utilising the UK DCP Version 3.1 software for the TRL DCPs and provide a direct correlation in terms of California Bearing Ratio (CBR) value.

The locations of the DCP tests are detailed on the Exploratory Point Location Plan presented in Appendix B.

The results of the DCP testing are presented in Appendix E and are summarised in the table below.

Table 9: Dynamic Cone Penetrometer Result Summary

Location	Layer 1		Layer 2	
	Layer (basal depth (m))	Representative CBR Value (%)	Layer (basal depth (m))	Representative CBR Value (%)
DCP1	0.57	35	0.88	68
DCP2	0.30	41	0.88	9
DCP3	0.25	22	0.89	5
DCP4	0.51	33	0.91	6

The DCP results indicate the shallow Made Ground within all the locations to be but well compacted with values ranging between 22% and 41%. The DCP result were also quite variable within the deeper strata with values between 5% and 68% for the deeper second layer.

The TRL Laboratory Report 1132 – The Structure of Bituminous Road, Appendix C Table C1 allows an estimate of CBR value based on soil equilibrium suction index for fine grained soils. Based upon the laboratory testing on the shallow natural fine-grained soils encountered at shallow depths, a CBR value of between 1.5% and 7% can be employed dependent upon the groundwater table and the prevailing conditions at the time of construction.

Therefore, given the above results a conservative initial design CBR value of 3% is considered appropriate across the site assuming a formation level in excess of c. 0.50m bgl onto natural River Terrace Deposit. Where roadways are designed to bear onto Made Ground soils, then an initial CBR value of 1% should be employed due to inherent variability of such deposits.

It is recommended that the values above are confirmed with Plate Load testing at detailed design stage.

CERTIFICATION

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

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

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

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

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

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

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

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

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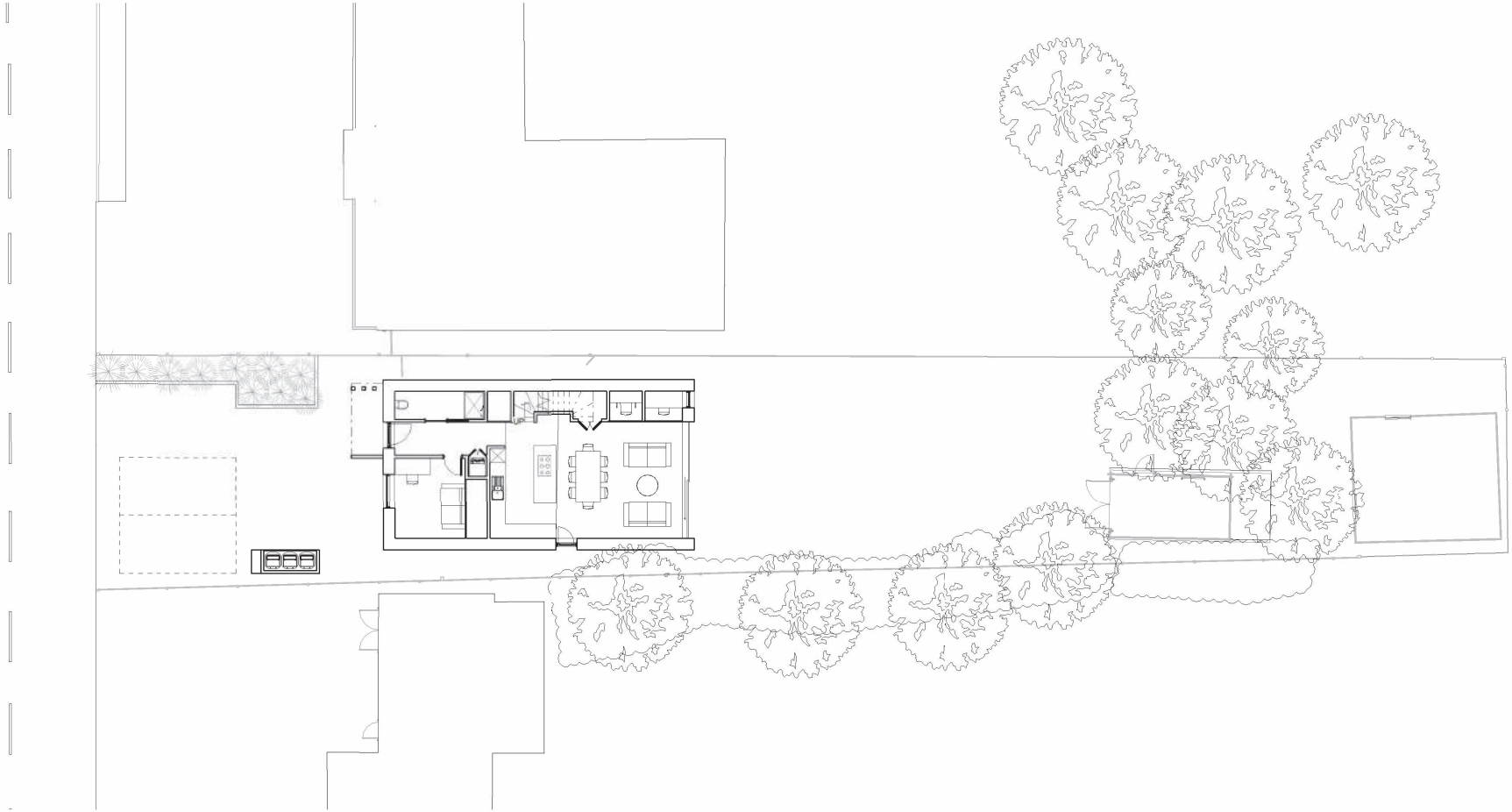
APPENDIX A – MAPS AND PLANS

Site Location Plan

Proposed Development Plans



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Revision	Date	Description	Drawn	Checked

Project
The Ridgeway

Project number
4242

Drawing Title
Site Plan

Drawing Number
102

Client
Kevin and Anne Mc Manus

0 5 10 m

Do not scale from drawings
Errors to be reported immediately to the Architect
To be read in conjunction with all relevant Architects', Services and Structural Engineer's drawings
All existing site, trees and building information has been compiled from different sources
All dimensions to be checked on site

Date	26/06/2025
Scale	1 : 200
Sheet	A3
Drawn	ASE
Checked	WH

Issue

SKETCH OPTIONS

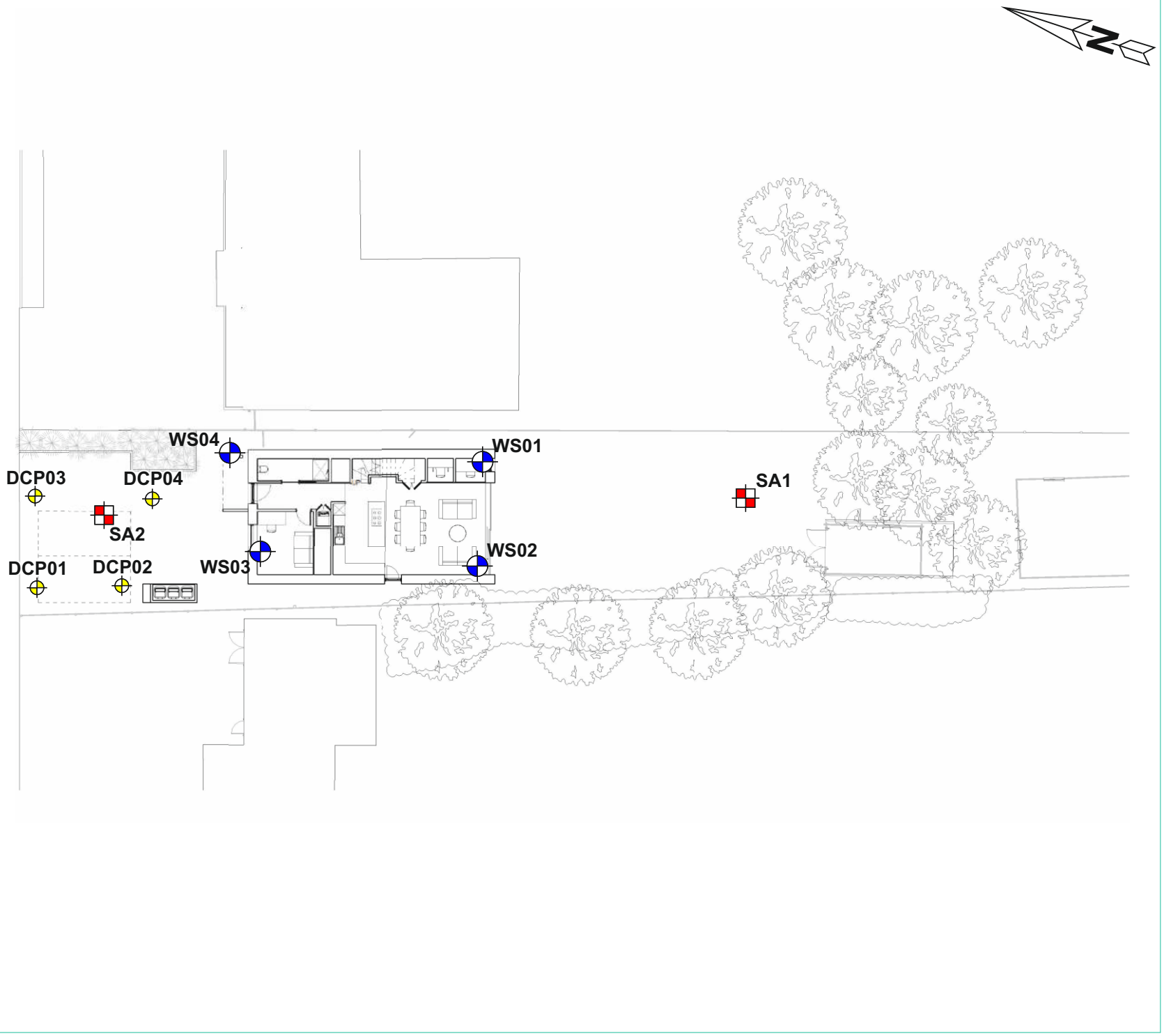
APPENDIX B – GROUND INVESTIGATION DATA

Exploratory Point Location Plan

Borehole Logs

Trial Pit Logs

Sitework Photographs



PADDOCK GEO ENGINEERING

Exploratory Point Location Plan

7a The Ridgeway,
Woodley,
Reading,
RG5 3QD

P25-281

Kevin McManus

October 2025

Legend:

- **Percussion Liner Sampling Borehole Locations**
- **Infiltration testing to BRE365 Locations**

Notes:

1) Not to scale
2) Dimensions as shown
3) All positions are approximate
4) Drawing to be viewed in colour
5) Drawing to be viewed digitally
6) Not for construction detail
7) Based on plans provided the Client

PADDOCK GEO ENGINEERING

Site	Trial Pit Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	SA1

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
3 tonne excavator	0.35 x 1.40		Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Grass over dark brown very clayey gravelly SAND with frequent rootlets. Gravel is fine to medium subangular subrounded flint. (TOPSOIL)		
					(0.70)	Light orange brown slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular subrounded flint. (RIVER TERRACE DEPOSIT)		
0.90	B				0.90 (0.10) 1.00	Soft light orange brown sandy gravelly CLAY. Gravel is fine to medium subangular subrounded flint. (RIVER TERRACE DEPOSIT)		
						Complete at 1.00m		

Remarks

Trial pit stable upon completion
No groundwater encountered
Trial pit backfilled with arising
Infiltration test carried out to the BRE365 methodology

Logged in accordance BS5930:2015+A1-2020

Scale (approx)	Logged By	Figure No.
1:25	AB	P25-281.SA1

PADDOCK GEO ENGINEERING

Site	Trial Pit Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	SA2

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
3 tonne excavator	0.35 x 2.00		Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Madeground gravel over dark brown very clayey gravelly SAND. Gravel is fine to medium subangular subrounded flint and brick. (MADE GROUND)		
					(1.50)	Firm grey mottled orange brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint and chalk. (RIVER TERRACE DEPOSIT)		
1.60	D				1.70	Complete at 1.70m		

Remarks

Trial pit stable upon completion
No groundwater encountered
Trial pit backfilled with arising
Infiltration test carried out to the BRE365 methodology

Logged in accordance BS5930:2015+A1-2020

Scale (approx)	Logged By	Figure No.
1:25	AB	P25-281.SA2

PADDOCK GEO ENGINEERING

Site	Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	WS01

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Percussion Liner Rig			Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grass onto dark grey organic gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is fine to coarse subangular to subrounded quartzite. (TOPSOIL)		
					0.20			
					(0.30)	Firm brown to orange brown gravelly sandy CLAY. Gravel is fine to medium subangular to rounded quartzite. (RIVER TERRACE DEPOSITS)		
0.40	D				0.50			
						Medium dense orange brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded quartzite. (RIVER TERRACE DEPOSITS)		
0.80	D				(0.60)			
1.00-1.45	SPT N=29		6,8/6,7,9,7		1.10			
					(0.20)	Firm orange brown slightly gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded quartzite. (RIVER TERRACE DEPOSITS)		
					1.30			
						Medium dense orange brown clayey silty fine to medium SAND with occasional grey CLAY pockets. (RIVER TERRACE DEPOSITS)		
1.50	D							
2.00-2.45	SPT N=27		4,4/6,6,6,9					
2.00	D				(1.70)			
2.50	D							
3.00-3.45	SPT N=59		8,12/13,14,16,16		3.00			
3.00	D					Complete at 3.00m		

Remarks
No groundwater encountered
Borehole stable upon completion
Borehole backfilled with arising
Borehole terminated at 3.00m depth due to refusal

Scale (approx)	Logged By
1:25	EA

Figure No. P25-281.WS01

Logged in accordance BS5930:2015+A1-2020

PADDOCK GEO ENGINEERING

Site	Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	WS02

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Percussion Liner Rig			Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Grass onto dark grey organic gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is fine to coarse subangular to subrounded quartzite. (TOPSOIL)		
0.40	D				(0.30) 0.50	Firm, dessicated, brown to orange brown slightly gravelly sandy CLAY. Gravel is fine to medium subangular to rounded quartzite. (RIVER TERRACE DEPOSITS)		
0.90	D				(0.50) 1.00	Medium dense orange brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded quartzite. (RIVER TERRACE DEPOSITS)		
1.00-1.45	SPT N=15		2,3/3,4,4,4		(0.60) 1.60	Stiff orange brown mottled grey slightly sandy silty CLAY with occasional subrounded quartzite up to coarse gravel size. (RIVER TERRACE DEPOSITS)		
1.50	HSV 72kPa							
1.50	D							
					(0.40) 2.00	Stiff to very stiff orange brown sandy gravelly CLAY. Gravel is fine to coarse subangular to rounded quartzite. (RIVER TERRACE DEPOSITS)		
2.00-2.39	SPT 50/237		10,14/18,21,11			Complete at 2.00m		
2.00	D							

Remarks
No groundwater encountered
Borehole stable upon completion
Borehole backfilled with arising
Borehole terminated at 2.00m depth due to refusal

Scale (approx)	Logged By
1:25	EA

Figure No. P25-281.WS02

Logged in accordance BS5930:2015+A1-2020

PADDOCK GEO ENGINEERING

Site	Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	WS03

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Percussion Liner Rig			Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Dark grey very gravelly fine to coarse SAND. Gravel is fine to medium subangular to subrounded quartzite, brick and tarmac. (MADE GROUND)		
					0.20			
					(0.20)	Olive grey slightly gravelly slightly organic sandy silty CLAY. Gravel is fine to medium subangular to subrounded quartzite and rare brick and ash fragments. (MADE GROUND)		
					0.40			
0.50	D					Soft becoming firm with depth orange brown to brown slightly sandy silty CLAY with occasional subrounded quartzite up to coarse gravel size. (RIVER TERRACE DEPOSITS)		
0.70	HSV 15.6kPa							
0.90	HSV 67.6kPa							
1.00-1.45	SPT N=12		2,3/3,3,3,3		(1.30)			
1.00	D							
1.50	HSV 62.4kPa							
1.50	D							
					1.70			
1.90	HSV 80.6kPa					Firm to stiff brown mottled orange brown to grey brown slightly sandy silty CLAY. (LONDON CLAY FORMATION)		
2.00-2.45	SPT N=22		2,2/3,5,6,8					
2.50	HSV 130kPa							
2.50	D							
2.90	HSV 127.4kPa							
3.00-3.45	SPT N=34		4,5/6,8,10,10					
					(3.30)			
3.50	HSV 127.4kPa							
3.50	D							
3.90	HSV 130kPa							
4.00-4.45	SPT N=25		4,4/5,7,6,7					
4.50	D							
					5.00			

Remarks
No groundwater encountered
Borehole stable upon completion
Borehole backfilled with arising
Borehole terminated at 5.00m depth

Scale (approx)	Logged By
1:25	EA

Figure No. P25-281.WS03

Logged in accordance BS5930:2015+A1-2020

PADDOCK GEO ENGINEERING

Site	Number
7a The Ridgeway, Woodley, Reading, RG5 3QD	WS04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Percussion Liner Rig			Kevin McManus	P25-281
	Location	**Dates** 26/09/2025	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Dark grey very gravelly fine to coarse SAND. Gravel is fine to medium subangular to subrounded quartzite, brick and tarmac. (MADE GROUND)		
					0.30	Firm orange brown slightly gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded quartzite. (RIVER TERRACE DEPOSITS)		
0.50	D							
1.00-1.45	SPT N=16		3,4/4,4,4,4					
1.00	D				(1.70)			
1.50	D							
2.00-2.45	SPT N=31		6,7/8,7,8,8		2.00	Medium dense orange brown clayey silty fine to medium SAND with occasional grey CLAY pockets. (RIVER TERRACE DEPOSITS)		
2.00	D				(0.80)			
2.50	D							
					2.80	Medium dense to dense yellow brown slightly silty fine to medium SAND. (RIVER TERRACE DEPOSITS)		
					(0.20)			
3.00-3.39	SPT 50/239		10,12/20,22,8		3.00	Complete at 3.00m		

Remarks
No groundwater encountered
Borehole stable upon completion
Borehole backfilled with arising
Borehole terminated at 3.00m depth due to refusal

Scale (approx)	Logged By
1:25	EA

Figure No. P25-281.WS04

Logged in accordance BS5930:2015+A1-2020

Photo of the norther area of the site facing south

Photo of the norther area of the site facing north

PADDOCK GEO ENGINEERING

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

Photo of the southern area of the site facing south

Photo of the southern area of the site facing north

PADDOCK GEO ENGINEERING

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

Photo of the trial pit SA1

Photo SA1 Arisings

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

Photo of the trial pit SA2

Photo SA2 Arisings

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

Photo of WS1

Photo of WS2—File Corrupted

PADDOCK GEO ENGINEERING

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

Photo of WS3

Photo of WS4

PADDOCK GEO ENGINEERING

Client:	**Kevin McManus**
Project No:	**P25-281**
Project Title:	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Date:	**October 2025**

APPENDIX C – GEOTECHNICAL DATA

Geotechnical Laboratory Testing Results

Geochemical Laboratory Testing Results

Paddock Geo Engineering
The Log Cabin
Manor Farm
Whaddon Road
Newton Longville
Milton Keynes
MK17 0AU

t: 01908 271366

e: labs@paddockgeoengineering.co.uk

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

t: 01923 225404
f: 01923 237404
e: info-i2analytical@normecgroup.com

Analytical Report Number : 25-052359

Project / Site name:	7a The Ridgeway Woodley Reading RG5 3QD	**Samples received on:**	29/09/2025
Your job number:	P25-281	**Samples instructed on/ Analysis started on:**	29/09/2025
Your order number:		**Analysis completed by:**	06/10/2025
Report Issue Number:	1	**Report issued on:**	07/10/2025
Samples Analysed:	4 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

Analytical Report Number: 25-052359
Project / Site name: 7a The Ridgeway Woodley Reading RG5 3QD

Lab Sample Number				697462	697463	697464	697465
Sample Reference				WS01-D	WS02-D	WS03-D	WS04-D
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.40	1.50	3.50	2.50
Date Sampled				26/09/2025	26/09/2025	26/09/2025	26/09/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				
Stone Content	%	0.1	NONE	44.4	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.3	14	16	14
Total mass of sample received	kg	0.1	NONE	1.2	1.1	1.2	0.9

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1	6.9	8.1	7.4
Total Sulphate as SO_4	mg/kg	50	MCERTS	300	310	200	130
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	38	160	45	22
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	18.8	78	22.4	10.8

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-052359
Project / Site name: 7a The Ridgeway Woodley Reading RG5 3QD

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
697462	WS01-D	None Supplied	0.4	Brown sand with stones
697463	WS02-D	None Supplied	1.5	Brown clay
697464	WS03-D	None Supplied	3.5	Brown clay
697465	WS04-D	None Supplied	2.5	Brown clay and sand

Analytical Report Number : 25-052359
Project / Site name: 7a The Ridgeway Woodley Reading RG5 3QD

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

Client:

Paddock Geo Engineering

The Log Cabin,
Manor Farm,
Whaddon Road,
Newton Longville,
Milton Keynes,
MK17 0AU

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way,
Stukeley Meadows, Huntingdon,
Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Paddock Geo Engineering

Samples Labelled:

7a The Ridgeway, Woodley, Reading, RG5 3QD

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

Date Received: 02/10/2025

Samples Tested Between: 02/10/2025 **and** 16/10/2025

Remarks:

For the attention of Matt Paddock
Your Reference No: P25-281

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**		
Serial No.	**48746_1**	**Target Date**	16/10/2025
Scheduled By	Paddock Geo Engineering		

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BSEN)	Liquid/Plastic Limits	Wet Sieve Preparation	Particle Size Distribution (BS1377)															Sample Remarks
WS01	D	-	2.00	1	1																	
WS01	D	-	2.50	1	1																	
+WS02+'	D	PSD1	0.80				1															
WS03	D	-	1.50	1	1	1																
WS03	D	-	2.50	1	1																	
WS04	D	-	1.50	1	1																	
Totals				**5**	**5**	**1**	**1**															**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
WS01	2.00	D	-	**15.0**	Mottled bluish grey and orangish brown sandy silty CLAY.	
WS01	2.50	D	-	**15.4**	Mottled bluish grey and yellowish brown sandy silty CLAY with occasional orange staining.	
WS03	1.50	D	-	**16.5**	Firm mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chert.	
WS03	2.50	D	-	**24.1**	Very stiff closely fissured mottled bluish grey and yellowish brown CLAY with rare decayed roots and calcareous aggregations.	
WS04	1.50	D	-	**15.3**	Mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub angular chert.	

Method Of Preparation: BS EN ISO: 17892-1: 2014+A1:2022
Method of Test: BS EN ISO: 17892-1: 2014+A1:2022
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
WS01	2.00	D	-	**15.0**	28	19	9	-0.44	From Natural	0 (A)		28	Mottled bluish grey and orangish brown sandy silty CLAY.	CL
WS01	2.50	D	-	**15.4**	24	17	7	-0.23	From Natural	0 (A)		28	Mottled bluish grey and yellowish brown sandy silty CLAY with occasional orange staining.	CL
WS03	1.50	D	-	**16.5**	32	14	18	0.14	Wet Sieved	17 (M)	19.9*	27	Firm mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chert.	CL
WS03	2.50	D	-	**24.1**	64	25	39	-0.02	From Natural	0 (A)		28	Very stiff closely fissured mottled bluish grey and yellowish brown CLAY with rare decayed roots and calcareous aggregations.	CH
WS04	1.50	D	-	**15.3**	27	17	10	-0.17	From Natural	2 (A)		28	Mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub angular chert.	CL

Method Of Preparation: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

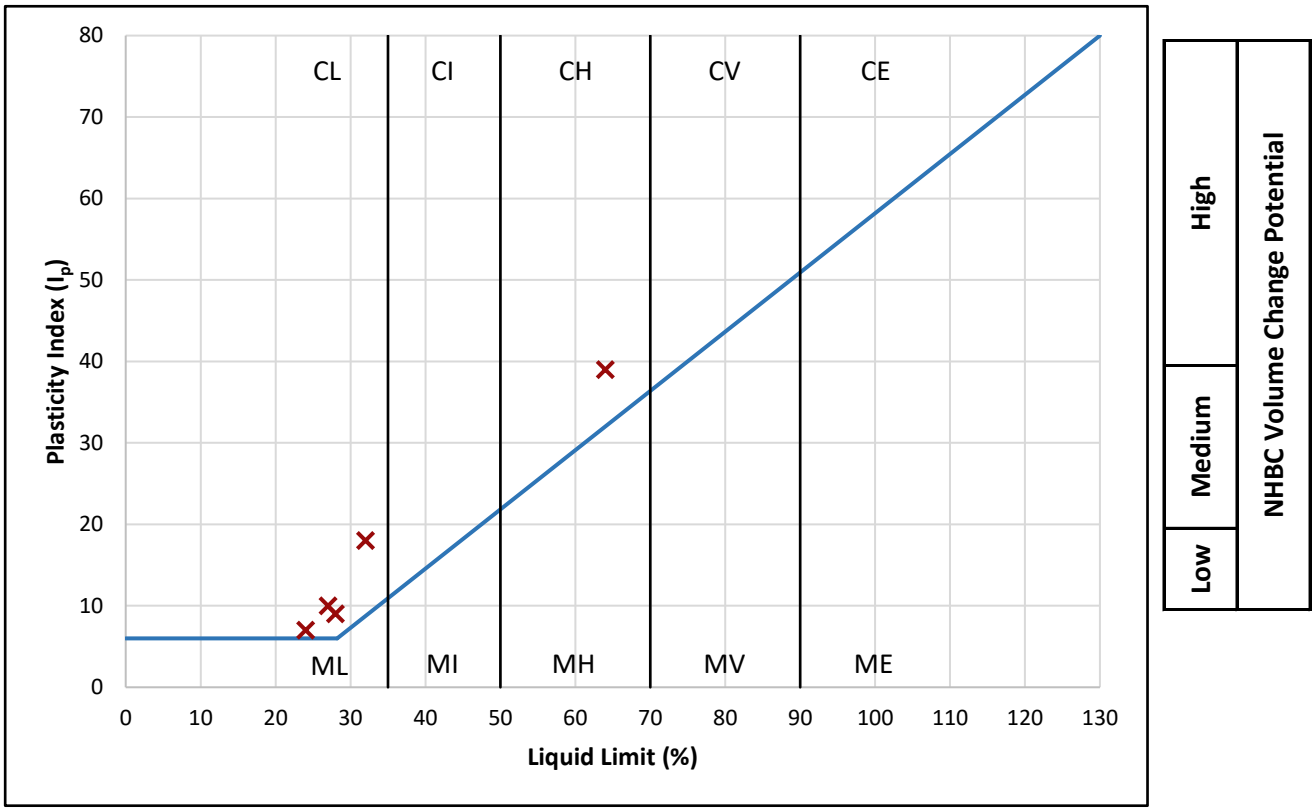
DATE ISSUED: 16/10/2025

UKAS TESTING 0998

Contract	7a The Ridgeway, Woodley, Reading, RG5 3QD
Serial No.	48746_1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS 1377: Part 2: 1990: 4.2
Method of Test:	BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

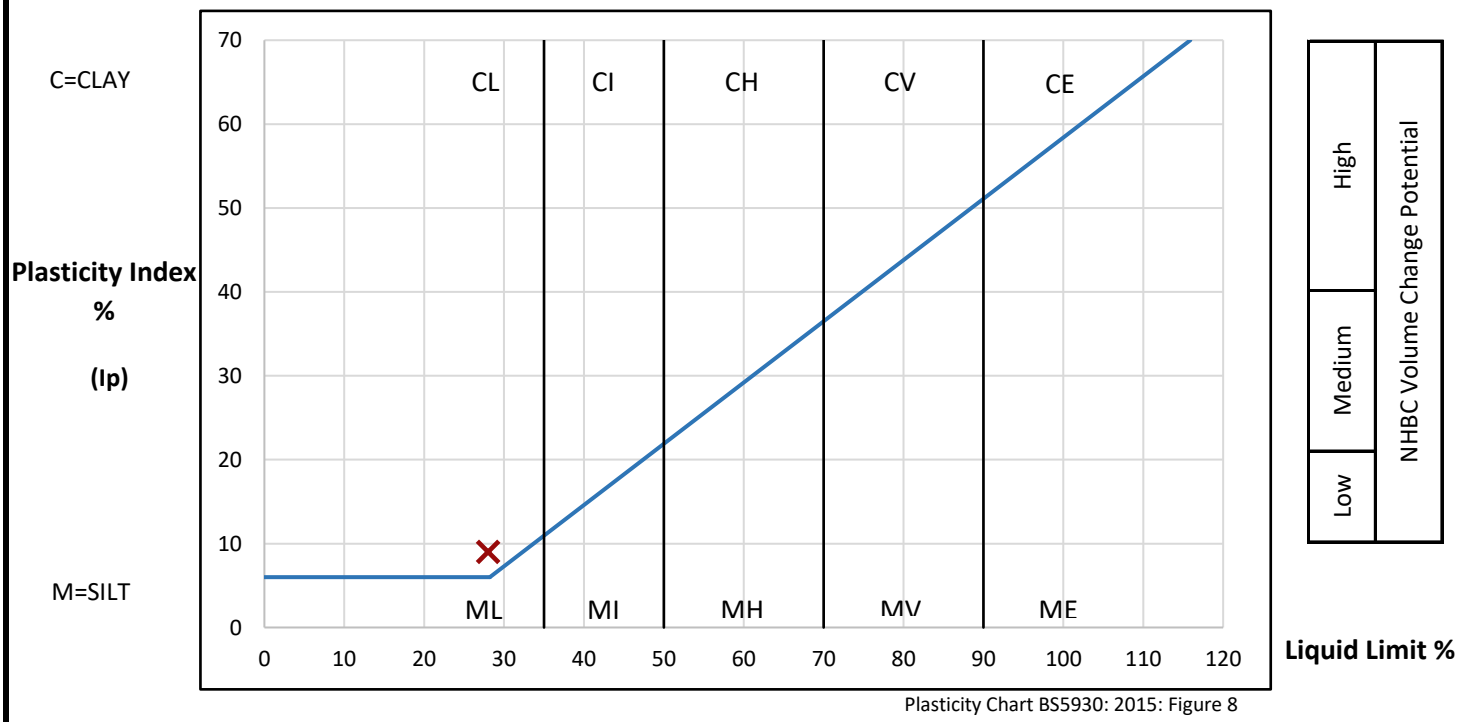
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS01	2.00	D	-	15.0	Mottled bluish grey and orangish brown sandy silty CLAY.	

PREPARATION			Liquid Limit	28 %
Method of preparation		From natural	Plastic Limit	19 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	9 %
Corrected water content for material passing 0.425mm			Liquidity Index	-0.44
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

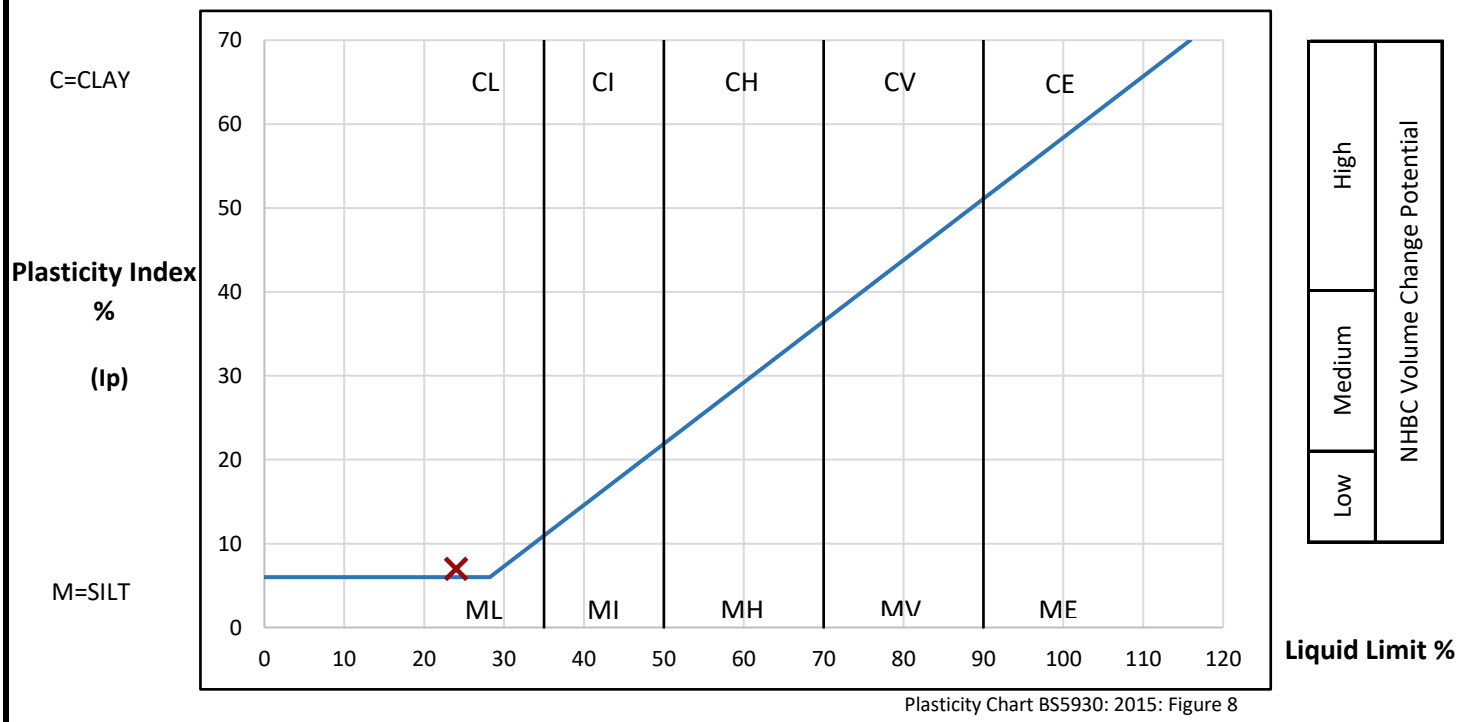
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS01	2.50	D	-	15.4	Mottled bluish grey and yellowish brown sandy silty CLAY with occasional orange staining.	

PREPARATION				Liquid Limit	24 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	7 %
Corrected water content for material passing 0.425mm				Liquidity Index	-0.23
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

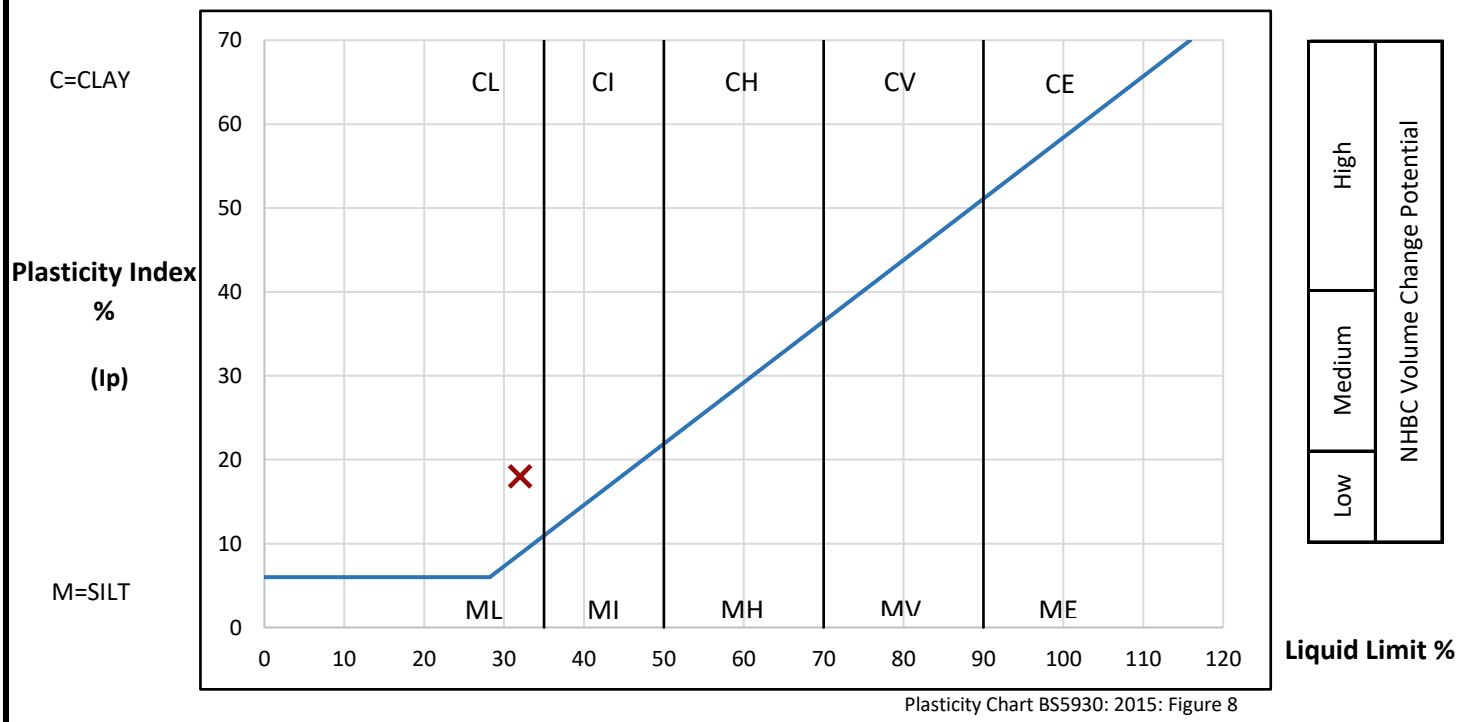
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS03	1.50	D	-	16.5	Firm mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chert.	

PREPARATION				Liquid Limit	32 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	14 %
Sample retained 0.425mm sieve	(Measured)	17 %		Plasticity Index	18 %
Corrected water content for material passing 0.425mm		19.9 %		Liquidity Index	0.14
Sample retained 2mm sieve	(Measured)	12 %		NHBC Modified (I'p)	15 %
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

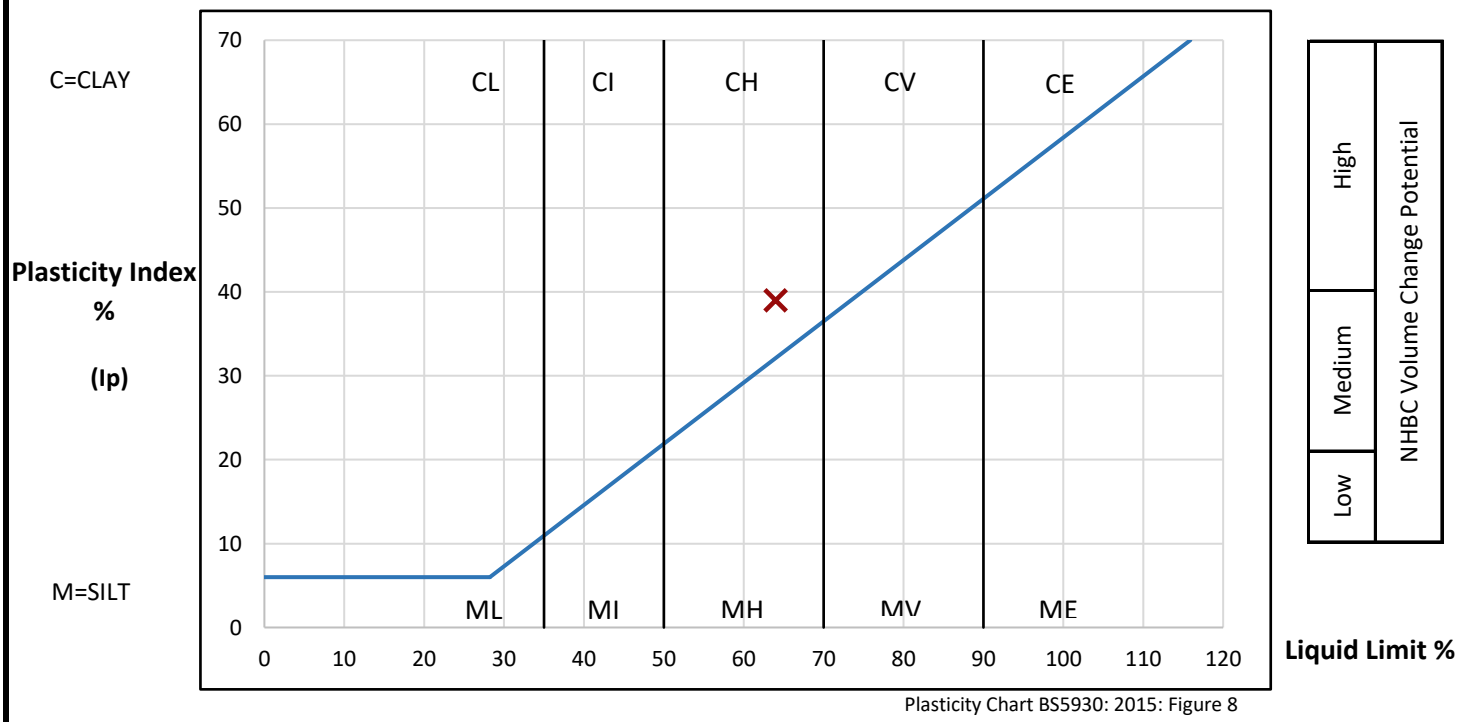
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS03	2.50	D	-	24.1	Very stiff closely fissured mottled bluish grey and yellowish brown CLAY with rare decayed roots and calcareous aggregations.	

PREPARATION				Liquid Limit	64 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	39 %
Corrected water content for material passing 0.425mm				Liquidity Index	-0.02
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

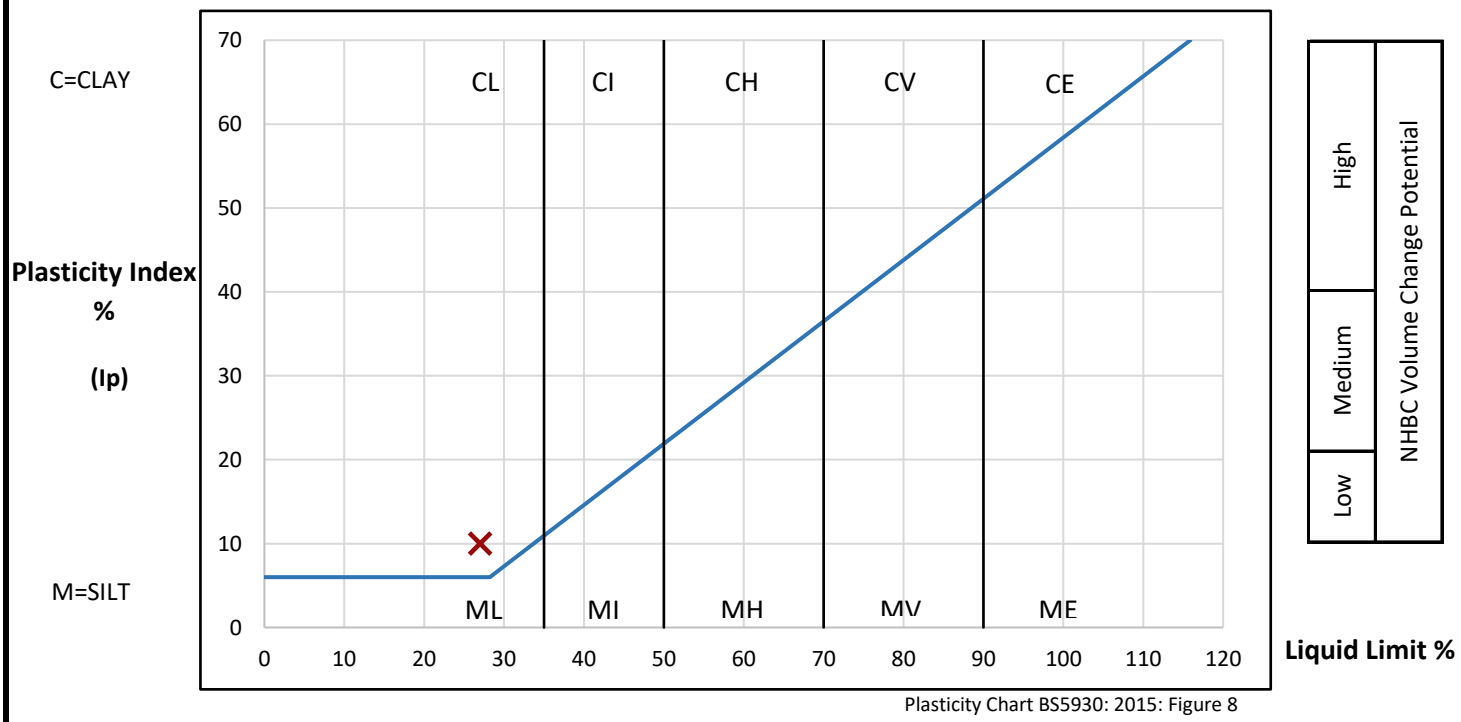
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS04	1.50	D	-	15.3	Mottled bluish grey and orangish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub angular chert.	

PREPARATION				Liquid Limit	27 %
Method of preparation	From natural/gravel picked out by hand			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Approximate)	2 %		Plasticity Index	10 %
Corrected water content for material passing 0.425mm				Liquidity Index	-0.17
Sample retained 2mm sieve	(Approximate)	2 %		NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/10/2025

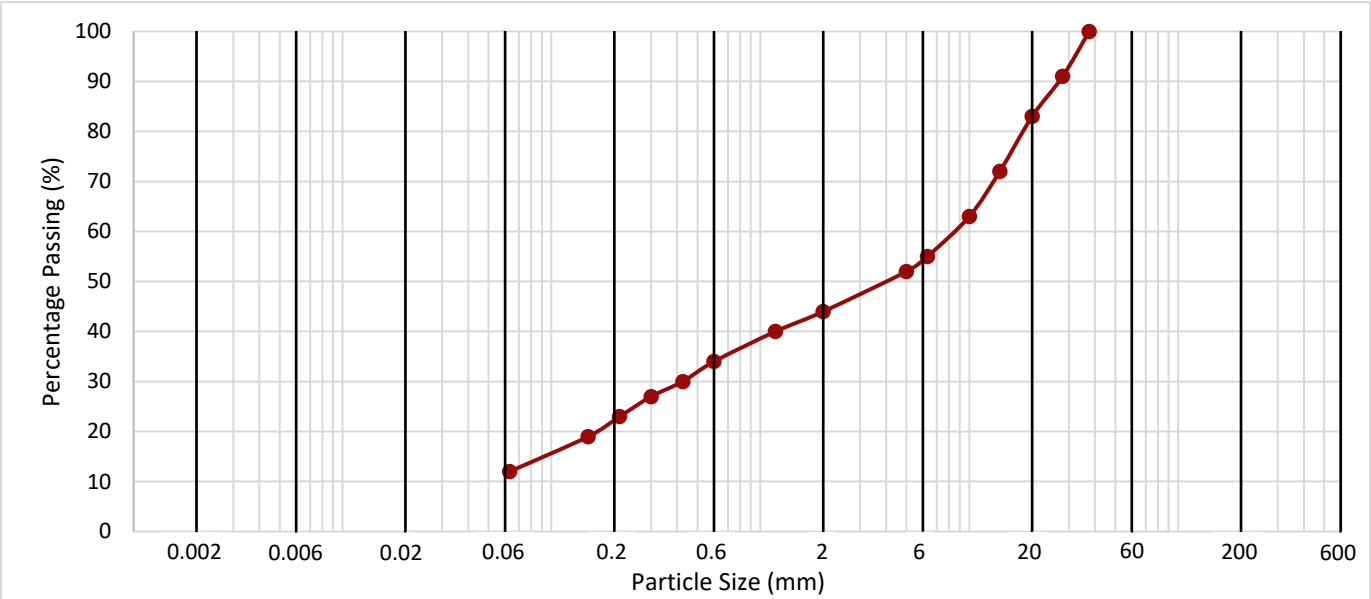
UKAS TESTING 0998

Contract	**7a The Ridgeway, Woodley, Reading, RG5 3QD**
Serial No.	**48746_1**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
WS01+ WS02+ WS04	0.80 - 2.00	D	PSD1	White, black and brown angular to rounded chert slightly clayey silty very sandy GRAVEL. Sand is yellowish brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	44	32
1.18	40	
0.600	34	
0.425	30	
0.300	27	
0.212	23	
0.150	19	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		56
125		
90		
63		
50		
37.5	100	
28	91	
20	83	
14	72	
10	63	
6.3	55	
5	52	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

APPENDIX D – IN-SITU INFILTRATION TEST

BRE365 Infiltration Test Results

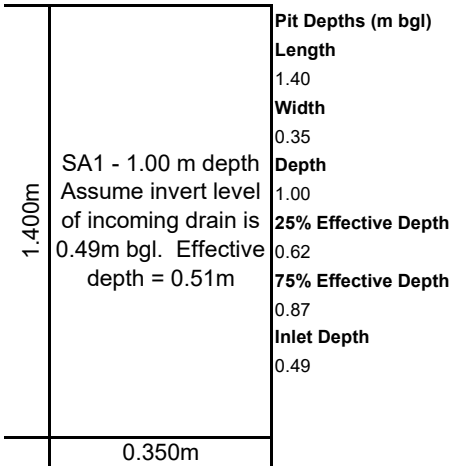
Infiltration Test to BRE365 - SA1 - TEST 1

Field Data

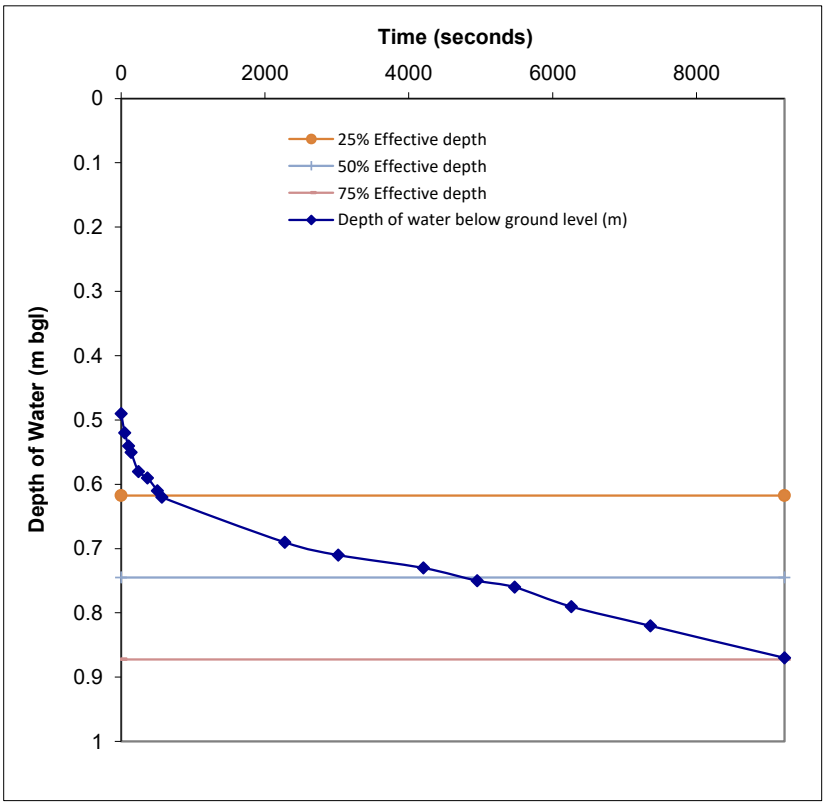
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.49
	0.80	48.00	0.52
	1.70	102.00	0.54
	2.30	138.00	0.55
	4.00	240.00	0.58
	6.10	366.00	0.59
	8.40	504.00	0.61
	9.40	564.00	0.62
	37.90	2274.00	0.69
	50.30	3018.00	0.71
	70.00	4200.00	0.73
	82.50	4950.00	0.75
	91.20	5472.00	0.76
	104.30	6258.00	0.79
	122.60	7356.00	0.82
	153.70	9222.00	0.87

Location: **SA1** **TEST 1**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.49



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.8725-0.6175)
= **0.12495**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.3825**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **8718** secs

f= **1.04E-05** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

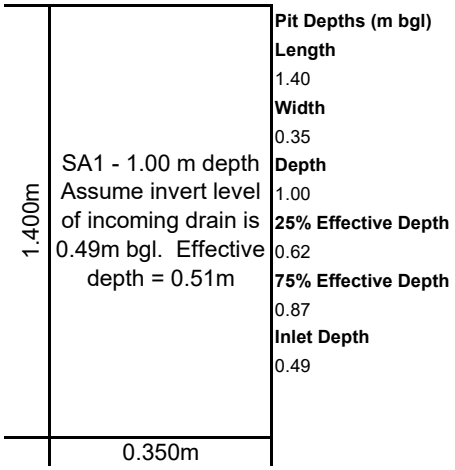
Infiltration Test to BRE365 - SA1 - TEST 2

Field Data

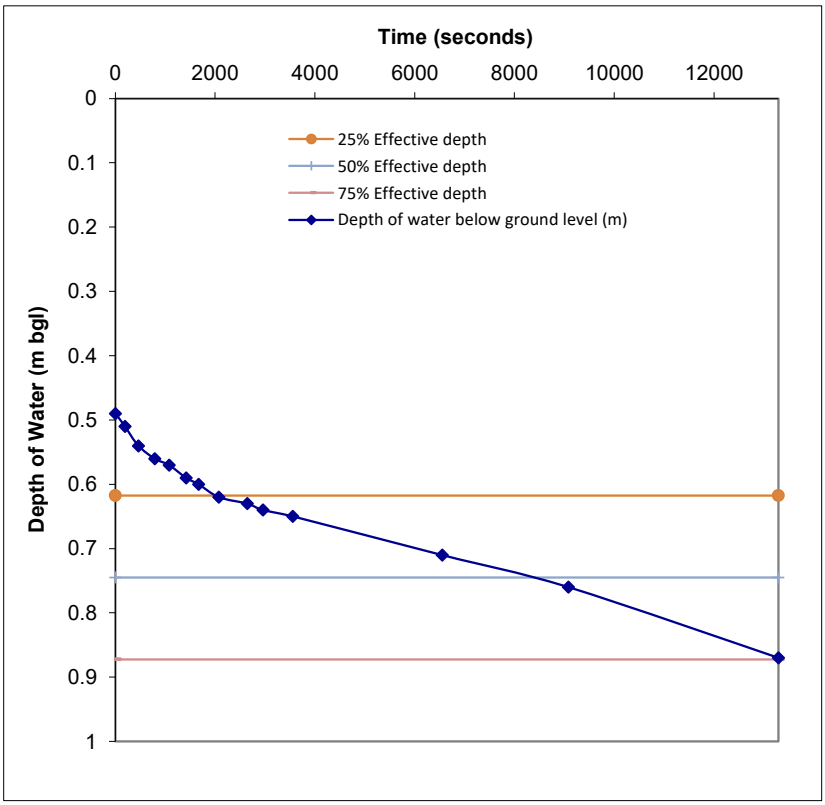
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.49
	3.20	192.00	0.51
	7.70	462.00	0.54
	13.20	792.00	0.56
	18.00	1080.00	0.57
	23.70	1422.00	0.59
	27.80	1668.00	0.60
	34.60	2076.00	0.62
	44.10	2646.00	0.63
	49.30	2958.00	0.64
	59.30	3558.00	0.65
	109.20	6552.00	0.71
	151.30	9078.00	0.76
	221.50	13290.00	0.87

Location: **SA1** **TEST 2**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.49



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.8725-0.6175)
= **0.12495**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.3825**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **11214** secs

f= **8.06E-06** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

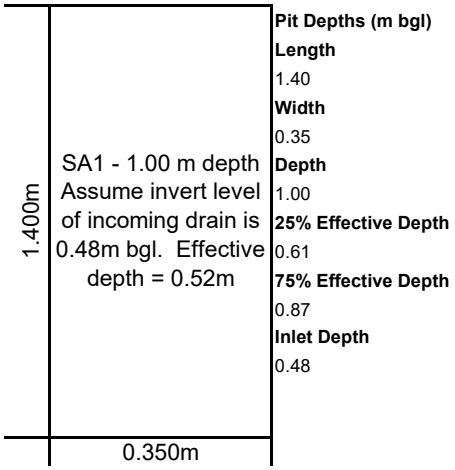
Infiltration Test to BRE365 - SA1 - TEST 3

Field Data

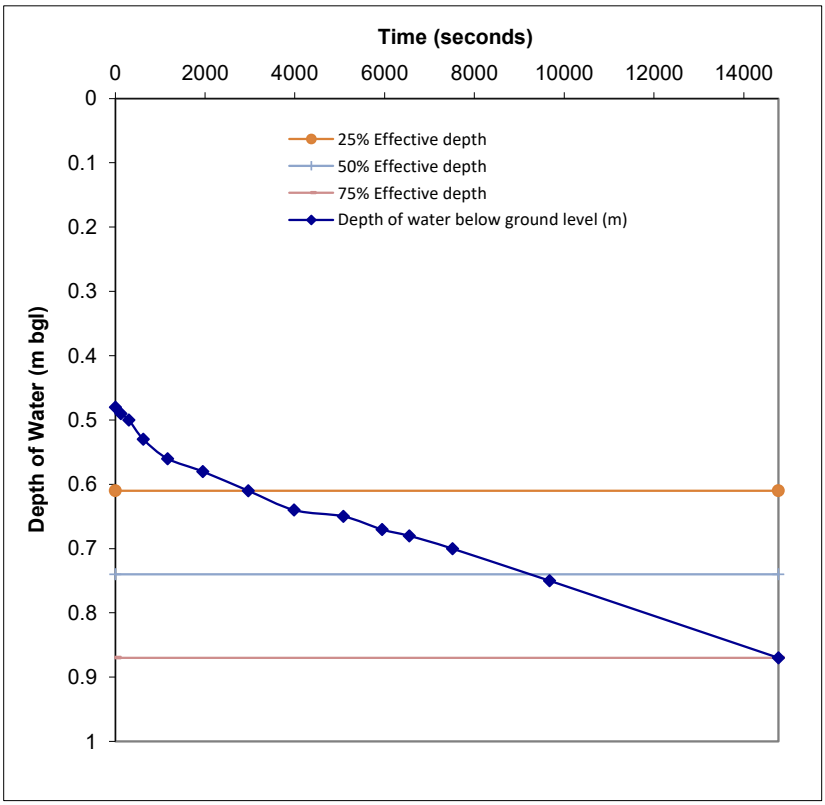
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	0.48
	2.00	120.00	0.49
	5.00	300.00	0.50
	10.40	624.00	0.53
	19.40	1164.00	0.56
	32.50	1950.00	0.58
	49.40	2964.00	0.61
	66.30	3978.00	0.64
	84.70	5082.00	0.65
	99.00	5940.00	0.67
	109.10	6546.00	0.68
	125.20	7512.00	0.70
	161.20	9672.00	0.75
	246.20	14772.00	0.87

Location: **SA1** **TEST 3**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 0.48



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.40x0.35x(0.87-0.61)
= **0.1274**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.40 x) + 2(0.35 x) + (1.40 x 0.35)
= **1.4**

Tp75-25 = the time for water level to fall from 75% - 25% effective depth
= **11808** secs

f= **7.71E-06** m/s

Comment

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

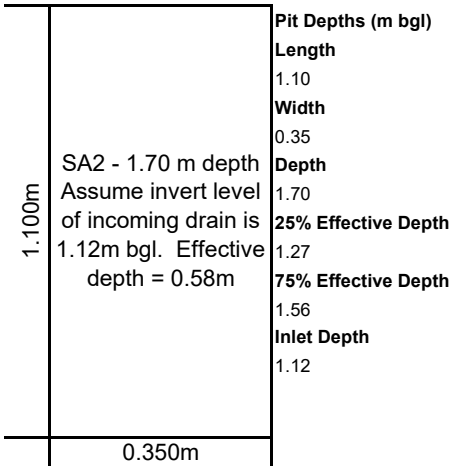
Infiltration Test to BRE365 - SA2 - TEST 1

Field Data

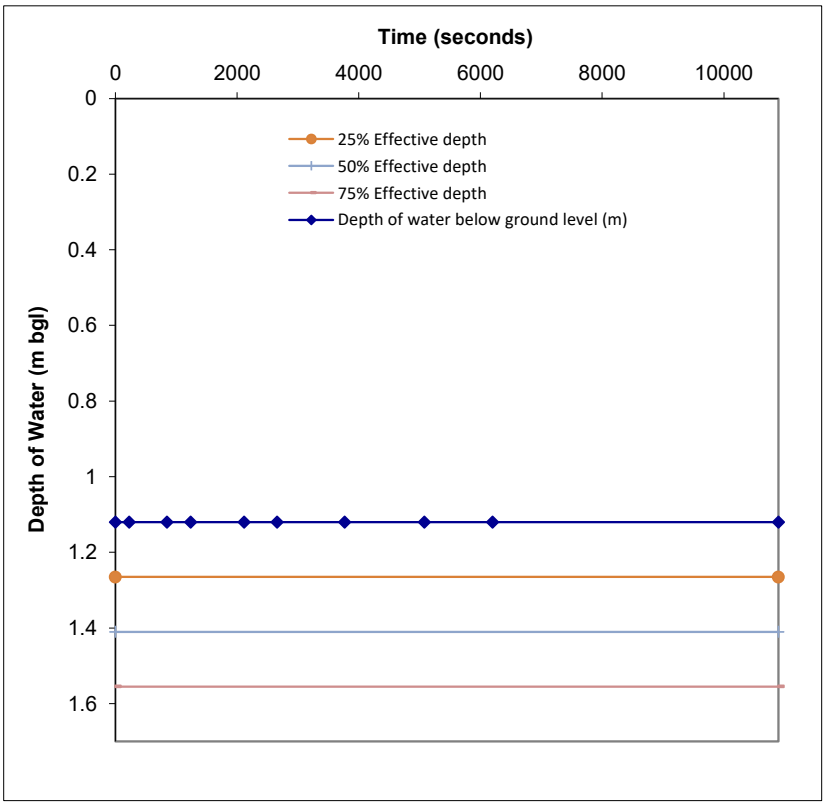
Time	Time Elapsed (min)	Time Elapsed (sec)	Depth of Water below GL (m)
	0.00	0.00	1.12
	3.80	228.00	1.12
	14.10	846.00	1.12
	20.60	1236.00	1.12
	35.30	2118.00	1.12
	44.30	2658.00	1.12
	62.80	3768.00	1.12
	84.60	5076.00	1.12
	103.30	6198.00	1.12
	181.60	10896.00	1.12

Location: **SA2** **TEST 1**
Weather: Cloudy
Engineer: AB
Date: 26/09/2025

Strata Tested RIVER TERRACE DEPOSIT



Invert Level of incoming pipe (m): 1.12



CALCULATION:

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

Where:
Vp75-25 = effective storage volume between 75% and 25% effective depth
1.10x0.35x(1.555-1.265)
= **0.11165**

ap50 = internal area of TP upto 50% effective depth + base of TP
2(1.10 x) + 2(0.35 x) + (1.10 x 0.35)
= **1.226**

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

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

Comment

Infiltration test terminated after c.3hrs due to failure to reach 50% in the allowed time.

PADDOCK GEO ENGINEERING

Client: Kevin McManus
Project No: P25-281
Project: 7a The Ridgeway, Woodley, Reading, RG5 3QD

APPENDIX E – In-situ Geotechnical Assessment Data

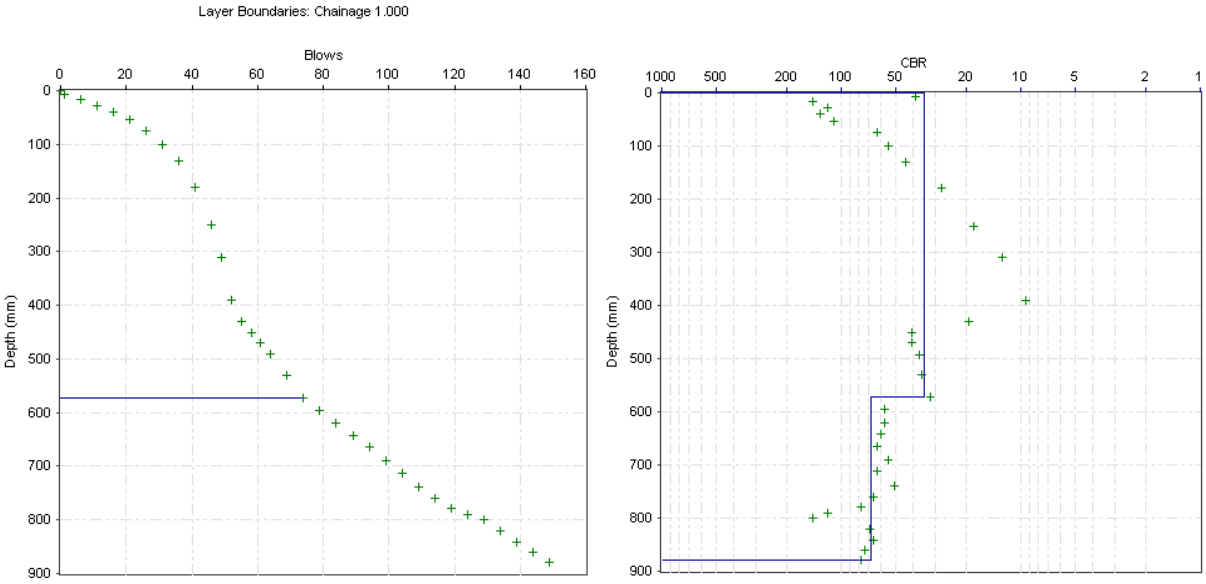
Dynamic Cone Penetrometer Results

UK DCP V3.1

DCP Layer Strength Analysis Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	1.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	60	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart

CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	7.73	35	572	572
2	4.08	68	306	878

CBR Relationship:

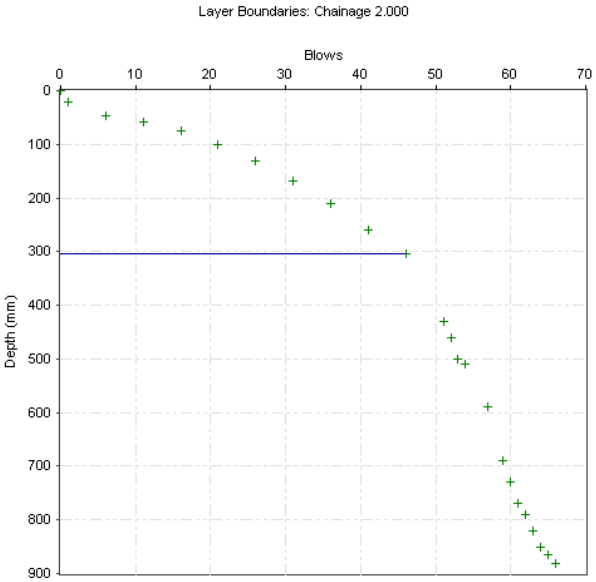
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

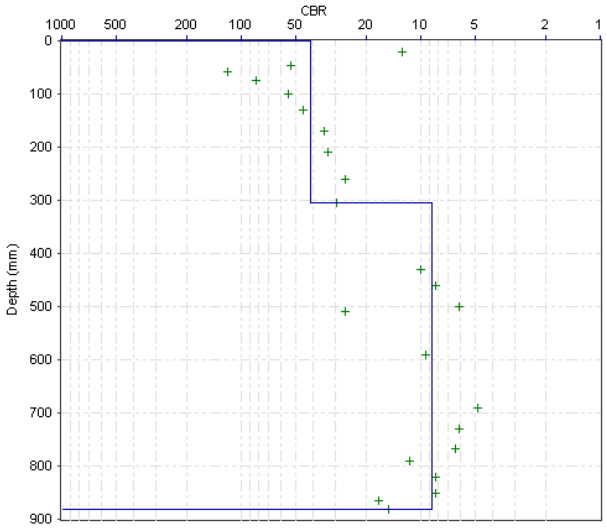
DCP Layer Strength Analysis Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	2.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	60	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	6.63	41	305	305
2	28.85	9	577	882

CBR Relationship:

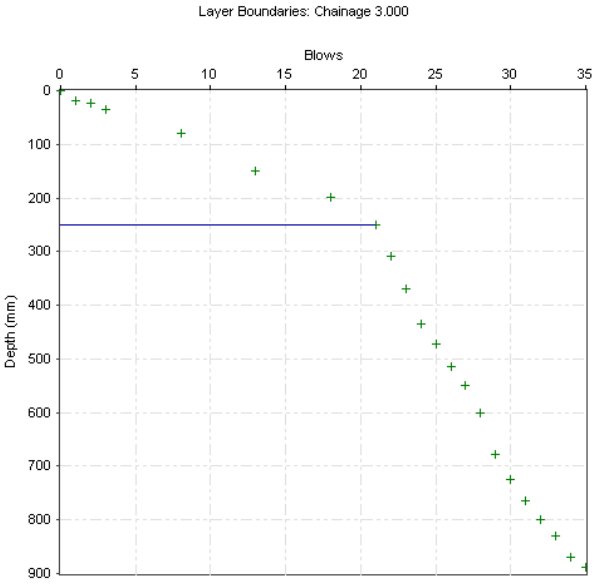
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

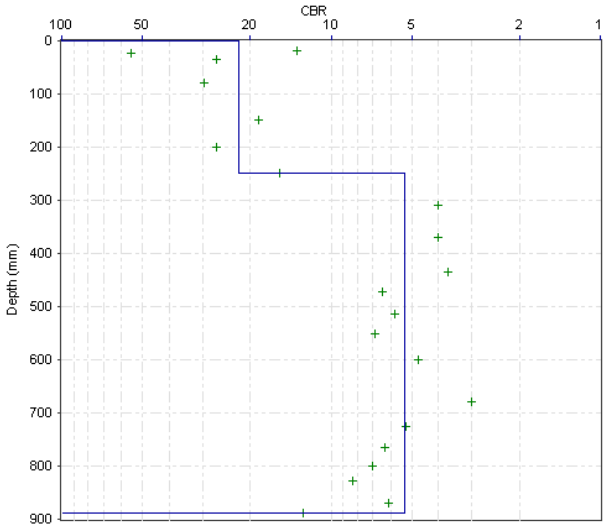
DCP Layer Strength Analysis Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	3.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	61	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	11.86	22	249	249
2	45.71	5	640	889

CBR Relationship:

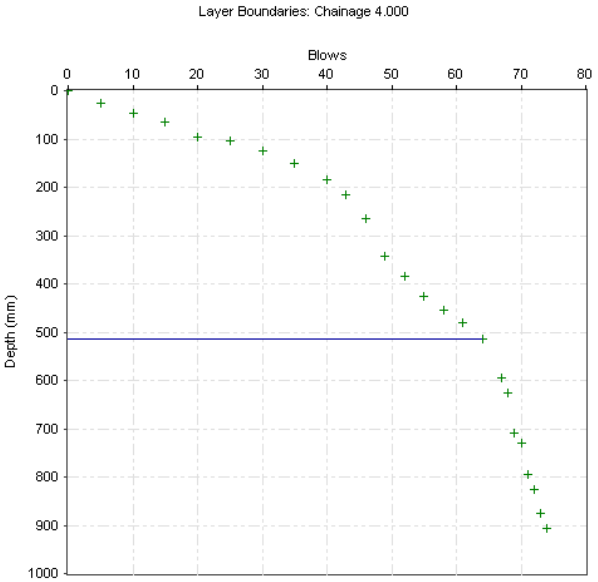
TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

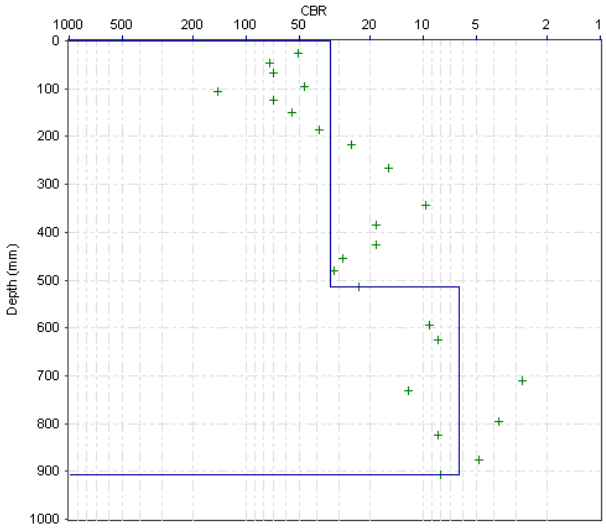
DCP Layer Strength Analysis Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	4.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	45	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	8.03	33	514	514
2	39.20	6	392	906

CBR Relationship:

TRL equation: $\log_{10}(CBR) = 2.48 - 1.057 \times \log_{10}(Strength)$

Report produced by .....

Penetration Data Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	1.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	60	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	60	0.00	26	5	109	799	5.40
2	1	1	67	7.00	27	5	114	820	4.20
3	5	6	77	2.00	28	5	119	838	3.60
4	5	11	89	2.40	29	5	124	850	2.40
5	5	16	100	2.20	30	5	129	860	2.00
6	5	21	113	2.60	31	5	134	880	4.00
7	5	26	135	4.40	32	5	139	901	4.20
8	5	31	160	5.00	33	5	144	920	3.80
9	5	36	191	6.20	34	5	149	938	3.60
10	5	41	239	9.60					
11	5	46	310	14.20					
12	3	49	370	20.00					
13	3	52	450	26.67					
14	3	55	490	13.33					
15	3	58	510	6.67					
16	3	61	530	6.67					
17	3	64	552	7.33					
18	5	69	590	7.60					
19	5	74	632	8.40					
20	5	79	656	4.80					
21	5	84	680	4.80					
22	5	89	703	4.60					
23	5	94	725	4.40					
24	5	99	750	5.00					
25	5	104	772	4.40					

Penetration Data Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	2.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	60	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	60	0.00					
2	1	1	80	20.00					
3	5	6	106	5.20					
4	5	11	118	2.40					
5	5	16	135	3.40					
6	5	21	160	5.00					
7	5	26	190	6.00					
8	5	31	229	7.80					
9	5	36	270	8.20					
10	5	41	320	10.00					
11	5	46	365	9.00					
12	5	51	490	25.00					
13	1	52	520	30.00					
14	1	53	560	40.00					
15	1	54	570	10.00					
16	3	57	650	26.67					
17	2	59	750	50.00					
18	1	60	790	40.00					
19	1	61	828	38.00					
20	1	62	850	22.00					
21	1	63	880	30.00					
22	1	64	910	30.00					
23	1	65	925	15.00					
24	1	66	942	17.00					

Penetration Data Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	3.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	61	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	61	0.00					
2	1	1	80	19.00					
3	1	2	85	5.00					
4	1	3	95	10.00					
5	5	8	140	9.00					
6	5	13	210	14.00					
7	5	18	260	10.00					
8	3	21	310	16.67					
9	1	22	370	60.00					
10	1	23	430	60.00					
11	1	24	495	65.00					
12	1	25	533	38.00					
13	1	26	575	42.00					
14	1	27	611	36.00					
15	1	28	662	51.00					
16	1	29	740	78.00					
17	1	30	786	46.00					
18	1	31	825	39.00					
19	1	32	860	35.00					
20	1	33	890	30.00					
21	1	34	930	40.00					
22	1	35	950	20.00					

Penetration Data Report

Project Name: P25-281 - 7a The Ridgeway, Woodley, Reading, RG5 3QD

Chainage (km):	4.000	Surface Type:	Unpaved
Direction:		Thickness (mm):	0
Location/Offset:	Lay-by / other	Base Type:	
Cone Angle:	60 degrees	Thickness (mm):	
Zero Error (mm):	45	Surface Moisture:	Moderate
Test Date:	26/09/2025	Moisture adjustment factor:	Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	45	0.00					
2	5	5	72	5.40					
3	5	10	91	3.80					
4	5	15	111	4.00					
5	5	20	140	5.80					
6	5	25	150	2.00					
7	5	30	170	4.00					
8	5	35	195	5.00					
9	5	40	230	7.00					
10	3	43	261	10.33					
11	3	46	310	16.33					
12	3	49	388	26.00					
13	3	52	430	14.00					
14	3	55	472	14.00					
15	3	58	500	9.33					
16	3	61	525	8.33					
17	3	64	559	11.33					
18	3	67	640	27.00					
19	1	68	670	30.00					
20	1	69	755	85.00					
21	1	70	776	21.00					
22	1	71	840	64.00					
23	1	72	870	30.00					
24	1	73	920	50.00					
25	1	74	951	31.00					

Appendix D - Drainage Layout

DESIGNER NOTE
Surface Water system designed for a 1 in 100 year event plus an allowance of 40% for climate change.
Impermeable areas have had an additional 10% added for urban creep.
A site specific soakage rate of 7.71 x 10-6/ m/s has been used for the soakaway, based on the worst case result from testing to BRE365 by Paddock Geo Engineering on 26/09/2025.

CDM RESIDUAL RISK ITEM
Overhead cables within site area.

CDM RESIDUAL RISK ITEM
Works within public Highway.
Danger to site personnel and general public

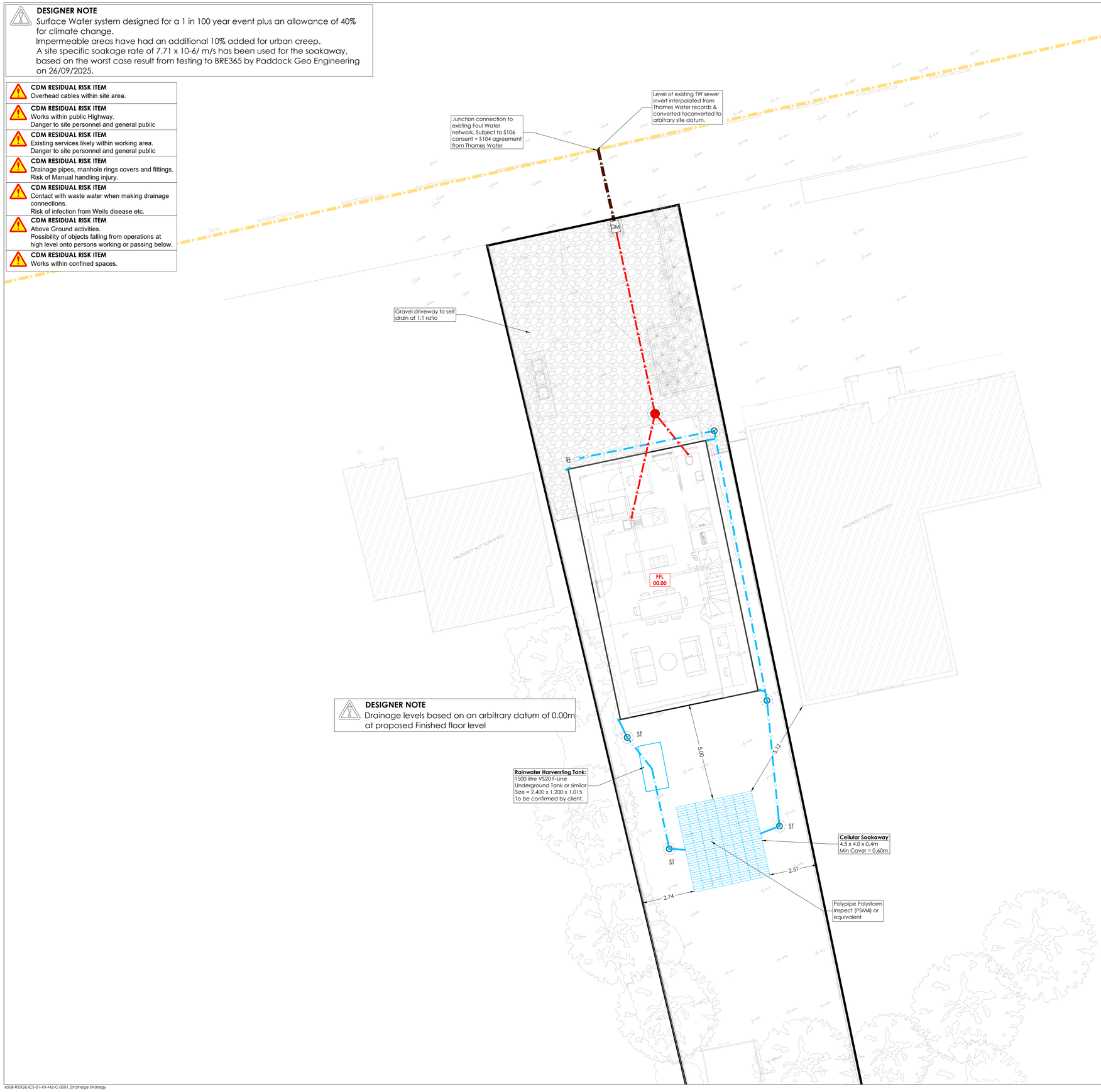
CDM RESIDUAL RISK ITEM
Existing services likely within working area.
Danger to site personnel and general public

CDM RESIDUAL RISK ITEM
Drainage pipes, manhole rings covers and fittings.
Risk of Manual handling injury.

CDM RESIDUAL RISK ITEM
Contact with waste water when making drainage connections.
Risk of infection from Weils disease etc.

CDM RESIDUAL RISK ITEM
Above Ground activities.
Possibility of objects falling from operations at high level onto persons working or passing below.

CDM RESIDUAL RISK ITEM
Works within confined spaces.



DESIGNER NOTE
Drainage levels based on an arbitrary datum of 0.00m at proposed Finished floor level

DESIGNERS CDM NOTE - RESIDUAL RISKS IDENTIFIED

The design Engineer(s) have analysed this design as the scheme has been developed, in order to identify if there are any significant residual risk hazards (i.e. unusual, unexpected, abnormal or difficult).

Residual risks **HAVE** been identified and are therefore shown on this drawing. These risks have not been possible to remove by design.

This statement assumes that a competent Contractor with the appropriate qualified staff will be employed for the works, and that they will be familiar with site wide construction risks and hazards that they can reasonably be expected to encounter as part of their work.

BURIED UTILITIES RISK NOTE

- Buried utilities are present on and in the vicinity of the site.
- The Contractor must satisfy themselves that they have seen utility returns for the area and that appropriate Risk Assessment Method Statement (RAMS) are in place and implemented to ensure that buried and/or overhead services are located prior to any works taking place.
- Any RAMS shall address safe procedures for protection and working in the proximity of services.

Construction Note
It is essential that new drainage associated with the development is laid from the outfall(s) into the site. This is essential to avoid unforeseen obstructions where encountered (such as services). If the drainage is laid from the site out to the outfall it can result in significant abortive works to relay and overcome such obstructions.

Location of Public Sewers have been taken from record drawings which should be fully substantiated by the contractor prior to commencing works on site

All manholes covers located within carriageways shall have no slip covers to prevent motorcycles/cycles losing control

Manhole schedules - Invert level shown related to the deepest pipe within the chamber

All adoptable drainage works to follow the requirements of Water UK - Design and Construction Guide (DCG).

Drainage Strategy

Foul Drainage

Foul water flows are to drain to the existing foul sewer in The Ridgeway to the north of the site via gravity, subject to S106 consent & confirmation of capacity by Thames Water.

Surface Water Drainage

Surface water falling onto the roof is to drain to the ground via a soakaway to the rear of the property.

Run off onto the gravel driveway will self drain at a 1:1 ratio replicating greenfield.

Rainwater harvesting will be utilised to the rear in to capture roof run-off in accordance with the SuDs hierarchy.

NOTES

1. All dimensions and levels are in metres unless otherwise noted
2. This drawing is to be read in conjunction with the relevant Architect's/Engineer's drawings, specifications and CDM documentation
3. This drawing has been produced electronically and may have been photo reduced or enlarged when copied. Work to figured dimensions only (DO NOT SCALE - EXCEPT FOR PLANNING PURPOSES). All dimensions to be checked on site. Any errors or omissions to be reported to the engineer immediately.
4. This drawing contains coloured lines / information that may not be clear if reproduced in black and white.
5. Digital copies of this plan can only be considered accurate if supplied directly by Infrastruct CS Ltd.

Drainage Key
Sewers

	Foul water drain (private/non adoptable)
	Surface water drain (private/non adoptable)
	Foul water sewer (Adoptable)
	Existing foul water sewer (Adopted)

Chamber Key
FW/SW

	PPIC - 475mmØ*
DM DM	Adoptable demarcation manhole within 1m of boundary

* General note
(Refer to standard details & longitudinal sections for chamber sizes. Size may need to increase dependant on number of incoming pipes/size of incoming pipes)

RE	Surface water rodding eye
	Rain water down pipe (roddable access)
	Soil vent pipe/soil stack
ST	Silt Trap (ST) with removable silt bucket
fg	Floor gully (trapped)
	Cellular storage (refer to drawing for sizes)
FFL XX.XX	Finished Floor Level (FFL)
	Self draining gravel

REV	DRAWN	CHECK	REVISION COMMENTS	ISSUE DATE
P02	FM	APL	Rainwater harvesting added	24/10/25
P01	FM	APL	Initial issue	13/10/25

DRAWING TITLE: Drainage Strategy
SHEET NO.: 1/1

PROJECT:
No.7a The Ridgeway
Woodley
Reading, RG5 3QD

CLIENT: Gresford Architects Ltd

Infrastruct CS Ltd

SCALE @ A1: 1:100 (0m, 2.5m, 5.0m)
ENGINEER: APL
DRAFT: NJ
APPROVED: MBD
PROJECT NUMBER: 6508
STATUS: S2
ISSUE PURPOSE: INFORMATION

PROJECT	ORIGIN	PHASE	LEVEL	TYPE	ROLE	NO.	REVISION
RIDGE	ICS	01	XX	DR	C	0001	P02

The Stables, High Cogges, Witney, OX28 4HA. Tel: 01993 779709. info@infrastruct.co.uk

6508-RIDGE-ICS-01-XX-M2-C-0001_Drainage Strategy

Appendix E - Drainage Calculations

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Inflows Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

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Catchment Area (2)

Type : Catchment Area

Area (ha)	0.01

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.950
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by:	Checked by:	Approved By:
	FM	APL	AJG
Report Details: Type: Junctions Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
S1	Manhole	476534.598	172031.363	-0.150	1.090	-1.240	Circular	0.450

Name	Lock
S1	None

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
S1	Inlet (1)	Catchment Area (2)	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
S1	Outlet	Pipe	Free Discharge

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by:	Checked by:	Approved By:
	FM	APL	AJG
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

Cellular Storage

Type : Cellular Storage

Dimensions

Exceedance Level (m)	-0.900
Depth (m)	0.400
Base Level (m)	-1.300
Number of Crates Long	9
Number of Crates Wide	4
Number of Crates High	1
Porosity (%)	100
Crate Length (m)	0.5
Crate Width (m)	1
Crate Height (m)	0.4
Total Volume (m³)	7.200

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.0278
Side Infiltration Rate (m/hr)	0.0278
Safety Factor	2.0

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area (2)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.7	0.738

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area (2)	FSR: 30 years: +0 %: 15 mins: Summer	0.01	4.2	1.800

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area (2)	FSR: 100 years: +0 %: 15 mins: Summer	0.01	5.4	2.337

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area (2)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.5	3.310

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 1 years: +0 %: 15 mins: Summer	-0.150	-1.240	-1.211	0.029	1.7	0.005	0.000	1.7	0.736	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by:	Checked by:	Approved By:
	FM	APL	AJG
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 2 years: +0 %: 15 mins: Summer	-0.150	-1.240	-1.206	0.034	2.2	0.005	0.000	2.1	0.952	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 30 years: +0 %: 15 mins: Summer	-0.150	-1.240	-1.191	0.049	4.2	0.008	0.000	4.0	1.766	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 100 years: +0 %: 15 mins: Summer	-0.150	-1.240	-1.179	0.061	5.4	0.010	0.000	5.2	2.273	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 100 years: +40 %: 15 mins: Summer	-0.150	-1.240	-1.127	0.113	7.5	0.018	0.000	7.2	3.201	Surcharged

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 1 years: +0 %: 120 mins: Winter	-1.244	-1.244	0.056	0.056	0.5	0.999	0.000	0.0	0.000		86.125	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 2 years: +0 %: 120 mins: Winter	-1.224	-1.224	0.076	0.076	0.6	1.368	0.000	0.0	0.000		81.000	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 30 years: +0 %: 240 mins: Winter	-1.132	-1.132	0.168	0.168	0.7	3.030	0.000	0.0	0.000		57.923	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 100 years: +0 %: 240 mins: Winter	-1.065	-1.065	0.235	0.235	0.9	4.230	0.000	0.0	0.000	135	41.250	OK

Project:	Date:		
6508 - 7a The Ridgeway Woodley Reading, RG5 3QD	08/09/2025		
	Designed by: FM	Checked by: APL	Approved By: AJG
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: The Stables High Cogges Witney, OX29 6UN		

Infrastruct CS Ltd

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 100 years: +40 %: 360 mins: Winter	-0.947	-0.947	0.353	0.353	0.9	6.357	0.000	0.0	0.000		11.714	OK