



Report
Title:

Geo-Environmental Site Investigation

Project
Name:

Land North of Swindon Road, Royal Wootton Bassett



Report
Reference:

BRD4201-OR2-B

Date:

November 2025

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REPORT CONTROL SHEET

REPORT TITLE	GEO-ENVIRONMENTAL SITE INVESTIGATION
PROJECT	LAND NORTH OF SWINDON ROAD, ROYAL WOOTTON BASSETT
CLIENT	GLEESON LAND

REPORT REFERENCE	ISSUE DETAIL	DATE	PREPARED BY	CHECKED BY
BRD4201-OR2-A	First Issue: Gas monitoring on going.	09/10/2025	I Hibberd & A Leon	B Devonshire
BRD4201-OR2-B	Second Issue.	17/11/2025	G O'Keefe	B Devonshire

BRD Environmental Limited

Geotechnical and Environmental Services

- Ground Investigation
- Japanese Knotweed Removal
- Soil, Water and Gas Testing
- Contamination Assessment
- Geotechnical Advice
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REPORT LAYOUT

This report is divided into the following four sections: Summary Report, Technical Report, Supporting Information and Appendices.

SUMMARY REPORT

This expanded executive summary provides the main findings of the work undertaken in brief non-technical language. This section provides an overview of the key outcomes for the benefit of non-specialists and concludes with the main recommendations for any further work required. This section should only be relied upon in the context of the whole report and the detailed within the Technical Report should be referred to with respect to any design decisions.

TECHNICAL REPORT

The main report section is intended to provide the technical detail of the works completed and meet the information required by current guidance and practice. The Technical Report is written in a language that, in part, assumes knowledge of the subject matter so that it can be written in as concise a form as possible. Its primary audience is clients, peers, regulators and other professionals in related disciplines.

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This section of the report provides background details of a generic nature together with specific technical approaches adopted by BRD and details of the guidance documents that are commonly referenced in the report. The section also includes explanations of technical terms to assist non-specialist readers in understanding the Technical Report. It should be noted that not all the information within this section is necessarily applicable to this specific report.	

APPENDICES

The final section of the report presents the factual data collected and employed as part of the preparation of the report.

APPENDIX 1 SITE PLANS

Site Location Plan	Ref. BRD4201-OP3-A
Proposed Development Layout	'Illustrative Masterplan' Stantec, ref. STN-GEN-SW-DR- MP-06 Rev. F, date: 14.10.25
Exploratory Hole Location Plan	Ref. BRD4201-OD1-A
Revised Conceptual Site Model	Ref. BRD4201-OP7-B

APPENDIX 2 EXPLORATORY HOLE & MONITORING RECORDS

Logs of trial pits.	Ref. TP01-TP17
Photographic records of trial pits.	Ref. BRD4201-OP6-A
Logs of hand dug pit inspection.	Ref. HD01 to HD05
Logs of boreholes.	Ref. WS01-WS10
BRE365 soakage test records.	3 x A4 pages
Gas monitoring records.	6 x A4 pages
Groundwater monitoring records.	1 x A4 pages

APPENDIX 3 LABORATORY TEST RESULTS

DETS report 25-08352.1, 25-07835.1 & 25-07834.1	30 x A4 pages
SPT report 48472_1	18 x A4 pages



SUMMARY REPORT- GENERAL INFORMATION

SUBJECT	COMMENTS
CURRENT SITE CONDITION	The site currently comprises a recently harvested agricultural field. The site is bordered by hedgerows to the north, east and south with a fence on the western boundary. A small derelict cow shed is located adjacent to the site entrance off Swindon Road.
PROPOSED DEVELOPMENT	Outline planning application with all matters reserved except for access for up to 135 dwellings, the creation of new vehicular access with footways from Swindon Road, provision of informal and formal open space, together with associated highways, landscape, earth works and level changes, foul and surface water drainage facilities, utilities provision and other associated and necessary infrastructure. The scheduled monument / mound in the north of the site will be retained within a proposed open space area. No development works of any nature are proposed around this feature.
HISTORICAL SUMMARY	The site has comprised an agricultural field throughout its history. Two small agricultural buildings were constructed in the south of the site around the 1960s. One of these has been demolished and one remains. Two ponds were located either side of the northwestern boundary. These have either been infilled or have been re-graded and ploughed into the existing field.
PUBLISHED GEOLOGY	The site is shown to be devoid of superficial deposits. The shallowest bedrock unit is shown to be the Kimmeridge Clay Formation in the centre of the site and the Amphill Clay Formation in the east and west of the site. Some limestone beds of the Kimmeridge Clay Formation are shown in the north of the site at the higher elevations.
ACTUAL GROUND CONDITIONS	The investigation works proved a thin layer of topsoil to be present over natural clay soils across the majority of the site with no clear distinction between the Kimmeridge and Amphill Clay Formations. Localised areas of shallow Made Ground were encountered near the site entrance in the location of former buildings and near the northwest boundary evidence of an infilled pond was identified. Groundwater was not encountered during the investigation works.
HYDROGEOLOGY	The majority of the underlying bedrock geology is designated as Unproductive Strata. The small outcrop of the limestone beds in the north are designated as a Secondary A Aquifer, however, this area coincides with the scheduled monument and is outside of the proposed development area. The site is not located within a groundwater Source Protection Zone.
HYDROLOGY	The closest water feature to the site are two ponds, one 80m to the north of the site and the other 80m to the south. The site is not in an area indicated to be at risk of flooding.
PREVIOUS GROUND REPORTS	BRD is not aware of any previous ground investigations having been conducted at the site. However, BRD has undertaken geo-environmental desk study research and this has been reported separately.

SUMMARY REPORT - GEOTECHNICAL

SUBJECT	COMMENTS
EXCAVATIONS	It should be possible to forward excavations employing normal equipment. The use of hydraulic breaking equipment will be required for forwarding some excavations at the site (barn foundations removal). Specific groundwater control unlikely to be required at this site. Limited groundwater control in the form of pumping from sumps is likely to be required.
SLOPE STABILITY	The slopes across the site are relatively shallow and show no obvious signs of instability. Any change in levels required by the development should be cut to a shallow slope or should be supported by appropriately designed and constructed retaining walls.
EARTHWORKS	It is likely that earthworks will be required on site to level the site or to provide development levels suitable for drainage falls as well as for the attenuation pond construction.
PAVEMENT DESIGN	A preliminary design California Bearing Ratio (CBR) of 3% has been recommended.
SUB-SURFACE CONCRETE	Design Sulphate Class of DS-4 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-3s applies.
SOAKAWAYS	Site is not suitable for surface water disposal to soakaways or other forms of infiltration device.
FOUNDATIONS	
LIKELY FOUNDATION TYPE	Shallow strip or deeper trench fill footings bearing upon the clay soils of the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated). Foundation designs must consider the impact of existing boundary hedges and trees. Where foundations fall within their influence zones, they will likely need localised deepening and may require to be piled.
VOLUME CHANGE POTENTIAL	Medium i.e. moderate swelling or shrinking with moisture content changes.
ESTIMATED FOUNDATION DEPTHS	The minimum footing depth required is 0.90m, but 1.25m where required to allow for restricted new tree planting. Pile lengths to be determined by specialist piling contractor.
FOUNDATION HEAVE PROTECTION	Will be required for those plots located in close proximity to the boundary trees/hedges.

SUMMARY REPORT - CONTAMINATION ISSUES

SUBJECT	COMMENTS
SOIL RISKS TO HUMAN HEALTH	No unacceptable contamination risks in respect of human health have been identified by this investigation. Whilst a marginally elevated concentration of lead was recorded, it is in area of the site proposed for public open space and the concentrations are suitable for this intended land use in regards to contamination. However, the identified Made Ground is considered to be physically unsuitable for a near surface landscaping.
ASBESTOS	No asbestos has been detected in the soil samples tested.
LANDFILL GAS	The gas monitoring completed has shown that landfill gas protection measures are not required.
RADON GAS	Radon gas protection measures are not required.
RISKS TO THE WATER ENVIRONMENT	No unacceptable contamination risks to water resources have been identified by this investigation.
RISKS TO BUILDING MATERIALS AND SERVICES	No unacceptable contamination risks to building materials and services have been identified by this investigation.
OUTLINE REMEDIATION STRATEGY	Generally, no remediation is required to facilitate the development. Further investigation is required beneath the farm buildings to see if any remediation is required in that area.
WASTE SOIL DISPOSAL	Whilst uncontaminated and suitable for reuse on site, the topsoil is unlikely to constitute 'inert waste' due to its high organic matter content. It is considered that the Made Ground soils and natural sub-soils disposed of from the site would be classified as 'non-hazardous waste'.

SUMMARY REPORT - KEY RECOMMENDATIONS

CONTAMINATION RECOMMENDATIONS

Investigation is required beneath the existing building and surrounding area it once demolition has been completed.

GEOTECHNICAL RECOMMENDATIONS

Once the areas of proposed earthworks cut are confirmed, further ground investigation will be required to classify materials for the Earthworks Specification. A Geotechnical Design Report (GDR) will be required to develop an Earthworks Specification for the cut and fill required for the development platforms.

Consideration should be given in the detailed design of the development to minimise or eliminate the need for piling due to tree influence. Dependent on the final position of plots near the existing boundary trees/hedgerows, if abnormal foundations are required then further ground investigation to establish deeper ground conditions is recommended. This may comprise deep cable percussive boreholes with insitu Standard Penetration Tests and collected soil samples submitted for appropriate geotechnical laboratory testing.

1. INTRODUCTION TO TECHNICAL REPORT

1.1. CONTRACT DETAILS

CLIENT	Gleeson Land Ltd.
SITE	Land north of Swindon Road, Royal Wootton Bassett.
CLIENT'S ADVISORS	BRD Environmental Limited (BRD) has been commissioned directly by the Client.
REPORT CONTEXT	It is understood that the Client intends to purchase the site and market it for residential development.
REPORT TYPE	Geo-environmental site investigation (i.e. combined geotechnical ground investigation and Phase 2 contamination assessment).
REPORT OBJECTIVES	The site has been the subject of a desk study referenced as follows: • 'Phase 1 Environmental Desk Study - Swindon Road, Royal Wootton Bassett,' BRD Environmental Ltd, report ref. BRD4201-OR1-A, dated June 2025. No significant contamination sources have been identified across large areas of the site as it has remained as fields throughout the mapped history. Some localised potential contamination risks were identified within the desk study report from the use of pesticides, potential infilled ponds and former buildings and a Phase 2 contamination assessment was recommended to confirm whether they pose any actual risks to the proposed development. In addition to this, a geotechnical ground investigation was also recommended to confirm the underlying ground conditions and allow design of the new structures.

1.2. SCOPE OF WORKS

The agreed scope of works was:

- Mobilisation to site and production of health and safety documentation.
- Two days of windowless sampling using a percussive drilling rig to provide approximately 9-10No. boreholes to a nominal depth of 3m-5m, ground conditions permitting. Undertake Standard Penetration Tests (SPT) at 1m intervals. Installation of a 4m depth combined gas and groundwater monitoring well (nominal 50mm diameter) into 6No. boreholes. Installations will be finished with a flush fitting metal stopcock cover.
- Two days of trial pitting using a mechanical excavator to provide approximately 14No. trial pits to a nominal depth of up to 3m, ground conditions permitting.
- Performance of soakage tests based upon BRE Digest 365 within 3No. of the trial pit locations. Supply of water to site via a 4WD water bowser unit on one day for the filling of each test pit. A Geo-Environmental Technician will monitor the soakage tests.
- All exploratory points will be logged and sampled in general accordance with BS5930:2015 by supervising Geo-Environmental Consultant. In-situ geotechnical testing of fine soils using a Hand Shear Vane and/or Pocket Penetrometer.

- Determination of the accurate location and level of exploratory points by topographical GPS unit.
- Geo-Environmental Technician to undertake a further 6No. combined gas, vapour and groundwater monitoring visits. For gas, the determination of oxygen, carbon dioxide, methane, hydrogen sulphide and carbon monoxide concentrations, together with atmospheric pressure and flow rates, using portable equipment. For vapours, determination of the concentration of volatile organic compounds by photo ionisation detector. For groundwater, the determination of groundwater levels.
- Chemical testing of soil samples to confirm the soils are uncontaminated, to determine waste classification for disposal and to meet the requirements for new water supply pipe specification. Budget based on the following testing schedule:
 - 10No. Metals Suite - As, Cd, Cr, CrVI, Hg, Se, Cu, Ni and Zn.
 - 14No. Lead (Pb)
 - 10No. Inorganics Suite - water soluble sulphate, pH, organic matter.
 - 10No. Speciated Polycyclic Aromatic Hydrocarbons (PAH).
 - 3No. Banded aliphatic/aromatic Total Petroleum Hydrocarbons (TPH).
 - 3No. Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Methyl Tertiary Butyl Ether (MTBE) compounds.
 - 2No. Semi-Volatile Organic Compounds (SVOC) suite.
 - 2No. Asbestos quantification.
 - 5No. Organochlorine Pesticides suite.
- Geotechnical testing as appropriate to the nature of the ground conditions encountered, but the budget is based on the following testing schedule:
 - 12No. Moisture content.
 - 12No. Plasticity indices.
 - 10No. pH and water soluble sulphate analysis - soil.
 - 10No. Total sulphate and sulphur analysis - soil.
 - 4No. pH and sulphate analysis - water.
- Provision of a combined factual and interpretative investigation report. Factual findings to include all exploratory point records, monitoring and test results. Interpretative reporting to include a summary of information from desk study research, a Generic Quantitative Contamination Risk Assessment (GQRA), waste classification and a Geotechnical Assessment providing comments on pavement design, concrete classification, soakaway feasibility, foundation design recommendations. Report to be supplied in an electronic Adobe pdf format.

1.3. REPORT LIMITATIONS

Any site boundary lines depicted on plans included within this report are approximate only and do not imply legal ownership of land. Any observations of tree species, asbestos containing materials within structures or invasive weeds, does not constitute a formal survey of such features. The identification of such features is therefore tentative only. In the case of Japanese Knotweed and other non-aqueous invasive weeds, BRD can undertake separate surveys for this plant undertaken by a Property Care Association qualified surveyor.

The report does not consider whether sensitive ecology or archaeology is present as these require consideration by professionals specialising in these matters. For excavations planned within six metres of a third part structure then separate professional advice should be sought in respect of the requirements of the Party Wall Act.

It should be recognised that the collection of desk study information may not be exhaustive and that other information pertinent to the site may be available.

The recommendations, interpretations and conclusions of this report are based solely on the ground conditions found at the exploratory holes. Due to the variability in the nature of ground, conditions between exploratory holes can only be interpreted and not defined. The description of the site and the ground conditions is accurate only for the dates of the field works. In particular, groundwater levels can vary due to seasonal and other effects.

The assessment and interpretation of contamination risks is based on the scope of works agreed with the Client together with the budgetary and programme constraints imposed. Further investigation, analysis and assessment of contamination may be required by regulators or other third parties with an interest in the site. An ecological risk assessment of contaminated soils is beyond the scope of this report. This report is concerned with assessing those contamination risks which apply to the future use of the site through the proposed development as part of the planning regime. The assessment does not consider the risk to current site users or continued future use of the site in its current state. If development of the site should occur that differs from that proposed, then the findings of the contamination assessment would need to be re-evaluated.

At the time of writing, detailed information on the proposed structure, such as detailed layout, loadings and serviceability limits, were not available. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules. The scope of this investigation excludes a formal slope stability study and any observations made regarding slopes are for information only.

2. SITE CHARACTERISTICS

2.1. SITE SETTING

SITE ADDRESS AND POST CODE	Land to the north of Swindon Road, Royal Wootton Bassett, Wiltshire, SN4 8LL.
NATIONAL GRID REFERENCE	408150E, 183190N

2.2. SITE DESCRIPTION

SUBJECT	COMMENTS
CURRENT SITE DESCRIPTION	The site currently comprises a recently harvested agricultural field. The site is bordered by hedgerows to the north, east and south with a fence on the western boundary. A small derelict cow shed is located adjacent to the site entrance off Swindon Road. The site is located on a hill side with the highest point in the northwest corner at an elevation of 137.5 metres Above Ordnance Datum. The site then slopes to the southwest and east to a low point in the eastern corner of 123.22m AOD. In the north of the site is a mound surrounded by a partial ringed depression. This is the site of a former post mill (type of windmill) and is a scheduled ancient monument.
SURROUNDING LAND USE	The site is set in an agricultural land on the edges of the residential area. To the north is mainly mixed agricultural and pastoral fields, and a small patch of woodland to the northwest. To the east are further agricultural fields and to the southeast a hotel and to the south on the opposite side of Swindon Road is a residential development. To the west of the site is a residential property with large gardens beyond which are further agricultural fields.
PROPOSED DEVELOPMENT	Outline planning application with all matters reserved except for access for up to 135 dwellings, the creation of new vehicular access with footways from Swindon Road, provision of informal and formal open space, together with associated highways, landscape, earth works and level changes, foul and surface water drainage facilities, utilities provision and other associated and necessary infrastructure. The scheduled monument / mound in the north of the site will be retained within the proposed open space area. No development works of any nature are proposed around this feature.

SUBJECT	COMMENTS
HISTORICAL SUMMARY	The site has comprised an agricultural field throughout its history. Two small agricultural buildings were constructed in the south of the site around the 1960s. One of these has been partially demolished and one remains. Two ponds were located either side of the northwestern boundary. These have either been infilled or have been re-graded and ploughed into the existing field.
PUBLISHED GEOLOGY	The site is shown to be devoid of superficial deposits. The shallowest bedrock unit is shown to be the Kimmeridge Clay Formation in the centre of the site and the Ampthill Clay Formation in the east and west of the site. Some limestone beds of the Kimmeridge Clay Formation are shown in the north of the site at the higher elevations.
HYDROGEOLOGY	The majority of the underlying bedrock geology is designated as Unproductive Strata. The small outcrop of the limestone beds in the north are designated as a Secondary A Aquifer, however, this area coincides with the scheduled monument and is outside of the proposed development area. The site is not located within a groundwater Source Protection Zone.
HYDROLOGY	The closest water feature to the site are two ponds, one 80m to the north of the site and the other 80m to the south. The site is not in an area indicated to be at risk of flooding.

2.3. PREVIOUS INVESTIGATIONS

The site has been the subject of a desk study referenced as follows:

- ‘Phase 1 Environmental Desk Study - Swindon Road, Royal Wootton Bassett,’ BRD Environmental Ltd, report ref. BRD4201-OR1-A, dated June 2025.

A summary of the report is provided below, but the full report should be referred to for further details.

2.4. PRELIMINARY CONCEPTUAL MODEL

2.4.1. Potential Contamination Sources

Based on the previous desk study the following potential contamination sources have been identified:

- Agricultural fields - Pesticides.
- Former farm buildings in south of site - Metals, hydrocarbons and asbestos.
- Potentially infilled ponds - Metals, hydrocarbons, asbestos and landfill gasses.

2.4.2. Invalid Contamination Sources & Linkages

The soil mound in the north of the site is the remains of a medieval mill and listed as scheduled monument. As such, the mound is unlikely to contain any significant contaminants given its age and likely composition of just soil. The mill would not have employed any chemicals and therefore the historic operations do not offer any contamination risks.

No significant off site sources of contamination have been identified other than the potential for a small infilled pond.

Very low permeability clay soils are anticipated and therefore it is not considered that there will be any viable contamination linkages to the water environment.

2.4.3. Preliminary Conceptual Model

The preliminary risks, based on the potential contaminant linkages, are detailed in the table below.

SOURCES AND CONTAMINANTS	PATHWAYS	RECEPTORS	POTENTIAL RISK
Agricultural fields: Pesticides	Ingestion & Inhalation Consumption of home grown produce (1)	Residents	Low
Former site buildings in south of site: Metals Hydrocarbons. Asbestos containing materials.	Ingestion & Inhalation Consumption of home grown produce (2)	Residents	Moderate/ Low
	Direct contact (3)	Water supply pipes and building foundations	Low
Potentially infilled pond: Metals. Hydrocarbons. Asbestos containing materials. Landfill gases (mainly carbon dioxide and methane).	Ingestion & Inhalation Consumption of home grown produce (4)	Residents	Moderate/ Low
	Inhalation of gases (5)		Moderate/ Low
	Direct contact (6)	Water supply pipes and building foundations	Low

No significant contamination sources have been identified across large areas of the site as it has remained as fields throughout the mapped history. However, some localised potential contamination risks were identified and therefore a Phase 2 contamination assessment was recommended to confirm whether they pose any actual risks to the proposed development. Details of this investigation incorporating the contamination assessment are provided in the subsequent sections of this report.

3. GROUND INVESTIGATION

3.1. INVESTIGATION DESIGN

METHODOLOGY	A combination of trial pits and windowless sample boreholes were selected as the primary investigation methods. Trial pits were selected as they expose more soils which enables a more reliable record of the ground conditions encountered and as soakage testing was required. Windowless samples boreholes were selected as monitoring installations were required. Hand dug pits were excavated near the site entrance where access was limited due to the presence of underground services.	
DATES OF SITE WORKS	The main field works were undertaken on 27th and 28th August 2025. Monitoring visits were undertaken on 3rd, 17th, 22nd and 30th September, 29th October and 14th November 2025.	
CONSTRAINTS TO EXPLORATORY HOLE LAYOUT	The following constraints to the exploratory hole layout were present on site: • Underground services located along the southern site boundary. • Overhead electric and BT cables. • An ancient monument in the northern corner of the site. • An extensive land drainage system. • An existing building adjacent to the site entrance.	
EXPLORATORY HOLE SPACING	Approximately 50m to 60m grid. Some targeted investigation was completed in the location of potential contamination sources including the ponds and former building area.	
LAYOUT RATIONALE	SOURCE / FEATURE	EXPLORATORY HOLE
CONTAMINATION SOURCES TARGETED	Infilled ponds.	TP15, TP17 and WS08.
	Former site buildings.	TP06, TP07, HD01 to HD05 and WS03.
	Surface soils surrounding the ancient monument.	SS01.
GROUND FEATURES TARGETED	Soakage testing.	TP01 to TP03 (inclusive)
	General site coverage.	TP01 to TP17 and WS01 to WS10.

CONTAMINATION SAMPLING PLAN	Based on the proposed end use, the sampling and analysis plan is more positively biased towards near surface samples as these represent the soils most likely to be available to future site users. Where applicable, the sampling has been focussed on soils displaying evidence of contamination as well as soils below or adjacent to such contamination to confirm the degree of migration, if any.
ANALYSIS PLAN	The samples have been tested for a range of commonly occurring contaminants in soils on agricultural land including heavy metals, asbestos and polycyclic aromatic hydrocarbons (PAH) asbestos and pesticides. Samples were also analysed for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and xylene (BTEX).

3.2. BRD FIELDWORK

HAND DUG INSPECTION PITS	
REFERENCES	HD01 to HD05.
DEPTH RANGE	0.65m below ground level.
BACKFILL	The inspection pits were backfilled with arisings upon completion.

TRIAL PITS	
REFERENCES	TP01 to TP17.
DEPTH RANGE	From 1.0m to 3.1m bgl.
EXCAVATOR	Tracked 8 Tonne 360° excavator.
BACKFILL	All the trial pits were backfilled with arisings upon completion and compacted with rams of the excavator bucket.

WINDOWLESS SAMPLING BOREHOLES	
REFERENCES	WS01 to WS10.
DEPTH RANGE	5.45m bgl.
RIG TYPE	Premier Drilling Rig.
INSTALLATION / BACKFILL	Boreholes WS01, WS02, WS03, WS06, WS07 and WS08 had monitoring wells installed. These comprised 50mm nominal diameter standpipes fitted with a gas tap finished with a flush metal cover. The slotted response length of the well is shown on the individual logs. Bentonite seals are also indicated on the logs. The filter medium used was pea gravel. The remaining boreholes were backfilled with arisings only.

MONITORING	
TYPE	Ground gases. Vapour. Groundwater level monitoring.
DATES	Monitoring visits were undertaken on 3 rd , 17 th , 22 nd and 30 th September, 29 th October and 14 th November 2025.

3.3. LABORATORY TESTING

SOIL CHEMICAL TESTING	
The soil samples for contamination and/or chemical geotechnical testing were forwarded to the laboratory of DETS Ltd and the testing suite is detailed below. The UKAS or MCERTS accreditation of the individual test methods is shown on the laboratory test report included in the Appendices.	
SOIL TESTS	NUMBER OF SAMPLES TESTED
Arsenic, Cadmium, Chromium, Chromium VI, Copper, Mercury, Nickel, Selenium, Zinc.	10
Lead	14
Speciated Polycyclic Aromatic Hydrocarbons (PAH).	10
Total Petroleum Hydrocarbons (TPH) with full carbon banding and aliphatic/aromatic split.	3
Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) plus Methyl Tert Butyl Ether (MTBE).	3
Organic Matter.	10
Total Organic Carbon	1
Asbestos Quantification.	2
Semi-Volatile Organic Compounds (SVOCs).	2
Organochlorine Pesticides.	5

GEOTECHNICAL TESTING

The soil samples for geotechnical testing were forwarded to the laboratory of Soil Property Testing Ltd with pH and sulphate analysis undertaken at the laboratory of DETS Ltd. The geotechnical testing suite is detailed below. The UKAS accreditation of the individual test methods is shown on the laboratory test report included in the Appendices.

TEST	NUMBER OF SAMPLES TESTED
Moisture content.	12
Liquid and plastic limits.	12
pH and Water soluble Sulphate.	10
Total Sulphur and Sulphate.	10

GROUNDWATER CHEMICAL TESTING

The water samples for contamination and/or chemical geotechnical testing were forwarded to the laboratory of DETS Ltd and the testing suite is detailed below. The UKAS or MCERTS accreditation of the individual test methods is shown on the laboratory test report included in the Appendices.

WATER TESTS	NUMBER OF SAMPLES TESTED
pH.	2
Sulphate.	2

4. GROUND CONDITIONS

4.1. OVERVIEW

The BGS mapping for the site shows the shallowest bedrock unit to be the Kimmeridge Clay Formation in the centre of the site, the Ampthill Clay Formation in the east and west of the site and some limestone beds of the Kimmeridge Clay Formation are shown in the north of the site at the higher elevations.

The investigation works proved a thin layer of topsoil to be present over natural clay soils across the majority of the site with no clear distinction between the Kimmeridge and Ampthill Clay Formations. Localised areas of shallow Made Ground were encountered near the site entrance in the location of former buildings and near the northwest boundary evidence of an infilled pond was identified.

Groundwater was not encountered during the investigation works.

Details of the various stratigraphic units are given in the following sections.

4.2. ARTIFICIAL GROUND

4.2.1. Former Site Buildings

Located centrally along the southern boundary in the location of the existing building and former buildings Made Ground soils extending to a maximum depth of 0.45m below ground level in hand dug pit HD01 were encountered.

In the hand dug pits the Made Ground contained brown silty soils with whole bricks, concrete, parts of paving slabs and a localised layer of cemented tarmac. Such Made Ground is not unexpected given that the historical maps indicate both an access track and buildings to have been formerly located in this area.

4.2.2. Infilled Pond

Trial pit TP15 encountered evidence of an infilled pond with Made Ground soils extending to a maximum depth of 1.5m bgl.

Underlying Made Ground Topsoil to 0.2m, Made Grounds soils consisting of 'Hard gravelly clay with gravel of flint and brick' was proven to 0.8m bgl. From 0.8m bgl to 1.5m bgl the Made Ground soils were described as 'Soft, black, clayey silt with some decaying plant remains and strong natural organic odour'. The presence of organic soils is evidence of the infilled pond.

At the southern end of trial pit TP15, natural clay soils were proven at 0.8m bgl confirming the edge of the pond in this direction. Trial pit TP17 and borehole WS08 to the north and east encountered natural soils beneath Made Ground Topsoil with no evidence of an infilled pond. The investigation has therefore confirmed the extents of the infilled pond in this area of the site.

4.3. TOPSOIL AND MADE GROUND TOPSOIL

Topsoil and Made Ground Topsoil was encountered in all of the exploratory holes the base of which was ranged from 0.1m to 0.3m bgl.

4.3.1. Field Areas

Across the majority of the field area the topsoil was typically described as 'Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of medium to coarse, subangular flint'. Localised Made Ground topsoil was also encountered in trial pit TP08 where fine brick and charcoal was observed in the topsoil.

4.3.2. Former Site Buildings

Made Ground Topsoil in this area was encountered in exploratory holes HD01 to HD05 (inclusive), TP06, TP07 and WS03. The base of the Made Ground topsoil was proven to a maximum depth of 0.4m bgl in borehole WS04 and in the location of the hand dug pits typically extended to 0.1m bgl. The topsoil in this area contained brick, sandstone, flint, quartzite and rare plastic fragments.

4.3.3. Infilled Pond

Located towards the northwestern boundary of the site, Made Ground Topsoil was encountered in the location of an infilled pond. The Made Ground Topsoil extended to a maximum depth of 0.3m bgl in trial pit TP17. Fragments of brick and charcoal were identified in these soils.

4.4. SUPERFICIAL DEPOSITS

Whilst not identified on the geological mapping superficial deposits were encountered during the investigation works and to a maximum depth of 0.8m bgl.

These soils were consistently recorded at the base of sloping ground along the eastern boundary of the site, but also sporadically encountered elsewhere.

These soils were typically described as 'Hard / very stiff, dry, blocky, fractured, brown with some grey, slightly gravelly CLAY. Gravel of fine to coarse, subangular to angular flint'. The presence of flint was the distinguishing feature between these soils and the underlying bedrock.

4.5. BEDROCK

As previously discussed, there was no clear distinction between the Kimmeridge and Ampthill Clay Formations identified during the investigation works completed at the site and therefore the bedrock geology has been identified as Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated).

Within the trial pits which exposes more of the soils, the bedrock soils were typically described as follows:

- 'Hard, dry, blocky, grey with some brown CLAY'.
- 'Stiff, grey with brown, slightly fissured, slightly sandy CLAY with selenite and shell fossils'.
- 'Stiff to very stiff, blue grey with brown, fissured, slightly sandy CLAY with some sandy, silty partings. Some shell fossils, selenite and relict rootlets'.

The above sequence of soils was typically encountered across the site, the exception being in some areas where the surface soils were observed to be firm to stiff, however, there appeared to be no obvious pattern to the observed changes.

4.6. GEOTECHNICAL COMMENTS

The exploratory holes identified very stiff / hard soils, fractured, blocky soils to depths of around 1.0m bgl in several area of the site. It is considered that this is likely a result of the extended period of dry weather experienced this summer, but the presence of an extensive land drainage system could also be contributing to the ground conditions observed.

An abundance of selenite was observed within the exploratory holes at depths of approximately 1.0m bgl onwards.

4.7. CONTAMINATION OBSERVATIONS

The organic soils identified in the infilled pond have the potential to be a source of landfill gas, but the migration of such gasses is likely to be limited by the surrounding clay soils. With reference to the proposed development layout, the infilled pond has been proven to be located in an area of public open space in the vicinity of proposed new buildings.

The surface Made Ground soils in the location of the former buildings could be a potential source of contaminants but is only present near surface and in a localised area of the site. With reference to the proposed development layout, these soils are confined to an area of public open space adjacent to the new site entrance.

4.8. OBSERVED GROUNDWATER BEHAVIOUR

Groundwater was not encountered whilst forwarding the exploratory holes.

4.9. GROUNDWATER MONITORING

DATE	RESTING GROUNDWATER RANGE	COMMENTS
03/09/2025	From 3.51m bgl to dry.	Boreholes WS02 and WS06 recorded groundwater at depths of 4.46m and 3.51m bgl respectively. The remaining boreholes were dry.
17/09/2025	From 2.69m bgl to dry.	Groundwater levels in boreholes WS02 and WS06 had risen to depths of 2.69m and 2.47m bgl respectively. Groundwater towards the base of the monitoring installation was recorded in boreholes WS03 and WS08 with WS01 and WS07 remaining dry.
23/09/2025	From 2.25m bgl to dry.	Groundwater levels in boreholes WS02 and WS06 had risen to depths of 2.28m and 2.25m bgl respectively. Groundwater towards the base of the monitoring installation was recorded in boreholes WS03 and WS08 Boreholes WS01 and WS07 remained dry.

DATE	RESTING GROUNDWATER RANGE	COMMENTS
30/09/2025	From 3.23m bgl to dry.	Groundwater was recorded in all boreholes except WS01 which remained dry. Groundwater levels ranged from 3.23m bgl in WS06 to 4.80m bgl in WS07. Notably groundwater levels have dropped in boreholes WS02 and WS06 during this visit. The water was sampled during the previous visit and levels had not recovered at the time of this visit.
29/10/2025	From 1.82m bgl to dry.	Groundwater was recorded in all boreholes except WS01 which remained dry. Groundwater levels ranged from 1.82m bgl in WS06 to 4.28 m bgl in WS07. Measured groundwater levels across the site had risen significantly since the previous visit, exceeding the levels recorded before the sampling on 23/09/2025.
14/11/2025	From ground level to 0.8m bgl.	Heavy rainfall prior to and during this visit associated with Storm Claudia significantly influenced site conditions. Groundwater levels had risen sharply compared to previous measurements. This related to the clay becoming saturated and extensive rainwater ponding across the site Boreholes WS03, WS06, WS07, and WS08 were flooded, with water reaching ground level. In WS02, the groundwater level had risen to 0.8 m bgl. Borehole WS01 recorded a water level that was rising. It was monitored again at the end of the visit and had reached ground level. It is conjectured that the saturated clay soils had trapped the air inside the monitoring well and caused it to be pressurised accounting for the spike in gas flow reading. Once the gas bung was removed to read water levels, the pressure dissipated and so allowed water to flow into the well.

Most of the monitoring wells recorded have recorded standing water levels which are considered to be related to a combination of seepage from localised pockets within the clay soils and surface water ingress via the ground disturbance during the borehole drilling. The cohesive nature of the clay soils precludes the free movement of the water and so accumulates within the well. Accordingly, the recorded standing water levels are not considered to be representative of 'true' groundwater levels.

5. GEOTECHNICAL PROPERTIES

5.1. KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)

5.1.1. Index Property Testing

SOIL TYPE	Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated).
WATER CONTENT	16.1% to 27.0% (12No. samples)
LIQUID LIMIT	42% to 67% (12No. samples)
PLASTIC LIMIT	17% to 26% (12No. samples)
PLASTICITY INDEX (I_p)	25%to 43% (12No. samples)
MODIFIED I_p	Not applicable as no oversize particles present.
NHBC CLASS	Medium volume change potential.
COMMENT	A wide range of samples have been tested and only two out of twelve samples have been recorded with a high volume change potential. An average I_p = 33% has been recorded which is indicative of medium volume change potential soils. Therefore, it is considered safe to classify the soils recorded across the site with a Medium volume change potential.

5.1.2. Standard Penetration Tests (SPTs)

A total of 50No. SPTs were carried out in the clay-rich soils recorded across the site. The recorded N-values range between 9 to 28, which is indicative of stiff to very stiff soil. It is worth noting that an N-values = 46 was recorded in borehole WS01 at a depth of 1.2m in dry soils. This N-value is not considered representative of the natural soil consistency but only a reflection of the dry soils recorded across the site in the upper metre.

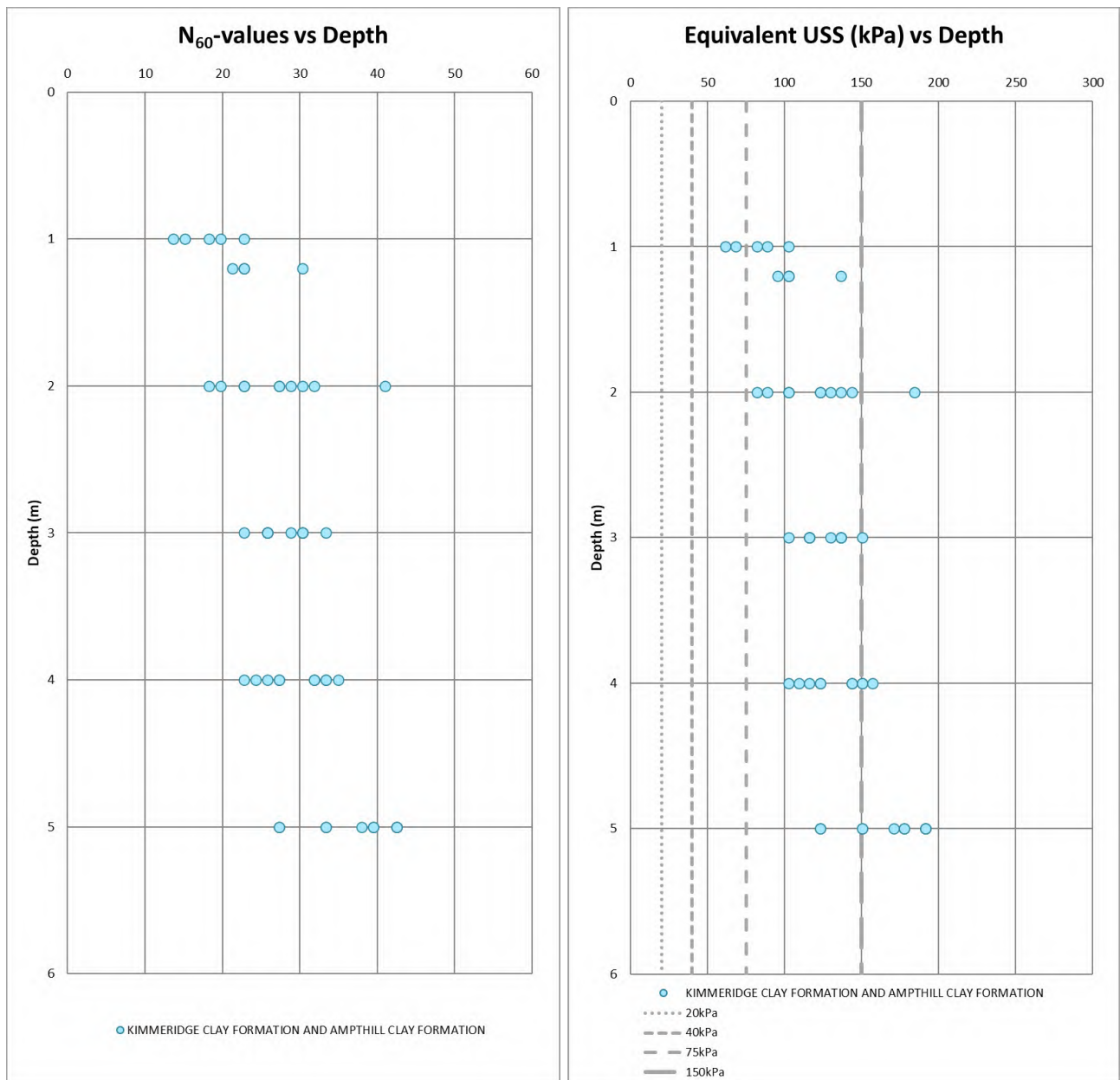
5.1.3. Undrained Shear Strength

The SPT N-values have been corrected to N_{60} -values, and then correlated to an equivalent undrained shear strength (c_u) using the approach by Stroud (1985) based upon a relationship of $c_u=4.5N_{60}$, derived from an average I_p of 33%. A hammer efficiency value for the windowless sample rig of $E_r=91.09\%$ based on the annual calibration certificate provided by the sub-contractor.

The equivalent undrained shear strength values for the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated) typically increases with depth. At about 1m depth, undrained shear strength values between 61kPa and 137kPa have been recorded, averaging 93kPa which is indicative of high strength soil type.

Between 2m and 4m, undrained shear strength values ranging between 82kPa and 184kPa, have been recorded, averaging 127kPa, which is indicative high strength soil type. At 5m depth, higher undrained shear strength values have been recorded ranging from 123kPa and 191kPa, averaging 165kPa, which is indicative of very high strength soil type.

The following charts show the distribution with depth of the N_{60} -values considered in every borehole together with the derived equivalent undrained shear strength values.



A wide range of Hand Shear Vane Testing was carried out within the clay-rich soils recorded on site. Typically, hand shear vane tests undertaken in the upper metre recorded undrained shear strength of between 100 to >140kPa, indicating high to very high strength soil type but also indicative of the seasonal desiccation recorded across the site. These values should not be considered for geotechnical design purposes. Therefore, the recorded undrained shear strength ranged between 70kPa and 112kPa. Applying the Bjerrun correction factor due to the plasticity of the soils provides corrected undrained shear strengths of between 61kPa and 98kPa, averaging 78kPa, which is indicative of a high strength soil type.

Hand penetrometer readings (Uncompressive Strength - UCS) range between 1.5kg/cm² and >5.0kg/cm². It is worth noting that the highest readings were recorded in the upper metre soils affected by seasonal desiccation. These values should not be considered for geotechnical design purposes. The tests have been carried out within the windowless sampling boreholes to maximum depths of 4.5m bgl. A reduction factor of 1.5 has been employed to adjust penetrometer results to correlate with shear vane values and soil consistency. For soils up to 1.6m depth, undrained

shear strengths of between 50kPa and 80kPa were recorded with the Hand Pocket Penetrometer tests, averaging 70kPa, which is indicative of medium strength soil type. Below and to a tested depth of 4.6m, undrained shear strengths of between 64kPa and 133kPa were recorded, averaging 90kPa, which is indicative of high strength soil type

Therefore, an undrained shear strength value representative of this soil at typical footing depths has been considered:

$$c_u = 70\text{kPa}$$

5.1.4. Compressibility

Using Stroud & Butler (1975) to determine the coefficient of volume compressibility (m_v) from SPT N-value and I_p . The average I_p value of the cohesive deposits of the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated) is of 33%. This result in correlations to $f_2 = 0.45$. A corrected average $N_{60} = 28$ has been recorded from the SPTs undertaken in these deposits. Therefore, $m_v = 0.07\text{m}^2/\text{MN}$ indicative of a low compressibility soil type.

5.1.5. Shearing Resistance

The BS 8004:2015 allows for the estimation of the critical state effective angle of shearing resistance (ϕ') based on the soils Plasticity Index. Therefore, based on the average plasticity index recorded: $\phi' = 24^\circ$

5.2. SOAKAGE POTENTIAL

The records of the BRE365 soakage tests are presented in the Appendices. A summary of results are presented in the table below:

TRIAL PIT	SOIL INFILTRATION RATE		STRATUM TESTED
TP01	Test 1	Permeability too low to calculate soil infiltration rate.	Very stiff, hard dry blocky, brown with some orange CLAY.
TP02	Test 1	Permeability too low to calculate soil infiltration rate.	Firm to stiff grey with some slightly fissured CLAY with selenite.
TP03	Test 1	Permeability too low to calculate soil infiltration rate.	Stiff, grey brown with some orange CLAY.

6. GEOTECHNICAL ASSESSMENT

6.1. INTRODUCTION

The following advice and recommendations are based on the construction of about 135No. low-rise, two to three storey, residential properties across most of the site. An Illustrative Masterplan is included in Appendix 1. From assessment of the nature of the ground conditions and the type of proposed structures, it is considered that the situation generally falls within EC7 Geotechnical Category 1, with some aspects of the development being Category 2.

Should the nature of the development be changed then the results of this investigation would need to be reviewed and reassessed.

6.2. EXCAVATIONS

STABILITY	Any excavation requiring man entry should be battered back to a safe angle, supported by an appropriate proprietary trench support system or adequately shored to provide safe working conditions. Shoring to any excavation requiring man entry must be designed by a suitably qualified and experienced engineer. Any support system will require regular inspection as detailed in published guidelines to ensure the excavation support is adequate and appropriate for the ground conditions present. It is anticipated that narrow trench excavations will remain relatively stable and open for short periods, but minor spalling of side walls could still occur.
EQUIPMENT	It should be possible to progress excavations with conventional equipment. The removal of sub-surface structures following demolition will require the use of hydraulic breaking equipment.
GROUNDWATER CONTROL	Specific groundwater control is unlikely to be required at this site. Limited pumping from sumps or bailing out may be required to deal with slight seepages or surface water ingress during periods of inclement weather. Existing land drainage may need to be diverted as part of the development. Land drainage may need to be incorporated into the construction of the development to avoid water logging of gardens.

6.3. SLOPE STABILITY

The slopes across the site are relatively shallow and show no obvious signs of instability. No significant changes in level as part of the development are anticipated. Any change in levels required should be cut to a slope no greater than one in four (vertical : horizontal) (14°) which should provide reasonable long term stability. It should be noted that shallower slopes may be required for other reasons such access in gardens. Alternatively, changes in level should be supported by appropriately designed and constructed retaining walls.

6.4. EARTHWORKS

It is likely that some earthworks will be required on site due to the existing site levels and the proposed development that will require some form of cut and fill to form development platforms. An Earthworks Specification should be developed for the Contractor to work in accordance with informed by a Geotechnical Design Report (GDR).

Where a Method based specification is adopted then it is an inherent requirement of such an approach that professional supervision of the contractor is needed.

The soil classification which has been undertaken as part of this investigation will assist in the preparation of an earthworks specification. Further classification tests will be required to develop the earthworks specification.

Whilst the filling needs to be undertaken in a controlled engineered manner that will greatly reduce settlement, the settlement of fill cannot be avoided entirely. In addition, where ground levels are raised the natural soils will undergo consolidation settlement from the imposed loading of the fill materials. Such settlements would be in addition to settlements arising from any imposed structural loads. It would therefore be prudent to delay construction by a several weeks in areas of deep fill (say greater than 1.0m as a guide) to allow the immediate component of settlement to be completed. The thicker the fill, the longer the delay required.

Substantial earthworks cut operations can cause stress relief heave of the natural ground. Such unloading cannot be countered and so a delay to construction by a several weeks in areas of deep cut (say greater than 2.0m as a guide) to allow the immediate uplift to occur is recommended. The deeper the cut, the longer delay required.

6.5. SOAKAWAY DESIGN ADVICE

A total of 3No. soakage tests were carried out in the eastern lower section of the site at the locations of trial pits TP01 to TP03. None of the tests were able to recorded infiltration rates due to the impervious nature of the clay soils existing across the site. Therefore, it is considered that the disposal of collected surface water to soakaways will not be feasible at this site due to the cohesive nature and proved low permeability of the underlying soils.

A positive drainage solution to a local sewer or surface watercourse should be pursued. Based on the proposed development, the drainage strategy considers discharging the surface water into the eastern boundary ditch via the proposed attenuation basin.

6.5.1. Attenuation Basins

It is noted on the masterplan that a basin for the temporary storage of surface water is proposed in the lower-lying area of the site.

The basin will be constructed within clayey soils of the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated). Slight seepages might be recorded associated with limited superficial deposits or due to the presence of mudstone/siltstone gravel beds recorded in the upper metre. Therefore, it is considered that the upper metre of the basin will need to be re-engineered with clay to prevent the seepages entering the basin and remove existing land drainage.

6.6. PAVEMENT CONSTRUCTION

From consideration of the observed ground conditions and the plasticity of the clay, it is recommended that a preliminary design California Bearing Ratio (CBR) of 3% is assumed. The cohesive deposits will be prone to rapid degradation during wet weather working and this should be avoided where possible.

Once the alignment and finished levels of adoptable roads has been determined, further targeted ground investigation may be required to meet the design CBR requirements of the local highways authority.

All unsuitable soils, such as topsoil or desiccated soils, should be removed from beneath proposed paved areas. The exposed sub-grade formation should then be proof rolled to reveal any excessively soft or compressible zones and any such features identified also removed by excavation. Where unsuitable materials are removed, the resultant voids should be filled in layers with appropriately compacted suitable granular fill. To reduce the loss of granular construction materials into the sub-grade, consideration should be given to utilising a geotextile starter layer across the formation level.

6.7. SUB-SURFACE CONCRETE

6.7.1.1. Sulphate and pH

KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)				
	Sulphate		pH	
Characteristic Value	6.87%		6.6 units	
Justification	Based on Highest Total Potential Sulphate.		Mean of lowest 20% results.	
	No. of tests	Results Range	No. of tests	Results Range
Soil	13	238 - 3,080 mg/l	13	6.5 - 7.7 units
Groundwater	-	Not tested	-	Not tested
Total Potential Sulphate	10	0.09% - 6.87% Seven out of ten samples tested potentially pyritic.		

6.7.1.2. Aggressive Chemical Environment for Concrete (ACEC) Class

Classification of the ACEC has been undertaken in accordance with the BRE SD1:2005 Concrete in Aggressive Ground.

KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)	
SITE / SOIL CATEGORY	Natural ground containing pyrite.
DESIGN SULPHATE CLASS	DS-4
GROUNDWATER REGIME	Static.
ACEC CLASS	AC-3s
COMMENTS	Concrete in pyritic ground that is initially low in soluble sulphate does not have to be designed to withstand a high potential sulphate class unless ground disturbance is such that pyrite may be oxidised. This may prompt a change in construction e.g. employing piled foundations instead of trench fill footings. The restriction to DS-4 has been applied.

6.8. PRELIMINARY FOUNDATION RECOMMENDATIONS

6.8.1. Introduction

Outside of the zones of influence of boundary hedges, it is considered that shallow spread foundations may be adopted for the proposed residential properties emplaced within the underlying clay soils of the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated). Locally, there may be a requirement to deepen foundations (trench fill) where the isolated shallow Superficial Deposits are encountered to place the footings within the underlying bedrock.

Within the zones of influence of the trees deepened trench fill foundations are considered appropriate. However, where plots are located adjacent to the trees and hedges piled foundations may need to be considered if trench fill foundations are too deep to be economic or practical to construct.

6.8.2. Floor Slabs

In consideration of the near surface clay soils, fully suspended floor slabs designed and constructed in accordance with NHBC Standards are recommended at this development.

6.8.3. Traditional Footings

The site is suitable for the adoption of shallow strip/trench fill footings. Foundations should be taken through made ground/topsoil and Superficial Deposits to bear upon the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated).

A presumed bearing value of 135kN/m^2 is considered appropriate for foundations up to 1m wide bearing upon the clay soils of the Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated). Immediate and long term settlement should be within tolerable limits and take place over several years.

The Kimmeridge Clay Formation and Ampthill Clay Formation (Undifferentiated) clay has been shown to have a medium volume change potential when assessed against NHBC standards and therefore the minimum foundation depth required is 0.90m, but 1.25m where required to allow for restricted new tree planting. Under the NHBC Standards, foundation depths have to be increased if they are within the influence zone of felled trees, existing trees or proposed tree planting. It should be noted that where trees are in groups the resulting competition for resources can lead to deeper root systems than allowed for in the NHBC Standards. In any event, foundations should be taken below any roots encountered in foundation trench excavation. Where the required foundation depth varies around a structure, this can be accommodated by forming steps in the foundation as per NHBC Standards.

Where foundation depths exceed 1.50m in clay soils and are within the zone of influence of existing or felled trees or where foundations cut through tree roots, a compressible void former will be required against the internal faces of new foundations in order to accommodate potential long term soil heave. Such precautions against heave should be designed and constructed in accordance with NHBC Standards.

The excavator must be set up with care and operated correctly to ensure trench walls are vertical and base horizontal as any slight inclination will result in eccentric loading on deep trench fill footings.

A number of trees and hedges are along the site boundaries. It will be necessary to remove all unwanted trees, stumps and root structures prior to commencing with the development. Any resultant void should be backfilled accordingly with respect to the preferred foundation design.

Where existing structures are to be demolished it is difficult to predict potential footing depths as the demolition works and foundation removal are likely to disturb the soils and therefore locally over deepened footings should be anticipated in areas of former structures.

During construction, any soft spots found at foundation formation level should be excavated and replaced with lean mix concrete. Foundation excavations should be kept dry and left open for the minimum amount of time possible. Where foundations cannot be completed immediately, a blinding layer of concrete should be placed.

6.8.4. Piling

Dependent on the position of proposed plots relative to the zones of influence of the existing boundary hedges, specific plots may result in uneconomically deep trench fill foundations. Consequently, consideration may need to be given to adopting piled foundations for a limited number of plots.

If necessary, in order to confirm deeper ground conditions for pile design further ground investigation is recommended.

6.9. **RECOMMENDATIONS FOR FURTHER GEOTECHNICAL WORK**

Once the areas of proposed earthworks cut are confirmed, further ground investigation will be required to classify materials for the Earthworks Specification. A Geotechnical Design Report (GDR) will be required to develop an Earthworks Specification for the cut and fill required for the development platforms.

Consideration should be given in the detailed design of the development to minimise or eliminate the need for piling due to tree influence. Dependent on the final position of plots near the existing boundary trees/hedgerows, if abnormal foundations are required then further ground investigation to establish deeper ground conditions is recommended. This may comprise deep cable percussive boreholes with insitu Standard Penetration Tests and collected soil samples submitted for appropriate geotechnical laboratory testing.

7. RISK ESTIMATION - SOILS

7.1. HUMAN HEALTH

The Generic Assessment Criteria (GAC) employed below are for residential land use as this is appropriate to the proposed form of development.

CONTAMINANT	UNITS	NUMBER OF TESTS	MAXIMUM CONCENTRATION	GAC	NUMBER EXCEEDING GAC
Arsenic	mg/kg	10	17	37	0
Cadmium	mg/kg	10	0.4	22	0
Chromium (total)	mg/kg	10	23	910	0
Chromium (hexavalent)	mg/kg	10	<2	21	0
Copper	mg/kg	10	20	2,400	0
Lead	mg/kg	14	276	200	1
Mercury	mg/kg	10	<1	11	0
Nickel	mg/kg	10	40	180	0
Selenium	mg/kg	10	<3	250	0
Zinc	mg/kg	10	115	3,700	0
pH	Units	10	7-7.6	<5-10>	0
Naphthalene	mg/kg	10	<0.1	2.3	0
Acenaphthylene	mg/kg	10	<0.1	170	0
Acenaphthene	mg/kg	10	<0.1	210	0
Fluorene	mg/kg	10	<0.1	170	0
Phenanthrene	mg/kg	10	0.12	95	0
Anthracene	mg/kg	10	<0.1	2,400	0
Fluoranthene	mg/kg	10	0.31	280	0
Pyrene	mg/kg	10	0.3	620	0
Benzo(a)anthracene	mg/kg	10	0.26	7.2	0
Chrysene	mg/kg	10	0.25	15	0
Benzo(b)fluoranthene	mg/kg	10	0.41	2.6	0
Benzo(k)fluoranthene	mg/kg	10	0.13	77	0
Benzo(a)pyrene	mg/kg	10	0.4	2.2	0
Indeno(1,2,3-cd)pyrene	mg/kg	10	0.33	27	0
Dibenzo(a,h)anthracene	mg/kg	10	<0.1	0.24	0
Benzo(ghi)perylene	mg/kg	10	0.37	320	0
TPH Aliphatic C5-C6	mg/kg	3	<0.01	42	0
TPH Aliphatic C6-C8	mg/kg	3	<0.05	100	0
TPH Aliphatic C8-C10	mg/kg	3	<2	27	0
TPH Aliphatic C10-C12	mg/kg	3	<2	130	0
TPH Aliphatic C12-C16	mg/kg	3	<3	1,100	0
TPH Aliphatic C16-C35	mg/kg	3	<10	65,000	0
TPH Aliphatic C35-C44	mg/kg	3	<10	65,000	0

CONTAMINANT	UNITS	NUMBER OF TESTS	MAXIMUM CONCENTRATION	GAC	NUMBER EXCEEDING GAC
TPH Aromatic C5-C7	mg/kg	3	<0.01	70	0
TPH Aromatic C7-C8	mg/kg	3	<0.05	130	0
TPH Aromatic C8-C10	mg/kg	3	<2	34	0
TPH Aromatic C10-C12	mg/kg	3	<2	74	0
TPH Aromatic C12-C16	mg/kg	3	<2	140	0
TPH Aromatic C16-C21	mg/kg	3	<3	260	0
TPH Aromatic C21-C35	mg/kg	3	16	1,100	0
TPH Aromatic C35-C44	mg/kg	3	<10	1,100	0
Benzene	mg/kg	3	<0.002	0.87	0
Toluene	mg/kg	3	<0.005	130	0
Ethylbenzene	mg/kg	3	<0.002	47	0
Xylene (total of all types)	mg/kg	3	<0.002	56	0
Methyl Tert Butyl Ether (MTBE)	mg/kg	3	<0.005	49	0
Semi-Volatile Organic Compounds (SVOCs)	mg/kg	2	LOD*	LOD*	0
Organochlorine Pesticides	mg/kg	5	LOD*	LOD*	0
Asbestos Quantification	%	2	<0.001	0.001	0
Total Organic Carbon	%	1	2.4	-	-

Notes: *Limit of detection: Given the large amount of compounds in this group, coupled with the lack of GAC for certain compounds, any concentrations above the limit of detection will be highlighted in the first instance.

DISCUSSION OF RESULTS

The majority of the site has not recorded any elevated concentrations of contaminants as was anticipated from a largely greenfield agricultural site.

LEAD	A single lead concentration of 276mg/kg which is elevated above the GAC of 200mg/kg was recorded in the near surface Made Ground soils in hand dug pit HD01 at 0.2m bgl. A further 4No. hand dug pits were excavated in the vicinity of HD01 referenced as HD02 to HD05 (inclusive). A total of 4No. Made Ground samples from similar depths were analysed for lead which recorded concentrations ranging from 20mg/kg to 195mg/kg, none of which are elevated above the GAC. Statistical analysis of the 5No. topsoil samples from HD01 to HD05 gives a mean lead concentration of 110mg/kg and an upper 95th percentile concentration of 213mg/kg. The mean concentration of this dataset is below the GAC and the upper 95th percentile concentration is only marginally elevated above the GAC. The additional testing undertaken has shown that the elevated lead concentration is not a widespread issue in this area. The investigations have also shown these soils to be confined to this area of the site only. With reference to the proposed development layout, the identified soils are located in an area of proposed open space adjacent to the new site entrance. The GAC for Public Open Space (POS1) land use is 630mg/kg and therefore the recorded
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DISCUSSION OF RESULTS

concentration in HD01 would not present a potential risk to future residents if the soils were to remain in their current location.

As an aside, it is worth noting that the Made Ground in this area contains abundant man-made products such as brick, concrete and tarmac with limited soils being present within this rubble. Whilst the contaminant concentrations are not considered to be of significant concern, the soils are not considered to be physically suitable for use near surface in an area of landscaping.

7.2. WATER ENVIRONMENT

It is not appropriate to consider human health assessment criteria for human health in relation to the risk to the water environment, but currently there are no generic soil assessment criteria in respect of the water environment. In the absence of any groundwater sampling data, the soil results are assessed on the basis of professional judgement.

The contaminant concentrations recorded in the soils at the site are not considered to be at such levels that they would present any significant risk to the underlying water environment.

7.3. BUILDING MATERIALS

CONTAMINANT	UNITS	NUMBER OF TESTS	MAXIMUM CONCENTRATION	GAC	NUMBER EXCEEDING GAC
pH	units	20	6.5 - 7.6	<5.5	0
Sulphate (w/s)	mg/l	20	3080	500	11
Sum of SVOC + Aliphatic TPH >C5-C10 + Aromatic TPH >C5-C10 above detection limits	mg/kg	2	LOD*	2	0
Sum of Aliphatic TPH >C10-C21 + Aromatic TPH >C10-C21 above detection limits	mg/kg	2	LOD*	10	0
Sum of Aliphatic TPH >C21-C34 + Aromatic TPH >C10-C35 above detection limits	mg/kg	3	16	500	0
Sum of BTEX + MTBE above detection limits	mg/kg	3	LOD*	0.1	0
Naphthalene	mg/kg	10	<0.1	0.5	0
Benzo(a)pyrene	mg/kg	10	0.4	0.5	0
Notes: *Limit of detection: Given the large amount of compounds in this group, coupled with the lack of GAC for certain compounds, any concentrations above the limit of detection will be highlighted in the first instance.					

RESULTS EXCEEDING BUILDING MATERIALS ASSESSMENT CRITERIA

WATER SOLUBLE SULPHATE

Concentrations of water soluble sulphate are such that they could detrimentally impact sub-surface concrete. The impact on concrete mix design is a geotechnical issue that is considered separately and so no further comment is made on these results within this contamination assessment.

8. RISK ESTIMATION - GAS

8.1. RADON GAS

The site is not situated within an area where radon gas protection measures are required in new buildings.

8.2. VOLATILE ORGANIC COMPOUNDS

There is no evidence that the site is affected by significant Volatile Organic Compounds (VOC) contamination.

8.3. GROUND GAS SOURCES

GAS SOURCE	GENERATION POTENTIAL	COMMENTS
Infilled pond with Made Ground with low organic content	Low	Shallow Made Ground soils to depths of 1.5m bgl were recorded in trial pit TP15. Organic soils at depths ranging from 0.8m to 1.5m bgl which recorded a total organic carbon of 2.4%.

8.4. TOTAL ORGANIC CARBON

With reference to CL:AIRE Research Bulletin RB17 (2012) - 'A Pragmatic Approach to Gas Risk Assessment' the use of the organic content of soils can be used to determine the likely gas generation of a particular source on site, which in this case is the presence of some organic soils with an organic odour within infilled ponds.

RB17 proposes the use of the TOC content of the soil to assess the potential for gas emissions detailed as follows:

- Soils with a TOC of less than or equal to 1% with no potential source of gas risk (including Made Ground soils averaging up to 3m thick) are recommended to be classified as CS1 (i.e. very low risk, no gas protection measures required).
- For Made Ground with a TOC <1.5% or Made Ground that has been insitu for greater than 20 years with a TOC of <3% are recommended to be classified as CS2.
- For Made Ground with a TOC <4% or Made Ground that has been insitu for greater than 20 years with a TOC of <6% are recommended to be classified as CS3.

Based on the TOC concentration of 2.4% recorded in trial pit TP15, it is considered that the Made Ground could potentially generate gas. Based on the small size of the infilled pond the gas generation potential is localised and being surrounded by clay soils is unlikely to result in the migration of gas elsewhere on site.

Whilst the TOC are a useful guide to confirm whether or not a gas risk exists, a programme of gas monitoring was undertaken. The results of the gas monitoring have therefore been used to confirm the gas regime at the site.

8.5. GROUND GAS MONITORING

8.5.1. Summary of Results

PARAMETER	MINIMUM	MAXIMUM	COMMENTS
Methane	0.0%	0.0%	No significant concentrations recorded.
Carbon Dioxide	0.0%	3.2%	No significant concentrations recorded.
Oxygen	18.6%	20.6%	The oxygen levels were typically depleted as carbon dioxide concentrations increased.
Hydrogen Sulphide	0.0ppm	17.0ppm	A concentration of 17.0ppm was recorded in borehole WS02 during the first visit. Across the remainder of the visits concentrations of 0.0ppm were recorded in all boreholes. The elevated concentration is not considered to be a cause for concern and is likely a result of drilling disturbance.
Carbon Monoxide	0.0ppm	0.0ppm	No significant concentrations recorded.
VOC & SVOC (by PID)	0.0ppm	0.0ppm	No significant concentrations recorded.
Atmospheric pressure	975mB	1013mB	The first and last monitoring visits were preceded by periods of falling atmospheric pressure.
Groundwater levels	Ground level - rainfall flooding	>5.50m depth	Groundwater was recorded at depth during all of the monitoring visits in some of the boreholes. The borehole response zone was only flooded during the final monitoring visit due heavy rainfall associated with Storm Claudia.
Flow rate	0.0 l/hr	0.0l/hr	No elevated flow rates were recorded during the monitoring visits completed to date.

8.5.2. Monitoring Frequency and Duration

SENSITIVITY OF DEVELOPMENT	High (Residential with gardens)	
	IDEALISED	ACTUAL
MONITORING PERIOD	6 months	1 months
TOTAL NUMBER OF VISITS	6	6
NUMBER OF VISITS DURING FALLING PRESSURE TRENDS	At least two visits	Three visits

COMMENTS ON MONITORING

The number of monitoring visits comply with the minimum recommended within CIRIA C665.

Some of the methane readings in the penultimate visit were erroneous due to an instrument error and so the data from the affected boreholes was not included in the monitoring record sheet. However, it is worth noting that the carbon dioxide readings from those boreholes was all low and

The last gas monitoring visit was impacted by surface water flooding from Storm Claudia and only limited gas readings could be taken. However, it is considered that sufficient data has been collected to assess the ground gas regime for the site.

8.6. GROUND GAS REGIME ASSESSMENT

8.6.1. Building Type

In accordance with BS8485:2015+A1:2019, the development comprises Type A buildings. These buildings are in private ownership with no controls over the use of and alterations to the building. This building type typically comprises private dwellings.

8.6.2. Gas Screening Values

	MAXIMUM GAS CONCENTRATION (fraction)	MAXIMUM GAS SCREENING VALUE (l/hr)
Methane	0.0	0.0
Carbon Dioxide	0.032	0.0032
METHODOLOGY	BS8485:2015+A1:2019. Instrument minimum flow rate detection limit employed for GSV.	
GAS REGIME	Based on the monitoring completed to date the site has been designated as Characteristic situation 1 - Very low risk.	

8.7. GROUND GAS PROTECTION MEASURES

Based on the monitoring completed the ground gas regime has been assessed as Characteristic situation 1 - Very low risk and therefore it is unlikely that ground gas protection measures for carbon dioxide and methane will be required.

9. RISK EVALUATION

9.1. REVISED CONCEPTUAL MODEL

The revised conceptual site model plan is presented in the Appendices.

INVALID CONTAMINANT LINKAGES	No elevated concentrations of TPH, SVOC, PAH or pesticides were recorded during the investigation works. Asbestos has not been identified in the soils investigated to date. The site has been confirmed to be underlain by clay soils resulting in no potential risk to the groundwater environment. No risks to new water supply pipes have been identified by the investigation works.
VALID CONTAMINANT LINKAGES	A potential source of ground gasses has been identified from an infilled pond in the northwest corner of the site but the monitoring undertaken to date has not recorded any elevated concentrations of ground gasses.
LIMITATIONS AND UNCERTAINTIES	Due to access restrictions, it was not possible to undertake any exploratory holes beneath the existing farm building or adjacent land to the south. One gas monitoring visit was impacted by an instrument error and the last gas monitoring visit was impacted by surface water flooding from Storm Claudia. However, it is considered that sufficient data has been collected to assess the ground gas regime for the site. Intrusive investigation was not allowed within 50m of the scheduled monument. The vast majority of the site has been sufficiently investigated to confirm the anticipated lack of contamination risks.

9.2. UPDATED CONTAMINATION RISK ASSESSMENT

The contamination linkages identified in the revised conceptual site model will now be evaluated as to their severity:

SOURCES AND CONTAMINANTS	PATHWAYS	RECEPTORS	POTENTIAL RISK
Agricultural fields: Pesticides	Ingestion & Inhalation Consumption of home grown produce	Residents	Negligible risk
Former site buildings in south of site: Metals Hydrocarbons. Asbestos containing materials.	Ingestion & Inhalation Consumption of home grown produce	Residents	Negligible risk
	Direct contact	Water supply pipes and building foundations	Negligible risk

SOURCES AND CONTAMINANTS	PATHWAYS	RECEPTORS	POTENTIAL RISK
Potentially infilled pond: Metals. Hydrocarbons.	Ingestion & Inhalation Consumption of home grown produce	Residents	Negligible risk
Asbestos containing materials.	Inhalation of gases		Negligible risk
Landfill gases (mainly carbon dioxide and methane).	Direct contact	Water supply pipes and building foundations	Negligible risk

The contamination risks that are presented to the various receptor groups are discussed further in the following sections:

SOIL RISKS TO HUMAN HEALTH

No risks to human health have been identified across the vast majority of the site.

Hand dug pit HD01 recorded an elevated concentration of lead in the near surface Made Ground soils when assessed against the criteria for residential gardens with plant uptake. Additional investigation confirmed this to be an isolated issue in this area. With reference to the proposed layout, the affected soil is located in an area of public open space with recorded concentrations significantly below the assessment criteria for this land use. On this basis the recorded concentration is not considered to present a risk to future residents.

GROUND GAS RISKS

No elevated concentrations of ground gases have been identified by the gas monitoring programme completed.

RISK TO WATER ENVIRONMENT

No risks to the water environment have been identified at the site.

RISK TO BUILDING MATERIALS AND SERVICES

No risks to building materials and services have been identified at the site.

9.3. RISK MANAGEMENT

9.3.1. Introduction

The investigation has confirmed the topsoil and underlying clay soils across the vast majority of the site to be uncontaminated and suitable for the proposed residential development.

Along the southern boundary of the site near the entrance, some near surface Made Ground soils were identified that are associated with a former track and buildings in this area. These Made Ground soils are considered suitable for public open space land use in terms of contamination. However, they are physically unsuitable for near surface landscaping use.

It is recommended that this report is submitted to the planning department of the Local Authority, warranty providers, and the organisation undertaking the Building Control function to confirm that the investigation completed to date is satisfactory.

9.3.2. Further Contamination Assessment

In order to provide further confidence in the risk assessment and to address the limitations and uncertainties identified within the existing conceptual model it is recommended that the following additional investigation elements are completed for contamination assessment purposes:

- Investigation beneath the existing building and immediate area surrounding is required once demolition has been completed.

9.3.3. Outline Remediation Strategy

Due to the absence of confirmed contamination risks, no remediation is considered necessary.

10. SOIL RE-USE AND WASTE SOIL DISPOSAL

10.1. OVERVIEW

It is considered that uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated is not waste. Accordingly, the planned re-use of such soils on site to form the development landform that has been determined through the planning process is excluded from waste regulation by the Waste Framework Directive (2008).

Made Ground and other materials such as recycled aggregate are also not waste unless they are discarded, intended to be discarded or required to be discarded.

Any soils that are surplus to requirements and/or are unsuitable for re-use to be disposed of from site are recognised as 'waste' according to the Environment Agency and the European Waste Framework Directive.

To allow the transfer of surplus soil for use at other developments it is recommended that a Materials Management Plan (MMP) is formulated in general accordance with the CLAIRE 'Definition of Waste: Development Industry Code of Practice'. Such a MMP is also of use for the re-use of the excavated materials on site, such as for:

- Demonstrating that stockpiled soils have a use.
- Facilitating the import of soils if there is a shortfall of fill material.

It is a legal requirement to correctly assess and classify waste. There are specific technical requirements for waste sampling such that it is proportionate to the volume of the waste type in question and its nature. The preliminary waste assessment provided below is based only upon the available data and may not be sufficient to adequately classify the waste.

10.2. TOPSOIL

Topsoil should be viewed as a resource rather than a waste. As the topsoil across the vast majority of the site is suitable for residential garden use in terms of contamination, the topsoil at the site should be stripped and any surplus reused on other developments. It should be noted that topsoil, even if uncontaminated, is unlikely to constitute 'inert waste' due to its high organic matter content.

The suitability of the topsoil for re-use is considered in this report only in respect of contamination issues. For consideration of the quality of the topsoil for re-use then a Topsoil Resource Survey with appropriate testing should be commissioned. Such a survey will inform a topsoil management plan.

10.3. SUB-SOIL

It is considered that natural sub-soils and Made Ground disposed of from the site would be classified as 'non-hazardous waste'. The chemical results should be forwarded to the proposed landfill site and the waste classification confirmed prior to disposing of any surplus soils. The waste code from the European Waste Catalogue (EWC) 2002 for the soils would be 17 05 04 'Soil and Stones, not containing dangerous substances'.

Waste Acceptance Criteria (WAC) testing of the soils will also be required where the soil is to be disposed of at a landfill permitted to accept inert waste. It should be noted that some of the bedrock clay soils will not comply with inert waste limits due to naturally elevated sulphates.

11. HEALTH AND SAFETY FILE INFORMATION

11.1. INTRODUCTION

The aim of the following sections is to present pertinent Health and Safety information that has arisen from the current investigation/survey works discussed in this report. The aim is to identify health and safety controls that may be necessary during any subsequent maintenance, refurbishment, demolition or construction works. The information is not exhaustive and stems only from the aspects identified within the scope of the works undertaken by BRD.

Where BRD has been appointed as a Principal Contractor, then this information shall form the Health and Safety Files as required by the Construction Design and Management (CDM) Regulations 2015.

Reports are always forwarded to the Client and they shall be responsible for ensuring this safety information is disseminated to those who need it.

The works undertaken by BRD are detailed in the previous sections of this report.

11.2. HAZARDS

During the course of the BRD works the following noteworthy safety hazards have been identified:

11.2.1. Contamination

Although no soil contamination has been identified to date, as with any construction site, if any anomalous material is encountered during the redevelopment then expert environmental advice should be sought.

11.2.2. Asbestos

No asbestos has been identified in the soils investigated to date.

In accordance with Health and Safety Executive (HSE) guidance, a 'Refurbishment Demolition Survey' (RDS) should be undertaken to identify whether or not asbestos containing materials are present in the existing structure(s) prior to demolition or refurbishment. The results of the survey should then be used to plan for the safe management, removal and disposal of asbestos containing materials from the existing buildings and infrastructure should such materials be present.

11.3. EXISTING STRUCTURES

BRD recommend that advice on existing structures is gained from a qualified and experienced Building Surveyor or Structural Engineer.

11.4. HAZARDOUS MATERIALS

BRD did not construct anything with hazardous materials.

Any soils to be imported to the site, in particular topsoil, should be tested to confirm their suitability in the development.

11.5. UTILITY SERVICES

The utility services plans held by the Client should be referred to. Both overhead and underground electric cables are present on site.

REPORT SPECIFIC REFERENCES

- British Geological Survey sheet 252 'Swindon' Solid and Drift edition (1:50,000) 1997.
- 'Phase 1 Geo-Environmental Desk Study - Swindon Road, Royal Wootton Bassett,' BRD Environmental Ltd, report ref. BRD4201-OR1-A, dated June 2025.

SUPPORTING INFORMATION

GROUND INVESTIGATION

Exploratory holes are logged by an experienced Geo-Environmental Consultant in general accordance with 'Code of practice for site investigations' BS5930:2015+A1:2020 (BSi, 2020). Soil samples for chemical and geotechnical analysis are taken from the exploratory holes at intervals dictated by the nature of the soils and the objectives of the investigation.

Where stated on the logs of inspection pits, trial pits or boreholes (where insitu testing has not been undertaken), the relative density of coarse (sand and gravel) soils is tentative only. Such assessments of density are on the basis of visual inspection only taking into consideration such factors as drilling rates, stability of pit side walls, appearance and behaviour under excavation.

Where Chalk strata is encountered it is logged and graded in general accordance with CIRIA guidance 'C574 - Engineering in Chalk' (CIRIA, 2002). It should be recognised that where percussive drilling methods are employed, the structure of the Chalk is destroyed and therefore the grading stated on such logs is either tentative or absent where it is not possible to assess the grade.

Hand Dug Inspection Pits

Hand tools are used to forward shallow inspection pits as a cost effective method of describing and sampling near surface soils. The technique is also used where exposure of existing footings is required. The depth reached by such techniques is a function of the nature of the ground and generally does not exceed 1.5m

Trial Pits

Mechanically excavated trial pits allow detailed inspection of near surface ground due to the large volume of soil exposed. A wheeled backhoe loader is the usual machine for digging trial pits that are typically 3 to 4.5m deep, 0.5m wide and 3m long. It is worth noting that due to the disturbance of the ground, this technique will leave visible pits scars, localised surface disturbance and may leave a mound of soils that can settle over time.

Windowless Sampling Boreholes

This type of borehole is formed by a small tracked dynamic percussion drilling rig with samples retrieved in thin plastic liners within the narrow diameter steel sampling tubes. Borehole depths of up to 5m are typical, but in exceptional circumstances up to 15m depth can be achieved. This is the smallest type of rig that is capable of undertaking Standard Penetration Tests (SPTs).

Hand Held Window Sampling

Hand held window sampling is a useful method of drilling narrow diameter boreholes particularly where access is difficult. Hand held mechanical percussive hammers are used to drive the sampling tube into the ground. The soil samples are collected within the hollow metal sampling tubes and inspected via the open window along one side. Window sampling boreholes can be forwarded to depths of 3m to 6m depending upon ground conditions.

Cable Percussive Boreholes

This form of drilling involves repetitive dropping of a tube into the soil under its own weight from a tripod support. The sample is obtained from the clay cutter head in fine soils or a bailer for wet granular soils. As the borehole progresses SPTs can be undertaken and relatively

undisturbed samples can be obtained. Typically these boreholes are 15 to 25m deep, but depths of double that can be achieved in soils, but only thin weak rock layers can be penetrated.

Rotary Boreholes

Where competent rock is required to be drilled then rotary drilling techniques are required. The drilling rigs can vary in size from small tracked units to larger units mounted on four wheel drive trucks. Rotary open hole drilling techniques break the rock into small fragments and so recovery of any samples is limited. In contrast, rotary coring generally retrieves excellent samples. Some rigs also allow dynamically driven windowless sampling to be undertaken through soil layers. There are no practical limits to the depths that this drilling method can achieve.

Dynamic Probing

Dynamic probing comprises a sectional rod with a sacrificial cone at the base of slightly larger diameter than the rod. The rod is driven into the ground by a constant mass falling through a set distance. The number of blows required to forward the rod per 100mm is then recorded and presented in a graph of N_{10} values. The standard applicable to dynamic probing is 'BS EN ISO 22476-2:2005 Incorporating corrigendum no. 1, Geotechnical investigation and testing – Field testing – Part 2: Dynamic probing' (BSi, 2007).

Static Cone Penetration Tests

Cone Penetration Tests (CPT) consist of pushing a conical 60° cone into the ground at a constant rate and recording the force required to do this. Sensors in the cone record other information and this data can be correlated to a number of different geotechnical parameters.

Dynamic Penetrometer

The Transport Research Laboratory Dynamic Cone Penetrometer (TRL DCP) uses an 8 kg hammer dropping through a height of 575mm to drive a 60° cone of 20mm maximum diameter into the ground. The depth driven either per blow or per several blows is recorded. The strength of each of the soil layer encountered is then calculated by converting the penetration rate into an approximate California Bearing Ratio (CBR) value employing the correlation proposed by TRL.

Light Weight Deflectometer

The falling Light Weight Deflectometer (LWD) test is a dynamic plate load test. It is a surface testing instrument and does not involve any penetration of the underlying soils. The plate used is 300mm diameter and so the results achieved are effectively an average of the ~450mm to 600mm soils beneath the plate. The LWD result can be correlated to a California Bearing Ratio (CBR) value and BRD's experience is that these results compare well with other insitu CBR test methods.

Gas Monitoring

Gas monitoring is undertaken with a portable gas monitor for Oxygen, Methane, Carbon Dioxide, Hydrogen Sulphide and Carbon Monoxide together with recording of atmospheric pressure and any flow rate.

Vapour Monitoring

Headspace tests and monitoring for Volatile Organic Compounds (VOC) or Semi Volatile Organic Compounds (SVOC) is undertaken using a Photo Ionisation Detector (PID). The MiniRAE models used have a 10.6 eV lamp calibrated for isobutylene. The PID is useful tool to indicate the presence of a wide range of volatile compounds, but only provides semi-quantitative data as different compounds provide a different response and thus the reading is not a true reflection of the actual concentration present.

Low PID readings can be recorded in natural uncontaminated organic soils or even as a result of atmospheric pollution. It is generally accepted by consultants and regulators that recorded values in excess 50 parts per million (ppm) represents the presence of organic compound pollutants and in excess of 100 ppm such contamination may be significant.

The headspace test procedure involves the collection of a sample of suspected contaminated soils and placing within a sample bag. A tight seal to the bag is formed with a similar volume of air trapped to that of the soil and the sample is left for fifteen minutes to allow volatilisation of any contaminants. The bag is then pierced by, and sealed around, the sample probe of the PID and a reading taken.

Borehole well monitoring is undertaken by connecting the PID directly to the gas tap on the monitoring well installation.

Groundwater Level Monitoring

Groundwater levels are recorded with an electronic dip meter that has a detector end that is lowered into the borehole well. An audible signal is made when water is reached and the depth recorded from the graduated tape used to lower the detector. Where there is potential for a separate Light Non Aqueous Phase Liquid (LNAPL) to be present floating on the groundwater an oil/water interface meter is used in preference to a conventional dip meter so that any such floating product can be detected.

Geotechnical Sampling

BRD schedule a range of geotechnical testing as appropriate to the identified ground conditions, available budget and the proposed development. Different types of soil samples are obtained as appropriate to the ground conditions and planned testing.

SAMPLE TYPE	LOG SYMBOL	DESCRIPTION
Disturbed	D	Small disturbed soil samples of about 1 to 2 kg are collected in plastic bags.
Bulk	B	Large disturbed bulk samples up to about 20 to 30 kg are collected in plastic bags
Undisturbed	U	'Undisturbed' samples generally collected in plastic or metal tubes within cable percussive boreholes of 100mm diameter for samples of fine soils of firm to stiff consistency. Can also be representative of samples taken by cutting plastic sample liners from windowless sampling drilling methods. It is recognised that such samples do not generally meet Eurocode sample quality requirements for the tests commonly employed. However, given the wealth of experience with these sampling methods this continues to be a common approach in United Kingdom practice particularly for less sensitive developments where more expensive sampling techniques are not economically justifiable.
Undisturbed	UT	A thin walled steel sampler developed by Archway Engineering called a UT100 in an attempt to gain better quality samples of soft to firm fine soils when using cable percussive drilling methods.

Contamination Sampling

BRD schedule contamination testing as appropriate to the ground conditions, available budget, potential contaminants and the proposed development. Samples are collected in single use laboratory supplied containers.

Soil samples are retrieved in plastic containers and/or amber glass jars with a lined plastic cap. Contamination samples are indicated by a 'J' on exploratory hole logs.

Water samples are collected in plastic bottles and/or amber glass jars with a lined plastic cap then placed in cool boxes together with freezer packs. Water samples are indicated by a 'W' on exploratory hole records, but generally such samples are not tested as testing from dedicated monitoring wells is preferred for sample quality reasons.

Samples retrieved from the exploratory holes are dispatched to the laboratory by overnight courier. Where samples cannot be transported directly from site they are temporarily stored in the BRD dedicated sample storage facility which includes refrigeration where necessary. The individual accreditation of the test methods is detailed in the laboratory test report.

GEOTECHNICAL ASSESSMENT

Under Eurocode 7 (EC7) the following risk ranking is applied to geotechnical projects:

GEOTECHNICAL CATEGORY	DESCRIPTION
1	Small and relatively simple structures for which it is possible to ensure that the fundamental requirements will be satisfied on the basis of experience and qualitative geotechnical investigations with negligible risk. For example, straightforward ground conditions, local experience, no excavation below the water table unless this will be straight forward.
2	Conventional types of structures and foundations. No difficult soil or loading conditions. Quantitative geotechnical data and laboratory testing. Routine procedures for field and laboratory testing. Conventional structures and no exceptional geotechnical risk. For example, spread, raft and piled foundations, retaining walls, bridge piers and abutments, embankments, ground anchors, tunnels and excavations.
3	Those structures not in Categories 1 and 2 such as very large or unusual structures, structures involving abnormal risks, or unusual or exceptionally difficult ground or loading conditions. Structures in highly seismic areas. Structures in areas of probable site instability or persistent ground movements that require separate investigation or special measures.

GEOTECHNICAL PARAMETERS

Soakage Tests

Soakage tests comprise the filling of a test pit with water and recording the time taken for the water to drain away. The tests are undertaken in general accordance with 'Digest DG 365: Soakaway design' (BRE, 2016). The test pits are usually gravel filled for safety with a slotted vertical pipe through which water observations are made. Water is generally supplied by a tanker to allow fast filling of the pits with water. Compliant tests are filled and allowed to drain near empty three times.

Standard Penetration Tests

The standard penetration test (SPT) determines the resistance of soils at the base of a borehole to the dynamic penetration of a split barrel sampler and the recovering of disturbed samples for identification purposes. In gravelly soils and some soft rocks a solid cone is used in preference to the sampler.

The basis of the test consists in driving a sampler by dropping a hammer of 63.5 kg mass on from a height of 760 mm. The number of blows (N value) necessary to achieve a penetration of the sampler of 300 mm is recorded. The test is described in 'Geotechnical investigation and testing – Field testing – Part 3: Standard penetration test - BS EN ISO 22476-3:2005 Incorporating corrigendum no. 1' (BSi, 2007).

The uncorrected N values of the SPT tests are recorded upon the borehole logs together with a record of blows for each 75mm test portion including the seating blows. Where the full test depth cannot be achieved due to refusal on hard stratum, the number of blows and the distance achieved is recorded and the N value given as >50. The abbreviation SPT(c) is used on the logs indicates that the test was performed with a solid cone rather than a split spoon sampler.

It is necessary to apply a correction to the N values to account for the effects of energy delivery using the equation: $N_{60} = \frac{E_r}{60} N$ where E_r is the energy ratio of the specific test equipment.

In the case of tests in sand, for the effects of overburden and rod length the equation is modified to $N_{60} = \frac{E_r}{60} \times \lambda \times C_N \times N$ where λ is the correction factor for energy losses due to the rod length and C_N is the correction factor for vertical stress due to overburden of the soil.

Sulphate

In order to compare the laboratory soil test results with 'Concrete in aggressive ground. BRE Special Digest 1: 2005' (BRE, 2005) laboratory results are converted to SO_4 mg/l. Laboratory results expressed as SO_3 g/l and are multiplied by a factor of 1200 to express the results as SO_4 mg/l.

Index Property Tests

In accordance with National House Building Council (NHBC) 'Standards Chapter 4.2 - Building near trees', the laboratory plasticity indexes are assessed against their volume change potential. The Modified Plasticity Index is defined as the Plasticity Index of the soil multiplied by the percentage of particles with a nominal diameter of less than 425µm. Whilst the NHBC Standards were developed for residential buildings, the advice is equally applicable to a large number of other types of low rise structures.

Hand Shear Vane

The undrained shear strength of the fine (i.e. clay) soils at the site can be established using hand shear vane apparatus. Usually three readings are taken at every depth tested and the uncorrected results recorded on the exploratory point log. Shear vane readings from depths below 1m depth in trial pits are from tests performed on excavated soil. In accordance with Eurocode 7 – Geotechnical design – Part 2: Ground investigation and testing EN 1997-2:2007 the results should be corrected. BRD employ only simple correction methods as the more complex correction methodologies imply undue accuracy to a test that has distinct disadvantages and limitations.

Pocket Penetrometers

The Pocket Penetrometer is a lightweight instrument for use by field personnel to check visual classification of soils. It is a simple test and there is inherent uncertainty related to the small volume of soil being tested and so the results should be used with appropriate caution. Pocket penetrometers are calibrated in terms of unconfined compressive strength and once converted to undrained shear strength (divide by two) the results are further reduced by a factor of 1.5 - 2.0 as the device tends to overestimate strengths.

<i>Instrument Reading (uncompressive strength in kg/cm²)</i>	<i>Indicative Undrained Shear Strength (kN/m²)</i>	<i>Indicative Consistency</i>	<i>Indicative strength</i>
1.0	25 - 33	Soft	Low
1.5	38 - 50	Soft to firm	Low to medium
2.0	50 - 67	Firm	Medium
2.5	63 - 83	Firm to stiff	Medium to high
3.5	88 - 116	Stiff	High
4.5	113 - 150	Stiff to very stiff	High to very high

CONTAMINATION ASSESSMENT METHODOLOGY

UK Policy

The UK Government's policy in relation to land affected by historic contamination is based on a 'suitable for use' approach. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Contamination risks therefore need to be assessed on a site-by-site basis. The 'suitable for use' approach limits requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to either the current use or future use of the land.

The three main drivers for contamination assessment and remediation are:

- Voluntary action.
- Development as part of the planning regime.
- Regulatory action to mitigate unacceptable risks e.g. Part 2A of the Environmental Protection Act 1990.

Contaminant Linkages

For a contamination risk to exist there must be a 'contaminant linkage' from the source (contaminant or pollutant) via a pathway (the route from contaminant to receptor) to a receptor (the entity that could be harmed). The absence of a source, pathway or receptor breaks the contaminant linkage and therefore no contamination risk exists.

Contamination is typically present at a site (in the ground and/or in the underlying groundwater) as a result of a historic or current industrial use, usually as a result of leaks, spills or disposal of residues, wastes and excess raw materials from the industrial processes. Contamination may also be present due to:

- The deliberate application of chemicals e.g. the spraying of herbicide/pesticide.
- Migration of pollutants from adjacent land.
- Naturally occurring processes e.g. elevated concentrations of particular heavy metals associated with specific geological strata.
- Atmospheric deposition.

Conceptual Site Model

The conceptual site model can be defined as a textual or graphical representation of the identified contaminant linkages for a given site. The model forms the basis for designing the investigation as the aim will be to target all of the potential contaminant linkages to determine, through the subsequent phases of risk assessment, whether or not they pose an actual risk.

It is important that the conceptual site model is updated with new information as the various investigation, risk assessment and remediation works are completed.

Technical Guidance

The technical and legal framework for contamination assessment is complex. The process adopted through this report for assessing contamination risks is in general accordance with the following guidance, as listed below:

- ‘Investigation of Potentially Contaminated Sites - Code of Practice - BS 10175:2011+A2:2017’, (BSi, 2017).
- Land Contamination Risk Management (LCRM) website, (Environment Agency, 2023).
- ‘Guidance for the safe development of housing on land affected by contamination - R&D66: 2008’, (NHBC/Environment Agency, 2008).

Land Contamination Risk Management: Stage 1 Risk Assessment

In line with the technical guidance, the contamination risk assessment follows a series of steps for each tier of risk assessment:

- *Identify the hazard* - A preliminary stage of risk assessment concerned with identifying and characterising the contamination source that may be associated with a particular site.
- *Assess the hazard* - Use a source-pathway-receptor (S-P-R) linkage approach to find out if there is the potential for unacceptable risk.
- *Estimate the risk* - predict what degree of harm or pollution might result and how likely it is to occur by using the tiered approach to risk assessment.
- *Evaluate the risk* - Decide whether a risk is unacceptable, taking into account the nature and scale of the risk estimates, any uncertainties associated with the assessment and the broad costs and benefits of taking action to mitigate risks.

The separate staged tiers of risk assessment are as follows:

TIER	DESCRIPTION
TIER 1: PRELIMINARY RISK ASSESSMENT	Generally limited to desk based research and a site walkover survey (site reconnaissance) to develop an initial conceptual site model and identify what risks, if any, are likely to be presented by the site. Occasionally it may include assessment of a limited exploratory ground investigation or previous investigation data.
TIER 2: GENERIC QUANTITATIVE RISK ASSESSMENT	This phase is concerned with establishing whether contamination is present, usually through intrusive ground investigation, and then evaluating the magnitude of the associated risks with test results compared to generic assessment criteria.
TIER 3: DETAILED QUANTITATIVE RISK ASSESSMENT	To further evaluate risks the development of site-specific assessment criteria are values for concentrations of contaminants derived using risk estimation models

Risk Classification

The objective of risk assessment is to identify the nature and magnitude of the potential risks and should be based on a consideration of both:

- The likelihood/probability of an event [taking into account both the presence of the hazard and receptor and the integrity of the pathway].
- The severity of the potential consequence [taking into account both the potential severity of the hazard and the sensitivity of the receptor].

There is a need for a logical, transparent and repeatable system in defining the categories of severity of consequence and likelihood as well as for the risk itself and therefore the following risk rating matrix is employed:

		SEVERITY OF CONSEQUENCE			
		SEVERE	MEDIUM	MILD	MINOR
PROBABILITY	HIGH LIKELIHOOD	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	LIKELY	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	LOW LIKELIHOOD	Moderate Risk	Moderate/Low Risk	Low Risk	Negligible Risk
	UNLIKELY	Moderate/Low Risk	Low Risk	Negligible Risk	Negligible Risk

These risk classifications are defined as follows:

- **Very High Risk** - There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
- **High Risk** - Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
- **Moderate Risk** - It is possible that without appropriate remediation action harm could arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.
- **Low Risk** - It is possible that harm could arise to a designated receptor from an identified hazard. It is likely that, at worst if any harm was realised any effects would be mild.
- **Negligible Risk** - The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

This risk assessment matrix and classification system is based on guidance produced by Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency in connection with contaminated land assessment.

TIER 2 RISK ESTIMATION - SOILS

Introduction to Soil Human Health Generic Assessment Criteria (GAC)

The Environment Agency (EA) and Department of Environment Food and Rural Affairs (DEFRA) had previously issued revised guidance following the consultation about the DEFRA publication 'Assessing risks from land contamination - a proportionate approach. Soil Guideline Values: the Way Forward'. This resulted in a revised version of the Contaminated Land Exposure Model (CLEA) model (version 1.06) and a few of the previously published Soil Guideline Values (SGVs) were revised.

The main legislative driver for dealing with historical land affected by contamination is Part 2A of the Environmental Protection Act 1990. Revised Statutory Guidance to support Part 2A was published in April 2012. This Guidance introduced a new four-category system for classifying land under Part 2A for cases of a Significant Possibility of Significant Harm to human health, where Category 1 includes land where the level of risk is clearly unacceptable and Category 4 includes land where the level of risk posed is acceptably low. The impact assessment for the new Statutory Guidance stated "The new statutory guidance will bring about a situation where the current SGVs/GACs are replaced with more pragmatic (but still strongly precautionary) Category 4 screening levels (C4SLs) which will provide a higher simple test for deciding that land is suitable for use and definitely not contaminated land". The C4SLs are still derived using the CLEA model, but adopt a slightly different approach to toxicological assessment and exposure modelling.

In March 2014, the outcome of 'SP1010 - Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination - Final Project Report' (CL:AIRE) was published. Due to slightly ambiguous wording within this report, Lord de Mauley, Parliamentary Under Secretary, DEFRA wrote to all local authorities on 3 September 2014 to confirm that the published C4SLs were final and that they can be used in risk assessment undertaken under the planning regime.

Whilst there are proposals for the industry to develop C4SLs for other contaminants, these have only produced limited results to date. BRD do not believe that C4SLs could be developed by a single organisation with sufficient confidence. BRD has therefore employed other, more conservative guidance based on the CLEA model (detailed below) within this assessment for compounds where C4SLs are not available. However, it should be noted that the results of this investigation may need to be reinterpreted as new C4SLs become available.

Due to the limited number of published C4SL values at this time, the Chartered Institute of Environmental health (CIEH) and Land Quality Management Ltd (LQM) have produced Generic Assessment Criteria (GAC) known as Suitable for Use Levels (S4ULs), for use in contaminated land human health risk assessment. These S4ULs (2014) have been derived for a large number of substances using the current CLEA model and are therefore consistent with current guidance. They also incorporate the revised exposure parameters as adopted by the C4SL programme, but have not adopted the revised toxicological approach adopted by the C4SLs and so remain a more conservative assessment criteria. The substances for which SGVs were previously published have also been revised as new S4ULs in light of the new exposure parameters proposed by the C4SL programme, and therefore effectively replace the existing SGVs.

In addition, in December 2009, other GAC for less common substances were produced by the Environmental Industries Commission (EIC), The Association of Geotechnical and Geoenvironmental Specialists (AGS) and Contaminated Land: Applications in Real Environments (CL:AIRE) using the CLEA model. These are referred to as the EIC/AGS/CLAIRE GAC.

In summary, C4SLs have been used where these are available. For those substances where C4SLs have yet to be issued, then the S4ULs have been adopted or in some cases, the EIC/AGS/CLAIRE GAC. All of the previously produced SGVs have now either been withdrawn, or superseded by the respective C4SLs or S4ULs.

The only exception to this approach is the PAH compound benzo(a)pyrene (BaP) where a C4SL guideline value has been produced, whereas BRD has adopted the S4UL value. The C4SL for BaP relates to its use as a surrogate marker compound representing all of the genotoxic PAH compounds as a mixture, rather than this individual compound. BRD has therefore adopted the compound specific S4UL value as the initial screening value, for consistency with the other PAH compounds before then employing the C4SL is necessary.

It should be noted that unless otherwise stated, all the assessment criteria adopted within this report have been derived based on a sandy loam soil at pH 7 and the values quoted are for a conservative soil organic matter content of 1% where applicable (i.e. organic contaminants).

Human Health - Soil Generic Assessment Criteria

The results of the soils analysis have been compared to generic assessment criteria for the default exposure scenarios comprising either residential land with plant uptake, residential land without plant uptake, or commercial/industrial land use. The criteria values selected are listed in the table below and full details on the source are referred to above. Where deemed appropriate, the results have also been assessed with reference to the required statistical tests presented within CL:AIRE Professional Guidance: 'Comparing Soil Contamination Data with a Critical Concentration'.

ANALYSIS	GENERIC ASSESSMENT CRITERIA (mg/kg unless stated)			SOURCE
	RESIDENTIAL WITH PLANT UPTAKE	RESIDENTIAL WITHOUT PLANT UPTAKE	COMMERCIAL / INDUSTRIAL	
Arsenic	37	40	640	C4SL
Cadmium	22	150	410	
Chromium (total) ⁵	910	910	8,600	S4UL
Chromium VI	21	21	49	C4SL
Lead	200	310	2,330	
Mercury*	11	15	320	S4UL
Selenium	250	430	12,000	
Nickel	180	180	980	
Copper	2400	7,100	68,000	
Zinc	3,700	40,000	730,000	
pH	<5 - 10> units			Professional judgement
Naphthalene	2.3	2.3	190	S4UL
Acenaphthylene	170	2,900	83,000	
Acenaphthene	210	3,000	84,000	
Fluorene	170	2,800	63,000	
Phenanthrene	95	1,300	22,000	
Anthracene	2,400	31,000	520,000	
Fluoranthene	280	1,500	23,000	
Pyrene	620	3,700	54,000	
Benzo(a)anthracene	7.2	11	170	
Chrysene	15	30	350	
Benzo(b)fluoranthene	2.6	3.9	44	
Benzo(k)fluoranthene	77	110	1,200	
Benzo(a)pyrene	2.2	3.2	35	
Indeno(1,2,3-cd)pyrene	27	45	500	
Dibenzo(a,h)anthracene	0.24	0.31	3.5	S4UL
Benzo(ghi)perylene	320	360	3,900	
TPH Aliphatic C5-C6	42	42	3,200	
TPH Aliphatic C6-C8	100	100	7,800	
TPH Aliphatic C8-C10	27	27	2,000	
TPH Aliphatic C10-C12	130	130	9,700	
TPH Aliphatic C12-C16	1,100	1,100	59,000	
TPH Aliphatic C16-C35	65,000	65,000	1,600,000	

ANALYSIS	GENERIC ASSESSMENT CRITERIA (mg/kg unless stated)			SOURCE
	RESIDENTIAL WITH PLANT UPTAKE	RESIDENTIAL WITHOUT PLANT UPTAKE	COMMERCIAL / INDUSTRIAL	
TPH Aliphatic C35-C44	65,000	65,000	1,600,000	
TPH Aromatic C5-C7	70	370	26,000	
TPH Aromatic C7-C8	130	860	56,000	
TPH Aromatic C8-C10	34	47	3,500	
TPH Aromatic C10-C12	74	250	16,000	
TPH Aromatic C12-C16	140	1,800	36,000	
TPH Aromatic C16-C21	260	1,900	28,000	
TPH Aromatic C21-C35	1,100	1,900	28,000	
TPH Aromatic C35-C44	1,100	1,900	28,000	
Benzene	0.87	3.3	98	C4SL
Toluene	130	880	56,000	S4UL
Ethylbenzene	47	83	5,700	
Xylene [^]	56	79	5,900	
MTBE	49	73	7,900	EIC/AGS/CL:AIRE GAC

Notes:

* The S4UL for methyl mercury has been adopted as the worst case mercury compound as generally there is no desk study evidence to suggest the potential for elemental mercury on the majority of sites.

[^] The lowest S4UL of either p-xylene, o-xylene or m-xylene has been adopted for each land use as a conservative measure.

[§] S4UL for Chromium III adopted, as in the absence of Chromium VI it is likely that all of the chromium will be in this form as these are the two most common and stable forms of chromium in the soil environment.

Where no GAC is available, any concentrations exceeding the laboratory limit of detection are identified and discussed in more detail.

Water Environment - Soil Generic Assessment Criteria

There are no UK published Generic Assessment Criteria for soil test results in respect of the risk to the water environment and therefore risk estimation is on the basis of the professional judgement and experience of BRD to employ values that are a reasonable concentration above which concern for water resources is valid.

The Total PAH GAC employed is the sum of the 16No. priority PAH compounds regularly tested for in contaminated land analysis (i.e. US EPA 16PAHs). BRD employ a soil screening based upon the total PAH limit for 'inert waste' of 100mg/kg. The rationale is based on PAHs are recognised to be generally of low solubility and the risk to the water environment is correspondingly low.

In respect of Total Petroleum Hydrocarbons, BRD employ a value of 500 mg/kg as a screening value in comparison to the sum of the component aliphatic and aromatic TPH carbon bands. The employed soil screening value is based upon:

- In common with some other consultants, the professional judgement and experience of BRD suggests that this value is a reasonable concentration above which concern for water resources is valid. The rationale is based on the fact that lower concentrations of fuel based contaminants are more likely to naturally degrade than migrate any great distance.
- BRD is aware of regional Environment Agency groundwater and contaminated land teams historically employing 500 mg/kg as a screening value for considering whether or not TPH could represent a risk to water resources.
- The value mirrors the mineral oil Waste Acceptance Criteria limits for what is considered 'inert waste'.

Should elevated contaminants that pose a potential risk to the water environment be identified then site specific assessment criteria should be developed.

Building Materials and Services - Soil Generic Assessment Criteria

Some hydrocarbon compounds are known to both attack and permeate through certain plastic pipe materials, with the primary concern being the degradation and tainting of water supplies. The UK Water Industry Research (UKWIR) has therefore produced a document 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' (ref. 10/WM/03/21) that specifies threshold criteria for the adoption of 'standard' polythene (PE) or PVC pipes, protective barrier pipe and ductile iron/steel/copper pipes.

The UKWIR threshold assessment criteria from Table 3.1 of this document for standard PE pipes have been employed. It should be noted that the approach taken by UKWIR is very conservative, and both the document and research are flawed. However, it is these values that are being using to specify water pipe materials and therefore it is appropriate to consider them.

The UKWIR guidance is particularly flawed in respect of the chemical analysis it expects as it seeks a limit of detection that is generally below limits that are reasonable or commonly employed in contaminated land assessment. The UKWIR seeks that where a substance is below the limit of detection it should be taken as being present at half this concentration. For the larger suite of chemicals where the limit is against a sum of compounds, this approach would mean that a sample of virgin sub-soil from a greenfield site with absolutely no contamination would actually fail the criteria for using standard PE pipes. To avoid this situation, BRD have adopted the approach of summing only those compounds detected above their respective limits of detection.

In terms of building materials, the primary concern is in respect of concrete as certain commonly occurring natural ground conditions can adversely impact on buried concrete as discussed in 'Special digest 1:2005 Concrete in aggressive ground', BRE, 2005.

ANALYSIS	GENERIC ASSESSMENT CRITERIA	SOURCE
pH	<5.5	BRE Special Digest 1:2005
Sulphate (w/s)	500 mg/l	BRE Special Digest 1:2005
Sum of any VOC above detection limits	0.5 mg/kg	Relevant compounds adapted from UKWIR Table 3.1
Sum of SVOC + Aliphatic TPH >C5-C10 + Aromatic TPH >C5-C10 above detection limits	2 mg/kg	
Sum of Aliphatic TPH >C10-C21 + Aromatic TPH >C10-C21 above detection limits	10 mg/kg	
Sum of Aliphatic TPH >C21-C34 + Aromatic TPH >C10-C35 above detection limits	500 mg/kg	
Sum of BTEX + MTBE above detection limits	0.1 mg/kg	
Phenols	2 mg/kg	
Cresols and chlorinated phenols	2 mg/kg	
Naphthalene	0.5 mg/kg	
Benzo(a)pyrene	0.5 mg/kg	

TIER 2 RISK ESTIMATION - SURFACE WATER AND GROUNDWATER

The initial assessment of the contamination risk to groundwater is by comparing dissolved groundwater concentrations with screening values (GAC) that are protective of surface water resources. Surface waters are supplied with a baseflow from groundwater and so shallow groundwater often enters the surface water. It is therefore appropriate to compare groundwater to these GAC.

The reference source for the target concentrations is generally the Environment Agency's maximum allowable concentration Environmental Quality Standard (EQS) (as accessed February 2025: <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit#screening-tests-freshwaters>), the Water Supply (Water Quality) Regulations 2016 (WSR) and the DW1/DW2 criteria from the Surface Water (Abstraction for drinking water)(classification) Regulations 1996. The target concentrations are outlined in the table below.

The 'Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies'. CL:AIRE, 2017 has also been used as reference source for the values.

ANALYSIS	GENERIC ASSESSMENT CRITERIA (GAC)	SOURCE
Arsenic	50 µg/l	DW1 (& EQS annual average)
Cadmium	50 µg/l	DW1
Chromium (total)	32 µg/l	EQS
Chromium (VI)	3.4 µg/l	EQS
Copper	50 µg/l	DW1
Nickel	34 µg/l	EQS
Lead	14 µg/l	EQS
Mercury	1 µg/l	WSR
Selenium	10 µg/l	WSR
Zinc	10.9 mg/l	EQS annual average bioavailable
Cyanide	50 µg/l	WSR
pH	6 to 9 units	-
Benzene	50 µg/l	EQS
Toluene	380 µg/l	EQS
Ethylbenzene	300 µg/l	WHO guideline
Xylene	30 µg/l	EQS (annual average)
Methyl tert-butyl ether (MTBE)	15 µg/l	Taste and odour threshold.
Naphthalene	130 µg/l	EQS
Benzo(a)pyrene	0.27 µg/l	EQS
Total PAH	-	Benzo(a)pyrene can be considered as a marker for the other PAHs
TPH Aliphatic C5-C6	15,000 µg/l	World Health Organization (WHO) guide values for TPHCWG fractions in drinking water
TPH Aliphatic C6-C8	15,000 µg/l	
TPH Aliphatic C8-C10	300 µg/l	
TPH Aliphatic C10-C12	300 µg/l	
TPH Aliphatic C12-C16	300 µg/l	
TPH Aromatic C5-C7	10 µg/l	
TPH Aromatic C7-C8	700 µg/l	
TPH Aromatic C8-C10	300 µg/l	
TPH Aromatic C10-C12	90 µg/l	
TPH Aromatic C12-C16	90 µg/l	
TPH Aromatic C16-C21	90 µg/l	
TPH Aromatic C21-C35	90 µg/l	

TIER 2 RISK ESTIMATION - GROUND GAS

Introduction

A variety of potentially hazardous gases occur naturally in the ground environment. Microbial decay of organic matter under anaerobic conditions and geological processes can lead to the generation of Methane and Carbon Dioxide, but can also include traces gases such as Hydrogen sulphide and Carbon monoxide.

Methane is a colourless and odourless gas that has the hazardous properties of being flammable and, at certain air/Methane mixtures, explosive. Methane has a low toxicity, but can be a simple asphyxiant due to the displacement of oxygen.

Carbon Dioxide is a colourless, odourless and non-combustible gas that has the hazardous property of being a highly toxic chemical. At concentrations of 3% by volume, shortness of breath and headaches will occur becoming acute by 6%. At levels of above 10% by volume headache, visual distortion, tremors and rapid loss of consciousness occur. Concentrations of Carbon Dioxide above 22% by volume are likely to be fatal. The effects of Carbon Dioxide poisoning are made more severe if there is accompanying reduction in oxygen concentrations.

Hydrogen sulphide is a colourless and flammable gas that has an odour of rotten eggs. It is important that the sense of smell is over powered at higher concentrations. The gas is toxic and can be an asphyxiant.

Carbon monoxide is a colourless, odourless and explosive gas in air mixtures that has the hazardous property of being a highly toxic chemical.

Radon is a naturally occurring colourless and odourless gas that is radioactive. It is formed by the radioactive decay of radium which in turn is derived from the radioactive decay of uranium, both of which are minerals that can be found in many soil types. Whilst it is recognised that the air inside every building contains radon, some buildings built in certain defined areas of the country might have unacceptably high concentrations and require special precautions to be taken. The maps contained within BRE211:2015 'Radon: guidance on protective measures for new buildings' identify areas where no radon protection measures are necessary or where higher concentrations are present that either basic or full radon protection measures are required to be fitted to all new buildings, extensions or refurbishments.

Basis of Gas Assessment

In order to classify the level of risk and need, if any, for gas protection measures at a site with the potential for a gas problem, consideration of each of the following is necessary:

- *The source of the gas.*
- *The generation potential of the gas.*
- *The location of the source and the geological setting.*
- *Boreholes flow rate and estimated surface emission rate.*
- *The nature of the proposed development.*
- *Confidence in the knowledge of the gas regime.*

The gas assessment is made with reference to 'C665 - Assessing risks posed by hazardous ground gases to buildings', (CIRIA, 2007) and 'BS8485:2015+A1:2019 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' (BSi, 2019).

Gas Screening Value

The methods within CIRIA C665 and BS8485 both use the gas concentrations together with the borehole flow rates to define a characteristic situation for a site based on the limiting borehole gas volume flow for Methane and Carbon Dioxide. This limiting borehole gas volume flow is called the Gas Screening Value (GSV) and is expressed below:

$$\text{Gas Screening Value (l /hr)} = \text{borehole flow rate (l/hr)} \times \text{gas concentration (fraction)}$$

The calculation of GSV is completed for both Methane and Carbon Dioxide and then the 'worse case' maximum values are used in the assessment. The assessment is to determine the gas regime at the site is dependent upon the nature of the development.

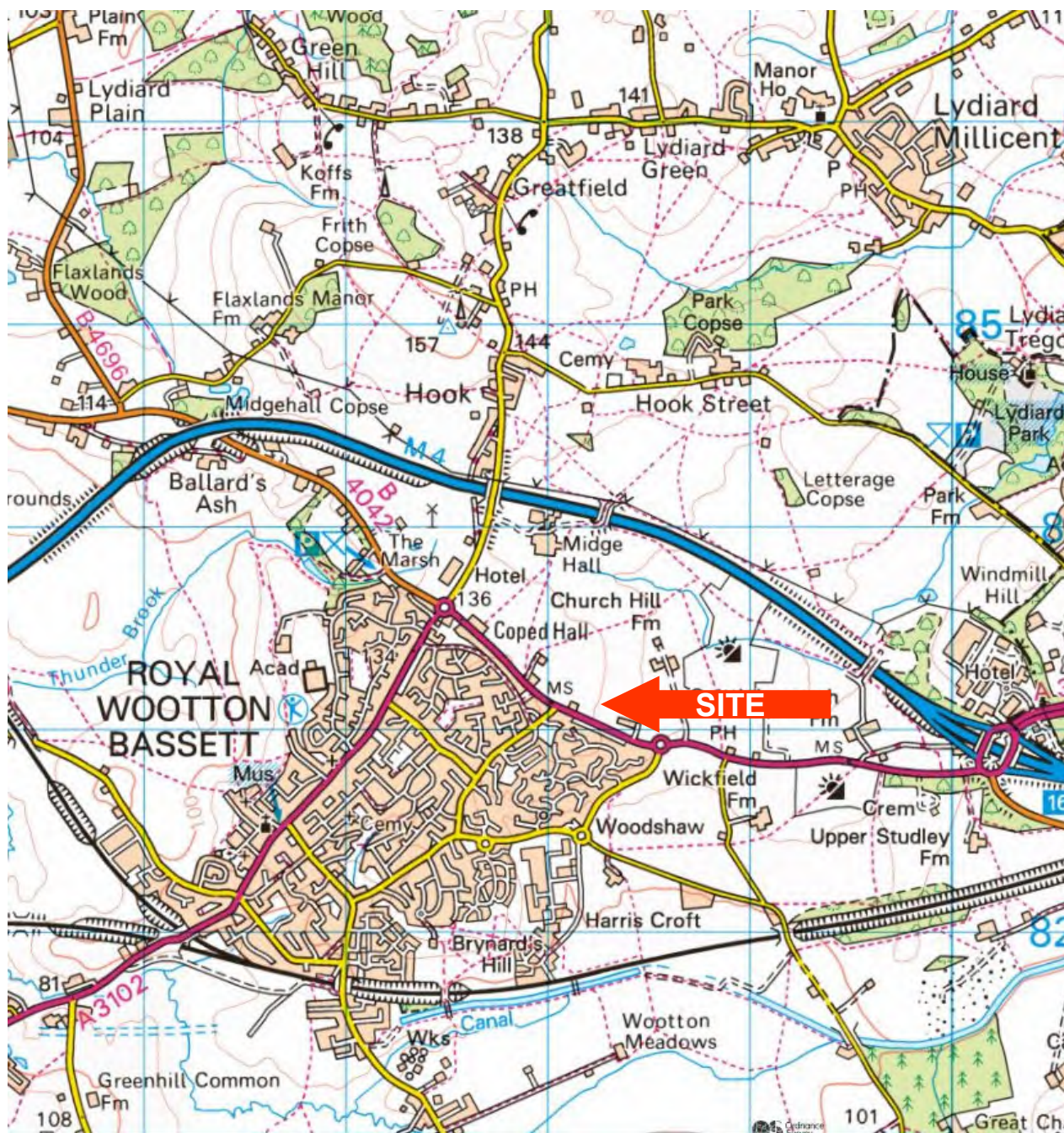
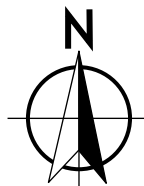
Characteristic Gas Situation

The characteristic situation for many sites is determined from evaluation of the Gas Screening Value derived against the criteria in the following table.

Characteristic situation	Hazard potential	Gas Screening Value (CH ₄ or CO ₂ l/hr)	Additional factors
CS1	Very low risk	<0.07	Typically Methane ≤1% and/or Carbon Dioxide ≤5%. Otherwise consider an increase to characteristic situation 2.
CS2	Low risk	0.07 to <0.7	Borehole air flow rate not to exceed 70 l/hr. Otherwise consider an increase to characteristic situation 3.
CS3	Moderate risk	0.7 to <3.5	-
CS4	Moderate to high risk	3.5 to <15	Quantitative risk assessment required to evaluate the scope of protection measures.
CS5	High risk	15 to <70	-
CS6	Very high risk	>70	-

APPENDIX 1

Site Location Plan



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Not to scale.

Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP3-A
Date Issued: May 2025



The scaling of this drawing cannot be assured

Revision	Date	Drn	Ckd
F Illustrative Masterplan Update to Include Additional Play Area	14.10.25	I.M.	T.L.

- Site Boundary
- 6.50Ha / 16.07Ac
- Built Form
- Garden
- Primary Road
- Shared Surface
- Private Drive
- Parking
- Footpath
- Open Space
- Play Area
- Interpretation Board
- Attenuation
- Swale
- Pumping Station

Project
Royal Wootton Bassett

Drawing Title
Illustrative Masterplan

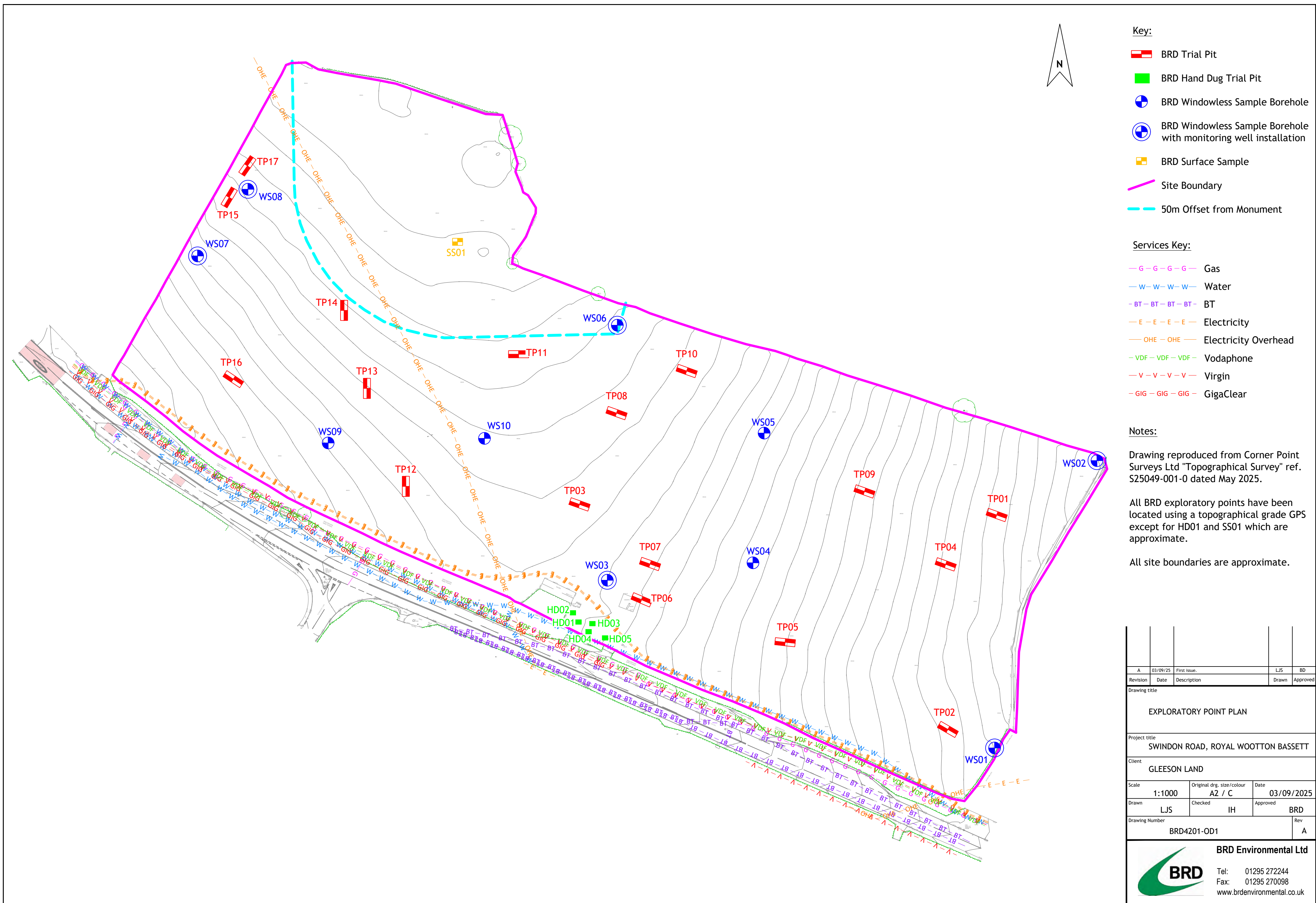
Date 08.08.25	Scale 1:2,500 @A3	Drawn by J.W.	Check by T.L.
Project No 333102301	Drawing No STN-GEN-SW-DR-MP-06F	Revision	

Stantec

DRAFT

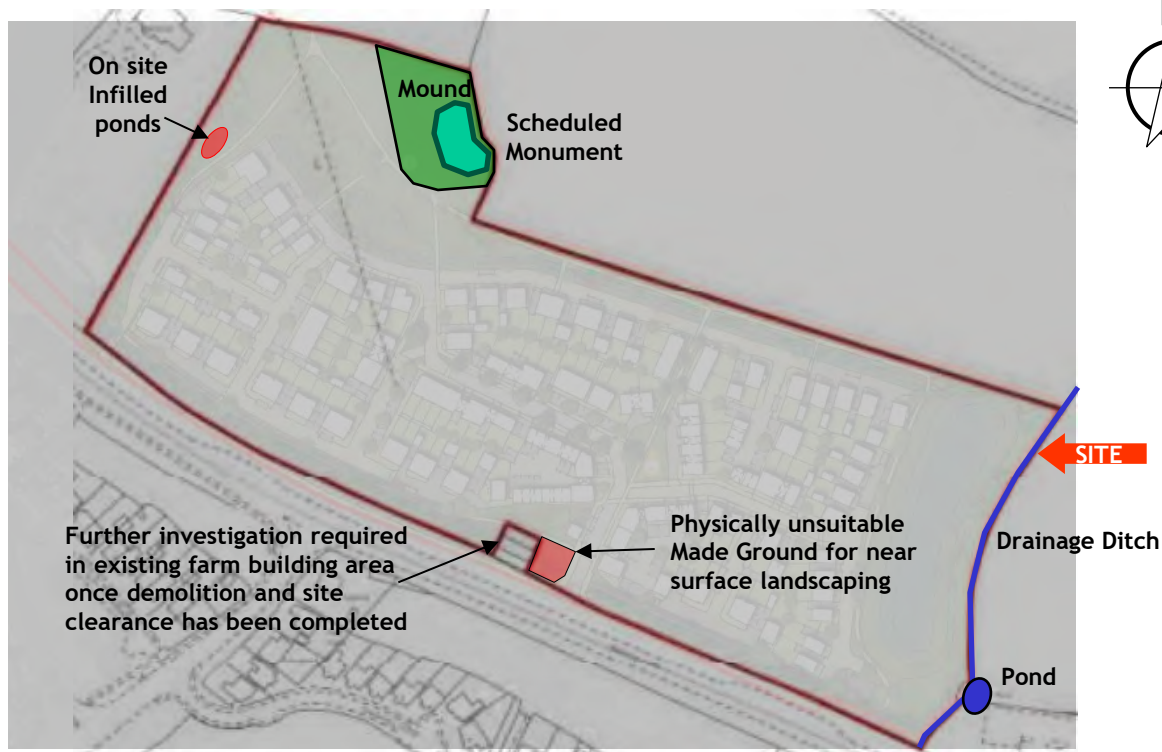
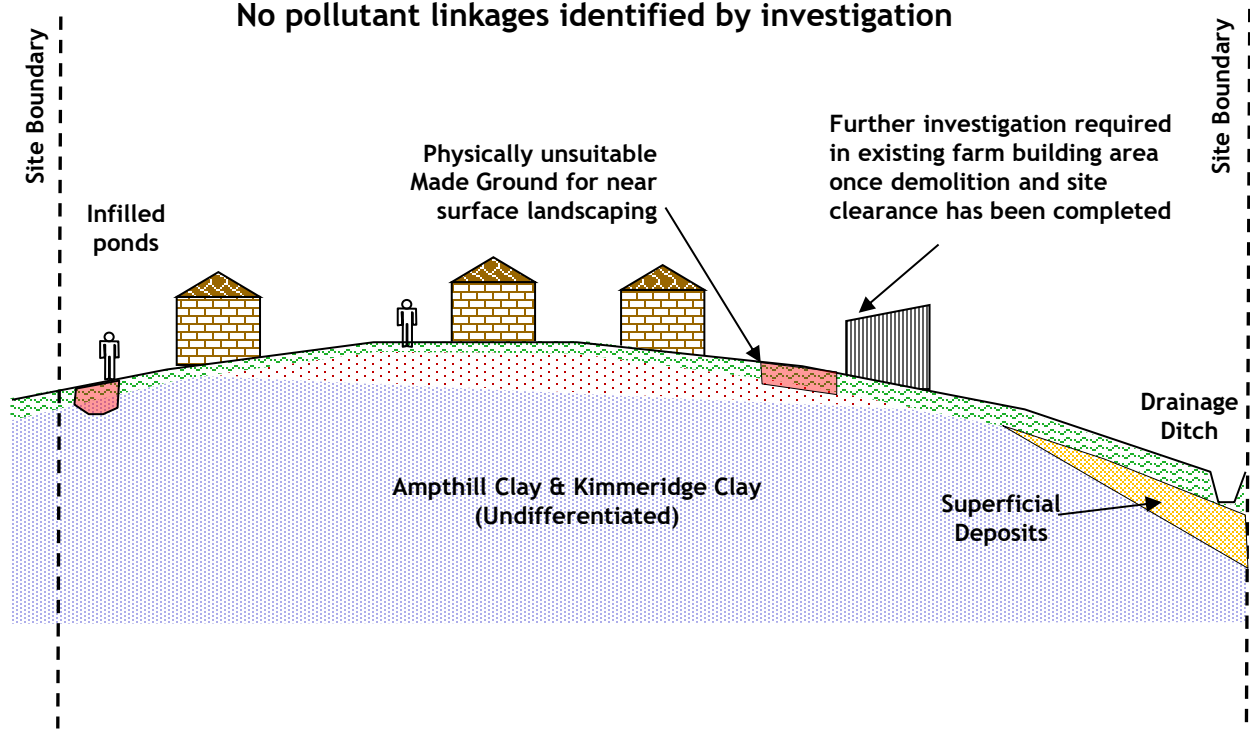
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stantec.com\uk



Revised Conceptual Model

No pollutant linkages identified by investigation



Project Title: Swindon Road, Royal Wootton Bassett
 Client: Gleeson Land
 BRD Reference: BRD4201-OP7-B
 Date Issued: November 2025

APPENDIX 2

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP01		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.	0.25 (125.40)	TS	
0.50	J2		Hard, dry, blocky, fractured, brown with some grey, slightly gravelly CLAY. Gravel of fine to coarse, subangular to angular flint.		SUP. DEP.	
0.60	SV	110/100/112 kPa	Very stiff, hard, dry, blocky, brown with some orange CLAY.	0.70 (124.95)		KIMM + AMP CLAY (UNDIFF.)
1.20	SV D1	100/98/104 kPa	1.00 m: Becoming very stiff. 1.20 m: Occasional selenite crystals.	1 1.60 (124.05)		
1.80	SV	70/72/70 kPa	Firm to stiff, grey with some brown, slightly fissured CLAY with selenite.	2 2.00 (123.65)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 125.645 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.0m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	
					 Telephone: 01295 272244 Email: info@brduk.com	

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP02		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.	0.25 (126.59)	TS	
			Hard, dry, blocky, fractured, brown with some grey, slightly gravelly CLAY. Gravel of fine to coarse, subangular to angular flint.			
1.00	J2		Hard, dry, blocky, grey brown with some orange CLAY.	1 1.20 (125.64)	KIMMERIDGE + AMPTHILL CLAY (UNDIFF.)	
1.10	SV	140/>140/>140 kPa	Firm to stiff, grey with some brown and orange brown CLAY with selenite.			
1.50	D1					
				2 2.00 (124.84)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 126.835 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.0m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25			
			 Telephone: 01295 272244 Email: info@brduk.com			

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP03		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.	0.30 (133.96)	TS	
0.60	SV D1	132/128/>140 kPa	Hard, dry, blocky, light grey with orange brown CLAY.			
1.40	SV	76/80/86 kPa	Stiff, grey brown with some orange CLAY.	0.80 (133.46)	KIMMERIDGE + AMPTHILL CLAY (UNDIFF.)	
1.70	D2		1.20 m: Selenite and occasional shell fossils. 1.50 m: Some shell fossils. 1.60 m: Becoming slightly fissured.			
				1.80 (132.46)		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 134.263 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 1.8m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25			
			 Telephone: 01295 272244 Email: info@brduk.com			

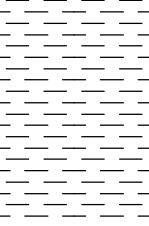
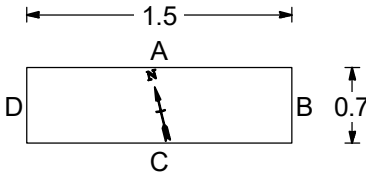
TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP04		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint. Hard, dry, blocky, light grey with orange brown, slightly gravelly CLAY. Gravel of fine to coarse and cobbles of subangular to angular flint.	0.25 (126.57)	TS	
0.80	D1		Hard, dry, blocky, grey with orange brown CLAY with occasional shell fossils and calcareous aggregations.	0.70 (126.12)	SD	
1.40	SV D2	70/78/80 kPa	Firm to stiff, grey and brown with some orange brown, slightly fissured, slightly sandy CLAY. Occasional shell fossils, selenite and relict rootlets.	1.20 (125.62)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
2.40	SV D3	74/80/72 kPa	Stiff, blocky, grey with some brown CLAY with shell fossils, selenite and relict rootlets.	2.50 (124.32)		
3.00	SV	90/90/86 kPa		3.20 (123.62)		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 126.821 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 3.2m bgl.			
			All dimensions in metres Log Scale 1:25 Telephone: 01295 272244 Email: info@brduk.com			

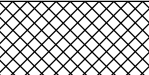
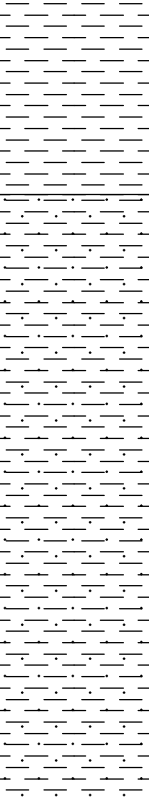
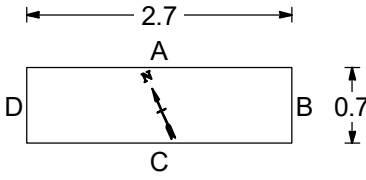
TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP05		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.	0.30 (129.64)	TS	
0.50	J2		Hard, dry, blocky, light brown with some grey, slightly gravelly CLAY. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.		SD	
			Very stiff / hard, blocky, grey with some brown and orange brown CLAY.	0.60 (129.34)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
1.00	SV D1	80/80/76 kPa	Firm to stiff, grey with brown and orange brown CLAY with selenite and occasional shell fossils.	0.80 (129.14)		
2.10	SV D2	80/82/86 kPa	Firm to stiff, slightly fissured, grey with some brown and orange brown, slightly sandy CLAY with occasional shell fossils, selenite and relict rootlets. 2.00 m: Some polished and striated surfaces.	1.90 (128.04)		
2.80	SV D3	90/94/94 kPa	2.70 m: Becoming stiff.	3.00 (126.94)		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 129.941 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 3.0m bgl.			All dimensions in metres Log Scale 1:25
			Telephone: 01295 272244 Email: info@brduk.com			

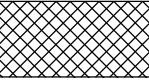
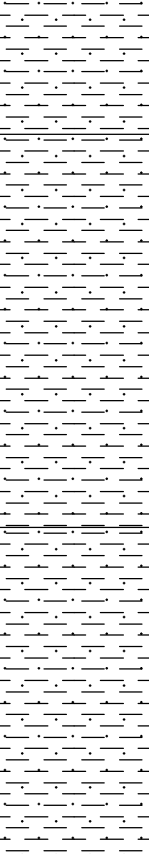
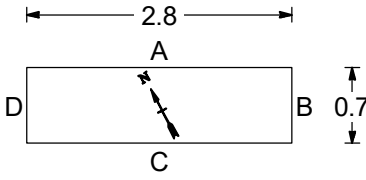
TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP06		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		MADE GROUND TOPSOIL: Crops over brown, very gravelly, friable clay. Gravel of fine to coarse and occasional cobbles of subangular to angular limestone, flint and brick. Hard, dry, blocky, grey with some brown CLAY.	0.20 (132.71)	MGTS	
0.50	J2				K + A CLAY (UNDIFF.)	
0.60	D1					
				1 1.00 (131.91)		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 132.914 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 1.0m bgl.		All dimensions in metres Log Scale 1:25	
					 Telephone: 01295 272244 Email: info@brduk.com	

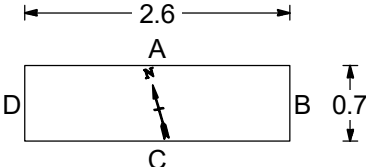
TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP07		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		MADE GROUND TOPSOIL: Crops over brown, very gravelly, slightly sandy, friable, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular limestone, flint and brick.	0.25 (132.82)	MGTS	
			Hard, dry, blocky, grey with some brown CLAY.			
1.00	J2		Stiff, grey with brown, slightly fissured, slightly sandy CLAY with selenite, shell fossils and relict rootlets.	0.90 (132.17)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
1.20	SV D1	90/98/100 kPa				
			2.20 m: Becoming stiff to very stiff, fissured with some silty partings.	2.90 (130.17)		
2.40	SV D2	110/108/100 kPa				
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 133.065 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.9m bgl.			
			All dimensions in metres Log Scale 1:25  Telephone: 01295 272244 Email: info@brduk.com			

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP08		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		MADE GROUND TOPSOIL: Crops over hard, brown, slightly gravelly, slightly sandy clay. Gravel of fine to coarse, subangular to angular flint with fine brick and charcoal.	0.25 (134.58)	MGTS	
0.60	SV J2	>140/>140/>140 kPa	Hard, dry, blocky, light brown with some grey, slightly sandy CLAY.	0.70 (134.13)	KIMMERIDGE + AMPTHILL CLAY (UNDIFFERENTIATED)	
1.00	D1		Stiff, grey with brown, slightly fissured, slightly sandy CLAY with selenite and shell fossils.	1		
1.10	SV	78/80/76 kPa				
1.60	D2					
			Stiff to very stiff, blue grey with brown, fissured, slightly sandy CLAY with some sandy, silty partings. Some shell fossils, selenite and relict rootlets. Occasional striated surfaces.	2 2.00 (132.83)		
2.80	SV D3	100/96/108 kPa		3 3.10 (131.73)		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 134.834 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 3.1m bgl.			All dimensions in metres Log Scale 1:25
			 Telephone: 01295 272244 Email: info@brduk.com			

TRIAL PIT RECORD

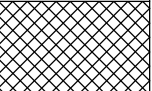
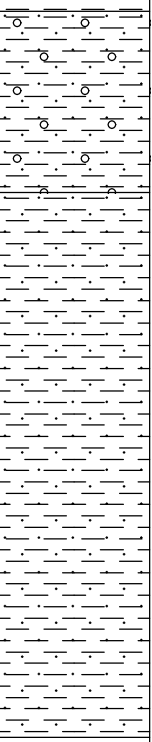
Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 27/08/2025 Method Used: Tracked mini-excavator						Trial Pit No.	
						TP09	
						Sheet 1 of 1	
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend	
Depth	Type & No	Value					
0.10	J1	80/76/76 kPa	TOPSOIL: Crops over hard, dry, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse and occasional cobbles of subangular to angular flint.	0.25 (128.98) 0.40 (128.83)	TS		
			Hard, dry, blocky, light brown with some grey, slightly sandy CLAY.				
0.50	J2		Firm to stiff, grey with some brown, slightly sandy CLAY.				
0.60	SV D1	80/76/76 kPa		1	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
1.30	SV D2	80/76/76 kPa	Stiff, grey with brown and orange brown, slightly fissured, slightly sandy CLAY with selenite.	1.20 (128.03)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
				1.50 (127.73)			
1.80	SV D3	70/72/68 kPa	Firm to stiff, dark grey, friable in places, silty, sandy CLAY with occasional orange, sandy pockets. Abundant selenite and occasional shell fossils and relict rootlets.	2	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
				2.00 (127.23)			
2.50	J3	80/78/70 kPa		3	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
2.90	SV	80/78/70 kPa	Stiff, grey with brown, fissured, slightly sandy CLAY with selenite and relict roots. Occasional sandy, silty partings.	3.00 (126.23)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
				4	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)		
Pit Stability: Generally stable throughout				Surface Elevation Level:			
Groundwater: Not encountered				129.232 mAOD			
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 3.0m bgl.				
			All dimensions in metres Log Scale 1:25				
			 Telephone: 01295 272244 Email: info@brduk.com				

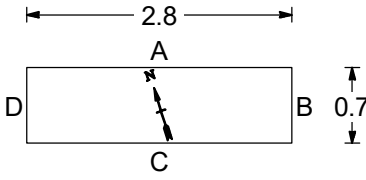
TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP10		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly slightly sandy, organic clay. Gravel of fine to coarse, subangular to angular flint.		TS	
0.40	SV	110/112/112 kPa	Very stiff, light brown with some grey, slightly sandy CLAY.	0.25 (134.11)		
			Stiff, grey brown, slightly sandy CLAY with shell fossils.	0.50 (133.86)		
0.90	D1		0.80 m: Some selenite.	1		
1.00	SV J2	80/84/80 kPa				
1.80	SV D2	86/86/84 kPa	Stiff, fissured, grey and brown, slightly silty CLAY with some silty, sandy partings, selenite, shell fossils and relict rootlets.	1.50 (132.86)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
2.50	SV D3	100/110/102 kPa	2.50 m: Becoming very stiff and blue grey and brown in colour.	2		
				2.90 (131.46)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 134.358 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.9m bgl.			All dimensions in metres Log Scale 1:25
			Telephone: 01295 272244 Email: info@brduk.com			

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP11	
				Sheet 1 of 1	

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		MADE GROUND TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly clay. Gravel of fine to coarse, subangular to angular flint with rare brick and charcoal.	0.30 (135.50)	TS	
0.60	SV J2	140/140/140 kPa	Hard, dry, blocky, light brown CLAY.			
0.90	SV	100/110/92 kPa	Very stiff, light grey with light brown and white in places, friable, slightly sandy, gravelly, calcareous CLAY. Gravel of medium to coarse and cobbles of subangular to tabular calcareous mudstone / siltstone. Abundant shell fossil fragments and selenite.	0.70 (135.10)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
1.00	D1					
1.60	SV D2	110/94/96 kPa	Stiff to very stiff, heavily fissured, grey with brown, slightly sandy CLAY with some silty, sandy partings, selenite, relict rootlets and shell fossils.	1.30 (134.50)		
2.80	SV D3	90/82/98 kPa	2.50 m: Becoming stiff, blue grey and brown in colour with abundant shell fossils.	3.10 (132.70)		

Pit Stability: Generally stable throughout Groundwater: Not encountered		Surface Elevation Level: 135.798 mAOD
Plan of Trial Pit: 	General Remarks: Trial pit terminated at 3.1m bgl.	
		All dimensions in metres Log Scale 1:25  Telephone: 01295 272244 Email: info@brduk.com

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP12		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subangular to angular flint. Hard, dry, blocky, dark brown with some grey slightly sandy CLAY.	0.20 (133.56)	TS	
0.60	SV J2	128/140/138 kPa		0.80 (132.96)		
1.00	D1		Stiff to very stiff, slightly fissured, dark grey brown with patches of orange brown, slightly sandy CLAY with occasional shell fossils and selenite.	1		
1.10	SV	108/100/88 kPa		1.60 (132.16)		
2.00	SV D2	100/88/90 kPa	Stiff to very stiff, fissured, blue grey with brown, slightly sandy CLAY with some sandy, silty partings. Some selenite, relict rootlets and shell fossils.	2	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
				2.90 (130.86)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 133.762 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.9m bgl.			All dimensions in metres Log Scale 1:25
			Telephone: 01295 272244 Email: info@brduk.com			

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP13		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.20	J1		TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subangular to angular flint. Hard, dry, blocky, dark brown with some grey slightly sandy CLAY.	0.25 (134.28)	TS	
0.70	SV D1	100/108/110 kPa	Very stiff, dry, blocky, light grey and light brown, slightly gravelly, sandy CLAY. Gravel of fine to coarse and rare cobbles of subangular to tabular mudstone / siltstone.	0.50 (134.03)		
1.50	SV D2	100/100/94 kPa	Stiff to very stiff, slightly fissured, grey brown, slightly sandy CLAY with selenite, shell fossils and occasional relict rootlets.	1.10 (133.43)		
2.60	SV D3	100/96/100 kPa	Stiff to very stiff, fissured, blue grey with brown, slightly sandy CLAY with some sandy, silty partings. Some selenite, relict rootlets and shell fossils.	2.10 (132.43)		
				3.00 (131.53)		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 134.527 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 3.0m bgl.			
				All dimensions in metres Log Scale 1:25		
				Telephone: 01295 272244 Email: info@brduk.com		

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP14		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subangular to angular flint.		TS	
			Stiff, light brown with occasional grey, slightly sandy CLAY.	0.30 (135.12)		
0.60	SV J2	90/92/90 kPa	Stiff, light brown and grey, slightly gravelly, slightly sandy CLAY. Gravel of fine to coarse, subangular to angular mudstone / siltstone with occasional shell fossils.	0.50 (134.92)		
1.00	J3		Stiff, grey with brown and some orange patches, slightly fissured, slightly sandy CLAY with selenite and shell fossils.	0.90 (134.52)		
1.20	SV D1	86/80/92 kPa				
2.20	SV D2	92/100/98 kPa	Stiff to very stiff, fissured, blue grey with brown, slightly sandy CLAY with some sandy, silty partings. Some selenite, relict rootlets and shell fossils.	1.80 (133.62)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
				2.90 (132.52)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 135.416 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.9m bgl.			All dimensions in metres Log Scale 1:25
			Telephone: 01295 272244 Email: info@brduk.com			

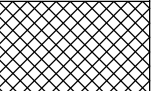
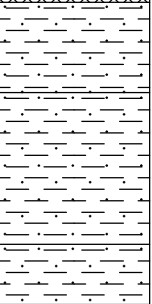
TRIAL PIT RECORD

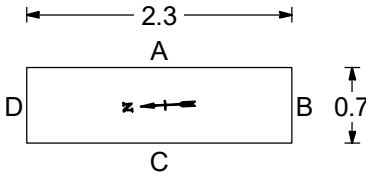
Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP15		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		MADE GROUND TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly clay. Gravel of fine to coarse, subangular to angular flint with rare brick and charcoal.	0.20 (135.11)	MADE GROUND MGTS	
0.60	J2		MADE GROUND: Hard, blocky, dry, grey brown, slightly gravelly clay. Gravel of fine to coarse, subangular to angular flint with occasional brick.	0.80 (134.51)		
1.10	J3		MADE GROUND: Soft, black, clayey silt with some decaying plant remains and strong natural organic odour. Face D: Stiff to very stiff, grey brown, slightly fissured CLAY with selenite and shell fossils.	1.20 (133.81)	MG / K + A (UNDIFF.)	
2.00	D1		1.20 m: Face B: Pockets of stiff to firm, grey and dark orange, silty clay with decaying plant remains.	1.50 (133.81)		
			Stiff to very stiff, grey brown, slightly fissured CLAY with selenite and shell fossils.	2.30 (133.01)	K + A CLAY (UNDIFF.)	
				2.30 (133.01)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level: 135.312 mAOD	
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.3m bgl in natural soils. Trial pit excavated in the location of known infilled pond.			
					All dimensions in metres Log Scale 1:25	
					 Telephone: 01295 272244 Email: info@brduk.com	

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP16		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	J1		TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subangular to angular flint.	0.30 (131.99)	TS	
0.60	J2	100/100/96 kPa	Hard, dry, blocky, grey brown, slightly sandy CLAY.	0.70 (131.59)	KIMMERIDGE + AMPHILL CLAY (UNDIFFERENTIATED)	
1.00	SV D1	Stiff to very stiff, grey with some brown, slightly sandy CLAY.	1			
2.00	D2	Stiff, grey with brown and some orange patches, slightly fissured, slightly sandy CLAY with selenite and shell fossils.	1.30 (130.99)			
2.50	SV	90/100/100 kPa	Stiff to very stiff, fissured, blue grey with brown, slightly sandy CLAY with some sandy, silty partings. Some selenite, relict rootlets and shell fossils.	2.20 (130.09)		
				2.80 (129.49)		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level: 132.287 mAOD		
Plan of Trial Pit: 			General Remarks: Trial pit terminated at 2.8m bgl.		All dimensions in metres Log Scale 1:25	
					 Telephone: 01295 272244 Email: info@brduk.com	

TRIAL PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: I Hibberd Date Completed: 28/08/2025 Method Used: Tracked mini-excavator				Trial Pit No. TP17		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND TOPSOIL: Crops over hard, dry, blocky, brown, slightly gravelly clay. Gravel of fine to coarse, subangular to angular flint with rare brick and charcoal.	0.30 (135.64)	TS	
			Hard, dry, blocky, light brown with grey, slightly sandy CLAY.		K + A CLAY (UNDIFF.)	
			Hard, dry, blocky, grey with light brown, slightly sandy CLAY with occasional shell fossils.	0.60 (135.34)		
			Stiff, slightly fissured, grey with brown, slightly sandy CLAY with selenite and shell fossils.	1.10 (134.84)		
				1.30 (134.64)		
				2		
				3		
				4		

Pit Stability: Generally stable throughout Groundwater: Not encountered		Surface Elevation Level: 135.942 mAOD
Plan of Trial Pit: 	General Remarks: Trial pit terminated at 1.3m bgl.	
All dimensions in metres Log Scale 1:25		 Telephone: 01295 272244 Email: info@brduk.com

Trial Pit Photographs

TP01



Trial Pit Photographs

TP02



Trial Pit Photographs

TP03



Trial Pit Photographs

TP04



Trial Pit Photographs

TP05



Trial Pit Photographs

TP06



Trial Pit Photographs

TP07



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025



01295 272244
info@brduk.com

Trial Pit Photographs

TP08



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025

Trial Pit Photographs

TP09



Trial Pit Photographs

TP10



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025

Trial Pit Photographs

TP11



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025



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Trial Pit Photographs

TP12



Trial Pit Photographs

TP13



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025

Trial Pit Photographs

TP14



Project Title: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
BRD Reference: BRD4201-OP6-A
Date Issued: September 2025



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Trial Pit Photographs

TP15



Trial Pit Photographs

TP16

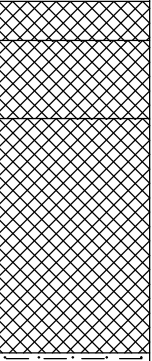
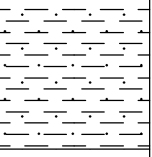


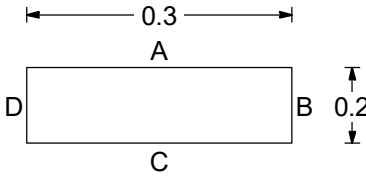
Trial Pit Photographs

TP17

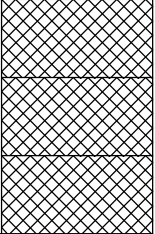
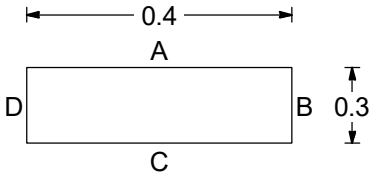


INSPECTION PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: G O'Keeffe Date Completed: 27/08/2025 Method Used: Hand Dug				Pit No. HD01			
				Sheet 1 of 1			
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend	
Depth	Type & No	Value					
0.20	J1		MADE GROUND TOPSOIL: Grass over brown sandy silty clay with rootlets and brick fragments.	0.05 ()	MG		
			MADE GROUND: Concrete rubble.	0.15 ()			
			MADE GROUND: Light brown gravelly sandy silt. Gravel of fine to coarse with cobbles of brick, cement and concrete. Whole brick and fragments of concrete paving slab.				
			0.30 - 0.35 m: Band of cemented tarmac				
0.60	J2		Firm, brown to orange brown, slightly sand CLAY with pockets of orange sand.	0.45 ()	KCF + ACF		
				0.65 ()			
				1			

Pit Stability: Generally stable throughout Groundwater: Not encountered		Surface Elevation Level:
Plan of Inspection Pit: 	General Remarks: Hand dug pit terminated at 0.65m bgl in natural soils.	
		All dimensions in metres Log Scale 1:10  Telephone: 01295 272244 Email: info@brduk.com

INSPECTION PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: S Walker Date Completed: 23/09/2025 Method Used: Hand Dug				Pit No. HD02		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.25	J1		MADE GROUND TOPSOIL: Dark brown, sandy, slightly gravelly silt with many rootlets. Gravel is fine to medium, subrounded to subangular quartzite and brick fragments.	0.10 ()	MADE GROUND	
			MADE GROUND: Slightly sandy tabular concrete cobbles.			
			MADE GROUND: Brown, sandy, slightly gravelly silt. Gravel is fine to medium, subangular to subrounded quartzite, concrete and brick fragments.	0.20 ()		
			3.00 m: Terminated on concrete cobbles, unable to dig further.	0.30 ()		
				1		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Inspection Pit: 			General Remarks: Hand dug pit terminated at 0.30m bgl on concrete cobbles.			
			All dimensions in metres Log Scale 1:10  Telephone: 01295 272244 Email: info@brduk.com			

INSPECTION PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: S Walker Date Completed: 23/09/2025 Method Used: Hand Dug				Pit No. HD03		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.25	J1		MADE GROUND TOPSOIL: Brown, slightly gravelly, slightly sandy silt with rootlets. Gravel is fine, subangular brick fragments.	0.10 ()	MADE GROUND	
			MADE GROUND: Brown, slightly gravelly, slightly silt. Gravel is fine to medium, subangular to subrounded brick and quartzite.			
			Brown to grey brown, sandy SILT.	0.25 () 0.30 ()	K+A	
			0.25 m: Short length (20cm) of orange plastic rope.			
				1		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Inspection Pit: 			General Remarks: Hand dug pit terminated at 0.30m bgl in natural soils.		All dimensions in metres Log Scale 1:10 Telephone: 01295 272244 Email: info@brduk.com	

INSPECTION PIT RECORD

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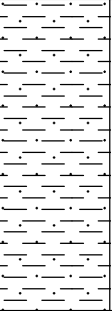
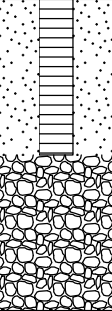
INSPECTION PIT RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: S Walker Date Completed: 23/09/2025 Method Used: Hand Dug				Pit No. HD05		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.25	J1		MADE GROUND TOPSOIL: Brown, slightly gravelly, slightly sandy silt with rootlets and occasional roots. Gravel is fine, subrounded quartzite gravel, and occasional plastic fragments.	0.10 ()	MADE GROUND	
			MADE GROUND: Brown, sandy, slightly gravelly silt with rootlets. Gravel is fine, subrounded quartzite with occasional ceramic fragments.			
			0.10 m: Metal bar across southern edge of pit.	0.20 ()	K+A	
			Firm, light brown mottled orange brown, silty, slightly sandy CLAY.	0.30 ()		
				1		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Inspection Pit: 			General Remarks: Hand dug pit terminated at 0.30m bgl in natural soils.		All dimensions in metres Log Scale 1:10 Telephone: 01295 272244 Email: info@brduk.com	

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS01		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.10	J1			TOPSOIL: Dark brown, dry, slightly gravelly, slightly sandy, organic clay. Gravel of fine to medium, subangular flint and sandstone.	0.30 (126.10)		TS	
0.70	D1			Very stiff, dry, fissured, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of fine to coarse, subrounded to subangular flint. Contains roots up to 2mm diameter, down to 0.5m depth.	0.80 (125.60)		SD	
1.20	SPT	46 N		1.20 m: SPT: 8,9/10,11,11,14	1.0		KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.50	D2			1.50 m: Selenite below 1.5m.				
1.60	PEN	>5.0/4.75/4.75 kg/cm²						
2.00	SPT	27 N		2.00 m: No longer dry. Becoming stiff. 2.00 m: SPT: 4,5/6,7,6,8	2.0			
2.50	D3							
2.60	PEN	2.5/2.75/3.0 kg/cm²						
3.00	SPT	17 N		3.00 m: SPT: 3,4/4,4,4,5	3.0			
3.50	D4							
3.60	PEN	2.75/2.75/2.5 kg/cm²						
4.00	SPT	17 N		4.00 m: SPT: 3,4/4,5,4,4	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 126.4 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

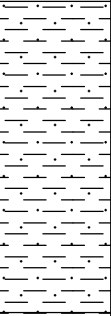
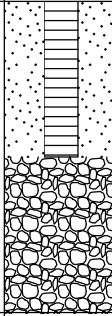
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS01		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	D5			Continued from 2.0m: Stiff, fissured, grey brown, slightly sandy CLAY with selenite crystals.			KCF + ACF	
4.60	PEN	2.5/2.5/2.75 kg/cm²						
5.00	SPT	22 N		5.00 m: SPT: 4,5/5,6,5,6	5.0			
					5.50 (120.90)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 126.4 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

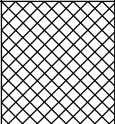
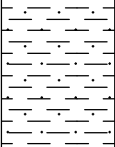
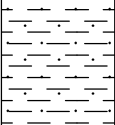
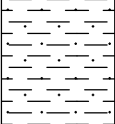
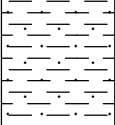
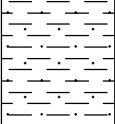
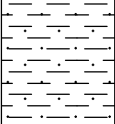
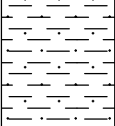
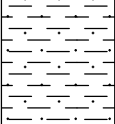
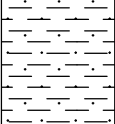
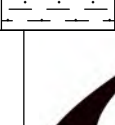
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig					Borehole No. WS02			
					Sheet 1 of 2			
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic CLAY. Gravel of fine to coarse, subangular flint.	0.30 (124.40)		TS	
				Very stiff, dry, fissured, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of coarse subrounded to subangular flint. Contains roots up to 3mm diameter.			SD	
1.00	D1			Very stiff, fissured, grey brown, slightly sandy CLAY. Contains roots up to 3mm diameter, down to 1.2m depth.	1.0		KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.20	PEN SPT	>5.0/4.75/4.75 kg/cm² 20 N		1.20 m: SPT: 4,5/4,5,5,6				
1.50	D2			1.50 m: Becoming firm. Some selenite crystals, relict roots and fossil shell fragments below 1.5m.				
1.60	PEN	2.0/2.0/1.75 kg/cm²						
2.00	SPT D3	19 N		2.00 m: SPT: 3,4/4,5,5,5	2.0			
2.60	PEN	2.75/3.0/2.75 kg/cm²		2.50 m: Becoming stiff.				
3.00	SPT D4	22 N		3.00 m: SPT: 4,4/5,6,6,5	3.0			
3.60	PEN	2.75/2.75/2.5 kg/cm²						
4.00	SPT D5	22 N		4.00 m: SPT: 3,4/5,5,7,5	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 124.7 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

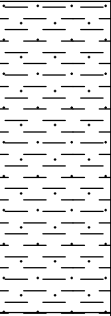
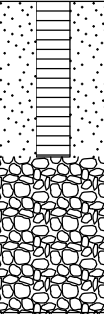
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS02		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	PEN 3	25/2.75/3.0 kg/cm²		Continued from 2.5m: Stiff, fissured, grey brown, slightly sandy CLAY. Some selenite crystals, relict roots and fossil shell fragments.			KCF + ACF	
5.00	SPT	28 N		5.00 m: SPT: 5,6/7,7,7,7	5.0			
					5.50 (119.20)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 124.7 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

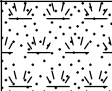
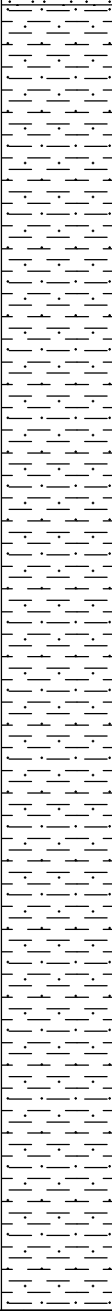
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS03		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			MADE GROUND TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subrounded to subangular flint, sandstone and brick.	0.40 (133.10)		MGTS	
0.50	J2			Firm, grey brown, slightly sandy CLAY. Contains fossil fragments.			KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.00	D1				1.0			
1.20	PEN SPT	1.75/2.0/2.0 kg/cm² 15 N		1.20 m: SPT: 2,3/3,4,4,4				
1.50	D2			1.50 m: Some relict roots.				
1.60	PEN	2.0/2.0/2.0 kg/cm²						
2.00	SPT	18 N		2.00 m: SPT: 3,4/4,4,5,5 2.20 m: Some selenite crystals below 2.2m.	2.0			
2.50	D3							
2.60	PEN	2.0/2.25/2.0 kg/cm²						
3.00	SPT	20 N		3.00 m: SPT: 3,5/4,5,5,6	3.0			
3.50	D4							
3.60	PEN	2.5/2.25/2.25 kg/cm²						
4.00	SPT	18 N		4.00 m: SPT: 3,3/4,5,4,5	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.5 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS03		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	D5			4.50 m: Becoming stiff, grey brown, slightly sandy CLAY. Contains fossil fragments and some relict rootlets and selenite crystals.			KCF + ACF	
4.60	PEN	2.5/2.5/2.75 kg/cm²						
5.00	SPT	26 N		5.00 m: SPT: 4,5/6,6,6,8	5.0			
					5.50 (128.00)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.5 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS04				
						Sheet 1 of 2				
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill		
Depth	Type & No	Value								
0.70 0.75	J1 PEN	3.0/3.5/3.0 kg/cm²		TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of medium to coarse, subangular flint. Stiff, grey brown, dry, fissured, slightly sandy CLAY. Contains roots up to 2mm diameter, down to 0.6m depth.	0.30 (131.80)		TS			
1.00	SPT	10 N		1.00 m: Becoming firm and no longer dry. 1.00 m: SPT: 2,3/2,3,3,2	1.0		KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)			
1.50	PEN D1	1.5/1.5/1.5 kg/cm²								
2.00	SPT	12 N		2.00 m: Some selenite crystals below 2.0m. 2.00 m: SPT: 1,2/3,2,3,4	2.0					
2.50	PEN D2	2.0/2.0/2.0 kg/cm²								
3.00	SPT	20 N		3.00 m: SPT: 3,4/5,5,4,6	3.0					
3.50	PEN D3	2.0/2.0/2.0 kg/cm²								
4.00	SPT	21 N		4.00 m: SPT: 5,5/5,5,7,4	4.0					
					4.50					
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 132.1 mAOD				 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25					

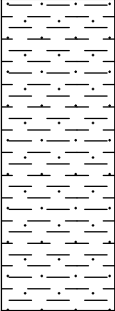
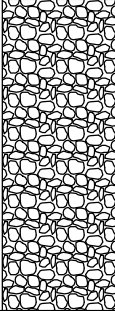
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS04		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	PEN 2	25/2.5/2.25 kg/cm²		4.50 m: Becoming stiff, grey brown, fissured, slightly sandy CLAY with some selenite crystals.				
5.00	SPT	25 N		5.00 m: SPT: 5,6/7,6,6,6	5.0		KCF + ACF	
					5.50 (126.60)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 132.1 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

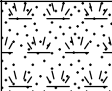
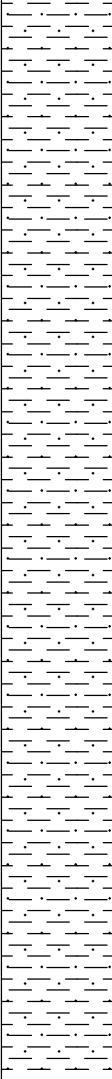
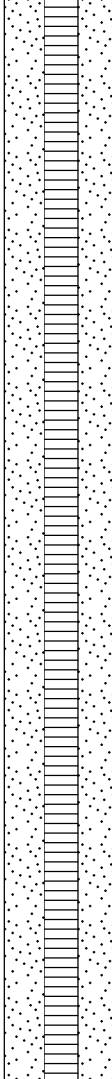
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS05		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.10	J1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subrounded to subangular flint.			TS	
0.40	D1			Very stiff, dry, fissured, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of fine to coarse, subangular flint.	0.30 (130.90)		SD	
0.75	PEN	3.5/3.75/3.5 kg/cm²		Very stiff, dry, fissured, grey brown, slightly sandy CLAY. Contains some fossil shell fragments.	0.50 (130.70)		KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.00	SPT D2	13 N		1.00 m: SPT: 3,5/4,3,3,3 1.20 m: No longer dry.	1.0			
1.50	D3			1.50 m: Becoming firm and contains some selenite crystals.				
1.60	PEN	2.0/2.0/2.0 kg/cm²						
2.00	SPT D4	20 N		2.00 m: SPT: 4,3/4,5,5,6	2.0			
2.60	PEN	2.0/2.25/2.25 kg/cm²		2.50 m: Relict roots.				
3.00	SPT	17 N		3.00 m: SPT: 5,6/4,4,3,6	3.0			
3.60	PEN	2.5/2.5/2.5 kg/cm²						
4.00	SPT D5	18 N		4.00 m: SPT: 4,5/4,4,5,5	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 131.2 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

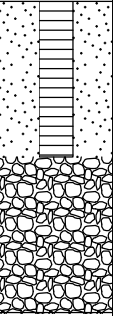
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS05		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	PEN	2.5/2.5/2.75 kg/cm²		Continued from 2.5m: Firm, fissured, grey brown, slightly sandy CLAY. Contains relict roots, some fossil shell fragments and some selenite crystals.			KCF + ACF	
5.00	SPT	28 N		5.00 m: SPT: 5,6/7,8,6,7	5.0			
					5.50 (125.70)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 131.2 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS06				
						Sheet 1 of 2				
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill		
Depth	Type & No	Value								
0.40	J1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subrounded to subangular flint.	0.30 (135.10)		TS			
				Very stiff, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of fine to coarse, subrounded to subangular flint.					0.60 (134.80)	SD
				Stiff, grey brown, slightly sandy CLAY. Contains roots up to 2mm diameter, down to 1.6m depth.						
1.20	SPT	14 N		1.20 m: SPT: 2,3/3,4,3,4	1.0		KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)			
1.50	PEN D1	2.5/2.25/2.5 kg/cm²								
2.00	SPT	18 N		1.80 m: Selenite crystals below 1.8m. 2.00 m: SPT: 3,4/4,5,4,5	2.0					
2.50	PEN D2	2.5/2.5/2.75 kg/cm²								
3.00	SPT	19 N		3.00 m: SPT: 3,4/5,4,5,5	3.0					
3.50	PEN D3	3.5/3.25/3.5 kg/cm²		3.70 m: Relict roots.						
4.00	SPT	22 N		4.00 m: SPT: 4,5/6,5,6,5	4.0					
					4.50					
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 135.4 mAOD		 Telephone: 01295 272244 Email: info@brduk.com			
					All dimensions in metres Log Scale 1:25					

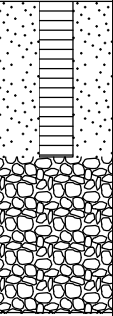
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 27/08/2025 Date Completed: 27/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS06		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	PEN	3.5/3.5/4.0 kg/cm²		4.50 m: Becoming stiff, grey brown, slightly sandy CLAY. Contains selenite crystals, relict roots and thin, calcareous mudstone beds.			KCF + ACF	
5.00	SPT	28 N		5.00 m: SPT: 6,7/7,8,7,6	5.0			
					5.50 (129.90)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 135.4 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

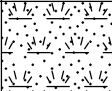
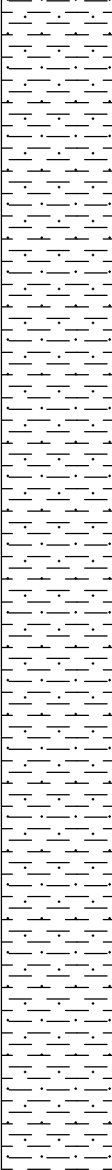
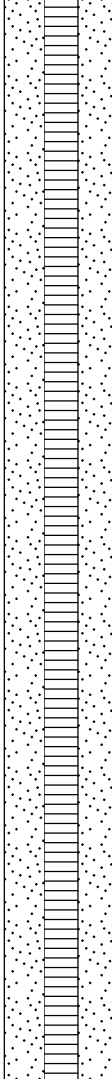
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS07		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.10	D1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of coarse, subangular flint.			TS	
0.40	D1			Very stiff, dry, fissured, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of coarse, subangular flint. Contains roots up to 2mm diameter.	0.30 (135.40)		SD	
0.75	PEN >5.0/>5.0/>5.0	kg/cm²		Very stiff, dry, fissured, grey brown, slightly sandy CLAY. Contains some fossil shell fragments.	0.60 (135.10)		KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.00	SPT D2	15 N		1.00 m: No longer dry. 1.00 m: SPT: 2,3/3,4,4,4	1.0			
1.60	PEN	2.0/2.0/2.0	kg/cm²	1.50 m: Becoming firm and containing some selenite crystals.				
2.00	SPT D3	13 N		2.00 m: SPT: 1,2/2,4,3,4	2.0			
2.60	PEN	1.75/2.25/1.75	kg/cm²					
3.00	SPT D4	15 N		3.00 m: SPT: 3,2/3,4,4,4	3.0			
3.60	PEN	2.5/2.75/2.75	kg/cm²	3.50 m: Becoming stiff.				
4.00	SPT D5	21 N		4.00 m: SPT: 4,5/5,6,5,5	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 135.7 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

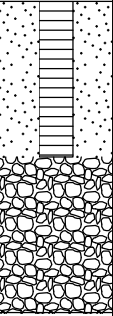
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS07		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	PEN	2.5/2.5/2.75 kg/cm²		Continued from 3.5m: Stiff, fissured, grey brown, slightly sandy CLAY. Contains some fossil shell fragments and selenite crystals.			KCF + ACF	
5.00	SPT	22 N		5.00 m: SPT: 6,5/5,5,5,7	5.0			
					5.50 (130.20)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 135.7 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS08			
						Sheet 1 of 2			
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill	
Depth	Type & No	Value							
0.80	D1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of medium to coarse, subangular flint.	0.30 (133.30)		TS		
				Very stiff, dry, fissured, grey brown, slightly gravelly, slightly sandy CLAY. Gravel of coarse, subangular flint. Occasional cobbles. Occasional cobbles up to 0.2mm diameter.					0.70 (132.90)
				Stiff, grey brown, fissured, slightly sandy CLAY. Contains some fossil shell fragments.					
1.20	SPT	15 N		1.00 m: Contains selenite crystals below 1.0m. 1.20 m: SPT: 2,3/3,4,4,4	1.0		KIMMERIDGE CLAY FORMATION AND AMPTHILL CLAY FORMATION (UNDIFFERENTIATED)		
1.50	PEN D2	2.5/2.5/2.5 kg/cm²		2.00 m: SPT: 3,4/5,5,5,6	2.0				
2.00	SPT	21 N		3.00 m: SPT: 3,4/4,5,4,4	3.0				
2.50	PEN D3	2.5/2.5/2.25 kg/cm²		3.50 m: Becoming firm.	4.0				
3.00	SPT	17 N		4.00 m: SPT: 5,6/5,5,6,7	4.50				
3.50	PEN D4	2.0/2.25/2.0 kg/cm²							
4.00	SPT	23 N							
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.6 mAOD		 Telephone: 01295 272244 Email: info@brduk.com		
					All dimensions in metres Log Scale 1:25				

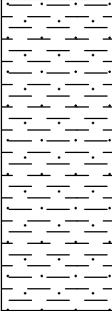
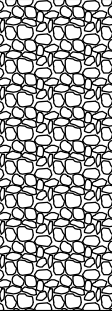
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS08		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	PEN 3.25/D5	3.25/3.25/3.25 kg/cm²		4.50 m: Becoming tiff, grey brown, fissured, slightly sandy CLAY. Contains some fossil shell fragments and selenite crystals.			KCF + ACF	
5.00	SPT	26 N		5.00 m: SPT: 5,6/6,7,7,6	5.0			
					5.50 (128.10)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.6 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

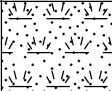
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig							Borehole No.	
							WS09	
							Sheet 1 of 2	
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.10	J1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of coarse, subrounded to subangular flint.			TS	 KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)
0.70 0.75	J2 PEN	2.5/2.5/2.25 kg/cm²		Firm, grey brown, slightly sandy CLAY. Contains occasional fossil shell fragments. Contains roots up to 0.3m diameter, down to 0.8m depth.	0.30 (132.80)			
1.00	SPT D1	12 N		1.00 m: SPT: 2,2/2,3,3,4 1.10 m: Selenite crystals below 1.1m.	1.0			
1.50	PEN	2.0/2.25/2.0 kg/cm²						
2.00	SPT D2	15 N		2.00 m: SPT: 3,4/4,3,4,4	2.0			
2.60	PEN	2.5/2.5/2.25 kg/cm²						
3.00	SPT D3	17 N		3.00 m: SPT: 2,3/5,3,4,5	3.0			
3.60	PEN	3.0/3.0/2.5 kg/cm²		3.50 m: Becoming stiff.				
4.00	SPT D4	15 N		4.00 m: SPT: 3,3/4,4,3,4	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.1 mAOD			
					All dimensions in metres Log Scale 1:25		Telephone: 01295 272244 Email: info@brduk.com	

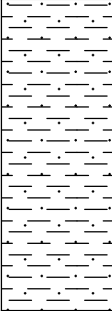
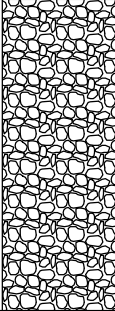
PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS09		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	PEN	3.5/3.5/3.25 kg/cm²		Continued from 3.5m: Stiff, grey brown, slightly sandy CLAY. Contains selenite crystals and occasional fossil shell fragments.			KCF + ACF	
5.00	SPT	18 N		5.00 m: SPT: 4,4/5,4,4,5	5.0			
					5.50 (127.60)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 133.1 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS10		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.40	J1			TOPSOIL: Dark brown, slightly gravelly, slightly sandy, organic clay. Gravel of fine to coarse, subrounded to subangular flint. Firm, grey brown, slightly sandy CLAY. Contains some fossil shell fragments. Contains roots up to 2mm diameter.	0.30 (134.60)		TS	
0.75	PEN	2.0/2.0/2.25 kg/cm²						
0.90	D1				0.90 (134.00)		KIMMERIDGE CLAY FORMATION AND AMPHILL CLAY FORMATION (UNDIFFERENTIATED)	
1.00	SPT	9 N		Very weak, grey, calcareous MUDSTONE.	1.00 (133.90)			
1.10	D2			Stiff, grey brown, slightly sandy CLAY. Contains localised fossil shell fragments. 1.00 m: SPT: 1,3/2,2,2,3 1.30 m: Contains selenite crystals below 1.3m.				
1.50	D3							
1.60	PEN	2.5/2.5/2.75 kg/cm²						
2.00	SPT	15 N		2.00 m: SPT: 2,3/4,3,4,4	2.0			
2.50	D4							
2.60	PEN	3.25/3.25/3.5 kg/cm²						
3.00	SPT	20 N		3.00 m: SPT: 3,4/5,4,5,6	3.0			
3.50	D5							
3.60	PEN	3.0/3.0/3.0 kg/cm²						
4.00	SPT	16 N		4.00 m: SPT: 3,3/3,4,4,5	4.0			
					4.50			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 134.9 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Land Project Title: Swindon Road, Royal Wootton Bassett Project No: BRD4201 Logged By: L Chippington Date Commenced: 28/08/2025 Date Completed: 28/08/2025 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS10		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.60	PEN 3	75/4.0/4.25 kg/cm²		Continued from 1.3m: Stiff, grey brown, slightly sandy CLAY. Contains selenite crystals and localised fossil shell fragments.			KCF + ACF	
5.00	SPT	18 N		5.00 m: SPT: 3,6/3,5,4,6	5.0			
					5.50 (129.40)			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.5m bgl.					Surface Elevation Level: 134.9 mAOD		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			



SOIL INFILTRATION RATE

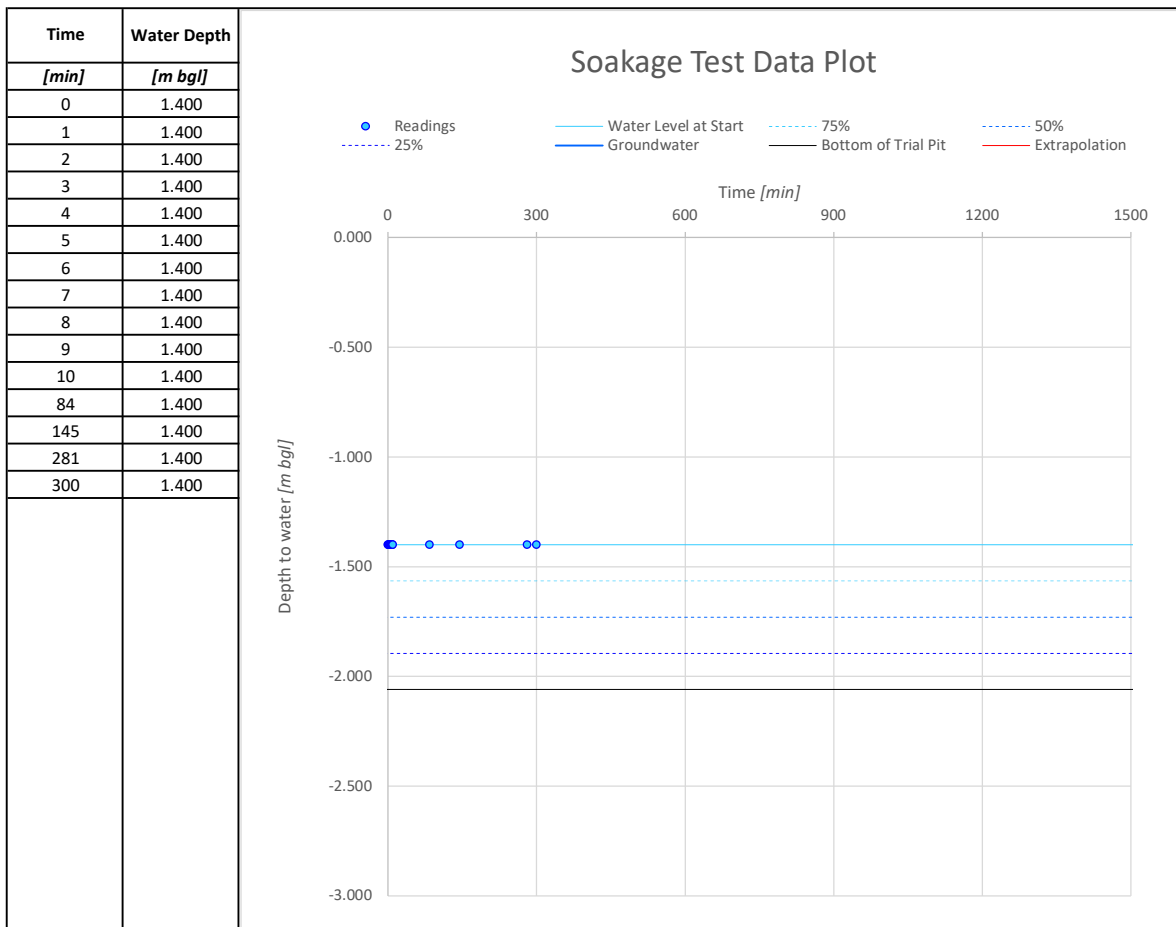
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Ground Conditions
Project Title: Soil Infiltration Rate
Project No: BRD4201

Trial Pit No: TP01
Test No: 1
Date: 27/08/2025
Logged by: GO

Length [m]: 1.50
Depth [m]: 2.06
Width [m]: 0.65
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.25	TOPSOIL: hard, dry, brown slightly gravelly slightly sandy clay.
		0.25	0.70	Hard, dry, blocky, fractured brown with some grey slightly gravelly CLAY.
		0.70	1.60	Very stiff, hard dry blocky, brown with some orange CLAY.
		1.60	2.00	Firm to stiff grey with some slightly fissured CLAY with selenite.



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.32**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.39**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

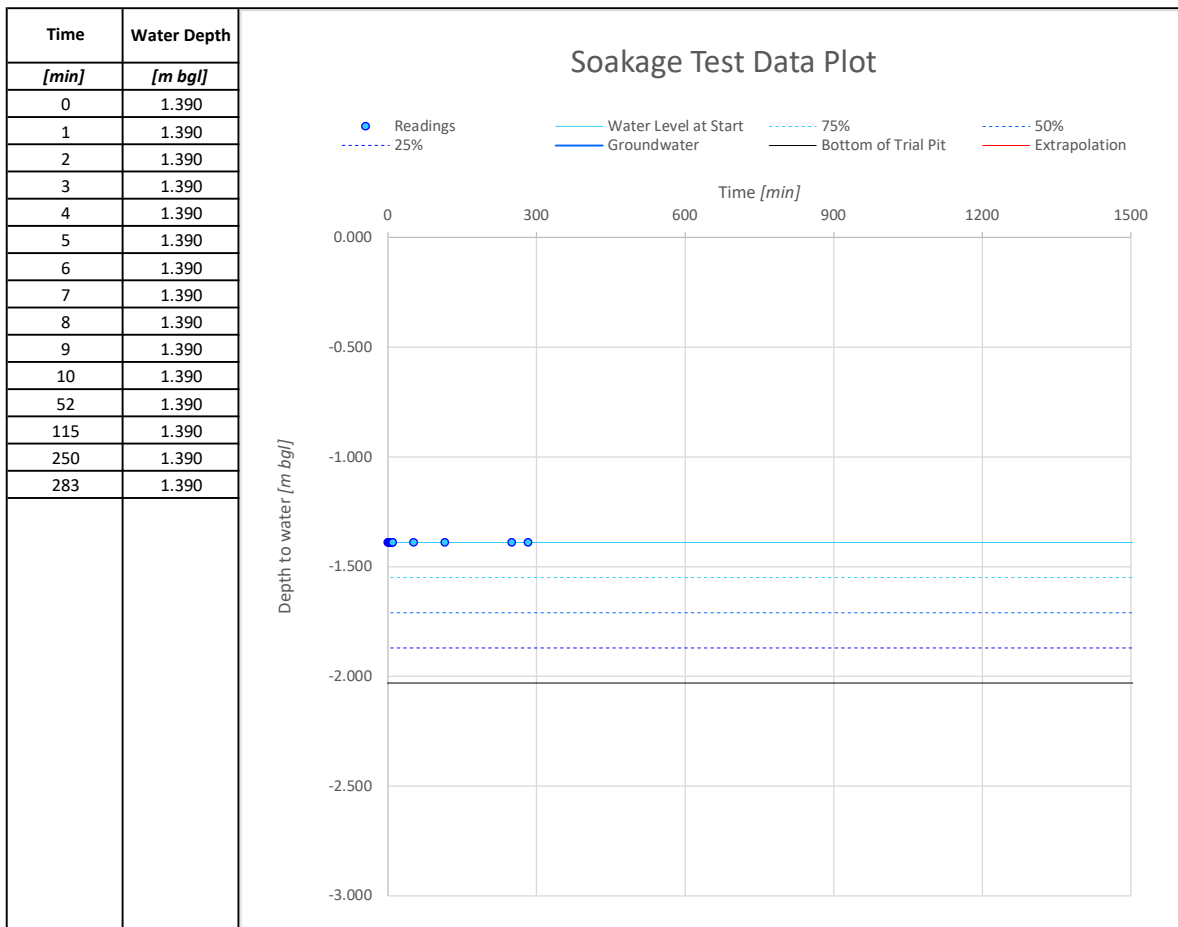
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Ground Conditions
Project Title: Soil Infiltration Rate
Project No: BRD4201

Trial Pit No: TP02
Test No: 1
Date: 27/08/2025
Logged by: GO

Length [m]: 1.70
Depth [m]: 2.03
Width [m]: 0.65
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.25	TOPSOIL: hard, dry, brown slightly gravelly slightly sandy clay.
		0.25	0.60	Hard, dry, blocky, fractured brown with some grey slightly gravelly CLAY.
		0.60	1.20	Hard, dry, blocky, grey brown with some orange CLAY.
		1.20	2.00	Firm to stiff grey with some slightly fissured CLAY with selenite.



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.35**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.61**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

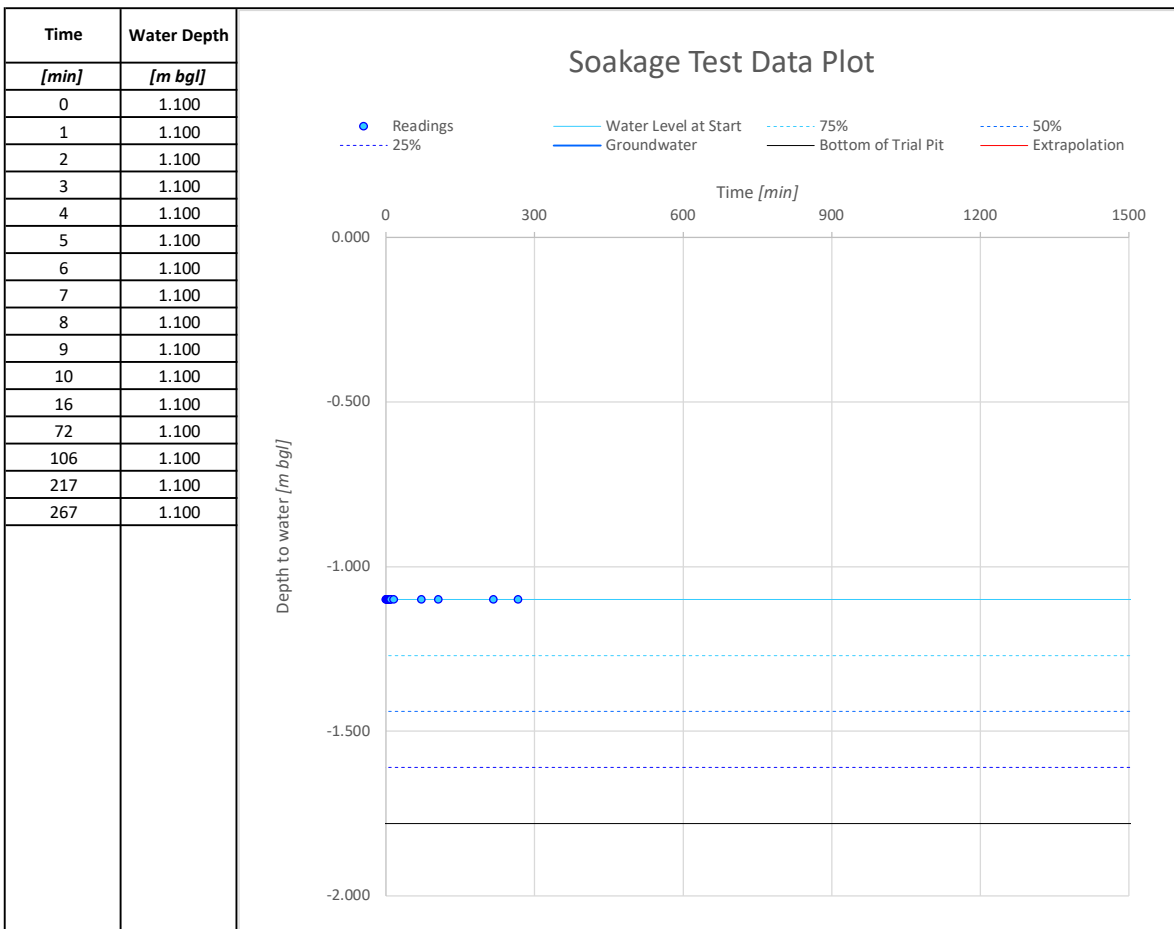
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Ground Conditions
Project Title: Soil Infiltration Rate
Project No: BRD4201

Trial Pit No: TP03
Test No: 1
Date: 27/08/2025
Logged by: GO

Length [m]: 1.60
Depth [m]: 1.78
Width [m]: 0.65
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.00	0.30	TOPSOIL: hard, dry, brown slightly gravelly slightly sandy clay.
		0.30	0.80	Hard, dry, blocky, light grey with orange brown CLAY.
		0.80	1.80	Stiff, grey brown with some orange CLAY.



Soil Infiltration Rate [m/s]:
$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.35**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.57**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett** Recorded by: **GO**
 Client: **Gleeson Land** Weather Station: **Swindon**
 Project No: **BRD4201** Monitor serial no: **SN14430**

Date: **03/09/2025** Time at start: **08:30:00** Weather conditions: **Overcast** Air Temperature (°C): **17**
 Time at finish: **09:30:00** Ground conditions: **Damp on surface** Pressure Trend: **Falling**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface. RZ = Borehole Response Zone (Pipe)
 CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane
 PID = Photo Ionisation Detector GSV = Gas Screening Value NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)	(mbar)	(l/hr)	(l/hr)	(ppm)	(l/hr)	(l/hr)	
WS01	DRY	DRY	5.14	1.05	0.0	0.0	2.6	18.8	0.0	0.0	0.000	0.0	6.1	18.8	977	0.0	0.0	0.0	0.00	0.00	No
WS02	4.46	4.36	5.09	1.05	0.0	0.0	0.7	20.3	0.0	17.0	0.014	1.6	0.8	19.5	977	0.0	0.0	0.0	0.00	0.00	No
WS03	DRY	DRY	4.96	1.05	0.0	0.0	3.1	18.6	0.0	0.0	0.004	0.0	3.1	18.6	976	0.0	0.0	0.0	0.00	0.00	No
WS06	3.51	3.35	4.92	1.05	0.0	0.0	0.6	20.4	0.0	0.0	0.000	0.0	0.6	20.4	975	0.0	0.9	0.0	0.00	0.00	No
WS07	DRY	DRY	4.86	1.05	0.0	0.0	2.4	19.2	0.0	0.0	0.000	0.0	2.4	19.2	976	0.0	0.7	0.0	0.00	0.00	No
WS08	DRY	DRY	5.10	1.05	0.0	0.0	2.2	19.6	0.0	0.0	0.000	0.0	2.2	19.6	975	0.0	0.0	0.0	0.00	0.00	No

Comments:



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett**

Recorded by: **GO**

Client: **Gleeson Land**

Weather Station: **Swindon**

Project No: **BRD4201**

Monitor serial no: **SN14430**

Date: **17/09/2025**

Time at start: **08:45:00**

Weather conditions: **Overcast**

Air Temperature (°C): **18**

Time at finish: **11:00:00**

Ground conditions: **Damp**

Pressure Trend: **Steady**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

RZ = Borehole Response Zone (Pipe)

CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane

PID = Photo Ionisation Detector

GSV = Gas Screening Value

NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)							
WS01	DRY	DRY	5.15	1.05	0.0	0.0	2.2	19.1	0.0	0.0	0.000	1.0	2.2	19.2	995	0.0	1.9	0.0	0.00	0.00	No
WS02	2.69	2.58	5.10	1.05	0.0	0.0	0.3	20.6	0.0	0.0	0.000	0.0	0.3	20.6	995	0.0	0.0	0.0	0.00	0.00	No
WS03	4.65	4.46	4.97	1.05	0.0	0.0	2.9	18.8	0.0	0.0	0.000	0.0	2.9	18.8	994	0.0	0.1	0.0	0.00	0.00	No
WS06	2.47	2.31	4.95	1.05	0.0	0.0	0.2	19.4	0.0	0.0	0.000	0.0	0.2	20.7	993	0.0	7.8	0.0	0.00	0.00	No
WS07	DRY	DRY	4.87	1.05	0.0	0.0	2.2	19.4	0.0	0.0	0.000	0.0	2.2	19.4	994	0.0	0.4	0.0	0.00	0.00	No
WS08	4.74	4.53	5.12	1.05	0.0	0.0	2.2	19.8	0.0	0.0	0.000	0.0	2.2	19.8	994	0.0	2.7	0.0	0.00	0.00	No

Comments:



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett** Recorded by: **SW**
 Client: **Gleeson Land** Weather Station: **Swindon**
 Project No: **BRD4201** Monitor serial no: **SN14430**

Date: **23/09/2025** Time at start: **08:45:00** Weather conditions: **Overcast** Air Temperature (°C): **18**
 Time at finish: **11:00:00** Ground conditions: **Damp** Pressure Trend: **Steady**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface. RZ = Borehole Response Zone (Pipe)
 CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane
 PID = Photo Ionisation Detector GSV = Gas Screening Value NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)							
WS01	DRY	DRY	5.14	1.05	0.0	0.0	2.3	18.9	0.0	0.0	0.000	0.0	2.3	18.9	1013	0.0	0.0	0.0	0.00	0.00	No
WS02	2.28	2.18	5.08	1.05	0.0	0.0	0.4	20.3	0.0	0.0	0.000	0.0	0.4	20.1	1013	0.0	0.0	0.0	0.00	0.00	No
WS03	4.25	4.05	4.95	1.05	0.0	0.0	3.2	18.5	0.0	0.0	0.000	0.0	3.2	15.5	1012	0.0	0.0	0.0	0.00	0.00	No
WS06	2.25	2.11	4.94	1.05	0.0	0.0	0.4	20.0	0.0	0.0	0.000	0.0	0.5	20.0	1011	0.0	0.0	0.0	0.00	0.00	No
WS07	DRY	DRY	4.86	1.05	0.0	0.0	2.3	19.1	0.0	0.0	0.000	0.0	2.3	19.1	1012	0.0	0.0	0.0	0.00	0.00	No
WS08	4.44	4.22	5.11	1.05	0.0	0.0	2.3	19.2	0.0	0.0	0.000	0.0	2.3	19.2	1011	0.0	0.0	0.0	0.00	0.00	No

Comments:



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett** Recorded by: **GO**
 Client: **Gleeson Land** Weather Station: **Swindon**
 Project No: **BRD4201** Monitor serial no: **SN14430**

Date: **30/09/2025** Time at start: **08:45:00** Weather conditions: **Sunny** Air Temperature (°C): **15**
 Time at finish: **11:00:00** Ground conditions: **Damp** Pressure Trend: **Steady**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface. RZ = Borehole Response Zone (Pipe)
 CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane
 PID = Photo Ionisation Detector GSV = Gas Screening Value NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)							
WS01	DRY	DRY	5.15	1.05	0.0	0.0	2.3	18.7	0.0	0.0	0.000	0.0	2.3	18.7	1010	0.0	0.0	0.0	0.00	0.00	No
WS02	3.94	3.84	5.10	1.05	0.0	0.0	0.6	20.0	0.0	0.0	0.000	0.0	0.6	20.0	1011	0.0	0.0	0.0	0.00	0.00	No
WS03	3.98	3.78	4.97	1.05	0.0	0.0	2.8	18.6	0.0	0.0	0.000	0.0	2.8	18.6	1008	0.0	0.0	0.0	0.00	0.00	No
WS06	3.23	3.09	4.93	1.05	0.0	0.0	1.1	19.7	0.0	0.0	0.000	0.0	1.1	19.7	1009	0.0	0.0	0.0	0.00	0.00	No
WS07	4.80	4.68	4.88	1.05	0.0	0.0	2.3	18.8	0.0	0.0	0.000	0.0	2.3	18.8	1009	0.0	0.0	0.0	0.00	0.00	No
WS08	4.14	3.93	5.11	1.05	0.0	0.0	2.1	19.0	0.0	0.0	0.000	0.0	2.1	19.0	1008	0.0	0.0	0.0	0.00	0.00	No

Comments:



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett** Recorded by: **GO**
 Client: **Gleeson Land** Weather Station: **Swindon**
 Project No: **BRD4201** Monitor serial no: **SN14430**

Date: **29/10/2025** Time at start: **11:00:00** Weather conditions: **Light rain** Air Temperature (°C): **10**
 Time at finish: **12:00:00** Ground conditions: **Damp** Pressure Trend: **Falling**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface. RZ = Borehole Response Zone (Pipe)
 CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane
 PID = Photo Ionisation Detector GSV = Gas Screening Value NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)							
WS01	DRY	DRY	5.15	1.05	0.0	0.0	1.9	19.1	0.0	0.0	0.000	0.0	1.9	19.1	982	0.0	0.1	NR	0.00	0.00	No
WS02	2.05	1.94	5.10	1.05	ERR	ERR	0.0	20.9	0.0	0.0	ERR	ERR	0.1	20.8	982	0.0	0.0	NR	0.00	0.00	No
WS03	2.38	2.16	4.97	1.05	0.0	0.0	1.7	18.9	0.0	0.0	0.000	0.0	1.7	18.9	982	0.0	0.0	NR	0.00	0.00	No
WS06	1.82	1.65	4.95	1.05	ERR	ERR	0.1	20.4	0.0	0.0	ERR	ERR	0.1	20.4	979	0.0	0.0	NR	0.00	0.00	No
WS07	4.28	4.15	4.88	1.05	0.0	0.0	1.7	19.0	0.0	0.0	0.000	0.0	1.7	19.0	979	0.0	0.0	NR	0.00	0.00	No
WS08	3.18	2.95	5.12	1.05	ERR	ERR	1.0	20.0	0.0	0.0	ERR	ERR	1.0	20.0	979	0.0	0.0	NR	0.00	0.00	No

Comments: ERR = Error. A problem with the gas monitor led to incorrect methane gas and hexane readings in WS02, WS06, and WS08 so data not presented.



Gas Monitoring Record

Project Name: **Swindon Road, Royal Wootton Bassett** Recorded by: **GO**
 Client: **Gleeson Land** Weather Station: **Swindon**
 Project No: **BRD4201** Monitor serial no: **SN14430**

Date: **14/11/2025** Time at start: **13:00:00** Weather conditions: **Rain** Air Temperature (°C): **12**
 Time at finish: **14:45:00** Ground conditions: **Very wet, large puddles in areas** Pressure Trend: **Falling**

The gas monitoring equipment is a Gas Data GM25-4 portable analyser. As per manufacturers recommendations this is factory calibrated every 12 months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run until the readings stabilise. Peak concentrations are noted during the pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from WeatherOnline at the nearest reported weather station. The GSV is not recorded (NR) if the response zone at the well is flooded.

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface. RZ = Borehole Response Zone (Pipe)
 CH₄ = Methane LEL = Lower Explosive Limit CO₂ = Carbon Dioxide O₂ = Oxygen CO = Carbon Monoxide H₂S = Hydrogen Sulphide Hex = Hexane
 PID = Photo Ionisation Detector GSV = Gas Screening Value NR = Not Recorded

Monitoring point					Gas Concentration										Pressure	Flow Rate		Vapour	GSV		Flooded Response Zone?
Borehole	GWL	GWL	Base	Top of	Steady				Peak					Min	Baro-metric	Steady	Peak	PID	CH ₄	CO ₂	
	Ground	Pipe	Ground	RZ	CH ₄	LEL	CO ₂	O ₂	CO	H ₂ S	Hex	CH ₄	CO ₂	O ₂							
	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(%)	(ppm)	(ppm)	(%)	(%)	(%)	(%)	(mbar)			(ppm)			
WS01	4.23	4.04	5.15	1.05	0.0	0.0	3.0	17.7	0.0	0.0	0.015	0.0	3.0	17.7	979	0.0	105.0	NR	0.00	0.00	No
WS02	0.80	0.69	5.12	1.05	0.0	0.0	0.3	20.3	0.0	0.0	0.044	0.0	0.3	20.3	979	0.0	50.2	NR	NR	NR	Yes
WS03	0.00	0.00	4.96	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NR	NR	NR	Yes
WS06	0.00	0.00	4.95	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NR	NR	NR	Yes
WS07	0.00	0.00	4.88	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NR	NR	NR	Yes
WS08	0.00	0.00	5.12	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NR	NR	NR	Yes

Comments: WS03, WS06, WS07, WS08 were flooded. Site was being affected by heavy rain from Storm Claudia. Piston effect for the flows for WS02. Groundwater level in WS01 rose to ground level throughout monitoring period. It was monitored again at the end of the visit and had reached ground level. It is conjectured that the saturated clay soils had trapped the air inside the monitoring well and caused it to be pressurised accounting for the spike in gas flow reading. Once the gas bung was removed to read water levels, the pressure dissipated and so allowed water to flow into the well.

Groundwater Monitoring Record

Project: Swindon Road, Royal Wootton Bassett
Client: Gleeson Land
Project No: BRD4201

[illegible]

APPENDIX 3

Ian Hibberd
BRD Environmental Ltd
Hawthorne Villa
1 Old Parr Road
Banbury
Oxfordshire
OX16 5HT

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

DETS Report No: 25-08352

Site Reference: Swindon Road, Royal Wootton Bassett

Project / Job Ref: BRD4201

Order No: None Supplied

Sample Receipt Date: 25/09/2025

Sample Scheduled Date: 25/09/2025

Report Issue Number: 1

Reporting Date: 03/10/2025

Authorised by:



Steve Knight
Customer Support Manager

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

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Soil Analysis Certificate						
DETS Report No: 25-08352	~Date Sampled	23/09/25	23/09/25	23/09/25	23/09/25	23/09/25
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	HD02	HD03	HD04	HD05	WS02
~Project / Job Ref: BRD4201	~Additional Refs	J1	J1	J1	J1	None Supplied
~Order No: None Supplied	~Depth (m)	0.25	0.25	0.35	0.25	4.93
Reporting Date: 03/10/2025	DETS Sample No	790706	790707	790708	790709	790710

Determinand	Unit	RL	Accreditation				
Lead (Pb)	mg/kg	< 3	MCERTS	195	37	20	20

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate						
DETS Report No: 25-08352	~Date Sampled	23/09/25				
BRD Environmental Ltd	~Time Sampled	None Supplied				
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	WS06				
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied				
~Order No: None Supplied	~Depth (m)	4.69				
Reporting Date: 03/10/2025	DETS Sample No	790711				

Determinand	Unit	RL	Accreditation				
Lead (Pb)	mg/kg	< 3	MCERTS				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Analysis carried out on the dried sample is corrected for the stone content

Water Analysis Certificate						
DETS Report No: 25-08352	~Date Sampled	23/09/25	23/09/25			
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied			
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	WS02	WS06			
~Project / Job Ref: BRD4201	~ Water Matrix					
~Order No: None Supplied	~Additional Refs	None Supplied	None Supplied			
Reporting Date: 03/10/2025	~Depth (m)	4.93	4.69			
	DETS Sample No	790710	790711			

Determinand	Unit	RL	Accreditation	(n)	(n)			
pH	pH Units	N/a	ISO17025	7.0	6.6			
Sulphate as SO ₄	mg/l	< 1	ISO17025	3840	3190			

Soil Analysis Certificate - Sample Descriptions

DETS Report No: 25-08352	
BRD Environmental Ltd	
~Site Reference: Swindon Road, Royal Wootton Bassett	
~Project / Job Ref: BRD4201	
~Order No: None Supplied	
Reporting Date: 03/10/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
790706	HD02	J1	0.25	11.1	Brown loamy sand with stones and vegetation
790707	HD03	J1	0.25	13	Brown loamy sand with stones and vegetation
790708	HD04	J1	0.35	14.4	Brown loamy clay with stones
790709	HD05	J1	0.25	14.3	Brown loamy clay with stones

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

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 25-08352
BRD Environmental Ltd
~Site Reference: Swindon Road, Royal Wootton Bassett
~Project / Job Ref: BRD4201
~Order No: None Supplied
Reporting Date: 03/10/2025

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

Water Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 25-08352	
BRD Environmental Ltd	
~Site Reference: Swindon Road, Royal Wootton Bassett	
~Project / Job Ref: BRD4201	
~Order No: None Supplied	
Reporting Date: 03/10/2025	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	F	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (BOD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	F	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	F	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	F	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	F	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E115
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Acidification, followed by high-temperature oxidation and IR detection.	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

List of HWOL Acronyms and Operators

DETS Report No: 25-08352

BRD Environmental Ltd

~Site Reference: Swindon Road, Royal Wootton Bassett

~Project / Job Ref: BRD4201

~Order No: None Supplied

Reporting Date: 03/10/2025

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

Det - Acronym

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

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene, Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene and Coronene.
^	No sampling date provided; unable to confirm if samples are within acceptable holding times
\$	Samples exceeded their recommended holding times
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
M	MCERTS accredited test
U	UKAS accredited test

Ian Hibberd
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OX16 5HT

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

DETS Report No: 25-07835

Site Reference: Swindon Road, Royal Wootton Bassett

Project / Job Ref: BRD4201

Order No: None Supplied

Sample Receipt Date: 02/09/2025

Sample Scheduled Date: 02/09/2025

Report Issue Number: 1

Reporting Date: 10/09/2025

Authorised by:



Steve Knight
Customer Support Manager

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

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Soil Analysis Certificate						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	SS01	HD01	HD01	TP01	TP06
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	0.10	0.20	0.60	0.10	0.10
Reporting Date: 10/09/2025	DETS Sample No	788378	788379	788380	788381	788382

Determinand	Unit	RL	Accreditation					
Asbestos Quantification ⁽⁵⁾	%	< 0.001	ISO17025		< 0.001			< 0.001
pH	pH Units	N/a	MCERTS	7.0	7.6		7.3	7.2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	105	75		42	129
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.10	0.07		0.04	0.13
Organic Matter (SOM)	%	< 0.1	MCERTS	9.6	10.9		6.4	9.8
TOC (Total Organic Carbon)	%	< 0.1	MCERTS					
Arsenic (As)	mg/kg	< 2	MCERTS	16	9		14	12
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.4		0.3	0.4
Chromium (Cr)	mg/kg	< 2	MCERTS	23	10		20	13
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2		< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	17	19		14	20
Lead (Pb)	mg/kg	< 3	MCERTS	35	276		30	28
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1		< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	12	9		16	10
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2		< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	58	115		63	104

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	TP06	TP07	TP10	TP13	TP15
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	0.50	1.00	0.10	0.20	0.10
Reporting Date: 10/09/2025	DETS Sample No	788383	788384	788385	788386	788387

Determinand	Unit	RL	Accreditation				
Asbestos Quantification ⁽⁵⁾	%	< 0.001	ISO17025				
pH	pH Units	N/a	MCERTS	7.5	7.3		7.1
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	394	2030		1850
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.39	2.03		1.85
Organic Matter (SOM)	%	< 0.1	MCERTS	1.2	1		1.2
TOC (Total Organic Carbon)	%	< 0.1	MCERTS				
Arsenic (As)	mg/kg	< 2	MCERTS	16	14		17
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	17	17		15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2		< 2
Copper (Cu)	mg/kg	< 4	MCERTS	19	15		16
Lead (Pb)	mg/kg	< 3	MCERTS	20	16		18
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1		< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	40	34		27
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2		< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	65	63		57

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate

DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	TP15	TP15	WS09	WS09
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	0.60	1.10	0.10	0.70
Reporting Date: 10/09/2025	DETS Sample No	788388	788389	788390	788391

Determinand	Unit	RL	Accreditation				
Asbestos Quantification ⁽⁵⁾	%	< 0.001	ISO17025				
pH	pH Units	N/a	MCERTS	7.1		7.2	7.2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	115		276	238
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.12		0.28	0.24
Organic Matter (SOM)	%	< 0.1	MCERTS	8.8		7	1
TOC (Total Organic Carbon)	%	< 0.1	MCERTS		2.4		
Arsenic (As)	mg/kg	< 2	MCERTS	14		11	15
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2		0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	17		15	17
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2		< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	20		11	16
Lead (Pb)	mg/kg	< 3	MCERTS	30		26	18
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1		< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	19		9	36
Selenium (Se)	mg/kg	< 2	MCERTS	< 2		< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	72		42	63

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	SS01	HD01	TP01	TP06	TP06
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	0.10	0.20	0.10	0.10	0.50
Reporting Date: 10/09/2025	DETS Sample No	788378	788379	788381	788382	788383

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.31	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.30	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.26	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.25	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.41	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.13	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.40	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.37	< 0.1	< 0.1	< 0.1
**Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	2.9	< 1.6	< 1.6	< 1.6

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	TP07	TP15	TP15	WS09	WS09
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	1.00	0.10	0.60	0.10	0.70
Reporting Date: 10/09/2025	DETS Sample No	788384	788387	788388	788390	788391

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
**Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Soil Analysis Certificate - TPH LQM Banded

DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied		
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Swindon Road, Royal Wooton Bassett	~TP / BH No	HD01	TP06	WS09		
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: None Supplied	~Depth (m)	0.60	0.50	0.70		
Reporting Date: 10/09/2025	DETS Sample No	788380	788383	788391		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C35 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic >C35 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 30	NONE	< 30	< 30	< 30		
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	16	< 10	< 10		
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aromatic (>C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 30	NONE	< 30	< 30	< 30		
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 60	NONE	< 60	< 60	< 60		

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied		
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	HD01	TP06	WS09		
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: None Supplied	~Depth (m)	0.60	0.50	0.70		
Reporting Date: 10/09/2025	DETS Sample No	788380	788383	788391		

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene : HS_1D_MS	µg/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE : HS_1D_MS	µg/kg	< 5	MCERTS	< 5	< 5	< 5		

Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)

DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied			
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied			
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	TP06	WS09			
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied			
~Order No: None Supplied	~Depth (m)	0.50	0.70			
Reporting Date: 10/09/2025	DETS Sample No	788383	788391			

Determinand	Unit	RL	Accreditation					
Phenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
0-Cresol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15	< 0.15			
Isophorone	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15	< 0.15			
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15	< 0.15			
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
4-Chloroaniline	mg/kg	< 0.15	NONE	< 0.15	< 0.15			
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dibenzofuran	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Azobenzene	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
Carbazole	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1			
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	ISO17025	< 0.15	< 0.15			
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			

Soil Analysis Certificate - Organochlorine Pesticides						
DETS Report No: 25-07835	~Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	HD01	TP01	TP10	TP13	WS09
~Project / Job Ref: BRD4201	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	~Depth (m)	0.20	0.10	0.10	0.20	0.10
Reporting Date: 10/09/2025	DETS Sample No	788379	788381	788385	788386	788390

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
beta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
delta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dieldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Endrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Heptachlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Isodrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Trifluralin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

Soil Analysis Certificate - Sample Descriptions

DETS Report No: 25-07835	
BRD Environmental Ltd	
~Site Reference: Swindon Road, Royal Wootton Bassett	
~Project / Job Ref: BRD4201	
~Order No: None Supplied	
Reporting Date: 10/09/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 788378	SS01	None Supplied	0.10	14.4	Brown sandy clay
^ 788379	HD01	None Supplied	0.20	7.3	Brown sandy clay with vegetation and brick
^ 788380	HD01	None Supplied	0.60	13.8	Brown sandy clay
^ 788381	TP01	None Supplied	0.10	12.2	Brown sandy clay with vegetation
^ 788382	TP06	None Supplied	0.10	7.8	Brown sandy clay with vegetation
^ 788383	TP06	None Supplied	0.50	13.1	Brown sandy clay with stones and vegetation
^ 788384	TP07	None Supplied	1.00	12	Brown clay
^ 788385	TP10	None Supplied	0.10	17.7	Brown sandy clay with stones and vegetation
^ 788386	TP13	None Supplied	0.20	9.3	Brown sandy clay with stones and vegetation
^ 788387	TP15	None Supplied	0.10	13.3	Brown clay
^ 788388	TP15	None Supplied	0.60	6.6	Brown sandy clay with vegetation
^ 788389	TP15	None Supplied	1.10	31.8	Brown clay
^ 788390	WS09	None Supplied	0.10	9.5	Brown sandy clay with vegetation
^ 788391	WS09	None Supplied	0.70	14.6	Brown clay

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

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 25-07835
BRD Environmental Ltd
~Site Reference: Swindon Road, Royal Wootton Bassett
~Project / Job Ref: BRD4201
~Order No: None Supplied
Reporting Date: 10/09/2025

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

List of HWOL Acronyms and Operators	
DETS Report No: 25-07835	
BRD Environmental Ltd	
~Site Reference: Swindon Road, Royal Wootton Bassett	
~Project / Job Ref: BRD4201	
~Order No: None Supplied	
Reporting Date: 10/09/2025	

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

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH LQM - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH LQM - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH LQM - Aliphatic >C16 - C35 - EH_CU_1D_AL
TPH LQM - Aliphatic >C35 - C44 - EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH LQM - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH LQM - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH LQM - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH LQM - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH LQM - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH LQM - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH LQM - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH LQM - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH LQM - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

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

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene, Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene and Coronene.
^	No sampling date provided; unable to confirm if samples are within acceptable holding times
\$	Samples exceeded their recommended holding times
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
S	Subcontracted analysis
M	MCERTS accredited test
U	UKAS accredited test

Lee Chippington
BRD Environmental Ltd
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Banbury
Oxfordshire
OX16 5HT

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ME17 2JN
t: 01622 850410

DETS Report No: 25-07834

Site Reference: Swindon Road, Royal Wootton Bassett

Project / Job Ref: BRD4201

Order No: None Supplied

Sample Receipt Date: 02/09/2025

Sample Scheduled Date: 02/09/2025

Report Issue Number: 1

Reporting Date: 10/09/2025

Authorised by:



Steve Knight
Customer Support Manager

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

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Soil Analysis Certificate						
DETS Report No: 25-07834	~Date Sampled	27/08/25	27/08/25	27/08/25	27/08/25	27/08/25
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	WS01	WS02	WS04	WS05	WS05
~Project / Job Ref: BRD4201	~Additional Refs	D3	D1	D1	D2	D4
~Order No: None Supplied	~Depth (m)	2.50	1.00	1.50	1.00	2.00
Reporting Date: 10/09/2025	DETS Sample No	788368	788369	788370	788371	788372

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.0	6.7	6.5	7.1	6.7
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	16490	59280	43730	41570	38160
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	3080	2100	2490	2030	2440
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	3.08	2.10	2.49	2.03	2.44
Total Sulphur	%	< 0.02	NONE	0.67	1.85	1.57	2.29	1.67

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate						
DETS Report No: 25-07834	~Date Sampled	28/08/25	28/08/25	28/08/25	28/08/25	28/08/25
BRD Environmental Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Swindon Road, Royal Wootton Bassett	~TP / BH No	WS06	WS07	WS09	WS10	TP11
~Project / Job Ref: BRD4201	~Additional Refs	D2	D2	D2	D2	D2
~Order No: None Supplied	~Depth (m)	2.50	1.00	2.00	1.10	1.60
Reporting Date: 10/09/2025	DETS Sample No	788373	788374	788375	788376	788377

Determinand	Unit	RL	Accreditation	(n)				
pH	pH Units	N/a	MCERTS	7.7	7.2	7.4	7.4	7.6
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	24660	1365	44360	614	2226
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	2290	849	2200	484	2040
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	2.29	0.85	2.20	0.48	2.04
Total Sulphur	%	< 0.02	NONE	0.84	0.04	1.63	0.03	0.09

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Analysis carried out on the dried sample is corrected for the stone content

Soil Analysis Certificate - Sample Descriptions

DETS Report No: 25-07834	
BRD Environmental Ltd	
~Site Reference: Swindon Road, Royal Wootton Bassett	
~Project / Job Ref: BRD4201	
~Order No: None Supplied	
Reporting Date: 10/09/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
788368	WS01	D3	2.50	16.9	Brown clay
788369	WS02	D1	1.00	14.7	Brown clay
788370	WS04	D1	1.50	19.1	Brown sandy clay
788371	WS05	D2	1.00	13.6	Brown clay
788372	WS05	D4	2.00	15	Brown clay
788373	WS06	D2	2.50	15.1	Brown clay with stones
788374	WS07	D2	1.00	13	Brown sandy clay
788375	WS09	D2	2.00	12.7	Brown sandy clay with chalk
788376	WS10	D2	1.10	15	Brown sandy clay
788377	TP11	D2	1.60	15.6	Brown sandy clay

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

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 25-07834
BRD Environmental Ltd
~Site Reference: Swindon Road, Royal Wootton Bassett
~Project / Job Ref: BRD4201
~Order No: None Supplied
Reporting Date: 10/09/2025

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

List of HWOL Acronyms and Operators

DETS Report No: 25-07834

BRD Environmental Ltd

~Site Reference: Swindon Road, Royal Wootton Bassett

~Project / Job Ref: BRD4201

~Order No: None Supplied

Reporting Date: 10/09/2025

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

Det - Acronym

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

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene, Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene and Coronene.
^	No sampling date provided; unable to confirm if samples are within acceptable holding times
\$	Samples exceeded their recommended holding times
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
M	MCERTS accredited test
U	UKAS accredited test



TEST REPORT
ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 16/09/2025



Contract	Royal Wootton Bassett		
Serial No.	48472_1		
Client: BRD Environmental Ltd BRD Environmental Ltd Hawthorne Villa 1 Old Parr Road Banbury Oxfordshire OX16 5HT		<i>Soil Property Testing Ltd</i> 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: BRD Environmental Ltd Samples Labelled: Royal Wootton Bassett		Approved Signatories: ☒ J.C. Garner B.Eng (Hons) FGS Technical Director & Quality Manager ☐ W. Johnstone Materials Lab Manager 	
Date Received: 01/09/2025		Samples Tested Between: 01/09/2025 and 16/09/2025	
Remarks: For the attention of Lee Chippington Your Reference No: BRD4201			
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: 16/09/2025



Contract			Royal Wootton Bassett																				
Serial No.			48472_1										Target Date			15/09/2025							
Scheduled By			BRD Environmental Ltd																				
Schedule Remarks																							
Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BS EN) Liquid/Plastic Limits																			Sample Remarks
TP03	D	2	1.70	1	1																		
TP04	D	1	0.80	1	1																		
TP05	D	1	1.00	1	1																		
TP05	D	3	2.80	1	1																		
TP08	D	1	1.00	1	1																		
TP14	D	1	1.20	1	1																		
WS02	D	2	1.50	1	1																		
WS03	D	2	1.50	1	1																		
WS06	D	2	1.50	1	1																		
WS07	D	3	2.00	1	1																		
WS08	D	3	2.50	1	1																		
WS09	D	3	3.00	1	1																		
Totals				12	12															End of Schedule			



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Contract		Royal Wootton Bassett				
Serial No.		48472_1				
SUMMARY OF WATER CONTENT						
Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
TP03	1.70	D	2	17.3	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals with rare shell debris and rare decayed roots.	Dried at 50°C due to the presence of selenite.
TP04	0.80	D	1	23.1	Very stiff closely fissured mottled bluish grey and olive CLAY with rare shell debris traces and rare decayed roots.	
TP05	1.00	D	1	19.1	Very stiff fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	Dried at 50°C due to the presence of selenite.
TP05	2.80	D	3	27.0	Stiff mottled bluish grey and olive CLAY with occasional selenite crystals and decayed roots with rare shell debris.	Dried at 50°C due to the presence of selenite.
TP08	1.00	D	1	16.7	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare decayed roots with shell debris.	Dried at 50°C due to the presence of selenite.
TP14	1.20	D	1	16.1	Very stiff closely fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	Dried at 50°C due to the presence of selenite.
WS02	1.50	D	2	20.8	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	Dried at 50°C due to the presence of selenite.
WS03	1.50	D	2	17.9	Stiff closely fissured mottled bluish grey and olive silty CLAY with rare selenite crystals and recently active and decayed roots and shell debris.	Dried at 50°C due to the presence of selenite.
WS06	1.50	D	2	19.1	Stiff mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare shell debris and recently active roots.	Dried at 50°C due to the presence of selenite.
WS07	2.00	D	3	21.9	Stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	Dried at 50°C due to the presence of selenite.
WS08	2.50	D	3	20.3	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	Dried at 50°C due to the presence of selenite.
WS09	3.00	D	3	23.8	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	Dried at 50°C due to the presence of selenite.
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						



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Contract		Royal Wootton Bassett												
Serial No.		48472_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)		
TP03	1.70	D	2	17.3	49	20	29	-0.09	From Natural	0 (A)		24	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals with rare shell debris and rare decayed roots.	CI
TP04	0.80	D	1	23.1	65	25	40	-0.05	From Natural	0 (A)		24	Very stiff closely fissured mottled bluish grey and olive CLAY with rare shell debris traces and rare decayed roots.	CH
TP05	1.00	D	1	19.1	55	21	34	-0.06	From Natural	0 (A)		25	Very stiff fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	CH
TP05	2.80	D	3	27.0	67	24	43	0.07	From Natural	0 (A)		26	Stiff mottled bluish grey and olive CLAY with occasional selenite crystals and decayed roots with rare shell debris.	CH
TP08	1.00	D	1	16.7	49	17	32	-0.01	From Natural	0 (A)		26	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare decayed roots with shell debris.	CI
TP14	1.20	D	1	16.1	42	17	25	-0.04	From Natural	0 (A)		25	Very stiff closely fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	CI
WS02	1.50	D	2	20.8	61	26	35	-0.15	From Natural	0 (A)		24	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	CH
WS03	1.50	D	2	17.9	46	18	28	0.00	From Natural	0 (A)		24	Stiff closely fissured mottled bluish grey and olive silty CLAY with rare selenite crystals and recently active and decayed roots and shell debris.	CI
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:														
Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured														



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Contract		Royal Wootton Bassett												
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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)		
WS06	1.50	D	2	19.1	46	17	29	0.07	From Natural	0 (A)		27	Stiff mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare shell debris and recently active roots.	CI
WS07	2.00	D	3	21.9	55	22	33	0.00	From Natural	0 (A)		27	Stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	CH
WS08	2.50	D	3	20.3	54	21	33	-0.02	From Natural	0 (A)		26	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	CH
WS09	3.00	D	3	23.8	61	24	37	-0.01	From Natural	0 (A)		24	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	CH
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:														
Table Notation:		Ret'd 0.425mm: (A) = Assumed, (M) = Measured												



TEST REPORT

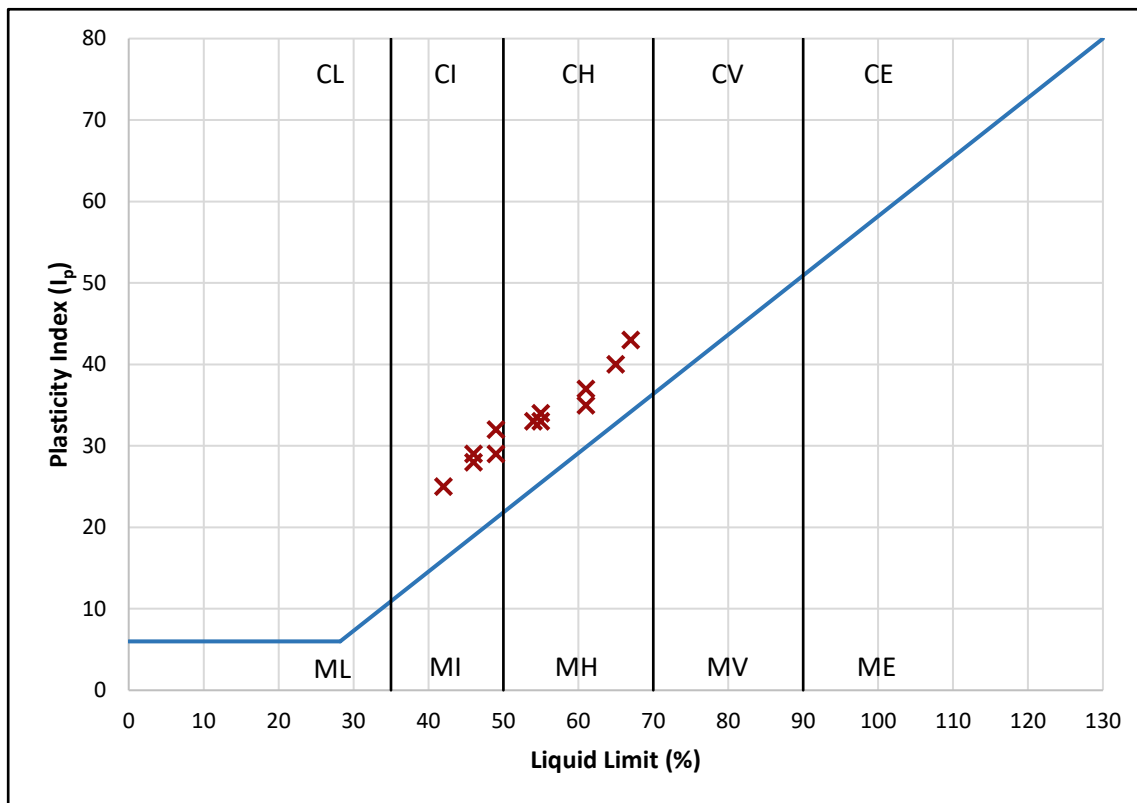
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Contract	Royal Wootton Bassett
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PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

High	NHBC Volume Change Potential
Medium	
Low	

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



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DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
TP03	1.70	D	2	17.3	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals with rare shell debris and rare decayed roots.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	49 %	
Method of preparation					From natural	Plastic Limit	20 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	29 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.09
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) High Medium Low NHBC Volume Change Potential Liquid Limit % 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:							



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DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
TP04	0.80	D	1	23.1	Very stiff closely fissured mottled bluish grey and olive CLAY with rare shell debris traces and rare decayed roots.		
PREPARATION					Liquid Limit	65 %	
Method of preparation					From natural	Plastic Limit	25 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	40 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.05
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) Liquid Limit %						High Medium Low NHBC Volume Change Potential	
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:							



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Serial No.	48472_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample TypeReference		Water Content (W) %	Description	Remarks	
TP05	1.00	D	1	19.1	Very stiff fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	55 %	
Method of preparation					From natural	Plastic Limit	21 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	34 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.06
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (Ip) High Medium Low NHBC Volume Change Potential Liquid Limit %							

Plasticity Chart BS5930: 2015: Figure 8



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Serial No.	48472_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 Reference		Water Content (W) %	Description	Remarks	
TP05	2.80	D	3	27.0	Stiff mottled bluish grey and olive CLAY with occasional selenite crystals and decayed roots with rare shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	67 %	
Method of preparation					From natural	Plastic Limit	24 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	43 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.07
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time			26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) NHBC Volume Change Potential High Medium Low						Liquid Limit %	
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:							



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Serial No.	48472_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample TypeReference		Water Content (W) %	Description	Remarks	
TP08	1.00	D	1	16.7	Very stiff closely fissured mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare decayed roots with shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	49 %	
Method of preparation					From natural	Plastic Limit	17 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	32 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.01
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		26 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) 70 60 50 40 30 20 10 0 0102030405060708090100110120 CLCI CHCVCE MLMI MH MV ME Plasticity Chart BS5930: 2015: Figure 8 High Medium Low NHBC Volume Change Potential Liquid Limit %							
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:							



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DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
TP14	1.20	D	1	16.1	Very stiff closely fissured mottled bluish grey and olive CLAY with frequent selenite crystals and rare decayed roots and shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	42 %	
Method of preparation					From natural	Plastic Limit	17 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	25 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.04
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (Ip) High Medium Low NHBC Volume Change Potential Liquid Limit %							

Plasticity Chart BS5930: 2015: Figure 8



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Borehole / Pit No.	Depth m	Sample TypeReference		Water Content (W) %	Description	Remarks	
WS02	1.50	D	2	20.8	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	61 %	
Method of preparation					From natural	Plastic Limit	26 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	35 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.15
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) Liquid Limit %						High Medium Low NHBC Volume Change Potential	
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:							



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DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS03	1.50	D	2	17.9	Stiff closely fissured mottled bluish grey and olive silty CLAY with rare selenite crystals and recently active and decayed roots and shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	46 %	
Method of preparation					From natural	Plastic Limit	18 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	28 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.00
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) High Medium Low NHBC Volume Change Potential Liquid Limit %							

Plasticity Chart BS5930: 2015: Figure 8



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DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS06	1.50	D	2	19.1	Stiff mottled bluish grey and olive silty CLAY with occasional selenite crystals and rare shell debris and recently active roots.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	46 %	
Method of preparation					From natural	Plastic Limit	17 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	29 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.07
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		27 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) High Medium Low NHBC Volume Change Potential Liquid Limit % 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:							



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Serial No.	48472_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample TypeReference		Water Content (W) %	Description	Remarks	
WS07	2.00	D	3	21.9	Stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	55 %	
Method of preparation					From natural	Plastic Limit	22 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	33 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.00
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time			27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) High Medium Low NHBC Volume Change Potential Liquid Limit % 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:							



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Serial No.	48472_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 Reference		Water Content (W) %	Description	Remarks	
WS08	2.50	D	3	20.3	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell debris.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	54 %	
Method of preparation					From natural	Plastic Limit	21 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	33 %
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		26 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) High Medium Low NHBC Volume Change Potential Liquid Limit % 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: 16/09/2025



Contract	Royal Wootton Bassett						
Serial No.	48472_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 Reference		Water Content (W) %	Description	Remarks	
WS09	3.00	D	3	23.8	Very stiff closely fissured mottled bluish grey and olive CLAY with occasional selenite crystals and rare decayed roots and shell traces.	Specimen dried at 50°C due to the presence of selenite.	
PREPARATION					Liquid Limit	61 %	
Method of preparation					From natural	Plastic Limit	24 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	37 %
Corrected water content for material passing 0.425mm						Liquidity Index	-0.01
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) Plasticity Chart BS5930: 2015: Figure 8						High Medium Low NHBC Volume Change Potential	
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:							