

Growing Baldock

Environmental Statement Volume 2: Figures & Appendices

Chapter 12: Ground Conditions and Soils

Appendix 12.3 Ground Investigation Interpretive Report BA2 Area



SHADBOLT
ENVIRONMENTAL



Baldock, North Hertfordshire

Ground Investigation Interpretive Report –
BA2 Area

Urban and Civic

Issue V2

February 2025



SHADBOLT
GROUP

Baldock, North Hertfordshire

Ground Investigation Interpretive Report – BA2 Area

Project Reference: 2899

Client	Urban and Civic
Our Reference	2899 – Baldock, North Hertfordshire
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Urban&Civic



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1.0 INTRODUCTION

Shadbolt Group (SG) were commissioned by Urban and Civic to undertake an intrusive ground investigation on the site in Baldock, North Hertfordshire. The current report considers the area BA2 which is a part of the wider development and is located at the southern end of the proposed Baldock development area. The investigation on the current area (BA2) was carried out under the supervision of SG, with site works carried out in March 2024.

This report provides an assessment of the ground conditions encountered during the ground investigation and is a development on assessments based on information presented in a Preliminary Risk Assessment undertaken as part of area that is referred to as Baldock, North Hertfordshire by SG (Ref: 2899 – Baldock North Hertfordshire, Preliminary Risk Assessment, Issue V1, July 2022).

For the purposes of this ground investigation report “The Site” refers to area that can be seen outlined in red in Figure 2 below.

1.1 Aims and Objectives

The purpose of the investigation was to determine the existing geotechnical and geochemical ground conditions relating to artificial ground (if encountered) and underlying natural ground conditions and past uses of the site which may provide constraints to a potential future development.

1.2 Proposed Development

At this stage it is understood that the proposed development has not been finalised however we understand that the development will comprise residential housing with associated infrastructure, public open space, vehicular access and nature conservation.

1.3 Scope of Works

The works undertaken by SG to date comprise:

- Rotary boreholes.
- Windowless sample boreholes.
- Trial pitting.
- In-situ testing with the above exploratory borehole (SPTs).
- In-situ determination of CBR using TRL DCP testing.
- Infiltration testing within selected exploratory trial pits.
- Geotechnical Laboratory testing.
- Chemical laboratory testing.
- Contamination risk assessment.
- Ground gas and groundwater monitoring.

1.4 Limitations

The information presented in this report comprises data on the strata observed in the excavations and the results of the site and laboratory tests as detailed within the report. Shadbolt Group take no responsibility for ground conditions which occur between the exploratory hole positions.

Every effort has been made to interpret the conditions between investigation locations; however, such information is indicative. A detailed review of the extent of limitations of this report is included in the **Report Conditions** included in **Appendix A** and the standard terms and conditions of the agreement.

The exploratory hole locations were carried out on a grid of spacing between 50m within proposed development areas. An area of ecological interest is present on the southeast corner of the site which is to be retained as open space within the proposed development. As such no exploratory holes were carried out in this area due to the ecological restrictions.

The proposed locations were set out by SG utilising a GPS unit with the exact location positioned as near as possible to the proposed location taking into account access requirements (e.g. level surfacing for safe rig set up), services (mapped and unmapped identified by visual inspection and CAT signal) and the position of proposed archaeological excavations on site.

2.0 SITE INFORMATION

2.1 General

The site is east of the Town of Baldock, in North Hertfordshire. The site is approximately 24km southeast of Bedford. The site is irregularly shaped in plan and has an area of approximately 8.4ha.

The approximate National Grid References (NGR) for the centre of the site is **TL 25331 33298**. A general site location plan of the site is shown in Figure 1 and an aerial photograph in Figure 2.

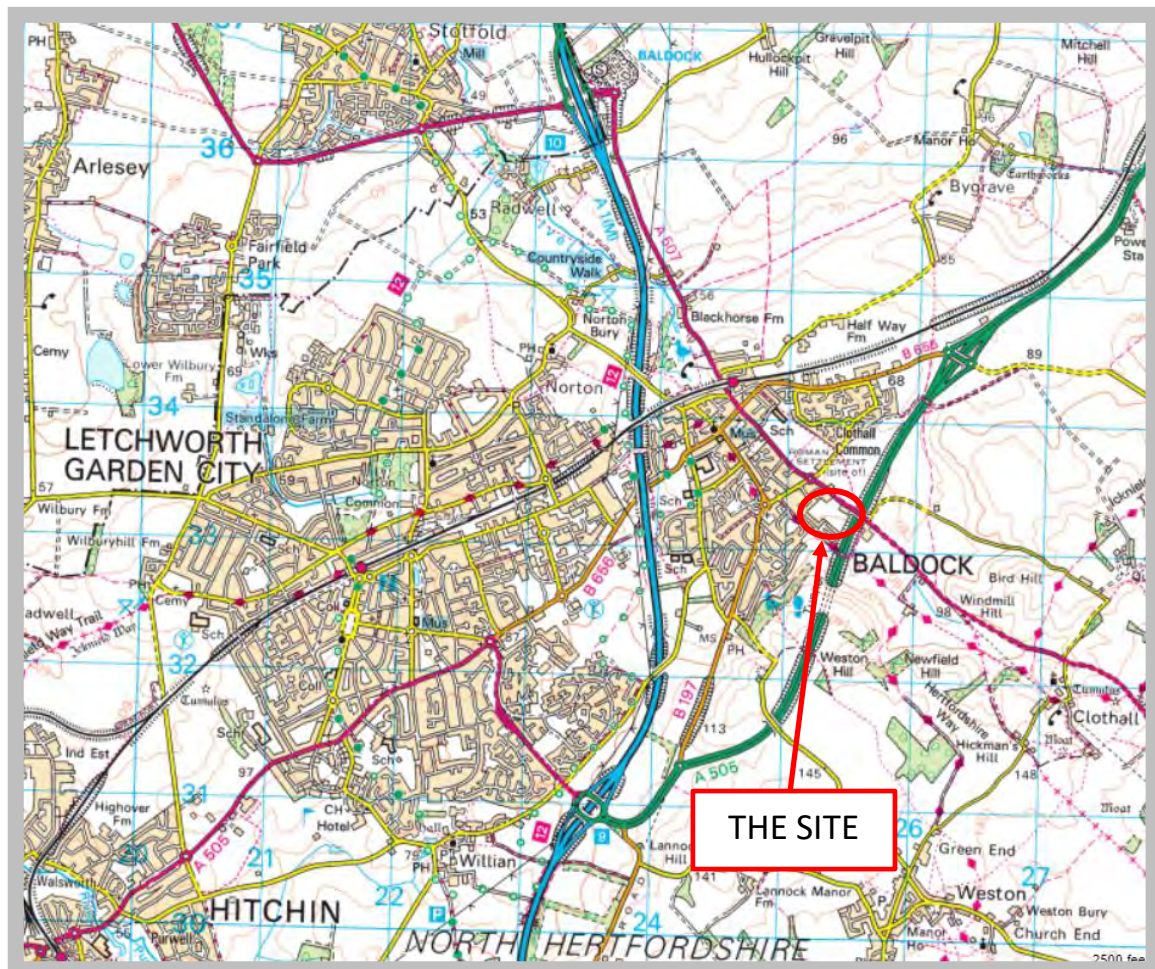


Fig. 1 – General Site Location Plan

2.2 Site Description

An initial site reconnaissance visit was undertaken in June 2022.

The site is an irregularly shaped parcel of land located east of the town centre of Baldock, approximately 23km northwest of the county town of Hertford. It comprises predominantly of agricultural land and was used as pasture/cropped with barley at the time of the initial walkover.

The topography is relatively flat. The site is split by wire fencing and vegetated by trees, hedges, and non-invasive plants, including brambles, nettles, and false oat grass.

The surrounding area is comprised of agricultural land to the north, east and south areas. Directly west from the site boundary are residential dwellings, and further west of this is the town of Baldock. The A1 (M) passes through the western parts of Baldock heading north separating the residential area of Baldock and the industrial area of Letchworth. To the east of the site boundary is the A505 dual carriageway road leading northeast.

No obvious olfactory or visual evidence of significant contamination was noted during site reconnaissance.

During the works in March 2024 no significant changes to the site reconnaissance which would alter the conclusion of the previous PRA report were noted during the recent fieldworks.



Fig.2 – Aerial Photograph Showing the Development Area in red (approximate).

3.0 HISTORICAL LAND USE

A phase 1 desk study was undertaken for the larger Baldock development area including the site in July 2022 by SG prior to undertaking intrusive investigations. A full description of the site history and documented geo environmental conditions were discussed in the document, referenced as follows:

2899 – Baldock North Hertfordshire, Preliminary Risk Assessment, Issue V1, July 2022 by Shadbolt Group.

The history of the site is summarised thus:

“The earliest attainable records show the site has remained as predominantly agricultural land, with associating farming building throughout its mapped history. The site has a history of allowing sections of the land to be accessible to the public with several public footpaths established. Local roads have been developed within the site, for example Bygrave Road, for farming relating access. However, some main roads have been marked on the map, for example southeast of the site is the Roman Road (Clothall Road) and Warren Lane leading east. Roman Road also intersects the site boundary in the northwest of the site. Ashwell Road and Royston Road cuts though the northeast areas of the site. In addition, the national railway line passes through the central part of the site.

The surrounding around predominantly started off as agricultural land, with smaller villages around the areas, including the town of Baldock. However, throughout the mapped history, the surrounding areas have gradually developed from both residential and industrial development. From Late 1800s to early 1900s the land relied on chalk related industries with several chalk pits marked around the surrounding areas of the site. However, 1920s onwards, the town of Baldock has expansion steadily with factories and warehouse development in Letchworth area. The chalk pits have closed due to this expansion and allowing for residential expansion in the town of Baldock to increase.”

4.0 PREVIOUS INVESTIGATIONS

SG have not had sight of any previous reports/investigations undertaken at the site other than the PRA report carried out by SG described above.

There are 107 No. shallow borehole records within 250m of the site. Approximately 48 No. records are relating to the A505 Baldock Bypass located adjacent to the site.

The strata mainly comprise topsoil overlying hard fissure chalk. The hard chalk reached at approximately 3m.

Examples of logs are included within the associated PRA report.

5.0 SITE INVESTIGATION

5.1 Proposed Development

The proposals at the site are for a development comprising residential housing, with associated infrastructure, public open space, vehicular access, and nature conservation.

5.2 Scope of Investigation

The site works comprised the following:

- 3 No. rotary boreholes to a maximum depth of 9.50m bgl.
- 23 No. machine dug trial pits/trial trenches to a maximum depth of 3.00m bgl.
- 10 No. windowless sample boreholes drilled to a maximum depth of 4.45m bgl.
- 10 No. DCP utilising the TRL Apparatus
- Appropriate sample retrieval.
- Geotechnical laboratory testing and analysis.
- Geochemical laboratory testing and analysis.
- 10 No. groundwater / ground gas monitoring wells
- 6 No. Ground gas and groundwater monitoring visits.

A total of 36 No. exploratory holes have been undertaken as part of this investigation.

A plan showing the approximate location of the exploratory holes and the extent of the areas of investigation are presented as a drawing **2899-003(BA2) - Exploratory Hole Location Plan** in **Appendix B**.

The exploratory logs are included in **Appendix B**.

The soils encountered during this investigation have been logged in accordance with BS5930:2015+A1:2020 “Code of Practice for Site Investigation”. During excavation, representative samples were taken at regular intervals from the exploratory holes to assist in the identification of the soils and allow selected geotechnical and geochemical testing to be programmed.

5.3 In-Situ Testing

Hand Shear Vane (HSV) tests and Standard Penetration Tests (SPT) were undertaken in suitable deposits during the siteworks. Results of the in-situ testing are presented on the relevant exploratory hole logs included in **Appendix B**.

5.4 Geotechnical Laboratory Testing

Selected samples were submitted to our nominated geotechnical testing laboratory. Laboratory testing included Atterberg limits, Particle Sieve Distribution (PSD) 4.5kg Compaction testing and Californian Bearing Ratio (CBRs) testing, Saturation Moisture Contents and Intact Dry Density (IDD) of chalk, and point load testing of rock core. Samples scheduled for geotechnical testing were delivered to the selected UKAS accredited laboratory (i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS, UKAS No. 4041) where testing was carried out in accordance with BS 1377:1990 “Methods of Test for Soils for Civil Engineering Purposes” and any relevant updates to parts.

The results of geotechnical testing are presented in **Appendix E**.

5.5 Chemical Laboratory Testing

A programme of chemical laboratory analysis was scheduled by SG to determine the concentrations of potential contaminants which may be present within the soils encountered at the site. The selected samples were submitted to selected UKAS accredited laboratories (i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS, UKAS No. 4041).

17 No. soil samples were tested for a range of determinants including heavy and phytotoxic metals, metalloids, inorganic and organic contaminants. 10 No. samples were also screened for the presence of asbestos.

The results of the chemical analysis undertaken were compared to the **Shadbolt Group in house Tier 1 Screening Values (TSV) for Residential with Consumption of Home Grown Fruit and Vegetable**. A copy of the Tier 1 TSV are presented in **Appendix C**. The results of the laboratory contamination testing are presented in **Appendix D**.

5.6 Groundwater and Gas Monitoring

10 No. monitoring wells were installed as part of the recent works. 6 No. monitoring visits have been undertaken over a period of 3 months in accordance with CIRIA guidance. An assessment of the data has been carried out to provide a ground gas risk assessment.

The monitoring procedure comprised the following measurements:

- Atmospheric temperature, pressure and ambient oxygen, methane and carbon dioxide concentrations on site immediately prior to and on completion of monitoring
- Emission (flow) rate
- Methane, oxygen and carbon dioxide concentrations using a GasData infra-red landfill gas analyser
- Standing water level using a dip meter.

Ground gas monitoring results are presented in **Appendix F**.

5.7 Limitations

It should be noted that although every effort has been made to ensure the accuracy of the data obtained from the investigation, the possibility exists of variations in ground and groundwater conditions between and around the exploratory hole locations; additionally, groundwater levels and ground gas concentrations will vary seasonally and with changes in weather conditions.

Archaeological investigation works are also ongoing at the site and exploratory positions were placed within the available accessible areas where it was deemed safe to excavate with reference to the service plans and CAT/Genny scanning, and further restrictions imposed by ecological constraints mean there remains the potential for variation in ground conditions, and/or potentially for unidentified contamination not encountered within this investigation.

6.0 GROUND CONDITIONS

Reference should be made to the individual exploratory hole logs presented in **Appendix B** for detailed descriptions of strata encountered at each location. However, the following ground conditions have been typically encountered across the site (except for the below any existing structures or areas of hardstanding).

6.1 Topsoil

Topsoil was encountered in all 36 No. exploratory holes across the site. The topsoil encountered from ground level to between 0.20m and 0.60m bgl more typically in the range 0.20-0.40m bgl. The topsoil was generally described as Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel includes angular to sub angular fine to coarse chalk, flint and chert.

6.2 Made Ground

No Made Ground was encountered in any of the 36 No. exploratory holes across the site.

6.3 Superficial Deposits

No Superficial Deposits were encountered in any of the 36 No. exploratory holes across the site.

6.4 Solid Deposits

Bedrock deposits of Chalk were encountered in all 36 No. exploratory holes across the site from depths of 0.20m bgl –immediately beneath Topsoil.

The Chalk strata initially comprised Structureless Chalk of white mottled orange brown silty GRAVEL/gravelly SILT.

Localised loose orange brown mottled white SAND and GRAVEL of chalk and flint was encountered directly below the Topsoil and up to a maximum depth of 0.80m. Given the general lack of other superficial deposits across the site and the predominance of chalk as the gravel fraction these soils are considered to be heavily weathered chalk as opposed to superficial deposits.

Structured Chalk was encountered from depth of between 0.30m and 2.50m depth bgl (more typically 1.00m to 2.00m bgl) and comprised extremely weak to weak low locally medium density Chalk. The Chalk strata was generally excavated to a depth of 3.00m without significant obstruction and recovered as angular fine to coarse gravel with light orange brown silty matrix typically becoming coarser with cobbles and lower matrix content at depth. The shallow structured chalk was typically considered to be of Grade B/C.

Similar chalk strata was noted within the rotary boreholes with some increase in strength and density with depth. Fracturing was not consistent within the borehole and varied between horizontal to vertical, extremely close to close, rough to smooth, planar to stepped, very tight to moderately open, clean with reddish brown staining. The chalk within the deeper boreholes was generally assessed as being Grade A.

6.5 Groundwater

No Groundwater was encountered in any of the 36 No. exploratory holes across the site during the site investigation.

No Groundwater has been reported during any of the 6 No. monitoring visits.

Gas and groundwater monitoring results are presented in **Appendix F**.

6.6 Ground Obstructions

Ground obstructions were not encountered during intrusive investigations with the exception of shallow rockhead.

6.7 Observed Contamination

There was no evidence (visual / olfactory) of contamination noted during the site investigation. The presence of further contaminants cannot be ruled out given the site's history of farming activities and following the results of chemical testing.

The results of the chemical analysis carried out on samples obtained from the site are discussed in **Section 7.4**.

6.8 Geotechnical Testing

The following in-situ and laboratory geotechnical testing has been undertaken for the site.

Method	Strata	Parameter	Comments
CBR (Laboratory Remoulded) (4 No.)	Chalk (1.10-1.40m)	Indicated CBR value of Chalk is <1% to 19%	Lab remoulded CBR tests indicate CBR of <1% to 18% (Based upon the SPTs values and in-situ description this is considered to be an underestimate of the in-situ CBR value. Further testing is outstanding.)
CBR (In-situ TRL DCP Testing) (10 No.)	Chalk (From Surface to c.1.0m)	Indicated CBR value below Topsoil (c.0.30m depth) of 2% to 13%.	Equilibrium CBR of 2% at 0.30m depth below Topsoil should be assumed for initial design. Due to quick deterioration of chalk in inclement weather confirmatory testing should be carried out immediately prior to placement of stone/hardstanding.
Atterberg Limits (N/A)	Not Applicable	Not Applicable	No Significant Cohesive strata encountered on site.
Standard Penetration Test	Chalk 1.00m to 4.00m	SPT 'N-Values' in range N=7 to N=57 (Average N=22)	No correlations relating SPTs to chalk parameters or classifications.

Particle Size Distribution (PSD)	N/A	N/A	No significant none chalk strata. PSD not appropriate testing for chalk.
Chalk Crush Value (14 No.)	Natural Chalk Strata 1.10m to 3.50m	Material Greater than 10mm = 0% to 98% (Average 26.6%) Moisture Content = 26% to 32% (Average 28.8%) Saturated Moisture Content = 23% to 3% (Average 29.8%) Chalk Crushing Value = 2.6 to 4.9 (Average 3.3)	Materials classified as Chalk Class A to D but predominantly B/C according to TRL LR806
Saturation Moisture Content and Intact Dry Density (28 No.)	Chalk 1.10m to 9.06m	Saturation Moisture Content = 23.3% to 32.9% (Average = 29.8%) Intact Dry Density = 1.33Mg/m ³ to 1.66Mg/m ³ (Average = 1.48 Mg/m ³)	Chalk is typically classified as Low locally Medium density.
Point Load Tests (24 No.)	Chalk 1.40m to 8.26m	Rock strength Is(50) = 0.03Pa to 0.52MPa (Average = 0.19MPa)	Chalk is typically classified as extremely weak.

7.0 GROUND CONTAMINATION ASSESSMENT

7.1 Legislation

Part IIA of the Environmental Protection Act 1990 provides for the control of specific threats to health or the environment from existing land contamination. In accordance with the Act, the statutory guidance document, and The Contaminated Land (England) Regulations 2000, the definition of contaminated land is intended to embody the concept of risk assessment. Therefore, land is only “contaminated land” where it appears to the regulatory authority, by reason of substances within, on, or under the land that:

Significant harm is being caused, or there is significant possibility of such harm being caused; or

Pollution of controlled waters is being, or is likely to be, caused.

The guidance defines “risk” as the combination of:

Probability, or frequency, of occurrence of a defined hazard (for example, exposure of a property to a substance with the potential to cause harm); and

Magnitude (including the seriousness) of the consequences.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all the following elements must be present:

Source, i.e. a substance that is capable of causing pollution or harm.

Receptor (or target), i.e. something which could be adversely affected by the contaminant; and

Pathway, i.e. a route by which the contaminant can reach the receptor.

If one of these elements is missing (source, pathway, or receptor) there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

7.2 Assessment Methodology

To assess the environmental risk posed by potential contaminants within the underlying soils to human health and controlled waters, Shadbolt Group undertook an initial screen of the laboratory results using Shadbolt Group Tier 1 Screening Values (TSVs). This screening was undertaken using TSVs derived for the and proposed **RESIDENTIAL WITH HOME GROWN PRODUCE** end use.

Contaminant concentrations below the TSVs are considered not to warrant further risk assessment. Concentrations of potential contaminants above the TSVs require further consideration of the potential pollutant linkages.

It should be noted that exceedance of the TSVs does not necessarily require that the site be remediated.

7.3 Derivation of Soils SSVs

A discussion on the development of **Shadbolt** TSVs is presented, along with the relevant values at the time of writing in **Appendix C**.

7.4 Soil Contamination Assessment

In total 18 No. soil samples from the ground investigation, were submitted from for testing against a suite of common contaminants and asbestos screening. The laboratory chemical results have been compared to the **Shadbolt Group Tier 1 TSVs** for a **RESIDENTIAL with Home Grown Produce** end use as this represents the most sensitive end-use receptor and materials may be moved between parcels as part of any remediation and/or earthworks phases.

17 No. samples were tested for Total Petroleum Hydrocarbons (TPH), of these, 16 No. reported concentrations of TPH below the laboratory detection limit of 10mg/kg. 1 No. sample reported a higher concentration of TPH of 160mg/kg (TP-189 at 0.10-0.15m bgl) and was scheduled for additional TPH CWG testing. The speciated TPH CWG results indicated none of the aliphatic/aromatic hydrocarbon bands above the relevant threshold.

1 No. samples reported elevated pH levels, a pH level of 9.1 within TP-205 at 0.30-0.40m depth. Gravel sized fragments of chalk were noted within the Topsoil which may account for the very slightly elevated pH level.

The reported speciated PAH concentrations were below their respective assessment criteria for all samples except that within TP-189 at 0.10-0.15m depth. This indicated elevated concentration of the PAH determinands **Benzo(b)fluoranthene** (recorded concentration of 3.5mg/kg above thresholds of 2.6 mg/kg), **Benzo(a)pyrene** (recorded concentration of 3.3mg/kg above thresholds of 2.2 mg/kg) and **Di-benzo(a,h)anthracene** (recorded concentration of 0.42mg/kg above thresholds of 0.24 mg/kg) which reported an elevated concentration of 0.42mg/kg when compared to the Shadbolt TSV assessment criteria of 0.3mg/kg.

Exploratory Position	Depth (m)	Strata Type	Determinand	Threshold	Recorded Concentration
TP-189	0.10	Topsoil	Benzo(b)fluoranthene	2.6mg/kg	3.5mg/kg
			Benzo(a)pyrene	2.2mg/kg	3.3mg/kg
			Dibenzo(a,h)anthracene	0.24g/kg	0.42mg/kg
TP-205	0.30	Topsoil	pH	9 pH	9.1 pH

Table 7.4.2 – Summary of Elevated Concentrations

The area is utilised as agricultural farmland (mixed pasture and arable land) with no visual or olfactory evidence of contamination or odours encountered during the investigation. As such scheduling for more specialised contaminants such as PFAS, PCBs, or Volatiles was not deemed warranted at this time. Should further evidence of contamination be uncovered during the site strip further testing including for a broader range of potential contaminants may be required.

Concentrations of other contaminants scheduled were reported to be within their respective assessment criteria.

10 No. samples were also scheduled for qualitative Asbestos analysis. No samples reported the presence of asbestos.

7.4.1 Soils Statistical Assessment

Statistical analysis was carried out on all 18 No. samples for those contaminants with reported elevated concentrations; namely Benzo(b)fluoranthene, Benzo(a)pyrene and Di-benzo(a,h)anthracene.

Analysis was undertaken utilising ESI Ltd.'s Soils and Groundwater Statistics Calculator which is based on CIEH/CL:AIRE document Guidance on Comparing Soil Contamination Data with a Critical Concentration (2008).

Analysis was carried out on samples grouped by soil type, Topsoil (12 No.) and Natural Chalk Materials (6 No.). As elevated concentration were only noted within the Topsoil samples and the concentrations were below the level of detection (<0.05mg/kg) and well below the relevant thresholds in the natural chalk soils samples statistical analysis was not deemed necessary for the natural chalk soil data set.

The outcomes of the statistical analysis are summarised in Table 7.4.1.1 below.

Contaminant	SG TSV (mg/kg)	Material	U95% (mg/kg)	Hotspots Removed	Evidence Level	Acceptable?
Benzo(b)fluoranthene	2.6	Topsoil	0.425	n/a	98%	Yes
Benzo(a)pyrene	2.2	Topsoil	0.39	n/a	98%	Yes
Dibenzo(a,h)anthracene	0.24	Topsoil	0.08	n/a	96%	Yes

Table 7.4.1.1 – Summary of Statistical Analysis

The statistical analysis indicates that the calculated UCL 95% mean for all of the determinands fall below the relevant thresholds. However, although the calculated UCL 95% calculated mean is below the relevant threshold for the identified PAH determinands, the elevated concentrations of PAH reported in the sample submitted for analysis are identified as statistical outliers. With these removed from the dataset, the PAH concentrations are all within the relevant Shadbolt SSV.

This indicates that the Topsoil materials around the statistical outlier identified with respect to PAH determinands removed as a hotspot, the Topsoil is suitable for use in the proposed development within Public Open space.

An area of Topsoil (approximately 10m x 10m) around the identified elevated PAH concentrations (TP-189) should be removed at the outset of groundworks and stockpiled separately for further analysis.

Subject to the findings of the analysis, the Topsoil may be suitable for reuse in Public Open Space areas or may be removed to tip. However, this will attract hazardous waste disposal rates due to the inherent high organic content of Topsoil.

The individual summary of the statistical analysis for Benzo(b)fluoranthene, Benzo(a)pyrene and Di-benzo(a,h)anthracene are included in **Appendix D**.

7.5 Leachate Contamination Assessment

Leachate analysis has not been undertaken due to the generally low concentrations of contaminants reported.

7.6 Groundwater Contamination Assessment

Significant groundwater was not encountered during the trial pitting and drilling works or during the subsequent monitoring.

7.7 Gas and Groundwater Monitoring

10 No. monitoring wells were installed by SE as part of the commissioned works. Results are reported within **Appendix F**.

8.0 ENVIRONMENTAL RISK ASSESSMENT

8.1 Gas Monitoring

Ground gas and water monitoring wells have been monitored in accordance with CIRIA C665 and BS8576:2013.

8.2 Gas Risk Assessment

NHBC Foundation have developed a guidance document (NF94) 'Hazardous ground gas - an essential guide for housebuilders' to be used in conjunction with BS 8485:2015+A1:2019 to characterize sites using Gas Screening Value (GSV), the term Gas Screening Value (GSV) was originally used in CIRIA C665 and is a value derived from the assessment of gas monitoring data obtained from either spot monitoring or continuous data as set out in BS8485.

The borehole hazardous gas flow rate is obtained for each hazardous gas, by multiplying the relevant gas concentration by the flow rate. It is calculated for each gas, on each monitoring event in each well.

The individual values of borehole hazardous gas flow rate (Qhg) obtained from several monitoring locations over a number of visits are considered collectively to establish a Gas Screening Value (GSV) for the site as a whole (a site characteristic GSV). This requires consideration of the results in relation to the conceptual site model.

The site characteristic GSV for both methane and carbon dioxide are then used to determine the characteristic situation (CS), with CS1 representing the lowest risk and CS6, the highest.

The Characteristic Situation system has been designed for both methane and carbon dioxide, with the worst-case value adopted for assessment.

Ground Gas Monitoring Data

6 No. planned visits have been completed on the 10 No. monitoring installations with 3 No of visits showing atmospheric pressures of <1000mb which is considered to present a worst case for ground gas generation and migration. The gas monitoring results to date are presented in **Appendix F**.

The maximum Methane and Carbon Dioxide emissions, which are representative of the Typical Maximum Concentrations, were as follows:

Methane: 0.0% v/v

Carbon Dioxide: 4.3% v/v

The maximum recorded steady state concentration of methane was 0.0% v/v, for calculations 0.1l/h is assumed as this is the limit of detection for the device.

The maximum representative recorded concentration of Carbon Dioxide to date was 4.3% (steady). The maximum recorded flow rate in the boreholes was 0.6l/hr.

The maximum borehole hazardous gas flow rates (Qhg) for both Methane and Carbon Dioxide were located at WS-65 on 11-04-2024 and were calculated as follows.

Methane: $(0.1/100) \times 0.6 = 0.0006 \text{ l/hr}$

Carbon Dioxide: $(3.8/100) \times 0.6 = 0.0228 \text{ l/hr}$

Given that the maximum possible combination of ground gas and flow rates is below the threshold for CS1, the lowest classification, then all of the concentration and flow values from each individual monitoring point will also classify as CS1 and consideration of zoning by individual monitoring points is not deemed necessary. The monitoring data has been compared to the values in BS 8485. The Gas monitoring results to date are presented within **Appendix F**.

The site as a whole is classified as **Characteristic Situation 1 (CS1)** under the BS 8485 system for Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.

8.3 Gas Protection Measures

BS8485:2015, "Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings" sets out a methodology for determining an appropriate level of protection against ground gases in respect of the Characteristic Situation classification and the proposed building type.

The proposed development is understood to be **RESIDENTIAL** in nature. For a site classified as **CS1**, no ground gas protection measures are required when the development is assessed BS8485.

8.4 Discussion

Using calculated GSVs for Methane and Carbon Dioxide based on monitoring to date and following guidance outlined in NHBC NF94, the site as a whole is **Low Risk** and classified as **Characteristic Situation 1 (CS1)** under the BS 8485 system for Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.

For site classified as CS1 under BS8485 no ground gas protection measures are required.

This is based on monitoring data gathered to date and may be reviewed on completion of the scheduled 6 rounds of monitoring.

The site is not in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment and confirmed by the UK Radon interactive map.

9.0 ENVIRONMENTAL RISK ASSESSMENT

All available data has been collated and evaluated to establish an initial conceptual model of the site in its current condition and post development identifying sources, pathways and receptors and pollutant linkages. The conceptual site model has been developed in accordance with BS10175: 2011.

The proposed end use for the site is residential and a Tier 1 risk assessment has been undertaken using the Shadbolt Group Tier 1 Screening Value (TSV) guidelines for a **RESIDENTIAL DEVELOPMENT with consumption of home-grown fruit and vegetables**, end use.

9.1 Contamination Sources

In total 18 No. soil samples were submitted for chemical testing of a suite of common contaminants from the SG ground investigation with 10 No. samples submitted screened for the presence of Asbestos.

Reported concentrations of potential contaminants are discussed in Section 7.4.

No Made Ground was encountered in any of the 36 No. exploratory holes across the site.

No samples were reported to contain Asbestos.

A single Topsoil sample indicated slightly elevated concentration of PAH determinands Benzo(b)fluoranthene, Benzo(a)pyrene and Di-benzo(a,h)anthracene. The same sample also exhibited marginally elevated pH, likely due to chalk fragments. Statistical analysis of the PAH determinands indicated that the 95% UCL is below the relevant thresholds, however, the elevated PAH the elevated concentrations within this single sample are indicated by the statistical analysis to be outliers.

An area of Topsoil (approximately 10m x 10m) around the identified elevated PAH concentrations (TP-189) should be removed at the outset of groundworks and stockpiled separately for further analysis.

Subject to the findings of the analysis, the Topsoil may be suitable for reuse in Public Open Space areas or may be removed to a suitable waste facility. However, this will attract hazardous waste disposal rates due to the inherent high organic content of Topsoil.

No other elevated concentrations were reported that would constitute evidence of significant contamination and no further remedial measures are considered to be required based on the testing carried out to date.

It is also noted that the investigation typically avoided conducting exploratory point in the vicinity of service runs to avoid damage to services. As services are typically laid in trenches with either loose Made Ground backfilled around the service or coarse gravel these are typically permeable and can provide significant pathways for contamination. As such there remains a risk of encountering potentially unidentified contamination within such service runs across the site.

There exists a similar risk of unidentified contamination in areas which the investigation avoided due to ecological and archaeological constraints.

9.2 Potential Contaminant Pathways

The following potential contaminant pathways are possible and should be considered during the construction phase and the post development end use.

- Inhalation / ingestion of dust, gases, and vapour.
- Ground gas / vapour migration.
- Dermal contact.
- Ingestion of soils and / or groundwater.
- Leaching of contaminants from made ground soils to groundwater.
- Groundwater flow.
- Soil gas migration through Made Ground, granular soils, fissures and mine entries.
- Migration and leakage through service conduits.

9.3 Potential Contamination Receptors

The potential receptors listed below are proposed considering the current status of the site and surrounding area, and a potential RESIDENTIAL end use.

Human Health

- Current site users.
- Future site users.
- Site development workers.
- Maintenance workers

Environmental

- Future establishment of flora and fauna.
- Buildings and underground services.
- Controlled waters and aquifers.

9.4 Qualitative Risk Assessment

By considering the sources, pathways and receptors, an assessment of the environmental risks is made with reference to the significance and degree of the risk to the development for current and future site users.

The qualitative risk assessment has been undertaken in accordance with BS10175:2011 and CIRIA Document C552: Contaminated Land Risk assessment, A Guide to Good Practice.

The risk assessment has been carried out by assessing the severity of the potential consequence, taking into account both the potential severity of the hazard and the sensitivity of the target, based on the categories given in Table 9.4.1 below.

<i>Category</i>	<i>Definition</i>
Severe	Acute risks to human health, catastrophic damage to buildings / property, major pollution of controlled waters
Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures
Mild	Pollution of non-sensitive waters, minor damage to buildings or structures

Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non-sensitive ecosystems or species
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Table 9.4.1 – Definition of Risk Severity

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given in Table 9.4.2 below.

<i>Category</i>	<i>Definition</i>
High Likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term
Low Likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable

Table 9.4.2 – Definition of Risk Probability

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix, Table 9.4.3 below, in order to give a level of risk for each potential hazard.

		<i>Potential Severity</i>			
		<i>Severe</i>	<i>Medium</i>	<i>Mild</i>	<i>Minor</i>
Probability of Risk	<i>High Likelihood</i>	Very high	High	Moderate	Low/Moderate
	<i>Likely</i>	High	Moderate	Low/Moderate	Low
	<i>Low likelihood</i>	Moderate	Low/Moderate	Low	Very low
	<i>Unlikely</i>	Low/Moderate	Low	Very low	Very low

Table 9.4.3 – Risk Matrix of Potential Hazard

The contamination risk assessment for the site based on identified sources is presented in Table 9.4.4. Further discussion of the more significant

Hazard / Pollutant	Source	Pathway	Receptor	Potential severity	Probability of risk	Level of risk
The site has Historically been used as agricultural land. A small area (now bordering the southeastern site boundary) was used as a chalk pit. The ground investigation has identified no significant elevated contaminant concentrations.	Contaminants may be present in the soils surrounding the subject site. Tested samples have reported only one sample showing PAH determinands in exceedance of SGV. Statistical analysis indicated the PAH concentrations within this sample to be outliers. An area of Topsoil (approx. 10m by 10m) around the identified elevated PAH concentrations (TP-189) should be removed at the outset of groundworks and stockpiled separately for further analysis. No asbestos reported from samples subject to testing.	Inhalation, Dermal contact, and Ingestion	Future site users, future buildings, and structures.	Medium	Unlikely	Low
		Inhalation, Dermal contact, and Ingestion	Development workers.	Medium	Unlikely	Low
		Root Uptake	Plants	Minor	Unlikely	Very Low
		Contaminated Groundwater Migration	Superficial Aquifer - No significant superficial deposits encountered during site works	N/A	N/A	N/A
			Principal Aquifer (Chalk)	Medium	Unlikely	Low
			Water Courses	Medium	Unlikely	Low
		Leaching of Soil Contamination	Superficial Aquifer - No significant superficial deposits encountered during site works	N/A	Unlikely	Very Low
			Principal Aquifer (Chalk)	Medium	Unlikely	Low
			Water Courses	Medium	Unlikely	Low
		Migration through service conduits, foundations, drainage solutions)	Superficial Aquifer - No significant superficial deposits encountered during site works	N/A	N/A	N/A
			Principal Aquifer (Chalk)	Medium	Unlikely	Low
			Water Courses	Medium	Unlikely	Low
		Surface Run-off	Superficial Aquifer - No significant superficial deposits encountered during site works	N/A	N/A	N/A
			Principal Aquifer (Chalk)	Medium	Unlikely	Low
			Water Courses	Medium	Unlikely	Low
		Volatilisation (vapour phase migration and portioning into sorbed / dissolved phase).	Superficial Aquifer - No significant superficial deposits encountered during site works	N/A	N/A	N/A
			Unproductive Aquifer	Medium	Low Likelihood	Low
			Culvert / Water Course	Medium	Unlikely	Low
Hazardous gas and volatile compounds	Concentrations of methane and carbon dioxide generally are low.	Inhalation, Explosion	Future site users, Structures	Medium	Unlikely	Low
			Site development workers	Medium	Unlikely	Low

Table 9.4.4 – Contamination Risk Assessment

9.4.1 Current and Future Site Users

Potential pathways considered significant to current and future site uses are dermal contact, ingestion of contaminated soil / groundwater and inhalation of fibres, gases, vapours or dusts.

Slightly elevated PAH concentration were identified within a single sample of Topsoil from trial pit TP-189. Statistical analysis indicates that the elevated results are outliers. An area of Topsoil (approximately 10m x 10m) around the identified elevated PAH concentrations (TP-189) should be removed at the outset of groundworks and stockpiled separately for further analysis.

Subject to the findings of the analysis, the Topsoil may be suitable for reuse in Public Open Space areas or may be removed to a suitable waste facility. However, this will attract hazardous waste disposal rates due to the inherent high organic content of Topsoil.

Soils identified in exploratory holes excluding those in the excavation around TP-189 would be considered suitable for reuse at the site.

Based on the chemical analysis data it is considered that the site presents a LOW risk to current site users from the soils located at the site. Should the site be developed in the future the risk to site users would be LOW based on the chemical analysis data.

9.4.2 Ground Excavation / Development Workers

Significant earthworks are not envisaged ahead of future construction. Limited cut and fill works are likely to be undertaken to create a suitable development platform utilising existing site won soils.

It is considered that the risk to construction and/or maintenance workers during redevelopment works and post-development maintenance works is Low owing to the low concentrations of reported contaminants. However, site development workers should remain vigilant for the evidence of contamination.

Should any materials, including suspected Asbestos Containing Materials, suspected of being contaminated be observed during site works these works should cease and specialist environmental advice sought.

9.4.3 Future Developments including Buried Structures and Services

The risk to buried structures and services (i.e. possible migration of contamination within service corridors) is considered to be Low.

9.4.4 Controlled Waters

Given the concentrations of potential contaminants identified on site and the general lack of groundwater it is considered that there is very low risk to controlled waters within the vicinity of the site and the underlying aquifer due to the generally low contaminants concentrations identified.

Further assessment should be carried out should any suspected contamination be identified during the construction works.

9.4.5 Flora

It is considered soils encountered at the site would pose a very low risk to any planting at the site.

10.0 GROUND ENGINEERING CONSIDERATIONS

10.1 Proposed Development

It is understood that the proposed development is to comprise predominantly traditional residential housing and associated infrastructures.

10.2 Ground Obstructions

Ground obstructions were not encountered during intrusive investigations with the exception of shallow rockhead. Similar obstructions may be reasonably expected during onward development works. The presence of any relict structures is considered unlikely but cannot be ruled out. Rows of hedges/ small trees bound the site and are also noted through the centre of the site.

10.3 Mining

The site is not located within a known coal mining affected area as verified by The Coal Authority's Coal Mining Gazetteer for England and Wales.

There is a record referring to a small historic chalk pit identified on the southeastern boundary of the site—surface mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered.

There are no other records of Historical Mining, JPB Mining Areas, Non-Coal Mining Cavities, Natural Cavities, Brine Extraction, Tin Mining and Clay Mining within 1000m of the site.

10.4 Foundations and Settlement Issues

Traditional strip foundations are considered to be suitable for a residential development founded at a **minimum depth of 0.90m bgl** (below the depth of frost susceptibility, 450mm, and the maximum depth of disturbed Topsoil/Sub-soil due to agricultural action) based upon Insitu testing and observation. Bearing capacities in the order of 150kPa should be available in shallow Structureless Chalk soils which are generally not considered to be subject to volume change potential with changes in moisture content. Higher bearing capacities in the order of 150-200 kPa are considered readily achievable at depths of c.2.0m within the structured chalk. The possibility of localised soft spots at founding depth cannot be ruled out. Foundations may require deepening in these areas to reach more competent strata.

Areas of both Dc (clast dominated Structureless Chalk) and Dm (matrix dominated Structureless Chalk) were encountered during the investigation, along with a variable depth of encountered more structured chalk. As such it is recommended that reinforcement bar is incorporated into foundation to mitigate against potential differential settlement across varying strata.

In all instances the depth of foundations may need to be assessed on a plot-by-plot basis to allow for the influence of changes in level following earthworks, plot specific bearing capacity and existing trees and hedgerows and any planned planting.

10.5 Earthworks

Significant earthworks are not anticipated across the site however some minor cut and fill works to provide a suitable development platform is likely to be required at the site.

Earthworks involving underlying chalk bedrock are considered feasible - however care is required when handling chalk material – particularly if Class 3 chalk material is encountered (which must be compacted in accordance with the specific requirements for Class 3 materials under SHW Series 600).

Shallow chalk encountered at the site has been classed as chalk 'Class A to Class D' however only 2No. of 14No. samples tested classify as Class D with the majority classifying as B/C according to (HA 44/91).

However, given that no significant superficial deposits were encountered, and the strata consisted of Topsoil directly over Chalk the majority of any excavations and earthworks cut/fill will consist predominantly of chalk material. Where >30% of excavated material is chalk the material should be assumed to be Class 3. Care should still be taken to minimise handling of chalk and to avoid excessive exposure to moisture. Chalk material should not be placed within the upper 450mm of road construction due to frost susceptibility.

No significant groundwater was encountered during SI works but may be expected in limited quantities.

An Earthworks/Remediation Strategy should be developed for the site to further assess and dictate the works required to create a development platform appropriate to the proposed development.

Excavations in shallow soils remained stable over short periods during the investigation but excavations may require shoring or benching, and edges should be protected in line with current guidance / best practise if they are to remain open.

10.6 Chemical Attack on Buried Structures

The water-soluble sulphate test results generally recorded concentrations between, 3.6mg/l (TP-206) and 184mg/l (TP-192), with an average of 20.4mg/l SO₄. The soil pH was between 8 (TP-186) and 9 (TP-205) with an average of 8.3 indicating slightly alkali conditions).

The results have been assessed in accordance with the guidance given in BRE Special Digest 1:2005. Assuming Brownfield locations with static groundwater the Design Sulphate Class across the site is DS-1 to DS-1, ACEC Class AC-1S (assuming static groundwater).

10.7 Drainage and Infrastructure

The planned development is for residential properties with gardens, areas of soft landscaping and associated infrastructure.

Infiltration testing was carried out adjacent to trial pits TP-191 (SA-01) and TP-203 (SA-02) indicated rates in the order of 1.71*10⁻⁵m/s and 9.23*10⁻⁵m/s respectively. The full infiltration testing data is presented within Appendix B.

As shallow Chalk has been encountered across the entirety of the site, shallow soakaways may be feasible, however, careful considerations need to be given to soakaways in chalk due to the risk of dissolution from the concentrated discharge of a soakaway.

In accordance with CIRIA C574 Engineering in Chalk where dissolution features are present soakaways should be avoided if possible or, if unavoidable, sited at least 20m away from any foundation, road or site boundary. Where no dissolution features are present the offset is typically determined by the density of the chalk, as determined by field logging and laboratory intact dry density testing (IDD). Where the chalk is typically of low density soakaways should be sited at least 10m away from any foundation, road or site

boundary. Where the chalk is of medium density (or higher) soakaways should be sited at least 5m away from any foundation, road or site boundary.

The density of the chalk strata across the site was typically low locally medium with laboratory testing indicating Intact Dry Densities of between 1.39Mg/m^3 to 1.66Mg/m^3 with 27 of 28 results classified as low and 1 as medium, and an average of 1.48Mg/m^3 (low). On this basis the chalk strata on site is considered to be classified as low density with respect to the CIRIA C574 guidance in relation to soakaways. Therefore, soakaways should be site at least 10m from any foundation, road and boundary.

Flexible jointed pipes should be used wherever possible, and care should be taken for the avoidance of leaks in both water supply and drainage pipework.

As the Chalk is classified as a principal aquifer the Environment Agency as well as the local authority should be consulted regarding installation of soakaway.

Drainage may also utilise existing formal drainage surrounding the site.

Chalk material should not be placed within the upper 450mm of road construction due to frost susceptibility.

Excavations on site were generally stable during exploratory works. However, these excavations were open for a relatively short period of time and did not experience heavy rainfall. Should excavations be required to be left open for longer periods trench support may be required and careful considerations need to be given - particularly with wet weather.

11.0 CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions

Shadbolt Environmental (SE) part of the Shadbolt Group (SG) were commissioned by Urban and Civic to undertake an intrusive ground investigation on the Baldock BA2 site in Baldock, North Hertfordshire which is part of an investigation within a larger development area. The investigation was carried out under the supervision of SG, with site works carried out in March 2024.

A total of 36 No. exploratory holes consisting of Trial Pits and Boreholes (Windowless Sampling and Rotary) have been undertaken as part of this investigation.

Topsoil was encountered in all 36 No. exploratory holes across the site. The topsoil encountered from ground level to between 0.20m and 0.60m bgl more typically in the range 0.20-0.40m bgl. The topsoil was generally described as Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.

No Made Ground or Superficial Deposits were encountered in any of the 36 No. exploratory holes across the site. Initial this comprised Structureless Chalk of white mottled orange brown silty GRAVEL/gravelly SILT becoming Chalk comprising extremely weak to weak low locally medium density Chalk at depth of below c.1.0m to 1.50m bgl. The structured Chalk was generally excavated to a depth of 3.00m without significant obstruction and recovered as angular fine to coarse gravel with light orange brown silty matrix typically becoming coarser with cobbles and lower matrix content at depth. The shallow structured chalk was typically considered to be of Grade B/C.

Localised loose orange brown mottled white SAND and GRAVEL of chalk and flint was encountered directly below the Topsoil and up to a maximum depth of 0.80m. Given the general lack of other superficial deposits across the site and the predominance of chalk as the gravel fraction these soils are considered to be heavily weathered chalk as opposed to superficial deposits.

No Groundwater was encountered in any of the 36 No. exploratory holes across the site during the site investigation.

No Groundwater has been reported during any of the 6 No. monitoring visits.

Ground obstructions were not encountered during intrusive investigations with the exception of shallow rockhead.

There was no evidence (visual / olfactory) of contamination noted during the site investigation.

The findings of the environmental testing indicate that the soils encountered at the site are unlikely to pose a significant risk to human health or the environment with respect to the proposed residential development and materials are considered suitable for reuse at the site. The risk to the proposed development is considered to be **Low**. Materials stripped from the vicinity of the elevated PAH concentrations identified in TP-189 may be suitable for re-use in area of POS subject to suitable testing. Materials on site, excluding those excavated in the vicinity of TP-189, are considered suitable for reuse at the site.

10 No. samples were also scheduled for qualitative Asbestos analysis. No samples reported the presence of asbestos.

It is also noted that the investigation typically avoided conducting exploratory point in the vicinity of service runs to avoid damage to services. As services are typically laid in trenches with either loose Made Ground backfilled around the service or coarse gravel these are typically permeable and can provide significant pathways for contamination. As such there remains a risk of encountering potentially unidentified contamination within such service runs across the site.

The presence of further contaminants cannot be ruled out and development workers should remain vigilant for evidence of potential contamination and seek assistance from a suitably qualified environmental engineer.

The site has been assessed in accordance with the guidance given in BRE Special Digest 1:2005. Assuming natural soil with mobile groundwater the Design Sulphate Class for the site is DS-1, AEC Class AC-1.

Traditional strip foundations are considered to be suitable for a residential development founded at a minimum depth of 0.90m bgl in Structureless Chalk soils with allowable bearing capacities in the order of 150 kPa considered achievable at these depths. High bearing capacities in the order of 150-200 kPa are considered readily achievable at depths of c.2.0m within the structured chalk. Higher bearing capacities could be achieved if required using deeper trench fill foundations on structured chalk (typically below approx. >2.0m bgl) or by the use of a piled foundation solution.

Areas of both Dc (clast dominated Structureless Chalk) and Dm (matrix dominated Structureless Chalk) were encountered during the investigation, along with a variable depth of encountered more structured chalk. As such it is recommended that reinforcement bar is incorporated into foundation to mitigate against potential differential settlement across varying strata.

In all instances the depth of foundations may need to be assessed on a plot-by-plot basis to allow for the influence of changes in level following earthworks, plot specific bearing capacity and existing trees and hedgerows and any planned planting.

Where shallow Chalk has been encountered across the site shallow soakaways may be feasible. However, careful considerations need to be given to soakaways in chalk due to the risk of dissolution from the concentrated discharge of a soakaway. The density of the chalk strata across the site was typically low locally medium and therefore the chalk strata on site is considered to be classified as low density in accordance with CIRIA C574 guidance. Therefore, soakaways should be site at least 10m from any foundation, road and boundary.

A total of 6 No. Ground gas and groundwater monitoring visits have been completed over a period of 3 months. Based on the concentrations of Methane and Carbon Dioxide present on site, the site classifies as Characteristic Situation 1 (CS1) for which no ground gas protection measures are required.

The Shadbolt Group

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APPENDIX A

REPORT CONDITIONS

REPORT CONDITIONS

GEO-ENVIRONMENTAL GROUND INVESTIGATION

*This report is produced for the benefit of **Urban and Civic** in accordance with the terms of the appointment.*

This report has been prepared in accordance with the terms and conditions of the appointment and relates to the condition of the site at the time of ground investigations. No warranty is provided as to the possibility of future changes in the condition of the site.

Shadbolt Environmental takes no responsibility for conditions which occur between the individual exploratory holes.

This report is prepared and written for the purposed uses stated in the report and should not be used in a different context without reference to Shadbolt Environmental. In time, improved practices or amended legislation may necessitate a re-assessment.

The report is limited to the geotechnical and environmental aspects detailed within the report and is necessarily restricted.

APPENDIX B

2906-003 – EXPLORATORY HOLE LOCATION PLAN

EXPLORATORY HOLE LOGS (Trial Pit Logs)

EXPLORATORY HOLE LOGS (Window Sample Borehole Logs)

EXPLORATORY HOLE LOGS (Rotary Borehole Logs)

INFILTRATION TESTING RESULTS

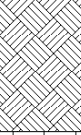
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Project Title: Baldock
Location: Baldock, North Hertfordshire
Client: Urban & Civic

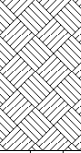
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Scale: 1:2000
Engineer: Stephen J Fisk
Contractor:

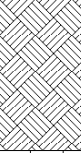


- Legend Key
- Locations By Type - Empty
 - Locations By Type - RC
 - Locations By Type - TP
 - Locations By Type - WLS



 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-184 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525264.35 - 233411.19 Level: 72.57		Date 14/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 2.80		Scale 1:20	
Client: Urban & Civic						Depth 3.50		Logged SJF	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	ES		0.35	72.22		Grey brown slightly gravelly sandy silty clayey TOPSOIL with frequent rootlets. Gravel is angular fine chalk and sub-angular fine to coarse flint.		
	0.50 - 0.70	B		1.00	71.57		Structureless CHALK composed of white and light brown silty GRAVEL. Gravel is angular fine to coarse very weak low density chalk with a light brown silt matrix. (Grade Dc).		
	2.00 - 2.20	B					White mottled orange brown very weak CHALK recovered as angular coarse silty gravel and cobbles. Gravel and cobbles are angular fine to coarse of very weak low to medium density chalk with orange brown staining on edges and some off white/grey silty matrix between gravel/cobbles. (Grade B4-B5).		
	3.30 - 3.40	D		3.50	69.07		End of Pit at 3.50m		
Remarks: No groundwater encountered. Terminated at scheduled depth.									
Stability: Stable Plant: 10 tonne tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-185 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525325.23 - 233416.67 Level: 73.49		Date 14/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 3.00		Scale 1:20	
Client: Urban & Civic						Depth 3.50		Logged SJF	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.20 - 0.30	ES		0.40	73.08		Grey brown slightly gravelly sandy silty clayey TOPSOIL with frequent rootlets. Gravel is angular fine chalk and sub-angular fine to coarse flint.		
	0.70 - 0.80	D		0.90	72.58		Structureless CHALK composed of brown slightly gravelly SILT. Gravel is angular fine extremely weak low density chalk. (Grade Dm).		
	1.80	B					White mottled orange brown very weak CHALK recovered as angular coarse silty gravel and cobbles. Gravel and cobbles are angular fine to coarse of very weak medium density chalk with orange brown staining on edges and some off white/grey silty matrix between gravel/cobbles. (Grade B4-B5/C4-C5).		
	3.00 - 3.10	B		3.50	69.98		End of Pit at 3.50m		
Remarks: No groundwater encountered. Terminated at scheduled depth.									
Stability: Collapse of sides from 1-2m depth. Plant: 10 tonne tracked excavator									
									

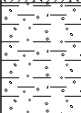
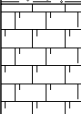
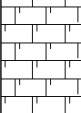
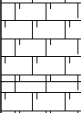
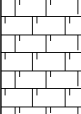
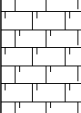
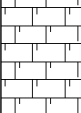
 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-186 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525312.86 - 233377.48 Level: 75.03		Date 14/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 3.20		Scale 1:20	
Client: Urban & Civic						Depth 3.50		Logged SJF	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	ES		0.40	74.63		Grey brown slightly gravelly sandy silty clayey TOPSOIL with frequent rootlets. Gravel is angular fine chalk and sub-angular fine to coarse flint.		
	0.80 - 1.00	B		1.10	73.93		Structureless CHALK composed of white and light brown gravelly SILT. Gravel is angular fine to coarse very weak low density chalk with a light brown silt matrix. (Grade Dm).		
	2.30 - 2.50	B		3.50	71.53		White mottled orange brown very weak CHALK recovered as angular coarse silty gravel and cobbles. Gravel and cobbles are angular fine to coarse of very weak low to medium density chalk with orange brown staining on edges and some off white/grey silty matrix between gravel/cobbles. (Grade B4-B5).		
							End of Pit at 3.50m		
Remarks: No groundwater encountered. Terminated at scheduled depth.									
Stability: Stable Plant: 10 tonne tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-187 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525155.05 - 233346.31 Level: 73.40		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 3.00 0.00		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.30 - 0.40	ES		0.60	72.80		Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to coarse, angular to sub-angular of chert.		
	1.00 - 1.10 1.00 - 1.10	B B					Structureless CHALK weak high density white mottled yellowish brown. Recovering as a silty GRAVEL with medium cobble and boulder content. Gravel is fine to coarse, angular to sub-angular chalk.		
	1.70 - 1.80 1.70 - 1.80	B B							
	2.50 - 2.60	D		2.50	70.90		White mottled yellowish brown extremely weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.		
				3.00	70.40		End of Pit at 3.00m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

Trial Pit Log

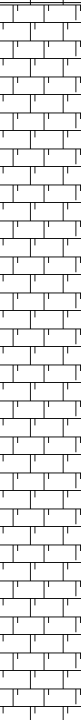
TrialPit No
TP-188
Sheet 1 of 1

Project Name: Baldock	Project No. 2899	Co-ords: 525230.77 - 233352.84 Level: 74.93	Date 18/03/2024
Location: Baldock, North Hertfordshire		Dimensions (m): 3.00 Depth 3.00	Scale 1:20 Logged HB
Client: Urban & Civic			

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.15	D					Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.	
	0.40 - 0.50	ES		0.30	74.63		Soft to firm brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, angular to sub-angular of chalk.	
				0.60	74.33		Structureless CHALK composed of white mottled creamy brown gravelly SILT. Gravel is consists of very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dm.	1
	1.20 - 1.30 1.20 - 1.30	B B						
				1.40	73.53		White mottled orangish brown extremely weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL with medium cobble content. Gravel is fine to coarse, angular to sub-angular. Cobble is angular of chalk. Matrix is orangish brown. Grade B.	2
	1.80 - 1.90 1.80 - 1.90	B B						
	2.30 - 2.40	D						
				3.00	71.93			
							End of Pit at 3.00m	3
								4

Remarks: No groundwater identified.

Stability: Stable
Plant: 20 tonnes tracked excavator

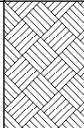
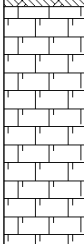
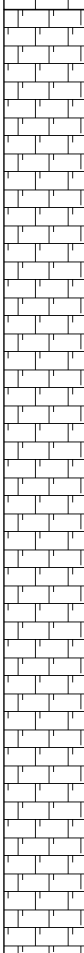
 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-189 Sheet 1 of 1			
Project Name: Baldock				Project No. 2899		Co-ords: 525417.27 - 233353.32 Level: 75.23		Date 18/03/2024		
Location: Baldock, North Hertfordshire						Dimensions (m): 3.10 0.90		Scale 1:20		
Client: Urban & Civic						Depth 2.80		Logged HB		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.10 - 0.15	ES		0.30	74.93		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.			1 2 3 4
							Structureless CHALK composed of loose brown mottled white sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular of flint and chalk. Grade Dc.			
	0.90 - 1.00 0.90 - 1.00	B B		0.90	74.33		White mottled cream extremely weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.			
	1.60 - 1.70	D								
	2.20 - 2.30 2.20 - 2.30	B B		2.80	72.43					
							End of Pit at 2.80m			
Remarks: No groundwater identified.										
Stability: Stable Plant: 20 tonnes tracked excavator										
										



TrialPit No
TP-190
Sheet 1 of 1

Date
14/03/2024

Logged
SJF

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.35	74.42		Grey brown slightly gravelly sandy silty clayey TOPSOIL with frequent rootlets. Gravel is angular fine chalk and sub-angular fine to coarse flint.	1	
							Structureless CHALK composed of white and light brown silty GRAVEL. Gravel is angular fine to coarse very weak low density chalk with a light brown silt matrix. (Grade Dc).		
				1.00	73.78		White mottled orange brown extremely weak low to medium density CHALK recovered as angular coarse silty gravel and cobbles. Gravel and cobbles are angular fine to coarse of very weak medium density chalk with orange brown staining on edges and some off white/grey silty matrix between gravel/cobbles. (Grade B4-B5).		2
							End of Pit at 3.50m		
				3.50	71.28			4	

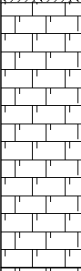
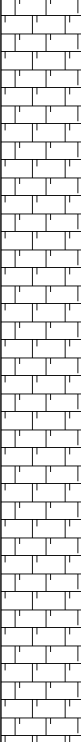


 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-191 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525210.38 - 233311.56 Level: 76.49		Date 14/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 3.50		Scale 1:20	
Client: Urban & Civic						Depth 3.50		Logged SJF	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	ES		0.30	76.19		Grey brown slightly gravelly sandy silty clayey TOPSOIL with frequent rootlets. Gravel is angular fine chalk and sub-angular fine to coarse flint.		
	0.50 - 0.60	D					Structureless CHALK composed of white and light brown silty GRAVEL. Gravel is angular fine to coarse very weak low density chalk with a light brown silt matrix. (Grade Dc).		
	1.00 - 1.20	B		0.80	75.69		White mottled orange brown extremely weak to very weak low to medium density CHALK recovered as angular coarse silty gravel and cobbles. Gravel and cobbles are angular fine to coarse of very weak medium density chalk with orange brown staining on edges and some off white/grey silty matrix between gravel/cobbles. (Grade B4-B5).		
								End of Pit at 3.50m	
				3.50	72.99				
Remarks: No groundwater encountered. Terminated at scheduled depth.									
Stability: Stable Plant: 10 tonne tracked excavator									

Trial Pit Log

TrialPit No
TP-192
Sheet 1 of 1

Project Name: Baldock	Project No. 2899	Co-ords: 525263.62 - 233319.61 Level: 77.34	Date 18/03/2024
Location: Baldock, North Hertfordshire		Dimensions (m): 3.10 Depth 3.00	Scale 1:20 Logged HB
Client: Urban & Civic			

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.15	ES		0.30	77.04		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.	
	0.50 - 0.60	D					Structureless CHALK composed white mottled yellowish brown silty gravelly SILT. Gravel is fine to coarse, angular to sub-angular extremely weak high density chalk.	
	1.30 - 1.40 1.30 - 1.40	B B		1.00	76.34		White mottled yellowish brown extremely weak low to medium density CHALK. Recovering as a slightly silty, gravelly CLAY. Gravel is fine to coarse, angular to sub-angular. . Matrix is yellowish brown. Grade B.	1
	1.90 - 2.00	D						2
	2.60 - 2.70	D		3.00	74.34			3
							End of Pit at 3.00m	4

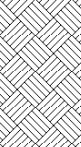
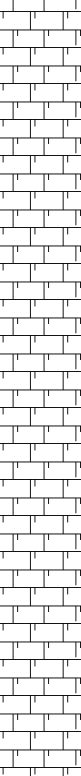
Remarks: No groundwater identified.	
Stability: Stable	
Plant: 20 tonnes tracked excavator	

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-193 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525330.91 - 233320.32 Level: 78.11		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 2.90		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	D		0.30	77.81		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.40 - 0.50	ES					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel is consists of very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dc.		
	0.90 - 1.00	D		1.00	77.10		White mottled yellowish brown extremely weak low to medium density CHALK. Recovering as a slightly silty, gravelly CLAY with medium cobble content. Gravel is fine to coarse, angular to sub-angular. Cobble is sub-angular of chalk. Matrix is yellowish brown. Grade B.		
	1.60 - 1.70 1.60 - 1.70	B B							
	2.40 - 2.50	D		3.00	75.10				
									
							End of Pit at 3.00m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-194 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525402.82 - 233294.50 Level: 79.14		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20	
Client: Urban & Civic						Depth 3.50		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.30 - 0.40	ES		0.30	78.84		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.50 - 0.60	D		0.50	78.64		Structureless CHALK composed of loose brown mottled white sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular of flint and chalk. Grade Dc.		
							Structureless CHALK composed of loose white mottled yellowish brown silty GRAVEL. Gravel is consists of very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dc.		
	1.30 - 1.40	D					White mottled orangish brown extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is orangish brown. Grade B.		
	1.90 - 2.00	B					White mottled orangish brown extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is orangish brown. Grade B.		
	2.60 - 2.70	D					White mottled orangish brown extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is orangish brown. Grade B.		
				3.50	75.64		End of Pit at 3.50m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-195 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525286.78 - 233260.24 Level: 80.97		Date 19/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.40 - 0.50	ES		0.30	80.67		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
				0.50	80.47		Loose brown mottled white SAND and GRAVEL. Gravel is fine to coarse, angular to sub-angular of chalk.		
	0.90 - 1.00	B					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel is consists of very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dc.		
							1.60 - 1.70	D	
	2.70 - 2.80	D							
				3.00	77.97		End of Pit at 3.00m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-196 Sheet 1 of 1			
Project Name: Baldock				Project No. 2899		Co-ords: 525372.09 - 233274.69 Level: 80.14		Date 19/03/2024		
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20		
Client: Urban & Civic						Depth 3.00		Logged HB		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.10 - 0.15	ES		0.30	79.84		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.			1
	0.50 - 0.60	D					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel consists of very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dc.			
				1.00	79.14		White mottled yellowish brown extremely weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.			
	1.60 - 1.70	B								
	2.20 - 2.30	D		3.00	77.14					2
										
							End of Pit at 3.00m			3
										4
Remarks: No groundwater identified.										
Stability: Stable										
Plant: 20 tonnes tracked excavator										
										

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-197 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525446.67 - 233260.30 Level: 80.08		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90 3.10		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	D					Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.40 - 0.50	ES		0.40	79.68		Loose orangish brown mottled white SAND and GRAVEL. Gravel is fine to coarse, angular to sub-angular of chalk and flint.		
				0.60	79.48		White mottled yellowish brown extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.		
	1.00 - 1.10	B							
	2.10 - 2.20	D							
				3.00	77.08		End of Pit at 3.00m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-198 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525506.26 - 233253.71 Level: 79.69		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.00 3.00		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	ES		0.30	79.39		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.60 - 0.70	D					White mottled orangish brown extremely to very weak medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is orangish brown. Grade B.		
	1.50 - 1.60	B							
	2.20 - 2.30	D		3.00	76.68		End of Pit at 3.00m		
Remarks: No groundwater identified. Stability: Stable Plant: 20 tonnes tracked excavator									





TrialPit No
TP-199
Sheet 1 of 1

Date
14/03/2024

Scale
1:20

Logged
SJF

- 1
- 2
- 3
- 4



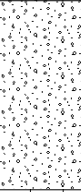
Plant: 10 tonne tracked excavator

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log				TrialPit No TP-200 Sheet 1 of 1	
Project Name: Baldock				Project No. 2899		Co-ords: 525270.20 - 233226.25 Level: 82.66		Date 19/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	ES		0.30	82.36		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.40 - 0.50	D					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel is consists of extremely to very weak medium density angular to sub-angular, fine to coarse chalk. Grade Dc.		
	1.40 - 1.50	B		1.00	81.66		White mottled cream extremely weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is cream. Grade B.		
	2.30 - 2.40	D							
					3.00	79.66		End of Pit at 3.00m	
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-201 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525324.37 - 233210.63 Level: 83.68		Date 18/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 3.00		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	ES		0.30	83.38		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
						Structureless CHALK composed of white mottled yellowish brown silty GRAVEL with medium cobble and boulder content. Gravel is fine to coarse, angular to sub-angular weak high density chalk. Cobble is angular of chalk. Grade Dc.			
	0.90 - 1.00	B		1.50	82.18		White mottled yellowish brown extremely to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.		
	1.50 - 1.60	D							
	2.00 - 2.10	B		3.00	80.68		End of Pit at 3.00m		
Remarks: No groundwater identified.								AGS	
Stability: Stable Plant: 20 tonnes tracked excavator									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-202 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525381.08 - 233225.09 Level: 82.21		Date 19/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.80		Scale 1:20	
Client: Urban & Civic						Depth 2.90		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	ES		0.30	81.91		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.		
	0.50 - 0.60	D					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel is consists of angular to sub-angular, fine to coarse extremely weak to very weak medium density chalk. Grade Dc.		
							White mottled orangish brown extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is orangish brown. Grade B.		
	1.30 - 1.40	B		0.60	81.61				
2.10 - 2.20	D								
									
									
									
									
									
									
									
									
									
									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-203 Sheet 1 of 1			
Project Name: Baldock				Project No. 2899		Co-ords: 525428.06 - 233236.31 Level: 81.16		Date 19/03/2024		
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20		
Client: Urban & Civic						Depth 3.00		Logged HB		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.50 - 0.60	ES		0.30	80.86		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.			1
							Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel consists of angular to sub-angular, fine to coarse extremely weak to very weak medium density chalk. Grade Dc.			
	0.90 - 1.00	B		0.70	80.46		White mottled cream extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is cream brown. Grade B.			
	1.50 - 1.60	D								
	2.30 - 2.40	D								2
				3.00	78.16		End of Pit at 3.00m			3
										4
Remarks: No groundwater identified.										
Stability: Stable Plant: 20 tonnes tracked excavator										
										

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-204 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525402.13 - 233198.84 Level: 82.94		Date 19/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90 3.10		Scale 1:20	
Client: Urban & Civic						Depth 3.00		Logged HB	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.15	ES		0.30	82.64		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert		
	0.50 - 0.60	D		0.80	82.14		Loose brown mottled white SAND and GRAVEL. Gravel is fine to coarse, angular to sub-angular of chalk and flint.		
	1.40 - 1.50	B					Structureless CHALK composed of loose white mottled creamy brown silty GRAVEL. Gravel consists of angular to sub-angular, fine to coarse very weak low to medium density chalk. Grade Dc.		
	2.00 - 2.10	D		2.00	80.94		White mottled cream extremely weak to very weak low to medium density CHALK. Recovering as a slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is yellowish brown. Grade B.		
	2.80 - 2.90	D		3.00	79.94		End of Pit at 3.00m		
Remarks: No groundwater identified.									
Stability: Stable Plant: 20 tonnes tracked excavator									
									

 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-205 Sheet 1 of 1			
Project Name: Baldock				Project No. 2899		Co-ords: 525368.59 - 233156.64 Level: 85.58		Date 19/03/2024		
Location: Baldock, North Hertfordshire						Dimensions (m): 0.90		Scale 1:20		
Client: Urban & Civic						Depth 3.00		Logged HB		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.10 - 0.15	D		0.30	85.28		Brown friable slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub angular fine to coarse chalk, flint and chert.			1 2 3 4
	0.30 - 0.40	ES					Loose brown mottled white SAND and GRAVEL. Gravel is fine to coarse, angular to sub-angular of chalk and flint.			
				0.70	84.88		White mottled cream extremely weak to very weak low to medium density CHALK. Recovering as slightly silty, slightly sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular. Matrix is brown. Grade B.			
	1.00 - 1.10	B								
	1.70 - 1.80	D								
2.40 - 2.50	D		3.00	82.58		End of Pit at 3.00m				
Remarks: No groundwater identified.										
Stability: Stable Plant: 20 tonnes tracked excavator										



 SHADBOLT GROUP DESIGN MANAGE CONSTRUCT				Trial Pit Log			TrialPit No TP-206 Sheet 1 of 1		
Project Name: Baldock				Project No. 2899		Co-ords: 525403.68 - 233121.02 Level: 85.98		Date 25/03/2024	
Location: Baldock, North Hertfordshire						Dimensions (m): 0.80		Scale 1:20	
Client: Urban & Civic						Depth 3.60		Logged SJF	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.20 - 0.30	ES		0.25	85.73		Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is angular to sub-angular fine to coarse chalk and occasional flint.		
	1.10 - 1.20	D					White mottled cream very weak CHALK recovered as angular coarse silty gravel and cobbles at depth. Gravel and cobbles are angular fine to coarse of very weak low to medium density chalk. Some silt matrix between gravel/cobbles. (Grade B3-B5).		
	1.90 - 2.00	D							
	3.50 - 3.60	D		3.60	82.38		End of Pit at 3.60m		
Remarks: No groundwater encountered. Terminated at scheduled depth.									
Stability: Stable Plant: 10 tonne tracked excavator									
									



Windowless Sample Log

Borehole No.

WS-64

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525181E - 233369N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 72.82

Scale
1:25

Client: Urban & Civic

Dates: 11/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	D	N=10 (2,3/3,2,3,2)	0.30	72.52		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	1
		0.40 - 0.50	ES					Firm greyish brown and white mottled slightly sandy slightly gravelly CLAY. Gravel is dine to coarse, sub-angular of chalk.	
		0.80 - 0.90	D		0.70	72.12		Firm friable yellowish brown mottled white slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular of chalk.	
		1.00	SPT	1.30			71.52		Structureless CHALK weak low density white mottled cream. Recovering as a silty GRAVEL Gravel is fine to coarse, angular to sub-angular chalk.
		1.50 - 1.60	D			Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.			
		2.00	SPT		N=26 (5,6/7,4,9,6)	2.00		70.82	
		2.50 - 2.60	D	N=28 (4,5/6,5,8,9)	2.00	70.82		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	3
		3.00	SPT					Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	
		4.00	SPT		N=11 (5,6/11,0,0,0)	4.15	68.67		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.
								Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	
		End of Borehole at 4.15m							5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-65

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525268E - 233372N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 74.51

Scale
1:25

Client: Urban & Civic

Dates: 11/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20 - 0.30	ES		0.40	74.11		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	1	
		0.60 - 0.70	D					Firm brown mottled orangish brown and grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chalk.		
		1.00 1.10 - 1.20	SPT D	N=9 (2,2/2,2,3,2)	1.00	73.51		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.		2
		2.00 2.10 - 2.20	SPT D	N=41 (2,5/8,10,11,12)						
		3.00	SPT	N=57 (12,14/15,13,16,13)						
End of Borehole at 3.45m								4		
									5	

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-66

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525365E - 233394N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 74.86

Scale
1:25

Client: Urban & Civic

Dates: 11/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	D		0.30	74.56		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	
		0.40 - 0.50	ES					Structureless CHALK very weak low density white mottled light brown. Recovering as a silty GRAVEL. Gravel is fine to coarse, angular to sub-angular chalk.	
		1.00	SPT	N=14 (1,1/2,3,5,4)	1.00	73.86		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	1
		1.20 - 1.30	D						
		2.00	SPT	N=18 (2,4/4,5,4,5)					2
		2.50 - 2.60	D						
		3.00	SPT	N=48 (3,6/11,10,14,13)					3
		3.50 - 3.60	D						
		4.00	SPT	N=25 (6,5/4,4,8,9)	4.45	70.41			4
								End of Borehole at 4.45m	5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-67

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525176E - 233274N

Hole Type
WLS

Location: Baldock, North Hertfordshire

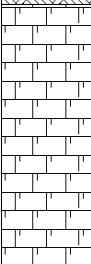
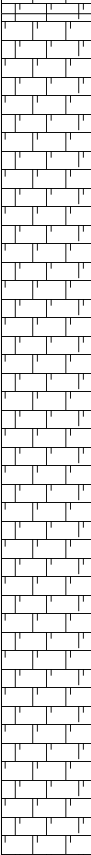
Level: 77.46

Scale
1:25

Client: Urban & Civic

Dates: 11/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	ES		0.30	77.16		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert and chalk.	
		0.60 - 0.70	D					Structureless CHALK weak low density white mottled greyish brown. Recovering as a silty GRAVEL Gravel is fine to coarse, angular to sub-angular chalk.	
		1.00	SPT	N=14 (2,2/2,3,4,5)	1.20	76.26			1
		1.50 - 1.60	D					Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	
		2.00	SPT	N=26 (5,6/7,7,6,6)					2
		2.40 - 2.50	D						
		3.00	SPT	N=26 (5,6/7,7,6,6)					3
		3.40 - 3.50	D						
		3.55	SPT	N=50 (11,11/9,12,15,14)					
					4.00	73.46		End of Borehole at 4.00m	4
									5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-68

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525313E - 233278N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 80.21

Scale
1:25

Client: Urban & Civic

Dates: 12/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	D	N=10 (2,2/3,3,2,3)	0.30	79.91		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	1
		0.50 - 0.60	ES		0.70	79.51		Firm friable white mottled greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular of chalk.	
		0.90 - 1.00 1.00	D SPT					Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	
		1.60 - 1.70	D	N=13 (2,3/3,3,4,3)					
		2.00	SPT						
		2.90 - 3.00 3.00	D SPT	N=16 (2,2/3,3,4,6)					3
		4.00	SPT	N=35 (10,11/15,20,0,0)					4
					4.40	75.81			5
								End of Borehole at 4.40m	

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-69

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525419E - 233265N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 80.10

Scale
1:25

Client: Urban & Civic

Dates: 13/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	ES		0.30	79.80		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	
		0.50 - 0.60	D					Structureless CHALK weak low density white mottled creamy brown. Recovering as a silty GRAVEL Gravel is fine to coarse, angular to sub-angular chalk.	
		1.00	SPT	N=20 (3,5/7,6,4,3)	1.00	79.10		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	1
		1.50 - 1.60	D						
		2.00	SPT	N=18 (2,3/4,3,5,6)					2
		2.60 - 2.70	D						
		3.00	SPT	N=16 (3,4/3,3,4,6)					3
		3.50 - 3.60	D						
		4.00	SPT	N=56 (6,10/8,12,13,23)	4.45	75.65			4
								End of Borehole at 4.45m	5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-70

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525489E - 233219N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 81.11

Scale
1:25

Client: Urban & Civic

Dates: 12/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	ES		0.30	80.81		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	
		0.50 - 0.60	D					Structureless CHALK weak low density white mottled yellowish brown. Recovering as a silty GRAVEL. Gravel is fine to coarse, angular to sub-angular chalk.	
		1.00	SPT	N=13 (2,3/3,3,4,3)	1.30	79.81			1
		1.50 - 1.60	D					Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	2
		2.00	SPT	N=27 (3,8/6,6,8,7)					
		2.50 - 2.60	D						
		3.00	SPT	N=20 (4,3/4,4,6,6)					
		3.50 - 3.60	D						
		4.00	SPT	N=38 (5,3/5,8,10,15)	4.45	76.66			4
								End of Borehole at 4.45m	5

Remarks

No groundwater encountered,





Windowless Sample Log

Borehole No.

WS-71

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525325E - 233180N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 85.35

Scale
1:25

Client: Urban & Civic

Dates: 12/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	D	N=11 (2,3/3,3,2,3)	0.30	85.05		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	1
		0.40 - 0.50	ES					Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.	
		1.00	SPT						
		1.50 - 1.60	D						
					2.00	83.35		End of Borehole at 2.00m	2
									3
									4
									5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-72

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525453E - 233169N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 83.00

Scale
1:25

Client: Urban & Civic

Dates: 12/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.10 - 0.15	D	N=12 (2,2/3,3,3,3)	0.30	82.70		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	1		
		0.40 - 0.50	ES					Light brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, subangular of chert and chalk.			
		0.90 - 1.00 1.00	D SPT		0.50	82.50		Very weak medium density white mottled cream CHALK. Recovering as a silty CLAY. Gravel is angular to sub-angular, fine to coarse.			
		2.00 - 2.10 2.00	D SPT	N=12 (2,2/3,3,3,3)					2		
		3.00	SPT	N=15 (2,3/3,4,4,4)					3		
		3.40 - 3.50	D	N=9 (1,2/2,2,2,3)					4		
		4.00	SPT								
							4.45	78.55		End of Borehole at 4.45m	5

Remarks

No groundwater encountered.





Windowless Sample Log

Borehole No.

WS-73

Sheet 1 of 1

Project Name: Baldock

Project No.
2899

Co-ords: 525436E - 233134N

Hole Type
WLS

Location: Baldock, North Hertfordshire

Level: 84.29

Scale
1:25

Client: Urban & Civic

Dates: 12/03/2024

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	ES	N=7 (1,1/2,1,2,2)	0.30	83.99		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	
		0.50 - 0.60	D						
		1.00	SPT						
		1.50 - 1.60	D						
		2.00	SPT						
		2.50 - 2.60	D						
		3.00	SPT						
		3.50 - 3.60	D						
		4.00	SPT						
		End of Borehole at 4.45m							

Remarks

No groundwater encountered.





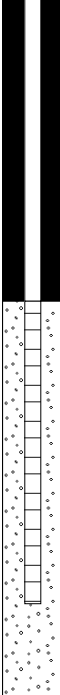
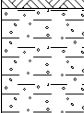
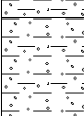
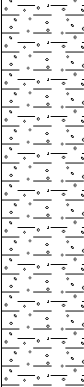
Borehole No.

Sheet 1 of 1

Hole Type
WLS

Scale
1:25

Logged By
HB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.15	D	N=20 (3,5/5,5,5,5)	0.30	75.34		Grass over TOPSOIL - Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular of chert.	
		0.50 - 0.60	ES					Firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular of chert and chalk.	
		0.90 - 1.00 1.00	D SPT					Firm yellowish brown mottled white slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, angular to sub-angular of chalk and flint.	
		1.50 - 1.60	D		;				
		2.00	SPT			43 (6,6/8,15,20,)			
					2.33	73.31	End of Borehole at 2.33m		

No groundwater encountered.





Borehole No.

RO-35

Sheet 1 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525373.82 - 233308.10

Location: Baldock, North Hertfordshire

Level: 78.77

Scale
1:25

Client: Urban & Civic

Dates: 19/03/2024

Logged By
TJS

Remarks
No groundwater identified. Borehole terminated at scheduled depth.





Rotary Core Log

Borehole No.

RO-35

Sheet 2 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525373.82 - 233308.10

Location: Baldock, North Hertfordshire

Level: 78.77

Client: Urban & Civic

Dates: 19/03/2024

Scale
1:25

Logged By
TJS

Well	Water Strikes	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		5.52 - 5.69	C							Structureless weak low density white CHALK (A4) <i>horizontal, very close to closely, stepped to undulating rough to smooth very tight to open with chalk infill.</i>	
		5.00 - 6.50	7	100	79	49					
										Weak low density chalk (B4/B5) between 5.93 and 6.00m bgl. <i>Horizontal to oblique (50°), extremely close to close undulating to stepped rough to striated, very tight open with reddish brown staining.</i>	6
		6.60 - 6.80	C							Weak to moderately strong medium to high density chalk (A2/A3) between 6.00m and 9.50m bgl. <i>Horizontal to sub-horizontal (30°) very close to close, planar to undulating smooth to rough, very tight to open, clean to reddish brown surface staining.</i>	7
		6.50 - 8.00	5	96	88	73				<i>Horizontal to oblique (40°) very close to closely, undulating to stepped rough to striated, very tight to open, clean.</i>	
											8
		8.30 - 8.60	C							<i>horizontal to oblique (30° to 45°) close to medium spaced, undulating to stepped smooth to rough, very tight to open, clean to reddish brown surface staining.</i>	
		8.00 - 9.50	5	88	74	61				<i>horizontal to vertical, closely, stepped rough, very tight to open, clean with reddish brown surface staining.</i>	9
							9.50	69.27		End of Borehole at 9.50m	10

Remarks

No groundwater identified. Borehole terminated at scheduled depth.





Rotary Core Log

Borehole No.

RO-36

Sheet 1 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525222.51 - 233273.26

Location: Baldock, North Hertfordshire

Level: 79.04

Client: Urban & Civic

Dates: 19/03/2024

Scale
1:25

Logged By
TJS

Well	Water Strikes	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.30	78.74		Scrub over TOPSOIL: Brown slightly clayey slightly silty slightly gravelly fine to medium SAND with high root content. Gravel is angular to sub-round fine to coarse and includes chalk, flint, chert and brick. Structureless weak, low density white CHALK (B4-B5).	
		50 (7,11/50 for 200mm)								Incipient fractures.	1
		1.20 - 2.00		86	0	0				Weak to moderately strong low to very high density chalk (A3/A5)	2
		2.00 - 3.50	14	91	63	0				Horizontal to oblique (35°) very close closely, undulating to stepped smooth to rough, very tight to tight, clean.	3
		4.10 - 4.23 3.50 - 5.00	C 10		79	50	29			Horizontal to oblique (35°) closely to medium spaced, planar to undulating smooth to rough, very tight to open, clean.	4
										Horizontal to sub-horizontal (15°) very close to closely, undulating to stepped rough, very tight to partly open, clean.	5
										Incipient fractures.	
										Horizontal, closely, undulating rough, tight, clean.	
										Continued on Next Sheet	

Remarks

No groundwater identified. Borehole terminated at scheduled depth.





Rotary Core Log

Borehole No.

RO-36

Sheet 2 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525222.51 - 233273.26

Location: Baldock, North Hertfordshire

Level: 79.04

Client: Urban & Civic

Dates: 19/03/2024

Scale
1:25

Logged By
TJS

Well	Water Strikes	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		5.13 - 5.22	C							Structureless weak, low density white CHALK (B4-B5). <i>Horizontal to vertical, very close to closely, undulating to stepped rough, very tight to open, clean to reddish brown surface staining.</i>	6
		5.00 - 6.50	10	100	66	12					
		6.50 - 8.00		81	19	19				<i>Incipient fractures.</i>	
		8.00 - 9.50		97	35	35					
							9.50	69.54		End of Borehole at 9.50m	10

Remarks
No groundwater identified. Borehole terminated at scheduled depth.





Rotary Core Log

Borehole No.

RO-37

Sheet 1 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525428.31 - 233104.87

Location: Baldock, North Hertfordshire

Level: 87.66

Scale
1:25

Client: Urban & Civic

Dates: 19/03/2024

Logged By
SJF

Well	Water Strikes	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		N=50 (8.9/50 for 265mm)					0.35	87.31		Grey brown slightly gravelly sandy silty clayey TOPSOIL. Gravel is angular fine chalk and sub-angular fine to coarse flint.	1
										Structureless CHALK composed of white and light brown silty GRAVEL. Gravel is angular fine to coarse very weak low density chalk with a light brown silt matrix. (Grade Dc).	
							1.40	86.26		Brown and white mottled structureless CHALK composed of weak low to medium density silty GRAVEL.	
		1.20 - 2.00	C	63	26	0	1.60	86.06		Very weak low density white mottled cream CHALK.	2
		1.80 - 1.90					2.00	85.66		Horizontal Fracture - rough, closed to partly open with creamy brown staining.	
							2.15	85.51		Horizontal Fracture - rough, closed to partly open with creamy brown staining.	
		2.55 - 2.65	C							None Intact Core Recovery: Very weak medium density white mottled cream CHALK.	3
										Very weak low density white mottled cream CHALK.	
										Horizontal Fracture - rough closed light brown staining.	
		2.00 - 3.50	C	93	13	0				Horizontal Fracture - rough closed with no staining.	4
										Horizontal Fracture - rough open with gravel infill.	
										Horizontal Fracture - rough partly open with yellow staining.	
		3.50 - 5.00	C				3.50	84.16		None Intact Core Recovery: Very weak medium density white mottled cream CHALK.	5
							3.79	83.87		Very weak low density white mottled cream CHALK.	
										Vertical and sub-vertical fractures,	
		4.83 - 4.93	C							Continued on Next Sheet	
							5.00	82.66		Continued on Next Sheet	

Remarks

No groundwater encountered. Terminated at scheduled depth.





Rotary Core Log

Borehole No.

RO-37

Sheet 2 of 2

Hole Type
RC

Project Name: Baldock

Project No.
2899

Co-ords: 525428.31 - 233104.87

Location: Baldock, North Hertfordshire

Level: 87.66

Client: Urban & Civic

Dates: 19/03/2024

Scale
1:25

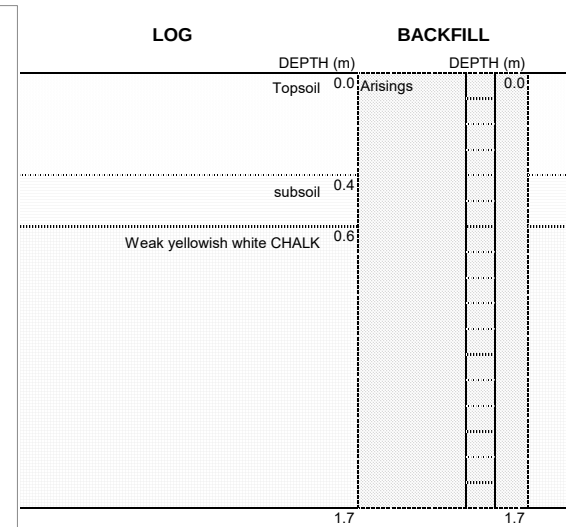
Logged By
SJF

Well	Water Strikes	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		5.00 - 6.50	C	90	35	13	5.14	82.52		None Intact Core Recovery: Very weak medium density white mottled cream CHALK. Very weak low density white mottled cream CHALK.	6
										Two sub-vertical fractures along entire core sample between 5.40 - 6.50m.	
		6.50 - 8.00 7.35 - 7.55	C	100	87	74				Horizontal Fracture - rough closed with no staining.	7
		8.68 - 9.06 8.00 - 9.50	C	82	77	63				Horizontal Fracture - rough, open, orange staining with some gravel infill.	8
			C							Horizontal Fracture - rough closed with orange staining.	9
							9.50	78.16		End of Borehole at 9.50m	10

Remarks
No groundwater encountered. Terminated at scheduled depth.

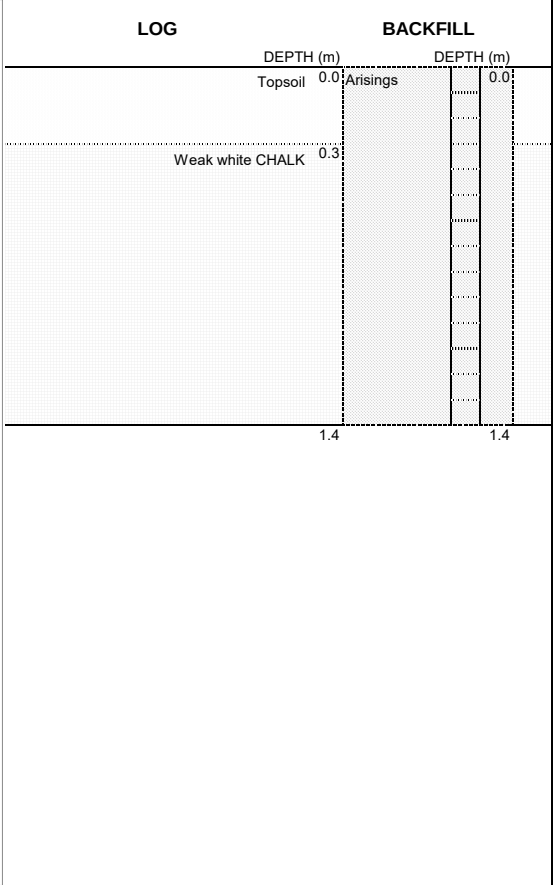
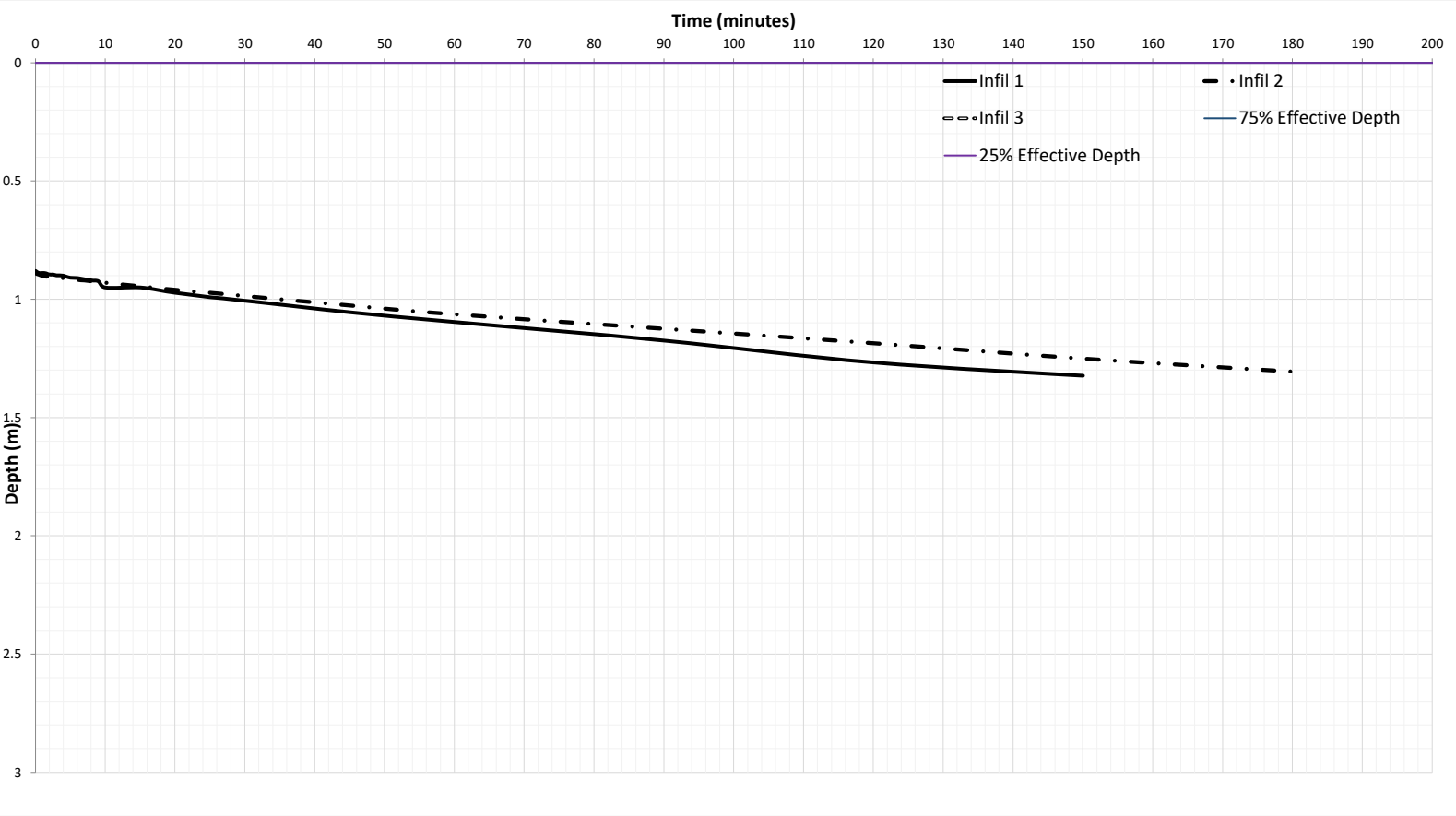


Recommended soil infiltration rate	
9.23E-05	m/s



	units	Fill 1	Fill 2	Fill 3
Depth (final reading)	m	1.32	1.31	
Pit depth	m		1.40	
Pit length	m		1.50	
Pit width	m		0.70	
Depth to first reading	m	0.88	0.89	
Maximum effective depth	m	0.44	0.42	
Depth at 75% full	m	0.99	0.99	
Depth at 25% full	m	1.21	1.20	
Time at 75% full	mins	31.53	41.89	
Time at 25% full	mins	121.61	162.27	
Vp75 - 25 (volume outflowing between 75% and 25% effective depth)	m3	0.273	0.268	
Mean surface area for outflow (50% effective depth)	m2	2.19	2.17	
Time for outflow	mins	90.08	120.38	
Soil infiltration rate, f =		0.0000230231	0.0000170669	
or		2.30E-05	1.71E-05	

Recommended soil infiltration rate	
1.71E-05	m/s



	PROJECT NAME	SOAKAWAY TEST RESULTS	DATE	PROJECT NUMBER
	Baldock North		Mar-24	2899.00
	CLIENT		SOAKAWAY NUMBER	FILL NUMBER
	Urban and Civic		In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)	SA02

APPENDIX C

SHADBOLT TIER 1 SOIL SCREENING VALUES

Derivation of Screening Values

In assessing risks to human health arising from materials present on site, environmental testing results are compared to Shadbolt Group Inhouse Tier 1 Soil Screening Values (TSVs).

These screening values are drawn from a range of sources including government guidance, research bodies, industry publications and modelling software.

On-going research by the Environment Agency (EA) is being undertaken to produce toxicology reports (TOX series) for each of the contaminants identified within the LCRM framework and then to produce published Soil Guideline Values (SGVs) using the Contaminated Land Exposure Assessment (CLEA) Model. Parallel to the work being undertaken by the EA is research being undertaken by Land Quality Management Limited and the Chartered Institute of Environmental Health (CIEH) to produce similar General Assessment Criteria (GAC) using the CLEA Model. To date, SGVs and GACs have been published for over 80 No. contaminants with SGVs / GACs derived for each contaminant for three different land use scenarios namely:

- Residential
- Allotment
- Commercial

In addition, Shadbolt Group screening values have been derived for **Public Open Space (residential), Public Open Space (Parks)** based on current guidance.

Shadbolt Group TSVs are based on the SGVs and GACs which are scientifically based generic assessment criteria that can be used to simplify the assessment of human health risks arising from long-term and on-site exposure to chemical contamination in soil.

SGVs and GACs are a screening tool for the generic quantitative risk assessment of land contamination (Defra and Environment Agency, 2004). They are not (unless clearly stated otherwise) relevant for assessing risks to human health from short-term exposure to chemicals in soil including injury arising from direct bodily contact and do not take account of other types of risks to humans such as explosion or suffocation risks (associated with the build-up of gases such as methane and carbon dioxide) or aesthetic issues such as odour or colour. SGVs and GACs do not take account of other non-soil-based sources of contamination such as contamination in groundwater, surface waters or drinking waters. They cannot be used to evaluate risks to non-human receptors such as controlled waters, ecosystems, buildings and services, domestic pets, or garden plants. Where, for example, phytotoxic effects are an important consideration in the current or future intended land use further investigation should be undertaken.

TGVs are guidelines on the level of long-term human exposure to individual chemicals in soil that, unless stated otherwise, are tolerable or pose a minimal risk to human health. They represent “trigger values” – indicators to a risk assessor that soil concentrations above this level **may** pose a possibility of *significant harm* to human health (Defra, 2008b).

Significance is linked to:

- **Margin** of exceedance;
- **Duration** and frequency of exposure;
- **Other site-specific factors** that the enforcing authority may wish to consider.

SGVs do not of themselves represent the threshold at which there is a *significant possibility of significant harm* (SPOSH). Nor do they automatically represent an unacceptable intake in the context of Part 2A of the Environmental Protection Act 1990. However, they can be a useful starting point for such an assessment.

In order to assess the soil analyses results with regard to potential human health risks, Shadbolt Environmental TSVs have been derived in accordance with the UK framework set out in the most recent LCRM documents (EA 2020) and LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment 2nd Edition 2015 and are “in line” with industry standards.

Assessment Framework

The CLEA model states that, ‘the contamination is assumed to be at or within 1m of the surface’. It is considered that at depths greater than 1.00m, the probability of human exposure via the direct contact pathways are significantly reduced, leaving inhalation of volatile compounds as the dominant pathway regarding human health risks. Typically, volatile compounds only significantly affect the indoor inhalation pathway.

Statistical Analysis

The CLEA guidelines also state that for each contaminant, the upper 95th percentile of the mean measured concentration (95%UCL) should be calculated and this value should be compared to the TSV.

The objective of maximum value tests is to decide whether the maximum concentration observed should be treated as an outlier or whether it can reasonably be considered to come from the same underlying population as the other samples.

It is known that contaminant concentrations often demonstrate lognormal or other distribution forms. Therefore, to calculate what are considered to be more representative 95%UCL values, the contaminant concentrations have first been assessed to determine if each contaminant distribution is closer to a normal or lognormal distribution.

If a dataset was found to be log normally distributed, the geometric mean was used to calculate the 95%UCL, for those that were found to be normally distributed; the arithmetic mean was used to calculate the 95%UCL. Constituent non-detects were assigned a value equal to the reported analytical laboratory limit of detection, considered reasonably conservative. Any identified outliers are excluded from the datasets used in calculation of the 95%UCL value.

Shadbolt Tier 1 Soil Screening Values (TSVs) used in the production of this report are presented below.

SOIL - THE SHADBOLT GROUP SUITABLE FOR USE LEVELS - HUMAN HEALTH													
Status		Issue No.		Date		SHADBOLT ENVIRONMENTAL							
Issue		Version 8		21/09/2023									
Determinand	Units	Residential with Home Grown Produce (1% SOM)	Residential with Home Grown Produce (6% SOM)	Residential without Home Grown Produce (1% SOM)	Residential without Home Grown Produce (6% SOM)	Allotments (6% SOM)	Commercial (1% SOM)	Commercial (6% SOM)	Public Open Space (res) (1% SOM)	Public Open Space (res) (6% SOM)	Public Open Space (park) (1% SOM)	Public Open Space (park) (6% SOM)	Derivation Tool
pH		<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	<5, >9	Neutral Conditions
Asbestos	%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	Lab Screening Level
HEAVY METALS/METALLOIDS													
Arsenic (C4SL)	mg/kg	37	37	39.9	39.9	49	635	635	79.1	79.1	168	168	CLEA MODEL LQM/CIEH 2015
Beryllium	mg/kg	1.7	1.7	1.72	1.72	17.8	14	14	2.19	2.19	61	61	CLEA MODEL LQM/CIEH 2015
Boron	mg/kg	290	290	11000	11000	45	240000	240000	21000	21000	46000	46000	CLEA MODEL LQM/CIEH 2015
Cadmium (C4SL)	mg/kg	22.1	22.1	149	149	3.9	410	410	219	219	882	882	CLEA MODEL LQM/CIEH 2015
Chromium (III)	mg/kg	14300	14300	16700	16700	12600	208000	208000	30600	30600	83500	83500	CLEA MODEL LQM/CIEH 2015
Chromium (VI) (C4SL)	mg/kg	20.5	20.5	20.5	20.5	171	49.1	49.1	26.1	26.1	251	251	CLEA MODEL LQM/CIEH 2015
Chromium (VI) (MRL)	mg/kg	3.62	3.63	3.62	3.62	73.9	19.7	19.7	4.62	4.62	132	132	CLEA MODEL LQM/CIEH 2016
Copper	mg/kg	4730	4790	9060	9060	1450	106000	106000	16400	16400	45200	45200	CLEA MODEL LQM/CIEH 2015
Lead	mg/kg	200	200	313	313	79.1	2310	2310	625	625	1340	1340	pC4SL
Mercury (Elemental)	mg/kg	1.2	1.2	1.2	1.2	21	58 ^{pp} (25.8)	58 ^{pp} (25.8)	16	16	30 ^{pp} (25.8)	30 ^{pp} (25.8)	CLEA MODEL LQM/CIEH 2015
Mercury (Inorganic)	mg/kg	40	40	56	56	19	1100	1100	120	120	240	240	CLEA MODEL LQM/CIEH 2015
Mercury (Methyl)	mg/kg	11	11	15	15	6	320	320	40	40	68	68	CLEA MODEL LQM/CIEH 2015
Nickel	mg/kg	136	136	188	188	67.3	1770	1770	347	347	804	804	CLEA MODEL LQM/CIEH 2015
Selenium	mg/kg	375	375	595	595	143	13000	13000	1370	1370	2550	2550	CLEA MODEL LQM/CIEH 2015
Vanadium	mg/kg	136	136	357	357	33.2	7490	7490	818	818	1550	1550	CLEA MODEL LQM/CIEH 2015
Zinc	mg/kg	20000	20000	47000	47000	5230	1100000	1100000	93700	93700	201000	201000	CLEA MODEL LQM/CIEH 2015
GENERAL INORGANICS													
Cyanide (Free)	mg/kg	34	34	34	34	34	373	373	34	34	34	34	ATKINS ATRISK
US EPA PRIORITY PAHs													
Acenaphthene	mg/kg	210	1100	3000 (57)	6000 (336)	200	84000 (57)	100000	15000	15000	29000	30000	CLEA MODEL LQM/CIEH 2015
Acenaphthylene	mg/kg	170	920	2900 (86.1)	6000 (506)	160	83000 (86.1)	100000	15000	15000	29000	30000	CLEA MODEL LQM/CIEH 2015
Anthracene	mg/kg	2400	11000	31000 (1.17)	37000	2200	52000	540000	74000	74000	150000	150000	CLEA MODEL LQM/CIEH 2015
Benzo(a)Anthracene	mg/kg	7.2	13	11	15	13	170	180	29	29	49	62	CLEA MODEL LQM/CIEH 2015
Benzo(a)pyrene (C4SL)	mg/kg	2.2	3.00	3.2	3.2	3.5	35	36	5.7	5.7	11	13	CLEA MODEL LQM/CIEH 2015
Benzo(a)pyrene (MRL)	mg/kg												
Benzo(b)fluoranthene	mg/kg	2.6	3.7	3.9	4	3.9	44	45	7.1	7.2	13	16	CLEA MODEL LQM/CIEH 2015
Benzo(k)fluoranthene	mg/kg	320	350	360	360	640	3900	4000	640	640	1400	1600	CLEA MODEL LQM/CIEH 2015
Benzo(g,h,i)perylene	mg/kg	77	100	110	110	130	1200	1200	190	190	370	440	CLEA MODEL LQM/CIEH 2015
Chrysene	mg/kg	15	27	30	32	19	350	350	57	57	93	120	CLEA MODEL LQM/CIEH 2015
Di-benzo(a,h)anthracene	mg/kg	0.24	0.3	0.31	0.32	0.43	3.5	3.6	0.57	0.58	1.1	1.4	CLEA MODEL LQM/CIEH 2015
Indeno(1,2,3-cd)pyrene	mg/kg	27	41	45	46	39	500	510	82	82	150	180	CLEA MODEL LQM/CIEH 2015
Fluoranthene	mg/kg	280	890	1500	1600	290	23000	23000	3100	3100	6300	6400	CLEA MODEL LQM/CIEH 2015
Fluorene	mg/kg	170	860	2800 (30.9)	4500 (183)	160	63000 (30.9)	71000	9900	9900	20000	20000	CLEA MODEL LQM/CIEH 2015
Naphthalene	mg/kg	2.3	13	2.3	13	24	190 (76.4)	1100 (432)	4900	4900	1200 (76.4)	300	CLEA MODEL LQM/CIEH 2015
Phenanthrene	mg/kg	95	440	1300 (36)	1500	90	22000	23000	3100	3100	6200	6300	CLEA MODEL LQM/CIEH 2015
Pyrene	mg/kg	620	2000	3700	3800	620	54000	54000	7400	7400	15000	15000	CLEA MODEL LQM/CIEH 2015
Coal Tar (Bap as surrogate marker)	mg/kg	0.79	0.98	1.2	1.2	1.2	15	15	2.2	2.2	4.4	4.8	CLEA MODEL LQM/CIEH 2015
Chlorinated Solvents													
1,2 Dichloroethane (DCA)	mg/kg	0.0071	0.019	0.0092	0.023	0.016	0.67	1.7	29	29	21	28	CLEA MODEL LQM/CIEH 2015
1,1,1,2 Tetrachloroethane	mg/kg	1.2	6.4	1.5	8.2	4.4	110	560	1400	1400	1500	2100	CLEA MODEL LQM/CIEH 2015
1,1,1,2 Tetrachloroethane	mg/kg	1.3	7.5	3.9	17	2	270	1100	1400	1400	1800	2300	CLEA MODEL LQM/CIEH 2015
PCE (Tetrachloroethene)	mg/kg	0.18	0.9	0.18	0.92	3.6	19	95	1400	1400	810 (424) sol	1500	CLEA MODEL LQM/CIEH 2015
1,1,1 Trichloroethane (111 TCA)	mg/kg	8.8	39	9	40	240	660	3000	140000	140000	57000 (1425) vap	100000 (6392) vap	CLEA MODEL LQM/CIEH 2015
Chloroethene (Vinyl Chloride VC)	mg/kg	0.00064	0.0014	0.00077	0.0015	0.0018	0.059	0.12	3.5	3.5	4.8	5.4	CLEA MODEL LQM/CIEH 2015
Tetrachloromethane	mg/kg	0.016	0.075	0.017	0.08	0.21	1.2	5.7	120	120	70	120	CLEA MODEL LQM/CIEH 2015
Trichloroethene (TCE)	mg/kg	0.91	3.4	1.2	4.2	1.7	99	350	2500	2500	2600	3100	CLEA MODEL LQM/CIEH 2015
Trichloromethane (Chloroform)	mg/kg	0.026	0.13	0.026	0.13	2.4	2.9	14	890	950	190	400	CLEA MODEL LQM/CIEH 2015
Phenolics													
Phenol	mg/kg	280	1100	750	2300	280	760dir (31000)	3200dir (37000)	760dir (11000)	3200dir (11000)	760dir (8600)	3200dir (11000)	CLEA MODEL LQM/CIEH 2015
TPH (Environment Agency 16 Fractions)													
TPH Aliphatic >C5-6	mg/kg	42	160	42	160	3900	3200 (304) sol	12000 (1150) sol	570000 (304) sol	600000	95000 (304) sol	180000 (1150) sol	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic >C6-8	mg/kg	100	530	100	530	13000	7800 (144) sol	40000 (736) sol	600000	620000	150000 (144) sol	320000 (736) sol	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic >C8-10	mg/kg	27	150	27	150	1700	2000 (78) sol	11000 (451) vap	13000	13000	14000 (78) sol	21000 (451) vap	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic >C10-12	mg/kg	130 (48) Vap	760 (283) vap	130 (48) vap	770 (283) vap	7300	9700 (48) sol	47000 (283) vap	13000	13000	21000 (48) sol	24000 (283) vap	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic >C12-16	mg/kg	1100 (24) sol	4300 (142) sol	1100 (24) sol	4400 (142) sol	13000	59000 (24) sol	90000 (142) sol	13000	13000	25000 (24) sol	26000 (142) sol	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic >C16-35	mg/kg	65000 (8.48) f, sol	110000 f	65000 (8.48) f, sol	110000 f	270000 f	1600000 f	1800000 f	250000 f	250000 f	450000 f	490000 f	CLEA MODEL LQM/CIEH 2015
TPH Aliphatic > C35-44	mg/kg	65000 (8.48) f, sol	110000 f	6000 (8.48) f, sol	110000 f	270000 f	1600000 f	1800000 f	250000 f	250000 f	450000 f	490000 f	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC5-7 (Benzene)	mg/kg	70	300	370	1400	57	26000 (1220) sol	86000 (4710) sol	56000	56000	76000 (1220) sol	92000 (4710) sol	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC7-8 (Toluene)	mg/kg	130	660	860	3900	120	56000 (869) vap	180000 (4360) vap	56000	56000	87000 (869) vap	100000 (4360) vap	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC8-10	mg/kg	34	190	47	270	51	3500 (613) vap	17000 (3580) vap	5000	5000	7200 (613) vap	9300 (3580) vap	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC10-12	mg/kg	74	380	250	1200	74	16000 (364) sol	34000 (2150) sol	5000	5000	9200 (364) sol	10000	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC12-16	mg/kg	140	660	1800	2500	130	36000 (169) sol	38000	5100	5000	10000	10000	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC16-21	mg/kg	260 f	930 f	1900 f	1900 f	260 f	28000 f	28000 f	3800 f	3800 f	7600 f	7800 f	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC21-35	mg/kg	1100 f	1700 f	1900 f	1900 f	1600 f	28000 f	28000 f	3800 f	3800 f	7800 f	7900 f	CLEA MODEL LQM/CIEH 2015
TPH Aromatic >EC35-44	mg/kg	1100f	1700 f	1900 f	1900 f	1600 f	28000 f	28000 f	3800 f	3800 f	7800 f	7900 f	CLEA MODEL LQM/CIEH 2015
Aliphatic - Aromatic EC44-70	mg/kg	1600 f	1900 f	1900 f	1900 f	3000 f	28000 f	28000 f	3800 f	3800 f	7800 f	7800 f	CLEA MODEL LQM/CIEH 2015
Total TPH	mg/kg	100.0	100.0	100.0	100.0	100	1000	1000	1000	1000	1000	1000	NOT a S4U if exceeded speciation required
BTEX													
Benzene	mg/kg	0.087		0.38	1.4	0.075	27	90	72	73	90	110	CLEA MODEL LQM/CIEH 2015
Toluene	mg/kg	130	660	880 (869) vap	3900	120	56000 (869) vap	180000 (4360) vap	56000	56000	87000 (869) vap	100000 (4360) vap	CLEA MODEL LQM/CIEH 2015
Ethylbenzene	mg/kg	47	260	83	440	91	5700 (518) vap	27000 (2840) vap	24000	25000	17000 (518) vap	27000 (2840) vap	CLEA MODEL LQM/CIEH 2015
Xylenes (ortho)	mg/kg	60	330	88	480	160	6600 (478) sol	33000 (2620) sol	41000	43000	17000 (478) sol	33000 (2620) sol	CLEA MODEL LQM/CIEH 2015
Xylenes (meta)	mg/kg	59	320	82	450	160	6200 (625) vap	31000 (3460) vap	41000	43000	17000 (625) vap	32000 (3460) vap	CLEA MODEL LQM/CIEH 2015
Xylenes (para)	mg/kg	56	310	79	430	170	5900 (576) sol	30000 (3170) sol	41000	43000	17000 (576) sol	31000 (3170) sol	CLEA MODEL LQM/CIEH 2015

NOTES

- 1) Screen individual constituent values initially and if exceedences are noted consider further in relation to averaging areas and statistical analysis.
- 2) These values are for initial screening for potential **risk to human health only**. They are **not remediation thresholds**. **Screening for other receptors to be done** separately as appropriate for the site, e.g. for water, ecology, building materials.
- 3) TSVs have been derived for common constituents only to date, pending future issues of this sheet. Research has bene undertaken for numerous other constituents already.
- 4) Please note that the TSVs derived for certain compounds may be low in relation to standard laboratory detection limits.

For certain compounds not identified as a significant risk to human health (eg heavy end hydrocarbon fractions), aesthetic and other considerations may drive requirement for remediation.

APPENDIX D

CHEMICAL LABORATORY RESULTS

STATISTICAL ANALYSIS WORKSHEETS



The Shadbolt Group
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Analytical Report Number : 24-012035

Replaces Analytical Report Number: 24-012035, issue no. 1
Additional analysis undertaken.
TPHCWG Ali/Aro added to sample 160369 at client's request.

Project / Site name:	Baldock	Samples received on:	26/03/2024
Your job number:	2899	Samples instructed on / Analysis started on:	03/04/2024
Your order number:	2912	Analysis completed by:	09/04/2024
Report Issue Number:	2	Report issued on:	22/04/2024
Samples Analysed:	33 soil samples		

Signed: _____

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160352	160353	160354	160355	160356
Sample Reference	TP-180	TP-182	TP-179	TP-184	TP-186
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.10-0.20	0.40-0.50	0.10-0.20	0.10-0.20
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	14	10	16	18
Total mass of sample received	kg	0.1	NONE	1.6	1.6	1.5	1.7	1.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	Not-detected	-	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	MLO	-	MLO	MLO

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	8.1	8.4	8.1	8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	14	11	15	21	24
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	7.1	5.42	7.72	10.6	12.1
Organic Matter	%	0.1	MCERTS	3.3	2.7	1.7	5.2	5.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	0.32	< 0.05	0.1	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.34	1	< 0.05	0.32	0.2
Pyrene	mg/kg	0.05	MCERTS	0.3	0.94	< 0.05	0.28	0.18
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	0.47	< 0.05	0.17	0.1
Chrysene	mg/kg	0.05	MCERTS	0.2	0.55	< 0.05	0.2	0.13
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.24	0.61	< 0.05	0.21	0.14
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.1	0.29	< 0.05	0.12	0.08
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.22	0.54	< 0.05	0.22	0.12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.12	0.29	< 0.05	0.11	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.15	0.34	< 0.05	0.13	0.07

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.93	5.43	< 0.80	1.86	1.02
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	11	13	8.9	8.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.4	0.6	2.4	2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.4	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14	16	17	10	8.7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	17	9.3	19	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	46	39	15	45	42
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	18	13	8.7	8.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	66	57	37	58	50

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160352	160353	160354	160355	160356
Sample Reference	TP-180	TP-182	TP-179	TP-184	TP-186
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.10-0.20	0.40-0.50	0.10-0.20	0.10-0.20
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160357	160358	160359	160360	160361
Sample Reference	TP-191	TP-191	WS-67	WS-66	WS-73
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.20	0.40-0.50	0.10-0.15	0.40-0.50	0.10-0.15
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	16	17	19	23
Total mass of sample received	kg	0.1	NONE	0.8	1.5	1.5	1.6	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	-	MLO	-	MLO

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	8.2	8.1	8.9	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	26	12	31	34	25
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.1	5.89	15.4	17.2	12.6
Organic Matter	%	0.1	MCERTS	3.8	2	3.3	0.5	3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.1
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.08	< 0.05	0.23
Pyrene	mg/kg	0.05	MCERTS	0.08	< 0.05	0.09	< 0.05	0.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	< 0.05	0.11
Chrysene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.05	< 0.05	0.12
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.06	< 0.05	0.09	< 0.05	0.15
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05	0.14
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.08

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	1.27
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.9	9.9	9.9	4	9
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	1.5	1	0.3	2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.3	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8.9	10	9.4	2.5	9.9
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	12	20	2.7	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	58	16	53	3.8	53
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.1	8.2	8.2	2.1	8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	38	47	10	54

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160357	160358	160359	160360	160361
Sample Reference	TP-191	TP-191	WS-67	WS-66	WS-73
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.20	0.40-0.50	0.10-0.15	0.40-0.50	0.10-0.15
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160362	160363	160364	160365	160366
Sample Reference	WS-69	WS-74	WS-61	TP-192	TP-194
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.15-0.15	0.50-0.60	0.10-0.15	0.10-0.15	0.30-0.40
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	12	13	17	15
Total mass of sample received	kg	0.1	NONE	1.6	1.7	1.5	1.5	1.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	-	MLO	MLO	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.4	8.1	8.1	8.1	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	30	33	56	370	17
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	15	16.3	27.9	184	8.25
Organic Matter	%	0.1	MCERTS	2	1.1	2.6	4.3	1.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.32	0.09	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	0.08	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12	0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16	0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.17	0.07	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.07	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16	0.06	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	1.71	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7	12	12	7.9	7.9
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	0.8	1.3	1	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	< 0.2	0.3	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	9.2	23	20	9	9.1
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	12	21	19	9.6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	23	15	39	47	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.4	17	16	7.1	7.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	38	45	59	45	34

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160362	160363	160364	160365	160366
Sample Reference	WS-69	WS-74	WS-61	TP-192	TP-194
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.15-0.15	0.50-0.60	0.10-0.15	0.10-0.15	0.30-0.40
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160367	160368	160369	160370	160371
Sample Reference	TP-198	TP-187	TP-189	TP-195	TP-175
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.15	0.30-0.40	0.10-0.15	0.40-0.50	0.10-0.15
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	15	22	20	13
Total mass of sample received	kg	0.1	NONE	1.6	1.5	1.5	1.6	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	-	SCA	-	SCA

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	8.3	8.2	8.7	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	22	13	24	12	13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11	6.6	11.9	5.79	6.41
Organic Matter	%	0.1	MCERTS	4.8	2.7	5.5	0.4	3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.32	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.1	0.79	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.12	0.84	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.13	1.2	8.8	< 0.05	0.15
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.11	0.91	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.33	0.91	9	< 0.05	0.34
Pyrene	mg/kg	0.05	MCERTS	0.3	0.71	7.1	< 0.05	0.33
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.14	0.29	2.9	< 0.05	0.17
Chrysene	mg/kg	0.05	MCERTS	0.16	0.37	3.3	< 0.05	0.21
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.19	0.37	3.5	< 0.05	0.25
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	0.11	1.7	< 0.05	0.08
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.16	0.29	3.3	< 0.05	0.22
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.09	0.15	1.7	< 0.05	0.13
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.42	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.1	0.18	1.7	< 0.05	0.17

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.65	4.92	46.4	< 0.80	2.05
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	7.6	7.3	4.3	14
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	1.2	1.8	0.4	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.3	0.3	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	12	9.8	8.6	2.7	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	15	18	4.9	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	58	26	44	3.1	49
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.9	8.3	7.8	1.9	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	74	46	85	10	66

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160367	160368	160369	160370	160371
Sample Reference	TP-198	TP-187	TP-189	TP-195	TP-175
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.15	0.30-0.40	0.10-0.15	0.40-0.50	0.10-0.15
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	< 0.020	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	< 0.020	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	< 0.050	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	< 2.0	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	< 10	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	< 0.010	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	< 0.010	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	< 0.050	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	5.7	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	44	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	89	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	140	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	160	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	< 5.0	-	-
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160372	160373	160374	160375	160376
Sample Reference	TP-205	TP-170	TP-164	TP-172	TP-173
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30-0.40	0.10-0.15	0.15-0.15	0.10-0.15	0.60-0.70
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	12	14	13	20
Total mass of sample received	kg	0.1	NONE	1.5	1.4	1.5	1.4	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	-	SCA	SCA	SCA	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9	8.3	8.2	8.4	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	11	10	14	12	13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	5.45	5.04	7.05	6.17	6.49
Organic Matter	%	0.1	MCERTS	0.3	2.6	3	2.7	0.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	0.11	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.1	0.21	0.27	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.1	0.21	0.24	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.1	0.12	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.14	0.18	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.08	0.14	0.17	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.07	0.07	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.13	0.14	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	0.09	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.11	0.11	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	1.25	1.5	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.5	16	13	13	4.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	1.6	1.4	1.4	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	2.8	24	17	15	4.4
Copper (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	23	21	34	3.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2.9	43	38	130	4.5
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	1.7	19	14	12	3.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	8.9	62	56	59	12

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160372	160373	160374	160375	160376
Sample Reference	TP-205	TP-170	TP-164	TP-172	TP-173
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30-0.40	0.10-0.15	0.15-0.15	0.10-0.15	0.60-0.70
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160377	160378	160379	160380	160381
Sample Reference	TP-200	TP-158	TP-158	TP-161	TP-163
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.15	0.80-0.90	2.70-2.80	0.40-0.50	0.20-0.30
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	19	8.4	8.9	17
Total mass of sample received	kg	0.1	NONE	1.6	1.5	1.4	1.5	1.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	-	SCA

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3	8.6	10.2	8.3	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	24	28	590	8.7	17
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.8	14.2	294	4.33	8.63
Organic Matter	%	0.1	MCERTS	3.1	0.2	< 0.1	0.8	3.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05	< 0.05	0.06
Pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05	< 0.05	0.06
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.06	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.9	6.8	9	16	8.3
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	0.6	1.4	0.5	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.2	< 0.2	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	9.1	9.9	12	28	9
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	11	5.3	11	8.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	47	5.7	4.4	15	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.6	9.5	9.1	22	6.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47	26	26	49	35

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160377	160378	160379	160380	160381
Sample Reference	TP-200	TP-158	TP-158	TP-161	TP-163
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10-0.15	0.80-0.90	2.70-2.80	0.40-0.50	0.20-0.30
Date Sampled	13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

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

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160382	160383	160384
Sample Reference	TP-163	TP-174	TP-206
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	2.50-2.60	0.10-0.15	0.20-0.30
Date Sampled	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	12	16
Total mass of sample received	kg	0.1	NONE	1.7	1.6	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.8	8.3	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	14	9.8	23
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	7.18	4.9	11.2
Organic Matter	%	0.1	MCERTS	0.4	2.8	3.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.26
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.21	0.4
Pyrene	mg/kg	0.05	MCERTS	0.05	0.21	0.36
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.12	0.17
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.14	0.16
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.2	0.21
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.08	0.07
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.18	0.18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.11	0.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.13

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.44	2.09
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.7	15	8.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	1	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	3.3	21	8.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	2.2	23	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	3.5	44	41
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	2.7	17	6.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	13	61	46

Analytical Report Number: 24-012035

Project / Site name: Baldock

Your Order No: 2912

Lab Sample Number	160382	160383	160384
Sample Reference	TP-163	TP-174	TP-206
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	2.50-2.60	0.10-0.15	0.20-0.30
Date Sampled	13/03/2024	13/03/2024	13/03/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	-	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	-	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	-	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-

TPH (C10 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-

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

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
160352	TP-180	None Supplied	0.20-0.30	Brown loam and sand with gravel and vegetation
160353	TP-182	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation
160354	TP-179	None Supplied	0.40-0.50	Brown loam and sand with gravel and vegetation
160355	TP-184	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation
160356	TP-186	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation
160357	TP-191	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation
160358	TP-191	None Supplied	0.40-0.50	Brown loam and sand with gravel and vegetation
160359	WS-67	None Supplied	0.10-0.15	Brown loam with gravel and vegetation
160360	WS-66	None Supplied	0.40-0.50	Light brown clay with chalk
160361	WS-73	None Supplied	0.10-0.15	Brown clay and loam with vegetation
160362	WS-69	None Supplied	0.15-0.15	Brown loam and clay with vegetation
160363	WS-74	None Supplied	0.50-0.60	Brown sand with vegetation
160364	WS-61	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160365	TP-192	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160366	TP-194	None Supplied	0.30-0.40	Brown sand with gravel
160367	TP-198	None Supplied	0.10-0.15	Brown loam and sand with gravel and vegetation
160368	TP-187	None Supplied	0.30-0.40	Brown loam and sand with gravel and vegetation
160369	TP-189	None Supplied	0.10-0.15	Brown loam and sand with gravel and vegetation
160370	TP-195	None Supplied	0.40-0.50	Beige sand with chalk
160371	TP-175	None Supplied	0.10-0.15	Brown loam and sand with gravel and vegetation
160372	TP-205	None Supplied	0.30-0.40	Beige sand with chalk
160373	TP-170	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160374	TP-164	None Supplied	0.15-0.15	Brown loam and sand with vegetation
160375	TP-172	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160376	TP-173	None Supplied	0.60-0.70	Light brown sand with chalk
160377	TP-200	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160378	TP-158	None Supplied	0.80-0.90	Beige clay with chalk
160379	TP-158	None Supplied	2.70-2.80	Light brown sand with rubble and chalk
160380	TP-161	None Supplied	0.40-0.50	Brown loam and sand
160381	TP-163	None Supplied	0.20-0.30	Brown loam and sand with vegetation
160382	TP-163	None Supplied	2.50-2.60	Beige clay with chalk
160383	TP-174	None Supplied	0.10-0.15	Brown loam and sand with vegetation
160384	TP-206	None Supplied	0.20-0.30	Brown loam and sand with vegetation

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Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L023B	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 24-012035

Project / Site name: Baldock

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#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 e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number : 24-012035

Project / Site name: Baldock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP-158	N/A	S	160378	c	Total cyanide in soil	L080	c
TP-158	N/A	S	160379	c	Total cyanide in soil	L080	c
TP-161	N/A	S	160380	c	Total cyanide in soil	L080	c
TP-163	N/A	S	160381	c	Total cyanide in soil	L080	c
TP-163	N/A	S	160382	c	Total cyanide in soil	L080	c
TP-164	N/A	S	160374	a	Asbestos identification in Soil	A001B	a
TP-164	N/A	S	160374	a	Boron, water soluble, in soil	L038B	a
TP-164	N/A	S	160374	a	Hexavalent chromium in soil	L080	a
TP-164	N/A	S	160374	a	Metals in soil by ICP-OES	L038B	a
TP-164	N/A	S	160374	a	Organic matter in soil	L023B	a
TP-164	N/A	S	160374	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-164	N/A	S	160374	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-164	N/A	S	160374	a	Total cyanide in soil	L080	a
TP-164	N/A	S	160374	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-164	N/A	S	160374	a	pH in soil (automated)	L099	a
TP-170	N/A	S	160373	a	Asbestos identification in Soil	A001B	a
TP-170	N/A	S	160373	a	Boron, water soluble, in soil	L038B	a
TP-170	N/A	S	160373	a	Hexavalent chromium in soil	L080	a
TP-170	N/A	S	160373	a	Metals in soil by ICP-OES	L038B	a
TP-170	N/A	S	160373	a	Organic matter in soil	L023B	a
TP-170	N/A	S	160373	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-170	N/A	S	160373	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-170	N/A	S	160373	a	Total cyanide in soil	L080	a
TP-170	N/A	S	160373	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-170	N/A	S	160373	a	pH in soil (automated)	L099	a
TP-172	N/A	S	160375	a	Asbestos identification in Soil	A001B	a
TP-172	N/A	S	160375	a	Boron, water soluble, in soil	L038B	a
TP-172	N/A	S	160375	a	Hexavalent chromium in soil	L080	a
TP-172	N/A	S	160375	a	Metals in soil by ICP-OES	L038B	a
TP-172	N/A	S	160375	a	Organic matter in soil	L023B	a
TP-172	N/A	S	160375	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-172	N/A	S	160375	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-172	N/A	S	160375	a	Total cyanide in soil	L080	a
TP-172	N/A	S	160375	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-172	N/A	S	160375	a	pH in soil (automated)	L099	a
TP-173	N/A	S	160376	a	Boron, water soluble, in soil	L038B	a
TP-173	N/A	S	160376	a	Hexavalent chromium in soil	L080	a
TP-173	N/A	S	160376	a	Metals in soil by ICP-OES	L038B	a
TP-173	N/A	S	160376	a	Organic matter in soil	L023B	a
TP-173	N/A	S	160376	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-173	N/A	S	160376	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-173	N/A	S	160376	a	Total cyanide in soil	L080	a
TP-173	N/A	S	160376	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-173	N/A	S	160376	a	pH in soil (automated)	L099	a
TP-174	N/A	S	160383	c	Total cyanide in soil	L080	c
TP-175	N/A	S	160371	a	Asbestos identification in Soil	A001B	a
TP-175	N/A	S	160371	a	Boron, water soluble, in soil	L038B	a
TP-175	N/A	S	160371	a	Hexavalent chromium in soil	L080	a
TP-175	N/A	S	160371	a	Metals in soil by ICP-OES	L038B	a
TP-175	N/A	S	160371	a	Organic matter in soil	L023B	a
TP-175	N/A	S	160371	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-175	N/A	S	160371	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-175	N/A	S	160371	a	Total cyanide in soil	L080	a
TP-175	N/A	S	160371	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-175	N/A	S	160371	a	pH in soil (automated)	L099	a
TP-179	N/A	S	160354	c	Organic matter in soil	L023B	c
TP-179	N/A	S	160354	c	Total cyanide in soil	L080	c
TP-179	N/A	S	160354	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c

Sample Deviation Report



Analytical Report Number : 24-012035

Project / Site name: Baldock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP-180	N/A	S	160352	c	Organic matter in soil	L023B	c
TP-180	N/A	S	160352	c	Total cyanide in soil	L080	c
TP-180	N/A	S	160352	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-182	N/A	S	160353	c	Organic matter in soil	L023B	c
TP-182	N/A	S	160353	c	Total cyanide in soil	L080	c
TP-182	N/A	S	160353	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-184	N/A	S	160355	c	Organic matter in soil	L023B	c
TP-184	N/A	S	160355	c	Total cyanide in soil	L080	c
TP-184	N/A	S	160355	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-186	N/A	S	160356	c	Organic matter in soil	L023B	c
TP-186	N/A	S	160356	c	Total cyanide in soil	L080	c
TP-186	N/A	S	160356	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-187	N/A	S	160368	a	Boron, water soluble, in soil	L038B	a
TP-187	N/A	S	160368	a	Hexavalent chromium in soil	L080	a
TP-187	N/A	S	160368	a	Metals in soil by ICP-OES	L038B	a
TP-187	N/A	S	160368	a	Organic matter in soil	L023B	a
TP-187	N/A	S	160368	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-187	N/A	S	160368	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-187	N/A	S	160368	a	Total cyanide in soil	L080	a
TP-187	N/A	S	160368	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-187	N/A	S	160368	a	pH in soil (automated)	L099	a
TP-189	N/A	S	160369	c	BTEX and/or Volatile organic compounds in soil	L073B	c
TP-189	N/A	S	160369	c	Organic matter in soil	L023B	c
TP-189	N/A	S	160369	c	Total cyanide in soil	L080	c
TP-189	N/A	S	160369	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-191	N/A	S	160357	c	Organic matter in soil	L023B	c
TP-191	N/A	S	160357	c	Total cyanide in soil	L080	c
TP-191	N/A	S	160357	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-191	N/A	S	160358	c	Organic matter in soil	L023B	c
TP-191	N/A	S	160358	c	Total cyanide in soil	L080	c
TP-191	N/A	S	160358	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
TP-192	N/A	S	160365	a	Asbestos identification in soil	A001B	a
TP-192	N/A	S	160365	a	Boron, water soluble, in soil	L038B	a
TP-192	N/A	S	160365	a	Hexavalent chromium in soil	L080	a
TP-192	N/A	S	160365	a	Metals in soil by ICP-OES	L038B	a
TP-192	N/A	S	160365	a	Organic matter in soil	L023B	a
TP-192	N/A	S	160365	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-192	N/A	S	160365	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-192	N/A	S	160365	a	Total cyanide in soil	L080	a
TP-192	N/A	S	160365	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-192	N/A	S	160365	a	pH in soil (automated)	L099	a
TP-194	N/A	S	160366	a	Boron, water soluble, in soil	L038B	a
TP-194	N/A	S	160366	a	Hexavalent chromium in soil	L080	a
TP-194	N/A	S	160366	a	Metals in soil by ICP-OES	L038B	a
TP-194	N/A	S	160366	a	Organic matter in soil	L023B	a
TP-194	N/A	S	160366	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-194	N/A	S	160366	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-194	N/A	S	160366	a	Total cyanide in soil	L080	a
TP-194	N/A	S	160366	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-194	N/A	S	160366	a	pH in soil (automated)	L099	a
TP-195	N/A	S	160370	a	Boron, water soluble, in soil	L038B	a
TP-195	N/A	S	160370	a	Hexavalent chromium in soil	L080	a
TP-195	N/A	S	160370	a	Metals in soil by ICP-OES	L038B	a
TP-195	N/A	S	160370	a	Organic matter in soil	L023B	a
TP-195	N/A	S	160370	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-195	N/A	S	160370	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-195	N/A	S	160370	a	Total cyanide in soil	L080	a
TP-195	N/A	S	160370	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a

Sample Deviation Report



Analytical Report Number : 24-012035

Project / Site name: Baldock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP-195	N/A	S	160370	a	pH in soil (automated)	L099	a
TP-198	N/A	S	160367	a	Asbestos identification in Soil	A001B	a
TP-198	N/A	S	160367	a	Boron, water soluble, in soil	L038B	a
TP-198	N/A	S	160367	a	Hexavalent chromium in soil	L080	a
TP-198	N/A	S	160367	a	Metals in soil by ICP-OES	L038B	a
TP-198	N/A	S	160367	a	Organic matter in soil	L023B	a
TP-198	N/A	S	160367	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-198	N/A	S	160367	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-198	N/A	S	160367	a	Total cyanide in soil	L080	a
TP-198	N/A	S	160367	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-198	N/A	S	160367	a	pH in soil (automated)	L099	a
TP-200	N/A	S	160377	a	Asbestos identification in Soil	A001B	a
TP-200	N/A	S	160377	a	Boron, water soluble, in soil	L038B	a
TP-200	N/A	S	160377	a	Hexavalent chromium in soil	L080	a
TP-200	N/A	S	160377	a	Metals in soil by ICP-OES	L038B	a
TP-200	N/A	S	160377	a	Organic matter in soil	L023B	a
TP-200	N/A	S	160377	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-200	N/A	S	160377	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-200	N/A	S	160377	a	Total cyanide in soil	L080	a
TP-200	N/A	S	160377	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-200	N/A	S	160377	a	pH in soil (automated)	L099	a
TP-205	N/A	S	160372	a	Boron, water soluble, in soil	L038B	a
TP-205	N/A	S	160372	a	Hexavalent chromium in soil	L080	a
TP-205	N/A	S	160372	a	Metals in soil by ICP-OES	L038B	a
TP-205	N/A	S	160372	a	Organic matter in soil	L023B	a
TP-205	N/A	S	160372	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	a
TP-205	N/A	S	160372	a	Sulphate, water soluble, in soil (16hr extraction)	L038B	a
TP-205	N/A	S	160372	a	Total cyanide in soil	L080	a
TP-205	N/A	S	160372	a	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	a
TP-205	N/A	S	160372	a	pH in soil (automated)	L099	a
TP-206	N/A	S	160384	c	Total cyanide in soil	L080	c
WS-61	N/A	S	160364	c	Organic matter in soil	L023B	c
WS-61	N/A	S	160364	c	Total cyanide in soil	L080	c
WS-61	N/A	S	160364	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
WS-66	N/A	S	160360	c	Organic matter in soil	L023B	c
WS-66	N/A	S	160360	c	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS-66	N/A	S	160360	c	Total cyanide in soil	L080	c
WS-66	N/A	S	160360	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
WS-67	N/A	S	160359	c	Organic matter in soil	L023B	c
WS-67	N/A	S	160359	c	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS-67	N/A	S	160359	c	Total cyanide in soil	L080	c
WS-67	N/A	S	160359	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
WS-69	N/A	S	160362	c	Organic matter in soil	L023B	c
WS-69	N/A	S	160362	c	Total cyanide in soil	L080	c
WS-69	N/A	S	160362	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
WS-73	N/A	S	160361	c	Organic matter in soil	L023B	c
WS-73	N/A	S	160361	c	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS-73	N/A	S	160361	c	Total cyanide in soil	L080	c
WS-73	N/A	S	160361	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c
WS-74	N/A	S	160363	c	Organic matter in soil	L023B	c
WS-74	N/A	S	160363	c	Total cyanide in soil	L080	c
WS-74	N/A	S	160363	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	c

Test Results

Benzo(a)pyrene F/T:12/12

Client/client ref: 2899

Site ref:

Date: 28-May-2024

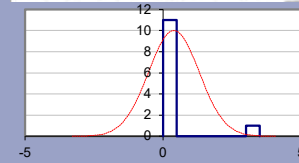
Project ref: Baldock (Area BA2) Data description: Topsoil

User details: SJF

Dataset: Benzo(a)pyrene F/T:12/12

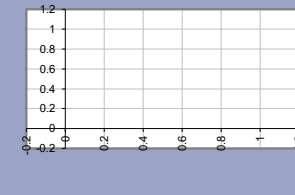
Sample mean	$\bar{X}$	0.39
Sample standard deviation, s		0.9197
Sample size, n		12
Critical concentration, Cc		2.2

Use Normal distribution to test fc



Outliers & non-detects

Outliers present?	Yes
Significance level	5%
Outliers excluded	0
Non-detects	0

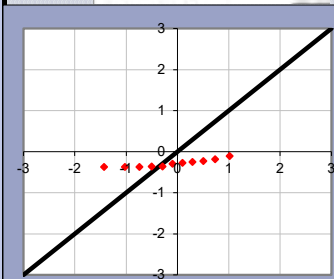


Normality test

Significance level: 5%

Non-normal distribution

Use: Auto: Chebychev

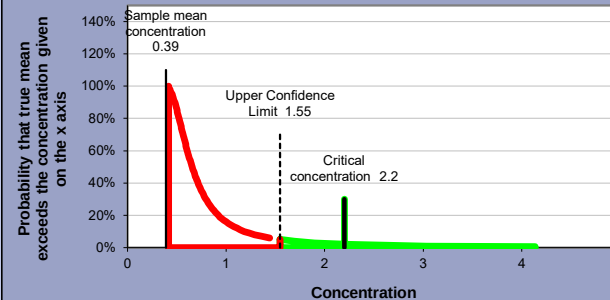


Test scenario:

Planning: is true mean lower than critical concentration ($\mu < C_c$)?

Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$

Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$



Evidence against Null hypothesis:

98%

Base decision on: evidence level

Evidence level required: 95%

Balance of probability? N/A

Reject Null Hypothesis? Yes

$\mu < C_c$ (re this dataset)

Back to data

Back to summary

Go to outlier test

Go to normality test

Test Results

Client/client ref: 2899

Site ref:

Date: 28-May-2024

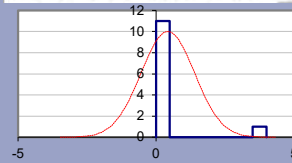
Benzo(b)fluoranthene F/T:12/12 Project ref: Baldock (Area BA2) Data description: Topsoil

User details: SJF

Dataset: Benzo(b)fluoranthene F/T:12, ▼

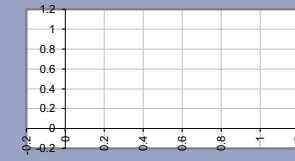
Sample mean	$\bar{X}$	0.425
Sample standard deviation, s		0.9727
Sample size, n		12
Critical concentration, Cc		2.6

Use Normal distribution to test fc ▼



Outliers & non-detects

Outliers present?	Yes
Significance level	5% ▼
Outliers excluded	0
Non-detects	0

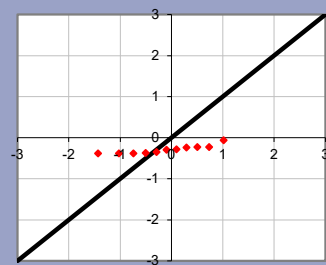


Normality test

Significance level: 5% ▼

Non-normal distribution

Use: Auto: Chebychev ▼

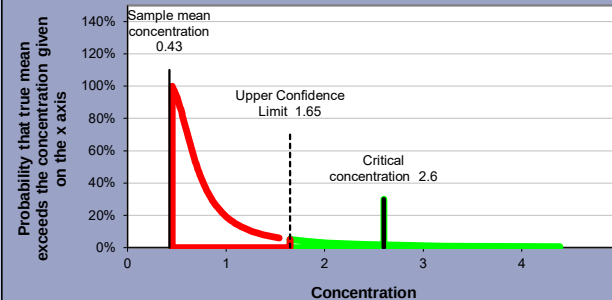


Test scenario:

Planning: is true mean lower than critical concentration ($\mu < C_c$)? ▼

Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$

Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$



Evidence against Null hypothesis:

98%

Base decision on: evidence level ▼

Evidence level required: 95%

Balance of probability? N/A

Reject Null Hypothesis? Yes

$\mu < C_c$ (re this dataset)

Back to data

Back to summary

Go to outlier test

Go to normality test

Test Results

Dibenzo(a,h)anthracene

F/T:12/12

Client/client ref: 2899

Site ref:

Date: 28-May-2024

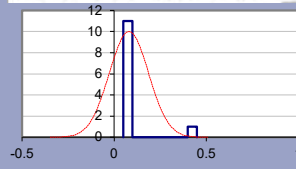
Project ref: Baldock (Area BA2) Data description: Topsoil

User details: SJF

Dataset: Dibenzo(a,h)anthracene F/T:12/12 ▼

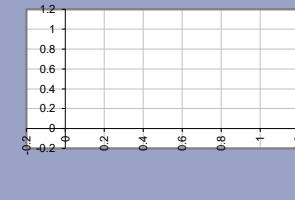
Sample mean	$\bar{X}$	0.0808
Sample standard deviation, s		0.1068
Sample size, n		12
Critical concentration, Cc		0.24

Use Normal distribution to test fc ▼



Outliers & non-detects

Outliers present?	Yes
Significance level	5% ▼
Outliers excluded	0
Non-detects	#NAME?

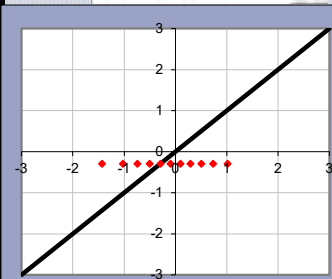


Normality test

Significance level: 5% ▼

Non-normal distribution

Use: Auto: Chebychev ▼

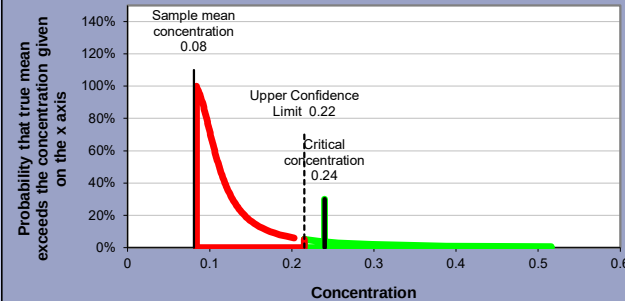


Test scenario:

Planning: is true mean lower than critical concentration ($\mu < C_c$)? ▼

Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$

Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$



Evidence against Null hypothesis:

96%

Base decision on: evidence level ▼

Evidence level required: 95%

Balance of probability? N/A

Reject Null Hypothesis? Yes

$\mu < C_c$ (re this dataset)

Back to data

Back to summary

Go to outlier test

Go to normality test

APPENDIX E

GEOTECHNICAL LABORATORY RESULTS



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

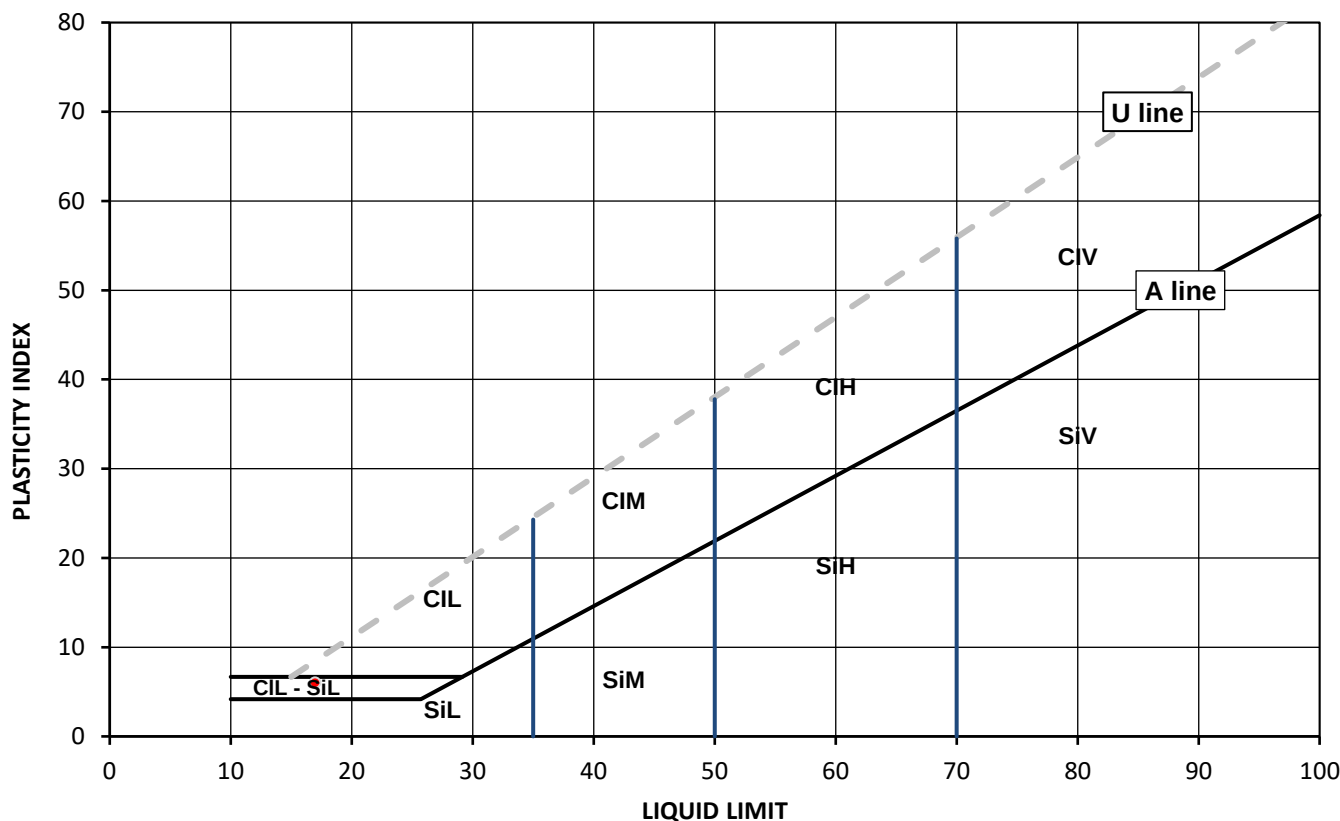
Test Results:

Laboratory Reference: 172914
Hole No.: TP-78
Sample Reference: Not Given
Sample Description: Brown gravelly very clayey SAND with fragments of chalk

Depth Top [m]: 1.10
Depth Base [m]: 1.20
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
12.1	17	11	6	0.17	0.83	75



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	L Low below 35
Si	Silt	M Medium 35 to 50
		H High 50 to 70
		V Very high exceeding 70
	O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1: 2014; # Non accredited

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of Atterberg 4P

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

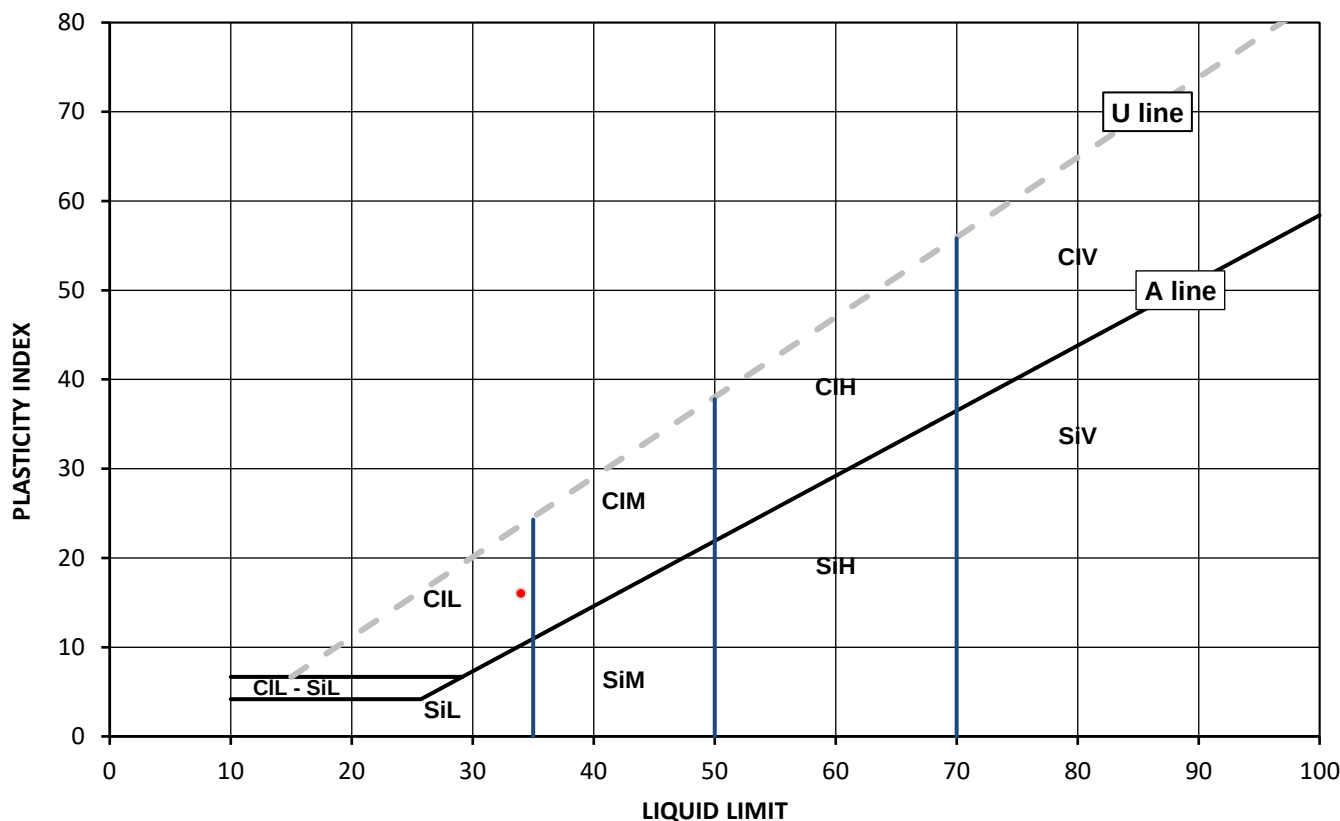
Test Results:

Laboratory Reference: 172921
Hole No.: TP-166
Sample Reference: Not Given
Sample Description: Yellowish brown gravelly very clayey SAND

Depth Top [m]: 1.90
Depth Base [m]: 2.00
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
19.5	34	18	16	0.13	0.88	77



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	L Low below 35
Si	Silt	M Medium 35 to 50
		H High 50 to 70
		V Very high exceeding 70
	O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1: 2014; # Non accredited

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of Atterberg 4P

Signed:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

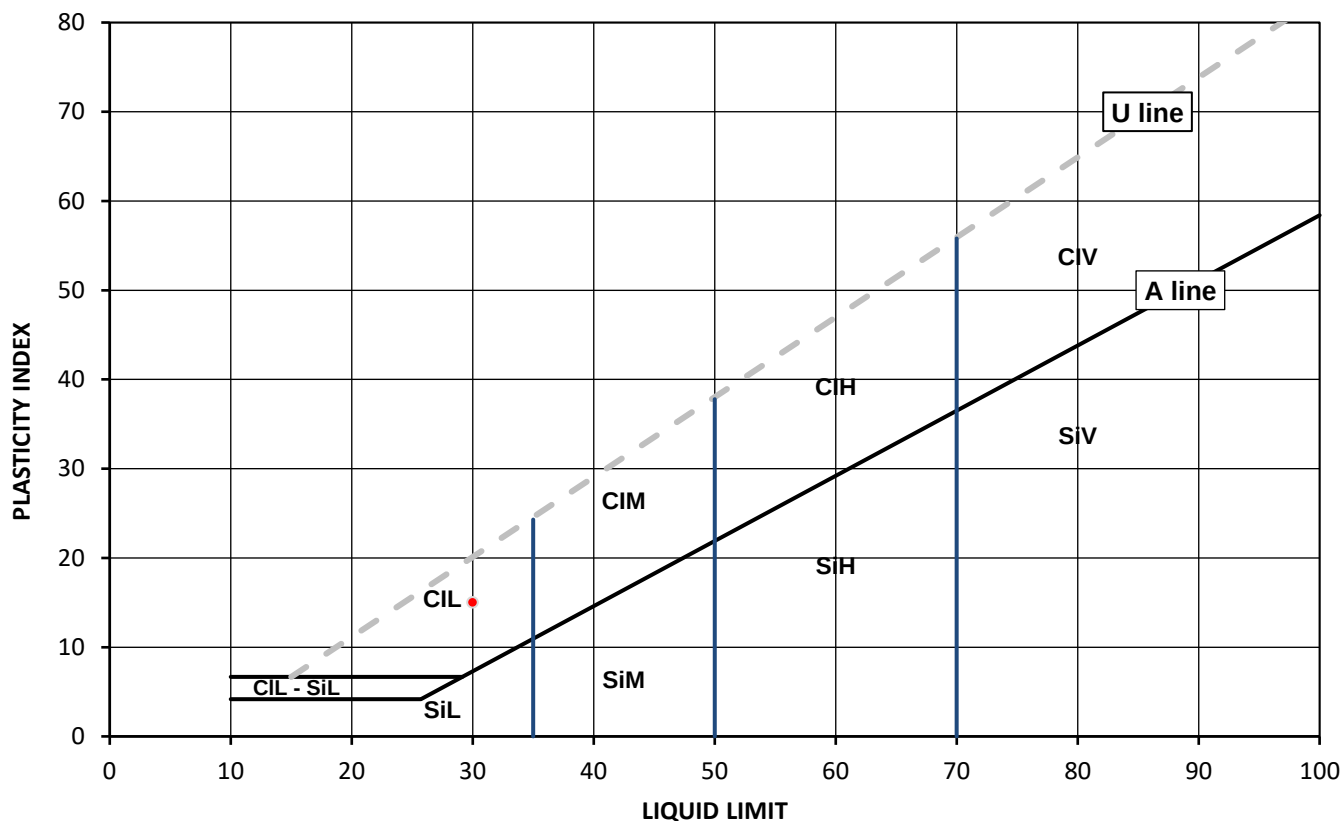
Test Results:

Laboratory Reference: 172922
Hole No.: TP-167
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.10
Depth Base [m]: 1.20
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
16.6	30	15	15	0.13	0.87	75



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	L Low below 35
Si	Silt	M Medium 35 to 50
		H High 50 to 70
		V Very high exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS EN 17892-1: 2014; # Non accredited

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of Atterberg 4P

Signed:

Monika Siewior
Reporting Specialist
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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

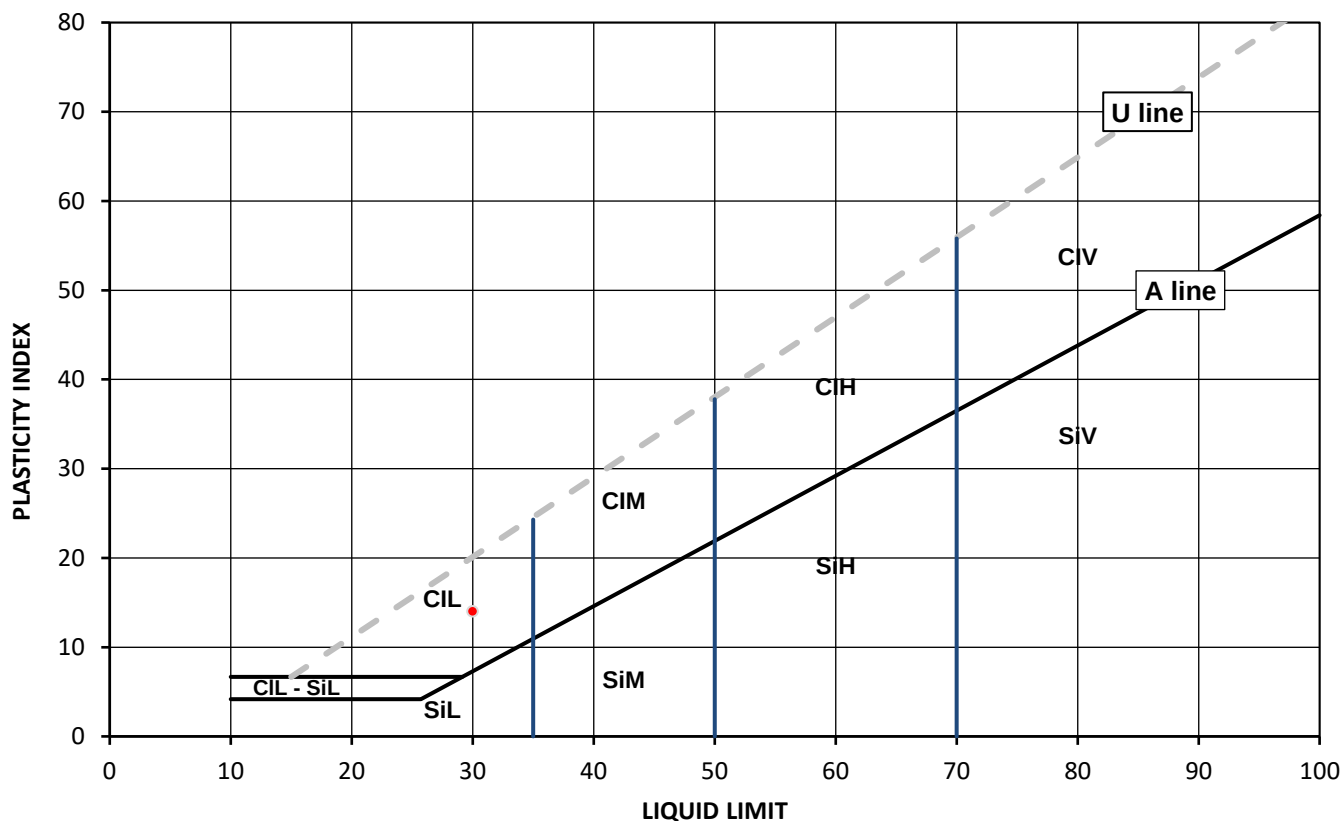
Test Results:

Laboratory Reference: 172926
Hole No.: TP-174
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.00
Depth Base [m]: 1.20
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
15.2	30	16	14	-0.07	1.07	84



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	L Low below 35
Si	Silt	M Medium 35 to 50
		H High 50 to 70
		V Very high exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS EN 17892-1: 2014; # Non accredited

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of Atterberg 4P

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

BS EN ISO 17892-12:2018+A2:2022 cl 5.3 and 5.5, Fall Cone Method, 4 Pt
Test, BS 1377-2:2022, cl 5.2 and 6. W by BS EN 17892-1:2014.

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04 - 05/06/2024
Sampled By: Not Given

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m					%	%		%	%			Mg/m3	Mg/m3	Mg/m3
172914	TP-78	Not Given	1.10	1.20	B	Brown gravelly very clayey SAND with fragments of chalk	Atterberg 4 Point	12.1	75	17	-	11	6	80g/30 deg	W / I			
172915	TP-143	Not Given	1.60	1.70	B	White CHALK		27.4										
172916	TP-159	Not Given	1.70	1.80	B	White CHALK		20.3										
172917	TP-161	Not Given	1.80	1.90	B	White CHALK		26.2										
172918	TP-162	Not Given	0.90	1.00	B	Brown very clayey GRAVEL and SAND		10.5										
172919	TP-162	Not Given	1.60	1.70	B	Yellowish brown very gravelly very clayey SAND with fragments of chalk		10.0										
172920	TP-163	Not Given	2.30	2.40	B	White CHALK		26.5										
172921	TP-166	Not Given	1.90	2.00	B	Yellowish brown gravelly very clayey SAND	Atterberg 4 Point	19.5	77	34	-	18	16	80g/30 deg	W / I			
172922	TP-167	Not Given	1.10	1.20	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	16.6	75	30	-	15	15	80g/30 deg	W / I			
172923	TP-169	Not Given	1.30	1.40	B	White CHALK		23.4										

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, W - Tested after washing to remove >425mm; I - The water content in the sample was increased , D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results for samples 172914, 172921, 172922

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

BS EN ISO 17892-12:2018+A2:2022 cl 5.3 and 5.5, Fall Cone Method, 4 Pt
Test, BS 1377-2:2022, cl 5.2 and 6. W by BS EN 17892-1:2014.

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04 - 05/06/2024
Sampled By: Not Given

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m					%	%		%	%			Mg/m3	Mg/m3	Mg/m3
172924	TP-170	Not Given	0.80	0.90	B	Brown slightly gravelly slightly sandy CLAY		21.8										
172925	TP-172	Not Given	1.20	1.30	B	White CHALK		30.9										
172926	TP-174	Not Given	1.00	1.20	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	15.2	84	30	-	16	14	80g/30 deg	W / I			
172927	TP-176	Not Given	2.90	3.00	B	White CHALK		31.6										
172928	TP-183	Not Given	2.00	2.20	B	White CHALK		28.1										
172929	TP-184	Not Given	3.00	3.10	B	White CHALK		29.3										
172930	TP-186	Not Given	2.30	2.50	B	White CHALK		30.4										
172931	TP-188	Not Given	1.20	1.30	B	Light grey CHALK		24.2										
172932	TP-188	Not Given	2.30	2.40	B	White CHALK		25.6										
172933	TP-189	Not Given	2.20	2.30	B	White CHALK		25.6										

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, W - Tested after washing to remove >425mm; I - The water content in the sample was increased , D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results for sample 172926

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group

W by BS EN 17892-1:2014.

Client Reference: 2899

Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Job Number: 24-014569-2

Date Sampled: Not Given

Date Received: 26/03/2024

Contact: Stephen Fisk

Date Tested: 24/04 - 05/06/2024

Site Address: Baldock

Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit								Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD	
			m	m					%	%		%	%			Mg/m3	Mg/m3	Mg/m3	
172934	TP-191	Not Given	1.10	1.20	B	White CHALK		29.9											
172935	TP-194	Not Given	2.00	2.20	B	White CHALK		24.0											
172936	TP-196	Not Given	2.20	2.30	B	White CHALK		30.6											
172937	TP-197	Not Given	2.10	2.20	B	White CHALK		30.2											
172938	TP-200	Not Given	1.40	1.50	B	White CHALK		29.6											
172939	TP-201	Not Given	2.00	2.10	B	White CHALK		30.3											
172940	TP-202	Not Given	2.10	2.20	B	White CHALK		29.9											
172941	TP-204	Not Given	1.40	1.50	B	White CHALK		32.7											
172942	TP-206	Not Given	3.50	3.60	B	White CHALK		33.3											

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, W - Tested after washing to remove >425mm; I - The water content in the sample was increased , D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

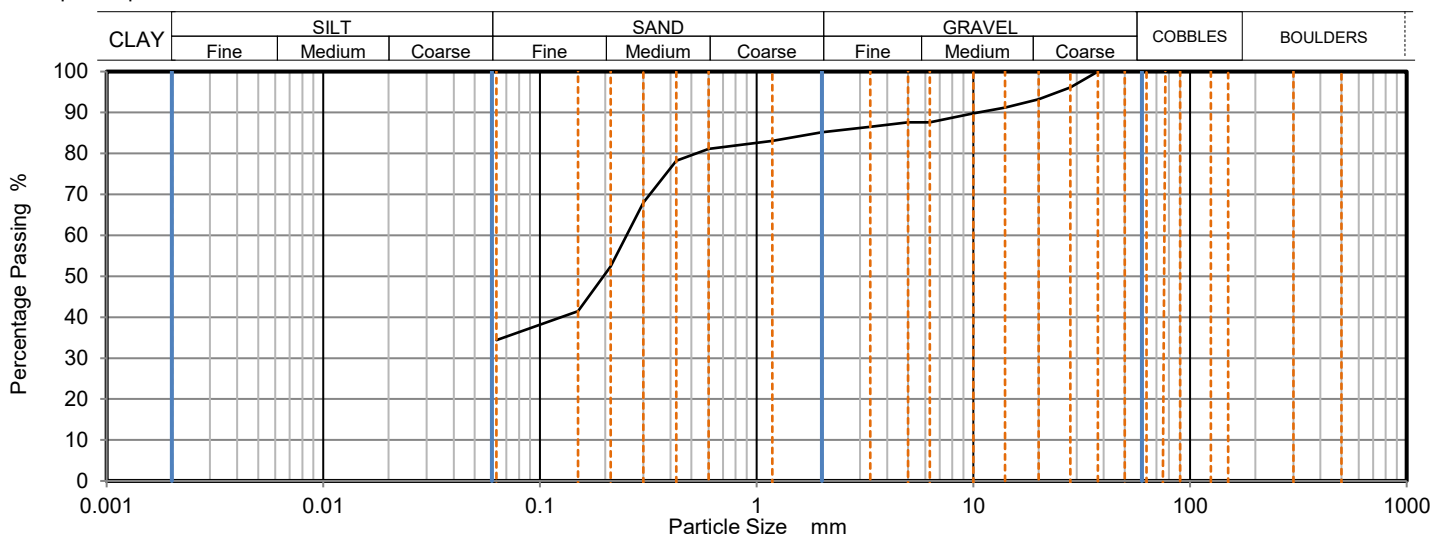
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172914
Hole No.: TP-78
Sample Reference: Not Given
Sample Description: Brown gravelly very clayey SAND with fragments of chalk
Sample Preparation: Sample was quartered, oven dried at 106.2 °C and broken down by hand.Depth Top [m]: 1.10
Depth Base [m]: 1.20
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	93		
14	91		
10	90		
6.3	88		
5	88		
3.35	87		
2	85		
1.18	83		
0.6	81		
0.425	78		
0.3	68		
0.212	52		
0.15	42		
0.063	34		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	15.00
Sand	51.00
Fines <0.063 mm	34.00

Grading Analysis		
D100	mm	37.5
D60	mm	0.251
D30	mm	
D10	mm	
Uniformity Coefficient		4
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of PSD

Signed:

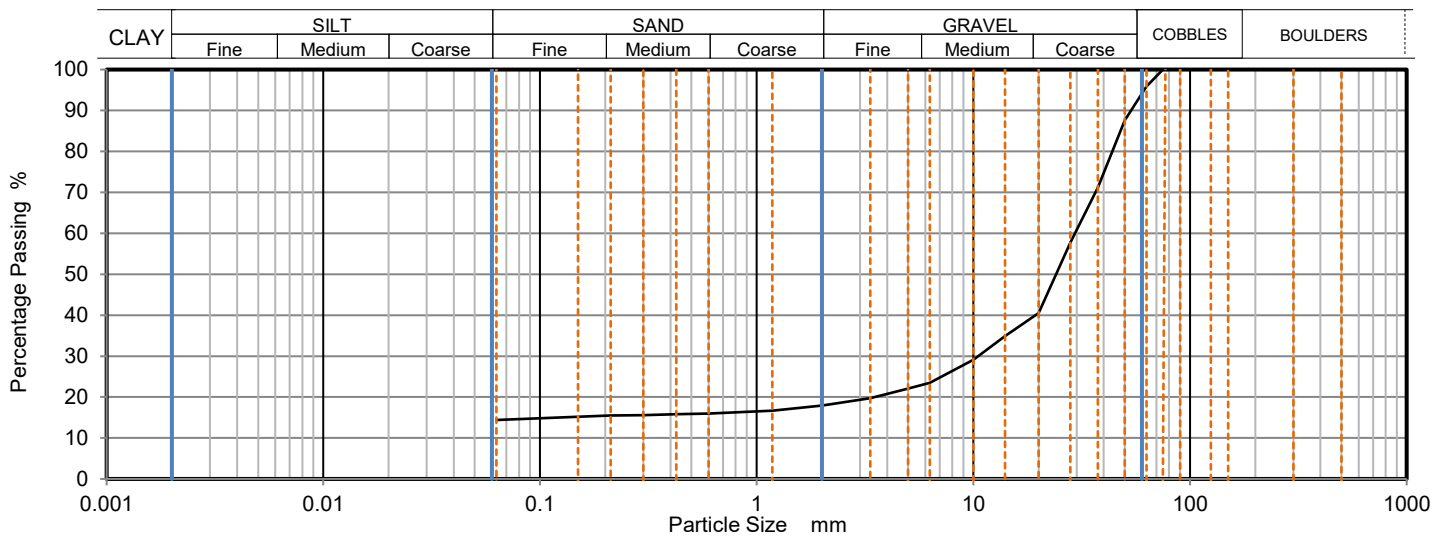
Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical LtdOpinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172915
Hole No.: TP-143
Sample Reference: Not Given
Sample Description: White CHALK
Sample Preparation: Sample was quartered, oven dried at 106.4 °C and broken down by hand.Depth Top [m]: 1.60
Depth Base [m]: 1.70
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	96		
50	88		
37.5	71		
28	58		
20	41		
14	35		
10	29		
6.3	24		
5	22		
3.35	20		
2	18		
1.18	17		
0.6	16		
0.425	16		
0.3	16		
0.212	16		
0.15	15		
0.063	14		

Sample Proportions	% dry mass
Very coarse	4.00
Gravel	79.00
Sand	3.00
Fines <0.063 mm	14.00

Grading Analysis	
D100	mm 75
D60	mm 29.4
D30	mm 10.5
D10	mm
Uniformity Coefficient	470
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS EN ISO 17892-4:2016 Table 1.

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

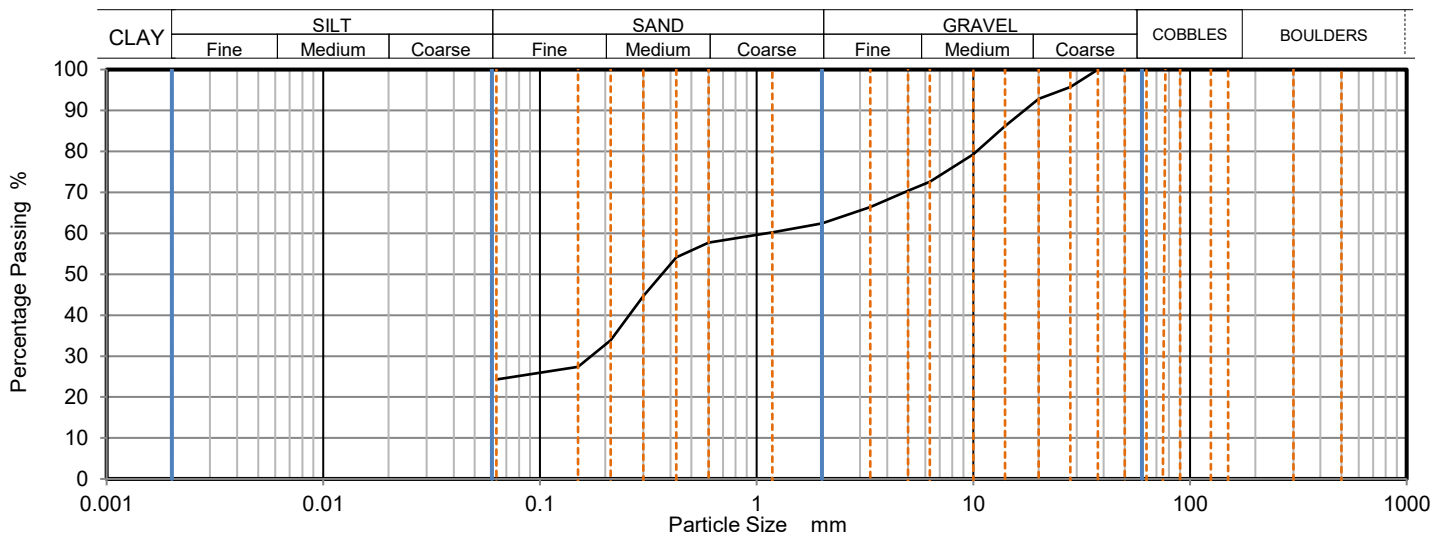
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172918
Hole No.: TP-162
Sample Reference: Not Given
Sample Description: Brown very clayey GRAVEL and SAND
Sample Preparation: Sample was quartered, oven dried at 106.4 °C and broken down by hand.Depth Top [m]: 0.90
Depth Base [m]: 1.00
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	93		
14	86		
10	79		
6.3	73		
5	70		
3.35	66		
2	62		
1.18	60		
0.6	58		
0.425	54		
0.3	45		
0.212	34		
0.15	27		
0.063	24		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	38.00
Sand	38.00
Fines <0.063 mm	24.00

Grading Analysis		
D100	mm	37.5
D60	mm	1.12
D30	mm	0.172
D10	mm	
Uniformity Coefficient		18
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:**Signed:**Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

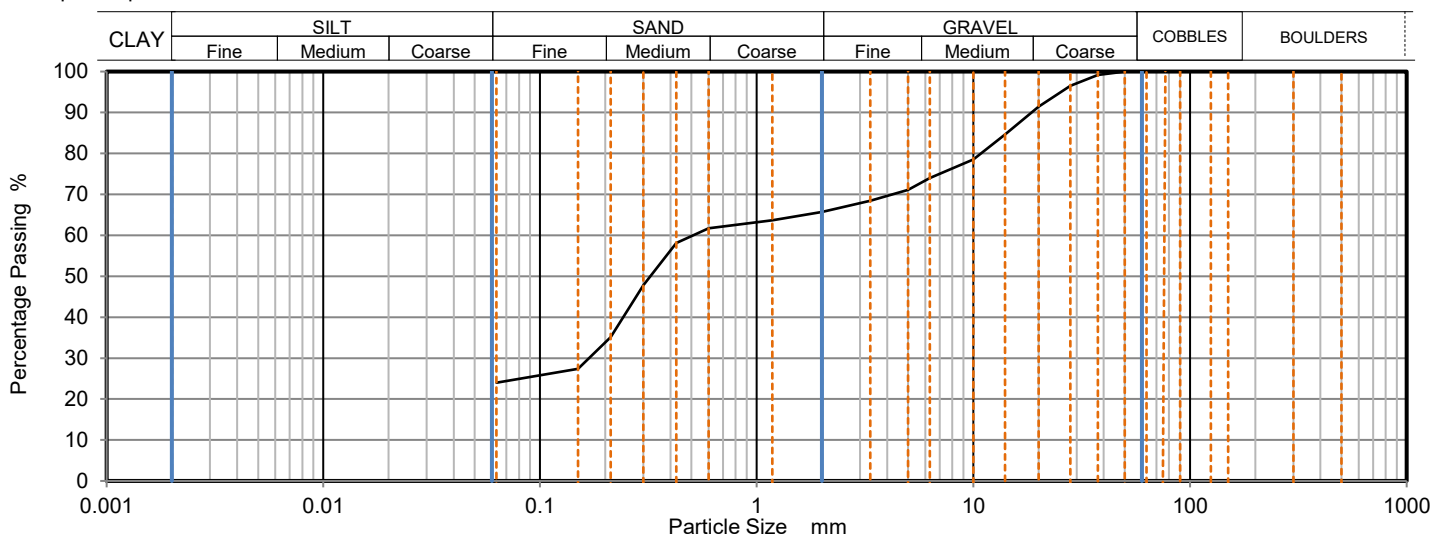
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172919
Hole No.: TP-162
Sample Reference: Not Given
Sample Description: Yellowish brown very gravelly very clayey SAND with fragments of chalk
Sample Preparation: Sample was quartered, oven dried at 106.4 °C and broken down by hand.Depth Top [m]: 1.60
Depth Base [m]: 1.70
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	97		
20	91		
14	85		
10	79		
6.3	74		
5	71		
3.35	68		
2	66		
1.18	64		
0.6	62		
0.425	58		
0.3	48		
0.212	35		
0.15	27		
0.063	24		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	34.00
Sand	42.00
Fines <0.063 mm	24.00

Grading Analysis		
D100	mm	50
D60	mm	0.511
D30	mm	0.169
D10	mm	
Uniformity Coefficient		8.1
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

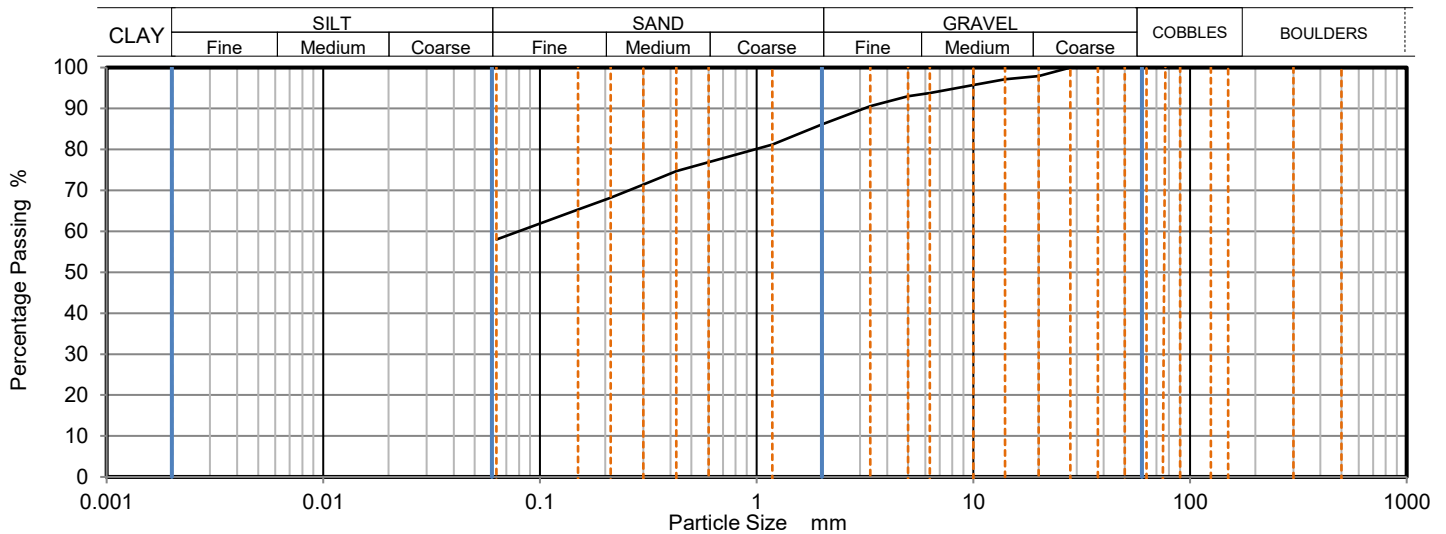
Remarks:**Signed:**Monika Siewior
Reporting Specialist
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172921
Hole No.: TP-166
Sample Reference: Not Given
Sample Description: Yellowish brown gravelly very clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.2 °C and broken down by hand.Depth Top [m]: 1.90
Depth Base [m]: 2.00
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	97		
10	96		
6.3	94		
5	93		
3.35	91		
2	86		
1.18	81		
0.6	77		
0.425	75		
0.3	71		
0.212	68		
0.15	65		
0.063	58		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	14.00
Sand	28.00
Fines <0.063 mm	58.00

Grading Analysis		
D100	mm	28
D60	mm	0.0798
D30	mm	
D10	mm	
Uniformity Coefficient		1.3
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of PSD

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

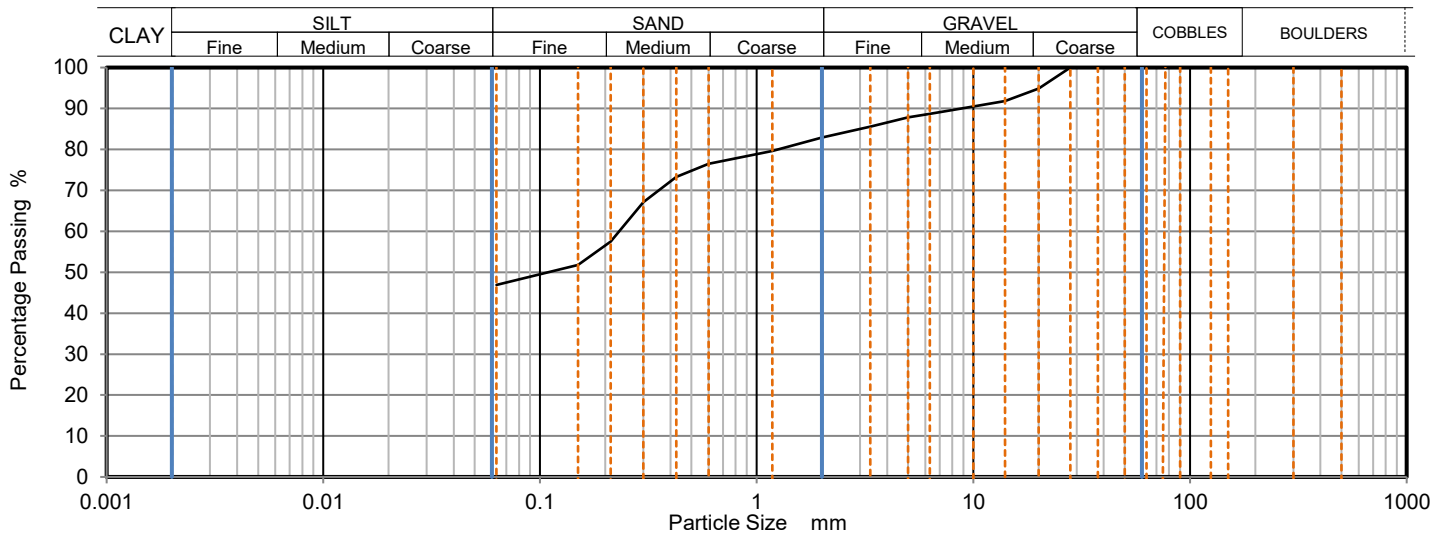
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**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 05/06/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172922
Hole No.: TP-167
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106.2 °C and broken down by hand.Depth Top [m]: 1.10
Depth Base [m]: 1.20
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	92		
10	91		
6.3	89		
5	88		
3.35	86		
2	83		
1.18	80		
0.6	77		
0.425	73		
0.3	67		
0.212	58		
0.15	52		
0.063	47		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	17.00
Sand	36.00
Fines <0.063 mm	47.00

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	3.7
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks: Replaces Analytical Report Number 24-014569, issue no. 1; Additional results of PSD

Signed:

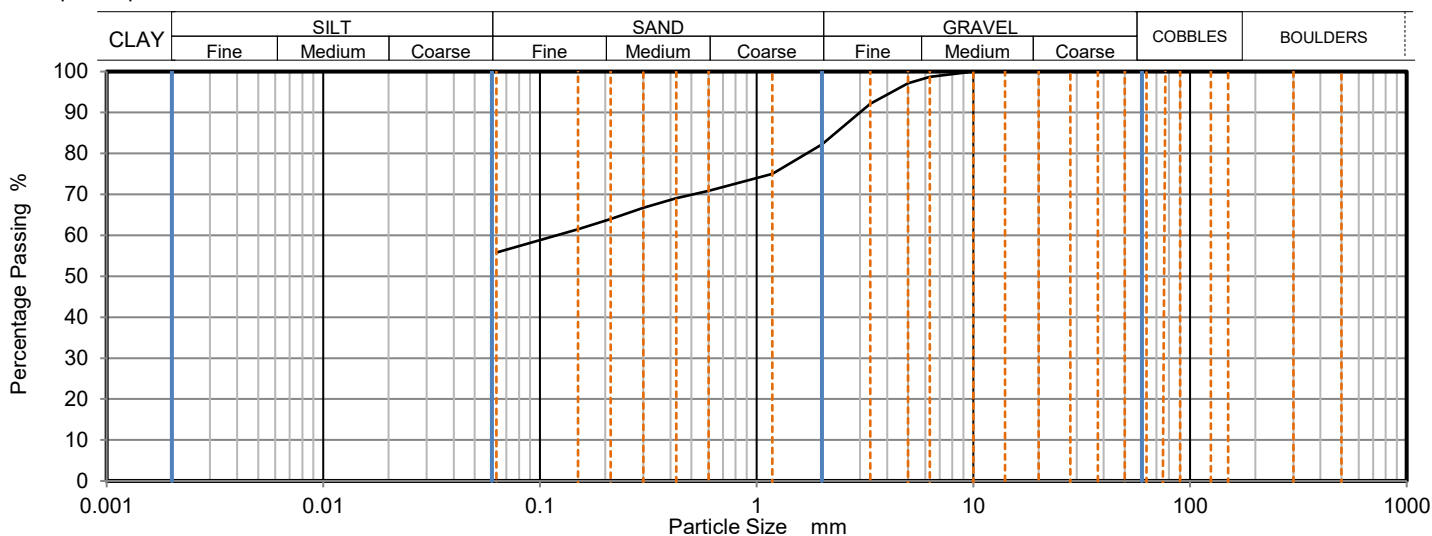
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Reporting Specialist
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**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172924
Hole No.: TP-170
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106.2 °C and broken down by hand.Depth Top [m]: 0.80
Depth Base [m]: 0.90
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	97		
3.35	92		
2	82		
1.18	75		
0.6	71		
0.425	69		
0.3	67		
0.212	64		
0.15	62		
0.063	56		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	18.00
Sand	26.00
Fines <0.063 mm	56.00

Grading Analysis	
D100	mm 10
D60	mm 0.12
D30	mm
D10	mm
Uniformity Coefficient	1.9
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:

Signed:

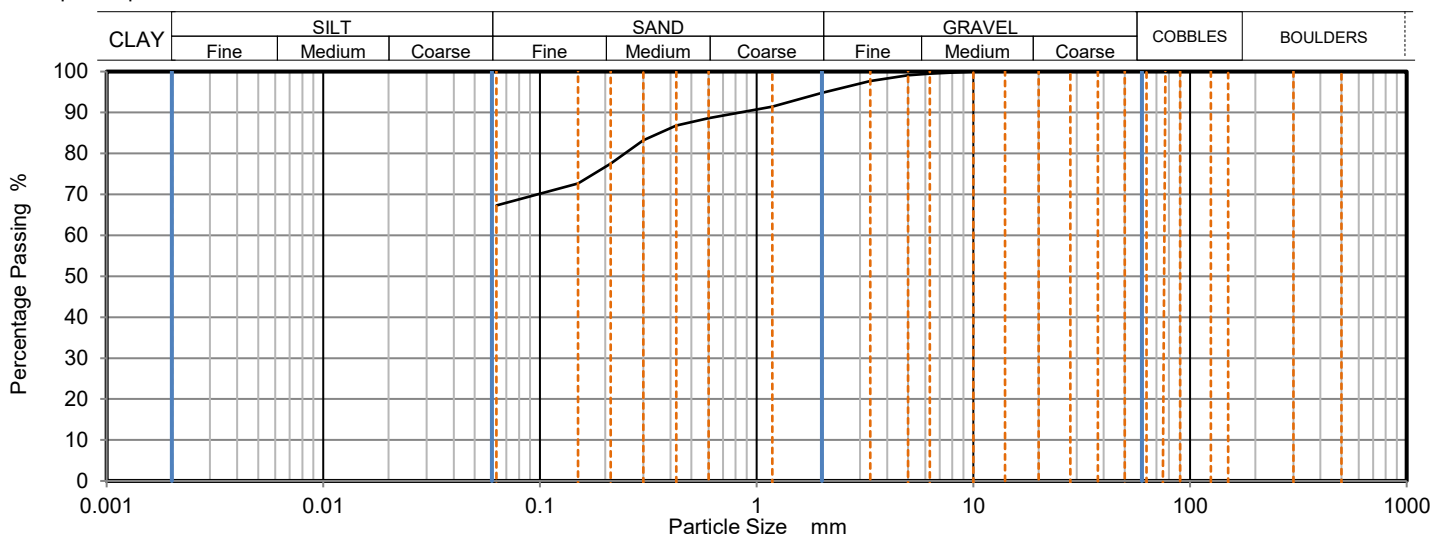
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4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172926
Hole No.: TP-174
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106.2 °C and broken down by hand.Depth Top [m]: 1.00
Depth Base [m]: 1.20
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	98		
2	95		
1.18	91		
0.6	89		
0.425	87		
0.3	83		
0.212	78		
0.15	73		
0.063	67		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	5.00
Sand	28.00
Fines <0.063 mm	67.00

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04 - 31/05/2024
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top	Depth Base	Type							
			m	m				%	Mg/m3	Mg/m3	%	
172947	RC-35	Not Given	5.52	5.68	C	White CHALK		27.4	1.97	1.55	27.1	
172946	RC-35	Not Given	6.60	6.80	C	White CHALK		31.7	1.91	1.46	31.2	
172945	RC-35	Not Given	8.30	8.60	C	White CHALK		31.6	1.92	1.46	31.5	
172943	RC-36	Not Given	4.10	4.23	C	White CHALK		30.2	1.93	1.49	29.9	
172944	RC-36	Not Given	5.13	5.22	C	White CHALK		28.5	1.94	1.53	27.3	
172916	TP-159	Not Given	1.70	1.80	B	White CHALK		26.3	1.93	1.58	22.0	
172917	TP-161	Not Given	1.80	1.90	B	White CHALK		28.8	1.94	1.52	27.7	
172920	TP-163	Not Given	2.30	2.40	B	White CHALK		25.7	1.99	1.59	24.9	
172923	TP-169	Not Given	1.30	1.40	B	White CHALK		27.3	1.96	1.55	26.1	
172925	TP-172	Not Given	1.20	1.30	B	White CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS EN ISO 17892-2: 2014, clause 5	30.3	1.92	1.49	29.0	

Note: SWC - Saturation Water Content; WC - Water Content

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 25/04 - 29/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top	Depth Base	Type							
			m	m				%	Mg/m3	Mg/m3	%	
172927	TP-176	Not Given	2.90	3.00	B	White CHALK		34.9	1.87	1.39	34.1	
172928	TP-183	Not Given	2.00	2.20	B	White CHALK		27.6	1.97	1.55	27.1	
172929	TP-184	Not Given	3.00	3.10	B	White CHALK		31.9	1.91	1.45	31.5	
172930	TP-186	Not Given	2.30	2.50	B	White CHALK		31.8	1.90	1.45	31.0	
172932	TP-188	Not Given	2.30	2.40	B	White CHALK		28.0	1.96	1.54	27.7	
172933	TP-189	Not Given	2.20	2.30	B	White CHALK		30.9	1.92	1.47	30.5	
172934	TP-191	Not Given	1.10	1.20	B	White CHALK		28.0	1.96	1.54	27.6	
172935	TP-194	Not Given	2.00	2.20	B	White CHALK		23.3	2.04	1.66	22.8	
172936	TP-196	Not Given	2.20	2.30	B	White CHALK		28.6	1.95	1.52	28.4	
172937	TP-197	Not Given	2.10	2.20	B	White CHALK		31.3	1.92	1.46	31.2	

Note: SWC - Saturation Water Content; WC - Water Content

Comments:

Signed:

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Reporting Specialist
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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top	Depth Base	Type							
			m	m								
172938	TP-200	Not Given	1.40	1.50	B	White CHALK		29.1	1.94	1.51	28.6	
172939	TP-201	Not Given	2.00	2.10	B	White CHALK		30.5	1.91	1.48	28.9	
172940	TP-202	Not Given	2.10	2.20	B	White CHALK		29.5	1.94	1.50	29.3	
172941	TP-204	Not Given	1.40	1.50	B	White CHALK		32.1	1.91	1.45	31.7	
172942	TP-206	Not Given	3.50	3.60	B	White CHALK		32.9	1.89	1.43	32.5	

Note: SWC - Saturation Water Content; WC - Water Content

Comments:

Signed:

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Reporting Specialist
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SUMMARY REPORT
DETERMINATION OF THE CHALK CRUSHING VALUE (CCV)

Tested in Accordance with: BS 1377-2:2022 Cl. 14

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 02/05 - 07/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Material >10 mm %	Specimen Water Content %	Saturated Water Content %	Chalk Crushing Value	Preparation
		Reference	Depth Top m	Depth Base m	Type							
172916	TP-159	Not Given	1.70	1.80	B	White CHALK		18	22	26	2.7	
172917	TP-161	Not Given	1.80	1.90	B	White CHALK	Water ooze from mould after 20 blows	63	26	29	2.6	
172920	TP-163	Not Given	2.30	2.40	B	White CHALK		52	25	26	2.4	
172923	TP-169	Not Given	1.30	1.40	B	White CHALK	Water ooze from mould	7	24	27	3.0	
172925	TP-172	Not Given	1.20	1.30	B	White CHALK	Water ooze from mould after 40 blows	5	30	30	3.3	
172927	TP-176	Not Given	2.90	3.00	B	White CHALK	Water ooze from mould after 40 blows	44	30	35	3.1	
172928	TP-183	Not Given	2.00	2.20	B	White CHALK		25	28	28	3.0	
172929	TP-184	Not Given	3.00	3.10	B	White CHALK	Water ooze from mould	2	30	32	3.5	
172930	TP-186	Not Given	2.30	2.50	B	White CHALK	Water ooze from mould after 50 blows	5	29	32	3.5	
172931	TP-188	Not Given	1.20	1.30	B	Light grey CHALK		5	26	N/A	3.0	

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT
DETERMINATION OF THE CHALK CRUSHING VALUE (CCV)

Tested in Accordance with: BS 1377-2:2022 Cl. 14

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 07/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Material >10 mm %	Specimen Water Content %	Saturated Water Content %	Chalk Crushing Value	Preparation
		Reference	Depth Top m	Depth Base m	Type							
172932	TP-188	Not Given	2.30	2.40	B	White CHALK		12	26	28	2.9	
172933	TP-189	Not Given	2.20	2.30	B	White CHALK	Water ooze from mould after 30 blows	73	29	31	2.6	
172934	TP-191	Not Given	1.10	1.20	B	White CHALK	Water ooze from mould after 30 blows	7	30	28	2.8	
172935	TP-194	Not Given	2.00	2.20	B	White CHALK		95	26	23	3.3	
172936	TP-196	Not Given	2.20	2.30	B	White CHALK		98	30	29	3.3	
172937	TP-197	Not Given	2.10	2.20	B	White CHALK	Water ooze from mould after 40 blows	6	29	31	3.4	
172938	TP-200	Not Given	1.40	1.50	B	White CHALK	Water ooze from mould after 10 blows	8	28	29	3.9	
172939	TP-201	Not Given	2.00	2.10	B	White CHALK	Water ooze from mould after 20 blows	22	30	31	3.1	
172940	TP-202	Not Given	2.10	2.20	B	White CHALK		31	29	29	2.6	
172941	TP-204	Not Given	1.40	1.50	B	White CHALK	Water ooze from mould after 7 blows	9	32	32	4.9	

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF THE CHALK CRUSHING VALUE (CCV)

Tested in Accordance with: BS 1377-2:2022 Cl. 14

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 07/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Material >10 mm %	Specimen Water Content %	Saturated Water Content %	Chalk Crushing Value	Preparation
		Reference	Depth Top m	Depth Base m	Type							
172942	TP-206	Not Given	3.50	3.60	B	White CHALK	Water ooze from mould after 40 blows	0	29	33	3.5	

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

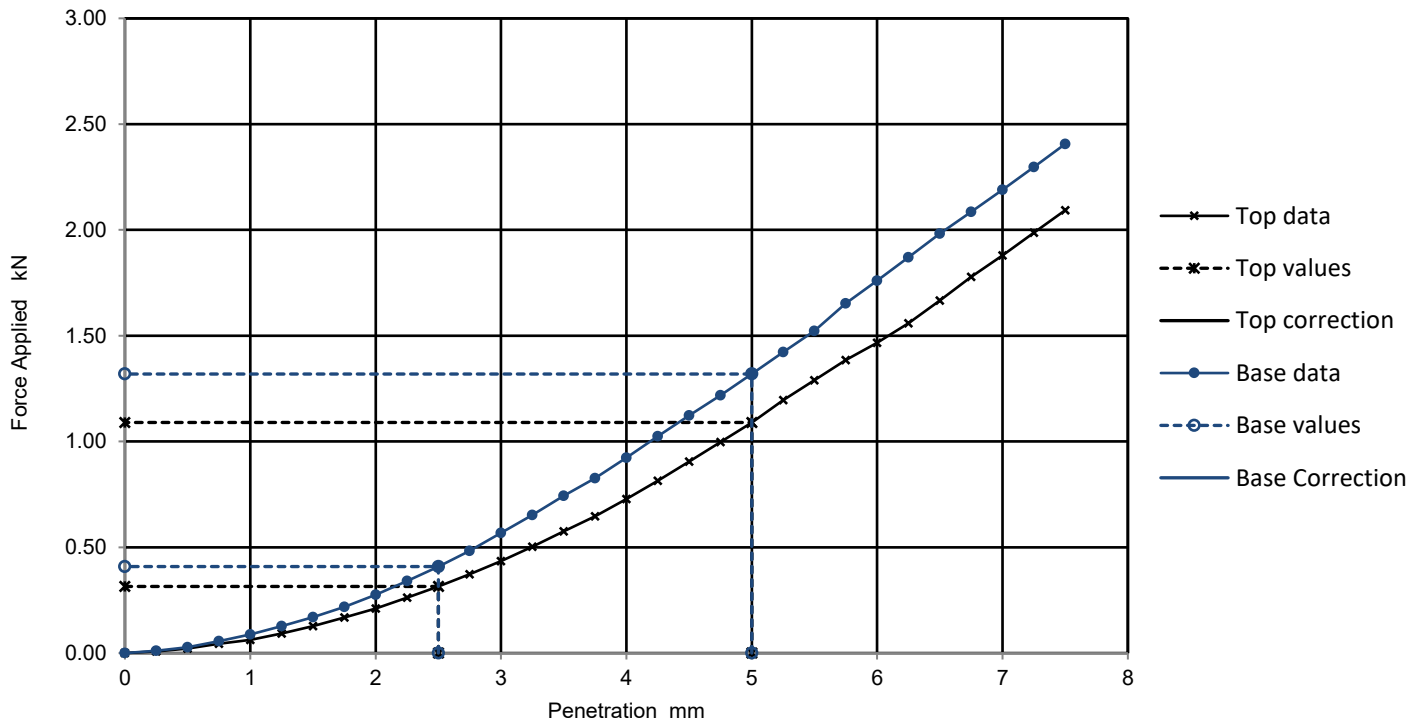
Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 07/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172918
Hole No.: TP-162
Sample Reference: Not Given
Sample Description: Brown very clayey GRAVEL and SANDDepth Top [m]: 0.90
Depth Base [m]: 1.00
Sample Type: B**Specimen Preparation:**Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammerSoaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m³

Material retained on 20mm sieve removed 7 %

Initial Specimen details Bulk density 2.22 Mg/m³
Dry density 2.00 Mg/m³
Water content 11 %
Surcharge applied 8 kg
4.9 kPa**Force v Penetration Plots****Results**TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.4	5.5	5.5	6
No	3.1	6.6	6.6	

Water Content %
11
11

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

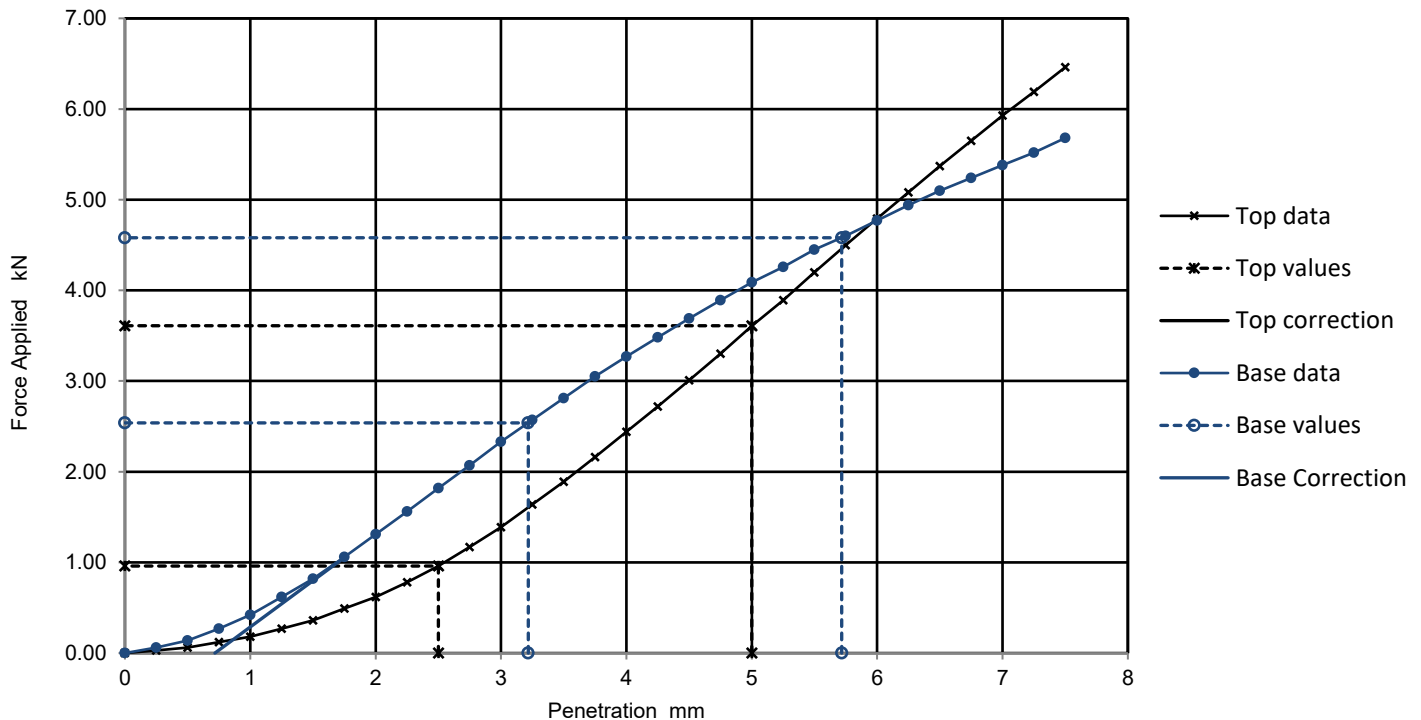
Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 02/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172919
Hole No.: TP-162
Sample Reference: Not Given
Sample Description: Yellowish brown very gravelly very clayey SAND with fragments of chalkDepth Top [m]: 1.60
Depth Base [m]: 1.70
Sample Type: B**Specimen Preparation:**

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
		Dry density after soaking	Mg/m3
Material retained on 20mm sieve removed	9 %		
Initial Specimen details	Bulk density 2.18 Mg/m3	Surcharge applied	8 kg
	Dry density 1.97 Mg/m3		4.9 kPa
	Water content 11 %		

Force v Penetration Plots**Results**TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	7.3	18	18	
Yes	19	23	23	

Water Content %
10
11

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR)

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 29/04/2024
Sampled By: Not Given

Test Results:

Laboratory Reference: 172924
Hole No.: TP-170
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 0.80
Depth Base [m]: 0.90
Sample Type: B

Specimen Preparation:

Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammer

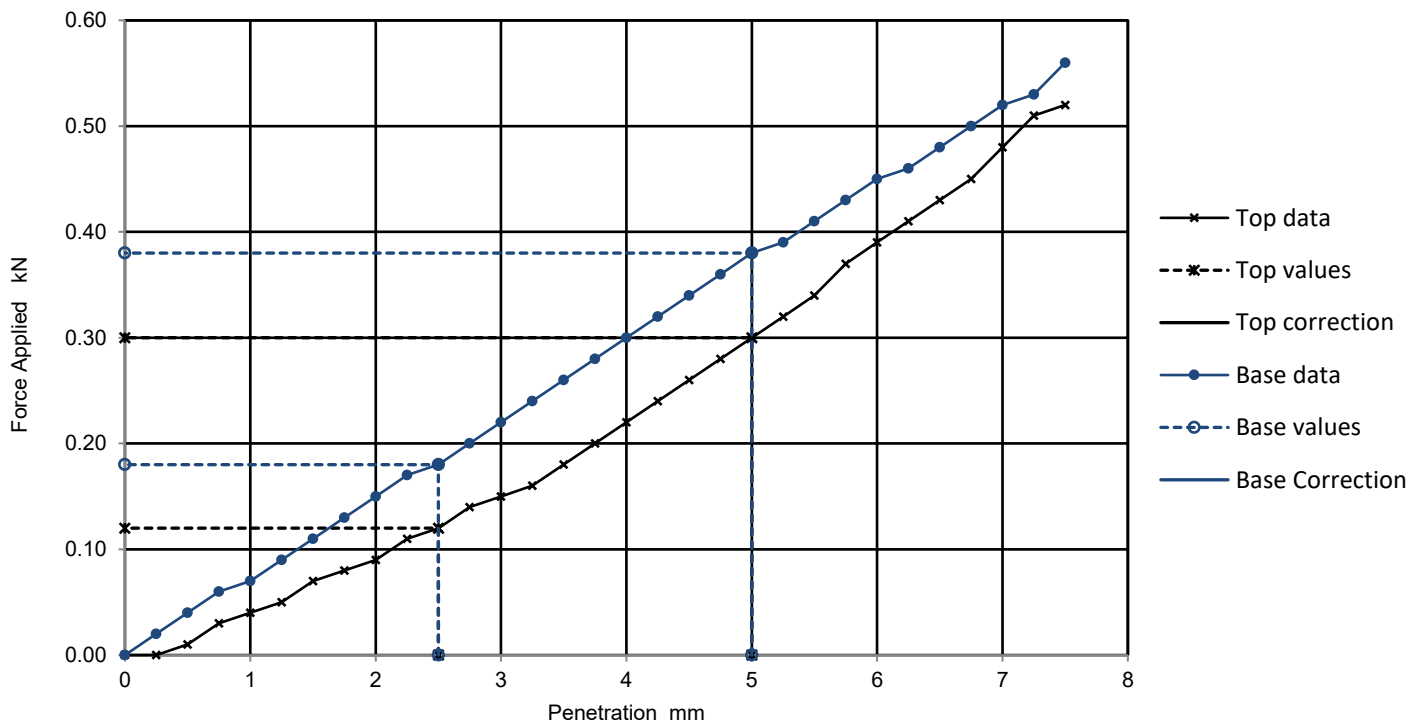
Soaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.99 Mg/m3
Dry density 1.64 Mg/m3
Water content 21 %

Surcharge applied 8 kg
4.9 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.91	1.5	1.5	
No	1.4	1.9	1.9	

Water Content %
22
22

Remarks:

Test/ Specimen specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 03/05/2024
Sampled By: Not Given

Test Results:

Laboratory Reference: 172925
Hole No.: TP-172
Sample Reference: Not Given
Sample Description: White CHALK

Depth Top [m]: 1.20
Depth Base [m]: 1.30
Sample Type: B

Specimen Preparation:

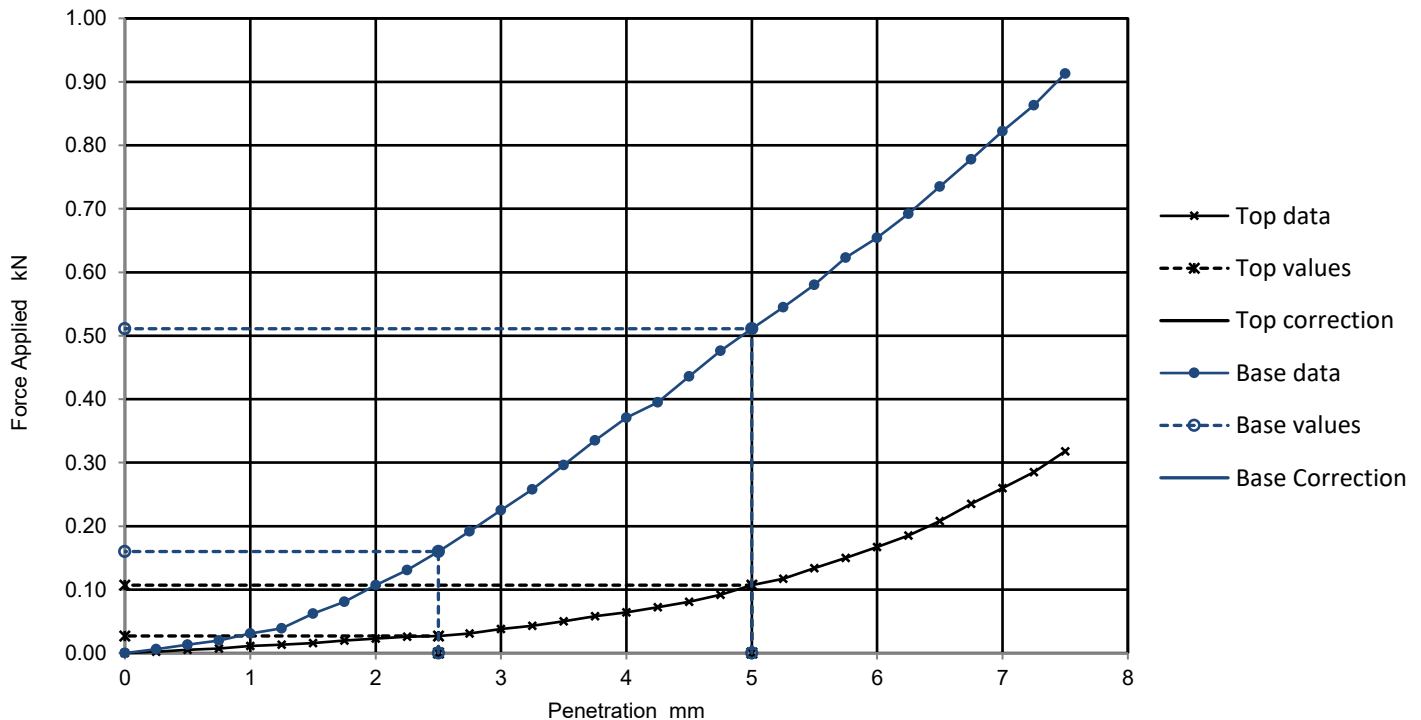
Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 24 %

Initial Specimen details Bulk density 1.89 Mg/m3
Dry density 1.44 Mg/m3
Water content 31 %

Surcharge applied 8 kg
4.9 kPa

Force v Penetration Plots**Results**

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.2	0.54	0.54	
No	1.2	2.6	2.6	

Water Content %
31
31

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

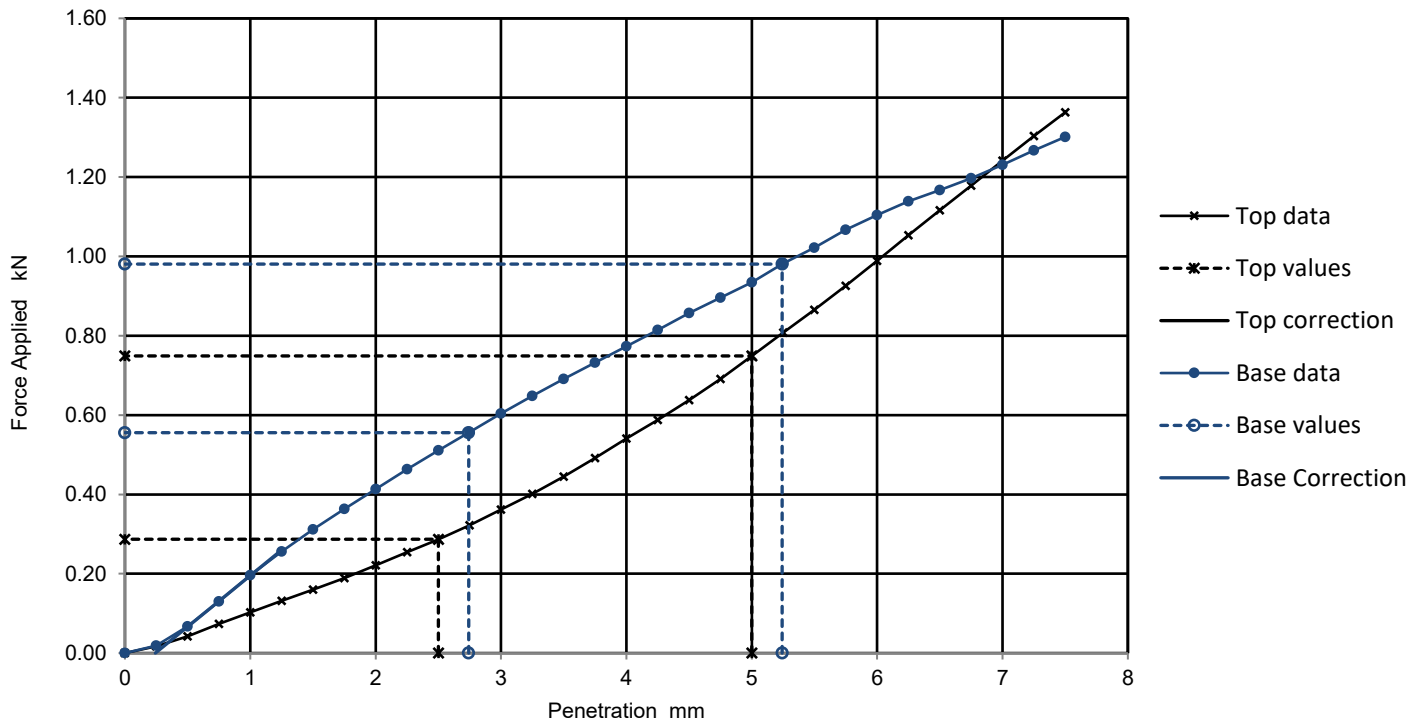
Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: BaldockClient Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 29/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 172926
Hole No.: TP-174
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAYDepth Top [m]: 1.00
Depth Base [m]: 1.20
Sample Type: B**Specimen Preparation:**Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammerSoaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 2.10 Mg/m3
Dry density 1.81 Mg/m3
Water content 16 %
Surcharge applied 8 kg
4.9 kPa**Force v Penetration Plots****Results**TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.2	3.7	3.7	
Yes	4.2	4.9	4.9	

Water Content %
16
17

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

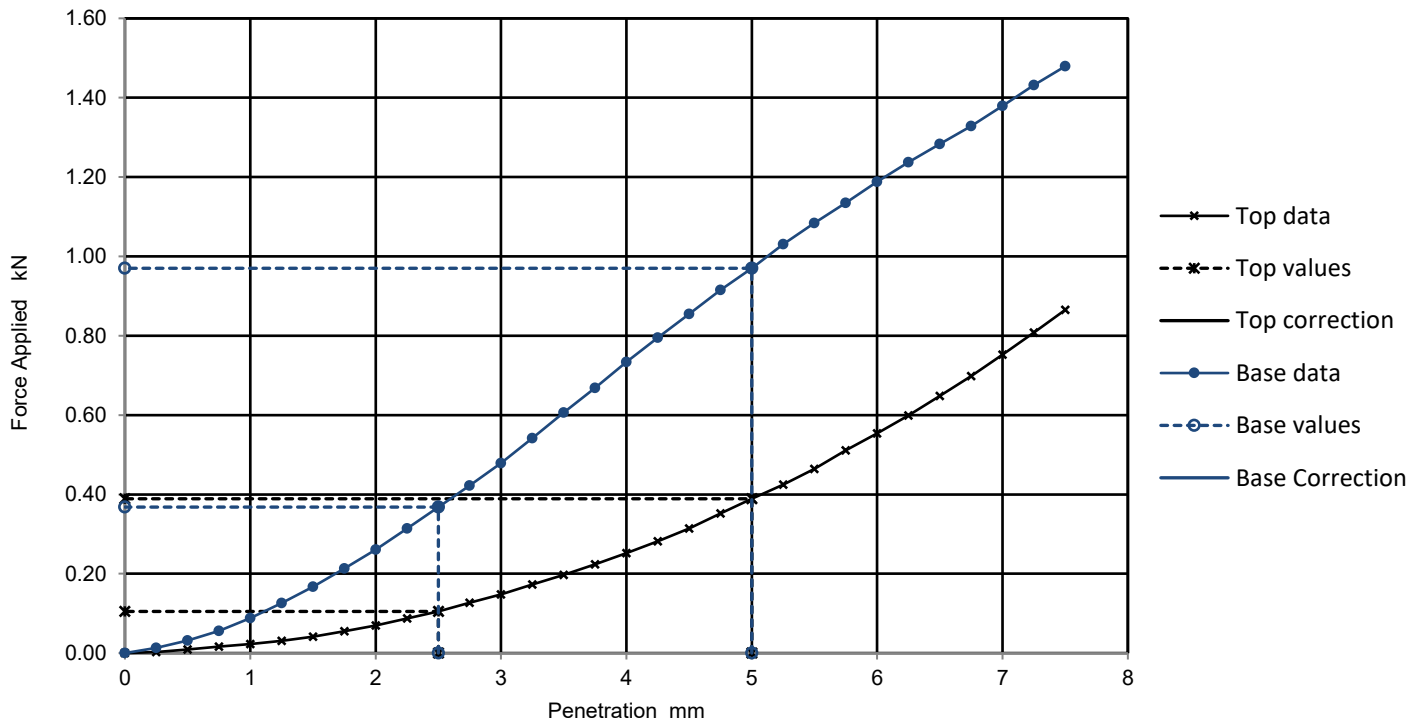
Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 03/05/2024
Sampled By: Not Given**Test Results:**Laboratory Reference: 172931
Hole No.: TP-188
Sample Reference: Not Given
Sample Description: Light grey CHALKDepth Top [m]: 1.20
Depth Base [m]: 1.30
Sample Type: B**Specimen Preparation:**Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammerSoaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m³

Material retained on 20mm sieve removed 7 %

Initial Specimen details Bulk density 1.97 Mg/m³
Dry density 1.62 Mg/m³
Water content 22 %
Surcharge applied 8 kg
4.9 kPa**Force v Penetration Plots****Results**TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.8	1.9	1.9	
No	2.8	4.9	4.9	

Water Content %
21
22

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

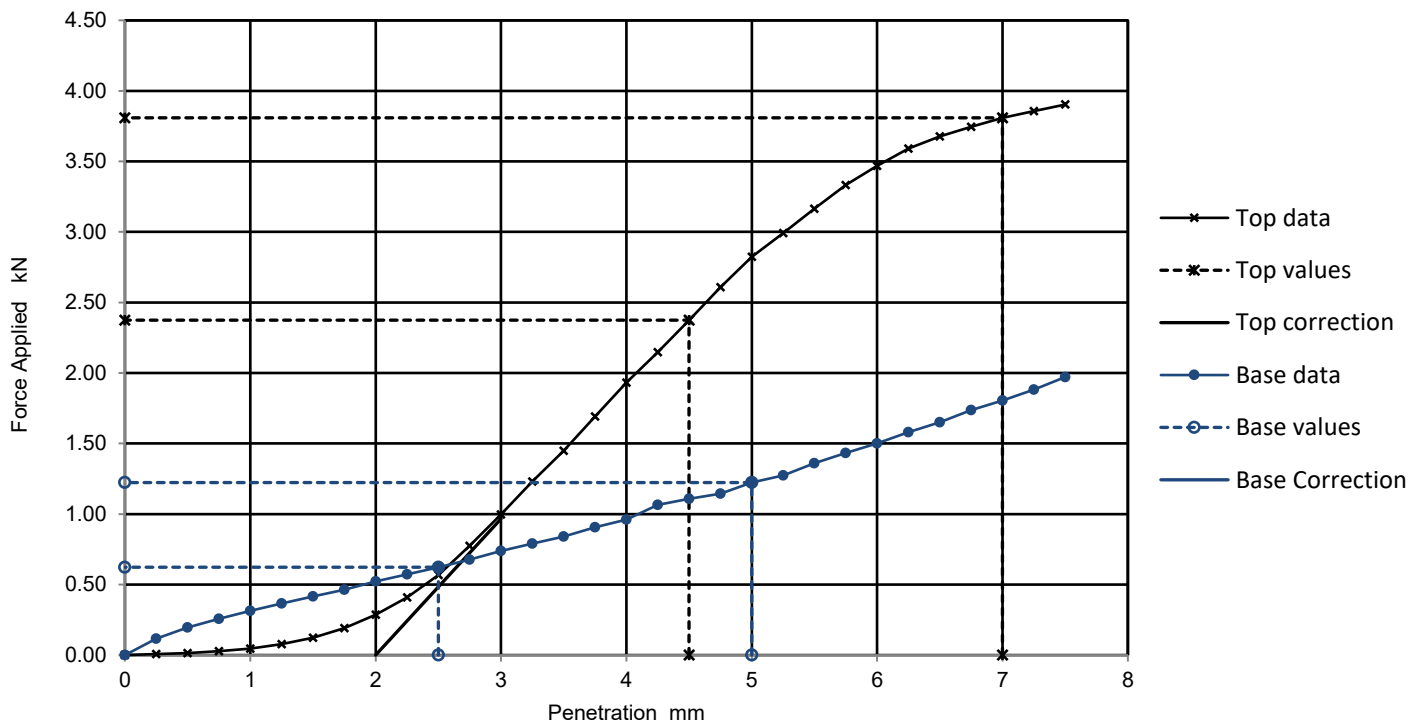
Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EBClient: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DPContact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 06/05/2024
Sampled By: Not Given**Test Results:**Laboratory Reference: 172934
Hole No.: TP-191
Sample Reference: Not Given
Sample Description: White CHALKDepth Top [m]: 1.10
Depth Base [m]: 1.20
Sample Type: B**Specimen Preparation:**Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammerSoaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m³

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.80 Mg/m³ Surcharge applied 8 kg
Dry density 1.39 Mg/m³ 4.9 kPa
Water content 30 %**Force v Penetration Plots****Results**TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	18	19	19	
No	4.7	6.1	6.1	

Water Content %
30
31

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 06/05/2024
Sampled By: Not Given

Test Results:

Laboratory Reference: 172938
Hole No.: TP-200
Sample Reference: Not Given
Sample Description: White CHALK

Depth Top [m]: 1.40
Depth Base [m]: 1.50
Sample Type: B

Specimen Preparation:

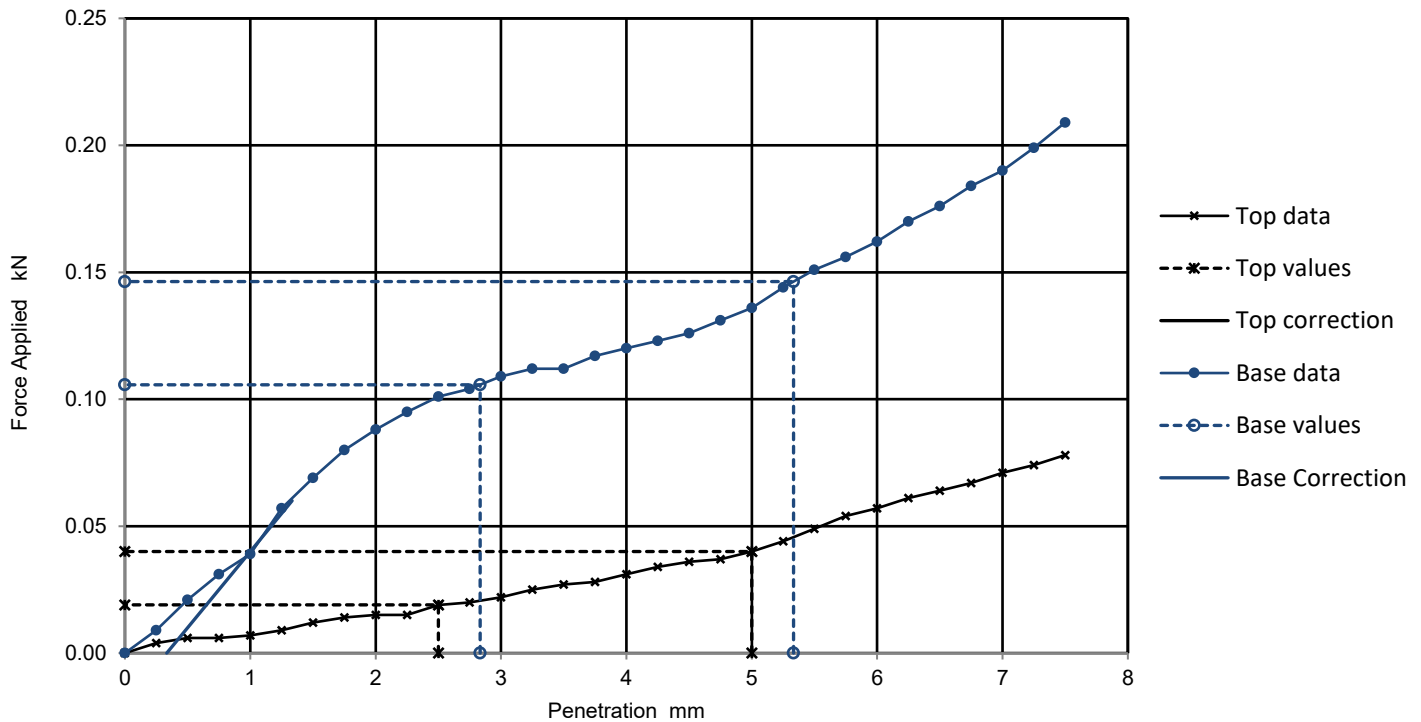
Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.93 Mg/m3
Dry density 1.49 Mg/m3
Water content 30 %

Surcharge applied 8 kg
4.9 kPa

Force v Penetration Plots**Results**

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.14	0.2	0.2	
Yes	0.8	0.73	0.8	

Water Content %
29
29

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE**DETERMINATION OF THE CALIFORNIA BEARING
RATIO (CBR)**

Tested in Accordance with: BS 1377-2:2022 Cl. 15

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 06/05/2024
Sampled By: Not Given

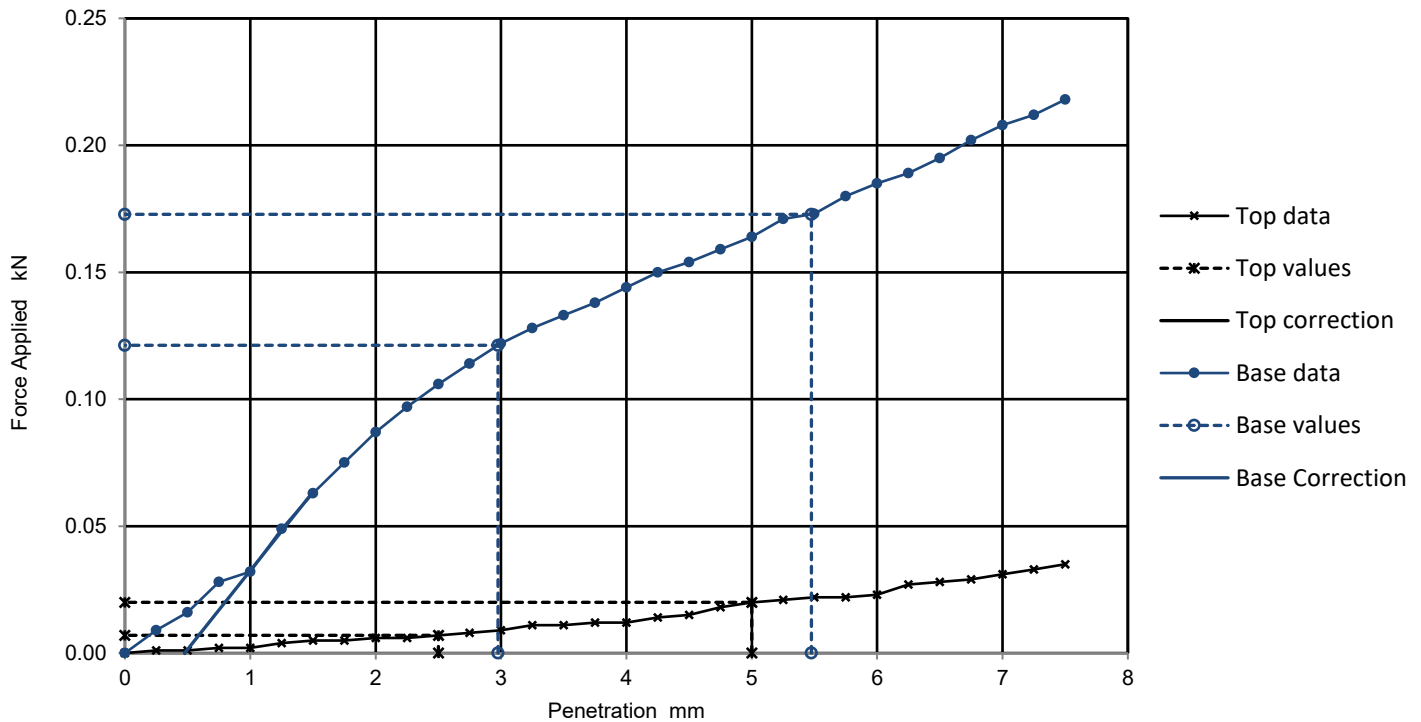
Test Results:

Laboratory Reference: 172941
Hole No.: TP-204
Sample Reference: Not Given
Sample Description: White CHALK

Depth Top [m]: 1.40
Depth Base [m]: 1.50
Sample Type: B

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
		Dry density after soaking	Mg/m3
Material retained on 20mm sieve removed	0 %		
Initial Specimen details	Bulk density 1.88 Mg/m3	Surcharge applied	8 kg
	Dry density 1.41 Mg/m3		4.9 kPa
	Water content 33 %		

Force v Penetration Plots**Results**

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.053	0.1	0.1	
Yes	0.92	0.86	0.92	

Water Content %
32
33

Remarks:

Test/ Specimen
specific remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04 - 31/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
172947	RC-35	Not Given	5.52	5.68	C	White CHALK	WC = 28.1%	1	A	U	YES	-	100.4	80.0	76.0	2.0	98.6	0.20	0.27
172946	RC-35	Not Given	6.60	6.80	C	White CHALK	WC = 35.0%	1	D	U	YES	70.2	100.1	100.0	98.0	0.7	99.1	0.07	0.09
172943	RC-36	Not Given	4.10	4.23	C	White CHALK	WC = 31.3%	1	A	U	YES	-	98.7	70.0	62.0	0.3	88.3	0.03	0.04
172944	RC-36	Not Given	5.13	5.22	C	White CHALK	WC = 25.8%	1	I	U	YES	61.4	99.8	86.0	84.0	0.2	103.3	0.02	0.03
172923	TP-169	Not Given	1.30	1.40	B	White CHALK	WC = 16.8%	1	I	U	YES	60.9	89.7	55.0	47.0	7.3	73.3	1.35	1.60
172927	TP-176	Not Given	2.90	3.00	B	White CHALK	WC = 26.4%	1	I	U	YES	80.1	76.4	41.0	37.0	1.5	60.0	0.40	0.44
172928	TP-183	Not Given	2.00	2.20	B	White CHALK	WC = 27.5%	1	I	U	YES	38.3	67.7	47.0	42.0	1.0	60.2	0.28	0.30
172929	TP-184	Not Given	3.00	3.10	B	White CHALK	WC = 28.5%	1	I	U	YES	82.6	57.7	43.0	38.0	0.6	52.8	0.20	0.20
172930	TP-186	Not Given	2.30	2.50	B	White CHALK	WC = 32.3%	1	I	U	YES	60.4	80.0	40.0	35.0	0.6	59.7	0.15	0.17
172932	TP-188	Not Given	2.30	2.40	B	White CHALK	WC = 36.7%	1	I	U	YES	42.6	39.9	37.0	34.0	0.9	41.6	0.49	0.45

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-014569-2
Date Sampled: Not Given
Date Received: 26/03/2024
Date Tested: 24/04/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top	Depth Base	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			Is	Is(50)
			m	m															
172933	TP-189	Not Given	2.20	2.30	B	White CHALK	WC = 32.3%	1	I	U	YES	32.8	50.1	60.0	57.0	0.7	60.3	0.18	0.19
172935	TP-194	Not Given	2.00	2.20	B	White CHALK	WC = 25.9%	1	I	U	YES	72.8	56.8	42.0	38.0	1.4	52.4	0.51	0.52
172936	TP-196	Not Given	2.20	2.30	B	White CHALK	WC = 28.3%	1	I	U	YES	35.9	58.9	46.0	40.0	0.9	54.8	0.28	0.30
172937	TP-197	Not Given	2.10	2.20	B	White CHALK	WC = 29.9%	1	I	U	YES	76.6	57.4	47.0	42.0	0.8	55.4	0.24	0.26
172938	TP-200	Not Given	1.40	1.50	B	White CHALK	WC = 30.4%	1	I	U	YES	39.9	57.6	50.0	42.0	0.8	55.5	0.24	0.26
172939	TP-201	Not Given	2.00	2.10	B	White CHALK	WC = 30.1%	1	I	U	YES	36.7	58.6	40.0	36.0	0.9	51.8	0.32	0.32
172940	TP-202	Not Given	2.10	2.20	B	White CHALK	WC = 29.3%	1	I	U	YES	51.9	107.9	39.0	37.0	0.8	71.3	0.16	0.18
172941	TP-204	Not Given	1.40	1.50	B	White CHALK	WC = 32.6%	1	I	U	YES	38.3	40.8	38.0	35.0	0.8	42.6	0.44	0.41
172942	TP-206	Not Given	3.50	3.60	B	White CHALK	WC = 32.6%	1	I	U	YES	68.3	112.2	62.0	48.0	0.8	82.8	0.11	0.14

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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DETERMINATION OF UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group

Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk

Site Address: Baldock

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899

Job Number: 24-014569-2

Date Sampled: Not Given

Date Received: 26/03/2024

Date Tested: 31/05/2024

Sampled By: Not Given

Test results

[illegible]

Note: 1 - ISRM p87 test 1, water content at $105 \pm 3^\circ\text{C}$ - not accredited, specimen as tested for UCS, 2 - ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density, 3 - ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials, above notes apply unless annotated otherwise in the remarks. Compaction machine: VJ Tech AUTOCON - VJT 51-3011; Mode of failure legend: S - Single shear, MS - multiple shear, AC - Axial cleavage, F - Fragmented

Comments: * Sample is below recommended length to diameter ratio. Duration of test, fell below time specified in ISRM method, 2007, p153, part1.

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT
METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP
Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-019789-1
Date Sampled: Not Given
Date Received: 13/05/2024
Date Tested: 03/06/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top	Depth Base	Type							
			m	m				%	Mg/m3	Mg/m3	%	
199863	RC-34	Not Given	9.00	9.10	C	White CHALK		37.4	1.78	1.34	32.7	
199864	RC-36	Not Given	7.64	7.78	C	White CHALK		30.9	1.92	1.47	30.4	
199865	RC-36	Not Given	8.16	8.26	C	White CHALK		29.7	1.93	1.50	29.1	
199866	RC-37	Not Given	1.80	1.90	C	White CHALK		33.3	1.87	1.42	31.8	
199867	RC-37	Not Given	2.55	2.65	C	White CHALK		34.2	1.86	1.40	32.7	
199868	RC-37	Not Given	4.83	4.93	C	White CHALK		34.8	1.86	1.39	33.4	
199869	RC-37	Not Given	7.35	7.55	C	White CHALK		33.1	1.89	1.43	32.3	
199870	RC-37	Not Given	8.68	9.06	C	White CHALK		33.4	1.89	1.42	32.9	
199862	RO-02	Not Given	10.31	10.46	C	White CHALK		10.0	2.33	2.12	9.6	

Note: SWC - Saturation Water Content; WC - Water Content

Comments:

Signed:

Katarzyna Koziel
Senior Reporting Specialist

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for and on behalf of i2 Analytical Ltd



4041



SUMMARY REPORT
DETERMINATION OF POINT LOAD STRENGTH
Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP
Contact: Stephen Fisk
Site Address: Baldock

Client Reference: 2899
Job Number: 24-019789-1
Date Sampled: Not Given
Date Received: 13/05/2024
Date Tested: 29/05/2024
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index	
		Reference	Depth Top	Depth Base	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			Is	Is(50)
			m	m															
199863	RC-34	Not Given	9.00	9.10	C	White CHALK	WC = 31.8%	1	I	U	YES	47.9	59.6	60.0	52.0	0.5	62.8	0.11	0.13
199864	RC-36	Not Given	7.64	7.78	C	White CHALK	WC = 31.9%	1	D	U	YES	73.0	100.9	96.0	94.0	0.3	97.4	0.03	0.04
199865	RC-36	Not Given	8.16	8.26	C	White CHALK	WC = 29.4%	1	D	U	YES	86.7	100.4	98.0	90.0	0.6	95.0	0.06	0.08
199866	RC-37	Not Given	1.80	1.90	C	White CHALK	WC = 31.8%	1	A	U	YES	-	104.5	78.0	66.0	0.3	93.7	0.03	0.05
199867	RC-37	Not Given	2.55	2.65	C	White CHALK	WC = 33.0%	1	I	U	YES	50.7	51.3	40.0	36.0	0.8	48.5	0.34	0.34
199868	RC-37	Not Given	4.83	4.93	C	White CHALK	WC = 33.4%	1	A	U	YES	-	100.9	70.0	52.0	0.8	81.7	0.11	0.14
199869	RC-37	Not Given	7.35	7.55	C	White CHALK	WC = 33.5%	1	D	U	YES	99.1	100.2	98.0	82.0	1.1	90.7	0.13	0.17
199862	RO-02	Not Given	10.31	10.46	C	White CHALK	WC = 10.5%	1	A	U	YES	-	100.5	56.0	43.0	4.2	74.2	0.75	0.90

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed: Katarzyna Koziel
Senior Reporting Specialist

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for and on behalf of i2 Analytical Ltd





SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02 - 27/02/2025
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top m	Depth Base m	Type							
448531	RC-32	Not Given	6.10	Not Given	B	White CHALK		28.9	1.52	1.52	0.2	
448532	RC-33	Not Given	4.73	Not Given	D	White CHALK		27.3	1.58	1.55	1.6	
448533	RC-33	Not Given	9.20	Not Given	B	White CHALK		27.4	1.90	1.55	22.2	
448497	RO-01	Not Given	3.94	4.12	C	White CHALK		27.4	1.97	1.55	26.8	
448498	RO-04	D1	Not Given	Not Given	B	White CHALK		18.9	2.08	1.79	16.5	
448499	RO-06	D1	Not Given	Not Given	B	White CHALK		18.4	2.08	1.80	15.1	
448500	RO-06	D2	Not Given	Not Given	B	White CHALK		18.9	2.06	1.79	15.3	
448501	RO-06	D3	Not Given	Not Given	D	White CHALK		22.4	2.00	1.68	19.1	
448502	RO-08	D1	Not Given	Not Given	D	White CHALK		26.4	1.88	1.58	19.0	
448503	RO-08	D2	Not Given	Not Given	D	White CHALK		27.6	1.90	1.55	22.7	

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group

Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk

Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899

Job Number: 25-006189-1

Date Sampled: Not Given

Date Received: 10/02/2025

Date Tested: 14/02 - 25/02/2025

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top	Depth Base	Type							
			m	m				%	Mg/m3	Mg/m3	%	
448504	RO-08	D3	Not Given	Not Given	D	White CHALK		21.4	2.00	1.71	17.2	
448505	RO-08	D4	Not Given	Not Given	D	White CHALK		23.4	1.95	1.65	17.6	
448506	RO-09	D1	Not Given	Not Given	B	White CHALK		24.0	2.00	1.64	22.0	
448507	RO-10	D1	Not Given	Not Given	D	White CHALK		23.8	2.02	1.64	22.7	
448508	RO-10	D2	Not Given	Not Given	D	White CHALK		25.4	1.98	1.60	23.5	
448509	RO-11	D1	Not Given	Not Given	D	White CHALK		18.9	2.08	1.79	16.1	
448510	RO-11	D2	Not Given	Not Given	B	White CHALK		21.8	2.01	1.70	18.5	
448511	RO-11	D3	Not Given	Not Given	D	White CHALK		14.3	2.20	1.95	13.0	
448512	RO-13	D1	Not Given	Not Given	B	White CHALK		25.9	1.92	1.59	21.1	
448513	RO-13	D2	Not Given	Not Given	D	White CHALK		27.5	1.94	1.55	25.4	

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 21/02 - 26/02/2025
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top m	Depth Base m	Type							
448514	RO-14	D1	Not Given	Not Given	B	White CHALK		22.0	2.00	1.69	18.0	
448515	RO-14	D2D	Not Given	Not Given	B	White CHALK		24.4	1.97	1.63	21.2	
448516	RO-14	D3	Not Given	Not Given	B	White CHALK		15.8	2.14	1.89	13.3	
448517	RO-14	D4	Not Given	Not Given	D	White CHALK		11.0	2.21	2.08	6.1	
448518	RO-16	D1	Not Given	Not Given	B	White CHALK		10.8	2.28	2.09	9.1	
448519	RO-16	D2	Not Given	Not Given	B	White CHALK		18.2	2.09	1.81	15.1	
448520	RO-20	D1	Not Given	Not Given	B	White CHALK		22.5	1.98	1.68	18.2	
448521	RO-20	D2	Not Given	Not Given	B	White CHALK		19.5	2.04	1.77	15.6	
448522	RO-20	D3	Not Given	Not Given	D	White CHALK		22.0	2.01	1.69	18.5	
448523	RO-20	D4	Not Given	Not Given	B	White CHALK		19.9	2.03	1.76	15.6	

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02 - 27/02/2025
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top m	Depth Base m	Type							
448524	RO-21	Not Given	9.18	9.50	C	White CHALK		38.7	1.73	1.32	30.6	
448525	RO-23	Not Given	Not Given	Not Given	B	White CHALK		27.5	1.73	1.55	11.4	
448526	RO-24	D2	Not Given	Not Given	B	White CHALK		20.6	2.00	1.74	15.1	
448527	RO-26	D2	Not Given	Not Given	B	White CHALK		21.3	2.06	1.71	20.1	
448528	RO-26	D3	Not Given	Not Given	B	White CHALK		12.2	2.26	2.03	11.1	
448529	RO-28	D1	Not Given	Not Given	D	White CHALK		19.8	2.06	1.76	16.8	
448530	RO-28	D2	Not Given	Not Given	B	White CHALK		17.0	2.22	1.85	20.2	
448534	RO-35	D1	Not Given	Not Given	B	White CHALK		28.5	1.61	1.53	5.4	
448535	RO-35	D2	Not Given	Not Given	B	White CHALK		29.7	1.87	1.50	24.5	
448536	RO-35	D3	Not Given	Not Given	B	White CHALK		38.4	1.60	1.33	20.8	

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

METHOD FOR SATURATION WATER CONTENT OF CHALK

Tested in Accordance with: BS EN ISO 17892-2:2014, clause 5.2 and BS 1377: Part 2:2022, clause 4.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 14/02 - 25/02/2025
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SWC	Bulk density	Dry density	WC	Preparation
		Reference	Depth Top m	Depth Base m	Type							
448537	RO-R1-02	D1	Not Given	Not Given	D	White CHALK		27.2	1.88	1.56	20.7	
448538	RO-R2/R3-01	D1	Not Given	Not Given	B	White CHALK		18.9	2.08	1.79	16.1	
448539	RO-R2/R3-01	D2	Not Given	Not Given	B	White CHALK		19.8	2.02	1.76	14.9	
448540	RO-R4-03	D1	Not Given	Not Given	B	White CHALK		17.9	2.10	1.82	15.4	
448541	RO-R4-03	D2	Not Given	Not Given	B	White CHALK		22.3	2.01	1.68	19.5	
448542	RO-R4-03	D3	Not Given	Not Given	C	White CHALK		16.9	2.14	1.85	15.2	
448543	RO-R4-03	D4	Not Given	Not Given	B	White CHALK		24.8	1.99	1.62	22.8	
448544	RO-R4-04	D1	Not Given	Not Given	B	White CHALK		29.2	1.91	1.51	26.7	
448545	RO-R4-04	D2	Not Given	Not Given	C	White CHALK		26.0	1.97	1.59	24.4	
448546	RO-R5-02	D1	Not Given	Not Given	B	White CHALK		28.7	1.83	1.52	20.4	

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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METHOD FOR SATURATION WATER CONTENT OF CHALK

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899

Job Number: 25-006189-1

Date Sampled: Not Given

Date Received: 10/02/2025

Date Tested: 27/02/2025

Sampled By: Not Given

Test results

[illegible]

Note: SWC - Saturation Water Content; WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022 clause 4.1

Comments:

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Geotechnical Reporting Team Leader
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SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02 - 27/02/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
448531	RC-32	Not Given	6.10	Not Given	B	White CHALK	WC = 0.2%	1	D	U	YES	54.4	101.0	101.0	98.0	1.9	99.5	0.19	0.26
448532	RC-33	Not Given	4.73	Not Given	D	White CHALK	WC = 1.7%	1	I	U	YES	33.8	58.2	58.0	54.0	0.4	63.3	0.10	0.11
448533	RC-33	Not Given	9.20	Not Given	B	White CHALK	WC = 22.5%	1	A	U	YES	-	94.3	76.0	71.0	0.4	92.3	0.05	0.06
448497	RO-01	Not Given	3.94	4.12	C	White CHALK	WC = 19.5%	1	D	U	YES	66.4	99.8	100.0	96.0	0.8	97.9	0.08	0.11
448499	RO-06	D1	Not Given	Not Given	B	White CHALK	WC = 15.9%	1	D	U	YES	58.8	100.7	100.0	92.0	1.7	96.2	0.18	0.25
448500	RO-06	D2	Not Given	Not Given	B	White CHALK	WC = 15.1%	1	A	U	YES	-	100.6	84.0	78.0	2.4	100.0	0.24	0.33
448501	RO-06	D3	Not Given	Not Given	D	White CHALK	WC = 17.9%	1	I	U	YES	56.6	100.7	73.0	66.0	1.7	92.0	0.19	0.26
448503	RO-08	D2	Not Given	Not Given	D	White CHALK	WC = 21.9%	1	A	U	YES	-	101.6	57.0	48.0	1.3	78.8	0.20	0.25
448506	RO-09	D1	Not Given	Not Given	B	White CHALK	WC = 23.7%	1	I	U	YES	64.2	85.6	82.0	72.0	1.4	88.6	0.18	0.23
448510	RO-11	D2	Not Given	Not Given	B	White CHALK	WC = 17.2%	1	D	U	YES	53.3	100.5	99.0	94.0	2.1	97.2	0.22	0.29

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02 - 27/02/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
448514	RO-14	D1	Not Given	Not Given	B	White CHALK	WC = 19.1%	1	I	U	YES	55.8	90.1	81.0	74.0	2.5	92.1	0.29	0.38
448516	RO-14	D3	Not Given	Not Given	B	White CHALK	WC = 14.7%	1	A	U	YES	-	90.0	60.0	50.0	1.6	75.7	0.27	0.33
448517	RO-14	D4	Not Given	Not Given	D	White CHALK	WC = 6.3%	1	A	U	YES	-	88.4	59.0	52.0	5.8	76.5	0.98	1.19
448518	RO-16	D1	Not Given	Not Given	B	White CHALK	WC = 7.5%	1	I	U	YES	92.6	101.1	58.0	55.0	2.2	84.1	0.31	0.39
448520	RO-20	D1	Not Given	Not Given	B	White CHALK	WC = 19.0%	1	D	U	YES	86.0	85.5	85.0	77.0	2.3	81.2	0.34	0.42
448523	RO-20	D4	Not Given	Not Given	B	White CHALK	WC = 14.5%	1	D	U	YES	69.5	87.8	87.0	83.0	2.0	85.4	0.27	0.35
448524	RO-21	Not Given	9.18	9.50	C	White CHALK	WC = 29.3%	1	D	U	YES	108.4	100.3	100.0	95.0	0.8	97.6	0.08	0.11
448525	RO-23	Not Given	4.00	Not Given	B	White CHALK	WC = 12.4%	1	D	U	YES	53.5	100.0	99.0	92.0	2.8	95.9	0.30	0.40
448526	RO-24	D2	Not Given	Not Given	B	White CHALK	WC = 13.5%	1	D	U	YES	55.2	99.7	99.0	95.0	1.5	97.3	0.16	0.21
448529	RO-28	D1	Not Given	Not Given	D	White CHALK	WC = 16.2%	1	A	U	YES	-	101.4	40.0	33.0	1.5	65.3	0.35	0.40

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02 - 27/02/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
448534	RO-35	D1	Not Given	Not Given	B	White CHALK	WC = 4.1%	1	D	U	YES	61.5	100.9	100.0	95.0	0.4	97.9	0.04	0.05
448536	RO-35	D3	Not Given	Not Given	B	White CHALK	WC = 20.9%	1	D	U	YES	81.8	100.8	99.0	95.0	0.4	97.8	0.04	0.06
448537	RO-R1-02	D1	Not Given	Not Given	D	White CHALK	WC = 20.2%	1	A	U	YES	-	102.9	51.0	42.0	2.2	74.2	0.40	0.48
448539	RO-R2/R3-01	D2	Not Given	Not Given	B	White CHALK	WC = 16.2%	1	A	U	YES	-	100.3	92.0	80.0	3.3	101.1	0.32	0.44
448540	RO-R4-03	D1	Not Given	Not Given	B	White CHALK	WC = 14.7%	1	D	U	YES	53.7	99.3	99.0	95.0	1.2	97.1	0.13	0.17
448541	RO-R4-03	D2	Not Given	Not Given	B	White CHALK	WC = 18.8%	1	D	U	YES	56.9	100.0	99.0	94.0	0.4	96.9	0.04	0.06
448543	RO-R4-03	D4	Not Given	Not Given	B	White CHALK	WC = 23.9%	1	A	U	YES	-	99.6	75.0	53.0	2.9	82.0	0.43	0.54
448544	RO-R4-04	D1	Not Given	Not Given	B	White CHALK	WC = 26.8%	1	D	U	YES	94.0	98.6	97.0	92.0	1.9	95.2	0.21	0.28
448545	RO-R4-04	D2	Not Given	Not Given	C	White CHALK	WC = 24.3%	1	I	U	YES	105.4	97.8	67.0	65.0	1.4	90.0	0.17	0.23
448546	RO-R5-02	D1	Not Given	Not Given	B	White CHALK	WC = 21.0%	1	A	U	YES	-	101.2	60.0	52.0	2.4	81.8	0.35	0.44

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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DETERMINATION OF POINT LOAD STRENGTH

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 27/02/2025
Sampled By: Not Given

[illegible]

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random; Dimensions: Dps - Distance between platens (platen separation), Dps_f - at failure (see ISRM note 6), Lne - Length from platens to nearest free end and W - Width of shortest dimension perpendicular to load, P; Detailed legend for test and dimensions, based on ISRM, is shown above. Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Tested in Accordance with: ISRM, 2007, p153, part 1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: The Shadbolt Group
Client Address: 18 Bewick Road, Gateshead,
NE8 4DP

Contact: Stephen Fisk
Site Address: Baldock - Supplementary

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 2899
Job Number: 25-006189-1
Date Sampled: Not Given
Date Received: 10/02/2025
Date Tested: 26/02/2025
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Specimen Dimensions (2)				Bulk density (2) Mg/m3	Water Content (1) %	Uniaxial Compression (3)			
		Reference	Depth Top	Depth Base	Type			Diameter	Length	H/D	Orientation of sample			Condition	Stress Rate	Mode of failure	UCS
			m	m													
448521	RO-20	D2	Not Given	Not Given	B	White CHALK	Sample is below recommended length to diameter ratio.	89.8	77.9	0.9	Vertical	2.06	17.0	as received	0.0158	AC	9.06
448535	RO-35	D2	Not Given	Not Given	B	White CHALK	Sample is below recommended length to diameter ratio. *	100.8	103.2	1.0	Vertical	1.86	26.1	as received	0.0125	AC	1.79
448542	RO-R4-03	D3	Not Given	Not Given	C	White CHALK	Sample is below recommended length to diameter ratio.	100.7	124.0	1.2	Vertical	2.21	12.7	as received	0.0126	S + AC	5.57

Note: 1 - ISRM p87 test 1, water content at 105 ± 3 °C, specimen as tested for UCS, 2 - ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density, 3 - ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials, above notes apply unless annotated otherwise in the remarks. Compaction machine: VJ Tech AUTOCON - VJT 51-3011; Mode of failure legend: S - Single shear, MS - multiple shear, AC - Axial cleavage, F - Fragmented

Comments: * - Duration of test, fell below time specified in ISRM method, 2007, p153, part1.

Signed:

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Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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APPENDIX F

GROUND GAS MONITORING RESULTS

GAS RISK ASSESSMENT TABLE (CIRIA C665)

GAS PROTECTION MEASURES ASSESSMENT TABLES (BS8485:2015)

GAS AND GROUNDWATER MONITORING RESULTS

The Shadbolt Group

18 Bewick Road, Gateshead, Tyne & Wear, NE8 4DP Tel: 0191 478 3330 Email: admin@shadboltgroup.net

GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT

ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899		
Client:	Urban & Civic											Date:		15/03/2024		
												Weather:		Cloudy		
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter		
												Pressure Trend:		Falling		
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)	
Ambient						20.3	20.3					992				
WS-64			0.0	0.0	2.4	2.4	16.5	16.5	0.0	0.0	0.0	991	DRY		3.83	
WS-65			0.0	0.0	2.0	2.0	17.2	16.7	0.0	0.0	0.0	991	DRY		2.77	
WS-66			0.0	0.0	0.8	0.8	19.2	18.8	0.0	0.0	0.0	992	DRY		3.81	
WS-67			0.0	0.0	2.1	2.1	16.6	16.2	0.0	0.0	0.0	991	DRY		3.28	
WS-68			0.0	0.0	0.6	0.6	19.7	19.5	0.0	0.0	0.0	990	DRY		3.89	
WS-69			0.0	0.0	0.2	0.2	20.2	20.2	0.0	0.0	0.0	990	DRY		3.73	
WS-70			0.0	0.0	0.7	0.7	20.1	19.4	0.0	0.0	0.0	990	DRY		3.84	
WS-71			0.0	0.0	0.4	0.4	19.9	19.8	0.0	0.0	0.0	990	DRY		1.87	
WS-72			0.0	0.0	0.6	0.6	19.5	19.3	0.0	0.0	0.0	990	DRY		3.90	
WS-73			0.0	0.0	0.5	0.5	19.6	19.5	0.0	0.0	0.0	990	DRY		3.83	
WS-74			0.0	0.0	0.0	0.0	20.2	20.2	0.0	0.0	0.0	991	DRY		1.91	

Notes:

- 1 The peak reading is the maximum recorded level during a monitoring event.
- 2 The steady reading is the level which remained constant after approximately 1 minute.

The Shadbolt Group

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GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT

ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899		
Client:	Urban & Civic											Date:		11/04/2024		
												Weather:		Sunny		
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter		
												Pressure Trend:		Falling		
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)	
Ambient						20.7	20.7					1018				
WS-64			0.0	0.0	3.8	3.8	16.4	15.6	0.0	0.0	0.0	1018	DRY		3.83	
WS-65			0.0	0.0	3.3	3.3	16.4	16.2	0.0	0.0	0.6	1018	DRY		2.75	
WS-66			0.0	0.0	1.4	1.4	18.8	18.7	0.0	0.0	0.0	1018	DRY		3.75	
WS-67			0.0	0.0	3.4	3.4	15.7	15.5	0.0	0.0	0.0	1017	DRY		3.27	
WS-68			0.0	0.0	0.6	0.6	20.0	20.0	0.0	0.0	0.0	1018	DRY		3.82	
WS-69			0.0	0.0	0.8	0.8	19.7	19.6	0.0	0.0	0.0	1018	DRY		3.73	
WS-70			0.0	0.0	1.6	1.6	17.5	17.4	0.0	0.0	0.0	1018	DRY		3.80	
WS-71			0.0	0.0	0.8	0.7	18.8	18.8	0.0	0.0	0.0	1017	DRY		1.85	
WS-72			0.0	0.0	1.5	1.5	18.5	18.5	0.0	0.0	0.0	1018	DRY		3.86	
WS-73			0.0	0.0	1.1	1.1	18.8	18.6	0.0	0.0	0.0	1018	DRY		3.78	
WS-74			0.0	0.0	0.3	0.3	20.3	20.3	0.0	0.0	0.0	1017	DRY		1.93	

Notes:

- 1 The peak reading is the maximum recorded level during a monitoring event.
- 2 The steady reading is the level which remained constant after approximately 1 minute.

The Shadbolt Group

18 Bewick Road, Gateshead, Tyne & Wear, NE8 4DP Tel: 0191 478 3330 Email: admin@shadboltgroup.net

GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT

ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899		
Client:	Urban & Civic											Date:		25/04/2024		
												Weather:		Sunny		
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter		
												Pressure Trend:		Falling		
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)	
Ambient						20.7	20.7					992				
WS-64			0.0	0.0	3.6	3.6	17.5	17.5	0.0	0.0	0.0	992	DRY		3.80	
WS-65			0.0	0.0	3.4	3.4	17.5	17.4	0.0	0.0	0.0	991	DRY		2.81	
WS-66			0.0	0.0	1.5	1.4	19.1	19.1	0.0	0.0	0.0	991	DRY		3.75	
WS-67			-	-	-	-	-	-	-	-	-	-	-		-	ANT NEST
WS-68			0.0	0.0	0.7	0.7	20.1	20.0	0.0	0.0	0.0	991	DRY		3.86	
WS-69			0.0	0.0	0.6	0.6	20.0	19.9	0.0	0.0	0.0	991	DRY		3.71	
WS-70			0.0	0.0	1.3	1.3	19.2	18.8	0.0	0.0	0.0	992	DRY		3.83	
WS-71			0.0	0.0	0.7	0.6	19.8	19.8	0.0	0.0	0.0	990	DRY		1.87	
WS-72			0.0	0.0	1.4	1.4	19.1	19.0	0.0	0.0	0.0	991	DRY		3.87	
WS-73			0.0	0.0	1.0	1.0	19.2	19.2	0.0	0.0	0.0	991	DRY		3.72	
WS-74			0.0	0.0	0.4	0.4	20.2	20.2	0.0	0.0	0.0	990	DRY		1.93	

Notes:

- 1 The peak reading is the maximum recorded level during a monitoring event.
- 2 The steady reading is the level which remained constant after approximately 1 minute.

The Shadbolt Group

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GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT
ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899			
Client:	Urban & Civic											Date:		09/05/2024			
												Weather:		Sunny			
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter			
												Pressure Trend:		Falling			
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks	
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)		
Ambient						20.6	20.6					1016					
WS-64			0.0	0.0	4.1	4.1	15.4	15.2	0.0	0.0	0.0	1016	DRY		3.80		
WS-65			0.0	0.0	3.6	3.6	15.3	15.3	0.0	0.0	0.0	1016	DRY		2.81		
WS-66			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-67			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-68			0.0	0.0	0.8	0.8	19.0	18.9	0.0	0.0	0.0	1015	DRY		3.86		
WS-69			0.0	0.0	0.7	0.7	19.5	19.5	0.0	0.0	0.0	1015	DRY		3.73		
WS-70			0.0	0.0	1.4	1.4	18.2	18.2	0.0	0.0	0.0	1016	DRY		3.78		
WS-71			0.0	0.0	0.8	0.8	19.0	19.0	0.0	0.0	0.0	1015	DRY		1.87		
WS-72			0.0	0.0	1.6	1.6	17.7	17.3	0.0	0.0	0.0	1015	DRY		3.87		
WS-73			0.0	0.0	0.9	0.9	18.4	18.4	0.0	0.0	0.0	1015	DRY		3.72		
WS-74			0.0	0.0	0.4	0.4	19.9	19.9	0.0	0.0	0.0	1015	DRY		1.93		

Notes:

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GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT
ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899			
Client:	Urban & Civic											Date:		21/05/2024			
												Weather:		Sunny			
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter			
												Pressure Trend:		Falling			
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks	
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)		
Ambient						20.3	20.3					1000					
WS-64			0.0	0.0	4.0	4.0	17.6	17.5	0.0	0.0	0.0	1000	DRY		3.80		
WS-65			0.0	0.0	4.3	4.3	18.3	16.7	0.0	0.0	0.0	999	DRY		2.81		
WS-66			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-67			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-68			0.0	0.0	0.9	0.9	19.6	19.5	0.0	0.0	0.0	997	DRY		3.83		
WS-69			0.0	0.0	0.8	0.8	19.7	19.7	0.0	0.0	0.0	997	DRY		3.69		
WS-70			0.0	0.0	1.6	1.6	19.0	18.7	0.0	0.0	0.0	998	DRY		3.80		
WS-71			0.0	0.0	1.0	1.0	19.4	19.3	0.0	0.0	0.0	997	DRY		1.84		
WS-72			0.0	0.0	1.8	1.8	19.1	18.8	0.0	0.0	0.0	997	DRY		3.87		
WS-73			0.0	0.0	1.4	1.2	19.1	18.9	0.0	0.0	0.0	997	DRY		3.72		
WS-74			0.0	0.0	0.6	0.6	19.6	19.6	0.0	0.0	0.0	998	DRY		1.93		

Notes:

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GROUNDWATER / GAS MONITORING RECORD SHEET



SHADBOLT
ENVIRONMENTAL

Site:	Baldock (Area BA2)											Job No:		2899			
Client:	Urban & Civic											Date:		05/06/2024			
												Weather:		Sunny			
Monitored by:	HB											Instruments Used:		GFM 436 + Dipmeter			
												Pressure Trend:		Falling			
Borehole		surface level (as surveyed)	CH4		CO2		O2		CO	H2S	Flow Rate	Atmospheric	Water	Water	Base	Remarks	
			Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Peak (% vol)	Steady (% vol)	Steady PPM	Steady PPM	Peak (Steady) (l/hr)	Pressure (mbar)	Depth (m bgl)	Depth (m aOD)	Depth (m bgl)		
Ambient						20.5	20.5					1002					
WS-64			0.0	0.0	4.2	4.2	17.5	17.4	0.0	0.0	0.0	1002	DRY		3.81		
WS-65			0.0	0.0	4.2	4.2	17.3	17.1	0.0	0.0	0.0	1002	DRY		2.79		
WS-66			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-67			-	-	-	-	-	-	-	-	-	-	-	-	-	ANT NEST	
WS-68			0.0	0.0	1.1	1.1	19.5	19.5	0.0	0.0	0.0	1001	DRY		3.81		
WS-69			0.0	0.0	0.7	0.7	19.9	19.9	0.0	0.0	0.0	1001	DRY		3.69		
WS-70			0.0	0.0	2.0	1.9	18.3	18.3	0.0	0.0	0.0	1002	DRY		3.80		
WS-71			0.0	0.0	1.1	1.1	19.2	19.2	0.0	0.0	0.0	1000	DRY		1.84		
WS-72			0.0	0.0	2.0	2.0	18.7	18.5	0.0	0.0	0.0	1001	DRY		3.87		
WS-73			0.0	0.0	1.4	1.2	19.1	18.9	0.0	0.0	0.0	1001	DRY		3.72		
WS-74			0.0	0.0	0.7	0.7	19.9	19.8	0.0	0.0	0.0	1000	DRY		1.88		

Notes:

- 1 The peak reading is the maximum recorded level during a monitoring event.
- 2 The steady reading is the level which remained constant after approximately 1 minute.

CIRIA C665

Characteristic Situation

	Characteristic Situation (CIRIA 149)	Comparable Classification In DETER <i>et al</i> (1999)	Risk Classification	Gas Screening Value (GSV) (CH ₄ or CO ₂) (l/hr) ¹	Additional Factors	Typical source of generation
	1	A	Very Low Risk	<0.07	Typically methane 1 % and/or carbon dioxide 5 %. Otherwise consider increase to Situation 2.	Natural soils with low organic content. “Typical” made ground
	2	B	Low. Risk	<0.7	Borehole air flow rate not to exceed 70 l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/ organic content “Typical” made ground
	3	C	Moderate Risk	<3.5		Old landfill, inert waste, mineworkings flooded
	4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures	Mineworkings – susceptible to flooding, completed landfill (WMP 26B criteria)
	5	E	High risk	<70		Mineworkings Unflooded inactive with shallow workings near surface
	6	F	Very high risk	>70		Recent landfill site

Notes:

Gas screening value: (Litres of gas/hour) is calculated by multiplying the maximum gas concentration (%) by the maximum measured borehole flow rate (l.hr) – See Glossary.

Site Characterisation should be based on gas monitoring of concentrations and borehole flow rates for the minimum period defined in Table 5.5, CIRIA 659.

Source of gas and generation potential/performance should be identified.

Soil gas investigation should be in accordance with guidance provided in Chapters 4 to 6.

If there is no detectable flow, use the limit of detection of the instrument.

The boundaries between the Partners in Technology classifications do not fit exactly with the boundaries for the CIRIA classification.

Gas Risk Assessment – Characteristic Situations with Typical Maximum concentrations and Gas Screening Values (Reproduced from Table 8.5, CIRIA Report C659 – Assessing risk posed by hazardous ground gases to buildings)

BS8485:2015

Code of Practice for the Design of Gas Protective Measures for Methane and Carbon Dioxide for New Buildings

Table 3

BRITISH STANDARD

BS 8485:2015

Table 3 Building types

	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial/public, possible multiple	Commercial/public	Commercial/industrial
Control (change of use, structural alterations, ventilation)	None	Some but not all	Full	Full
Room sizes	Small	Small/medium	Small to large	Large industrial/retail park style

- **Type A building:** private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.
- **Type B building:** private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels.
- **Type C building:** commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).
- **Type D building:** industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorized as Type B or Type C).

NOTE 2 Type A buildings are those where the risk of failure of the gas protection measures is likely to be most significant to the safety of the occupants and Type D buildings are those where this same risk is likely to be least significant.

From the design CS and the type of building (A, B, C or D) the minimum level of gas protection (score) in the range 0 to 7.5 should be determined in accordance with Table 4.

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Code of Practice for the Design of Gas Protective Measures for Methane and Carbon Dioxide for New Buildings

Table 4

BS 8485:2015

BRITISH STANDARD

Table 4 Gas protection score by CS and type of building

CS	Minimum gas protection score (points)			
	High risk	Medium risk		Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5 ^{A)}	5.5 ^{A)}	4.5	3.5
5	— ^{B)}	6.5 ^{A)}	5.5	4.5
6	— ^{B)}	— ^{B)}	7.5	6.5

^{A)} Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.

^{B)} The gas hazard is too high for this empirical method to be used to define the gas protection measures.

NOTE 3 The NHBC has published guidance [8] for use on residential developments, which utilizes an alternative classification ("traffic light") system. This guidance typically applies to Type A buildings utilizing beam and block floor constructions with clear void ventilation. The design choice variables are limited to decisions relating to the membrane specification and verification recommendations (see Table 7). Designers utilizing this system would therefore need to refer to the NHBC [8] to assess compliance for specific recommendations.

When the minimum gas protection score has been determined for the building as a whole, or for each part of the building, then a combination of two or more of the following three types of protection measures should be used to achieve that score:

- the structural barrier of the floor slab, or of the basement slab and walls if a basement is present;
- ventilation measures; and
- gas resistant membrane.

NOTE 4 The method of selecting the combination of these types of protection measures for a particular building is given in 7.2.

Once the types of protection measures have been decided, the detailed design and specification of the measures should be undertaken (see 7.3).

NOTE 5 In some cases, the designer might be of the opinion at this stage that the extent of the protection measures is potentially more than is needed, because of limitations in the scope of the site investigation [these limitations having led to a more conservative GSV and CS than is likely from the conceptual site model (see 6.3.7.2 and 6.3.7.3)]. In this case, further site investigation could be carried out to check the GSV. Only if there is sufficient time to carry out additional site investigation and gas monitoring would this step be useful.

The detailed design and specification of the protection measures should be recorded in a design report (see 8.3).

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Code of Practice for the Design of Gas Protective Measures for Methane and Carbon Dioxide for New Buildings

Table 5

Table 5 Gas protection scores for the structural barrier	
Floor and substructure design (see Annex A)	Score ^{A)}
Precast suspended segmental subfloor (i.e. beam and block)	0
Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)	0.5
Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	1 or 1.5 ^{B)}
Basement floor and walls conforming to BS 8102:2009, Grade 2 waterproofing ^{C)}	2
Basement floor and walls conforming to BS 8102:2009, Grade 3 waterproofing ^{C)}	2.5
^{A)} The scores are conditional on breaches of floor slabs, etc., being effectively sealed. ^{B)} To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast in (see A.2.2.2). ^{C)} The score is conditional on the waterproofing not being based on the use of a geosynthetic clay liner waterproofing product (see C.3, Note 4).	

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Code of Practice for the Design of Gas Protective Measures for Methane and Carbon Dioxide for New Buildings

Table 6

BRITISH STANDARD		BS 8485:2015
Table 6 Gas protection scores for ventilation protection measures		
Protection element/system	Score	Comments
(a) Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building)	0.5	Whenever possible a pressure relief pathway (as a minimum) should be installed in all gas protection measures systems. If the layer has a low permeability and/or is not terminated in a venting trench (or similar), then the score is zero.
(b) Passive sub floor dispersal layer: Very good performance: Good performance: Media used to provide the dispersal layer are: • Clear void • Polystyrene void former blanket • Geocomposite void former blanket • No-fines gravel layer with gas drains • No-fines gravel layer	2.5 1.5	Performance criteria for methane and carbon dioxide are shown in Figure B.6 and Figure B.7, respectively. The ventilation effectiveness of different media depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing and type and the thickness of the layer. The selected score should be assigned taking into account the recommendations in Annex B. Passive ventilation should be designed to meet at least "good performance", see Annex B.
(c) Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may comprise a clear void or be formed of geocomposite or polystyrene void formers	1.5 to 2.5	This system relies on continued serviceability of the pumps, therefore alarm and response systems should be in place. There should be robust management systems in place to ensure the continued maintenance of the system, including pumps and vents. Active ventilation should always be designed to meet at least "good performance", as described in Annex B.
(d) Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket	1.5 to 2.5	This system relies on continued operation of the pumps, therefore alarm and response systems should be in place. The score assigned should be based on the efficient "coverage" of the building footprint and the redundancy of the system. Active ventilation should always be designed to meet at least "good performance".
(e) Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park)	4	Assumes that the car park is vented to deal with car exhaust fumes, designed to <i>Buildings Regulations 2000, Approved Document F</i> [9].

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Code of Practice for the Design of Gas Protective Measures for Methane and Carbon Dioxide for New Buildings

Table 7

BRITISH STANDARD		BS 8485:2015
Table 7 Gas protection score for the gas resistant membrane		
Protection element/system	Score	Comments
Gas resistant membrane meeting all of the following criteria: - sufficiently impervious to the gases with a methane gas transmission rate $<40.0 \text{ ml/day/m}^2/\text{atm}$ (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method); - sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; - sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floor slab); - sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); - capable, after installation, of providing a complete barrier to the entry of the relevant gas; and - verified in accordance with CIRIA C735 [N1]	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints. For example, a minimum 0.4 mm thickness (equivalent to 370 g/m^2 for polyethelene) reinforced membrane (virgin polymer) meets the performance criteria in Table 7 (see C.3). If a membrane is installed that does not meet all the criteria in column 1 then the score is zero.



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