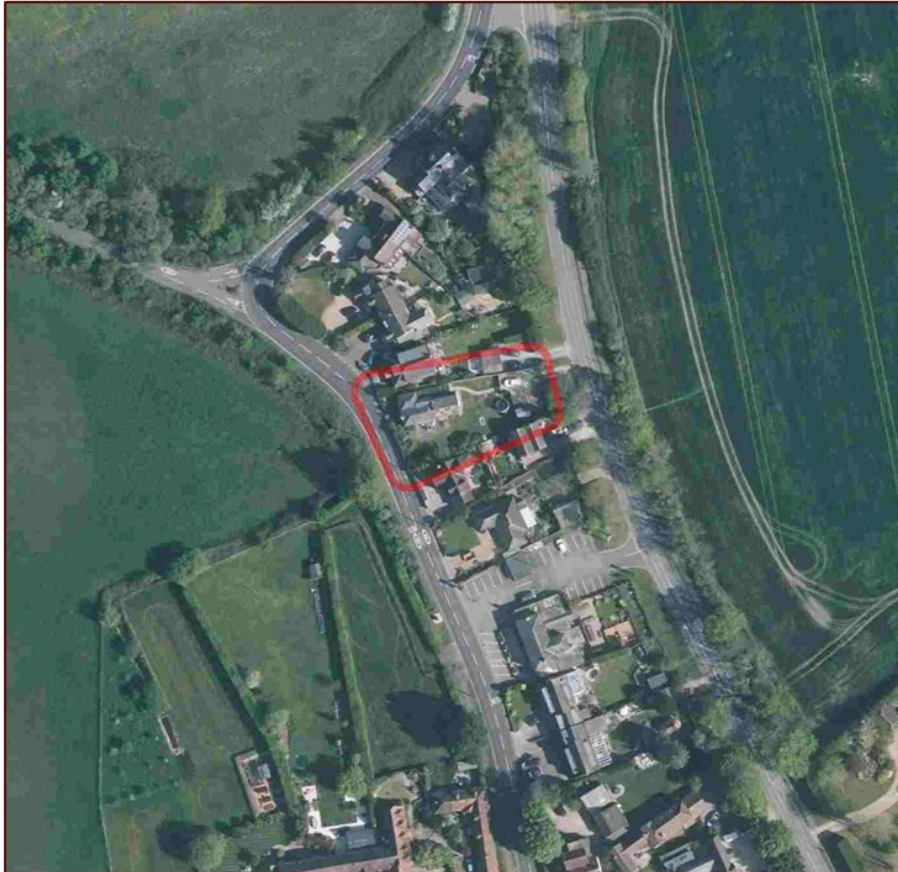


SITE INVESTIGATION REPORT

PROPOSED REDEVELOPMENT:

ALMA COTTAGE, LODGE ROAD, WHISTLEY GREEN, BERKSHIRE RG10 0EH



Client: **LOUIS MASSARELLA**
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Report ref: **10995/CA**

Date: **9th November 2024**

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This investigation has been undertaken within the constraints of the client's instruction/contract, together with those set out in the 'General information, limitations and exceptions' section at the end of this report. The Soil Consultants Limited (SCL) 'Standard Terms of Appointment' are also included at the end of this report and these identify the contractual arrangements for the investigation. Conclusions or recommendations made in this report are limited to those which can be reasonably based upon the research and/or intrusive investigation work carried out. Any comments which rely on third-party information which has been provided to us are made in good faith and on the assumption that such information is accurate. SCL have not carried out independent validation of any third-party information. Any views or recommendations made by the authors are expressed solely on behalf of SCL and not as individuals.

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Plans, drawings & photographs

- ✚ Site photograph key plan and photographs
- ✚ Proposed development plan and elevations
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- ✚ Wokingham Borough Council landfill sites ArcGIS maps
- ✚ Site location plan

APPENDIX B

- ✚ GroundSure historical maps (Ref: SCL-A92-ZW7-CY3-D95, 06/11/2024)
- ✚ GroundSure Enviro+Geo Insight Report (Ref: SCL-8WJ-8NA-DJD-XDE, 06/11/2024)

1.0 INTRODUCTION

It is proposed to construct a new residential dwelling at the eastern end of the garden to this property. The new dwelling is to be of traditional construction, two storey height with associated parking and access off Broadwater Lane located at the rear of the property.

In connection with the proposed works, Soil Consultants Ltd (SCL) were commissioned by Mr Louis Massarella to carry out a site investigation to include the following elements:

-  Stage 1 Tier 1 Preliminary Risk Assessment (Desk Study) including initial Conceptual Site Model (CSM)
-  Intrusive investigation to identify the ground sequence and groundwater conditions
-  Geotechnical and geo-environmental sampling and laboratory testing
-  Provision of advice on foundations and ground floor slabs
-  Provision of a Stage 1 Tier 2 generic quantitative risk assessment and refined Conceptual Site Model (CSM)

This report includes a summary of the findings and conclusions of the Desk Study research and Preliminary Risk Assessment. It then describes the intrusive investigation undertaken, gives a summary of the ground conditions encountered and discusses various foundation options. The Stage 1 Tier 2 generic environmental appraisal is then provided, including a revised CSM.

2.0 SITE DESCRIPTION

A summary description of the site and its general setting is as follows:

Element	Description
Site location and setting	- Located on the northern side of Whistley Green Village in the Borough of Wokingham, Berkshire. - Residential property, on the east side of Lodge Road and west side of Broadwater Lane (Photo 8). - Small residential area within a wider rural environment. - NGR 479242E, 174318N.
Site dimensions	17m (N-S) x 52m (E-W)
Site boundaries	- Residential dwellings are present directly north and south with associated gardens and garage / sheds either side (Photos 9 to 12). - Broadwater Lane is present directly east with open agricultural fields beyond (Photo 1 and 2). - Lodge Road is presently 9m west with open agricultural fields and lakes beyond. It is noted this field has been identified as a former landfill area. No gas protection measures/venting were noted within this field (Photo 3 and 4). - Approx 50m north of site are open fields, which have been identified as a former landfill. No gas protection measures/venting were noted within this field (Photo 5 and 6). - The village of Hurst is located approx. 900m southeast of site. - From historic mapping it is identified that a ditch is present running parallel to Broadwater Lane, on the western side, just beyond the eastern boundary of site. During the site walkover it is noted that this ditch had largely been infilled although remnants of this are still present to the northeast but no longer present to the east and southeast of site. It is noted that the remaining remnant ditch on the eastern boundary is heavily overgrown and did not contain water at the time of the site walkover (Photo 7) - A more recent ditch has been constructed running parallel to Broadwater Lane, but on the eastern side, adjacent to the agricultural field, starting at the junction with Lodge Road and stopping just north of Whistley Green Cottages. This drainage ditch did not contain water at the time of the site walkover (photo 1 and 2)

Element	Description
Site description	- Existing 2-storey house with side and rear garden and brick paving parking area on the southern and western part of the plot (Photo 8) - A paved patio area is present to the southern and eastern elevations of the existing house (Photo 8) with a paved path leading to the garden at the rear of the house. - At the time of our work, a close boarded fence had been constructed across the garden separating the development plot from the Cottage (Photos 11 and 12). - Within the development plot, the area was largely laid to lawn with a small shed and stockpiled building materials located in the south eastern corner (Photos 9 to 12). - A sewage/foul drain is known to be present running from the existing Alma Cottage along the northern boundary towards Broadwater Lane to the east of site.
Topography and site levels	- General area is sensibly level although the overall topography has a very gentle dip down to the north. - The site itself appears to be generally flat with no significant slope. - From online data sources and historical mapping, the site appears to be at an approximate elevation of about +36.6mOD.
Existing vegetation within site and adjacent properties	- A Tree Survey and Arboriculture Impact Assessment has been undertaken for the site by GHA Trees arboricultural consultancy; Ref: GHA/DS/162920:22, dated 14/11/2022. - The tree survey identifies two trees within the garden area of the site, a Cotoneaster (5m height) and a Weeping Birch (3m height) - Four trees are identified offsite directly to the east close to Broadwater Lane which are: Sycamore (13m height), Ash (12m height), Walnut (8m height) and Sycamore (12m height).

3.0 STAGE 1 TIER 1 PRELIMINARY RISK ASSESSMENT (DESK STUDY)

This assessment is generally based upon current UK guidance, primarily the Environment Agency's "Land contamination: risk management" 2023. The scope of the assessment is as follows:

- ✚ A review of historical and current land-use and potential contaminated land risks
- ✚ Development of an outline conceptual model, identifying potential sources, pathways and receptors and potential contaminant linkages (PCLs)
- ✚ Development of a strategy for intrusive investigation

3.1 Review of historical mapping

The following summary of the history of the site and surrounding area has been compiled from a series of historical maps (Groundsure Ref: SCL-A92-ZW7-CY3-D95, 06/11/2024) obtained from a commercially available database; these are included in Appendix B.

Historical development of site and surrounding area		
Map date	The site	Significant development / features in surrounding area
✚ 1872 - 1900	✚ The site contains a single residential dwelling located in the north western corner of the plot. Several small outbuildings are shown close to the eastern boundary. ✚ A well/pump is shown adjacent to the house ✚ A drainage ditch is shown along the eastern boundary	✚ Residential properties are present directly north and south of the site. ✚ An unnamed road is present directly west. ✚ Whistleycourt Farm is shown 100m southwest. ✚ Broadwater Lane is present approx. 90m north. ✚ Wells are shown in a number of the adjacent properties. ✚ Elephant & Castle public house approx. 80m south. ✚ Whistley Green village lies to the south. ✚ Whistley Farm is present 250m south. ✚ The land to the east and west of site are large open agricultural fields ✚ Various drainage ditches are shown in all directions around the site ✚ The River Lodden is shown about 300m west

Historical development of site and surrounding area		
Map date	The site	Significant development / features in surrounding area
1912 - 1933	- The well/pump feature is no longer shown. - It is noted that the site layout shown in this map edition is the same as the current day layout.	- Residential development had occurred within Whistley Village beyond 100m south of the site by this time. - By 1932 Broadwater Lane has been extended south and is shown to pass directly east of the site. It is noted that the road is in its current day layout.
1956 – present	No significant changes apparent	- Continued development of Whistley village directly south of site up to 500m south has occurred. - A Horticultural Nursery is shown approx. 320m to the south. This nursery is not present by 2024, with the area being redeveloped for residential purpose. - A garage was present approx. 210m south which was shown from 1956. Sometime after 2001 this building was repurposed as a plumbing merchants and child charity premises and is currently a gym - By 1967 Whistley Farm located approx. 250m south of site is no longer present, replaced with residential dwellings. - In the wider area to the west and north west, significant gravel workings were in operation the closest being about 300m from the site.

3.2 Database information

The database report includes information of local activities encompassing a range of subjects related to land use, pollution, and geological/hydrological conditions. Our assessment of contaminative uses and other environmental issues relevant to the site and its surroundings is provided below. The full database report (Groundsure Ref: SCL-8WJ-8NA-DJD-XDE, 06/11/2024) is included as Appendix B and this should be read and understood fully in conjunction with this summary.

Past land use

- Historical industrial land uses (within 250m): There are two records of historical land use within close proximity. Both of these records relate to a horticultural nursery located 241m south east and

identified to be present between 1977-1986. Historical mapping suggests the nursery to have been present until sometime between 2010-2024 map edition.

-  Historical tanks (within 500m): There are no identified records of historical tanks.
-  Historical energy features (within 500m): There are no identified records of historical tanks.
-  Historical garages (within 500m): There are three records of historical garages within proximity to site. These three records relate to a single garage located 186-194m south east of site, identified to be present between 1967-1997.

Waste and landfill

-  Active or recent landfill (within 500m): There are three records of active or recently closed landfill sites within proximity to site. The nearest of these records relates to an area of land operated by Tarmac Aggregates Limited at Whistley Mill (Stage 4), Broadwater, Hurst, Twyford, Berkshire, RG10 0EX located 47m northwest of site and is identified to be 'landfill taking other wastes' which has ceased operation. The second record relates to an area of land operated by Summerlease Limited at Whistley Court Farm & Lea Farm, Mohawk Way, Woodley, Reading, Berkshire, RG5 4UE located 83m west of site, although is considered to extend to a distance of 9m west of site as shown by ArcGIS mapping provide by Wokingham Borough Council, and is identified to be 'co-disposal landfill site' which has ceased operation. The third record relates to an area of land operated by Tarmac Aggregates Limited at Whistley Mill (Stage 3), Broadwater, Hurst, Twyford, Berkshire, RG10 0RA located 303m northwest of site and is identified to be 'landfill taking non-biodegradable wastes' which has ceased operation.
-  Historical landfills (within 500m): There are four records of historical landfill sites within proximity to site. The nearest of these records relates to Whistley Mill Stage 1, Hurst, Near Twyford located 283m west of site and is identified to be for disposal of inert industrial waste and has a last recorded input of 31/12/1985.
-  Licensed waste sites (within 500m): There are twelve records of licensed waste sites. The nearest seven of these records relate to waste sites operated by Lafarge Aggregates Ltd, Lafarge Redland Aggregates Ltd and Tarmac Aggregates Limited at Alan Hadley Ltd, Whistley Mill, Whistley Bridge Lane, Hurst, Twyford, Berkshire, RG10 located 209m northwest of site and is identified to be 'landfill taking other wastes'.
-  Waste exemptions (within 500m): There are no identified records of waste exemptions within proximity to site.

Current industrial land use

-  Recent industrial land uses(within 250m): There are no identified records of current potentially contaminative industrial sites.
-  Current or recent petrol stations (within 500m): There are no identified records of open, closed, under development and obsolete petrol stations.

- ✚ Licensed discharges to controlled waters (within 500m): One record of discharges of treated or untreated effluent to controlled waters is identified and relates to Twyford Landfill Site, Near Whistle, Twyford Landfill Site, Tley Bridge, Twyford, Berkshire located 498m north west and is identified to be for miscellaneous effluent into the River Loddon and is noted to be ceased on 04/07/2007.
- ✚ Pollution incidents (within 500m): One record of substantiated pollution incidents is identified which relates to the release of 'general biodegradable materials and wates (other animal matter) located 412m west of site and is noted to have category 4 (no impact) to water, land and air.

Hydrogeology

- ✚ Superficial aquifer: The superficial deposits beneath site (Kempton Park Gravel Member) are defined as a Secondary A Aquifer.
- ✚ Bedrock aquifer: The bedrock geology beneath site (Lambeth Group) are defined as a Secondary A Aquifer.
- ✚ Groundwater vulnerability: High vulnerability on site. Leaching class 'High'.
- ✚ Groundwater, surface water and potable abstractions (within 500m): There are no identified records of groundwater, surface water and potable abstractions within proximity to site.
- ✚ Source Protection Zones (within 500m): It is noted that the site and surround area is categorised as a type 3 Total Catchment source protection zone.

Hydrology

- ✚ Water Network (within 250m): There are fifteen records of water features within proximity to the site. The nearest four records relate to an inland river not influenced by normal tidal action (watercourse contains water year round) located 3-5m southwest of site and, from review of historical mapping, this feature appears to be a drain ditch located adjacent to Lodge Road. During the site walkover it is noted that remnants of a drainage ditch is present to the northeast of site A new drainage ditch is present on the eastern side of Broadwater Lane, adjacent to the agricultural field.
- ✚ Water Framework Directive (WFD) surface water body catchments (within 250m): It is identified that the site is located within the Twyford Brook (Water Body ID: GB106039023190) catchment area, with an operational catchment of Loddon and a management catchment of Loddon and Trib.
- ✚ Water Framework Directive (WFD) surface water bodies: One record of surface water bodies is identified within proximity to site, this record relates to Twyford Brook (Water Body ID: GB106039023190) located 410m north of site, and has an overall rating of bad, a chemical rating of fail and an ecological rating of bad.
- ✚ Water Framework Directive (WFD) groundwater bodies: One record of groundwater bodies is identified on site, this record relates to Twyford Tertiaries (Water Body ID: GB40602G602700) and has an overall rating of good, a chemical rating of good and an quantitative rating of good.

River and coastal flooding

- ✚ Risks of flooding from rivers and seas (RoFRaS) (within 50m): The risk of flooding from rivers and seas is considered negligible on site and in the surrounding area up to 125m in all directions.
- ✚ Historical flood events (within 250m): There are eleven records of historic flooding from rivers, the sea, groundwater and surface water. The nearest of these records relates to a flood event that occurred between 23/12/2002 to 12/01/2003 located 108m west of site, with the type noted as fluvial and cause noted as channel capacity exceeded (no raised defences).
- ✚ Flood defences (within 250m): No records of flood defences are identified within 250m of the site.
- ✚ Areas benefiting from flood defences (within 250m): No records of areas benefiting from flood defences are identified.
- ✚ No Zone 2 or 3 floodplains within 50m of the site.

Surface water and groundwater flooding

- ✚ Surface water flooding: the highest risk on site (and within 50m) is 1 in 30 year – 0.3m-1.0m
- ✚ Groundwater flooding: the highest risk on site (and within 50m) is 'moderate'

Environmental designations

- ✚ SSSI: No records identified within 500m of the site.
- ✚ Designated Ancient Woodland: No records identified within 500m of the site.
- ✚ Nitrate Vulnerable Zones: it is identified that the site is located within the Sheeplands nitrate vulnerable zone (Type: groundwater, NVZ ID: 88, Status: existing).

Visual and cultural designations

- ✚ Listed buildings (within 250m): There is one record of a listed building within proximity to site, this record relates to Huntsmans Cottage located 219m south east and is categorised as a Grade II listed building.

Agricultural designations

- ✚ Agricultural land designation (within 250m): The site and surrounding area is classified as Grade 3 agricultural land.
- ✚ Countryside stewardship schemes: There are two records of countryside stewardship schemes located in proximity to the site. The nearest of these records relates to Countryside Stewardship (Middle Tier) (Ref: 1056972) located 19m northeast of site and has a start date of 01/01/2021 and an end date of 21/12/2025.

Habitat designations

- Priority habitat inventory (within 250m): There is one record of Habitats of principal importance within proximity to site, this record relates to deciduous woodland (Inv >50%) located 212m south.

Geology

- Artificial and made ground: There are four records of infilled and worked ground within 500m of the site. The nearest of these records relates to an area of infilled land 9m to the west that is identified to be the former landfill site at Summerleaze Ltd, Whistley Court Farm & Lea Farm, Mohawk Way, Woodley, Reading, Berkshire, RG5 4UE (co-disposal landfill site). This infilled land is categorised as having a low to very high permeability with a mixed flow type.
- Superficial geology: It is identified that the site is directly underlain by superficial deposits of the Kempton Park Gravel Member which has a high to very high permeability with a intergranular flow type.
- Bedrock geology: It is identified that the site is underlain by bedrock geology of the Lambeth Group which has a very low to moderate permeability and a mixed flow type.
- BGS boreholes: There is one record of publicly available BGS borehole data within proximity to site. This borehole record identifies the following sequence of strata: Topsoil to a depth of 0.20m bgl, river gravels (Kempton Park Gravel Member) to a depth of 3.50m bgl, Reading beds (Lambeth Group) to a depth of 4.0m bgl.
- Natural ground subsidence: The following table summarises the onsite risks for all categories of natural ground subsidence:

Natural Ground Subsidence	Identified Risk Onsite
Shrink/swell clays	Moderate
Running sands	Very Low
Compressible deposits	Onsite = Negligible 9m west = Moderate
Collapsible deposits	Very Low
Landslides	Very Low
Ground dissolution of soluble rocks	Negligible

Mining, ground workings and natural cavities:

- Surface ground workings (within 250m): There are six records of surface ground workings, all of which relate to existing pond features. The nearest of these records relates to a pond located 70m northwest, dated 1960 and is considered to relate to the currently existing pond features noted at the junction between Whistley Green Lane and Lodge Road.
- Historical mineral planning areas (within 500m): There are two records of historical mineral planning permissions. The nearest of these records relates to Whistley Mill Farm located 314m west and is noted to be for the extraction of sand and gravel (surface miner working, status: valid). The second record relates to East Park Farm located 350m north and is noted to be for the extraction of sand and gravel (surface miner working, status: refused).
- Non-coal mining (within 500m): There are no identified records of non-coal mining activity.
- JPB mining areas: It is identified that the site and surrounding area may be affected by mining activities.
- The Coal Authority non-coal mining (within 500m): There are no identified records of Coal Authority non-coal mining activity.
- Researched mining (within 500m): There are two records of areas of potential mining identified from alternative or archival sources, both of which relates to the extraction of stone. The nearest of these records relates to an area located 379m west of site that is for the extraction of stone.

Radon

- Less than 1% of properties affected, Radon protection measures not required

Soil chemistry

- BGS estimated background soil chemistry, extract as follows:

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

3.3 Unexploded ordnance risk assessment

From a preliminary search of UXO risk (shown below), the site is within a low risk UXO area therefore on-site support is not considered to be required for both investigation or development works.



This map principally indicates a hazard from Unexploded Bombs (UXB) due to WWII bombardment. Other sources of Unexploded Ordnance (UXO) may be present. It should be noted that this map does not represent UXO risk and should not be reported as such when reproduced.

LEGEND						
High: Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.	Moderate: Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.	Low: Areas indicated as having 15 bombs per 1000acre or less.	Military	Industry	UXO find	Other
			Transport	Docks	Luftwaffe targets	
			Utilities	Bombing decoy	Airfields	

3.4 Walk-over survey

A site walk-over survey was undertaken on 13th November 2024. A description of the general features of the site and the topography is provided in Section 2.0 above. From inspection of visible and accessible areas, a summary of specific features relevant to the land quality assessment is as follows:

Feature	Commentary
Electricity substations and transformers	✚ None identified within the site or surrounding area
Fuel storage tanks	✚ None identified within the site or surrounding area
Fuel interceptors	✚ None identified within the site or surrounding area
General chemical storage/waste	✚ None identified within the site or surrounding area
Invasive species	✚ None identified within the site or surrounding area
Evidence of gas protection	✚ None identified within the site. Gas venting systems were not observed in the surrounding fields to the west and north where former landfill sites are reported.
Surface water contamination	✚ None identified within the site and surrounding area. ✚ Two small pond features are noted to be present approx. 50m northwest of site, at the junction between Whistley Mill Lane and Lodge Road, and are connected by a culvert with no significant visual signs of water contamination noted during the site walkover. This area is noted to be heavily overgrown. ✚ The River Loddon was observed approx. 360m northwest of site, accessed off Whistley Mill Lane, which showed no obvious visual signs of significant water contamination.
Waste storage	✚ General construction materials (wood, roofing felt, brick and plastic pipe) were present adjacent to the shed in the south eastern corner of the site
ACMs	✚ None identified within the site or surrounding area
Other	✚ The drainage ditch located on the eastern boundary had largely been infilled and is over grown. The remnant ditch to the north , whilst overgrown, was dry at this time. The ditch present on the eastern side of Broadwater Lane did not contain any water at the time of the site walkover

3.5 Potential pollution linkages and Initial Conceptual Site Model

The information in the preceding sections has been used to undertake the Preliminary Risk Assessment and to compile the Initial Site Conceptual Model below in accordance with current LCRM (EA2021) guidance. The assessment follows a risk-based approach, with the potential risks determined qualitatively using the 'source-pathway-receptor' linkage concept. Potential harm may only exist where a plausible, rational and justified linkage is present between all factors of the linkage.

The following assessment pro-forma methodology has been formulated from existing guidance using a standard modified consequence and probability matrix:

		Consequences			
		Severe (4)	Medium (3)	Mild (2)	Minor (1)
Probability	High likelihood (4)	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely (3)	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood (2)	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely (1)	Moderate/low risk	Low risk	Very low risk	Very low risk

Definitions of Consequence:

- Severe (4): Significant damage or harm to buildings/property/services, short-term (possibly immediate) acute direct risks to controlled waters, human and ecological receptors via pollution and direct exposure.
- Medium (3): Direct pollution of controlled waters and possible chronic or acute risks of significant harm to human health, buildings/services and/or ecological receptors via exposure.
- Mild (2): Indirect pollution of controlled waters and possible chronic risks to human health, building/service and/or ecological receptors over the longer term causing potential harm.
- Minor (1): Negligible potential for damage or harm to be significant to identified receptors but may still be present which may result in actions being required by appropriate regulators.

Definitions of Probability:

-  High likelihood (4): There is, or it is inevitable that there will be, an identified and/or confirmed potential pollution linkage or incident capable of causing harm in the immediate to medium term.
-  Likely (3): There is, or it is inevitable that there will be, an identified and/or confirmed potential pollution linkage or incident capable of causing harm in the medium or longer term.
-  Low likelihood (2): There is, or could be, an identified and/or confirmed potential pollution linkage or incident potentially capable of causing harm over time, but it is not inevitable.
-  Unlikely (1): There is, or could be, an identified and/or confirmed potential pollution linkage or incident potentially capable of causing harm over the longer term, but it is improbable that it will be significant.

Definitions of the final linkage risks are summarised as follows:

-  **Very high:** high probability that severe harm could occur, or there is evidence that it is currently occurring. If realised, the risk could result in substantial liability. Urgent investigation/remediation
-  **High:** harm is likely to occur, realisation is likely to present substantial liability. Urgent investigation required. Remedial works may be required in short-term, will be in long-term
-  **Moderate:** possible that harm could arise, but unlikely to be severe. Investigation normally required to clarify risk and liability. Remedial works may be necessary in long-term
-  **Low:** possible that harm could occur, but this would at worst be mild
-  **Very low:** low possibility of harm, unlikely to be severe

The following initial assessment has been carried out by identifying and evaluating the potential sources of contamination, the potential receptors and the plausible pathways for contamination migration. These have been determined from the available data using current guidance at the time of writing and will be subject to re-evaluation if or when additional data becomes available.

Potential sources of contamination

A summary of potential sources identified by our review of the above information is as follows:

-  **Present/recent site usage:** The site is currently used as a residential dwelling therefore we would not expect any significant contaminant sources from this type of land use, as such the only potential contamination source is considered to be the presence of made ground or localised spillages from vehicles or materials stored in the shed which may include: inorganics (metalloids and heavy metals), asbestos and hydrocarbons (TPH and PAH).
-  **Historical site usage:** The site has been used as a residential dwelling since earliest map edition dated 1872. As such the only historical potential contamination source is considered to be the presence of made ground which may include: inorganics (metalloids and heavy metals), asbestos and hydrocarbons (TPH and PAH).

- ✚ **Offsite usage:** The immediate area to the north, east and south has been predominately residential in nature with some agricultural fields beyond. Directly to the west and further to the north, infilled land and landfill sites are recorded and thus potential contamination sources. These contaminants could include inorganics (metalloids and heavy metals) and hydrocarbons (TPH and PAH) which could migrate through groundwater but also have the potential to generate ground gasses that could migrate towards the site.

It should be noted that any developed, non-greenfield land is likely to contain made ground. This will probably be of uncertain or unknown origin and may contain contaminants that have not been specifically identified.

The assessed risks from these potential sources are summarised in the Initial Conceptual Site Model below.

Potential receptors

In the context of the proposed development, the following potential receptors have been identified:

- ✚ Human health: inhabitants/users of building, construction workers, adjacent site users
- ✚ Controlled waters: Secondary 'A' aquifers beneath site (superficial and bedrock). The site and surrounding area is located within a Type III source protection zone, there are no nearby water abstractions. The site is assessed as being of **low to medium environmental sensitivity**.
- ✚ Building fabric and services: buried foundations and potable water pipes

Plausible pathways

- ✚ Ingestion of soil, dust or water
- ✚ Inhalation of dust, gas or vapours
- ✚ Direct physical contact with contaminated soil/water
- ✚ Vertical and lateral migration of contamination including leaching
- ✚ Chemical attack of building infrastructure, including water supply pipes
- ✚ Migration of ground gas/vapour through permeable soils or open pathways

The Initial Conceptual Site Model and an estimate of the risk associated with each potential linkage is shown in the following table:

Source	Pathway	Receptor	Preliminary assessed risk and commentary/justification
On-site: contaminated soil and groundwater	Ingestion, contact, inhalation	End user, construction workers and infrastructure	Probability: 3 Consequence: 2 Potential Contaminant Linkage risk: Low to Moderate Historical/recent development of the site leaving made ground, spillages
	Leaching from contaminated soils and migration in groundwater	Superficial Aquifer	Probability: 2 Consequence: 2 Potential Contaminant Linkage risk: Low No significant potential onsite contamination sources were identified
Off-site: contaminated soil and groundwater	Lateral migration of contaminants to site in groundwater	End user, construction workers and infrastructure	Probability: 3 Consequence: 3 Potential Contaminant Linkage risk: Moderate - Potential significant sources of offsite contamination have been identified within the vicinity of site, notably the waste/landfill sites which have the potential for leachate to generate and migrate towards site - It is noted that nearby surface water features do not show obvious signs of significant contamination
On-site and off-site: ground gas and vapours	Lateral and vertical migration of gas/vapour	End-user and buildings	Probability: 3 Consequence: 4 Potential Contaminant Linkage risk: High - There is a risk of ground gas/vapour to be present at the development site given the proximity to identified areas of infilled ground/landfill sites. The nature of the material being deposited at these waste site is unknown although some records indicate inert / industrial waste. Given that no gas protection measures were noted within the former landfill areas, this would suggest that inert, non-degradable wastes were deposited. - The shallowest soils onsite and in the surrounding area are expected to be granular in nature; it is possible for ground gas and vapour to travel laterally through the ground and or vent directly to the atmosphere. - The site is not in a radon affected area, therefore no radon protection measures are required for new buildings without basements.

The overall risk rating for the site is assessed as being **High to Moderate**.

3.6 Recommendations for intrusive investigation

The Initial Conceptual Site Model identified potential pollution linkages for the generation/migration of ground gasses/vapours resulting in the overall assessed risk rating of high to moderate. The following programme of intrusive investigation is recommended:

-  Suitable intrusive investigation to confirm the ground sequence and allow the installation of combined ground gas/groundwater monitoring pipes.
-  Potential areas to be targeted which have been identified by the PRA include the western and northern areas of the site, given these are the nearest points to the identified infilled land/landfill site.
-  A programme of groundwater and gas monitoring should be undertaken to ascertain the concentrations of ground gasses and vapours present beneath the site.

The Initial Conceptual Site Model should then be revised to include complete pollution linkages and outline mitigation/remedial measures should be identified, together with any requirements for additional investigation.

4.0 EXPLORATORY WORK AND LABORATORY TESTING

The ground investigation was carried out on the 13th November 2024 and is described below.

4.1 Constraints of investigation

At the time of the investigation the North wester corner of site was occupied by the existing Alma Cottage building with no access available and, within the eastern area of site, a small wooden shed was present with stored building materials in this general area. Reasonable coverage was possible in the remaining areas. Thus, one boreholes was completed on the western margin of the overall site (closest to the landfill) with the remaining boreholes concentrated within the proposed development plot.

4.2 Dynamic sampler boreholes

Six boreholes (WS01 to WS06) were completed using dynamic sampling equipment under the supervision of an experienced geo-environmental engineer. Representative samples were taken for geotechnical and environmental testing and PID headspace testing was carried out on all environmental samples. In-situ Standard Penetration Testing (SPT) were carried out at appropriate intervals. The hammer Energy Ratio (E_r) for the SPT equipment used was 61%; the relevant test certificate is appended. Monitoring pipes were installed in WS01, WS02, WS03 and WS04.

4.3 Groundwater and gas monitoring

Groundwater/gas monitoring was carried out on three occasions following completion of the site works between 13/11/24 to 05/12/24.

4.4 Geotechnical laboratory testing

The following geotechnical laboratory testing was completed:

 Particle size distribution tests

4.5 Chemical and contamination testing

Selected soil samples were delivered to a specialist laboratory (DETS Ltd) and the following testing was carried out:

	General soil suite	-	3no samples
	Asbestos screening	-	3no samples
	TPH-CWG	-	1no samples
	Soluble sulphate/sulphur/pH analyses	-	3no samples

The engineering borehole logs and the laboratory testing results are included in Appendix A.

5.0 GROUND CONDITIONS

Published BGS geological maps indicate that the site is underlain by the Kempton Park Gravel Member (sand and gravel) which rests upon the Lambeth Group (clay, silt and sand). Given the site has been developed we would expect limited thickness of made ground to be present.

This sequence was confirmed by the investigation and detailed descriptions are presented on the exploratory hole records with the ground sequence represented on the geological cross section; this information is presented in Appendix A. The ground sequence is summarised in the following sections. Note that all depths are relative to existing ground level unless otherwise stated.

5.1 Made ground

Below a nominal thickness of turf/topsoil or surfacing material, made ground was identified extended to depths of between 0.25m and 1.00m bgl. Whilst variable in composition, these soils generally comprised dark brown/black silty gravelly sand with variable amounts of brick, concrete, clinker and glass fragments.

5.2 Kempton Park Gravel Member

The Kempton Park Gravel Member was met beneath the made ground and was present to the full depth investigated of 3.00m bgl. This deposit generally comprised yellow very sandy gravel and yellow very gravelly sand which was observed to locally contain pockets of grey clay within borehole WS06.

Within boreholes WS02 and WS05, a layer of clay soil was identified above the granular deposits attaining a thickness of 0.75m and 0.35m respectively. This clay has a soft consistency and generally comprises light grey mottled orange and brown; and greyish-brown sandy clay with a subordinate gravel content.

The laboratory test results on the granular stratum indicate the material is predominantly gravel (55-60%) with a secondary component of sand (30.5-39%) and a tertiary component of clay/silt (4-9.5%). One sample taken from WS05, between 1.0m-1.5m is predominately sand (53.5%) with a secondary component of gravel (41.7%) and a minor component of clay/silt (4.8%).

The deposit was in a dense to very dense state of compaction with SPT 'N' values generally in excess of >50. It is noted that in Borehole WS04, medium dense conditions were measured which probably represents an influence of the groundwater table and disturbance of the soils from drilling.

5.3 Groundwater

No significant water inflows were noted during the drilling works although the soils were noted as 'Damp' below 1.70m to 1.80m depth on some of the boreholes. During subsequent monitoring visits groundwater was measured at depths of between 1.71m and 2.86m at this time.

The groundwater observations during drilling and subsequent monitoring are summarised in the table below.

Hole ID	Inflows (depth & level)	Monitoring results (depth and level)		
		13 Nov 2024	22 Nov 2024	05 Dec 2024
WS01	Damp from 1.80m; Dry on completion of drilling	Dry	Dry	1.74m (+34.86mOD)
WS02	Damp from 1.80m; Dry on completion of drilling	1.84m (+34.76mOD)	1.79m (+34.81mOD)	1.71m (+34.89mOD)
WS03	Dry on completion of drilling	Dry	Dry	Dry
WS04	Damp from 1.70m; Dry on completion of drilling	2.86m (+33.74mOD)	2.76m (+33.84mOD)	2.56m (+34.04mOD)

NB levels approximate in the absence of a site survey

Groundwater levels can of course vary seasonally and with prevailing weather conditions. The surrounding area contains a number of drainage ditches adjacent to roadways and thus, shallow groundwater would be expected during winter months and following prolonged periods of inclement weather.

5.4 Environmental observations

Generally, no obvious olfactory or visual signs of soil contamination were encountered in the boreholes. It is noted that a blue green compound was seen within the borehole WS03 at a depth of 0.60-0.80m bgl which may represent a copper associated compound. As sample of this material was tested and is discussed below.

PID headspace testing (for VOC concentrations) was undertaken on samples of made ground and natural soils during the borehole exercise with no significantly elevated levels noted in soil samples (<1.2ppm). No consistently elevated levels were measured within the installation during post fieldwork monitoring.

6.0 GEOTECHNICAL ASSESSMENT

The proposed works at this site include the following elements:

-  Demolition of the existing buildings/structures within the rear garden of Alma Cottage
-  Construction of a new 2-storey residential building with associated parking and access

No details of the anticipated structural loads were available at the time of compiling this report and we would expect these to be modest for a development of this nature.

The investigation has revealed that beneath the topsoil/made ground (up to 1.00m in the boreholes) the competent natural Kempton Park Gravel Member is present to at least the maximum investigated depth of 3.00m bgl. With the exception of shallow clay soils which could be present in some areas, we anticipate that the natural granular Kempton Park Gravel deposits should be suitable to support the structural loads using traditional spread foundations.

Standing groundwater was recorded at depths of between about 1.79m and 2.86m bgl; the highest level recorded during monitoring was +34.81mOD. Perched groundwater should also be expected at higher levels accumulation in the topsoil/made ground above the Kempton Park Gravel Member particularly if clay soils are present. From the history of the site (showing former structures at the eastern end of the site), buried obstructions may be present and thus should be anticipated.

Gas monitoring has indicated that basic gas protection measures are required for the building and this is discussed below.

6.1 Spread foundations

Spread foundations must bypass any topsoil/made ground and shallow clay soils and be placed within the competent natural undisturbed granular Kempton Park deposits. Based on boreholes WS03 and WS04, we consider that a minimum founding depth of 0.75m below ground level would be appropriate although deepening may be required in order to bypass any made ground and or clay soils. The excavations will need to be carefully inspected by an experienced foundation engineer, and any soft/loose zones (or significant clay lenses/horizons within the Kempton Park Gravel) must be bypassed or removed and replaced with suitably compacted granular fill or concrete.

For preliminary assessment of the feasibility and sizing of foundations placed within the natural granular material of the Kempton Park Gravel Member, we envisage that an allowable bearing resistance of 200kN/m² would be appropriate; this would be applicable to moderate sized strip or pad foundations, say up to 2.5m width. As required by EC7, the design engineer must ensure that the correct comparisons are made between Design Actions and Design Resistances after the application of appropriate partial factors and using the final base geometry. For ULS design the bearing resistance should be determined, using undrained and/or drained analysis as appropriate, to calculate the degree of utilisation of the foundation (limit state GEO). SLS checks should be carried out using appropriate methods in accordance with current practice.

The foundation excavations will encounter variable topsoil/made ground, which could become unstable and thus provision for temporary lateral support should be made. On the basis of the monitoring, the excavations are expected to remain dry above say 1.50m but provision should be made for protection against perched water. The nature of the shallow soils would indicate that these rapidly deteriorate or erode in the presence of free water and thus excavations should be protected during inclement weather and concrete cast immediately after excavation and the trenches are unlikely to remain stable for any significant period of time.

It must also be noted that groundwater levels can rise significantly during wet periods. We recommend that a monitoring of the borehole installations is carried out to confirm the groundwater levels ahead of construction or a trial excavation is undertaken.

6.2 Ground floor slab

The investigation has indicated that up to about 1m thickness of non-engineered made ground is present. Following removal of topsoil and topsoil type material we recommend that suspended floor slabs are adopted. Gas protection measures would be required and this is discussed in Section 7.3 below.

6.3 Soakaways

As granular soils are present below the site, soakaways could be adopted subject to local authority/regulatory approval. Whilst no infiltration tests were included within the scope of this work, testing should be undertaken ahead of design to assess the soakage rates of the underlying soils. It should be noted that groundwater levels could be relatively shallow and thus inhibit drainage potential especially during winter months or periods of inclement weather.

6.4 Foundation concrete

Low concentrations of water-soluble sulphates (2:1 water/soil extract) were measured in selected soil and groundwater samples, with near neutral to slightly alkaline pH values. The results fall into Site Design Class DS-1 of Table C2 given in BRE Special Digest 1 (2005). We assess the site as having 'mobile' groundwater and this would result in an ACEC Site Class of AC-1.

Consideration should also be given to the potential oxidation of pyritic soils. Following the procedure recommended in the BRE digest, the amount of oxidisable sulphides is seen to be >0.3% in none of samples, suggesting that pyrite is probably not present. The characteristic value of Total Potential Sulphate is 0.14%, which equates to Class DS-1 with a resultant classification of ACEC AC-1.

7.0 STAGE 1 TIER 2 ENVIRONMENTAL ASSESSMENT

This appraisal is generally based on the Environment Agency's 'Land contamination: risk management', 2023, adopting current UK practice which uses the Source-Pathway-Receptor methodology to assess contamination risks. For a site to be designated as contaminated a plausible linkage between any identified sources and receptors must be identified, ie whether potential contaminant linkages (PCLs) are present. In considering the potential for contamination to cause a significant effect, the extent and nature of the potential source are assessed and pathways/receptors identified; without a PCL there is theoretically no risk to the receptors from contamination. The assessed risks to the various potential receptors are summarised in the tabulated Conceptual Site Model which forms Section 7.4 of this report.

7.1 Environmental setting and context

The site is underlain by the Kempton Park Gravel Member and the Lambeth Group both of which have a Aquifer Designation of '**Secondary Aquifer – A**'. The site lies within a Source Protection Zone III with no nearby water abstractions.

The site is assessed as being of **Low to Moderate** environmental sensitivity.

7.2 Contamination sources and testing

The Preliminary Risk Assessment is presented in Section 3.6 and this identifies significant potential sources of contamination and the associated risks. To confirm the presence or absence of contaminants for the proposed development, we have undertaken analysis of three soil samples for a range of contaminants which were considered to reflect the potential historical/current site usages and the potential sources. Specifically, PID head-space testing and analysis for total and speciated petroleum hydrocarbons were also included to reflect the presence of the nearby waste landfill sites and historic features.

The soil test results have been assessed where relevant against the DEFRA Soil Guideline Values (SGV) and Category 4 Screening Levels (C4SLs), together with the LQM/CIEH Suitable 4 Use Level (S4UL) for Human Health Risk Assessment in which Generic Assessment Criteria (GACs) have been derived from the CLEA Model (2nd Edition, 2009). Any groundwater test results have primarily been assessed against the Water Supply (Water Quality) Regulations 2016, Environmental Quality Standards (EQS) and the WHO Guidelines for Drinking Water Quality WHO/SDE/WSH/0.5.08/123. The contamination testing was carried out specifically for the purpose of providing a general guidance evaluation for the proposed development. Reference should be made to the foreword to the appended contamination test results in order to fully understand the context in which this discussion should be viewed.

We have used, where relevant, the trigger levels for **residential development (with home-grown produce)** to assess the results of the contamination testing.

Using these criteria the following results are of note:

-  **Lead:** elevated concentrations of lead were measured in two samples of made ground, taken from WS03 at 0.60-0.80m bgl identifying 1230mg/kg and WS04 at 0-0.35m bgl identifying 299mg/kg, when compared to the C4SL threshold level of 200mg/kg. The desk study has indicated a 'normal' background concentration of 100mg/kg (BGS background soil guidance)
-  **Phytotoxic zinc:** one sample of made ground, taken from WS04 at 0-0.35m bgl, exhibited an elevated concentration of phytotoxic zinc of 345mg/kg when compared to the soil guideline value of 330mg/kg
-  **Petroleum hydrocarbons:** below threshold trigger values for relevant assessment criteria
-  **Polycyclic Aromatic Hydrocarbons (PAH):** below threshold trigger values for relevant assessment criteria
-  **Asbestos:** not detected in any samples

The analyses of soil samples indicates that lead is present within the made ground in the eastern area of the site. Within the vicinity of WS03, where the highest levels of lead contamination were noted, the underlying natural Kempton Park Gravel Member shows no signs of lead contamination therefore it is considered that the lead contamination is likely to be contained within the made ground present and is not considered of high leaching potential affecting the underlying superficial aquifer. The identified single exceedances of phytotoxic zinc is not considered a risk in term of human health but should be considered for any potential planting.

It should be noted that there may of course be pockets of undetected contamination between exploratory points. The boreholes did not intercept the groundwater table and there was insufficient water within the monitoring pipes to allow suitable sampling and testing. Hence, groundwater samples have not been analysed.

The implications of these results are addressed in the revised Conceptual Site Model below.

Although Asbestos-Containing Materials (ACMs) were neither observed on site nor identified in the samples examined, we note that buildings, especially those constructed or refurbished before 2000, are a potential source of ACM and may contribute to Asbestos-Containing Soils (ACS) on-site and in surrounding areas. Furthermore, made ground, construction and/or demolition materials on site may also contain ACM and/or ACS which should be further investigated, if encountered, by competent persons. These matters should be addressed and assessed by competent persons in the Pre-Construction H&S plan prior to any demolition or earthworks being undertaken.

7.3 Ground gas/vapour monitoring

The PRA identified a potential gas risk from the nearby landfill sites located approximately 9m west and 47m northwest of site. Given that the proposed development is a new residential building which provides a space for ground gases/vapour to accumulate and, that a ground gas risk assessment planning condition has been applied to the proposed development, gas monitoring was undertaken on three occasions following completion of the boreholes. No elevated levels of Hydrogen Sulphide or Carbon Monoxide were measured within the boreholes. Methane was generally present in very low concentrations (0.3%) although slightly elevated concentrations of Methane were noted on one occasion within borehole WS02 with a maximum recorded concentration of 3.3%. Carbon Dioxide was generally present at all locations in very small concentrations with measurements above 5% in borehole WS03 on two occasions with a maximum recorded concentration of 6.1%. PID readings in the borehole installations were generally low with some slightly elevated readings measured in boreholes WS02 and WS04 on one occasion. The maximum PID reading identified 16.2ppm. Oxygen levels were slightly depleted on all occasions corresponding with the slight elevations of the other gasses.

Flow rates were generally measured as zero with a maximum flow rate of 0.1 l/hr identified in boreholes on the second and third visits in boreholes across the site.

As described in CIRIA C665 "Assessing risks posed by hazardous ground gases to buildings", 2007 we have considered the concentrations of Methane and Carbon Dioxide which could potentially affect the development. A Methane Gas screening value of 0.003l/h is calculated along with a value of 0.006l/h for Carbon Dioxide. Given the level of carbon dioxide above 5%, it is recommended that gas protection measures will be required. On the basis of these results, we consider that Characteristic Situation 2 (low risk) is appropriate and basic gas protection measures are required for the new building.

The PRA identifies that the site is not within a surface affected radon area, <1% of homes estimated to be at or above the action level. Therefore it is considered that no radon protection measure are required for buildings without basements.

7.4 Refined Conceptual Site Model

Taking into account the above discussion, the assessed risks to potential receptors identified in the PRA are summarised in the refined Conceptual Site Model (CSM) below. See Section 3.5 for an explanation of probability and consequence ratings and the overall assessment of the risks of contaminant linkages. The CSM below includes recommendations for appropriate mitigation measures to render any linkages inactive and reduce the risks to receptors to acceptable levels:

Source	Pathway	Receptor	Assessed risk, justification and measures to mitigate the risk to acceptable levels
On site: contaminated soil/water	Ingestion, contact & inhalation	End users, construction workers and third parties	Probability: 4 Consequence: 2 Potential Contaminant Linkage (PCL) risk: Moderate - Lead contamination was measured in the made ground samples within the vicinity of WS03 and WS04 - No contamination was measured in the natural soils which remain on site - For any permanent hard standing, this would effectively break any pollution links and therefore the risk to end site users is considered to be very low. - In areas of soft landscaping or potential soft landscaping, the pollution link would be active and hence some remediation will be required. This would likely involve the removal of the top 600mm of soil with the subsequent replacement with certified clean topsoil and subsoil (minimum 300m certified clean topsoil with the remainder being clean subsoil originating from either clean onsite soils generated from foundation excavations or imported clean soils) - A careful watching brief should be kept during construction and if obvious or suspected contamination is encountered this should be dealt with prescriptively - Any risks to construction workers during the construction phase will be managed through health & safety procedures and CDM regulations with advice from a suitably qualified competent person
Leaching from contaminated soils and migration in groundwater		Aquifer and surface water	Probability: 1 Consequence: 1 Potential Contaminant Linkage (PCL) risk: Very low Analysis of natural underlying soils indicates no elevated contamination levels which suggest that leaching is currently minimal. Lead and Zinc are considered low mobility elements and therefore unlikely to leach into the underlying aquifers.

Source	Pathway	Receptor	Assessed risk, justification and measures to mitigate the risk to acceptable levels
	Direct contact with soil/water	Building fabric and infrastructure	✚ The effects of soluble sulphates and alkali/acidic ground are discussed in Section 6.5 of this report ✚ Detailed assessment of soil/groundwater contamination with respect to water supply pipes is outside the scope of this report. The UKWIR publication 'Guidance for the selection of water supply pipes to be used in brownfield sites', 2010 states that if suitable barrier pipe is specified "there is no need to carry out soil sampling and analysis and this may be the most cost-effective solution". The validity of this approach will clearly be dependent upon the scale of the development and the quantity of pipe needed
Off site: contaminated soil/water	Lateral migration of contaminants in groundwater	End-user and buildings	Probability: 2 Consequence: 2 Potential Contaminant Linkage (PCL) risk: Low ✚ No contamination measured in natural soils which may be associated with off-site sources ✚ Whilst no groundwater was tested, however, from our visual observations of the nearby water features, evidence of contamination was not observed and thus we consider migration in this regard to be low risk
On-site and off-site: ground gas & vapour	Lateral migration through strata, service runs and cracks in buildings	End-user and buildings	Probability: 3 Consequence: 4 Potential Contaminant Linkage (PCL) risk: High ✚ Potential gas sources were identified off-site by the PRA (large landfill areas to the west and northwest of site) ✚ Slightly elevated concentrations of methane and carbon dioxide were measured during the recent monitoring visits. Monitoring indicates that CIRIA C665 CS2 applies and appropriate gas protection measures must be incorporated. Upon correct installation this will remove the pathway and therefore the PCL from gas risk will then be inactive. ✚ The site is not within a radon area, therefore no radon protection measures are required for buildings without basements

In conclusion, based upon the information reviewed and the results of the investigation, our assessment is that with appropriate mitigation measures, it should be possible to reduce the risks to acceptable levels. The required mitigation measures identified above include incorporation of gas protection measures to the building and provision of clean soil in potential landscaped areas.

The investigation has provided general coverage of the site and it is self-evident that there may be zones of contamination within the site which were not encountered. A careful watching brief should be kept during construction to ensure that any potentially contaminated soil encountered is disposed of in a safe and controlled manner. Site workers should observe normal hygiene precautions when handling soils and if material suspected of being contaminated is identified during construction, this should be set aside under protective cover and further tests undertaken to verify the nature and levels of contamination present. If contamination is present, a full site re-assessment may be required and a contingency should be in place in this regard.

8.0 ADDITIONAL INVESTIGATION

It may be requested by the local council for additional ground gas monitoring visits to be undertaken to satisfy Condition 12 of the planning decision, although it is considered that further gas monitoring visits would not change the assigned Characteristic Situation 2 (low risk) (as described in CIRIA C665 "Assessing risks posed by hazardous ground gases to buildings", 2007).

The replacement of soils in landscaped areas is based on limited data and thus, it may be possible that additional sampling and testing for Lead across the site could be undertaken along with a statistical analysis to justify if the soils do require removal or the elevated results are localised elevated hot spots that could be dealt with through localised removal.

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GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition, Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata between the exploratory points, below the maximum depth of the investigation or where site conditions have changed since the exploratory work; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report. We will provide an indication of the strata configuration within the site based upon exploratory holes undertaken. Any strata boundaries shown will relate to the principal layers but it should be noted that these boundaries could be gradational and the depths identified would then not be definitive. The boundary depths/levels are given for guidance only.

Comments made relating to groundwater or ground-gas are based upon observations made during our investigation unless otherwise stated. Groundwater and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as (but not limited to) areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report (anything above a 'low' risk rating), reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk (for example near-surface chalk strata) it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report. No liability will be accepted for changes to the ground and groundwater conditions which occur post investigation.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

We will identify tree and plant species if possible, but a suitably qualified arboriculturalist/botanist should be consulted to provide definitive identification.

Where reference to 'topsoil' is made, this should be construed as any turf (if present) plus any obvious organic-rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations.

STANDARD TERMS OF APPOINTMENT OF SOIL CONSULTANTS LTD FOR GEOTECHNICAL SERVICES

- 1 Unless previously withdrawn, our offer remains valid for a period of sixty days from date of offer. If an instruction is given after the sixty days we reserve the right to reasonably adjust any cost associated with the project to reflect any variance on the original offer. In placing an instruction to proceed with exploratory work, whether directly from the Client or Client's representative, the Client is deemed to have accepted our Terms of Appointment.
- 2 Our offer is on the basis that free, unhindered access and working conditions are available and that the investigation can be completed in one visit, if applicable. Delays beyond our control will incur additional charges. If additional works outside our offer are required to facilitate the investigation these will be advised and any costs will be passed on to the Client.
- 3 In our quotation we will provide an estimate of any mobilisation period following an instruction to proceed. This estimate will be accurate at the time of quotation, but it should be noted that the mobilisation period may vary at a later date due to factors such as sub-contractor availability and workload.
- 4 In commissioning this work, the Client has a responsibility for the health, safety and welfare of operatives invited to undertake work on their site. The Client shall indemnify us in respect of any failure to fulfil their obligations in connection with all relevant and current Health and Safety Regulations.
- 5 The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access, space and budgetary limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique, or where a non-compliant technique has been specified, we will adopt practical and appropriate techniques to obtain indicative soil parameters.
- 6 Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in BS EN1997-2. Any interpretation which is provided is for guidance only and must not be regarded as design or design recommendation.
- 7 Where excavation is required as part of the exploratory work, the Client shall provide drawings or plans showing accurate and complete locations of all underground services and structures. In performing our service, we shall take reasonable precautions to avoid damage to underground services or structures. We will not be responsible for any damage caused to underground services or structures and will not be liable for any claims for damage, expenses arising or losses unless the location of all underground services or structures are accurately shown on drawings and those plans have been provided to us in good time prior to commencement of the exploratory work. Risk to the Client can be further reduced by undertaking a scan of the site using a specialist underground scanning service which would be intended to identify traceable services at shallow depth.
- 8 With some sites, especially those in certain areas of London and other large towns and cities, there may be a risk of unexploded ordnance (UXO) being present. Unless otherwise stated our offer is on the basis that the Client or their representative provides a preliminary UXO risk assessment for the site. It should be noted that if the site is deemed to be in an area of risk then further measures will be required. These would normally comprise either a more detailed risk assessment and/or specialist site attendance by an EOD engineer. These measures can be commissioned either by the Client or Soil Consultants Ltd. If the Client requires, we would be pleased to obtain a preliminary risk assessment at cost+10%.
- 9 The Client will supply a site plan (to a rational scale), an indication of the scope and type of the proposed development and an indication of any relevant structural loading information.
- 10 Should the Client terminate the contract after instruction, we reserve the right to recover costs associated to work carried out between the time of instruction and the point of termination. Cancellation fees, and material costs shall be charged at cost plus 20% (+VAT). Engineer/technician time shall be charged at £95+VAT per hour and principal consultant/director time shall be charged at £125+VAT per hour.

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- 11 The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during the investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.
- 12 If and when instructed, an agreed number of contamination tests will be carried out to give an outline assessment of potential contaminants. In some circumstances it may be necessary to recommend further monitoring, contamination testing and assessment and the scope of this work would be agreed with the Client. Notwithstanding this additional scope, local regulatory authorities may have specific requirements which need to be addressed. Unless otherwise agreed or stated our reporting will constitute neither a Quantitative Risk Assessment nor a Remediation Statement or Strategy.
- 13 Our reports are counter-checked by one of our suitably qualified and experienced engineers/geologists.
- 14 Notwithstanding anything to the contrary contained in these terms, our liability under or in connection with these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise (other than in respect of personal injury or death) shall not exceed the sum equivalent to ten times our contract fee or £100,000 whichever is less in the aggregate for geotechnical and environmental matters unless otherwise agreed.
- 15 Without prejudice to any other exclusion or limitation of liability, damages, loss, expense or costs our liability for any claim or claims under this agreement be further limited to such sum as it would be just and equitable for us to pay having regard to the extent of our responsibility for the loss or damage giving rise to such claim or claims ("the loss and damage") and on the assumptions that:
- (a) All other consultants, contractors, sub-contractors, project managers or advisers engaged in connection with the Project have provided contractual undertakings to the Client on terms no less onerous than those set out in the original contracts in respect of the carrying out of their obligations in connection with the Project; and
 - (b) There are no exclusions of or limitations of liability nor joint insurance or co-insurance provisions between the Client and any other party referred to in this clause and any such other party who is responsible to any extent for the loss and damage is contractually liable to the Client for the loss and damage; and
 - (c) All such other consultants, contractors, sub-contractors, project managers or advisers have paid to the Client such proportion of the loss or damage which it would be just and equitable for them to pay having regard to the extent of their responsibility for the loss and damage.
- 16 Further and notwithstanding anything to the contrary contained in this agreement and without prejudice to any provision in this agreement whereby liability is excluded or limited to a lesser amount, our liability under or in connection with this agreement whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time that the claims or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. The limitation shall not apply if no such amount is recoverable due to us having been in breach of our obligations or the terms of any insurance maintained in accordance therewith or having failed to report any such claim or circumstances to the Insurers in question timeously.
- 17 Whilst our investigation may include asbestos screening/quantification on selected samples, this must not be deemed to constitute a full asbestos survey or be taken as sufficient to definitively identify the presence or quantity of asbestos within or on the ground. We will not accept responsibility if asbestos is encountered during any subsequent construction or development works and in placing a contract with us the Client accepts this condition. Where the fabric of a building is to be disturbed, the Client shall provide an appropriate asbestos survey to us prior to exploratory work and make adequate provision to allow the implementation of sufficient and appropriate protective/remedial measures for the work to progress safely.
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- 18 Where our report refers to 'topsoil', this should be construed as any turf (if present) plus any obvious organic rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations; if this type of classification is required, this should be identified to us at an early stage and the method of sampling, testing and classification agreed.
- 19 The Client agrees that they shall not bring any claim personally against any director/employee of Soil Consultants Ltd or consultant to us in respect of loss or damage suffered by the Client arising out of this contract.
- 20 Our appointment shall be under simple agreement and our liability under this agreement whether in contract or in tort shall be for a period of six years from date of instruction.
- 21 Our reports are non-assignable and are prepared for the benefit of the Client. No reliance can be assumed by others without written agreement from Soil Consultants Ltd. We will provide a letter of reliance at our discretion and this will be subject to payment of our fee, which will be 10% of contract value, subject to a minimum fee of £1,250 plus VAT. The terms of our letter of reliance are non-negotiable and the beneficiary should be aware that the information shall only apply to the scheme for which the report was originally produced and the original rights and benefits will apply.
- 22 A VAT invoice (at current rate) will be presented in respect of the work undertaken. Payment of our account is to be made within twenty-eight days of issue of our invoice unless otherwise agreed. On no account shall payment be on a 'pay-when-paid' basis. The information contained within our report remains the property of Soil Consultants Ltd and no reliance may be assumed by any party with an interest in the project until payment has been received in full. After one calendar month interest shall be chargeable at 10% above the Bank of England Rate and compensation claimed in accordance with 'Late Payments of Commercial Debts (Interest) Act 1998 and subsequent revisions. If the debt is referred to a debt collection agency then we have the right to recover associated fees under the terms of our contract.

APPENDIX A

Fieldwork, in-situ testing and monitoring

- ✚ Foreword
- ✚ Borehole records
- ✚ Standard Penetration Test results
- ✚ SPT hammer calibration certificates
- ✚ Groundwater and gas monitoring results

Laboratory testing

- ✚ Particle size distribution tests

Ground profiles

- ✚ Cross section through boreholes

Contamination and chemical testing

- ✚ Foreword
- ✚ General soil suite
- ✚ Sulphate/pH suite

Plans, drawings & photographs

- ✚ Site photograph key plan and photographs
- ✚ Proposed development plan and elevations
- ✚ Site plan
- ✚ Wokingham Borough Council landfill sites ArcGIS maps
- ✚ Site location plan

APPENDIX B

- ✚ GroundSure historical maps (Ref: SCL-A92-ZW7-CY3-D95, 06/11/2024)
- ✚ GroundSure Enviro+Geo Insight Report (Ref: SCL-8WJ-8NA-DJD-XDE, 06/11/2024)

FOREWORD FOR DYNAMIC SAMPLER BOREHOLES (WINDOWLESS) - GUIDANCE NOTES

GENERAL

The borehole records are compiled from the driller's description of the strata encountered, an examination of the samples by our geotechnical engineer and the results of in-situ and laboratory tests. Based on these data, the report presents an opinion on the configuration of strata within the site. However, such reasonable assumptions are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

BORING METHODS

The dynamic sampler technique uses 1m long tubes containing a rigid plastic liner. These are driven into the ground by a falling hammer, then withdrawn and the liner removed. The borehole commences using a large diameter tube (usually 100mm) with each succeeding tube reducing usually by 10mm in diameter to assist the extraction of the tube from the ground. Thus, it is theoretically possible to obtain a total continuous sample of the soil for examination or testing. Casing can be utilised as required. The technique allows the ground conditions to be reasonably well established although disturbance of the ground is inevitable, particularly some "softening" of the upper zone of clay immediately beneath a granular soil. The presence of thin layers of different soils within a stratum may not always be detected.

GROUND WATER

The depth at which ground water was struck is entered on the borehole records. However, this observation may not indicate the true water level at that time. Due to the speed of boring and the relatively small diameter of the borehole, natural ground water may be present at a depth higher than the water strike. Moreover, ground water levels are subject to variations caused by changes in the local drainage conditions and by seasonal effects. When a moderate inflow of water does take place, boring is suspended for at least 10 minutes to enable a more accurate short-term water level to be achieved. An estimate of the rate of inflow is also given. This is a relative term and serves only as a guide to the probable flow of water into an excavation.

Further observations of the water level made during the progress of the borehole are shown including end of shift and overnight readings and the depth at which water was sealed off by the borehole casing, if applicable.

SAMPLES

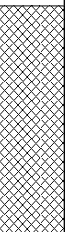
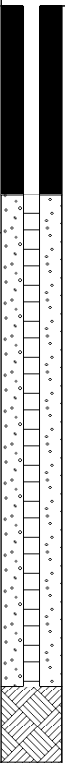
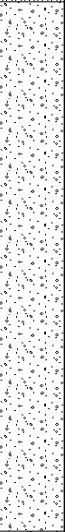
Small disturbed samples can be recovered from the lining tubes for subsequent laboratory testing, including moisture content, index property tests and contamination analyses.

IN-SITU TESTING

Standard Penetration Test (SPT): this test is performed in accordance with the procedure given in BS EN ISO 22476-3:2005. The individual blow count record for each test is given on a separate table. The 'N' value is normally the number of blows to achieve a penetration of 0.3m following a seating distance of 0.15m and is quoted at the mid-depth of the test zone. However if a change of stratum occurs within the test zone then a revised 'N' value can be calculated to assess one layer in particular. In hard strata full penetration may not be obtained. The presence of groundwater and particularly Where groundwater can affect the test and the measured values may not represent the true in-situ density of the soil.

Hand Shear Vane: provides the shear strength of cohesive soils, values reported in kPa

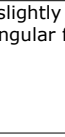
Pocket Penetrometer: provides an estimate of the unconfined compression strength, values reported in kg/cm²

Alma Cottage							Borehole No: WS01	
Lodge Road, Whistley Green, Berkshire RG10 0EH								
Client: Mr Louis Massarella				Coordinates: 479234E, 174307N		Sheet 1 of 1		
Engineer:				Ground Level: +36.60mOD		Report No: 10995/CA		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.30					Grass over MADE GROUND: Dark brown gravelly fine to medium sand. Gravel is angular to subrounded fine to medium flint with rare fragments of brick and clinker.	
'Damp' from 1.8m	ES PID	0.60 0.60	0.0	0.60	36.00		Very dense yellow silty very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint.	
	D	0.90						
	D SPT/C PID	1.00 1.00 1.00	N>50* 0.0					
	D PID	1.50 1.50	0.0					
BH complete: 13/11/24 BH depth: 2.00m (refused) Water depth: Dry	SPT/C PID	2.00 2.00	N>50* 0.0	2.00	34.60		End of hole at 2.00m	2
								3
								4
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS01

Alma Cottage								Borehole No: WS02	
Lodge Road, Whistley Green, Berkshire RG10 0EH									
Client: Mr Louis Massarella					Coordinates: 479244E, 174323N		Sheet 1 of 1		
Engineer:					Ground Level: +36.60mOD		Report No: 10995/CA		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation	
	Type	Depth (m)		Depth (m)	Level (m)				
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.10	0.0	0.25	36.35		Grass over MADE GROUND: Dark brown/black slightly silty slightly gravelly fine to medium sand. Gravel is subangular to subrounded fine to medium flint with occasional fragments of brick, concrete and clinker.		
	ES PID	0.25 0.25					Soft light grey mottled brown/orange grey silty sandy slightly gravelly CLAY. Gavel is angular to subrounded fine to medium flint.		
	D PID	0.60 0.60	0.0				Very dense yellow silty very gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium flint.	1	
'Damp' from 1.80m									
	SPT/C PID	1.00 1.00 1.00	N=49 0.0	1.00	35.60			2	
BH complete: 13/11/24 BH depth: 2.40m (refused) Water depth: Dry				2.40	34.20		End of hole at 2.40m	3	
								4	
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler	
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS02	

Site & Location: Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH							Borehole No: WS03		
Client: Mr Louis Massarella					Coordinates: 479264E, 174323N		Sheet 1 of 1		
Engineer:					Ground Level: +36.60mOD		Report No: 10995/CA		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation	
	Type	Depth (m)		Depth (m)	Level (m)				
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.10	0.4	0.20	36.40		MADE GROUND: Yellowish-brown sandy gravel. Gravel is angular to subrounded fine to coarse flint with frequent fragments of brick and concrete.		
	ES PID	0.20 0.20					MADE GROUND: Dark brown/black slightly silty gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint with frequent fragments of brick, concrete, clinker, tile and glass. With rare rootlets.		
	ES PID	0.60 0.60					<i>Between 0.60m and 0.80m rare green blue copper staining</i>		
	D PID	0.80 0.80	0.7	0.80	35.80	MADE GROUND: Dark brown slightly silty slightly gravelly fine to medium sand. Gravel is subangular to subrounded fine to coarse flint.			
	SPT/C PID	1.00 1.00	N=31 0.2	1.00	35.60		Dense to very dense yellow silty very sandy GRAVEL. Gravel is angular to subangular fine to coarse flint. Locally slightly clayey.		
	D ES PID	1.20 1.20 1.20	1.2						
BH complete: 13/11/24 BH depth: 2.00m (refused) Water depth: Dry	SPT/C PID	2.00 2.00	N>50* 1.3	2.00	34.60		End of hole at 2.00m	2	
								3	
								4	
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler	
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS03	
									

Alma Cottage								Borehole No: WS04	
Lodge Road, Whistley Green, Berkshire RG10 0EH									
Client: Mr Louis Massarella					Coordinates: 479255E, 174319N		Sheet 1 of 1		
Engineer:					Ground Level: +36.60mOD		Report No: 10995/CA		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation	
	Type	Depth (m)		Depth (m)	Level (m)				
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.20					Grass over MADE GROUND: Dark brown slightly silty slightly gravelly fine to medium sand. Gravel is angular to subrounded fine to medium flint with occasional fragments of brick and clinker.		
	ES PID	0.35 0.35	0.0	0.35	36.25		Light brown silty gravelly fine to medium SAND. Gravel is angular to subangular fine to medium flint.		
	D PID ES PID	0.60 0.60 0.70 0.70	0.0 0.0 0.0	0.70	35.90		Very dense yellow slightly silty to silty very sandy GRAVEL. Gravel is angular to subangular fine to coarse flint.		
'Damp' from 1.70m	B SPT/C PID	1.00 1.00 1.00	N>50* 0.1				Below 1.70m becoming yellow/dark orange	1	
	B SPT/C PID	2.00 2.00 2.00	N>50* 0.0				At 2.10m pocket of light grey clay	2	
							Below 3.0m becoming medium dense		
BH complete: 13/11/24 BH depth: 3.00m Water depth: Dry	SPT/C PID	3.00 3.00	N=16 0.1	3.00	33.60		End of hole at 3.00m	3	
								4	
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler	
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS04	

Site & Location: Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH							Borehole No: WS05	
Client: Mr Louis Massarella					Coordinates: 479247E, 174312N		Sheet 1 of 1	
Engineer:					Ground Level: +36.60mOD		Report No: 10995/CA	
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.00					Grass over MADE GROUND: Dark brown slightly gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint with rare fragmetns of brick.	
	ES	0.65		0.65	35.95		Soft light greyish-brown slightly silty sandy gravelly CLAY. Gravel is angular to subangular fine to medium flint.	
	PID	0.65	0.0					
	D	0.90	0.0	1.00	35.60		Very dense yellow sightly silty to silty very gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium flint.	
BH complete: 13/11/24 BH depth: 1.50m (refused) Water depth: Dry	SPT/C	1.50	N>50*	1.50	35.10		End of hole at 1.50m	
	PID	1.50	0.0					
Backfilled with arisings								
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS05



Site & Location: Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH							Borehole No: WS06	
Client: Mr Louis Massarella					Coordinates: 479238E, 174310N		Sheet 1 of 1	
Engineer:					Ground Level: +36.60mOD		Report No: 10995/CA	
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 13/11/24 BH dia 100mm reducing in size with depth	ES	0.40	0.0	0.70	35.90		Grass over MADE GROUND: Dark brown gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint with rare fragments of brick and clinker.	
	D ES PID	0.70 0.70 0.70					Very dense yellow very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint. Rare pockets of grey clay to 1.0m.	
BH complete: 13/11/24 BH depth: 1.60m (refused) Water depth: Dry	D SPT/C PID	1.00 1.00 1.00	N>50* 0.1	1.60	35.00			1
	SPT/C PID	1.60 1.60	N>50* 0.2					
Backfilled with arisings							End of hole at 1.60m	
								2
								3
								4
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: a) coordinates and ground level estimated from online data sources								Borehole No: WS06
								

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No:	10995/CA
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STANDARD PENETRATION TEST SUMMARY

BH ID	Depth (m)	Test type	N value (Note b)	Blow-counts and penetration						Casing depth (m)	Water depth (m)	Remarks
				Seating blows		Test blows						
WS01	1.00	C	(50)	8	15	16	16	16	2/5mm	-	Dry	
WS01	2.00	C	(50)	16	9/40mm	18	18	14/50mm		-	Dry	
WS02	1.00	C	N=49	5	8	9	10	14	16	-	Dry	
WS02	2.00	C	(50)	16	9/50mm	16	16	15	3/10mm	-	Dry	
WS03	1.00	C	N=31	3	3	3	5	8	15	-	Dry	
WS03	2.00	C	(50)	25/70mm	0/0mm	28	22/60mm			-	Dry	
WS04	1.00	C	(50)	9	10	9	11	15	15/60mm	-	Dry	
WS04	2.00	C	(48)	14	11/60mm	12	10	13	13	-	Dry	
WS04	3.00	C	N=16	5	5	5	3	4	4	-	Dry	
WS05	1.00	C	(50)	9	12	15	17	16	2/5mm	-	Dry	
WS05	1.50	C	(50)	22	3/10mm	24	26/60mm			-	Dry	
WS06	1.00	C	(50)	7	9	13	18	18	1/0mm	-	Dry	
WS06	1.60	C	(50)	22	3/10mm	25	23	2/10mm		-	Dry	

a) Standard Penetration Test : BS EN ISO 22476:2005 Part 3

b) Where full penetration was not achieved, the total test blow-counts are reported

c) Hammer Energy Ratio, Er = 61%

SPT Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: DART548
Test Date: 08/02/2024
Report Date: 08/02/2024
File Name: DART548.spt
Test Operator: JL

Instrumented Rod Data

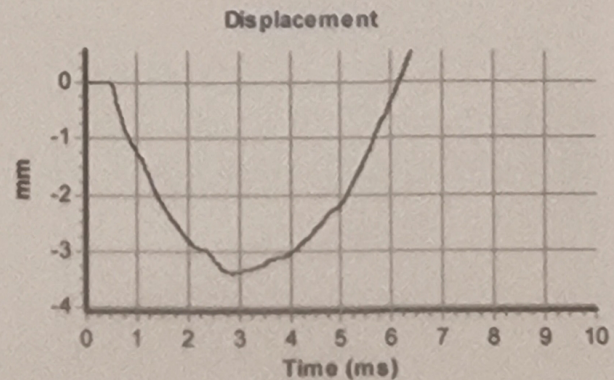
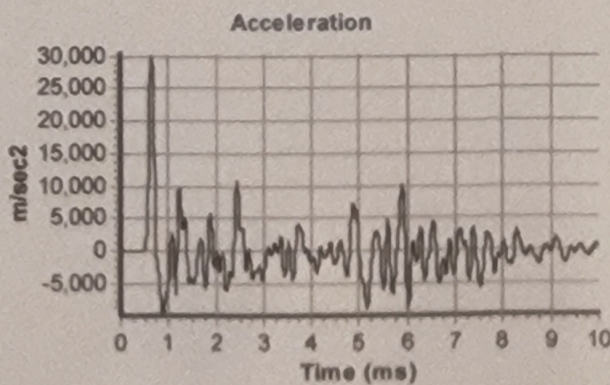
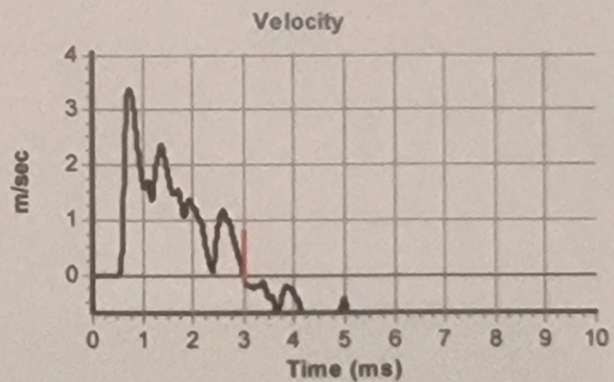
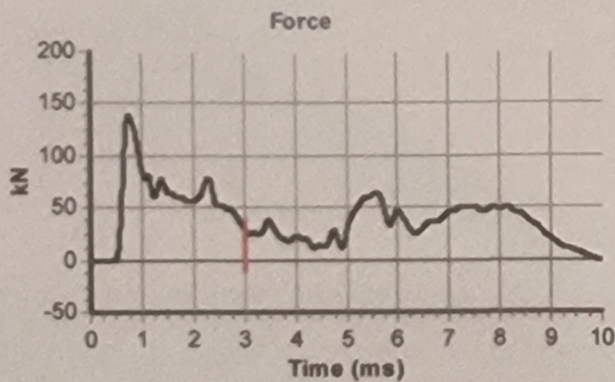
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.6
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

BOREWORX - 88023



Calculations

Area of Rod A (mm^2): 983
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 291

Energy Ratio E_r (%): **61**

Signed: J.LOCK

Title: FITTER

The recommended calibration interval is 12 months

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA																																																																																																																																												
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Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	13/11/2024	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):	Falling	Calibration check details:	See note 2 below
b) At start (mB):	1032	Next calibration date:	April 2025
Recorded by:	CA	Notes:	
Surface ground conditions:	Dry	1)	Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit
Weather conditions:	sunny, mild	2)	Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture
Ambient air temp (°C):	12	3)	CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS02	12:31:06	35	1.84	2.38

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.1	20.8	0	0	0.3
15	0.4	0.5	20.3	3	0	3.4
30	0.4	0.5	19.9	5	0	3.9
45	0.5	0.5	19.8	5	0	4.7
60	0.7	0.5	19.7	4	0	5.1
75	1.4	0.6	19.6	4	0	7.4
90	1.8	0.6	19.5	5	0	10.0
105	2.0	0.7	19.3	4	0	11.0
120	2.1	0.8	19.2	4	0	11.3
135	2.3	0.8	19.2	4	0	12.3
150	2.7	0.9	19.2	3	0	13.4
165	3.0	0.9	19.1	4	0	14.6
180	3.2	0.9	19.1	4	0	16.0
195	3.3	0.8	19.1	0	0	16.2

Max CH ₄ (%)	3.3
Max CO ₂ (%)	0.9
Min O ₂ (%)	19.1
Max CO (ppm)	5
Max H ₂ S (ppm)	0
Max PID (ppm)	16.2

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-16.34

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Site & Location Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH		Report No: 10995/CA	
Results of groundwater/gas monitoring			
Date: 13/11/2024		Monitoring equipment Instrument: GA5000. No. G505055	
Barometric pressure: a) Trend (24hrs): b) At start (mB):		Calibration check details: Next calibration date: April 2025	
Recorded by: CA		Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit	
Surface ground conditions: Weather conditions: Ambient air temp (°C):		2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Falling 1032		Dry sunny, mild 12	

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS04	12:45:09	35	2.86	3.10

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.1	20.5	0	0	0.8
15	0.3	0.8	19.9	1	0	1.1
30	0.3	0.8	19.6	2	0	1.7
45	0.3	0.8	19.5	1	0	0.0
60	0.3	0.9	19.4	1	0	0.0
75	0.3	1.0	19.3	1	0	0.0
90	0.3	1.1	19.2	1	0	0.0
105	0.4	1.2	19.1	1	0	0.2
120	0.4	1.3	19.0	1	0	0.6
135	0.5	1.4	18.8	1	0	1.2
150	0.5	1.4	18.7	2	0	1.6
165	0.6	1.4	18.7	1	0	2.3
180	0.7	1.4	18.7	1	0	3.2
195	0.9	1.4	18.7	0	0	4.4

Max CH ₄ (%)	0.9
Max CO ₂ (%)	1.4
Min O ₂ (%)	18.7
Max CO (ppm)	2
Max H ₂ S (ppm)	0
Max PID (ppm)	4.4

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-14.64

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	22/11/2024	Monitoring equipment	
Barometric pressure:	Rising 1002	Instrument:	GA5000. No. G505055
a) Trend (24hrs):		Calibration check details:	See note 2 below
b) At start (mB):		Next calibration date:	April 2025
		Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit	
Recorded by:	CA	2)	Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture
Surface ground conditions:	Frozen Cold, sunny 0	3)	CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide
Weather conditions:			
Ambient air temp (°C):			

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS01	08:33:20	35	Dry	1.76

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	1.1	20.5	0	0	0.0
15	0.3	2.0	20.1	0	0	0.0
30	0.3	2.0	19.8	0	0	0.0
45	0.3	2.0	19.8	0	0	0.0
60	0.3	2.1	19.7	0	0	0.0
75	0.3	2.1	19.7	0	0	0.0
90	0.3	2.1	19.7	0	0	0.0
105	0.3	2.2	19.7	0	0	0.0
120	0.3	2.2	19.7	0	0	0.0
135	0.3	2.2	19.7	0	0	0.0
150	0.3	2.2	19.7	0	0	0.0
165	0.3	2.2	19.7	0	0	0.0
180	0.3	2.2	19.6	0	0	0.0
195	0.3	2.2	19.6	0	0	0.0

Max CH ₄ (%)	0.3
Max CO ₂ (%)	2.2
Min O ₂ (%)	19.6
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-0.45

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Results of groundwater/gas monitoring		
Date:	22/11/2024	Monitoring equipment Instrument: GA5000. No. G505055 Calibration check details: See note 2 below Next calibration date: April 2025 Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH₄, 5% CO₂ and 6% O₂ gas mixture 3) CH₄ = methane; CO₂ = carbon dioxide; CO = carbon monoxide; O₂ = oxygen; H₂S = hydrogen sulphide
Barometric pressure: a) Trend (24hrs): b) At start (mB):	Rising 1002	
Recorded by:	CA	
Surface ground conditions: Weather conditions: Ambient air temp (°C):	Frozen Cold, sunny 0	

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS02	08:03:04	35	1.79	2.38

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.4	0.2	21.0	0	0	0.1
15	0.4	1.6	20.0	0	0	0.3
30	0.4	1.6	18.3	0	0	0.3
45	0.4	1.6	17.8	0	0	0.3
60	0.3	1.6	17.6	0	0	0.3
75	0.3	1.6	17.6	0	0	0.3
90	0.3	1.6	17.5	0	0	0.2
105	0.3	1.6	17.6	0	0	0.2
120	0.3	1.5	17.6	0	0	0.2
135	0.3	1.5	17.7	0	0	0.2
150	0.3	1.5	17.7	0	0	0.2
165	0.3	1.5	17.8	0	0	0.2
180	0.3	1.5	17.8	0	0	0.2
195	0.4	1.5	17.9	0	0	0.2

Max CH ₄ (%)	0.4
Max CO ₂ (%)	1.6
Min O ₂ (%)	17.5
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.3

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.1	0.1	-0.45

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA																																																																																																																																												
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Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	22/11/2024	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):		Calibration check details:	See note 2 below
b) At start (mB):	Rising 1002	Next calibration date:	April 2025
Recorded by:	CA	Notes:	
Surface ground conditions:	Frozen	1)	Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit
Weather conditions:	Cold, sunny	2)	Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture
Ambient air temp (°C):	0	3)	CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS04	08:11:23	35	2.76	3.10

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.2	20.8	0	0	0.0
15	0.3	2.0	20.1	0	0	0.0
30	0.3	2.0	18.7	0	0	0.0
45	0.3	2.0	18.3	0	0	0.0
60	0.3	2.0	18.3	0	0	0.0
75	0.3	1.9	18.4	0	0	0.0
90	0.3	1.9	18.4	0	0	0.0
105	0.3	1.8	18.8	0	0	0.0
120	0.3	1.8	19.0	0	0	0.0
135	0.3	1.8	19.2	0	0	0.0
150	0.3	1.8	19.3	0	0	0.0
165	0.3	1.8	19.3	0	0	0.0
180	0.3	1.8	19.3	0	0	0.0
195	0.4	1.7	19.4	0	0	0.0

Max CH ₄ (%)	0.4
Max CO ₂ (%)	2.0
Min O ₂ (%)	18.3
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.1	0.1	-7.23

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	03/12/2024	Monitoring equipment Instrument:	GA5000. No. G505055
Barometric pressure: a) Trend (24hrs): b) At start (mB):	Rising 1019	Calibration check details: Next calibration date:	See note 2 below April 2025
Recorded by:	CA	Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Surface ground conditions:	Dry		
Weather conditions:	Cold, cloudy		
Ambient air temp (°C):	4		

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS01	09:35:08	35	1.74	1.76

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.2	21.0	0	0	0.0
15	0.3	2.0	20.6	0	0	0.0
30	0.3	2.0	20.0	0	0	0.0
45	0.3	2.0	19.8	0	0	0.0
60	0.3	2.0	19.8	0	0	0.0
75	0.3	2.1	19.8	0	0	0.0
90	0.3	2.1	19.8	0	0	0.0
105	0.3	2.1	19.7	0	0	0.0
120	0.3	2.1	19.7	0	0	0.0
135	0.3	2.1	19.7	0	0	0.0
150	0.3	2.1	19.7	0	0	0.0
165	0.3	2.1	19.7	0	0	0.0
180	0.3	2.1	19.7	0	0	0.0
195	0.3	2.0	19.7	0	0	0.0

Max CH ₄ (%)	0.3
Max CO ₂ (%)	2.1
Min O ₂ (%)	19.7
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-1.49

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	03/12/2024	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):		Calibration check details:	See note 2 below
b) At start (mB):	Rising 1019	Next calibration date:	April 2025
Recorded by:	CA	Notes:	
Surface ground conditions:	Dry	1)	Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit
Weather conditions:	Cold, cloudy	2)	Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture
Ambient air temp (°C):	4	3)	CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS02	09:13:26	35	1.71	2.36

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.3	20.8	0	0	0.0
15	0.3	1.5	20.3	0	0	0.0
30	0.3	1.5	18.6	0	0	0.0
45	0.3	1.5	18.5	0	0	0.0
60	0.3	1.5	18.4	0	0	0.0
75	0.3	1.5	18.4	0	0	0.0
90	0.3	1.5	18.5	0	0	0.0
105	0.3	1.5	18.5	0	0	0.0
120	0.3	1.4	18.7	0	0	0.0
135	0.3	1.4	18.9	0	0	0.0
150	0.3	1.3	19.1	0	0	0.0
165	0.3	1.3	19.1	0	0	0.0
180	0.3	1.3	19.2	0	0	0.0
195	0.3	1.3	19.3	0	0	0.0

Max CH ₄ (%)	0.3
Max CO ₂ (%)	1.5
Min O ₂ (%)	18.4
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.1	0.1	-1.34

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	03/12/2024	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):		Calibration check details:	See note 2 below
b) At start (mB):	Rising 1019	Next calibration date:	April 2025
Recorded by:	CA	Notes:	
Surface ground conditions:	Dry	1)	Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit
Weather conditions:	Cold, cloudy	2)	Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture
Ambient air temp (°C):	4	3)	CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS03	08:56:53	35	Dry	2.00

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.2	20.9	0	0	0.0
15	0.3	2.3	20.4	0	0	0.0
30	0.3	2.6	19.1	0	0	0.0
45	0.3	2.9	18.7	0	0	0.0
60	0.3	3.2	18.4	0	0	0.0
75	0.3	3.6	18.0	0	0	0.0
90	0.3	3.9	17.7	0	0	0.0
105	0.3	4.3	17.3	0	0	0.0
120	0.3	4.7	16.9	0	0	0.0
135	0.3	5.0	16.5	0	0	0.0
150	0.3	5.1	16.4	0	0	0.0
165	0.3	5.1	16.3	0	0	0.0
180	0.3	5.1	16.3	0	0	0.0
195	0.3	5.0	16.3	0	0	0.0

Max CH ₄ (%)	0.3
Max CO ₂ (%)	5.1
Min O ₂ (%)	16.3
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.1	0.1	-2.01

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
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Results of groundwater/gas monitoring

Date:	03/12/2024	Monitoring equipment	
Barometric pressure:	Rising 1019	Instrument:	GA5000. No. G505055
a) Trend (24hrs):		Calibration check details:	See note 2 below
b) At start (mB):		Next calibration date:	April 2025
		Notes:	
Recorded by:	CA	1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit	
Surface ground conditions:	Dry Cold, cloudy 4	2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture	
Weather conditions:		3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide;	
Ambient air temp (°C):		O ₂ = oxygen; H ₂ S = hydrogen sulphide	

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS04	09:04:15	35	2.56	3.10

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.3	0.3	20.7	0	0	0.0
15	0.3	1.4	20.4	0	0	0.0
30	0.3	1.3	20.0	0	0	0.0
45	0.3	1.3	20.0	0	0	0.0
60	0.3	1.3	20.0	0	0	0.0
75	0.3	1.3	20.0	0	0	0.0
90	0.3	1.3	20.0	0	0	0.0
105	0.3	1.3	20.0	0	0	0.0
120	0.3	1.3	20.0	0	0	0.0
135	0.3	1.3	20.0	0	0	0.0
150	0.3	1.3	20.0	0	0	0.0
165	0.3	1.3	20.0	0	0	0.0
180	0.3	1.3	20.0	0	0	0.0
195	0.3	1.3	20.0	0	0	0.0

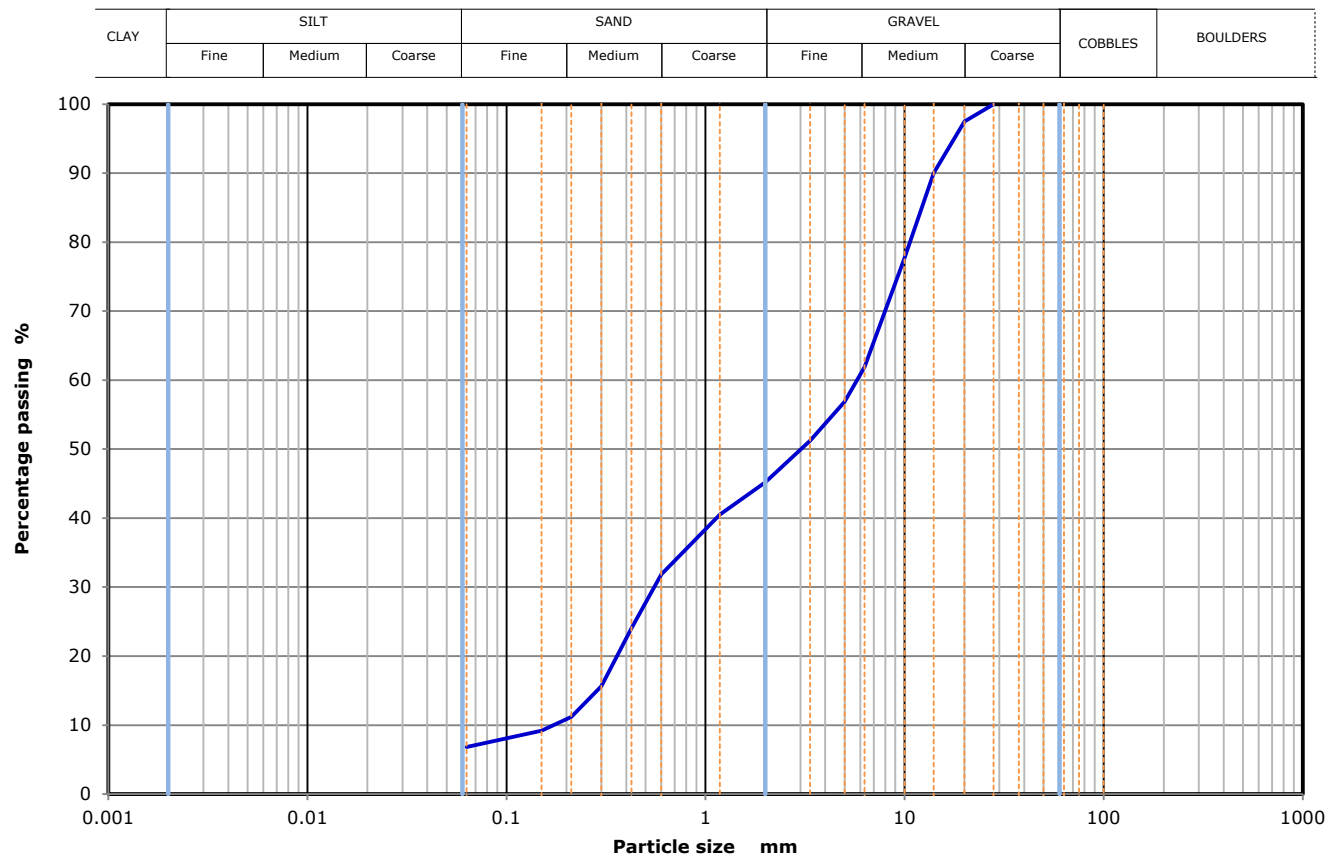
Max CH ₄ (%)	0.3
Max CO ₂ (%)	1.4
Min O ₂ (%)	20.0
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-0.52

Particle size distribution

Hole ID: **WS03**
Depth (m): **1.2-2.0**

Description:	Yellow very sandy angular to subangular fine to coarse GRAVEL of flint
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Sieving	
Size (mm)	% passing
0	0.0
0	0.0
0	0.0
0	0.0
28	100.0
20	97.5
14	90.0
10	77.7
6.3	61.9
5	56.9
3.35	51.2
2	45.2
1.18	40.5
0.6	31.8
0.425	24.0
0.3	15.6
0.212	11.2
0.15	9.2
0.063	6.8

Sedimentation	
Size (μm)	% passing

Sample proportions	%
Cobbles	0
Gravel	55
Sand	38
Fines (<0.063mm)	7

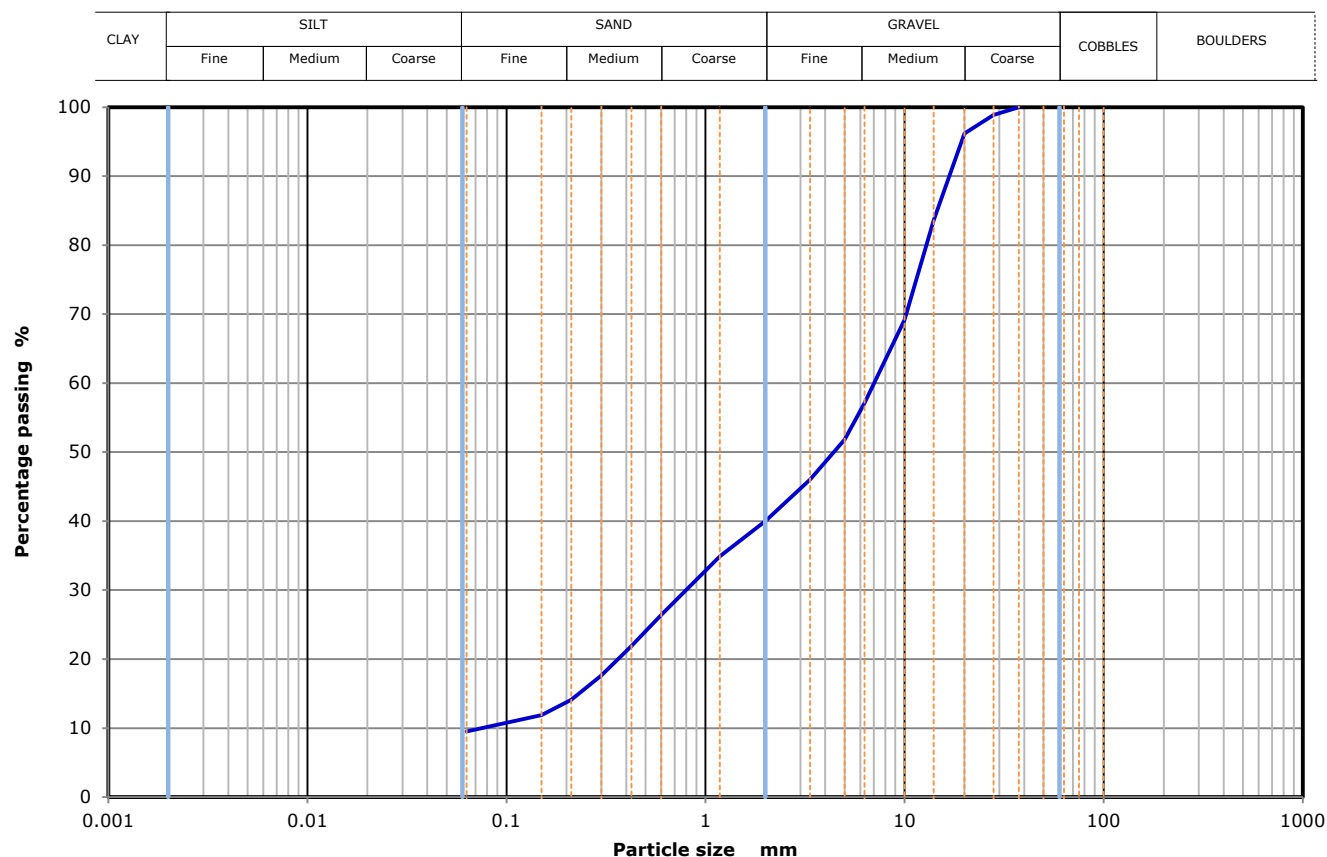
Grading analysis		
D60	mm	6
D30	mm	1
D10	mm	0
Uniformity Coefficient		33
Curvature Coefficient		0

Test method and date	
Method: BS EN ISO 17892-4:2016 - Wet sieving method	
Reporting date:	03 Dec 24

Particle size distribution

Hole ID: **WS04**
Depth (m): **2.0-3.0**

Description:	Yellow very sandy angular to subangular fine to coarse GRAVEL of flint.
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Sieving	
Size (mm)	% passing
0	0.0
0	0.0
0	0.0
37.5	100.0
28	98.9
20	96.2
14	83.6
10	69.2
6.3	57.1
5	51.8
3.35	46.0
2	40.0
1.18	34.9
0.6	26.4
0.425	21.9
0.3	17.6
0.212	14.1
0.15	11.9
0.063	9.5

Sedimentation	
Size (μm)	% passing

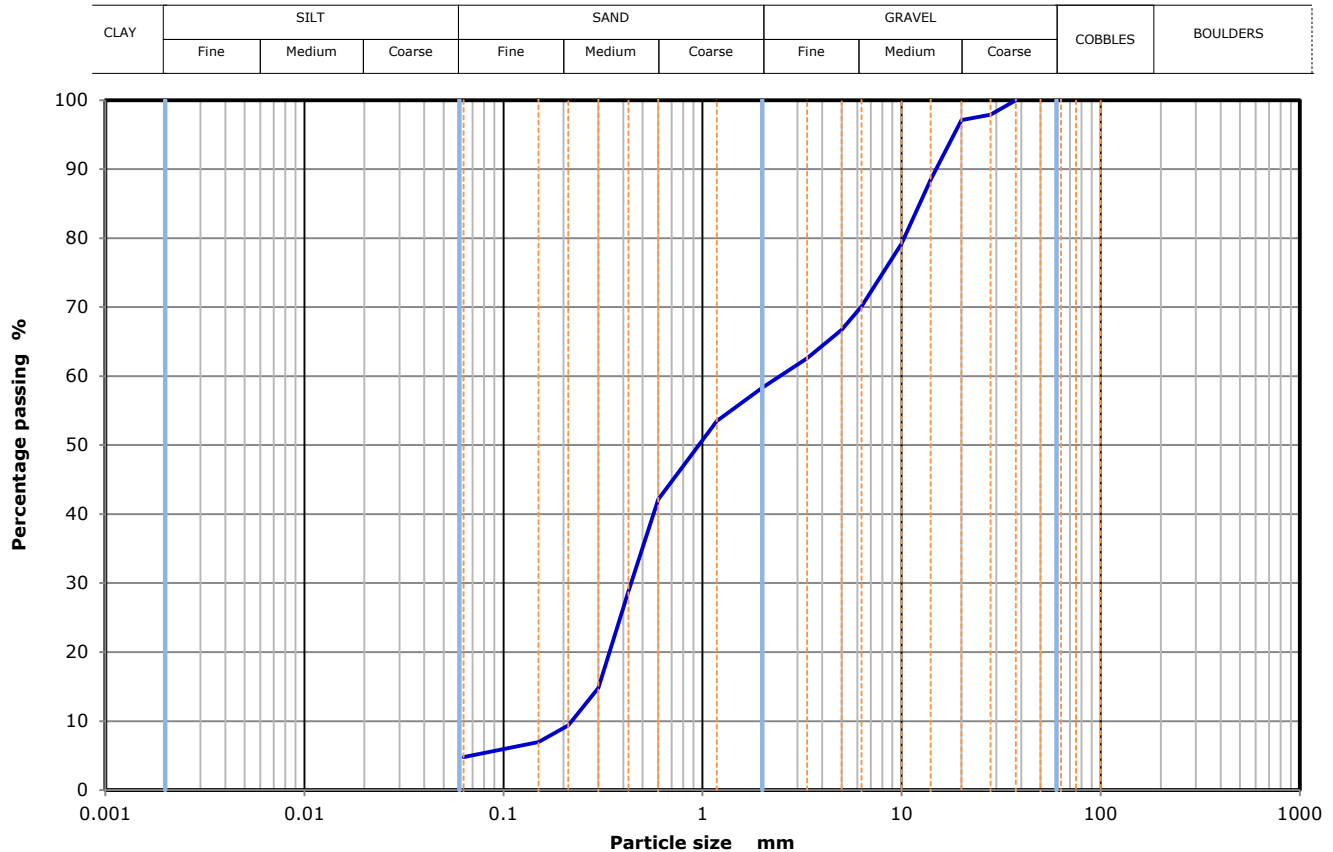
Sample proportions	%
Cobbles	0
Gravel	60.0
Sand	30.5
Fines (<0.063mm)	9.5

Grading analysis		
D60	mm	7
D30	mm	1
D10	mm	0
Uniformity Coefficient		93
Curvature Coefficient		1

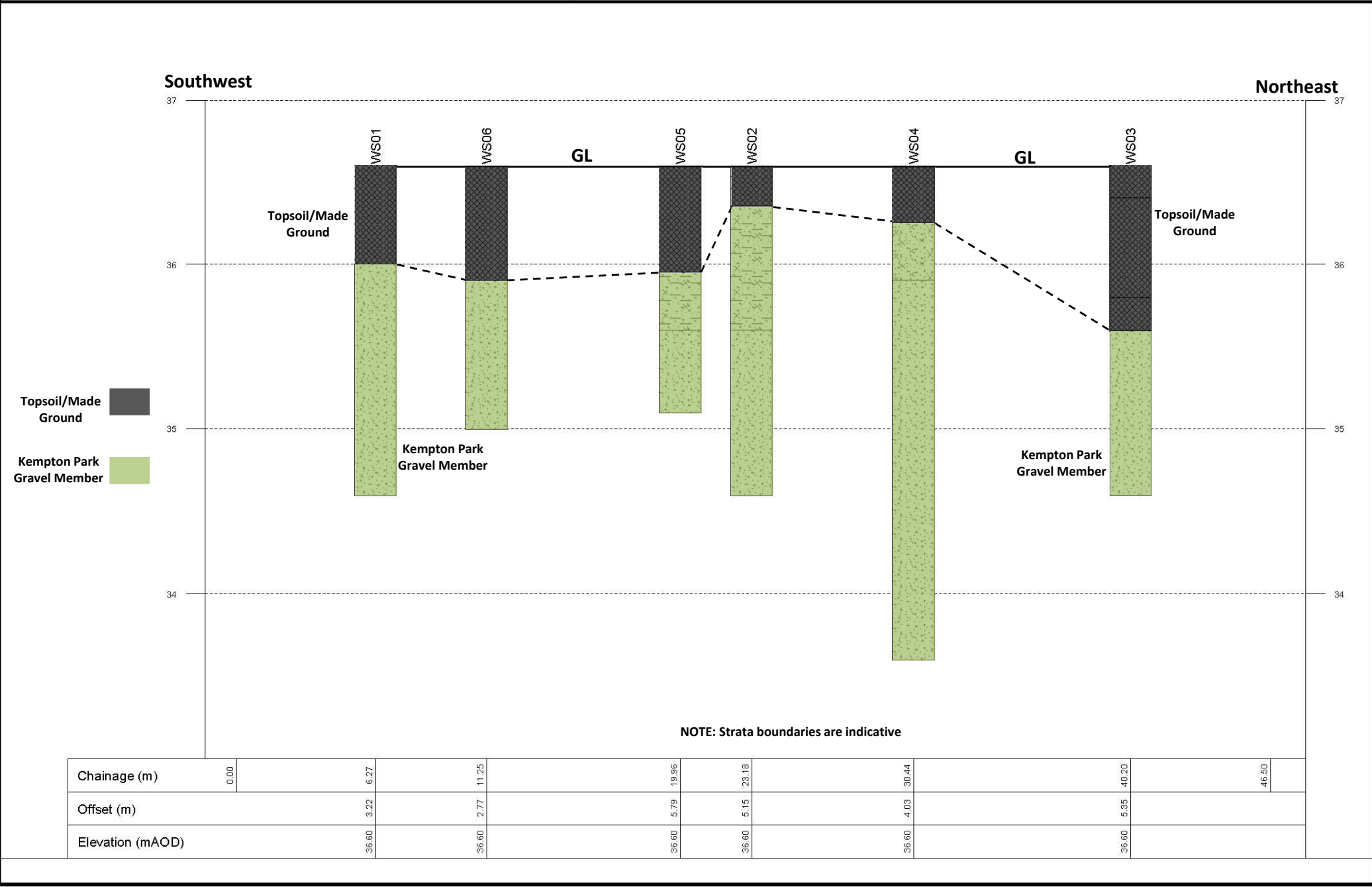
Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
Reporting date:	03 Dec 24

Particle size distribution

Description:	Yellow very gravelly fine to coarse SAND.
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Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
Reporting date:	03 Dec 24



FOREWORD TO CONTAMINATION TESTING AND ASSESSMENT

The following statements are designed to inform and guide the Client and other potential parties intending to rely upon this report, with the express intent of protecting them from misunderstanding as to the extent and thus the potential associated risks that may result from proceeding without further evaluations or guidance.

- 1] Unless otherwise stated in this report, the testing of soils and waters is based on a range of commonly occurring potential contaminants for the specific purpose of providing a general guidance evaluation for the proposed form of development. Thus, the range of potential contaminants is neither exhaustive nor specifically targeted to any previous known uses or influences upon the site.
- 2] The amount and scope of the testing should not be assumed to be exhaustive but has been selected, at this stage, to provide a reasonable, general view of the site ground conditions. In many cases this situation is quite sufficient for the site to be characterised for the purposes of development and related Health and Safety matters for persons involved in or directly affected by the site development works. It must be understood, however, that in certain circumstances aspects or areas of the site may require further investigation and testing in order to fully clarify and characterise contamination issues, both for regulatory compliance and for commercial reasons.
- 3] The scope of the contamination testing must not automatically be regarded as being sufficient to fully formulate a remediation scheme. For such a scheme it may be necessary to consider further testing to verify the effectiveness of the remedial work after the site has been treated. It must be understood that a remediation scheme which brings a site into a sufficient state for the proposed development ("fit for purpose") under current legislation and published guidance, may result in some contamination being left in-situ. It is possible that forthcoming legislation may result in a site being classified by the Local Authority and assigned a "Degree of Risk" related to previous use or known contamination.
- 4] The scope of the environmental investigation and contamination testing must not be automatically regarded as sufficient to satisfy the requirements in the wider environmental setting. The risks to adjacent properties and to the water environment are assessed by the regulatory authorities and there may be a requirement to carry out further exploration, testing and, possibly monitoring in the short or long term. It is not possible to sensibly predict the nature and extent of such additional requirements as these are the direct result of submissions to and liaison with the regulatory authorities. It is imperative, therefore, that such submissions and contacts are made as soon as possible, especially if there are perceived to be critical features of the site and proposed scheme, in this context.
- 5] New testing criteria have been implemented by the Environment Agency to enable a waste disposal classification to be made. The date of implementation of this Waste Acceptance Criteria [WAC] was July 2005. It is this testing that will be used by the waste regulatory authorities, including waste disposal sites, to designate soils for disposal in landfill sites. In certain circumstances, to satisfy the waste regulations, there may be the necessity to carry out additional testing to clarify and confirm the nature of any contamination that may be present. If commercial requirements are significant then this process may also necessitate further field operations to clarify the extent of certain features. Thus, the waste classification must be obtained from the waste regulation authorities or a licensed waste disposal site and we strongly recommend that this classification is obtained as soon as possible and certainly prior to establishing any costings or procedures for this or related aspects of the scheme.



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HP15 6QT

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

DETS Report No: 24-13771

Site Reference: Alma Cottage RG10 0EH

Project / Job Ref: 10995/CA

Order No: 10995/CA

Sample Receipt Date: 15/11/2024

Sample Scheduled Date: 15/11/2024

Report Issue Number: 1

Reporting Date: 22/11/2024

Authorised by:

Steve Knight
Customer Support Manager

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

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



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



Soil Analysis Certificate						
DETS Report No: 24-13771	~Date Sampled	13/11/24	13/11/24	13/11/24	13/11/24	
Soil Consultants Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS03	WS03	WS04	WS04	
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
~Order No: 10995/CA	~Depth (m)	0.60 - 0.80	1.20	0.00 - 0.35	0.35 - 0.60	
Reporting Date: 22/11/2024	DETS Sample No	750444	750445	750446	750447	

Determinand	Unit	RL	Accreditation	(n)			
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.6	7.8	7.2	7.4
Electrical Conductivity	uS/cm	< 5	NONE	273	248	85	
Total Cyanide	mg/kg	< 1	NONE	78	2	< 1	
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	889	790	478	280
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.09	0.08	0.05	0.03
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	67	89	< 10	< 10
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.07	0.09	< 0.01	< 0.01
Total Sulphur	%	< 0.02	NONE	0.04	0.03	0.05	0.02
Organic Matter (SOM)	%	< 0.1	MCERTS	2	2.8	7.2	
Arsenic (As)	mg/kg	< 2	MCERTS	5	10	11	
W/S Boron	mg/kg	< 1	NONE	< 1	1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	0.4	0.7	
Chromium (Cr)	mg/kg	< 2	MCERTS	138	11	15	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	15	19	59	
Lead (Pb)	mg/kg	< 3	MCERTS	1230	138	299	
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	2.3	
Nickel (Ni)	mg/kg	< 3	MCERTS	5	9	17	
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Zinc (Zn)	mg/kg	< 3	MCERTS	143	146	345	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-13771	~Date Sampled	13/11/24	13/11/24	13/11/24		
Soil Consultants Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS03	WS03	WS04		
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: 10995/CA	~Depth (m)	0.60 - 0.80	1.20	0.00 - 0.35		
Reporting Date: 22/11/2024	DETS Sample No	750444	750445	750446		

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.56	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.32	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	3.86	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	3.40	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.96	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.15	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.34	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.99	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.99	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.28	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.27	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.94	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	21.1	

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Soil Analysis Certificate - EPH Banded (Type F)						
DETS Report No: 24-13771	~Date Sampled	13/11/24	13/11/24	13/11/24		
Soil Consultants Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS03	WS03	WS04		
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: 10995/CA	~Depth (m)	0.60 - 0.80	1.20	0.00 - 0.35		
Reporting Date: 22/11/2024	DETS Sample No	750444	750445	750446		

Determinand	Unit	RL	Accreditation	(n)			
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1	< 1	5	
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	< 1	< 1	24	
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	< 6	< 6	37	
EPH (C8 - C40)	mg/kg	< 6	MCERTS	< 6	< 6	66	

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Soil Analysis Certificate - TPH LQM Banded

DETS Report No: 24-13771	~Date Sampled	13/11/24				
Soil Consultants Ltd	~Time Sampled	None Supplied				
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS03				
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied				
~Order No: 10995/CA	~Depth (m)	0.60 - 0.80				
Reporting Date: 22/11/2024	DETS Sample No	750444				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C16 - C35	mg/kg	< 10	MCERTS	< 10			
Aliphatic >C35 - C44	mg/kg	< 10	NONE	< 10			
Aliphatic (C5 - C44)	mg/kg	< 30	NONE	< 30			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10			
Aromatic >C35 - C44	mg/kg	< 10	NONE	< 10			
Aromatic (>C5 - C44)	mg/kg	< 30	NONE	< 30			
Total >C5 - C44	mg/kg	< 60	NONE	< 60			

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



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-13771	~Date Sampled	13/11/24				
Soil Consultants Ltd	~Time Sampled	None Supplied				
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS03				
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied				
~Order No: 10995/CA	~Depth (m)	0.60 - 0.80				
Reporting Date: 22/11/2024	DETS Sample No	750444				

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

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



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 24-13771

Soil Consultants Ltd

~Site Reference: Alma Cottage RG10 0EH

~Project / Job Ref: 10995/CA

~Order No: 10995/CA

Reporting Date: 22/11/2024

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
750444	WS03	None Supplied	0.60 - 0.80	5.1	Brown loamy sand with stones and concrete
750445	WS03	None Supplied	1.20	8.9	Brown sandy gravel with stones and concrete
750446	WS04	None Supplied	0.00 - 0.35	15.9	Black loamy sand with stones and vegetation
750447	WS04	None Supplied	0.35 - 0.60	10.3	Brown sandy clay with stones

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

Insufficient Sample ^{1/s}

Unsuitable Sample ^{u/s}

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



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-13771

Soil Consultants Ltd

~Site Reference: Alma Cottage RG10 0EH

~Project / Job Ref: 10995/CA

~Order No: 10995/CA

Reporting Date: 22/11/2024

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

D Dried
AR As Received



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DETS Report No: 24-13920

Site Reference: Alma Cottage RG10 0EH

Project / Job Ref: 10995/CA

Order No: 10995/CA

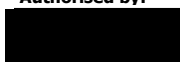
Sample Receipt Date: 19/11/2024

Sample Scheduled Date: 19/11/2024

Report Issue Number: 1

Reporting Date: 25/11/2024

Authorised by:



Steve Knight
Customer Support Manager

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

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Soil Analysis Certificate						
DETS Report No: 24-13920	~Date Sampled	13/11/24				
Soil Consultants Ltd	~Time Sampled	None Supplied				
~Site Reference: Alma Cottage RG10 0EH	~TP / BH No	WS02				
~Project / Job Ref: 10995/CA	~Additional Refs	None Supplied				
~Order No: 10995/CA	~Depth (m)	1.00 - 2.00				
Reporting Date: 25/11/2024	DETS Sample No	751223				

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	MCERTS	8.2			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	296			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.03			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	46			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.05			
Total Sulphur	%	< 0.02	NONE	< 0.02			

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

Subcontracted analysis (S)

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



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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-13920	
Soil Consultants Ltd	
~Site Reference: Alma Cottage RG10 0EH	
~Project / Job Ref: 10995/CA	
~Order No: 10995/CA	
Reporting Date: 25/11/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
751223	WS02	None Supplied	1.00 - 2.00	5.7	Brown gravelly sand with stones

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

Insufficient Sample ^{1/s}

Unsuitable Sample ^{u/s}

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



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-13920

Soil Consultants Ltd

~Site Reference: Alma Cottage RG10 0EH

~Project / Job Ref: 10995/CA

~Order No: 10995/CA

Reporting Date: 25/11/2024

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

D Dried
AR As Received



Chris Avalos
Soil Consultants Ltd
Chiltern House
Earl Howe Road
Holmer Green
High Wycombe
Buckinghamshire
HP15 6QT

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-14288

Site Reference: Alma Cottage RG10 0EH

Project / Job Ref: 10995/CA

Order No: 10995/CA

Sample Receipt Date: 27/11/2024

Sample Scheduled Date: 27/11/2024

Report Issue Number: 1

Reporting Date: 03/12/2024

Authorised by:

Steve Knight
Customer Support Manager

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

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



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



Soil Analysis Certificate						
DETS Report No: 24-14288	Date Sampled	13/11/24				
Soil Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Alma Cottage RG10 0EH	TP / BH No	WS02				
Project / Job Ref: 10995/CA	Additional Refs	None Supplied				
Order No: 10995/CA	Depth (m)	0.60 - 1.00				
Reporting Date: 03/12/2024	DETS Sample No	752899				

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	MCERTS	7.6			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	415			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.04			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	151			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.15			
Total Sulphur	%	< 0.02	NONE	< 0.02			

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



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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-14288	
Soil Consultants Ltd	
Site Reference: Alma Cottage RG10 0EH	
Project / Job Ref: 10995/CA	
Order No: 10995/CA	
Reporting Date: 03/12/2024	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 752899	WS02	None Supplied	0.60 - 1.00	13.5	Light brown sandy clay

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

\$ samples exceeded recommended holding times



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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-14288

Soil Consultants Ltd

Site Reference: Alma Cottage RG10 0EH

Project / Job Ref: 10995/CA

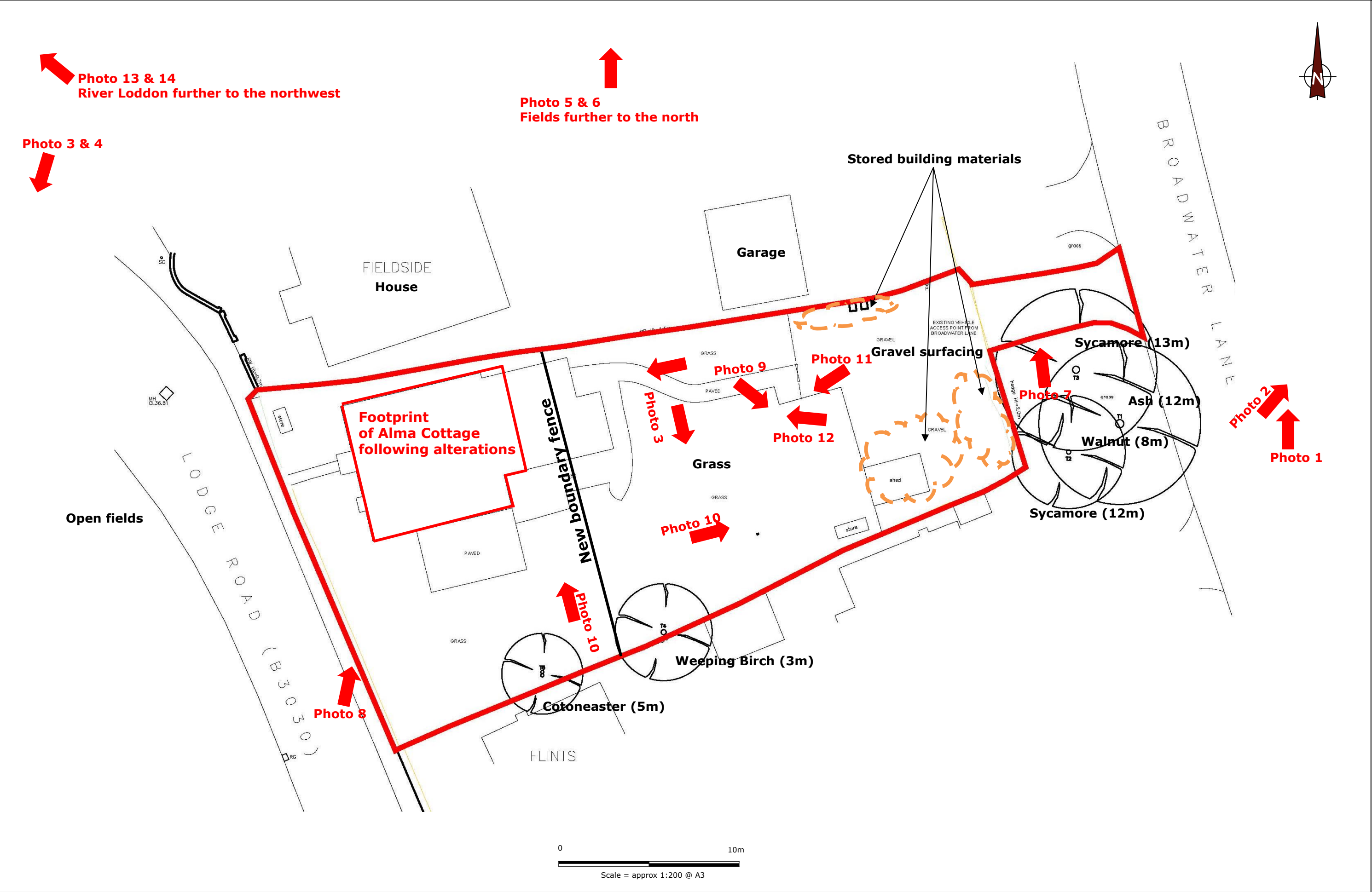
Order No: 10995/CA

Reporting Date: 03/12/2024

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

D Dried
AR As Received

Site Plan



Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 1	
Description: View of fields to the east of site from Broadwater Lane	
Direction: Looking NNE Date: 13/11/24	

Photo No 2	
Description: View of fields to the east of site from Broadwater Lane	
Direction: Looking ENE Date: 13/11/24	

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 3

Description:
View of former
landfill area to
the west of
site

Direction:
Looking SSW

Date:
13/11/24



Photo No 4

Description:
View of former
landfill area to
the west of
site

Direction:
Looking SSW

Date:
13/11/24



Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 5	
Description: View of former landfill area to the north of site	
Direction: Looking E Date: 13/11/24	

Photo No 6	
Description: View of former landfill area to the north of site	
Direction: Looking NE Date: 13/11/24	

Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 7

Description:
Land directly
east of site,
location of
former
drainage ditch
which is no
longer present

Direction:
Looking NNE

Date:
13/11/24



Photo No 8

Description:
Alma Cottage

Direction:
Looking NE

Date:
13/11/24



Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 9

Description:
Garden area
for proposed
new house.
Garden shed
close to
boundary with
stored
building
materials
around shed

Direction:
Looking SE

Date:
13/11/24



Photo No 10

Description:
Garden area
where new
house is
proposed

Direction:
Looking E

Date:
13/11/24



Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 11

Description:
Garden area of
new dwelling

Direction:
Looking SW

Date:
13/11/24



Photo No 12

Description:
Garden area
looking
towards Alma
Cottage
(west) and
northern
boundary on
right. Car
garage beyond
fence.

Direction:
Looking SW

Date:
13/11/24



Site & Location	Alma Cottage Lodge Road, Whistley Green, Berkshire RG10 0EH	Report No: 10995/CA
Site photographs		

Photo No 13

Description:
View of River
Loddon,
observed from
approx. 360m
northwest of
site

Direction:
Looking S

Date:
13/11/24



Photo No 14

Description:
View of River
Loddon,
observed from
approx. 360m
northwest of
site

Direction:
Looking N

Date:
13/11/24



- NOTES:
- All dimensions and levels are to be checked on site.
 - Any discrepancies are to be reported to the Architect before any work commences.
 - This drawing shall not be scaled to ascertain any dimension. Work to figured dimensions only.
 - This drawing shall not be reproduced without express written permission from the Architect.
 - Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. The Architect cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.

MATERIALS KEY

1. RED BRICK
2. ROSEMARY ROOF TILE
3. UPVC WINDOWS (RAL TBC)

REVISION: A (23/06/23)
AMENDED FLOOR PLAN

CLIENT: MR L MASSARELLA

PROJECT: PROPOSED NEW
DWELLING WITHIN
LAND AT;

ALMA COTTAGE
LODGE ROAD
WHISTLEY GREEN
RG10 0EH

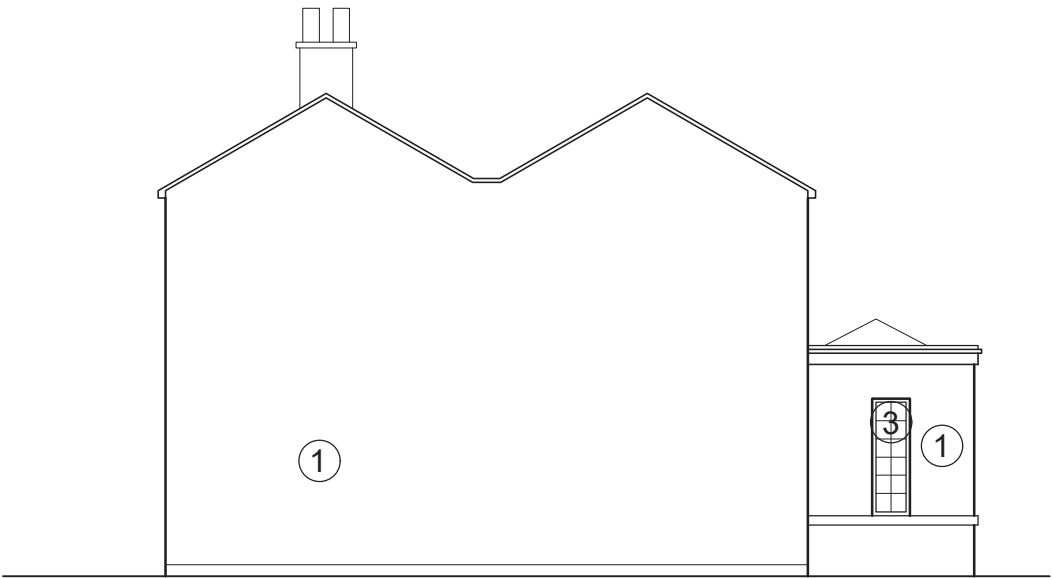
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SCALE: 1:100 @ A3

DATE: MAY 2023

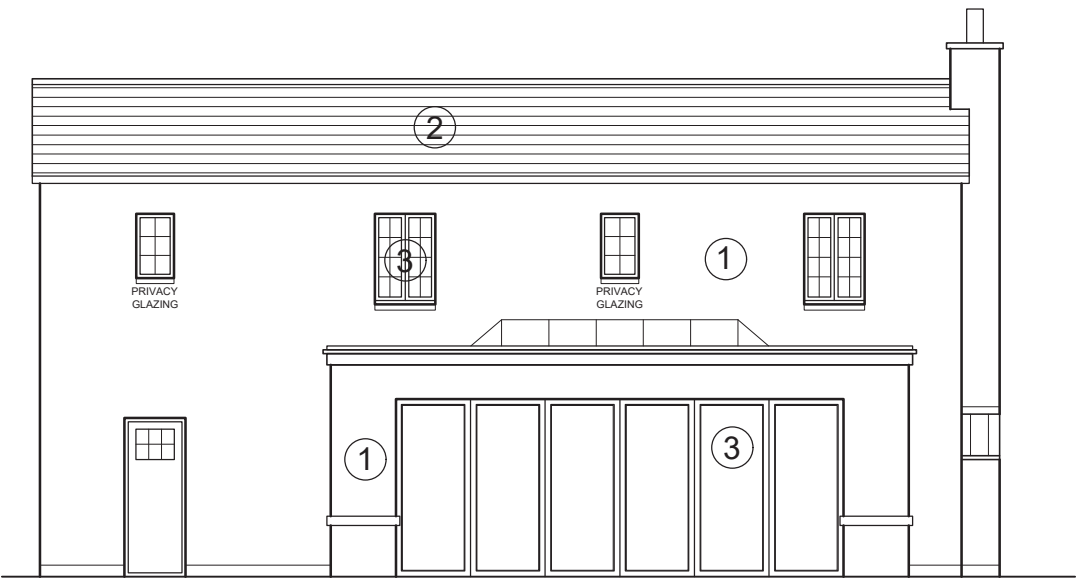
DRAWING I.D
004 / 04 (02) 020



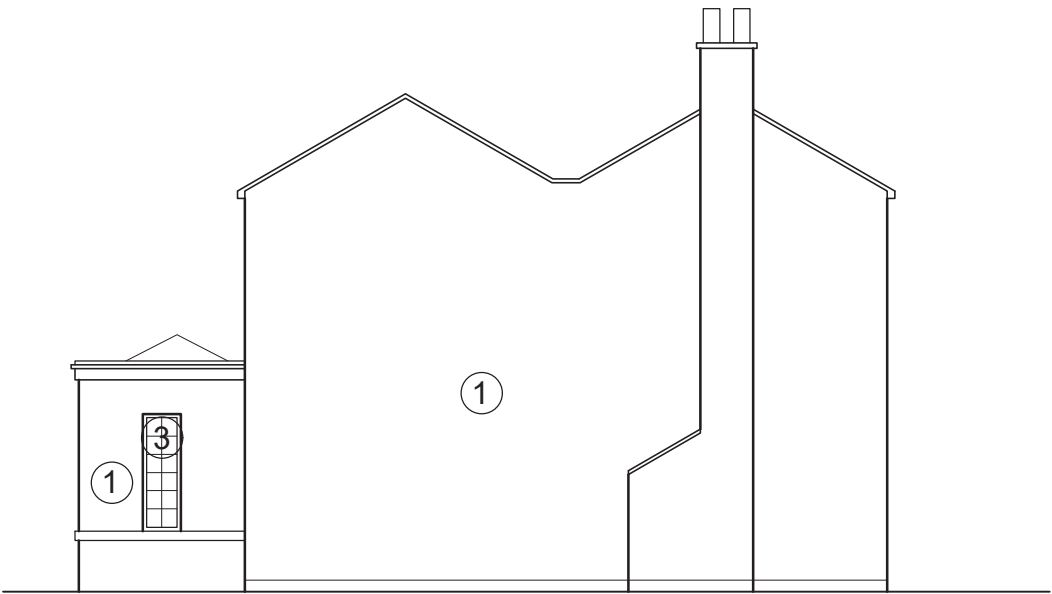
FRONT (EAST)



SIDE (NORTH)



REAR (WEST)



SIDE (SOUTH)



- NOTES:
- All dimensions and levels are to be checked on site.
 - Any discrepancies are to be reported to the Architect before any work commences.
 - This drawing shall not be scaled to ascertain any dimension. Work to figured dimensions only.
 - This drawing shall not be reproduced without express written permission from the Architect.
 - Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. The Architect cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.

DEVELOPMENT BOUNDARY



REVISION: A (23/06/23)
AMENDED FLOOR PLAN

CLIENT: MR L MASSARELLA
PROJECT: PROPOSED NEW DWELLING WITHIN LAND AT;
ALMA COTTAGE
LODGE ROAD
WHISTLEY GREEN
RG10 0EH

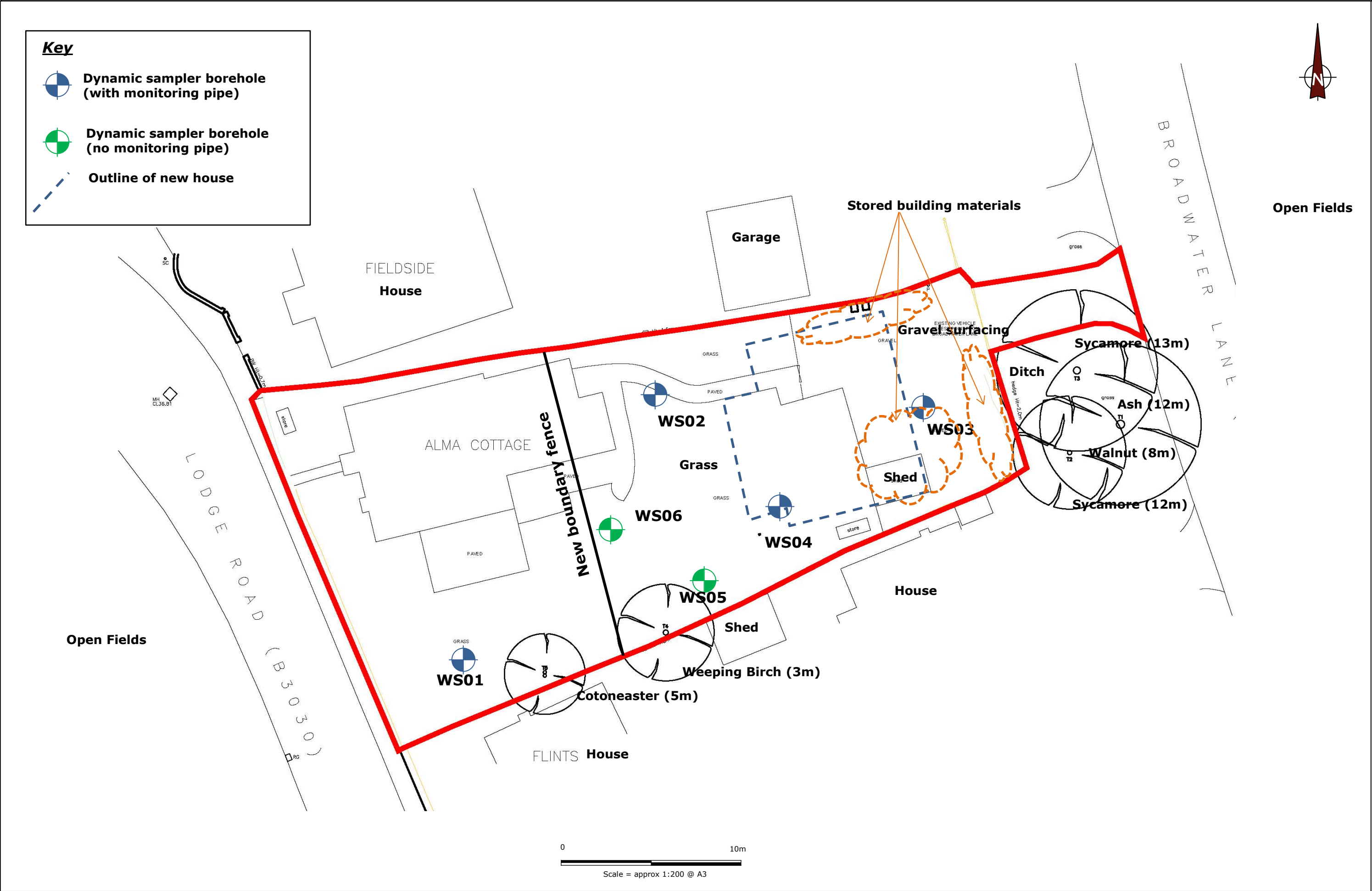
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SCALE: 1:200 @ A3

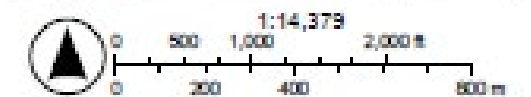
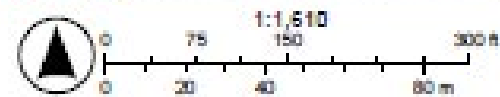
DATE: MAY 2023

DRAWING I.D
004 / 04 (02) 004

Borehole Location Plan



ArcGIS Web Map

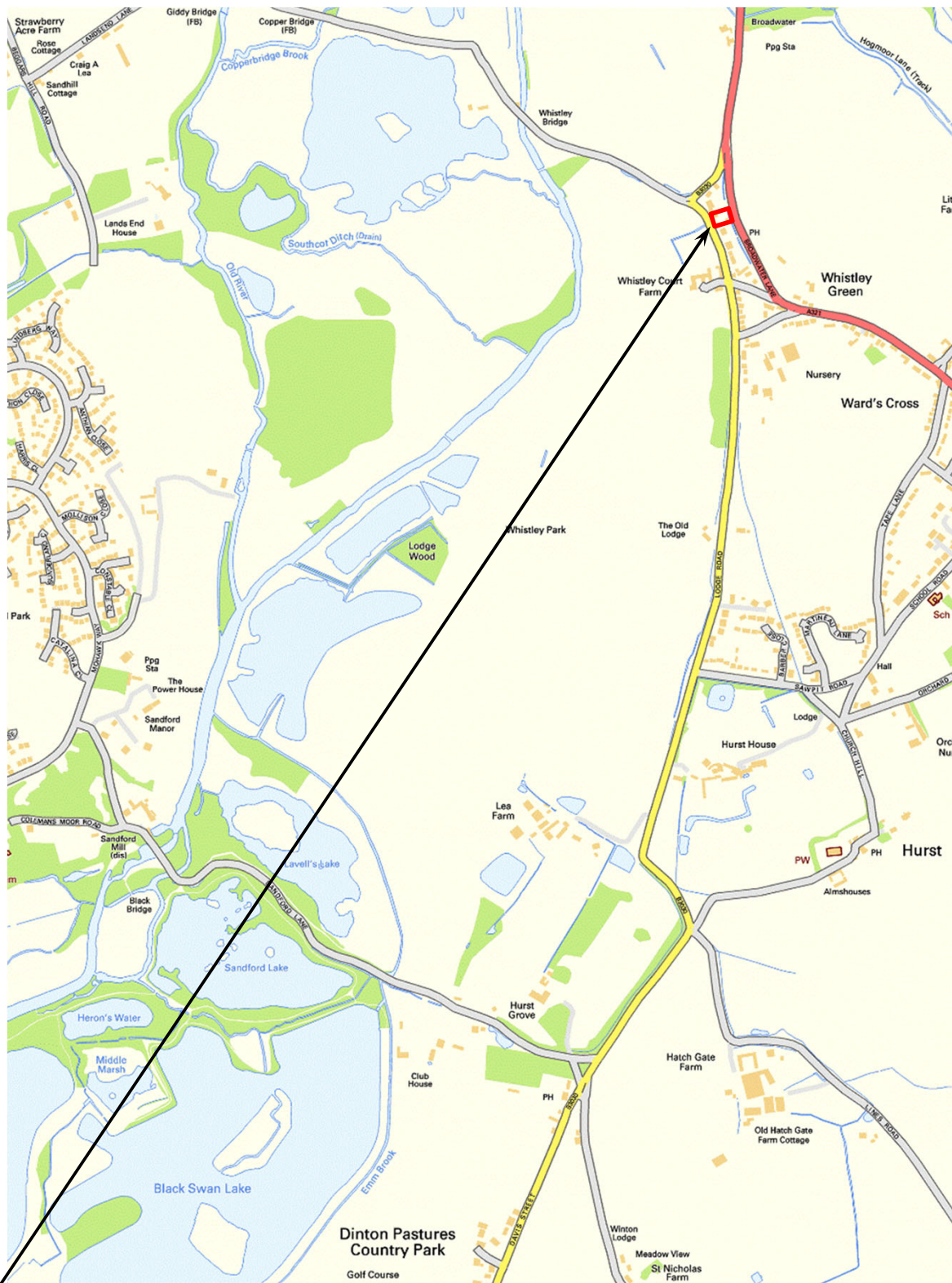


Site &
Location

Alma Cottage
Lodge Road, Whistley Green, Wokingham RG10 0EH

Report No:
10995/CA

Site Location Map



SITE LOCATION

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APPENDIX B

-  GroundSure historical maps (Ref: SCL-A92-ZW7-CY3-D95, 06/11/2024)
-  GroundSure Enviro+Geo Insight Report (Ref: SCL-8WJ-8NA-DJD-XDE, 06/11/2024)

Site Details:

ALMA COTTAGE, LODGE ROAD,
HURST, WOKINGHAM, RG10
0EH

Client Ref: 10995
Report Ref: SCL-A92-ZW7-CY3-D95
Grid Ref: 479241, 174314

Map Name: County Series

Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

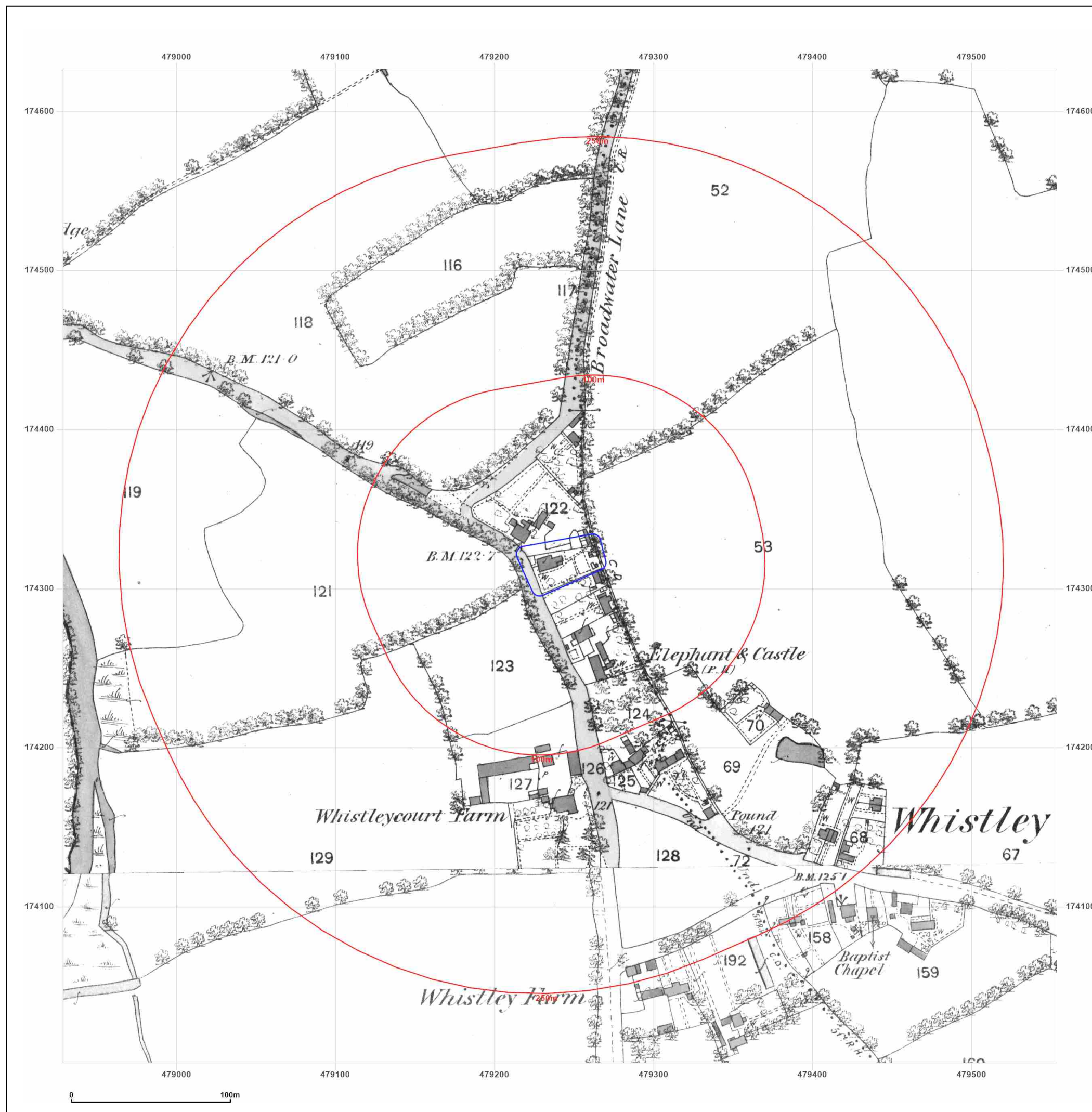


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

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Production date: 06 November 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

ALMA COTTAGE, LODGE ROAD,
HURST, WOKINGHAM, RG10
0EH

Client Ref: 10995
Report Ref: SCL-A92-ZW7-CY3-D95
Grid Ref: 479241, 174314

Map Name: County Series

Map date: 1899

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A



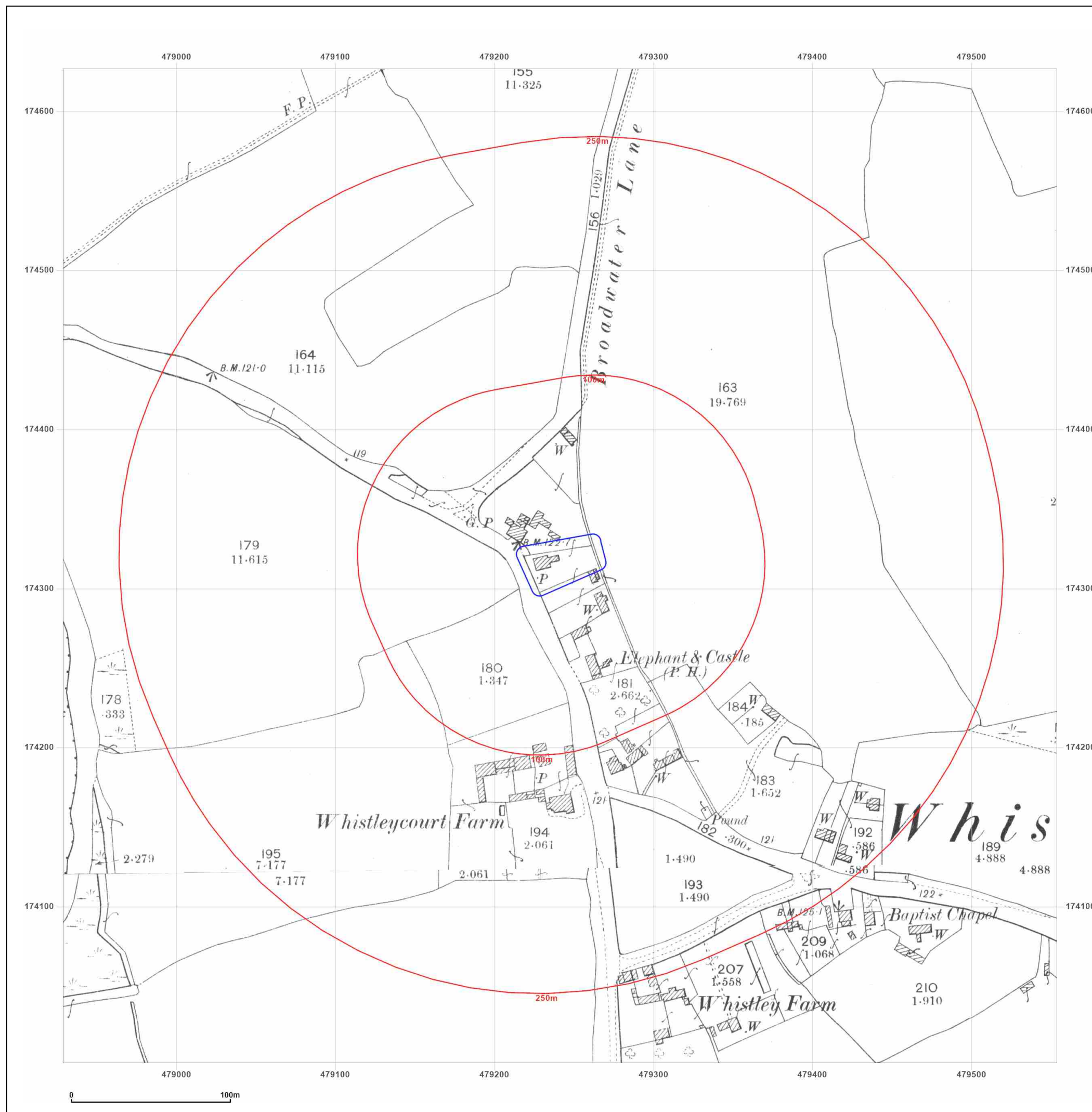
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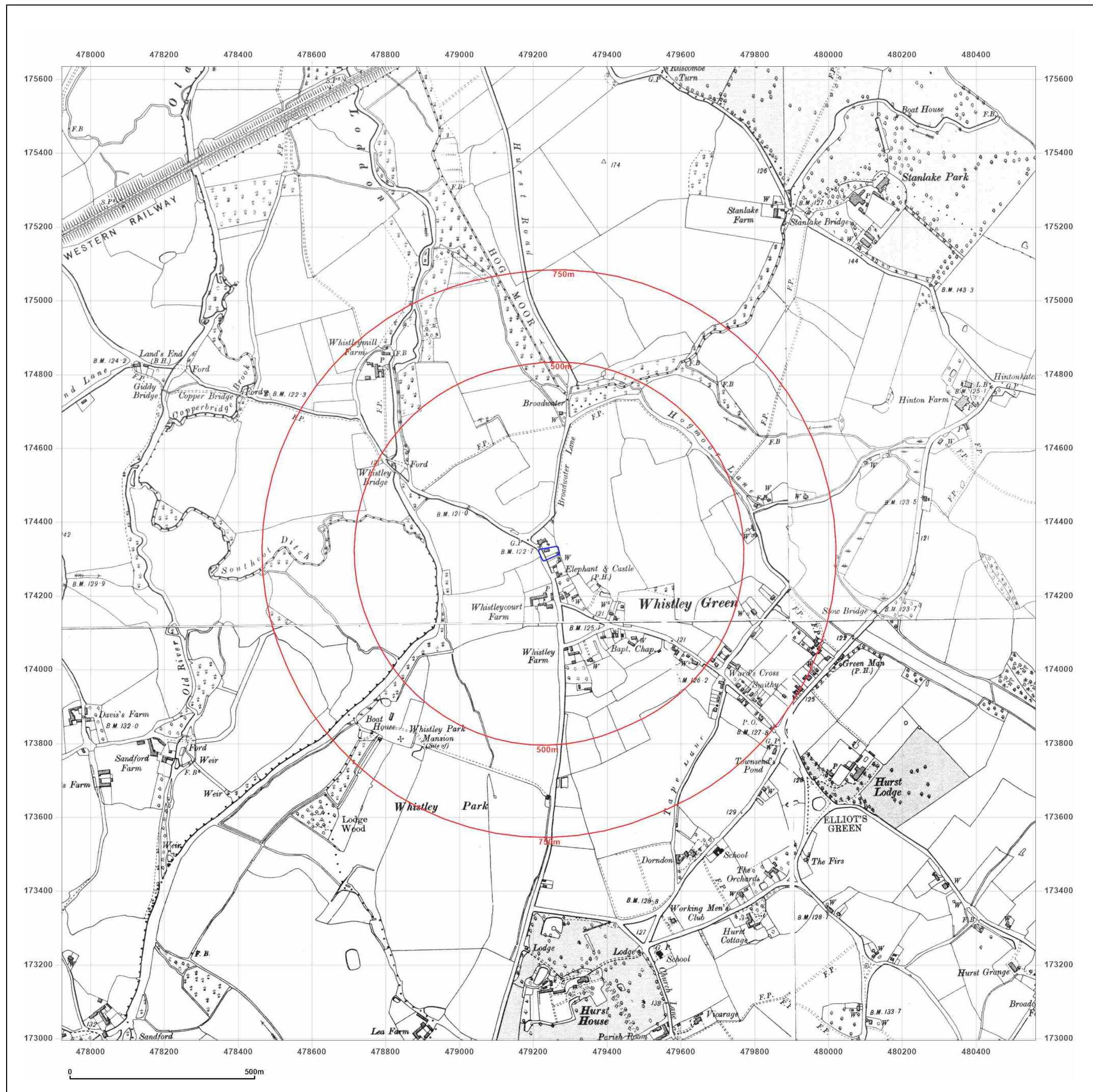
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Production date: 06 November 2024

Map legend available at:

www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

ALMA COTTAGE, LODGE ROAD,
HURST, WOKINGHAM, RG10
0EH

Client Ref: 10995
Report Ref: SCL-A92-ZW7-CY3-D95
Grid Ref: 479241, 174314

Map Name: County Series
Map date: 1897-1900
Scale: 1:10,560
Printed at: 1:10,560

Map Legend:

Surveyed 1877
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

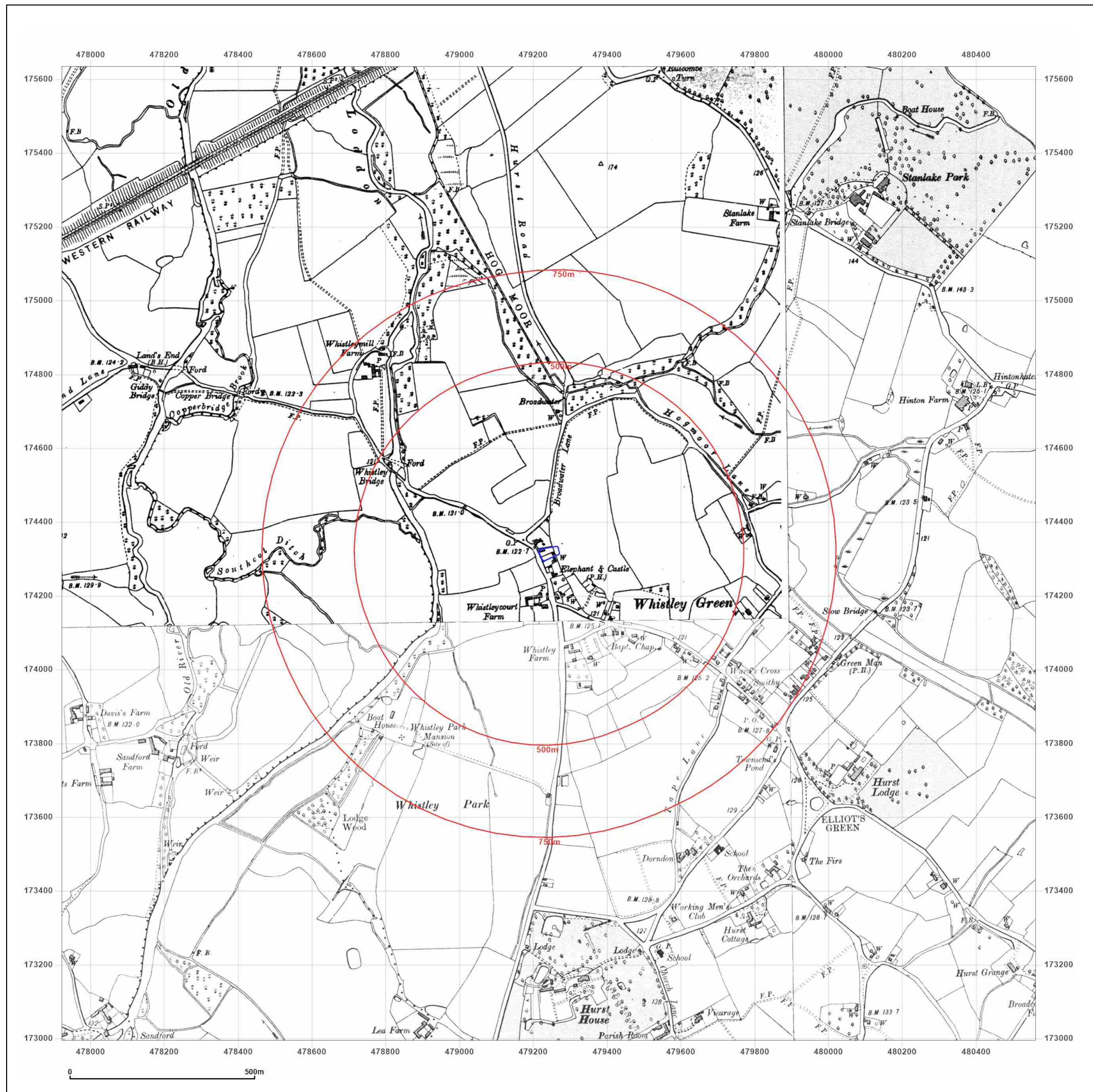
Surveyed 1875
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

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HURST, WOKINGHAM, RG10
0EH

Client Ref: 10995
Report Ref: SCL-A92-ZW7-CY3-D95
Grid Ref: 479241, 174314

Map Name: County Series

Map date: 1898-1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1897
Edition 1900
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



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Production date: 06 November 2024

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