

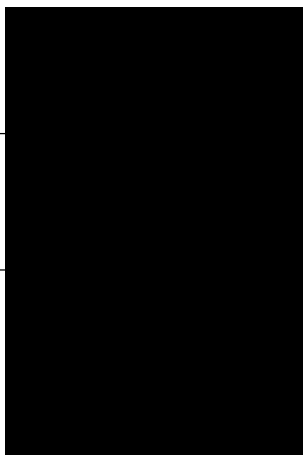
**REPORT ON
GROUND INVESTIGATION
AT
STANBURY HOUSE
SPENCERS WOOD**



REPORT STATUS SHEET

Client:	Cooper Estates Strategic Land Ltd
Report Title:	Report on Ground Investigation at Stanbury House, Spencers Wood
Report Number:	AG2994A-23-AQ09
Report Status:	Validated Issue 1
Date:	July 2023



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1.0 INTRODUCTION

1.1 Objectives and Scope of Investigation

An area of land at Stanbury House, Basingstoke Road, Spencers Wood (the site) is being considered for redevelopment by Cooper Estates Strategic Land Ltd (the Client). The current proposals for the site comprise the construction of a residential development (traditional housing) with associated infrastructure, gardens and an access road leading from Basingstoke Road in the east.

A Phase II Ground Investigation report for the site has previously been produced by Applied Geology in July 2019 (Report ref: AG2994-19-AI06 Validated Issue 1) on behalf of the Client. At the time of issuing the previous report the site also included the remainder of the land/field to the adjacent east of the site. In February 2023, Applied Geology was appointed again by the Client to review and update the 2019 report to acknowledge a revised and smaller site boundary (predominantly the south-western extent of the former site boundary with an access road across the eastern extent towards Basingstoke Road). This current report details the findings of the original intrusive works, however, the findings and assessments provided have been revised, where applicable, to reflect the new site boundary.

The revised report has been undertaken in order to:

- assess the potential for hazardous substances or conditions to exist at the site that might warrant mitigation or remediation appropriate to the intended end use proposed by the Client.
- establish geological conditions and geotechnical parameters to assist in the safe and economic engineering design of the proposed development.
- support an existing Planning Application.

The terms of reference/brief for the works were originally developed between Phillips Planning Services Ltd (the Client's Planning Consultant) and Applied Geology Ltd and are outlined in our proposal reference AG18-6647let001 dated 14th November 2018, and revised estimate reference AG18-6647-03 dated 20th March 2019. The terms of reference/brief for the revised report were again mutually developed between Phillips Planning Services Ltd and Applied Geology Ltd and are outlined in our email correspondence between the 17th of February and the 23rd of February 2023.

The scope of works originally undertaken by Applied Geology in 2019 comprised:

- A site inspection and walkover survey.
- A review of the following desk study sources:
 - ❑ GroundSure – GeoInsight & EnviroInsight environmental databases.
 - ❑ GroundSure – MapInsight historical maps.
 - ❑ British Geological Survey (BGS) - published information & on-line borehole database.
 - ❑ Environment Agency Web Site.

- Ground investigation together with sampling, monitoring and a programme of laboratory testing.
- Assessment and reporting of the results of the works.

A new GroundSure report, comprising GeoInsight and EnviroInsight environmental databases and MapInsight historical maps, was obtained for the revised site boundary.

Underground service plans for the site were obtained by Applied Geology on 2nd April 2019. At the time of issuing, no topographic survey drawings were available.

1.2 Report Layout

This report presents a brief description of the site, the desk study data and the factual results of the intrusive investigations carried out. An interpretation of the ground conditions and a discussion/assessment of the findings is presented in the later report text sections. The main text of the report has been produced in a concise format, including the use of data tables to summarise key information where possible. The report should be read in conjunction with the general procedures detailed in Appendix F and General Notes given at the end of the main text, which provide details of investigation techniques, assessment methodology and standards, health & safety and limitations and exceptions of the report. Drawings and factual data including exploratory hole records, laboratory testing results and desk study records are presented in the other Appendices.

2.0 SITE DESCRIPTION AND PROPOSALS

2.1 Site Description and Walkover

The site is located to the west of Basingstoke Road, in the village of Spencers Wood, approximately 6.7km south of Reading town centre. The Ordnance Survey grid reference for the centre of the site is 471150, 166773, as shown on the Site Location Plan in Appendix A.

The main part of the site (excluding the access road) is irregular in shape, measuring approximately 250m by 200m at the longest and widest extents and covering an area of c.3.36 ha. Topographically the site sloped gradually from west to east, with elevations ranging from c.68.3m to 65.0m AOD.

A site inspection/walkover was undertaken by Applied Geology on 15th April 2019. Access to the site was gained off Basingstoke Road and the adjacent field to the east. At the time of the inspection and the subsequent intrusive works, the site comprised part of two large vacant fields which had been left to grass. The two fields were separated by a mature hedgerow and intermittently by a dry drainage ditch along part of the southern boundary. In the south-east of the site, where the two fields met, there was a low area of standing water (small pond) surrounded by mature and semi-mature trees. A single residential property (Stanbury House) was present along the route of the proposed access road to the proposed development. The accompanying garage to the dwelling was located to the adjacent south of this proposed access road.

The residential property was a two-storey dwelling of brick construction with front and rear gardens and was occupied at the time of the walkover and subsequent works.

The accompanying garage was of single storey brick construction and a metal above ground heating oil tank (c.1000litres), sited on a brick support structure and with associated pipework, was present to the south of the garage. The driveway of the property continued to a set of wooden gates, which provided access to the fields beyond (the remainder of the proposed access road and the main site).

A large shed/barn was present in the eastern end of the field closest to the property, within the defined route of the proposed access road. This was constructed of a mix of corrugated sheet metal, concrete blocks and possible cement bound asbestos sheeting. Several possible ACM roof sheets were also piled by the side of the barn/shed in large broken fragments. No access was gained to the shed, albeit it appeared to be empty and no longer in use.

At the time of the walkover, it was noted that ecologists were also on site undertaking observations of the pond/woodland area. The findings of this survey remain unknown to Applied Geology.

The site was bound to the north and south by mature woodland, to the west by wooden fencing and the continuation of the field and to the east by the continuation of the field and residential properties beyond bounding Basingstoke Road.



Photo looking northwest showing the large shed/barn to the east of the site along the route of the proposed access road.



Photo looking west showing above ground fuel storage tank next to the single storey brick garage located to the adjacent south of the route of the proposed access road.



Photo looking east showing the access point to the site, via the residential property with associated garage.



Photo looking northwest showing surrounding mature woodland, mature trees across the site and vacant grass fields.

The site has not been revisited in 2023 as part of this report update, however, it is understood that the site is generally in the same condition as it was during the walkover and subsequent intrusive works in 2019.

2.2 Site Proposals

The proposals for the site comprise the construction of a relatively large residential development scheme with associated infrastructure, gardens and an access road leading to Basingstoke Road. The location and layout of the intended development is presented on the Initial Feasibility Layout drawing by OSP Architecture (no drawing reference) as presented in Appendix A.

3.0 DESK STUDY INFORMATION

The desk study findings are summarised below, with the full Groundsure Report and select Historical Ordnance Survey Maps, which has been updated to reflect the new revised site boundary, is included in Appendix B.

Site History (1877 to 2023)	• 1872 to 1877 - The site is shown to comprise part of two large agricultural fields with a track crossing through roughly the centre of the southern field in a north-east to south-west orientation. Sparse trees are present around the periphery of the two fields and a pond is present in the south-east of the main part of the site. A tributary/ drain is shown leading from the pond along the southern boundary of the site before connecting with Foudry Brook c.800m to the west. A building, possibly a farm house/ barn, is present along the western site boundary, whilst a similar structure is noted adjacent to the southern boundary. The site is surrounded by fields, with several residential dwellings to the east of the proposed access road off Basingstoke Road, with the settlement of Spencers Wood beyond. Four wells are shown to the north-east of the site from c.50m to c.175m, with an additional four shown from c.300m south of the site. A Smithy is present c.200m to the north-east and a clay pit and associated brick works is present c.500m to the south-west. There are several other ponds within the area from c.50m to the north, c.200m to the south and c.250m to the south-east. • 1898 to 1990 – There are no further significant changes on site. There are several more residential properties shown along Basingstoke Road to the adjacent east of the site. The Smithy c.200m to the north-east is no longer shown or labelled, however, a newly constructed Smithy is mapped c.30m to the east, with a well also shown to the adjacent south. • 1909 to 1913 – There are no further significant changes on site. Further (predominantly) residential development is shown to the east of the site, off Basingstoke Road. The wells to the east and south of the site are no longer shown or labelled. A wind pump is shown c.250m to the east of the site and an infant's school is shown c.50m to the south/ south-east. The clay pit and associated brick works c.500m to the south-west are labelled as old and therefore assumed to no longer be an active operation. • 1937- Several more trees are shown in the south-east of the site around the pond. There has been substantial residential development to the east of the site along Basingstoke Road, with several roads and residential dwellings noted off this road. The Smithy c.30m to the east of the site is no longer shown and it has been redeveloped to comprise residential dwellings. • 1968 to 1969 – The drain and the pond within the boundaries of the site are now labelled as such. Several of the trees around the pond and the periphery of the two fields are no longer shown to be present, neither is the building along the western boundary of the site or the pond c.50m to the north. There has been large-scale residential development to the east of Basingstoke Road up to Grovelands c.250m from the eastern
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	boundary of the site. A vacant field in the north of the settlement, c.200m north-east of the site, is now utilised as allotment gardens. • 1976 to 1988– There are no further significant changes onsite. Stanbury House and an accompanying garage are present at the entrance of the proposed site access (to the adjacent west of Basingstoke Road). A large barn/shed type feature is also mapped to the west of Stanbury House. The drain feeding the onsite pond has been extended to. A residential development, known as Wellington Court, is mapped from c. 150m north-west of the site. • 1994 – No further significant changes onsite or within the immediate area. • 2001 to 2023 – No further significant changes on site, with continued residential development ongoing to the settlement of Spencers Wood, to the east of the site.
Anticipated Geology and Ground Conditions	• The anticipated ground conditions beneath the site and the immediate area were assessed using the BGS map web viewer, the BGS 1:50,000 scale mapping sheet 12 (Solid and Drift edition) and the published BGS maps (1:10,000 scale and 1:50,000 scale maps in the Groundsure Report). • The published information indicates the site to be underlain by Solid Geology of the London Clay Formation (brown becoming grey with depth silty clay), with overlying Superficial River Terrace Deposits (sands and gravels). The River Terrace Deposits are shown to be relatively localised, extending c.400m to the north and south of the site and c.100m to the west. • There are no records of Made Ground/ Worked Ground within the boundaries of the site, however, some Made Ground is to be expected in already developed areas of the site (Residential dwelling known as Stanbury House and ancillary buildings, such as the garage and the large shed/barn). • A search of the BGS records indicates that the nearest archived borehole record is c.110m south-west of the site, and that this was advanced using cable percussive drilling methods in July 1974. The borehole encountered a nominal covering of Topsoil, over Superficial River Terrace gravels to 2.00m bgl, with firm brown/grey clay of the London Clay Formation encountered beneath and proven to the full depth of the investigation (4.00m bgl). The borehole was noted to be dry. • The site is not in a radon affected area, with <1% of homes above the Action Level. No radon protection measures are therefore considered necessary for new properties.
Mining/Quarrying	• The site is not indicated to be within an area of underground coal mining activities. • There are no BritPits (British Pits) records within 500m of the site. • There are up to ten records of surface ground working within 250m of the site, all of which are associated with ponds, the nearest one being c.35m to the east and likely associated with the on-site pond. • There are no underground workings within 1km of the site.
Hydrology	• The Foudry Brook is located c.1km to the west of the site, whilst a tributary/drain of this brook is present along part of the southern boundary and a connecting pond is present in the south-east of the site. • The water quality of Foudry Brook is noted to be chemically and ecologically poor. • The site lies outside a River and Coastal Flood Zone 2 and 3 and so the associated risk of flooding is noted to be low. • There are four Licensed Discharge Consent records within 500m of the site, the nearest being a historic authorisation for sewage discharges (final/treated) into gravel strata. This authorisation was revoked in October 1996. • There are no surface water abstractions within 1.5km of the site.
Hydrogeology	• The Superficial River Terrace Deposits are designated as a Secondary A aquifer, whilst the underlying London Clay Formation is designated as an Unproductive aquifer.

	• There are no groundwater or potable water abstractions within 1km of the site. The nearest abstraction is located at High Copse Farm c.1.3km to the east of the site and it is utilised for spray irrigation purposes. • The site does not lie within a Source Protection Zone. • The associated risk from groundwater flooding is noted to be low.
Other Environmental data	• There are no historical/operational landfilling operations located on site or within 200m of the site. • There are Local Authority records for one historical refuse pit located c.360m to the north-east of the site, which was in operation in 1937. No further information was made available. • There are six waste exemption records within 500m of the site, the nearest being c.210m to the south-east at Day Lewis Pharmacy. The exemption is for the sorting and de-naturing of controlled drugs for disposal. • There are no records held for any historical tanks within 500m of the site. There are, however, records of up to four historical garages within 500m of the site, the nearest being c.420m south-east of the site dating back to c.1967. • There are no historical petrol fuel stations within 500m of the site, however, the nearest operational petrol fuel station is located c.395m to the north-west off Swallowfield Bypass. • There are no sites determined as contaminated land within 500m of the site. • There are three industrial land uses within 250m of the site. There is a publishing goods c.35m to the east (off Basingstoke Road), a telephone exchange/feature c.100m to the east and an electricity sub station c.155m to the east. • There are three records for Part A(2)/B Authorised Activities within 500m of the site, the nearest being held by Max Dry Cleaners c.225m to the south-east, permitting dry cleaning processes. • There are no EA pollution incidents within 500m of the site. • Stanford End Mill and River Loddon c.1.5km south-east of the site are noted to be Sites of Special Scientific Interest (SSSI). • Norman's Shaw c.1.3km south-west of the site is designated an 'Ancient & Semi-Natural Woodland'. • The tributary/drain of Foudry Brook which is located along part of the southern boundary of the site, is noted to be at risk from agricultural nitrate pollution. • The site is noted to be part of a Local Authority conservation area, albeit no further information was available. • No recorded former railways or tunnels on or within 250m of the site.
Other Ground Related Risks	• The Groundsure report identifies the following risk levels to ground related hazards; • Shrink swell soils = low risk • Collapsible deposits = very low risk • Running sands = very low risk • Landslides = very low risk • Soluble rocks = negligible risk • Compressible ground = negligible risk.
Unexploded Ordnance and Military Sites.	• The Zetica Bomb risk map identifies the site to be within a low-risk area for potential unexploded bombs to be present as a result of the WW2 bombing. • Historical maps do not show any significant change in layout of buildings on or near the site between the 1930's and 1950's. • No military sites recorded within 500m of site.

4.0 CONCEPTUAL SITE MODEL

4.1 Diagrammatical Illustration

The Conceptual Model for the site, showing the main elements of the surface and subsurface conditions and including the potential contaminant sources, pathways and receptors identified from the desk study information is presented in Appendix A as Drawing No AG2994A-23-03. The potential sources, pathways and receptors are defined in the following sections:

4.2 Sources

- Localised Made Ground soils on site associated with former and current buildings and agricultural historic use (including pesticides);
- Hydrocarbons from spillages/leaks of the above ground heating oil tank located to the adjacent south of the proposed access road;
- On-site and off-site ground gases associated with decomposition of organic material in Made Ground and potential infilled ponds/Alluvium associated with ditch/pond;
- Sulphates in Made Ground or underlying natural strata.

The electricity substation, petrol filling station and refuse pit are not considered to be plausible sources of contamination due to the limited extent of the River Terrace Deposits, the predominantly cohesive nature of the Solid Geology and their recorded distances from the site.

4.3 Pathways

- Human dermal contact;
- Human ingestion via soil directly or via bioavailable contaminants within vegetables grown in contaminated soils;
- Human inhalation of dust or vapours;
- Leaching and/or migration through permeable soils (granular Made Ground & River Terrace Deposits);
- Direct contact with buried concrete/water supply services.

4.4 Receptors

- End users: residents, visitors (Human Health);
- Secondary A Aquifer- River Terrace Deposits (Controlled Waters);
- Pond and the associated drains on site;
- Buried foundation/substructure concrete (Building Materials);
- Water supply services (Building Materials).

4.5 Source/Pathway/Receptor Linkage and Assessed Risk

Source-pathway-receptor (SPR) linkages are tabulated below together with the qualitatively assessed risk. The risk to ground workers and construction workers is not included here due to the short-term exposure times that they will be subject to and the assumption that good hygiene practices will be adopted on site and the appropriate use of relevant PPE/RPE will be adhered to when exposed to potentially contaminated soils. Comments regarding contamination issues with respect to

ground workers and construction workers are included in the health and safety section of the Standard Procedures included as Appendix F.

Source	Pathway	Receptor	Risk*
Potential contaminants within localised Made Ground likely present near the large barn/shed and Stanbury House or resulting from historical site usage (on site) - including pesticides.	Inhalation, ingestion, dermal contact.	End users	Low
	Migration and Leaching.	Pond/Ditch and Secondary Aquifer	Low
Soil gas from Made Ground – both on-site and off-site sources (methane, carbon dioxide).	Migration into buildings, service ducts etc.	End users	Low
Hydrocarbons from the above ground heating oil tank on site/ spillages	Inhalation, ingestion, dermal contact.	End users	Low
	Leaching/migration.	Pond/ditch and Secondary Aquifer	Low
	Water Supply Pipes	Direct contact.	Low/ Medium
Elevated sulphates in Made ground or natural soils	Direct contact, leaching and contact with groundwater.	Buried concrete	Low- River Terrace Deposits Medium/High - London Clay Formation

*** Definition of Risk Categories**

Negligible - Contaminants that might have unacceptable impact on key receptors, are unlikely to be present, or, no pathway is envisaged.

Low Risk: Contaminants may be present but are unlikely to be at levels to have unacceptable impact on key receptors, or pathways are likely to be minimal.

Medium Risk: Contaminants are probably present and might have an unacceptable impact on key receptors. Pathways may also be present therefore remedial measures may be necessary to reduce the risks.

High Risk – Contaminants probably or certainly present and pathways are probably also present. Therefore, contaminants are likely to have an unacceptable impact on key receptors and remedial measures are likely to be necessary to reduce the risks to acceptable levels.

5.0 GROUND INVESTIGATION WORKS

5.1 Fieldwork

The following scope of fieldwork was undertaken in 2019 within the area of the new site boundary:

- 5 No Driven Continuous Sampling Boreholes (ref. DCS1, DCS4, DCS5 DCS7 and DCS8) to depths of between 3.50m and 5.45m below ground level (bgl);
- 13 No Machine Excavated Trial Pits (ref. SA2 to SA5 and TP2, TP4 to TP8 and TP10 to TP12) to depths of between 1.20m and 2.80m bgl;
- 4 No Soakaway infiltration tests (within trial pits SA2 to SA5);
- 1 No Hand Dug Inspection Pit (ref HP1) to a depth of 0.30m bgl.

The borehole, trial pit and hand dug inspection pit records and the SPT calibration certificate are included in Appendix C with the infiltration test results included in Appendix D.

The locations of the exploratory holes were selected and set out on site by Applied Geology Limited. The exploratory holes were generally located to provide best coverage across the site, whilst the hand dug inspection pit was undertaken adjacent to the above ground heating oil tank associated with Stanbury House and TP2 and TP9 were positioned within close proximity to the large barn/ shed. TP4 and TP5 are not located strictly within the revised site boundary, however, they have been included in this assessment in order to provide information on the likely ground condition anticipated within the nearby section of proposed road.

Soakaway tests were undertaken in general accordance with BRE DG365 Methodology, however, SA2 and SA3 were only filled on one occasion running over one working day, whilst SA4 and SA5 were only filled once, however they were left to run over 3 working days. The tests were carried out in the excavated Trial Pits of measured dimensions, testing the natural strata. The pits were filled with clean water, with the levels observed over the test period. Results are discussed in Section 6.5, below.

A series of Mexe-probe tests were undertaken at shallow depths within select Trial Pit excavations in order to determine the in-situ CBR profile of the soils. The results are presented on the trial pit recorded presented in Appendix C.

The positions of the exploratory holes were defined by taping from identifiable features on the site plan (Drawing No: 043023 18-03 Rev 1 dated January 2019) provided by Phillips Planning Ltd. The locations are presented on Drawing No. AG2994A-23-02 in Appendix A.

5.2 Instrumentation and Monitoring

On completion of boring, 50mm diameter standpipes were installed in selected boreholes as follows, with further details included in the relevant borehole logs in Appendix C:

- DCS1, installed 1.00m to 2.00m bgl in River Terrace Deposits;
- DCS4, installed 1.00m to 4.00m bgl in London Clay Formation;
- DCS5, installed 1.00m to 2.00m bgl in River Terrace Deposits;
- DCS7, installed 0.50m to 1.50m bgl in River Terrace Deposits;
- DCS8, installed 1.50m to 4.00m bgl in London Clay Formation.

Washed silica gravel (10mm) was used as the filter medium. Each standpipe was fitted with a push-in bung and single gas tap and was finished with flush metal cover concreted in place.

Ground gas and groundwater monitoring visits were undertaken on 4 occasions from 3rd to 29th May 2019. Each monitoring well was monitored for concentrations of carbon dioxide, methane, oxygen, flow rates and differential pressures and water level. The monitoring results are included in Appendix D.

5.3 Laboratory Testing

Geotechnical laboratory testing was undertaken on selected samples and comprised the following:

- 7 No natural moisture content tests;
- 7 No Atterberg limit tests;
- 5 No particle size distribution tests;
- 8 No BRE SD1 suite tests (4no. including pyrite suite).

Chemical testing was undertaken based upon the desk study, walkover and site observations during the fieldwork.

One sample of Made Ground/Topsoil and one sample of the Superficial River Terrace Deposits were analysed for the following suite of contaminants;

- Selected metals suite [arsenic, boron, beryllium, cadmium, total chromium, chromium hexavalent, copper, mercury, nickel, lead, zinc, vanadium and selenium];
- Speciated (16 US EPA) Polycyclic Aromatic Hydrocarbons (PAH);
- pH;
- Phenols;
- Soluble sulphate;
- Organic matter
- Asbestos screening (one sample only),
- Total Petroleum Hydrocarbon (TPH) Criteria Working Group (CWG);
- Benzene, Toluene, Ethylbenzene, m&p Xylene, o-Xylene (BTEX), and
- Methyl Tert-Butyl Ether (MTBE).

A second sample of Made Ground/ Topsoil, obtained within close proximity to the above ground heating oil tank (HP1), was analysed for the following suite of contaminants;

- Asbestos screening;
- TPHCWG;
- BTEX; and
- MTBE.

Seven samples of Topsoil and one sample of the Superficial River Terrace Deposits were analysed for the following suite of contaminants:

- Selected metals suite [arsenic, boron, beryllium, cadmium, total chromium, copper, mercury, nickel, lead, zinc, vanadium and selenium];
- Speciated (16 US EPA) Polycyclic Aromatic Hydrocarbons (PAH);
- pH;
- Soluble sulphate;
- Organic matter;
- Asbestos screening (seven samples only).

Six of the seven samples of Made Ground and the sample of Superficial River Terrace Deposits were also submitted for TPHCWG, BTEX and MTBE testing. Two samples

of Topsoil and one sample of Made Ground/ Topsoil were tested for a Targeted Pesticide Suite due to the historical agricultural use of the site.

Laboratory test results are included in Appendix E.

6.0 GROUND CONDITIONS

6.1 Strata Encountered

The ground investigation has generally identified Topsoil from surface overlying mixed cohesive and granular River Terrace Deposits, with cohesive London Clay Formation encountered with depth. Locally, within close proximity of Stanbury House and the large barn/shed, Made Ground/Topsoil and/or Topsoil/ Made Ground soils were encountered.

Full details of the strata encountered are given on the borehole records presented in Appendix C. A generalised ground profile is presented below to summarise the information. A Standard Penetration Test (SPT) 'N' value versus depth plot is also presented in Appendix A.

Stratum	Depth to Top of Strata (m bgl)	Depth to Bottom of Strata (m bgl)	Comments
Topsoil	GL	0.20 to 0.50	Encountered from surface across the entirety of the site.
Made Ground/ Topsoil	GL	0.30 to 0.40	Encountered in DCS1, HP1 and TP9. Proven to the full depth of the investigation in HP1 (>0.30m bgl).
River Terrace Deposits	0.20 to 0.45	1.10 to 2.40	Encountered directly beneath the Topsoil as mixed cohesive and granular soils across the entirety of the site. Proven to the full depth of the investigation in select trial pit excavations (>1.20m to >2.70m bgl).
London Clay Formation	1.10 to 2.40	Proven to the full depth of the investigation (>5.45m bgl)	Encountered in exploratory holes where the base of the River Terrace Deposits was proven. Considered to be laterally present across the entirety of the site.

6.2 Topsoil

Topsoil was encountered from surface across the entirety of the site and was proven to depths of between 0.20m and 0.50m bgl. The Topsoil generally comprised brown mottled light grey silty/clayey sand or very soft to soft brown sandy clay or silt with a collective gravel content of flint and quartzite and occasional to frequent rootlets.

6.3 Made Ground/Topsoil

A predominantly Topsoil material with occasional anthropogenic inclusions of fragmented brick was encountered locally in HP1, DCS1 and TP9, all of which were adjacent to developed areas of the site (Stanbury House, garage and above ground heating oil tank and the large barn/ shed). These materials were encountered from surface and were proven to depths of between 0.30m (TP9) and 0.40m (DCS1), albeit they were proven to the full depth of the pit (0.30m bgl) in HP1, which terminated at shallow depth. Collectively, the soils comprised soft to firm dark brown to brown sandy clays with gravelly of flint and brick and occasional to frequent roots and rootlets.

6.4 River Terrace Deposits

Strata considered to represent Superficial River Terrace Deposits were encountered across the entirety of the site directly beneath the Topsoil and/or Made Ground/Topsoil and were proven to depths of between 1.10m and 2.40m bgl. It should be noted that the Superficial Deposits were proven to the full depth in selected trial pit excavations (>1.20m to >2.70m bgl) and so locally they may be present to greater depths.

The soils were encountered as comprising either soft to firm orangish brown mottled light brown and grey gravelly sandy silty clay with pockets of sand, or medium dense orangish brown mottled light grey clayey sandy gravel with pockets of clay. The gravel content generally comprised quartzite and flint and locally cobbles of flint. Where both the cohesive and granular horizons were encountered in the same exploratory hole, the cohesive soils were generally overlying the granular.

Five particle size distribution tests were undertaken on bulk samples of the granular River Terrace Deposits. For clarity, the results are presented in the table below.

Location	Depth (m bgl)	Sample Proportion (%)				Classification
		Clay/Silt	Sand	Gravel	Cobbles	
TP2	1.50-2.00	28.5	53.5	18	0	Very clayey SAND with some gravel
TP6	1.00-2.00	9.0	43.2	47.7	0	Clayey SAND and GRAVEL
TP10	0.50-1.00	23.5	49.1	27.3	0	Very clayey very gravelly SAND
TP10	1.50-2.00	6.8	22.1	71.0	0	Clayey very sandy GRAVEL
TP12	0.90-1.90	8.1	32.9	59.0	0	Clayey very sandy GRAVEL

The results of five Atterberg Limit tests undertaken on the cohesive horizons of the River Terrace Deposits have indicated plasticity indices of between 26% and 33% (corrected to 22% and 33%) indicating these materials to be of medium shrinkability as defined by NHBC Standards. Uncorrected liquid limits of between 46% and 52%, plastic limits of between 19% and 24% and moisture contents of between 14% and 24% were also recorded. The results indicate the clays to be of medium to high plasticity.

Six in-situ Standard Penetration Tests (SPTs) were carried out with the River Terrace Deposits, three in horizons of gravel and three in the horizons of clay. SPT 'N' values of between N=26 and N=38 were recorded in the gravels at depths of between 1.20m and 3.00m bgl, whilst SPT 'N' values of between N=11 and N=26 were recorded in the clay horizons at 1.20m bgl. Applying the empirical relationship between SPT 'N' values versus mass shear strength using an average Plasticity index of 30%, this correlates with an F_1 value of approximately 4.5% (after Stroud et al) giving estimates of mass shear strength (in clayey soils) of between c.50kN/m² and c. 115kN/m².

6.5 London Clay Formation

Strata considered to represent the London Clay Formation was encountered across the site directly beneath the River Terrace Deposits and were proven to the full depth of the investigation (5.45m bgl). It should be noted that the London Clay Formation was not encountered in select trial pits (SA2, SA3, SA4, SA5, TP8, TP9, TP10, TP11) and DCS1, which terminated at shallow depths in the River Terrace Deposits.

Generally, an initial weathered horizon of firm becoming stiff light grey or brown and locally orangish brown silty clay with relict rootlets was encountered. Below this intact London Clay Formation of stiff very closely fissured grey/ dark grey/ brown silty clay was recorded. Rare shell fragments were found to be present, and selenite crystals were encountered in nearly all locations within both horizons where London Clay was encountered. Occasionally within the strata, pockets of pyrite/glaucanite were also encountered.

One Atterberg Limit test was undertaken on the cohesive London Clay Formation Strata and has indicated a plasticity index of 37% (corrected to 36%) indicating the soils tested to be of medium shrinkability as defined by NHBC Standards. An uncorrected liquid limit of 59%, plastic limit of 22% and a moisture content of 24% were also recorded, indicating the clay tested to be of high plasticity.

Fifteen in-situ Standard Penetration Tests (SPTs) were carried out within the London Clay Formation, recording SPT 'N' values of between N=14 and N=17 at 2.0m bgl, increasing to SPT 'N' values of between N=21 and N=24 from 4.00m bgl onwards. Applying the empirical relationship between SPT 'N' values versus mass shear strength using a Plasticity Index of 37%, this correlates to an F_1 value of approximately 4.3 (after Stroud et al) giving estimates of mass shear strength of between c.60kN/m² and c.75kN/m² at 2.0m bgl, increasing to c.90kN/m² and c.100kN/m² from 4.00m bgl. The SPT N value vs depth plot shows a steady increase in strength with depth.

6.6 Groundwater and Soakaway Tests

Groundwater strikes and seepages were typically recorded in the granular River Terrace Deposits at depths of between 1.00m and 2.80m bgl, as identified in the table below.

Location	Stratum	Depth of strike (m bgl)	Groundwater level after 20min	Comments
DCS1	River Terrace Deposits - gravels	2.80	2.80	Strikes
SA3	River Terrace Deposits - gravel	1.15 to 1.20	-	Seepage
SA4	River Terrace Deposits - clay	2.05	-	Seepage
TP2	River Terrace Deposits – sand	1.80	2.00	Strike
TP4	London Clay Formation	2.60	-	Seepage
TP7	River Terrace Deposits – sand and gravel	2.00	-	Seepage
TP8	River Terrace Deposits - gravel	1.70	-	Strike – fast flowing
TP9	River Terrace Deposits - clay	2.60	2.60	Seepage
TP10	River Terrace Deposits - gravel	2.00	-	Strike – fast flowing
TP11	River Terrace Deposits – sand	1.00	-	Seepage
TP11	River Terrace Deposits - clay	2.70	-	Seepage
TP12	River Terrace Deposits – sand	1.50	-	Seepage

Groundwater levels may fluctuate for a number of reasons, including in the short term, the prevailing weather conditions immediately before and during investigation and monitoring works and longer-term seasonal variations should be expected.

During the subsequent monitoring programme standing groundwater levels within the standpipes were recorded and are summarised below;

Location	Response Zone (m bgl)	Stratum	Depth to groundwater over four visits (m bgl)
DCS1	1.00 to 2.00	River Terrace Deposits	1.15 to 1.89 (dry during visits 3 & 4)
DCS4	1.00 to 4.00	London Clay Formation	2.74 to 3.70
DCS5	1.00 to 2.00	River Terrace Deposits	1.20 to 1.63
DCS7	1.00 to 1.50	River Terrace Deposits	0.95 to 1.05 (dry during visit 3)
DCS8	1.50 to 4.00	London Clay Formation	1.20 to 1.65

During the return monitoring programme, standing groundwater was recorded at depths of between 0.95m and 1.89m bgl in the River Terrace Deposits and at depths of between 1.20m and 3.70m bgl in the underlying London Clay Formation. It should be noted that DCS1 and DCS7 (installed in the River Terrace Deposits) were noted to be dry during the third and/or fourth monitoring visits.

Preliminary soakaway tests were carried out across the site within four open trial pits (SA2, SA3, SA4, SA5) and were terminated at depths of between 1.20m (SA2 and

SA3) and 2.10m bgl (SA4) within the River Terrace Deposits. During the tests, water levels were monitored for between 1.6hours (SA3) and 46.15hours (SA5) and in that time the water level did not alter in SA2 and SA3 and rose by 0.04m in SA4 and by 0.07m in SA5 (likely due to rainfall or a minor collapse). As such, it has not been possible to calculate infiltration rates of any of the trial pit soakaway locations. The soakaway tests were carried out in general accordance with BRE Digests DG365 methodology, however, due to the lack in drop in water level only one test was undertaken in each of the four trial pits over the course of one day. The results of the tests are included in Appendix D.

6.7 Contamination

There was no visual or olfactory evidence of any gross contamination observed in the exploratory hole positions, with the exception of DCS1 and TP9 where black staining and a hydrocarbon odour was observed. The location of these exploratory holes coincides with the location of Stanbury House and the large barn/shed.

HP1 undertaken in close proximity to the above ground fuel tank, recorded no evidence of near surface contamination.

6.8 Soil Gas

Only limited sources of potential ground/soil gas were identified by the Desk Study and only a nominal amount of Made Ground/Topsoil was encountered during these works. Monitoring was therefore predominantly undertaken for groundwater level observation purposes. However, confirmatory ground gas monitoring has been undertaken alongside groundwater monitoring to confirm the absence of ground/soil gas in the natural soils across the site.

Four phases of ground gas monitoring were undertaken and have indicated methane concentrations of below the limit of detection (<0.1%) together with carbon dioxide concentrations of between <0.1% and 3.4%. Oxygen concentrations were recorded at between 18.0% and 20.9% and average flow rates were generally below the limit of detection (<0.1l/hr).

Based on the highest recorded steady carbon dioxide and methane concentrations and the average flow rate from the four visits, gas screening values have been calculated in accordance with CIRIA C665 of 0.0034l/hr (carbon dioxide) and 0.0001l/hr (methane).

It should be acknowledged that for a proposed residential scheme, six monitoring visits over a three-month period are usually required as a minimum for sites classified as being of very low generation potential. However, considering no sources of ground gas and negligible Made Ground were found as part of the investigation, only confirmatory gas monitoring was considered appropriate (alongside the required groundwater monitoring). However, this is subject to the agreement of the Local Authority and as such, further monitoring visits may be required. This monitoring could be conducted alongside any future supplementary site investigations.

7.0 GEOENVIRONMENTAL ASSESSMENT

7.1 Human Health Risk Assessment

The results of the chemical testing on soils have been assessed as described in Appendix F, with specific details as follows:

- Proposed end-use – residential houses with gardens;
- Screening criteria – residential with plant uptake, assuming 2.5% SOM;
- Assuming a single dataset based on the site's history, current land-use and the proposed redevelopment

A spreadsheet summarising the laboratory results and relevant screening values is presented in Appendix E. A review of the chemical testing undertaken on the soil samples analysed has identified that none of the determinants tested for were found to exceed the corresponding screening values.

Of the ten samples submitted for hydrocarbon analysis, all but two samples recorded total TPH concentrations at less than the laboratory detection limit (10mg/kg). The remaining two samples, on a sample of Topsoil from TP12 at 0.20m bgl and the other a sample of Made Ground/Topsoil from HP1 at 0.20m bgl, recorded total TPH concentrations of 38mg/kg, which remained significantly below the relevant screening criteria.

Out of the ten samples submitted for PAH analysis, all but two samples recorded total PAH concentrations at less than the laboratory detection limit (2mg/kg). The remaining two samples of Topsoil, taken from DCS4 at 0.30m bgl and TP2 at 0.20m bgl, recorded total PAH concentrations of 3.10mg/kg and 3.70mg/kg, respectively, which remained significantly below the relevant screening criteria.

All samples of BTEX and MTBE concentrations were recorded at below the laboratory limits of detection and the heavy metal concentrations were significantly below the relevant screening values within all samples analysed.

Targeted pesticides were not recorded at concentrations above detection limits.

Laboratory screening for asbestos did not detect any ACM within any of the samples screened.

Based on the above assessments, it is considered that the site presents a negligible risk to end users with regards to Human Health.

7.2 Controlled Waters Risk Assessment

The results of the chemical testing on soils have not identified any concentrations elevated above those considered to be at background levels.

Based on the context of the site, the ground conditions, the absence of any elevated concentrations in the soils on site, the risk to Controlled Waters is considered to be negligible.

7.3 Conclusions and Recommendations

The above risk assessments have established a negligible risk to human health and Controlled Water receptors. It is therefore considered that further assessment or remedial actions are not warranted for the proposed development.

However, it is noted that the site is relatively large and there has been limited coverage of the site by the initial phase of investigation. Therefore, it is recommended that a supplementary investigation be undertaken once final development plans are available, in order to confirm the findings of this assessment. The number of proposed exploratory positions and sampling frequencies should comply with that specified in BS5390/Eurocodes.

Issues with respect to ground gas and potential effects of contaminants on buried concrete and water supply pipework are included in Section 8.0.

8.0 GEOTECHNICAL ASSESSMENT

8.1 General

The proposals for the site comprise the construction of a relatively large residential development, with associated services, parking, roadways, open spaces and gardens. At the time of issuing no information with regards to proposed loadings was made available, however, lightly loaded traditionally constructed one to two storey dwellings are envisaged.

Generally, Topsoil was encountered overlying both cohesive and granular superficial River Terrace Deposits, which were underlain by cohesive strata of the London Clay Formation. Locally, around Stanbury House and garage and the large barn/shed Made Ground/Topsoil was encountered. Groundwater was recorded typically within the River Terrace Deposits at depths of between 1.00m and 2.80m bgl causing localised spalling/instability in the trial pits excavated.

8.2 Foundation Design

The River Terrace Deposits and underlying London Clay Formation are considered suitable to support conventional strip/trench fill foundations. Following a Topsoil strip of the site, foundations must be placed below any Made Ground (if encountered) or disturbed ground and also beneath any soft or loose natural materials (again if encountered) and embedded into the underlying firm/ medium dense or better strata of the River Terrace strata, or the underlying firm or better London Clay Formation.

The ground conditions include soils of medium shrinkage potential, hence a minimum foundation depth of 0.90m bgl will apply to the site to cater for seasonal variations. Greater minimum depths may apply in areas of restricted new planting and where foundations are within influencing distance of trees. Foundations must be placed below any evidence of roots/desiccation. Anti-heave measures should be employed for any foundations >1.5m bgl.

Strip/trench fill (up to 1.0m wide) foundations competently designed to the above requirements may adopt safe net design bearing pressure of between 75kN/m² and 100kN/m². This is based on engineering judgement, published data/guidance and a consideration of laboratory and in situ test data over influencing depth of foundations

within variable strata, using traditional methods of bearing capacity calculations e.g. as set out in Tomlinson 7th Edition and a factor of safety of 3 against bearing capacity failure.

Variable strata are anticipated at formation, comprising both granular and cohesive materials. In view of the potential for variable settlement performance across such variable strata, consideration should be given to inclusion of light reinforcement within foundations to resist potential tensional forces.

Total settlement should be maintained at less than 25mm based on the above criteria.

Once final layouts are available, further site investigation to establish a more specific depth profile of the River Terrace Deposits and geotechnical properties of this material, allowing a more detailed assessment of allowable bearing capacities to be made. Consideration could then be given to creating a foundation zoning plan for groups of building plots, or areas of the site based on the ground conditions and the presence of trees. It is advised that a tree survey be undertaken at the site, if one has not already been undertaken.

If conditions, significantly at variance to those described herein are encountered, specialist geotechnical advice should be sought to make appropriate assessment and recommendations.

8.3 Floor Slab and Gas Protection

It is considered that ground bearing floor slabs may be adopted across some parts of the site, subject to proof rolling, removal of soft spots and replacement with a suitable compacted granular material. Suspended slabs may be required in places due to the presence of near surface cohesive strata and trees. This would likely need to be determined on a plot by plot, or zone by zone basis following further investigation.

Negligible soil gas has been identified during the monitoring and no flow rates were measured in the installations during the monitoring visits. The conceptual model and gas monitoring results would characterise the site as Situation 1 (CIRIA C665) or NHBC Green. No gas protection measures are therefore likely to be required. However, as previously mentioned, this assessment is subject to the agreement of the Local Authority and further monitoring visits may be required.

Radon protection measures are not considered necessary.

8.4 Excavations

Excavations for the foundation excavations and service trenches are expected to be in a combination of River Terrace Deposits (granular and cohesive) and possibly localised London Clay Formation. These materials may locally be prone to some short-term instability and spalling, especially where granular strata are present, and may need to be graded back to a stable angle or trench support should be provided. Trench support or the angle of batter should be designed by an appropriately qualified engineer or competent person to suit the required depth and the ground and groundwater conditions. Significant groundwater ingress is not expected, however locally ingress is anticipated in the base of excavations and it is recommended that some provision for obtaining sump pumping equipment is made to control any seepage and run off in wet weather conditions

8.5 Pavement Design

In-situ Mexeprobe testing of the River Terrace Deposits produced variable results with inferred CBR values of between 1% and 9%.

Based on a review of in-situ CBR testing carried out, classification testing, soil type, and construction conditions, a long-term equilibrium CBR value of 2-3% (dependent on construction conditions) is recommended for the cohesive River Terrace Deposits and 5% is recommended for the granular River Terrace Deposits.

Based on the plasticity results, gradings and field descriptions, the River Terrace Deposits should be assumed to be frost susceptible.

8.6 Soakaways

Due to the lack in drop in water level across all four trial pit soakaway tests, soil infiltration rates could not be calculated. This together with the presence of groundwater seepages and/or strikes from depths of between 1.00m to 2.80m bgl and the underlying low permeability of the London Clay Formation suggest that the site is unlikely to be feasible for the use of soakaway drainage. Some granular River Terrace Deposits are present above the water table, which could mean that permeable paving is potentially viable, subject to further assessment.

8.7 Buried Concrete and Services

As defined by BRE Special Digest 1, Concrete Aggressive Ground, 2005, the Design Sulphate Class and the Aggressive Chemical Environment for Concrete (ACEC) has been assessed for each of the strata encountered. Following the results of the geotechnical testing, the characteristic values for each stratum have been determined in the table below:

Strata	No. of samples tested	Soluble Sulphate (g/l) ^{*1}	Total Potential Sulphate (%)	pH	Design Sulphate Class	ACEC ^{*2}
River Terrace Deposits	6	<0.1	-	4.9	DS-1	AC-2z
London Clay Formation ^{*3}	4	0.2	<0.1	7.0	DS-1	AC-1

Notes:

*1: Characteristic values are rounded to the nearest 0.1g/l.

*2: Assumes mobile groundwater.

*3: Only shallow soils tested.

In accordance with the guidance in BRE SD1, the characteristic values for each stratum have been determined based on the highest result (where <5 samples tested), or the mean average of the highest two results (where 5-9 samples tested).

The results of the sulphate tests undertaken on the River Terrace Deposits identified that a Design Sulphate Class (DS) of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) of AC-2z, as defined by the BRE Special Digest 1, Concrete Aggressive Ground, 2005 for a greenfield site and assuming a mobile groundwater regime. For the London Clay Formation, the results of the sulphate tests identified a

Design Sulphate Class (DS) of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) of AC-1. It is recommended that further testing (particularly of the London Clay) is undertaken as part of the supplementary works in order to refine this assessment. This is due to the presence of selenite and pyrite in this stratum, which often requires sulphate resistant concrete to be utilised when placing concrete foundations in the London Clay Formation.

Further reference should be made to BRE Special Digest 1 for requirements in respect of types of cement and aggregate to be used and variations in type of concrete construction.

The results of the laboratory testing undertaken on the natural strata across the site have indicated concentrations of TPH at less than the threshold for Polyurethane pipes. Barrier supply pipes, therefore, may not be necessary on this site. It should be noted that the full suite of testing required by the UKWIR guidance has not been undertaken as part of this investigation and such testing may be required by the Water Authority once pipeline routes are known. Further guidance on this subject is included in Appendix F.

8.8 Conclusions and Recommendations

Strip/trench fill footings (up to 1m wide) competently designed to the requirements outlined in Section 8.2 may adopt safe net design bearing pressures of between 75kN/m² and 100kN/m².

Further investigation would be prudent to establish a more specific depth profile of the River Terrace Deposits and geotechnical properties of this material, allowing a more detailed assessment of allowable bearing capacities. Consideration could then be given to creating a foundation zone plan for groups of plots or areas of the site based on ground conditions and the presence of trees. A tree survey and associated drawing would be required to aid this.

Ground bearing slabs should be suitable in most areas; however, suspended slabs are likely to be required in areas within the influence of trees on cohesive soils, or if there is evidence of desiccation.

No gas protection measures are considered necessary; however, this would need to be agreed with the Local Authority and/or NHBC beforehand.

The site is unlikely to be suitable for the use of soakaway drainage.

The results of the sulphate tests undertaken on the River Terrace Deposits identified that a Design Sulphate Class (DS) of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) of AC-2z. More testing to confirm the classification, particularly of the underlying London Clay Formation is recommended.

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GENERAL NOTES

- A) The assessment made in this report is based on the site terrain and ground conditions revealed by the various field investigations undertaken and also any other relevant data for the site including previous site investigation reports (if available) and desk study data. There may be special conditions appertaining to the site, however, which have not been revealed by the investigation and which have not, therefore, been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available. It must be recognised that many of the Environmental Searches obtained during the course of the desk study are often lengthy. Applied Geology have, where appropriate and in the interests of simplicity, only reproduced the summary of the searches within the report. A full copy of all the search data is held at the Applied Geology office and is available for inspection if required.
- B) The services provided are defined within our proposal and are carried out in line with the terms of appointment between Applied Geology and the Client.
- C) Where any data supplied by the Client or other external source, including that from previous site investigations, has been used it has been assumed that the information is correct. No responsibility can be accepted by Applied Geology for inaccuracies within this data.
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- I) Ground conditions should be monitored during the construction of the works and the recommendations of the report re-evaluated in the light of this data by the supervising geotechnical or geo-environmental engineers.
- J) Unless specifically stated, the investigation has not taken into account the possible effects of mineral extraction.
- K) The works performed are not a comprehensive site characterisation and should not be construed as being such.
- L) The findings of the geo-environmental risk assessment are based on information obtained from a variety of sources which Applied Geology believe to be correct. Applied Geology cannot and does not guarantee the authenticity or reliability of the information it has relied upon.
- M) The report represents the findings and opinions of experienced geo-environmental consultants. Applied Geology does not provide legal advice and the advice of lawyers may be required.
- N) Conditions at the site are subject to change from the time of the site inspection.
- O) It is possible that researches carried out by Applied Geology, whilst fully appropriate for a phase 1 desk study, failed to indicate the existence of important information sources. Assuming such indicators actually exist, their information could not have been considered in the formulation of Applied Geology findings and opinions.
- P) The economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, depends on very many factors in addition to geotechnical considerations and hence its evaluation is outside the scope of this report.
- Q) Applied Geology operates as a Consultancy and does not operate its own laboratory for soil testing, this work being sub contracted to known and respected, generally UKAS accredited, laboratories. Applied Geology can therefore not be held responsible for the testing carried out.

LIST OF REFERENCES COMMONLY USED BY APPLIED GEOLOGY IN REPORTS

SECTION/TITLE	AUTHOR/PUBLICATION
LABORATORY TESTING	
BS 1377 Methods of Test for Soils for Civil Engineering Purposes.	BSI
BS 17892 Geotechnical Investigation and testing. Laboratory testing of soil.	BSI
SITE WORK	
Guidelines for Combined Geoenvironmental and Geotechnical Investigations. Issue 2. March 2006.	AGS
BS 5930:2015. Code of Practice for Ground Investigations	BSI
BS 10175:2011 + A2:2017 Code of Practice for the Investigation of Potentially Contaminated Sites	BSI
GEOTECHNICAL DESIGN	
BS EN 1997-1 + A1:2013 Eurocode 7 – Geotechnical Design, Part 1. 2004.	BSI
BS EN 1997-2 Eurocode 7 – Geotechnical Design, Part 2. 2007.	BSI
BS EN 16907:2018 Earthworks, Part 1 & 2.	BSI
BS 6031:2009 Code of Practice for Earthworks.	BSI
BS 8004:2015 Code of Practice for Foundations.	BSI
Paper by M. A. Stroud 'The Standard Penetration Test – its Application and Interpretation' within Thomas Telford/ICE book 'Penetration Testing in the UK'. 1989.	Stroud
BRE Special Digest 1: 2005 Third Edition. Concrete in Aggressive Ground	BRE
NHBC Standards, Chapter 4.2: Building Near Trees. 2022.	National House Building Council
C574 Engineering in Chalk. 2002.	CIRIA
C570 Engineering in Mercia Mudstone. 2001.	CIRIA
C504 Engineering in Glacial Till. 1999.	CIRIA
Foundation Design and Construction, 7th Edition.	MJ Tomlinson
GROUND GAS	
Radon Indicative Atlas (online)	BGS
BS 8485:2015 + A1:2019 Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.	BSI
Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide are Present. 4 th Ed, 2007	NHBC & RSK Group
Assessing Risks Posed by Hazardous Ground Gases to Buildings. C665. 2007.	CIRIA
Research Bulletin 17. 2012.	CLAIRE
BS 8576:2013 Guidance on Investigations for Ground Gas. Permanent Gases and Volatile Organic Compounds (VOCs)	BSI
C748 Guidance on the Use of Plastic Membranes as VOC Vapour Barriers. 2014.	CIRIA
Remediating and Mitigating Risks from Volatile Organic Compound (VOC) Vapours from Land Affected by Contamination. C716. 2012.	CIRIA
BR211:2023 Radon: Guidance on Protective Measure for New Buildings (including supplementary advice for extensions, conversions and refurbishment projects).	BRE
BR212:1991 Construction of New Buildings on Gas-Contaminated Land.	BRE
BR414:2001 Protective Measures for Housing on Gas-Contaminated Land.	BRE
RB13 The Utility of Continuous Monitoring in Detection and Prediction of 'Worst-Case' Ground-Gas Concentration. 2011	CL:AIRE
TB17 Ground Gas Monitoring and 'Worst-Case' Conditions. 2019.	CL:AIRE
GROUNDWATER	
BRE DG 365: Soakaway Design. 2016.	BRE
BS EN ISO 22282-2:2012 Geotechnical Investigation and Testing – Geohydraulic Testing, Part 2. 2012.	BSI
CONTAMINATION ASPECTS (Soil & Groundwater)	
Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance. 2012.	DEFRA
Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination - SP1010. 2014.	DEFRA
HPA Contaminated Land Information Sheet – Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons. Version 3. 2010.	HPA
Cover Systems for Land Regeneration. Thickness of Cover Systems for Contaminated Land. 2004. BR465 (archived) .	AGS/BRE
C552 Contaminated Land Risk Assessment – A Guide to Good Practice. 2001.	CIRIA
Development of Generic Assessment Criteria for Assessing Vapour Risk to Human Health from Volatile Contaminants in Groundwater. Version 1.0. February 2017.	SoBRA
BS 3882:2015 Specification for Topsoil	BSI
The LQM/CIEH S4ULs for Human Health Risk Assessment, 2015. S4UL3159.	Chartered Institute of Environmental Health. Land Quality Management.
Generic Assessment Criteria for Human Health Risk Assessment. 2009.	Chartered Institute of Environmental Health. Land Quality Management.
Land Contamination Risk Management (LCRM). 2020.	Environment Agency
The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils. February 2005.	Environment Agency
The Environment Agency's Approach to Groundwater Protection, V1.2. 2018.	Environment Agency

Remedial Targets Methodology. Hydrogeological Risk Assessment for Land Contamination. 2006.	Environment Agency
Guidance for the Safe Development of Housing on Land Affected by Contamination. R&D Publication 66. 2008.	NHBC
Sampling Strategies for Contaminated Land. Contaminated Land Research Report no.4. 1994.	DoE
NHBC Standards, Chapter 4.1: Land Quality – Managing Ground Conditions (online) 2023.	National House Building Council
CLEA Software (Version 1.071). 2015.	Environment Agency
The Water Supply (Water Quality) Regulations. 2018.	DWI
Code of Practice for the Investigation & Mitigation of Possible Petroleum-Based Land Contamination. 1993.	The Institute of Petroleum
www.gov.uk/contaminated land	Environment Agency
Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites. (10/WM/03/21). 2011.	UK Water Industries Research
DISPOSAL OF SOIL	
Guidance on the Classification and Assessment of Waste. Technical Guidance WM3. 1 st Ed. Version 1.2.GB. 2021.	SEPA, NIEA, Natural Resources Wales & Environment Agency
Disposal of Waste to Landfill. 2021.	Environment Agency
PAVEMENT DESIGN	
Interim Advice Note 73/06 Rev 1, 2009. Design Guidance for Road Pavement Foundations (Draft HD25) (withdrawn).	Highways Agency
CD 622 Managing Geotechnical Risk, Rev 1, 2020.	Highways England, Transport Scotland, Welsh Government & Department for Infrastructure
CD 225 Design for New Pavement Foundations, Rev 1, 2020.	Highways England, Transport Scotland, Welsh Government & Department for Infrastructure
CD 226 Design for New Pavement Construction, Rev 1, 2021.	Highways England, Transport Scotland, Welsh Government & Department for Infrastructure
PLANNING	
National Planning Policy Framework and Practice Guidance. 2021.	Department for Communities and Local Government
HEALTH & SAFETY ASPECTS	
www.ag.s.org.uk	AGS
Construction (Design & Management) Regulations 2015 (CDM)	Health & Safety Executive
Control of Substances Hazardous to Health Regulations 2002	Health & Safety Executive
Workplace Exposure Limits. EH40/2005	Health & Safety Executive
Trenching Practice. Guidance on Groundwater Control (Report 97). 2 nd Ed. 2001.	CIRIA
Control of Groundwater for Temporary Works (Report 113). 1986.	CIRIA
C733 Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks. 2014.	CIRIA
C765 Asbestos in Soil and Made Ground Good Practice Site Guide. 2017.	CIRIA
C681 Unexploded Ordnance (USO) – A Guide for the Construction Industry. 2009.	CIRIA
HSG47 Avoiding Danger from Underground Services. 3 rd Ed. 2014.	Health & Safety Executive

APPENDIX A



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APPLIED GEOLOGY

The Old Barn, Church Farm
Fulbrook Lane
Sherbourne
Warwick
CV35 8AR

Tel: 02476 511822
email: admin@appliedgeology.co.uk

Client: COOPER ESTATES STRATEGIC LAND LTD

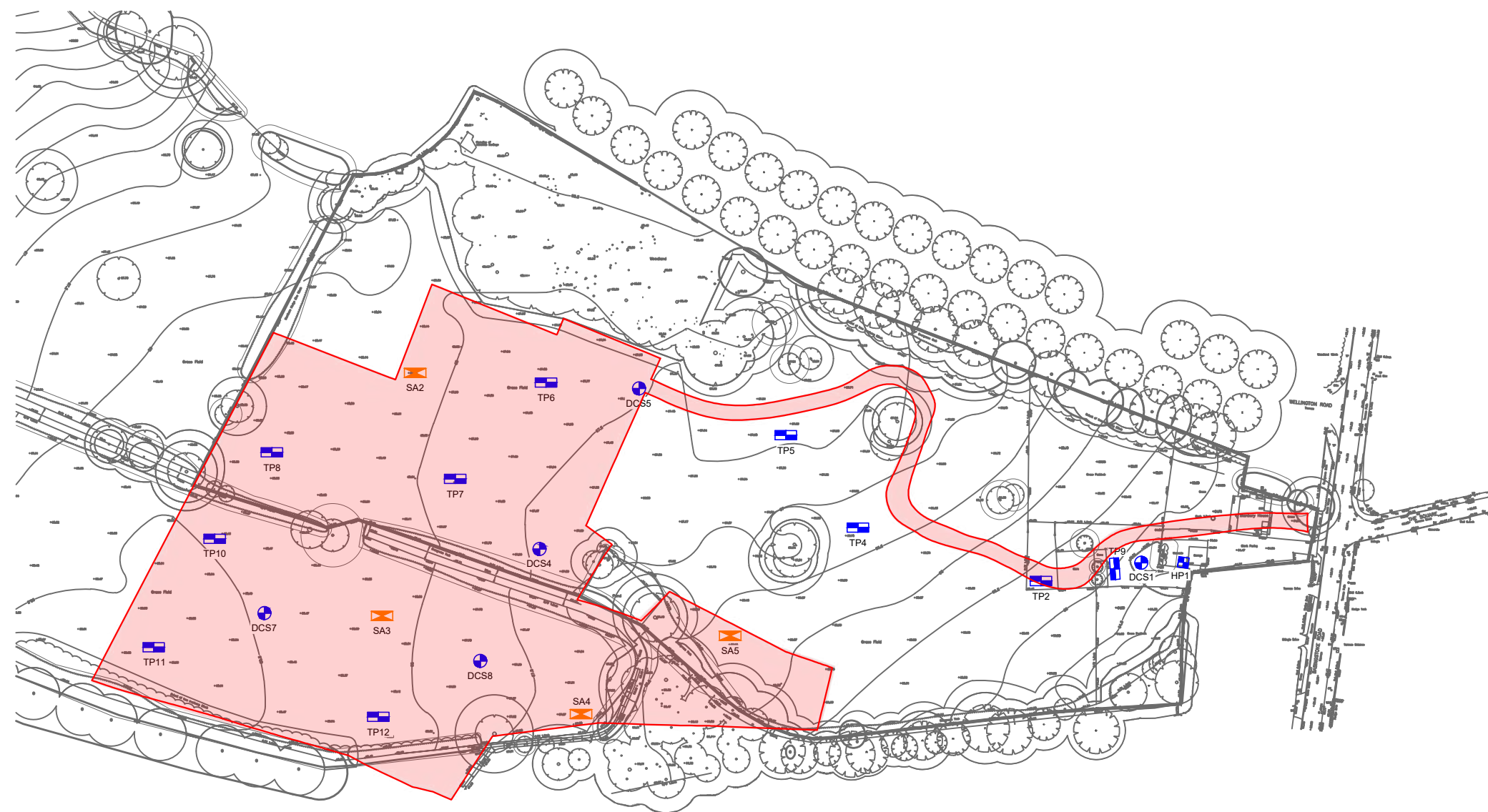
Project: STANBURY HOUSE, SPENCERS WOOD

Drawn By: KM	Checked By: MS	Paper Size: A4
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Scale: NTS	Date: 20.06.2023	NGR: 471150 166773
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Drawing No: AG2994A-23-01	Revision: 0
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Title: SITE LOCATION PLAN



Key:

-  Driven Continuous Sampling Borehole
-  Machine Excavated Trial Pit
-  Hand Dug Pit
-  Soakaway Test/ Trial Pit
-  Site boundary

Drawing based on Indigo Landscape Architects Limited drawing No:784-MP-03 dated 02/11/2018 and Phillips Planning Services LTD drawing No:043023-23-01 REV B dated 04/2023.

APPLIED GEOLOGY

The Old Barn
Church Farm
Fulbrook Lane
Sherbourne
Warwick
CV34 8AR

Tel: 02476 511822
email: admin@appliedgeology.co.uk

Client:
COOPER ESTATES STRATEGIC
LAND LTD

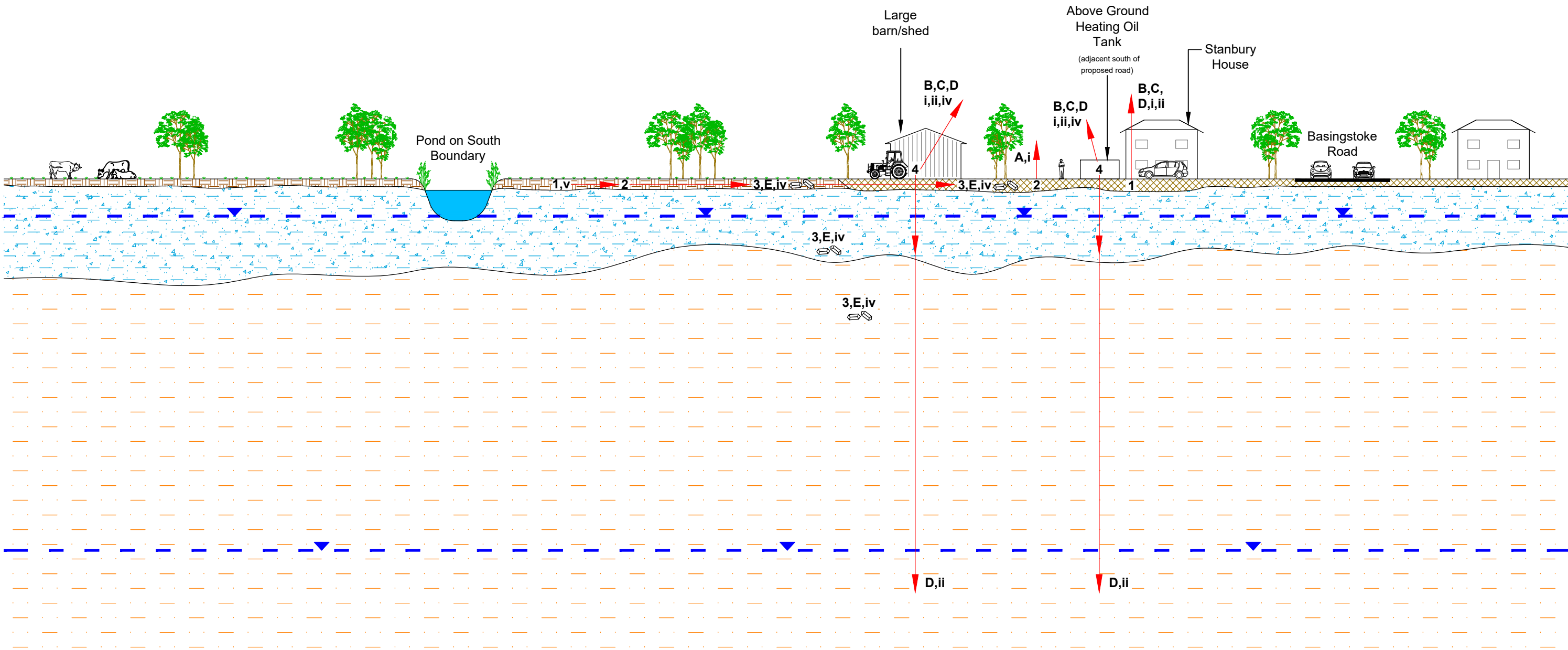
Project:
STANBURY HOUSE, SPENCERS WOOD

Title:
EXPLORATORY HOLE LOCATION PLAN

Drawn by: KM	Checked by: MS	Paper Size: A3
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Scale: NTS	Date: 21/06/2023
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Drawing No: AG2994A-23-02	Revision: 0
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SOURCES

- 1. Made Ground
- 2. Soil gas
- 3. Elevated sulphates
- 4. Hydrocarbons

PATHWAYS

- A. Inhalation
- B. Ingestion
- C. Dermal contact
- D. Leaching/migration
- E. Direct contact

RECEPTORS

- i. End users
- ii. Aquifer
- iii. Watercourse
- iv. Buried concrete
- v. Water supply pipes

Key:

Topsoil

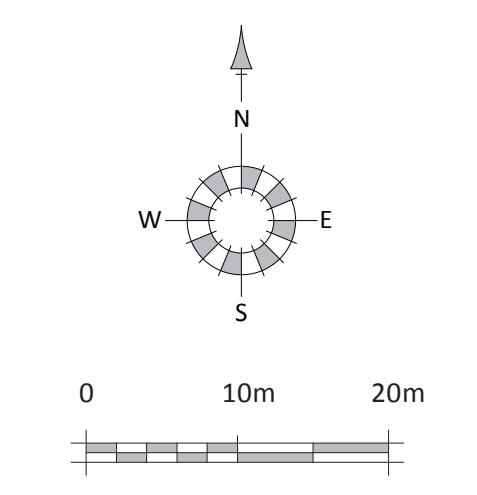
Made Ground

River Terrace Deposits
(Secondary A Aquifer)

London Clay Formation
(undifferentiated)

Groundwater

APPLIED GEOLOGY The Old Barn,Church Farm Fulbrook Lane Sherbourne Warwick CV34 8AR Tel: 02476 511822 email: admin@appliedgeology.co.uk	Client: COOPER ESTATES STRATEGIC LAND TD	Title: CONCEPTUAL SITE MODEL	Drawn by: KM	Checked by: MS	Paper Size: A3
	Project: STANBURY HOUSE, SPENCERS WOOD		Scale: NTS	Date: 21/06/2023	
			Drawing No: AG2994A-23-03	Revision: 0	



KEY

- Site boundary
- Affordable dwellings

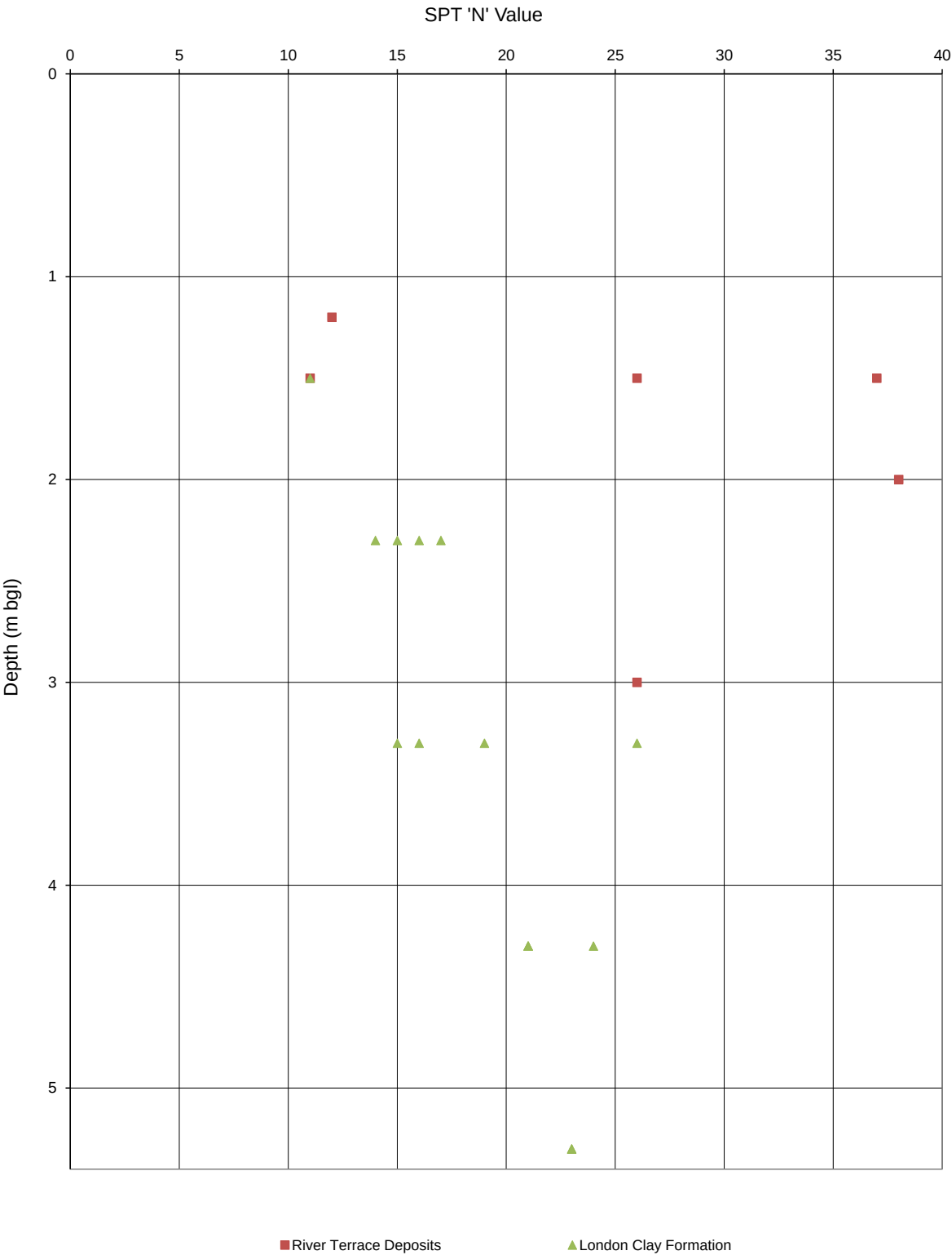


Initial Feasibility Layout
Stanbury, Wokingham (Phase 2)

23040 / SK02

Scale 1:500 @ A1 May 2023

Uncorrected SPT 'N' Value versus depth



Notes:

Client:	Cooper Estates Strategic Land Ltd	APPLIED GEOLOGY
Project:	Stanbury House, Spencers Wood	
Project No.	AG2994A-23	

APPENDIX B

County Series 1:10,560 scale

VEGETATION

	Fir Wood		Deciduous Wood
	Mixed Wood		Brushwood
	Orchard		Reeds
	Rough Pasture		Furze
	Marsh		Osiers

ROADS

	Railway over Road		Road over Railway
	Road over River or Canal		Level Crossing
	Railway over River		Road over Stream
	Road over Stream		Sunken Road
	Raised Road		

RAILWAYS

	Double Lines of Railway		Single Lines of Railway and Tramway
--	-------------------------	--	-------------------------------------

GENERAL FEATURES

	Gravel Pit		Sand Pit
	Quarry		Shingle
	Other Pits		Antiquities, Site of
			Arrow, showing direction of flow of water
			Trigonometrical Station

BOUNDARIES

	County Boundary		Parliamentary Division Boundary
	Parish Boundary		Union Boundary
	Contours		Rural District Boundary

National Grid 1:10,000 scale

HEIGHTS (METRES)

Values are given in metres above mean sea level at Newlyn.

Surface heights determined by { ground survey + 163m, air survey + 16m }

Bench marks and their values are shown on large scale maps, and bench mark lists containing fuller and possibly later levelling information are obtainable from the Director General, Ordnance Survey.

Contours are at 5 metres vertical interval.

ROCK FEATURES

Loose rock, Boulders, Outcrop, Scree, Vertical face

CONVERSION SCALE

Metres - Feet

2000 Metres 6500 Feet

1500 5000

4000

ABBREVIATIONS

BP,BS	Boundary Post or Stone	PO	Post Office
Ch	Church	PC	Public Convenience
CH	Club House	PH	Public House
F Sta	Fire Station	S	Stone
FB	Foot Bridge	Spr	Spring
Fn	Fountain	TCB	Telephone Call Box
GP	Guide Post	TCP	Telephone Call Post
MP,MS	Mile Post or Stone	TH	Town Hall
P	Pole or Post	W	Well
Pol Sta	Police Station	Y	Youth hostel

ROADS

Track, Track, Path, Path

Where unfenced shown by pecked lines.

RAILWAYS

Cutting, Embankment, Multiple track, Single track, Siding, tramway or mineral line, Narrow gauge

Road over, Road under, Level crossing, Foot Bridge

GENERAL FEATURES

	Antiquity, (site of)		Lake, loch or pond
	Boulders		Sloping masonry
	Building		Chalk pit, clay pit or quarry
	Pylon		Gravel pit
	Pole		Sand pit
	Glasshouse		Refuse or slag heap
	Triangulation station		

Direction of flow of water

Shingle, Sand

VEGETATION

	Bracken, rough grassland		Marsh		Coppice
	Scrub		Saltings		Orchard
	Heath		Reeds		Coniferous trees
					Non-coniferous trees

In some areas bracken () and rough grassland () are shown separately.



Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

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471150 , 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: County Series

Map date: 1877

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
 Revised N/A
 Edition 1877
 Copyright N/A
 Levelling 1874

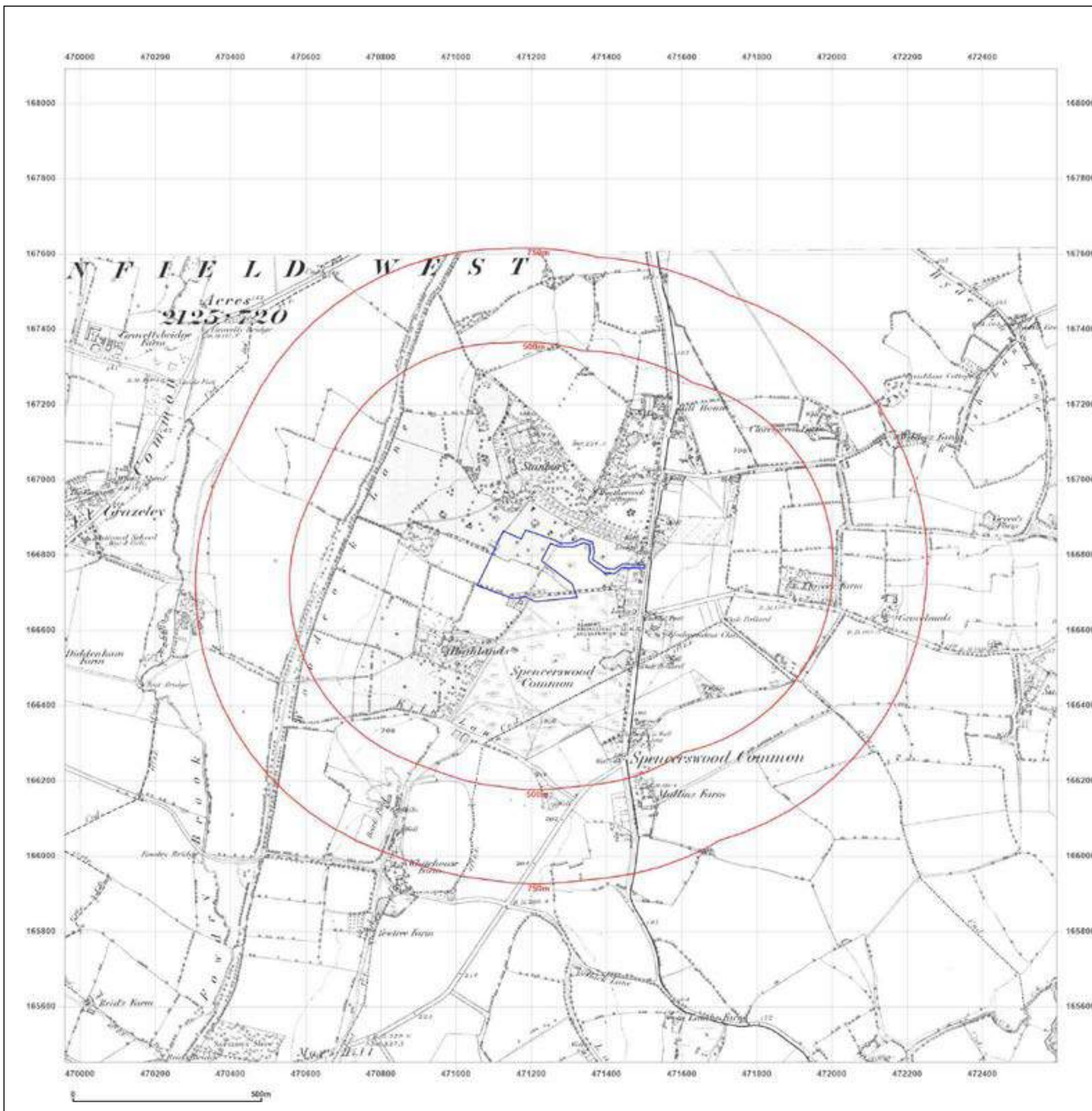


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Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: County Series

Map date: 1898-1900

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1876
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1871
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1871
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

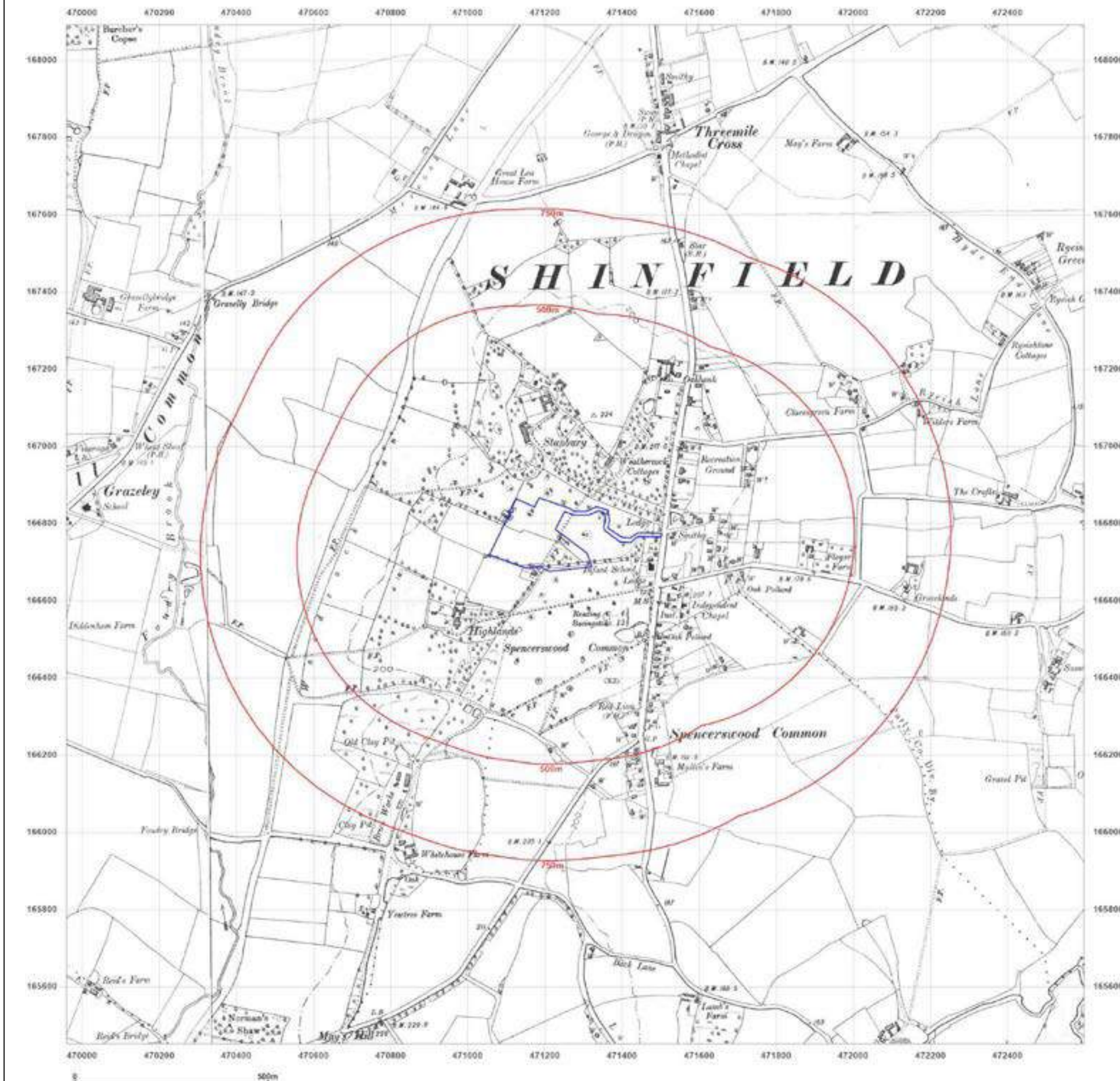


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Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: County Series

Map date: 1909-1913

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1876
 Revised 1913
 Edition 1913
 Copyright N/A
 Levelled N/A

Surveyed 1876
 Revised 1913
 Edition 1913
 Copyright N/A
 Levelled N/A

Surveyed 1871
 Revised 1910
 Edition N/A
 Copyright N/A
 Levelled N/A

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 Levelled N/A

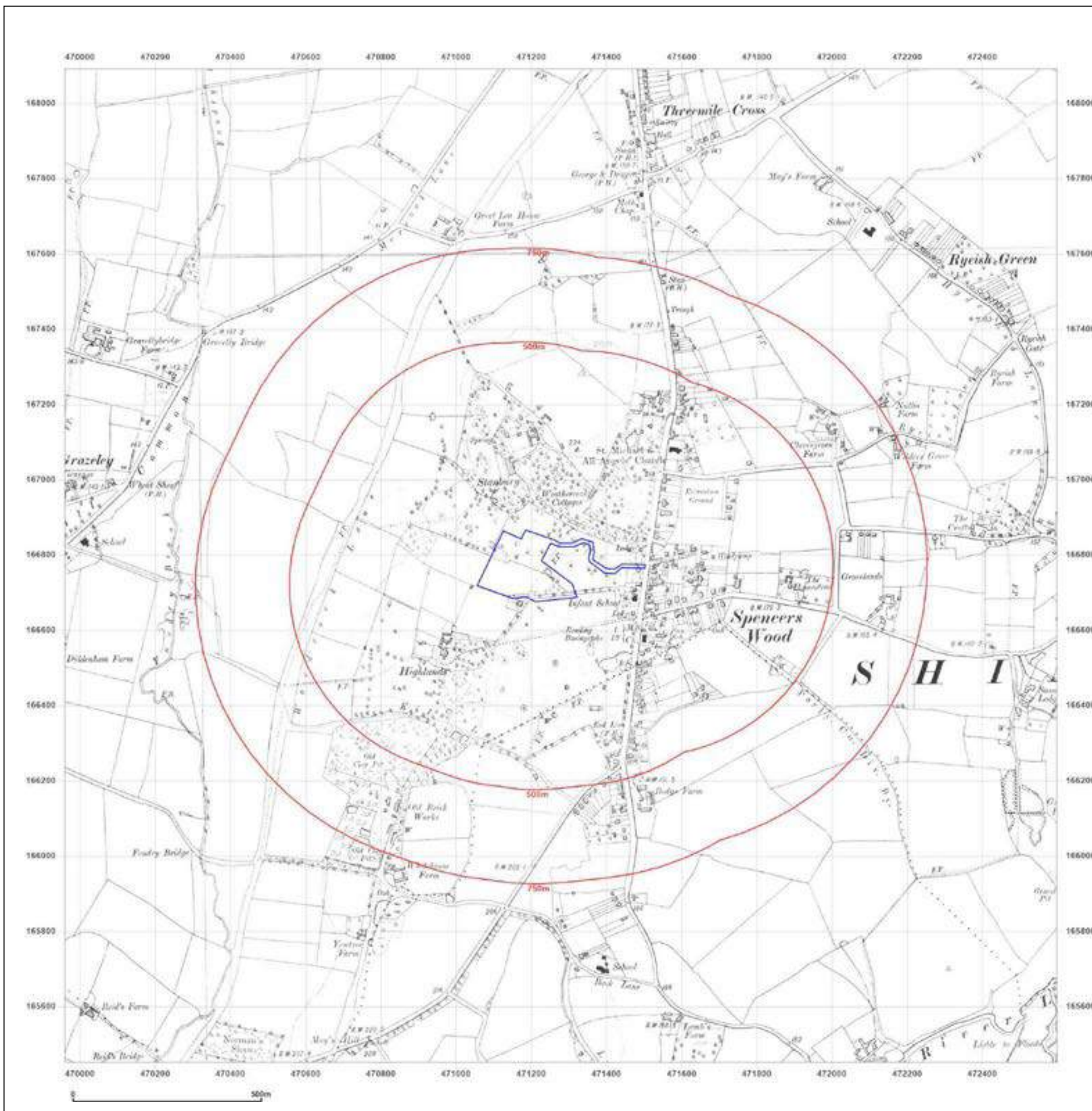


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Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: Provisional

Map date: 1961

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1960
Edition N/A
Copyright 1961
Levelled N/A

Surveyed N/A
Revised 1961
Edition N/A
Copyright 1961
Levelled N/A

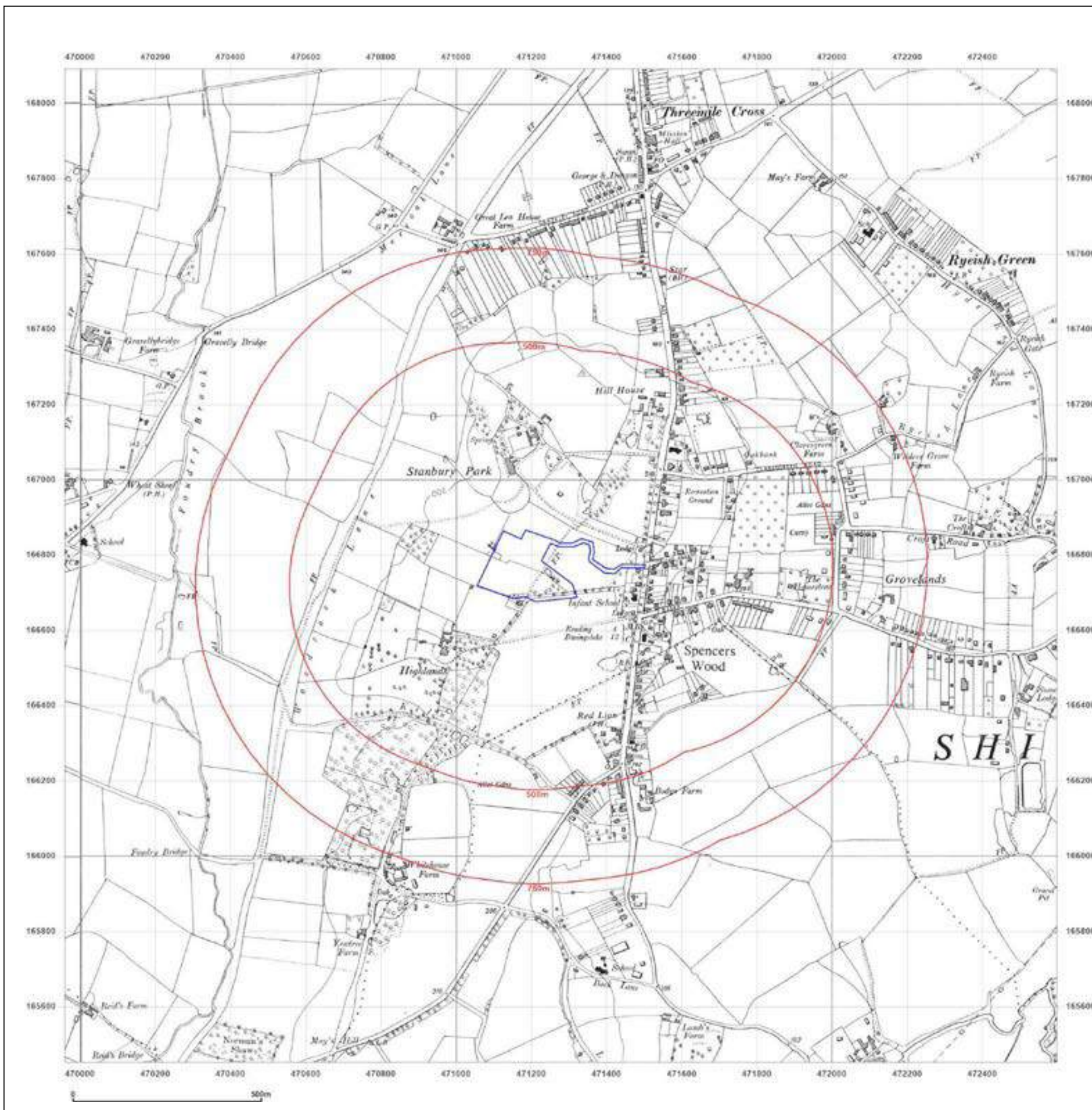


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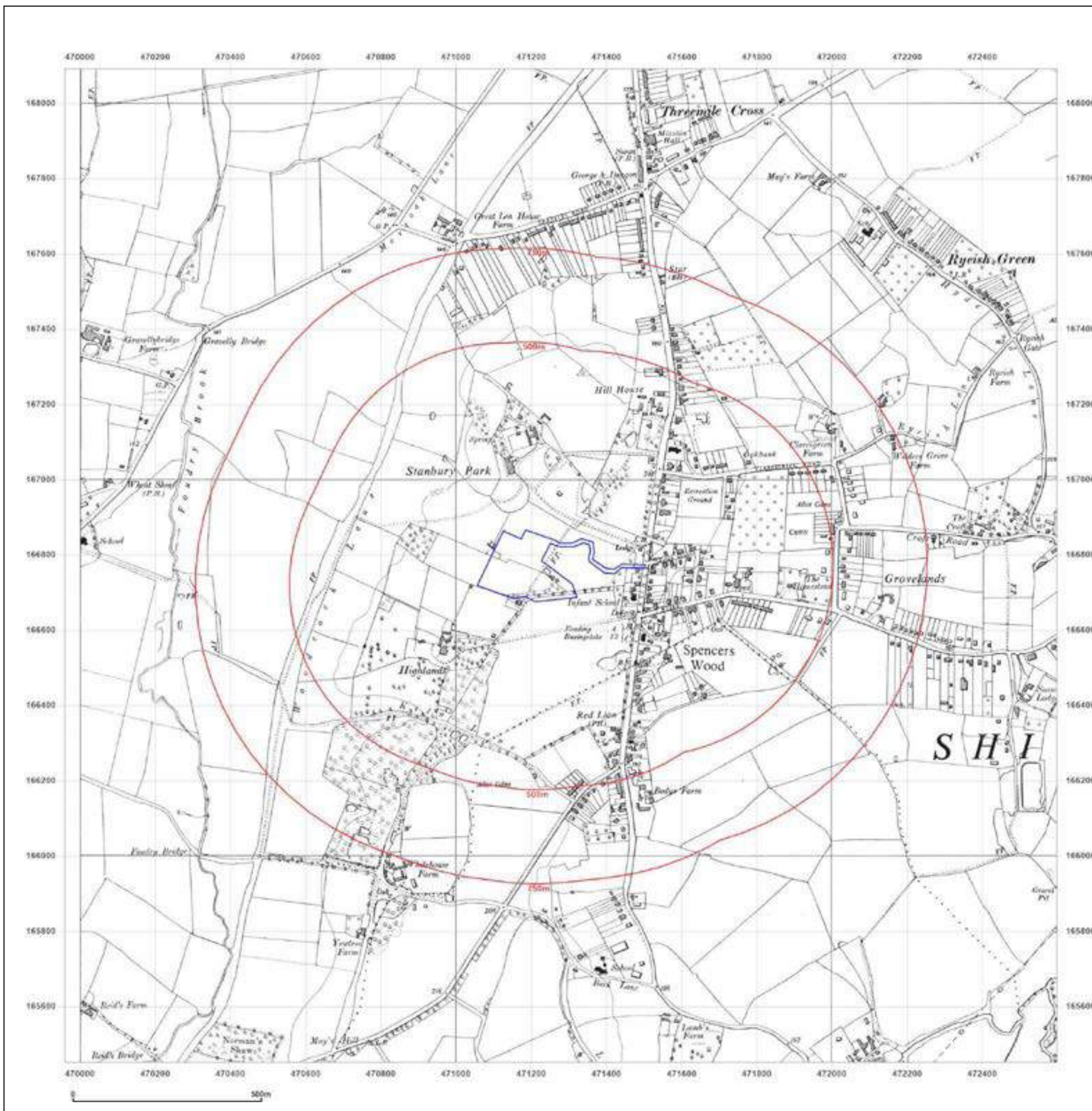


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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: National Grid

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Surveyed 1969
 Revised 1969
 Edition N/A
 Copyright N/A
 Levelled N/A

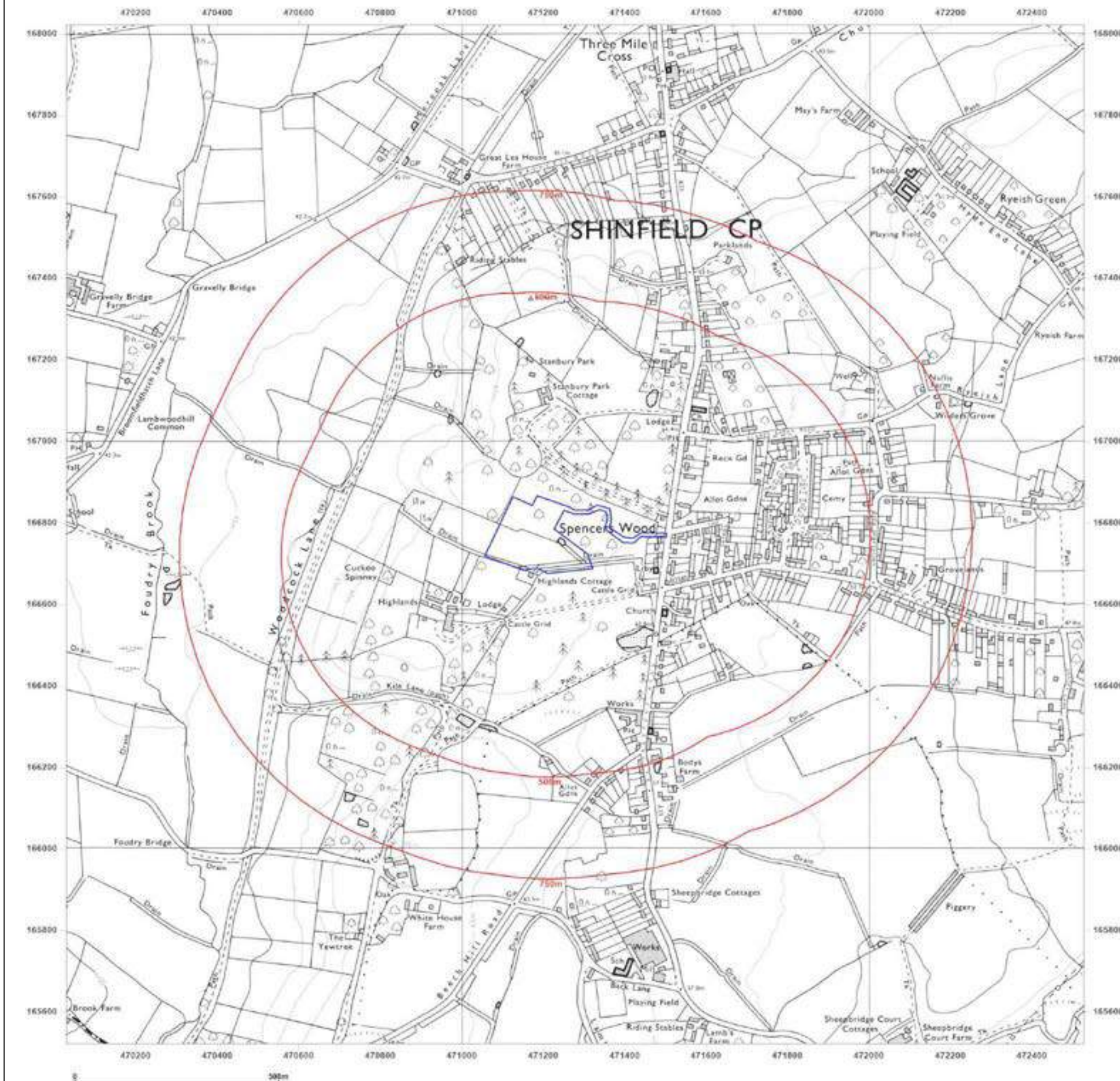


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Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

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Printed at: 1:10,000



Surveyed 1975
 Revised 1976
 Edition N/A
 Copyright 1976
 Levelled 1969

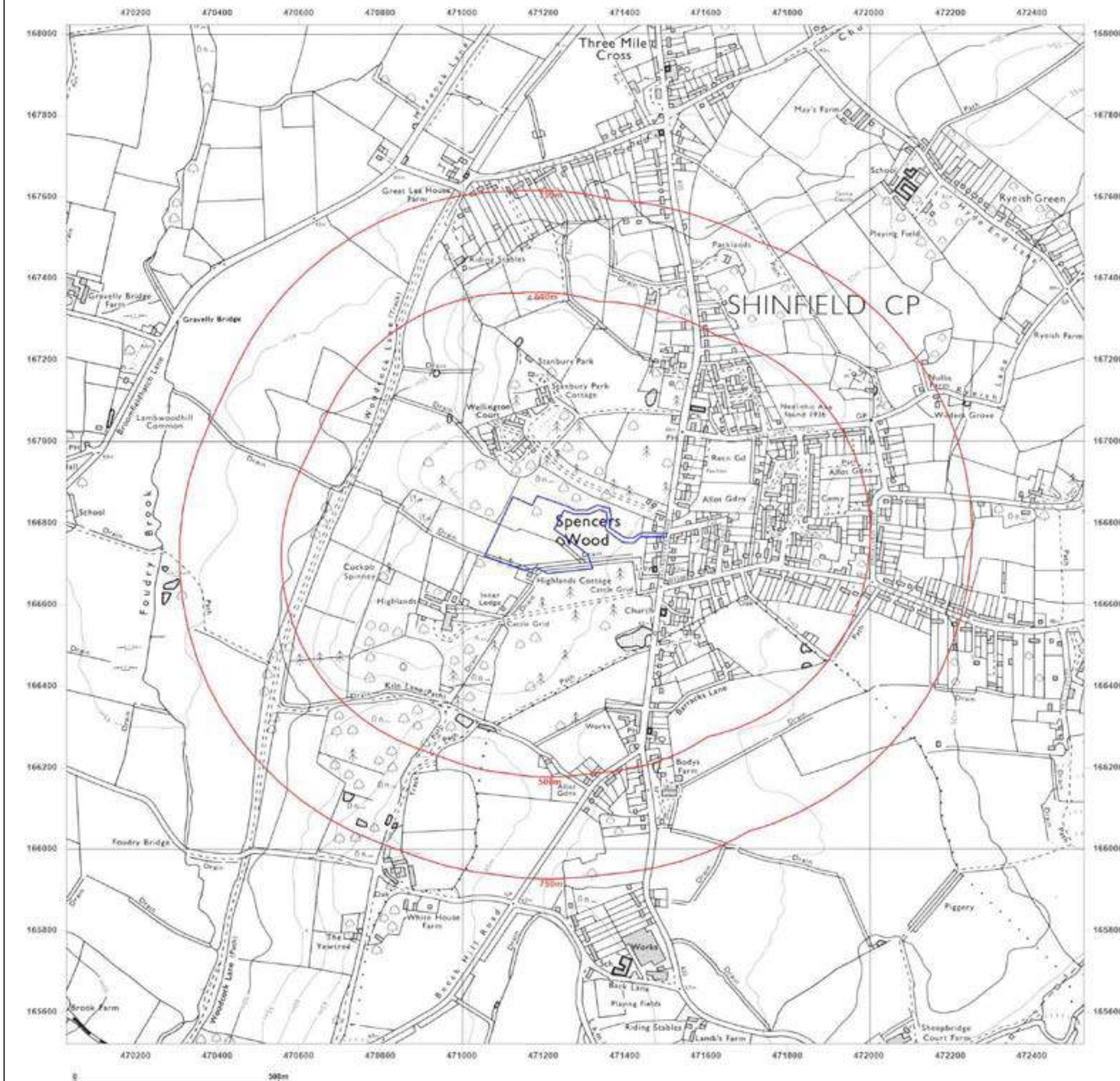


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Report Ref: GS-NRD-3HK-ABR-YID
Grid Ref: 471278, 166771

Map Name: National Grid

Map date: 1983

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1982
 Revised 1983
 Edition N/A
 Copyright N/A
 Levelled N/A

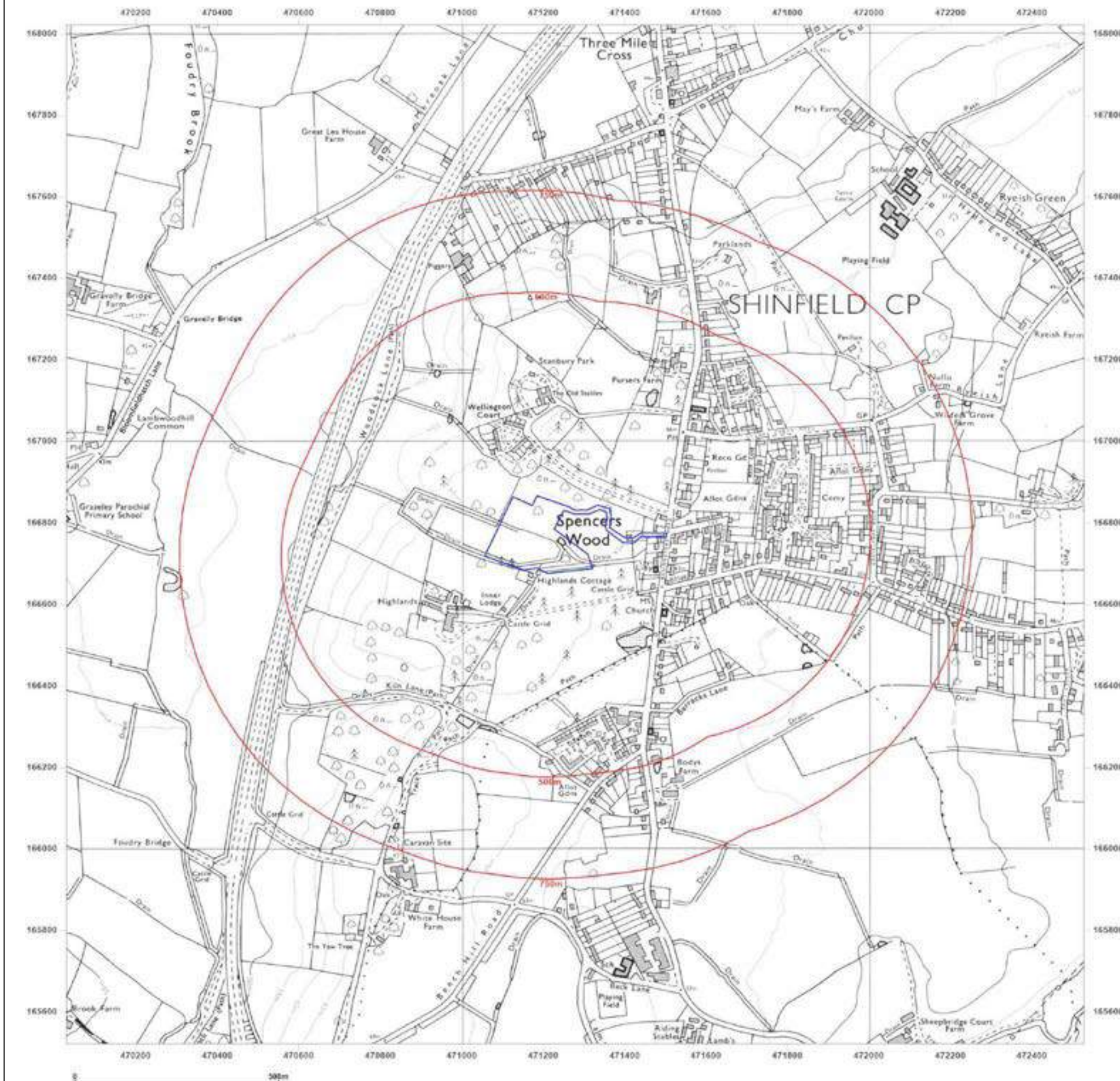


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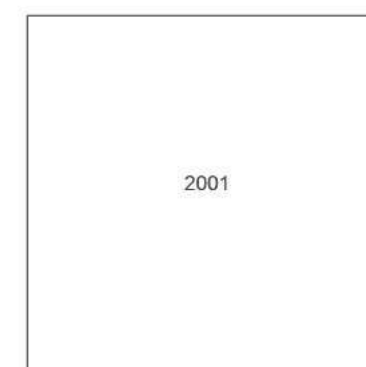
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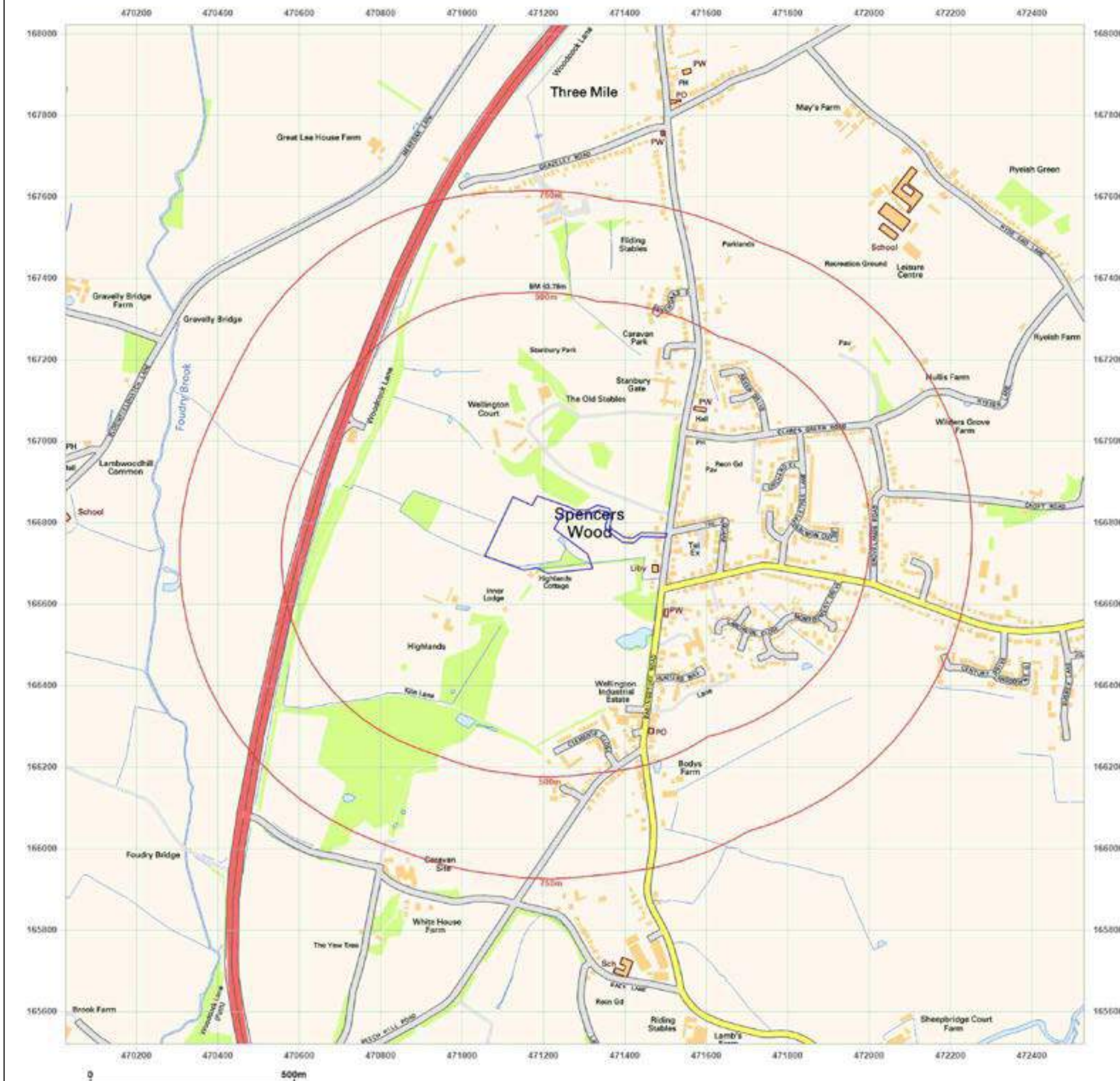


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2010

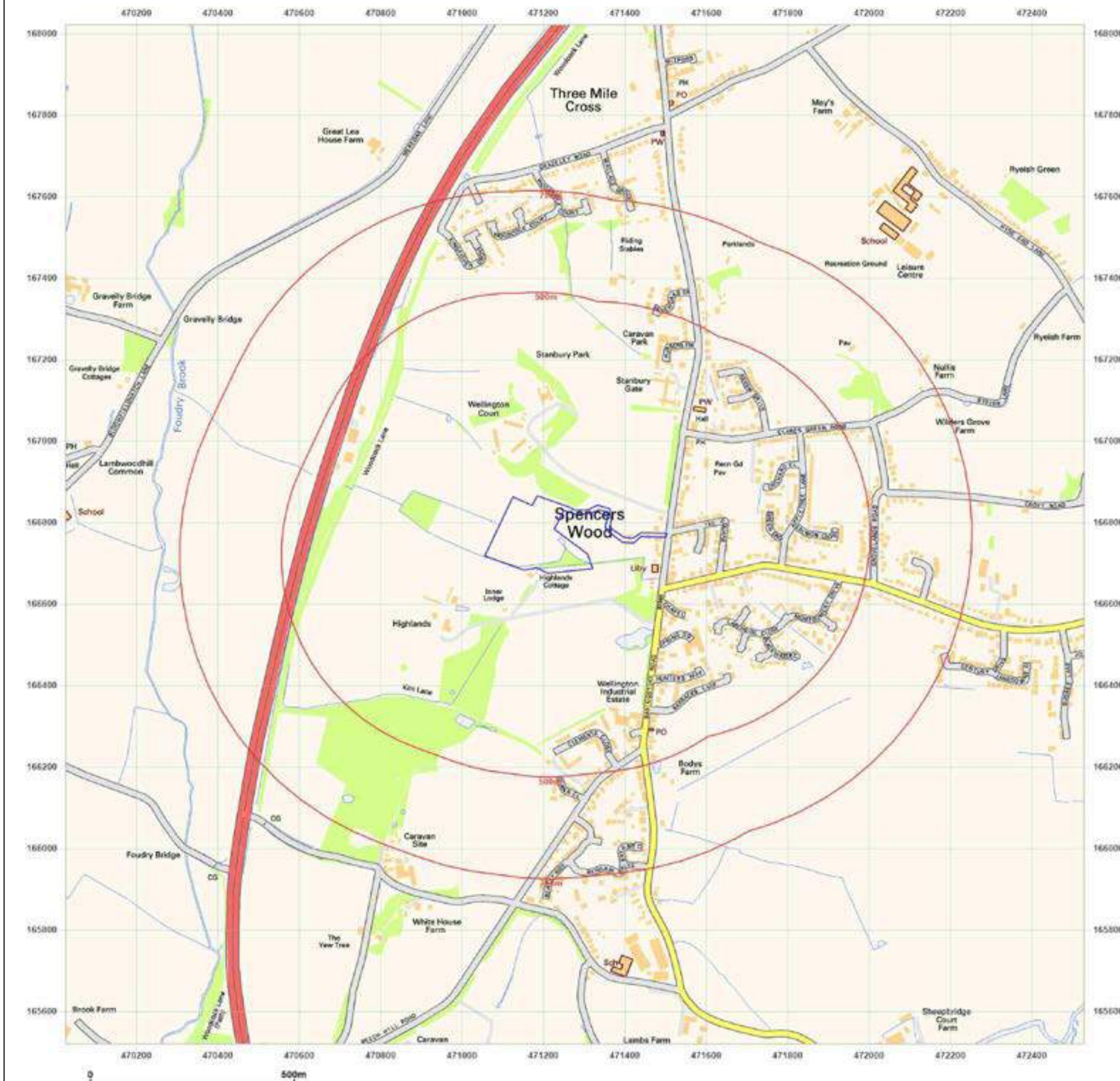


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2023

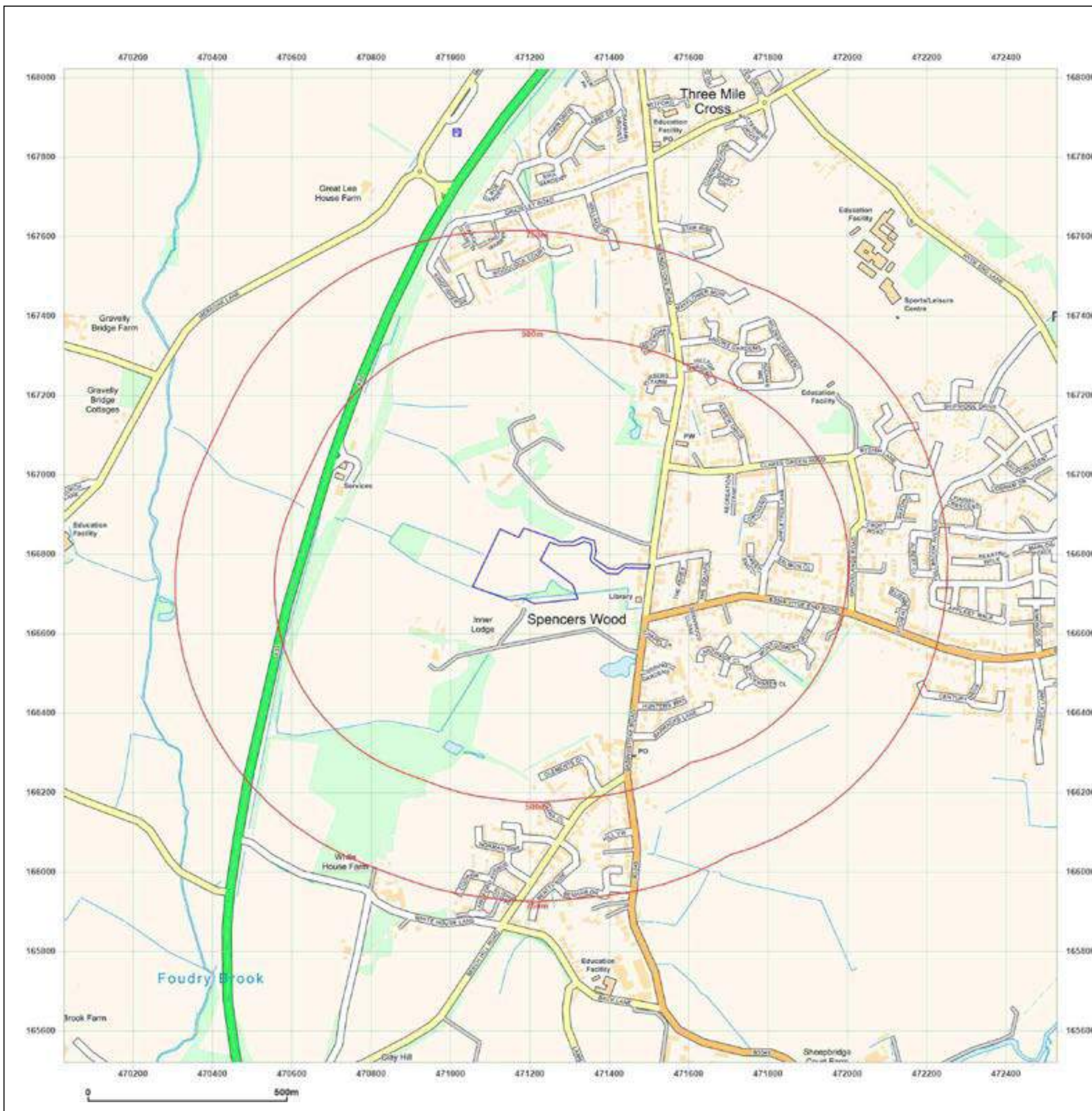


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County Series 1:2,500 scale

National Grid 1:2,500 / 1:1,250 scale



Historical Map Pack Legend

County Series
1:1,250 scale
~

County Series &
National Grid
1:2,500 scale

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GENERAL FEATURES

Trigonometrical Station

507

Altitude at Trigonometrical Station

B.M. 325-9

Bench Mark

342

Surface Level

Permanent Traverse Station

Antiquities (site of)

Arrow denotes flow of water

SL

Sluice

Tr

Trough

Sp.

Spring

W

Well

M.R.

Mooring Ring

M.P.

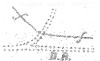
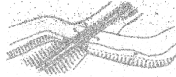
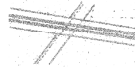
Mooring Post

B.S.

Boundary Stone

B.P.

Boundary Post

ROADS			
	Road over single stream		Road crossing railway
	Road over River or Canal		
RAILWAYS			
	Railway crossing River or Canal		Railway crossing Road
	Level Crossing		Embankment
	Cutting		

ABBREVIATIONS

	Trigonometrical Station		Sluice
	Altitude at Trigonometrical Station		Trough
	Bench Mark		Spring
	Surface Level		Well
	Permanent Traverse Station		Mooring Ring
	Antiquities (site of)		Mooring Post
	Arrow denotes flow of water		Boundary Stone
			Boundary Post

GENERAL FEATURES					
	Non-coniferous Trees		Slopes		Antiquity (site of)
	Coniferous Trees		Cliff		Culvert
	Surveyed Trees		Cave Entrance		Direction of water flow
	Orchard Trees		Rock		Electricity Pylon
	Coppsie, Osier		Boulders		Electricity Transmission Line
	Scrub		Sloping Masonry		Triangulation Station
	Bracken		Roofed Building		Traverse Station (permanent)
	Heath		Glasshouse		Bench Mark
	Rough Grassland		Archway		Surface Level
	Marsh, Saltings		Change of boundary marking		Revision Point (instrumentally fixed)
	Reeds		see AREAS notes		Revision Point & Bench Mark coincident
	Top		Slopes		Quarry
	Flat Rock		Sand		Refuse Heap
	Shingle		Sand Pit		Culvert
	Boulders		Gravel Pit		Archway
	Cliff Face		Glazed Roof Building		

BOUNDARIES		
England & Wales		
	County Boundary (geographical)	
	County & Civil Parish Boundary coterminous	
	Admin County or County Borough Boundary	
	London Borough Boundary	
	County District Boundaries based on civil parish	
England, Wales & Scotland		
	Civil Parish Boundary	
	Parly & Ward Boundaries based on civil parish	
	Parly & Ward Boundaries not based on civil parish	
Scotland		
	County Boundary (geographical)	
	County Council Boundary	
	County of the City Boundary	
	Burgh Boundary	
	District Council Boundary	
	Coincident with parish	
	Not with parish	

ABBREVIATIONS							
	Beer House		Fire Station		Mail Pick-up		Signal Light
	Bench Mark		Guide Post		Mile Stone		Sluice
	Boundary Post		Gas Valve Compound		National Trust		Signal Post
	Boundary Stone		Hydrant or Hydraulic		Normal Tidal Limit		Spring
	Crane		Hectares		National Trust for Scotland		Signal Station
	Club House		Lecter Box		Pillar, Pole or Post		Telephone Call Box
	Chimney		Lifeboat Station		Public Convenience		Telephone Call Post
	Capstan		Level Crossing		Police Call Box		Tank or Track
	Drinking Fountain		Loading Gauge		Public House		Trough
	Dock		Lighthouse		Post Office		Traverse Station
	Electricity Pillar or Post		Lighting Tower		Pump		Well
	Electricity Transmission Line		Metres		Police Telephone Point		Weighbridge
	Fire Alarm		Mean High Water		Reservoir		Wind Pump
	Fire Alarm Pillar		Mean High Water Springs		Road House		Works
	Filter Bed, Foot Bridge		Mean Low Water		Revision Point		Water Point
	Fundamental Bench Mark		Mean Low Water Springs		Stone		Water Tap
	Flagstaff		Mile or Mooring Post		Signal Box		

Site Details:

471150 , 166758

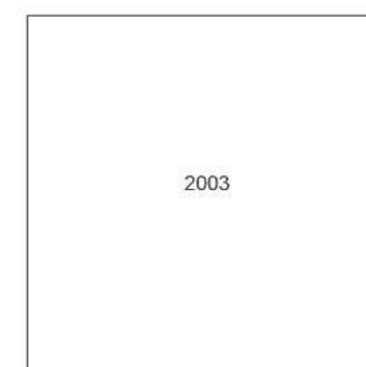
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Map Name: LandLine

Map date: 2003

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Printed at: 1:1,250

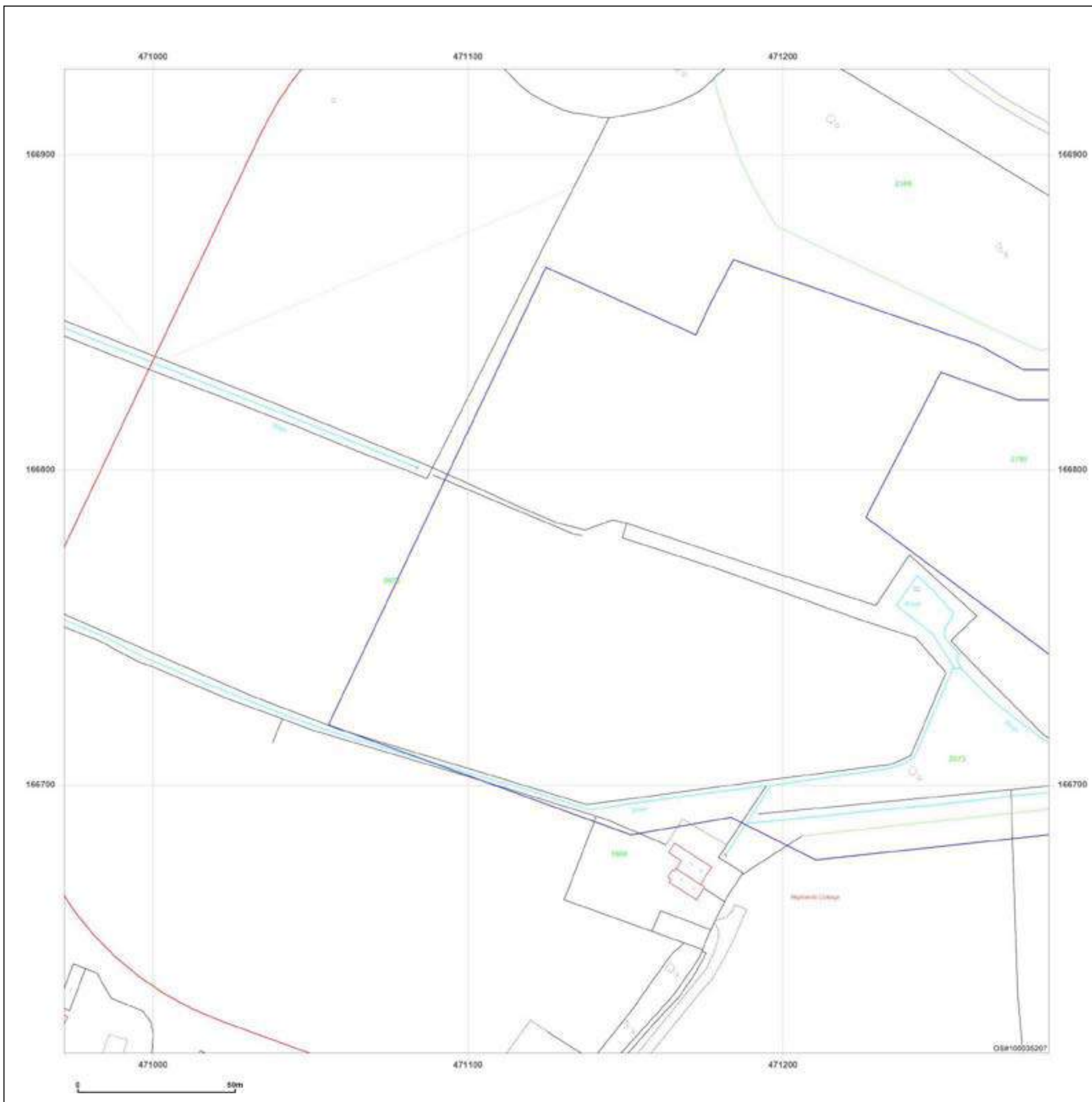


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Report Ref: GS-NRD-3HK-ABR-YID_Landline_2_1
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Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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Site Details:

471150 , 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

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

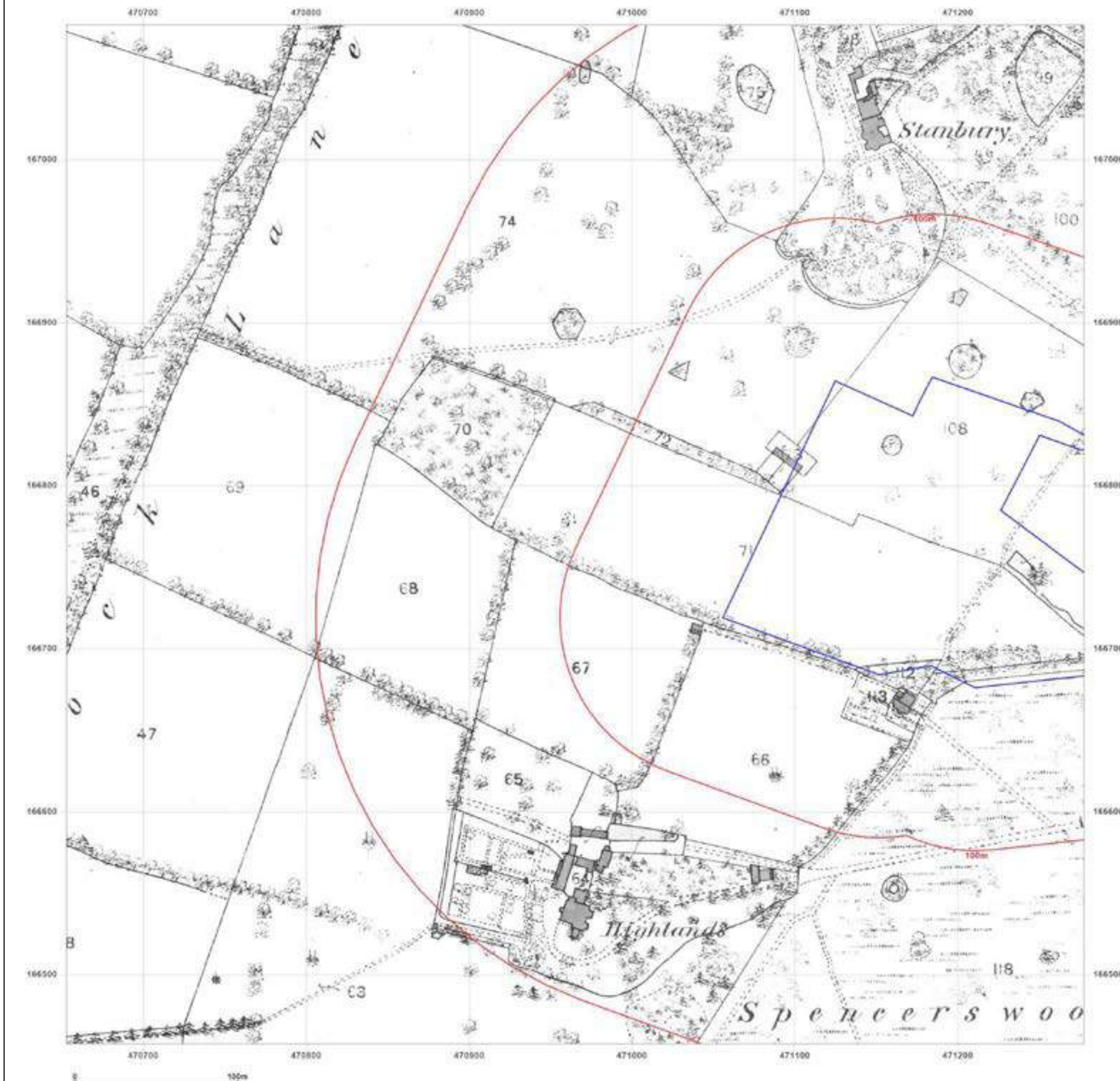


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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

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

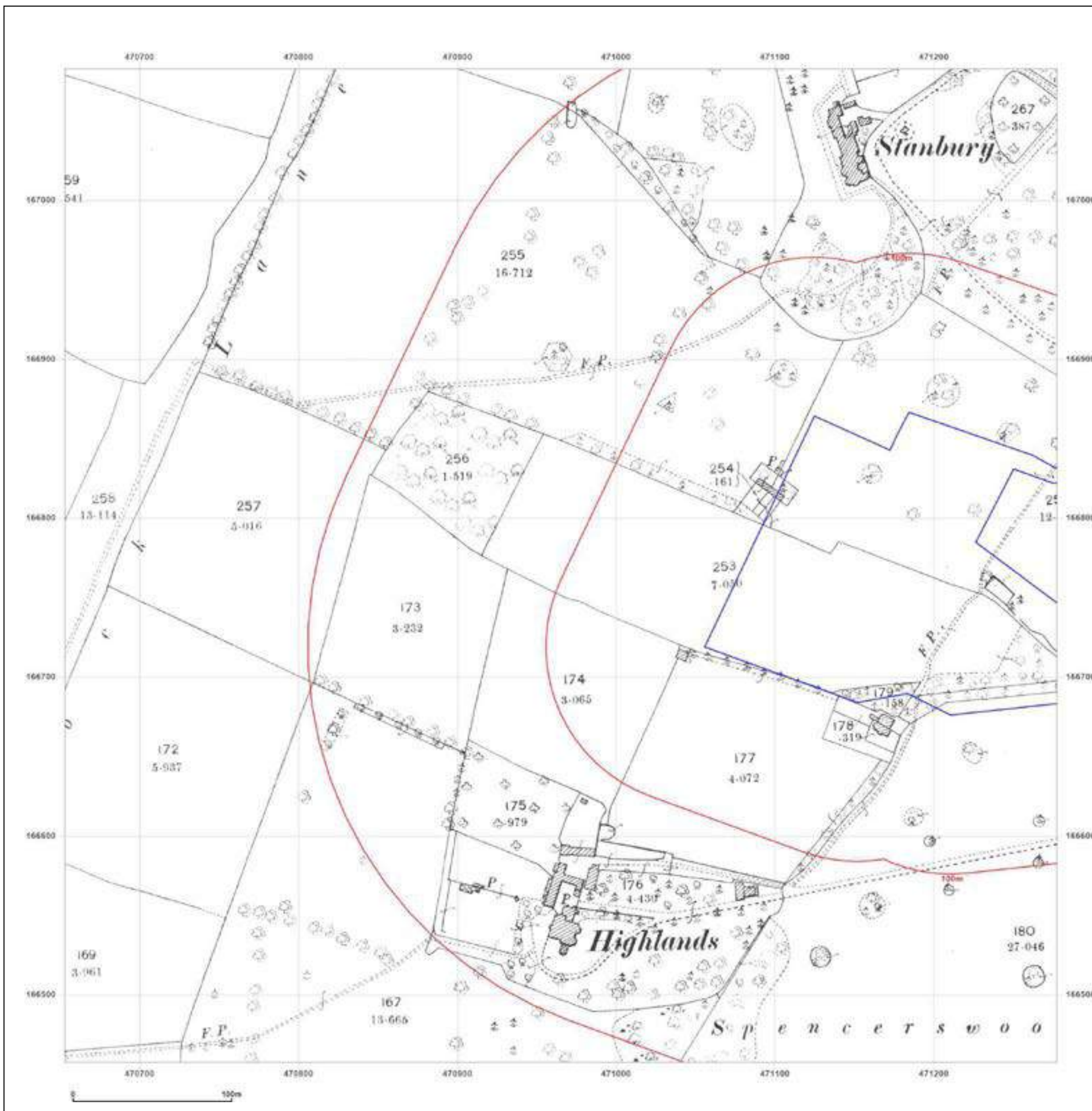


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Site Details:

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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: County Series

Map date: 1911

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1911
 Revised 1911
 Edition N/A
 Copyright N/A
 Levelled N/A

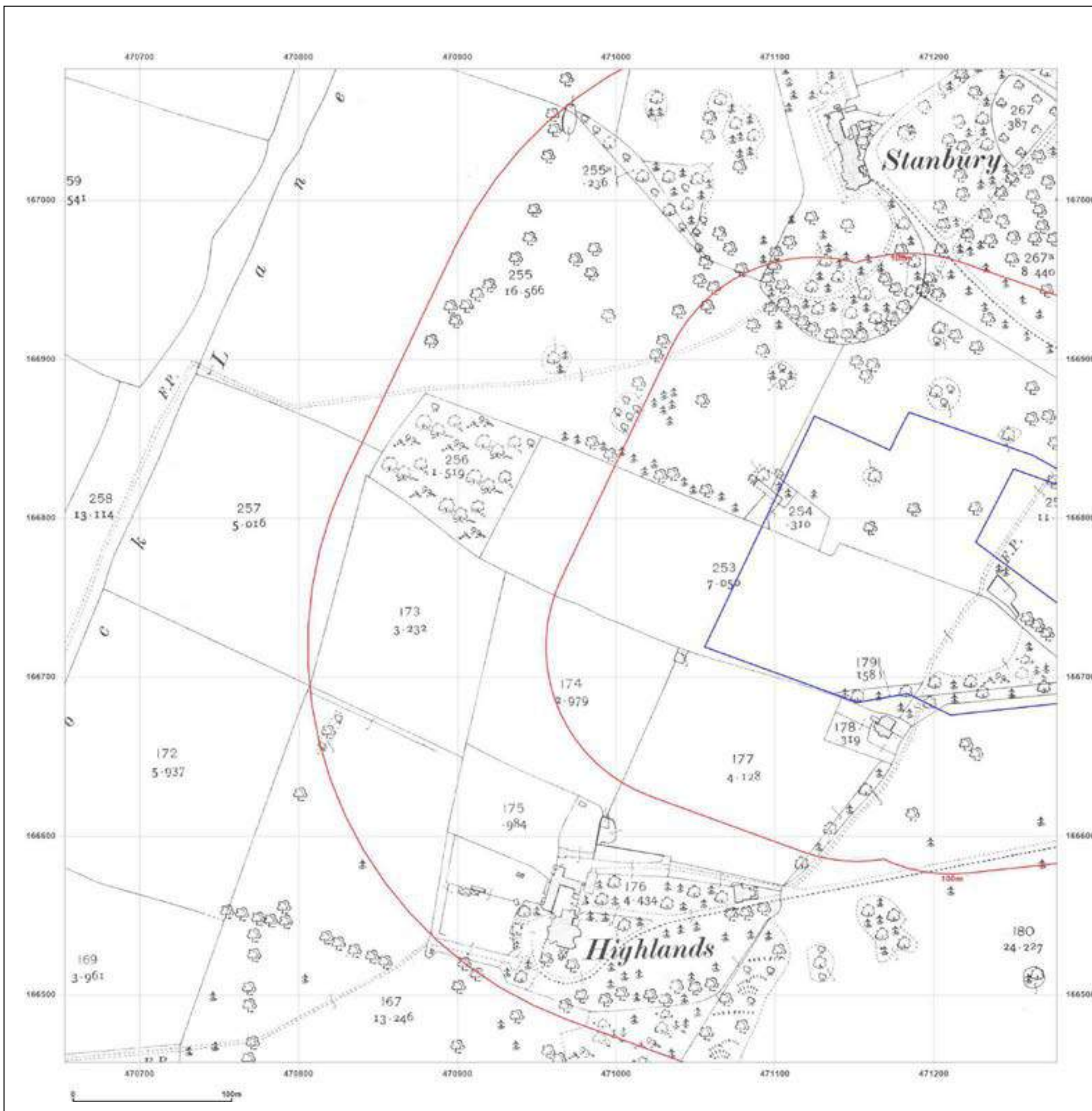


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Site Details:

471150 , 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1937
 Revised 1937
 Edition N/A
 Copyright N/A
 Levelled N/A

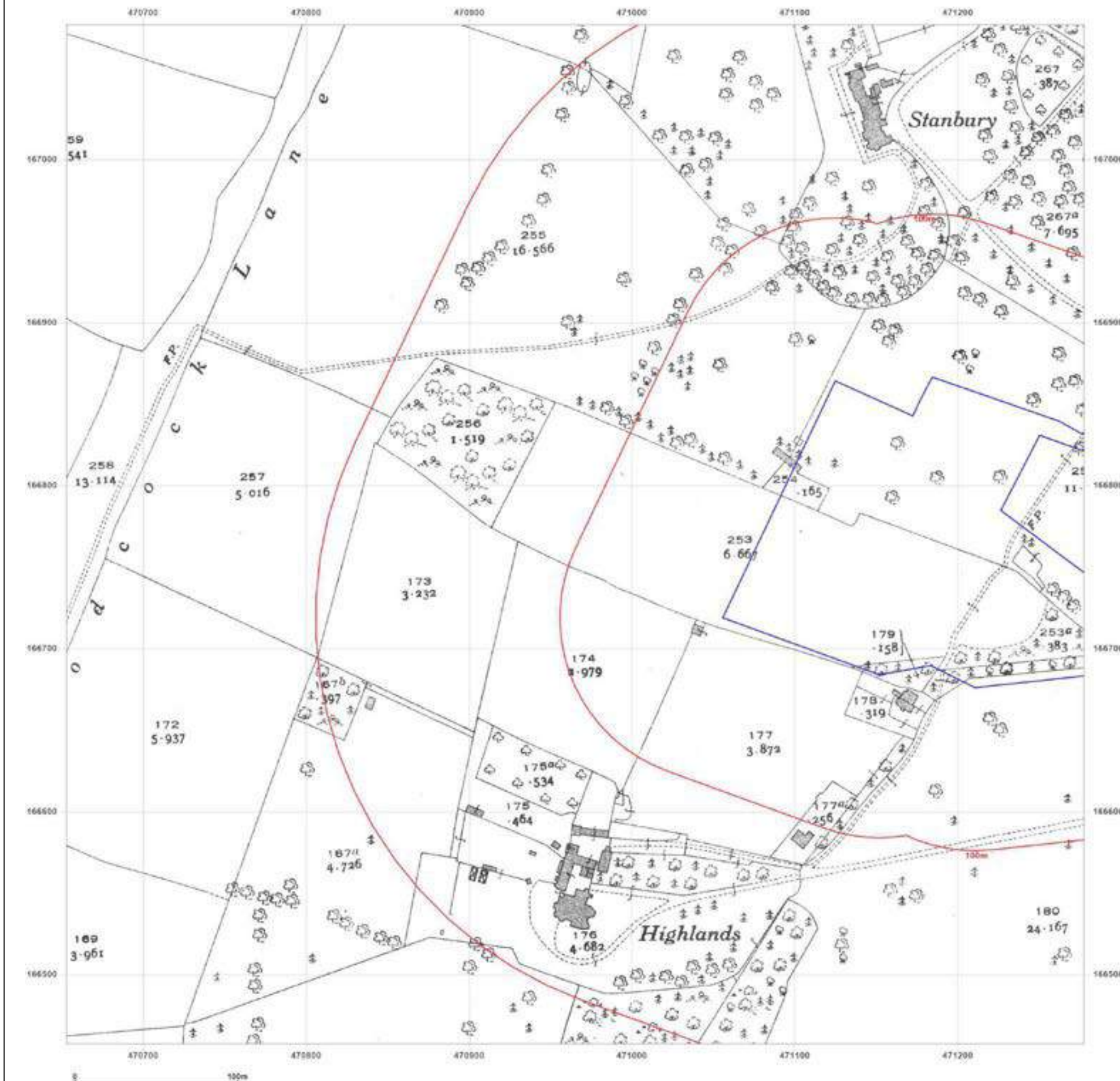


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Site Details:

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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: National Grid

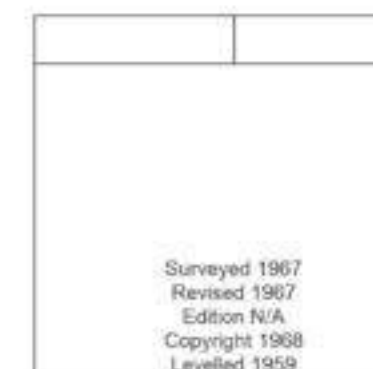
Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



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



Surveyed 1967
 Revised 1987
 Edition N/A
 Copyright 1968
 Levelled 1959

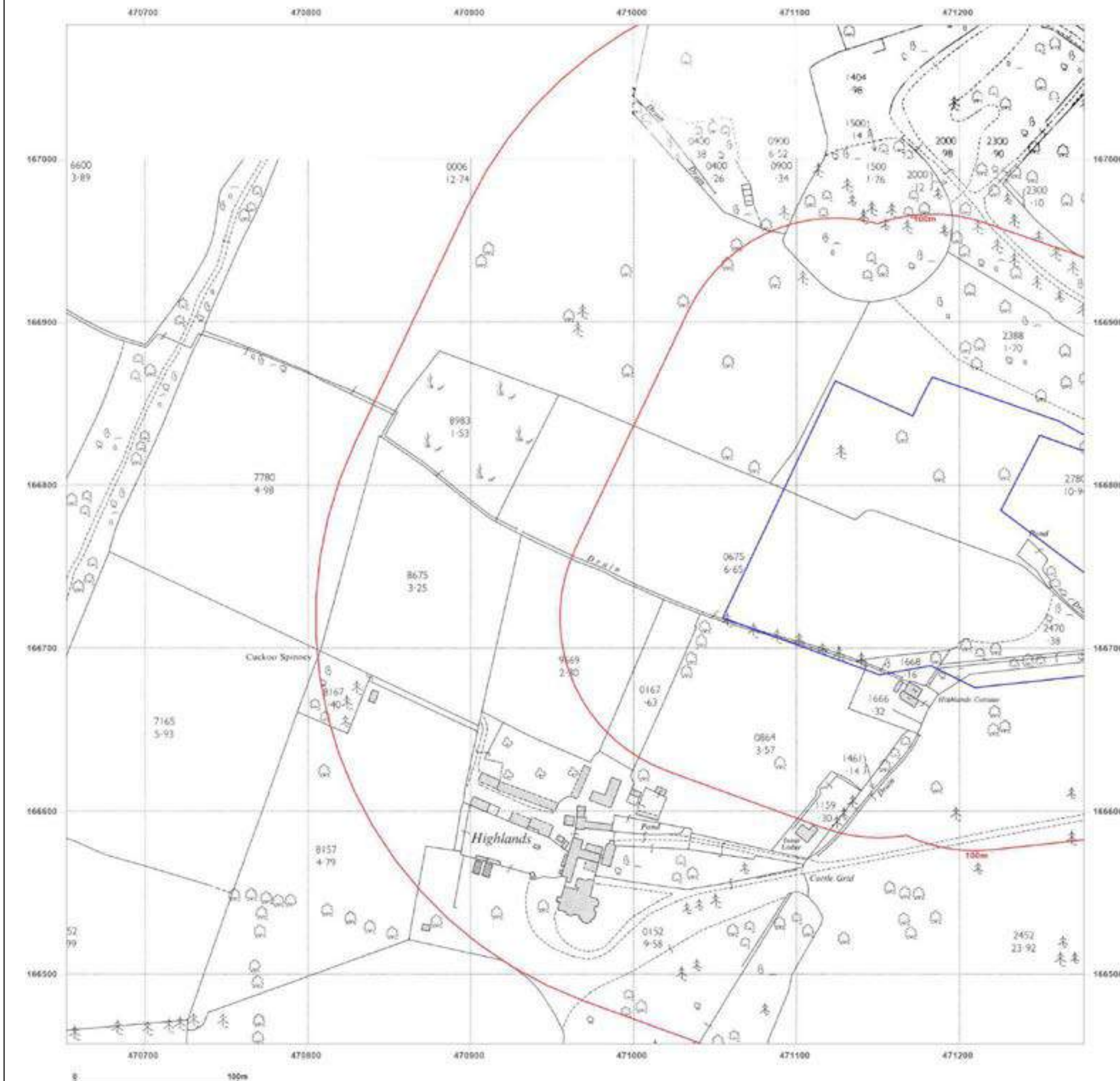


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Site Details:

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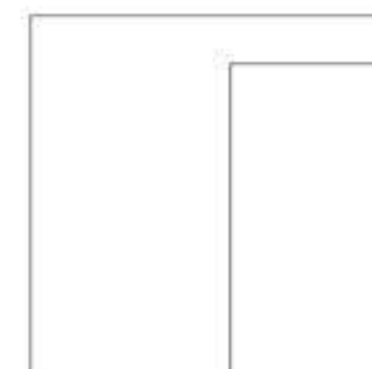
Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



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

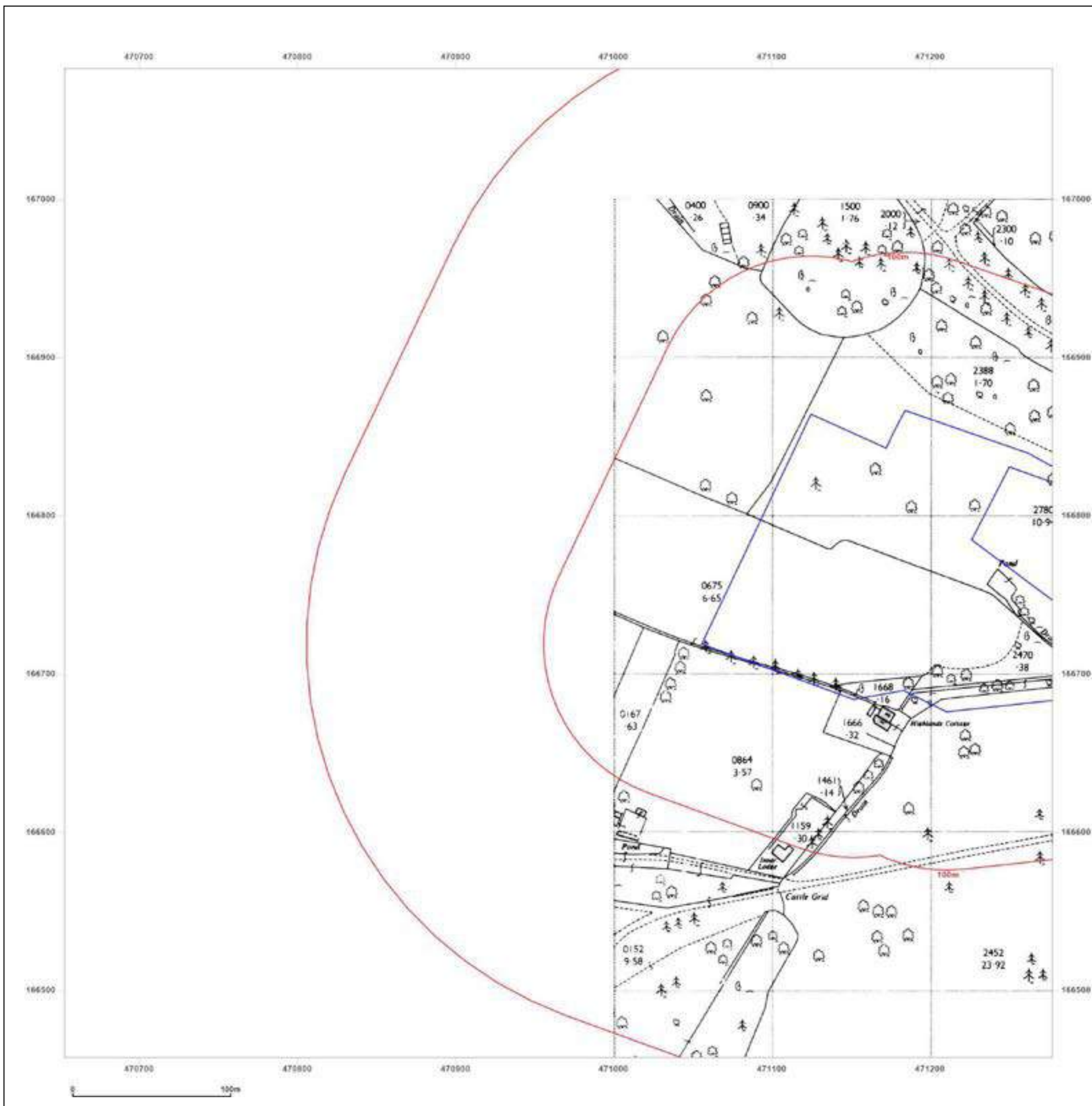


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Site Details:

471150 , 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: National Grid

Map date: 1983

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1982
 Revised 1982
 Edition N/A
 Copyright 1983
 Levelled 1972

Surveyed 1982
 Revised 1982
 Edition N/A
 Copyright 1983
 Levelled 1959

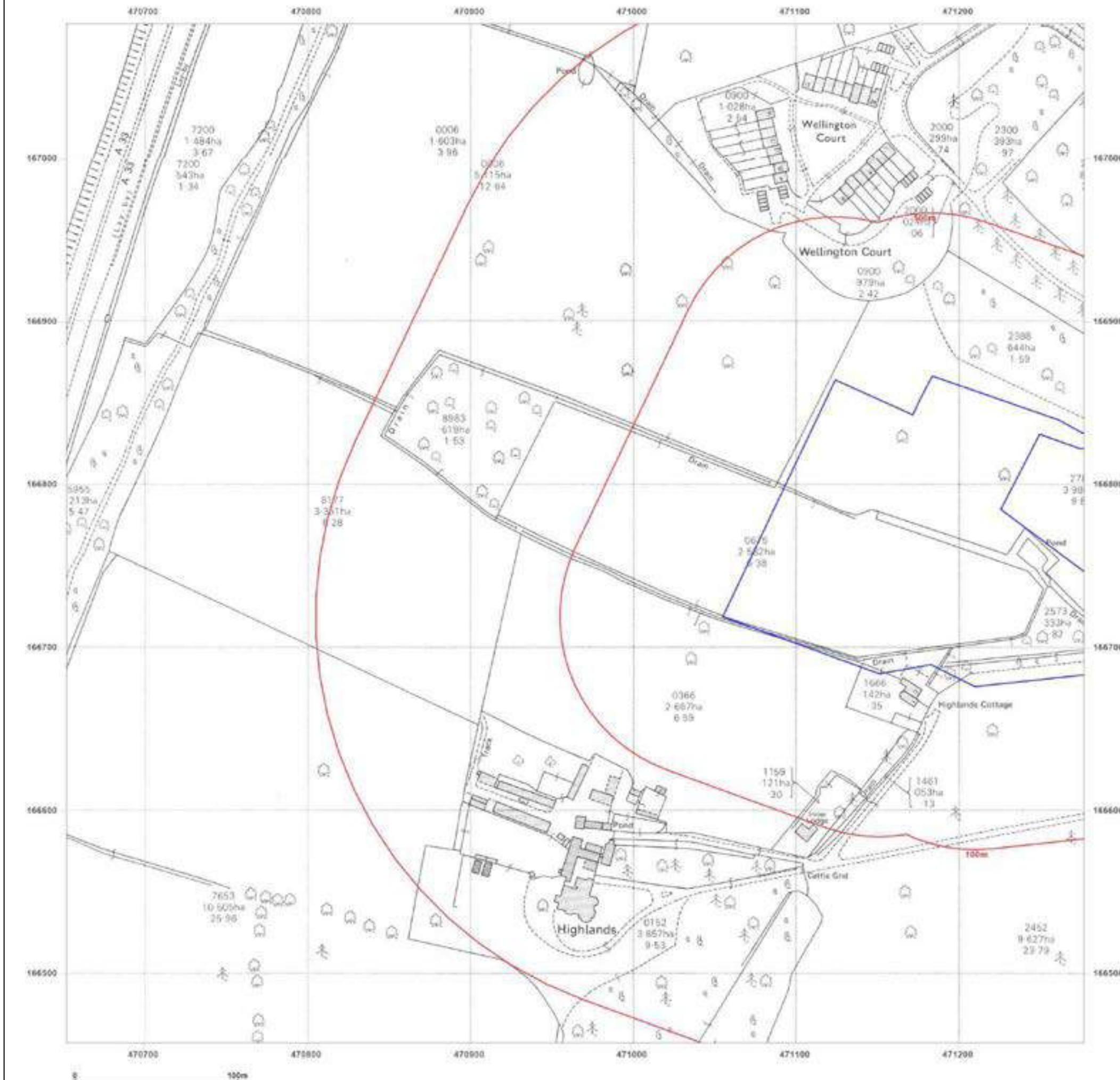


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Site Details:

471150, 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: National Grid

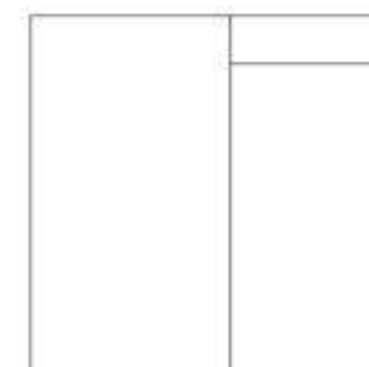
Map date: 1983-1986

Scale: 1:2,500

Printed at: 1:2,500



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



Surveyed 1959
 Revised 1982
 Edition N/A
 Copyright 1986
 Levelled 1959



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Site Details:

471150 , 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_1_1
Grid Ref: 470965, 166770

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1994
 Revised 1994
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
 Levelled N/A

Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
 Levelled N/A

Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
 Levelled N/A

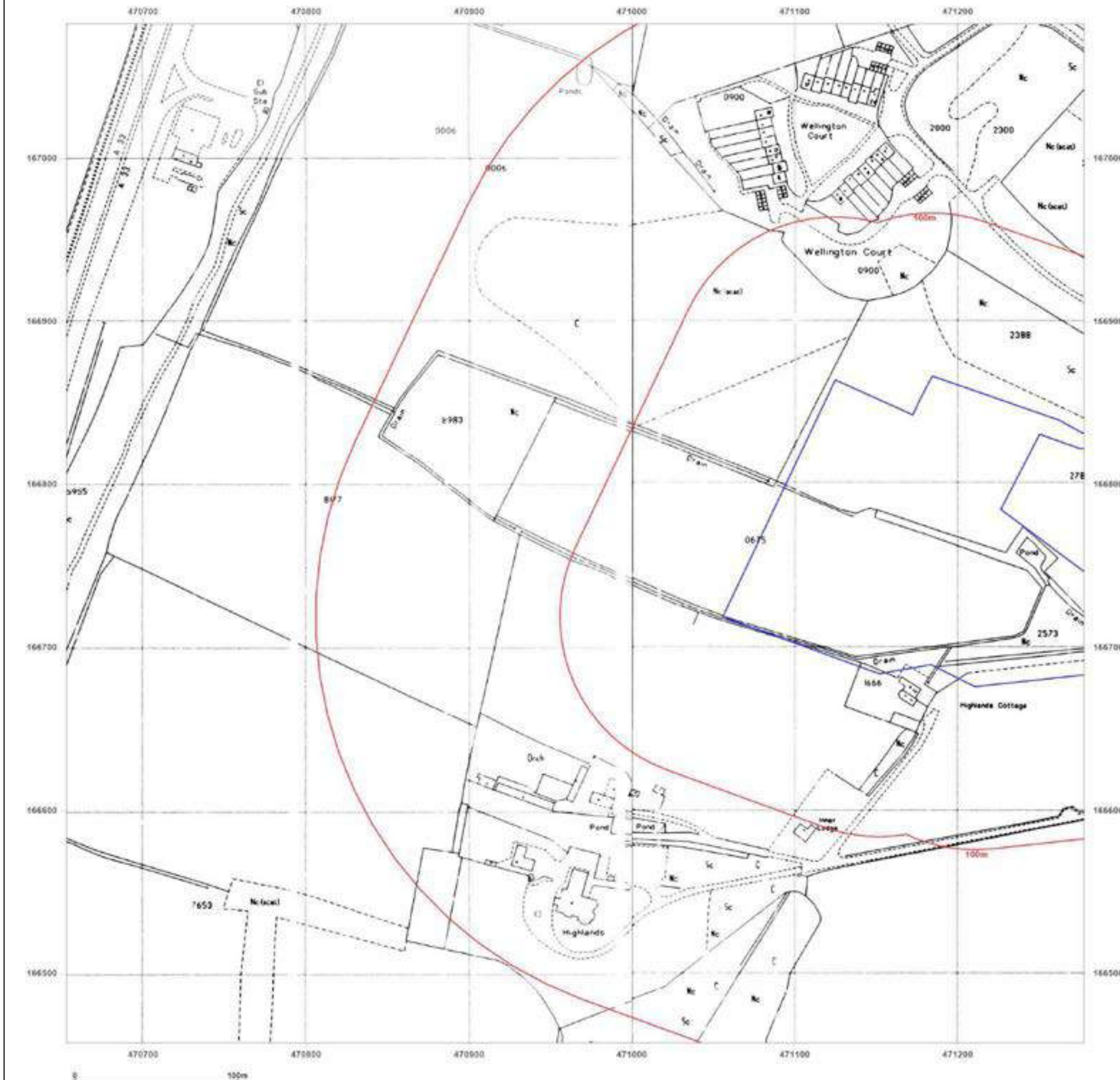


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Site Details:

471150, 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

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

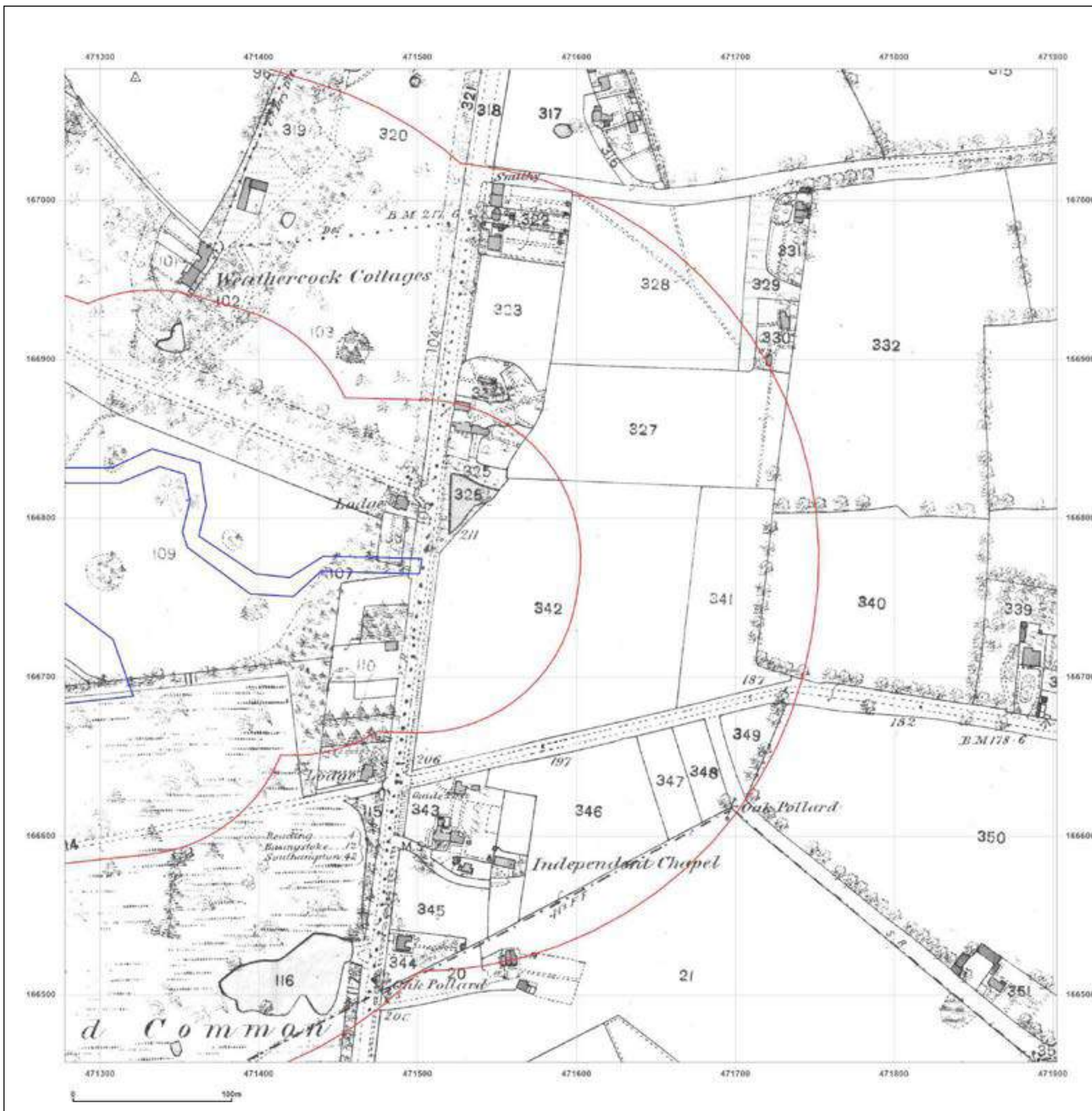


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Site Details:

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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

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

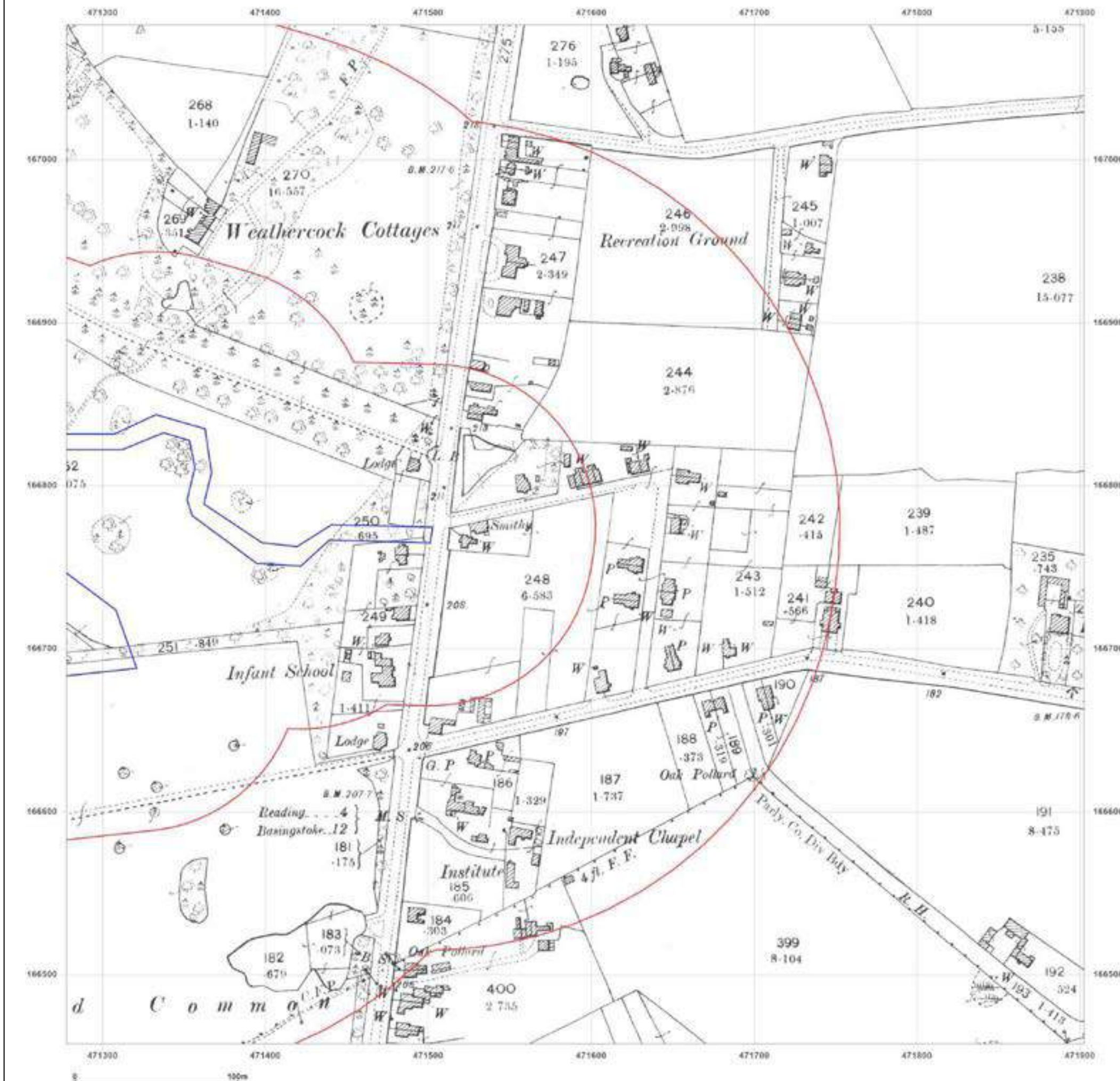


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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: County Series

Map date: 1911

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1911
 Revised 1911
 Edition N/A
 Copyright N/A
 Levelled N/A

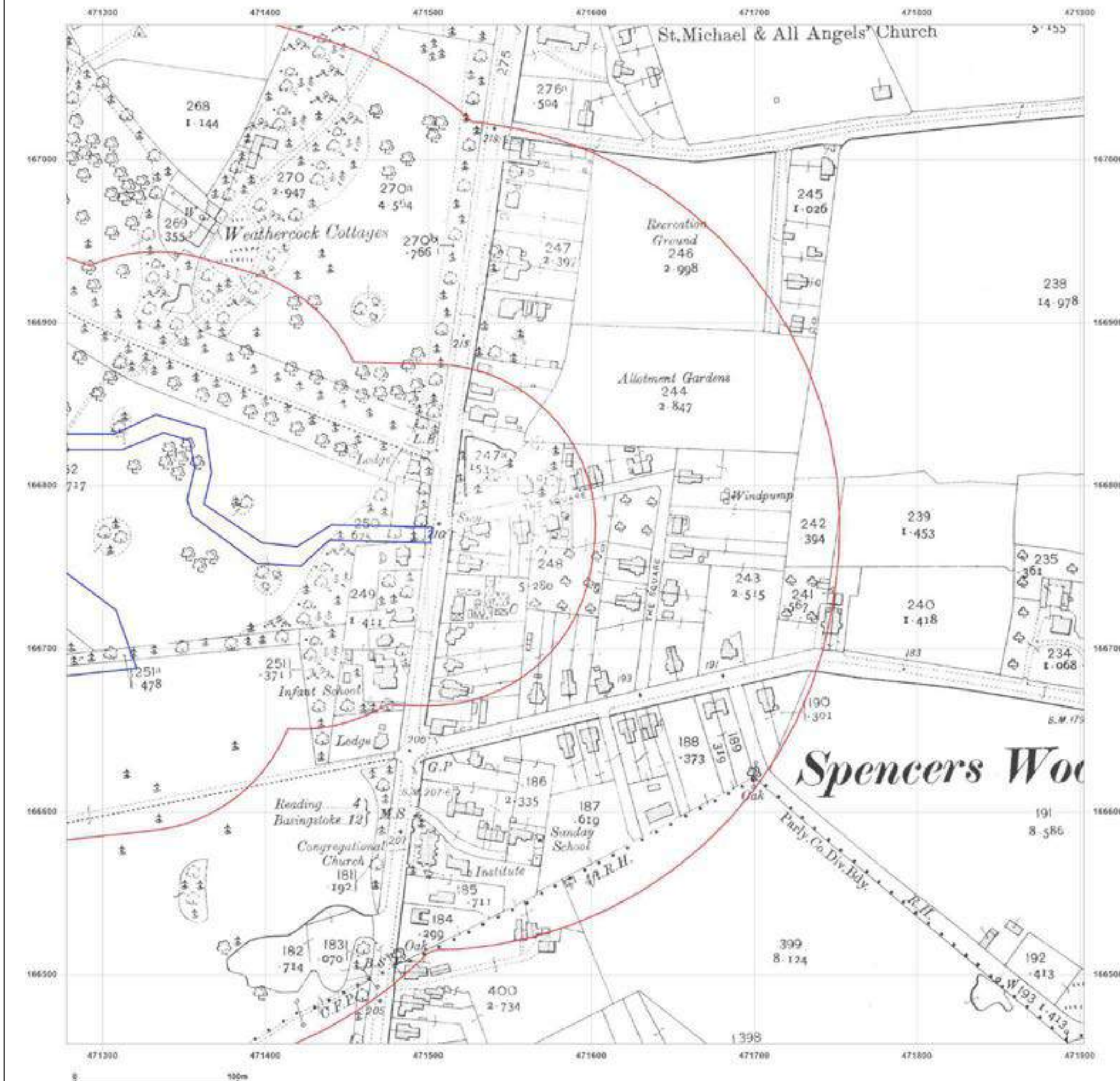


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Site Details:

471150, 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1837
Revised 1937
Edition N/A
Copyright N/A
Levelled N/A

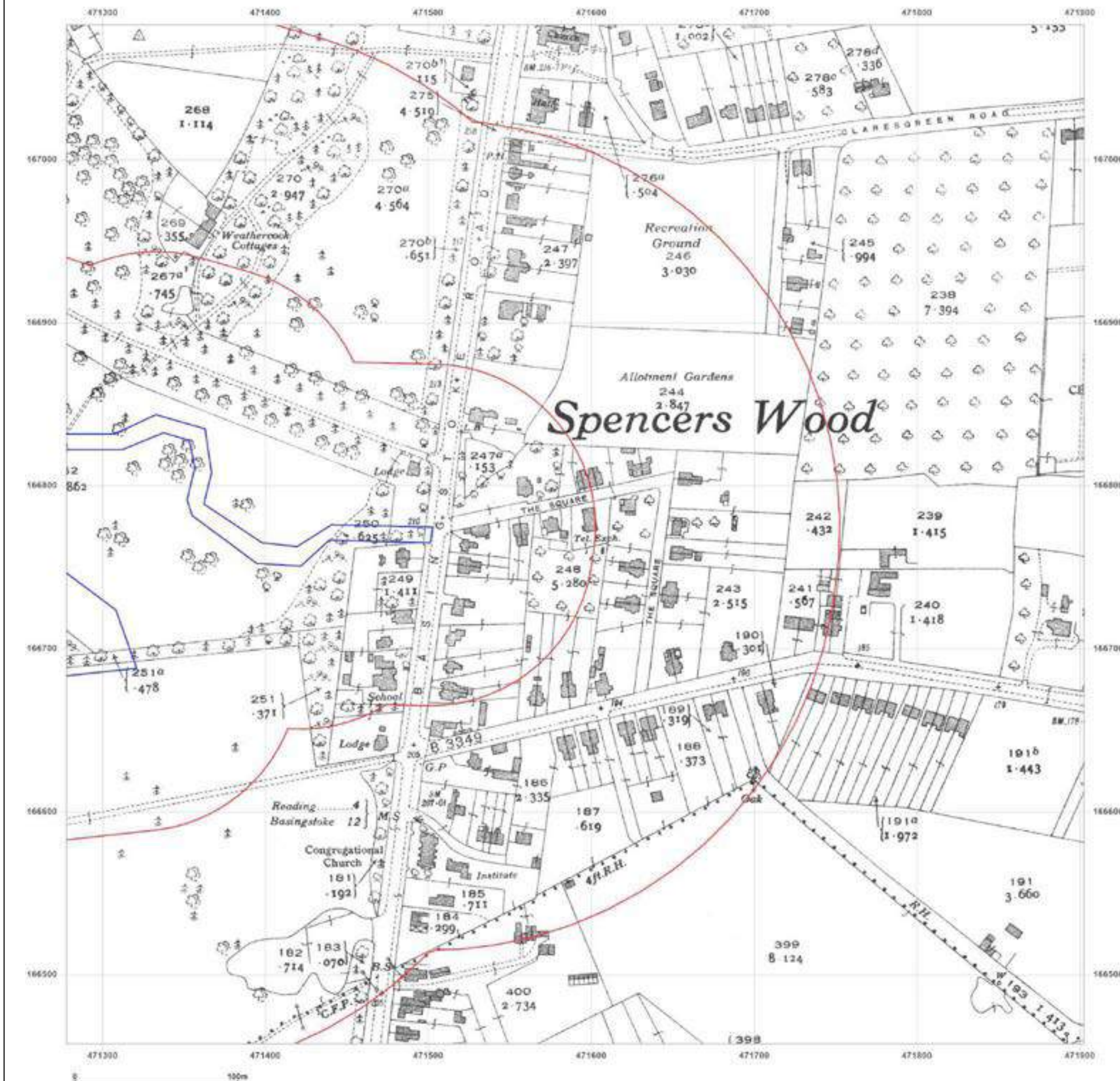


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Site Details:

471150, 166758

Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



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

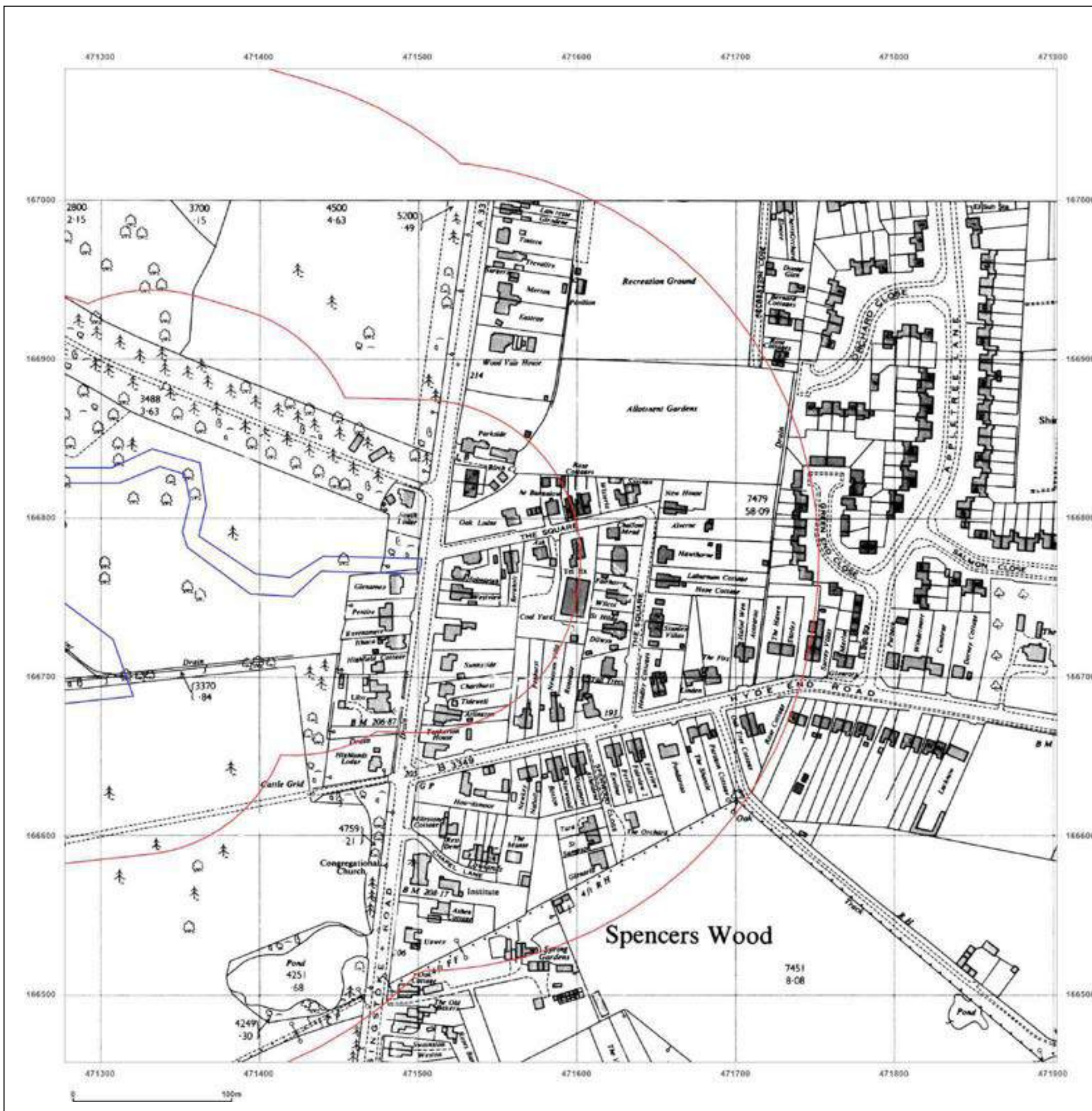


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Site Details:

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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: National Grid

Map date: 1983

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1982
 Revised 1982
 Edition N/A
 Copyright 1983
 Levelled 1972

Surveyed 1982
 Revised 1982
 Edition N/A
 Copyright 1983
 Levelled 1959

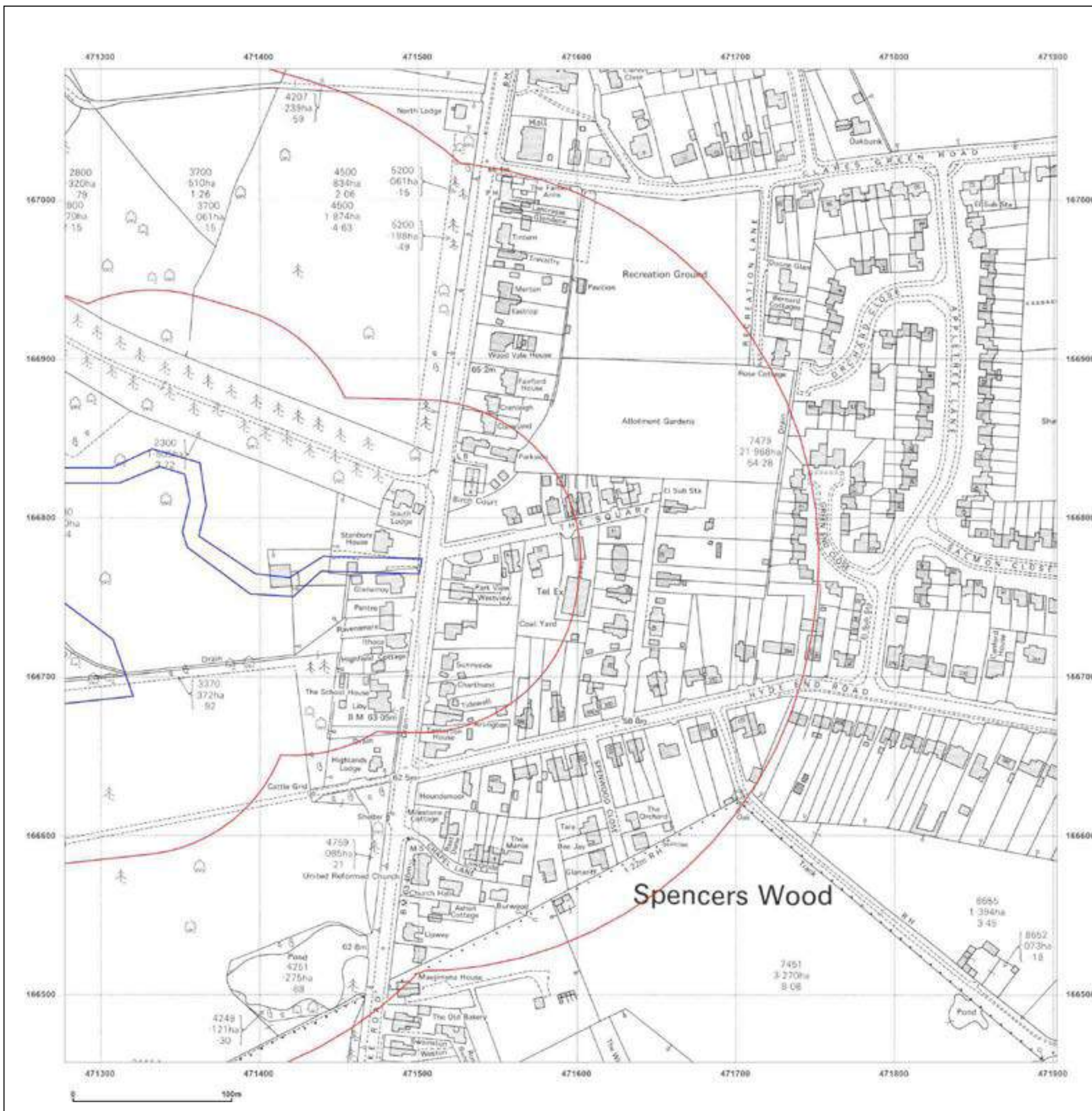


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Client Ref: AG2994A-23
Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: National Grid

Map date: 1983-1986

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1959
 Revised 1982
 Edition N/A
 Copyright 1986
 Levelled 1959



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Report Ref: GS-NRD-3HK-ABR-YID_LS_2_1
Grid Ref: 471590, 166770

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
 Levelled N/A

Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
 Levelled N/A

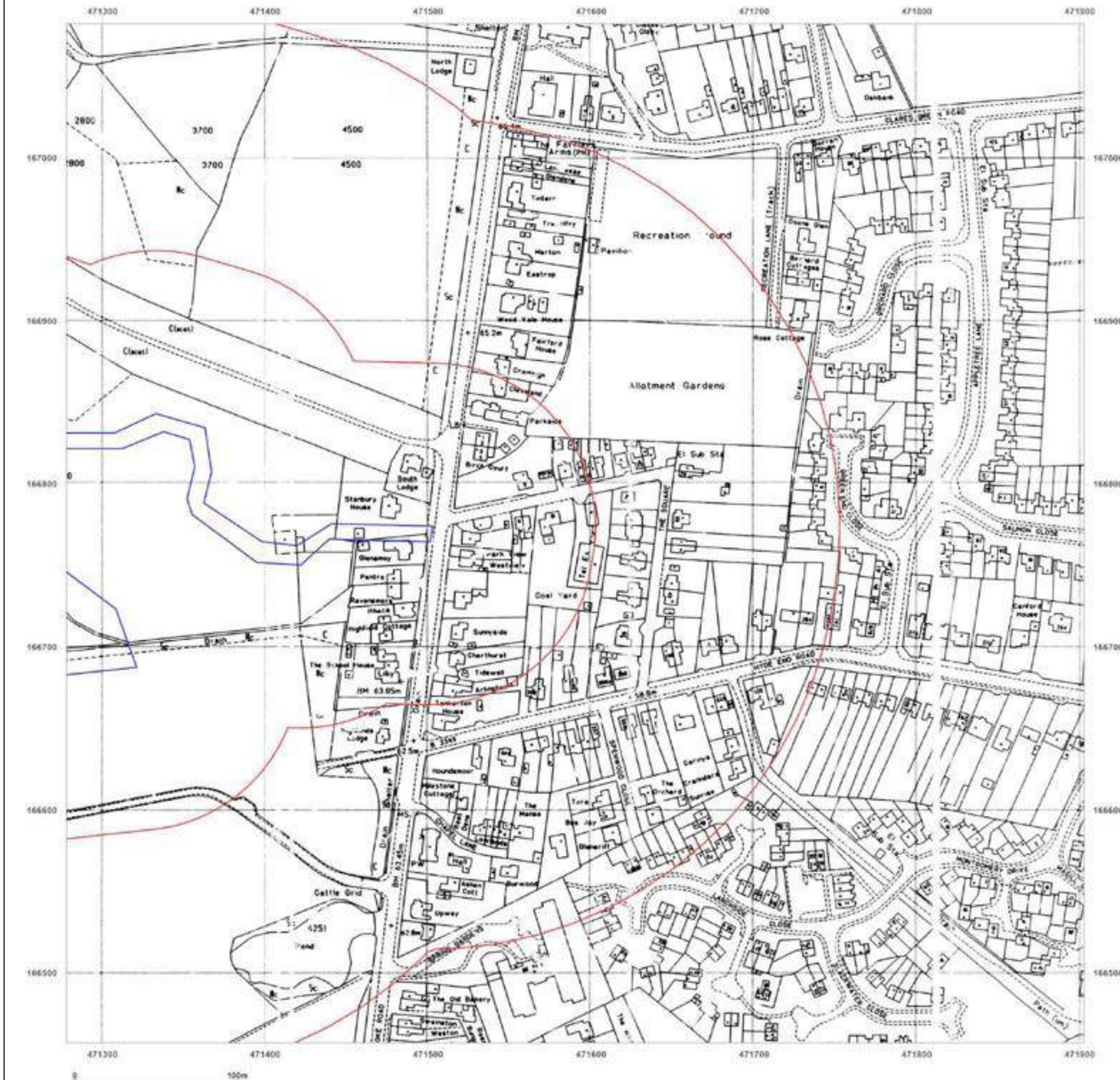


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471150 , 166758,

Order Details

Date: 21/06/2023
Your ref: AG2994A-23
Our Ref: GS-OWD-PHG-OC9-R19

Site Details

Location: 471150 166758
Area: 3.36 ha
Authority: [Wokingham Borough Council](#) ↗



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[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 9 >](#)

[OS MasterMap site plan](#)

[p.14 >](#)

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01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	1	1	1	4	-
16	1.2	Historical tanks	0	0	0	0	-
16 >	1.3 >	Historical energy features >	0	0	2	9	-
17	1.4	Historical petrol stations	0	0	0	0	-
17 >	1.5 >	Historical garages >	0	0	0	3	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
19 >	2.1 >	Historical industrial land uses >	1	2	1	7	-
20	2.2	Historical tanks	0	0	0	0	-
20 >	2.3 >	Historical energy features >	0	0	3	16	-
21	2.4	Historical petrol stations	0	0	0	0	-
21 >	2.5 >	Historical garages >	0	0	0	4	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
23	3.1	Active or recent landfill	0	0	0	0	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
24	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
24 >	3.5 >	Historical waste sites >	0	0	0	1	-
24	3.6	Licensed waste sites	0	0	0	0	-
25 >	3.7 >	Waste exemptions >	0	0	1	5	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
26 >	4.1 >	Recent industrial land uses >	0	1	2	-	-
27 >	4.2 >	Current or recent petrol stations >	0	0	0	2	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-



28	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	1	2	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	3	-
30	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
31	4.16	List 1 Dangerous Substances	0	0	0	0	-
31	4.17	List 2 Dangerous Substances	0	0	0	0	-
31	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
31	4.19	Pollution inventory substances	0	0	0	0	-
31	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
33 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
34 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
35 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
36	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37 >	5.6 >	Groundwater abstractions >	0	0	0	0	9
39 >	5.7 >	Surface water abstractions >	0	0	0	0	6
41	5.8	Potable abstractions	0	0	0	0	0
41	5.9	Source Protection Zones	0	0	0	0	-
42	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
43 >	6.1 >	Water Network (OS MasterMap) >	8	2	13	-	-



45 >	6.2 >	Surface water features >	1	2	8	-	-
46 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
46 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
46	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
47	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
47	7.2	Historical Flood Events	0	0	0	-	-
47	7.3	Flood Defences	0	0	0	-	-
48	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
48	7.5	Flood Storage Areas	0	0	0	-	-
49	7.6	Flood Zone 2	None (within 50m)				
49	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
50 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
52 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
53 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
54	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
54	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
54	10.4	Special Protection Areas (SPA)	0	0	0	0	0
54	10.5	National Nature Reserves (NNR)	0	0	0	0	0
55	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
55 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	10
56	10.8	Biosphere Reserves	0	0	0	0	0
56	10.9	Forest Parks	0	0	0	0	0
56	10.10	Marine Conservation Zones	0	0	0	0	0
56	10.11	Green Belt	0	0	0	0	0
56	10.12	Proposed Ramsar sites	0	0	0	0	0



57	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
57	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
57	10.15	Nitrate Sensitive Areas	0	0	0	0	0
57 >	10.16 >	Nitrate Vulnerable Zones >	1	0	0	0	1
59 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
60 >	10.18 >	SSSI Units >	0	0	0	0	2
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
62	11.1	World Heritage Sites	0	0	0	-	-
63	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
63	11.3	National Parks	0	0	0	-	-
63 >	11.4 >	Listed Buildings >	0	0	2	-	-
64 >	11.5 >	Conservation Areas >	1	0	0	-	-
64	11.6	Scheduled Ancient Monuments	0	0	0	-	-
64	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
65 >	12.1 >	Agricultural Land Classification >	Grade 3b (within 250m)				
67	12.2	Open Access Land	0	0	0	-	-
67 >	12.3 >	Tree Felling Licences >	0	1	0	-	-
68	12.4	Environmental Stewardship Schemes	0	0	0	-	-
68 >	12.5 >	Countryside Stewardship Schemes >	2	0	2	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
69 >	13.1 >	Priority Habitat Inventory >	0	1	10	-	-
70	13.2	Habitat Networks	0	0	0	-	-
70	13.3	Open Mosaic Habitat	0	0	0	-	-
70	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
72 >	14.1 >	10k Availability >	Identified (within 500m)				
73 >	14.2 >	Artificial and made ground (10k) >	0	0	1	2	-
74 >	14.3 >	Superficial geology (10k) >	1	0	0	1	-



75	14.4	Landslip (10k)	0	0	0	0	-
76 >	14.5 >	Bedrock geology (10k) >	1	0	0	0	-
77	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
78 >	15.1 >	50k Availability >	Identified (within 500m)				
79	15.2	Artificial and made ground (50k)	0	0	0	0	-
79	15.3	Artificial ground permeability (50k)	0	0	-	-	-
80 >	15.4 >	Superficial geology (50k) >	1	0	0	0	-
81 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
81	15.6	Landslip (50k)	0	0	0	0	-
81	15.7	Landslip permeability (50k)	None (within 50m)				
82 >	15.8 >	Bedrock geology (50k) >	1	0	0	0	-
83 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
83	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	16.1 >	BGS Boreholes >	0	0	1	-	-
Page	Section	Natural ground subsidence >					
85 >	17.1 >	Shrink swell clays >	Low (within 50m)				
86 >	17.2 >	Running sands >	Very low (within 50m)				
87 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
88 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
89 >	17.5 >	Landslides >	Very low (within 50m)				
90 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
92	18.1	BritPits	0	0	0	0	-
93 >	18.2 >	Surface ground workings >	0	1	9	-	-
93	18.3	Underground workings	0	0	0	0	0
93	18.4	Underground mining extents	0	0	0	0	-
94	18.5	Historical Mineral Planning Areas	0	0	0	0	-



94	18.6	Non-coal mining	0	0	0	0	0
94	18.7	JPB mining areas	None (within 0m)				
94	18.8	The Coal Authority non-coal mining	0	0	0	0	-
95	18.9	Researched mining	0	0	0	0	-
95	18.10	Mining record office plans	0	0	0	0	-
95	18.11	BGS mine plans	0	0	0	0	-
95	18.12	Coal mining	None (within 0m)				
95	18.13	Brine areas	None (within 0m)				
96	18.14	Gypsum areas	None (within 0m)				
96	18.15	Tin mining	None (within 0m)				
96	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
97	19.1	Natural cavities	0	0	0	0	-
97	19.2	Mining cavities	0	0	0	0	0
97	19.3	Reported recent incidents	0	0	0	0	-
97	19.4	Historical incidents	0	0	0	0	-
98	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
99 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
101 >	21.1 >	BGS Estimated Background Soil Chemistry >	4	0	-	-	-
101	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
102	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
103	22.1	Underground railways (London)	0	0	0	-	-
103	22.2	Underground railways (Non-London)	0	0	0	-	-
103	22.3	Railway tunnels	0	0	0	-	-
103	22.4	Historical railway and tunnel features	0	0	0	-	-
103	22.5	Royal Mail tunnels	0	0	0	-	-



104	22.6	Historical railways	0	0	0	-	-
104	22.7	Railways	0	0	0	-	-
104	22.8	Crossrail 1	0	0	0	0	-
104	22.9	Crossrail 2	0	0	0	0	-
104	22.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 29/06/2019

Site Area: 3.36ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 21 June 2023

Recent site history - 2013 aerial photograph



Capture Date: 11/07/2013

Site Area: 3.36ha



Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Date: 21 June 2023

Recent site history - 2010 aerial photograph



Capture Date: 25/09/2010

Site Area: 3.36ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 21 June 2023

Recent site history - 2005 aerial photograph



Capture Date: 12/07/2005

Site Area: 3.36ha



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info@groundsure.com

01273 257 755

Date: 21 June 2023

Recent site history - 1999 aerial photograph



Capture Date: 04/09/1999

Site Area: 3.36ha



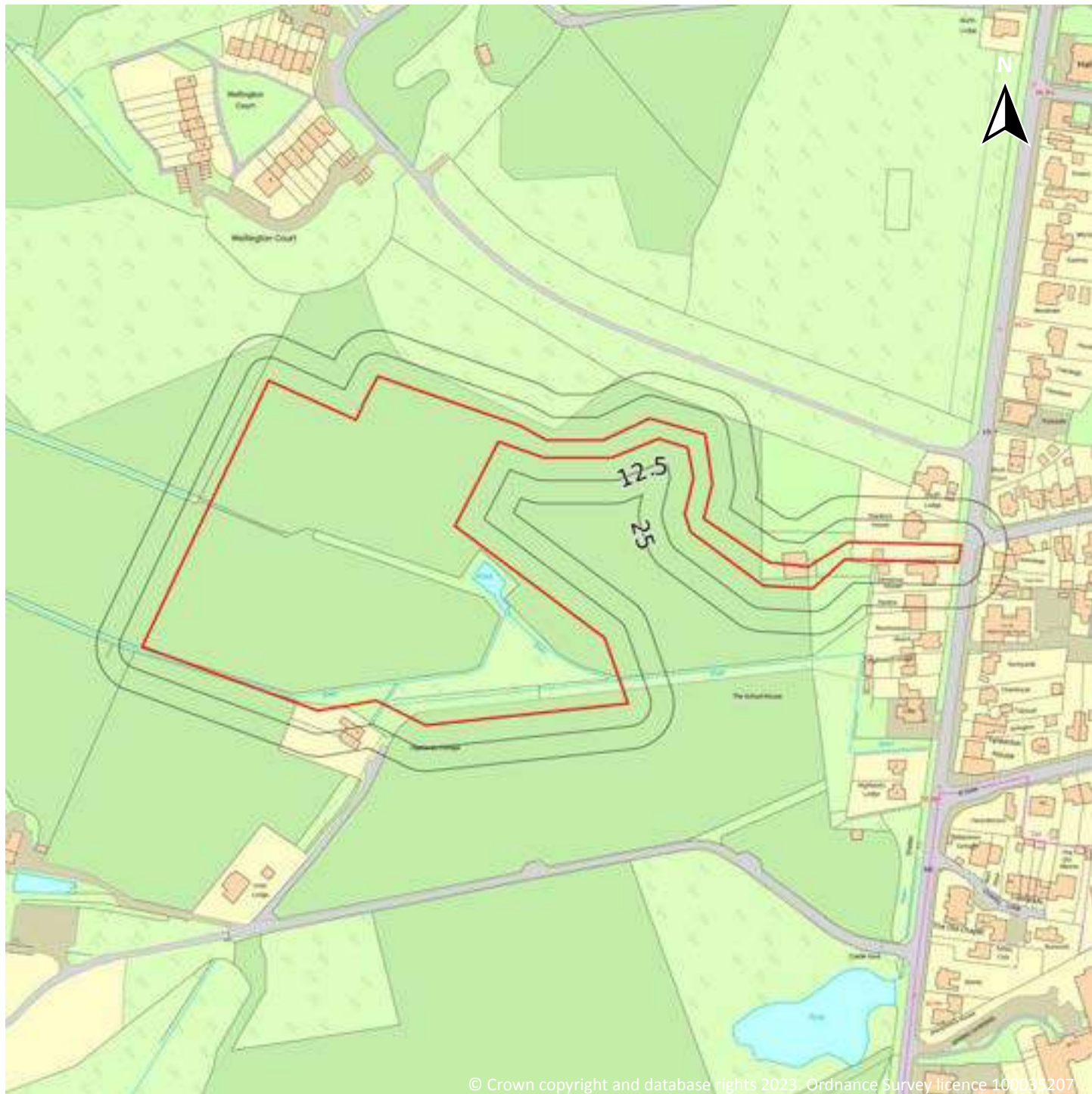
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Date: 21 June 2023

OS MasterMap site plan



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Site Area: 3.36ha



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info@groundsure.com

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Date: 21 June 2023

1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

7

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
A	On site	Smithy	1956	1946898



ID	Location	Land use	Dates present	Group ID
A	12m E	Smithy	1900 - 1909	1904299
1	234m NE	Smithy	1872	1875833
3	343m S	Unspecified Works	1969 - 1975	1944886
D	371m E	Cemetery	1969 - 1975	1950032
D	371m E	Cemetery	1983 - 1988	1961447
D	371m E	Cemetery	1956	1966628

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

11

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
B	146m E	Electricity Substation	1986	209126
B	148m E	Electricity Substation	1982 - 1997	203012
C	272m E	Electricity Substation	1967 - 1986	210359
C	273m E	Electricity Substation	1997	189546
2	333m E	Electricity Substation	1986 - 1997	206126



ID	Location	Land use	Dates present	Group ID
4	385m NW	Electricity Substation	1994	189560
E	405m E	Electricity Substation	1967 - 1986	202106
E	406m E	Electricity Substation	1997	201684
5	425m NE	Electricity Substation	1976 - 1998	196489
G	452m S	Electricity Substation	1982 - 1986	200938
G	455m S	Electricity Substation	1997	206797

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

3

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
F	422m SE	Garage	1967	61671
F	423m SE	Garage	1982 - 1986	63826
F	424m SE	Garage	1997	62825

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



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- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

11

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
A	On site	Smithy	1956	1946898
A	12m E	Smithy	1909	1904299
A	14m E	Smithy	1900	1904299



ID	Location	Land Use	Date	Group ID
1	234m NE	Smithy	1872	1875833
E	343m S	Unspecified Works	1975	1944886
E	343m S	Unspecified Works	1969	1944886
F	371m E	Cemetery	1988	1961447
F	371m E	Cemetery	1975	1950032
F	371m E	Cemetery	1983	1961447
F	371m E	Cemetery	1969	1950032
F	371m E	Cemetery	1956	1966628

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

19

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
B	146m E	Electricity Substation	1986	209126
B	148m E	Electricity Substation	1997	203012
B	149m E	Electricity Substation	1982	203012
C	272m E	Electricity Substation	1986	210359
C	273m E	Electricity Substation	1997	189546



ID	Location	Land Use	Date	Group ID
C	274m E	Electricity Substation	1967	210359
D	333m E	Electricity Substation	1986	206126
D	336m E	Electricity Substation	1997	206126
2	385m NW	Electricity Substation	1994	189560
G	405m E	Electricity Substation	1986	202106
G	406m E	Electricity Substation	1997	201684
G	407m E	Electricity Substation	1967	202106
G	407m E	Electricity Substation	1982	202106
I	425m NE	Electricity Substation	1998	196489
I	426m NE	Electricity Substation	1982	196489
I	426m NE	Electricity Substation	1976	196489
J	452m S	Electricity Substation	1982	200938
J	452m S	Electricity Substation	1986	200938
J	455m S	Electricity Substation	1997	206797

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

4

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >



ID	Location	Land Use	Date	Group ID
H	422m SE	Garage	1967	61671
H	423m SE	Garage	1986	63826
H	423m SE	Garage	1982	63826
H	424m SE	Garage	1997	62825

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



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- Site Outline
- Search buffers in metres (m)
- Historical waste sites
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m**1**

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on [page 23 >](#)

ID	Location	Address	Further Details	Date
2	360m NE	Site Address: N/A	Type of Site: Refuse Pit Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1937

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.



3.7 Waste exemptions

Records within 500m

6

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

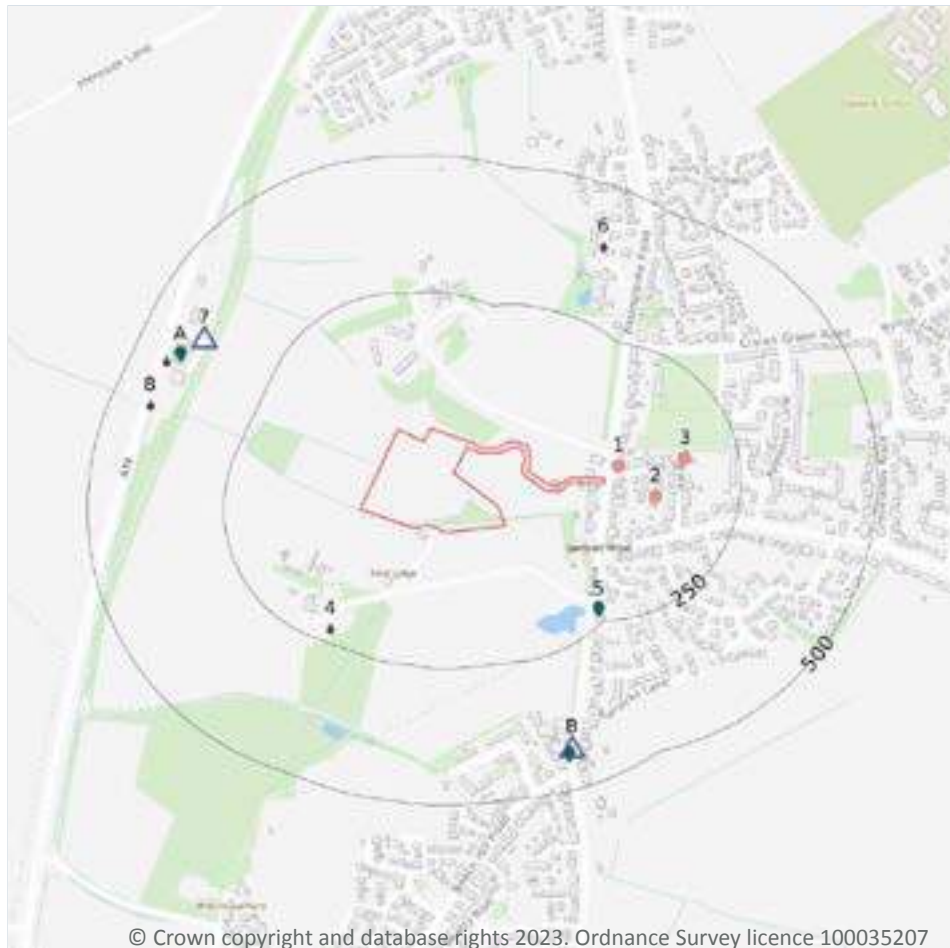
Features are displayed on the Waste and landfill map on [page 23](#) >

ID	Location	Site	Reference	Category	Sub-Category	Description
1	211m SE	DAY LEWIS PHARMACY, WALFORD HOUSE, BASINGSTOKE ROAD, SPENCERS WOOD, READING, RG7 1AA	WEX197668	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	331m SE	Walford House Basingstoke Road Reading Berkshire RG7 1AA	EPR/VE5680SD /A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
A	346m SE	BALIMORE, BASINGSTOKE ROAD, SPENCERS WOOD, READING, RG7 1AA	WEX225397	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	346m SE	BALIMORE, BASINGSTOKE ROAD, SPENCERS WOOD, READING, RG7 1AA	WEX350322	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
3	419m NW	A33 Swallowfield Bypass READING RG7 1LZ	EPR/GE5851FR /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
4	426m NW	SWALLOWFIELD BY PASS, SWALLOWFIELD, READING, RG7 1LZ	WEX067825	Using waste exemption	Not on a farm	Use of waste in construction

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



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- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- ◆ Licensed pollutant release (Part A(2)/B)
- ◆ Licensed Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 26 >](#)

ID	Location	Company	Address	Activity	Category
1	35m E	Hippo Invites	1, The Square, Spencers Wood, Berkshire, RG7 1BS	Published Goods	Industrial Products
2	97m E	Telephone Exchange	Berkshire, RG7	Telecommunications Features	Infrastructure and Facilities
3	153m E	Electricity Sub Station	Berkshire, RG7	Electrical Features	Infrastructure and Facilities



This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

2

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Company	Address	LPG	Status
7	394m NW	BP	Swallowfield Bypass, Swallowfield, Reading, Wokingham, RG7 1LZ	No	Open
B	423m SE	MURCO	Basingstoke Road, Spencers Wood, Reading, Wokingham, RG7 1AF	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m

0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.



4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

3

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Address	Details	
5	225m SE	Max Dry Cleaners, Basingstoke Road, Spencers Wood, Berskhire, RG7 1AA	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
A	420m NW	Swallowfield Service Station, Swallowfield By Pass, Reading, Berkshire, RG7 1LZ	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
B	433m SE	Doubles Garage, Basingstoke Road, Spencers Wood, Reading, RG7 1AF	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

4

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on [page 26](#) >



ID	Location	Address	Details	
4	224m SW	HIGHLANDS HOUSE, SPENCERS WOOD, REA, HIGHLANDS HOUSE, SPENCERS WOOD, READING, BERKS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCU.1128 Permit Version: 1 Receiving Water: GRAVEL STRATA	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 04/02/1982 Effective Date: 04/02/1982 Revocation Date: 01/10/1996
6	390m NE	DEVELOPMENT AT HILL HOUSE, SPENCERS, DEVELOPMENT AT HILL HOUSE, SPENC, ERS WOOD, BERKS	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1726 Permit Version: 1 Receiving Water: UN-NAMED TRIB OF FOUDRYBROOK	Status: REVOKED - UNSPECIFIED Issue date: 17/07/1987 Effective Date: 17/07/1987 Revocation Date: 31/10/1991
8	430m W	MEAKINS TRANSPORT, THE GARAGE, BACK LANE SPENCERS WOOD, READING, BERKSHIRE, RG7 1JB	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CAWM.0465 Permit Version: 1 Receiving Water: TRIB OF FOUDRY BROOK	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 11/07/2002 Effective Date: 08/05/2002 Revocation Date: 01/11/2007
A	437m NW	MEAKINS TRANSPORT, OFF A33, SPENCERS WOOD, READING, BERKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CAWM.0464 Permit Version: 1 Receiving Water: TRIB OF FOUDRY BROOK	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 11/07/2002 Effective Date: 08/05/2002 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.16 List 1 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



4.21 Pollution inventory radioactive waste

Records within 500m

0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



5 Hydrogeology - Superficial aquifer



— Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m

1

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 33 >](#)

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



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- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

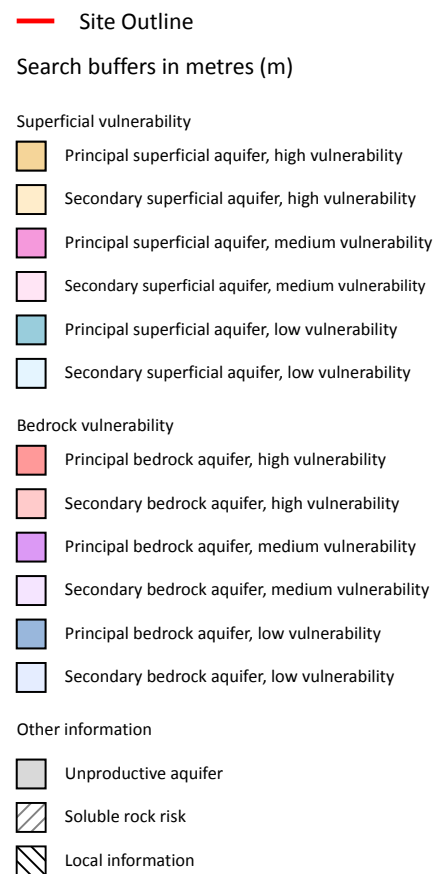
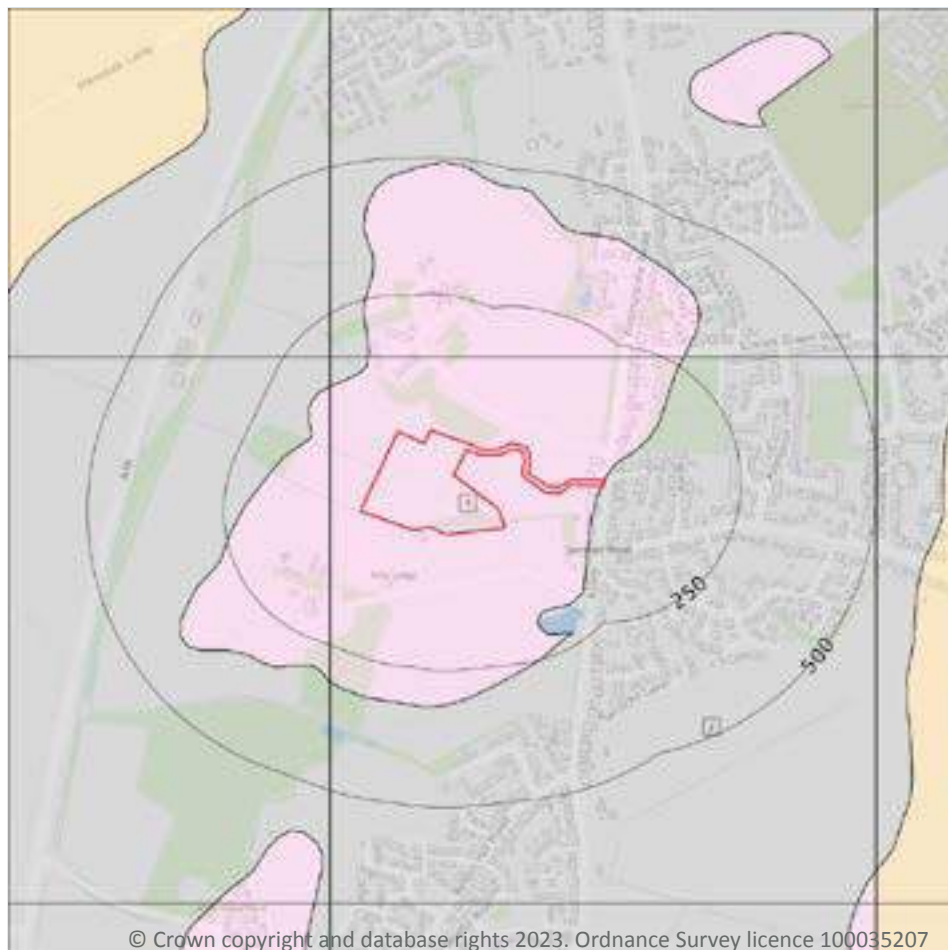
Features are displayed on the Bedrock aquifer map on [page 34](#) >

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on [page 35](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

9

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Details	
-	1365m E	Status: Historical Licence No: 28/39/24/0142 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: HIGH COPSE FARM, SHINFIELD - BOREHOLE Data Type: Point Name: UNIVERSITY OF READING Easting: 472800 Northing: 167200	Annual Volume (m ³): 37277 Max Daily Volume (m ³): 681.9 Original Application No: - Original Start Date: 05/04/1971 Expiry Date: - Issue No: 100 Version Start Date: 05/04/1971 Version End Date: -
-	1428m NW	Status: Historical Licence No: 28/39/22/0021 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT B Data Type: Point Name: CANNEY Easting: 469900 Northing: 167600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 16/12/2003 Version End Date: -
-	1428m NW	Status: Historical Licence No: 28/39/22/0021 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT B Data Type: Point Name: CANNEY Easting: 469900 Northing: 167600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 16/12/2003 Version End Date: -
-	1649m NW	Status: Historical Licence No: 28/39/22/0021 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT A Data Type: Point Name: BULLINGHAM Easting: 469600 Northing: 167500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 31/07/1984 Version End Date: -
-	1649m NW	Status: Historical Licence No: 28/39/22/0021 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT A Data Type: Point Name: BULLINGHAM Easting: 469600 Northing: 167500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 31/07/1984 Version End Date: -



ID	Location	Details	
-	1692m NW	Status: Historical Licence No: 28/39/22/0021 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT A Data Type: Point Name: CANNEY Easting: 469600 Northing: 167600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 16/12/2003 Version End Date: -
-	1692m NW	Status: Historical Licence No: 28/39/22/0021 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: GRAZELEY COURT FARM, GRAZELEY POINT A Data Type: Point Name: CANNEY Easting: 469600 Northing: 167600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/12/1965 Expiry Date: - Issue No: 101 Version Start Date: 16/12/2003 Version End Date: -
-	1790m W	Status: Historical Licence No: 28/39/22/0287 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: POUND GREEN FARM, GRAZELEY Data Type: Point Name: STANLEY Easting: 469400 Northing: 167400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 13/07/1970 Version End Date: -
-	1977m N	Status: Historical Licence No: 28/39/22/0601 Details: Make-Up or Top Up Water Direct Source: THAMES GROUNDWATER Point: READING INTERNATIONAL BUSINESS PARK Data Type: Point Name: AKELER DEVELOPMENTS LTD Easting: 471320 Northing: 168840	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/11/2000 Expiry Date: - Issue No: 1 Version Start Date: 10/11/2000 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

6

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.



Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Details	
-	1628m SW	Status: Historical Licence No: 28/39/22/0207 Details: Spray Irrigation - Direct Direct Source: THAMES SURFACE WATER - NON TIDAL Point: FOUDRY BROOK, BEECH HILL, READING Data Type: Line Name: THOMPSON & CRIPPS Easting: 469900 Northing: 165400	Annual Volume (m ³): 5681 Max Daily Volume (m ³): 181.8 Original Application No: - Original Start Date: 10/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 06/08/1987 Version End Date: -
-	1814m S	Status: Historical Licence No: TH/039/0024/004 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER LODDON AT WYVOLS COURT FARM, SWALLOWFIELD Data Type: Point Name: Wyvols Court Farm Limited Easting: 471666 Northing: 164907	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/10/2009 Expiry Date: 31/03/2016 Issue No: 2 Version Start Date: 09/12/2013 Version End Date: -
-	1814m S	Status: Historical Licence No: TH/039/0024/004/R01 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER LODDON AT WYVOLS COURT FARM, SWALLOWFIELD Data Type: Point Name: Wyvols Court Farm Limited Easting: 471666 Northing: 164907	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: NPS/WR/019577 Original Start Date: 01/04/2016 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 01/04/2021 Version End Date: -
-	1822m S	Status: Historical Licence No: 28/39/24/0235 Details: Transfer between Sources (Pre Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER LODDON AT WYVOLS COURT FARM, SWALLOWFIELD Data Type: Point Name: R R WATERER & CO Easting: 471670 Northing: 164900	Annual Volume (m ³): 6300000 Max Daily Volume (m ³): 17280 Original Application No: - Original Start Date: 11/05/2001 Expiry Date: 31/12/2006 Issue No: 2 Version Start Date: 24/07/2006 Version End Date: -

ID	Location	Details	
-	1822m S	Status: Historical Licence No: TH/039/0024/004 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER LODDON AT WYVOLS COURT FARM, SWALLOWFIELD Data Type: Point Name: Wyvols Court Farm Limited Easting: 471670 Northing: 164900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/10/2009 Expiry Date: 31/03/2016 Issue No: 2 Version Start Date: 09/12/2013 Version End Date: -
-	1966m NW	Status: Historical Licence No: 28/39/22/0232 Details: Spray Irrigation - Direct Direct Source: THAMES SURFACE WATER - NON TIDAL Point: FOUNDRY BROOK AT HARTLEY COURT FARM Data Type: Line Name: Hewison Farms limited Easting: 470200 Northing: 168600	Annual Volume (m ³): 18184 Max Daily Volume (m ³): 681.91 Original Application No: - Original Start Date: 14/11/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2016 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0
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Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0
----------------------------	----------

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

23

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on [page 43](#) >

ID	Location	Type of water feature	Ground level	Permanence	Name
A	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	10m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	101m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
4	135m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	137m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	140m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
G	146m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	158m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	196m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
H	202m SE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	207m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	228m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	236m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	241m NW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	247m NW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

11

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on [page 43 >](#)

This data is sourced from the Ordnance Survey.



6.3 WFD Surface water body catchments

Records on site

1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on [page 43 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River	Foudry Brook (West End Brook to M4)	GB106039017380	Kennet	Kennet and Trib

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified

1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on [page 43 >](#)

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	798m W	River	Foudry Brook (West End Brook to M4)	GB106039017380 ↗	Poor	Fail	Poor	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site

0

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



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— Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

1 in 30 year, 0.3m - 1.0m

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on [page 50 >](#)

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

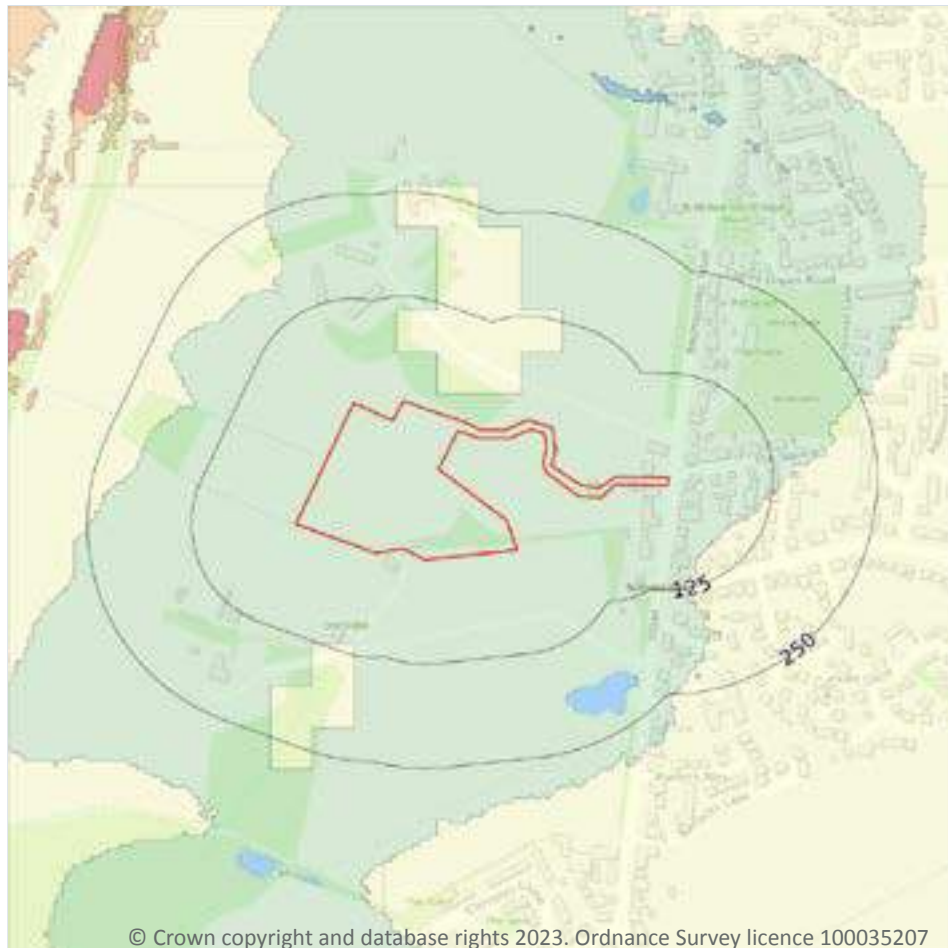
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

Moderate

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on [page 52 >](#)

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on [page 53](#) >

ID	Location	Name	Data source
-	1579m SE	Stanford End Mill and River Loddon	Natural England



This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m

0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m

0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

10

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on [page 53 >](#)

ID	Location	Name	Woodland Type
A	1310m SW	Norman's Shaw (Tithe Map: Normans Shaw)(tithe:normans Shaw)	Ancient & Semi-Natural Woodland
A	1328m SW	Norman's Shaw (Tithe Map: Normans Shaw)(tithe:normans Shaw)	Ancient & Semi-Natural Woodland
A	1332m SW	Norman's Shaw (Tithe Map: Normans Shaw)(tithe:normans Shaw)	Ancient & Semi-Natural Woodland
-	1461m E	High Copse (Tithe Map: High Coppice)(tithe:high Coppice)	Ancient & Semi-Natural Woodland
-	1491m E	High Copse (Tithe Map: High Coppice)(tithe:high Coppice)	Ancient & Semi-Natural Woodland
B	1511m SW	(Tithe Map: New Coppice)(tithe:the New Coppice)	Ancient & Semi-Natural Woodland
-	1526m SW	(Tithe Map: New Coppice)(tithe:the New Coppice)	Ancient & Semi-Natural Woodland
-	1602m SW	Clay Hill	Ancient & Semi-Natural Woodland
-	1761m S	Priory Copse	Ancient Replanted Woodland
-	1881m E	Tanner's Copse (Tithe Map: Tanners Coppice)(tithe:furgy Or Tanners Coppice)	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.



10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	Foudry Brook (West End Brook to M4) NVZ	Surface Water	459	Existing

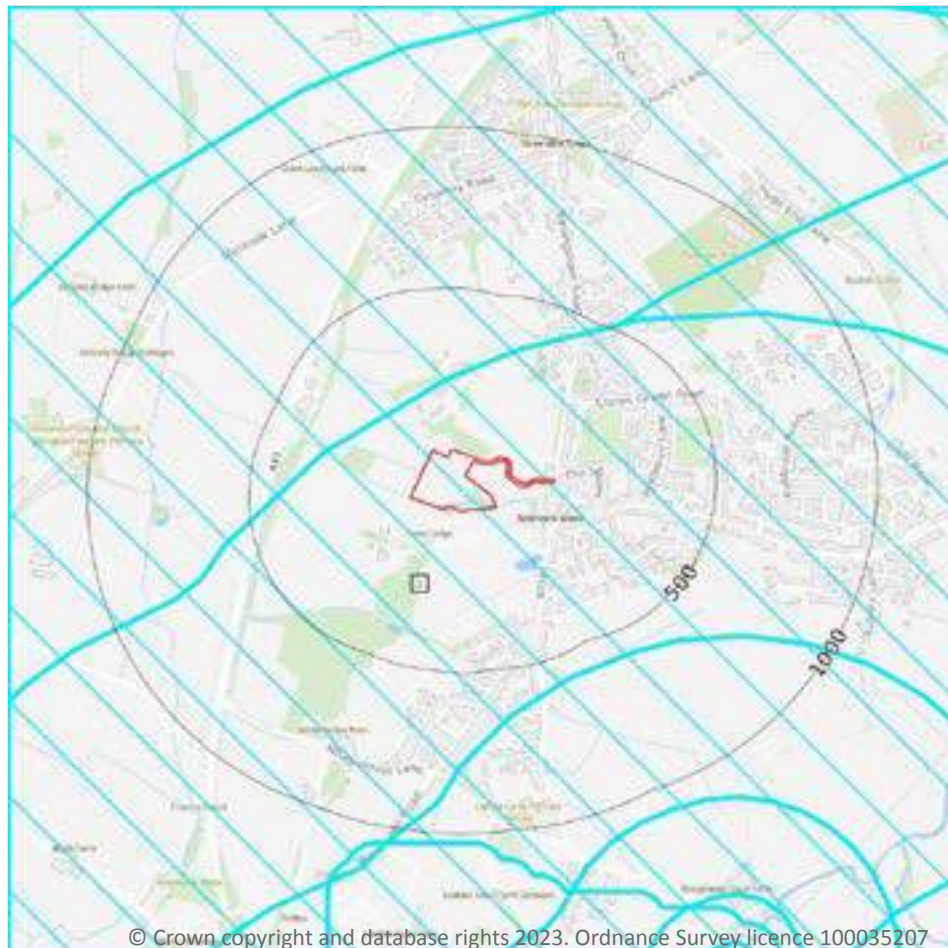


Location	Name	Type	NVZ ID	Status
763m SW	Foudry Brook (West End Brook to M4) NVZ	Surface Water	459	Existing

This data is sourced from Natural England and Natural Resources Wales.



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on [page 59](#) >

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause air pollution (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more. Notes: Strategic solutions for recreational impacts are in place. please contact your local planning authority as they have the information to advise on specific requirements.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	2
-----------------------------	----------

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on [page 59 >](#)

ID: -
 Location: 1579m SE
 SSSI name: Stanford End Mill and River Loddon
 Unit name: Waterer
 Broad habitat: Rivers And Streams
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Population of RDB plant - Potamogeton nodosus, Loddon Pondweed	Favourable	01/10/2010



ID: -
Location: 1951m S
SSSI name: Stanford End Mill and River Loddon
Unit name: Warner Templeton
Broad habitat: Rivers And Streams
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Population of RDB plant - Potamogeton nodosus, Loddon Pondweed	Favourable	01/10/2010

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

2

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on [page 62 >](#)

ID	Location	Name	Grade	Reference Number	Listed date
2	82m E	Library The School House	II	1312952	01/08/1952
3	167m SE	Milestone At Spencers Wood	II	1246235	17/04/2001

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.5 Conservation Areas

Records within 250m

1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on [page 62](#) >

ID	Location	Name	District	Date of designation
1	On site	The Local Authority for this area have not supplied conservation area data.		-

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

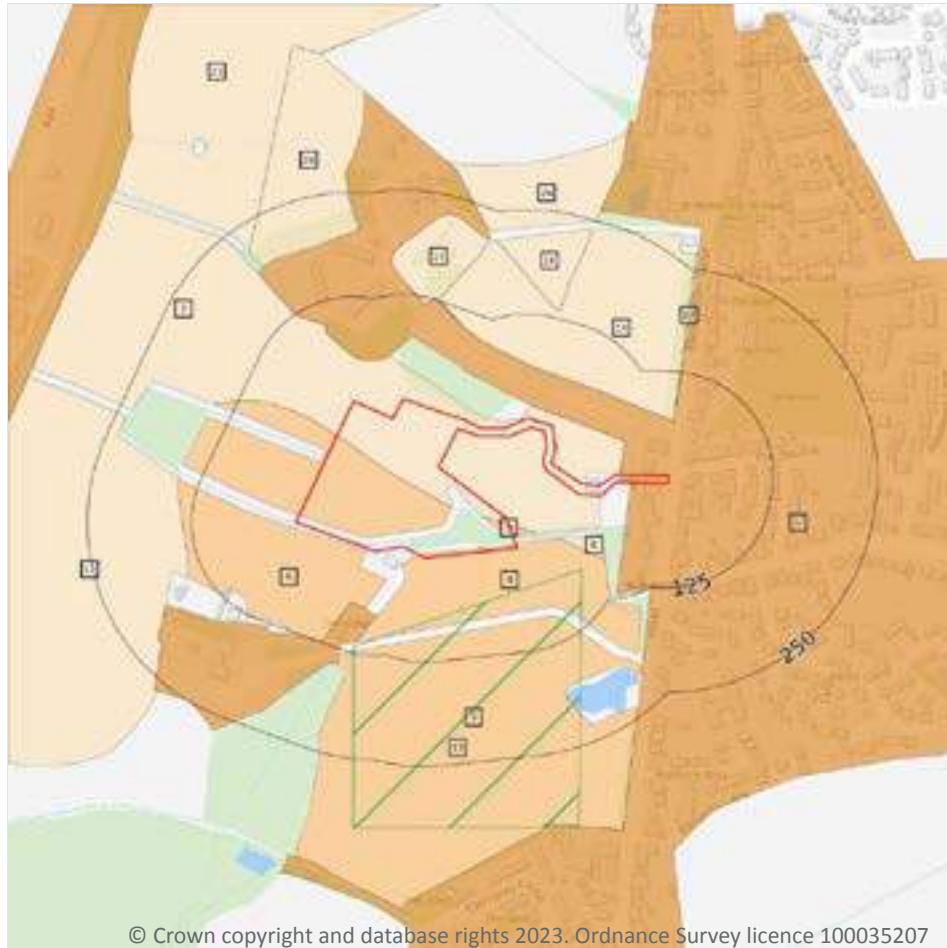
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

16

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 65](#) >

ID	Location	Classification	Description
1	On site	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

ID	Location	Classification	Description
3	On site	Grade 3a	Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
4	On site	Grade 3a	Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
5	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
A	On site	Grade 3a	Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
6	2m SW	Grade 3a	Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
8	47m E	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
10	58m NE	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
12	79m E	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
13	87m SE	Grade 3a	Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
14	107m N	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
16	134m NE	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
17	135m W	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.



ID	Location	Classification	Description
20	190m NW	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
23	219m NW	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
24	224m N	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

1

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

Features are displayed on the Agricultural designations map on [page 65](#) >

ID	Location	Description	Reference	Application date
9	49m SE	Selective Fell/Thin (Conditional)	019/52/03-04	15/07/2004

This data is sourced from the Forestry Commission.



12.4 Environmental Stewardship Schemes

Records within 250m**0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m**4**

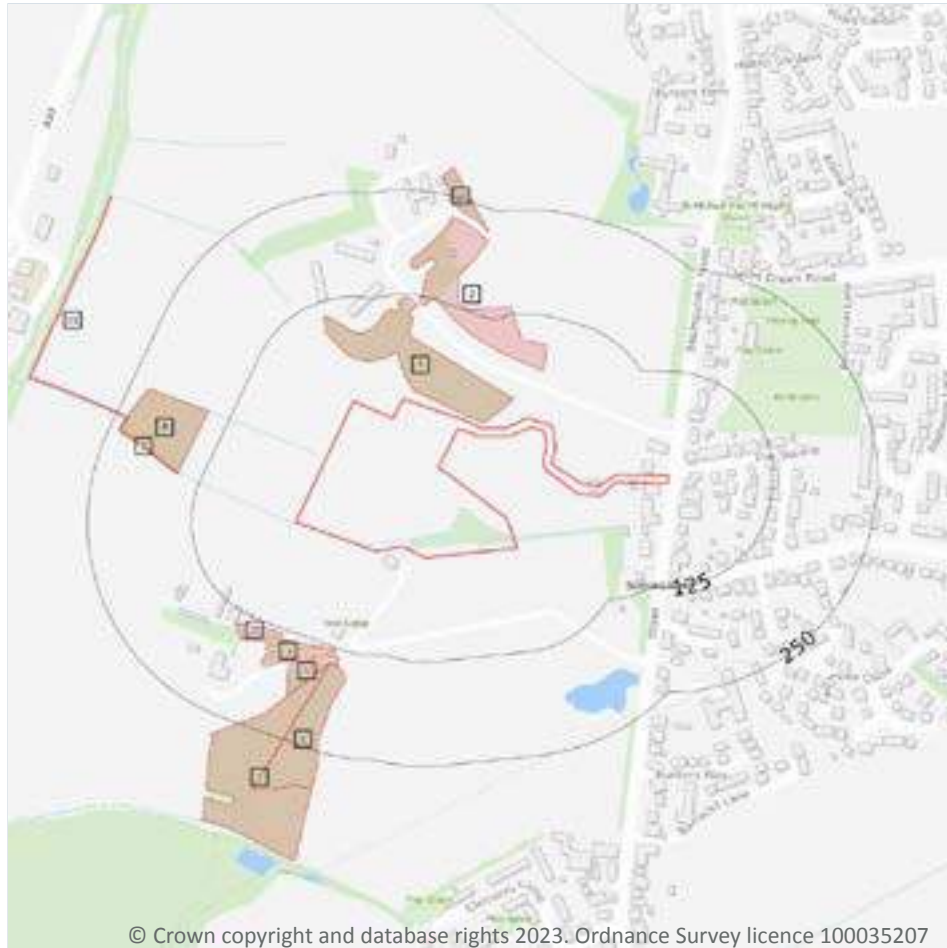
Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
On site	1061093	Countryside Stewardship (Middle Tier)	01/01/2021	31/12/2025
On site	1061093	Countryside Stewardship (Middle Tier)	01/01/2021	31/12/2025
85m SE	1061093	Countryside Stewardship (Middle Tier)	01/01/2021	31/12/2025
89m SE	1061093	Countryside Stewardship (Middle Tier)	01/01/2021	31/12/2025

This data is sourced from Natural England.



13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

11

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on [page 69](#) >

ID	Location	Main Habitat	Other habitats
1	6m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	60m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	128m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	131m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
5	134m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	145m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	146m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	152m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	154m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	222m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	238m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

0

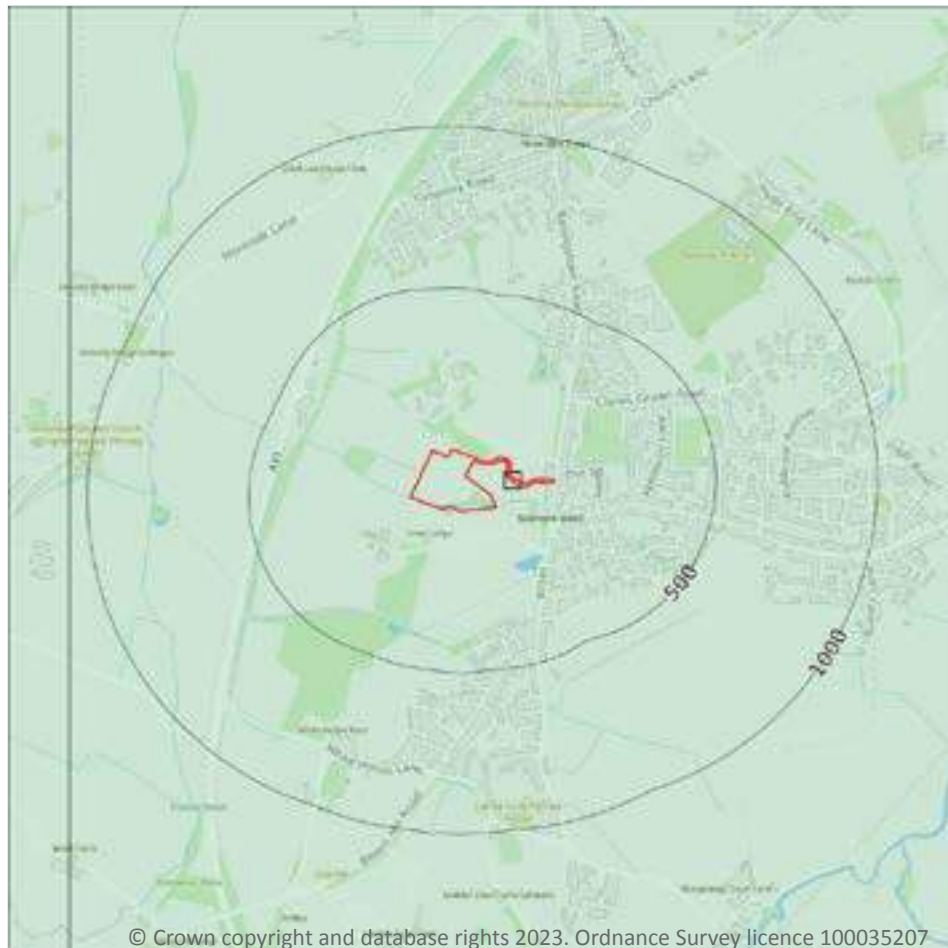
Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.



This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on [page 72](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SU76NW

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

3

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

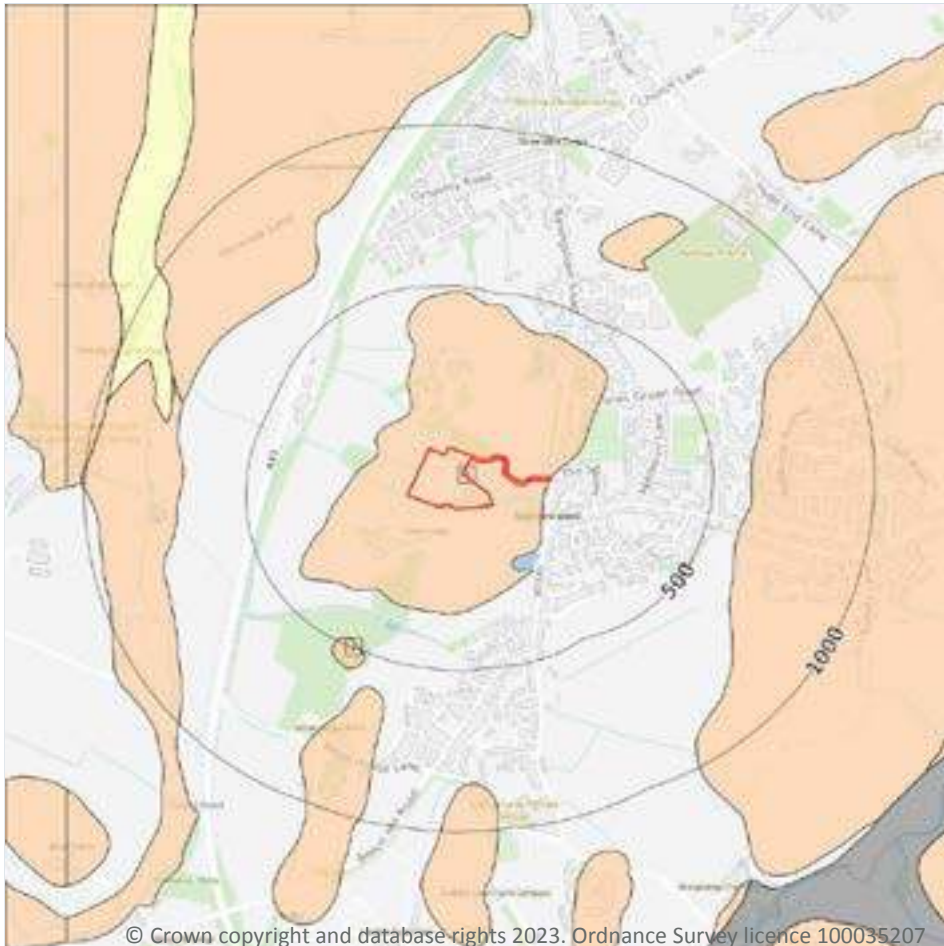
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 73](#) >

ID	Location	LEX Code	Description	Rock description
1	178m SE	WGR-VOID	Worked Ground (Undivided)	Void
2	411m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	496m SW	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

 Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

2

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 74 >](#)

ID	Location	LEX Code	Description	Rock description
1	On site	RTD5-XSV	River Terrace Deposits, 5 - Sand And Gravel	Sand And Gravel
2	477m SW	RTD5-XSV	River Terrace Deposits, 5 - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

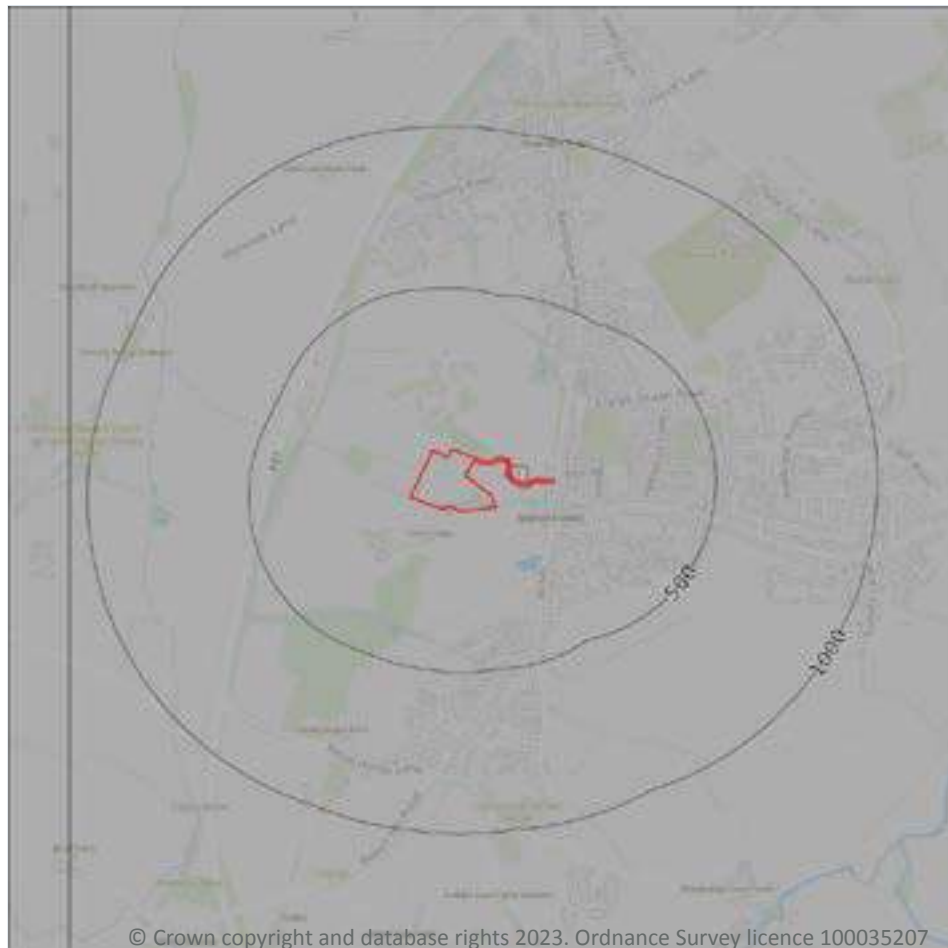
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

1

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 76 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	LC-CLISA	London Clay Formation - Clay, Silt And Sand	Eocene Epoch

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

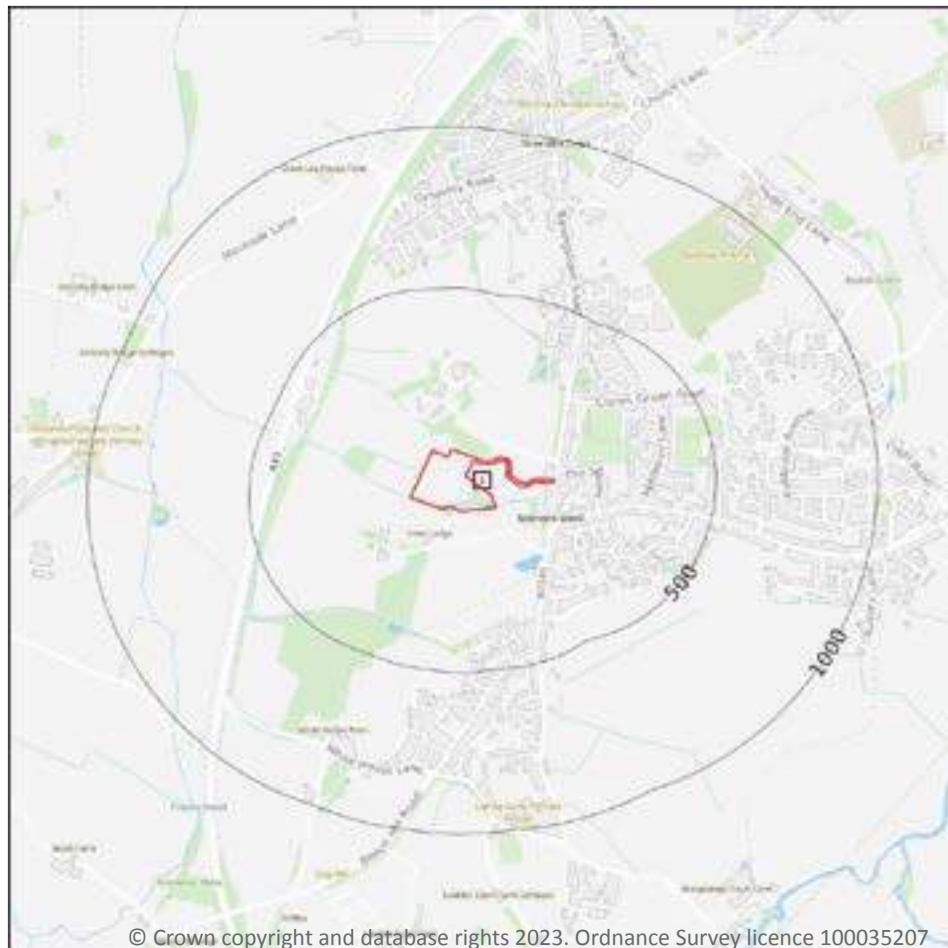
0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- ☐ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on [page 78](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	EW268_reading_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

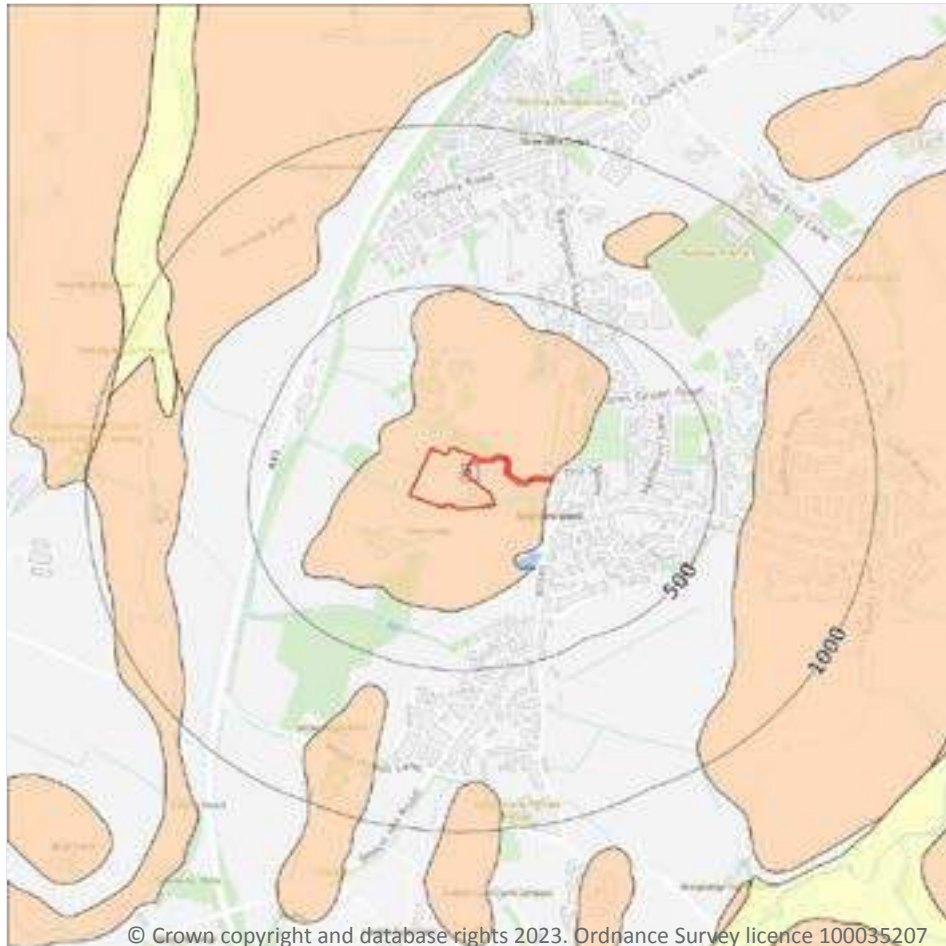
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



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- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

1

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 80](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	RTD5-XSV	RIVER TERRACE DEPOSITS, 5	SAND AND GRAVEL

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

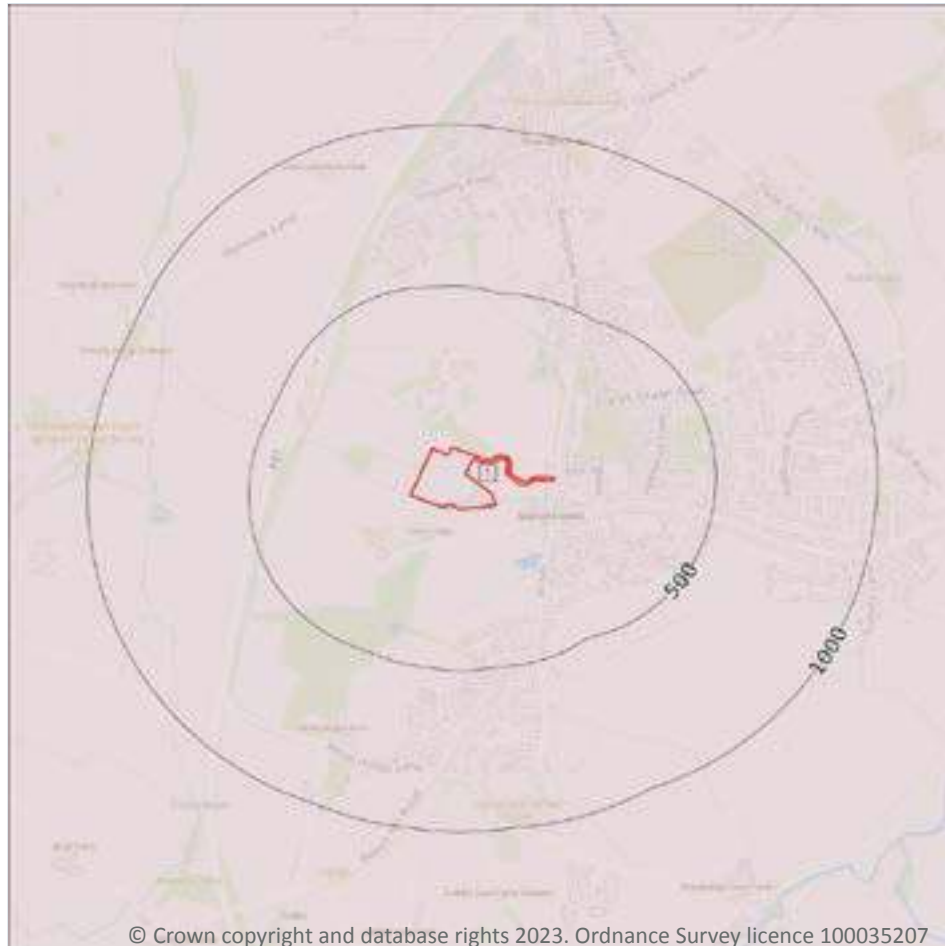
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 82 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	LC-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	YPRESIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	Moderate	Very Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

1

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

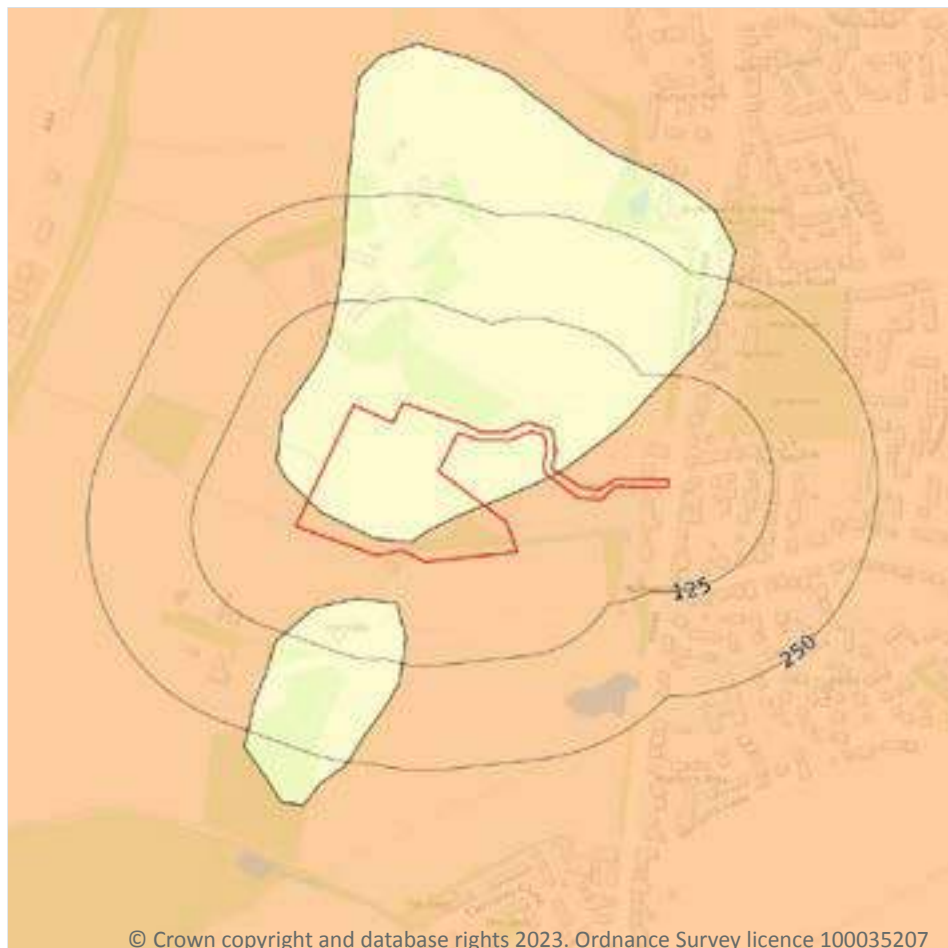
Features are displayed on the Boreholes map on [page 84](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	112m SW	470960 166660	NEAR HIGHLANDS SHINFIELD	4.0	N	427128 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

2

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

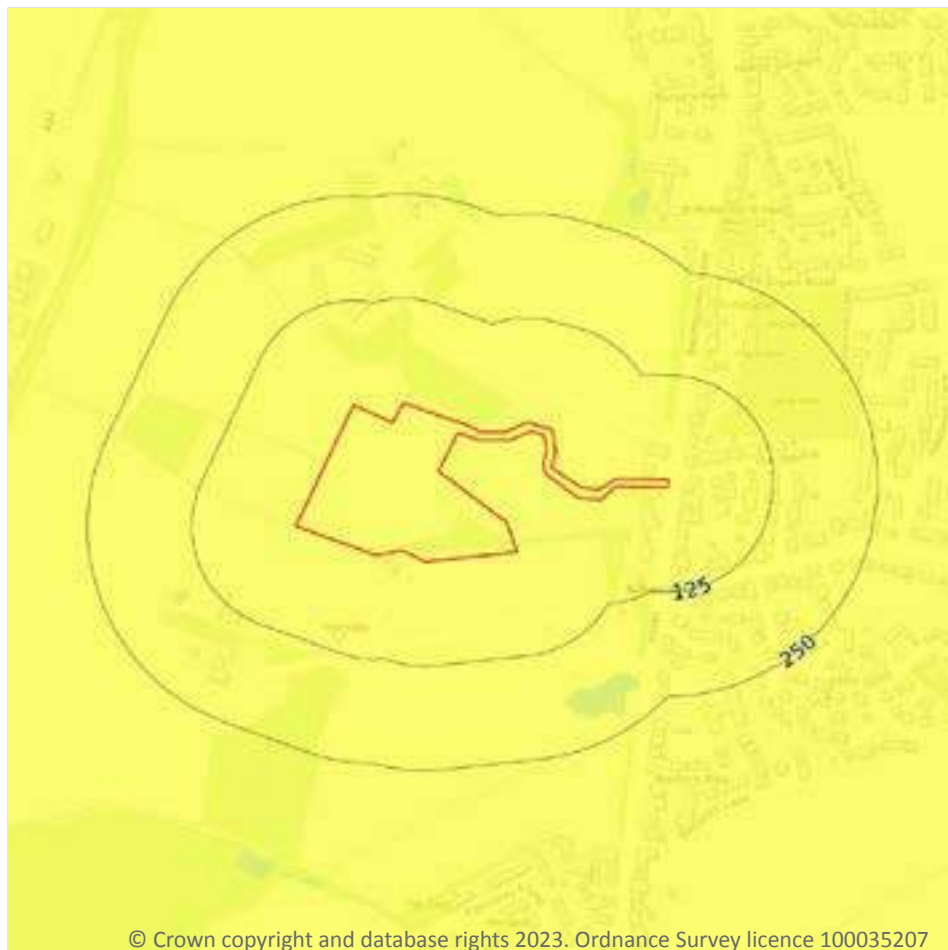
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 85 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Low	Ground conditions predominantly medium plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on [page 86](#) >

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.3 Compressible deposits

Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

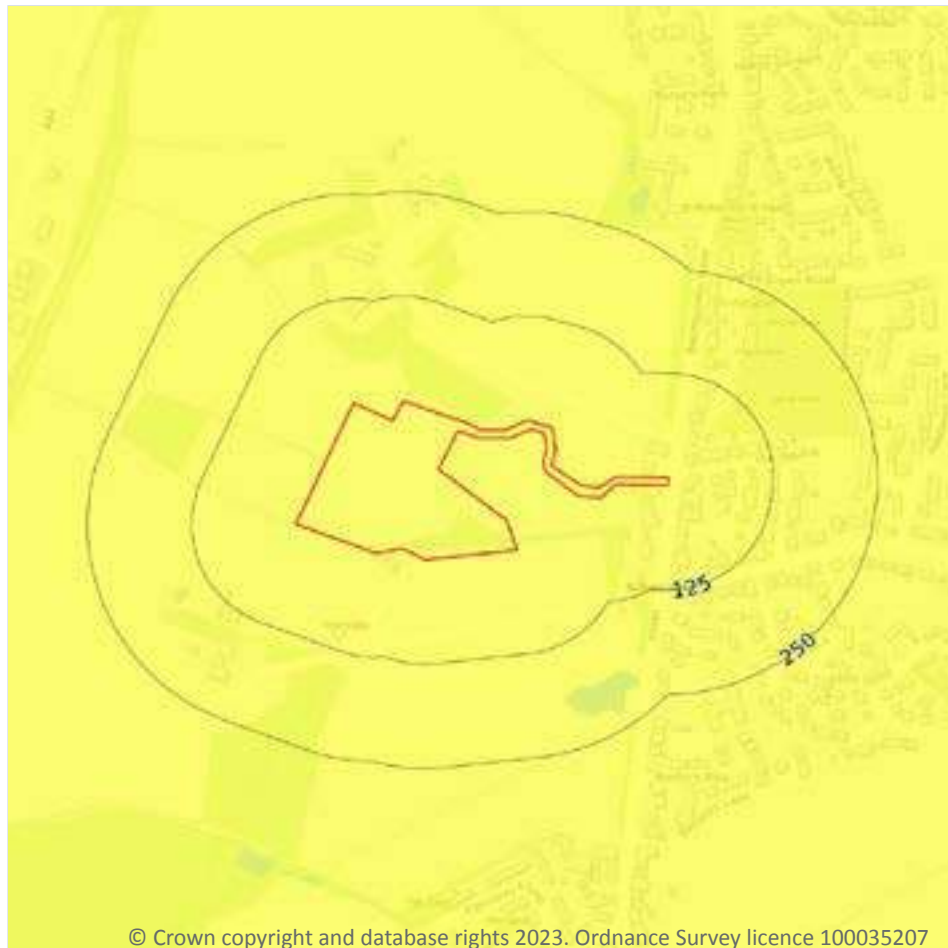
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 87 >](#)

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

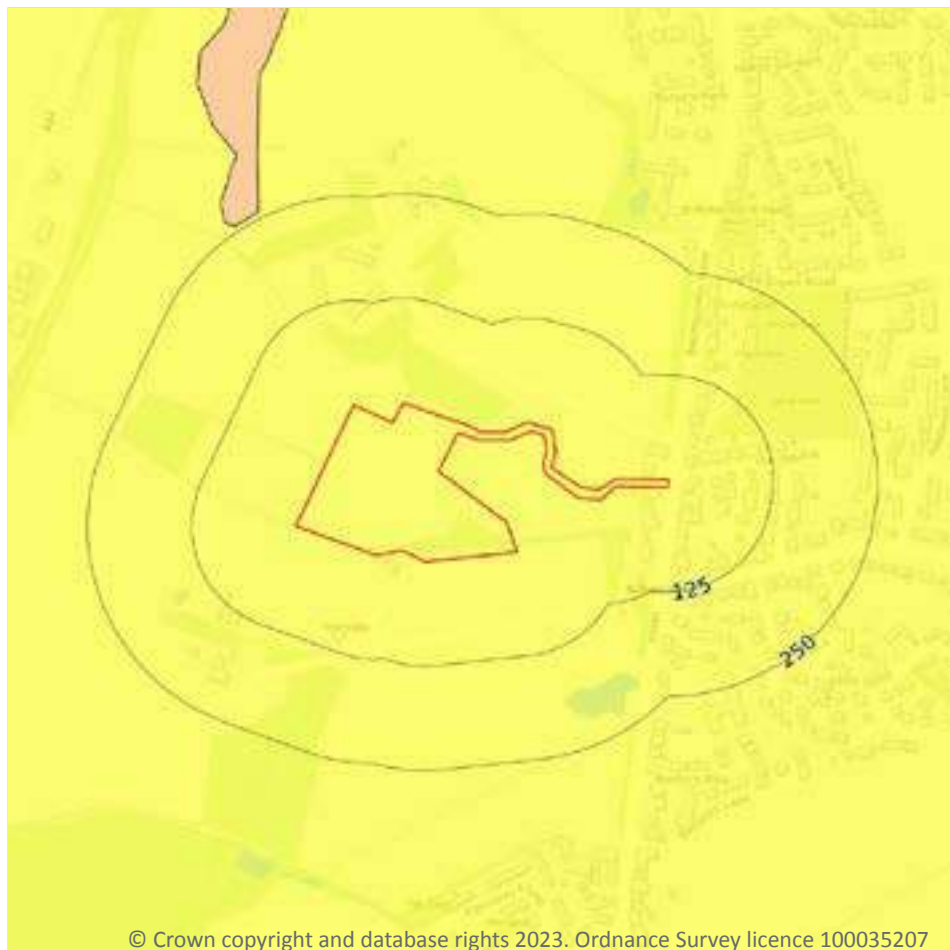
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 88](#) >

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



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- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on [page 89](#) >

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 90](#) >

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m

10

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 92 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
1	33m E	Pond	1872	1:10560
2	124m SW	Pond	1872	1:10560
A	177m SE	Pond	1872	1:10560
A	179m SE	Pond	1983	1:10000
A	179m SE	Pond	1969	1:10000
A	179m SE	Pond	1956	1:10560
A	179m SE	Pond	1988	1:10000
A	179m SE	Pond	1975	1:10000
A	179m SE	Pond	1900	1:10560
A	179m SE	Pond	1909	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.



18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.



18.9 Researched mining

Records within 500m

0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site

0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.



18.14 Gypsum areas

Records on site	0
-----------------	---

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).



19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.



This data is sourced from Groundsure.

19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

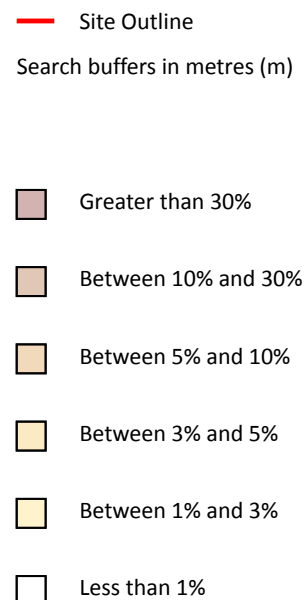
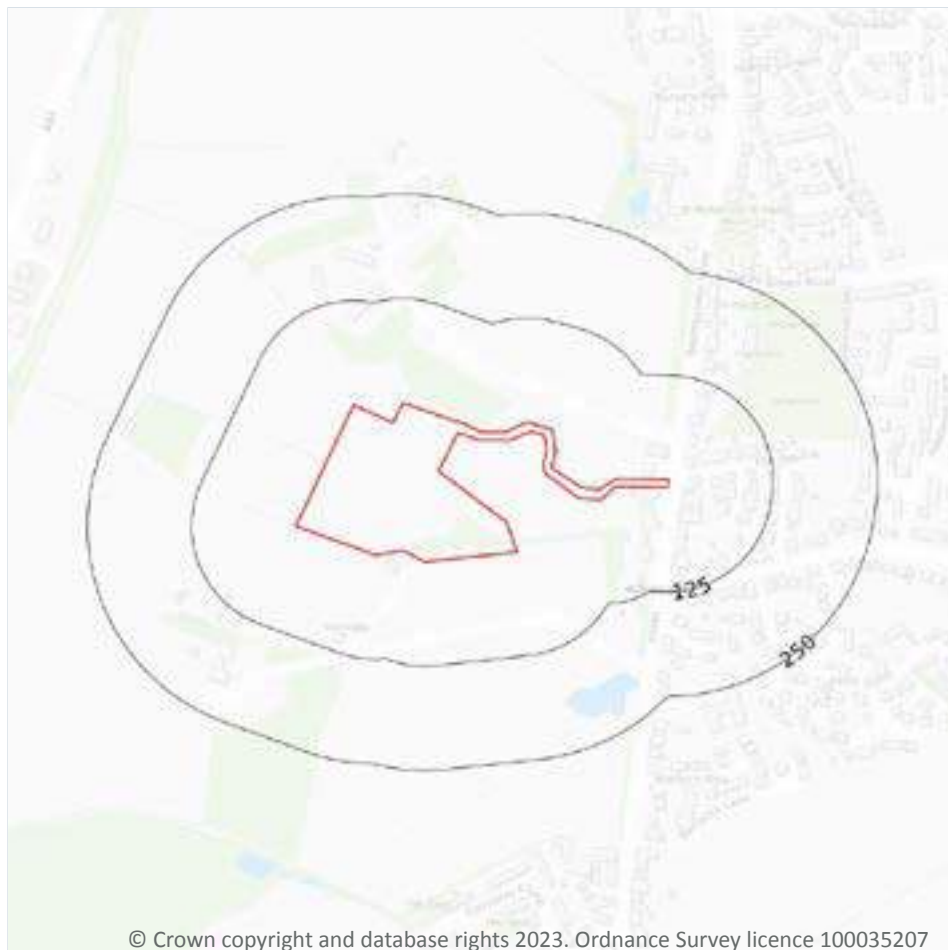
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



20.1 Radon

Records on site

1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 99](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None



This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

4

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
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
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.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.



21.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m**0**

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m**0**

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m**0**

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m**0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m

0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m

0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m

0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m

0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-april-2023/> ↗.



APPENDIX C

BOREHOLE LOG - DRIVEN CONTINUOUS SAMPLING

DCS1

Project Stanbury House, Spencers Wood

Project No.

AG2994A-23

Client Cooper Estates Strategic Land Ltd

Sheet

1 of 1

Start 16/04/2019

Coordinates

Scale

1:25

End 16/04/2019

Ground Level

Total Depth

3.50m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install
ES PID	0.20 0.20	PID = 0.0			(0.40)	Soft brown and dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse flint and rare brick fragments. (MADE GROUND/TOPSOIL)			
					0.40				
D	0.80					Firm orangish brown mottled light brown and grey slightly gravelly silty sandy CLAY with rare roots and occasional rootlets. Gravel is subangular to subrounded fine to medium flint. (RIVER TERRACE DEPOSITS)			
S ES PID	1.20 1.30 1.30	N = 12 PID = 0.2			(1.80)	Between 1.25m and 1.55m bgl: Stained black, slight unnatural odour.			
D	1.60		87mm /80%			Between 1.55m and 2.00m bgl: Predominantly light grey mottled orangish brown.			
ES	1.80								
D S	2.00 2.00	N = 38			2.20	Dense to medium dense orangish brown mottled light grey clayey sandy GRAVEL. Gravel is subangular to rounded fine to coarse quartzite and flint. (RIVER TERRACE DEPOSITS)			
			77mm /100%						
					(1.30)				
D C	3.00 3.00	N = 26			3.50	End of Borehole at 3.50m			
			67mm /100%						

Installation: 50mm diameter standpipe installed to 2.00m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl. Terminated due to collapsing gravels at 3.50m bgl.

Groundwater Strikes					Drilled: DH Logged: FC Checked: AS
Depth Strike	Rose to	Remarks	Cased	Sealed	
2.80	2.80	No rise			

BOREHOLE LOG - DRIVEN CONTINUOUS SAMPLING

DCS4

Project Stanbury House, Spencers Wood

Project No.

AG2994A-23

Client Cooper Estates Strategic Land Ltd

Sheet

1 of 1

Start 15/04/2019

Coordinates

Scale

1:25

End 15/04/2019

Ground Level

Total Depth

4.45m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install		
ES PID D	0.30 0.30 0.50	PID = 0.0			(0.40)	Grass over brown slightly gravelly clayey/silty SAND with frequent rootlets. Gravel is fine to medium subangular flint and quartzite. (TOPSOIL)					
	0.40				Soft orangish brown slightly sandy to sandy silty CLAY with rare roots and frequent rootlets. Sand is fine to coarse. (RIVER TERRACE DEPOSITS) <i>Between 0.40m and 0.60m bgl: slightly gravelly. Gravel is fine to coarse subangular to subrounded quartzite and flint.</i>						
	(0.70)										
D	1.00	N = 11			1.10	Firm brown mottled light grey slightly sandy silty CLAY with frequent coarse sand sized calcite/selenite crystals and occasional fine to medium gravel sized cement stone. (LONDON CLAY FORMATION) <i>From 1.10m to 1.50m bgl: rare rootlets.</i> <i>From 1.90m bgl: becoming stiff, including mottled grey/dark grey specks.</i> <i>From 2.50m bgl: stiff, rare relict rootlets.</i>					
S	1.20										
D	1.40										
D S D	2.00 2.00 2.60	N = 17			(3.35)						
	S									2.00	92mm /100%
S D	3.00 3.60	N = 26			(3.35)						
	D									3.60	79mm /100%
D S	4.00 4.00	N = 24			4.45	End of Borehole at 4.45m					

Installation: 50mm diameter standpipe installed to 4.00m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Groundwater Strikes					Drilled: DH Logged: FC Checked: AS
Depth Strike	Rose to	Remarks	Cased	Sealed	

BOREHOLE LOG - DRIVEN CONTINUOUS SAMPLING

DCS5

Project Stanbury House, Spencers Wood

Project No.

AG2994A-23

Client Cooper Estates Strategic Land Ltd

Sheet

1 of 2

Start 15/04/2019

Coordinates

Scale

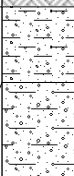
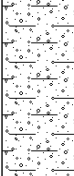
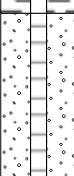
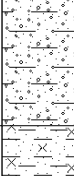
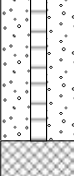
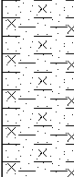
1:25

End 15/04/2019

Ground Level

Total Depth

5.45m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install		
ES PID D B	0.30 0.30 0.50 0.70	PID = 0.0			(0.40)	Grass over brown slightly gravelly clayey to very clayey SAND with occasional rootlets. Gravel is fine to medium subangular flint. (TOPSOIL)					
	0.40 (0.25) 0.65				Very soft becoming soft grey mottled orangish brown slightly gravelly slightly sandy CLAY with occasional rootlets. Sand is fine to medium. Gravel is fine to coarse subangular to rounded flint. (RIVER TERRACE DEPOSITS)						
					Orangish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)						
C	1.20	N = 37			(1.30)	Below 1.20m bgl: dense.					
D S	2.00 2.00	N = 16			1.95	From 1.85m to 1.95m bgl: slightly clayey fine to coarse sand.					
						Firm to stiff brown and orangish brown slightly sandy silty CLAY with rare rootlets. (LONDON CLAY FORMATION)					
D	2.50	N = 19			(2.55)	From 2.50m to 3.00m bgl: locally slightly micaceous.					
D S	3.00 3.00									From 3.00m bgl: no rootlets, less orangish brown.	
D	3.60	N = 21			4.50	Stiff very thinly laminated grey locally greenish grey silty CLAY with rare fine shell fragments and possible fine sand sized pyrite/glaucconite crystals between laminations. (LONDON CLAY FORMATION)					
D S	4.00 4.00										
					(0.95)						
D	4.70										
D	5.00										
Continued next sheet											

Installation: 50mm diameter standpipe installed to 2.00m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Groundwater Strikes					Drilled: DH Logged: FC Checked: AS
Depth Strike	Rose to	Remarks	Cased	Sealed	

DCS5

Project No. AG2994A-23

Sheet 2 of 2

Scale 1:25

Total Depth 5.45m

Installation: 50mm diameter standpipe installed to 2.00m bgl.
Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Exploratory hole logs to be read in conjunction with key sheet

BOREHOLE LOG - DRIVEN CONTINUOUS SAMPLING

DCS7

Project Stanbury House, Spencers Wood

Project No.

AG2994A-23

Client Cooper Estates Strategic Land Ltd

Sheet

1 of 1

Start 16/04/2019

Coordinates

Scale

1:25

End 16/04/2019

Ground Level

Total Depth

4.45m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install
ES PID	0.30 0.30	PID = 0.0			(0.45)	Grass over brown slightly gravelly clayey/silty fine to medium SAND with occasional rootlets. Gravel is fine to coarse subangular to subrounded flint and quartzite. (TOPSOIL)			
B	0.50				0.45	Orangish brown mottled light grey slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)			
C	1.20	N = 26			(1.05)	<i>Below 1.20m bgl: medium dense.</i>			
D	1.70		101mm /80%		1.50	Firm orangish brown mottled light grey slightly gravelly sandy CLAY with rare rootlets. Gravel is fine to medium subangular flint. (RIVER TERRACE DEPOSITS/ REWORKED LONDON CLAY)			
D S	2.00 2.00	N = 14			1.90	Stiff locally firm locally very closely fissured grey mottled brownish grey silty CLAY with occasional selenite/calcite crystals. (LONDON CLAY FORMATION) <i>From 1.90m to 2.30m bgl: occasional relict rootlets.</i>			
D S	3.00 3.00	N = 15	92mm /100%		(2.55)				
D S	4.00 4.00	N = 21	79mm /100%		4.45	End of Borehole at 4.45m			

Installation: 50mm diameter standpipe installed to 1.50m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Groundwater Strikes					Drilled: DH Logged: FC Checked: AS
Depth Strike	Rose to	Remarks	Cased	Sealed	

BOREHOLE LOG - DRIVEN CONTINUOUS SAMPLING

DCS8

Project Stanbury House, Spencers Wood

Project No.

AG2994A-23

Client Cooper Estates Strategic Land Ltd

Sheet

1 of 2

Start 16/04/2019

Coordinates

Scale

1:25

End 16/04/2019

Ground Level

Total Depth

5.45m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install
ES PID	0.20 0.20	PID = 0.0			(0.35)	Grass over brown slightly gravelly sandy to very sandy SILT with frequent rootlets. Gravel is fine to coarse subangular to rounded flint and quartzite. (TOPSOIL)			
D	0.50				0.35 (0.35)	Soft brown slightly gravelly very sandy CLAY with occasional rootlets. Sand is fine to coarse. Gravel is fine to medium subangular flint. (RIVER TERRACE DEPOSITS)			
D	0.80				0.70	Soft becoming firm orangish brown mottled light grey slightly gravelly silty CLAY with rare rootlets. Gravel is fine to coarse subangular flint. (RIVER TERRACE DEPOSITS)			
D S	1.20 1.20	N = 11			(0.85)				
D	1.60		101mm /80%		1.55	<i>From 1.50m to 1.55m bgl: very sandy.</i> Firm becoming stiff light grey mottled brown and locally orangish brown silty CLAY with rare relict rootlets, occasional fine to coarse sand size calcite/selenite crystals and rare fine to medium gravel sized cement stone nodules. (LONDON CLAY FORMATION)			
D S	2.00 2.00	N = 16							
			92mm /100%		(1.95)	<i>From 2.35m bgl: stiff.</i>			
D S	3.00 3.00	N = 16							
			79mm /100%		3.50	Stiff brown mottled grey silty CLAY with rare fine shell fragments and relict rootlets. (LONDON CLAY FORMATION)			
D S	4.00 4.00	N = 21							
			79mm /100%		(1.95)				
D	5.00					Continued next sheet			

Installation: 50mm diameter standpipe installed to 4.00m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Groundwater Strikes					Drilled: DH
Depth Strike	Rose to	Remarks	Cased	Sealed	
					Logged: FC
					Checked: AS

DCS8

Project No. AG2994A-23

Sheet 2 of 2

Scale 1:25

Total Depth 5.45m

Sample / Test Type	Depth (m)	Result	Dia./ Rec.	Level (mAoD)	Strata Depth (thickness) (m)	Description of Strata	Legend	GW	Install
S	5.00	N = 23				Stiff brown mottled grey silty CLAY with rare fine shell fragments and relict rootlets. (LONDON CLAY FORMATION) <i>From 4.95m to 5.45m bgl: fine sand sized grey rare selenite crystals.</i>	x — x — x — x — x — x — x — x		
					5.45	End of Borehole at 5.45m			

Installation: 50mm diameter standpipe installed to 4.00m bgl.

Remarks: Hand dug service inspection pit excavated to 1.20m bgl.

Groundwater Strikes					Drilled: DH
Depth Strike	Rose to	Remarks	Cased	Sealed	
					Logged: FC
					Checked: AS

SPT SUMMARY SHEET

Project: Stanbury House, Spencers Wood
Client: Cooper Estates Strategic Land Ltd
Project No: AG2994A-23

Borehole No.	Borehole depth (m)	Bottom depth (m)	Casing depth (m)	Water Level (m)	Equipment ref.	Seating Drive				Test Drive									Test Type	N Value
						Blows		Pen (mm)		Blows				Pen (mm)				Total Pen (mm)		
DCS4	1.20	1.65			110.119	1	1	75	75	2	3	3	3	75	75	75	75	300	S	11
DCS4	2.00	2.45			110.119	3	2	75	75	4	4	4	5	75	75	75	75	300	S	17
DCS4	3.00	3.45			110.119	4	4	75	75	6	6	6	8	75	75	75	75	300	S	26
DCS4	4.00	4.45			110.119	4	4	75	75	5	6	6	7	75	75	75	75	300	S	24
DCS5	1.20	1.65			110.119	6	7	75	75	8	9	10	10	75	75	75	75	300	C	37
DCS5	2.00	2.45			110.119	3	2	75	75	4	3	4	5	75	75	75	75	300	S	16
DCS5	3.00	3.45			110.119	2	3	75	75	4	4	5	6	75	75	75	75	300	S	19
DCS5	4.00	4.45			110.119	3	4	75	75	4	5	5	7	75	75	75	75	300	S	21
DCS5	5.00	5.45			110.119	5	5	75	75	6	5	6	6	75	75	75	75	300	S	23
DCS7	1.20	1.65			110.119	12	12	75	75	11	7	4	4	75	75	75	75	300	C	26
DCS7	2.00	2.45			110.119	2	3	75	75	3	3	4	4	75	75	75	75	300	S	14
DCS7	3.00	3.45			110.119	2	2	75	75	3	4	4	4	75	75	75	75	300	S	15
DCS7	4.00	4.45			110.119	4	4	75	75	4	5	5	7	75	75	75	75	300	S	21
DCS8	1.20	1.65			110.119	1	2	75	75	2	3	3	3	75	75	75	75	300	S	11
DCS8	2.00	2.45			110.119	2	2	75	75	3	4	5	4	75	75	75	75	300	S	16
DCS8	3.00	3.45			110.119	3	3	75	75	3	4	5	4	75	75	75	75	300	S	16
DCS8	4.00	4.45			110.119	3	4	75	75	5	4	5	7	75	75	75	75	300	S	21
DCS8	5.00	5.45			110.119	3	4	75	75	5	5	6	7	75	75	75	75	300	S	23

- Notes:
- 1. Test carried out in general accordance with BS EN ISO 22476-3:2005
 - 2. N values have not been subjected to any correction.
 - 3. Test carried out using split spoon S, or solid cone C.

Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref: 110.119
Test Date: 20/03/2019
Report Date: 20/03/2019
File Name: 110.119.spt
Test Operator: TS

Instrumented Rod Data

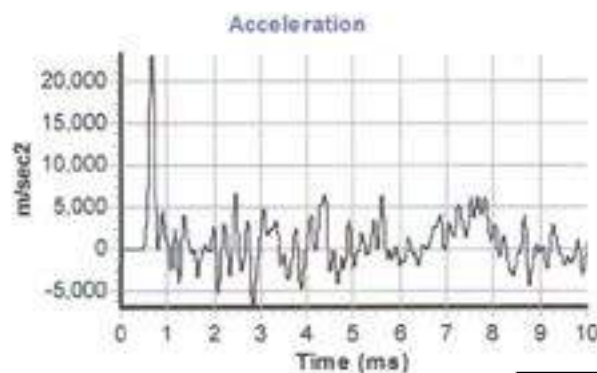
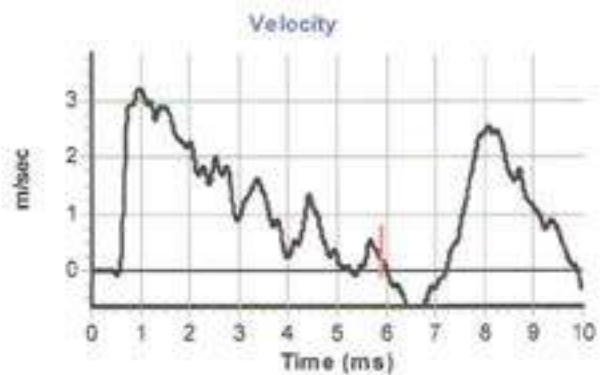
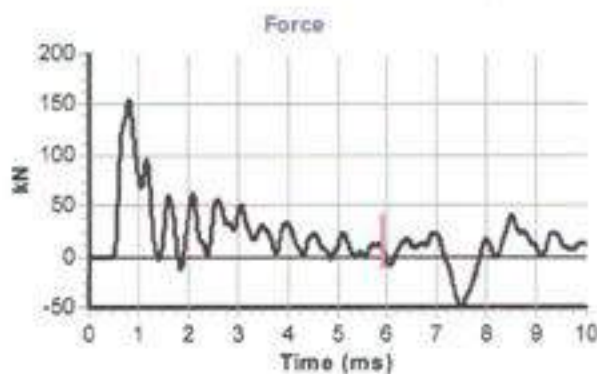
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 9603
Accelerometer No.2: 6457

Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
String Length L (m): 15.0

Comments / Location

Applied geology tested at Dynamic samplings yard.



Calculations

Area of Rod A (mm^2): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 373

Energy Ratio E_r (%): **79**

Title: Associate Director.

The recommended calibration interval is 12 months

HP1

Project No.	AG2994A-23
Sheet	1 of 1
Scale	1:25

[illegible]

Length:	0.30m
Width:	0.30m
Logged:	FC
Checked:	AS

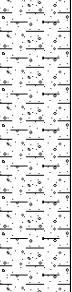
TRIAL PIT LOG

SA2

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 16/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 1.20m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
				(0.20)	E	Brown slightly gravelly silty SAND with frequent rootlets. Gravel is fine to coarse subangular to subrounded flint. (TOPSOIL)		
				0.20				
				(1.00)	E	Firm locally becoming stiff orangish brown mottled light grey slightly gravelly sandy CLAY with local cobble sized pockets of clayey fine to medium sand. Gravel is fine to coarse angular to subrounded flint. (RIVER TERRACE DEPOSITS) <i>Between 0.20m and 0.50m bgl: locally soft.</i>		
				1.20		End of Trial Pit at 1.20m		

Method: Backhoe excavator

Groundwater: Groundwater not encountered.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with arisings on completion.

Length:	1.50m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

SA3

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 16/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25
Total Depth 1.20m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
				(0.25)	E	Grass over brown slightly gravelly silty SAND with frequent rootlets. Gravel is fine to coarse subangular to rounded flint and quartzite. (TOPSOIL)		
				0.25		Orangish brown locally mottled dark reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)		
				(0.95)	E			
				1.20		Between 1.00m and 1.20m bgl: local cobble sized pockets of slightly sandy gravelly clay.		
						End of Trial Pit at 1.20m		

Method: Backhoe excavator

Groundwater: Slight seepage at 1.15m to 1.20m bgl.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with arisings on completion.

Length:	1.00m
Width:	0.60m
Logged:	FC
Checked:	AS

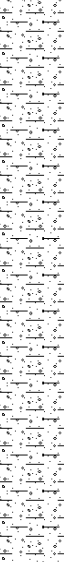
TRIAL PIT LOG

SA4

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 16/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.10m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
				(0.20) 0.20	E	Grass over brown and greyish brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse subangular to rounded flint. (TOPSOIL) Firm becoming stiff brown mottled light grey slightly gravelly locally gravelly slightly sandy CLAY with occasional rootlets. Sand is fine. Gravel is fine to coarse angular to subrounded flint. (RIVER TERRACE DEPOSITS) <i>Between 0.20m and 0.90m bgl: mottled orangish.</i> <i>Between 0.80m and 0.90m bgl: soft brown very sandy.</i> <i>Between 0.90m and 2.10m bgl: slightly gravelly.</i>		
				(1.90)	E			
				2.10		End of Trial Pit at 2.10m		

Method: Backhoe excavator

Groundwater: Seepage at 2.05m bgl.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with arisings on completion.

Length:	1.50m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

SA5

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 16/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 1.90m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
				(0.30)	E	Grass over brown slightly gravelly clayey/silty SAND with frequent rootlets and occasional roots. Gravel is fine to coarse subangular to rounded flint and quartzite. (TOPSOIL)		
				0.30		Firm locally soft orangish brown mottled light grey slightly gravelly sandy CLAY with occasional rootlets and occasional cobble sized pockets of silty/clayey sand. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)		
				(0.90)	E			
				1.20				
				(0.70)	E-M	Stiff orangish brown mottled brown and light grey sandy gravelly becoming very gravelly CLAY. Gravel is fine to coarse subangular to rounded flint and occasional quartzite. (RIVER TERRACE DEPOSITS)		
				1.90		End of Trial Pit at 1.90m		

Method: Backhoe excavator

Groundwater: Groundwater not encountered.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with arisings on completion.

Length:	1.70m
Width:	0.60m
Logged:	FC
Checked:	AS

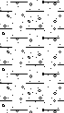
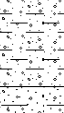
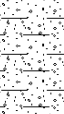
TRIAL PIT LOG

TP2

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 17/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.70m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
ES	0.10			(0.40)	E	Soft brown slightly gravelly sandy to very sandy CLAY with frequent rootlet. Gravel is subangular to rounded fine to medium quartzite. (TOPSOIL) <i>At 0.20m to 0.40m bgl mexe-probe 3-4%</i>		
D	0.60			0.40				
				(0.70)	E	Soft to firm orangish brown mottled light grey slightly gravelly sandy to very sandy CLAY with rare rootlets. Gravel is subangular to rounded fine to coarse of flint. (RIVER TERRACE DEPOSITS) <i>At 0.40m to 0.70m bgl mexe-probe 3-4%</i> <i>At 0.70m to 0.90m bgl mexe-probe 9%</i>		
D	1.00			1.10				
				(1.20)	E	Orangish brown and brown slightly gravelly clayey locally very clayey SAND. Gravel is subangular to subrounded fine to coarse of flint. (RIVER TERRACE DEPOSITS)		
D	1.50							
				2.30				
				(0.40)	E/M	Firm becoming stiff brown mottled light grey silty CLAY with locally frequent sand sized calcite/selenite crystals and rare relict rootlets (LONDON CLAY FORMATION)		
D	2.60			2.70				
						End of Trial Pit at 2.70m		

Method: Backhoe excavator
Groundwater: Fast inflow from 1.80m to 2.00m bgl.
Stability: Good aside from inflow in sand.
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.90m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

TP4

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 17/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.70m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
D	0.60			(0.50)	E	Soft brown slightly gravelly silty SAND with frequent rootlets and roots (max 10mm diameter). Gravel is subangular to subrounded fine to medium flint. (TOPSOIL)		
				0.50		At 0.40m to 0.50m bgl mexe-probe 2%		
D	0.90			(1.00)	E	Firm orangish brown mottled grey slightly gravelly sandy locally very sandy CLAY with rare roots. Gravel is subangular to rounded fine to medium flint. (RIVER TERRACE DEPOSITS)		
						At 0.50m to 0.65m bgl mexe-probe 2% Between 0.50m and 0.70m bgl: soft. At 0.65m to 0.90m bgl mexe-probe 4%		
D	1.40			1.50	E/M	Firm locally stiff locally closely fissured brown mottled grey silty CLAY with rare fine sand sized selenite crystals along fissures. (LONDON CLAY FORMATION)		
D	2.00			(1.20)	E/M			
D	2.70			2.70		End of Trial Pit at 2.70m		

Method: Backhoe excavator
Groundwater: Seepage at 2.60m bgl.
Stability: Good
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.80m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

TP5

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 17/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.60m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
B	0.50			(0.45)	E	Very soft brown slightly gravelly sandy CLAY with frequent rootlets. Gravel is subangular to subrounded fine to medium flint (TOPSOIL)		
				0.45				
D	1.50			(0.75)	E	Orangish brown mottled grey slightly gravelly to gravelly clayey SAND with frequent cobble sized pockets of gravelly sandy clay. Gravel is subangular to subrounded fine to coarse flint. (RIVER TERRACE DEPOSITS) <i>At 0.45m to 0.75m bgl mexe-probe 4%</i>		
				1.20				
D	2.50			(0.80)	E/M	Firm brown mottled grey locally orangish brown slightly gravelly sandy CLAY with occasional cobble sized pockets of slightly gravelly sand. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)		
				2.00				
				(0.60)		Firm becoming stiff brown mottled light grey slightly sandy silty CLAY with occasional fine sand sized selenite crystals. (LONDON CLAY FORMATION)		
				2.60		End of Trial Pit at 2.60m		

Method: Backhoe Excavator
Groundwater: Seepage at 2.60m bgl.
Stability: Good
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.90m
Width:	0.60m
Logged:	FC
Checked:	AS

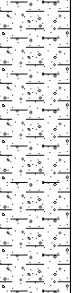
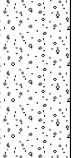
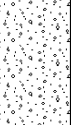
TRIAL PIT LOG

TP7

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 17/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.60m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
ES	0.30			(0.40)	E	Grass over brown slightly gravelly silty/clayey SAND with frequent rootlets. Gravel is subangular to rounded fine to coarse flint. (TOPSOIL)		
D	0.80			0.40		Soft locally firm slightly gravelly to gravelly sandy CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse flint. (RIVER TERRACE DEPOSITS) <i>At 0.40m to 0.70m bgl mexe-probe 8%</i>		
D	1.50			1.40		Orangish brown clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to rounded fine to medium locally coarse flint. (RIVER TERRACE DEPOSITS) <i>Between 1.40m and 1.60m bgl: locally with cobble sized pockets of clay.</i>		
D	2.00			(1.00)	E			
D	2.30					<i>Between 2.20m and 2.40m bgl: locally frequent cobble sized pockets of stiff sandy gravelly clay.</i>		
D	2.50			2.40 (0.20) 2.60	M	Stiff brown mottled grey silty CLAY with occasional sand sized selenite crystals. (LONDON CLAY FORMATION)		
						End of Trial Pit at 2.60m		

Method: Backhoe Excavator
Groundwater: Seepage at 2.00m bgl (fast inflow locally).
Stability: Good
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.80m
Width:	0.60m
Logged:	FC
Checked:	AS

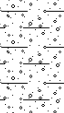
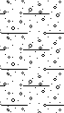
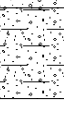
TRIAL PIT LOG

TP8

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 18/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.70m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
D	1.00			(0.40)	E	Brown slightly gravelly silty fine to coarse SAND with frequent rootlets. Gravel is subangular to rounded fine to coarse of flint. (TOPSOIL) <i>From 0.30m to 0.40m bgl: gravelly. At 0.30m to 0.50m bgl mexe-probe 3%</i>		
				0.40		Orangish brown clayey sandy GRAVEL. Gravel is subangular to rounded fine to coarse flint and quartzite. (RIVER TERRACE DEPOSITS) <i>From 0.40m to 0.60m bgl: rare rootlets. At 0.50m to 0.70m bgl mexe-probe 7%</i>		
				(1.00)	E			
D	2.00			1.40		Orangish brown and grey slightly clayey slightly sandy GRAVEL. Gravel is subangular to rounded fine to coarse flint. (RIVER TERRACE DEPOSITS)		
				(1.00)	E			
D	2.60			2.40		Brown and orangish brown clayey gravelly SAND with occasional cobble sized pockets of grey silty gravelly clay. Gravel is subangular to coarse fine to medium of flint and quartzite. (RIVER TERRACE DEPOSITS)		
				(0.30)	E			
				2.70		End of Trial Pit at 2.70m		

Method: Backhoe Excavator
Groundwater: Fast inflow in gravels at 1.70m bgl.
Stability: Spalling from 1.50m bgl.
Remarks: Trial pit backfilled with arisings on completion.

Length:	2.00m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

TP9

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 17/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.80m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
				(0.30)	E	Soft to firm dark brown and brown slightly gravelly very sandy CLAY with frequent rootlets. Gravel is subangular to rounded fine to coarse of quartzite and brick. (MADE GROUND/TOPSOIL)		
D	0.60			0.30				
				(0.60)	E	Soft to firm orangish brown mottled light grey slightly gravelly sandy to very sandy CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse flint. (RIVER TERRACE DEPOSITS)		
D	1.00			0.90				
						Firm to stiff light grey mottled orangish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to medium flint. (RIVER TERRACE DEPOSITS) <i>Between 1.20m and 1.40m bgl: stained black.</i>		
ES	1.80			(1.50)	E	<i>Between 1.70m and 1.90m bgl: stained black.</i>		
D	2.00							
				2.40				
					E			
D	2.70							
						End of Trial Pit at 2.80m		

Method: Backhoe Excavator

Groundwater: Seepage in gravel, water standing at 2.60m bgl after 20 mins.

Stability: Good

Remarks: Trial pit backfilled with arisings on completion. Black staining possible mineralization, not contamination.

Length:	1.90m
Width:	0.60m
Logged:	FC
Checked:	AS

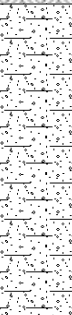
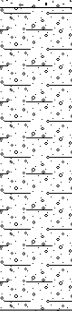
TRIAL PIT LOG

TP10

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 18/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.50m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
B	0.50			(0.45)	E	Brown and light brown slightly gravelly silty SAND with frequent rootlets. Gravel is subangular to rounded fine to medium flint. (TOPSOIL)		
				0.45		Orangish brown mottled locally light grey slightly gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of flint. (RIVER TERRACE DEPOSITS)		
B	1.50			(1.05)	E	<i>Between 0.80m to 1.50m bgl: locally cobble sized pockets of gravelly clay.</i>		
				1.50		Brown and orangish brown slightly clayey slightly sandy GRAVEL with low cobble content. Gravel is subangular to rounded fine to coarse flint and quartzite. Cobbles subangular to rounded flint. (RIVER TERRACE DEPOSITS)		
				(1.00)	E			
				2.50		End of Trial Pit at 2.50m		

Method: Backhoe excavator
Groundwater: Gravel wet at approx 1.00m bgl. Fast inflow from 2.00m bgl.
Stability: Good until 2.50m bgl. Wet gravel collapsing in pit end.
Remarks: Trial pit backfilled with arisings on completion.

Length:	2.00m
Width:	0.60m
Logged:	FC
Checked:	AS

TRIAL PIT LOG

TP11

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 18/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

Ground Level **Coordinates** **Total Depth** 2.70m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
D	1.20			(0.40)	E	Brown slightly gravelly clayey/silty SAND with frequent rootlets. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and quartzite (TOPSOIL)		
				0.40		Orangish brown slightly clayey gravelly SAND with rare rootlets. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and quartzite. (RIVER TERRACE DEPOSITS)		
D	2.00			(0.70)	E	<i>Between 0.90m and 1.10m bgl: clayey, mottled grey.</i>		▼
				1.10		Soft to firm orangish brown mottled light grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse flint and occasional quartzite (RIVER TERRACE DEPOSITS)		
D	2.50			(0.70)	E			
				1.80		Firm brownish grey mottled light grey silty CLAY with occasional relict rootlets and occasional sand sized selenite/calcite crystals. (RIVER TERRACE DEPOSITS)		
D	2.70			(0.90)	E/M	<i>Between 2.30m and 2.70m bgl: becoming stiff.</i>		▼
				2.70		End of Trial Pit at 2.70m		

Method: Backhoe Excavator
Groundwater: Seepage at 1.00m and 2.70m bgl.
Stability: Good
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.90m
Width:	0.60m
Logged:	FC
Checked:	AS

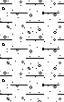
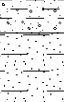
TRIAL PIT LOG

TP12

Project Stanbury House, Spencers Wood
Client Cooper Estates Strategic Land Ltd
Date 18/04/2019

Project No. AG2994A-23
Sheet 1 of 1
Scale 1:25

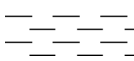
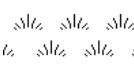
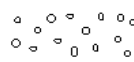
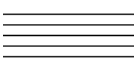
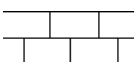
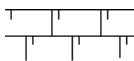
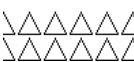
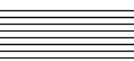
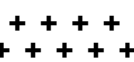
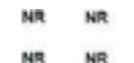
Ground Level **Coordinates** **Total Depth** 2.60m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
ES	0.20			(0.35)	E	Grass over brown clayey SAND with frequent rootlets. Sand is fine to coarse. (TOPSOIL)		
				0.35		<i>Between 0.30m and 0.35m bgl: locally mottled orangish brown.</i>		
D	0.70			(0.50)	E	Soft orangish brown mottled light grey sandy gravelly CLAY with rare rootlets. Gravel is fine to coarse subangular to rounded flint and quartzite. (RIVER TERRACE DEPOSITS)		
B	0.90			0.85		Orangish brown locally mottled light grey slightly clayey locally clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded flint. (RIVER TERRACE DEPOSITS)		
				(1.05)	E			
D	2.00			1.90		Soft to firm brown mottled orangish brown and light grey slightly sandy silty CLAY. (LONDON CLAY FORMATION)		
				(0.40)	E			
				2.30		Firm greyish brown mottled light grey slightly fine to coarse sandy silty CLAY with frequent relict rootlets and occasional sand sized selenite/calcite crystals. (LONDON CLAY FORMATION)		
D	2.50			(0.30)	M-E			
				2.60		End of Trial Pit at 2.60m		

Method: Backhoe excavator
Groundwater: Seepage at 1.50m bgl.
Stability: Stable.
Remarks: Trial pit backfilled with arisings on completion.

Length:	1.50m
Width:	0.60m
Logged:	FC
Checked:	AS

Exploratory Hole Log Key Sheet

Sample Notation			Backfill Symbols		Legend Symbols	
D	Small Disturbed sample			Sand		Topsoil
B	Bulk Disturbed sample			Gravel		Made Ground
ES	Environmental sample			Concrete		Concrete
U	Undisturbed U100 sample			Bentonite		Clay
UT	Undisturbed UT100 sample			Arisings		Silt
C	Core sample			Grout		Sand
W	Water sample					Gravel
In Situ Test Notation			Installation Symbols			
S	Standard Penetration Test			Plain Standpipe		Peat
S (C)	Standard Penetration Test (cone)			Slotted Standpipe		Cobbles
HV	Hand Shear Vane Test			Piezometer		Boulders
PID	Photoionization Detector Test			Vibrating Wire Piezometer		Mudstone
MEXE	Mexecone Cone Penetrometer Test			Inclinometer		Siltstone
PP	Pocket Penetrometer Test			Extensometer (with magnet locations)		Sandstone
K	Permeability Test					Limestone
Results Notation			Groundwater (GW)			
Cu	Shear Strength	kN/m ²		Rise		Chalk
N	SPT N Value	-		Groundwater Strike - with Recorded Rise		Coal
PID	VOC Concentration	ppm		Strike		Breccia
()	U/UT Blow Count	-		Groundwater Strike - No Recorded Rise		Conglomerate
Rotary Core Notation						Shale
TCR	Total Core Recovery					Igenous Rock
SCR	Solid Core Recovery					Metamorphic Rock
RQD	Rock Quality Designation					No Recovery
FI	Fracture Index					
If	Fracture Spacing					
NI	Non Intact					
NR	No Recovery					
NA	Not Applicable					
Ease of Dig						
VE	Very Easy					
E	Easy					
M	Moderate					
H	Hard					
VH	Very Hard					
General Notes						
1. Details of the standpipe/piezometer are given on the log. The 'Install' column shows a graphical representation of the installed including depth of instruments including slotted section or piezometer depth, and backfill details. 2. Standard Penetration Test is defined in BS EN ISO 17892. Total N value is shown on the logs, full details of the test increments, equipment references, water and casing levels shown on the SPT Summary Sheet.						
Note: Most soils comprise a mixture of particle sizes. The soil type is graphically represented on the log and may be a combination of these symbols.						

APPENDIX D

Ground Gas Monitoring and Flow Results

Project Number: AG2994A-23

Date and Time of Monitoring: 03/05/2019 8:45

Project Name: Stanbury House, Spencers Wood

Phase of Monitoring: 1 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.0	2.0	18.4	18.4	50	1.15
DCS4	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.7	1.7	19.2	19.2	50	3.70
DCS5	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.9	0.9	19.9	19.9	50	1.20
DCS7	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.1	0.1	20.8	20.8	50	0.95
DCS8	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.7	0.7	20.0	20.0	50	1.65

Meteorological Data

Atmospheric Pressure (mb)	Start: 1010
Atmospheric Pressure (mb)	Finish: 1010
Pressure Rising or Falling	Rising
Weather Conditions	Cloudy
Atmospheric Oxygen (% vol)	20.4
Wind Speed & Direction	Gentle Breeze- NW
Ambient Air Temperature (°C)	8.0

Site Data

Monitoring Personnel	Kevin Harper
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number: AG2994A-23

Date and Time of Monitoring: 14/05/2019 14:15

Project Name: Stanbury House, Spencers Wood

Phase of Monitoring: 2 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.8	2.8	18.0	18.0	50	1.89
DCS4	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.0	2.0	19.5	19.5	50	3.09
DCS5	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.1	1.1	20.6	20.6	50	1.34
DCS7	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.5	1.5	20.5	20.5	50	0.97
DCS8	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.5	0.5	20.9	20.9	50	1.24

Meteorological Data

Atmospheric Pressure (mb)	Start: 1001
Atmospheric Pressure (mb)	Finish: 1002
Pressure Rising or Falling	Rising
Weather Conditions	Cloudy / light rain
Atmospheric Oxygen (% vol)	20.9
Wind Speed & Direction	Light Breeze
Ambient Air Temperature (°C)	12.0

Site Data

Monitoring Personnel	Malcolm McGlone
GPS Instrument	
Gasmeter Serial Number	G505383
PID Serial Number	
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number: AG2994A-23

Date and Time of Monitoring: 22/05/2019 14:00

Project Name: Stanbury House, Spencers Wood

Phase of Monitoring: 3 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.8	2.8	18.1	18.1	50	Dry
DCS4	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.9	0.9	19.6	19.6	50	2.94
DCS5	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.8	0.8	19.4	19.4	50	1.52
DCS7	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.1	1.1	19.2	19.2	50	DRY
DCS8	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.4	0.4	19.6	19.6	4.00	1.20

Meteorological Data

Atmospheric Pressure (mb)	Start: 1013
Atmospheric Pressure (mb)	Finish: 1014
Pressure Rising or Falling	Rising
Weather Conditions	Sunny
Atmospheric Oxygen (% vol)	20.9
Wind Speed & Direction	Gentle Breeze- SSW
Ambient Air Temperature (°C)	20.0

Site Data

Monitoring Personnel	Malcolm McGlone
GPS Instrument	
Gasmeter Serial Number	G505383
PID Serial Number	109597
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number: AG2994A-23

Date and Time of Monitoring: 29/05/2019 10:15

Project Name: Stanbury House, Spencers Wood

Phase of Monitoring: 4 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	3.4	3.4	18.4	18.4	50	Dry
DCS4	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.1	2.1	18.8	18.8	50	2.74
DCS5	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.1	1.1	19.5	19.5	50	1.63
DCS7	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.9	0.9	20.3	20.4	50	1.05
DCS8	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.2	0.2	20.6	20.6	50	1.20

Meteorological Data

Atmospheric Pressure (mb)	Start: 1012
Atmospheric Pressure (mb)	Finish: 1012
Pressure Rising or Falling	Rising
Weather Conditions	Cloudy
Atmospheric Oxygen (% vol)	20.8
Wind Speed & Direction	Light Breeze- South
Ambient Air Temperature (°C)	14.0

Site Data

Monitoring Personnel	Kevin Harper
GPS Instrument	
Gasmeter Serial Number	G505383
PID Serial Number	109598
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Gas Monitoring Equipment Specification and Accuracy Details

Instrument Specifications

Instrument	Atmospheric Pressure Range	Temperature Range	Flow Range	Flow Resolution	Borehole Pressure Range
GA5000	500-1500 mb +/- 5 mb	-10°C to + 50°C	0-20 lt/hr +/- 0.3 l/hr	0.1l/hr	.+500/-500 mbar +/- 4 mbar
Phocheck Tiger	-	-20 to + 60°C (Certified to -15 to + 45°C)	-	-	-

Instrument Accuracy

Instrument		Methane	Lower Explosive Limit	Carbon Dioxide	Oxygen	Volatile Organic Compounds	Hydrogen Sulphide	Carbon Monoxide
GA5000	Detection Range	0-100%	-	0 -100%	0-25%	NA	0 -50ppm response <30 secs	0 - 1000ppm response <30 Secs
	Detection Accuracy	./- 0.5% @ 0 to 70%, ./-1.5% @ 70 to 100% Response < 10 secs	N/A	./- 0.5% @ 0 to 60%, ./-1.5% @ 60 to 100% Response < 10 secs	./- 1.0% @ 0 to 25%, Response < 20 secs	NA	./- 1.5% FS	./- 2% of FS
Phocheck Tiger	Detection Range	N/A	N/A	N/A	N/A	1 ppb - 10,000 ppm	N/A	N/A
	Detection Accuracy	N/A	N/A	N/A	N/A	+/- 1ppb +/- 5% of actual displayed accuracy +/- One digit Response < 2sec	N/A	N/A

Calibration Frequency

Equipment Serial Numbers

Instruments are calibrated annually. Details of the instrument calibration certificates and service records are available if required.		
	GA5000 (G503948, G505383, G505737)	
	Phocheck Tiger - (T-108308, T-109597, T-109598, T-110423)	

Filling	1 of 1
Trial Pit Length (m)	1.50
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.20
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

Figure 10 is a line graph showing Depth (m bgl) on the Y-axis versus Time (minutes) on the X-axis. The Y-axis ranges from 0.40 to 1.40 m bgl, and the X-axis ranges from 0 to 160 minutes. Four data series are plotted, all showing constant depth over time:

- Max effective depth:** Represented by a blue line with 'x' markers, constant at approximately 0.47 m bgl.
- 75%:** Represented by a red line with square markers, constant at approximately 0.65 m bgl.
- 25%:** Represented by a green line with triangle markers, constant at approximately 1.02 m bgl.
- Empty:** Represented by a cyan line with 'x' markers, constant at approximately 1.20 m bgl.

Soil Infiltration Rate (m/s)	*
------------------------------	---

* Water level did not drop sufficiently for the calculation to be made

APPLiED GEOLOGY

Filling	1 of 1
Trial Pit Length (m)	1.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.20
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

Figure 1 is a line graph showing Depth (m bgl) on the Y-axis (ranging from 0.30 to 1.30) versus Time (minutes) on the X-axis (ranging from 0 to 120). The graph displays four horizontal lines representing different depth levels over time:

- Max effective depth:** A blue line with 'x' markers, starting at approximately 0.35 m bgl and remaining constant.
- 75%:** A red line with square markers, starting at approximately 0.60 m bgl and remaining constant.
- 25%:** A green line with triangle markers, starting at approximately 0.95 m bgl and remaining constant.
- Empty:** A cyan line with 'x' markers, starting at approximately 1.20 m bgl and remaining constant.

The graph illustrates that the depth remains constant for all four levels over the 120-minute period.

Soil Infiltration Rate (m/s)	*
------------------------------	---

* Water level did not drop sufficiently for the calculation to be made

Client:	Cooper Estates Strategic Land Limited	
Project:	Stanbury House, Spencers Wood	
Project No.	AG2994A-23	

Filling	1 of 1
Trial Pit Length (m)	2.10
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.50
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

Depth (m bgl)

Time (minutes)

Max effective depth

75%

25%

Empty

Time (minutes)	Max effective depth (m bgl)	75% (m bgl)	25% (m bgl)	Empty (m bgl)
0.00	0.55	0.80	1.27	1.50
500.00	0.55	0.80	1.27	1.50
1000.00	0.55	0.80	1.27	1.50
1500.00	0.55	0.80	1.27	1.50
2000.00	0.53	0.80	1.27	1.50
2500.00	0.51	0.80	1.27	1.50
2600.00	0.50	0.80	1.27	1.50

Soil Infiltration Rate (m/s)	*
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* Water level did not drop sufficiently for the calculation to be made

APPLiED GEOLOGY

Filling	1 of 1
Trial Pit Length (m)	1.70
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.90
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

Figure 10 is a line graph showing Depth (m bgl) on the Y-axis versus Time (minutes) on the X-axis. The Y-axis ranges from 0.60 to 2.00 m bgl, and the X-axis ranges from 0.00 to 3000.00 minutes. Four data series are plotted:

- Max effective depth:** Represented by a blue line with diamond markers. It starts at approximately 0.82 m bgl, remains constant until about 1600 minutes, and then increases to about 0.75 m bgl at 2800 minutes.
- 75%:** Represented by a red line with square markers. It is a constant horizontal line at approximately 1.08 m bgl.
- 25%:** Represented by a green line with triangle markers. It is a constant horizontal line at approximately 1.63 m bgl.
- Empty:** Represented by a cyan line with 'x' markers. It is a constant horizontal line at approximately 1.90 m bgl.

Soil Infiltration Rate (m/s)

*

* Water level did not drop sufficiently for the calculation to be made

Client:	Cooper Estates Strategic Land Limited
Project:	Stanbury House, Spencers Wood
Project No.	AG2994A-23

APPLIED GEOLOGY

APPENDIX E

SOIL CHEMICAL RESULTS COMPARED AGAINST SCREENING VALUES FOR HUMAN HEALTH

Site: Stanbury House, Spencers Wood
Job No: AG2994A-23

Land Use: Residential with Plant Uptake
Dataset: All results
Soil Organic Matter (%): 2.5

Exploratory Hole Reference		DCS1	HP1	DCS4	DCS5	DCS7	DCS8	TP2	TP7	TP12	DCS1	TP9	No. of samples (n)	Residential with Plant Uptake	Source/Justification
Depth (m)		0.2	0.2	0.30	0.30	0.30	0.20	0.20	0.30	0.20	1.30	1.80			
Strata		Made Ground/Topsoil					Topsoil				River Terrace Deposits				
	Units														
Organic Matter (%)	%	1.3		1.6	1.7	2.6	1.7	2.8	3.1	2.4	1.2	0.71	10		
pH		6.2		5.8	5.8	6.0	6.1	6.5	5.4	5.6	4.8	5	10		
Asbestos Identification		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected			9		
Arsenic	mg/kg	6.2		5.2	6	4.9	8.1	6.5	6.3	8.1	16	8.3	10	37	LQM/CIEH S4UL (2015)
Beryllium	mg/kg	1		1	1	1	1	1	1	1	1.7	0.3	10	1.7	LQM/CIEH S4UL (2015)
Boron	mg/kg	3.2		0.65	1.1	0.79	0.7	3.6	0.77	0.4	1.4	1.9	10	290	LQM/CIEH S4UL (2015)
Cadmium	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	11	LQM/CIEH S4UL (2015)
Chromium (Hexavalent)	mg/kg	0.5						0.5			0.5		10	6	LQM/CIEH S4UL (2015)
Chromium	mg/kg	15		16	14	14	17	17	17	16	43	45	10	910	LQM/CIEH S4UL (2015)
Copper	mg/kg	5.8		6.3	7.2	4.8	5.2	7	8	5.5	57	38	10	2400	LQM/CIEH S4UL (2015)
Lead	mg/kg	15		23	19	19	17	20	36	23	24	29	10	200	C4SL (2014)
Mercury	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.11	0.1	10	40	LQM/CIEH S4UL (2015)
Nickel	mg/kg	6.5		7.3	6.5	6	6.7	7.1	6.8	6.5	33	28	10	130	LQM/CIEH S4UL (2015)
Selenium	mg/kg	1		0.85	0.89	1.1	0.86	1.2	1.2	1.1	0.81	0.49	10	250	LQM/CIEH S4UL (2015)
Vanadium	mg/kg	25		25	23	24	28	28	26	25	64	67	10	410	LQM/CIEH S4UL (2015)
Zinc	mg/kg	20		19	17	14	15	37	24	17	33	25	10	3700	LQM/CIEH S4UL (2015)
Napthalene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	5.6	LQM/CIEH S4UL (2015)
Acenaphthylene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	510	LQM/CIEH S4UL (2015)
Acenaphthene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	420	LQM/CIEH S4UL (2015)
Fluorene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	400	LQM/CIEH S4UL (2015)
Phenanthrene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	220	LQM/CIEH S4UL (2015)
Anthracene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	5400	LQM/CIEH S4UL (2015)
Fluoranthene	mg/kg	0.4		1.20	0.1	0.1	0.1	1.4	0.1	0.1	0.1	0.2	10	560	LQM/CIEH S4UL (2015)
Pyrene	mg/kg	0.45		1.20	0.1	0.1	0.1	1.4	0.1	0.1	0.1	0.28	10	1200	LQM/CIEH S4UL (2015)
Benzo[a]anthracene	mg/kg	0.1		0.38	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	10	11	LQM/CIEH S4UL (2015)
Chrysene	mg/kg	0.1		0.35	0.1	0.1	0.1	0.39	0.1	0.1	0.1	0.1	10	22	LQM/CIEH S4UL (2015)
Benzo[b]fluoranthene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	3.3	LQM/CIEH S4UL (2015)
Benzo[k]fluoranthene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	93	LQM/CIEH S4UL (2015)
Benzo[a]pyrene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	2.7	LQM/CIEH S4UL (2015)
Dibenzo[a,h]anthracene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	0.28	LQM/CIEH S4UL (2015)
Indeno[1,2,3-cd]pyrene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	36	LQM/CIEH S4UL (2015)
Benzo[g,h,i]perylene	mg/kg	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	340	LQM/CIEH S4UL (2015)
Total of 16 PAHs	mg/kg	2		3.10	2	2	2	3.7	2	2	2	2	10		
Phenols	mg/kg	0.3						0.3				0.3	3	200	LQM/CIEH S4UL (2015)
Benzene	mg/kg	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	10	0.17	LQM/CIEH S4UL (2015)
Toluene	mg/kg	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	10	290	LQM/CIEH S4UL (2015)
Ethylbenzene	mg/kg	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	10	110	LQM/CIEH S4UL (2015)
m&p Xylene	mg/kg	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	10	130	LQM/CIEH S4UL (2015)
o-Xylene	mg/kg	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	10	140	LQM/CIEH S4UL (2015)
Aliphatic TPH >C5-C6	mg/kg	1	1	1	1	1		1	1	1	1	1	10	78	LQM/CIEH S4UL (2015)
Aliphatic TPH >C6-C8	mg/kg	1	1	1	1	1		1	1	1	1	1	10	230	LQM/CIEH S4UL (2015)
Aliphatic TPH >C8-C10	mg/kg	1	1	1	1	1		1	1	1	1	1	10	65	LQM/CIEH S4UL (2015)
Aliphatic TPH >C10-C12	mg/kg	1	1	1	1	1		1	1	1	1	1	10	330	LQM/CIEH S4UL (2015)
Aliphatic TPH >C12-C16	mg/kg	1	1	1	1	1		1	1	1	1	1	10	2400	LQM/CIEH S4UL (2015)
Aliphatic TPH >C16-C21	mg/kg	1	1	1	1	1		1	1	1	1	1	10	-	-
Aliphatic TPH >C21-C35	mg/kg	1	14	1	1	1		1	1	38	1	1	10	92000	LQM/CIEH S4UL (2015)
Aliphatic TPH >C35-C44	mg/kg	1	1	1	1	1		1	1	1	1	1	10	92000	LQM/CIEH S4UL (2015)
Total Aliphatic Hydrocarbons	mg/kg	5	14	5	5	5		5	5	38	5	5	10	-	-
Aromatic TPH >C5-C7	mg/kg	1	1	1	1	1		1	1	1	1	1	10	140	LQM/CIEH S4UL (2015)
Aromatic TPH >C7-C8	mg/kg	1	1	1	1	1		1	1	1	1	1	10	290	LQM/CIEH S4UL (2015)
Aromatic TPH >C8-C10	mg/kg	1	1	1	1	1		1	1	1	1	1	10	83	LQM/CIEH S4UL (2015)
Aromatic TPH >C10-C12	mg/kg	1	1	1	1	1		1	1	1	1	1	10	180	LQM/CIEH S4UL (2015)
Aromatic TPH >C12-C16	mg/kg	1	1	1	1	1		1	1	1	1	1	10	330	LQM/CIEH S4UL (2015)
Aromatic TPH >C16-C21	mg/kg	1	1	1	1	1		1	1	1	1	1	10	540	LQM/CIEH S4UL (2015)
Aromatic TPH >C21-C35	mg/kg	1	24	1	1	1		1	1	1	1	1	10	1500	LQM/CIEH S4UL (2015)
Aromatic TPH >C35-C44	mg/kg	1	1	1	1	1		1	1	1	1	1	10	1500	LQM/CIEH S4UL (2015)
Total Aromatic Hydrocarbons	mg/kg	5	24	5	5	5		5	5	5	5	5	10	-	-
Total Petroleum Hydrocarbons	mg/kg	10	38	10	10	10		10	10	38	10	10	10	-	-
Methyl Tert-Butyl Ether	µg/kg	1	1	1	1	1		1	1	1	1	1	10	1	Limit of Detection

Testing of pesticide suite returned results all below the limit of detection, therefore removed for clarity.

Key -

Value within sample set exceeds screening value

MG- Made Ground

TS- Topsoil

RTD- River Terrace Deposits

LQM/CIEH S4UL Reference No. S4UL3159 (2015)

Values in **bold** are reported at the laboratory limit of detection



Amended Report

Report No.: 19-13763-2

Initial Date of Issue: 02-May-2019 **Date of Re-Issue:** 13-Jun-2019

Client Applied Geology

Client Address: Unit 23, Abbey Park
Stareton
Kenilworth
Warwickshire
CV8 2LY

Contact(s): Andrew Smith
Fiona Connor
Lab Results

Project AG2994-19 Stanbury House, Spencers
Wood

Quotation No.: Q17-09497 **Date Received:** 24-Apr-2019

Order No.: 14299 **Date Instructed:** 24-Apr-2019

No. of Samples: 13

Turnaround (Wkdays): 5 **Results Due:** 30-Apr-2019

Date Approved: 13-Jun-2019

Approved By:



Details: Robert Monk, Technical Manager

Results - Soil

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815015	815016	815017	815018	815019	815020	815022	815023	815025
Order No.: 14299	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES	ES
	Sample Location:				DCS1	TP2	TP9	DCS1	HP1	DCS5	DCS7	DCS8	DCS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	0.20	1.80	1.30	0.20	0.30	0.30	0.20	0.30
	Date Sampled:				16-Apr-2019	17-Apr-2019	17-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL			LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
Organic Matter	M	2625	%	0.40	1.3	2.8	0.71	1.2		1.7	2.6	1.7	1.6
Arsenic	M	2450	mg/kg	1.0	6.2	6.5	8.3	16		6.0	4.9	8.1	5.2
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	15	17	45	43		14	14	17	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50						
Chromium (Trivalent)	N	2490	mg/kg	1.0	15	17	45						
Copper	M	2450	mg/kg	0.50	5.8	7.0	38	57		7.2	4.8	5.2	6.3
Lead	M	2450	mg/kg	0.50	15	20	29	24		19	19	17	23
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.11		< 0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	6.5	7.1	28	33		6.5	6.0	6.7	7.3
Selenium	M	2450	mg/kg	0.20	1.0	1.2	0.49	0.81		0.89	1.1	0.86	0.85
Zinc	M	2450	mg/kg	0.50	20	37	25	33		17	14	15	19
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.40	1.4	0.20	< 0.10		< 0.10	< 0.10	< 0.10	1.2
Pyrene	M	2700	mg/kg	0.10	0.45	1.4	0.28	< 0.10		< 0.10	< 0.10	< 0.10	1.2
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	0.50	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	0.38
Chrysene	M	2700	mg/kg	0.10	< 0.10	0.39	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	0.35
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	3.7	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0	3.1
Phenol	M	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						
Resorcinol	M	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						
Cresols	M	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						
1-Naphthol	N	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						
Trimethylphenols	M	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30						
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0

Results - Soil

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815015	815016	815017	815018	815019	815020	815022	815023	815025
Order No.: 14299	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES	ES
	Sample Location:				DCS1	TP2	TP9	DCS1	HP1	DCS5	DCS7	DCS8	DCS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	0.20	1.80	1.30	0.20	0.30	0.30	0.20	0.30
	Date Sampled:				16-Apr-2019	17-Apr-2019	17-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL			LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	14	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	14	< 5.0	< 5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	24	< 1.0	< 1.0		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	24	< 5.0	< 5.0		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	38	< 10	< 10		< 10
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010
ACM Type	U	2192		N/A	-	-			-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-			-	-	-	-	-
Moisture	N	2030	%	0.020	15	18	21	22	17	13	14	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Black	Black	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Loam	Clay	Clay	Sand	Sand	Clay	Clay,	Sand
pH	M	2010		N/A	6.2	6.5	5.0	4.8		5.8	6.0	6.1	5.8
Chloride (Water Soluble)	M	2220	g/l	0.010			< 0.010						
Nitrate (Water Soluble)	N	2220	g/l	0.010			< 0.010						
Boron	N	2450	mg/kg	0.40	3.2	3.6	1.9	1.4		1.1	0.79	0.70	0.65
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	1.3	1.7		< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	U	2450	mg/kg	5.0	25	28	67	64		23	24	28	25
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0

Results - Soil

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815015	815016	815017	815018	815019	815020	815022	815023	815025
Order No.: 14299	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES	ES
	Sample Location:				DCS1	TP2	TP9	DCS1	HP1	DCS5	DCS7	DCS8	DCS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	0.20	1.80	1.30	0.20	0.30	0.30	0.20	0.30
	Date Sampled:				16-Apr-2019	17-Apr-2019	17-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL			LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
Demeton-O	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Phorate	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Demeton-S	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Disulfoton	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Fenthion	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Trichloronate	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Prothiofos	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Fensulphothion	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Sulprofos	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Azinphos-Methyl	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Coumaphos	N	2820	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Atraton	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Prometon	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Simazine	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Atrazine	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Propazine	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Terbutylazine	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Secbumeton	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Simetryn	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Ametryn	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Prometryn	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Terbutryn	N	2830	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Alpha-HCH	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Beta-HCH	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Delta-HCH	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Heptachlor	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Aldrin	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Heptachlor Epoxide	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Gamma-Chlordane	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Alpha-Chlordane	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endosulfan I	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
4,4-DDE	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Dieldrin	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endrin	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
4,4-DDD	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endosulfan II	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endrin Aldehyde	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	

Results - Soil

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815015	815016	815017	815018	815019	815020	815022	815023	815025
Order No.: 14299	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES	ES
	Sample Location:				DCS1	TP2	TP9	DCS1	HP1	DCS5	DCS7	DCS8	DCS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	0.20	1.80	1.30	0.20	0.30	0.30	0.20	0.30
	Date Sampled:				16-Apr-2019	17-Apr-2019	17-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019	16-Apr-2019	16-Apr-2019	15-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL			LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
4,4-DDT	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endosulfan Sulphate	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Methoxychlor	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Endrin Ketone	N	2840	mg/kg	0.20	< 0.20	< 0.20						< 0.20	
Xylenols	M	2920	mg/kg	0.050	< 0.050	< 0.050	< 0.050						

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815026	815027
Order No.: 14299	Client Sample Ref.:				ES	ES
	Sample Location:				TP7	TP12
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.30	0.20
	Date Sampled:				17-Apr-2019	18-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD		
Organic Matter	M	2625	%	0.40	3.1	2.4
Arsenic	M	2450	mg/kg	1.0	6.3	8.1
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	17	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50		
Chromium (Trivalent)	N	2490	mg/kg	1.0		
Copper	M	2450	mg/kg	0.50	8.0	5.5
Lead	M	2450	mg/kg	0.50	36	23
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010	< 0.010
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	6.8	6.5
Selenium	M	2450	mg/kg	0.20	1.2	1.1
Zinc	M	2450	mg/kg	0.50	24	17
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0
Phenol	M	2920	mg/kg	0.050		
Resorcinol	M	2920	mg/kg	0.050		
Cresols	M	2920	mg/kg	0.050		
1-Naphthol	N	2920	mg/kg	0.050		
Trimethylphenols	M	2920	mg/kg	0.050		
Total Phenols	M	2920	mg/kg	0.30		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815026	815027
Order No.: 14299	Client Sample Ref.:				ES	ES
	Sample Location:				TP7	TP12
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.30	0.20
	Date Sampled:				17-Apr-2019	18-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	38
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	38
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	38
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	18	13
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand
pH	M	2010		N/A	5.4	5.6
Chloride (Water Soluble)	M	2220	g/l	0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010		
Boron	N	2450	mg/kg	0.40	0.77	< 0.40
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0
Vanadium	U	2450	mg/kg	5.0	26	25
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815026	815027
Order No.: 14299	Client Sample Ref.:				ES	ES
	Sample Location:				TP7	TP12
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.30	0.20
	Date Sampled:				17-Apr-2019	18-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD		
Demeton-O	N	2820	mg/kg	0.20		
Phorate	N	2820	mg/kg	0.20		
Demeton-S	N	2820	mg/kg	0.20		
Disulfoton	N	2820	mg/kg	0.20		
Fenthion	N	2820	mg/kg	0.20		
Trichloronate	N	2820	mg/kg	0.20		
Prothiofos	N	2820	mg/kg	0.20		
Fensulphothion	N	2820	mg/kg	0.20		
Sulprofos	N	2820	mg/kg	0.20		
Azinphos-Methyl	N	2820	mg/kg	0.20		
Coumaphos	N	2820	mg/kg	0.20		
Atraton	N	2830	mg/kg	0.20		
Prometon	N	2830	mg/kg	0.20		
Simazine	N	2830	mg/kg	0.20		
Atrazine	N	2830	mg/kg	0.20		
Propazine	N	2830	mg/kg	0.20		
Terbutylazine	N	2830	mg/kg	0.20		
Secbumeton	N	2830	mg/kg	0.20		
Simetryn	N	2830	mg/kg	0.20		
Ametryn	N	2830	mg/kg	0.20		
Prometryn	N	2830	mg/kg	0.20		
Terbutryn	N	2830	mg/kg	0.20		
Alpha-HCH	N	2840	mg/kg	0.20		
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20		
Beta-HCH	N	2840	mg/kg	0.20		
Delta-HCH	N	2840	mg/kg	0.20		
Heptachlor	N	2840	mg/kg	0.20		
Aldrin	N	2840	mg/kg	0.20		
Heptachlor Epoxide	N	2840	mg/kg	0.20		
Gamma-Chlordane	N	2840	mg/kg	0.20		
Alpha-Chlordane	N	2840	mg/kg	0.20		
Endosulfan I	N	2840	mg/kg	0.20		
4,4-DDE	N	2840	mg/kg	0.20		
Dieldrin	N	2840	mg/kg	0.20		
Endrin	N	2840	mg/kg	0.20		
4,4-DDD	N	2840	mg/kg	0.20		
Endosulfan II	N	2840	mg/kg	0.20		
Endrin Aldehyde	N	2840	mg/kg	0.20		

Project: AG2994-19 Stanbury House, Spencers Wood

Client: Applied Geology	Chemtest Job No.:				19-13763	19-13763
Quotation No.: Q17-09497	Chemtest Sample ID.:				815026	815027
Order No.: 14299	Client Sample Ref.:				ES	ES
	Sample Location:				TP7	TP12
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.30	0.20
	Date Sampled:				17-Apr-2019	18-Apr-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD		
4,4-DDT	N	2840	mg/kg	0.20		
Endosulfan Sulphate	N	2840	mg/kg	0.20		
Methoxychlor	N	2840	mg/kg	0.20		
Endrin Ketone	N	2840	mg/kg	0.20		
Xylenols	M	2920	mg/kg	0.050		

Applied Geology Ltd

Unit 23 Abbey Park

Stareton

Kenilworth

Warwickshire

CV8 2LY

For the attention of Fiona Connor

Report No: B22661

Issue No 01

LABORATORY TEST REPORT

Project Name		STANBURY HOUSE, SPENCERS WOOD	
Project Number		B22661	Date samples received 30/04/2019
Your Ref			Date written instructions received 30/04/2019
Purchase Order		14330	Date testing commenced 30/04/2019
Please find enclosed the results as summarised below			
Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	17	Client Specified Suite - Soil	Yes
App S1	~	Sample Descriptions - Soil	N/A
App S2	~	Deviating Samples - Soil	N/A
App S3	~	Summary of In-House Analytical Test Methods - Soil	N/A
Remarks :			
Issued by : Stephen Langman		Date of Issue : 15/05/2019	Key to symbols used in this report S/C : Testing was sub-contracted
Approved Signatories : G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)			
Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. The results reported relate to samples received in the laboratory only. All results contained in this report are provisional unless signed by an approved signatory This report should not be reproduced except in full without the written approval of the laboratory. Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory. The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw our report if we have not received cleared funds in accordance with our standard terms and conditions Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation. Feedback on the this report may be left via our website www.terratek.co.uk/contact-us			


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 Offices in Airdrie, Birmingham, Belfast and Chesham

Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK AN ISO 9001:2015 ACCREDITED LABORATORY SERVICE				Site: STANBURY HOUSE, SPENCERS WOOD				Contract No: E13009/1			
				Client:							
				Engineer:							
Sample Identification				Lab Sample ID	Date Sampled	Temperature on receipt °C	PRIMARY MATRIX	Secondary Matrix	Additional matrix	% Loss at 30C	% Retained 2mm
Exploratory Hole	Depth m	Sample Ref	Sample Type								
DC56	1.20		D	489614	Deviating	10.9	CLAY			17	26.7
DC57	1.70		D	489615	Deviating	10.9	CLAY			16.8	16.6

DC54	1.40		D	489621	Deviating	10.9	CLAY	Fine to medium gravel		15.7	26.1
DC54	2.00		D	489622	Deviating	10.9	CLAY	Fine to medium gravel		16.8	23.5
TP11	1.20		D	489628	Deviating	10.9	Sandy CLAY	Fine to medium gravel		15.1	34.7
TP5	1.50		D	489630	Deviating	10.9	Sandy CLAY			15	23.1
TP5	2.50		D	489631	Deviating	10.9	Sandy CLAY			17.8	17.6

Notes

Terra Tek are accredited for clay, sand and loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials such as gravel, are not accredited where they comprise the major component of the sample.

Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated.

The laboratory removes any material > 2mm prior to analysis. The quantity and nature of the material is shown as the secondary and additional matrix types in the above table.

Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors List, which is subject to performance assessment, will be selected.

Originator	Checked & Approved	SAMPLE DESCRIPTIONS	Appendix S1
TGH			

 TERRA TEK AN ISO 9001:2015 ACCREDITED COMPANY				Site: STANBURY HOUSE, SPENCERS WOOD				Contract No: E13009/1			
				Client:							
				Engineer:							
Sample Identification				Lab Sample ID	Date Sampled	Temperature on receipt °C	PRIMARY MATRIX	Secondary Matrix	Additional matrix	% Loss at 30C	% Retained 2mm
Exploratory Hole	Depth m	Sample Ref	Sample Type								
DCS7	2.00		D	489813	Deviating	10.9	CLAY			18	25.1
Notes Terra Tek are accredited for clay, sand and loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials such as gravel, are not accredited where they comprise the major component of the sample. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated. The laboratory removes any material > 2mm prior to analysis. The quantity and nature of the material is shown as the secondary and additional matrix types in the above table. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors List, which is subject to performance assessment, will be selected.											
Originator		Checked & Approved		SAMPLE DESCRIPTIONS				Appendix S1			
TGH		 15/05/2015									

 TERRA TEK TESTING & INVESTIGATION SERVICES				Site: STANBURY HOUSE, SPENCERS WOOD				Contract No: B22661				
				Client:								
				Engineer:								
Sample Identification				Lab Sample ID	Date Sampled	Deviating conditions					Preservatives used	
Exploratory Hole	Depth m	Sample Ref	Sample Type			Sampling date has not been provided	Exceeded maximum holding time for selected test(s)	Presence of headspace in sample vial	Poorly fitting cap or lid	Damaged container		
DCS6	1.20		D	489814	Deviating							
DCS7	1.70		D	489815	Deviating							
DCS4	1.40		D	489821	Deviating							
DCS4	2.00		D	489822	Deviating							
TP11	1.20		D	489828	Deviating							
TP5	1.50		D	489830	Deviating							
TP5	2.50		D	489831	Deviating							
NOTES - Results reported for samples classified as deviating may be compromised. Deviation types are shown as "X" or "Yes" in the table above. - The absence of "X" or "Yes" in the table above indicates no reported deviations. - Deviations due to use of incorrect sample container are shown on result tables. - Deviating results are indicated within result tables.												
Originator		Checked & Approved		DEVIATING SAMPLES - SOIL				 Appendix S2 Sheet 1 of 2				
TGH		15/05/2019										

 TERRA TEK SOIL INVESTIGATING LABORATORY SERVICES				Site STANBURY HOUSE, SPENCERS WOOD		Contract No B22661					
				Client Engineer							
Sample Identification				Lab Sample ID	Date Sampled	Deviating conditions					Preservatives used
Exploratory Hole	Depth m	Sample Ref	Sample Type			Sampling date has not been provided	Exceeded maximum holding time for selected test(s)	Presence of headspace in sample vial	Poorly fitting cap or lid	Damaged container	
DCS7	2.00		D	489813	Deviating						
NOTES - Results reported for samples classified as deviating may be compromised. Deviation types are shown as "X" or "Yes" in the table above. - The absence of "X" or "Yes" in the table above indicates no reported deviations. - Deviations due to use of incorrect sample container are shown on result tables. - Deviating results are indicated within result tables.											
Originator TGH		Checked & Approved  15/02/2019		DEVIATING SAMPLES - SOIL				 Appendix S2 Sheet 2 of 2			

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES		Site		STANBURY HOUSE, SPENCERS WOOD		Contract No		B22661	
		Client							
		Engineer							
Method Code	Reference		Description of Method		ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested		
GP001	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Preparation of soil samples for chemical analysis		Yes	Yes	N/A		
GP012	BS EN 12457-3: Characterisation of Waste - Compliance test for leaching of granular waste materials and sludges (two-stage batch test)		Preparation of soil samples for two-stage leachate test				Dry		
TP019	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of pH in 2.5:1 water/soil extract using pH meter.		Yes	Yes	Dry		
TP032	MAFF Book 427: The Analysis of Agricultural Materials: Method 8		Determination of water soluble boron by colorimetry		Yes		Dry		
TP040	APHA/AWWA, 19th edition: Method 3500Cr-D		Determination of hexavalent chromium by colorimetry.		Yes		Dry		
TP041	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of organic matter by titrimetry.		Yes		Dry		
TP042	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of loss on ignition at 50-440°C by gravimetry		Yes	Yes	Dry		
TP045	GACHAMJA A.M. Chromatography and Analysis: 1992 9-11 (modified)		Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS		Yes	Yes	Dry		
TP046	MEWAM method: Phenols in water and Effluents: 4-aminoantipyrine method		Determination of monohydric phenols by steam distillation/colorimetry		Yes	Yes	Dry		
TP047	MEWAM method: Cyanide in Waters etc		Determination of free cyanide by steam distillation/colorimetry		Yes		Dry		
TP048	MEWAM method: Cyanide in Waters etc		Determination of total cyanide by steam distillation/colorimetry.		Yes	Yes	Dry		
TP049	MEWAM method: Cyanide in Waters etc		Determination of complex cyanide by calculation		Yes		Dry		
TP050	MEWAM method: Determination of Thiocyanate ,1985		Determination of thiocyanate by colorimetry		Yes	Yes	Dry		
TP051	USEPA Method 9030B		Determination of acid soluble sulphides by steam distillation/colorimetry.		Yes	Yes	Wet		
TP067	TNRCC Method 1005: 2001 (modified)		Determination of pentane/acetone extractable petroleum hydrocarbons (C8 - C40) by GC/FID		Yes	Yes	Wet		
TP072	In-house documented method		Determination of ammoniacal nitrogen by colorimetry				Dry		
TP073	In-house documented method		Determination of anionic detergent (MBAS) by colorimetry				Dry		
TP074	In-house documented method		Determination of water soluble fluoride by ion selective electrode				Dry		
TP098	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of acid soluble chloride by titrimetry				Dry		
TP099	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of water soluble chloride by titrimetry		Yes	Yes	Dry		
Notes 1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample. 2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated. 3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request. 4. The laboratory records the date of analysis of each parameter. This information is available on request. 5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.									
Originator		Checked & Approved		SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)			Tk Appendix S3		
N/A		N/A							
Sheet 1 of 2									

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES		Site STANBURY HOUSE, SPENCERS WOOD		Contract No B22661	
		Client			
		Engineer			
Method Code	Reference	Description of Method	ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested
TP100	Wisconsin DNR Modified GRO method, Method for Determining Gasoline Range Organics	Determination of Volatile Petroleum Hydrocarbons/GRO.	Yes	Yes	Wet
TP110	USEPA Methods 8082A & 3665A	Determination of Total & Speciated 7 PCB Congeners by GC/MS SIM	Yes	Yes	Wet
TP114	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of carbonate in soil (rapid titration method)			Dry
TP126	TNRCC Method 1006 (modified)	Extracted petroleum hydrocarbons from TP067 split into aromatic and aliphatic fractions. Analysed by GC/FID.	Yes		Wet
TP129	In-house documented method	Determination of total sulphur by ICP-OES spectroscopy	Yes	Yes	Dry
TP134	In-house documented method	Determination of water soluble chloride by titrimetry	Yes	Yes	Dry
TP135	USEPA Methods 8100 & 8270D. In-house method TP045	Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS (with concentration stage)			Dry
TP137	BS7755: Section 3.9: 1995/ISO 11466:1995	Determination of acid extractable metals in soil by ICP-OES	Selected	Selected	Dry
TP145	USEPA Methods 3550C & 8270D	Determination of Semi-Volatile Organic Compounds by GC/MS	Yes	Yes	Wet
TP147	USEPA Methods 8082A & 3665A	Determination of total & speciated WHO 12 PCB Congeners by GC/MS SIM.			Wet
TP150	USEPA Methods 8081B & 8141B	Determination of pesticides and herbicides in soil by GC/MS SIM			Dry
TP152	USEPA Method 556	Determination of carbonyls by GC/MS.			Wet
TP154	USEPA Method 5021. Wisconsin DNR modified GRO method	Determination of volatiles in by GC/MS headspace	Yes	Selected	Wet
TP158	USEPA Method 1671	Determination of glycols by GC/FID DI			Wet
TP169	In-house documented method	Determination of water soluble sulphate in 2:1 water/soil extract by ICP-OES spectroscopy	Yes	Yes	Dry
TP171	In-house documented method	Determination of acid soluble sulphate by ICP-OES spectroscopy	Yes	Yes	Dry
TP178	In-house documented method	Determination of water soluble nitrate by ion selective electrode			Dry
Notes 1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample. 2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated. 3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request. 4. The laboratory records the date of analysis of each parameter. This information is available on request. 5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.					
Originator	Checked & Approved	SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)		Tk Appendix S3	
N/A	N/A				
Sheet 2 of 2					

Applied Geology Ltd

Unit 23 Abbey Park

Stareton

Kenilworth

Warwickshire

CV8 2LY

For the attention of Fiona Connor

Report No: B22661

Issue No 01

LABORATORY TEST REPORT

Project Name		STANBURY HOUSE, SPENCERS WOOD	
Project Number		B22661	Date samples received 30/04/2019
Your Ref			Date written instructions received 30/04/2019
Purchase Order		14330	Date testing commenced 30/04/2019
Please find enclosed the results as summarised below			
Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	17	Client Specified Suite - Soil	Yes
App S1	~	Sample Descriptions - Soil	N/A
App S2	~	Deviating Samples - Soil	N/A
App S3	~	Summary of In-House Analytical Test Methods - Soil	N/A
Remarks :			
Issued by : Stephen Langman		Date of Issue : 15/05/2019	Key to symbols used in this report S/C : Testing was sub-contracted
Approved Signatories : 			
G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)			
Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. The results reported relate to samples received in the laboratory only. All results contained in this report are provisional unless signed by an approved signatory This report should not be reproduced except in full without the written approval of the laboratory. Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory. The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw our report if we have not received cleared funds in accordance with our standard terms and conditions Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation. Feedback on the this report may be left via our website www.terratek.co.uk/contact-us			


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 Offices in Airdrie, Birmingham, Belfast and Chesham

Head Office : 62 Rochsolloch Road, Airdrie, ML6 9BG

TERRA TEK				Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: B22661			
				Client:													
				Engineer:													
Sample Identification				Lab Sample ID	Non Engineering Sample Description	Moisture Content	Atterberg Limits					Particle Density	Density		Total Stress		Other Tests
Exploratory Hole	Depth m	Sample Ref	Sample Type				Liquid Limit	Plastic Limit	Plasticity Index	Percentage retained 425um	Atterberg Classification		Bulk	Dry	Shear Strength	Apparent Cohesion C	
						%	%	%	%	%		Mg/m ³	Mg/m ³	Mg/m ³	kPa	kPa	
DCS1	0.80		0	489625	Brown slightly silty CLAY with some gravel. Gravel is fine to coarse.	22	48	20	28	8	CI						

Notes: Comments and interpretations are outside the scope of UKAS accredited test		Test results are given on the 'Notes on Laboratory Procedures' sheet										See individual report sheets	
Originator		UKAS Accredited Test YES											
Approved													
PM													

SUMMARY OF GEOTECHNICAL TESTS

Tk

Figure 1

Sheet 1 of 6

TERRA TEK AN ISO 9001:2015 CERTIFIED COMPANY		Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: B22661					
		Client:															
		Engineer:															
Sample Identification					Non Engineering Sample Description	Moisture Content %	Atterberg limits					Particle Density Mg/m ³	Density		Total Stress		Other Tests
Exploratory Hole	Depth in	Sample Ref	Sample Type	Lab Sample ID			Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage retained 425um	Atterberg Classification		Bulk Mg/m ³	Dry Mg/m ³	Shear Strength kPa	Apparent Cohesion kPa	
DCS4	1.40		D	409821	Brown silty CLAY with occasional gravel. Gravel is fine.	34	55	22	37	3	CH						BRE 501 Suite
DCS4	2.00		D	409822													BRE 501 Suite
Notes: Options and interpretations are outside the scope of UKAS accreditation Test details are given on the Notes on Laboratory Procedures sheet See individual report sheets																	
Originator		Approved		SUMMARY OF GEOTECHNICAL TESTS												 Figure 1 Sheet 2 of 6	
PM		[Redacted]															

TERRA TEK				Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: 822661			
				Client:													
				Engineer:													
Sample Identification					Non Engineering Sample Description	Moisture Content	Atterberg limits					Particle Density	Density		Total Stress		Other Tests
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID			Liquid Limit	Plastic Limit	Plasticity Index	Percentage retained 425um	Atterberg Classification		Bulk	Dry	Shear Strength	Apparent Cohesion C	
						%	%	%	%		Mg/m ³	Mg/m ³	Mg/m ³	kPa	kPa		
DCS7	1.70		O	485815	Brown CLAY	24	52	27	31	0	CH						BR8 S01 Suite
DCS7	2.00		O	485813													BR8 S01 Suite
DCS8	1.20		O	485814	Brown CLAY	24	51	24	27	0	CH						BR8 S01 Suite

Notes: Opinions and interpretations are outside the scope of UKAS accreditation.		UKAS Accredited Test Title		Test details are given on the Notes on Laboratory Procedures sheet										See individual report sheets	
Originator	Approved														
PM															

SUMMARY OF GEOTECHNICAL TESTS

Tk

Figure 1

Sheet 3 of 6

TERRA TEK Geotechnical Test Summary - 02/2011		Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: B22661							
		Client:																	
		Engineer:																	
Sample Identification					Non Engineering Sample Description	Moisture Content %	Atterberg Limits					Particle Density Mg/m ³	Density		Total Stress		Other Tests		
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID			Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage retained 425µm	Atterberg Classification		Bulk Mg/m ³	Dry Mg/m ³	Shear Strength kPa	Apparent Cohesion kPa		Angle of Shearing Resistance φ°	
TP10	0.50-1.00		B	485027	Brown very silty SAND with much gravel. Gravel is fine.												PSD		
TP10	1.50-2.00		B	485038	Brown GRAVEL with much slightly silty sand. Gravel is fine to coarse.												PSD		
TP11	1.20		D	485028	Brown clayey SAND with much gravel. Gravel is fine.	14	51	21	30	27	CH						6RE ED1 Suite		
TP12	0.50-1.00		B	485026	Brown GRAVEL with much silty sand. Gravel is fine to coarse.												PSD		
Notes: Comments and interpretations are outside the scope of UKAS accreditation						Test details are given on the Notes on Laboratory Procedures sheet										See individual report sheets			
Originator		Approved		SUMMARY OF GEOTECHNICAL TESTS														 Figure 1 Sheet 4 of 6	
PM																			

TERRA TEK AN ISO 9001:2015 CERTIFIED COMPANY		Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: 822661													
		Client:																							
		Engineer:																							
Sample Identification					Non Engineering Sample Description	Moisture Content	Atterberg limits					Particle Density	Density		Total Stress		Other Tests								
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID			Liquid Limit	Plastic Limit	Plasticity Index	Percentage retained 425µm	Atterberg Classification		Wet	Dry	Shear Strength	Apparent Cohesion C		Angle of Shearing Resistance ϕ							
%	%	%	%				Mg/m ³	Mg/m ³	Mg/m ³	kPa	kPa														
TP2	1.50-2.00		R	489832	Brown very silty SAND with some gravel. Gravel is fine to coarse.												PSD								
TP5	1.50		D	489830	Brown slightly sandy CLAY.	20	52	19	33	0	CH						SHD SD1 Suite								
TP5	2.50		D	489831													BRE SD1 Suite								
Notes		Capitula and interpretations are outside the scope of UKAS accreditation										Test details are given on the Report on Laboratory Procedures when										See individual report sheets			
Originator		Approved																							
PM																									

SUMMARY OF GEOTECHNICAL TESTS

Tk

Figure 1

Sheet 5 of 6

		Site: STANBURY HOUSE, SPENCERS WOOD										Contract No: B22661					
		Client: Engineer:															
Sample Identification					Non Engineering Sample Description	Moisture Content %	Atterberg Limits					Particle Density Mg/m ³	Density		Total Stress		Other Tests
Exploratory Hole	Depth m	Sample Ref	Sample Type	Lab Sample ID			Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage Retained 425µm	Atterberg Classification		Bulk Mg/m ³	Dry Mg/m ³	Shear Strength kPa	Apparent Cohesion kPa	
Notes: Options and interpretations are details the scope of UKAS accreditation					Test details are given on the Notes on Laboratory Procedures sheet										See individual report sheets		
Originator		Approved		SUMMARY OF GEOTECHNICAL TESTS												 Figure 1 Sheet 6 of 6	
PM																	

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES		Site		STANBURY HOUSE, SPENCERS WOOD		Contract No		B22661	
		Client							
		Engineer							
Method Code	Reference		Description of Method			ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested	
GP001	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Preparation of soil samples for chemical analysis			Yes	Yes	N/A	
GP012	BS EN 12457-3: Characterisation of Waste - Compliance test for leaching of granular waste materials and sludges (two-stage batch test)		Preparation of soil samples for two-stage leachate test					Dry	
TP019	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of pH in 2.5:1 water/soil extract using pH meter.			Yes	Yes	Dry	
TP032	MAFF Book 427: The Analysis of Agricultural Materials: Method 8		Determination of water soluble boron by colorimetry			Yes		Dry	
TP040	APHA/AWWA, 19th edition: Method 3500Cr-D		Determination of hexavalent chromium by colorimetry.			Yes		Dry	
TP041	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of organic matter by titrimetry.			Yes		Dry	
TP042	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of loss on ignition at 50-440°C by gravimetry			Yes	Yes	Dry	
TP045	GACHAMJA A.M. Chromatography and Analysis: 1992 9-11 (modified)		Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS			Yes	Yes	Dry	
TP046	MEWAM method: Phenols in water and Effluents: 4-aminoantipyrine method		Determination of monohydric phenols by steam distillation/colorimetry			Yes	Yes	Dry	
TP047	MEWAM method: Cyanide in Waters etc		Determination of free cyanide by steam distillation/colorimetry			Yes		Dry	
TP048	MEWAM method: Cyanide in Waters etc		Determination of total cyanide by steam distillation/colorimetry.			Yes	Yes	Dry	
TP049	MEWAM method: Cyanide in Waters etc		Determination of complex cyanide by calculation			Yes		Dry	
TP050	MEWAM method: Determination of Thiocyanate ,1985		Determination of thiocyanate by colorimetry			Yes	Yes	Dry	
TP051	USEPA Method 9030B		Determination of acid soluble sulphides by steam distillation/colorimetry.			Yes	Yes	Wet	
TP067	TNRCC Method 1005: 2001 (modified)		Determination of pentane/acetone extractable petroleum hydrocarbons (C8 - C40) by GC/FID			Yes	Yes	Wet	
TP072	In-house documented method		Determination of ammoniacal nitrogen by colorimetry					Dry	
TP073	In-house documented method		Determination of anionic detergent (MBAS) by colorimetry					Dry	
TP074	In-house documented method		Determination of water soluble fluoride by ion selective electrode					Dry	
TP098	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of acid soluble chloride by titrimetry					Dry	
TP099	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.		Determination of water soluble chloride by titrimetry			Yes	Yes	Dry	
Notes 1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample. 2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated. 3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request. 4. The laboratory records the date of analysis of each parameter. This information is available on request. 5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.									
Originator		Checked & Approved		SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)			Tk Appendix S3		
N/A		N/A							
Sheet 1 of 2									

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES		Site STANBURY HOUSE, SPENCERS WOOD		Contract No B22661	
		Client			
		Engineer			
Method Code	Reference	Description of Method	ISO17025 Accredited	MCERTS Accredited	Wet/Dry Sample Tested
TP100	Wisconsin DNR Modified GRO method, Method for Determining Gasoline Range Organics	Determination of Volatile Petroleum Hydrocarbons/GRO.	Yes	Yes	Wet
TP110	USEPA Methods 8082A & 3665A	Determination of Total & Speciated 7 PCB Congeners by GC/MS SIM	Yes	Yes	Wet
TP114	BS1377, Part 3, 1990: Soils for Civil Engineering Purposes.	Determination of carbonate in soil (rapid titration method)			Dry
TP126	TNRCC Method 1006 (modified)	Extracted petroleum hydrocarbons from TP067 split into aromatic and aliphatic fractions. Analysed by GC/FID.	Yes		Wet
TP129	In-house documented method	Determination of total sulphur by ICP-OES spectroscopy	Yes	Yes	Dry
TP134	In-house documented method	Determination of water soluble chloride by titrimetry	Yes	Yes	Dry
TP135	USEPA Methods 8100 & 8270D. In-house method TP045	Determination of polyaromatic hydrocarbons extractable in dichloromethane, by GC/MS (with concentration stage)			Dry
TP137	BS7755: Section 3.9: 1995/ISO 11466:1995	Determination of acid extractable metals in soil by ICP-OES	Selected	Selected	Dry
TP145	USEPA Methods 3550C & 8270D	Determination of Semi-Volatile Organic Compounds by GC/MS	Yes	Yes	Wet
TP147	USEPA Methods 8082A & 3665A	Determination of total & speciated WHO 12 PCB Congeners by GC/MS SIM.			Wet
TP150	USEPA Methods 8081B & 8141B	Determination of pesticides and herbicides in soil by GC/MS SIM			Dry
TP152	USEPA Method 556	Determination of carbonyls by GC/MS.			Wet
TP154	USEPA Method 5021. Wisconsin DNR modified GRO method	Determination of volatiles in by GC/MS headspace	Yes	Selected	Wet
TP158	USEPA Method 1671	Determination of glycols by GC/FID DI			Wet
TP169	In-house documented method	Determination of water soluble sulphate in 2:1 water/soil extract by ICP-OES spectroscopy	Yes	Yes	Dry
TP171	In-house documented method	Determination of acid soluble sulphate by ICP-OES spectroscopy	Yes	Yes	Dry
TP178	In-house documented method	Determination of water soluble nitrate by ion selective electrode			Dry
Notes 1. Terra Tek (Birmingham) are MCERTS accredited for clay, sand & loam matrix types only, where they constitute the major component of the sample. Other coarse granular materials, ie gravel, are not accredited where they comprise the major component of the sample. 2. Results are expressed on a dry-weight basis (samples dried at 30°C ± 5°C) except where stated. 3. The laboratory removes any material >2mm prior to analysis. The quantity and nature of any material removed from samples is recorded and the information is available on request. 4. The laboratory records the date of analysis of each parameter. This information is available on request. 5. Where a parameter cannot be determined in house it is our policy to use a UKAS/MCERTS accredited laboratory wherever possible. Terra Tek will assume responsibility for the quality of subcontracted tests and the performance of the subcontractor chosen. Where there is no known UKAS/MCERTS laboratory for a particular parameter, a laboratory listed within the Terra Tek Approved Subcontractors list, which is subject to performance assessment, will be selected.					
Originator	Checked & Approved	SUMMARY OF IN-HOUSE ANALYTICAL TEST METHODS (SOIL)		Tk Appendix S3	
N/A	N/A				
Sheet 2 of 2					

APPENDIX F

APPENDIX F

STANDARD FIELDWORK AND ASSESSMENT PROCEDURES

Scope of Work

The scope of work undertaken is defined in Section 1 of the Report. It should be noted that Applied Geology Limited does not provide arboricultural surveys, specialist surveys for the detection of invasive plant species (such as Japanese Knotweed) or protected species of wildlife. Information from environmental and ecological datasets is included from a review of the MAGIC (Multi-Agency Geographic Information for the Countryside) website, however, if a full assessment of Environmental or Ecological aspects is required, it is recommended that other specialists are consulted. Similarly, information on flood risk is included; obtained from the Environment Agency Web site and the GroundSure report; but this is not intended to be a full hydrological study and, if a flood risk assessment is needed, additional analysis by others is recommended to confirm this aspect of the development. Also, whilst our field staff have undergone asbestos awareness training, Applied Geology does not undertake asbestos surveys or provide specific advice relating to asbestos-containing materials. Any suspected asbestos-containing materials observed by our field staff will be mentioned in the report but further assessment by others may be required.

Fieldwork

Fieldwork is generally carried out in accordance with BS5930 (2015) "Code of Practice for Site Investigations" and BS10175 (2011) Investigation of Potentially Contaminated Sites, unless otherwise stated.

Prior to commencement on site, statutory services plans are generally obtained and verbal enquiries are also made regarding the positions of private or statutory services on site. Prior to excavation or drilling, locations are scanned with a cable avoidance tool (CAT) and service pits are generally excavated at borehole positions, where possible.

Descriptions and depths of the various strata recovered are presented on the exploratory hole records, reproduced in the report appendices, together with sample depths, the results of in-situ testing, comments on groundwater inflows, and any other pertinent information. The strata descriptions are in general accordance with BS5930:2015. Disturbed plastic pot and glass amber jar samples are recovered from the various strata and stored and transported in cool boxes, where relevant, for possible future laboratory testing.

Light cable percussion boreholes are generally drilled using a Pilcon Wayfarer or Dando rig and are advanced using equipment to bore 200/150mm diameter boreholes. Disturbed plastic pot samples are recovered from all deposits encountered to allow examination and laboratory testing. Certain strata are cased off due to their tendency to collapse, particularly in the presence of groundwater inflows and/or to reduce the risk of cross contamination. In situ Standard Penetration Tests, using Split Spoon (SPT) and Cone (CPT) are undertaken in the boreholes to provide a measure of the relative density of the granular (coarse grained) deposits or shear strength of the clay/chalk/ weathered rock deposits using industry recognised correlation guidelines of shear strength against SPT "N" value results. Within the fine grained (cohesive) deposits, "undisturbed" 100mm driven open tube samples were recovered from the various deposits to provide samples for examination and laboratory testing. On encountering groundwater, boring is usually suspended for 20 minutes while any rise in water level is recorded. Full details of the groundwater observations and monitoring results during boring operations are included on the borehole records. All boreholes without monitoring wells installed are usually backfilled with arisings upon completion, unless otherwise stated on the individual logs.

Unless otherwise stated on the relevant logs, trial pits are excavated using a wheeled backhoe excavator, usually with a 0.6m wide bucket. The excavations are logged from the ground surface by an Engineering Geologist / Geo-environmental Engineer and relevant field testing, appropriate to the soils encountered, is carried out on samples brought to the surface. Representative disturbed soil samples are collected from selected horizons for subsequent laboratory testing. The trial pits are

usually unshored and where reasonable, left open for a period of time to allow observations of pit stability and depth and inflow rate of any groundwater ingress. The excavations are backfilled with arisings prior to moving on to the next position. Any trial pits carried out as part of this or previous investigations may represent soft spots and conduits/sumps for groundwater or surface water. In excavations, such materials may also be loose and unstable.

Driven Continuous Sampling (DCS) boreholes are drilled using a track mounted Global mini-rig or similar using sampling tubes of varying diameter (decreasing with depth). Samples of the deposits encountered are recovered in 1m long clear plastic liners, which are logged and sub-sampled on site by an Engineering Geologist. Generally for geotechnical investigations, during the drilling process in-situ Standard Penetration Tests (SPTs) are undertaken at selected depths to provide a measure of the relative density of the granular (coarse grained) deposits or shear strength of the clay/chalk/ weathered rock deposits using industry recognised correlation guidelines of shear strength against SPT "N" value results. Groundwater seepages are noted during drilling if encountered. All boreholes without monitoring wells installed are usually backfilled with arisings upon completion.

Unless specifically stated in the report, exploratory hole locations should be regarded as approximate. Consideration should be given to accurate location of the exploratory holes where it is considered they may impact on proposed development.

It should be noted that groundwater levels at any particular site may fluctuate due to rainfall, seasonal variations etc and, therefore, levels may be different to those measured during the course of the fieldwork and monitoring period.

Laboratory Testing

The geotechnical testing was carried out in accordance with BS 1377:1990 Method of Tests for Soils for Civil Engineering Purposes and was undertaken by a UKAS accredited specialist laboratory. Chemical testing was undertaken by a UKAS accredited specialist chemical testing laboratory and MCERTS accredited methods, in accordance with Environment Agency recommendations, were specified where available.

Contamination Assessment – Human Health

Applied Geology Limited has followed the guidance given in the Land Contamination Risk Management (LCRM) publication and other available guidance to assess the contaminant concentrations. Details of the methodology followed are briefly outlined below.

The available chemical data is sorted into appropriate datasets depending on sampling regime and ground conditions. An initial generic quantitative risk assessment is undertaken on this data using statistical tests, where appropriate, and relevant screening values. Risk to human health has been initially assessed by comparing soil results against various published screening criteria. These have been sourced from the following, in order of preference:

- DEFRA. Category 4 Screening Levels (C4SL), March 2014;
- LQM/CIEH S4UL for Human Health Risk Assessment (S4UL), 2015*;
- Environment Agency/DEFRA, Soil Guideline Values (SGV) published in 2009;
- EIC/AGS/CL:AIRE Soil Generic Assessment Criteria (GAC), 2010.

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Except for lead and benzo(a)pyrene, the assessments will be carried out by comparing results against the LQM/CIEH S4UL in the first instance, where these values are exceeded, then reference will be made to the C4SLs where such exist. Lead will only be compared to the C4SL because no S4UL exists for lead. For Benzo(a)pyrene, Applied Geology has chosen to adopt the approach presented by the C4SL committee rather than the approach proposed by LQM/CIEH. Further discussion on this is presented below.

It is our view, and the view of others in the industry, that the C4SL were derived for use in both the Part IIA system and through the planning system, as they allow identification of those sites that fall within Category 4 (not contaminated) and are therefore able to be developed with no further remedial action. The C4SLs are considered to represent a contamination level that is 'low' from a toxicological view point, which we therefore consider to be 'acceptable' under planning.

Historically, the level of contamination has been assessed with reference to SGV values which were derived to represent a 'minimal' level of contamination. The SGVs are still valid and can be used alongside C4SL, however both screening values are only intended to provide guidance as to the level of contamination and, where concentrations fall below these screening values, the site is not contaminated (and is within Category 4). Exceedance of a SGV/S4UL/C4SL does not automatically indicate that an 'unacceptable' risk exists at a site; simply that further consideration of that particular contaminant is required.

At this time, there are two toxicological methodologies that can be used in the derivation of screening criteria for PAHs; Relative Potency Factor (RPFs) or the Surrogate Marker approach. Applied Geology has chosen (based on the latest guidance from the Health Protection Agency (HPA) to use the surrogate marker approach proposed in the C4SL methodology, whereby benzo(a)pyrene can be used as a surrogate marker for all 'genotoxic' (gene damaging) PAHs. The surrogate marker approach estimates the toxicity of a mixture of PAHs in an environmental matrix by using data from toxicity studies in which a PAH mixture of known composition was tested. Exposure to the surrogate marker benzo(a)pyrene is assumed to represent exposure to all the PAHs in the environmental matrix. Thus, the level of toxicity ascribed to the surrogate represents the toxicity of the PAH mixture. This allows an assessment of the combined carcinogenic risk associated with genotoxic PAHs using only benzo(a)pyrene. In order to confirm that the mixture of genotoxic PAH in the soil is similar to the coal tar mixture used in the toxicological study, various PAH ratios are plotted and checked to see that they fall within the limits set in HPA, 2010.

Contamination Assessment – Water Quality

Risks to water quality has been assessed by following the Environment Agency guidance on groundwater protection (previously known as GP3), updated on their website in March 2017, see <https://www.gov.uk/government/policies/water-quality> and 'The Environment Agency's approach to groundwater protection' (March 2017 Version 1.0).

For hazardous substances, which should be prevented from entering groundwater, the screening criteria are initially set as the limit of detection, however, if groundwater has already been impacted, an appropriate environmental standard will then be used. For hazardous substances, background quality may also be taken into account.

For non-hazardous compounds, their release should not result in any pollution or significant risk of pollution in the future, as such comparison with UK DWS or EQS standards will allow determination of whether pollution could occur. Typically screening criteria will be sourced from the following:

- Environmental Standards (ES), which are defined in European legislation such as the Water Framework Directive (WFD) (2000/60/EC) and the Priority Substances Directive (PSD) (2008/105/EC) a daughter directive of the WFD.
- The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Direction, 2010.
- UK Water Supply (Water Quality) Regulations, 2010.
- UK quality standards for water to be used for direct abstraction to potable supply e.g. Surface Water (Abstraction for Drinking Water) (Classification) Regulations, 1996.
- World Health Organisation (WHO) Guidelines for Drinking Water Quality.

Re-use of Soils and Waste Soil Disposal

It is noted that if any excavated material is to be reused on site, a Waste Management Plan (WMP) and / or a Materials Management Plan (MMP) will probably be required. Any such materials must be suitable for re-use without further treatment, and only the quantity necessary for the specified works should be used. Any materials not within these definitions may need to be considered as waste whereby a Waste Management Licence Exemption may also be required.

A specific categorisation and assessment of potential waste soils arising from the proposed development has not been undertaken as part of the investigation, unless otherwise detailed in the report text. However, generic comments and advice are made below for the reader.

All waste soils should be sorted to prevent mixtures of waste types. Where possible, any waste soil should be recycled and the volume of soil to be disposed of should be minimised. Any excavated soil material and excess spoil disposed of off-site should be treated as Waste and classified as Inert, Non-hazardous or Hazardous, prior to removal from site, as required by the "Duty of Care" (Environmental Protection Act, 1990) legislation together with Annex II of Directive 1999/31/EC ("Landfill Directive"). Initially, Basic Characterisation of the waste is required whereby the material should be described and its source of origin recorded (a site plan, exploratory hole records and the certificates of chemical analysis in this report should be included). This should also include data on its composition and leaching behaviour, its European Waste Catalogue (EWC) code, and where relevant any hazardous properties according to Annex III of Directive 91/689/EEC. This information should be provided to the licensed waste contractor.

Soils excavated on many sites would generally fall under the EWC description "Soil and Stones", EWC code 17 05 04. Waste Acceptance Criteria (WAC) testing is required for many Inert wastes and generally for all Hazardous Waste but not for non-hazardous waste. There are certain restrictions for inert wastes regarding topsoil and peat. Any asbestos must be disposed of by suitably licensed contractors to a suitably licensed facility.

Health & Safety Aspects

As outlined within the HSE publication 'Successful Health and Safety Management - HSG65', this report should inform your development of safe systems of work and information as an input into the safety management system.

When developing risk control systems we suggest making reference to the CIRIA report 132 "A guide for safe working on contaminated sites" and the HSE document "Protection of workers and the general public during the development of contaminated land – HSG66". All risk control measures should be in accordance with the guidelines laid down within the Management of Health and Safety at Work Regulations 1999.

The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations.

Where excavations are undertaken on site, trench support or the angle of batter should be designed by an appropriately qualified engineer or competent person to suit the required depth and the ground and groundwater conditions. Care should be taken when digging excavations to prevent undermining or causing loss of support to the foundations of the nearby adjoining structures. Surcharging such as from spoil or vehicle movements close to excavation sides should be avoided. Practical guidance on trench excavation is given in CIRIA Report 97 Trenching Practice. Guidance on groundwater control is given in CIRIA Report 113 Control of groundwater for temporary works. Temporary works should be designed by a suitably qualified engineer or a competent person particularly where personnel access is necessary, in accordance with the requirements of the Construction (Design and Management) (CDM) Regulations.