



UPTON STEEL, STANTON LANE, MARKFIELD – PHASE 1

PHASE II SITE APPRAISAL FOR SUTTON LAND DEVELOPMENT

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Prepared for:
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This report has been prepared in accordance with GRM's Accredited Quality Procedures

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Issue	Description of Revision	Signature
RevA	Amended radon protection	RDH



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Site Appraisal for Upton Steel, Stanton Lane, Markfield

SUMMARY OF RECOMMENDATIONS

Where further assessment is required it is indicated with a "Y" in the right hand column.		
Proposed Development	Commercial warehouse with new yard area and lorry parking.	
CONTAMINATION ASSESSMENT - REMEDIATION / WASTE DISPOSAL		
End Users	No remediation required. To be updated following further investigation works.	Y
Site Workers	No remediation required.	
Construction Materials	Appropriate concrete specification. Standard water supply pipes required in field area; Barrier type water supply pipes in existing yard area of warehouse facility. (to be confirmed by water company).	Y
Groundwater	No remediation required. To be updated following further investigation works.	Y
Surface Water	No remediation required.	
Waste Disposal	Preliminary Waste Classification: Non-Hazardous for topsoil. Inert for natural strata. Will need to be confirmed by receiving landfill.	Y
GEOTECHNICAL ASSESSMENT – FOUNDATIONS		
Ground Treatment Required	Pre-treatment of the surface soils required at this stage. For pile foundations, safe working platform would be required – piling mat in the region of 400mm thick likely (if constructed without reinforcement depending on the quality of any earthworks).	Y
Main Bearing Strata	Firm to very stiff sandy gravelly CLAY and dense sandy GRAVEL & COBBLES.	
Nett Allowable Bearing Pressure	110kN/m ² (cohesive strata); 220kN/m ² (granular strata). For piles – safe working load to be confirmed by piling contractor	Y
Rockhead	Identified in TP102 (from 1.3m) and TP110 (from 2.0m).	
Tree Influence	Some around periphery of site. Extent to be confirmed by a tree survey.	
Volume Change Potential	High.	
Likely Foundation Types	Pad and strip foundations. Alternatively, CFA pile foundations.	Y
Likely Foundation Depth Range	1.0m begl minimum. Commercial decision for pads. To be confirmed by piling contractor for piles.	Y
Excavation Hazards	Shallow excavations should generally be stable. Dense granular strata or shallow rock could be encountered. Shallow groundwater not expected.	
Floor Slab Types	Allowance for suspended floor slabs should be made at this stage. Alternatively, cast in situ ground bearing / suspended floor slab. Working platform for pile foundations could form a suitable base for a ground bearing floor slab should it be engineered to a suitable standard.	Y
Gas Protection Requirements Radon and/or Landfill	Gas protection measures (for methane and carbon dioxide) are not required. Basic Radon gas protection measures are required at this stage.	Y
GEOTECHNICAL ASSESSMENT - GENERAL		
Slope Stability Risk	Low.	
Soakaways Potential	Not suitable.	
New Access Roads	Remoulded CBRs 0.4% to 6.8%. Design CBR value of 3%-5% recommended. Further insitu CBR testing is recommended immediately prior to road / car parking surface construction.	Y
Buried Concrete Class	DS - 1 / AC – 2z. FND2z	
Retaining Walls and Boundary Features	Retaining wall against boundary in north western corner. Potential for new retaining features following earthworks. Stanton Road, warehouse facility and agricultural fields form the site boundaries.	



Further Assessment Targets	Further investigation within the existing yard area of the Upton Steel warehouse facility. BGS liaison over Radon levels in Bradgate Member.	Y
Other Comments	Cut and fill earthworks likely to be required. Tree survey report should be conducted.	

This summary is based on the full report that provides the detailed assessment of the ground risks affecting the development and how to manage them. It should not be used in isolation.

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1 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Limited (GRM) has been appointed by Sutton Land Development (Client), to undertake a Phase II Site Appraisal for a new commercial development (referred to as 'Phase 1') at 'Upton Steel, Stanton Lane, Markfield'. Previous reports were issued in 2017 and 2018, and this updated report has been produced due to changes in the proposed development and any changes in standards and guidance over the intervening period.

The following reports have been used in the preparation of this document:

- Phase I Site Appraisal (Desk Study) – Ref: GRM/P8079/DS.1, dated August 2017.
- Phase II Site Appraisal Report – Ref: GRM/P8079/F.1, dated September 2017.
- Preliminary Soakaway Assessment Letter Report – Ref: P8079-LR.001, dated October 2017.
- Additional Investigation Letter Report – Ref: P8079-Phase 3, dated August 2018.

The Phase II works reported within this document comprised an intrusive ground investigation of window sample boreholes and trial pits, and included geotechnical soil testing, chemical soil analysis and gas monitoring. The information gained from the Phase II works will be used to refine the conceptual model for the site and determine the most cost-effective development solutions.

This document is intended to provide information that will assist decision making by identifying and recommending solutions to ground engineering and contamination issues.

GRM Standard Limitations of Reporting are provided in Appendix A of this report.

The development proposals comprise a new commercial development that includes the construction of a steel framed warehouse (with individual units) and associated infrastructure. The proposed end use includes a new yard area with lorry parking and areas of soft landscaping. The proposed development layout plan provided by the Client is presented in Appendix B.

1.2 OBJECTIVES OF THE SITE APPRAISAL

The principal aims of the Phase II Site Appraisal are as follows:

- a) Obtain information, from easily accessible sources, about the soil and groundwater conditions within the area of the site.
- b) Determine the possible ground-related geotechnical and contamination hazards within the site boundaries that may affect the proposed development.
- c) Provide preliminary development recommendations.

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- d) Provide advice on further works required for the cost-effective reduction of risks to the development and procedures likely to satisfy regulators.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they are likely to have specific requirements that will need to be discussed and addressed at a later date.

2 PHASE I DESK STUDY SUMMARY

Project Name.	Upton Steel, Stanton Lane, Markfield – Phase 1.
Project Reference.	P8079.
Client.	Sutton Land Development.
Site Location (address).	Upton Steel, Stanton Lane, Markfield, LE67 9TT. See Appendix C for a site location and boundary plan.
National Grid Reference.	SK469114.
Site Area (Ha).	1.55 (covering revised Phase 1 area).
Summary of Proposed Development.	New commercial warehouse (steel framed building) with yard area and lorry parking.
Client Supplied Information.	➤ Location of the site. ➤ Proposed development layout plan.
Site Setting.	The site comprises part of an open grassed field, making up the majority of the development area. The remainder, forming the northern end of the development area, comprises the hardstanding yard area of the adjacent Upton Steel warehouse facility, used for parking lorries and stockpiling of materials including wooden pallets. The site is bounded by fields to the west, east and south, and by the adjacent warehouses and mature trees to the north. An equestrian centre is also present to the south east of the site. Dense vegetation surrounds the grassed field and the north eastern boundary of the warehouse facility, and includes semi-mature to mature oak, hawthorn and elder trees/hedges. In the north western corner of the grassed field, adjacent to the warehouse facility, a gabion retaining wall is present. An overhead cable enters the site in the north western corner and terminates at a pylon. The topography of the site within the grass field slopes gently down from west to east. The area of the site occupied by the hardstanding yard area of the warehouse facility is generally flat-lying. Utility services included a medium pressure gas main adjacent to the eastern site boundary, electricity cables at the northern end of the site (north western corner of grass field and within warehouse facility), and water and sewer drainage.
Site History. (GRM has reviewed historical OS maps and aerial imagery from 1999 to 2023)	Extracts of the Ordnance Survey (OS) maps reviewed are provided in Appendix D. 1884 – records site and surrounding area to be open fields. An old quarry is recorded immediately to the south west of the site.

	1903-1959 – No significant changes to site. Old quarry is now recorded as disused. 1966 – No significant changes to site. The quarry is no longer visible and presumed to be backfilled. 1989-1993 – An entrance way is recorded on the land at the northern end of the site, leading to a depot building (off site). 2003 – at the northern end of the site the depot buildings (that exist in the present day) are shown bordering the northern site boundary, with the yard area shown within the northern part of the site. To the south, the field area remains unchanged. Aerial photographs taken between 2011 and the present day show further extensions, extending westwards, to the depot buildings adjacent to the northern site boundary. The site area remains unchanged.
Geology.	Made ground can be expected at the northern end of the site where the yard area of the warehouse facility is present. Topsoil is likely to be present within the grassed field area. Superficial deposits comprising Head deposits (clay, silt, sand and gravel) and Glacial Till / Oadby Member (gravelly clay) are recorded across the site area. Solid geology of the Cotgrave Sandstone Member (sandstone) and Gunthorpe Member (mudstone) are recorded across the northern half of the site, whilst the Edwalton Member (mudstone) is recorded across the southern half of the site.
Hydrogeology.	The Environment Agency has classified the superficial deposits as a Secondary Undifferentiated Aquifer, whilst the underlying bedrock is classified as a Secondary A Aquifer (Cotgrave Sandstone Member) and Secondary B Aquifer (Gunthorpe Member and Edwalton Member). There are no recorded groundwater / potable water abstraction licenses within 500m of the site, and the site is not recorded to be within a Groundwater Source Protection Zone.
Hydrology.	An unnamed stream / drain is located approximately 150m east of the site – considered to be at negligible risk from site derived contamination. There are no surface water abstraction licenses recorded within 500m of the site. There are no significant pollution incidents recorded within 500m of the site.

Flooding.	The site is not recorded to be in an area at risk from flooding by rivers or the sea and is not recorded to be within an area at risk from surface water flooding. There is recorded to be a low risk of groundwater flooding within 50m of the site. Based upon the anticipated ground conditions (and the local conditions) it is considered that groundwater flooding is not a potential issue within the site area. A Phase II ground investigation would provide information on the local groundwater regime so that the risk can be assessed by the project's infrastructure engineer. Any risk associated with the groundwater regime should be catered for within the development infrastructure design.
Mining.	The site is not at risk from historic coal mining, brine extraction or gypsum mining. GRM have conducted an on-line search, which has shown that the Oil and Gas Authority does not record the site to be within an on-shore licence area or associated with an on-shore hydrocarbon field.
Quarrying.	From the historical mapping, an old quarry is recorded immediately to the south west of the site – unknown if it has been wholly infilled, although it forms part of a nature reserve now covered by trees. There are other hard rock quarries in the surrounding area.
Environmental Information.	A Groundsure Enviro & Geo Insight Report has been acquired for the site, with the full report presented in Appendix E. There is one historical landfill recorded within 250m of the site. This relates to the old quarry that was present just to the south west of the site. The waste type was unknown. There are no licensed discharge consents recorded within 500m of the site. There was a historical petrol station and garage located within 100m of the site, to the north. There is a current petrol station recorded within 150m of the site, to the north. Upton Steel (warehouse facility) occupies the northern end of the site and adjacent land to the north. A local nature reserve (Billa Barra Hill Nature Reserve) is located adjacent to the western site boundary.
Potential Soil Contamination Sources.	The presence of made ground (within the northern end of the site where the yard area of the warehouse facility is present), is a potential source of soil contamination.

	Site specific contaminants include petroleum hydrocarbons associated with parking of lorries and pesticides associated with agricultural land use.
Potential Ground Gas Sources (including Radon).	Made ground. Historical landfill within old quarry (recorded by the Environment Agency). The site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings' (BR211 Revised 2023). The south western part of the site is within an area recorded to require basic radon protection measures in new dwellings. A BGS Radon report is presented in Appendix F.

2.1 PHASE I CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Level of Risk
Potentially contaminated made ground associated with previous development (warehouse yard area).	Indoor and outdoor inhalation of soil dust; the ingestion of, and dermal contact with, contaminated soil and soil dust. (soft landscaped areas only).	End users.	Low (based on proposed industrial development).
Pesticides associated with agricultural land use (grass field area).		Construction and Maintenance Workers.	
Made ground (on site) / historic landfill in former quarry (off site).	Inhalation of ground gas.	End users.	Very Low.
Natural strata.	Inhalation of Radon.	End users.	Basic radon protection measures required.
Potentially contaminated made ground associated with previous development (warehouse yard area).	Migration of contamination through leaks and joints, degradation of pipe materials.	Water supply pipes.	Very Low.

CONTROLLED WATERS			
Potentially contaminated made ground associated with previous development (warehouse yard area).	Leaching of contaminants and vertical migration to the groundwater.	Secondary A, B and undifferentiated Aquifers.	Low.

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3 PHASE II GROUND INVESTIGATION

3.1 FIELDWORK

The ground investigation has been designed in accordance with the general comments outlined in Appendix A (iv).

Two phases of ground investigation fieldwork were conducted in August 2017 and June 2018. On the 7th and 8th August 2017, seven exploratory holes (four trial pits and 3 window sample boreholes) were completed in the Phase I area, to a maximum depth of 5.0m begl. A subsequent investigation was undertaken on the 5th June 2018, comprising three additional trial pits within the Phase I area, to a maximum depth of 3.4m begl. The exploratory hole location plan is presented in Appendix G, whilst the exploratory hole logs are presented in Appendix H.

The exploratory holes were positioned to provide an adequate coverage of the site and to provide information with regard to the ground conditions. At this stage, no investigation works have been undertaken within the yard area of the Upton Steel warehouse facility; this area has been highlighted on the exploratory hole location plan. Further investigation works will be required within this area of the site.

Three gas and groundwater monitoring standpipes were installed during the site works, within the Phase 1 area. The rationale for these works is discussed fully in Section 6. Four weekly groundwater/gas monitoring visits were undertaken between the 18th August and 5th September 2017.

3.2 PROVEN GROUND

The following ground conditions were encountered during the investigation fieldwork:

- Topsoil
- Head (Superficial Deposits)
- Edwalton Formation
- Bradgate Formation

The Cotgrave Sandstone Member and Gunthorpe Member were not encountered during the ground investigation works.

3.2.1 Topsoil

Topsoil (and underlying subsoil) was encountered from the ground surface in all exploratory holes and ranged in thickness from 0.2m to 0.45m with a general thickness of 0.3m.

The topsoil typically comprised:

- Soft, dark brown, slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, subangular sandstone, siltstone, chert and volcanic sandstone / siltstone.

3.2.2 Head

These deposits were encountered in all the exploratory holes undertaken across the site, to depths of up to 3.4m begl. The base of the Head deposits was not proven in TP01 at 3.1m, TP02 at 2.7m, TP09 at 3.4m and WS03 at 1.8m begl.

The Head deposits generally comprised:

- Firm to very stiff (medium to very high strength), orangish brown (locally yellow and grey in colour), locally silty and sandy, gravelly to very gravelly, cobbly CLAY. Gravel was fine to coarse, angular to subangular chert and volcaniclastic sandstone and siltstone, with rare rounded quartzite.
- Medium dense, light brown sandy gravelly SILT.
- Medium dense to very dense, light brown and orangish brown, clayey sandy GRAVEL and COBBLES. Gravel and cobbles were fine to coarse, angular to subangular volcaniclastic sandstone and siltstone. This is potentially weathered insitu rock.

In TP02, the excavator was unable to proceed beyond the dense gravels (terminated at a depth of 2.7m begl) and may have been on the rockhead of the Bradgate Formation.

Where hand shear vane measurements were recorded, shear strengths ranging from 57kPa to 61kPa were obtained, indicating a medium strength.

Standard Penetration Test N-values are tabulated below:

Depth (No of readings)	Range in SPT 'N' Value	Correlation to strength *
1.0m (3)	10 to 50 (1 refusal)	Medium to Very High *
1.8-2.0m (3)	18 to 50 (1 refusal)	High to Very High *
2.7-3.0m (2)	21 to 44	High to Very High *

*Utilising the empirical relationship formulated by Stroud (1974) where undrained shear strength is related to SPT N-values and a factor based on plasticity,

Refusals (where SPTs recorded 50+) were recorded in WS03 at 1.0m and 1.8m begl. These are indicative of very stiff clay.

3.2.3 Solid Strata

In terms of geotechnical behaviour most solid strata are rocks, although some have remained as, or have become, soil (the latter as part of the weathering process). The

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solid strata at shallow depths beneath this site may be representative of a soil (which takes the form of weathered rock), becoming less weathered with depth until they are a rock. The weathered rock will have the geotechnical characteristics of a soil.

Edwalton Formation

These strata were encountered only in exploratory holes TP03, TP04, WS01 and WS02, at depths of between 1.5m and 3.4m begl. The full thickness was not proven.

The weathered strata encountered typically comprised:

- Firm to very stiff, reddish brown, silty slightly gravelly CLAY. Gravel was fine to medium, subangular mudstone and siltstone.

Hand shear vane measurements recorded shear strengths ranging from 65kPa to 126kPa indicating a medium to high strength.

Standard Penetration Test N-values are tabulated below:

Depth (No of readings)	Range in SPT 'N' Value	Correlation to strength *
4.0m (2)	32 to 50 (1 refusal)	High to Very High *
5.0m (1)	38	Very High *

*Utilising the empirical relationship formulated by Stroud (1974) where undrained shear strength is related to SPT N-values and a factor based on plasticity,

Refusals (where SPTs recorded 50+) were recorded in WS02 at 4.0m begl. This was indicative of very stiff clay.

Bradgate Formation

These strata were encountered only in exploratory holes TP102 and TP110, at depths of between 1.3m and 2.0m begl. The full thickness was not proven.

The strata encountered typically comprised:

- Medium strong to strong, bluish grey, volcanoclastic SILTSTONE.

3.3 CONTAMINATION OBSERVATIONS

No visual or olfactory evidence of potential contamination was encountered during the fieldwork and monitoring. In addition, potential sources of ground gas were not observed.

3.4 GROUNDWATER OBSERVATIONS

No groundwater was observed in any of the exploratory holes. However, the exploratory techniques used were rapid and may have masked small water seepages.

Four groundwater monitoring visits were completed and the results of the monitoring are reported in Appendix I. In summary, standing water was recorded at depths of between 1.61m begl and 1.96m begl in WS01 only. The other two installations (WS02 & WS03) remained dry during the monitoring visits undertaken.

Long term monitoring of groundwater levels has not been conducted as part of this investigation and interpreted levels are approximate and may be dependent on seasonal variations.

3.5 GROUND GAS AND VAPOURS

Ground gases are discussed in full in Section 6. In summary, the concentrations of ground gases recorded during the monitoring programme are presented in Appendix I and summarised below:

- Methane has not been detected.
- Carbon dioxide between 0.4%v/v and 7.0%v/v.
- Oxygen between 10.3%v/v and 19.5%v/v.

No gas flow was noted during the monitoring programme.

3.6 SUMMARY OF FIELDWORK OBSERVATIONS

The fieldwork has revealed/confirmed the following:

Significant Features identified during fieldwork
No made ground. No visual or olfactory evidence of potential soil contamination. Both shrinkable (cohesive) and non-shrinkable (granular) strata encountered. No groundwater recorded. Elevated carbon dioxide concentrations above 5%v/v have been recorded at two locations.

4 LABORATORY ANALYSES RATIONALE

4.1 CHEMICAL LABORATORY ANALYSIS

Chemical laboratory analyses were selected to provide the parameters necessary to make an initial assessment of potentially contaminated soils and/or waters, for the budgetary design of the development. The choice of contamination testing was based on the Phase I assessment, identified past uses of the site, site observations and comprised:

- Three samples of topsoil were analysed for a general suite of contaminants (metals, inorganics and speciated PAH).
- Three samples of topsoil were screened for the presence of pesticides.

The chemical analysis results are presented in Appendix J. Representative samples from across the area investigated were tested.

4.2 GEOTECHNICAL LABORATORY TESTING

Geotechnical soils testing has been undertaken as part of the ground investigation including the following:

- Four samples (3 of Head and 1 of Edwalton Formation) were tested for Natural Moisture Content.
- Four samples (3 of Head and 1 of Edwalton Formation) underwent Atterberg Limits (PI) classification.
- Three samples of Head deposits underwent Remoulded CBR testing to provide indicative information for roadway and floor slab design.
- Seven samples (3 of topsoil, 3 of Head and 1 of Edwalton Formation) underwent pH and water soluble sulphate testing, for concrete designation.

Geotechnical tests were selected to provide the parameters necessary for the budgetary design of the development including foundations and infrastructure. The geotechnical test results are presented in Appendix K and summarised in Section 10.2. Representative samples from across the area investigated were tested.

5 QUANTITATIVE RISK ASSESSMENT – HUMAN HEALTH (SOIL)

5.1 INTRODUCTION

Development proposals comprise the construction of a new steel framed warehouse (with individual units) and associated infrastructure. The proposed end use includes a new yard area with lorry parking and areas of soft landscaping.

Various sources of contamination have been put forward in the earlier text and summarised in the Phase I conceptual model. The fieldwork has not revealed any potential contamination; accordingly, testing has only been carried out to provide parameters for the reuse of the topsoil.

The rationale for the end use specific Tier 1 Acceptance Criteria (TAC) used by GRM is outlined in Appendix A (vi) and for this site the chemical analysis results are being compared against the TAC for a commercial / industrial end-use. In order to adopt a conservative approach a Soil Organic Matter (SOM) content of 2.5% has been used to assess the topsoil samples, as this closely reflects the lowest SOM recorded.

To provide an initial assessment, benzo(a)pyrene has been used as a surrogate marker compound for genotoxic PAHs with the exception of naphthalene. A copy of the thresholds used in this assessment is presented in Appendix L.

5.2 RISK TO END USERS

The chemical analysis results are presented in Appendix J.

Whilst the number of samples tested is considered sufficient to characterise the topsoil, it is not considered appropriate to carry out statistical analysis on this data set. Therefore, the results for the topsoil have been compared directly against the TAC for a commercial / industrial end-use.

The test results for the pesticide screening will be assessed separately.

5.2.1 Analysis of Soil Contamination Data

GRM General Suite

Three representative samples of the topsoil have been analysed for a general suite of contaminants. The recorded concentrations of all the contaminants were below the relevant TAC for a commercial / industrial end-use.

Pesticide Screening

The screening for pesticides did not reveal the presence of such contamination in the topsoil samples analysed.

5.2.2 Water Supply Pipes

It is considered that, based on the UKWIR guidance, the concentrations of contaminants recorded to date are such that standard PVC water supply pipes should be suitable for the site (field area). However, within the existing yard area of the Upton Steel warehouse facility, Barrier Type B water supply pipes should be allowed for.

It is recommended that the local water supply company for the site be contacted to confirm their requirements with regard to pipe materials.

5.2.3 Summary of Risk to End Users

The risk to end users from soil contamination is considered to be negligible.

Therefore, remedial works are not considered to be necessary.

It should be noted that no ground investigation has taken place in the current Upton Steel yard. Whilst the presence of contamination is considered unlikely given the history and only relatively recent development in current form, ground investigation is required to confirm no significant risk and that remediation is not required. Given the use of this area, the most likely form of contamination would be hydrocarbons associated with vehicle activities.

5.3 RISK TO SITE WORKERS

The investigation has not revealed any specific contamination risk to site workers; however, the general comments outlined in Appendix A (vii) should be considered when site specific risk assessments are completed. The use of suitable PPE should be enforced during the ground works stage of construction.

6 QUANTITATIVE RISK ASSESSMENT – HUMAN HEALTH (GROUND GAS)

The gas risk assessment methodology used by GRM is outlined in Appendix A (v).

As the proposed land use is classed as low sensitivity (commercial / industrial); three 35mm gas/water monitoring standpipes have been installed across the site (WS01, WS02 & WS03). The response zones have been targeted at the natural strata as no made ground was encountered.

Based on 'BS8576:2013 Guidance on investigations for ground gas – Permanent Gases and Volatile Organic Compounds', the gas hazard is considered to be very low (natural soil strata with low degradable organic content / off site historic landfill in former quarry).

The gas monitoring programme comprised four visits, undertaken over a one month time frame. The gas monitoring results are presented in Appendix I and summarised in Section 3.5. The gas monitoring has been undertaken using both the LMSxi Multifunction Gas Analyser and Gas Data GFM430.

The primary guidance document to determine if protection measures are required is BS8485:2015+A1:2019 *Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Screening Value (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

As both gas flow rate and methane concentrations have been consistently below the monitor's lower limit of detection for the installations within the natural strata, a default flow rate of 0.1l/hr and a default methane concentration of 0.1%v/v have been used in the following assessment.

Using the default flow rate of 0.1l/hr and the default methane concentration of 0.1%v/v a Q_{hg} of 0.0001l/hr has been calculated for methane. Using the same default flow rate of 0.1l/hr and the maximum carbon dioxide concentration of 7.0%v/v, a Q_{hg} of 0.007l/hr has been calculated for carbon dioxide. On this basis the GSV for the site is determined as 0.007l/hr.

Although the maximum concentration of methane is <1%v/v and the GSV is less than 0.07l/hr, a concentration of carbon dioxide has been recorded in excess of 5%v/v and as such, further consideration has to be given to the most appropriate Characteristic Situation for the natural strata.

Carbon dioxide concentrations of greater than 5%v/v were recorded in two of the standpipes on more than one occasion. At this stage, the ground gas could be generated by microbial activity within the soils, which is characterised by very low methane and low flow with carbon dioxide concentrations which could reach up to 21% (maximum of 7.0% recorded). Given no significant positive flow has been detected the concentrations are not being generated at a sufficient rate to pose a risk to the

proposed development, as referred to in 'Wilson S, Collins F and Lavery R (2018), using ternary plots for interpretation of ground gas monitoring results. Ground Gas Information Sheet No 1. Ambisense Limited and EPG Limited'.

A ternary plot using the ground gas data collected has been produced and is presented in Appendix M. From this, the plotting of the gas concentrations suggests that the source of the ground gas (and observed carbon dioxide) is indicative of microbial respiration within the natural strata.

Based on the desk study and the findings of the ground investigation and the ternary gas plot, it is considered that the gas source is not a high risk gas source and therefore, it has been concluded that increasing the characteristic situation from CS1 to CS2 is not necessary. As such, 'Characteristic Situation 1' or CS1 as outlined in BS8485:2015+A1:2019 is deemed suitable for the site and no gas protection measures will be required.

It should be noted that steady or rising pressure was recorded during the monitoring visits undertaken, and that the atmospheric pressure was below 1000mb for three of the four monitoring visits.

Therefore, gas protection measures (for methane and carbon dioxide) for the site are not required. However, at this stage, the desk study risk assessment determined that **Basic** radon gas protection measures are required. The BGS radon report confirmed that basic radon for new dwellings was required in the south west corner of the site. However, the proposed commercial development is not a dwelling. The source of the radon being the Bradgate Formation and Head derived deposits from it, are present on site to a greater extent than the BGS mapping suggests. Therefore, at this stage, basic radon protection should be allowed for, unless the BGS are able to confirm level of radon produced by the Bradgate Formation strata is such that a commercial building does not require protection measures.

Depleted levels of oxygen have been recorded during the gas monitoring visits. There is a risk to construction workers entering excavations and where possible, strategies to avoid entering excavations should be adopted. If the need to enter an excavation cannot be avoided, appropriate PPE/RPE should be used to protect those entering the excavation from depleted levels of oxygen, in line with the Confined Spaces Regulations 1997.

6.1 SUMMARY OF RISK FROM GAS

The investigation has confirmed there is no risk to end users from ground gas (due to methane and carbon dioxide) and protection measures will not be required.

However, at this stage, **basic** radon protection should be allowed for, unless the BGS are able to confirm level of radon produced by the Bradgate Formation strata is such that a commercial building does not require protection measures.



In addition, the investigation has also revealed the potential for depleted oxygen levels, which may pose a potential hazard to site workers working in confined spaces.

7 QUANTITATIVE RISK ASSESSMENT - CONTROLLED WATERS

The methodology, rationale and guidance GRM have used to assess the risk to controlled waters is set out in Appendix A (viii).

Following the ground investigation works, the primary receptors for the site are the Secondary Undifferentiated Aquifer (Superficial Deposits) and the underlying Secondary B Aquifers (bedrock). The site is not recorded to be within a Groundwater Source Protection Zone.

The primary pathway is infiltration with vertical migration to the groundwater.

The desk study considered that there are no nearby surface water features that could be impacted by any site derived contamination.

A potential source of contamination has not been identified at the site (field area) and, in the absence of a source, there is considered to be no risk to controlled waters and so soil leachate/water analysis has not been undertaken.

7.1 INTERPRETATION OF GROUNDWATER OBSERVATIONS AND MONITORING

No groundwater was observed in any of the exploratory holes.

Four groundwater monitoring visits have been completed and the results of the monitoring are reported in Appendix I. In summary, standing water was recorded at depths of between 1.61m begl and 1.96m begl in WS01 only. The other two installations (WS02 & WS03) remained dry during the monitoring visits undertaken.

7.2 SUMMARY OF RISK TO CONTROLLED WATERS

The risk to the aquifers below the site is generally negligible.

Within the Upton Steel yard area, the risk to the aquifers would be very low given the recent development and proposed use as hardstanding. Remediation is considered unlikely to be needed.

8 PHASE II CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Remedial Solution
A source of contamination has not been identified.	Indoor and outdoor inhalation of soil dust; the ingestion of, and dermal contact with, contaminated soil and soil dust. (soft landscaped areas only).	End users.	Remediation unlikely to be required.
Potentially in Upton Steel yard area.		Construction workers.	
No source identified (on site) / historic landfill in former quarry (off site).	Inhalation of ground gas.	End users.	Gas precautions are not required.
Natural strata.	Inhalation of Radon.	End users.	Basic radon protection measures required.
A source of contamination has not been identified.	Migration of contamination through leaks and joints, degradation of water pipe materials.	Water supply pipes.	Standard water supply pipes should be suitable – allow for Barrier Type water supply pipes in Upton Steel yard area (to be confirmed by water supply company).
Potentially in Upton Steel yard area.			
CONTROLLED WATERS			
A source of contamination has not been identified.	Leaching of contaminants and vertical migration to the groundwater (restricted by hardstanding and underlying clay strata).	Secondary B and undifferentiated Aquifers.	Remediation unlikely to be required.
Potentially in Upton Steel yard area.			

9 REMEDIATION

9.1 RECOMMENDED REMEDIAL MEASURES AND VALIDATION REQUIREMENTS

9.1.1 Protection of End Users

Soil Contamination

Development proposals comprise the construction of a new steel framed warehouse (with individual units) and associated infrastructure. The proposed end use includes a new yard area with lorry parking and areas of soft landscaping only.

A significant source of soil contamination has not been identified at the site and so remedial measures are unlikely to be required to protect end users. If needed, likely to be due to removal of limited TPH spill.

The existing topsoil has been shown to be uncontaminated and can be used as a growing medium in the new soft landscaped areas or sold as a commodity.

At this stage, no investigation works have been undertaken within the yard area of the Upton Steel warehouse facility; this has been highlighted on the exploratory hole location plan presented in Appendix G. Further analysis of the soils within this area of the site is required at a later date to confirm absence of contamination or any limited remediation that may be needed.

Should any material suspected of being significantly contaminated be encountered during the redevelopment of the site, GRM can be contacted to undertake additional investigation if necessary. The local Environmental Health Officer should be contacted and informed of any additional remedial work required.

Ground Gas

Gas protection measures for methane and carbon dioxide will not be required for the proposed development.

However, **Basic** radon gas protection measures are currently required. At this stage, basic radon protection should be allowed for, unless the BGS are able to confirm level of radon produced by the Bradgate Formation strata is such that a commercial building does not require protection measures.

9.1.2 Protection of Site Workers

The risk to site workers from soil contamination is negligible. No remedial measures are required. However, the use of suitable PPE should be enforced during the ground works stage of construction.

The investigation has revealed the potential for depleted oxygen levels, which may pose a potential hazard to site workers working in confined spaces. It is recommended

that there is no entry into excavations. If man entry is required, it is recommended that gas monitoring is conducted during operations to ensure adequate concentrations of oxygen are present and ventilation of excavations is undertaken. A banksman should also be present to monitor for any problems.

9.1.3 Protection of Controlled Waters

The risk to controlled waters is considered negligible and no remedial measures are anticipated.

9.1.4 Protection of Water Pipes

It is considered that standard PVC water supply pipes should be suitable for the site (field area). However, within the existing yard area of the Upton Steel warehouse facility, Barrier Type water supply pipes should be allowed for.

However, it is recommended that the local water supply company for the site be contacted to confirm their requirements with regard to pipe materials.

9.2 REMEDIAL STRATEGY

A Remediation Method Statement is not considered to be necessary at this stage.

The site does not need gas protection measures for methane or carbon dioxide. Due to the underlying geology, the site requires Basic Radon gas protection measures.

Following your review of this document, we would recommend that a copy of it be forwarded to the Local Authority for comment and approval, prior to commencing development of the site. The Local Authority may choose to include other consultees as part of the planning process (such as the Environment Agency).

Consultation should be undertaken at the earliest possible opportunity to avoid abortive or delayed works.

9.3 DISPOSAL AND CLASSIFICATION

Based on the chemical results, the topsoil at the site have been classified using the HazWaste Online software, should they require disposal offsite. A Waste Classification Report for the topsoil is presented in Appendix N. The topsoil will not be classified as Hazardous Waste (i.e., non-hazardous classification confirmed).

The natural strata underlying the site are likely to be classified as Inert for disposal purposes; however, further testing will be required to confirm this. Natural soils may be suitable for re-use on site as part of any general landscaping or as a non-structural fill and consideration should be given to retaining this material on site. Alternatively, it may be sold as a commodity to off-set construction costs.

Care should be taken to keep natural arisings separate from any made ground and free from construction materials, as natural soils mixed with made ground and / or construction materials may attract additional disposal costs.

It is recommended that any materials to be exported are stockpiled and tested to confirm disposal rates, as this may be more cost effective than using the results contained within this report.

Tarmacadam Assessment

Within the yard area of the Upton Steel warehouse facility, at the northern end of the site, asphalt / tarmac hardstanding will be present. If some of it is to be removed as part of the redevelopment works (to accommodate the new warehouse building), further testing of the asphalt / tarmac hardstanding will be required to determine the absence of coal tar and if it can be classified as a non-hazardous product. Until this is done, the hardstanding material should be treated as hazardous waste.

If required, it is recommended that the hardstanding material is excavated and stockpiled separately from other made ground materials on site. Analysis of the hardstanding material can then be undertaken using PAK marker spray. The PAK marker spray contains a solvent which dissolves tar-based products and discolours the paint as it dries; indicating if coal tar is present.

If the hardstanding material does include coal tar, it should be disposed of as Tarmacadam/asphalt: 17 03 01 (bituminous mixtures containing coal tar) or recycled through a waste disposal / recycling facility. If the hardstanding material does not include coal tar, it should be disposed as Tarmacadam/asphalt: 17 03 02 (bituminous mixtures other than those mentioned in 17 03 01) or recycled through a waste disposal / recycling facility.

10 GEOTECHNICAL ASSESSMENT

10.1 INTRODUCTION

The development proposals comprise the construction of a new steel framed warehouse (with individual units) and associated infrastructure. The proposed end use includes a new yard area with lorry parking and areas of soft landscaping.

Finished floor levels and the levels of any underground engineering works have not been provided.

In addition to the site specific comments below reference should be made to the general comments relating to the Geotechnical Assessment listed in Appendix A (xi to xvi).

10.2 GEOTECHNICAL TESTING

Geotechnical testing has been carried on site; the results of this testing are provided on the logs in Appendix H and in Appendix K. These results are summarised in the tables below:

Insitu Testing for Head Deposits:

Test Parameter	Range of Results
SPT 'N' values	10 to 50 @ 1m (medium to very high strength) 18 to 50 @ 1.8-2m (high to very high strength) 21 to 44 @ 2.7-3m (high to very high strength)
Hand Shear Vane	57 to 61 kPa

Insitu Testing for Edwalton Formation:

Test Parameter	Range of Results
SPT 'N' values	32 to 50 @ 4m (high to very high strength) 38 @ 5m (very high strength)
Hand Shear Vane	65 to 126 kPa

Laboratory Testing for Head Deposits:

Test Parameter	Range of Results
Natural Moisture Content	17% to 22%
Plasticity Index	7% to 22%
Remoulded CBRs	0.4% (gravelly silt) to 6.8% (gravelly clay)

Laboratory Testing for Edwalton Formation:

Test Parameter	Range of Results
Natural Moisture Content	27%
Plasticity Index	45%

The above Plasticity Index (PI) test results indicate that the natural cohesive strata are of low (PI 10% to <20%) to high (PI >40%) volume change potential (VCP). For the subsequent foundation assessment, assuming a worst case situation, high volume change potential should be used for design purposes at this stage. However, medium volume change potential can be used where the Edwalton Formation strata are not present within influencing distance of foundations.

Further discussion on the CBR test results is included in Section 10.12.

10.3 ENGINEERING GROUND TREATMENT

The near surface soils were generally firm under foot during the intrusive investigation. However, in wet conditions the near surface soils may become soft under foot. It is therefore considered likely that pre-treatment of the surface soils will be required, even for any small plant/personnel movements.

Due to the gently sloping nature of the site and the proposed development, it is considered likely that some cut and fill works will be required to provide a level platform for the proposed warehouse building. Testing will be required to classify the soils for suitability for re-use as engineering fill in cut and fill, as structural capping for roads and sub-base for ground bearing slabs.

For a piled foundation solution (see Section 10.6), a suitable working platform (i.e. piling mat) will be required. It is recommended that the design of the working platform is carried out as soon as possible. The working platform certificate requires signing by the Principal Contractor for the site. An allowance for this, and responsibility for the design of the platform (estimated at 400mm thick if constructed without reinforcement depending on the quality of any earthworks), should be made in tender packages and site programmes.

10.4 EXCAVATION CONDITIONS

Excavation of most of the materials encountered during the ground investigation should be readily achieved using conventional hydraulic excavation techniques. However, window sample borehole refusals from shallow depths were due to dense gravels or very stiff clay strata. A breaker may be required for deeper excavations into the dense gravel deposits and/or rock strata of the Bradgate Formation, as the machine used for trial pitting was struggling to excavate the material.

From the trial pit stability observations, it is likely that any excavations will remain stable. Some side trench collapse is inevitable particularly in the medium term and in

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inclement periods. Granular soils are liable to collapse without warning; this situation is likely to be exacerbated by water ingress. If required, trench stability should be maintained by providing full support to the side walls, in line with the necessary Temporary Works procedures and Code of Practices.

The observed groundwater conditions suggest that the use of conventional sump pumping would be adequate to control any water ingress in shallow excavations.

10.5 EXISTING STRUCTURES / SUBSTRUCTURES

At the time of the investigation works, no building structures were present within the field area of the site where there has been no previous development. The northern end of the site is occupied by the yard area of the Upton Steel warehouse facility. From historical mapping, there was no previous development (leading to potential substructures) before the construction of the existing warehouses and yard area.

There is an underground electric cable in the north western corner of the field, leading into the adjacent warehouse facility. A medium pressure gas main runs along the eastern site boundary adjacent to Stanton Lane. It is assumed that both water and sewer drainage will be present within the yard area of the Upton Steel warehouse facility.

10.6 FOUNDATIONS

Topsoil and any soft natural strata, as well as any made ground from the northern end of the site, are considered unsuitable as a bearing stratum and all new foundations should be carried down through them to found on the more competent natural cohesive or granular strata.

Development proposals comprise the construction of a new steel framed warehouse (with individual units), within the western half of the site area.

Anticipated founding strata for the vast majority of the new development comprises firm to very stiff sandy gravelly CLAY. For initial design purposes, a minimum foundation depth of 1.0m begl (high volume change potential) will be applicable for this site. However, at the southern end of the proposed location of the new warehouse building, dense sandy GRAVEL and COBBLES were recorded from shallow depths. As the occurrence of the granular strata is unpredictable due to the variable nature of the Head Deposits, it would be prudent to allow for a minimum founding depth of 1.0m begl for these deposits as well.

There are trees along the western and northern field boundaries and any new foundations within the zone of influence of these trees bearing into shrinkable soils will need to be deepened in line with recognised industry standards such as the NHBC Standards Chapter 4.2.

TRENCH FILL

Shallow foundations such as trench fill are not considered to be suitable due to the type of development proposed with high point loads. Where loads are lower, such as walls between steel stanchions, then trench fill may be suitable. The advice given for pads is also applicable for trench fill.

It is considered that either pad or pile foundations will be the most cost-effective foundation solution with the bearing strata being the Head Deposits or the underlying Edwalton Formation or Bradgate Formation.

The salient points of this are explored below.

PADS

It is considered that pad foundations, founding on the firm to very stiff sandy gravelly clay or dense sandy gravel and cobbles, should be suitable for the proposed warehouse building.

Assuming minimum firm strength (minimum 60kPa undrained shear strength) for the natural cohesive clay strata, a nett allowable bearing pressure of around 110kN/m² is considered appropriate. If 110kN/m² is used for design purposes, then a maximum column load of 245kN/m can be accommodated on pads 1.5m square (and 440kN/m on pads 2.0m square). If 150kN/m² is used instead (for stiff clay), then a maximum column load of 338kN/m can be accommodated on pads 1.5m square (and 600kN/m on pads 2.0m square).

For the dense granular strata recorded at a minimum foundation depth of 0.60m begl (TP102), a nett allowable bearing pressure of around 220kN/m² is considered appropriate. If 220kN/m² is used for design purposes, then a maximum column load of 220kN/m can be accommodated on pads 1.0m square (and 495kN/m on pads 1.5m square).

The firm clay strata will also be suitable to support a maximum line load of 66kN based on 600mm wide strip foundations (for connecting walls), whilst the dense granular strata will be suitable to support a maximum line load of 132kN based on 600mm wide strip foundations.

Founding onto different geological units with variable compressive natures will result in differential settlements, and it is recommended that an allowance is made for reinforcing the foundations to mitigate the risk of differential settlement. It is recommended that additional investigation is undertaken to check the strata at foundation depths once ground levels are finalised. Settlement assessment is recommended if founding on different strata to ensure tolerable to proposed end use. Proposed loads are needed and anticipated foundation sizes and depths to do.

As the near surface cohesive strata are shrinkable it is considered that the effects of trees will need to be considered during design. Heave precautions will be required

where the foundations lie within the heave zone of trees, as defined by industry standards such as NHBC Standards Chapter 4.2. Foundations should be remote from the direct action of tree roots, and should not be constructed so close to trees as to significantly damage their root systems.

PILES

The bearing strata for the piles will likely be either the Edwalton Formation (mudstone) or the Bradgate Formation (volcaniclastic siltstone).

A piling specialist will need to be approached to provide pile dimensions and safe pile capacities. They are likely to require the provision of rotary core borehole logs to provide information for detailed design. Consideration should be given to nearby structures and infrastructure and achieving sufficient penetration to resist heave, when choosing the appropriate pile type. Piles less than 7.5m long are unlikely to be acceptable to the warranting bodies where the potential influence of trees is greater than 2.5m.

Non-displacement piling techniques such as CFA or bored piled foundations are recommended to minimise ground disturbance which could impact adjacent structures.

Whilst piled foundations would end bear beneath the influence of trees, the piles and ring beams should be designed to resist potential heave, down-drag and negative skin friction.

A testing regime and objectives of the works will need agreeing with regulatory and warranting bodies prior to works. The pile design will need to be justified to the warranting bodies and the justification should be included within the piling contract.

It should be noted that a working platform will be required by the piling contractor.

Pile layouts and ground beams will need to be engineer designed.

10.7 FLOOR SLABS

Once the development proposals have been clarified, then the type of floor slab can be confirmed. As proposed site levels are currently unknown, allowance for a suspended floor slab should be made. Alternatively, due to the type of building proposed, a cast in situ ground bearing floor slab on a suitable base or cast in situ suspended floor slab with a void former may be appropriate.

If a piling mat, or working platform, is used as part of the foundation solution this, assuming it has been engineered to a suitable standard, could form a base for a ground bearing floor slab.

Gas protection measures for methane and carbon dioxide are not required. However, **Basic** radon gas protection measures are currently required. At this stage, basic radon protection should be allowed for.

10.8 BURIED CONCRETE

Testing for pH and water soluble sulphate has been undertaken in the topsoil and natural soils. The results of the water soluble sulphate and pH testing are presented in Appendix J.

Based on the recorded water soluble sulphate and pH levels in the soils below the site and assuming mobile groundwater conditions (worst case) for the site, in accordance with the requirements of BRE Special Digest 1 (2005), 'Concrete in Aggressive Ground', the Design Sulphate Class for buried concrete at the site should be assumed as DS-1 and the ACEC Class as AC-2z (due to low pHs and assuming brownfield site due to existing warehouse facility occupying northern end of the site area).

The classifications above equate to a concrete designated as FND2z in BS8500.

10.9 SLOPE STABILITY AND RETAINING STRUCTURES

The field area of the site slopes down from west to east, in a north eastern direction. The high point is in the south western corner of the field, with the lowest area of the field in the north eastern corner, adjacent to Stanton Lane. The ground drops by approximately 7m over the width of the field. It is considered that there is a low risk of slope instability at present gradients.

For the development area within the northern end of the site (where the existing yard area of the warehouse facility is located), the ground is generally flat-lying.

A retaining wall is present on the north western corner boundary of the field, adjacent to the yard area of the warehouse facility. It is assumed this retaining wall will be removed as part of the redevelopment works.

The present gradients on site are likely to be adjusted by earthworks. Future ground profiles may require earth retaining structures, for which further advice may be required when more information is available.

10.10 SEDIMENT MANAGEMENT

If required, mitigation measures should be implemented to prevent the runoff of sediment and potential pollution into any surface water (i.e. Blundel Brook), during the construction and earthworks process. Reference should be made to CIRIA C532 'Control of Water Pollution from Construction Sites'.

An Environmental Management Plan and Construction Management Plan will be required to prevent pollution of Controlled waters.

10.11 SOAKAWAY DRAINAGE

The majority of the strata encountered during the investigation is not suitable for soakaway drainage due to its low permeability (clays). Whilst the granular Head Deposits might potentially be suitable, given unpredictable occurrence and likely limited extent it is not recommended to be used in soakaways to prevent groundwater flooding occurring on finished development.

An alternative drainage system should be considered for the disposal of surface water.

10.12 NEW ACCESS ROAD / NEW CAR PARKING AREAS

Remoulded CBR tests have been undertaken, with recorded CBR values ranging from 0.4% to 6.8%. Two results were 6% to 6.8% (gravelly clay), whilst the other result was 0.4% (gravelly silt). The vast majority of the site has firm gravelly clay from shallow depths directly beneath the topsoil.

Site observations suggest that the natural cohesive soils will have CBR values of between 3% and 5%, whilst the granular soils will have CBR values of greater than 5%, when suitably drained. However, experience suggests that poorer CBR's are likely during the winter months when moisture contents are typically greater. At this stage, a design CBR value of 3%-5% is recommended.

Proof rolling and the improvement of soft spots may result in increased CBR values and the incorporation of a geotextile grid into sub-base layers may allow for reduced capping thickness.

Further insitu CBR testing immediately prior to any road or car parking surface construction, if this is acceptable under the adopting authorities procedures, may allow a more reliable CBR value to be used for design purposes.

11 FURTHER INVESTIGATION

Further investigation, to determine more accurately the effect of some of the identified hazards on the development, is recommended. This includes the following:

- Further investigation within the existing yard area of the Upton Steel warehouse facility, comprising window sample boreholes.
- Geotechnical design of earthworks / cut and fill programme. This will require additional ground investigation with deep trial pits undertaken by a large excavator with breaker to assess whether rockhead has been encountered.
- If pile foundations are required, a piling specialist will need to be approached to confirm the appropriate pile type, provide pile dimensions and safe pile capacities.
- Rotary core boreholes may be required for pile design.
- Insitu CBR testing to be undertaken once proposed site levels are known.
- An arboricultural specialist will be required to conduct a tree survey.
- Liaison with the Local Water Supply Company to determine the appropriate water supply pipes at the site.

A copy of this report should be submitted to the Planning Department of the Local Authority/Local Authority EHO for review, if planning conditions exist for this site.

12 CONCLUSIONS

Assuming compliance with all the recommendations contained within this report (for abridged version see 'Summary of Recommendations' table at the beginning of the report) the site is suitable for the proposed development.

Based on the evidence currently available the site is assessed as being of moderate risk for geotechnical hazards and low risk for contamination hazards.



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GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records: <https://mapapps2.bgs.ac.uk/geoindex/home.html>
- BGS online viewer: <https://geologyviewer.bgs.ac.uk>
- Magic Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: <http://www.environment-agency.gov.uk/>
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2023), 'Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)'
- UK HSA Radon Maps: <https://www.ukradon.org/information/ukmaps>
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015 +A1: 2019, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- | | | |
|------------|-------------------|--|
| · Arsenic | · Copper | · Water soluble sulphate |
| · Cadmium | · Nickel | · PAH (polycyclic aromatic hydrocarbons) |
| · Chromium | · Zinc | |
| · Lead | · Phenols | |
| · Mercury | · cyanide (total) | |
| · Selenium | · pH | |

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007) and BS8576 'Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs) (2013).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (including supplementary advice for extensions, conversions and refurbishment projects) (BR211: 2023)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is *BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Flow Rate (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Reports has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables. For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Category 4 Screening Levels (C4SLs) published by DEFRA, values calculated by GRM using the CLEA v1.071 risk assessment, and values and Suitable for Use Levels (S4UL) developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.071 risk assessment software using the age classes and pathways described above.

vii RISK TO SITE WORKERS – GENERAL COMMENTS

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values.

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Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier I Screening values.

ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

x WASTE DISPOSAL, SITE WASTE MANAGEMENT PLANS AND MATERIAL MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. GRM can assist in the production of Material Management Plans under the CL:AIRE Definition of Waste: Code of Practice. The DoWCoP enables:

- The direct transfer and re-use of clean naturally occurring soil materials between sites, and
- The re-use of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

GRM can also undertake the role of Qualified Person and submit the DoW CoP project Declaration.

Likewise making the site as volume neutral as possible will reduce the costs of development. Whilst not a statutory requirement, Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off-site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) 'Safety in Excavations'.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

xv **GEOTECHNICAL ASSESSMENT – SOAKAWAYS**

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.
- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi **GEOTECHNICAL ASSESSMENT – FOUNDATIONS**

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).

NOTES ON LIMITATIONS

General

GRM Development Solutions Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement had been executed, or with whom an assignment had been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from GRM Development Solutions Limited; a charge may be levied against such approval.

GRM Development Solutions Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects. The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.



The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.



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NOTES:



NOTES

1. **Connection must check all dimensions in situ.** On large alterations this to be worked from. Inconspicuous must be reported to the Architect or Engineer before proceeding. If this warning is repeated.
2. **Notepaper from IS.** Message in the perimeter of the document is subject of the Client's right of use (subject to the company's "Policy"). On 20/09/2008, 2008, all rights reserved. (Source: www.issn.org)
3. **ISAF Technical Approval has been obtained from the relevant local authority, all drawings are agreed and preliminary work has been completed. Should the Connection be required to provide prior to the approval being given, it is entirely their own risk.**
4. **Visuals (Images) cannot accept any discrepancies in terms of construction or any other information disclosed from this file.**
5. **The exact location and level of all existing services, their size and access are to be confirmed in situ prior to the**

SAFETY, HEALTH AND ENVIRONMENT

In addition to the hazards, risks normally associated with the type of work detailed on this drawing, note the following significant risks and information:

Construction

1. Quarterly, location is level of forested habitats and deadwood patterns. Consideration is undertaken during survey prior to the commencement of any work to confirm with statutory utility providers that proposed work will not affect their apparatus.
2. Close proximity to existing overhead statutory wires/cables.

It is assumed that all works will be carried out by a competent Craft labour, where appropriate, by an approved method.

-
- Site Boundary
 - Conservation reserve park administration
 - Proposed 2017 reforestation
 - Frequent forest
 - Frequent Forest (Proposed)
 - Proposed accurate forest (prior to disturbances due to logging)
 - Proposed Closures with risk are designed to avoid sensitive species (in areas)
 - Proposed Low levels of disturbance

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CLIENT: Sutton Land Development	
PROJECT: Upton Steel, Stanton Lane, Markfield	
TITLE: Proposed Development Layout Plan	
SCALE@SIZE : NTS	ISSUE: FINAL
DESIGN/DRAWN : RHC	DATE: Nov 2023
PROJECT No: P8079	DRAWING No: Figure 1
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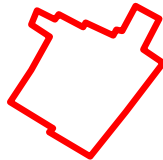


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NOTES:



Approximate site location



Approximate site boundary



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 Tel: 01283 551 249
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CLIENT:	
Sutton Land Development	
PROJECT:	
Upton Steel, Stanton Lane, Markfield	
TITLE:	
Site Location and Boundary Plan	
SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
RHC	Nov 2023
PROJECT No:	DRAWING No:
P8079	Figure 2



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Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: County Series

Map date: 1903

Scale: 1:2,500

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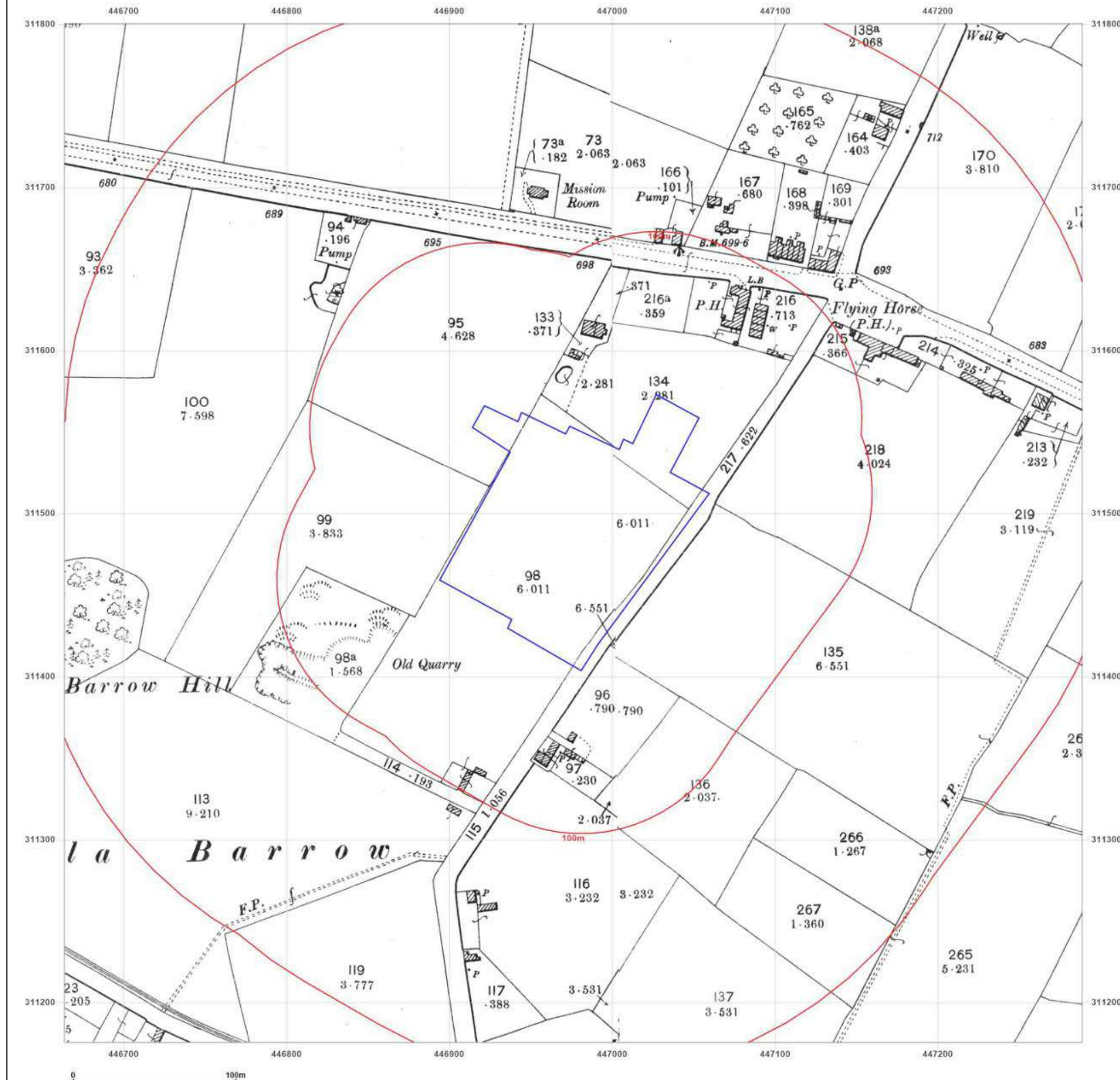


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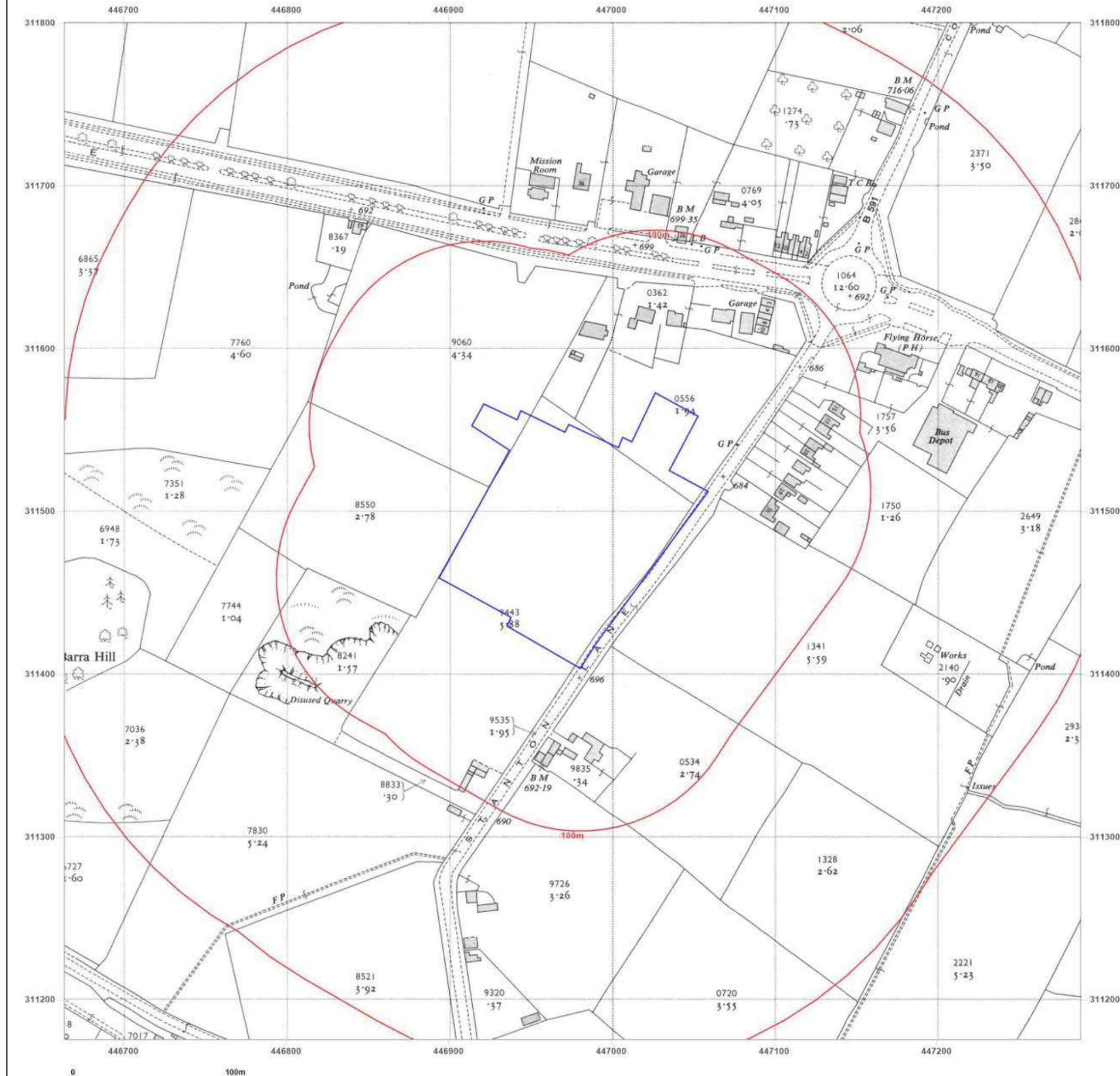


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Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: National Grid

Map date: 1966

Scale: 1:2,500

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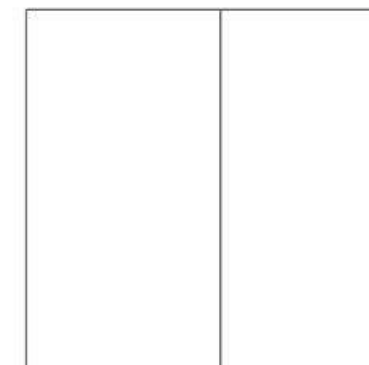
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Map Name: National Grid

Map date: 1967

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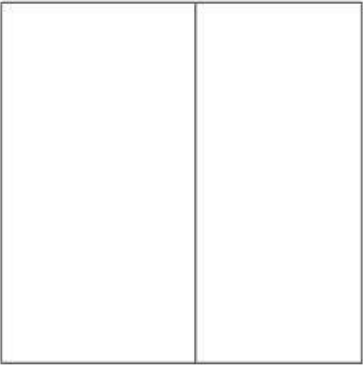
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Map Name: National Grid

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Map Name: National Grid

Map date: 1993

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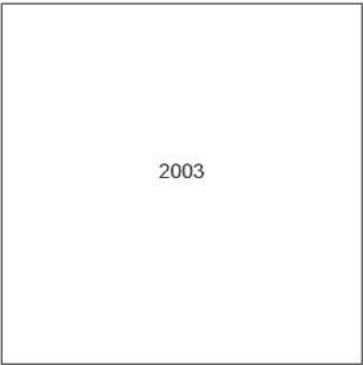
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Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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Site Details:

Upton Steel, Stanton Lane,
Markfield, LE67 9TT

Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: County Series

Map date: 1901

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1901
Edition N/A
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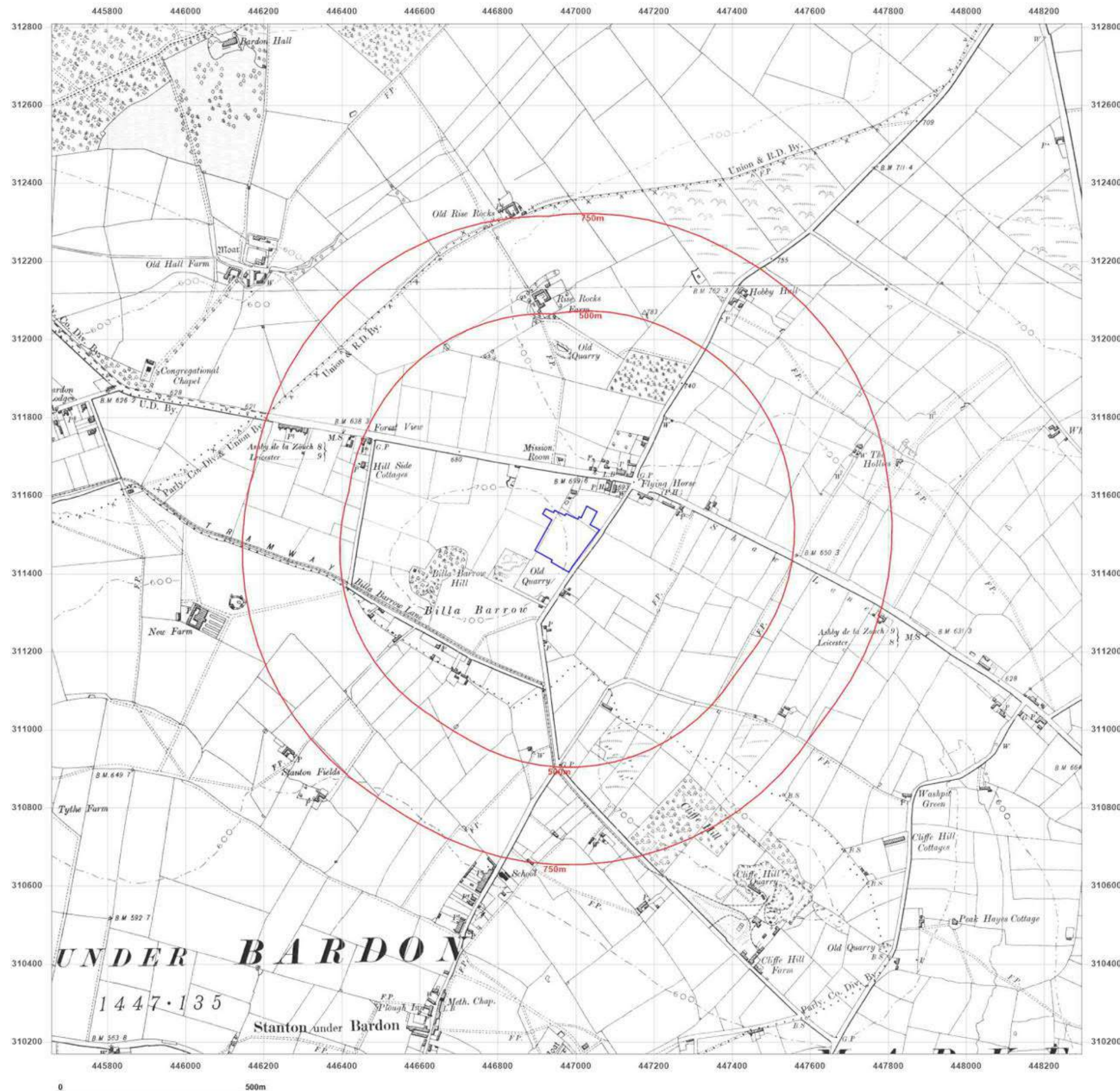


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Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: County Series

Map date: 1930-1931

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1883
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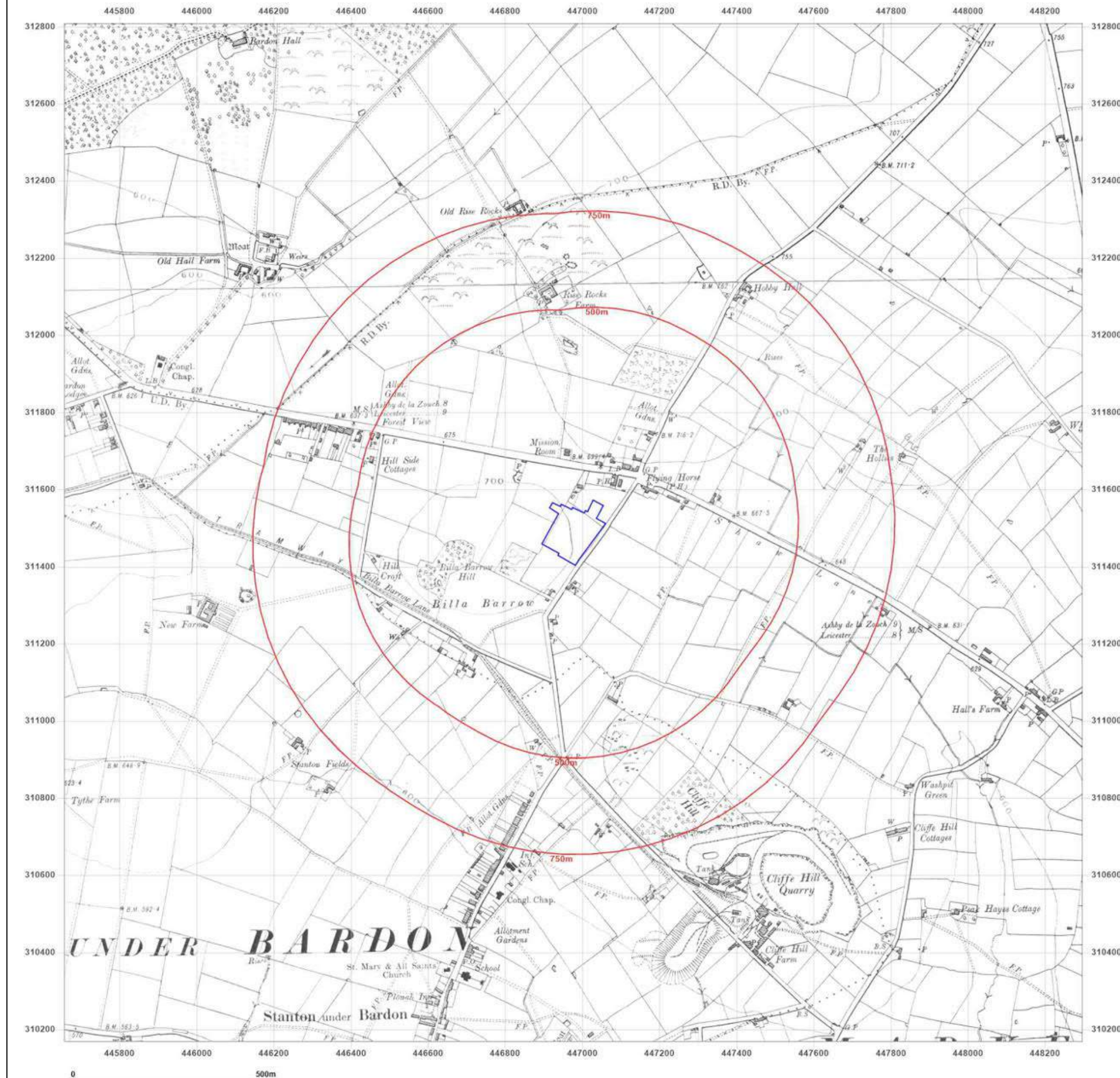


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Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: County Series

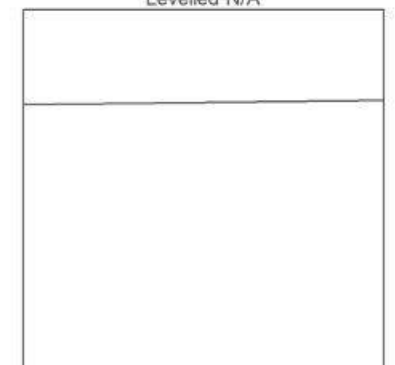
Map date: 1947

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Surveyed N/A
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Edition N/A
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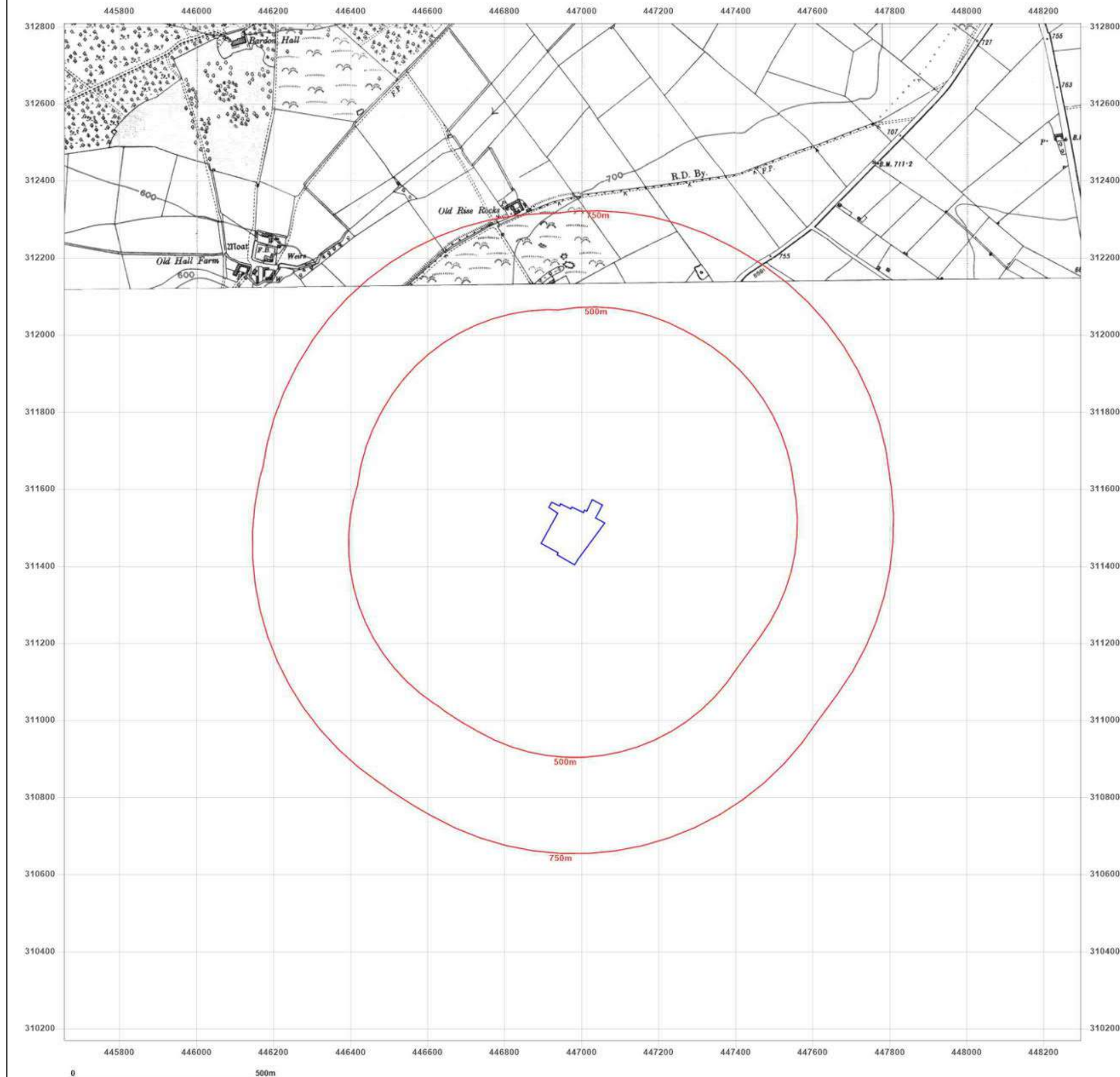


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Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: County Series

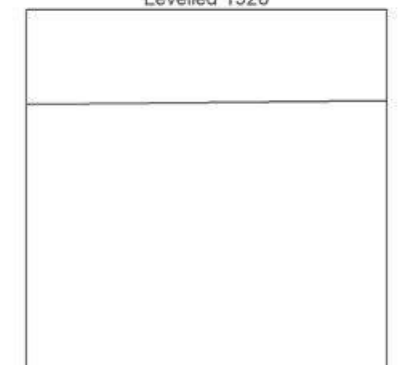
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Surveyed 1883
Revised 1947
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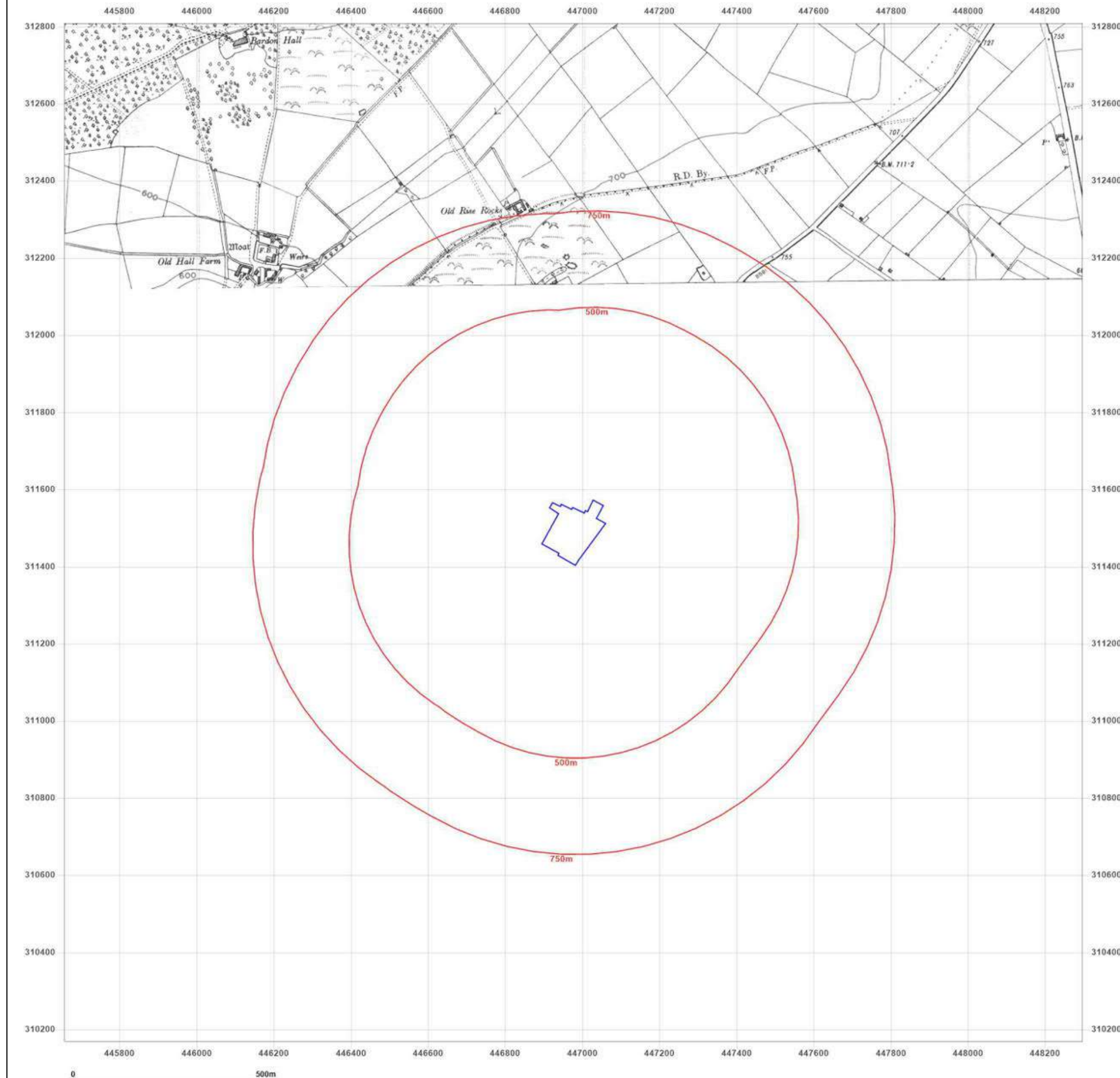


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Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: Provisional

Map date: 1955

Scale: 1:10,560

Printed at: 1:10,560



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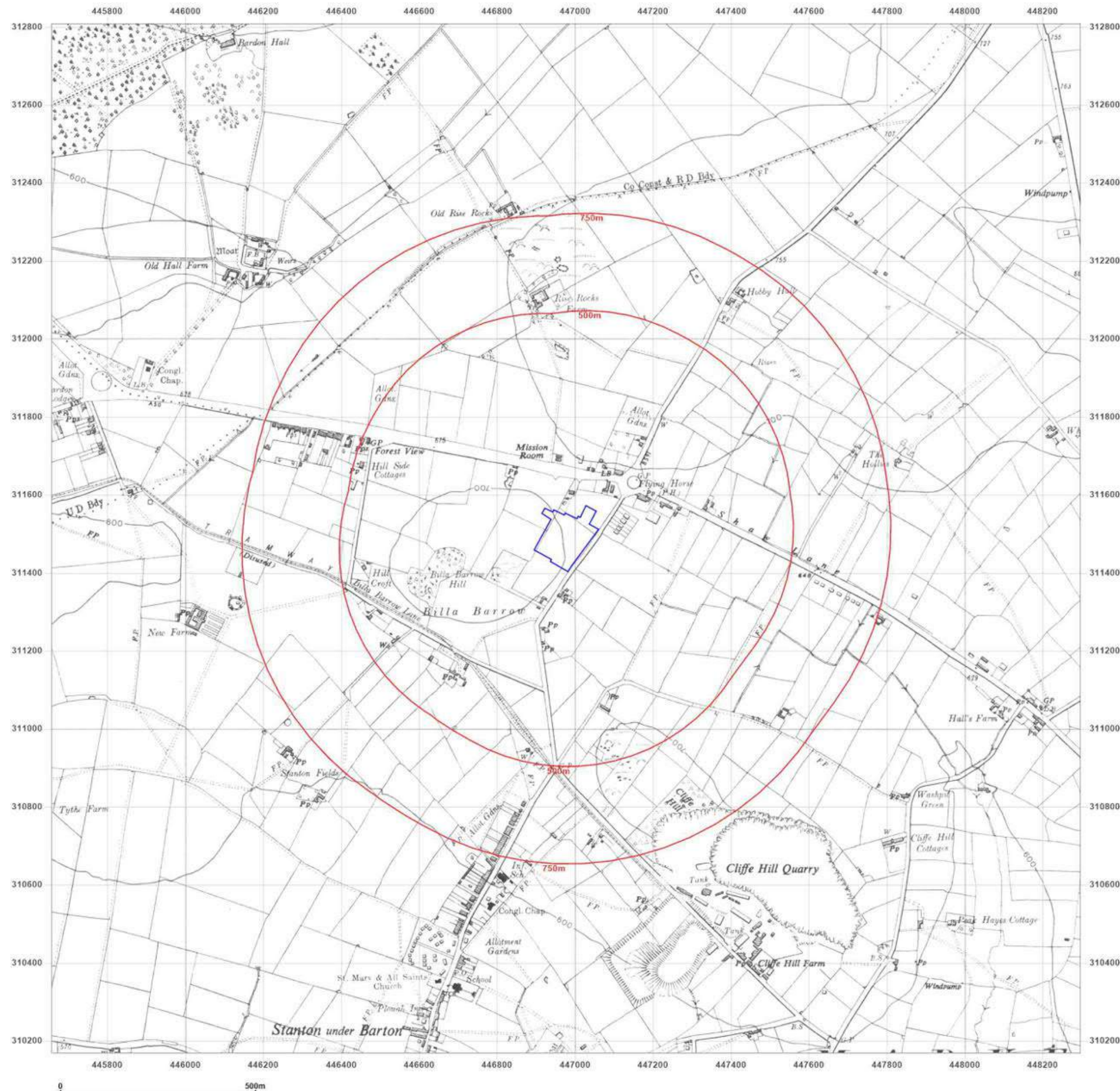


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Grid Ref: 446976, 311488

Map Name: Provisional

Map date: 1968

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Printed at: 1:10,560



Surveyed 1968
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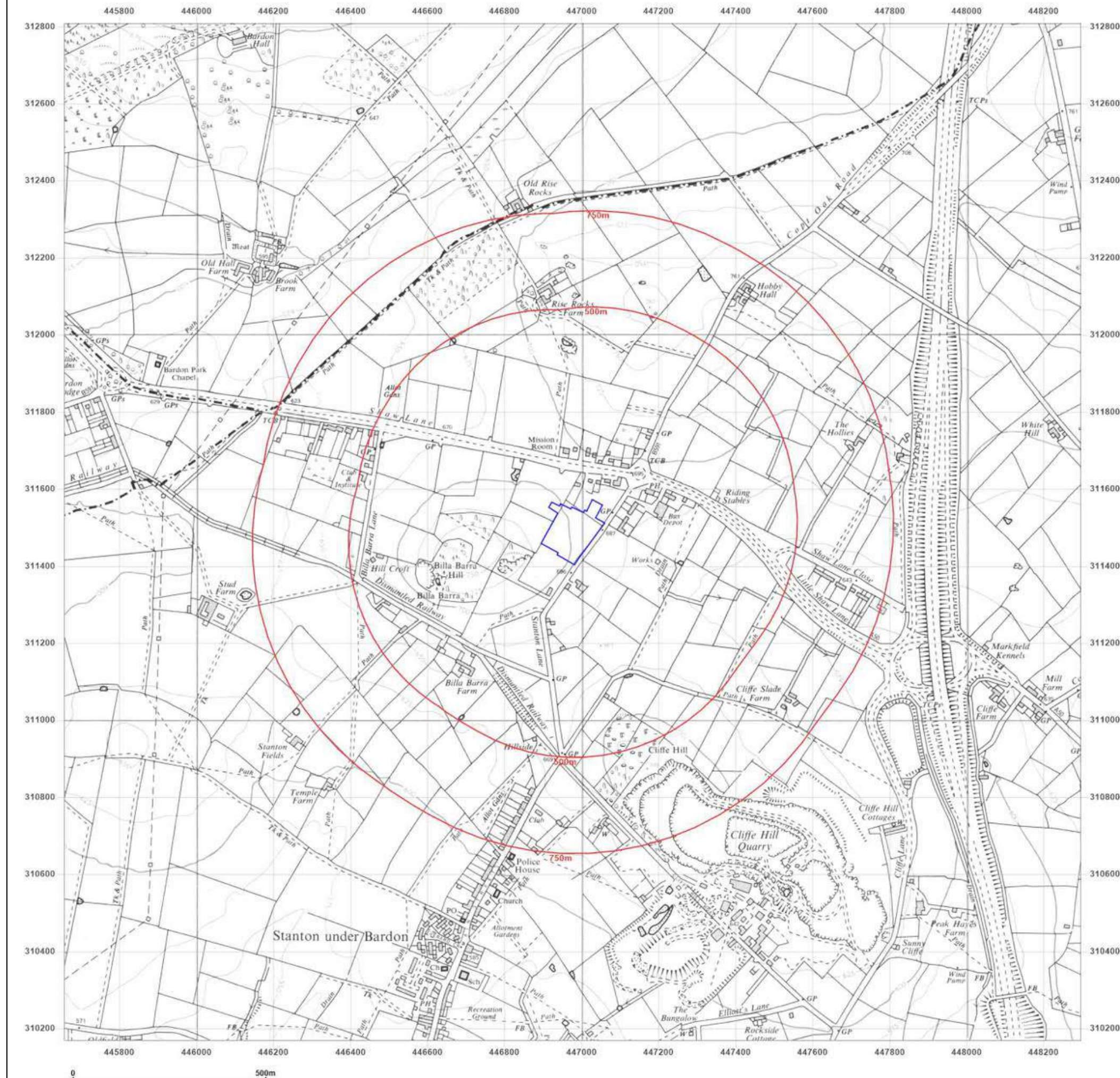


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Client Ref: EMS_907783_1124465
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Grid Ref: 446976, 311488

Map Name: National Grid

Map date: 1980

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1975
Revised 1980
Edition N/A
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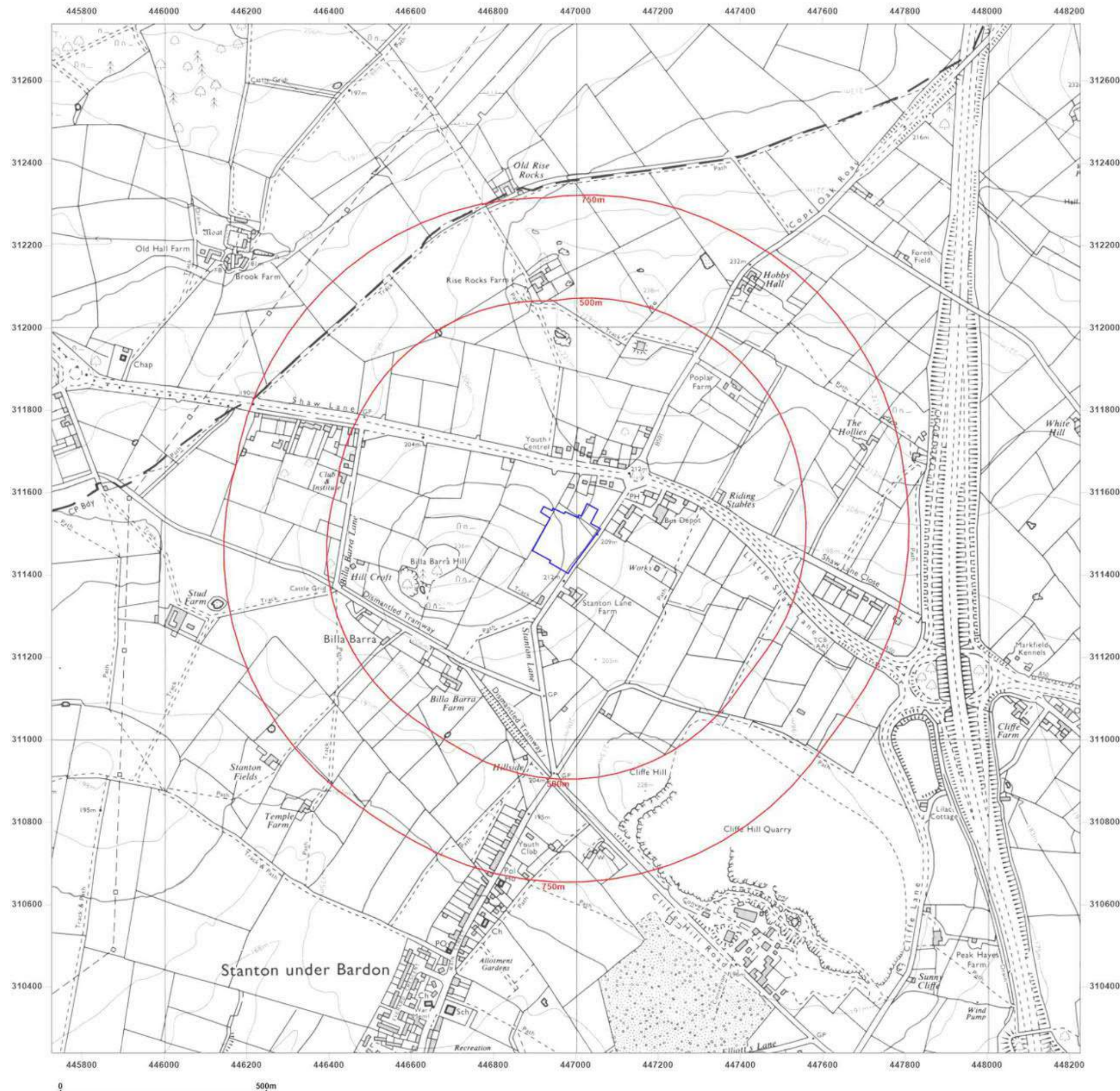


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Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1991
Revised 1992
Edition N/A
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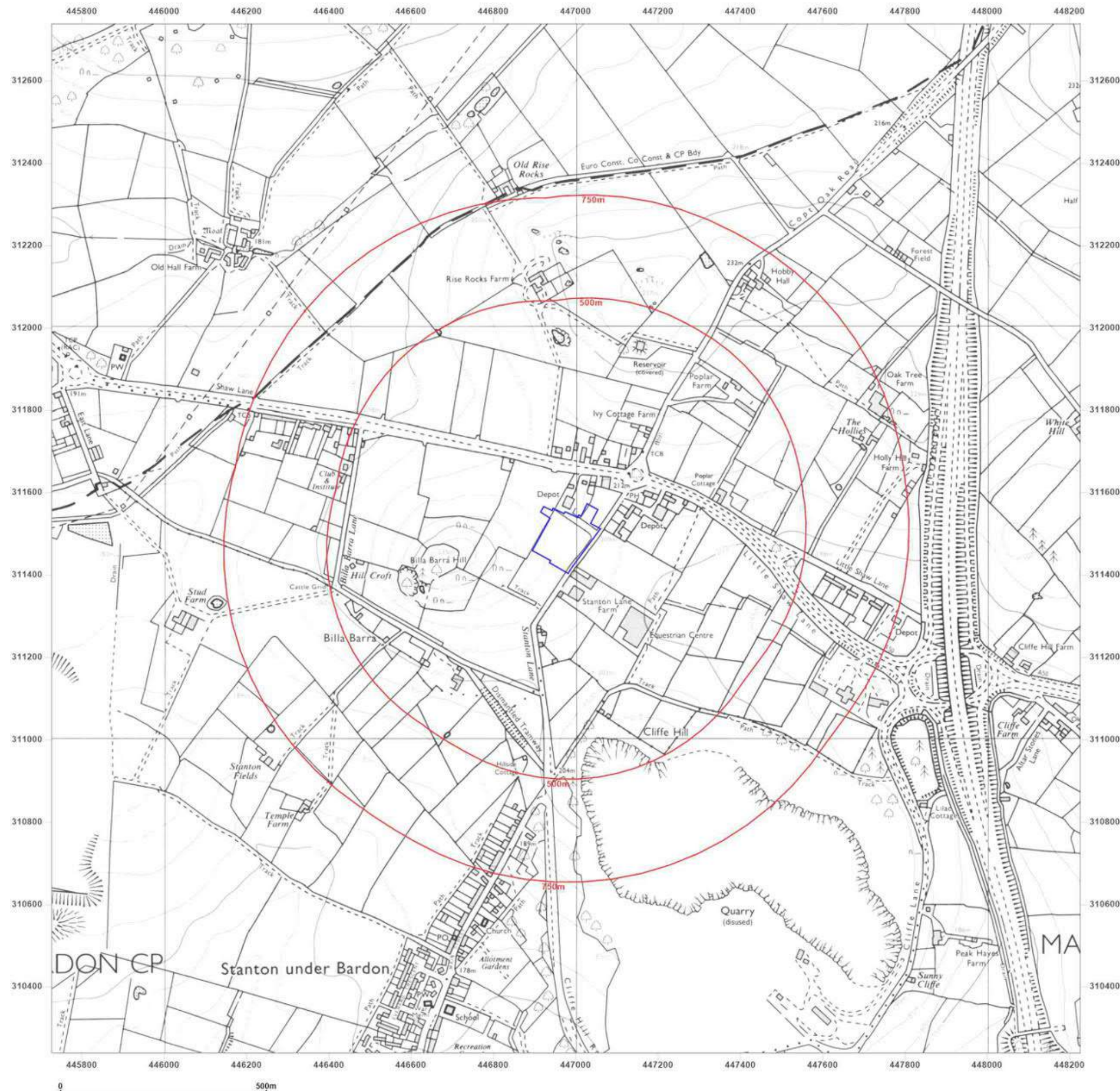


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Client Ref: EMS_907783_1124465
Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001



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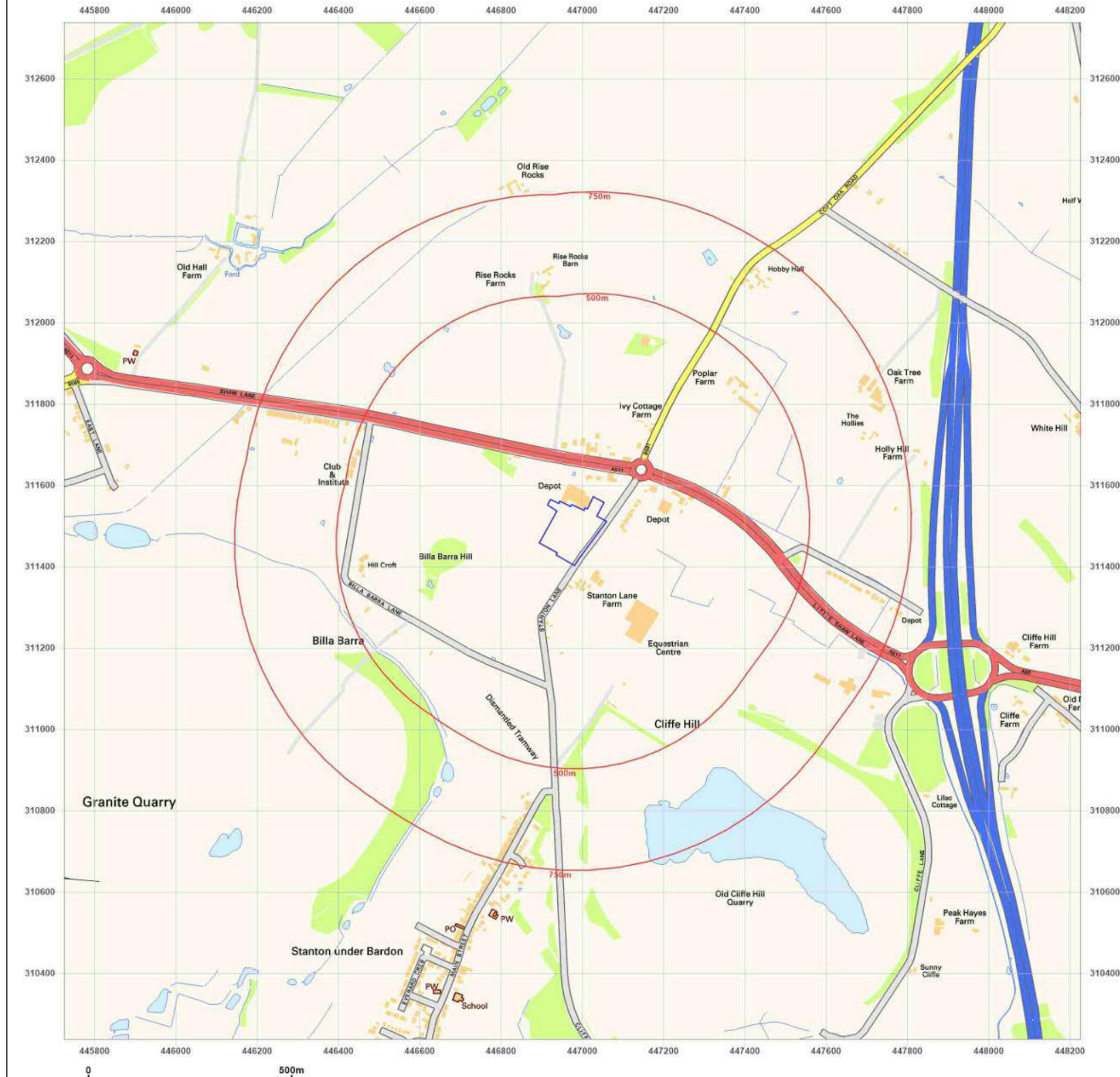


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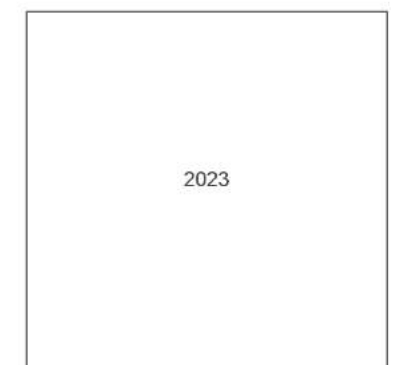
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Report Ref: EMS-907783_1157917
Grid Ref: 446976, 311488

Map Name: National Grid

Map date: 2023

Scale: 1:10,000

Printed at: 1:10,000



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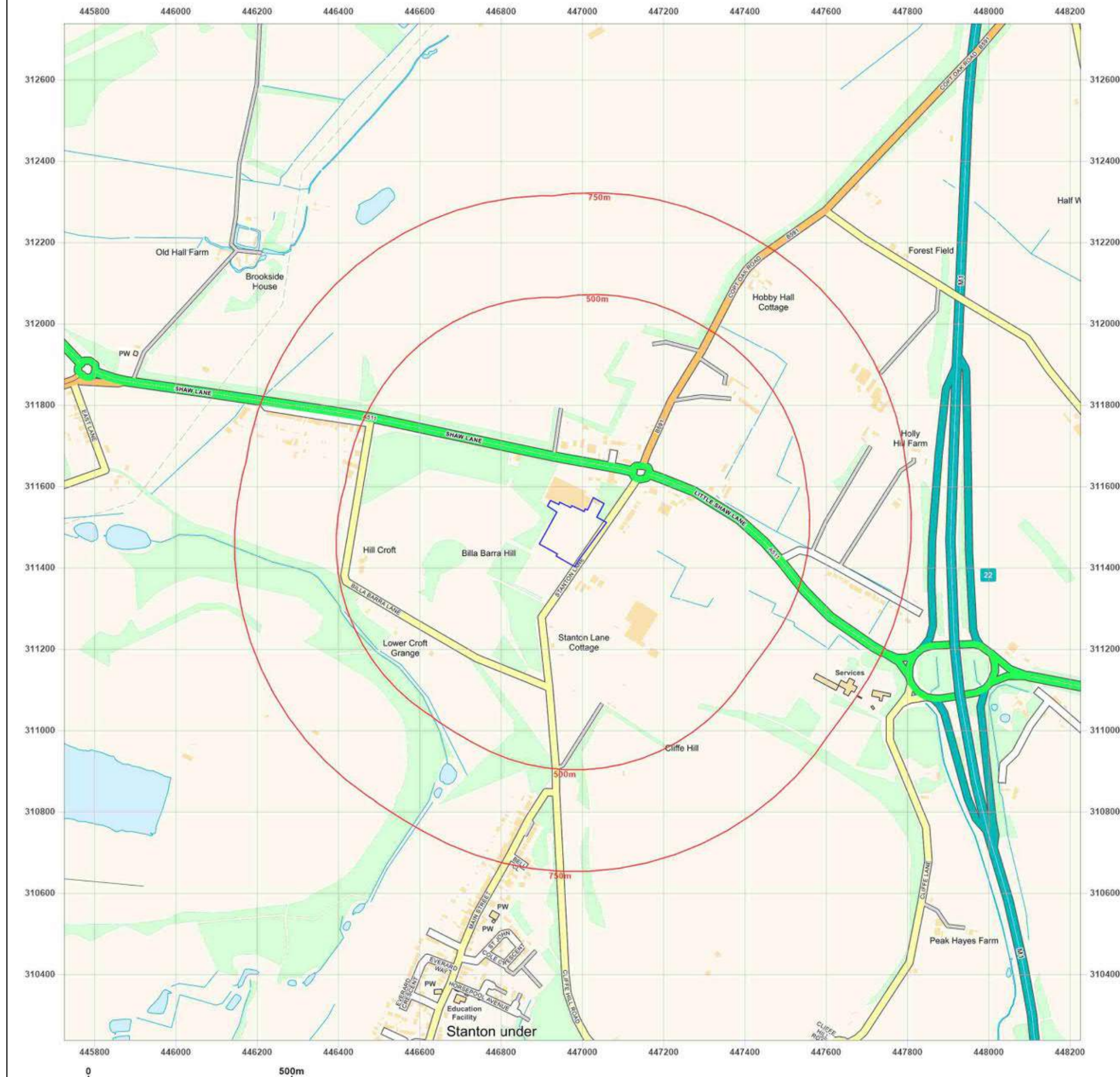


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Upton Steel, Stanton Lane, Markfield, LE67 9TT

Order Details

Date: 16/11/2023
Your ref: EMS_907783_1124465
Our Ref: EMS-907783_1157918

Site Details

Location: 446976 311492
Area: 1.55 ha
Authority: [Hinckley and Bosworth Borough Council](#) ↗



Summary of findings

[p. 2 >](#) **Aerial image**

[p. 9 >](#)

OS MasterMap site plan

[p.14 >](#) groundsure.com/insightuserguide ↗

Contact us with any questions at:

info@groundsure.com ↗

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	2	4	8	-
16	1.2	Historical tanks	0	0	0	0	-
16	1.3	Historical energy features	0	0	0	0	-
17 >	1.4 >	Historical petrol stations >	0	0	1	0	-
17 >	1.5 >	Historical garages >	0	1	1	0	-
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	3	7	10	-
20	2.2	Historical tanks	0	0	0	0	-
21	2.3	Historical energy features	0	0	0	0	-
21 >	2.4 >	Historical petrol stations >	0	0	2	0	-
21 >	2.5 >	Historical garages >	0	4	2	0	-
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	1	0	-
24	3.5	Historical waste sites	0	0	0	0	-
24	3.6	Licensed waste sites	0	0	0	0	-
25 >	3.7 >	Waste exemptions >	0	0	3	0	-
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	8	-	-
27 >	4.2 >	Current or recent petrol stations >	0	0	2	0	-
28	4.3	Electricity cables	0	0	0	0	-
28	4.4	Gas pipelines	0	0	0	0	-
28	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	-
29	4.8	Hazardous substance storage/usage	0	0	0	0	-
29	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
29	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	2	0	-
30	4.12	Radioactive Substance Authorisations	0	0	0	0	-
30	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
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	-
30	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	1	-
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)				
35 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
37 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
39	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
39	5.5	Groundwater vulnerability- local information	None (within 0m)				
40 >	5.6 >	Groundwater abstractions >	0	0	0	0	11
43 >	5.7 >	Surface water abstractions >	0	0	0	0	2
44 >	5.8 >	Potable abstractions >	0	0	0	0	1
44	5.9	Source Protection Zones	0	0	0	0	-
44	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
45 >	6.1 >	Water Network (OS MasterMap) >	0	0	1	-	-



46 >	6.2 >	Surface water features >	0	0	2	-	-
46 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
46 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
47 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
48	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
48	7.2	Historical Flood Events	0	0	0	-	-
48	7.3	Flood Defences	0	0	0	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
49	7.5	Flood Storage Areas	0	0	0	-	-
50	7.6	Flood Zone 2	None (within 50m)				
50	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
51	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
52 >	9.1 >	Groundwater flooding >	Low (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	1	2
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) >	1	0	0	0	0
55 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	7
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 >	2	0	0	0	1
59 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
60 >	10.18 >	SSSI Units >	0	0	0	1	3
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	-	-
62	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
62	11.3	National Parks	0	0	0	-	-
62	11.4	Listed Buildings	0	0	0	-	-
63	11.5	Conservation Areas	0	0	0	-	-
63	11.6	Scheduled Ancient Monuments	0	0	0	-	-
63	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
64 >	12.1 >	Agricultural Land Classification >	Grade 3 (within 250m)				
65 >	12.2 >	Open Access Land >	0	0	2	-	-
65	12.3	Tree Felling Licences	0	0	0	-	-
65 >	12.4 >	Environmental Stewardship Schemes >	1	0	0	-	-
66	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
67 >	13.1 >	Priority Habitat Inventory >	1	0	6	-	-
68	13.2	Habitat Networks	0	0	0	-	-
68	13.3	Open Mosaic Habitat	0	0	0	-	-
68	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
69 >	14.1 >	10k Availability >	Identified (within 500m)				
70 >	14.2 >	Artificial and made ground (10k) >	0	0	0	5	-
72 >	14.3 >	Superficial geology (10k) >	2	0	1	1	-

73	14.4	Landslip (10k)	0	0	0	0	-
74 >	14.5 >	Bedrock geology (10k) >	3	1	0	3	-
75	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
76 >	15.1 >	50k Availability >	Identified (within 500m)				
77 >	15.2 >	Artificial and made ground (50k) >	0	0	0	3	-
78	15.3	Artificial ground permeability (50k)	0	0	-	-	-
79 >	15.4 >	Superficial geology (50k) >	2	0	1	1	-
80 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
80	15.6	Landslip (50k)	0	0	0	0	-
80	15.7	Landslip permeability (50k)	None (within 50m)				
81 >	15.8 >	Bedrock geology (50k) >	3	1	0	3	-
82 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
82	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
83 >	16.1 >	BGS Boreholes >	0	0	1	-	-
Page	Section	Natural ground subsidence >					
84 >	17.1 >	Shrink swell clays >	Low (within 50m)				
86 >	17.2 >	Running sands >	Very low (within 50m)				
88 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
89 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
90 >	17.5 >	Landslides >	Low (within 50m)				
92 >	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
94 >	18.1 >	BritPits >	0	0	1	2	-
95 >	18.2 >	Surface ground workings >	0	3	2	-	-
96	18.3	Underground workings	0	0	0	0	0
96	18.4	Underground mining extents	0	0	0	0	-
96 >	18.5 >	Historical Mineral Planning Areas >	0	0	1	2	-



96	18.6	Non-coal mining	0	0	0	0	0
97 >	18.7 >	JPB mining areas >	Identified (within 0m)				
97	18.8	The Coal Authority non-coal mining	0	0	0	0	-
97	18.9	Researched mining	0	0	0	0	-
98	18.10	Mining record office plans	0	0	0	0	-
98	18.11	BGS mine plans	0	0	0	0	-
98	18.12	Coal mining	None (within 0m)				
98	18.13	Brine areas	None (within 0m)				
98	18.14	Gypsum areas	None (within 0m)				
99	18.15	Tin mining	None (within 0m)				
99	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
100	19.1	Natural cavities	0	0	0	0	-
100	19.2	Mining cavities	0	0	0	0	0
100	19.3	Reported recent incidents	0	0	0	0	-
100	19.4	Historical incidents	0	0	0	0	-
101	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
102 >	20.1 >	Radon >	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
104 >	21.1 >	BGS Estimated Background Soil Chemistry >	6	3	-	-	-
104	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
105	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
106	22.1	Underground railways (London)	0	0	0	-	-
106	22.2	Underground railways (Non-London)	0	0	0	-	-
106	22.3	Railway tunnels	0	0	0	-	-
106	22.4	Historical railway and tunnel features	0	0	0	-	-
106	22.5	Royal Mail tunnels	0	0	0	-	-



107	22.6	Historical railways	0	0	0	-	-
107	22.7	Railways	0	0	0	-	-
107	22.8	Crossrail 1	0	0	0	0	-
107	22.9	Crossrail 2	0	0	0	0	-
107	22.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 10/07/2022

Site Area: 1.55ha



Recent site history - 2019 aerial photograph



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Capture Date: 20/04/2019

Site Area: 1.55ha



Recent site history - 2011 aerial photograph



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Capture Date: 09/10/2011

Site Area: 1.55ha



Recent site history - 2000 aerial photograph



Capture Date: 17/06/2000

Site Area: 1.55ha



Recent site history - 1999 aerial photograph

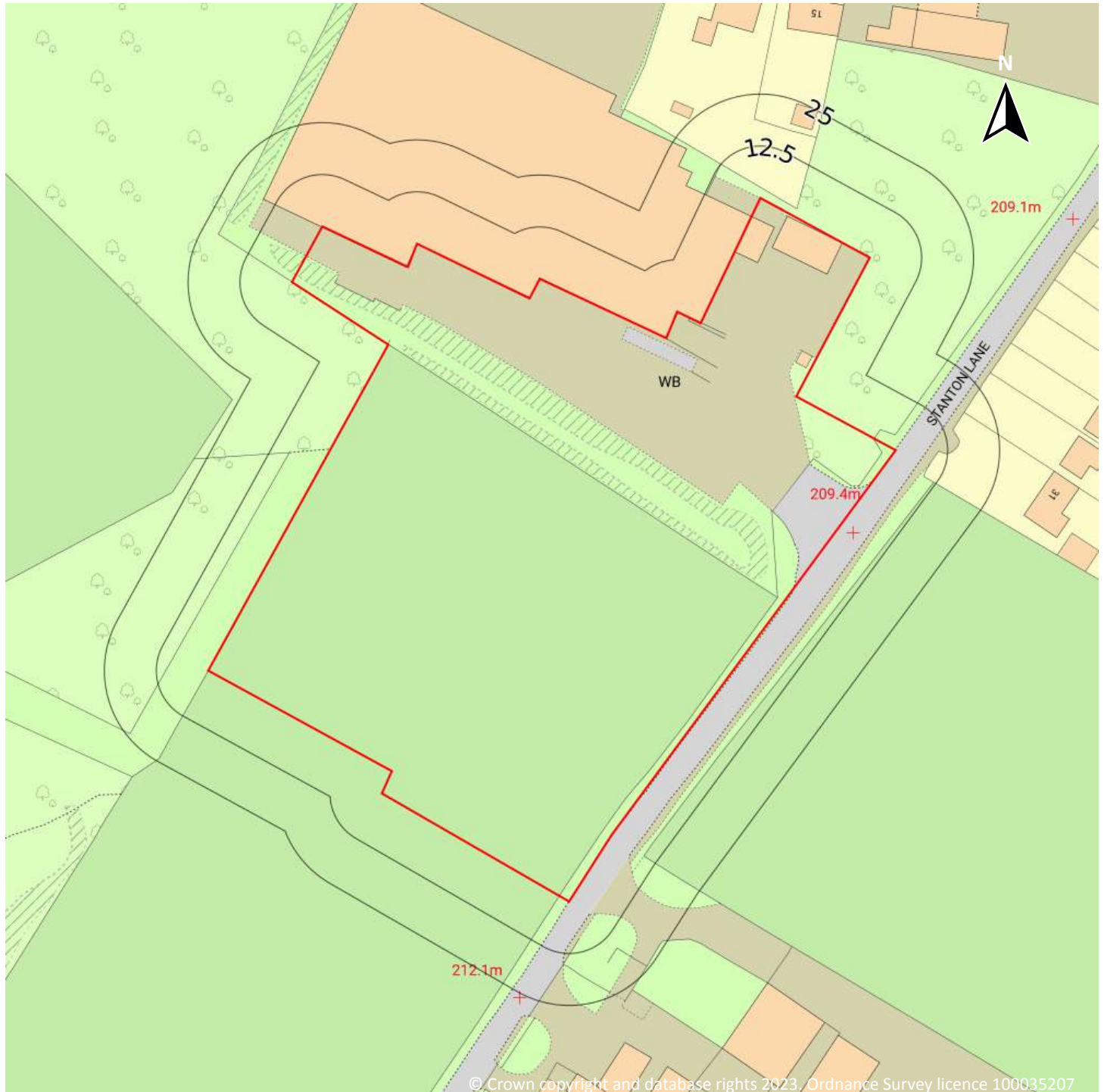


Capture Date: 11/07/1999

Site Area: 1.55ha



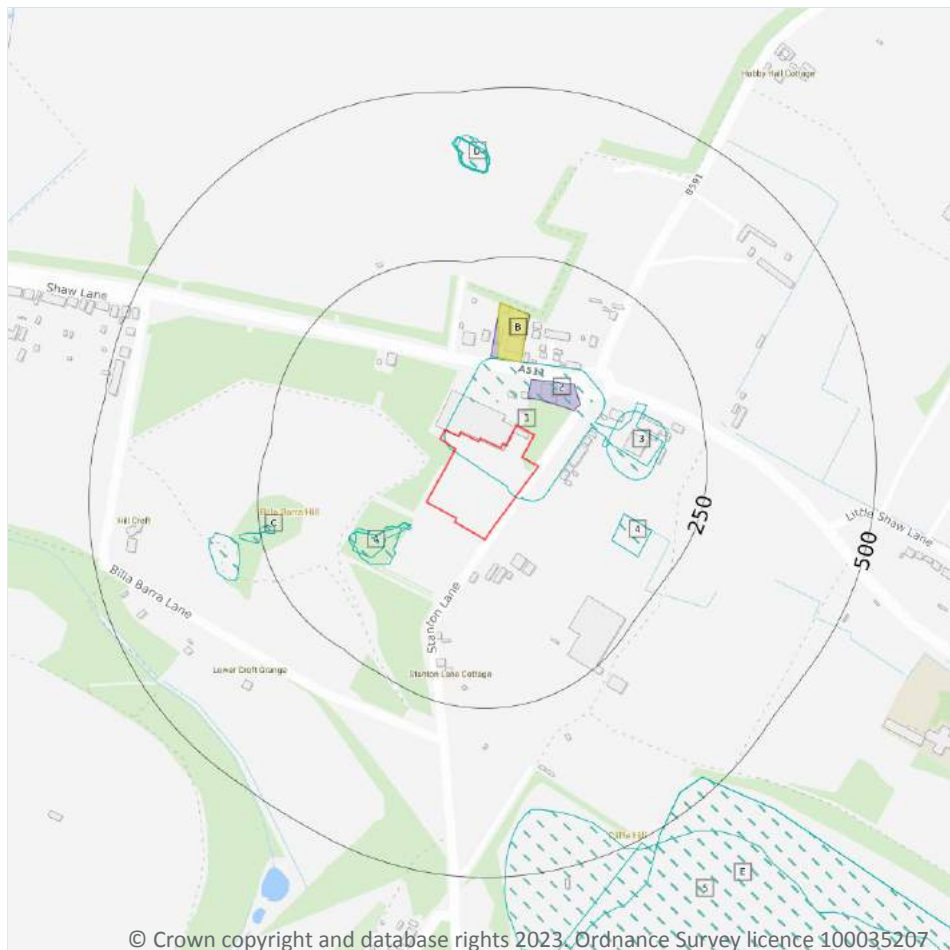
OS MasterMap site plan



Site Area: 1.55ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical petrol stations
- Historical garages

1.1 Historical industrial land uses

Records within 500m

15

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
1	On site	Unspecified Depot	1992	1668725



ID	Location	Land use	Dates present	Group ID
A	41m SW	Unspecified Old Quarry	1901 - 1930	1694921
A	43m SW	Unspecified Ground Workings	1883	1567382
3	104m E	Bus Depot	1968 - 1978	1675933
4	145m E	Unspecified Works	1968 - 1978	1649493
C	228m W	Unspecified Pit	1883	1611374
C	249m W	Unspecified Pit	1883	1611375
C	285m W	Unspecified Old Quarry	1883	1601311
D	376m N	Unspecified Quarry	1950	1662345
D	377m N	Unspecified Old Quarry	1901 - 1930	1666203
D	378m N	Unspecified Pit	1883	1611377
D	378m N	Unspecified Quarry	1968 - 1978	1623258
5	405m S	Unspecified Disused Quarry	1992	1606611
E	472m SE	Unspecified Quarry	1978	1660146
E	472m SE	Unspecified Commercial/Industrial	1968 - 1978	1749790

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

0

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 un-



grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

1

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'.

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

ID	Location	Land use	Dates present	Group ID
B	94m N	Filling Station	1989 - 1991	2857

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

2

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
2	44m NE	Garage	1959 - 1991	52088
B	94m N	Garage	1959 - 1966	53865

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

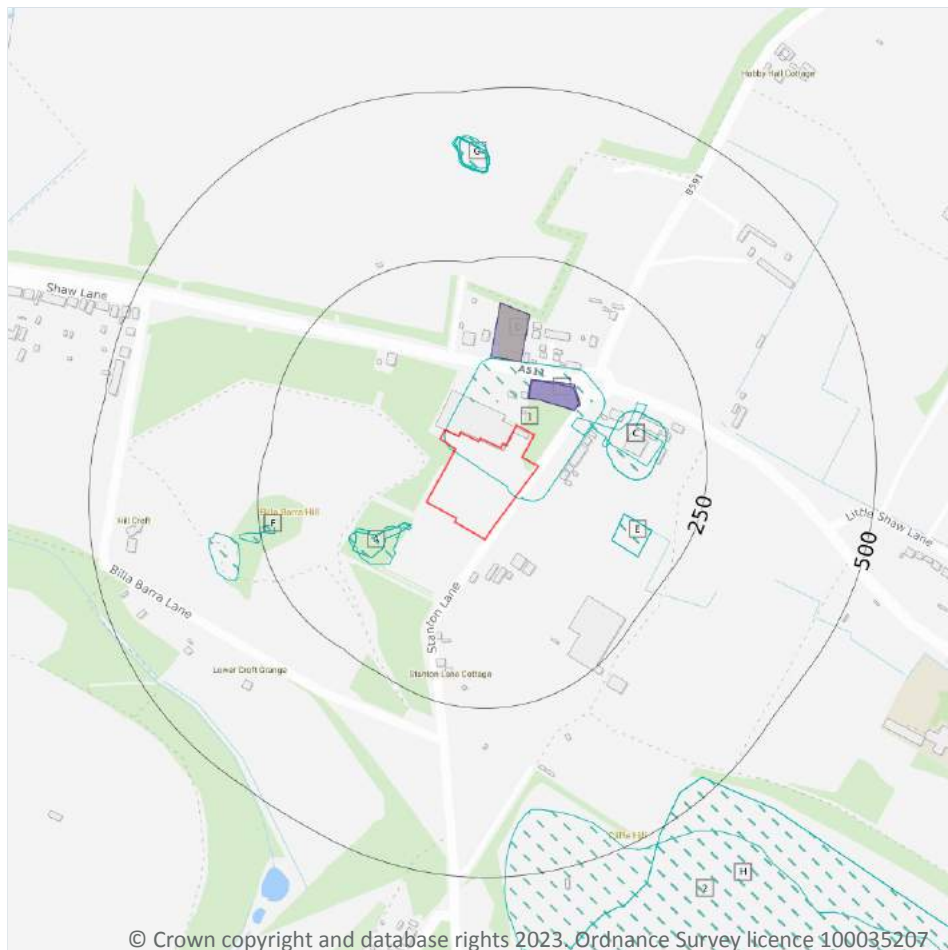
0

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



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical petrol stations
- Historical garages

2.1 Historical industrial land uses

Records within 500m

21

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
1	On site	Unspecified Depot	1992	1668725
A	41m SW	Unspecified Old Quarry	1930	1694921
A	41m SW	Unspecified Old Quarry	1901	1694921



ID	Location	Land Use	Date	Group ID
A	43m SW	Unspecified Ground Workings	1883	1567382
C	56m NE	Unspecified Depot	1992	1668725
C	104m E	Bus Depot	1968	1675933
C	104m E	Bus Depot	1978	1675933
E	145m E	Unspecified Works	1968	1649493
E	145m E	Unspecified Works	1978	1649493
F	228m W	Unspecified Pit	1883	1611374
F	249m W	Unspecified Pit	1883	1611375
F	285m W	Unspecified Old Quarry	1883	1601311
G	376m N	Unspecified Quarry	1950	1662345
G	377m N	Unspecified Old Quarry	1930	1666203
G	377m N	Unspecified Old Quarry	1901	1666203
G	378m N	Unspecified Pit	1883	1611377
G	378m N	Unspecified Quarry	1968	1623258
G	383m N	Unspecified Quarry	1978	1623258
2	405m S	Unspecified Disused Quarry	1992	1606611
H	472m SE	Unspecified Quarry	1978	1660146
H	472m SE	Unspecified Commercial/Industrial	1978	1749790

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

0

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'.

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

2

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'.

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

ID	Location	Land Use	Date	Group ID
D	94m N	Filling Station	1989	2857
D	94m N	Filling Station	1991	2857

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

6

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
B	44m NE	Garage	1989	52088
B	44m NE	Garage	1991	52088
B	44m NE	Garage	1959	52088
B	44m NE	Garage	1966	52088
D	94m N	Garage	1959	53865
D	94m N	Garage	1966	53865



This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)
- 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

1

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.

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

ID	Location	Details		
1	78m SW	Site Address: Stanton Lane/Road, Stanton Lane, Markfield, Hinckley and Bosworth, Leicestershire Licence Holder Address: -	Waste Licence: - Site Reference: GDO 212, 97 Waste Type: Waste Unknown Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: 31/12/1949

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

3.5 Historical waste sites

Records within 500m

0

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

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

3

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
A	65m S	Stanton Lane Farm Stanton Lane MARKFIELD Leicestershire LE67 9TT	EPR/LE5688PQ /A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
A	65m S	Stanton Lane Farm Stanton Lane MARKFIELD Leicestershire LE67 9TT	EPR/LE5688PQ /A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
A	65m S	Stanton Lane Farm Stanton Lane MARKFIELD Leicestershire LE67 9TT	EPR/LE5688PQ /A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in secure containers

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



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Licensed pollutant release (Part A(2)/B)
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

9

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	20m N	Upton Steel	21, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
2	52m E	Andrews Television	27, Stanton Lane, Stanton-under-Bardon, Leicestershire, LE67 9QA	Electrical Equipment Repair and Servicing	Repair and Servicing



ID	Location	Company	Address	Activity	Category
A	57m NE	HKS Flying Horse	5, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Petrol and Fuel Stations	Road and Rail
B	114m N	Browns Blue Service Station	32, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Petrol and Fuel Stations	Road and Rail
B	136m N	Hillmoren	32, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Secondhand Vehicles	Motoring
B	136m N	Esso	32, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Petrol and Fuel Stations	Road and Rail
B	142m N	Tim's Mechanics	-, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Vehicle Repair, Testing and Servicing	Repair and Servicing
B	142m N	Wood & Co Leicester Ltd	-, Shaw Lane, Markfield, Leicestershire, LE67 9PU	Distribution and Haulage	Transport, Storage and Delivery
B	151m N	BP Service Station	5, Browns Blue Close, Markfield, Leicestershire, LE67 9QG	Petrol and Fuel Stations	Road and Rail

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
A	60m NE	BP	5, Shaw Lane, Markfield, Leicester, Leicestershire, LE67 9PU	No	Open
B	107m N	ESSO	32, Shaw Lane, Markfield, Leicester, Leicestershire, LE67 9PU	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

2

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	
A	67m NE	Flying Horse Garage, Shaw Lane, Markfield, LE67 9PU	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	122m N	Browns Blue Service Station, Shaw Lane, Markfield, LE67 9PU	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**0**

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

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

1

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

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

ID	Location	Details	
3	307m SE	Incident Date: 10/08/2001 Incident Identification: 23465 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

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

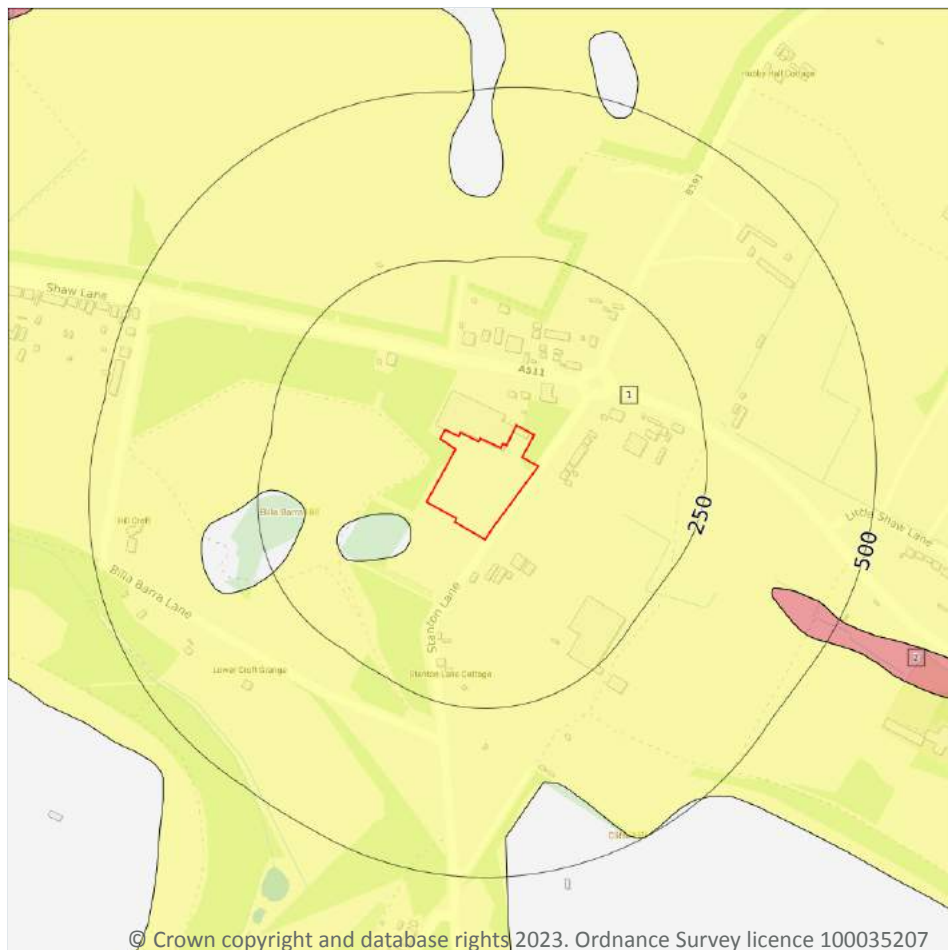
0

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

2

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 Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	392m E	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



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

5.2 Bedrock aquifer

Records within 500m

3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 35](#) >

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
2	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

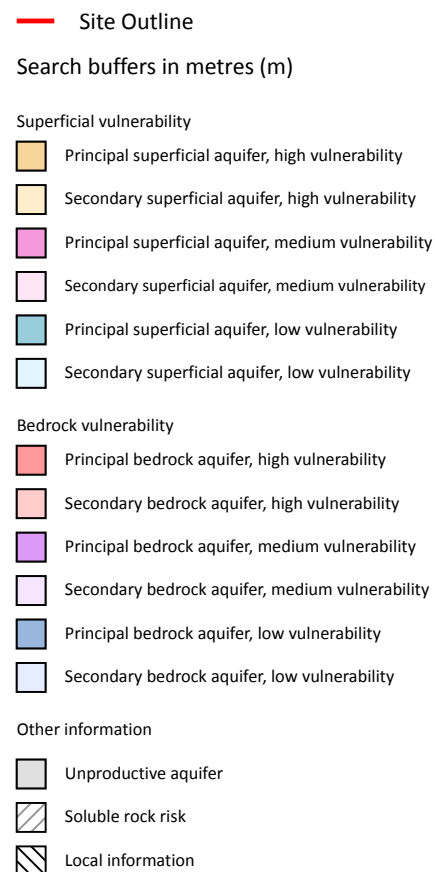


ID	Location	Designation	Description
3	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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

7

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 37](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
6	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: <3m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	40m SW	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

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

11

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 40](#) >

ID	Location	Details	
-	862m N	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: SPRING NEAR OLD RISE ROCKS,BARDON Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446700 Northing: 312400	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.368 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1997 Version End Date: -
-	901m N	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: SPRING NEAR OLD RISE ROCKS,BARDON Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446745 Northing: 312450	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.36 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/07/2013 Version End Date: -
-	960m NW	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: OLD HALL FARM, BARDON - WELL Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446200 Northing: 312200	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.368 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1997 Version End Date: -
-	966m NW	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: OLD HALL FARM, BARDON - WELL Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446238 Northing: 312250	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.36 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/07/2013 Version End Date: -
-	1363m NE	Status: Historical Licence No: 03/28/20/0006 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BARDEN DRIVE FARM, B'HOLE Data Type: Point Name: SKETCHLEY Easting: 447800 Northing: 312700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 11/11/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1975 Version End Date: -



ID	Location	Details	
-	1538m N	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: KELHAM'S FARM,BARDON - WELL Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446800 Northing: 313100	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.368 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1997 Version End Date: -
-	1562m NW	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BARDON HILL WOOD,BARDON - WELLS Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446300 Northing: 313000	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.368 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1997 Version End Date: -
-	1576m N	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: KELHAM'S FARM,BARDON - WELL Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446839 Northing: 313141	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.36 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/07/2013 Version End Date: -
-	1589m N	Status: Historical Licence No: 03/28/20/0060 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BARDON HILL WOOD,BARDON - WELLS Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446345 Northing: 313048	Annual Volume (m ³): 6737.17 Max Daily Volume (m ³): 36.36 Original Application No: - Original Start Date: 21/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/07/2013 Version End Date: -
-	1691m E	Status: Historical Licence No: 03/28/57/0152 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Groundwater Midlands Region Point: ULVERSCROFT GRANGE BOREHOLE Data Type: Point Name: THE TRUSTEES FOR SHUTTLEWOOD CLARKE FOUNDATION Easting: 448740 Northing: 311700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/07/2000 Expiry Date: - Issue No: 1 Version Start Date: 13/07/2000 Version End Date: -



ID	Location	Details	
-	1694m SW	Status: Historical Licence No: 03/28/56/0014 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: MANOR FARM - WELL Data Type: Point Name: WRIGHT Easting: 446200 Northing: 309900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

2

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 40 >](#)

ID	Location	Details	
-	1028m NW	Status: Historical Licence No: 03/28/20/0059/S Details: Mineral Washing Direct Source: Surface Water Midlands Region Point: BARDON HILL QUARRY - CATCHPIT (THE MOAT) Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446200 Northing: 312300	Annual Volume (m ³): 45460 Max Daily Volume (m ³): 1363.8 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/09/1998 Version End Date: -
-	1028m NW	Status: Historical Licence No: 03/28/20/0059/S Details: Dust Suppression Direct Source: Surface Water Midlands Region Point: BARDON HILL QUARRY - CATCHPIT (THE MOAT) Data Type: Point Name: AGGREGATE INDUSTRIES UK LIMITED Easting: 446200 Northing: 312300	Annual Volume (m ³): 45460 Max Daily Volume (m ³): 1363.8 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/09/1998 Version End Date: -

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



5.8 Potable abstractions

Records within 2000m

1

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.

Features are displayed on the Abstractions and Source Protection Zones map on [page 40](#) >

ID	Location	Details	
-	1691m E	Status: Historical Licence No: 03/28/57/0152 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Groundwater Midlands Region Point: ULVERSCROFT GRANGE BOREHOLE Data Type: Point Name: THE TRUSTEES FOR SHUTTLEWOOD CLARKE FOUNDATION Easting: 448740 Northing: 311700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/07/2000 Expiry Date: - Issue No: 1 Version Start Date: 13/07/2000 Version End Date: -

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

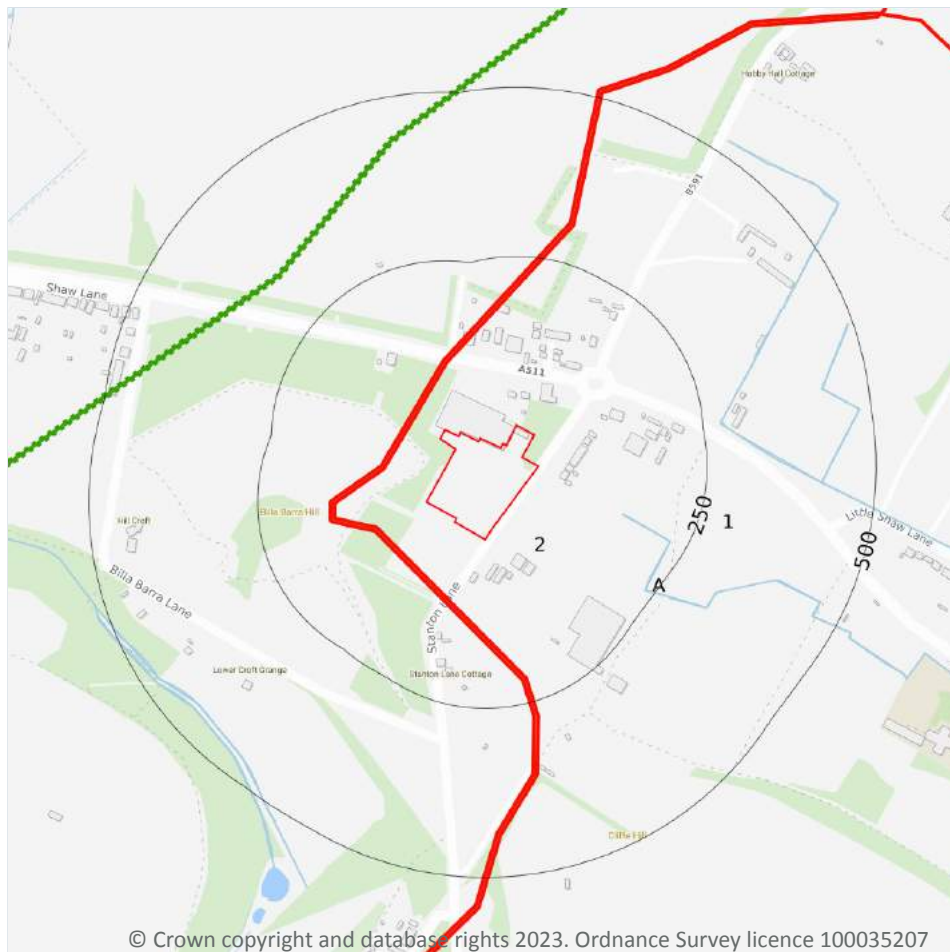
0

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

1

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 45 >](#)

ID	Location	Type of water feature	Ground level	Permanence	Name
A	143m E	Inland river not influenced by normal tidal action.	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

2

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 45 >](#)

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 45 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River	Rothley Brook Catchment (trib of Soar)	GB104028046730	Soar River	Soar

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 45 >](#)



ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2599m SW	River	Rothley Brook Catchment (trib of Soar)	GB104028046730 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	1
------------------------	----------

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.

Features are displayed on the Hydrology map on [page 45 >](#)

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	Soar - Secondary Combined	GB40402G990600 ↗	Good	Good	Good	2019

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

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

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.

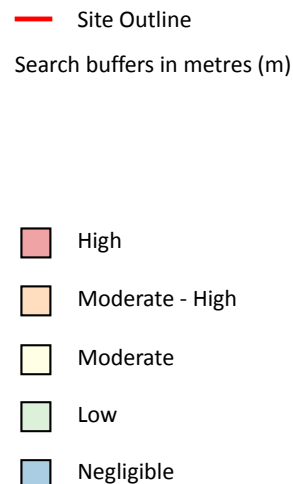
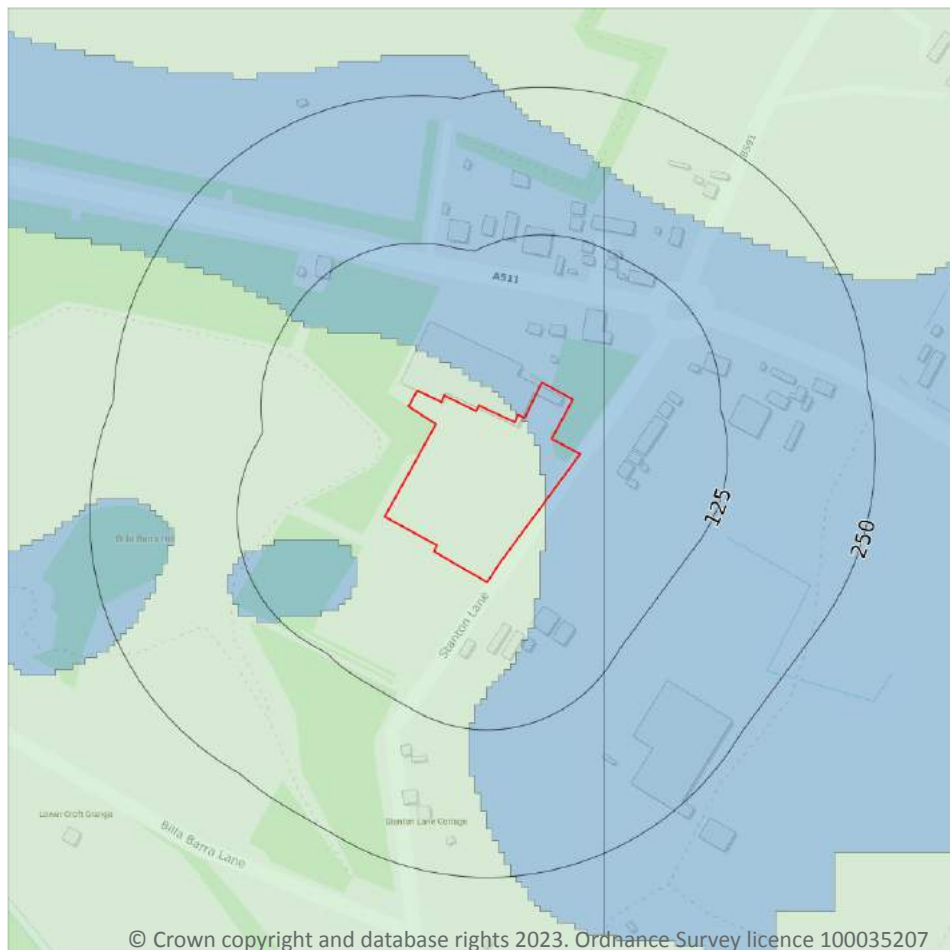
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the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

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

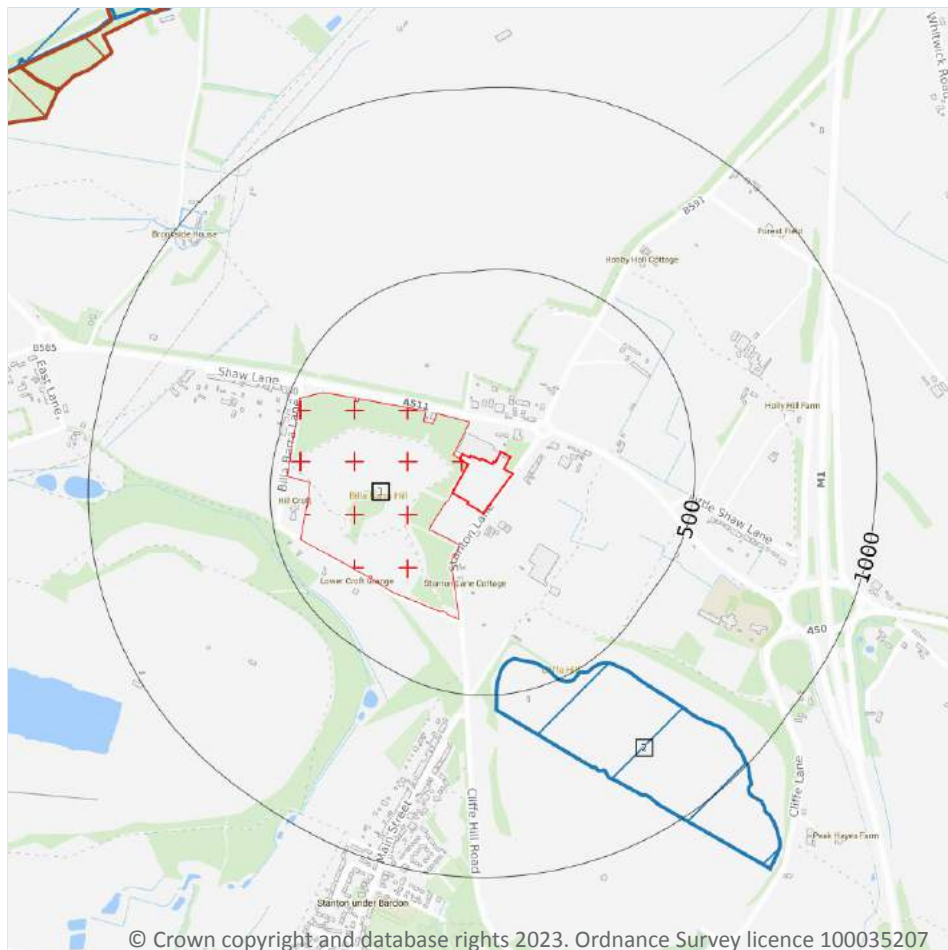
Low

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)
- + Local Nature Reserves (LNR)
- ▨ Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

3

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
2	407m S	Cliffe Hill Quarry	Natural England



ID	Location	Name	Data source
3	1457m NW	Bardon Hill	Natural England
7	1532m NW	Bardon Hill Quarry	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

1

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.

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

ID	Location	Name	Data source
1	On site	Billa Barra Hill Nature Reserve	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m

7

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
4	1463m NW	Unknown	Ancient & Semi-Natural Woodland
5	1470m NW	Unknown	Ancient & Semi-Natural Woodland
-	1522m N	Unknown	Ancient Replanted Woodland
-	1622m E	Unknown	Ancient Replanted Woodland
-	1722m NW	Unknown	Ancient Replanted Woodland
-	1864m E	Ulverscroft Wood	Ancient Replanted Woodland
-	1951m NE	Copt Oak Wood	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

3

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	River Trent (source to confluence with Derwent)	Surface Water	308	Existing

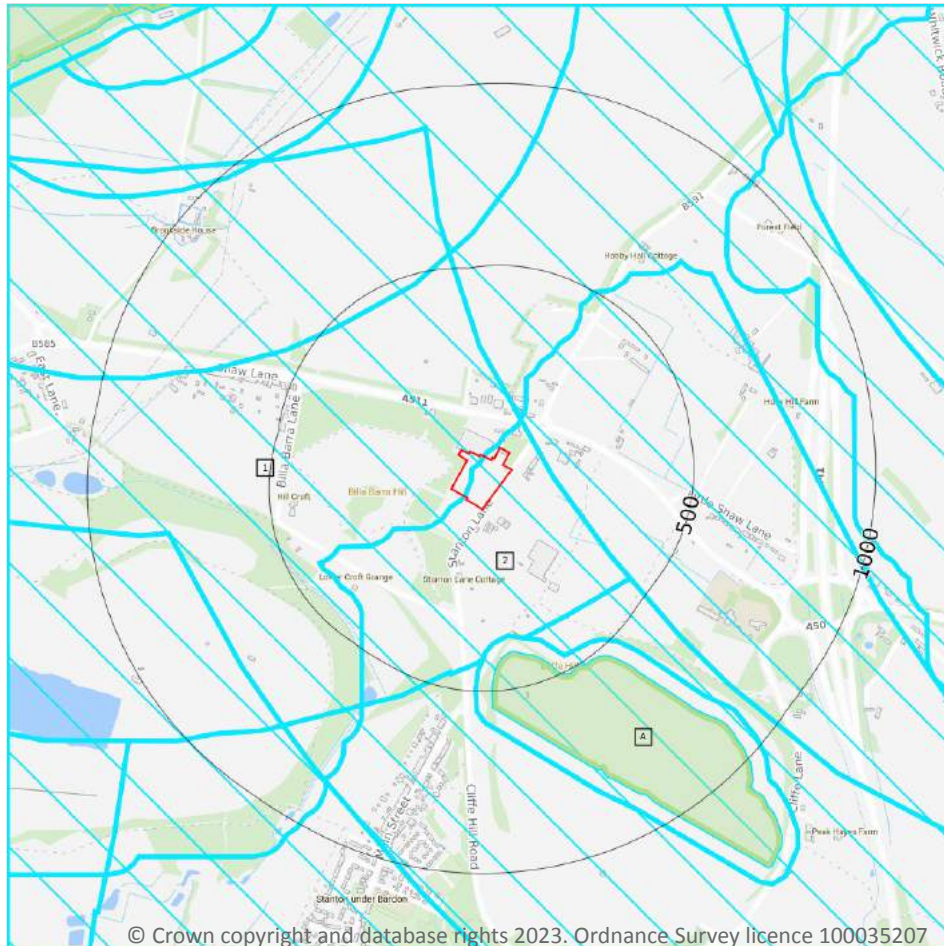


Location	Name	Type	NVZ ID	Status
On site	SOAR R NVZ	Surface Water	309	Existing
630m NE	Cropston & Swithland Reservoirs Eutrophic lake NVZ	Eutrophic Water	144	Existing

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

2

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 - 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 Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream
2	On site	Infrastructure - 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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

4

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: A
 Location: 407m S
 SSSI name: Cliffe Hill Quarry
 Unit name: 1
 Broad habitat: Earth Heritage
 Condition: Favourable
 Reportable features:



Feature name	Feature condition	Date of assessment
EA - Precambrian of England and Wales	Favourable	11/01/2023

ID: 23
 Location: 1457m NW
 SSSI name: Bardon Hill
 Unit name: Bardon Hill Wood
 Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	29/06/2012

ID: 24
 Location: 1532m NW
 SSSI name: Bardon Hill Quarry
 Unit name: Whole Site
 Broad habitat: Earth Heritage
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
EA - Caledonian Igneous	Favourable	11/01/2023
FM - Mineralogy	Favourable	11/01/2023

ID: -
 Location: 1683m NW
 SSSI name: Bardon Hill
 Unit name: Summit
 Broad habitat: Dwarf Shrub Heath - Lowland
 Condition: Unfavourable - Recovering
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland dry heath	Unfavourable - Recovering	29/06/2012

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



11 Visual and cultural designations

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

0

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.



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

11.5 Conservation Areas

Records within 250m

0

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.

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

1

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 64](#) >

ID	Location	Classification	Description
1	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.

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

2

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.

Features are displayed on the Agricultural designations map on [page 64](#) >

ID	Location	Name	Classification	Other relevant legislation
2	123m W	-	Section 4 Conclusive Open Country	-
3	148m SW	-	Section 4 Conclusive Open Country	-

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

12.3 Tree Felling Licences

Records within 250m

0

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.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

1

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.

Location	Reference	Scheme	Start Date	End date
On site	AG00356547	Higher Level Stewardship	01/10/2011	30/09/2023

This data is sourced from Natural England.



12.5 Countryside Stewardship Schemes

Records within 250m

0

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.

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

7

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 67](#) >

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	105m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	112m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	122m W	Lowland dry acid grassland	Main habitat: LDAGR (INV > 50%)



ID	Location	Main Habitat	Other habitats
5	131m W	Lowland dry acid grassland	Main habitat: LDAGR (INV > 50%)
6	180m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	218m SW	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

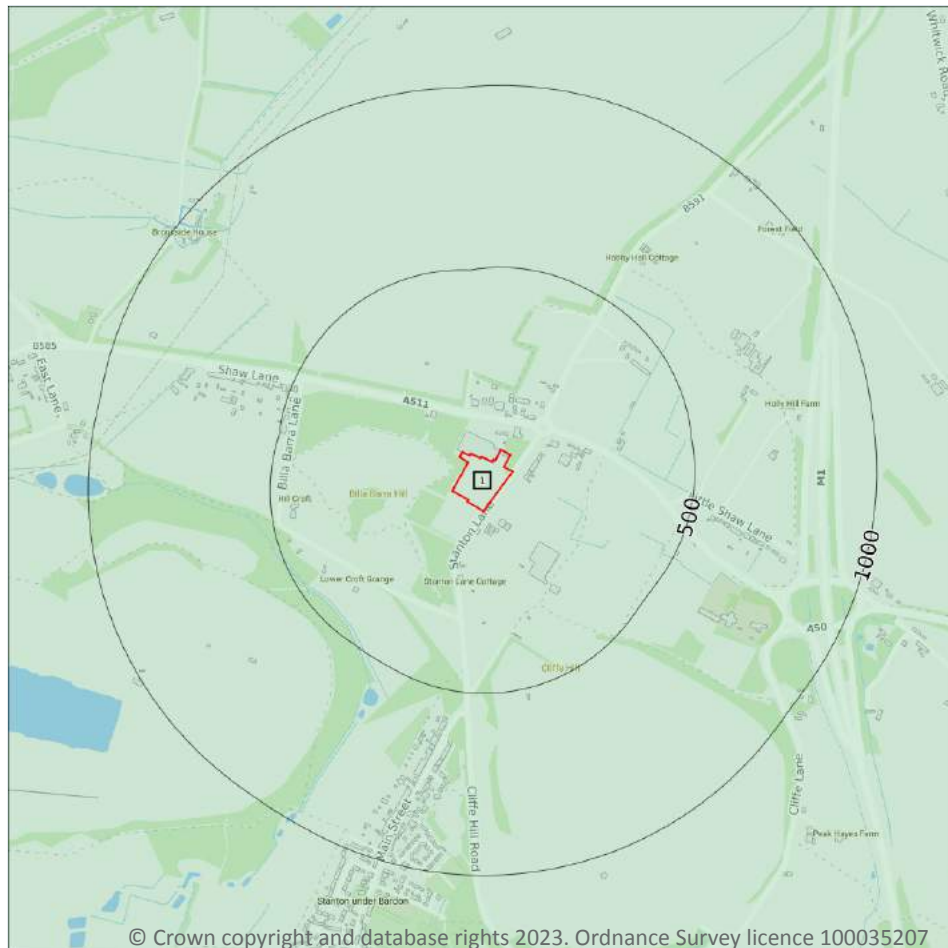
Records within 250m **0**

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.

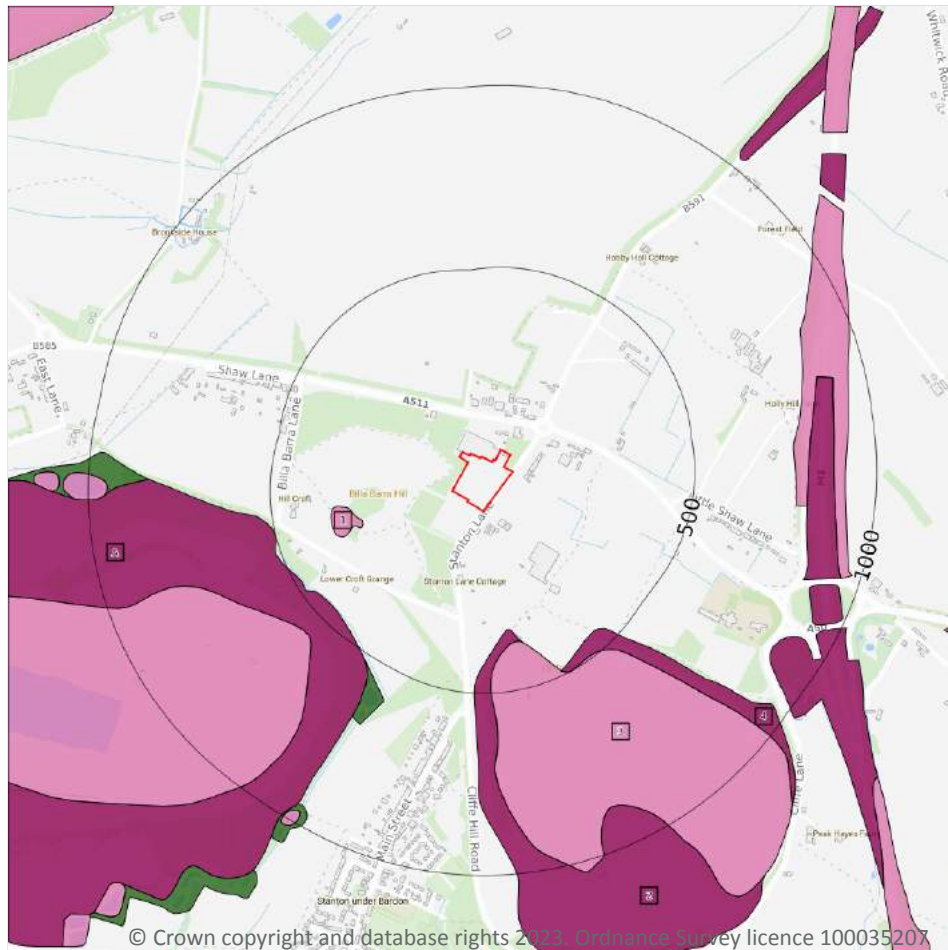
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 69](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SK41SE

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

5

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 70](#) >

ID	Location	LEX Code	Description	Rock description
1	260m W	WGR-VOID	Worked Ground (Undivided)	Void
2	331m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	369m S	WGR-VOID	Worked Ground (Undivided)	Void
4	446m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

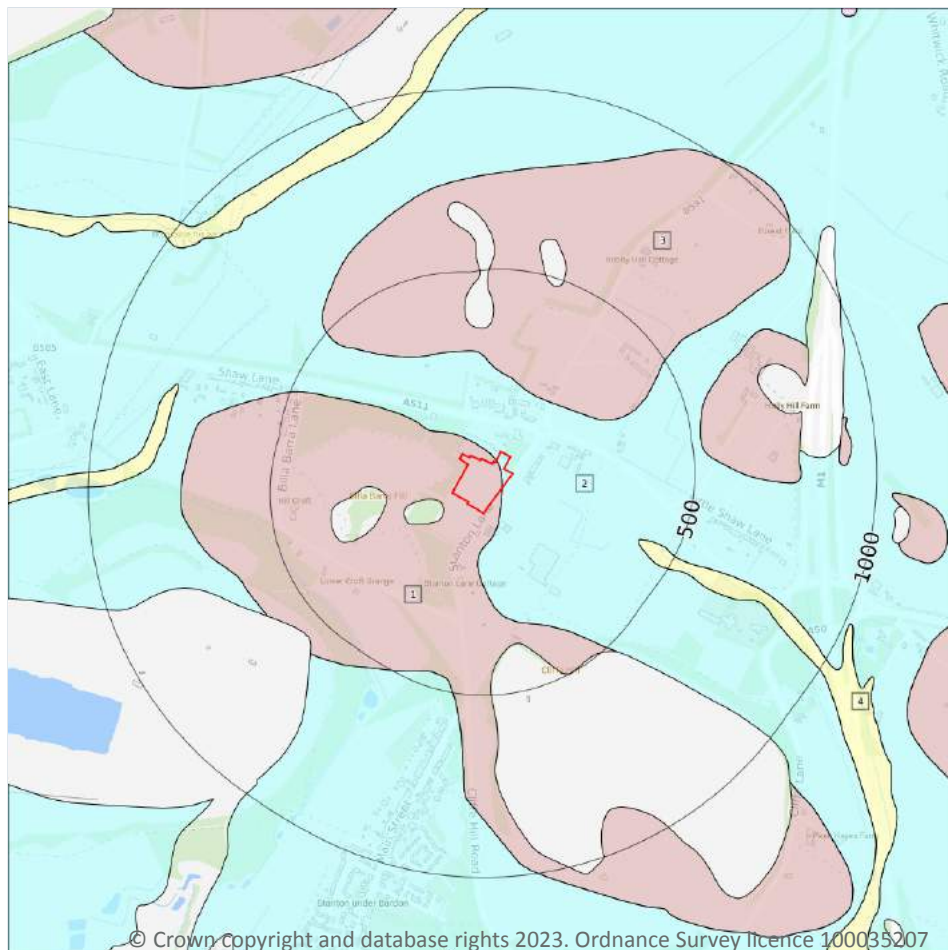


ID	Location	LEX Code	Description	Rock description
A	455m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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

4

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 72 >](#)

ID	Location	LEX Code	Description	Rock description
1	On site	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	On site	ODT-DMTN	Oadby Member - Diamicton	Diamicton
3	180m NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel



ID	Location	LEX Code	Description	Rock description
4	392m E	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

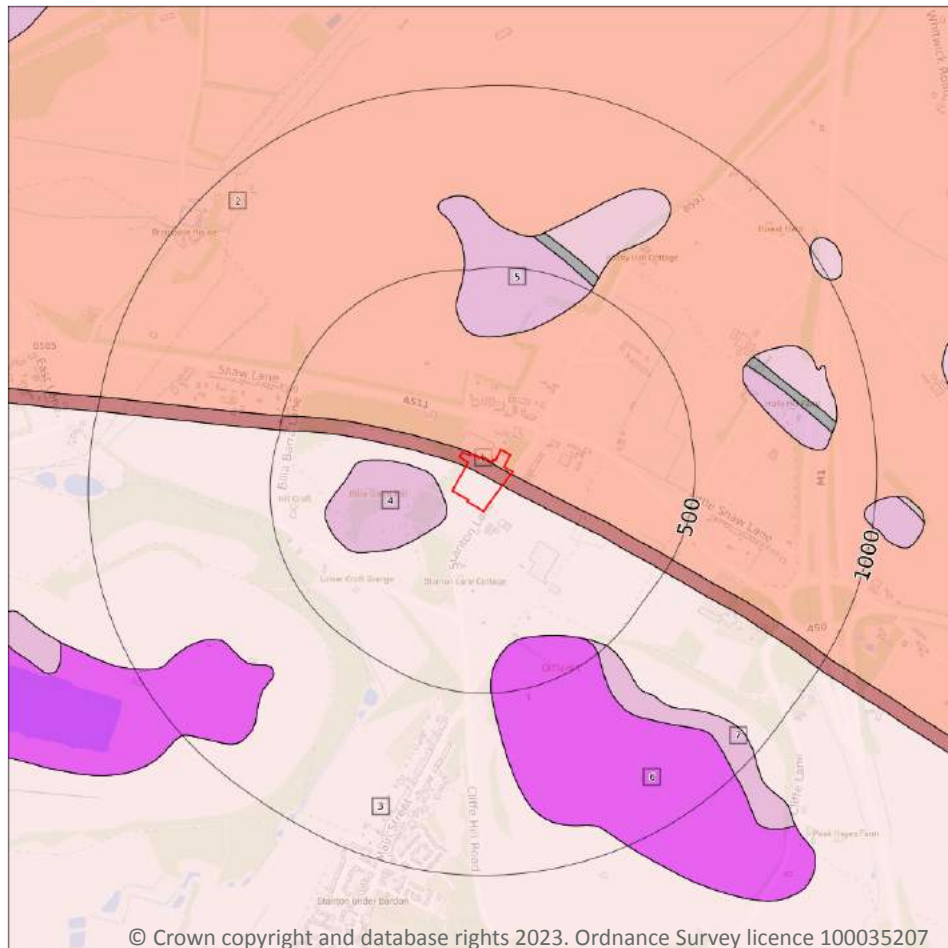
0

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

7

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 74 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	COT-SDST	Cotgrave Sandstone Member - Sandstone	Carnian Age
2	On site	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
3	On site	EDW-MDST	Edwalton Member - Mudstone	Carnian Age



ID	Location	LEX Code	Description	Rock age
4	29m W	CMBT- VCSLST	Bradgate Formation - Volcaniclastic-siltstone	Ediacaran Period
5	311m N	CMBT- VCSLST	Bradgate Formation - Volcaniclastic-siltstone	Ediacaran Period
6	365m S	SCHD-DI	South Charnwood Diorites - Diorite	Ediacaran Period
7	439m SE	CMBT- VCSLST	Bradgate Formation - Volcaniclastic-siltstone	Ediacaran Period

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

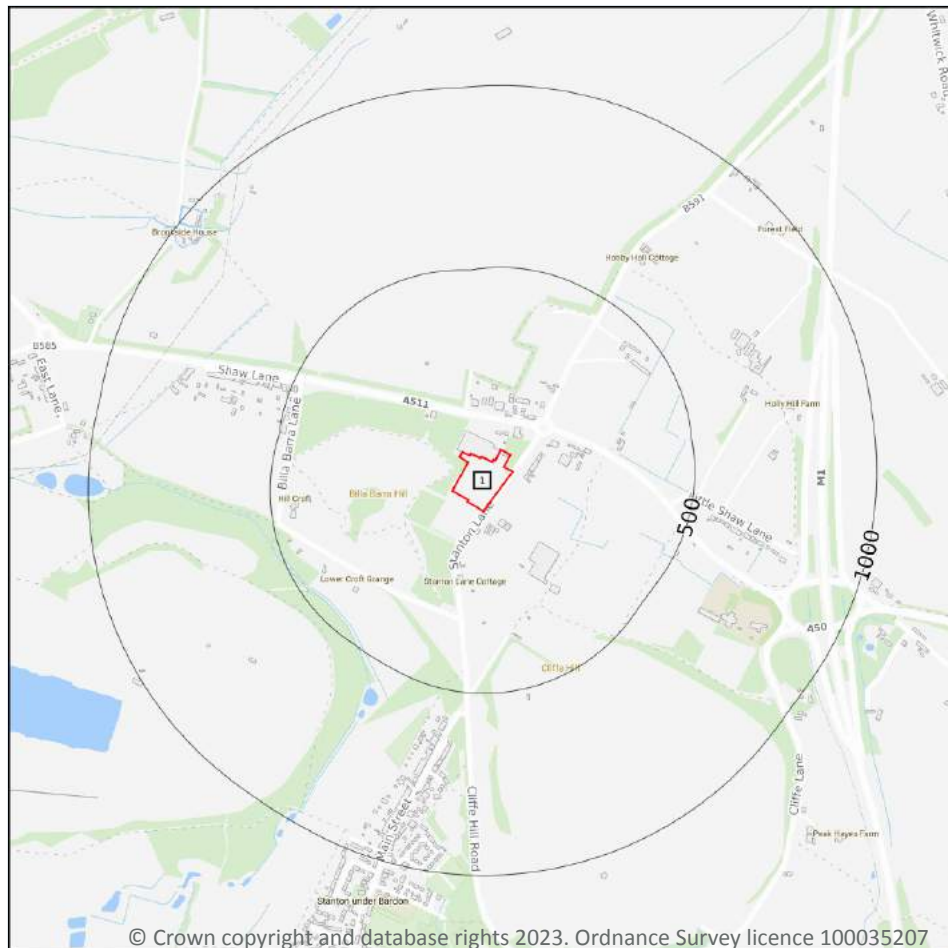
0

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.

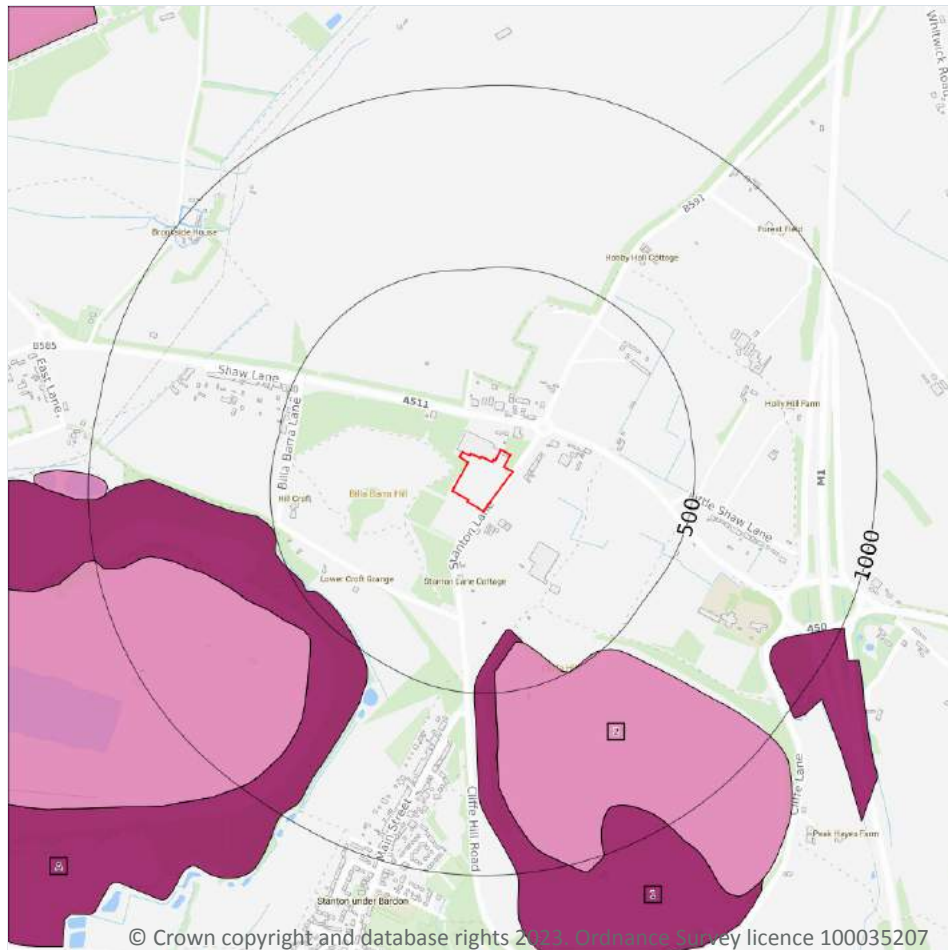
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 76](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW155_coalville_v4

This data is sourced from the British Geological Survey.



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



- Site Outline**
- Search buffers in metres (m)**
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

3

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.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 77](#) >

ID	Location	LEX Code	Description	Rock description
1	331m S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	369m S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
A	456m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

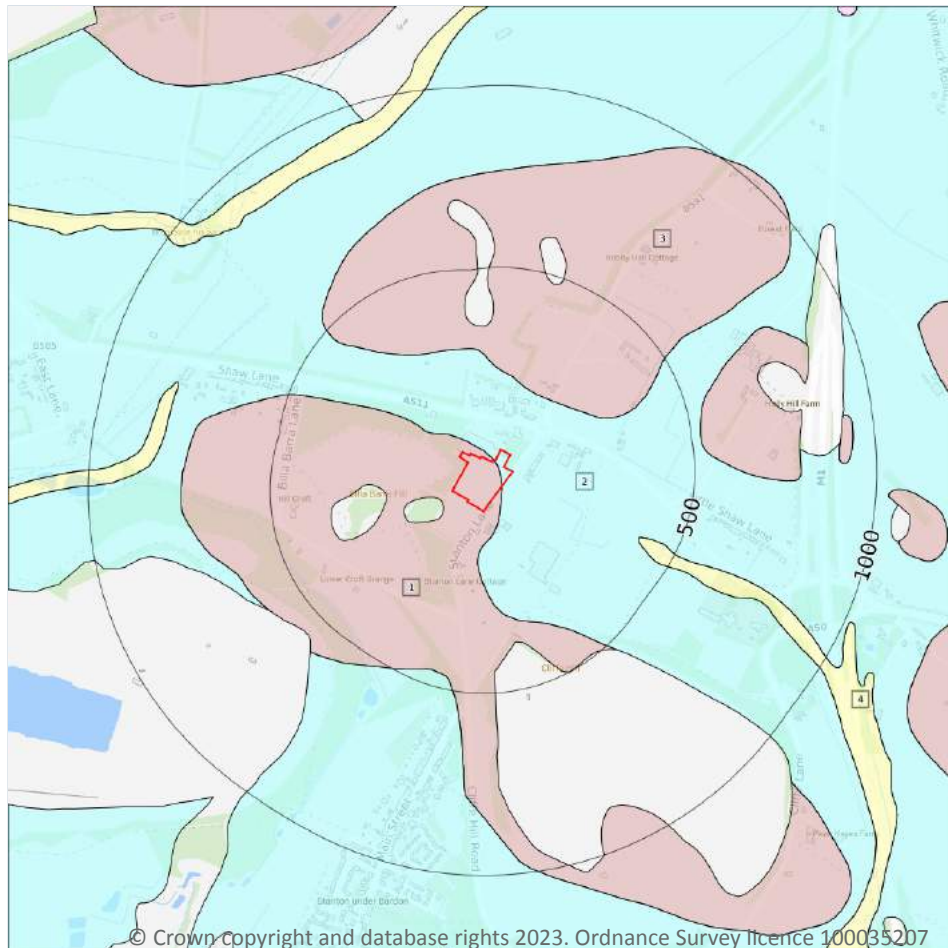
0

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



— 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

4

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 79](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
2	On site	ODT-DMTN	OADBY MEMBER	DIAMICTON
3	180m NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	392m E	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2
---------------------------	----------

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	Mixed	Moderate	Low
On site	Mixed	High	Very Low

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

7

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 81](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	EDW-MDST	EDWALTON MEMBER - MUDSTONE	CARNIAN
2	On site	COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE	CARNIAN
3	On site	GUN-MDST	GUNTORPE MEMBER - MUDSTONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
4	29m W	CMBT- VCSLST	BRADGATE FORMATION - VOLCANICLASTIC-SILTSTONE	-
5	310m N	CMBT- VCSLST	BRADGATE FORMATION - VOLCANICLASTIC-SILTSTONE	-
6	365m S	SCHD-DI	SOUTH CHARNWOOD DIORITES - DIORITE	-
7	440m SE	CMBT- VCSLST	BRADGATE FORMATION - VOLCANICLASTIC-SILTSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	4
---------------------------	----------

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	Fracture	Low	Low
On site	Fracture	High	Moderate
On site	Fracture	Low	Low
29m W	Fracture	Low	Low

This data is sourced from the British Geological Survey.

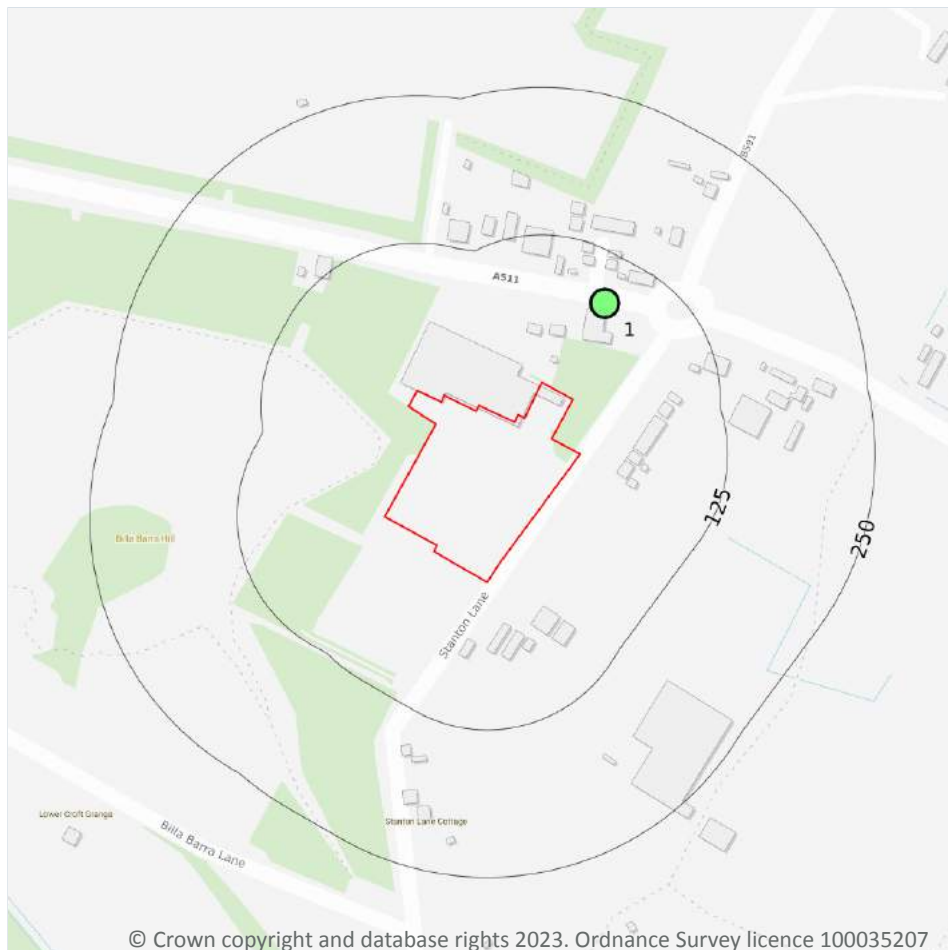
15.10 Bedrock faults and other linear features (50k)

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.

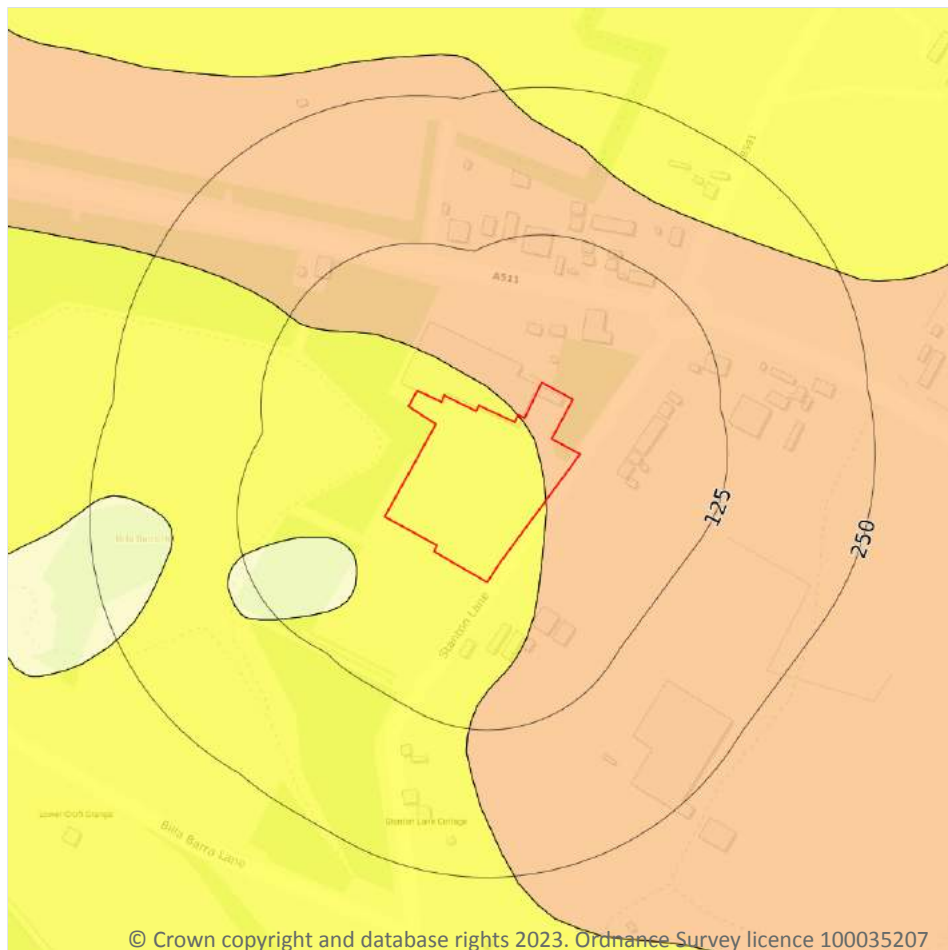
Features are displayed on the Boreholes map on [page 83](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	84m NE	447080 311640	MARKFIELD	10.05	N	216777 ↗

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

3

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 84 >](#)

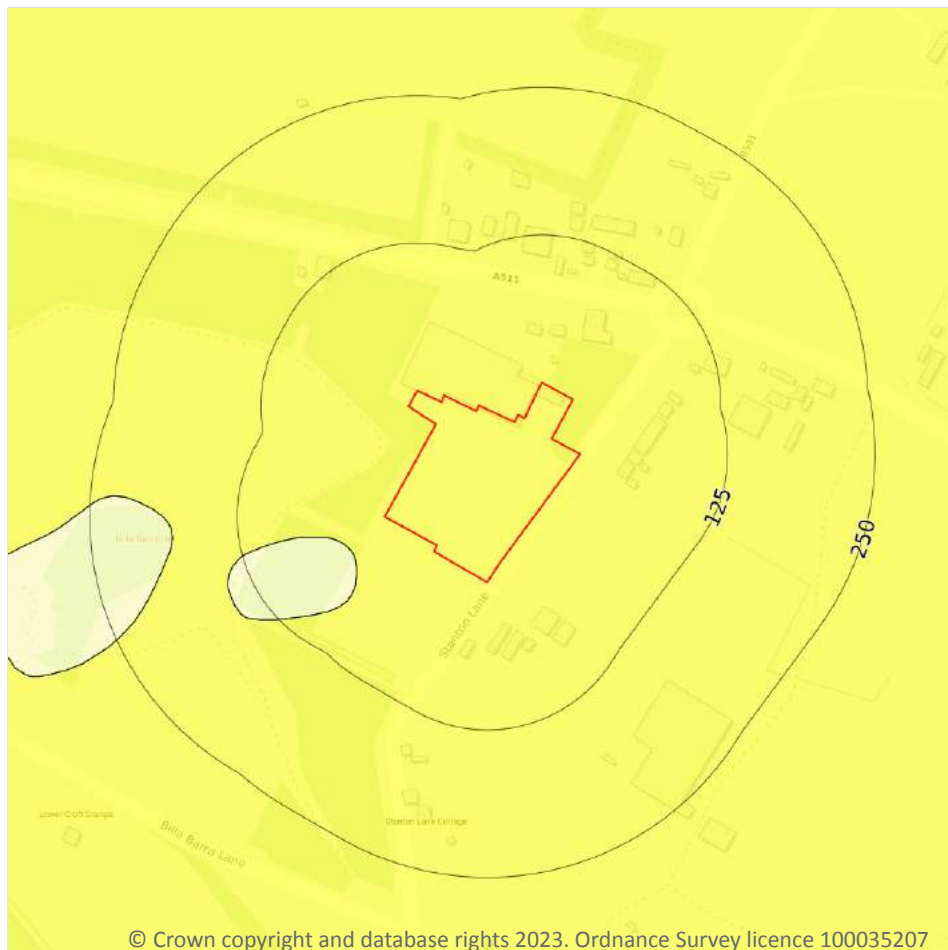
Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.
On site	Low	Ground conditions predominantly medium plasticity.
41m SW	Negligible	Ground conditions predominantly non-plastic.



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

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17.2 Running sands

Records within 50m

2

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.



Location	Hazard rating	Details
41m SW	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

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.

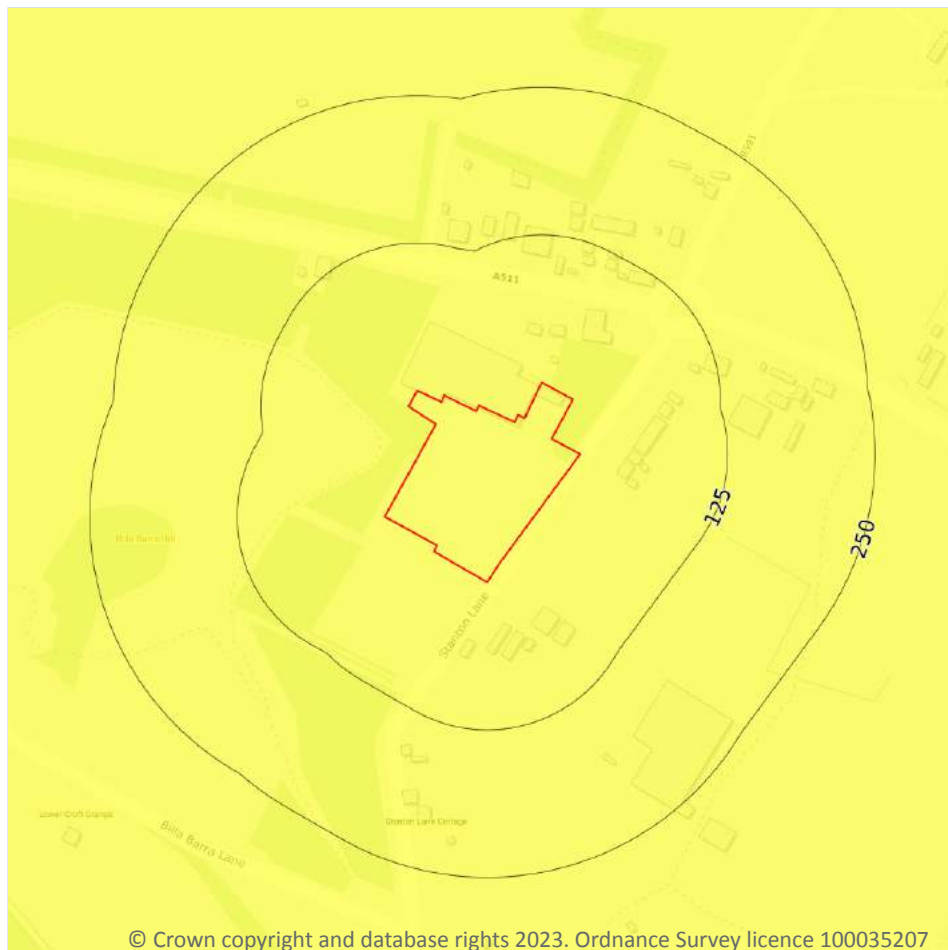
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 88](#) >

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.

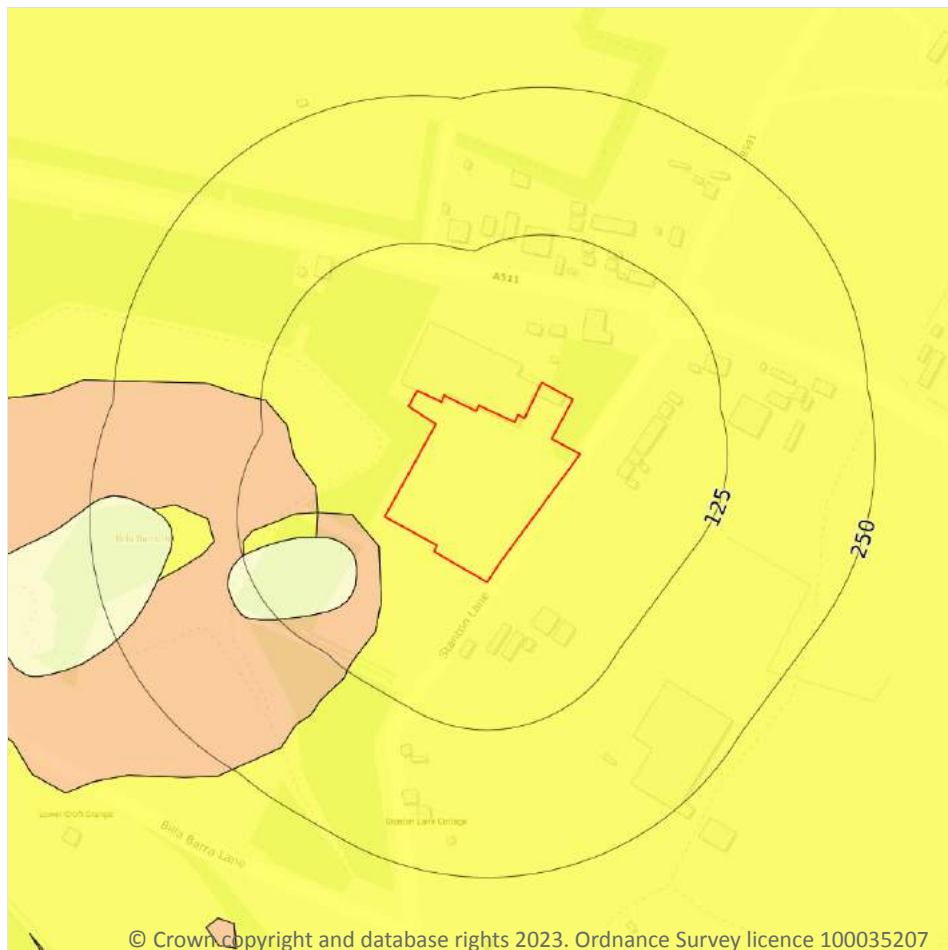
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 89](#) >

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



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

17.5 Landslides

Records within 50m

3

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 90](#) >

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.



Location	Hazard rating	Details
20m SW	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
41m SW	Negligible	Slope instability problems are not thought 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

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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 92](#)

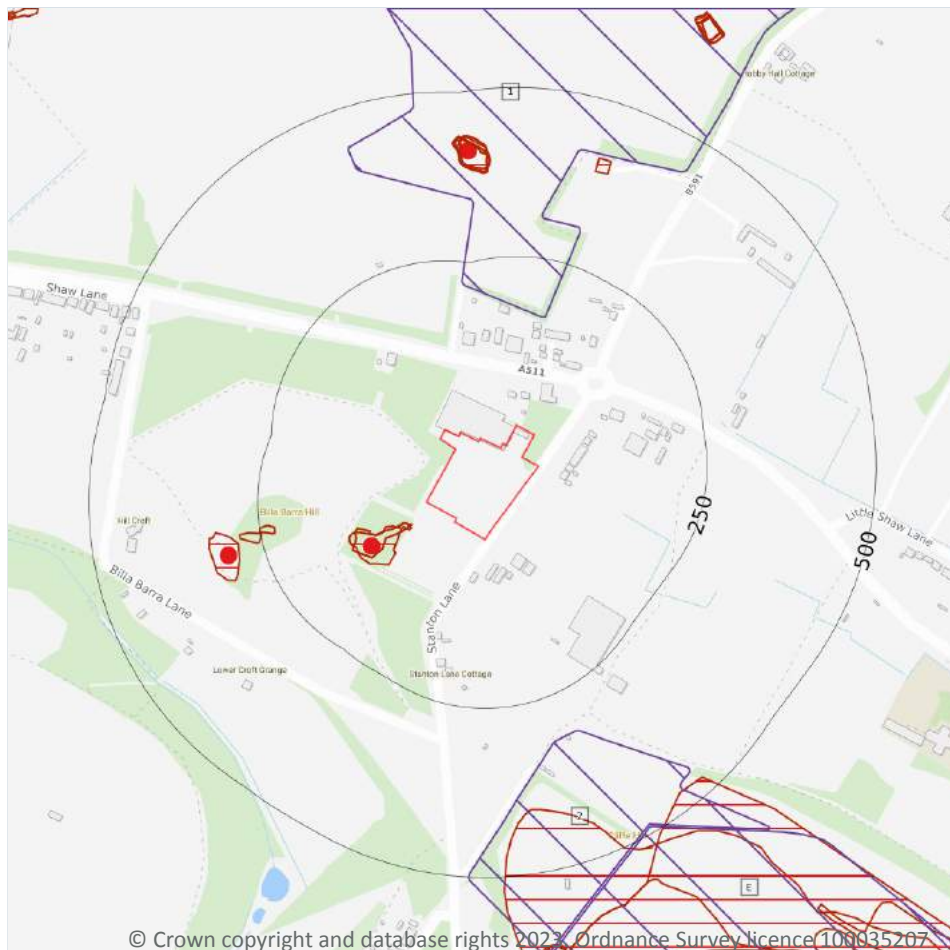
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



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

3

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.

Features are displayed on the Mining and ground workings map on [page 94](#) >

ID	Location	Details	Description
A	104m SW	Name: Billa Barrow Quarry Address: Stanton-under-Bardon, COALVILLE, Leicestershire Commodity: Igneous & Metamorphic Rock Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	304m W	Name: Billa Barra Address: Stanton-under-Bardon, COALVILLE, Leicestershire Commodity: Igneous & Metamorphic Rock Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	413m N	Name: Rise Rock Farm Address: Stanton-under-Bardon, COALVILLE, Leicestershire Commodity: Igneous & Metamorphic Rock Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	5
----------------------------	----------

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 94](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	41m SW	Unspecified Old Quarry	1901	1:10560
A	41m SW	Unspecified Old Quarry	1930	1:10560
A	43m SW	Unspecified Ground Workings	1883	1:10560
B	228m W	Unspecified Pit	1883	1:10560
B	249m W	Unspecified Pit	1883	1:10560

This is 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**3**

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.

Features are displayed on the Mining and ground workings map on [page 94 >](#)

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
1	165m N	Rise Rock Farm	Igneous rock	Surface mineral working	Refused	19/8/59
2	313m S	Cliffe Hill Granite	Igneous rock	Surface mineral working	Valid	14/1/76
E	490m SE	Cliffe Hill Granite	Igneous rock	Surface mineral working	Valid	5/8/47

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

1

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

Location	Details
On site	Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) may have information such as mining plans and maps held within their archive that have occurred within 1km of this property. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.

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.

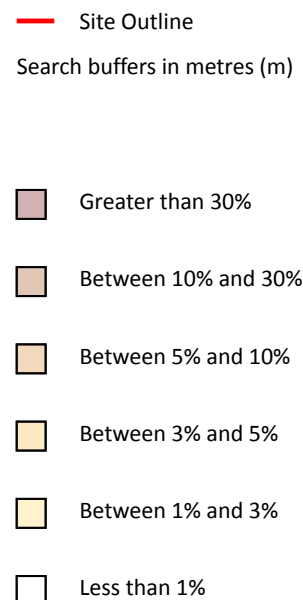
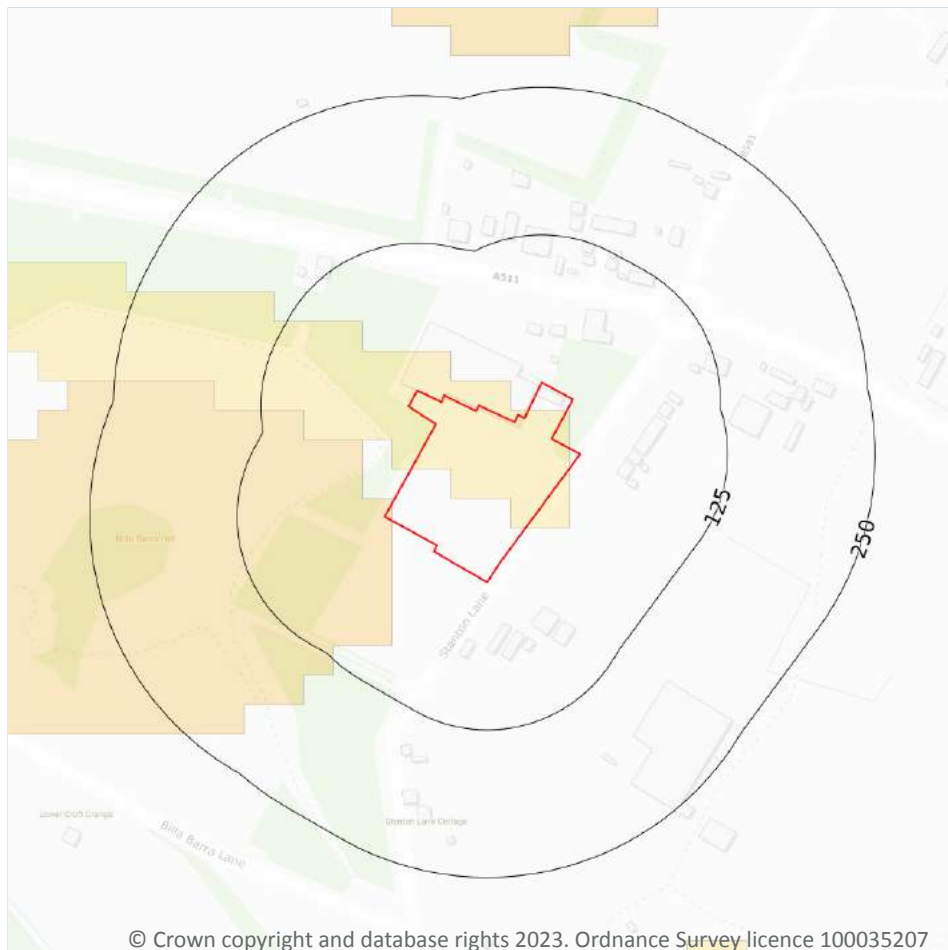
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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

3

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 102 >](#)

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None



Location	Estimated properties affected	Radon Protection Measures required
On site	Between 3% and 5%	Basic
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

9

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 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
19m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
29m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 mg/kg
36m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 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> ↗.

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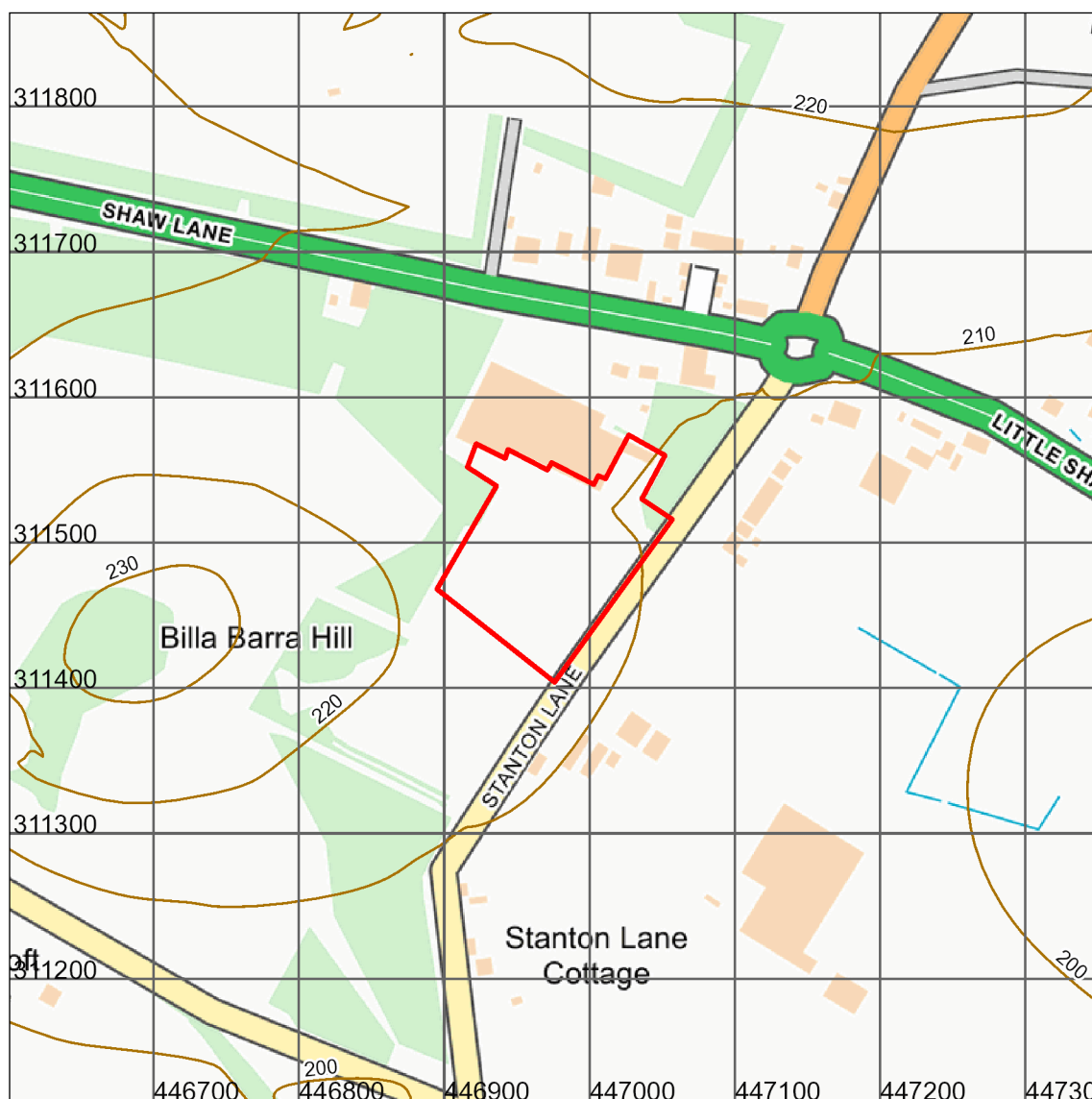
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: *BGS_335839/50070*

Client reference: P8079

Search location



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Search location indicated in red

*This report describes a site located at National Grid Reference 446976, 311489.
Note that for sites of irregular shape, this point may lie outside the site boundary.
Where the client has submitted a site plan the assessment will be based on the area given.*

Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2023 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2023 edition) Radon: Guidance on protective measures for new buildings?

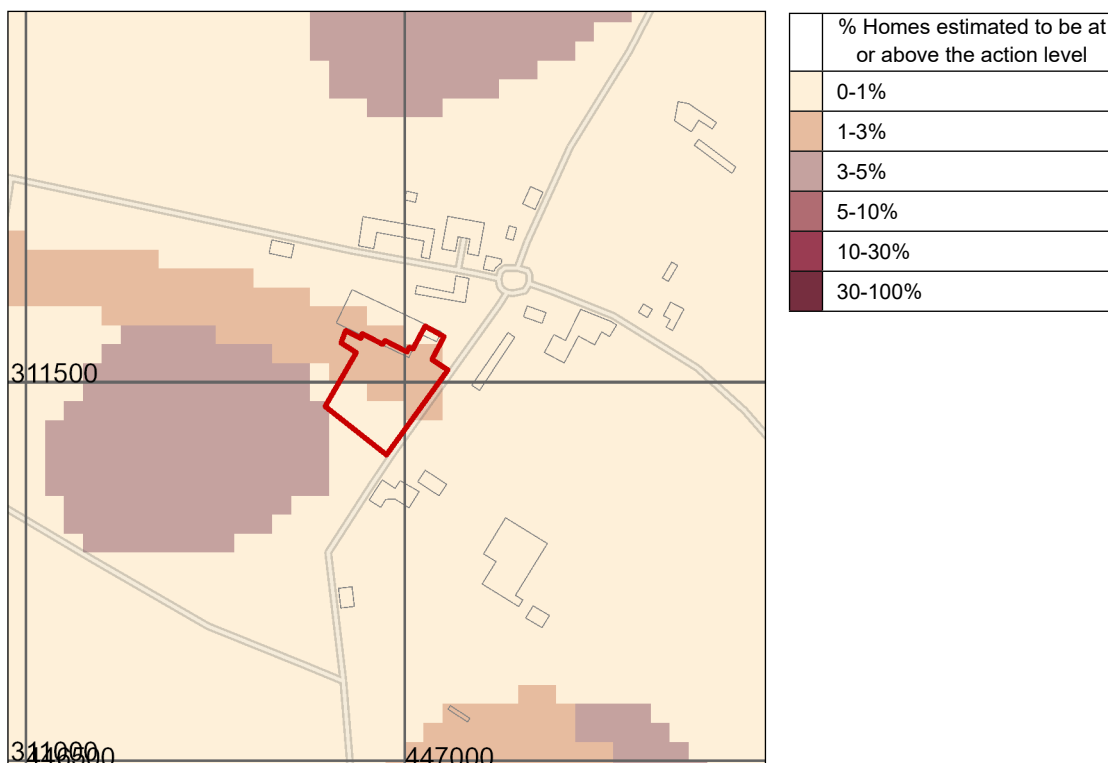
BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2023 Edition)*.

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The UKHSA provides a radon testing service which can be accessed at www.ukradon.org or by telephone (01235 822622).

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

Radon Affected Area



Contains OS data © Crown Copyright and database right 2023

Scale: 1:10 000 (1cm = 100 m)

Search area indicated in red

Is the property in a radon Affected Area as defined by the UK Health Security Agency (UKHSA) and if so what percentage of homes are estimated to be at or above the Action Level? YES

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 3 TO 5% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

The UKHSA recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to be at or above the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a high radon level within the property; the only way to determine the radon level is to carry out a radon measurement.

The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels at or above the Action Level (200 Bq m⁻³) should be remediated. Householders with levels between the Target Level (100 Bq m⁻³) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. The UKHSA provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a “Radon Affected Area” as identified by the UKHSA. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were at or above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from the UKHSA at www.ukradon.org.

What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m⁻³). The Government advises householders that, where the radon level is at or above the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations 2017 require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293): **Radon in the workplace**. BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.uk website: www.brebookshop.com

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A P P E N D I X G

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48



Legend:

- Site Boundary
- Area Not Investigated
- Historic Holes (TP & WS)



NOTES: Notes	CLIENT: Sutton Land Development	PROJECT No: P8079	DATE: Nov 2023	DESIGN/DRAWN: RHC	 GRM Development Solutions Ltd Tel: 01283 551 249 mail@grm-uk.comwww.grm-uk.com
	PROJECT: Upton Steel, Stanton Lane, Markfield (Phase 1)	DRAWING NUMBER: Figure 3		ISSUE: Final	
	TITLE: Exploratory Hole Location Plan	© GRM Development Solutions Ltd © Crown Copyright. AL 100014100			

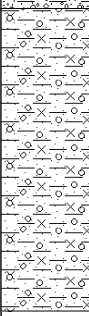


A P P E N D I X H

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

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		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP01 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 212.40	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446983 E 311490 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	D		0.35	212.05		Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular sandstone, volcanic sandstone, siltstone and chert.	1
	0.20	ES					TOPSOIL	
	0.50	D					Firm, light brown and orangish brown slightly sandy gravelly cobbly CLAY. Gravel is fine to coarse, angular to subangular volcanic sandstone and siltstone.	
	0.70	D		2.10	210.30		HEAD	2
	1.50	D						
	2.10	D					Firm, orangish brown silty gravelly CLAY. Gravel is fine to coarse, angular to subangular chert and volcanic sandstone.	
	3.00	D		3.10	209.30		End of Pit at 3.100m	3
								4

Date Excavated: 08/08/2017		Groundwater Observations:	
Date Backfilled: 08/08/2017		No groundwater encountered.	
Shoring: None			
Stability: Stable			
Plant Used: Tracked 8 Ton Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Target depth achieved.	
General Remarks: Land drain encountered at 0.9m begl.			

Relative density is approximate and determined by observation only.		Version: FINAL	Scale: 1:25
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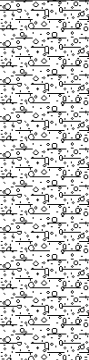
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP02 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 216.40	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446920 E 311473 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	D		0.30	216.10		Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular sandstone, volcanic sandstone, siltstone and chert. TOPSOIL	
	0.20	ES						
	0.50	D		1.00	215.40		Medium dense, light brown slightly sandy clayey gravelly SILT. Gravel is fine to coarse, angular to subangular volcanic sandstone. HEAD	1
	0.60	B						
	1.30	D		2.10	214.30		Dense, light brown silty sandy GRAVEL and COBBLES of subangular tabular volcanic sandstone. HEAD	2
	2.50	D		2.70	213.70		Dense light brown slightly sandy cobbly GRAVEL of subangular volcanic sandstone and siltstone. HEAD	3
							End of Pit at 2.700m	4

Date Excavated: 08/08/2017		Groundwater Observations:	
Date Backfilled: 08/08/2017		No groundwater encountered.	
Shoring: None			
Stability: Stable			
Plant Used: Tracked 8 Ton Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Unable to continue through dense gravel.	
General Remarks: None.			

Relative density is approximate and determined by observation only.		Version: FINAL	Scale: 1:25
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		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP03 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 214.20	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446955 E 311451 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20 0.20	D ES		0.30	213.90		Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular sandstone, volcanic sandstone, siltstone and chert. TOPSOIL	
	0.70 - 0.80	B					Firm, orangish brown and grey slightly sandy very gravelly cobbly CLAY. Gravel is fine to coarse, subangular chert and volcanic sandstone. HEAD	1
	1.70 1.70 1.70 1.70	D	HVP=65 HVP=77 HVP=96	1.50	212.70		Firm to stiff, reddish brown CLAY. Clay contains completely weathered mudstone lithorelicts. EDWALTON FORMATION	2
	2.40	D		3.10	211.10		End of Pit at 3.100m	3
								4

Date Excavated: 08/08/2017		Groundwater Observations:	
Date Backfilled: 08/08/2017		No groundwater encountered.	
Shoring: None			
Stability: Stable			
Plant Used: Tracked 8 Ton Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Target depth achieved.	

Trial Pit Dimensions (m):
 0.70  3.10

General Remarks: Land drain encountered at 0.8m begl.

Relative density is approximate and determined by observation only.	Version: FINAL	Scale: 1:25
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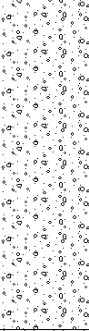
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP04 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 212.50	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446981 E 311442 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	D		0.20	212.30		Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular sandstone, volcanic sandstone, siltstone and chert.	1
	0.10	ES					TOPSOIL	
	0.30	D					Firm, grey and orange very sandy CLAY. Sand is fine to coarse.	
				0.50	212.00		HEAD	2
	0.60	D					Firm orangish brown and grey, gravelly to very gravelly CLAY. Gravel is fine to coarse, angular to subangular chert and volcanic siltstone.	
							HEAD	
				1.10	211.40		Firm to stiff, orangish brown and reddish brown locally silty gravelly CLAY. Gravel is fine to coarse, subangular chert and volcanic sandstone.	3
	1.30	D	HVP=57				HEAD	
	1.30		HVP=57					
	1.30		HVP=61	1.50	211.00		Firm to stiff, reddish brown locally silty CLAY. Clay contains weathered mudstone lithorelicts.	4
	1.30						EDWALTON FORMATION	
	2.00	D		2.00	211.00			5
	2.10		HVP=102					
	2.10		HVP=106					
	2.10		HVP=85	2.80	209.50			6
	2.80	D						
	2.80		HVP=101					
	2.80		HVP=109	3.00	209.50			7
	2.80		HVP=126					
	2.80							
							End of Pit at 3.000m	8

Date Excavated: 08/08/2017		Groundwater Observations:	
Date Backfilled: 08/08/2017		No groundwater encountered.	
Shoring: None			
Stability: Stable			
Plant Used: Tracked 8 Ton Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Target depth achieved.	
General Remarks: None.			

Relative density is approximate and determined by observation only.		Version: FINAL	Scale: 1:25
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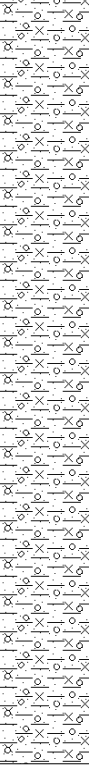
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP102 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 217.75	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446906 E 311461 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20	217.55		Soft, dark brown, slightly gravelly CLAY topsoil. Gravel is fine to medium subangular volcanic siltstone. TOPSOIL	1
				1.30	216.45		Dense, orangish brown and brown, clayey sandy GRAVEL and COBBLES. Gravel and cobbles are fine to coarse, angular to subangular volcanic siltstone. HEAD	
				1.90	215.85		Medium strong volcanoclastic SILTSTONE. BRADGATE FORMATION	2
							End of Pit at 1.900m	
								3
								4

Date Excavated: 05/06/2018		Groundwater Observations:	
Date Backfilled: 05/06/2018		No groundwater encountered.	
Shoring: None			
Stability: Stable during excavation			
Plant Used: JCB JS130LC Tracked Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Solid geology identified.	
General Remarks: None.			

Relative density is approximate and determined by observation only.		Version: FINAL	Scale: 1:25
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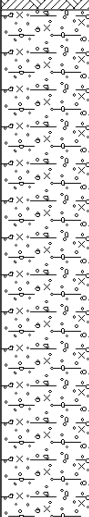
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP109 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 215.10	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446936 E 311494 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20	214.90		Soft, dark brown, slightly gravelly CLAY topsoil. Gravel is fine to medium subangular volcanic siltstone. TOPSOIL	
				0.60	214.50		Medium dense, light brown and orange, slightly clayey slightly sandy gravelly SILT. Gravel is fine to coarse, subangular volcanic siltstone and sandstone. HEAD	
							Firm, orangish brown and grey, sandy gravelly CLAY. Gravel is fine to coarse, angular to subangular volcaniclastic siltstone. HEAD	
								
				3.40	211.70		End of Pit at 3.400m	

Date Excavated: 05/06/2018		Groundwater Observations:	
Date Backfilled: 05/06/2018		No groundwater encountered.	
Shoring: None			
Stability: Stable during excavation			
Plant Used: JCB JS130LC Tracked Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Maximum bucket depth.	
General Remarks: None.			

Relative density is approximate and determined by observation only.		Version: FINAL		Scale: 1:25	
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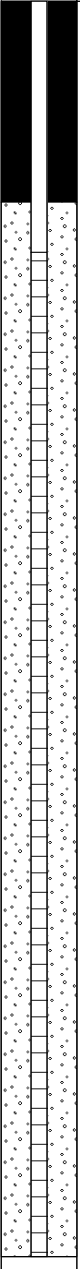
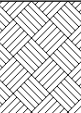
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No TP110 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 213.10	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446965 E 311420 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.25	212.85		Soft, dark brown, slightly gravelly CLAY topsoil. Gravel is fine to medium subangular volcanic siltstone. TOPSOIL	
							Medium dense to very dense, orangish brown, slightly clayey very sandy gravelly COBBLES of angular to subangular volcanic siltstone and sandstone. HEAD	1
				2.00	211.10		Strong, blueish grey, laminated volcanoclastic SILTSTONE.	2
				2.10	211.00		BRADGATE FORMATION End of Pit at 2.100m	
								3
								4

Date Excavated: 05/06/2018		Groundwater Observations:	
Date Backfilled: 05/06/2018		No groundwater encountered.	
Shoring: None			
Stability: Stable during excavation			
Plant Used: JCB JS130LC Tracked Excavator		Reason for termination of Trial Pit:	
Logged by: RDH		Solid geology identified.	
General Remarks: None.			

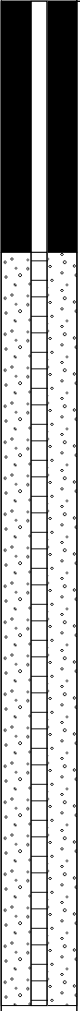
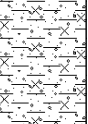
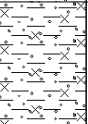
Relative density is approximate and determined by observation only.	Version: FINAL	Scale: 1:25
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		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS01 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 210.70	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 447014 E 311473 N	

Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.20 0.20	D ES		0.45	210.25	 Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular siltstone and chert. TOPSOIL	1	
		0.70 - 0.80	D				Firm, orange brown, gravelly CLAY. Gravel is fine to coarse, angular to rounded grey igneous siltstone and quartzite. HEAD		
		1.00	S	N=10 (1,1/2,2,3,3)					
		1.60 - 1.70	D						
		2.00	S	N=18 (1,2/3,4,4,7)	2.00	208.70	Stiff, yellowish orange slightly gravelly slightly sandy CLAY. Sand is medium to coarse. Gravel is fine to medium, sandstone, siltstone and chert. HEAD	2	
		2.60 - 2.70	D						
		3.00	S	N=21 (2,3/4,4,6,7)				3	
		3.50 - 3.60	D		3.30	207.40	Stiff, reddish brown, slightly gravelly CLAY. Gravel is fine to medium subangular mudstone and siltstone. EDWALTON FORMATION		
		4.00	S	N=32 (4,5/7,7,7,11)				4	
		4.50 - 4.60	D						
	5.00	S	N=38 (5,6/8,10,10,10)	5.00	205.70	End of Borehole at 5.000m		5	

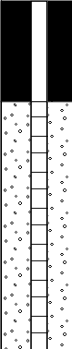
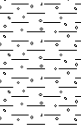
Crew: Dynamic Sampling Ltd.		Logger: RDH		Weather: Dry	
Equipment: Premier Compact 120 Series					
Reason for termination of borehole: Target depth achieved.					
Groundwater Remarks: No groundwater encountered.					
General Remarks: None.					
Hole Started: 07/08/2017		Hole Complete: 07/08/2017		Version: FINAL	
				Scale: 1:31	

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS02 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 214.00	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446945 E 311517 N	

Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.40 - 0.50	D		0.30	213.70	 Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular siltstone and sandstone and chert. TOPSOIL		
		1.00	S	N=16 (1,2/2,3,4,7)	0.90	213.10	 Firm, grey and brown, silty sandy slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded sandstone. HEAD	1	
		1.60 - 1.70	D						
		2.00	S	N=25 (2,3/4,6,6,9)					2
		2.60 - 2.70 2.70	D C	N=44 (7,9/10,10,11,13)					3
		3.60 - 3.70	D		3.40	210.60	 Stiff to very stiff, reddish brown, silty slightly gravelly CLAY. Gravel is fine to medium subangular, sandstone, siltstone and mudstone. EDWALTON FORMATION		
	4.00	S	N=50 (6,13/50 for 227mm)	4.00	210.00		End of Borehole at 4.000m	4	
								5	

Crew: Dynamic Sampling Ltd.		Logger: RDH		Weather: Dry	
Equipment: Premier Compact 120 Series					
Reason for termination of borehole: SPT refusal					
Groundwater Remarks: No groundwater encountered.					
General Remarks: None.					
Hole Started: 07/08/2017		Hole Complete: 07/08/2017		Version: FINAL	
				Scale: 1:31	

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS03 Sheet 1 of 1	
Site Name: Stanton Lane, Stanton under Bardon							Ground Level (mAOD) 215.06	
Client: Sutton Land Development					GRM Project Ref: P8079		Coordinates 446938 E 311431 N	

Installation/ Backfill	Water Strike	Samples/Tests			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	SPT Result					
		0.20 - 0.30	D		0.30	214.76	 Soft, dark brown, slightly sandy slightly gravelly CLAY topsoil. Sand is fine to medium. Gravel is fine to coarse, subangular sandstone, volcanic sandstone, siltstone and chert. TOPSOIL		
		0.20 - 0.30	ES						
		0.30 - 0.40	D						
		0.60 - 0.70	D				 Very stiff, light brown, very gravelly CLAY. Gravel is fine to coarse, angular to subangular sandstone and siltstone. HEAD		
		1.00	S	N=50 (6,4/5,12,20,13)					
	1.50 - 1.60	D							
		1.80	C	50 (7,9/50 for 215mm)	1.80	213.26	End of Borehole at 1.800m		

Crew: Dynamic Sampling Ltd.		Logger: RDH		Weather: Dry	
Equipment: Premier Compact 120 Series					
Reason for termination of borehole: SPT refusal					
Groundwater Remarks: No groundwater encountered.					
General Remarks: None.					
Hole Started: 07/08/2017		Hole Complete: 07/08/2017		Version: FINAL	
				Scale: 1:31	



A P P E N D I X I

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In-Situ Gas Monitoring Results

Project Name: Upton Steel, Stanton Lane, Markfield
 Project Number: P8079
 Client: Sutton Land Development Ltd
 Date: 18 August 2017
 Weather: Dry
 Atmospheric Pressure (mb): 991
 Pressure Trend: Rising
 Equipment: Gas Data GFM430
 Operator: Tom Robson

Ground Gases													
Well ID	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	1.0	5.0	NS	0.00	0.00	3.20	3.20	15.10	15.10	0.0	0.0	N/R	N/R
WS02	1.0	4.0	NS	0.00	0.00	3.60	3.60	15.30	15.30	0.0	0.0	N/R	N/R
WS03	0.4	1.4	NS	0.00	0.00	3.20	3.20	16.30	16.30	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
1.61	5.13
N/D	4.07
N/D	1.45

Comments:

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L.'= 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata

In-Situ Gas Monitoring Results

Project Name: Upton Steel, Stanton Lane, Markfield
 Project Number: P8079
 Client: Sutton Land Development Ltd
 Date: 24 August 2017
 Weather: Dry
 Atmospheric Pressure (mb): 983
 Pressure Trend: Steady
 Equipment: Gas Data LMSXi
 Operator: Dave Evans

Well ID	Response Zone (mbegl)			Ground Gases									
	Top	Base	Strata	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
				Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	1.0	5.0	NS	0.00	0.00	4.70	4.70	14.60	14.60	0.0	0.0	NR	NR
WS02	1.0	4.0	NS	0.00	0.00	5.10	5.10	13.70	13.70	0.0	0.0	NR	NR
WS03	0.4	1.4	NS	0.00	0.00	4.10	4.10	16.40	16.40	0.0	0.0	NR	NR

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
1.79	5.15
ND	4.08
ND	1.46

Comments: ALL HOLES PIPED UP.

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L.'= 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata

In-Situ Gas Monitoring Results

Project Name: Upton Steel, Stanton Lane, Markfield
 Project Number: P8079
 Client: Sutton Land Development Ltd
 Date: 01 September 2017
 Weather: Wet
 Atmospheric Pressure (mb): 1005
 Pressure Trend: Rising
 Equipment: Gas Data LMSXi
 Operator: Liam Press

Ground Gases													
Well ID	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	1.0	5.0	NS	0.00	0.00	6.80	6.80	15.50	15.50	0.0	0.0	N/R	N/R
WS02	1.0	4.0	NS	0.00	0.00	0.40	0.40	19.50	19.50	0.0	0.0	N/R	N/R
WS03	0.4	1.4	NS	0.00	0.00	1.70	1.70	19.10	19.10	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
1.78	5.13
n.d.	4.07
n.d.	1.46

Comments:

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata

In-Situ Gas Monitoring Results

Project Name: Upton Steel, Stanton Lane, Markfield
 Project Number: P8079
 Client: Sutton Land Development Ltd
 Date: 05 September 2017
 Weather: Dry
 Atmospheric Pressure (mb): 987
 Pressure Trend: Steady
 Equipment: Gas Data GFM430
 Operator: Wayne Barry

Well ID	Response Zone (mbegl)			Ground Gases									
	Top	Base	Strata	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
				Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
WS01	1.0	5.0	NS	0.00	0.00	7.00	7.00	16.20	16.20	0.0	0.0	N/R	N/R
WS02	1.0	4.0	NS	0.00	0.00	5.40	5.40	10.30	10.30	0.0	0.0	N/R	N/R
WS03	0.4	1.4	NS	0.00	0.00	4.30	4.30	17.00	17.00	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
1.96	5.13
N/D	4.07
N/D	1.45

Comments:

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions: a. Methane $\geq 1\%$ v/v b. Carbon Dioxide $\geq 5\%$ v/v
N.D.	Not Detected	
N.R.	Not Recorded	
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata



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Analytical Test Report: L17/1826/GRM/001

Your Project Reference:	Stanton Lane, Stanton under Bardon	Samples Received on:	11.08.2017
Your Order Number:	P8079	Testing Instruction Received:	11.08.2017
Report Issue Number:	1	Sample Tested:	11 to 23.08.2017
Samples Analysed:	11 Soils	Report issued:	23.08.2017

Signed



James Gane
Commercial Manager
Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for data pertaining to the analytical methods undertaken

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with NC method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with NC method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

With the exception of Sulphate, which is washed over the 2mm test sieve, concentrations are reported as a percentage mass of the dry soil passing the 10mm BS test sieve. As received samples have been corrected for moisture content but not stone content.

Samples were supplied by customer, results are representative of the material provided

Deviating Samples

Samples were received in suitable containers **Yes**

A date and time of sampling was provided **Yes**

Sample holding times were exceeded prior to analysis of determinants **No**

Where samples do not meet one or more of the above criteria they will be classed as deviating, this means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

Date of Issue: 24.09.2017

Drawn by: Emily Gane - Commercial Services Supervisor

Authorised by: James Gane - Commercial Manager

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L17/1826/GRM/001

Project Reference - Stanton Lane, Stanton under
Bardon

Analytical Test Results - GRM Soil Suite

NC Reference			17-26282	17-26283	17-26284	17-26285	17-26286	17-26287
Client Sample Reference			TP01	TP02	TP03	TP05	TP07	TP08
Client Sample Location			TP01	TP02	TP03	TP05	TP07	TP08
Depth (m)			0.20	0.20	0.20	0.20	0.20	0.20
Date of Sampling			08.08.2017	08.08.2017	08.08.2017	08.08.2017	08.08.2017	08.08.2017
Time of Sampling			11:15	11:45	12:30	13:30	15:15	16:00
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation						
Arsenic	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Cadmium	(mg/kg)	MCERTS	0.4	0.6	0.4	0.7	0.6	0.5
Chromium (Total)	(mg/kg)	UKAS	8.5	10.4	9.4	9.6	10.1	8.4
Copper	(mg/kg)	MCERTS	10.3	13.7	14.4	20.9	16.5	13.3
Lead	(mg/kg)	MCERTS	32.5	38.2	38.7	50.0	43.9	44.3
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	7.8	8.7	8.1	9.7	9.6	8.3
Selenium	(mg/kg)	u	< 8	< 8	< 8	< 8	< 8	< 8
Zinc	(mg/kg)	MCERTS	43.1	67.6	61.1	95.6	76.6	68.0
Total Phenols	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Cyanide (Total)	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Chromium (Hexavalent)	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
pH	pH Units	MCERTS	6.6	6.6	6.2	6.8	6.5	6.2
SOM	(%)	UKAS	4.4	5.6	6.4	8.0	5.0	6.7
Sulphate	(mg/l)	u	<10	<10	<10	<10	<10	<10
Acenaphthene	(mg/kg)	MCERTS	0.17	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	(mg/kg)	UKAS	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Anthracene	(mg/kg)	UKAS	0.14	<0.02	<0.02	<0.02	0.04	<0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	<0.02	0.04	0.05	0.06	0.16	0.06
Benzo (a) pyrene	(mg/kg)	MCERTS	<0.02	0.03	0.05	0.06	0.16	0.06
Benzo (b) fluoranthene	(mg/kg)	MCERTS	<0.02	0.05	0.07	0.09	0.22	0.08
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	<0.02	<0.02	0.04	0.05	0.11	0.05
Benzo (k) fluoranthene	(mg/kg)	MCERTS	<0.02	<0.02	<0.02	0.03	0.09	0.03
Chrysene	(mg/kg)	MCERTS	0.03	0.04	0.06	0.08	0.20	0.08
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoranthene	(mg/kg)	MCERTS	0.03	0.07	0.11	0.11	0.40	0.13
Fluorene	(mg/kg)	MCERTS	0.31	<0.02	<0.02	<0.02	<0.02	<0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	<0.02	<0.02	0.03	0.04	0.10	0.04
Naphthalene	(mg/kg)	MCERTS	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phenanthrene	(mg/kg)	MCERTS	0.43	0.03	0.04	0.04	0.16	0.05
Pyrene	(mg/kg)	MCERTS	0.05	0.07	0.10	0.10	0.35	0.12
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	1.39	0.58	0.74	0.83	2.10	0.86
Pesticide Screen	(mg/kg)	u	Undetected <1	Undetected <1	Undetected <1	Undetected <1	Undetected <1	Undetected <1

L17/1826/GRM/001

Project Reference - Stanton Lane, Stanton under
Bardon

Analytical Test Results - GRM Soil Suite

NC Reference			17-26289	17-26290	17-26291	17-26292	17-26293
Client Sample Reference			TP01	TP02	TP04	TP04	TP08
Client Sample Location			TP01	TP02	TP04	TP04	TP08
Depth (m)			0.50	0.50	0.60	2.00	2.80
Date of Sampling			08.08.2017	08.08.2017	08.08.2017	08.08.2017	08.08.2017
Time of Sampling			Not provided	Not provided	Not provided	Not provided	Not provided
Sample Matrix			Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation					
Arsenic	(mg/kg)	MCERTS	-	-	-	-	-
Cadmium	(mg/kg)	MCERTS	-	-	-	-	-
Chromium (Total)	(mg/kg)	UKAS	-	-	-	-	-
Copper	(mg/kg)	MCERTS	-	-	-	-	-
Lead	(mg/kg)	MCERTS	-	-	-	-	-
Mercury	(mg/kg)	UKAS	-	-	-	-	-
Nickel	(mg/kg)	MCERTS	-	-	-	-	-
Selenium	(mg/kg)	u	-	-	-	-	-
Zinc	(mg/kg)	MCERTS	-	-	-	-	-
Total Phenols	(mg/kg)	MCERTS	-	-	-	-	-
Cyanide (Total)	(mg/kg)	MCERTS	-	-	-	-	-
Chromium (Hexavalent)	(mg/kg)	u	-	-	-	-	-
pH	pH Units	MCERTS	6.5	7.3	6.3	6.8	6.0
SOM	(%)	UKAS	-	-	-	-	-
Sulphate	(mg/l)	u	<10	<10	17	<10	34
Acenaphthene	(mg/kg)	MCERTS	-	-	-	-	-
Acenaphthylene	(mg/kg)	UKAS	-	-	-	-	-
Anthracene	(mg/kg)	UKAS	-	-	-	-	-
Benzo (a) anthracene	(mg/kg)	MCERTS	-	-	-	-	-
Benzo (a) pyrene	(mg/kg)	MCERTS	-	-	-	-	-
Benzo (b) fluoranthene	(mg/kg)	MCERTS	-	-	-	-	-
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	-	-	-	-	-
Benzo (k) fluoranthene	(mg/kg)	MCERTS	-	-	-	-	-
Chrysene	(mg/kg)	MCERTS	-	-	-	-	-
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	-	-	-	-	-
Fluoranthene	(mg/kg)	MCERTS	-	-	-	-	-
Fluorene	(mg/kg)	MCERTS	-	-	-	-	-
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	-	-	-	-	-
Naphthalene	(mg/kg)	MCERTS	-	-	-	-	-
Phenanthrene	(mg/kg)	MCERTS	-	-	-	-	-
Pyrene	(mg/kg)	MCERTS	-	-	-	-	-
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	-	-	-	-	-
Pesticide Screen	(mg/kg)	u	-	-	-	-	-

L17/1826/GRM/001

Project Reference - Stanton Lane, Stanton under Bardon

Sample Descriptions

NC Reference	Client Sample Reference	Sample Depth (m)	Description	Moisture Content (%)	Stone Content (%)
17-26282	TP01	0.20	Dark brown silty sandy gravelly clay with root fragments.	29	0
17-26283	TP02	0.20	Dark brown silty sandy gravelly clay with organic matter.	32	13
17-26284	TP03	0.20	Dark brown silty sandy gravelly clay with root fragments.	34	12
17-26285	TP05	0.20	Dark brown silty sandy gravelly clay with root fragments.	34	15
17-26286	TP07	0.20	Dark brown silty sandy gravelly clay with root fragments.	19	50
17-26287	TP08	0.20	Dark brown silty sandy gravelly clay with root fragments.	31	17

NC Reference	Client Sample Reference	Sample Depth (m)	Description	% Passing 2mm BS test sieve
17-26289	TP01	0.50	Red/brown gravelly silty clay.	98
17-26290	TP02	0.50	Light brown silty clay.	81
17-26291	TP04	0.60	Brown gravelly silt clay with occasional siltstone.	89
17-26292	TP04	2.00	Red/brown clay.	100
17-26293	TP08	2.80	Red/brown silty clay.	100

L17/1826/GRM/001

Project Reference - Stanton Lane, Stanton under Bardon

Analysis Methodologies

Matrix	Determinant	Sample condition for analysis	Test Method used
Soil	Metals	Air Dried	In house method statement - MS - CL - ICP metals
Soil	PAH	As Received	In house method statement - MS - CL - PAH (As received)
Soil	Phenols	As Received	In house method statement - MS - CL - Phenols by Skalar
Soil	Chromium (hexavalent)	As Received	In house method statement - MS - CL - Hexavalent Chromium by Skalar
Soil	Cyanide	As Received	In house method statement - MS - CL - Cyanide by Skalar
Soil	pH	As Received	In house method statement - MS - CL - pH in soils (using a 1:3 soil to water extraction)
Soil	SOM	Air Dried	In house method statement - MS - CL - TOC Eltra
Soil	Sulphate (w/s)	Oven Dried	In house method statement - MS - CL - Anions by Aquakem
Soil	Pesticide Screen	As Received	In house method statement - MS - CL - Pesticides



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TEST REPORT

BS 1377 PLASTICITY INDEX AND MOISTURE CONTENT

Stanton Lane, Stanton under Bardon

Report no. L17/1826/GRM/002			
Order reference: P8079	Date of receipt: 11/08/2017	Date of testing: 14/08/2017 to 17/08/2017	Date of issue: 23/08/2017

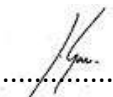
NC Sample reference	Client sample reference	Sample type	Depth (m)	Sample description	Fines passing 425µm (%)	Liquid limit (%)	Plastic limit (%)	Plasticity index (%)	Moisture content (%)
17-26294	TP01	Disturbed	0.50	Red/brown gravelly silty clay.	91	27	14	13	17
17-26295	TP02	Disturbed	0.50	Light brown silty clay.	76	26	19	7	22
17-26296	TP04	Disturbed	0.60	Brown gravelly silt clay with occasional siltstone.	73	38	16	22	19
17-26297	TP04	Disturbed	2.00	Red/brown clay.	100	67	22	45	27
17-26298	TP08	Disturbed	2.80	Red/brown silty clay.	100	45	18	27	20

NOTES:

1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016.
2. Plasticity index testing was in accordance with BS 1377 : Part 2 : 1990 Clauses 3, 4.4 (one-point) & 5.
3. Moisture content testing was in accordance with BS 1377 : Part 2 : 1990 Clause 3.2.3.1.
4. The material was prepared from its natural state.
5. Some information required by BS 1377 is not included in the report. The information will be provided if requested.

GRM Development Solutions Ltd

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.....

James Gane
Commercial Manager
Nicholls Colton Group

Date of Issue 30.01.2017

Owned by Emily Blissett – Customer Services Supervisor

Authorised by James Gane – Commercial Manager

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Page 1 of 1

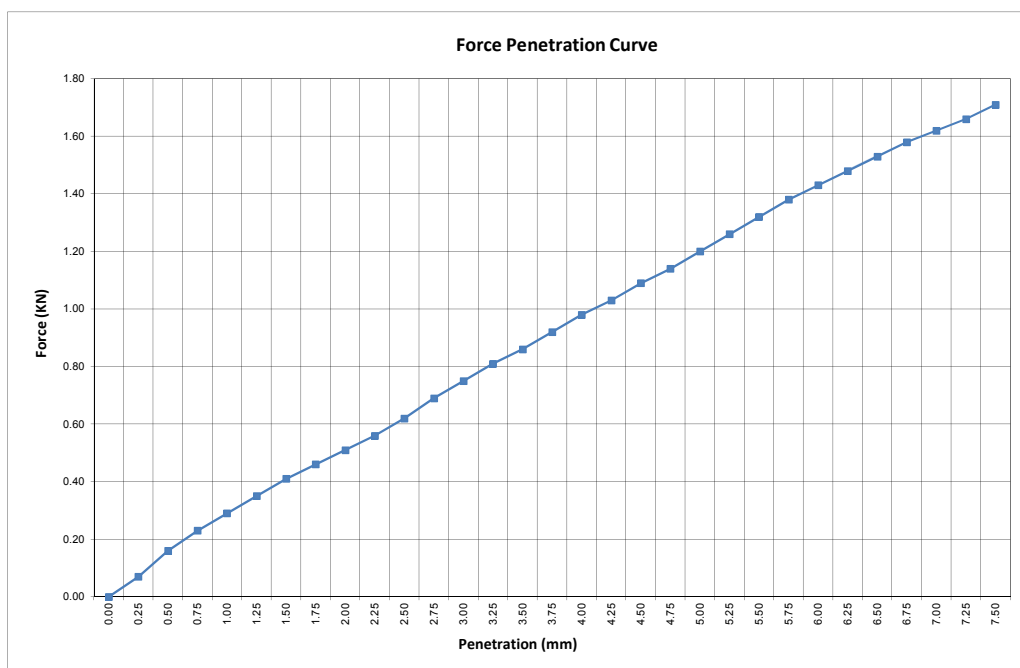
L17/1826/GRM/003

Project Reference - Stanton Lane, Stanton under Bardon

Test Result - BS 1377 Laboratory CBR value - Top only

NC Reference	17-26364
--------------	----------

Client reference :	TP1		
Sample Depth - Top (m):	0.7	Sample Depth - Bottom (m)	0.7
Visual description :	Light brown silty gravelly clay with siltstone.		
Sample type	Disturbed		
Initial Bulk Density (Mg/m3) :	2.18	Initial Dry Density (Mg/m3) :	1.90
Material retained on 20mm test sieve (%) :	16	Moisture content (%) :	15
California Bearing Ratio (CBR) % :	6.0		



NOTES :

- Testing was in accordance with BS 1377 : Part 4 : 1990 : Clause 7.
- Sample preparation was in accordance with cl.7.2.4.4 method 5 4.5kg rammer.
- The test specimen was not soaked prior to testing.

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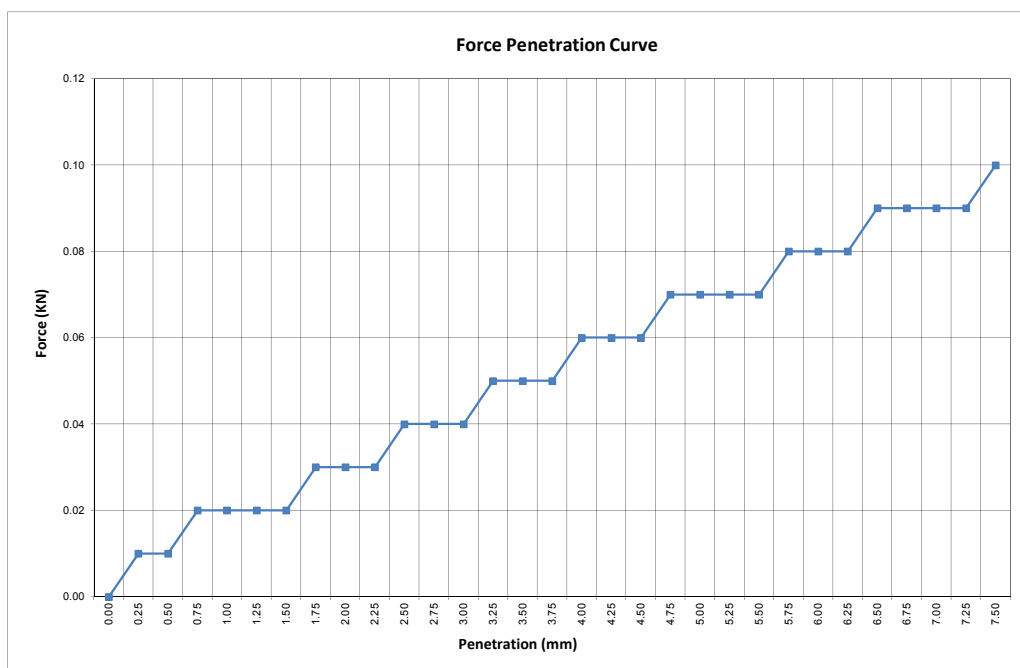
L17/1826/GRM/003

Project Reference - Stanton Lane, Stanton under Bardon

Test Result - BS 1377 Laboratory CBR value - Top only

NC Reference	17-26365
--------------	----------

Client reference :	TP2		
Sample Depth - Top (m):	0.6	Sample Depth - Bottom (m)	0.6
Visual description :	Light brown silty gravelly clay with siltstone.		
Sample type	Disturbed		
Initial Bulk Density (Mg/m3) :	2.03	Initial Dry Density (Mg/m3) :	1.69
Material retained on 20mm test sieve (%) :	42	Moisture content (%) :	20
California Bearing Ratio (CBR) % :	0.4		



NOTES :

- Testing was in accordance with BS 1377 : Part 4 : 1990 : Clause 7.
- Sample preparation was in accordance with cl.7.2.4.4 method 5 4.5kg rammer.
- The test specimen was not soaked prior to testing.
- The test sample classified as 'not appropriate' for testing in accordance with BS1377:Part 4:1990 Clause 7.2.1.2. Testing has been carried out in agreement with our client.

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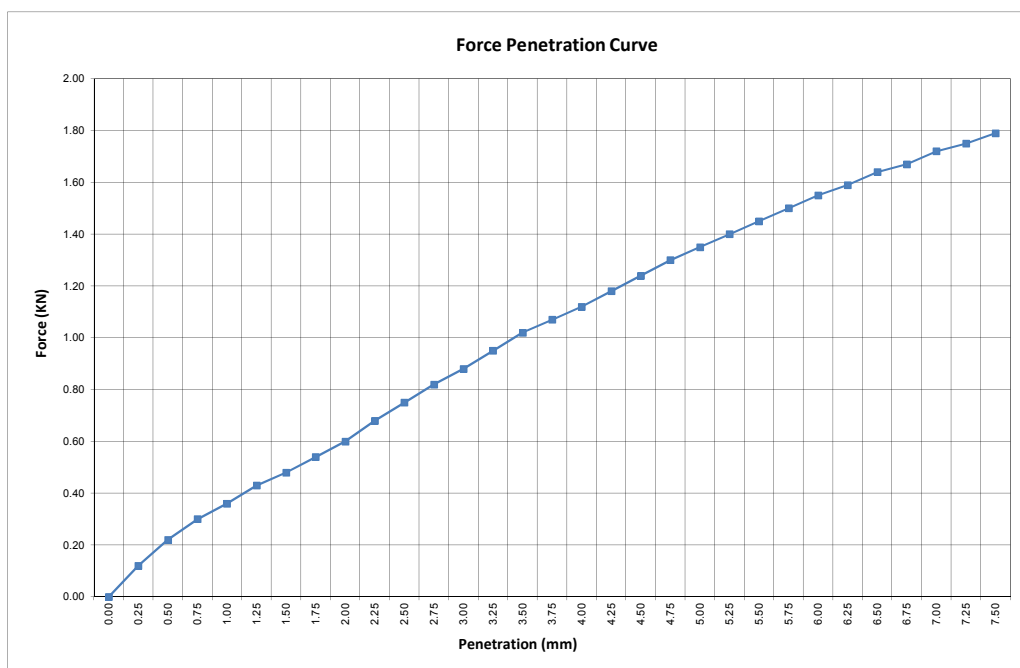
L17/1826/GRM/003

Project Reference - Stanton Lane, Stanton under Bardon

Test Result - BS 1377 Laboratory CBR value - Top only

NC Reference	17-26366
--------------	----------

Client reference :	TP3		
Sample Depth - Top (m):	0.7	Sample Depth - Bottom (m)	0.7
Visual description :	Light brown silty gravelly clay with siltstone.		
Sample type	Disturbed		
Initial Bulk Density (Mg/m3) :	2.20	Initial Dry Density (Mg/m3) :	1.93
Material retained on 20mm test sieve (%) :	20	Moisture content (%) :	14
California Bearing Ratio (CBR) % :	6.8		



NOTES :

1. Testing was in accordance with BS 1377 : Part 4 : 1990 : Clause 7.
2. Sample preparation was in accordance with cl.7.2.4.4 method 5 4.5kg rammer.
3. The test specimen was not soaked prior to testing.

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	GRM TIER 1 ASSESSMENT CRITERIA		
LAND USE	Commercial Industrial		
CONTAMINANT	1%	2.50%	6%
^a Arsenic	640	640	640
^a Cadmium	410	410	410
^b Chromium III	8600	8600	8600
^a Chromium VI	49	49	49
^a Lead	2330	2330	2330
^{b/c} Mercury	1100	1100	1100
^b Selenium	12000	12000	12000
^b Nickel	980	980	980
^b Phenols	760	1500	3200
^b Copper	68000	68000	68000
^b Zinc	730000	730000	730000
^d Cyanide	280	280	280
^b Benzene	27	47	90
^b Toluene	56000	110000	180000
^b Ethylbenzene	5700	13000	27000
^b <i>o</i> - xylene	6600	15000	33000
^b <i>m</i> - xylene	6200	14000	31000
^b <i>p</i> - xylene	5900	14000	30000
Non Genotoxic PAHs			
^b Acenaphthene	84000	97000	100000
^b Acenaphthylene	83000	97000	100000
^b Anthracene	520000	540000	540000
^b Fluoranthene	23000	23000	23000
^b Fluorene	63000	68400	70800
^b Naphthalene	190	460	1100
^b Phenanthrene	22000	22000	23000
^b Pyrene	54000	54000	54000
Genotoxic PAHs			
^{a/e} Benzo(a)pyrene	76	76	76
ALIPHATIC HYDROCARBONS			
^b C5-C6	3200	5900	12000
^b C6-C8	7800	17000	40000
^b C8-C10	2000	4800	11000
^b C10-C12	9700	23000	47000
^b C12-C16	59000	82000	90000
^b C16-35	1600000	1700000	1800000
AROMATIC HYDROCARBONS			
^b C5-7 (benzene)	26000	46000	86000
^b C7-8 (toluene)	56000	110000	180000
^b C8-C10	3500	8100	17000
^b C10-C12	16000	28000	34000
^b C12-C16	36000	37000	38000
^b C16-C21	28000	28000	28000
^b C21-C35	28000	28000	28000

Notes

- a C4SL - SP1010 (2014) - Benzene and Benzo(a)pyrene values for 1% and 2.5% SOM have been calculated using default C4SL parameters in CLEA v1.07
- b LQM/CIEH S4UL values (2015).
- c S4UL for inorganic Hg used.
- d Atkins ATRISKsoil Value
- e Benzo(a)pyrene is a surrogate marker for the 8 genotoxic PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(ah)anthracene, Indeno(1,2,3-cd)pyrene)

GRM TAC 06-2020

Contaminant Thresholds for Subsurface Water Pipes

Contaminant	Thresholds (mg/kg)
Corrosion	
Wrapped Steel	pH<7 Cond >400µS/cm
Wrapped Ductile Iron	pH<5 Cond >400µS/cm, he not neutral
Copper	pH<5 >8 and Eh +ve
Toxic Substances	
Chromium (total) (Cr)	Applies to above pipe materials
Organic Contaminants	
VOC's	0.5 PE/0.125 PVC
BTEX & MTBE	0.1 PE/0.03 PVC
SVOC	2 PE/1.4 PVC
Phenols	2 PE/0.4 PVC
Cresols & Chlorinated Phenols	2 PE/0.04 PVC
Mineral Oil C11-C20	10 PE
Mineral Oil C21 - C40	500
Ether/Ketone/Amines, Nitrobenzene/Aldehydes	0.5 PE/0.02-1 PVC

Notes.

It is not recommended that water pipes should be laid in sites where these substances are identified or suspected

Local Utility Companies should be consulted prior to pipe specifications being finalised.

Ref: Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites. UKWIR Ref. No. 10/WM/03/21. 2010.



A P P E N D I X M

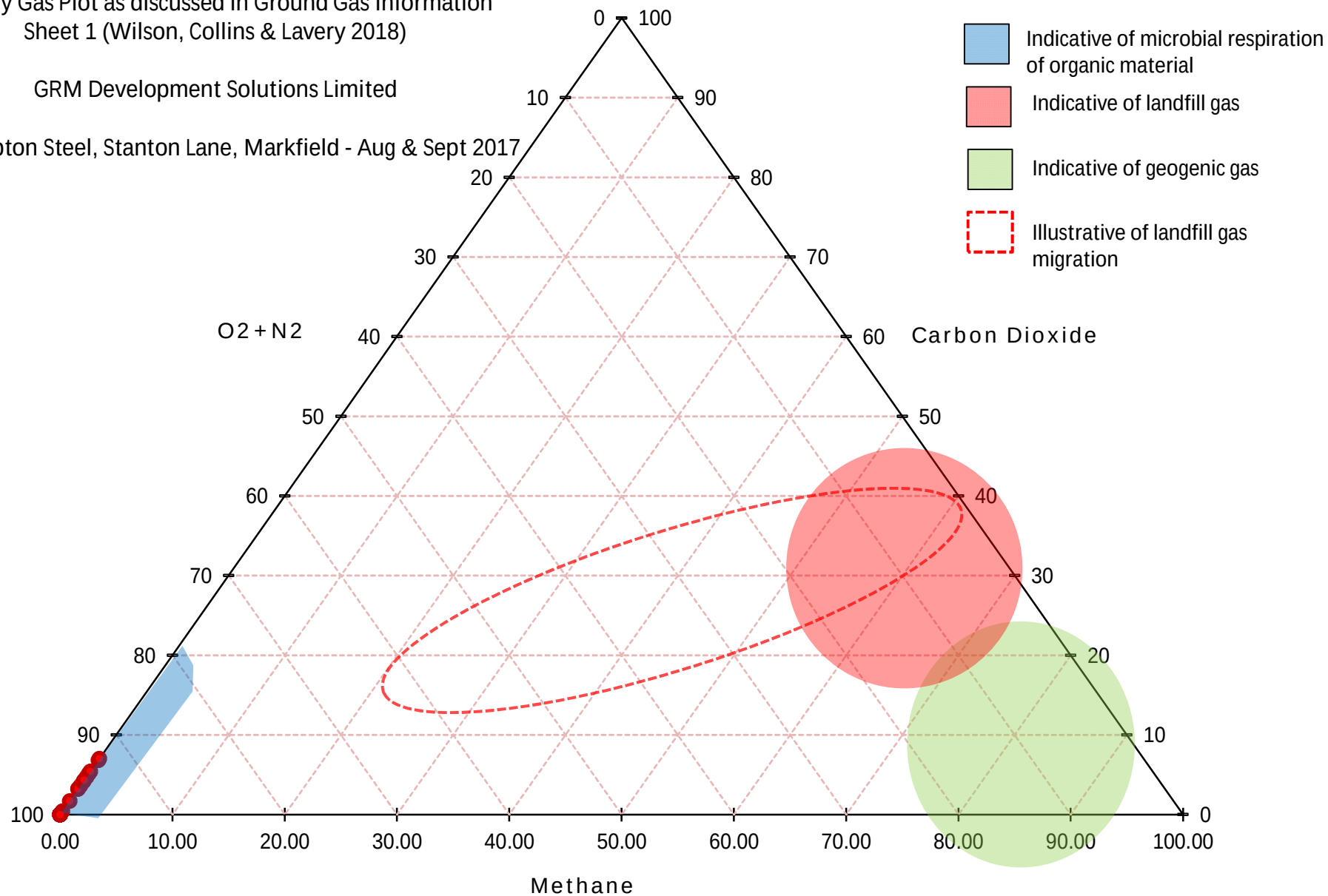
Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48

Ternary Gas Plot as discussed in Ground Gas Information
Sheet 1 (Wilson, Collins & Lavery 2018)

GRM Development Solutions Limited

P8079 Upton Steel, Stanton Lane, Markfield - Aug & Sept 2017





A P P E N D I X N

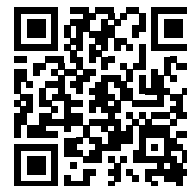
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Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



0EBL4-OWXKF-QAQ40

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

P8079 - Upton Steel, Stanton Lane, Markfield

Description/Comments

Project

P8079

Site

Upton Steel, Stanton Lane, Markfield

Classified by

Name: **George Salloway**
Date: **17 Nov 2023 16:01 GMT**
Telephone: **01283 551 249**

Company: **GRM Development Solutions Ltd**
Laurus House
First Avenue
Burton on Trent
DE14 2WH

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
Most recent 3 year Refresher

Date

06 Dec 2018
07 Dec 2021

Next 3 year Refresher due by Dec 2024

Purpose of classification

2 - Material Characterisation

Address of the waste

Upton Steel, Stanton Lane, Markfield, LE67 9TT

Post Code LE67 9TT

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

New warehouses.

Description of the specific process, sub-process and/or activity that created the waste

Excavation of soils, in preparation for new building.

Description of the waste

Natural strata.



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP01	0.2	Non Hazardous		3
2	TP02	0.2	Non Hazardous		5
3	TP03	0.2	Non Hazardous		7

Related documents

#	Name	Description
1	GRM Validation Suite - WM3 V1.2.GB	waste stream template used to create this Job

Report

Created by: George Salloway

Created date: 17 Nov 2023 16:01 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	9
Appendix B: Rationale for selection of metal species	10
Appendix C: Version	10