



STANTON LANE, STANTON UNDER BARDON

PHASE I SITE APPRAISAL (DESK STUDY) FOR SUTTON LAND DEVELOPMENT

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This report has been prepared in accordance with GRM's Accredited Quality Procedures.
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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 I Site Appraisal (desk study). The desk study and site inspection form Phase I of the assessment and allow the geotechnical and geo-environmental setting of the site to be determined and the identification of areas of particular concern that require targeted investigation.

This site appraisal is intended to provide information that will assist decision making by identifying potential ground engineering and contamination issues.

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

The Client proposes to develop the site with a number of steel framed buildings and associated infrastructure. The proposed end use may include areas of soft landscaping. The outline development proposals provided by the Client are presented in Appendix B.

The Client has not informed GRM of any potential development hazards.

1.2 OBJECTIVES OF THE SITE APPRAISAL

The principal aims of the Phase I Site Appraisal (desk study) 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.
- 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 AND SITE OBSERVATIONS

2.1 INFORMATION SOURCES

In addition to the general sources of information listed in Appendix A (i) the Client has supplied the following information that has been used in the assessment of the site:

- the location of the site.
- proposed development layout.

2.2 SITE DESCRIPTION

2.2.1 Geographical Setting

The site is located approximately 1km north of Stanton under Bardon village centre and approximately 5km southeast of Coalville town centre. The National Grid Reference (NGR) for the approximate centre of the site is SK469114. A Site Location and Boundary Plan is presented in Appendix C.

The northern boundary is formed by steel framed structures and infrastructure belonging to CJ Upton & Sons Ltd (Upton Steel), the western and southern boundaries by woodland and open fields, and the eastern boundary by Stanton Lane and then Markfield Equestrian Centre.

The site has a high point along the central western boundary and slopes away to the north, east and south from this point. The lowest area of the site is the north eastern corner, adjacent to Stanton Lane.

2.2.2 Site Inspection Observations

The Site Features Plan/General Site Photographs presented in Appendix D illustrate the salient observations made during a site inspection on 4th August 2017.

The site is presently an open grassed field used for silage and covers an area of approximately 2.05 hectares. The site is bounded by wooden fencing along the western, southern and eastern boundaries and by metallic fencing along the northern boundary adjacent to the steel warehouses.

The ground surface is relatively soft under foot when wet but generally not rutted. The site perimeter is dominated by hawthorn hedgerows and trees with overgrown brambles throughout. Other trees include semi mature to mature elder, oak, holly, ash and laurel.

In the north western corner, adjacent to the steel warehouse, a gabion retaining wall is present. At least 2m of ground level change is recorded from the site and the lower lying steel yard.

A derelict brick building was identified in the south eastern corner of the site, currently separated from the main area of the site by barbed wire fencing and is densely overgrown.

An overhead cable enters the site in the north western corner and terminates at a pylon. The ends of the cables are exposed by the pylon and run east along the site boundary towards the steel warehouses. An electricity substation was identified approximately 10m from the north eastern corner of the site, adjacent to the road and the steel yard entrance.

Significant Features identified during site inspection:

Trees – potential deepened foundations.
 Sloping site – potential slope stability hazard, considered a low risk at present gradients.
 Soft wet surface – potential trafficability issues.
 Underground cable – general excavation hazard.
 Electricity substation – potential contamination hazard and buried services.
 Derelict building – potential buried foundations/structures

2.3 HISTORICAL DEVELOPMENT OF THE SITE

A review of the available historical Ordnance Survey (OS) maps gives an insight into the development of the site and can highlight potential hazards. Extracts of the maps reviewed are provided in Appendix E.

The summary below identifies the significant features identified on the historical mapping data considered likely to have the potential to affect the site.

<i>Date to</i>	<i>Identified On-site Hazard</i>	<i>Identified Off-site Hazard</i>
1884	Open field	Open fields
1903	A collection of buildings are present in the south eastern corner of the site, presumably barn structures.	An old quarry is recorded immediately west of the site boundary.
1929	No significant changes.	No significant changes
1959	No significant changes.	- The old quarry is recorded as a disused quarry and shows a variation in topography to previous maps. - Stanton Lane Farm is recorded to the east of the site across Stanton Lane.
1966	No significant changes. A track is recorded along the southern boundary.	- The old quarry is no longer recorded and the ground now appears to be level. - Stanton Lane Farm continues to expand.

1991	The buildings are no longer recorded and are presumed to have been demolished.	A depot is recorded on the land immediately north of the site.
1993	No significant changes.	No significant changes.
2002	No significant changes.	No significant changes.
Present day Aerial Photography	No significant changes.	- Stanton Lane Farm is now recorded to be Markfield Equestrian Centre. - The depot to the north of the site is recorded to be an Upton Steel warehouse with hardstanding areas.

Significant Features identified on OS Maps:

Adjacent disused quarry – potential source of made ground and/or ground gas.
 Demolished buildings – potential buried foundations due to deep made ground.
 Adjacent steel works/warehouse – potential source of offsite contamination.

2.4 ANTICIPATED GEOLOGY

The BGS Geological Sheet for this area shows:

- Superficial deposits of head comprising clay, silt, sand and gravel is recorded to cover the entire site. The Oadby Till formation (boulder clays) is recorded immediately adjacent to the north eastern boundary and may encroach onto site.
- Solid geology of the Mercia Mudstone Group including the Edwalton Formation (mudstone) across the majority of the site. The Cotgrove Sandstone Member may be present along the northern boundary of the site
- The Bradgate Formation (volcanoclastic siltstone) is recorded on site in the southwestern corner.

There are no BGS borehole records close to the site. However, due to the presence of quarries in the nearby area, it is considered possible that rock will be present at shallow depth.

Made ground can be expected due to the demolition of former buildings and former quarry adjacent to the site. Buried sub-structures may also be present.

Significant Features identified from geological data:
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Cohesive strata – potentially depended foundations within influencing distance of trees. Made ground – potential source of contamination and ground gases. Potential for shallow rock. Variable strata – general geotechnical hazard
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2.5 HYDROGEOLOGICAL INFORMATION

No detailed information regarding the depths to groundwater is available; however, the groundwater level is likely to be subject to seasonal variations.

The Environment Agency has classified the underlying superficial strata (head and Oadby formation) as a Secondary aquifer (undifferentiated) and the solid geology (Edwalton Formation) is classified as a Secondary B aquifer with low permeability layers. The Cotgrove Sandstone member along the northern boundary has been classified as a Secondary A Aquifer.

There are no recorded groundwater abstraction licenses within 500m of the site. The site is not recorded to be within a Groundwater Source Protection Zone.

Significant Features identified from hydrogeological data:

Secondary A, B and undifferentiated aquifers – Potential receptors of site derived contamination.
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2.6 HYDROLOGICAL INFORMATION

Surface water features include:

- A tertiary river approximately 150m east to the site.
- A tertiary river recorded as a drain is located approximately 340m southwest of the site.

It is considered unlikely that the surface water features are at risk from site derived contamination since the likely pathway would be from over land flow, where considerable dilution would occur.

There are no surface water abstraction licenses within 500m of the site.

Significant Features identified from hydrological data:
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Tertiary rivers – considered to be at negligible risk from site derived contamination.
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2.7 FLOOD RISK

The BGS suggests the site is within an area of potential groundwater flooding related to Superficial Deposits Flooding (shallow unconsolidated sedimentary aquifers overlying unproductive aquifers) and that the confidence level is high. A Phase II ground investigation would assess the risk, but any risk would be catered for within the development infrastructure design.

The site is not within 250m of an indicative fluvial floodplain, and the Environment Agency's Internet based flood risk maps suggest there that there is no risk from river flooding.

A flood risk assessment is required for this site as it is over 1ha in size.

Significant Flood Risk Features identified:
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Flood risk assessment required.

Potential for groundwater flooding.

2.8 MINING

2.8.1 Coal

The site is not within an area recorded to require a Coal Authority mining report, therefore, the risk from coal mining is considered to be negligible.

Significant Mining Risks:

None identified.

2.9 QUARRYING

Quarries have been recorded on historical maps with the closest potentially encroaching onto site along the southwestern boundary. The quarries have targeted the localised diorite deposits in the area. The quarry immediately adjacent to the site is disused but may have extended into the site.

Significant Quarrying Risks:

Potential made ground associated with historical quarrying adjacent to or just within the site boundary.
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2.10 ENVIRONMENTAL INFORMATION

An Environmental Report has been acquired for the site. The full report is presented in Appendix F. A summary of the relevant information not included elsewhere in this report is presented below:

- The environmental report indicates that the former quarry adjacent to the southwest corner of the site may have encroached into the site boundary. The report also indicates that the quarry was registered as an 'Environment Agency/Natural Resources Wales' historic landfill site. The waste is not known but was last recorded in 1949.
- There are no other landfills within 250m of the site boundary.
- There have been no significant pollution incidents within 100m of the site that are considered to present a risk to the site.

Significant Features identified from Environmental data:

Historic landfill in former quarry – Potential source of made ground and ground gases.
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2.11 ARCHAEOLOGY

Archaeological information has not been sought as part of this desk study and has not been identified as an issue by the Client. Some Local Authorities require at least an initial archaeological appraisal for development sites. GRM can undertake such appraisals if required. Archaeological investigations occasionally reveal ground-related problems from ancient times (prior to the 1st Edition OS maps) and can occasionally cause foundation and contamination development hazards.

Archaeological Hazards:

Not researched.

2.12 INVASIVE PLANT SPECIES/ECOLOGY

GRM is not a specialist in this topic and has not conducted such a survey; however, we will endeavour to report easily recognisable issues such as Japanese Knotweed, Giant Hogweed, badger sets etc, when seen on site. No such issues were observed during the walkover; however, an ecological specialist should be consulted.

Invasive Plant Species/Ecological Hazards:

None identified on site.

2.13 RADON ASSESSMENT

The Health and Safety Executive (HSE) requires that if radon concentrations in air exceed 400 Bqm⁻³ in the workplace then mitigation measures may be required to reduce levels. This assessment can only be accurately carried out by undertaking measurements of radon level.

The level of 400 Bqm⁻³ in the workplace is considered to be analogous to the level of 200 Bqm⁻³ in the home, due to the reduced exposure time in the former.

The NRPB-W26: 'Radon Atlas of England and Wales' (2002) has now officially been superseded. However, while the new atlas contains revised maps, the previously provided tables of data are not included. Until this regional/local data has been republished (pending) NRPB-W26 (2002) will continue to be used, as it is the only readily accessible source of data available for assessing the risk posed by radon to commercial/industrial developments

NRPB-W26 indicates that the average radon concentration in dwellings in the Hinckley and Bosworth Borough Council area is 28Bqm⁻³, with a highest value of 120Bqm⁻³. In the postcode area LE67 the average radon concentration in dwellings is 36Bqm⁻³. Of the 41 dwellings tested none recorded radon levels in excess of 200 Bqm⁻³.

Radon Hazard:

No radon protection measures required.
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2.14 SUMMARY OF POTENTIAL GEOTECHNICAL/GENERAL HAZARDS

Potential geotechnical/general hazards have been identified in earlier sections and are summarised below.

Potential Hazard	Potential Consequence	Action
Live services	Danger to personnel	Inform relevant parties for disconnection / diversion
Previous buildings	Deepened foundations/buried structures	Ground investigation
Made ground associated with former buildings and adjacent historic quarry	Deepened foundations	Ground investigation
In-filled ground	Deepened foundations	Ground investigation
Rutting/softened surface strata	Poor trafficability	Possible need to improve near surface strata
Variable strata	Deepened foundations	Ground investigation
Shrinkable clay/trees	Deepened foundations	Ground investigation plasticity testing/tree survey

Potential sources, pathways and receptors are summarised in the Phase I Conceptual Model in Section 3, which is based on current relevant guidance, the principles of which are set out in Appendix A (iii).

Where appropriate potential hazards to the proposed development are shown on the Hazard Plan (Ground Model) presented in Appendix G.

2.15 CONTAMINANTS OF CONCERN

No site specific contaminants have been identified in addition to the general contaminants listed in Appendix A (ii).

3 PHASE I CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Level of Risk
Localised potentially contaminated made ground / fill associated with previous development.	Indoor and outdoor inhalation of soil dust, the ingestion of, and dermal contact with, contaminated soil and soil dust, ingestion of vegetables that have taken up contamination and contaminated soil attached to vegetables.	End users.	Low.
		Construction and Maintenance Workers.	
Localised made ground / fill.	Inhalation of ground gas.	End users.	Very low to low (Based on BS8576).
Historic landfill site in former quarry.			
Made ground.	Water pipes.	End users.	Very Low.

CONTROLLED WATERS			
Made ground / fill.	Leaching of contaminants and vertical migration to the groundwater. (pathway likely to be restricted by cohesive soils)	Secondary A, B and undifferentiated Aquifers.	Low.

4 CONTAMINATION / REMEDIATION RECOMMENDATIONS

The risk from ground contamination is considered low.

The risk from ground gas is considered to be very low.

Prior to development a ground investigation will be required, the scope of which is outlined in Section 6. At this stage, based on the desk study information available, it is considered that allowance be made for the following:

- A suitable capping system in soft landscaped areas close to the former quarry, and derelict buildings.
- Upgraded water pipes (protecta line or similar).

5 PRELIMINARY GEOTECHNICAL ASSESSMENT

It should be noted that the following comments and recommendations are based on the findings of this desk study which may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). Prior to development a ground investigation will be required to confirm the initial recommendations outlined below, the scope of which is outlined in Section 6. However, at this stage based on the desk based information available it is considered:

- The ground conditions are likely to comprise predominantly cohesive strata, however Head deposits may include silt, sand and gravels. Rock is potentially present at shallow depth.
- Providing deep made ground and/or soft or loose materials are not present the site may be suitable for the use of pad foundations.
- Due to the suspected presence of cohesive soils and the presence of trees, particularly around the margins of the site, allowance should be made for deepening foundations in accordance with accepted standards. At this stage it should be assumed that all of the proposed units will require some degree of deepening below minimum depth.
- Overly aggressive ground conditions are not expected and standard concrete should be suitable.
- Given the anticipated geology the adoption of a soakaway drainage system is considered unlikely.
- Due to the sloping nature of the site, any regrading of the site may result in slope stability issues.
- Given the anticipated geology CBR values of between 2% and 5% are considered likely.
- Due to the sloping nature of the site, an allowance should be made for earthworks/cut and fill.

FURTHER INVESTIGATION

A Phase II ground investigation is recommended to determine more accurately the effect of the identified hazards on the development. Initially, this should include:

- A ground investigation designed to BS10175:2011 and BS5930:2015 and comprising window sampling and trial pitting will be required to confirm ground conditions and collect samples for analysis. Based on a site area of 2Ha, up to 15 exploratory holes are envisaged.
- Chemical analysis of soils followed by risk assessment so that the risk to human health and controlled waters can be determined.
- Based on the Phase I Conceptual Model (Section 3) the ground gas risk has been assessed as very low to low. A ground gas investigation designed to BS8576:2013 will be required to determine the ground gas regime beneath the site and allow any necessary mitigation measures to be recommended. At this stage allowance for 4 visits over 1 month should be made to assess potential liabilities.
- Geotechnical soils testing of the founding strata to assess its character and suitable grades of buried concrete.

Following your review of this document, a copy of it should be submitted to the Planning Department of the Local Authority for comment and approval prior to any ground investigation works being undertaken, as this is often a condition of planning.

CONCLUSIONS

This Phase I Site Appraisal has shown the site is likely to be suitable for the proposed development, assuming compliance with all the recommendations contained within this report.



A P P E N D I X A

**GRM Development Solutions provides
multi-disciplinary consultancy services, UK-wide:**

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

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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
- Environment Agency 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 (2007), 'Radon: Guidance on protective measures for new buildings'
- HPA-RPD-033 (2007), 'Indicative Atlas of Radon in England and Wales'
- NRPB Publication W26 (2002), 'Radon Atlas of England and Wales'
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings.
- BS8576:2013 Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds.
- 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 (III and IV) | • 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.

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 BS8576:2013.

To assess the risks posed by ground gases such as carbon dioxide and methane, the relevant current guidance has been used (i.e. BS8485:2015). For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (BR211: 2007)'.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Report 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 C4SLs published by DEFRA, values calculated by GRM using the CLEA v1.07 risk assessment and values and chemical data developed by LQM/CIEH.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.07 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 an aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values. 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 AND SITE WASTE 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. Likewise making the site as volume neutral as possible will reduce the costs of development.

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.

SWMPs are a legal requirement for all projects with an overall development cost of over £300k. GRM can assist in the production of SWMPs which comply with the Code of Practice and identify best environmental disposal options when dealing with waste.

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.

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 365 (1991). 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:

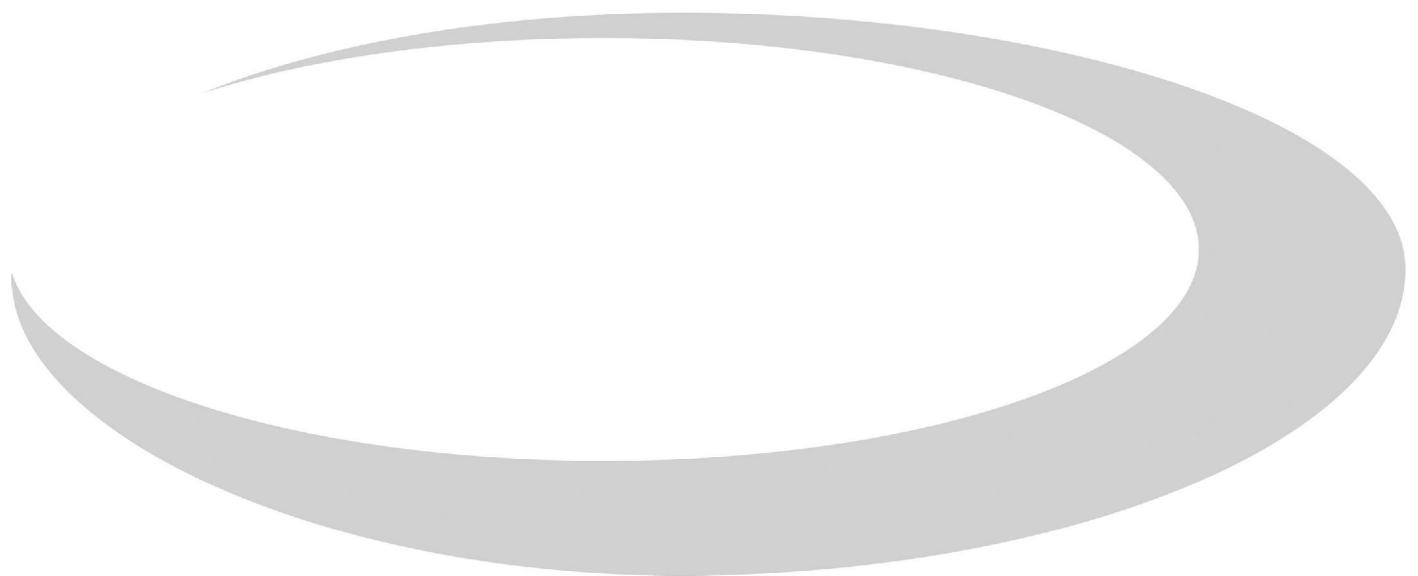
- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. 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**

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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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KEY	
	Total Site Area= 1.36ha
	A. 21500sqft
	1. 8000sqft
	2. 5500sqft
	3. 5500sqft
	4. 5500sqft
	5. 5500sqft
	6. 8000sqft
	7. 8000sqft
	Entrance to warehouse
	Entrance to offices



Pera Innovation Park, Nottingham Road
Melton Mowbray, LE13 0PB

Telephone: 01664 563 288 Fax: 01664 563 360
E-Mail: info@hssparchitects.co.uk Web: www.hssparchitects.co.uk

Project:
Proposed Extensions To
CJ Upton Steel & Sons Ltd
Shaw Lane
Markfield

Title:
SKETCH PLAN

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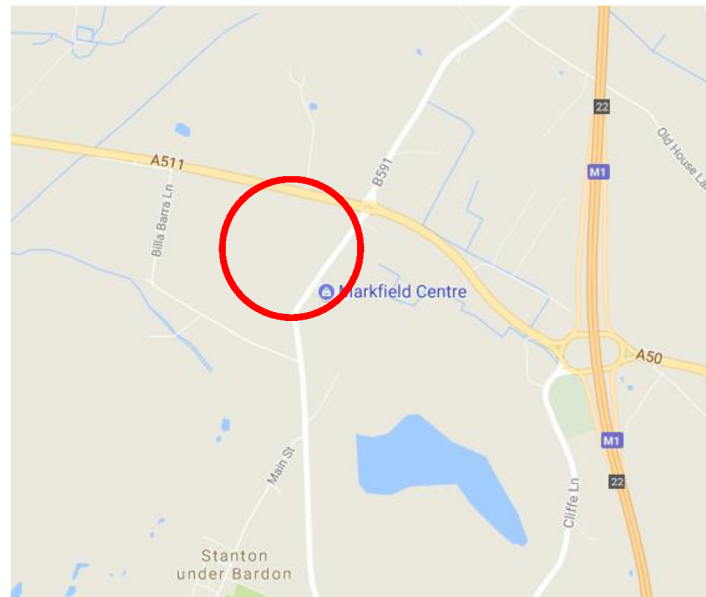
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CLIENT:

Sutton Land Development

PROJECT:

Stanton Lane, Stanton under Bardon

TITLE:

Site Location Plan

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Figure 1

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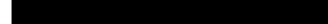
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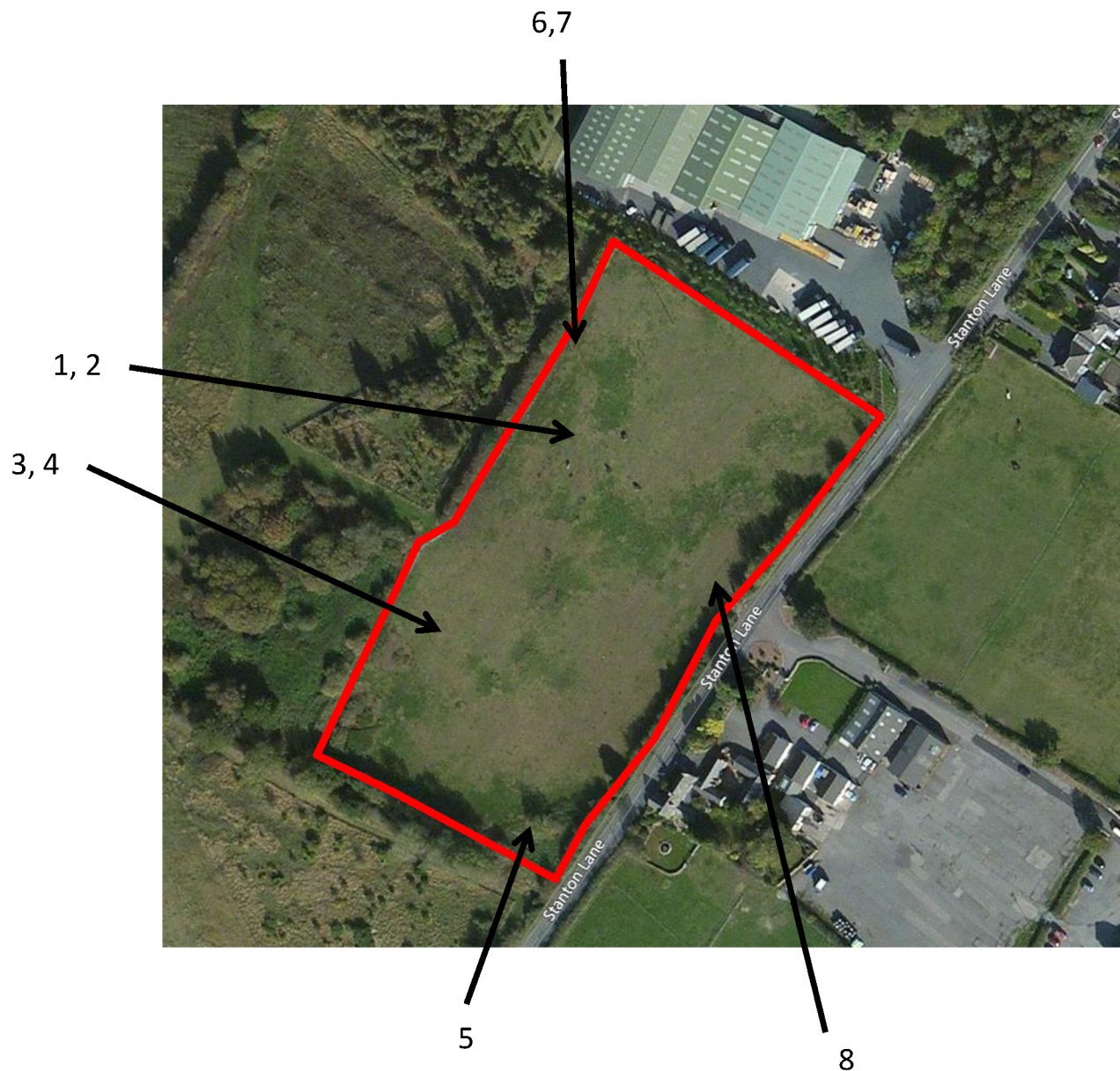
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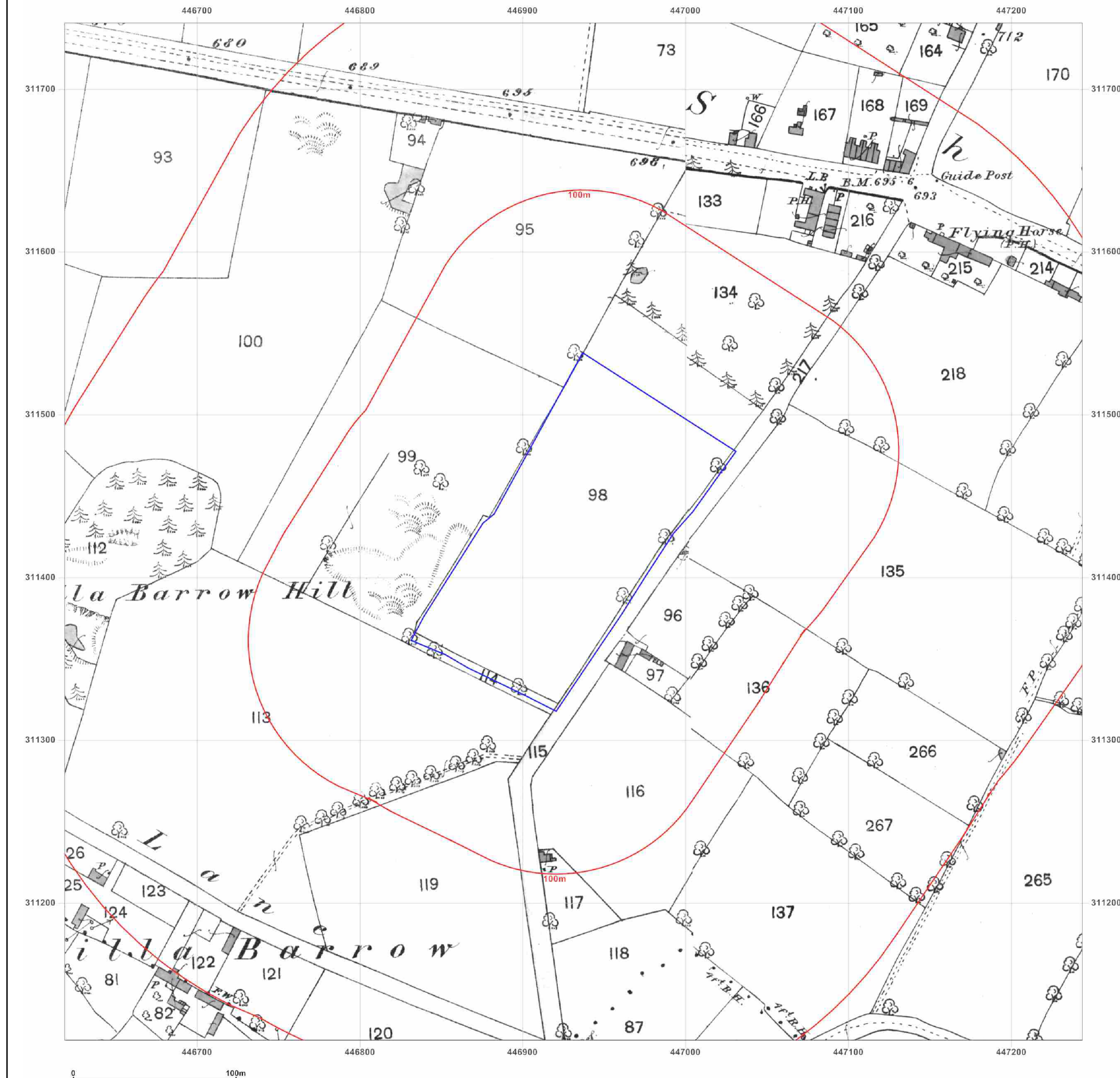


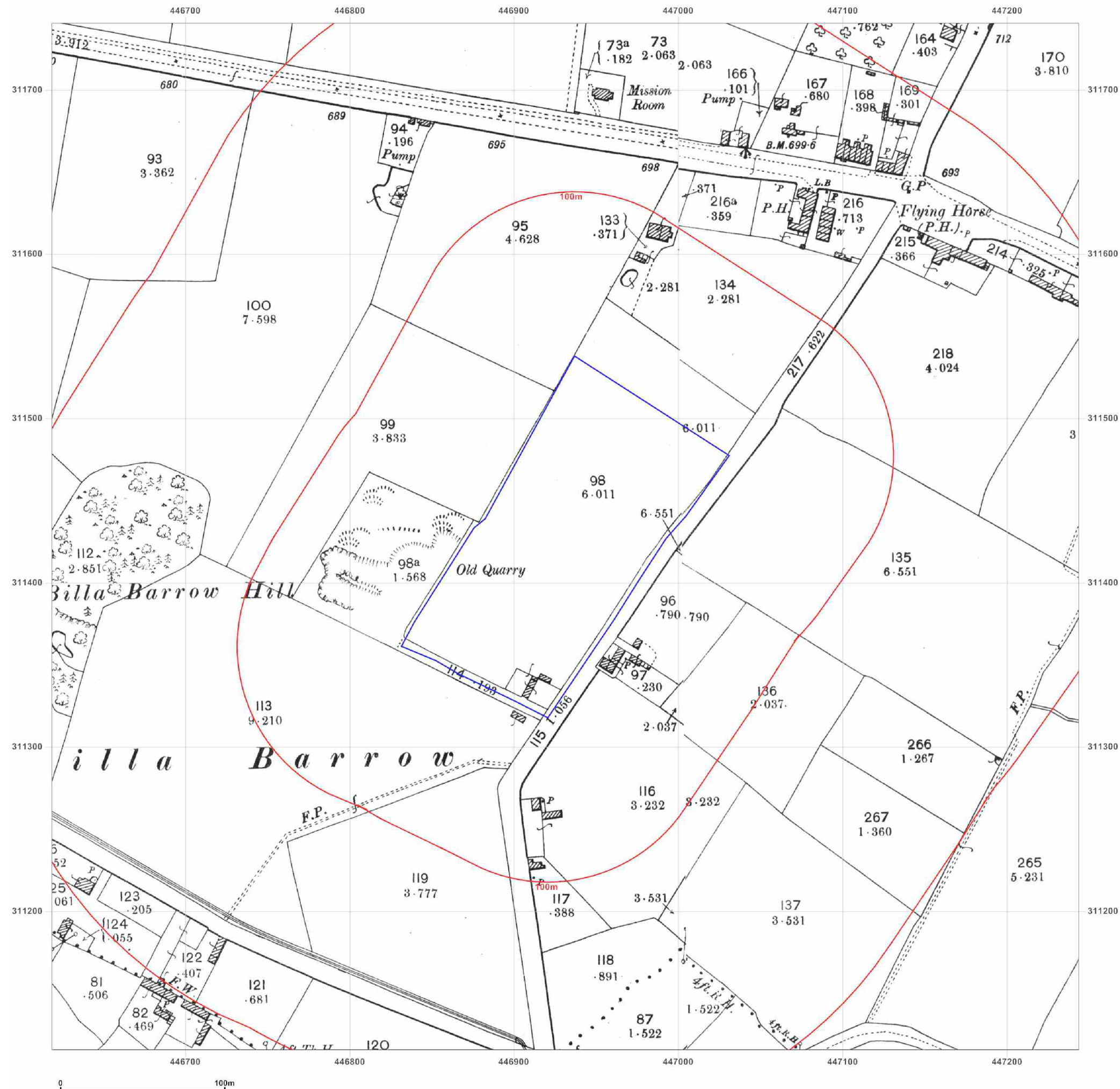
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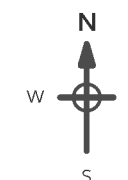
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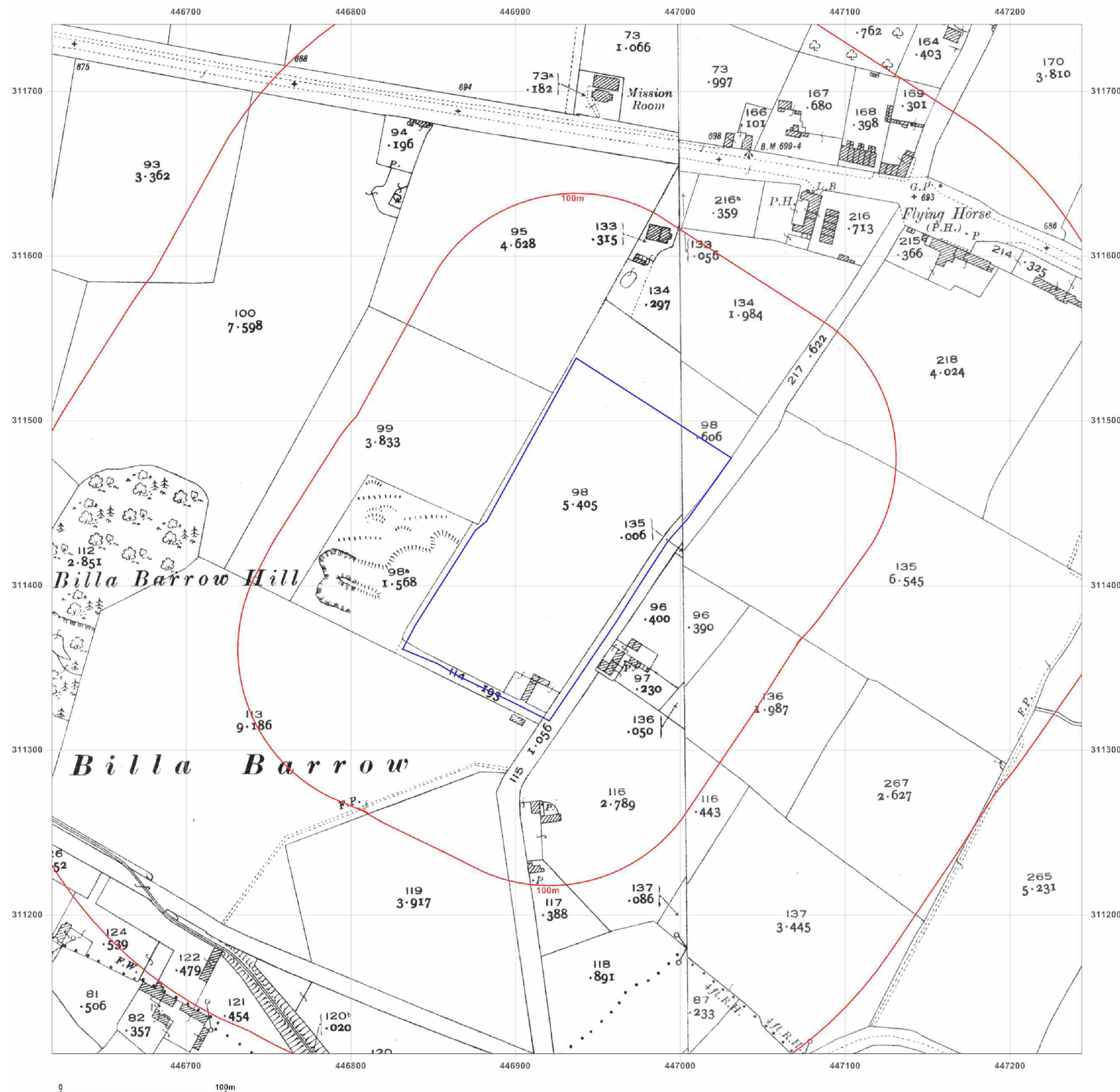


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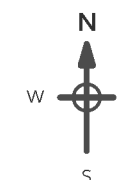
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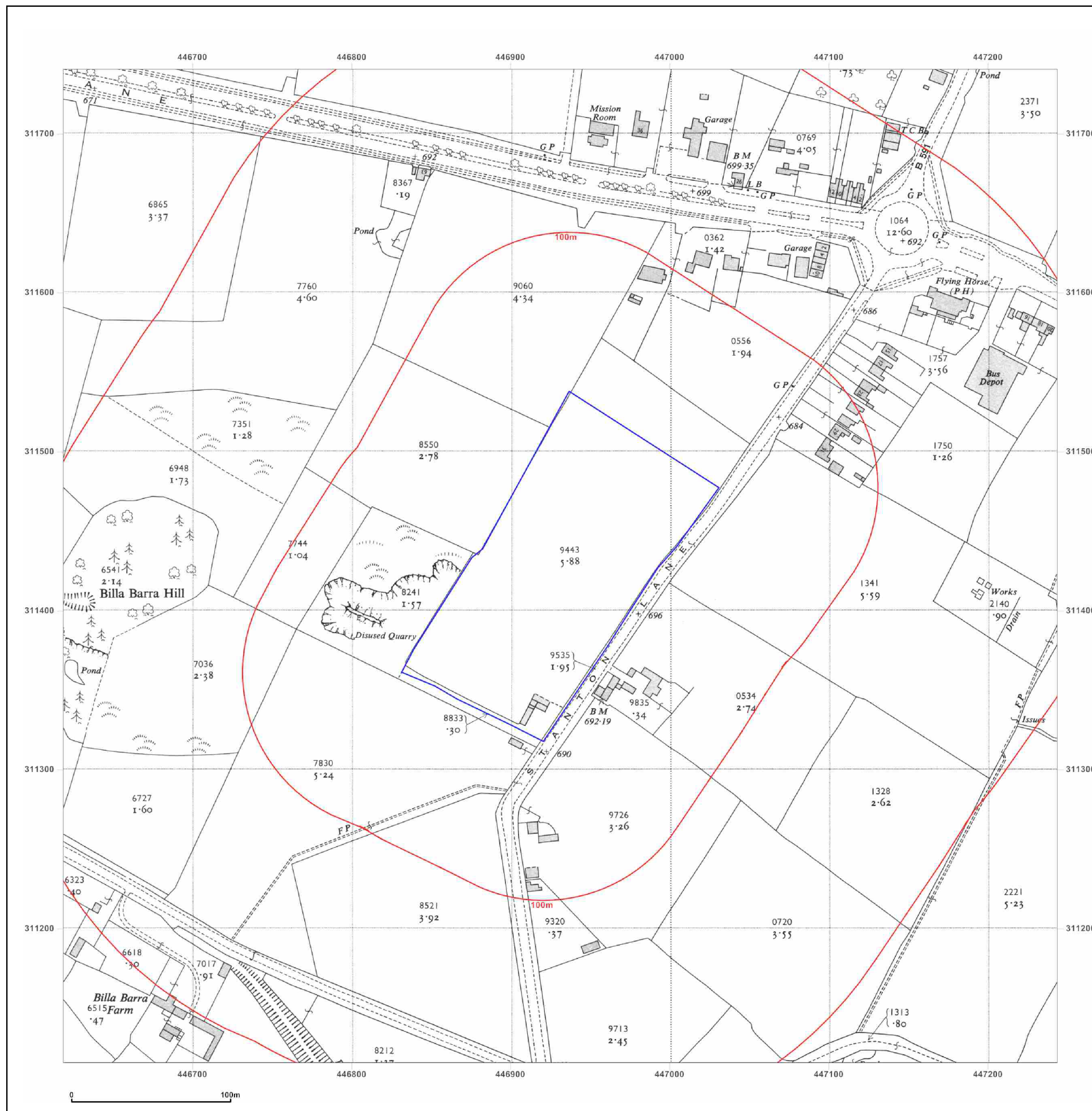


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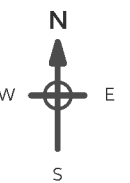
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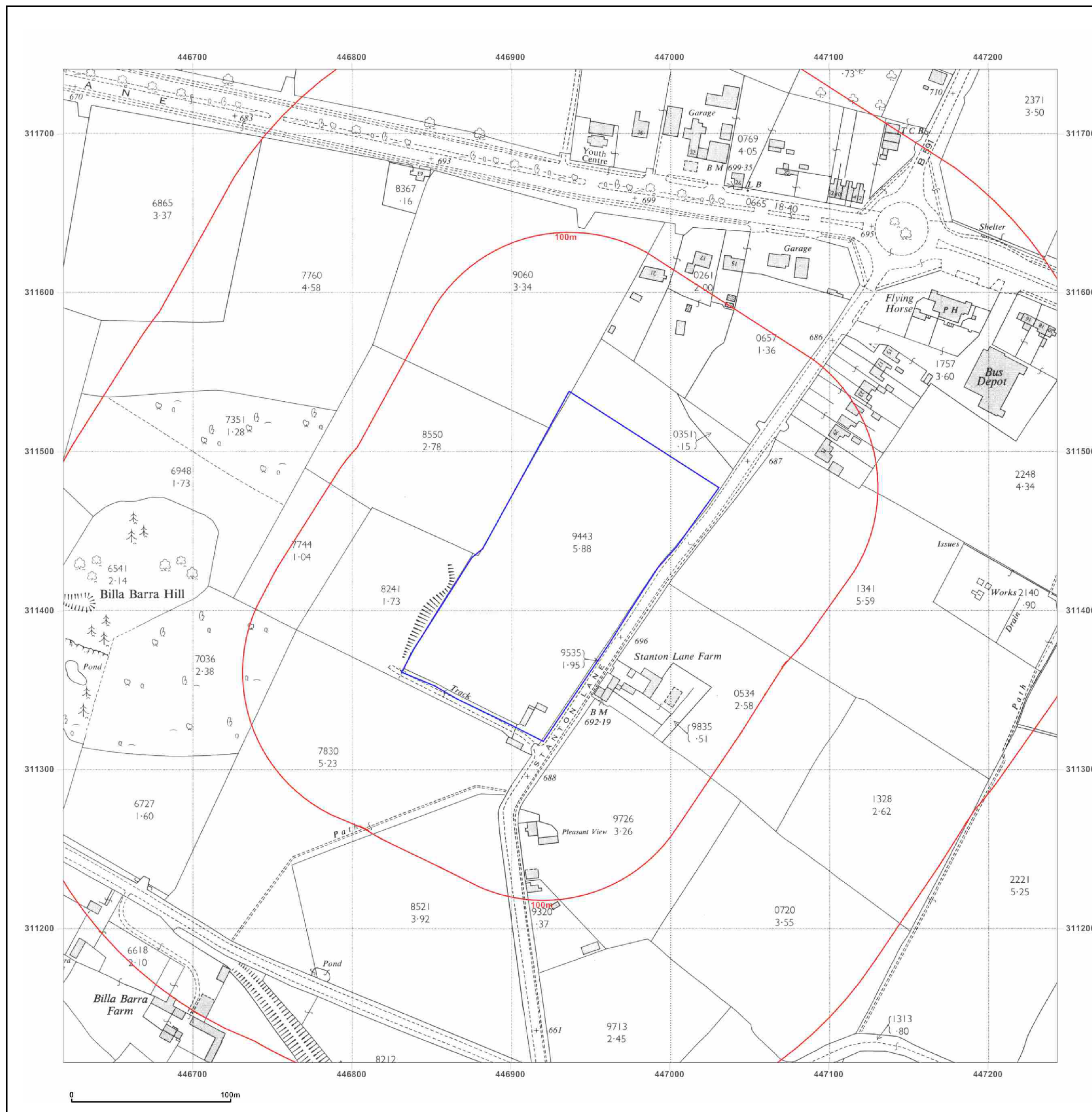


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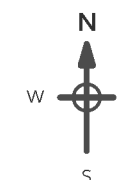
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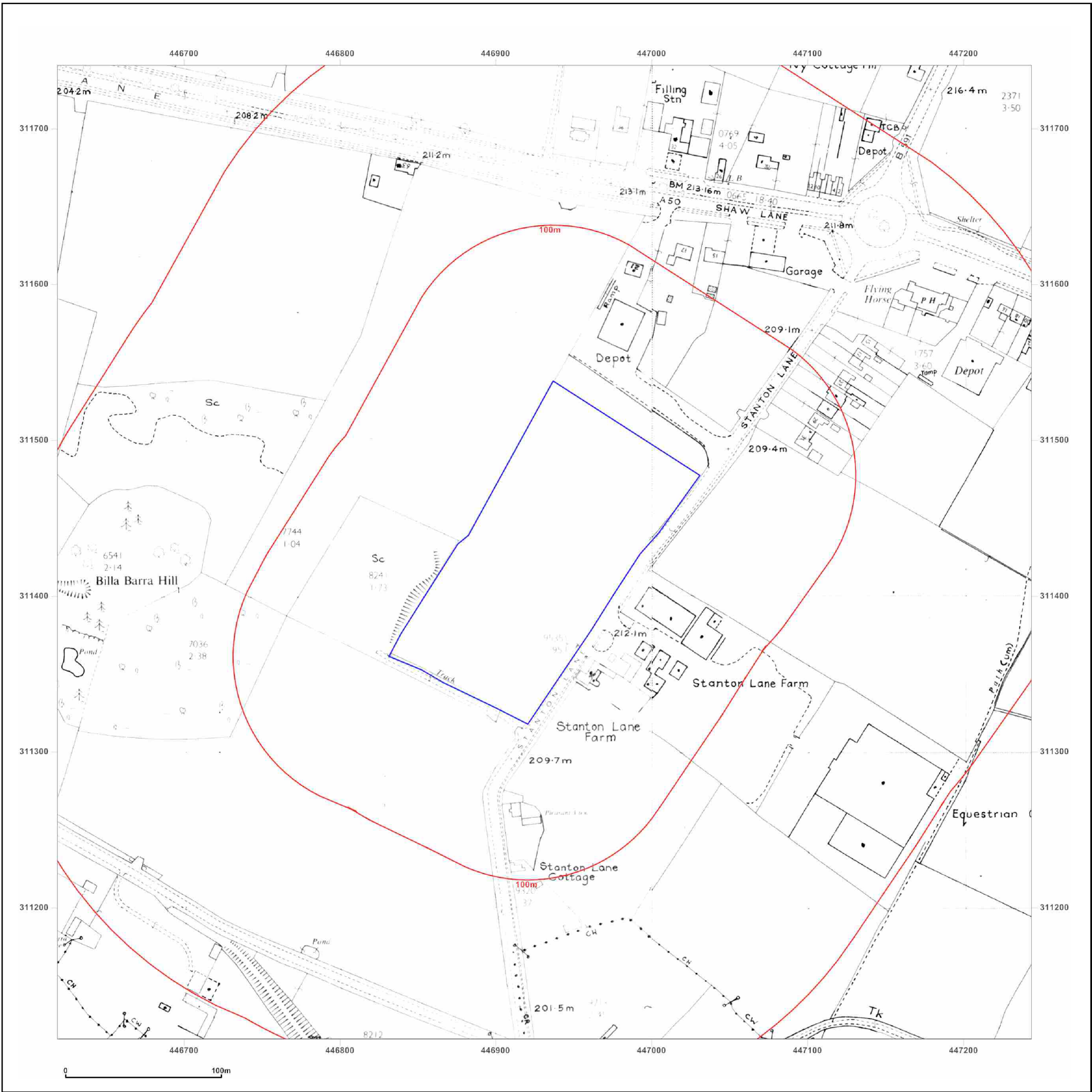


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Grid Reference: 446930,311426

Site Size: 2.05ha

Report Reference: EMS-433878_580373

Client Reference: EMS_433878_580373

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	4	0	8	10
1.2 Additional Information – Historical Tank Database	0	0	0	0
1.3 Additional Information – Historical Energy Features Database	0	0	0	3
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	2	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	6	0
1.6 Potentially Infilled Land	3	0	3	10

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	2	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
---	---------	-------	--------	---------	----------	-----------

3.1 Landfill Sites

3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0

3.2 Landfill and Other Waste Sites Findings

3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
-----------------------------	---------	-------	--------	---------

4.1 Current Industrial Sites Data	0	0	8	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	2	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology

5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?

No

5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?

Yes

5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.

Section 6: Hydrogeology and Hydrology

0-500m

6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?

Yes

6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?

Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	4	7
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	1	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology		0-500m				
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	Yes
6.10 Detailed River Network entries within 500m of the site	0	0	1	10	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding	
7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	No
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Limited potential
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	1	0	3
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	6
8.7 Records of Local Nature Reserves (LNR)	1	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	2	0	0	0	0	1
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

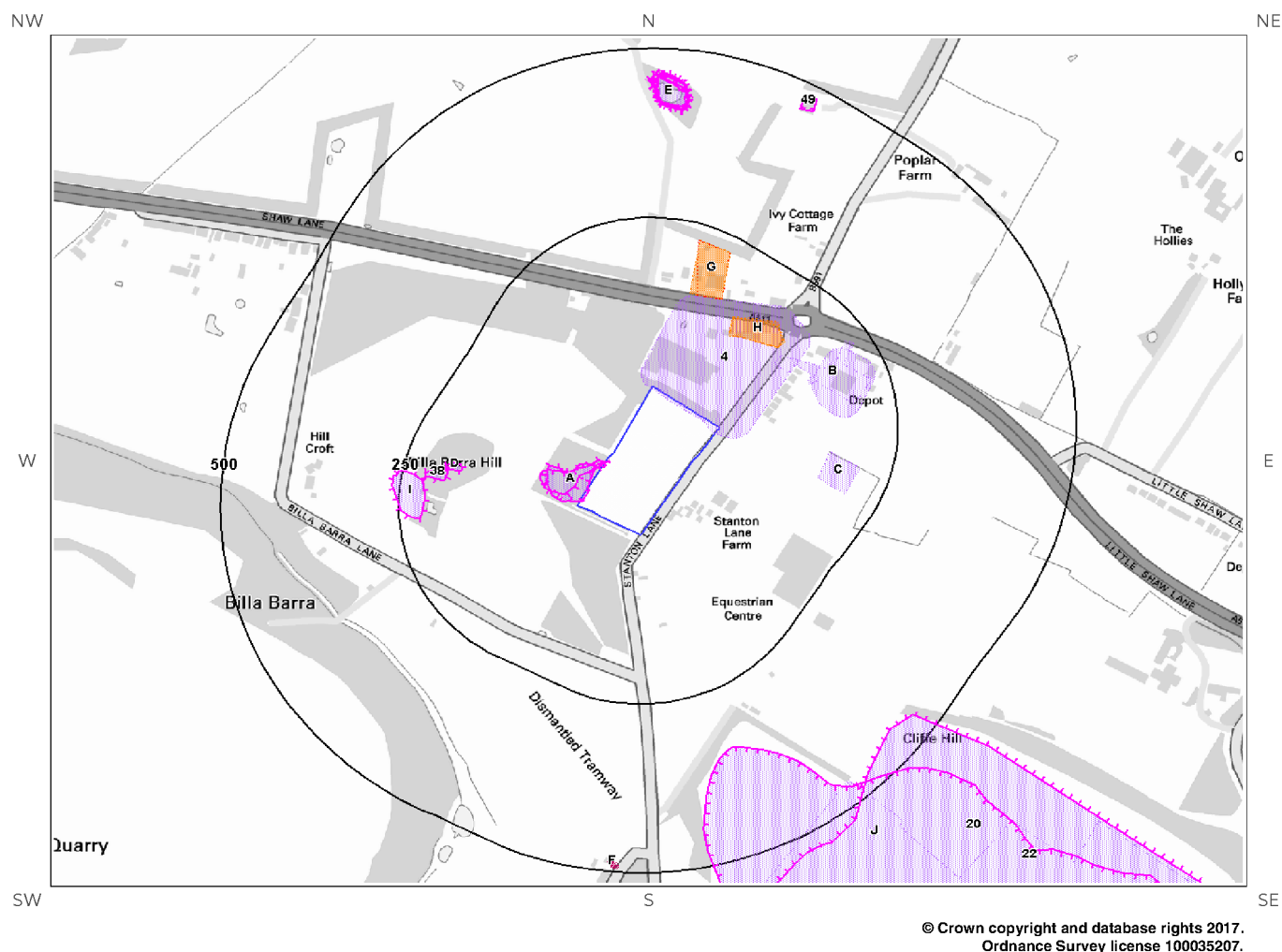
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

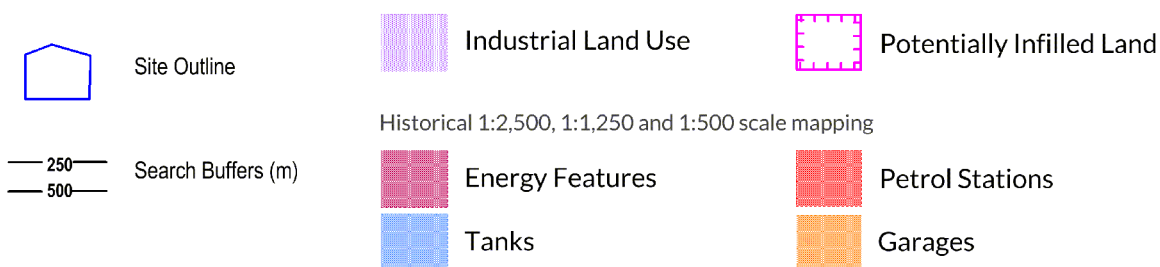
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



Historical 1:10,000 and 1:10,560 scale mapping



1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 22

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Ground Workings	1883
2A	0	On Site	Unspecified Old Quarry	1901
3A	0	On Site	Unspecified Old Quarry	1930
4	0	On Site	Unspecified Depot	1992
5B	122	NE	Unspecified Depot	1992
6B	142	E	Bus Depot	1968
7B	142	E	Bus Depot	1978
8C	156	SE	Unspecified Works	1968
9C	156	SE	Unspecified Works	1978
10D	170	W	Unspecified Pit	1883
11D	188	W	Unspecified Pit	1883
12I	214	W	Unspecified Old Quarry	1883
13J	339	S	Unspecified Disused Quarry	1992
14E	410	N	Unspecified Quarry	1950
15E	412	N	Unspecified Old Quarry	1901
16E	412	N	Unspecified Old Quarry	1930
17E	413	N	Unspecified Quarry	1968
18E	413	N	Unspecified Pit	1883
19E	417	N	Unspecified Quarry	1978
20	452	SE	Unspecified Commercial/Industrial	1978
21K	452	SE	Unspecified Quarry	1978
22	466	SE	Unspecified Commercial/Industrial	1968

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

0

Database searched and no data found.

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

3

ID	Distance (m)	Direction	Use	Date
23 F	481	S	Gas Governor	1988
24 F	485	S	Gas Governor	1999
25 F	487	S	Gas Governor	1993

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary:

2

ID	Distance (m)	Direction	Use	Date
26 G	149	NE	Filling Station	1991
27 G	149	NE	Filling Station	1989

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary:

6

ID	Distance (m)	Direction	Use	Date
28 H	121	NE	Garage	1991
29 H	121	NE	Garage	1989
30 H	122	NE	Garage	1959
31 H	122	NE	Garage	1966
32 G	146	N	Garage	1966
33 G	146	N	Garage	1959

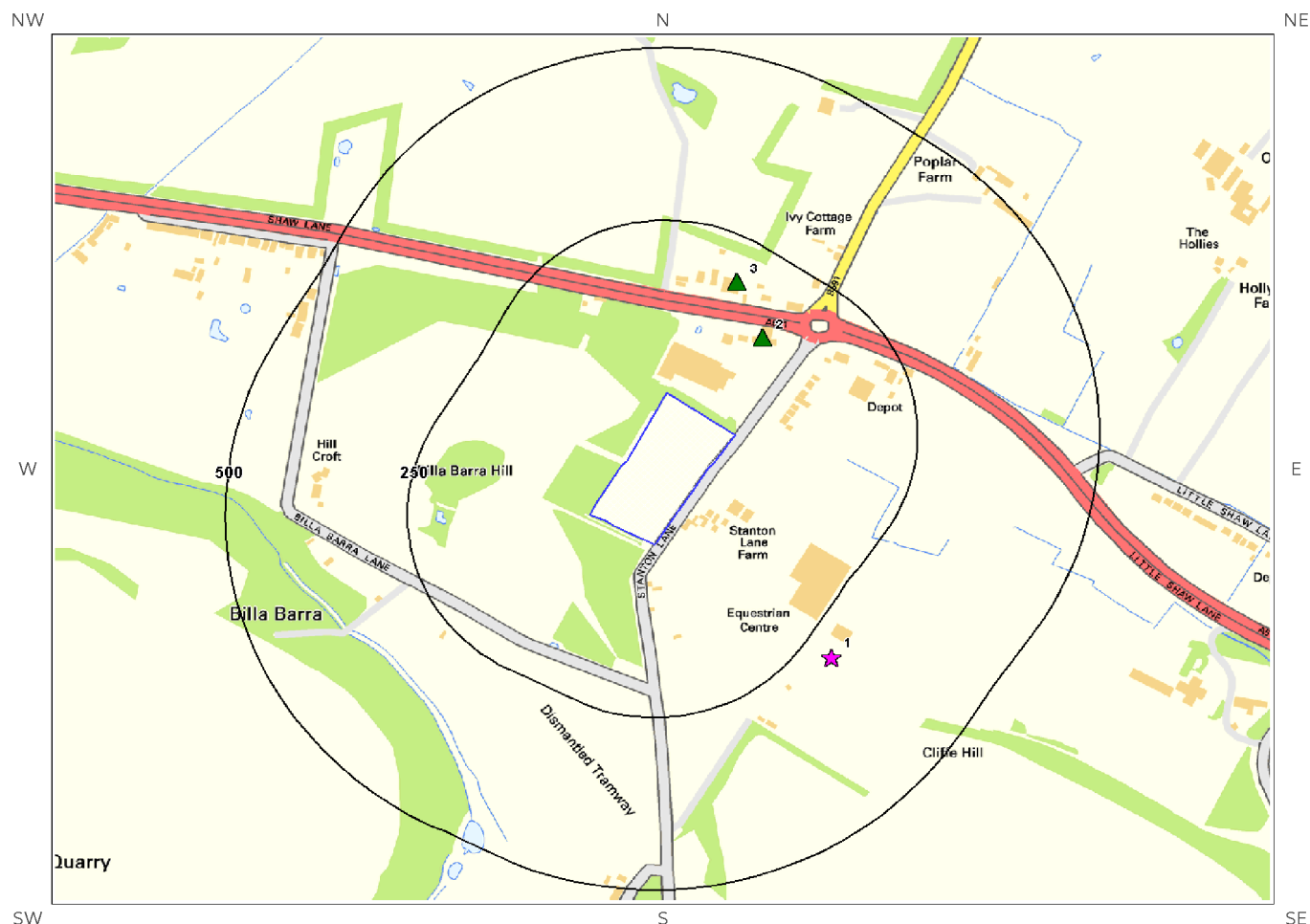
1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 16

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
34A	0	On Site	Unspecified Old Quarry	1930
35A	0	On Site	Unspecified Old Quarry	1901
36A	0	On Site	Unspecified Ground Workings	1883
37D	170	W	Unspecified Pit	1883
38	188	W	Unspecified Pit	1883
39I	214	W	Unspecified Old Quarry	1883
40J	339	S	Unspecified Disused Quarry	1992
41E	410	N	Unspecified Quarry	1950
42E	412	N	Unspecified Old Quarry	1930
43E	412	N	Unspecified Old Quarry	1901
44E	413	N	Unspecified Quarry	1968
45E	413	N	Unspecified Pit	1883
46E	417	N	Unspecified Quarry	1978
47E	417	N	Pond	1992
48K	452	SE	Unspecified Quarry	1978
49	460	NE	Covered Reservoir	1992

2. Environmental Permits, Incidents and Registers Map



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- | | | |
|-------------------------------|--|---|
| Site Outline | Recorded Pollution Incident | RAS 3 & 4 Authorisations |
| Dangerous Substances (List 1) | Part A(1) Authorised Processes and Historic IPC Authorisations | Part A(2) and Part B Authorised Processes |
| Dangerous Substances (List 2) | Water Industry Referrals | COMAH / NIHHS Sites |
| Licenced Discharge Consents | Sites Determined as Contaminated Land | Hazardous Substance Consents and Enforcements |
| Red List Discharge Consents | | |

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

2

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
2	137	NE	447068 311616	Address: 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
3	186	NE	447033 311697	Address: 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

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	291	SE	447161 311155	Incident Date: 10-Aug-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)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

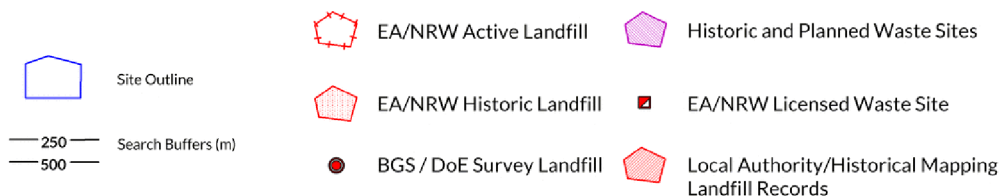
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

1

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
1	0	On Site	446800 311300	Site Address: Stanton Lane/Road, Stanton Lane, Markfield, Hinckley and Bosworth, Leicestershire Waste Licence: - Site Reference: GDO 212, 97 Waste Type: Waste, unknown Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1949

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

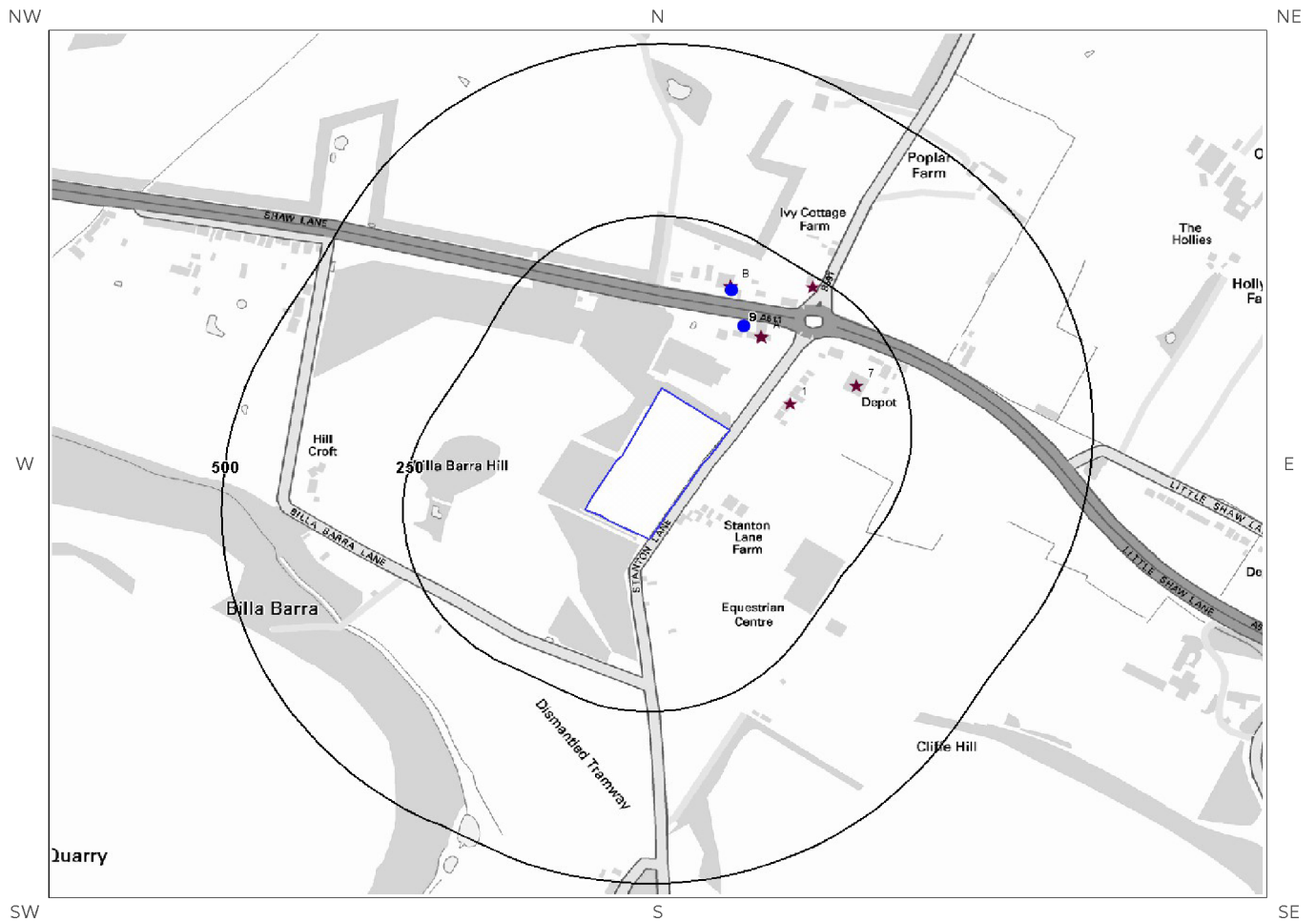
Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

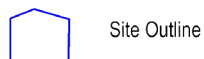
0

Database searched and no data found.

4. Current Land Use Map



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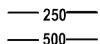


Site Outline



Current Industrial Sites

Electricity Transmission Cables



Search Buffers (m)



Petrol & Fuel Sites

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

8

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	91	NE	Andrews Television	447113 311516	Andrews Television, 27, Stanton Lane, Stanton Under Bardon, Markfield, LE67 9QA	Electrical Equipment Repair and Servicing	Repair and Servicing
2A	137	NE	Flying Horse Garage	447074 311612	Flying Horse Garage, 5-7, Shaw Lane, Markfield, LE67 9PU	Vehicle Repair, Testing and Servicing	Repair and Servicing
3A	137	NE	HKS Flying Horse Garage	447072 311613	HKS Flying Horse Garage, 5-7, Shaw Lane, Markfield, LE67 9PU	Petrol and Fuel Stations	Road and Rail
4B	176	NE	BP Service Station	447031 311686	BP Service Station, 32, Shaw Lane, Markfield, LE67 9PU	Petrol and Fuel Stations	Road and Rail
5B	176	NE	Hillmoren	447031 311686	Hillmoren, 32, Shaw Lane, Markfield, LE67 9PU	Secondhand Vehicles	Motoring
6B	176	NE	Browns Blue Service Station	447031 311687	Browns Blue Service Station, 32, Shaw Lane, Markfield, LE67 9PU	Petrol and Fuel Stations	Road and Rail
7	185	E	Depot	447204 311542	Depot, LE67	Container and Storage	Transport, Storage and Delivery
8	236	NE	Depot	447145 311685	Depot, LE67	Container and Storage	Transport, Storage and Delivery

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
9	137	NE	447050 311628	BP	Hks Flying Horse, 5, Shaw Lane, Shaw Lane, Markfield, Leicester, Leicestershire, LE67 9PU	No	Open

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
10B	171	NE	447032 311680	BP	Browns Blue Service Station, 32, Shaw Lane, Shaw Lane, Markfield, Leicester, Leicestershire, LE67 9PU	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site:

0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
ODT-DMTN	OADBY MEMBER	DIAMICTON

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
EDW-MDST	EDWALTON MEMBER	MUDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER	SANDSTONE
CMBT-VCSLST	BRADGATE FORMATION	VOLCANICLASTIC-SILTSTONE
GUN-MDST	GUNTHORPE MEMBER	MUDSTONE

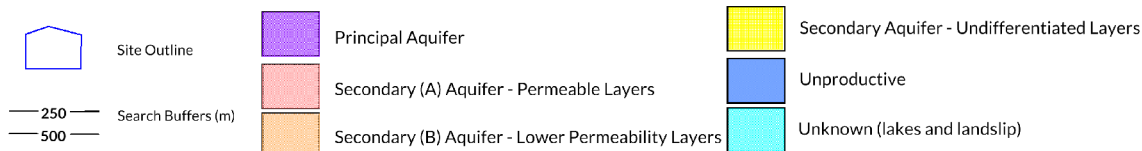
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

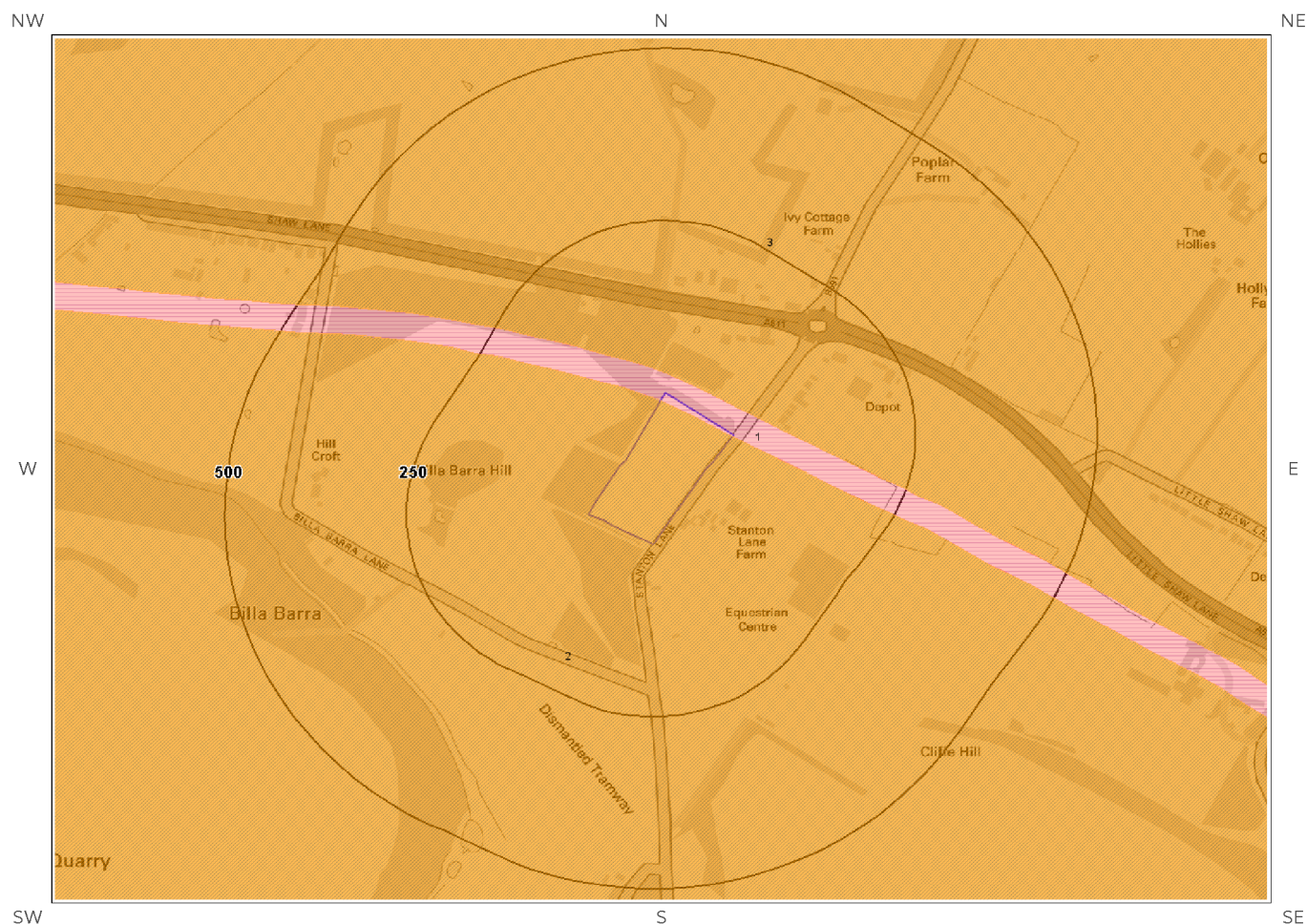
6a. Aquifer Within Superficial Geology



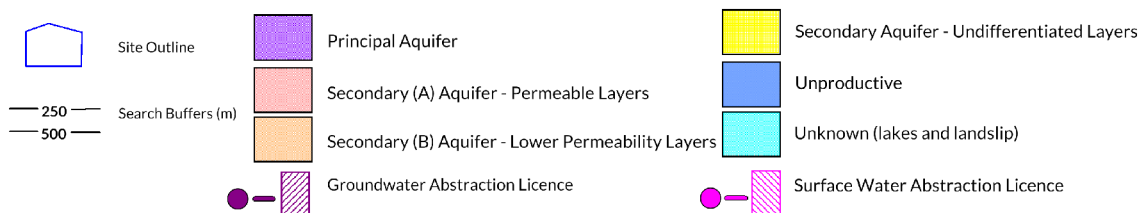
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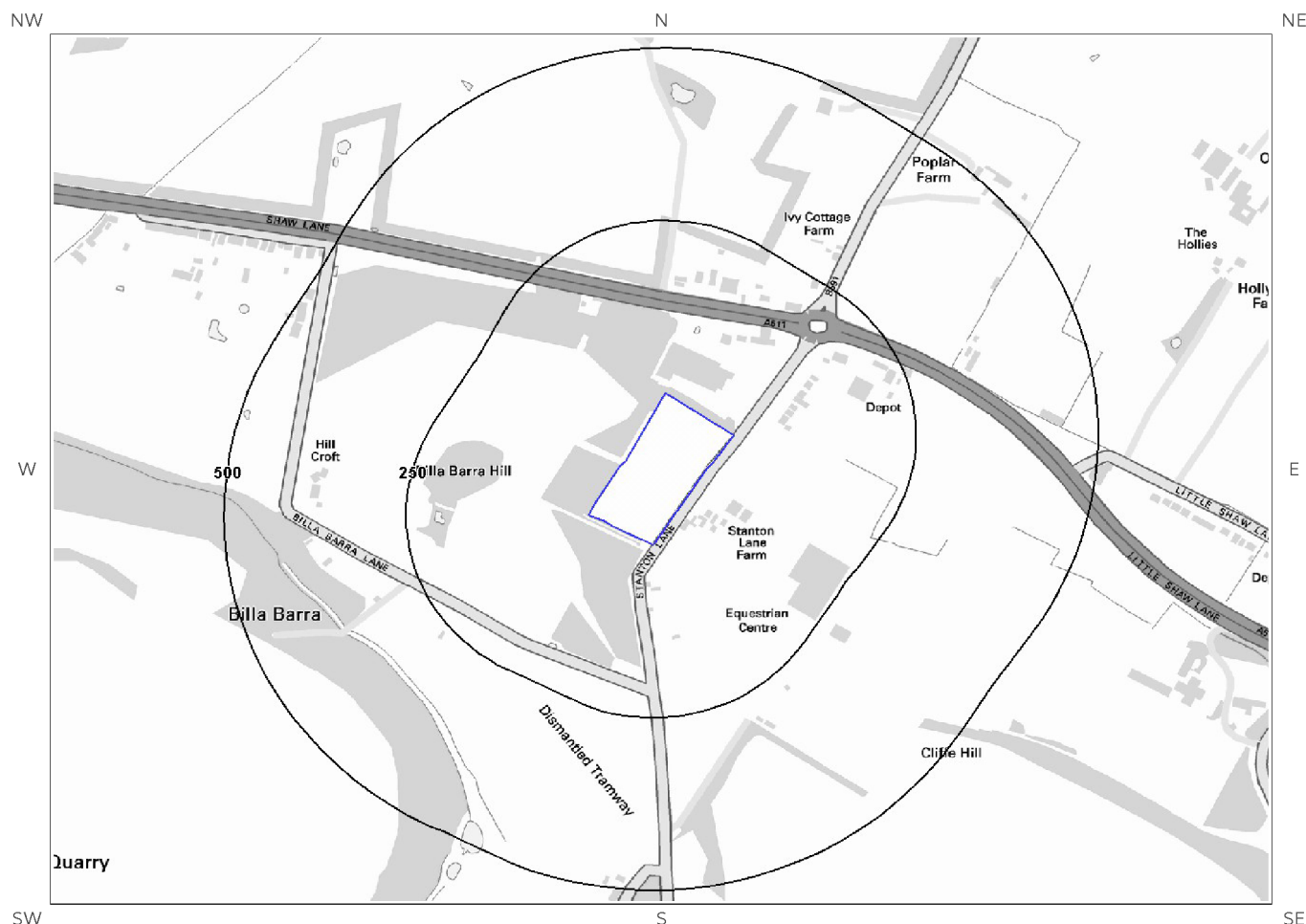
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



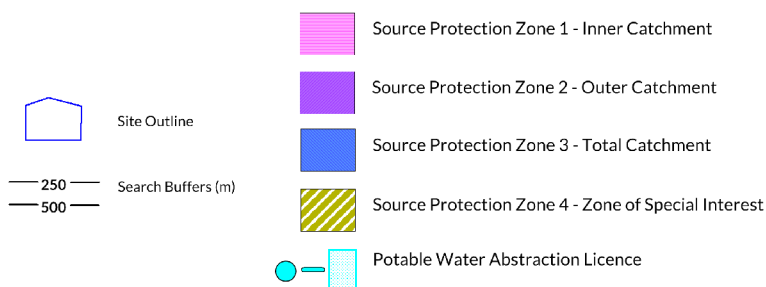
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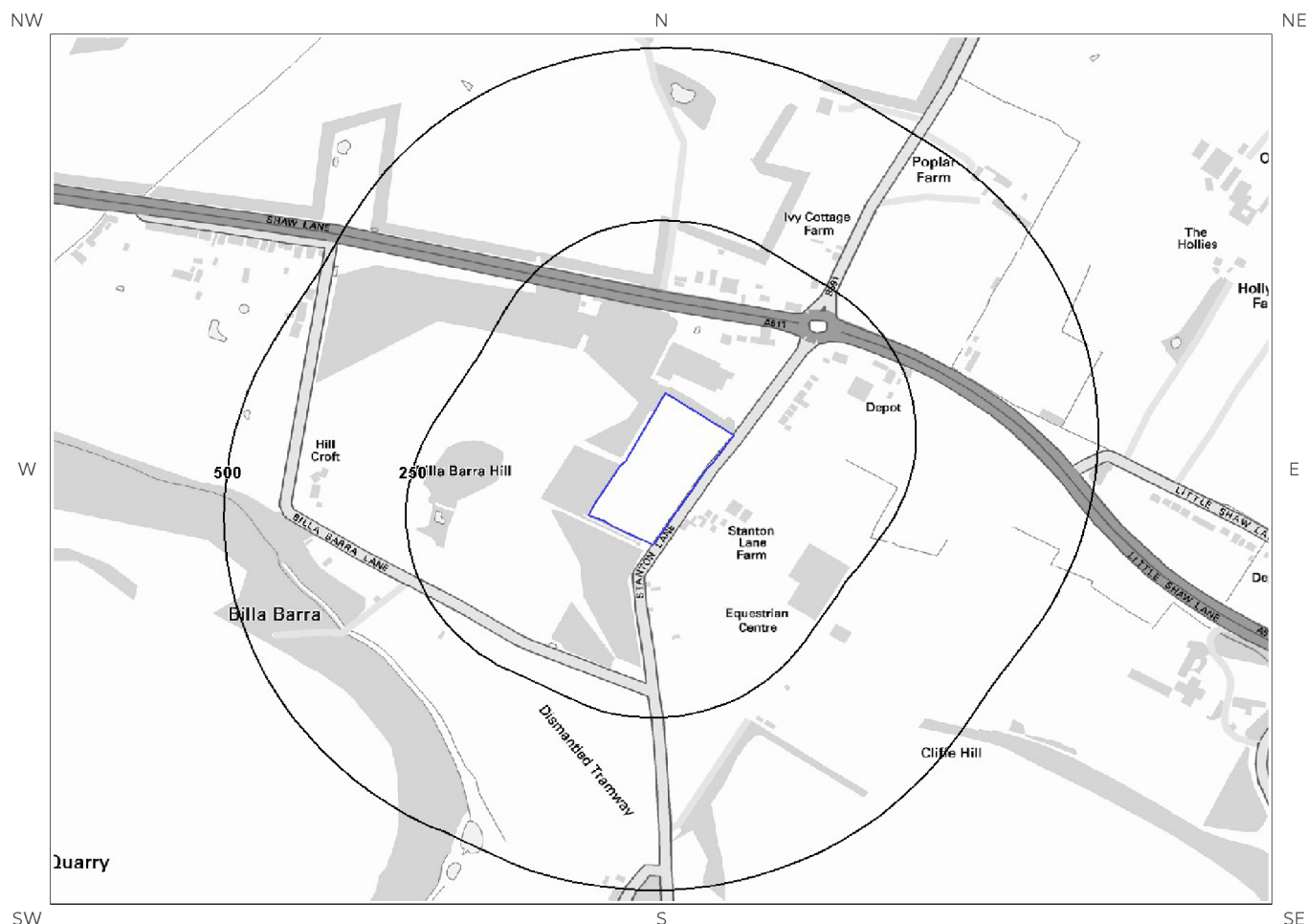
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



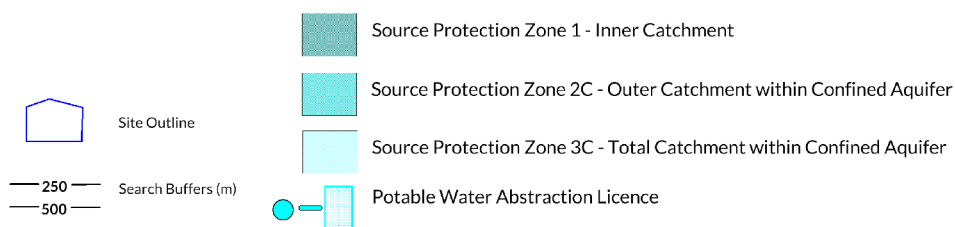
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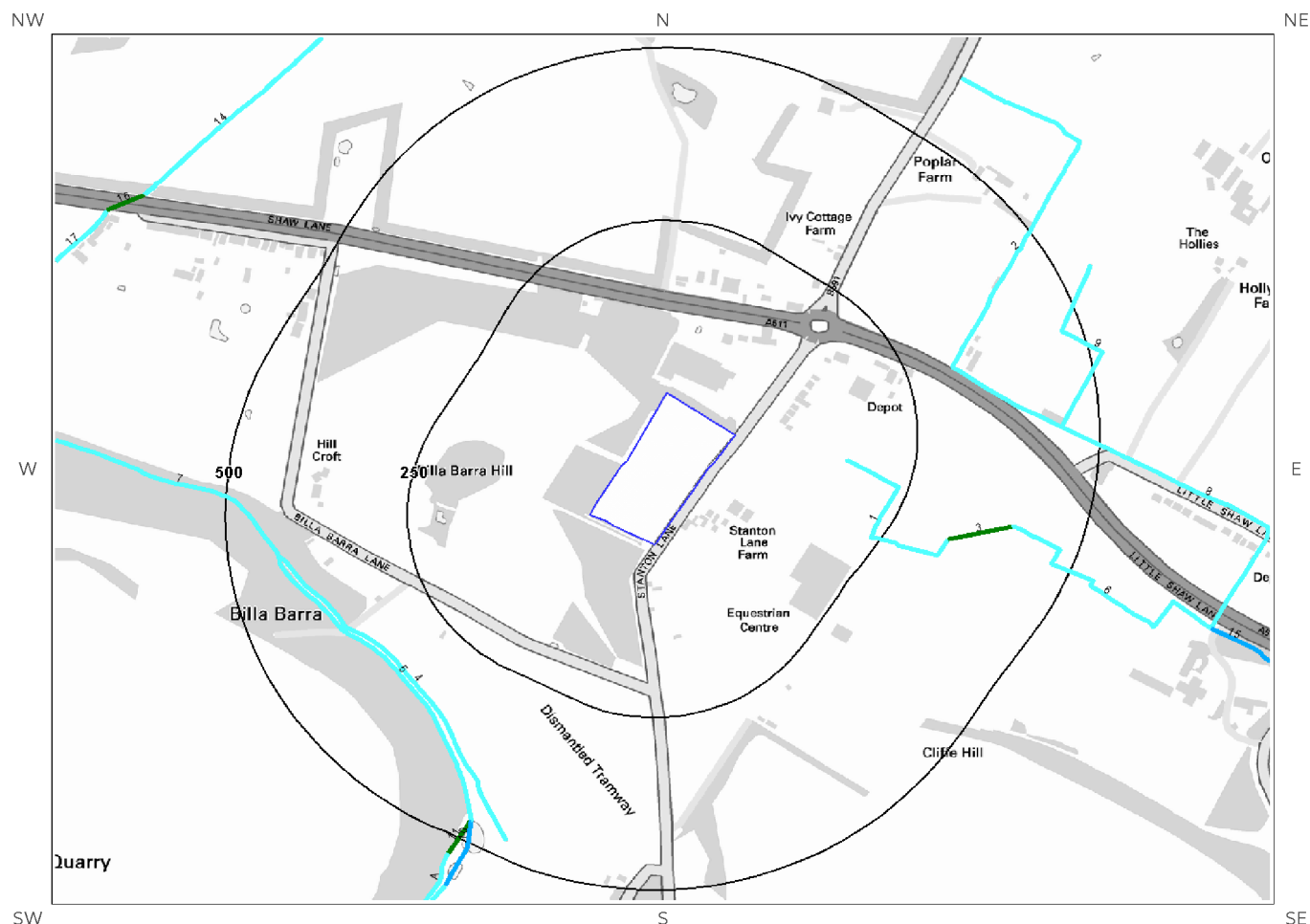
6d. Hydrogeology – Source Protection Zones within confined aquifer



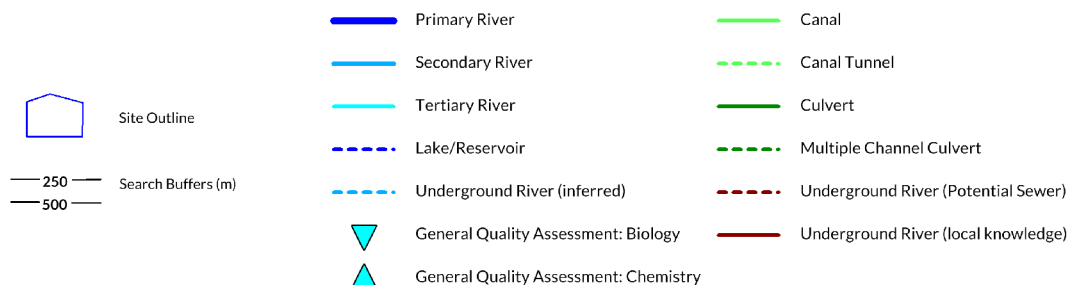
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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
4	0	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
1	403	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

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	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	0	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
3	27	NE	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

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	894	N	446700 312400	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: - Original Start Date: 21/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1997 Version End Date:
Not shown	932	N	446745 312450	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: NPS/WR/13809 Original Start Date: 21/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/7/2013 Version End Date:
Not shown	990	NW	446200 312200	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: - Original Start Date: 21/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1997 Version End Date:
Not shown	997	NW	446238 312250	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: NPS/WR/13809 Original Start Date: 21/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/7/2013 Version End Date:
Not shown	1444	NE	447800 312700	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 Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 11/11/1965 Expiry Date: - Issue No: 100 Version Start Date: 1/5/1975 Version End Date:
Not shown	1568	N	446800 313100	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: - Original Start Date: 21/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1997 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1590	SW	446200 309900	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 Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 3/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2000 Version End Date:
Not shown	1594	NW	446300 313000	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: - Original Start Date: 21/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1997 Version End Date:
Not shown	1606	N	446839 313141	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: NPS/WR/13809 Original Start Date: 21/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/7/2013 Version End Date:
Not shown	1622	N	446345 313048	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 Annual Volume (m³): 6737.17 Max Daily Volume (m³): 36.36 Original Application No: NPS/WR/13809 Original Start Date: 21/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 31/7/2013 Version End Date:
Not shown	1724	E	448740 311700	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 Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: A/28/57/31 Original Start Date: 13/7/2000 Expiry Date: - Issue No: 1 Version Start Date: 13/7/2000 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1060	NW	446200 312300	Status: Active 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 Annual Volume (m³): 45460 Max Daily Volume (m³): 1363.8 Application No: - Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/9/1998 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1060	NW	446200 312300	Status: Active 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 Annual Volume (m³): 45460 Max Daily Volume (m³): 1363.8 Application No: - Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/9/1998 Version End Date:

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details
Not shown	1724	E	448740 311700	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 Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: A/28/57/31 Original Start Date: 13/7/2000 Expiry Date: - Issue No: 1 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
250	N	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? Yes

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1201	NE	447800 312400	River Name: Bradgate Brook Reach: B591 Ulverscroft To Swithland Res. End/Start of Stretch: Start of Stretch NGR	B	B	B	B	B

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1201	NE	447800 312400	River Name: Bradgate Bk Reach: B591 Ulverscroft To Swithland Res End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	157	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
2	314	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
3	329	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
4	340	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	348	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	402	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	431	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
8	448	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
9	448	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
10	469	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
11	469	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

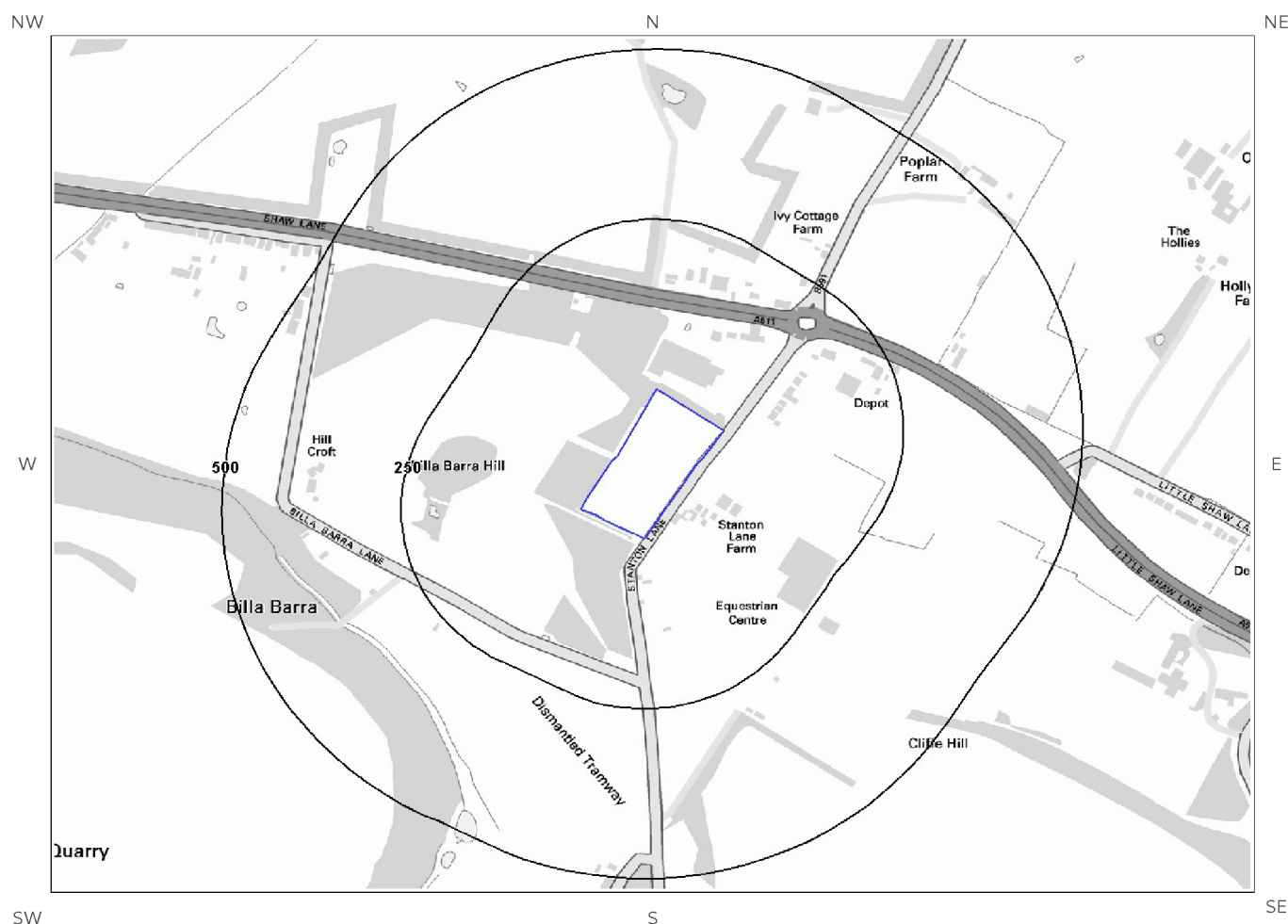
6.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
158	E
220	E

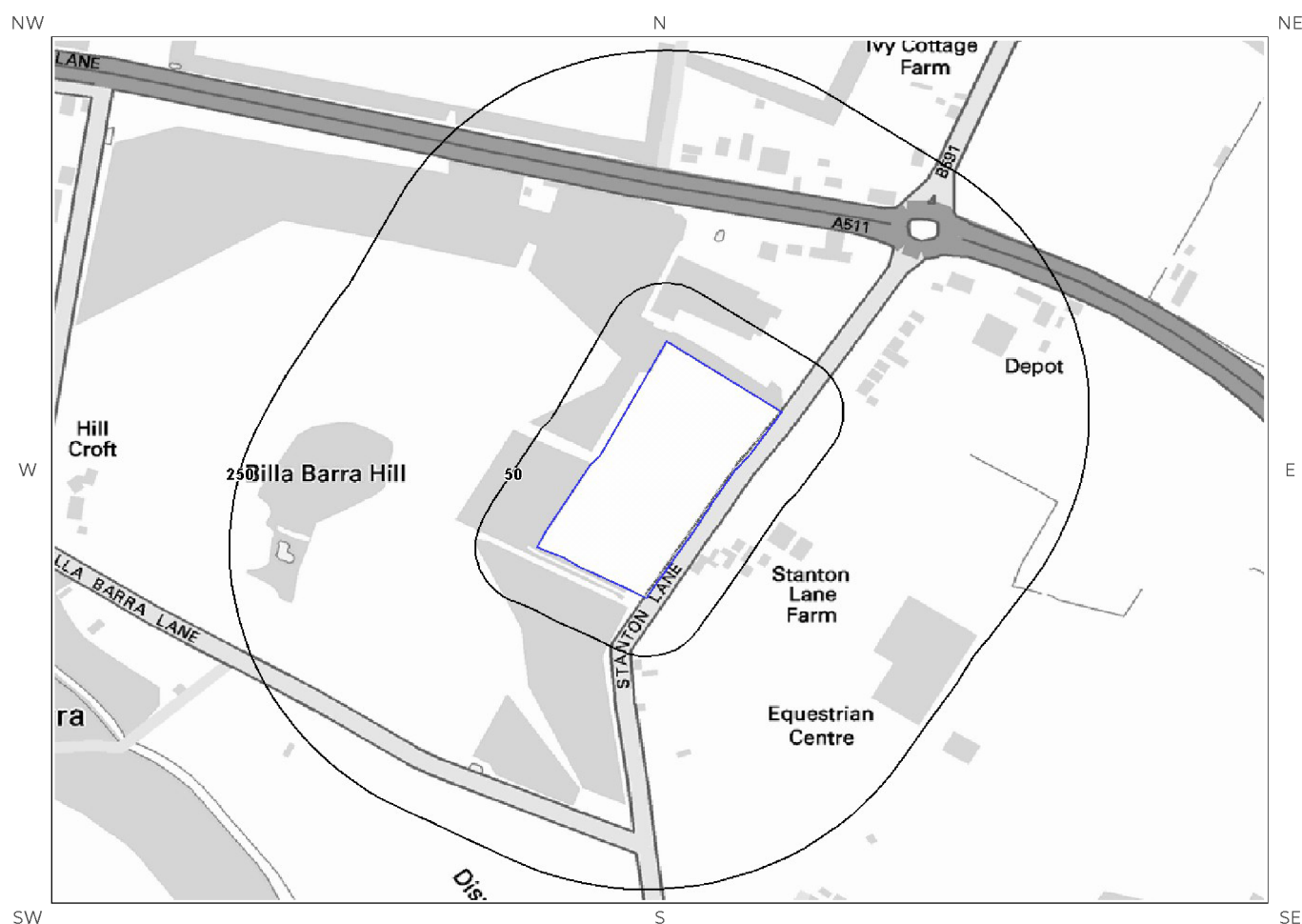
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



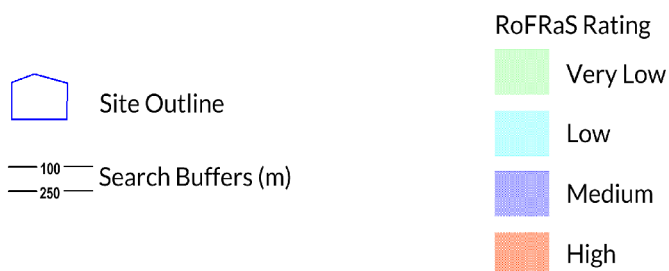
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? No

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? No

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site?

No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

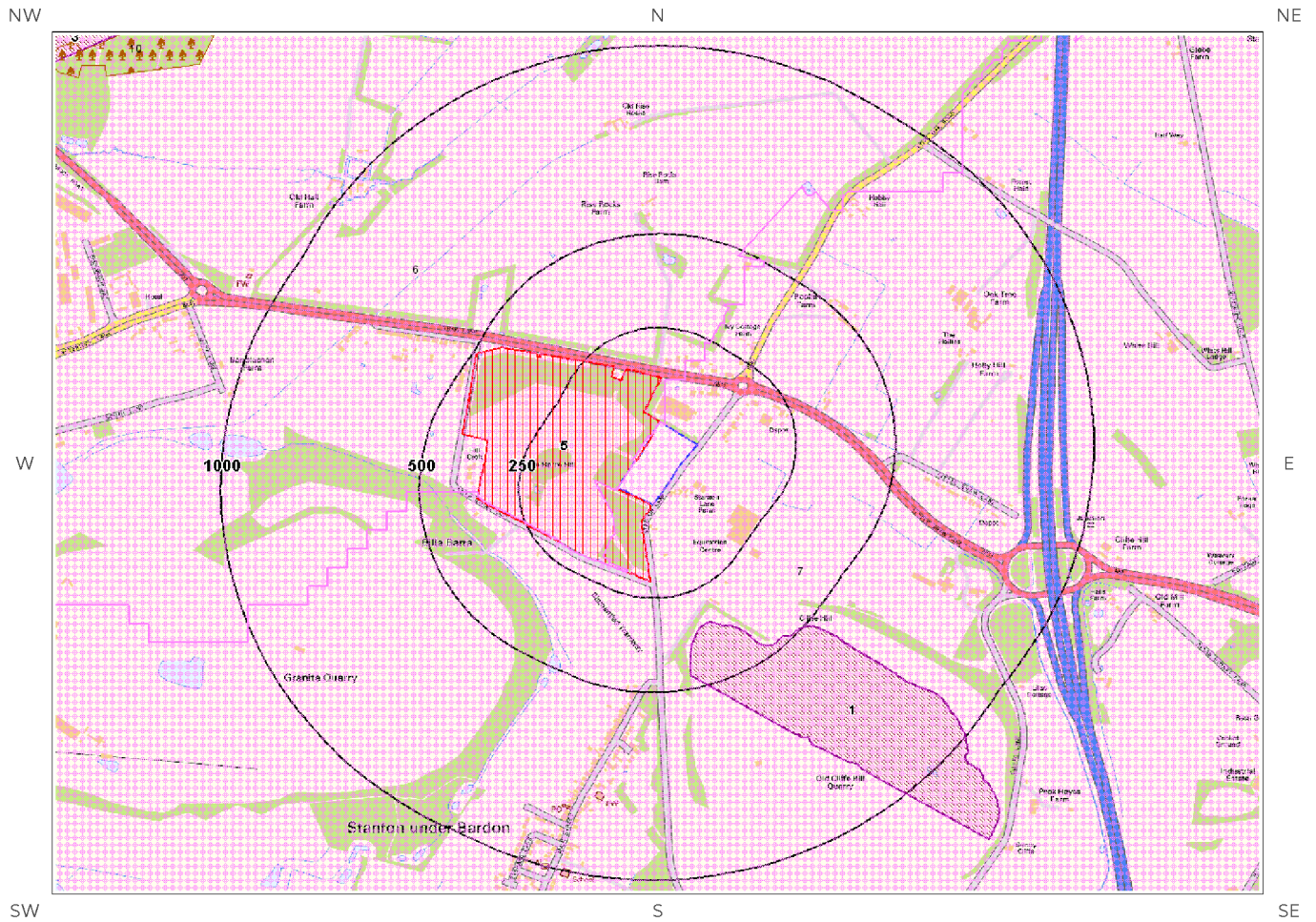
What is the British Geological Survey confidence rating in this result?

High

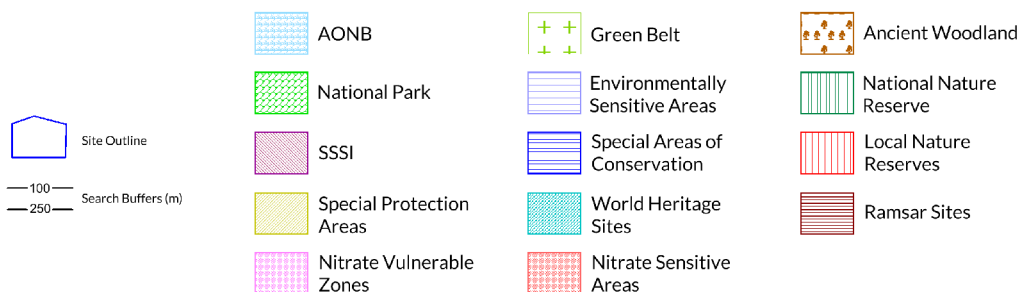
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?

Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

4

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	343	SE	Cliffe Hill Quarry	Natural England
Not shown	1489	NW	Bardon Hill	Natural England
3	1563	NW	Bardon Hill Quarry	Natural England
Not shown	1715	NW	Bardon Hill	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

6

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
9	1494	NW	UNKNOWN	Ancient and Semi-Natural Woodland
10	1500	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1553	N	UNKNOWN	Ancient Replanted Woodland
Not shown	1663	E	UNKNOWN	Ancient Replanted Woodland
Not shown	1754	NW	UNKNOWN	Ancient Replanted Woodland
Not shown	1883	E	UNKNOWN	Ancient Replanted Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

1

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
5	0	On Site	Billa Barra Hill Nature Reserve	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

3

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
6	0	On Site	Existing	DEFRA
7	0	On Site	Existing	DEFRA
Not shown	1318	S	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our [website](#). The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? ☐ No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

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Telephone: 0118 9736883
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British Geological Survey Enquiries

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Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

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**Environment
Agency**

Public Health England

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133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe

Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



**Public Health
England**

The Coal Authority

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Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



**The Coal
Authority**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505



Local Authority

Authority: Hinckley and Bosworth Borough Council
Phone: 01455 238 141

Web: <http://www.hinckley-bosworth.gov.uk/>

Address: Hinckley Hub, Rugby Road, Hinckley, Leicestershire, LE10

Gemapping PLC

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A P P E N D I X G

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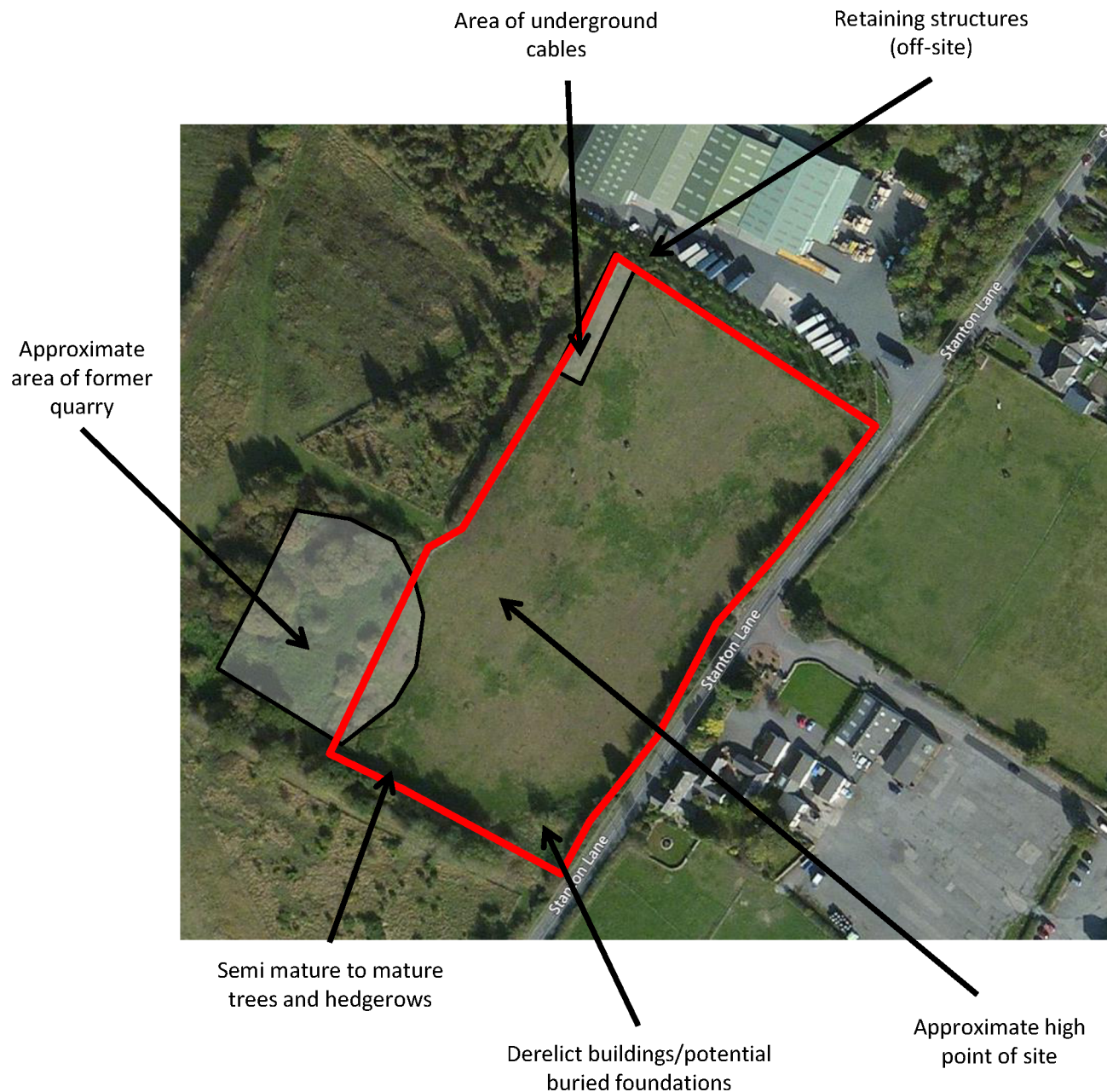
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- Structural Engineering Services
- Construction Management
- Site Services

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Fax:





DO NOT SCALE

NOTES:

 Approximate Site Boundary





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CLIENT:
Sutton Land Development

PROJECT:
Stanton Lane, Stanton under Bardon

TITLE:
Ground Hazard Plan

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN :	DATE:
RDH	August 2017
PROJECT No:	DRAWING No:
P8079	Figure 6