



Geo-Environmental

DESK STUDY REPORT

for the land

NORTH OF ASHWELL STREET, ASHWELL

BALDOCK, HERTFORDSHIRE, SG7 5LN

on behalf of

MANOR OAK HOMES



Report:	DESK STUDY REPORT
Site:	LAND NORTH OF ASHWELL STREET, ASHWELL, BALDOCK, HERTFORDSHIRE, SG7 5LN
Client:	MANOR OAK HOMES
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1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited (Geo- Environmental) was instructed by Manor Oak Homes to undertake a desk based investigation of the geotechnical and geo-environmental factors pertaining to the proposed development of the land north of Ashwell Street, Ashwell, Baldock, Hertfordshire, SG7 5LN (herein referred to as 'the site'). The site's location is presented in Figure 1.

1.2 Form of Development

It was understood that the development proposals were to comprise the construction of houses to include private gardens, public open space, access roads and associated development infrastructure.

1.3 Objectives

The investigation was to comprise a desk study of geotechnical and geo-environmental factors pertaining to the site, including a review of available historical maps and an examination of other available sources of geo-environmental information.

A Preliminary Risk Assessment (PRA) was to be undertaken as part of the desk study in accordance with CLR11. The objective of the risk assessment was to evaluate plausible pollutant linkages with respect to the proposed development, adjacent land uses, and the wider environment, in the context of planning, immediate liabilities under the Environment Protection Act 1990, and risks posed to Controlled Waters under the Water Resources Act.

1.4 Standards

Where practicable, the desk study was undertaken in accordance with the following documents and guidance:

- National Planning Policy Framework – March 2012;
- Planning Policy Statement 23 – Planning and Pollution Control;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004;
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011+A1:2013 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2013;
- BS5930: 2015 - Code of Practice for Site Investigations, BSI 2015;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI 1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- NHBC 10627-R01(04)- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (2007);
- BS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings;
- Department of Environment - Industry Profiles (1995 - 1996).

1.5 Conditions

The information collected from the desk study has been used to provide an interpretation of the geotechnical and environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that have either not been revealed in the available records or that occur between or under points of any physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

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2.0 DESK STUDY

The findings of the Phase I desk study are presented in the following section. A copy of the historical maps and other information obtained as part of the desk study are presented in Appendix A. Comments made in the following section regarding possible ground conditions on the site are based purely on the desk study.

2.1 Site Description

At the time of the site walkover in February 2019, the site comprised an approximately rectangular shaped area with a narrow spur of land linking the site to Lucas Lane to the north. The site was located at NGR 527144, 239697 extending to approximately 1.18Ha. The site was formed of a field with the spur to the north formed of a section of garden.

At the time of inspection, the field was covered by short grass and used for grazing sheep. The spur to the north was formed of a section of garden including two mature deciduous trees and various bushed and shrubs. The spur and the main body of the site were separated by post and wire fencing. The topography of the site was noted to slope moderately downhill in a north-westerly direction (a fall of approximately 15m over 140m). A narrow shallow depression was noted running downhill parallel to the entire length of the north-eastern boundary which may represent a drain or other buried service. A small area in the south of the site was fenced off and noted to contain fencing materials.

The main body of the site was bounded by post and wire fencing in addition to mature deciduous trees on the south-eastern boundary and variously hedgerows, shrubs and wooden garden fencing on the remaining boundaries. The spur was bounded to the north-west by a tall hedgerow with shrubs forming the north-east and south-west boundaries.

Residential land uses were noted to the north, east and west of the site with Lucas Lane adjacent to the spur in the north. To the south lay Ashwell Street, a track which ran within a depression along the south-eastern boundary. Further south lay large arable fields.

Site photographs obtained during the site walkover are presented in Appendix B.

2.2 Geology

With reference to British Geological Survey (BGS) mapping, the geology of the site was anticipated to comprise Zig Zag Chalk Formation with Melbourn Rock Member (chalk) shown in the south-western corner of the site. In addition, given the previous agricultural land use and nearby residential development there remains the possibility that there may be areas of reworked, disturbed or Made Ground across the site.

BS5930:2015 defines **Made Ground** as anthropogenic ground in which the material has been placed without engineering control and/or manufactured by man in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur and there can be deleterious or harmful matter, as well as potentially methanogenic organic material. In addition, where identified it is not uncommon for asbestos to be present within Made Ground soils.

The **Zig Zag Chalk Formation** is formed of pale grey and off-white blocky chalk which is largely firm. Marls and marly chalk are present in the lower part.

Melbourn Rock Member comprises off-white, blocky fractured chalk with frequent nodular chalk beds and thin branch-like veins of marls.

2.3 Hydrogeology

With reference to the desk study information, the underlying solid geology (Zig Zag Chalk Formation and Melbourn Rock Member) were recorded as Principal aquifers.

Principal aquifers are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifers.

The site is indicated to be within a Source Protection Zone (SPZ) Total Catchment (Zone 3). An SPZ is a protection zone placed around a well or borehole that supplies groundwater of potable quality.

Total Catchment (zone 3) is defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is 0.75. There is still the need to define individual source protection areas to assist operators in catchment management.

One discharge consent to land was identified within a radius of 500m of the site boundary:

- 305m N; Ashwell Garage, 65 Station Road, Ashwell, Hertfordshire, SG7 5LR; Sewage Discharges - Final/Treated Effluent - Not Water Company; Receiving Water – land; Issue Date – 14/06/1990; Revocation Date – none.

No groundwater abstractions were identified within a radius of 1000m of the site boundary.

No pollution incidents to controlled waters were recorded within a radius of 500m of the site boundary.

2.4 Hydrology

No surface water features were identified on the subject site itself during the site walkover. With reference to the desk study information, the closest surface water feature comprised an inland river (River Rhee) located 61m west of the site. This feature is assumed to flow away from the south in a north-westerly direction.

The site was indicated to be located outside of any current indicative tidal and fluvial flood plain.

No discharge consents to surface water were identified within a radius of 500m of the site boundary.

One surface water abstraction was identified within a radius of 500m of the site boundary:

- 322m NW; Bluegates Farms; Watercourses NW of Ashwell; Spray Irrigation – Direct; Original Start Date – 01/01/1966; Expiry Date – none.

2.5 Historical Data

Historical maps dating back to 1877 were obtained as part of the desk study. A summary of the apparent key features observed on the map extracts both on the site and within the local area is presented within Table 2.1.



Date	On Site	Off Site
1877	The site comprised the majority of an open field with trees marked along the south-western boundary.	Open land was present to the north-west and north-east. Ashwell Street was located to the south-east with open land beyond. Woodland and orchards were present to the south-west. Ashwell village lay to the west including various farms, a public house, a smithy (c. 200m west) and houses. A number of springs were located c. 50m north-west which flowed into a watercourse (River Rhee) which flowed away from the site in a north-westerly direction. A chalk pit, including a limekiln, was present c. 160m south-west. A further ground working, assumed to be associated with the chalk pit, was located 90m south-west of the site. A small burial ground was marked c. 200m west.
1881	No mapping coverage.	No mapping coverage.
1882	No significant changes noted.	A brewery and corn mill were located c. 400m north-west of the site.
1888	No significant changes noted.	Ashwell Street was marked as a Roman Road.
1898	No significant changes noted.	The chalk pit 160m south-west was shown to have expanded. A recreation ground was located 75m north of the site. The smithy 200m west was no longer present.
1899	No significant changes noted.	No significant changes noted.
1901	No mapping coverage.	No mapping coverage.
1903	No significant changes noted.	Partial mapping coverage. Allotments were located c. 190m east of the site.
1921	No significant changes noted.	A timber yard was shown c. 240m south-west of the site. A cemetery was located 200m north. A malthouse was shown 200m north-east. Allotments were marked 170m north-east. The corn mill 400m to the north-west was no longer marked.
1924	No significant changes noted.	The chalk pit to the south-west was expanded to the south slightly and now labelled 'Old Chalk Pit'. The allotments 190m east were no longer shown.
1937	No significant changes noted.	No significant changes noted.
1948	No significant changes noted.	No significant changes noted.
1953	No significant changes noted.	The timber yard was marked as a depot.
1974	The northern spur of the site was developed as part of a garden.	The land adjacent to the north-west of the site was developed with houses. Land to the south-west was also developed for residential use. A house and outbuilding were located within the old chalk pit 160m south-west.
1975	No significant changes noted.	No significant changes noted.
1982	No significant changes noted.	The malthouse to the north-east was marked 'depot'. The allotments to the north-east were



Date	On Site	Off Site
		no longer shown. The brewery 400m north-west appears to have been redeveloped for housing.
1983	No mapping coverage.	No mapping coverage.
1993	No significant changes noted.	No significant changes noted.
1995	No mapping coverage.	No mapping coverage.
2002	No significant changes noted.	No significant changes noted.
2010	No significant changes noted.	No significant changes noted.
2014	No significant changes noted.	No significant changes noted.

Table 2.1 Summary of Site History

The historical mapping indicated that the site has remained as open field throughout the period covered by the historical mapping with the northern spur becoming a garden during the 1970s.

The surrounding areas comprised fields and later housing immediately adjacent to the site. More widely, a ground working and chalk pit have been identified within the site surroundings along with a smithy, burial ground, cemetery, timber yard, depots, malthouse, brewery and cornmill.

2.6 Sensitive Land Uses

A search was made of environmentally sensitive areas, including areas of green belt, scenic or natural beauty, parks, reserves, nitrate zones, protected conservation and scientific areas.

The site was noted to be located within a Nitrate Vulnerable Zone.

Ashwell Springs Site of Special Scientific Interest (SSSI) was recorded 47m west of the site.

No other environmentally sensitive areas were noted within a 500m boundary of the site.

2.7 Environmental Data

Searches of other various environmental databases were made as part of the desk study, including air pollution control sites, Part IIA contaminated land, Integrated Pollution Control (IPC) and Integrated Pollution Prevention and Control (IPPC) site, registered radioactive substances, COMAH sites, explosives sites, Notification of Installations Handling Hazardous Substances (NIHHS) sites, planning permissions for sites involving hazardous substances, current industrial data and fuel station registers.

Three records of potentially contaminative industrial sites were recorded within 250m of the site:

- 88m SW; electricity sub-station
- 124m NW; electricity sub-station
- 248m NE; electricity sub-station

One fuel station was recorded with 500m of the site:

- 266m N; 33 Station Road, Ashwell, Baldock, Hertfordshire, SG7 5LG; unbranded; status - open

No other records of the above sites/features were recorded within 500m of the site.



The above land uses are considered sufficiently distant so as not to have had a detrimental effect on the site and, as such, are not considered further in this assessment.

2.8 Geotechnical Data

There were no coal mining affected areas within 1000m of the site.

The site was recorded by the BGS to lie within an area with may have been subject to non-coal historic mining. The assessment of likelihood was recorded as follows:

‘Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered’

The Peter Brett Associates (PBA) mining cavities database did not record any non-coal mining cavities within 100m of the site.

National databases for a number of geological hazards have been compiled by the BGS, and a summary of the hazard data pertaining to the site is presented in Table 2.2. In accordance with BGS recommendations, the highest rating within 50m of the site boundary (or a 250m radius for shallow mining) has been recorded.

British Geological Survey (BGS) geological hazard assessments for the site are summarised in Table 2.2 below:

Hazard	Designation
Collapsible ground	Very low
Compressible ground	Negligible
Ground dissolution	Negligible
Landslide	Negligible
Running sand	Negligible
Swelling clay	Negligible
Non-Coal Mining	Rare

Table 2.2 Summary of BGS Geological Hazards

During the site walkover inspection, no visible evidence of chalk solution features, such as circular depressions or irregular topography, were noted within the site. Thorough inspection of the areas surrounding the site was not possible due to these areas being in private ownership.

2.9 Landfill and Ground Workings

A search of BGS recorded landfill sites, IPC registered waste sites, licensed waste management facilities, local authority recorded landfill sites, other registered landfill sites, waste transfer stations, and other waste treatment or disposal sites was undertaken as part of the desk study. Such sites may form an artificial source of ground gases, such as carbon dioxide and methane, where wastes are buried or disposed of to landfill.

None of the above sites/features were recorded within 500m of the site. However, nine records of BGS Current Ground Workings were recorded within 500m of the site as summarised in Table 2.3.



Distance (m) & Direction	Pit name	Working Type	Status
116 SW	Ashwell Street Chalk Workings	Surface mineral working	Ceased
116 SW	Ashwell Street Chalk Workings	Surface mineral working	Ceased
207 SW	Ashwell Chalk Pit	Surface mineral working	Ceased
207 SW	Ashwell Chalk Pit	Surface mineral working	Ceased
323 SW	Silver Street Chalk Pit	Surface mineral working	Ceased
345 SW	Ashwell Chalk Pit	Surface mineral working	Ceased
345 SW	Ashwell Chalk Pit	Surface mineral working	Ceased
403 SW	Ashwell Chalk Pit	Surface mineral working	Ceased
403 SW	Ashwell Chalk Pit	Surface mineral working	Ceased

Table 2.3 Summary of BGS Current Ground Workings within 500m

The desk study information identified twenty areas of potentially infilled land from historical mapping within 250m of the site as summarised in Table 2.4.

Distance (m) & Direction	Feature	Mapping Date
61 W	Water Body	1903
61 W	Water Body	1886
149 SW	Unspecified Pit	1951
151 SW	Old Chalk Pit	1948
151 SW	Unspecified Quarry	1982
164 SW	Old Chalk Pit	1947
164 SW	Old Chalk Pit	1921
169 SW	Burial Ground	1886
179 SW	Chalk Pit	1903
184 SW	Unspecified Ground Workings	1877
187 SW	Unspecified Ground Workings	1886
196 SW	Chalk Pit	1897
199 SW	Burial Ground	1877
201 N	Cemetery	1947
219 N	Cemetery	1921
228 N	Cemetery	1948
230 N	Cemetery	1953
230 N	Cemetery	1977
234 W	Ponds	1903
237 W	Ponds	1886

Table 2.4 Summary of Potentially Infilled Land within 250m

Review of the above features on historical mapping and during the site walkover survey has recorded the following additional information:

- 61m W; Waterbody – comprises the River Rhee.
- 149m to 196m SW; Unspecified Pit, Old Chalk Pit, Chalk Pit, Unspecified Ground Workings – comprises a former chalk pit which expanded over time. An exposed chalk face can be seen to the east of Kingsland Way. A large depression with a steep slope to the south can be seen to the west of Kingsland Way which has been relatively recently developed for residential purposes. Reference to North Hertfordshire District Council's planning website shows permission (ref. 12/01617/1) for three detached houses. An associated



report by ST Consult (ref. JN0509, date 30th April 2013) for an intrusive investigation undertaken for this development recorded between 1.9m and 9.5m thicknesses of Made Ground within the former chalk pit.

- 169m SW & 199m SW; Burial Ground – small buried ground (c. 20m by 10m) noted on historical mapping.
- 201m N to 230m N; Cemetery – cemetery noted on historical mapping.

2.10 Radon

Reference has been made to the desk study information. The report indicated that the site lies in a lower probability radon area where less than 1% of homes are above the action level. However, no radon protection measures are deemed necessary in the construction of new dwellings.

2.11 Geochemistry

Data obtained as part of the desk study information provides details on the estimated soil chemistry for natural soils in the vicinity of the site. The estimated quality of natural soils beneath the subject site is presented in Table 2.5.

Determinant	Estimated Concentration (mg/kg)
Arsenic	<15
Cadmium	<1.8
Chromium	20-40
Lead	<100
Nickel	15-30

Table 2.5 Summary of Site Geochemistry

The natural background concentrations (where available) were below respective published Soil Guideline Values, Generic Assessment Criteria and Category 4 Screening Levels for the protection of human health under a residential land use, i.e. the most conservative end use.

However, these values are not necessarily representative of the site's soil chemistry and do not take account of current or historical activities on the site. Furthermore, some screening criteria are dependent on pH and soil organic matter content. Therefore, concentrations of specific determinands and the utilised SGV/GAC/C4SL cannot be determined without site specific investigation and analysis.

2.12 Asbestos

Whilst no clear evidence of asbestos containing materials was observed during the site visit, it is possible that asbestos containing materials (ACM) could be present within the underlying shallow soils on the site, or within any Made Ground. In line with current best practice, asbestos and ACM should be assumed to be present until proven otherwise.

2.13 Previous Ground Investigations

Geo-Environmental was not aware of any previous intrusive investigation works that had been undertaken on the site.

2.14 Potential Contamination

The site was shown from the historical mapping to have comprised a field throughout its history with the northern spur becoming a garden during the 1970s. A ground working and chalk pit have been identified within the site surroundings along with a smithy, burial ground, cemetery, timber yard, depots, malthouse, brewery and cornmill.



A review of the land uses covered by the National House Building Council (NHBC), Environment Agency (EA) and Chartered Institute of Environmental Health (CIEH) publication 'Guidance for the Safe Development of Housing on Land Affected by Contamination' (2008), which provides a summary of industrial profiles (1995 - 1996) published by the former Department of the Environment (DoE) (now part of the Department for Environment, Food and Rural Affairs [DEFRA]) has been undertaken. However, no profiles relating to the previous and current land uses of the site have been identified.

The smithy, burial ground, cemetery, timber yard, depots, malthouse, brewery and cornmill are not considered to present viable contamination sources to the site due to their distance from the site (>200m) and as such have not been considered further in this assessment.

The near surface soils across the site may have been impacted by pesticides through the site's agricultural usage.

The site's proximity to residential developments may have resulted in limited amounts of Made Ground being deposited in some locations. Where identified Made Ground or shallow soils may contain contaminants of concern, including metals, non-metal, inorganic pollutants, organic pollutants (including PAH/TPH) and asbestos.

2.15 Ground Gas and Vapour Summary

The desk study has identified the potential presence of a ground gas source in the vicinity of the site associated with former ground working and chalk pit to the south-west of the site, which may represent potential sources of contamination in terms of ground gases migrating onto the site.

In addition, there may be a thickness of Made Ground underlying parts of the site associated with development of adjacent land. If Made Ground is identified on the site which contains a significant amount of organic matter or organic contamination, this could have the potential to represent a source of ground gases/vapours.

The burial ground and cemetery are not considered viable sources for ground gas generation due to their distance from the site and the limited amounts of potential gas generating material present.

3.0 PRELIMINARY ASSESSMENT

Based on the findings of the desk study, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site.

3.1 Geotechnical Risk Assessment

3.1.1 Potential Geotechnical Issues

The following factors that might impact the geotechnical condition of the site were identified as part of the desk study:

- The possible presence of Made Ground (e.g. varying depth and/or composition) which if encountered may affect any additional foundation design and construction.
- The presence of laterally and vertically variable strata and the impact these could have on further construction.
- The suitability of shallow soils as a bearing stratum for conventional foundations.
- Consideration of the volume change potential of any cohesive soils and the affect this could have on foundations.
- The possible presence of aggressive ground conditions (sulphates) which may affect the foundation design and construction.
- The possible presence of perched and shallow groundwater beneath the site which may affect foundation design and construction.
- The presence of trees on the site, which may have a significant impact on foundation design and construction if/where shrinkable soils are present.
- The suitability of the shallow soils for the use of soakaways on the site as part of the proposed development.
- The possible presence of solution features associated with the chalk geology beneath the site.

3.2 Preliminary Environmental Conceptual Site Model & Risk Assessment

3.2.1 Methodology

A Preliminary Risk Assessment (PRA) and Conceptual Site Model (CSM) has been prepared in accordance with CLR11 based on information obtained as part of the desk study. Possible risks associated with potential sources of contamination and sensitive receptors identified have been assessed following a source-pathway-receptor (SPR) approach in accordance with current UK protocols.

A risk may only exist where a plausible SPR linkage is present, and where the quantity or concentration of a contaminant is sufficient so as to cause harm. Under the statutory definition, "Contamination" may only strictly exist where contaminants pose a risk of harm to a receptor. Risk may be defined as a function of the likelihood and severity of any adverse effects arising from contamination. The risk classification has been assessed in accordance with CIRIA C552 (Rudland et al., 2001). A summary of how the risks are derived and their definitions are presented in Tables 3.1 & 3.2 below.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table 3.1 Risk Ratings Matrix

Risk Rating	Definitions
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High risk	Harm is likely to arise to a designated receptor from an identified hazard Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not already undertaken) is required and remediation works may be necessary in the short term and are likely over the longer term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Moderate to low risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is unlikely that any such harm would be severe, or if any harm were to occur it is probable that the harm would be relatively mild.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table 3.2 Risk Ratings Definition



3.2.2 Summary of Plausible Sources

Possible sources of contamination identified or discounted as part of the desk study are summarised in Table 3.3.

Source	Description	Comments
Shallow soils across the site including any Made Ground	General chemical quality of the near surface soils could be impacted by the presence of contamination as a result of agricultural usage and any deposited Made Ground.	Possible elevated concentrations of metals, metalloids, TPH and PAH compounds, asbestos and pesticides.
Ground gases from backfilled ground working and chalk pit to the south-west	Potential for ground gases from infilled ground depending on presence and nature of backfill.	Possible presence of ground gases such as methane and carbon dioxide together with depleted oxygen.
Naturally occurring aggressive ground conditions	Naturally occurring compounds in the ground which could damage buried concrete.	Possible elevated sulphate concentrations.

Table 3.3 Possible Sources of Contamination

3.2.3 Summary of Plausible Pathways

The plausible pathways are summarised in Table 3.4. These pathways are based on the proposed end use, including private gardens and soft landscaping.

Pathway	Description
Direct Contact	Ingestion of soil particles, inhalation of soil derived dust (including tracked back dust), dermal contact. Bioaccumulation within home grown vegetation.
Inhalation	Inhalation of soil dust both inside and outside of buildings. Inhalation of ground gas/vapours within buildings.
Vertical & Lateral Migration	Contaminant movement both vertically through leaching/gravity and horizontally along preferential pathways, e.g. services trenches, more permeable bedded strata or with groundwater.
Shallow Groundwater	Shallow groundwater or perched water may be present, and if encountered could result in the vertical and lateral migration of contaminants.
Chemical Attack	Attack of buried plastics and concrete by aggressive ground conditions.
Flooding	The site was indicated to be located outside of any current indicative tidal and fluvial flood plain. As such, flooding is not considered a plausible pathway.

Table 3.4 Possible Contaminant Pathways

3.2.4 Summary of Plausible Receptors

Potential receptors associated with the site and its development, identified or otherwise discounted, are summarised in Table 3.5.

Receptor	Description	Comments
End Users	Residents/occupants of the proposed development.	The development will include residential properties with gardens, public open space and associated infrastructure.
Adjacent Land Users	Sensitive land uses identified within the immediate vicinity.	Adjacent land uses are a mixture of residential and agriculture.



Receptor	Description	Comments
Soft Landscaping	Areas of planting including lawns, shrubs, trees, etc.	Private gardens and soft landscaped areas are proposed.
Water Supply Pipes	Plastics for potable water supply pipes may be laid in contact with contaminated soils.	Limited chemical degradation of the near surface soils may have taken place. Made Ground may be present associated with the former buildings. Aggressive ground conditions may be present beneath parts of the site.
Buildings & Infrastructure	Buried concrete for foundations etc. may be laid in contact with contaminated/aggressive soils.	Significant depths of Made Ground are not anticipated; limited chemical degradation of the near surface soils may have taken place in some locations. Aggressive ground conditions may be present beneath parts of the site.
Groundwater	Controlled Waters contained within the aquifer(s) beneath the site.	The site lies upon a Principal aquifer and is located within a Source Protection Zone 3.
Surface Water	Controlled Waters within lakes, rivers, ponds, etc., or coastal waters.	An inland river (River Rhee) was located 61m west of the site.
Ecological Receptors	Sensitive areas of ecological significance.	Ashwell Springs SSSI was recorded 47m west of the site.

Table 3.5 Possible Receptors of Contamination

Site workers involved in the preparation and construction of the development have not been considered in this assessment as the principal contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

Whilst the above sources and receptors have been identified, Table 3.6 summarises the identified plausible pollution linkages and a qualitative assessment of the risks based on the desk study research:

Desk Study

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
Shallow soils across the site including any Made Ground	End Users	Direct contact and inhalation of soil derived dust	Likely	Mild	Moderate/Low Future occupiers are likely to come into contact with soils via a number of pathways. Modern pesticides degrade rapidly following application and any Made Ground is likely to be limited in extent.
	Adjacent Land Users	Direct contact	Unlikely	Mild	Very Low Adjacent site users are not expected to come into contact with soils from the site.
	Soft Landscaping	Root uptake	Likely	Minor	Low Areas of soft landscaping are proposed which may be completed with site-won natural soils. Landscaping would be completed with uncontaminated soils in the near surface root zone. The consequence is likely to be mild. No evidence of harm to existing vegetation was observed on or around the site.
	Water Supply Pipes	Direct contact	Likely	Minor	Low Water supply pipes are likely to come into contact with impacted soils depending upon depth of installation and extent of soil impact.
	Buildings and Infrastructure	Direct contact	Likely	Minor	Low Foundations will be placed within natural soils which may be an aggressive environment for concrete. However, the consequence is anticipated to be minor.
	Groundwater	Vertical Migration	Unlikely	Minor	Very Low The site overlies a Principal aquifer. The shallow soils at the site are not considered to be a significant source of potentially mobile contamination.
	Surface Water	Vertical and Lateral Migration	Low likelihood	Mild	Low A river is present 61m west and downhill from the site so could potentially be affected by runoff and lateral migration from the site. However, soils at the site are not considered to be a significant source of potentially mobile contamination.
	Ecological Receptors	Vertical and Lateral Migration	Low likelihood	Mild	Low Ashwell Springs SSSI is present 47m west and downhill from the site so could potentially be affected by runoff and lateral migration from the site. However, soils at the site are not considered to be a significant source of potentially mobile contamination.

Desk Study Report

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
Ground gases from backfilled ground working and chalk pit to the south-west	End Users	Inhalation	Unlikely	Severe	Moderate/Low Future occupiers may inhale potential ground gases produced by any material used to backfill these features. However, any gas being produced would likely vent directly to the atmosphere. Additionally, these sources are some distance from the site which limits the pathway for gas migration. Should ground gases at concentrations of concern be identified, incorporation of gas protection measures could mitigate the risk of harm.
	Soft Landscaping	Root uptake	Unlikely	Minor	Very low Soft landscaping is not expected to be adversely affected by any ground gases from these sources due to their distance from the site limiting the potential for significant gas migration. No vegetation distress was noted during the site walkover survey.
	Buildings and infrastructure	Gas accumulation and potential explosion of flammable gases	Unlikely	Medium	Low Extensive putrescible material sufficient for significant methane production is not expected to be present within these features and they are some distance from the site limiting the potential for significant gas migration.
Naturally occurring aggressive ground conditions	End users	Direct contact and inhalation / ingestion of soil derived	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Soft Landscaping	Root Uptake	Unlikely	Minor	Very Low Gardens and amenity soft landscaping are proposed but are unlikely to be affected by naturally occurring aggressive ground conditions. Current vegetation around the site appeared in good condition. The consequence is likely to be minor.

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low No potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Water supply pipes	Direct contact	Unlikely	Minor	Very Low No potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Buildings and Infrastructure	Direct contact	Likely	Minor	Low Foundations will be placed within soils which may be an aggressive environment for concrete. However, the consequence is anticipated to be minor.

Table 3.6 Plausible Pollution Linkages

3.3 Preliminary Risk Assessment Summary

The PRA and CSM developed from the information gathered as part of the desk study process have identified several plausible pollutant linkages that exist in relation to the proposed development of the site and the preliminary risk rating for most of the pollution linkages have been classified as low or very low. Low to moderate risks have been identified regarding the site's agricultural usage and the potential presence of Made Ground. A low to moderate risk has also been identified associated with a former chalk pit and ground working located in the site surroundings.

The potential pollutant linkages established within this desk study are not considered to prevent development on the subject site but may require investigation across areas of the site and assessment to support further characterisation, calibration of the CSM and where/if necessary determine a remedial strategy to reduce, remove or otherwise control any risk within the site to key receptors.

In order to progress this assessment in line with the National Planning Policy Framework, to provide further characterisation of the site and refinement of the PRA and CSM, it is recommended that intrusive investigation and associated testing is undertaken to confirm the findings of the desk study report and to provide a robust risk assessment for the site and proposed redevelopment. As such it is recommended that geochemical and geotechnical investigation be carried out on the site to include analysis of soil and groundwater (if encountered) samples for the range of potential contaminants identified within the desk study, in particular associated with the former orchard usage and former buildings.

3.4 Preliminary Geotechnical Assessment Summary

The site is anticipated to be underlain by Zig Zag Chalk Formation with Melbourn Rock Member (chalk) shown in the south-western corner of the site. It is possible that conventional strip or pad foundations could be suitable for the proposed development where natural ground is encountered at ground level. However, where foundations are required in areas of Made Ground or infilled ground, which may be present to depth beneath areas of the site, a deeper or piled foundation solution may be required.

Whilst ground bearing floor slabs may be suitable if non-shrinkable soil and deep Made Ground are not present, suspended floor slabs are recommended at this stage. Suspended floor slabs may also be required should ground gas protection measures be required for the proposed development.

It is considered, that soakaways may function effectively at the site, although this would be subject to formal testing. As such it may be necessary (subject to testing) to utilise on-site storage and attenuation of peak storm flow, through systems such as porous paving and cellular storage crates. The use of soakaways would also only be acceptable in areas remote from any contamination and infilled/Made Ground that may be identified on the site.

Consideration of any potential solution features associated with the chalk geology beneath the site should be made during any further investigations, design and planning for the proposed development.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The desk study has shown the site to comprise an open field and small section of garden. Agricultural usage, the potential for Made Ground and a former offsite chalk pit and ground working have been identified as the main risk drivers for the proposed development.

A residential land use is proposed at the site. As such, sensitive uses such as private gardens with gardening activities (including dust being tracked back into buildings) and growing vegetables are considered likely to form part of the end use scenario for this site.

It is concluded that the overall risk of harm to end users for the vast majority of the site is low and very low, with moderate/low risks identified in relation to the agricultural usage, potential for Made Ground (in terms of soil contamination) and former chalk pit and ground working (in terms of ground gases). Further assessment is required to better characterise the contamination status of the site to inform an update of the conceptual site model and allow a robust assessment of the risk to human health and the environment.

It is possible that conventional foundations would be suitable for parts of the proposed development, although any design should account for the potential presence of shrinkable soils. Soakaway drainage may function effectively at the site but would be subject to formal testing.

4.2 Recommendations

At this stage and based on the findings of the desk study and preliminary risk assessment, the following scope of works is recommended for the intrusive investigation on the site.

- Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.
- Soil sampling and analysis should be undertaken to inform subsequent geotechnical and geo-environmental risk assessment.
- Ground gas monitoring in accordance with best practice should be undertaken across the site.
- Soakage testing in broad accordance with BRE365 should be undertaken (already commissioned at time of reporting).
- Laboratory analysis, on soil samples recovered from the exploratory holes for a range of geotechnical parameters to support foundation design.
- Laboratory analysis, on shallow soil samples recovered from the exploratory holes, for an analytical suite to include the potential contaminants identified within the desk study and encountered during any intrusive investigation. The suite should include commonly occurring metals, non-metals, asbestos, TPH, PAH and pesticides.

It may be necessary to undertake remediation/risk mitigation measures on this site to break pollutant linkages and thus protect key receptors such as human health, controlled waters, built environment, soft landscaping and the like. The requirement and extent of any such remediation cannot be determined until such time as an intrusive investigation and associated testing has been completed.

Caveat

The data collected from the investigations have been used to provide an interpretation of the geo-environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained.

Geo-Environmental Service Limited takes no responsibility for conditions that either have not been revealed in the available records, or that occurs between or under points of physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

Information contained in this report is intended for the use of the client and their agents, and Geo-Environmental Services Limited can take no responsibility for the use of this information by any third party for uses other than that described in this report.

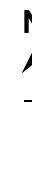
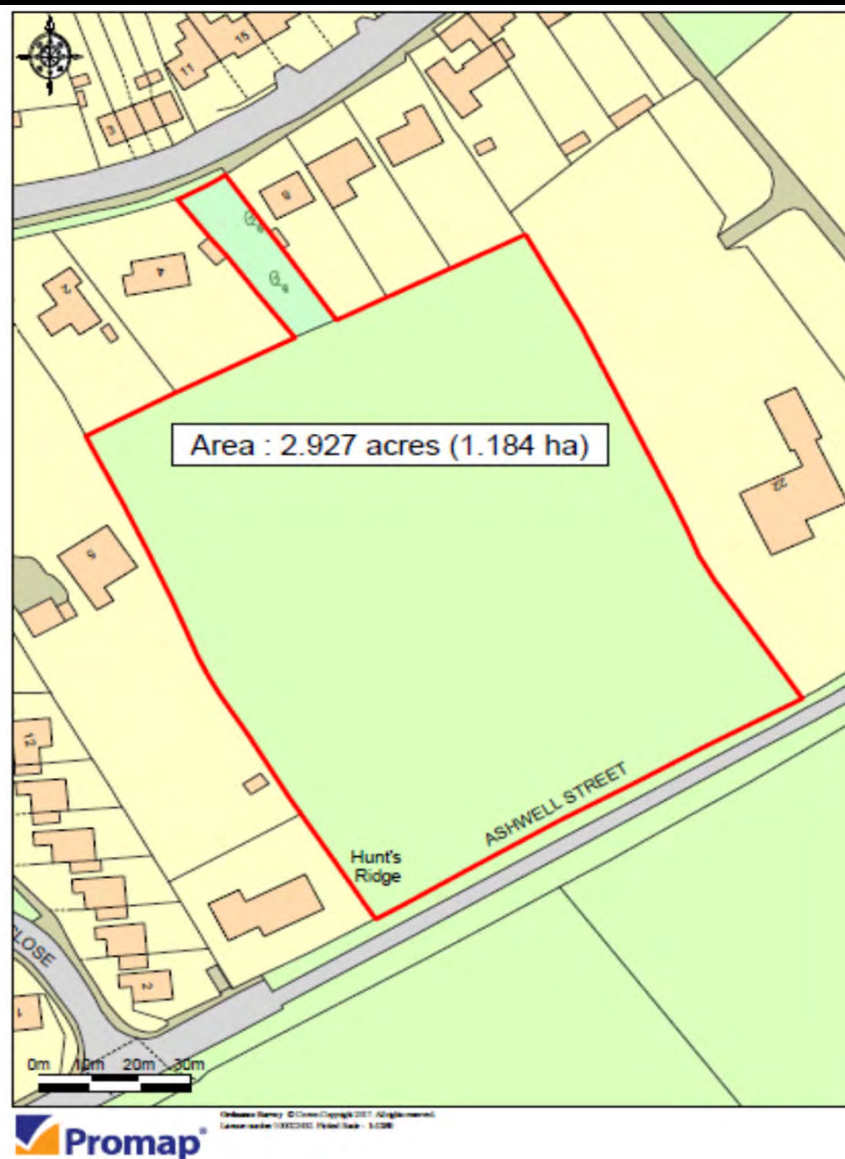
It should be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. Such reservations have been indicated in the text where such conditions are considered to apply.

Geo-Environmental Services Limited does not indemnify any third parties such as the vendor against any dispute or claim arising from any finding or result of this investigation or any claim or dispute arising as a result of any decisions made thereof.



Project:	Ashwell Street, Ashwell, Baldock, Hertfordshire, SG7 5QD			Title	Site Location Plan	
Client:	Manor Oak Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE17963	Revision:	0			
Drawn:	SA	Date:	05/02/2019			
Figure:	1	Scale:	Not To Scale			



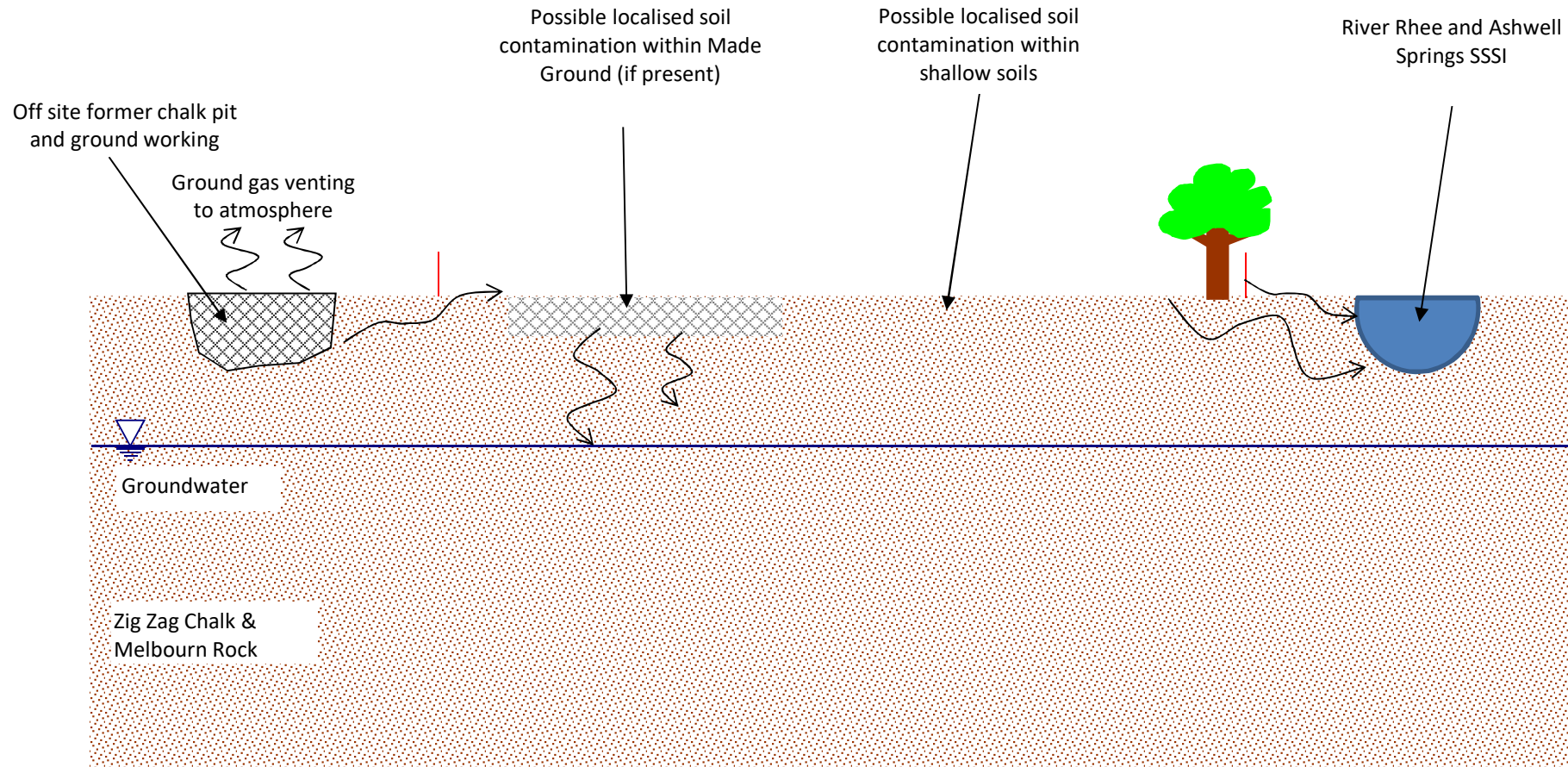


Project:	Ashwell Street, Ashwell, Baldock, Hertfordshire, SG7 5QD			Title	Site Plan	
Client:	Manor Oak Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE17963	Revision:	0			
Drawn:	SA	Date:	05/02/2019			
Figure:	2	Scale:	Not To Scale			

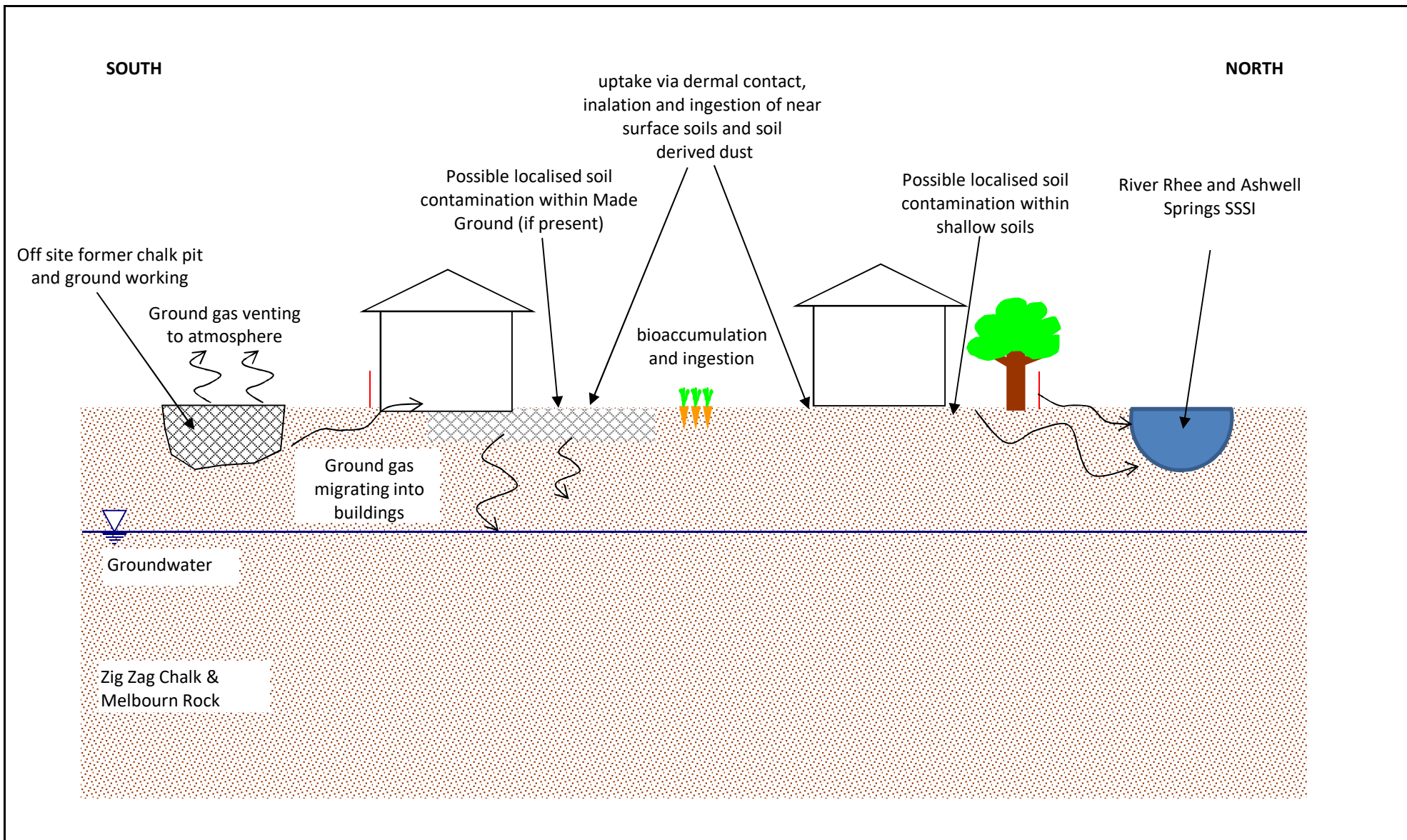


SOUTH

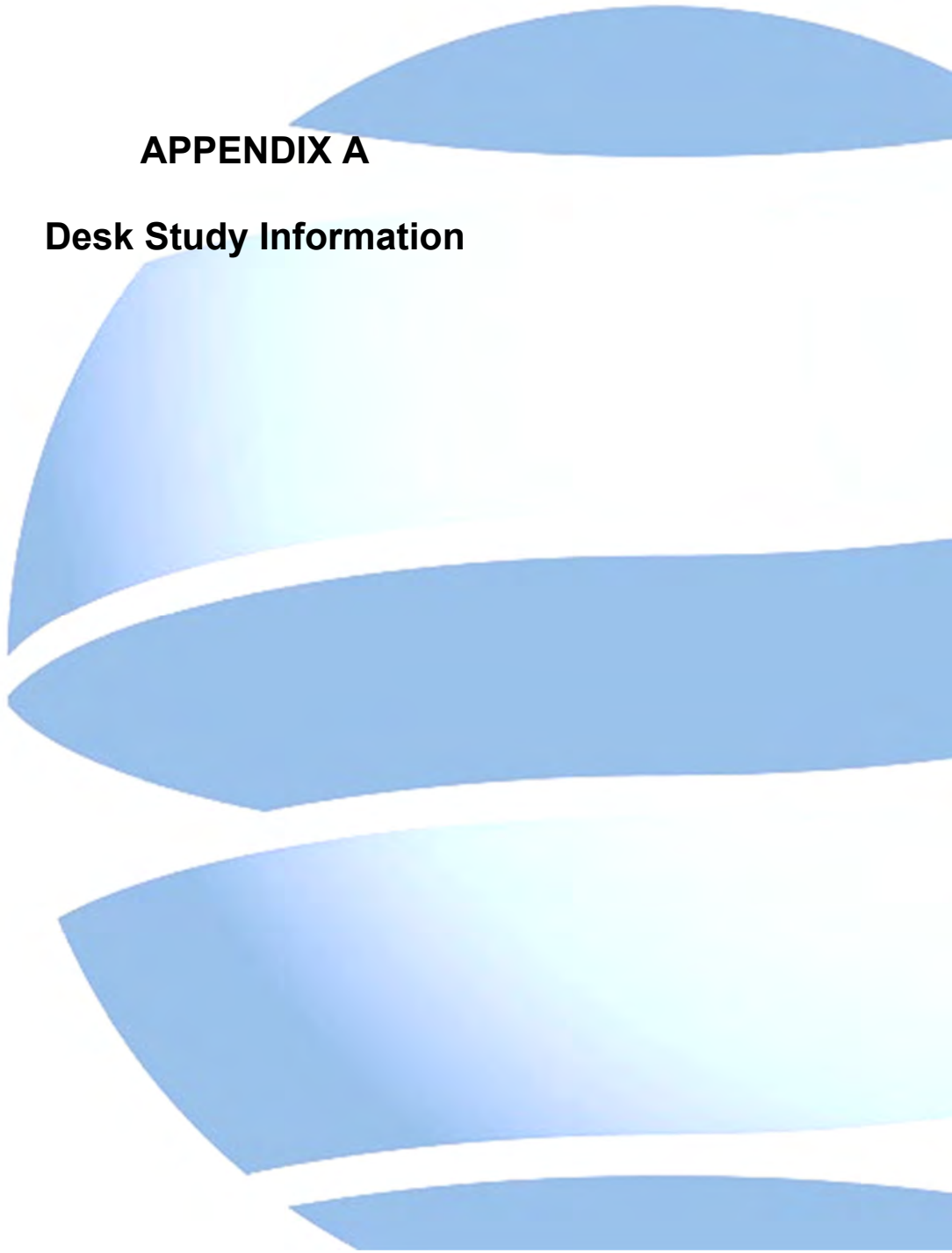
NORTH



Project:	Ashwell Street, Ashwell, Baldock, Hertfordshire, SG7 5QD			Title	Conceptual Site Model (Current Land Use)	
Client:	Manor Oak Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE17963	Revision:	0			
Drawn:	SA	Date:	05/02/2019			
Figure:	3	Scale:	Not To Scale			



Project:	Ashwell Street, Ashwell, Baldock, Hertfordshire, SG7 5QD			Title	Conceptual Site Model (Proposed Land Use)	
Client:	Manor Oak Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental
Ref No:	GE17963	Revision:	0			
Drawn:	SA	Date:	08/02/2019			
Figure:	4	Scale:	Not To Scale			



APPENDIX A

Desk Study Information

Address: LAND NORTH OF ASHWELL STREET, ASHWELL, SG7 5LN

Date: 28 Jan 2019

Reference: GS-5781803

Client: Geo-Environmental Services Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 21-Jun-2017

Grid Reference: 527144,239697

Site Size: 1.18ha

Report Reference: GS-5781803

Client Reference: GE17963

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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	0	0	27	40
1.2 Additional Information – Historical Tank Database	0	0	0	2
1.3 Additional Information – Historical Energy Features Database	0	0	7	9
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	6
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	20	22
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	0	1
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	1
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	0
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	0	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	3	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	1
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 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	None identified
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 Records of Strata Classification in the Superficial Geology within 500m of the study site				Identified		
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site				Identified		
	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	0	6
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	1	1	1
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	1	0	1	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	#250GWV #	#500GWV #	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 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	4	20	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 Environment Agency Zone 2 floodplains within 250m of the study site	None identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential
7.8 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	1	0	0	0	0
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	0
8.7 Records of Local Nature Reserves (LNR)	0	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	1
8.13 Records of Nitrate Vulnerable Zones	2	0	2	0	3	2
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Negligible
9.1.2 Maximum Landslides hazard rating identified on the study site	Negligible
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Negligible
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 site 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 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

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 licences, 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.

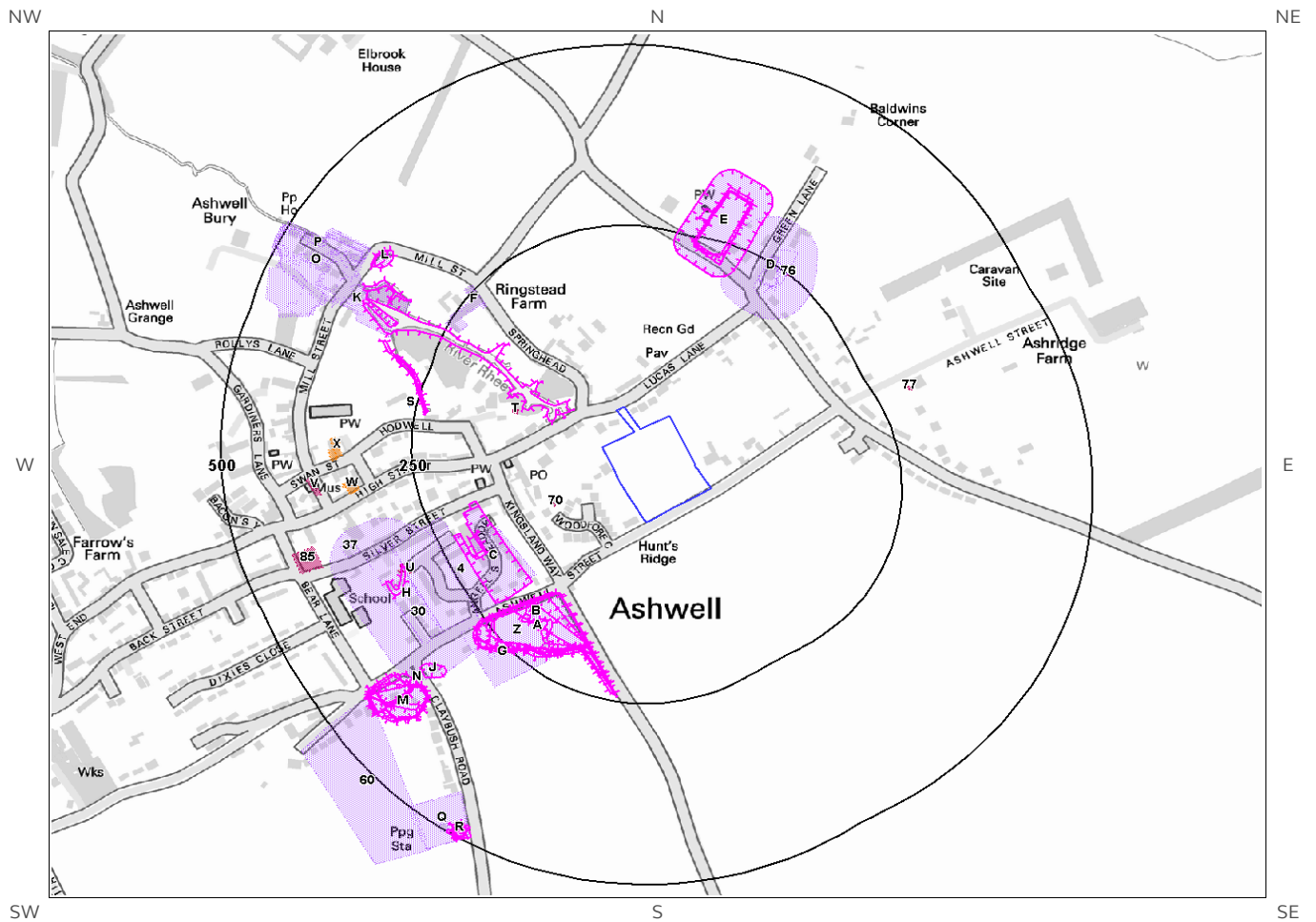
Note: Maps

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).

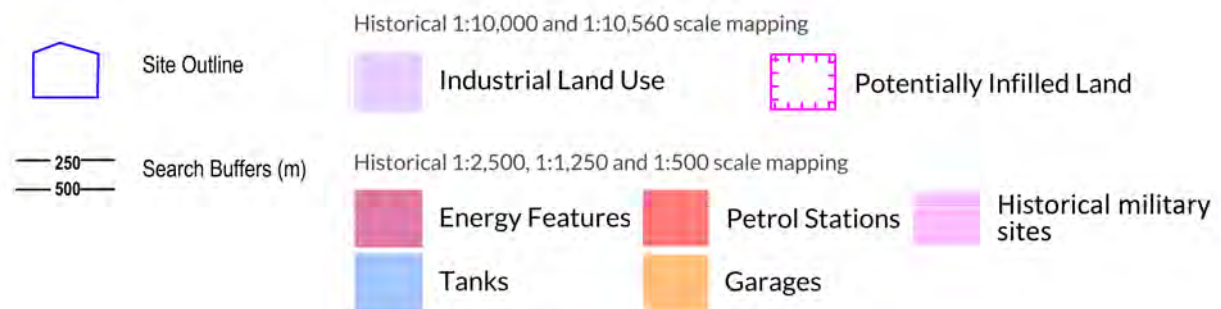
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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



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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: 67

ID	Distance [m]	Direction	Use	Date
1A	149	SW	Unspecified Pit	1951
2A	151	SW	Old Chalk Pit	1948
3A	151	SW	Unspecified Quarry	1982
4	160	SW	Timber Yard	1921
5A	164	SW	Old Chalk Pit	1947
6A	164	SW	Old Chalk Pit	1921
7C	169	SW	Burial Ground	1886
8D	177	NE	Unspecified Malthouse	1951
9A	179	SW	Chalk Pit	1903
10A	184	SW	Unspecified Ground Workings	1877
11A	187	SW	Unspecified Ground Workings	1886
12B	189	SW	Lime Kiln	1877
13B	194	SW	Lime Kiln	1886
14Z	196	SW	Chalk Pit	1897
15C	199	SW	Burial Ground	1877
16E	201	N	Cemetery	1947
17D	203	NE	Unspecified Depot	1982
18G	216	SW	Corn Windmill	1886
19E	219	N	Cemetery	1921
20D	219	NE	Malthouse	1921
21D	220	NE	Malthouse	1948
22D	222	NE	Unspecified Malthouse	1947
23F	222	NW	Smithy	1897
24F	225	NW	Smithy	1903
25E	228	N	Cemetery	1948
26E	230	N	Cemetery	1977
27E	230	N	Cemetery	1953
28H	251	SW	Unspecified Depot	1951
29G	270	SW	Corn Windmill	1877
30	304	SW	Unspecified Depot	1982
31H	304	SW	Timber Yard	1947
32H	305	SW	Unspecified Ground Workings	1877

33I	307	NW	Unspecified Mill	1903
34I	309	W	Corn Mill	1886
35J	332	SW	Unspecified Pit	1948
36J	332	SW	Unspecified Pit	1948
37	348	SW	Telephone Exchange	1982
38K	352	W	Corn Mill	1897
39K	359	NW	Corn Mill	1877
40L	360	NW	Unspecified Heap	1877
41L	368	NW	Unspecified Heap	1886
42N	368	SW	Lime Kiln	1877
43M	369	SW	Unspecified Pit	1948
44M	369	SW	Unspecified Pit	1948
45M	371	SW	Unspecified Pit	1947
46M	371	SW	Unspecified Pit	1951
47N	373	SW	Chalk Pit	1921
48M	379	SW	Chalk Pit	1903
49M	383	SW	Chalk Pit	1897
50M	386	SW	Unspecified Pit	1982
51O	387	NW	Brewery	1903
52O	389	NW	Brewery	1948
53N	389	SW	Lime Kiln	1886
54P	390	NW	Brewery	1877
55O	390	NW	Brewery	1921
56O	392	NW	Brewery	1897
57P	393	NW	Brewery	1953
58O	394	NW	Brewery	1947
59P	395	NW	Brewery	1886
60	433	SW	Corn Windmill	1886
61Q	444	SW	Water Works	1948
62Q	444	SW	Water Works	1947
63Q	444	SW	Water Works	1921
64R	480	SW	Unspecified Heap	1948
65R	480	SW	Unspecified Heap	1948
66R	480	SW	Unspecified Heap	1951
67Q	491	SW	Pumping Station	1982

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:

2

ID	Distance (m)	Direction	Use	Date
----	--------------	-----------	-----	------

68S	256	W	Unspecified Tank	1903
69S	256	W	Unspecified Tank	1888

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:

16

ID	Distance (m)	Direction	Use	Date
70	86	SW	Electricity Substation	1997
71T	121	NW	Electricity Substation	1995
72T	121	NW	Electricity Substation	1999
73T	121	NW	Electricity Substation	1974
74T	122	NW	Electricity Substation	1990
75T	122	NW	Electricity Substation	1983
76	248	NE	Electricity Substation	1997
77	293	NE	Electricity Substation	1997
78U	300	SW	Electricity Substation	1995
79U	300	SW	Electricity Substation	1999
80U	306	SW	Electricity Substation	1990
81U	309	SW	Electricity Substation	1983
82V	374	W	Electricity Substation	1990
83V	374	W	Electricity Substation	1983
84V	383	W	Electricity Substation	1974
85	401	SW	Electricity Substation	1974

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:

0

Database searched and no data found.

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
86W	323	W	Garage	1983
87W	324	W	Garage	1974
88X	341	W	Garage	1995
89X	341	W	Garage	1999
90X	348	W	Garage	1990
91X	348	W	Garage	1983

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary:

0

Database searched and no data found.

1.7 Potentially Infilled Land

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

42

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

ID	Distance(m)	Direction	Use	Date
92Y	61	W	Water Body	1903
93Y	61	W	Water Body	1886
94Z	149	SW	Unspecified Pit	1951
95B	151	SW	Old Chalk Pit	1948
96A	151	SW	Unspecified Quarry	1982
97B	164	SW	Old Chalk Pit	1947
98B	164	SW	Old Chalk Pit	1921
99C	169	SW	Burial Ground	1886
100Z	179	SW	Chalk Pit	1903
101Z	184	SW	Unspecified Ground Workings	1877
102Z	187	SW	Unspecified Ground Workings	1886
103Z	196	SW	Chalk Pit	1897
104C	199	SW	Burial Ground	1877
105E	201	N	Cemetery	1947
106E	219	N	Cemetery	1921

107E	228	N	Cemetery	1948
108E	230	N	Cemetery	1953
109E	230	N	Cemetery	1977
110AA	234	W	Pond	1903
111AA	237	W	Ponds	1886
112U	305	SW	Unspecified Ground Workings	1877
113AB	313	NW	Water Body	1903
114AB	313	NW	Water Body	1886
115J	332	SW	Unspecified Pit	1948
116J	332	SW	Unspecified Pit	1948
117L	360	NW	Unspecified Heap	1877
118L	368	NW	Unspecified Heap	1886
119M	369	SW	Unspecified Pit	1948
120M	369	SW	Unspecified Pit	1948
121M	371	SW	Unspecified Pit	1947
122M	371	SW	Unspecified Pit	1951
123M	373	SW	Chalk Pit	1921
124M	379	SW	Chalk Pit	1903
125M	383	SW	Chalk Pit	1897
126M	386	SW	Unspecified Pit	1982
127Q	480	SW	Unspecified Heap	1948
128Q	480	SW	Unspecified Heap	1948
129Q	480	SW	Unspecified Heap	1951
130Q	484	SW	Reservoir	1921
131Q	484	SW	Reservoir	1947
132Q	488	SW	Covered Reservoir	1982
133Q	493	SW	Reservoir	1948

2. Environmental Permits, Incidents and Registers Map



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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:

1

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	286	N	527153 240066	Address: Ashwell Garage, Eastgate House Station Road, Ashwell, Herts, SG7 5LG Process: Petrol Vapour Recovery Status: Historical 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:

1

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	305	N	527120 240090	Address: ASHWELL GARAGE, 65 STATION ROAD, ASHWELL, HERTFORDSHIRE, SG7 5LR Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: PRCLF02779 Permit Version: 1 Receiving Water: land Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 14/06/1990 Effective Date: 14-Jun-1990 Revocation Date: -

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:

0

Database searched and no data found.

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

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

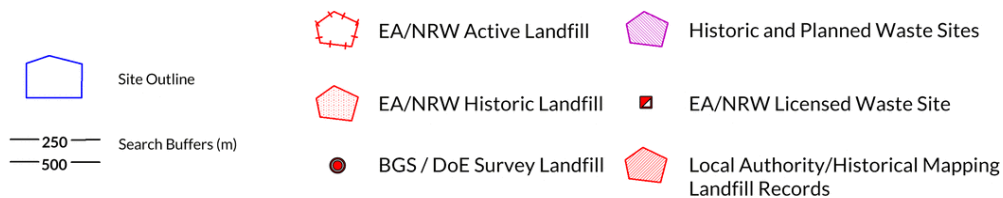
0

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:

0

Database searched and no data found.

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

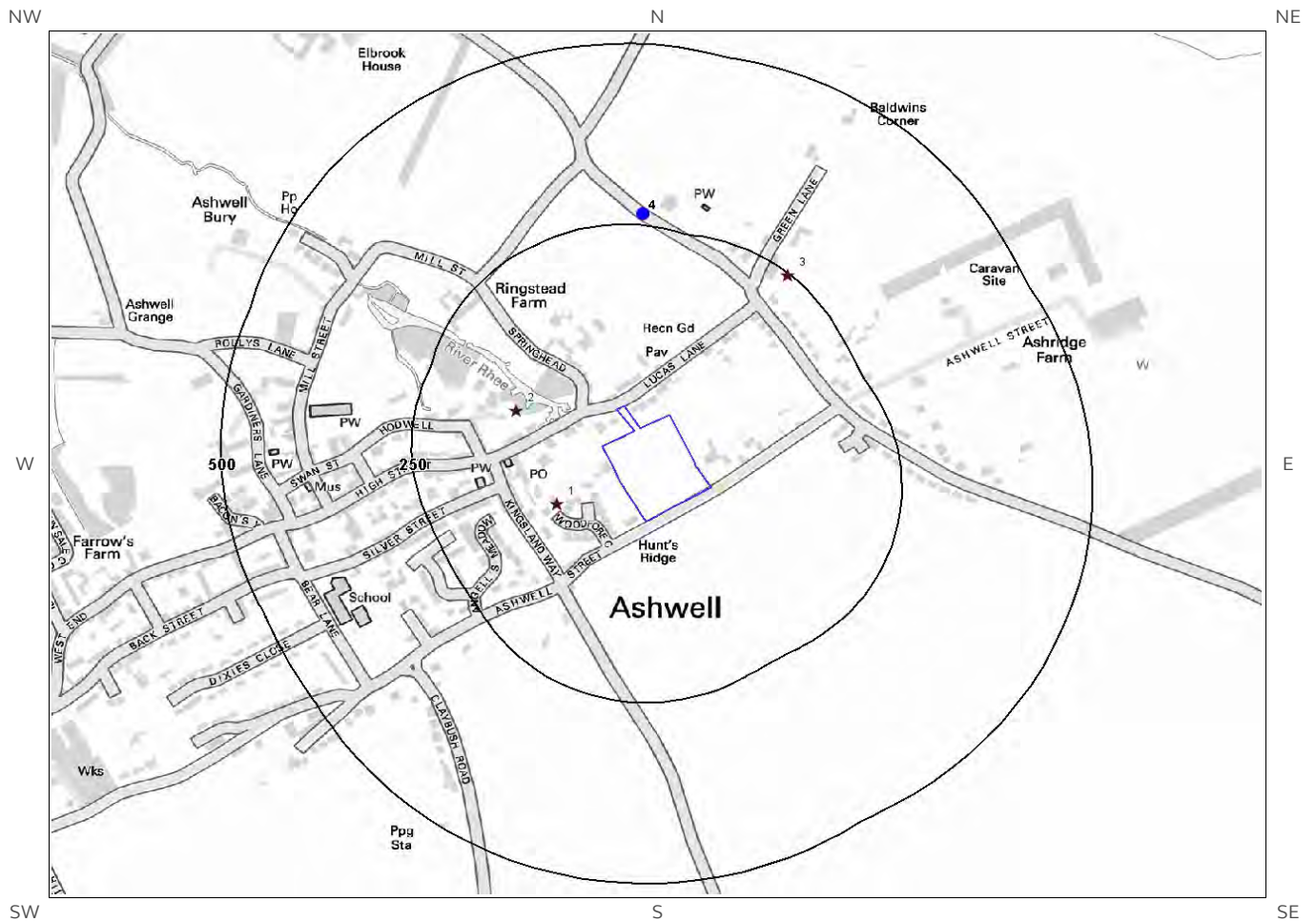
Database searched and no data found.

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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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 3

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	88	SW	Electricity Sub Station	527011 239650	Hertfordshire, SG7	Electrical Features	Infrastructure and Facilities
2	124	NW	Electricity Sub Station	526958 239779	Hertfordshire, SG7	Electrical Features	Infrastructure and Facilities
3	248	NE	Electricity Sub Station	527314 239966	Hertfordshire, SG7	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

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
4	266	N	527124 240050	UNBRANDED	33 Station Road, Ashwell, Baldock, Hertfordshire, SG7 5LG	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

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

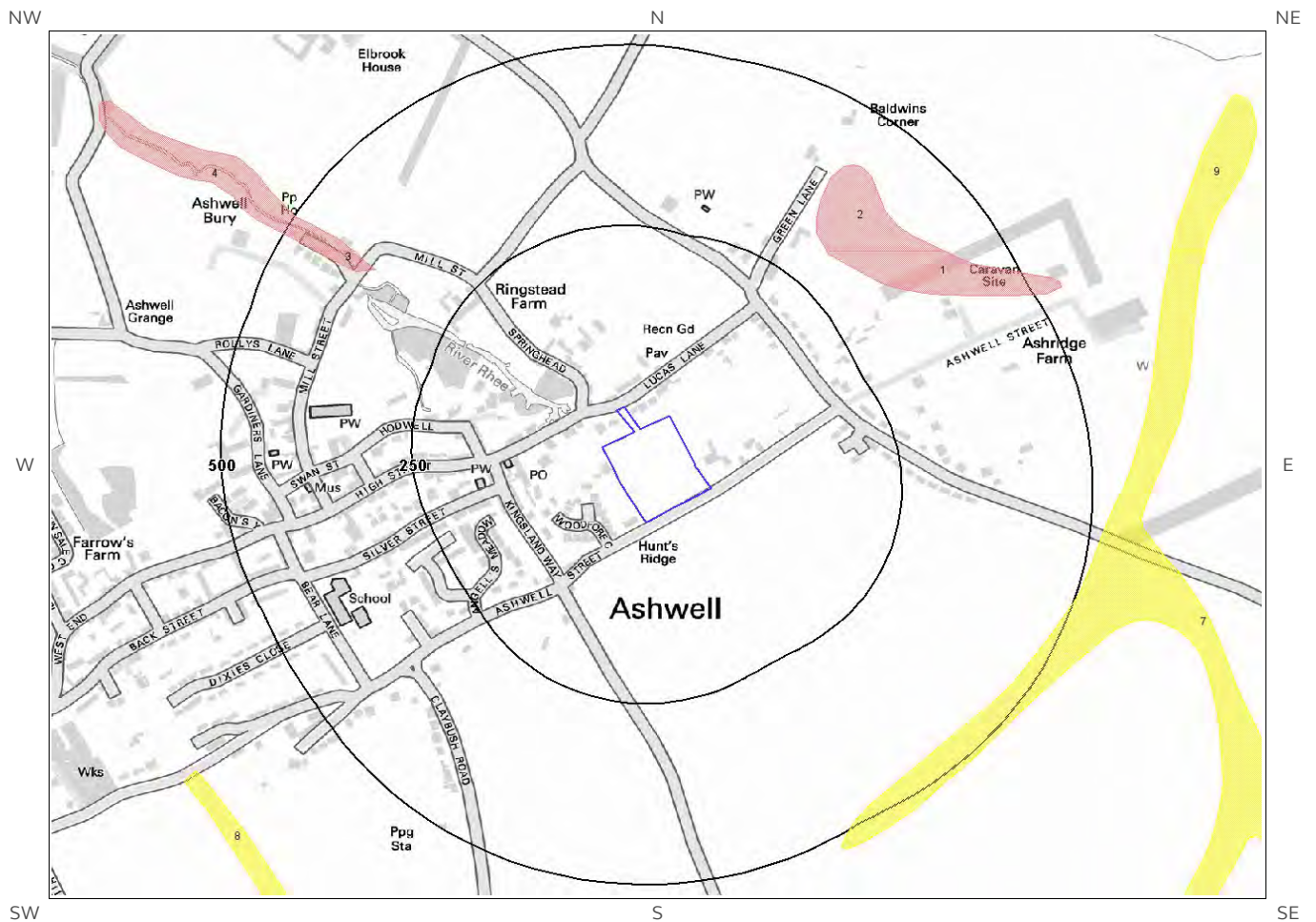
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MR-CHLK	MELBOURN ROCK MEMBER	CHALK
ZZCH-CHLK	ZIG ZAG CHALK FORMATION	CHALK
TTST-CHLK	TOTTERNHOE STONE MEMBER	CHALK
HCK-CHLK	HOLYWELL NODULAR CHALK FORMATION	CHALK

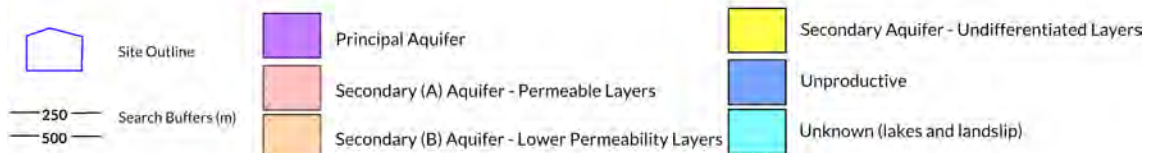
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

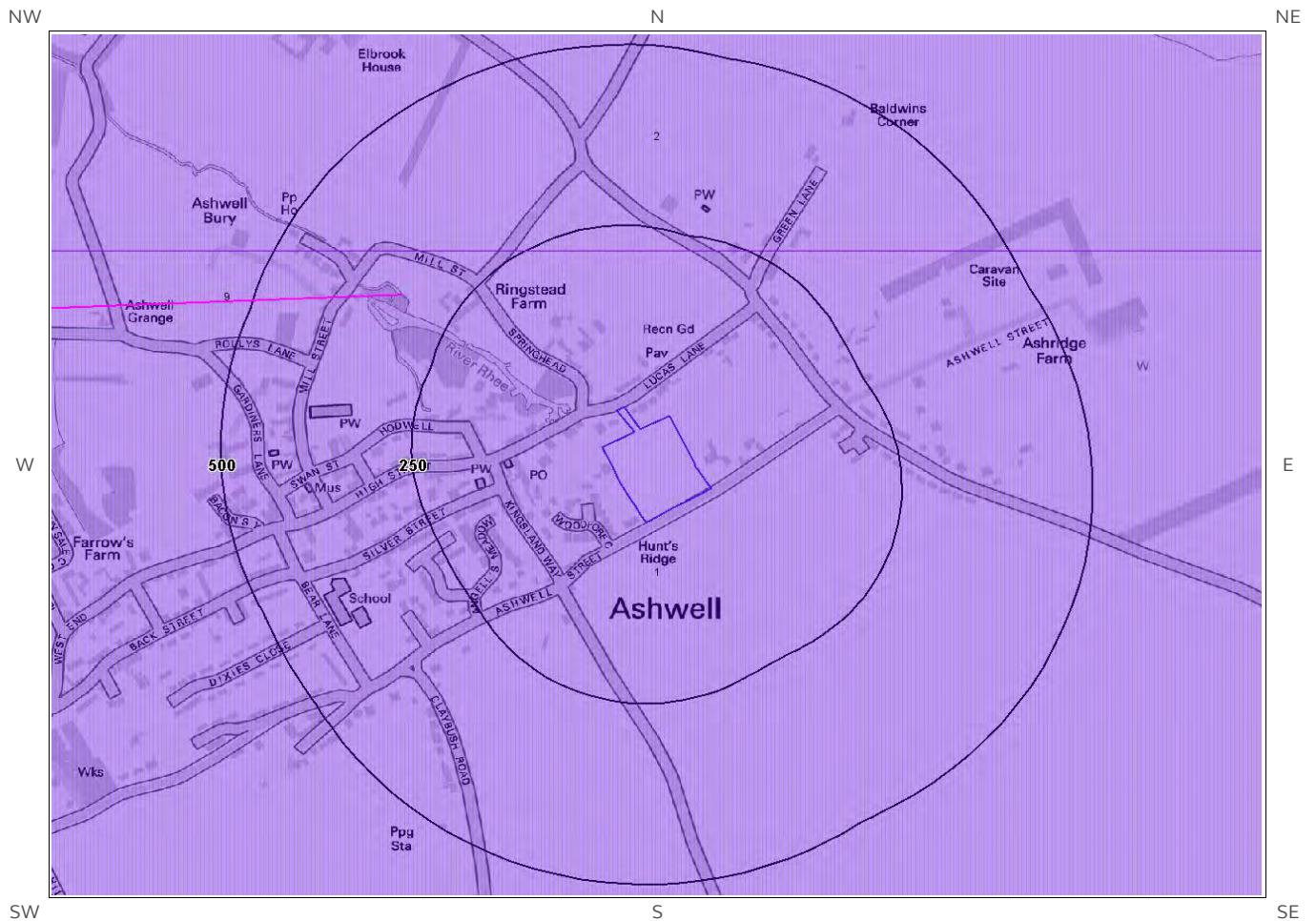
6a. Aquifer Within Superficial Geology



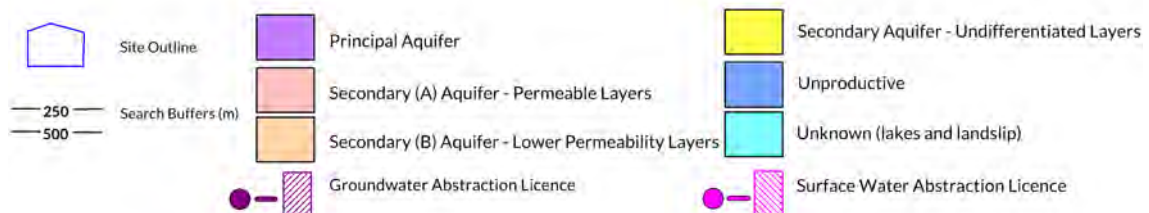
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6b. Aquifer Within Bedrock Geology and Abstraction Licences



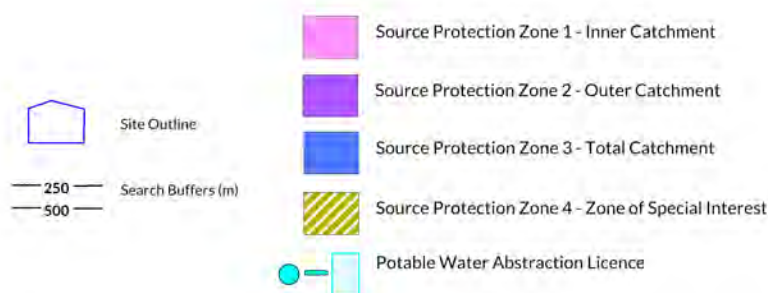
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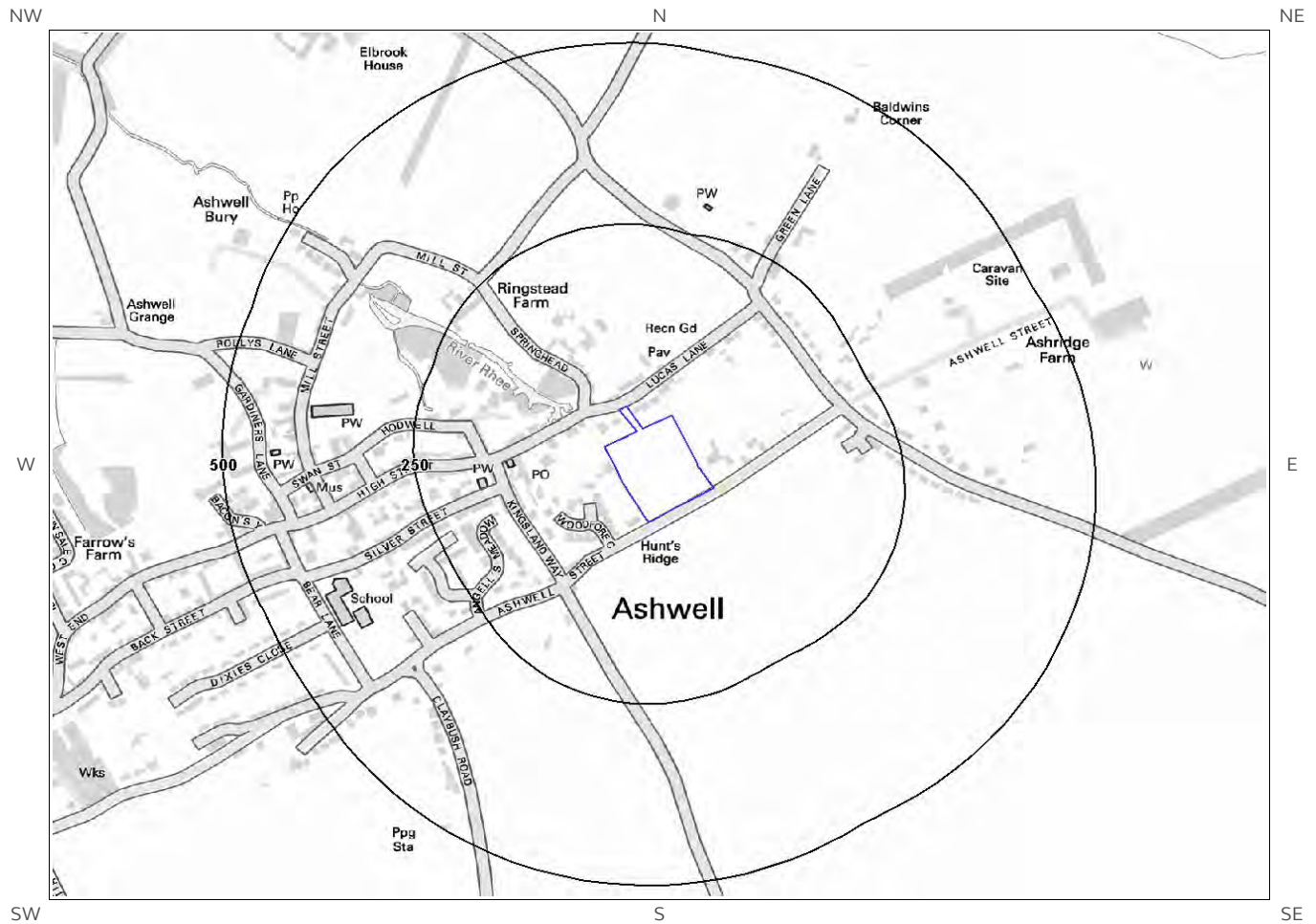
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



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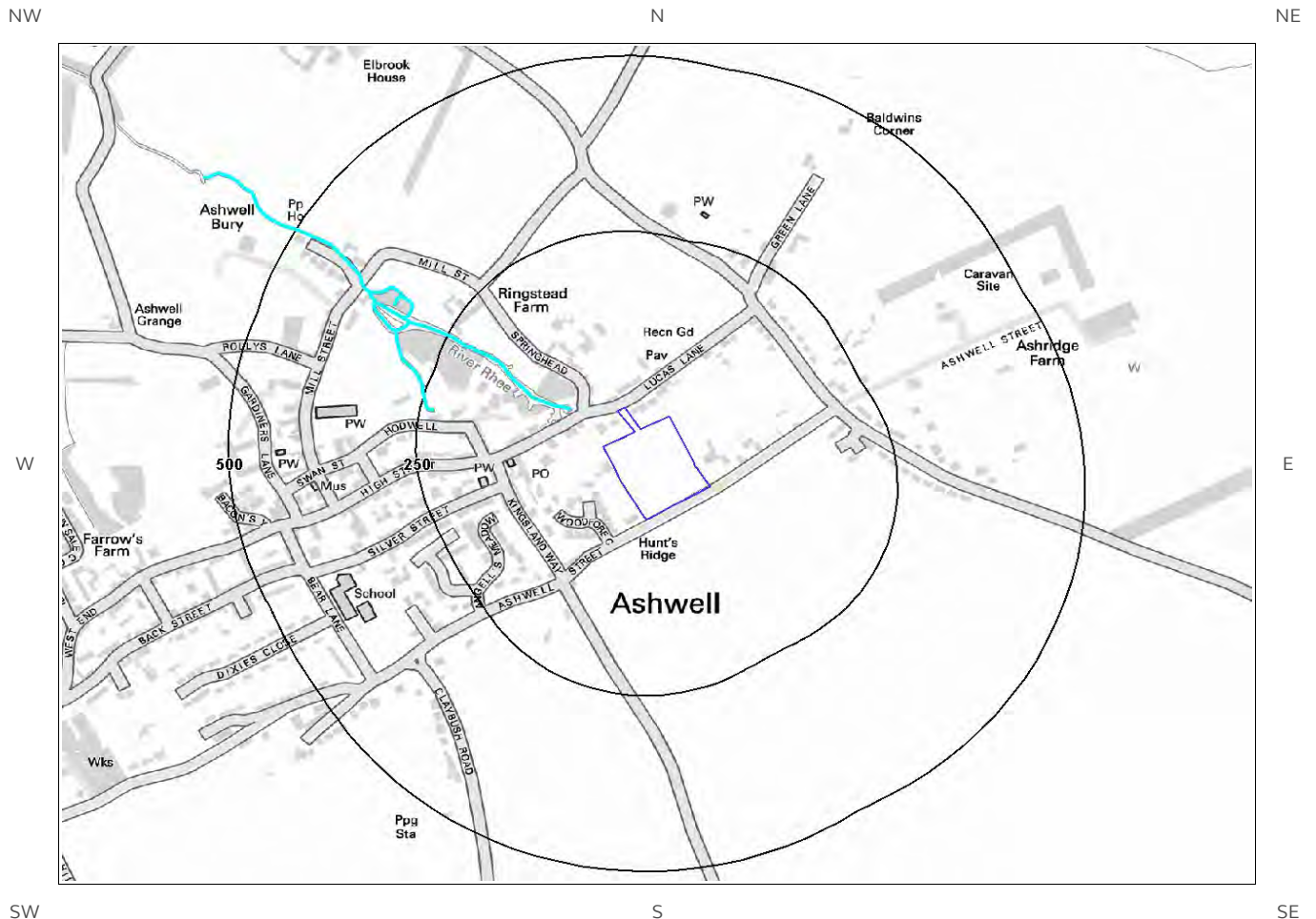
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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
1	306	NE	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	308	NE	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
3	370	NW	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
4	408	NW	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
7	465	SE	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

6.2 Aquifer within Bedrock Deposits

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	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	214	N	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

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	1454	SE	528420 238860	Status: Historical Licence No: 6/33/30/*G/0173/R02 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WORK NO 44 BOREHOLE AT ASHWELL - ABSTRACTION POINT 1 Data Type: Point Name: ENVIRONMENT AGENCY Annual Volume (m³): 6.86784e+006 Max Daily Volume (m³): 18816 Original Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
Not shown	1454	SE	528420 238860	Status: Historical Licence No: 6/33/30/*G/0173 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WORK NO.44,BORE AT ASHWELL Data Type: Point Name: ENVIRONMENT AGENCY Annual Volume (m³): 3e+006 Max Daily Volume (m³): 11000 Original Application No: - Original Start Date: 25/07/1977 Expiry Date: 31/03/2015 Issue No: 101 Version Start Date: 17/05/2007 Version End Date:
Not shown	1454	SE	528420 238860	Status: Active Licence No: 6/33/30/*G/0173/R02 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WORK NO 44 BOREHOLE AT ASHWELL - ABSTRACTION POINT 1 Data Type: Point Name: ENVIRONMENT AGENCY Annual Volume (m³): 6.86784e+006 Max Daily Volume (m³): 18816 Original Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 01/04/2018 Version End Date:
Not shown	1454	SE	528420 238860	Status: Historical Licence No: 6/33/30/*G/0173/R01 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WORK NO.44,BORE AT ASHWELL Data Type: Point Name: ENVIRONMENT AGENCY Annual Volume (m³): 6.86784e+006 Max Daily Volume (m³): 18816 Original Application No: - Original Start Date: 13/07/2015 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 13/07/2015 Version End Date:
Not shown	1654	NW	525600 240500	Status: Historical Licence No: 6/33/30/*G/0013 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL NW OF ASHWELL Data Type: Point Name: M G SHEPPARD (BLUEGATES FARMS) Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1968 Version End Date:
Not shown	1930	E	529030 239020	Status: Historical Licence No: 6/33/30/*G/0173 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WORK NO.33;BORE GULDEN MORDEN Data Type: Point Name: ENVIRONMENT AGENCY Annual Volume (m³): 3e+006 Max Daily Volume (m³): 11000 Original Application No: - Original Start Date: 25/07/1977 Expiry Date: 31/03/2015 Issue No: 101 Version Start Date: 17/05/2007 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

Identified

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
9	322	NW	526070 239910	Status: Active Licence No: 6/33/30/*S/0014 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WATERCOURSES NW OF ASHWELL Data Type: Line Name: BLUEGATES FARMS Annual Volume (m³): 45460 Max Daily Volume (m³): 818.3 Application No: - Original Start Date: 01/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 04/10/2003 Version End Date:
Not shown	606	N	527370 240340	Status: Active Licence No: 6/33/30/*S/0014 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: WATERCOURSE N OF ASHWELL Data Type: Line Name: BLUEGATES FARMS Annual Volume (m³): 45460 Max Daily Volume (m³): 818.3 Application No: - Original Start Date: 01/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 04/10/2003 Version End Date:
Not shown	1333	NW	525920 240420	Status: Active Licence No: 6/33/30/*S/0014 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: RIVER RHEE NW OF ASHWELL Data Type: Line Name: BLUEGATES FARMS Annual Volume (m³): 45460 Max Daily Volume (m³): 818.3 Application No: - Original Start Date: 01/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 04/10/2003 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

Identified

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
1	0	On Site	3	Total catchment
2	214	N	3	Total catchment

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

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

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

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
214	N	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site

None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	61 W	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.8
5	61 W	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.8
2	232 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
6	232 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
3	304 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.2
4	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.0

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
7	304 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.2
8	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.0
5	309 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	309 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	311 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
10	311 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
7	312 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.6
11	312 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.6
8	316 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.8
12	316 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.8
9	331 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
10	331 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
13	331	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
14	331 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
11	357 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
15	357 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
12	372 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
16	372 NW	River Rhee	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3

6.11 Surface Water Features

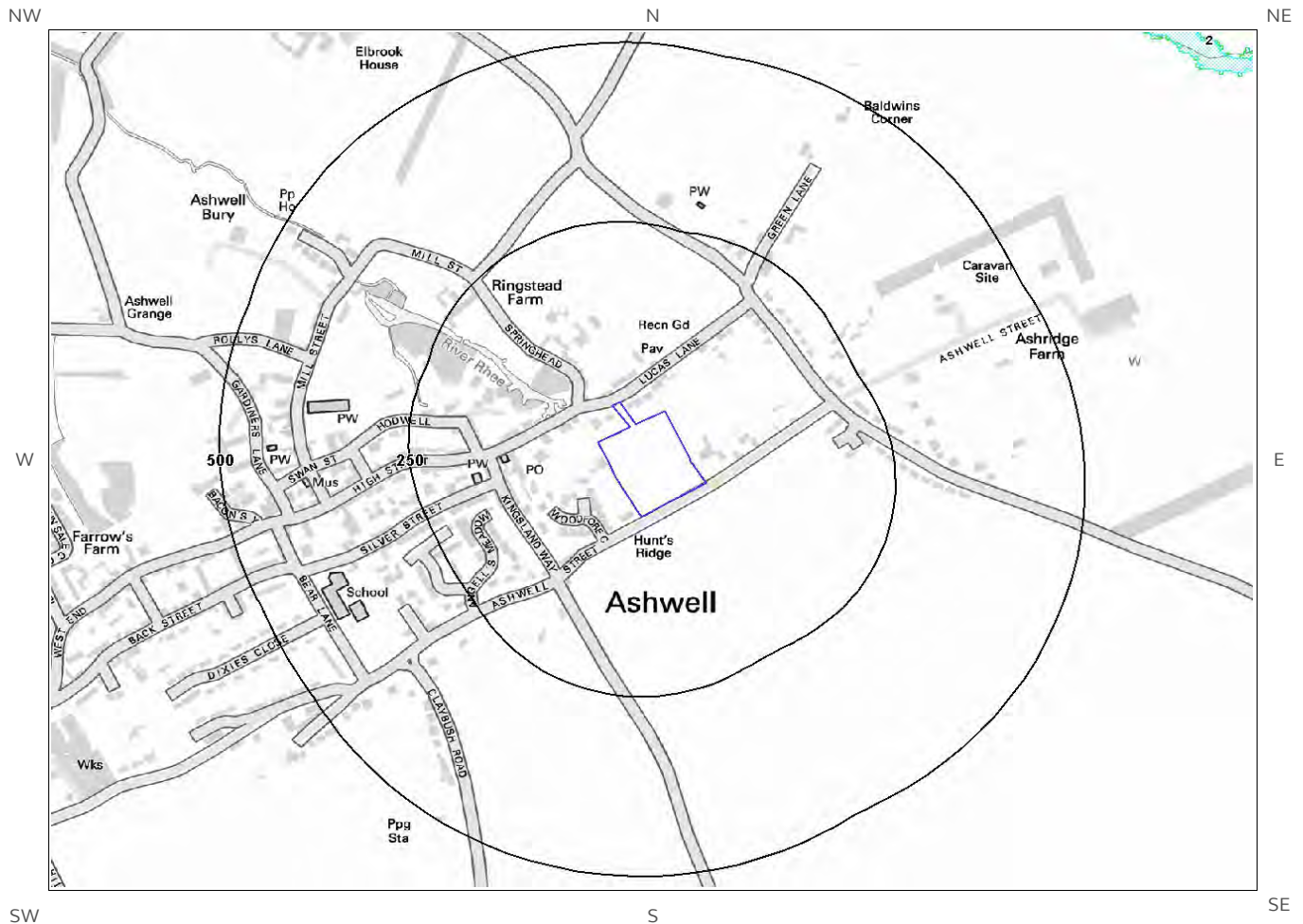
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
61	W
219	NW

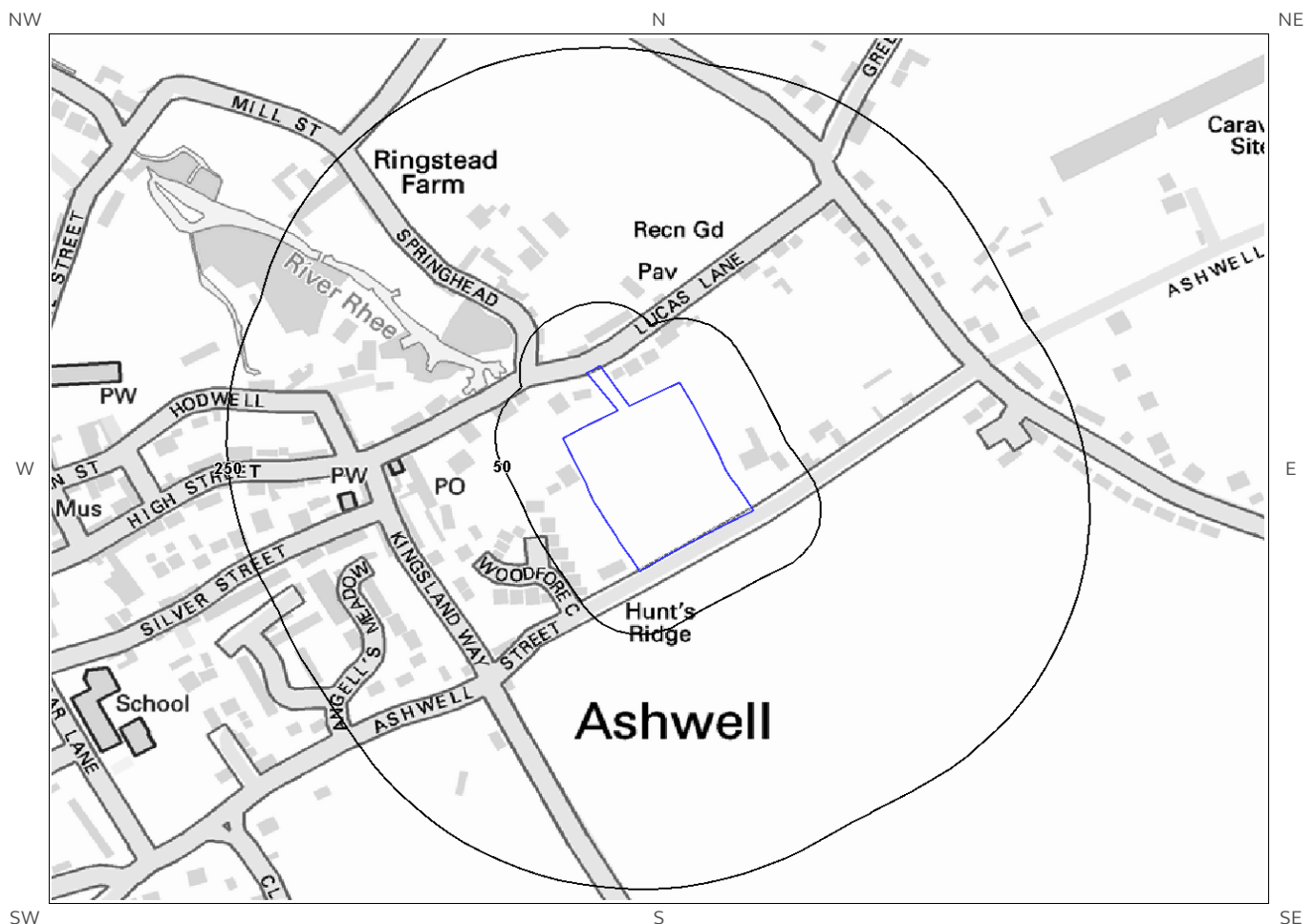
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



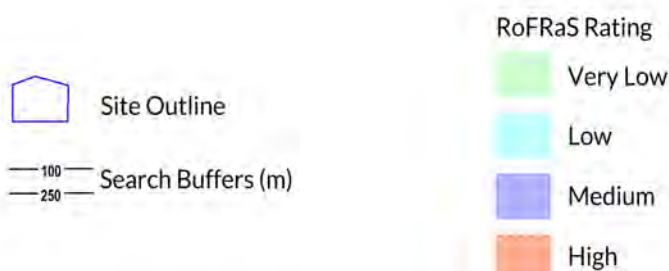
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m None identified

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

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m None identified

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

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

Flood Defences within 250m of the study site None identified
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

Clearwater 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 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

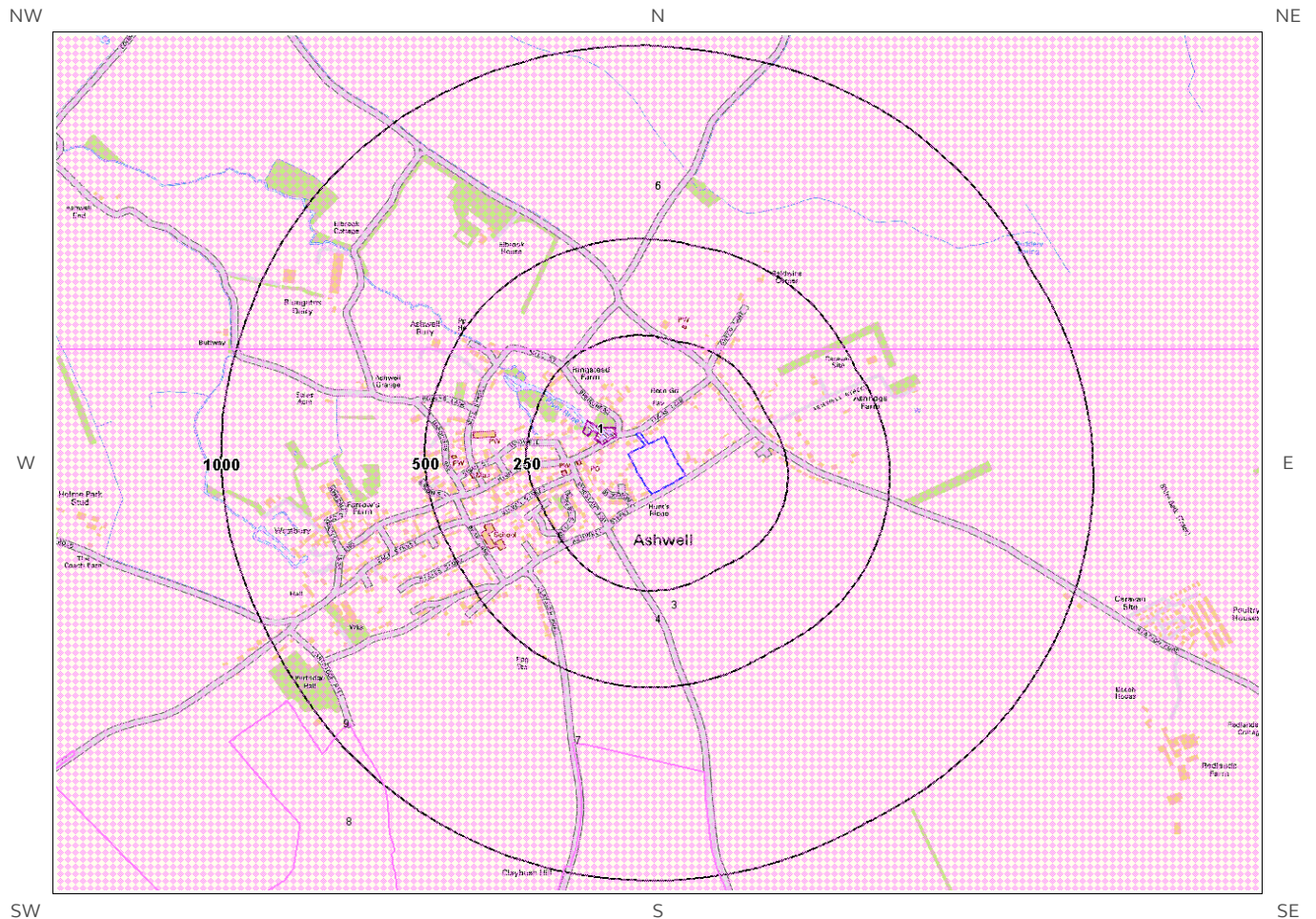
British Geological Survey confidence rating in this result

High

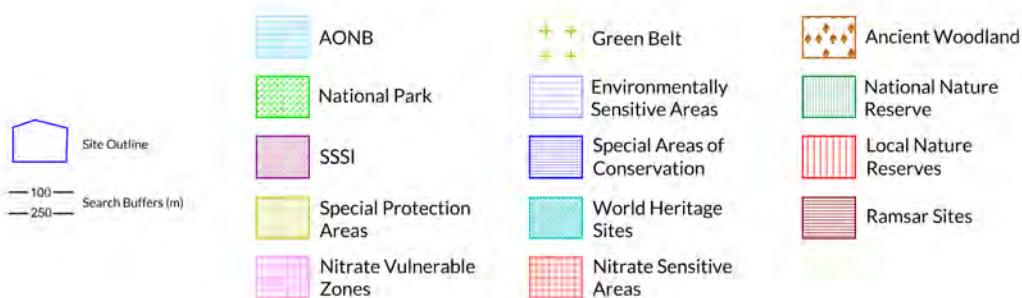
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

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

1

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	47	W	Ashwell Springs	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:

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

1

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

ID	Distance (m)	Direction	NSA Name	Data Source
Not shown	1717	SE	Slip End	Natural England

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

9

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
3	0	On Site	Existing	DEFRA
4	0	On Site	Existing	DEFRA
5	214	N	Existing	DEFRA
6	214	N	Existing	DEFRA
7	668	S	Existing	DEFRA
8	668	S	Existing	DEFRA
9	958	SW	Existing	DEFRA
Not shown	1288	SW	Existing	DEFRA
Not shown	1461	SW	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

Maximum Shrink-Swell** 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
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* 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 slope instability identified. No special actions required to avoid problems due to landslides. No special ground investigation required and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

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

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

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

Maximum Running Sand** 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 running sand identified. 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.

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

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 site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

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

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
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

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: North Hertfordshire District Council
Phone: 01462 474000
Web: <http://www.north-herts.gov.uk/>
Address: Council Offices, Gernon Road, Letchworth Garden Ci,

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.

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<https://www.groundsure.com/terms-and-conditions-may25-2018>

Address: LAND NORTH OF ASHWELL STREET, ASHWELL, SG7 5LN

Date: 28 Jan 2019

Reference: GS-5781804

Client: Geo-Environmental Services Ltd



Aerial Photograph Capture date: 21-Jun-2017

Grid Reference: 527144,239697

Site Size: 1.18ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the 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: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

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

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

No

Section 3: Radon

3. Radon

3.1 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.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

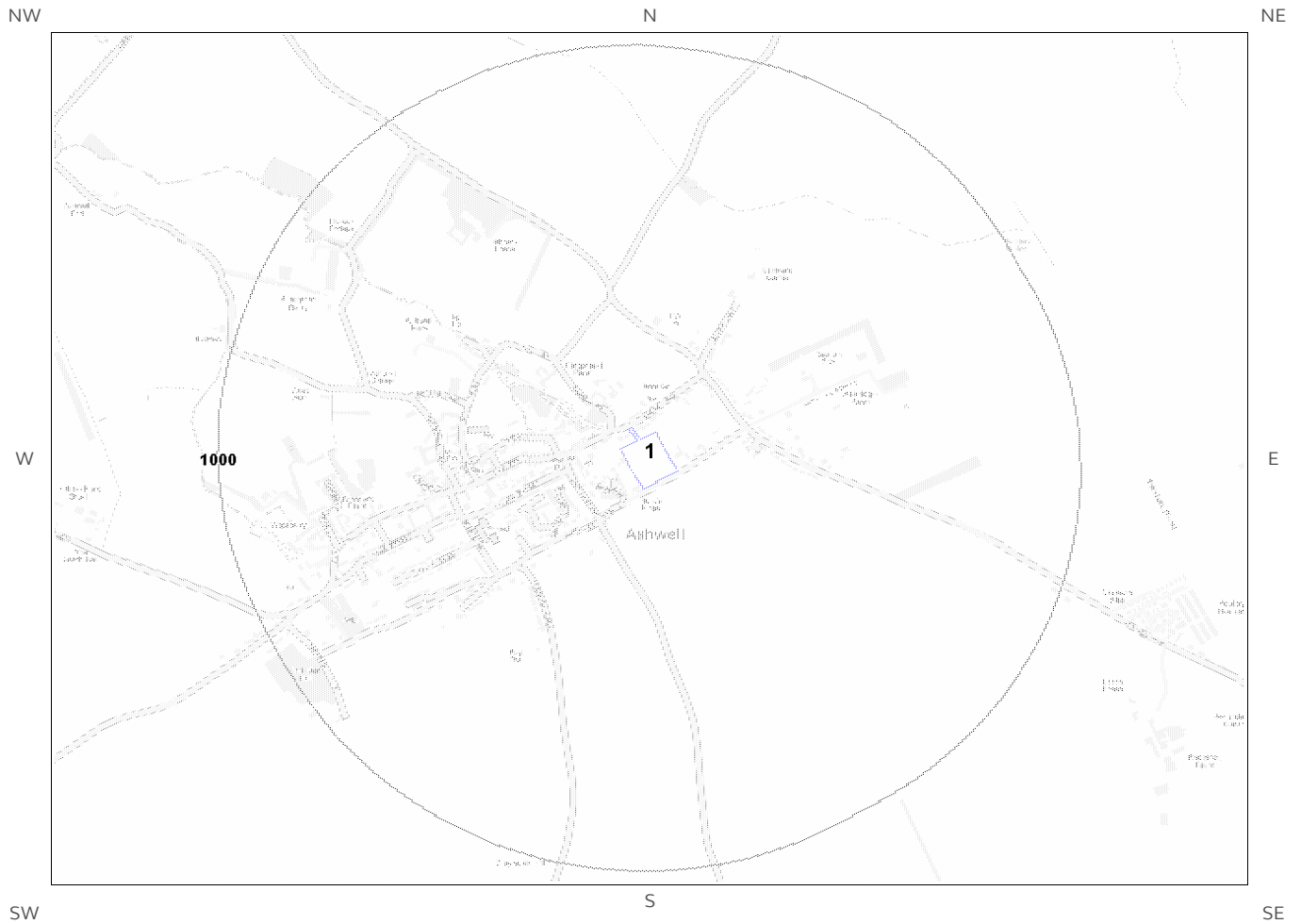
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	20	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	4	5	2

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	1	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

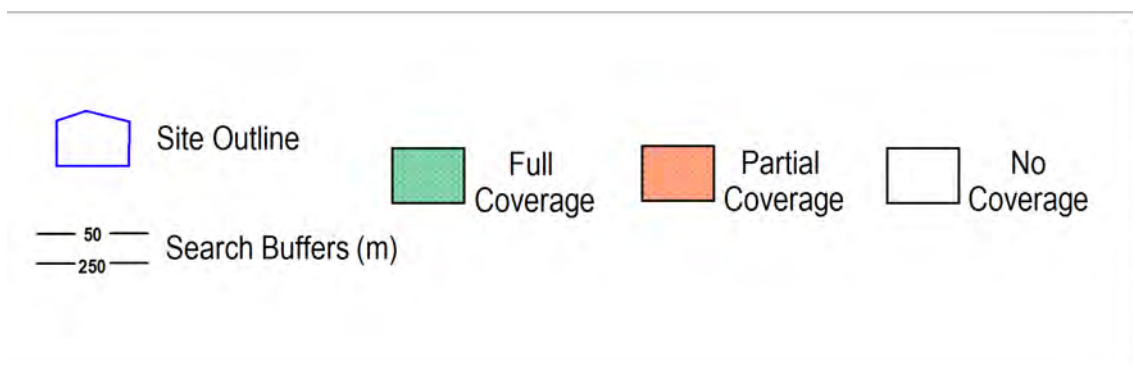
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Negligible				
6.2 Landslides	Negligible				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Negligible				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	1		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	2	2	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1. Geology 1:10,000 scale

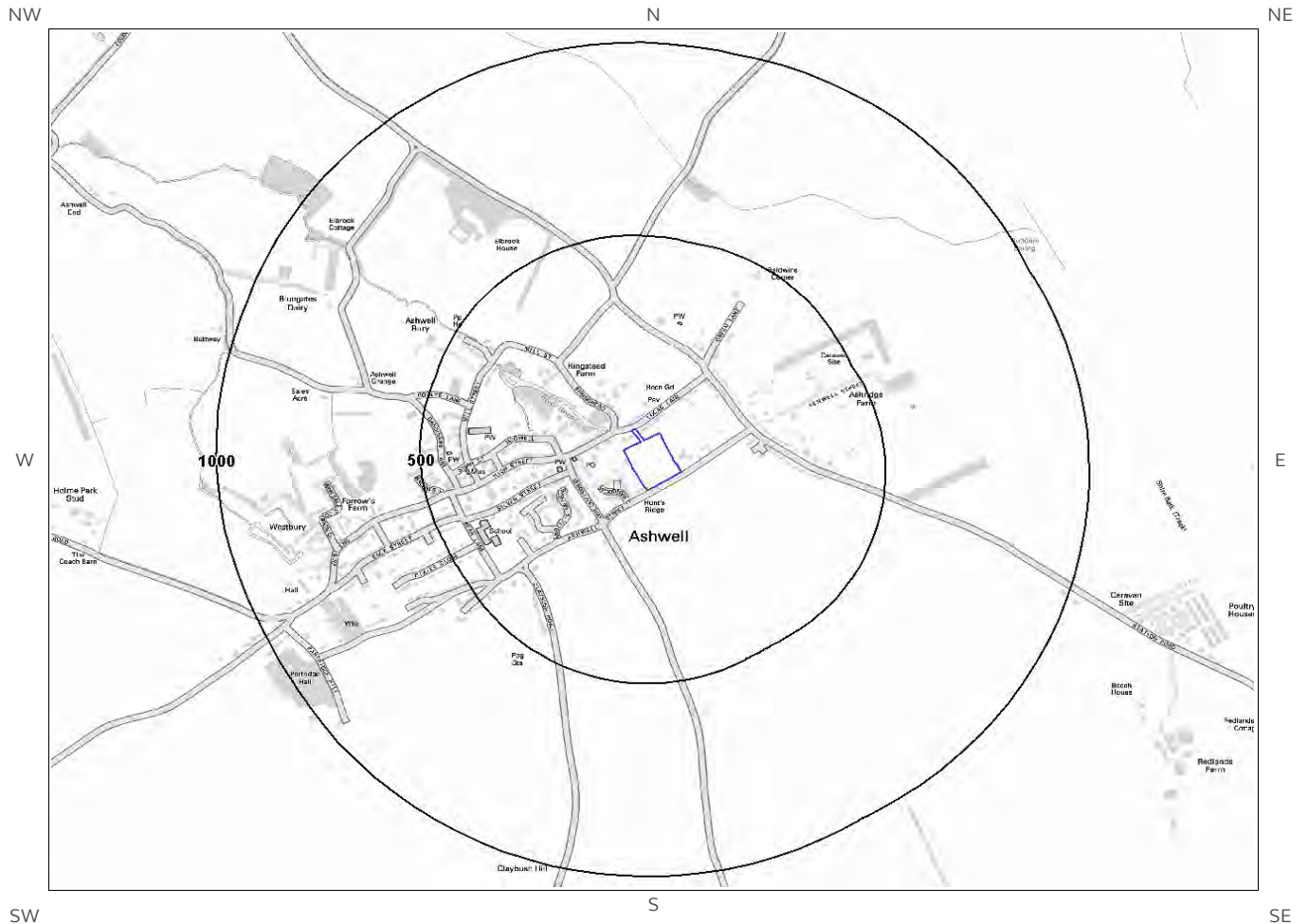
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

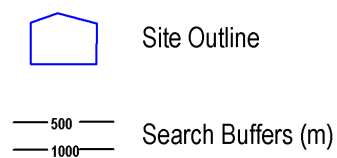
Database searched and no data found.

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

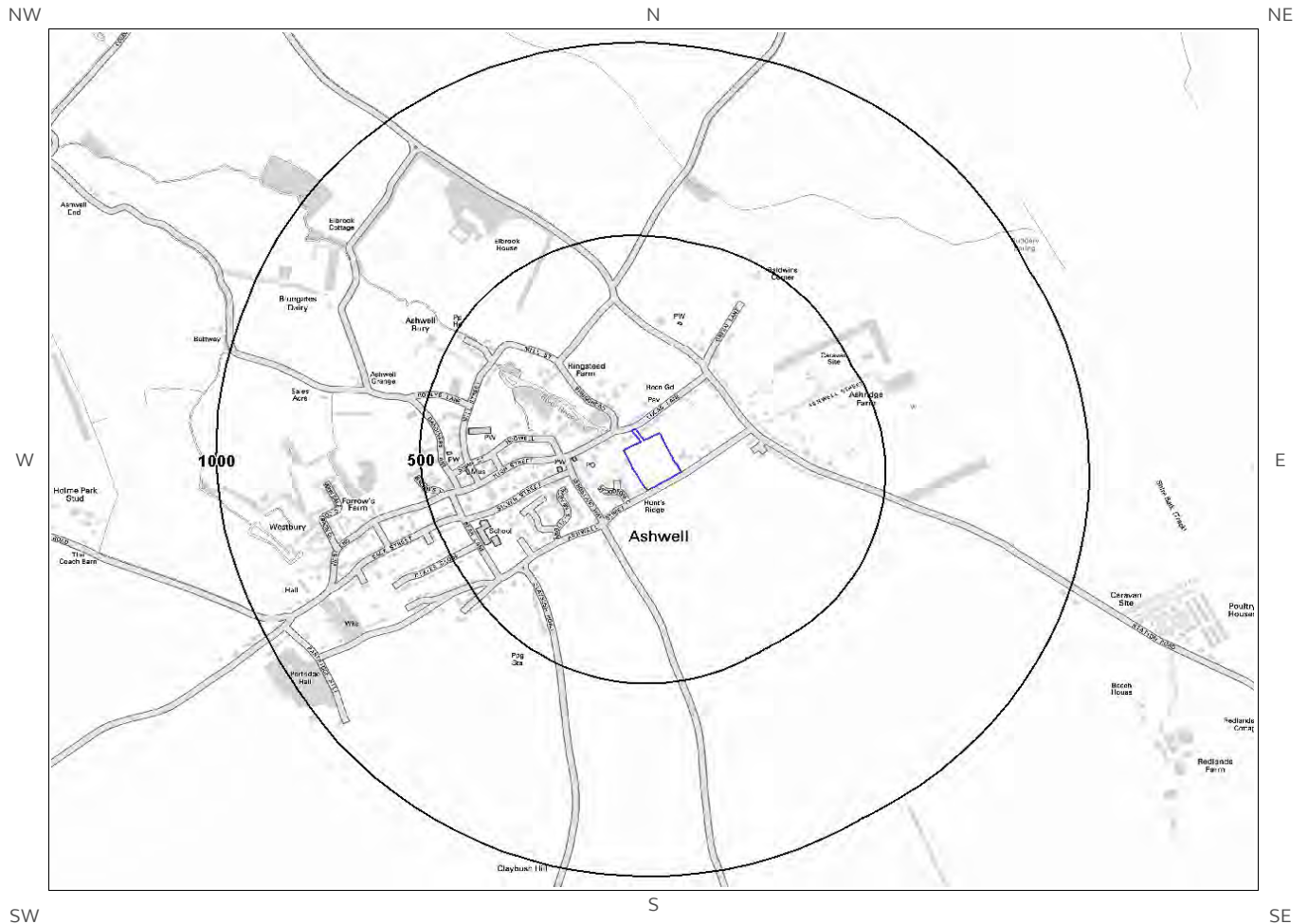
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

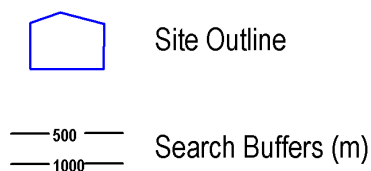
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

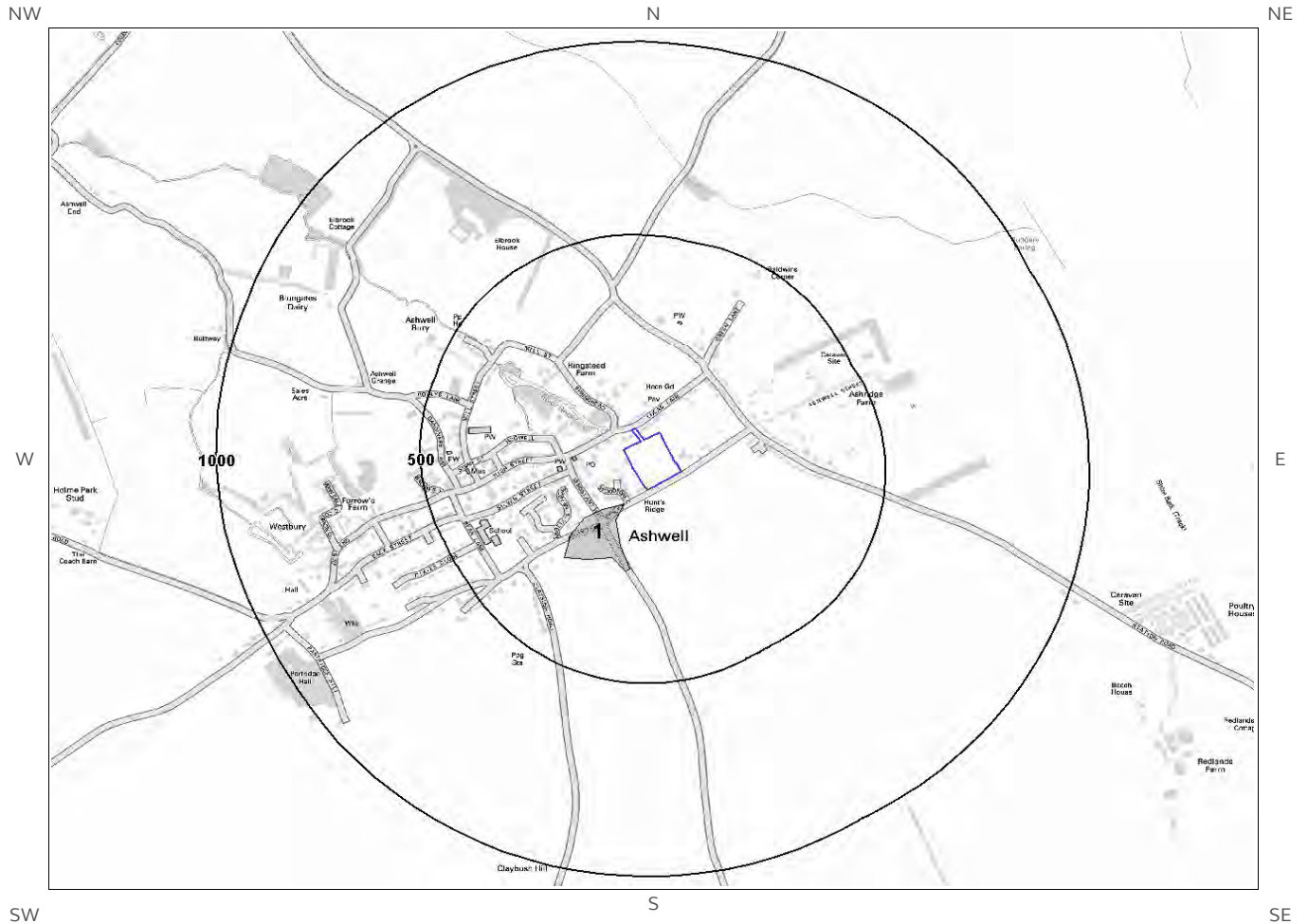
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

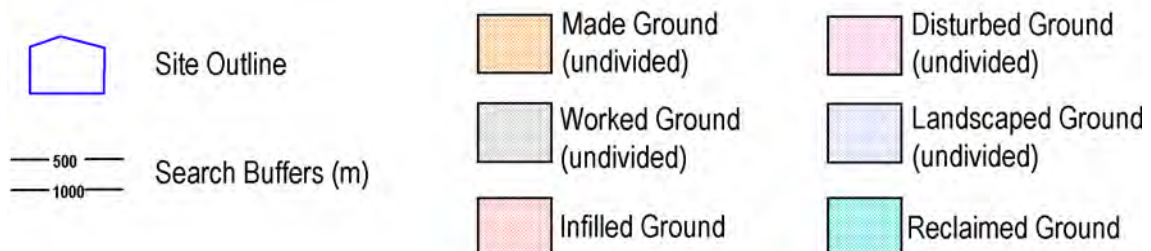
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 204

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

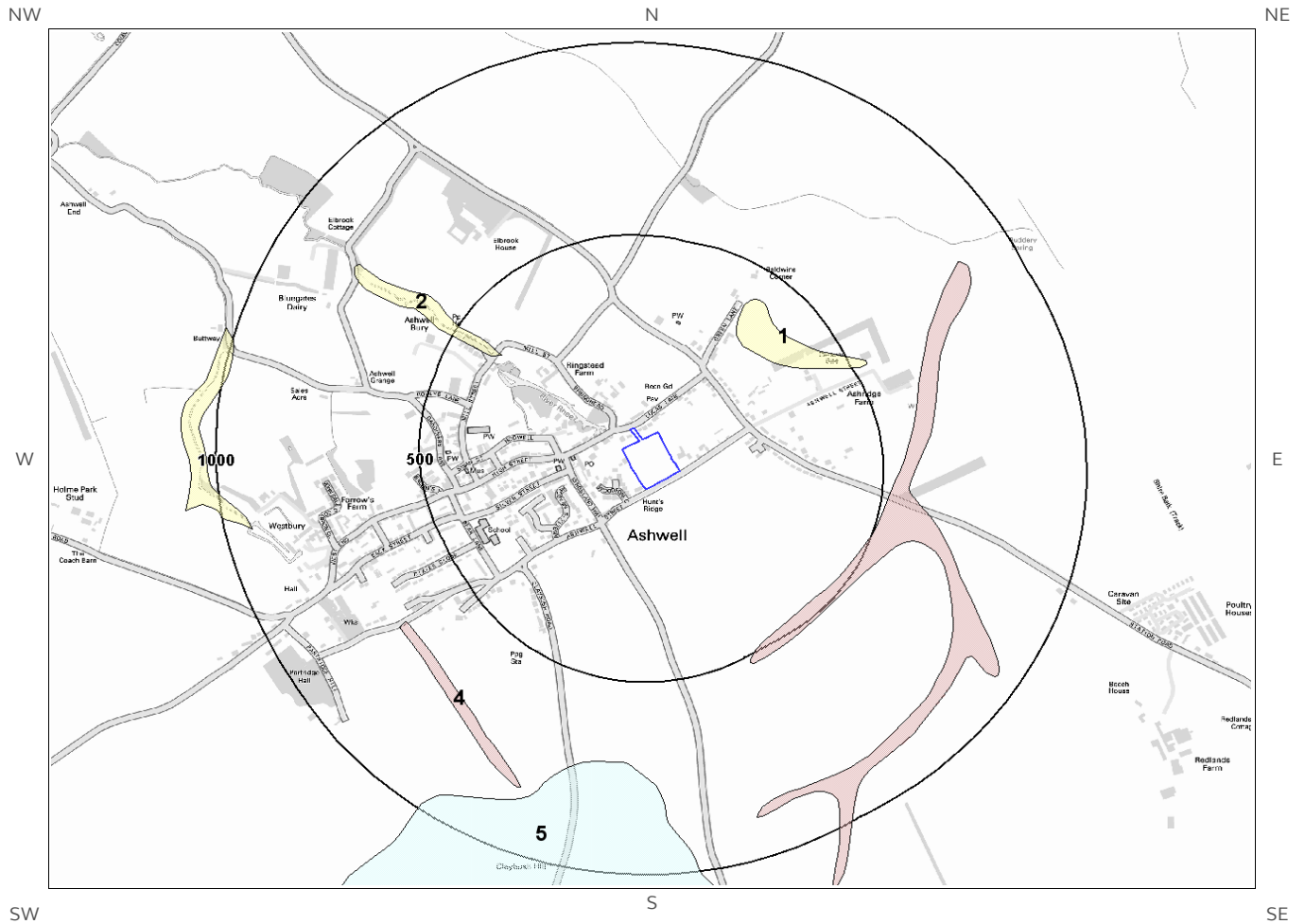
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	67.0	SW	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

2.1.2 Permeability of Artificial Ground

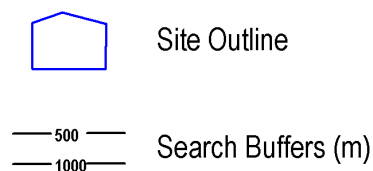
Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	306.0	NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	370.0	NW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	465.0	SE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? No

Database searched and no data found.

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

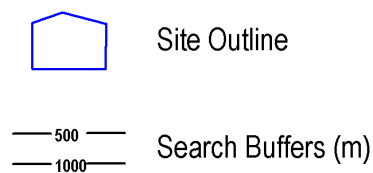
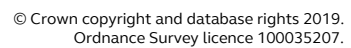
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.



2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 204

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	MR-CHLK	MELBOURN ROCK MEMBER - CHALK	CENOMANIAN
2	0.0	On Site	ZZCH-CHLK	ZIG ZAG CHALK FORMATION - CHALK	CENOMANIAN
3	23.0	W	TTST-CHLK	TOTTERNHOE STONE MEMBER - CHALK	CENOMANIAN
4	29.0	S	HCK-CHLK	HOLYWELL NODULAR CHALK FORMATION - CHALK	CENOMANIAN
5	59.0	W	WMCH-CHLK	WEST MELBURY MARLY CHALK FORMATION - CHALK	CENOMANIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Very High	Very High
0.0	On Site	Fracture	Very High	Very High
23.0	W	Fracture	Very High	Very High
29.0	S	Fracture	Very High	Very High

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

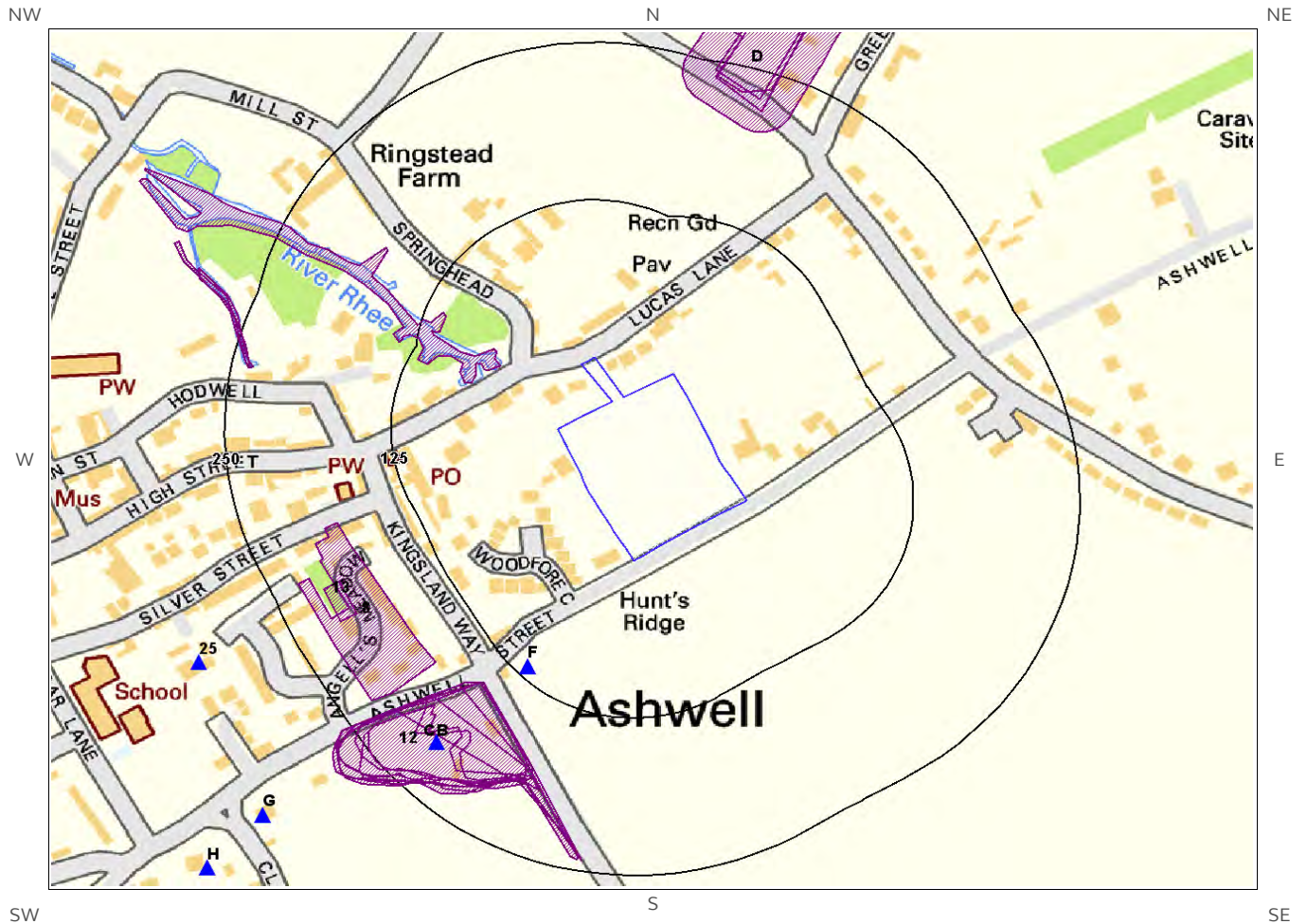
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

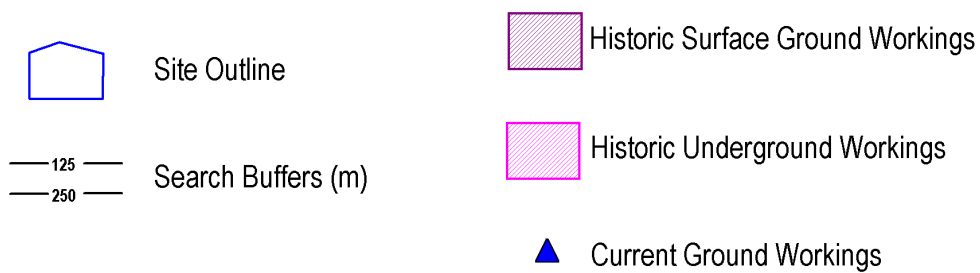
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	61.0	W	526924 239850	Water Body	1903
2A	61.0	W	526924 239850	Water Body	1886
3B	149.0	SW	526979 239486	Unspecified Pit	1951
4B	151.0	SW	526980 239484	Old Chalk Pit	1948
5B	151.0	SW	526986 239483	Unspecified Quarry	1982
6C	164.0	SW	526970 239485	Old Chalk Pit	1947
7C	164.0	SW	526970 239485	Old Chalk Pit	1921
8	169.0	SW	526928 239584	Burial Ground	1886
9C	179.0	SW	526997 239451	Chalk Pit	1903
10C	184.0	SW	526994 239476	Unspecified Ground Workings	1877
11C	187.0	SW	526924 239480	Unspecified Ground Workings	1886
12	196.0	SW	526970 239477	Chalk Pit	1897
13	199.0	SW	526908 239592	Burial Ground	1877
14D	201.0	N	527230 240038	Cemetery	1947
15D	219.0	N	527228 240032	Cemetery	1921
16D	228.0	N	527229 240040	Cemetery	1948
17D	230.0	N	527230 240040	Cemetery	1977
18D	230.0	N	527230 240040	Cemetery	1953
19E	234.0	W	526829 239817	Pond	1903
20E	237.0	W	526823 239828	Ponds	1886

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

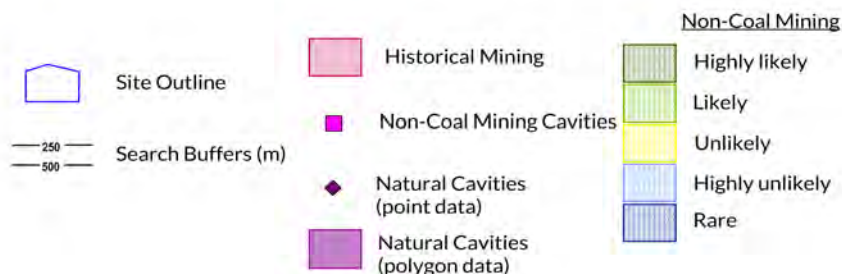
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
21F	116.0	SW	527049 239540	Chalk	Ashwell Street Chalk Workings	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
22F	116.0	SW	527049 239540	Chalk	Ashwell Street Chalk Workings	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
23C	207.0	SW	526980 239480	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
24C	207.0	SW	526980 239480	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
25	323.0	SW	526802 239543	Chalk	Silver Street Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
26G	345.0	SW	526850 239422	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
27G	345.0	SW	526850 239422	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
28H	403.0	SW	526808 239380	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
29H	403.0	SW	526808 239380	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	594.0	SW	526625 239310	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	594.0	SW	526625 239310	Chalk	Ashwell Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
2	214.0	N	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

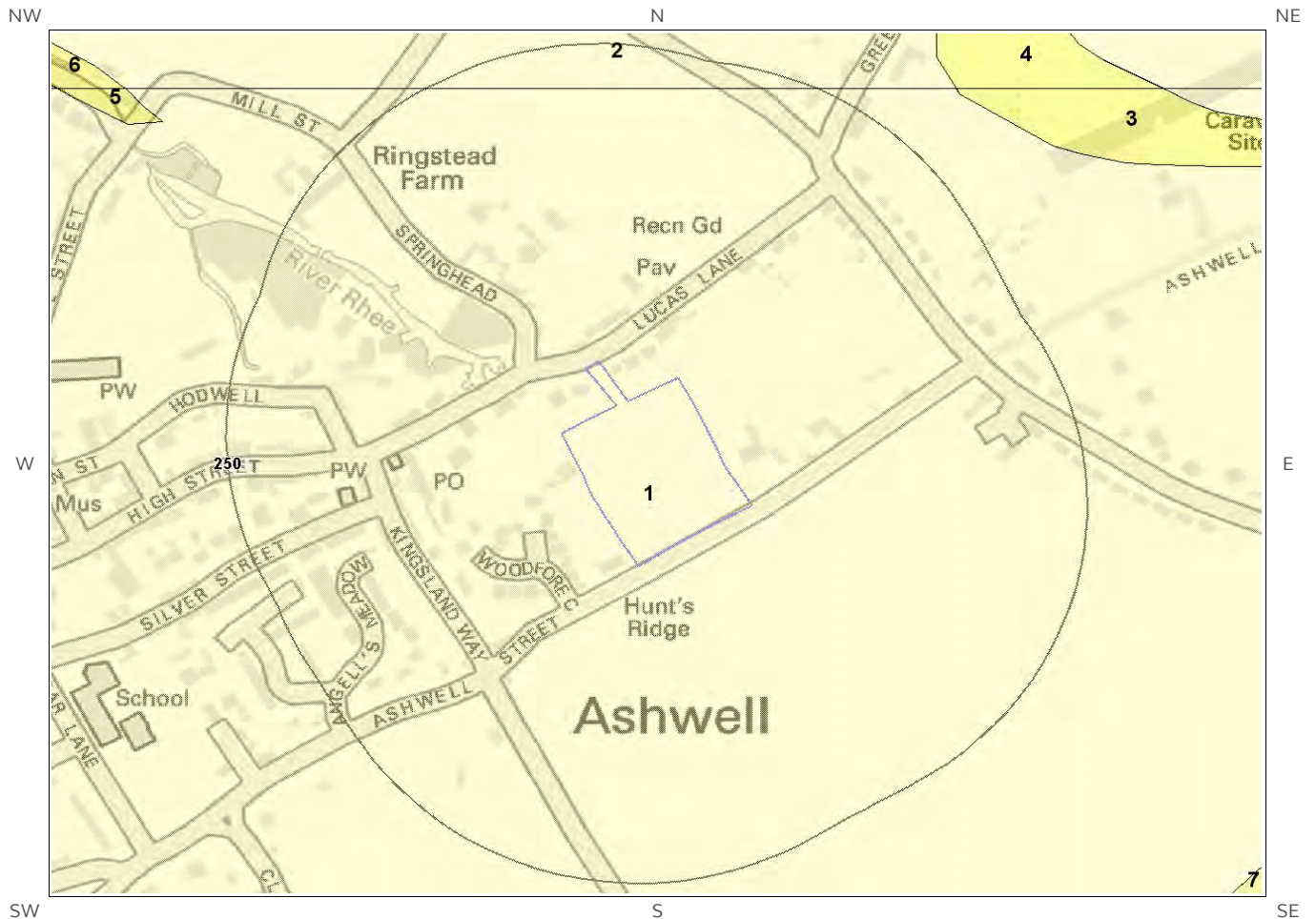
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

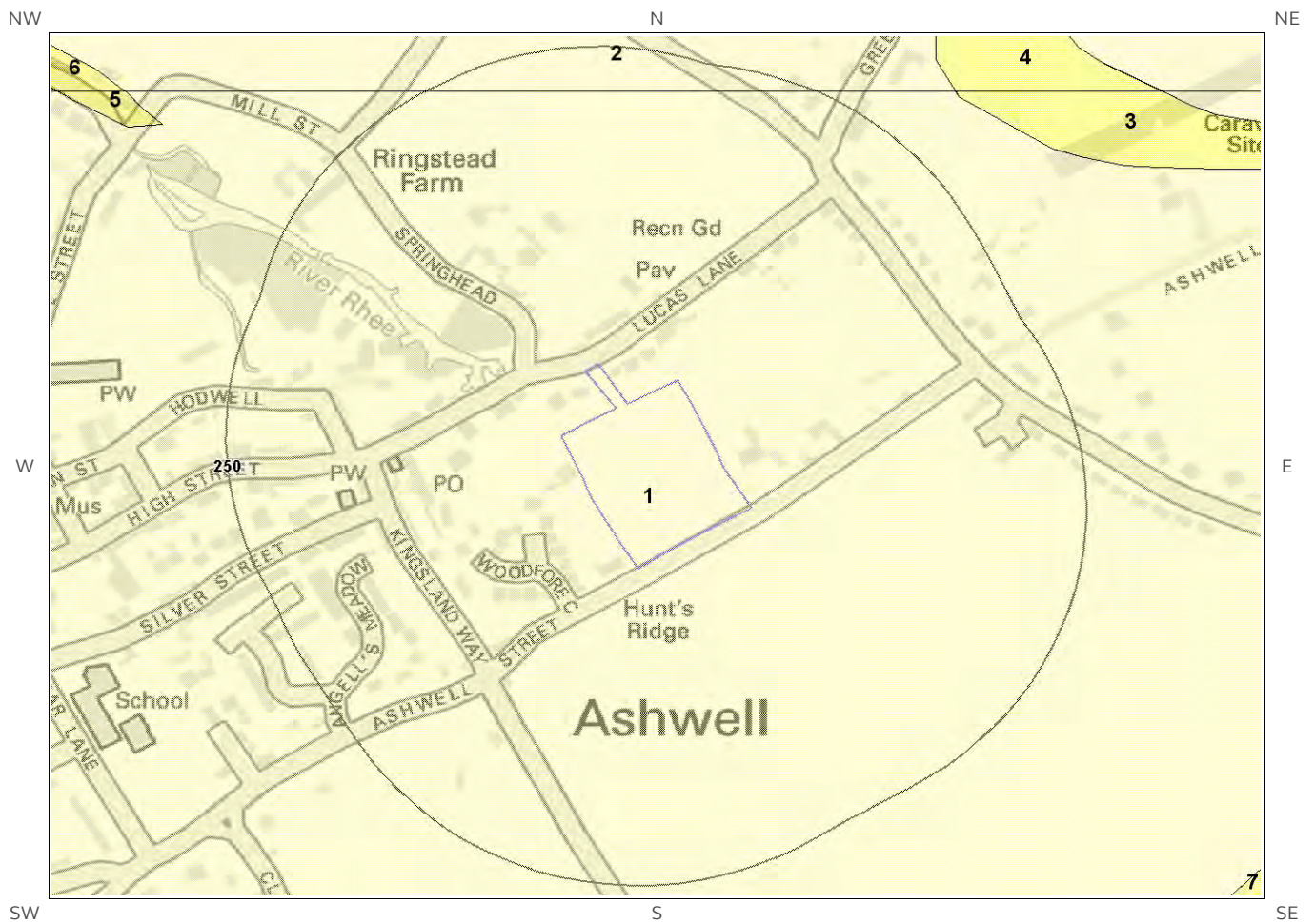


Shrink Swell Clay Legend

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6.2 Landslides map

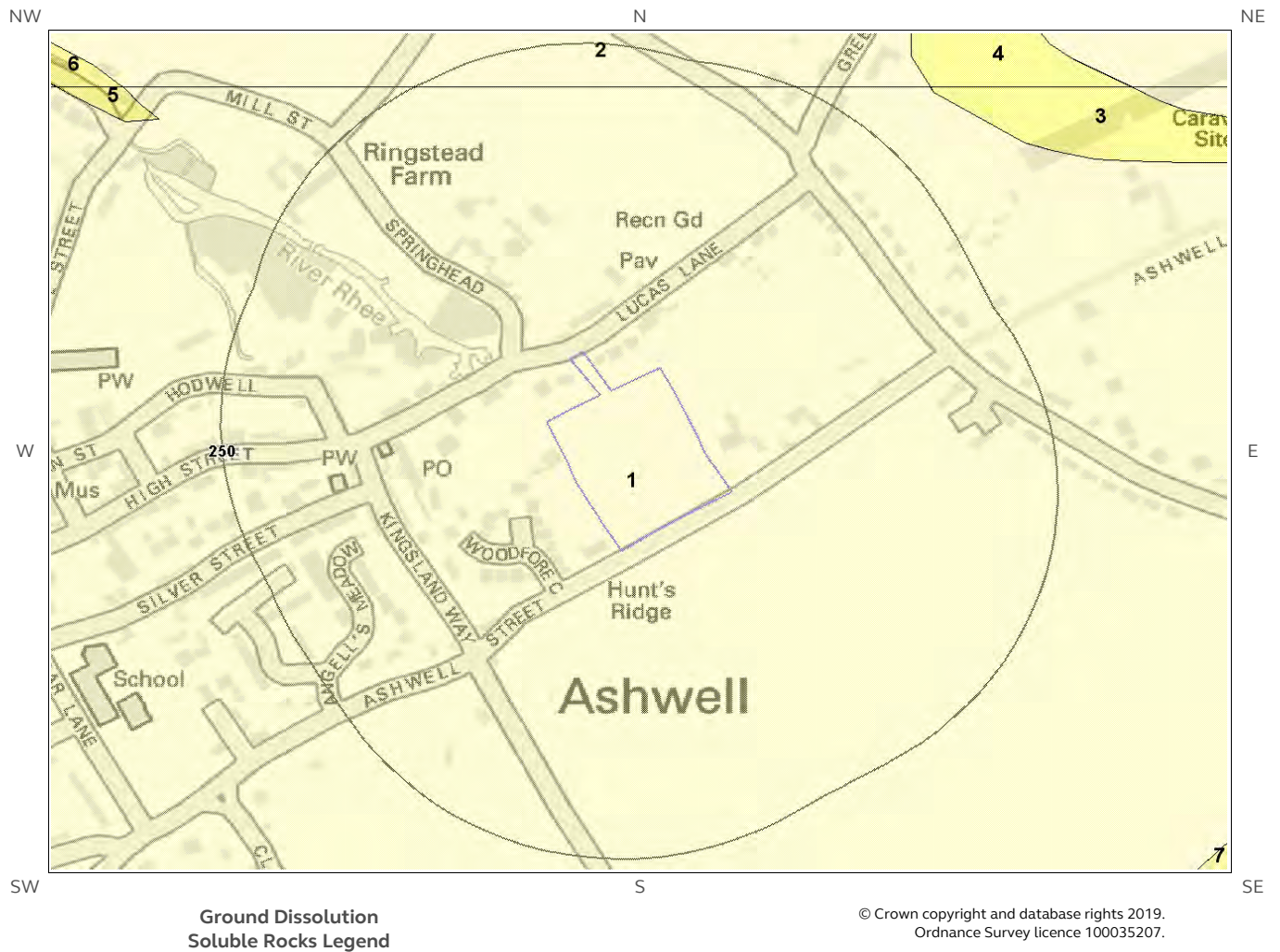


Landslides Legend

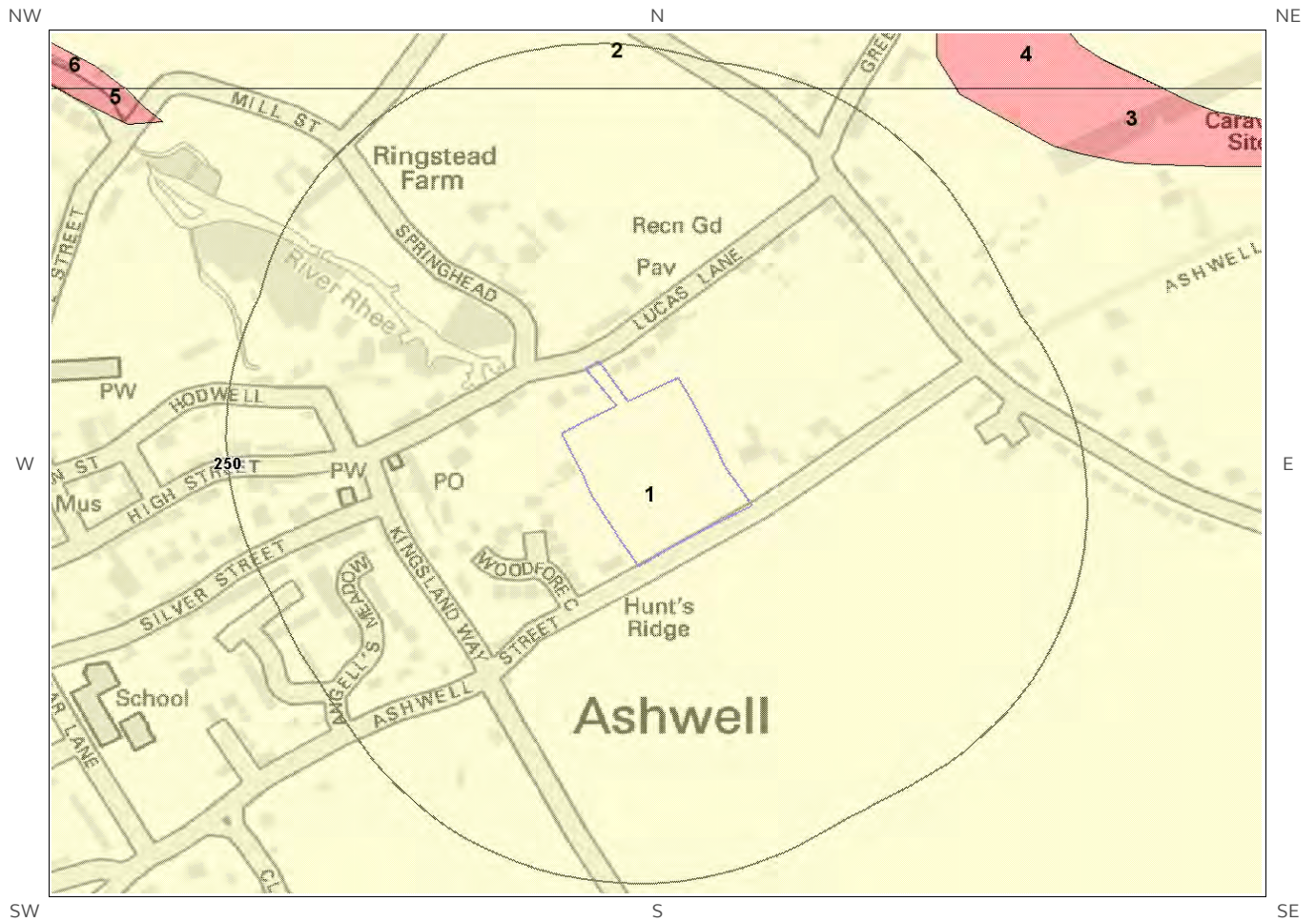
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6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map

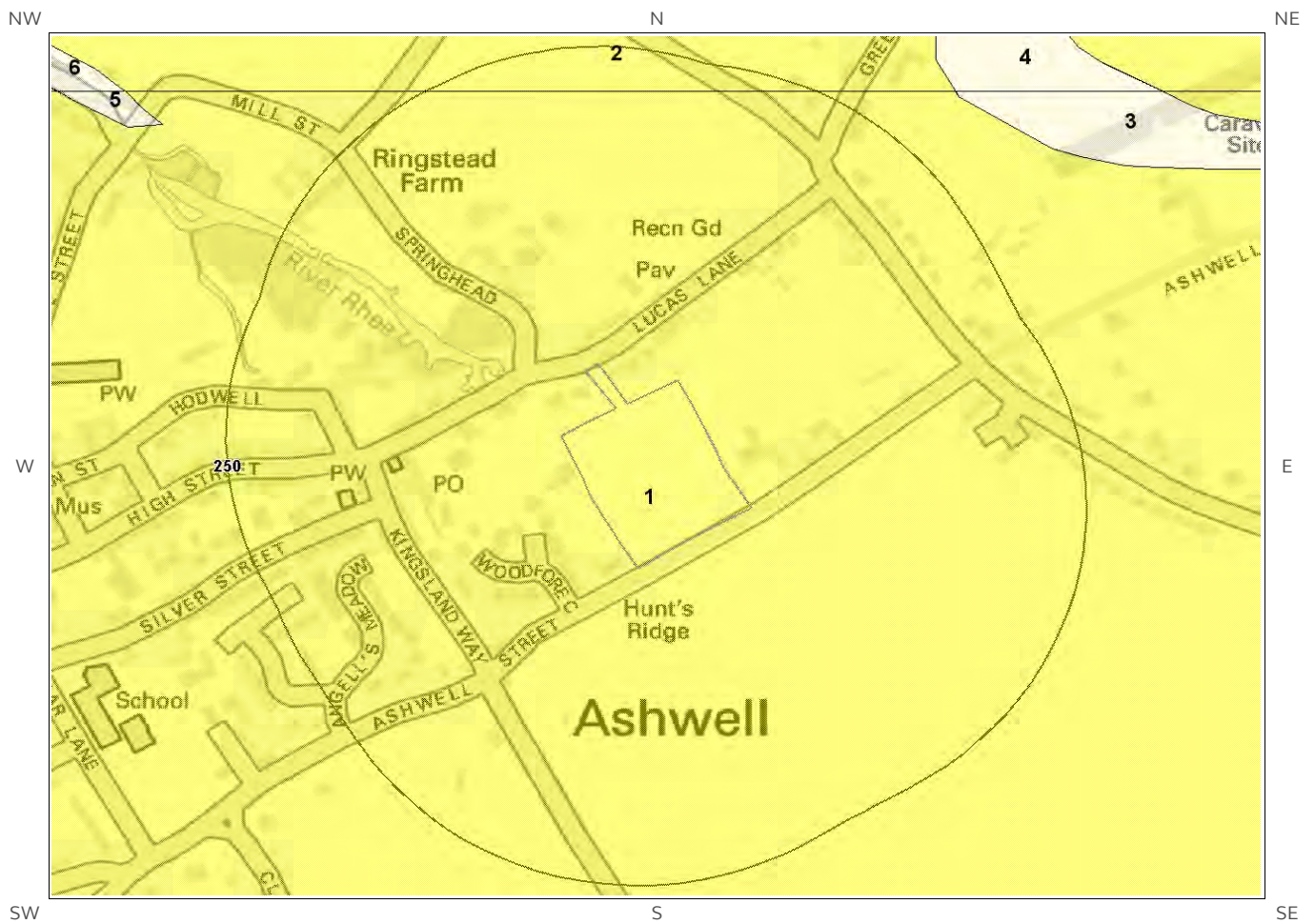


Compressible Deposits Legend

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6.5 Collapsible Deposits map

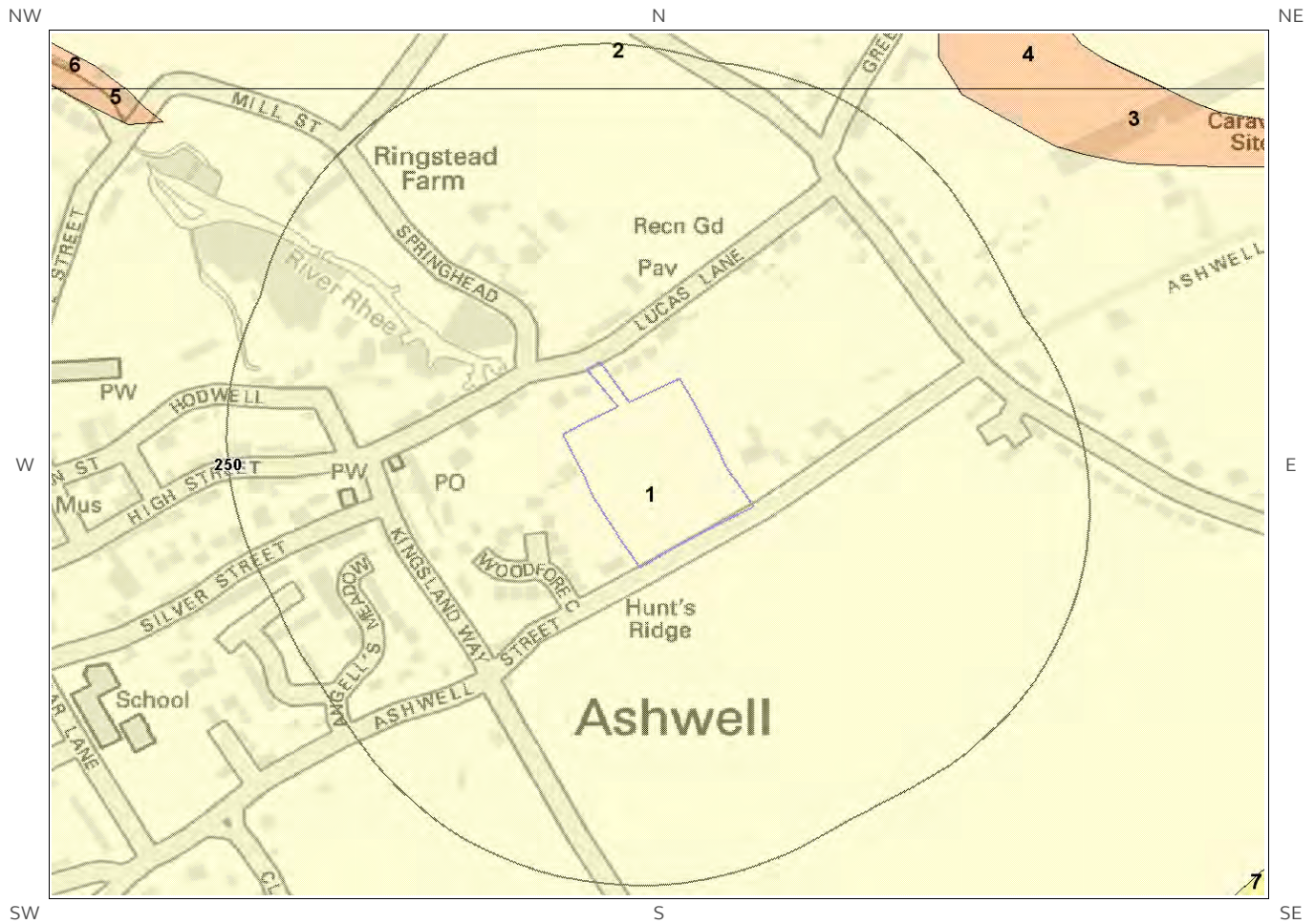


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for slope instability identified. No special actions required to avoid problems due to landslides. No special ground investigation required and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	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 includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	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.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

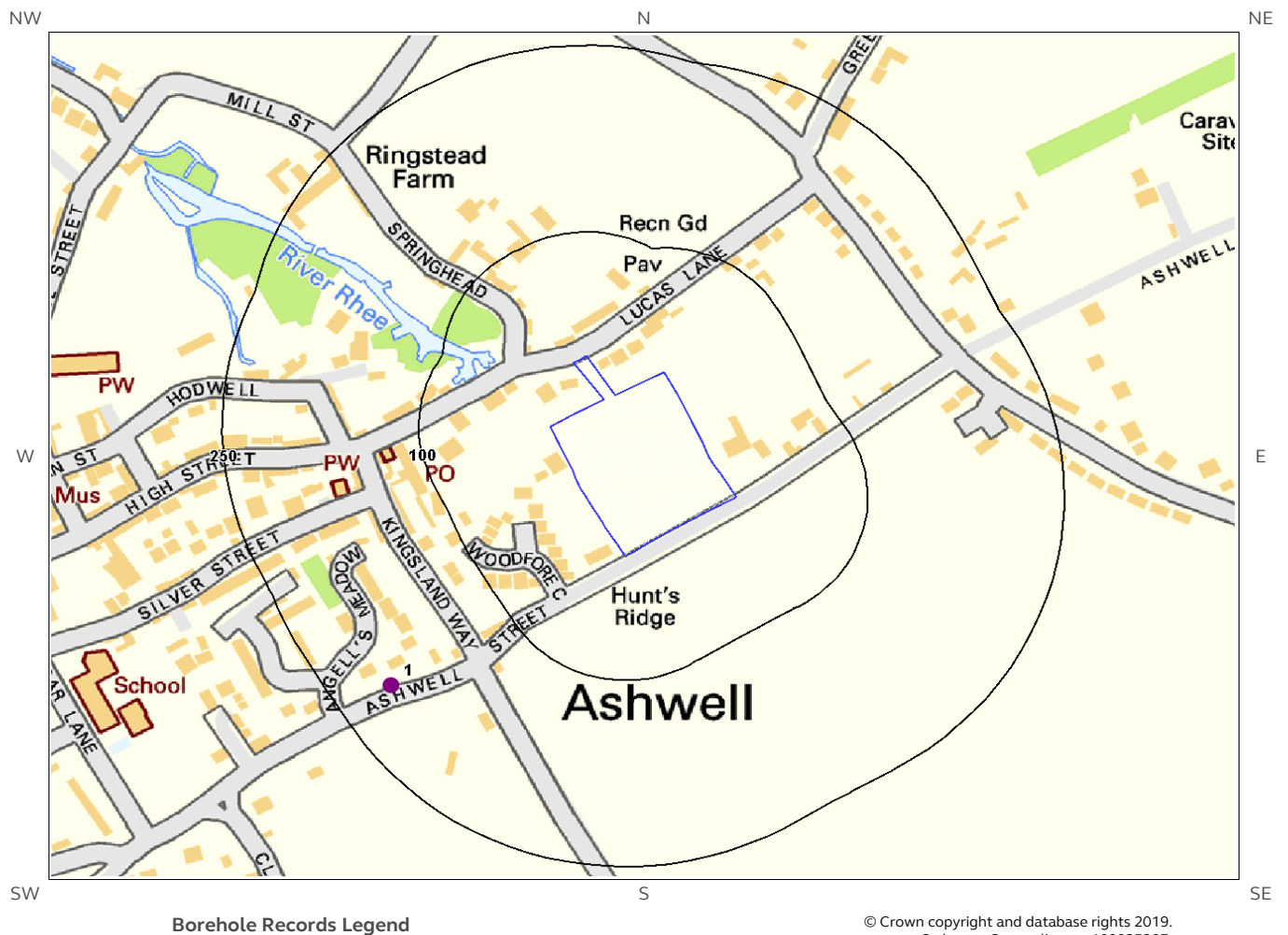
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. 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.

7 Borehole Records map



7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	207.0	SW	526950 239520	TL23NE68	38.5	GWDS B9 NR SILVER LEYS ASHWELL

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/534415

8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

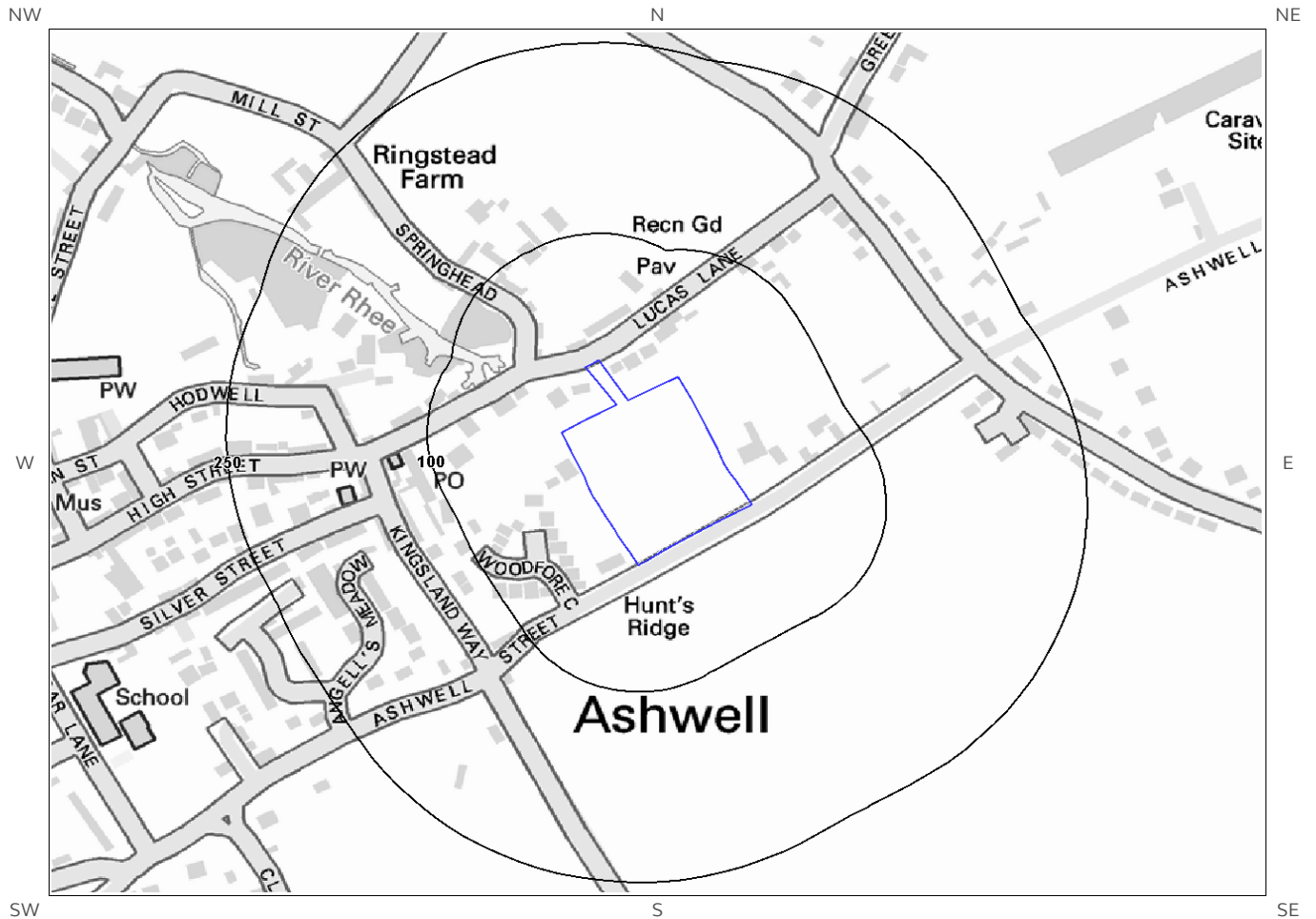
4

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg	<100 mg/kg
23.0	W	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg	<100 mg/kg
29.0	S	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg	<100 mg/kg

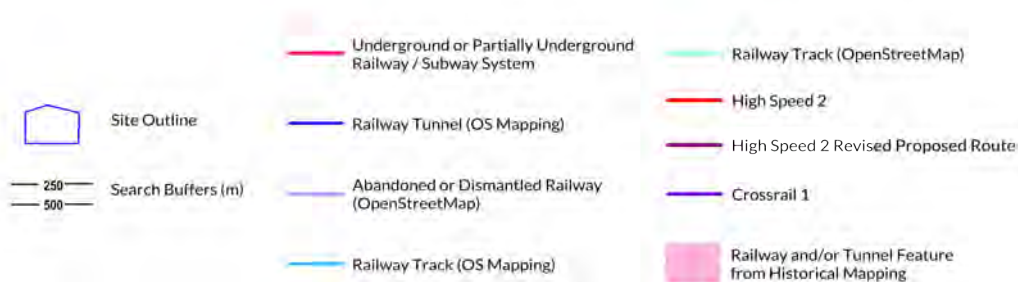
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
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Loughborough
Leicestershire
LE12 6HX



The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



Public Health England

Public information access office
Public Health England, Wellington House
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<https://www.gov.uk/government/organisations/public-health-england>
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



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Client Ref: GE17963
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Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



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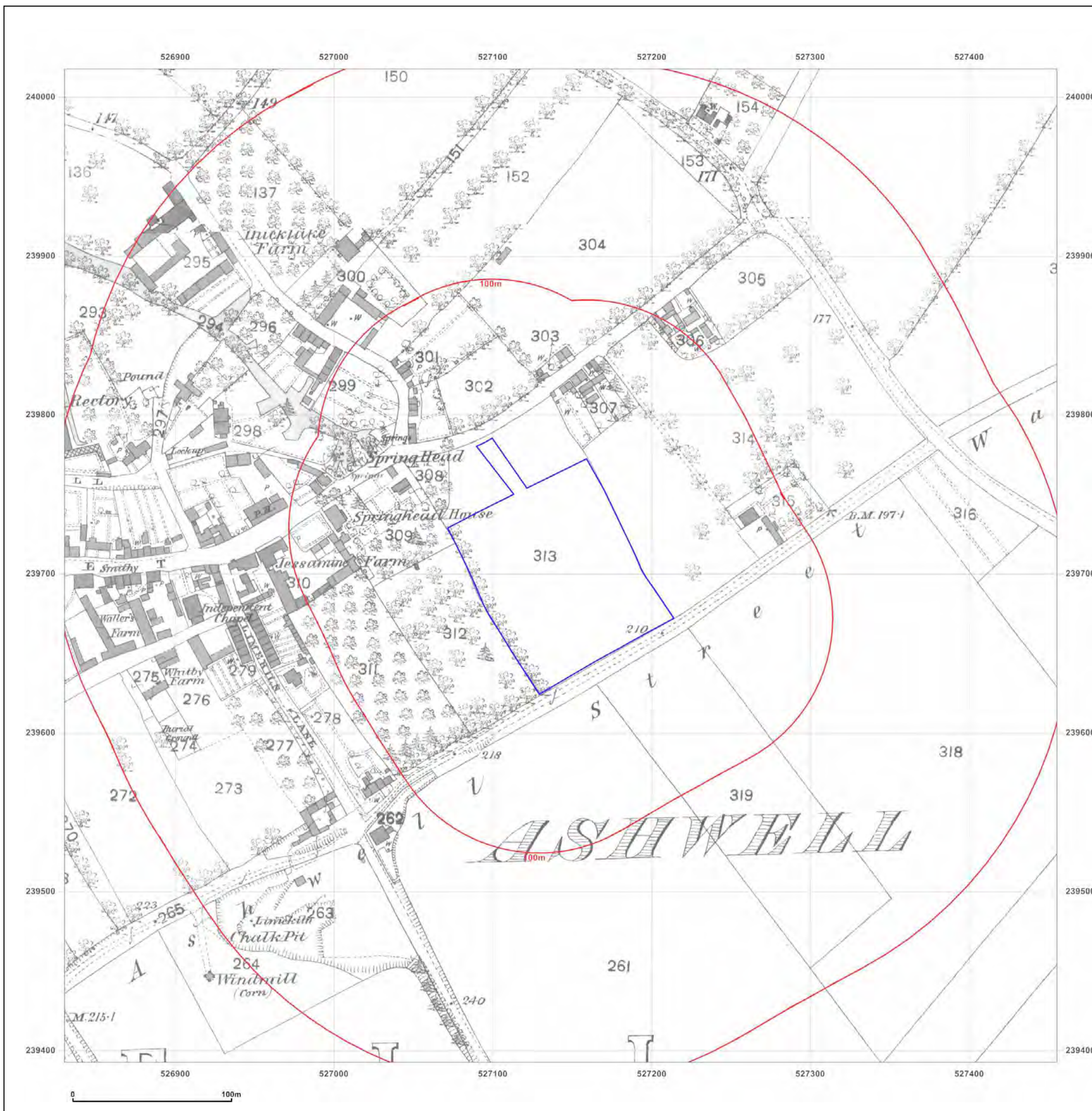


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Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1888

Scale: 1:2,500

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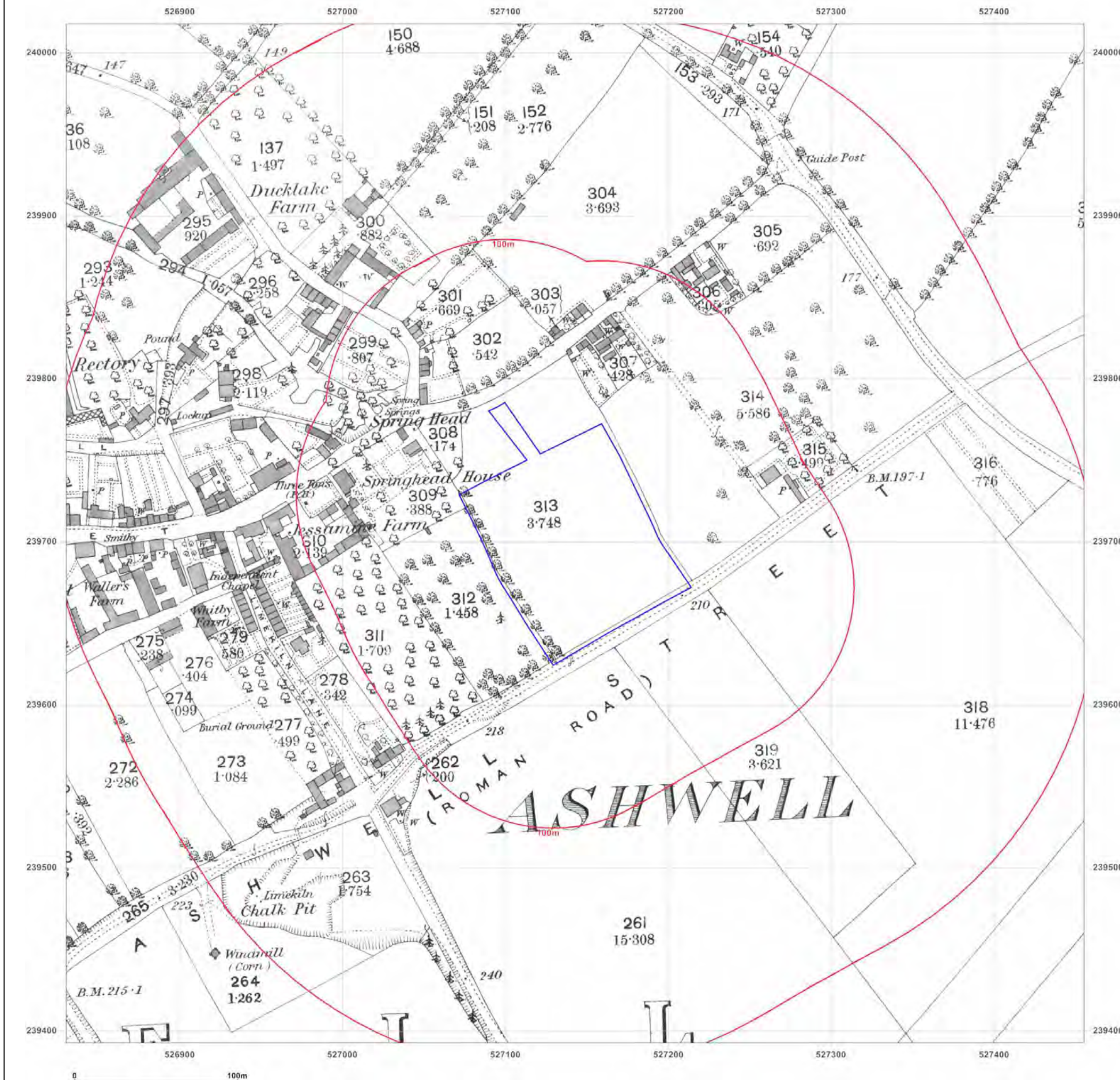


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Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1898

Scale: 1:2,500

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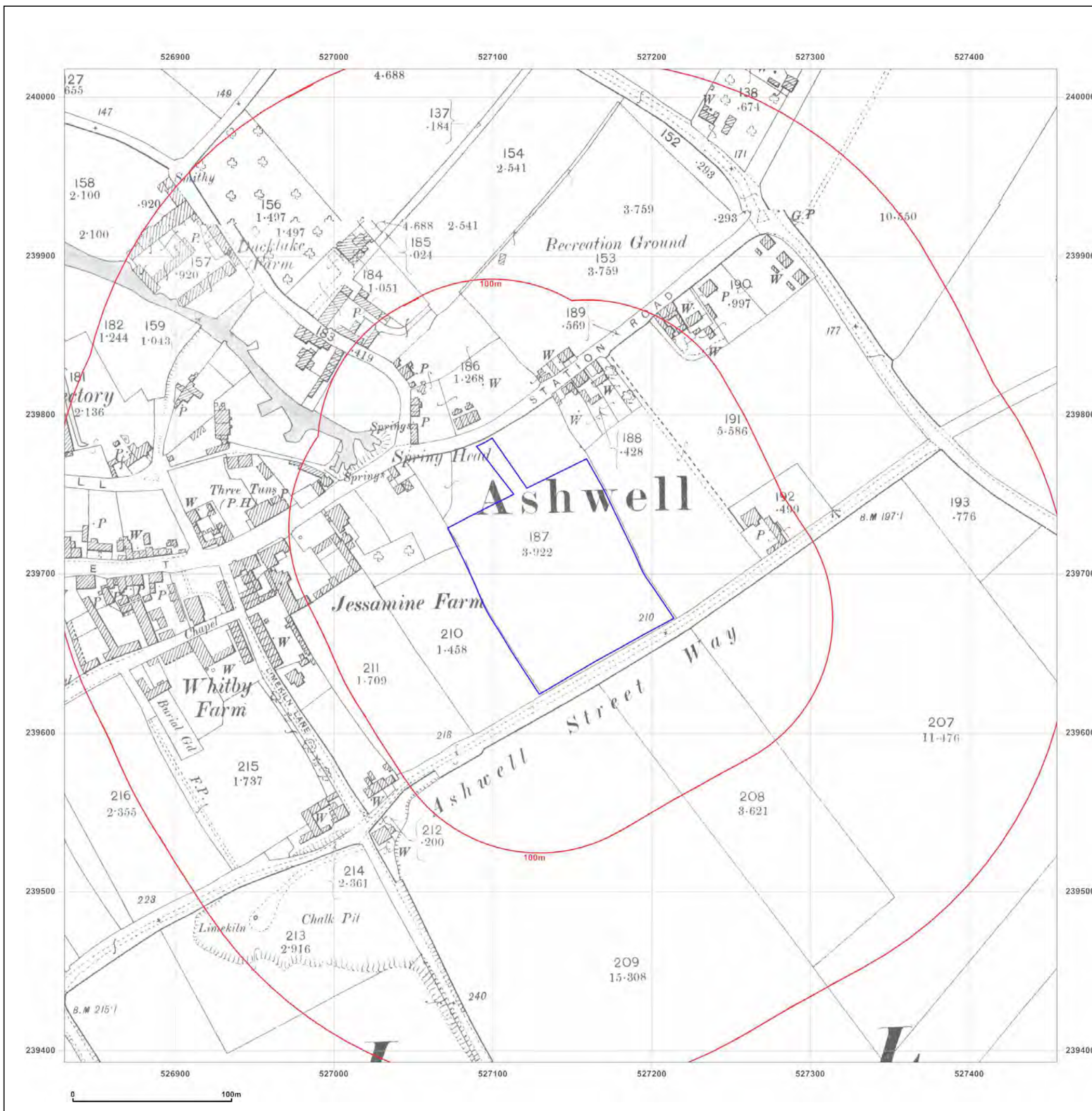


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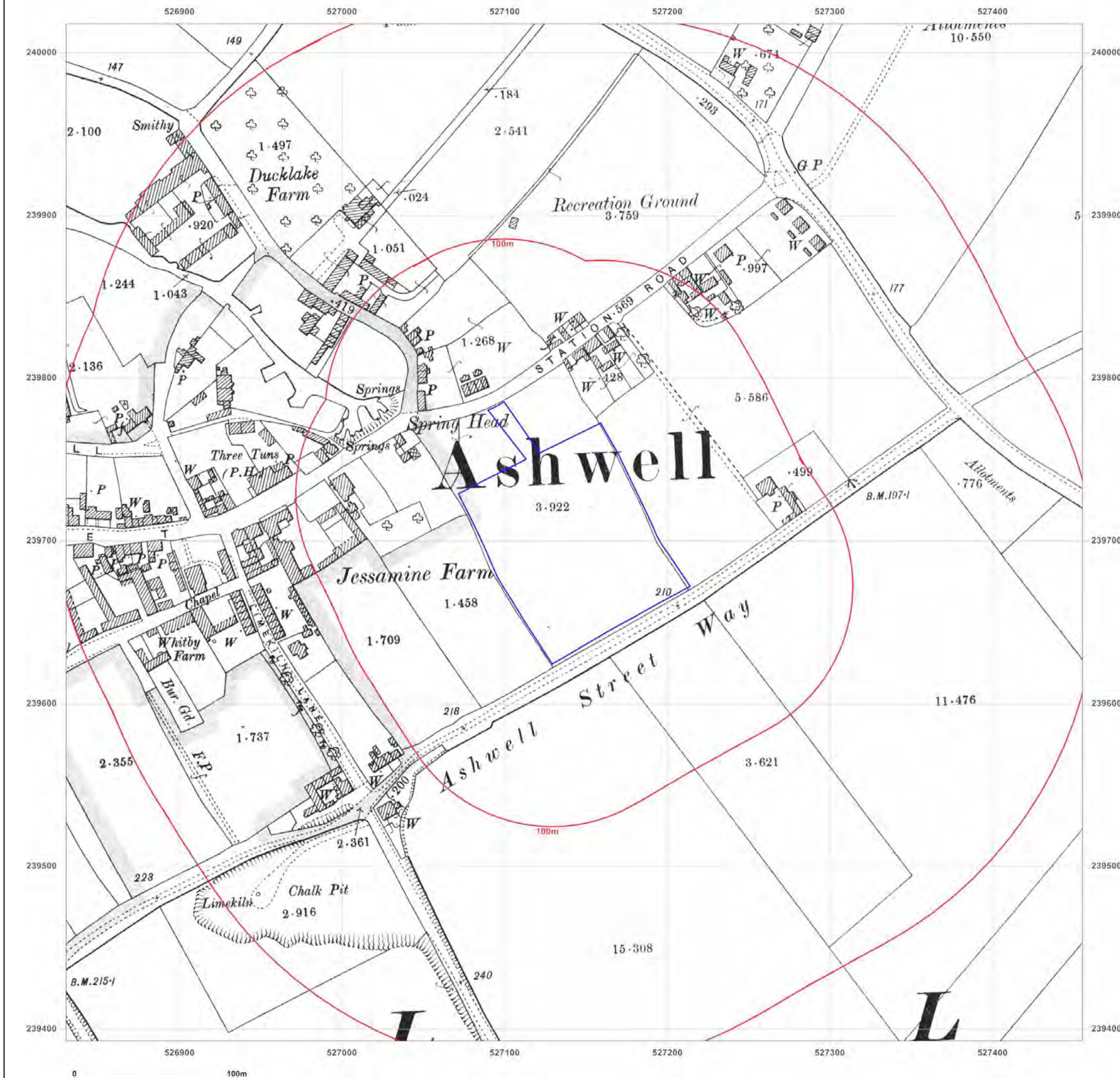


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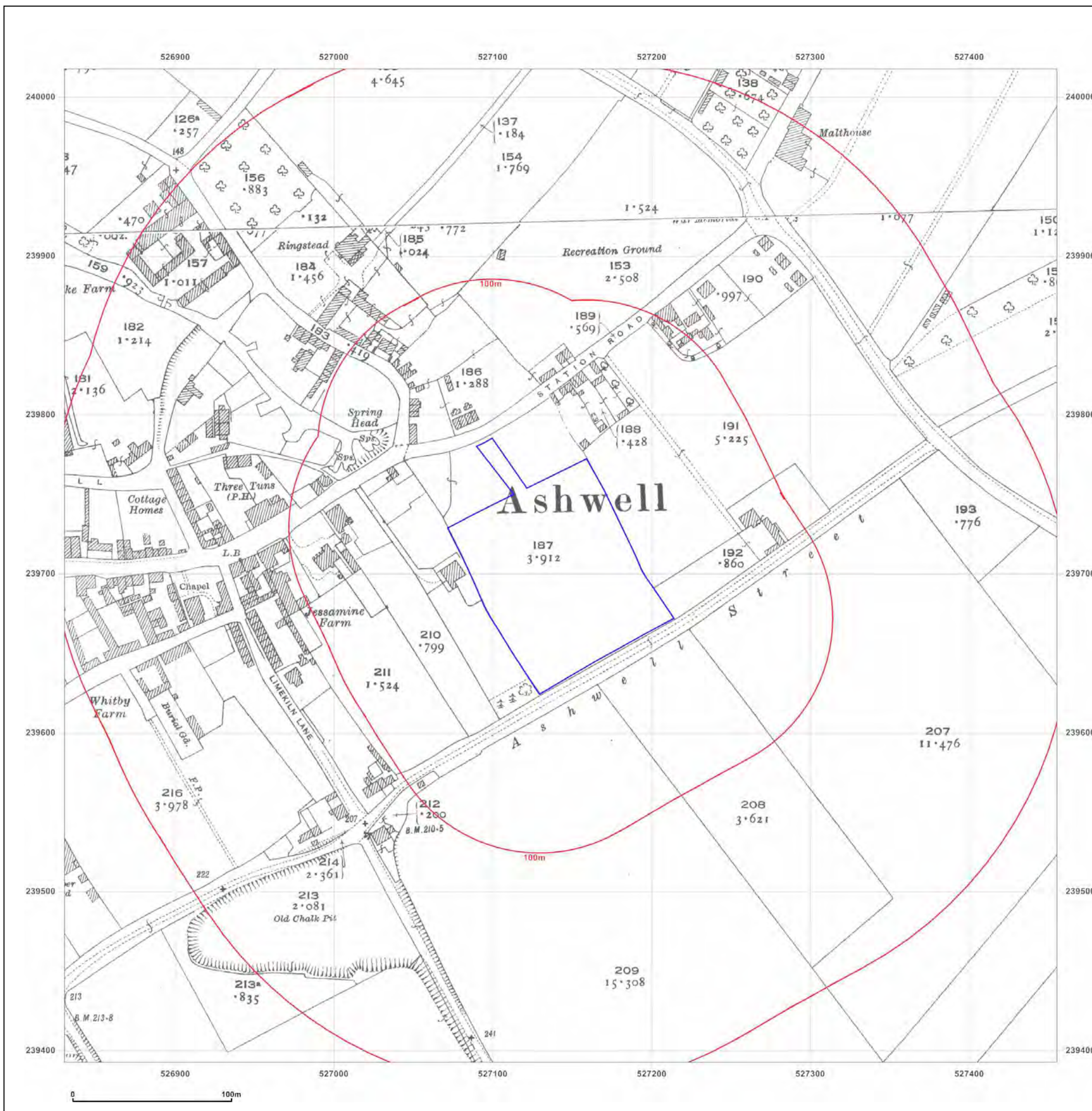


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Map Name: County Series

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Map Name: National Grid

Map date: 1974

Scale: 1:2,500

Printed at: 1:2,500



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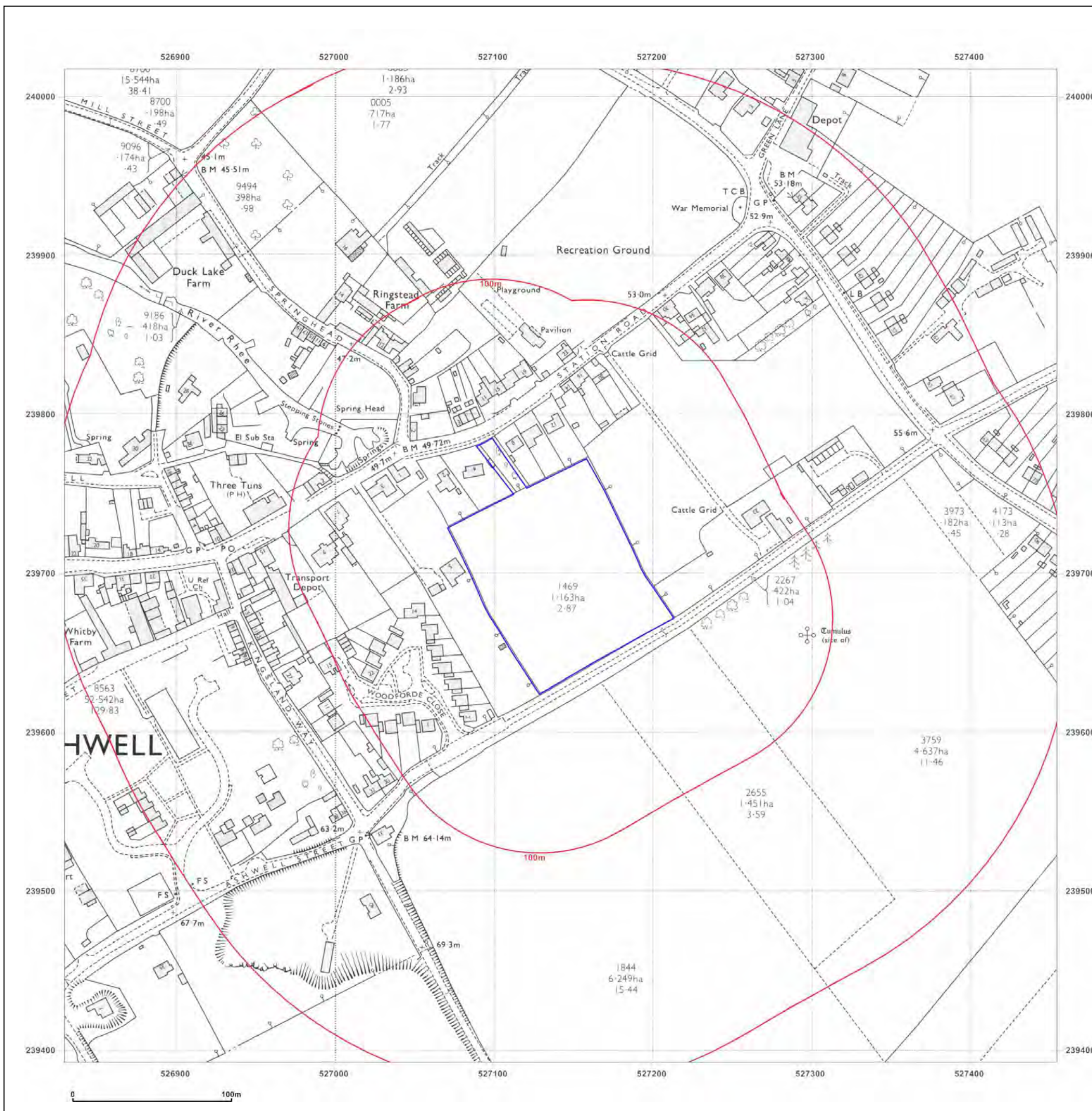


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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 1975

Scale: 1:2,500

Printed at: 1:2,500



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Map Name: National Grid

Map date: 1983

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Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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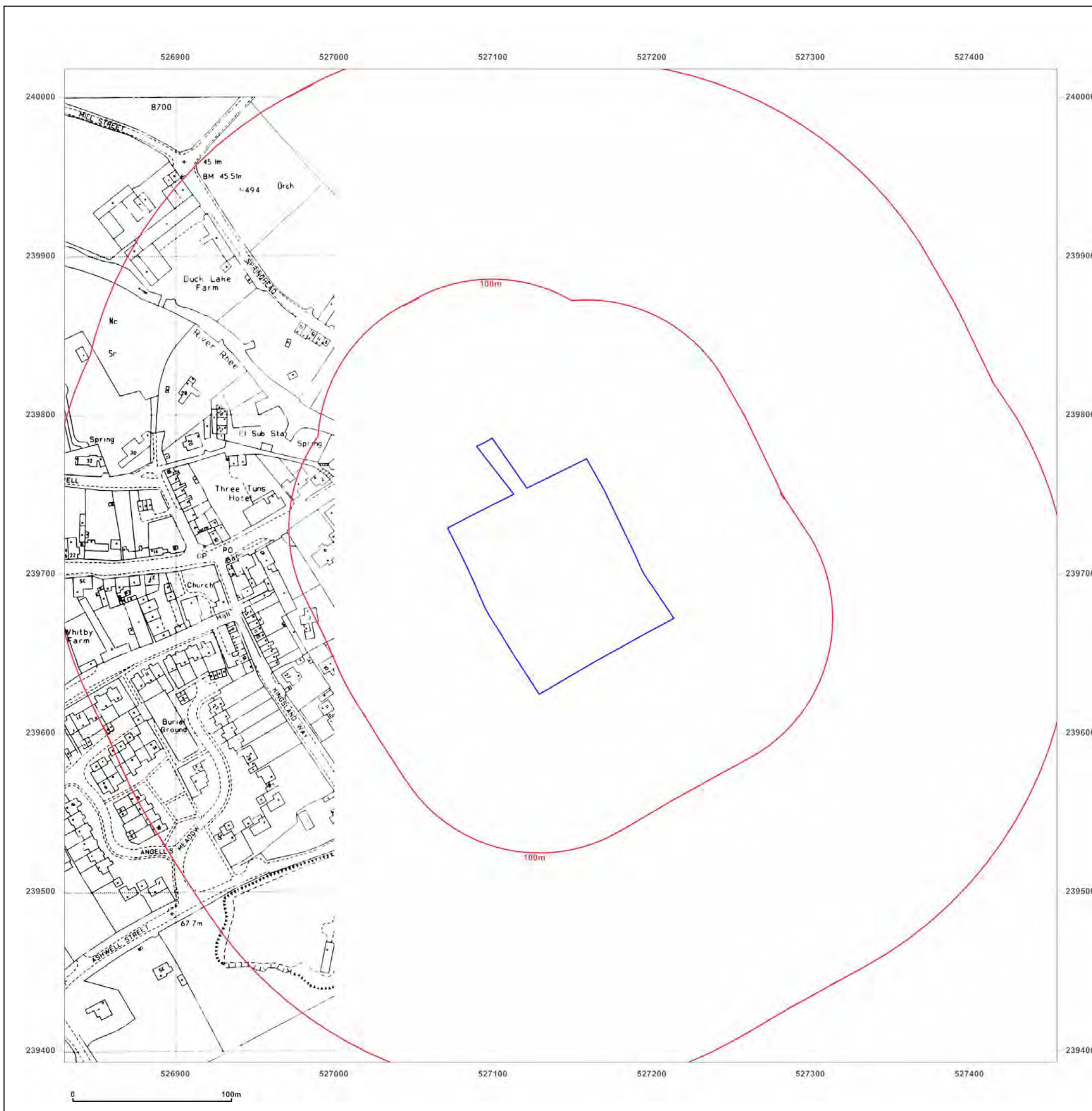


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Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 1990-1993

Scale: 1:2,500

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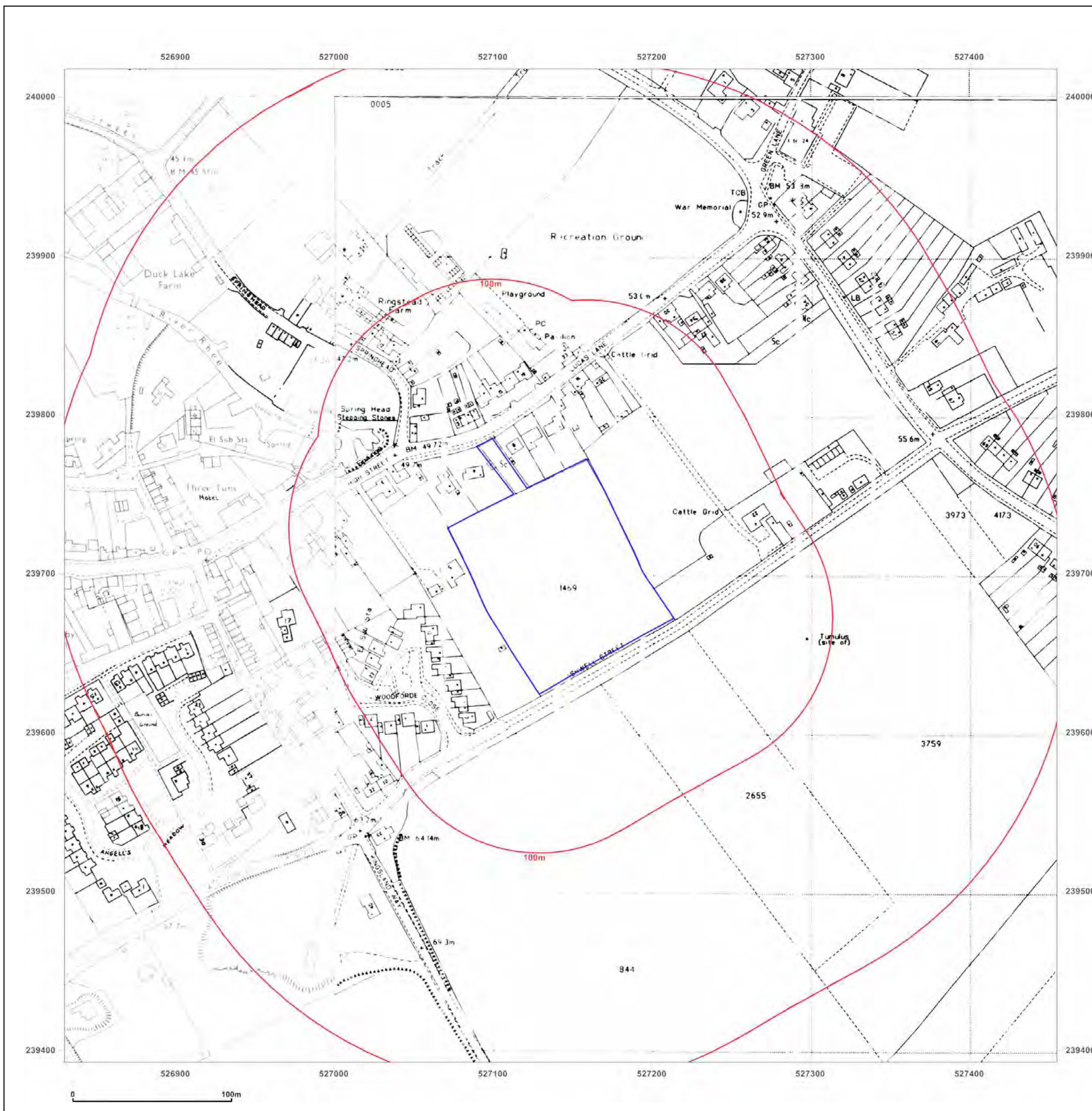


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Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 1995

Scale: 1:2,500

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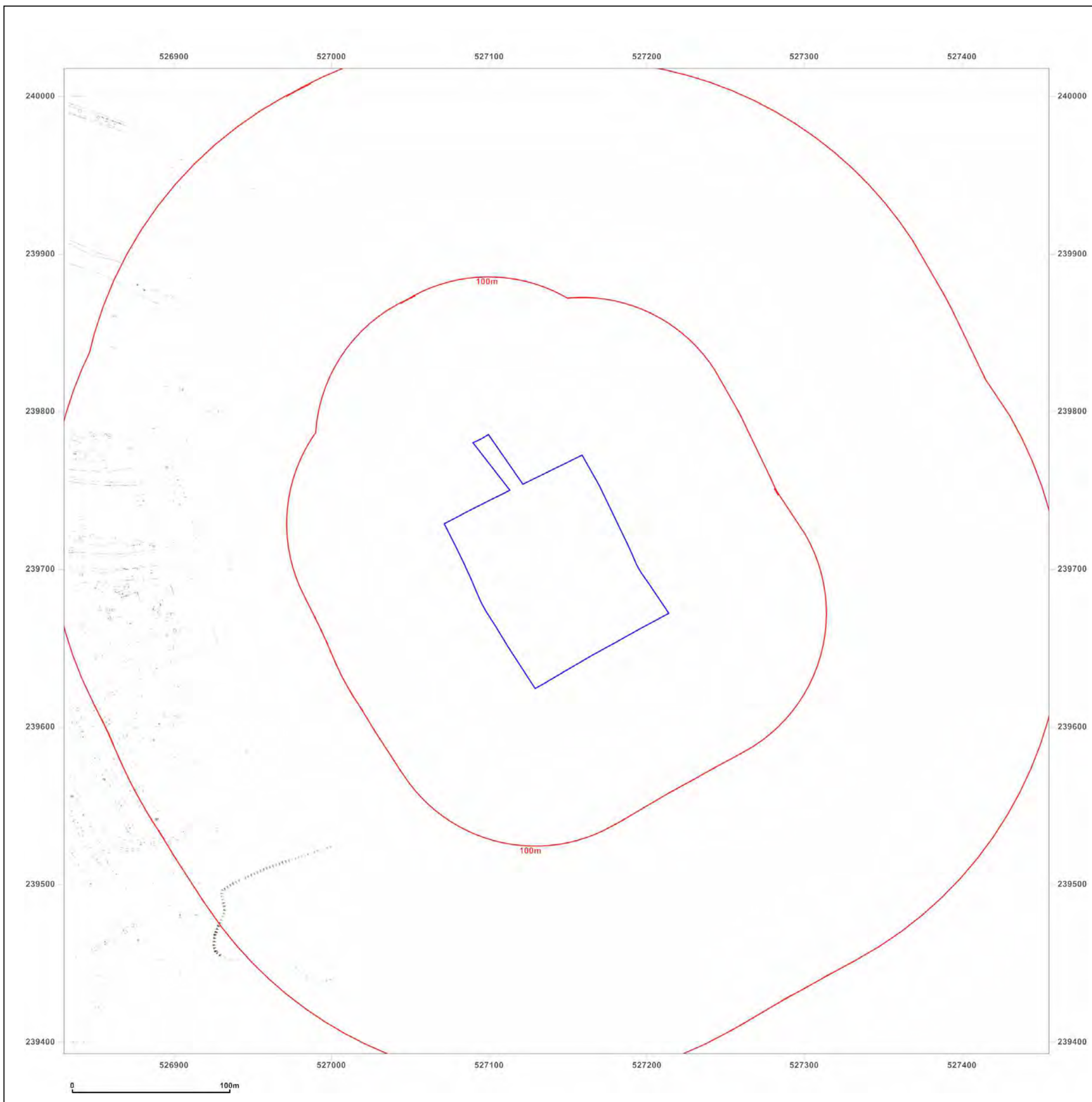


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Map Name: National Grid

Map date: 1995

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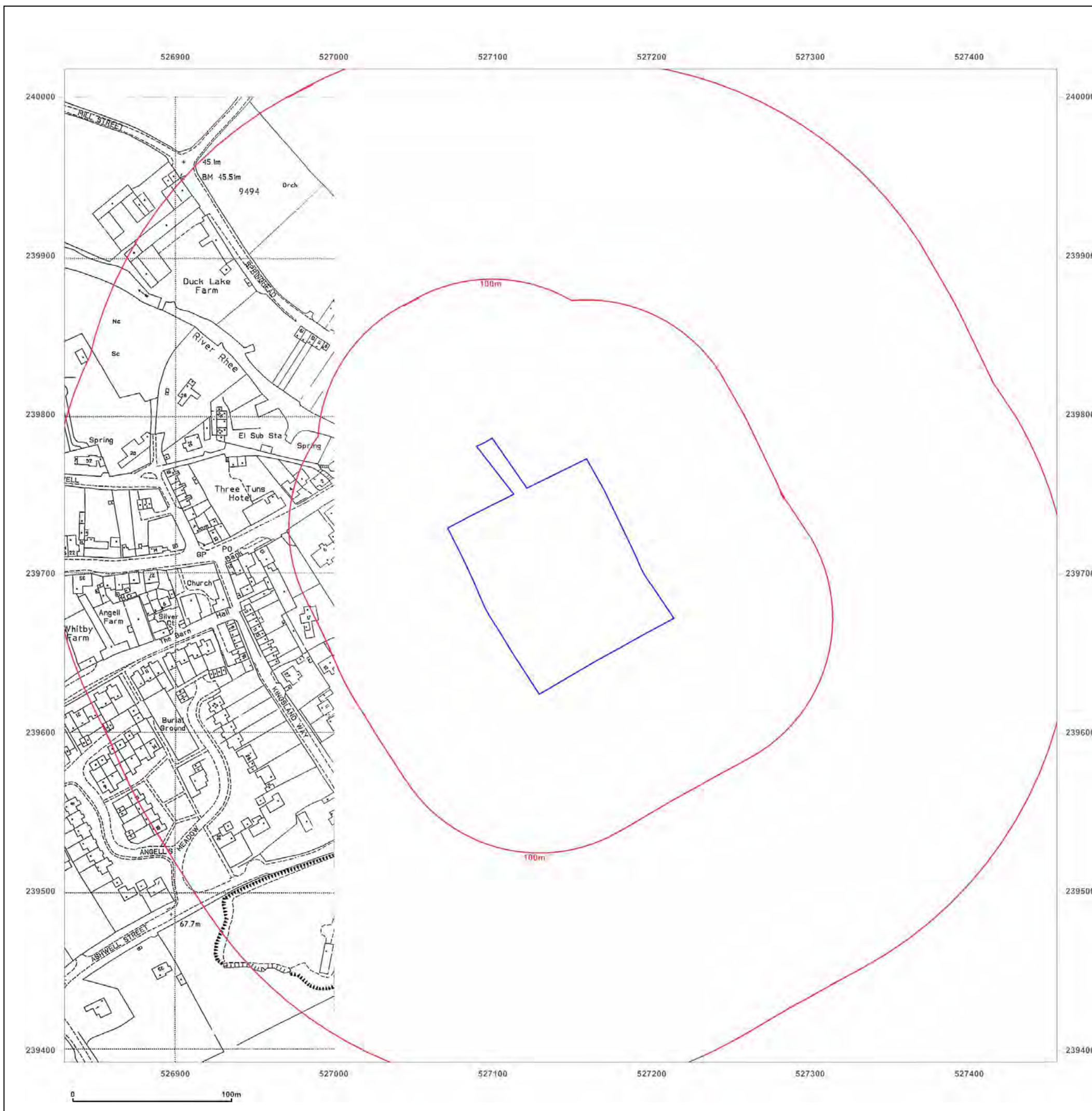


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Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1877-1881

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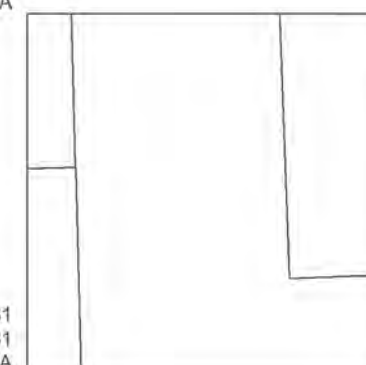
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Levelled N/A

Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

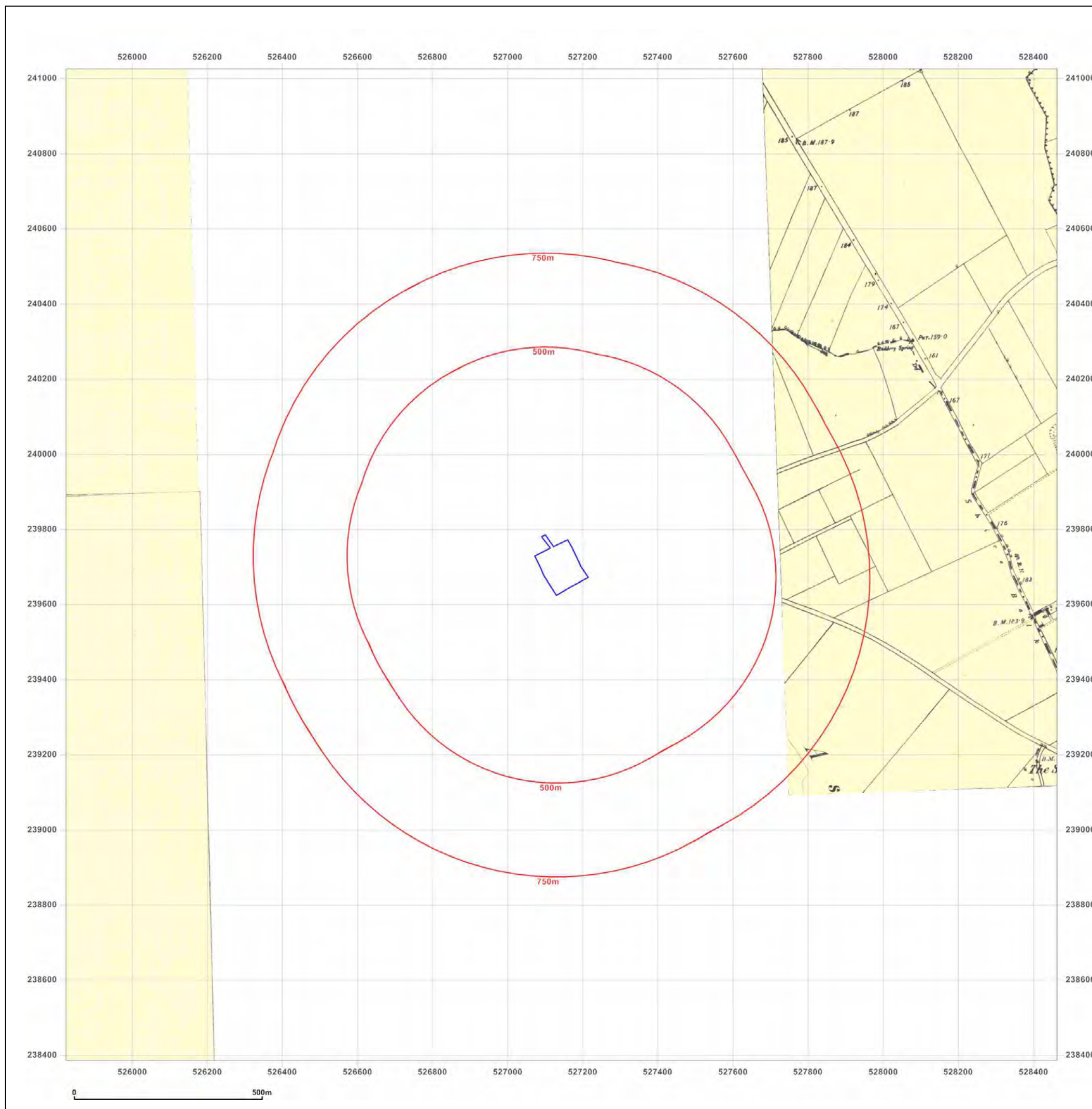


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Site Details:

LAND NORTH OF ASHWELL
STREET, ASHWELL, SG7 5LN

Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1882

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1877
Edition 1882
Copyright N/A
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Surveyed 1877
Revised N/A
Edition 1882
Copyright N/A
Levelled N/A

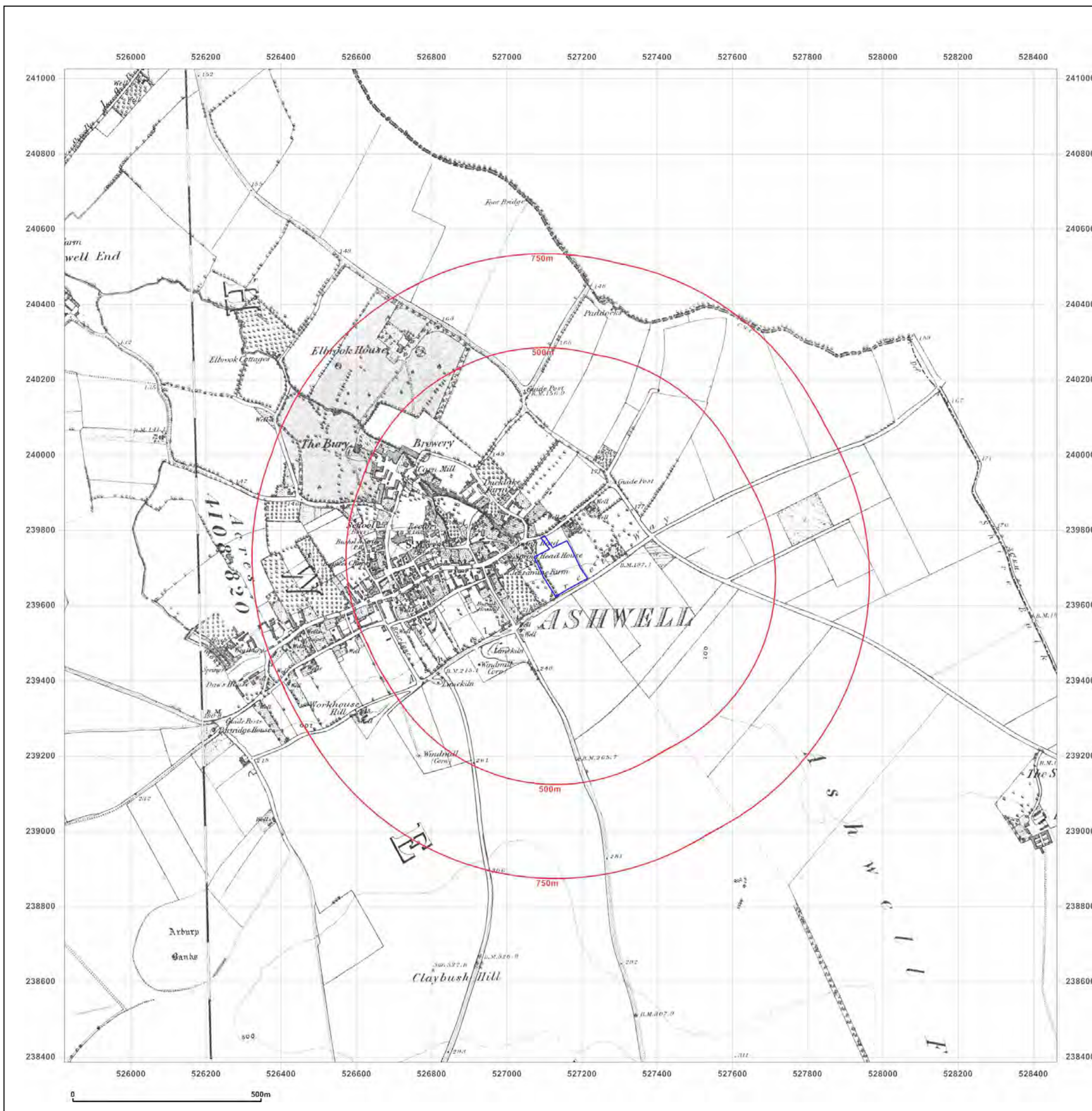


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Site Details:

LAND NORTH OF ASHWELL
STREET, ASHWELL, SG7 5LN

Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

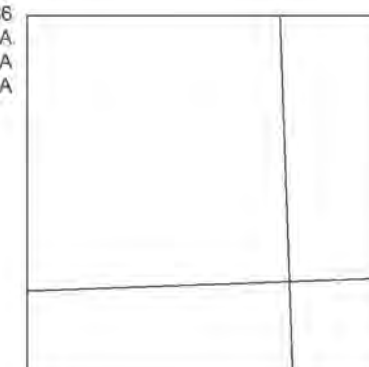
Map date: 1886

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

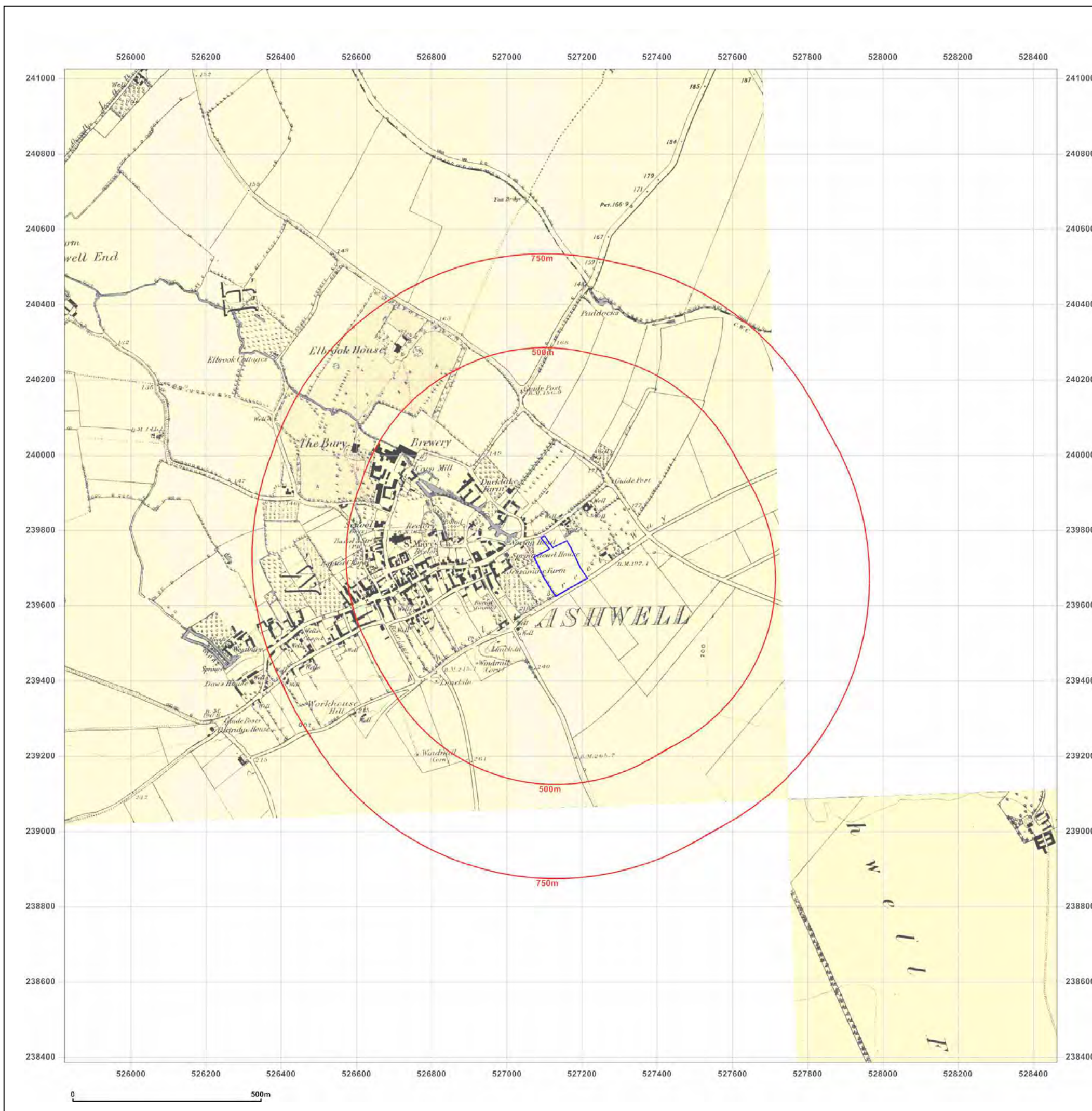


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Site Details:

LAND NORTH OF ASHWELL
STREET, ASHWELL, SG7 5LN

Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1897-1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

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

Surveyed 1877
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

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

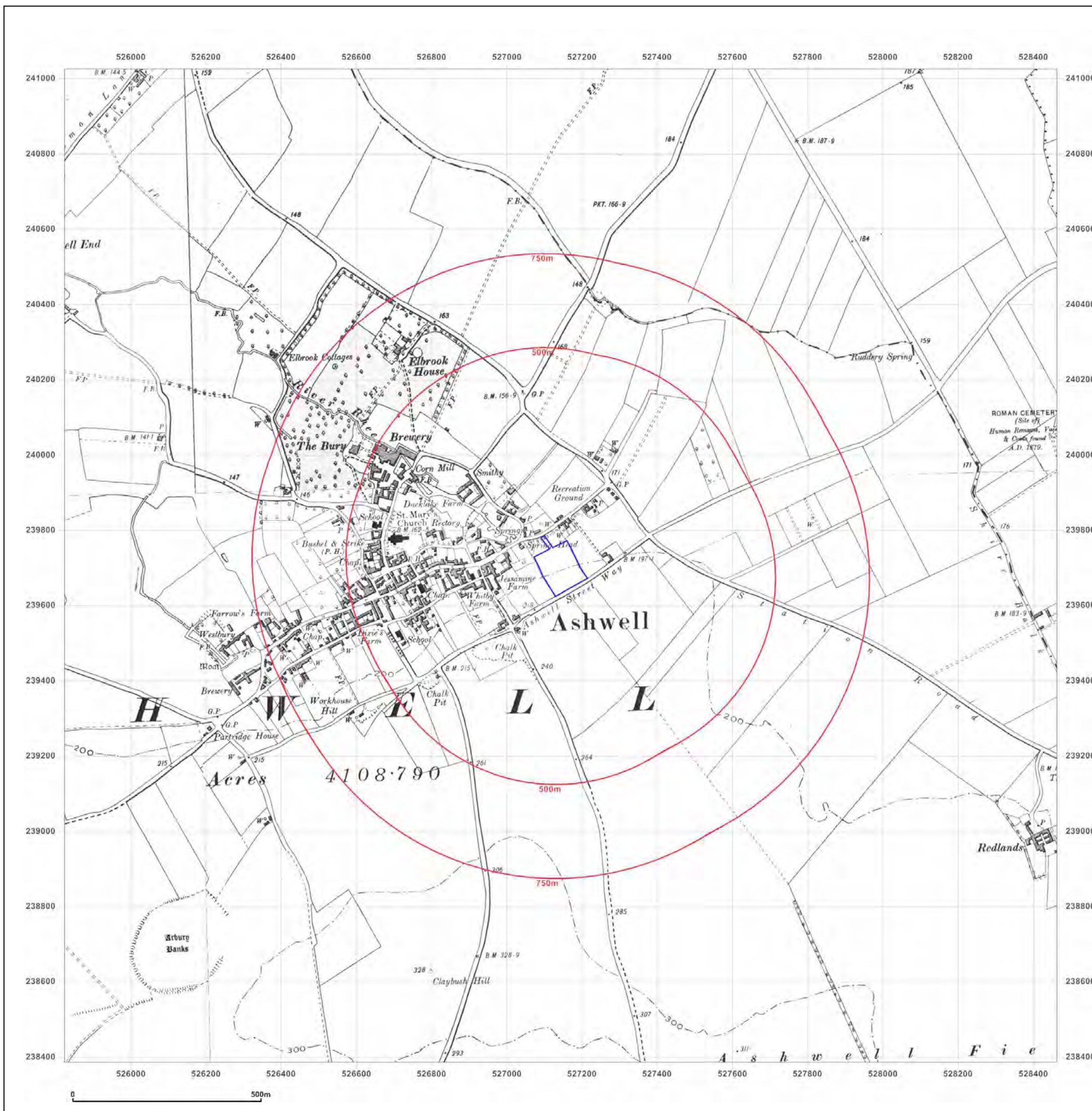


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Site Details:

LAND NORTH OF ASHWELL
STREET, ASHWELL, SG7 5LN

Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1900-1901

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

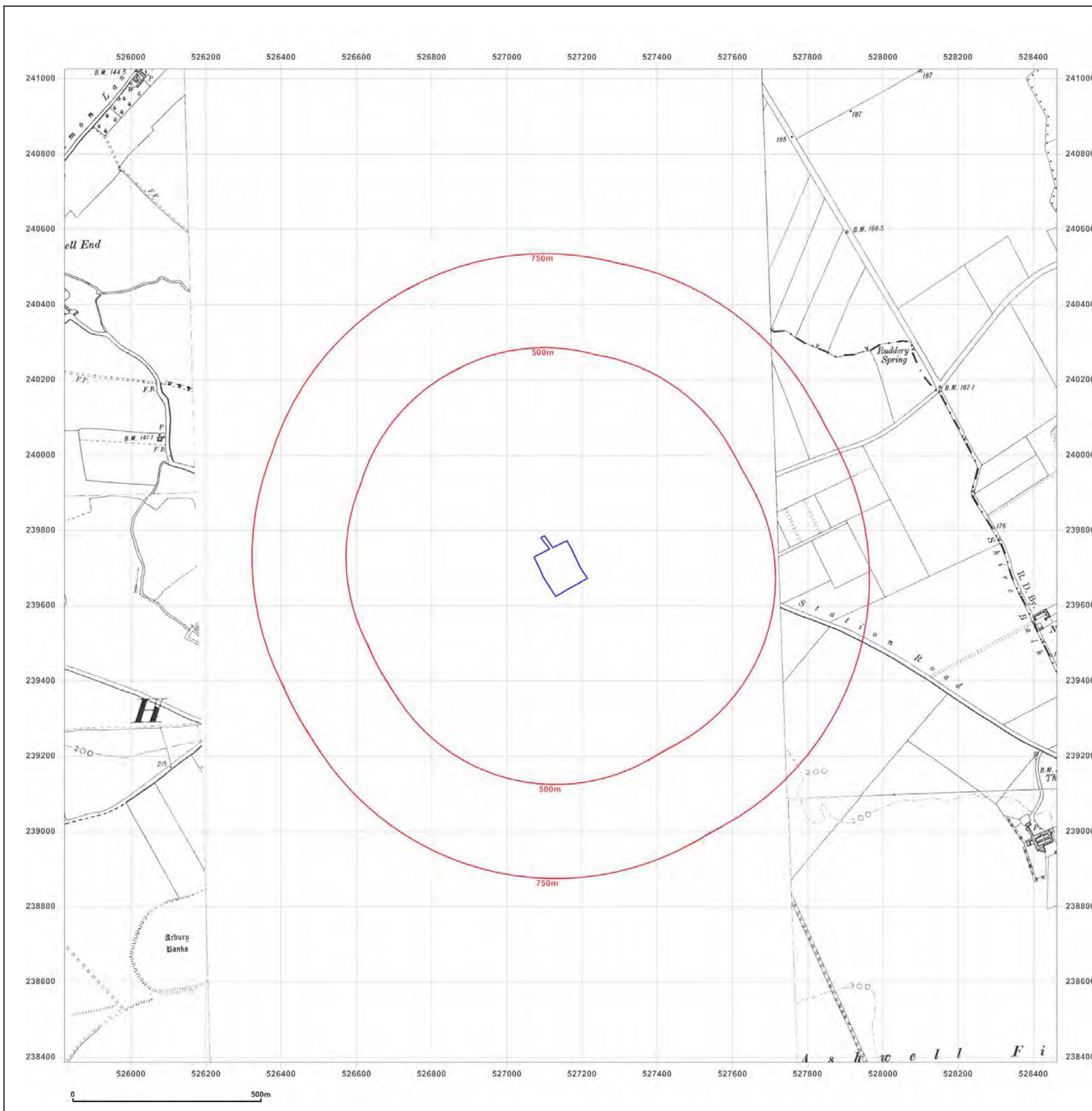


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Site Details:

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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

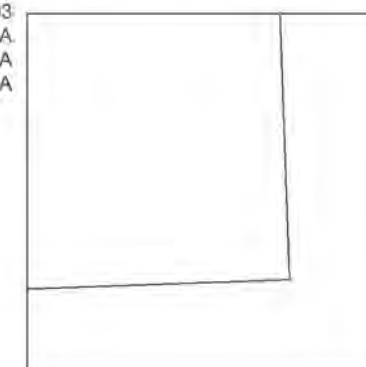
Map date: 1903

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

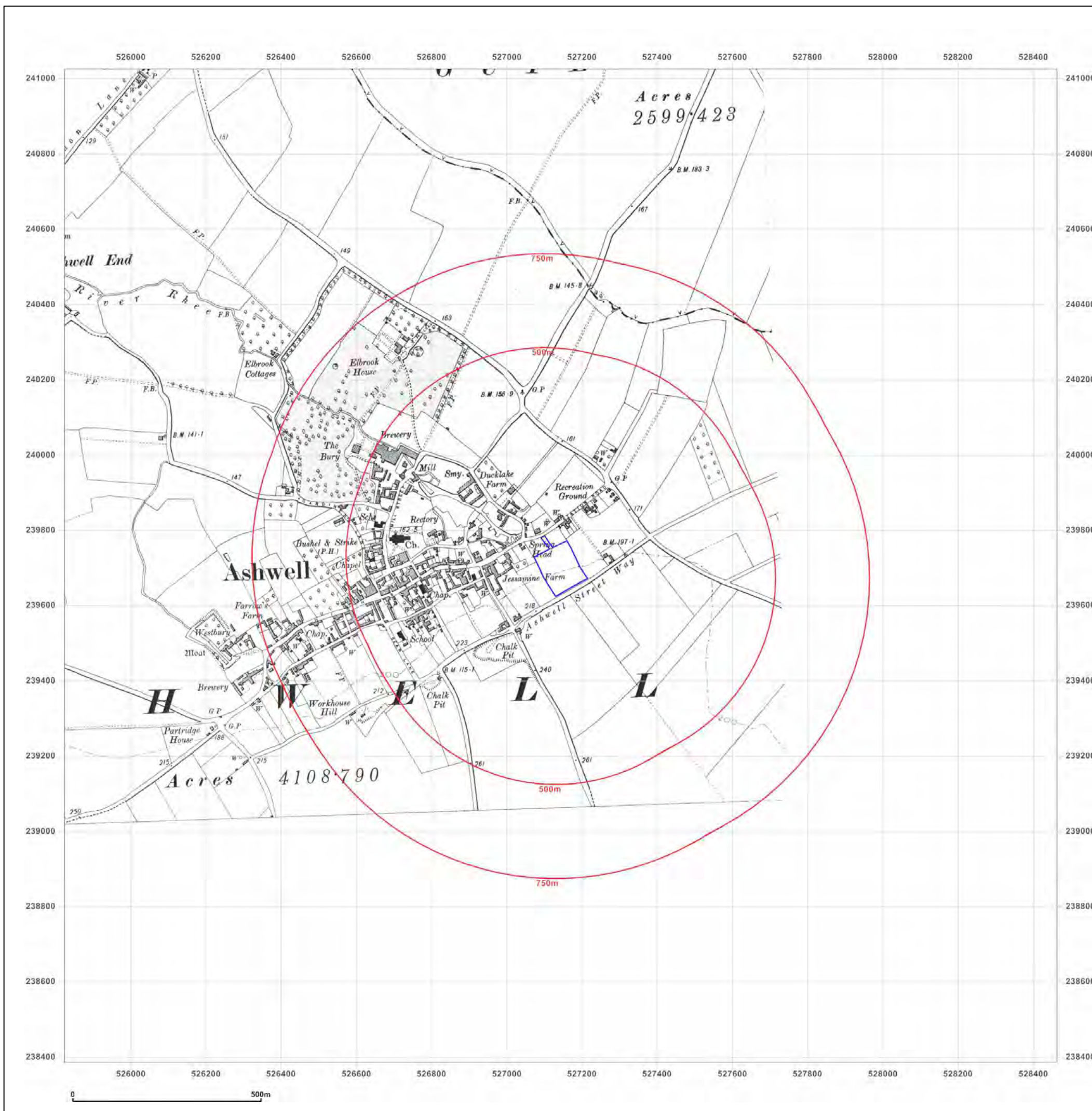


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Site Details:

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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1920-1921

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1877
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

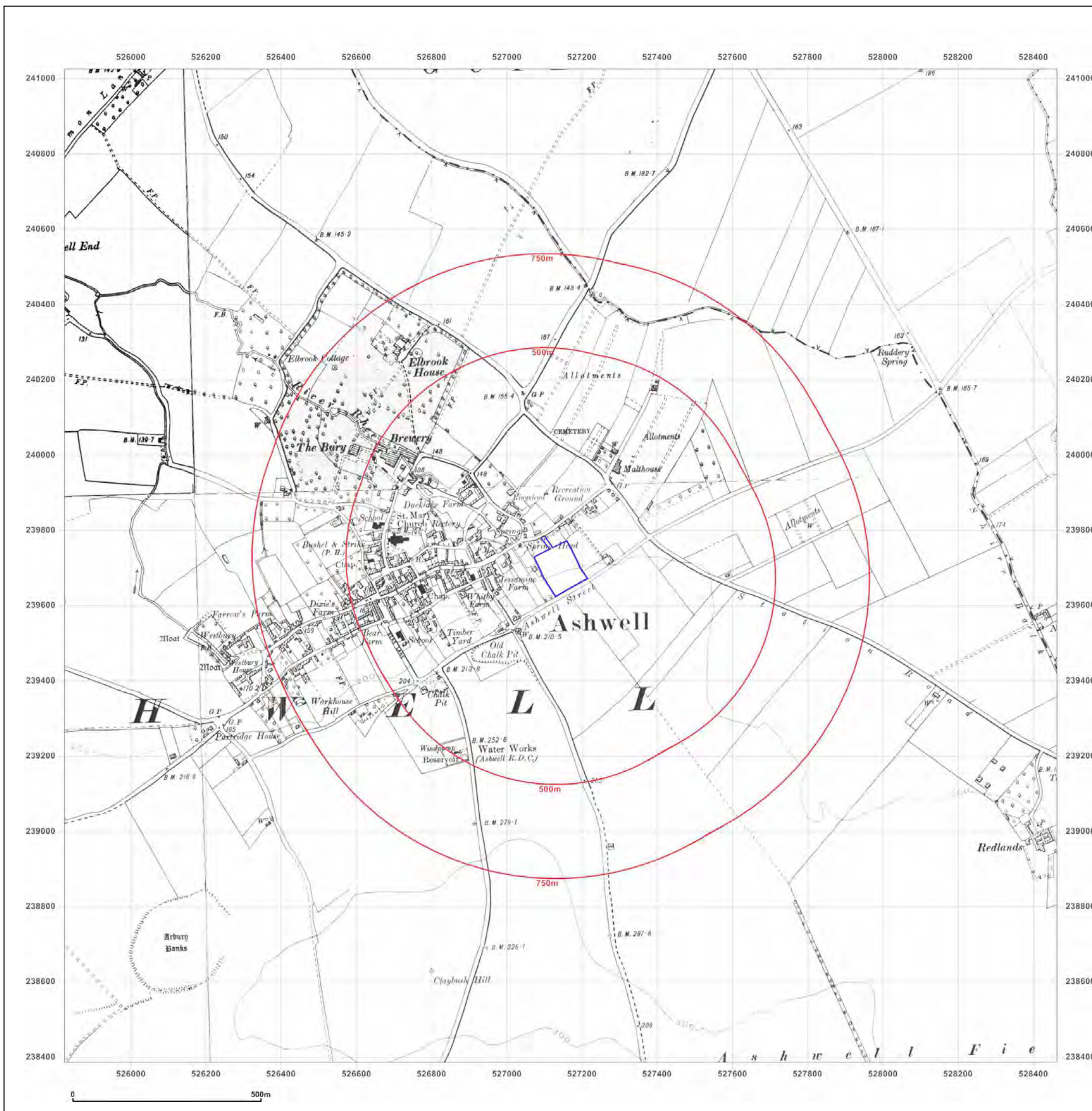


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Site Details:

LAND NORTH OF ASHWELL
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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

Map date: 1947-1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

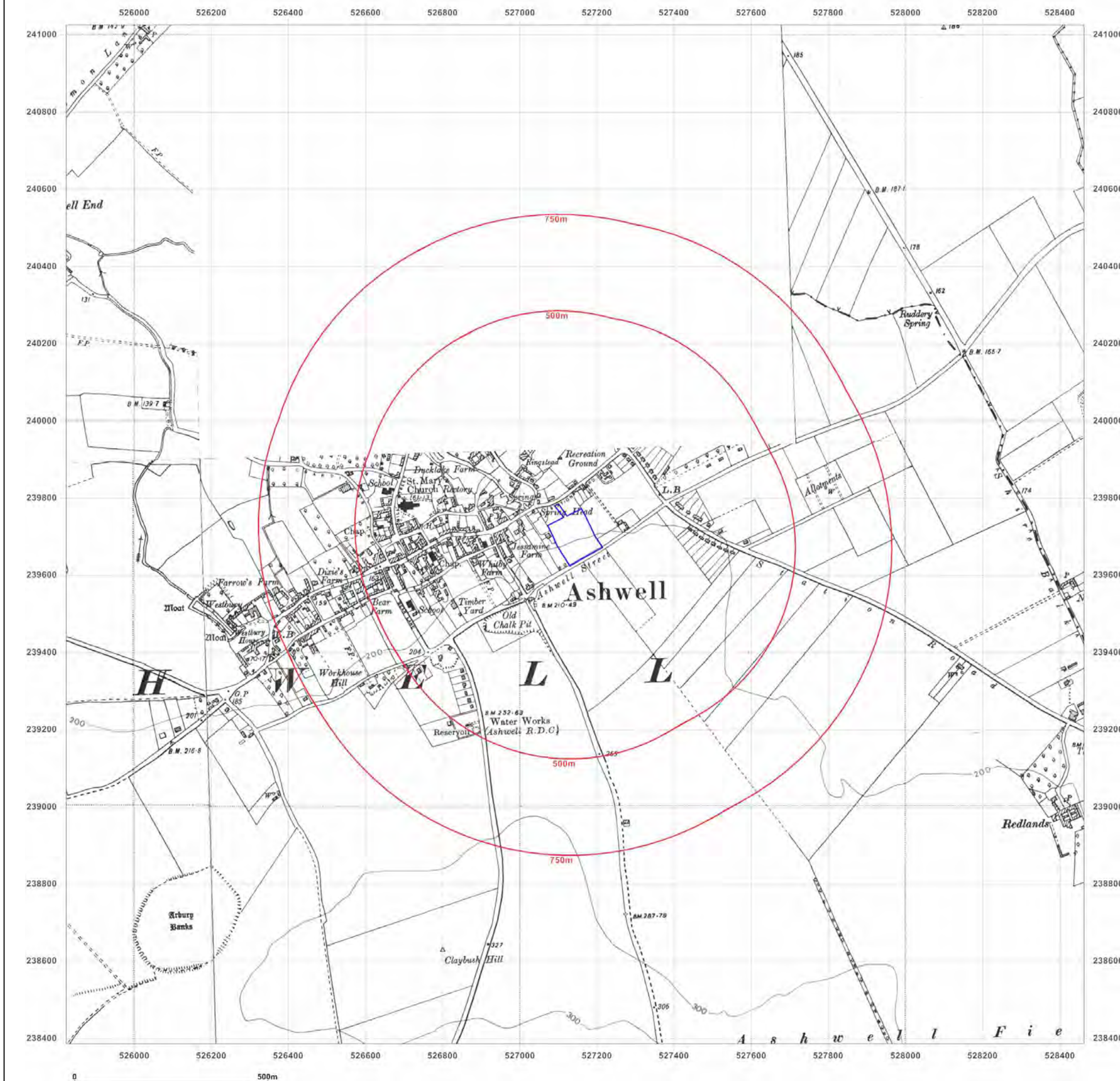


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Site Details:

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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: County Series

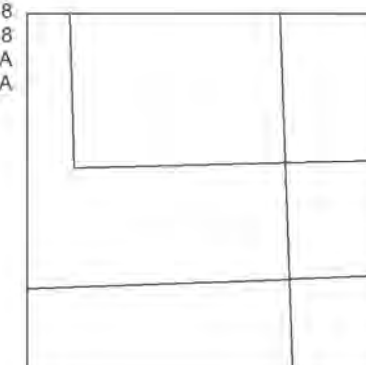
Map date: 1947-1948

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1948
Edition 1948
Copyright N/A
Levelled N/A



Surveyed 1877
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

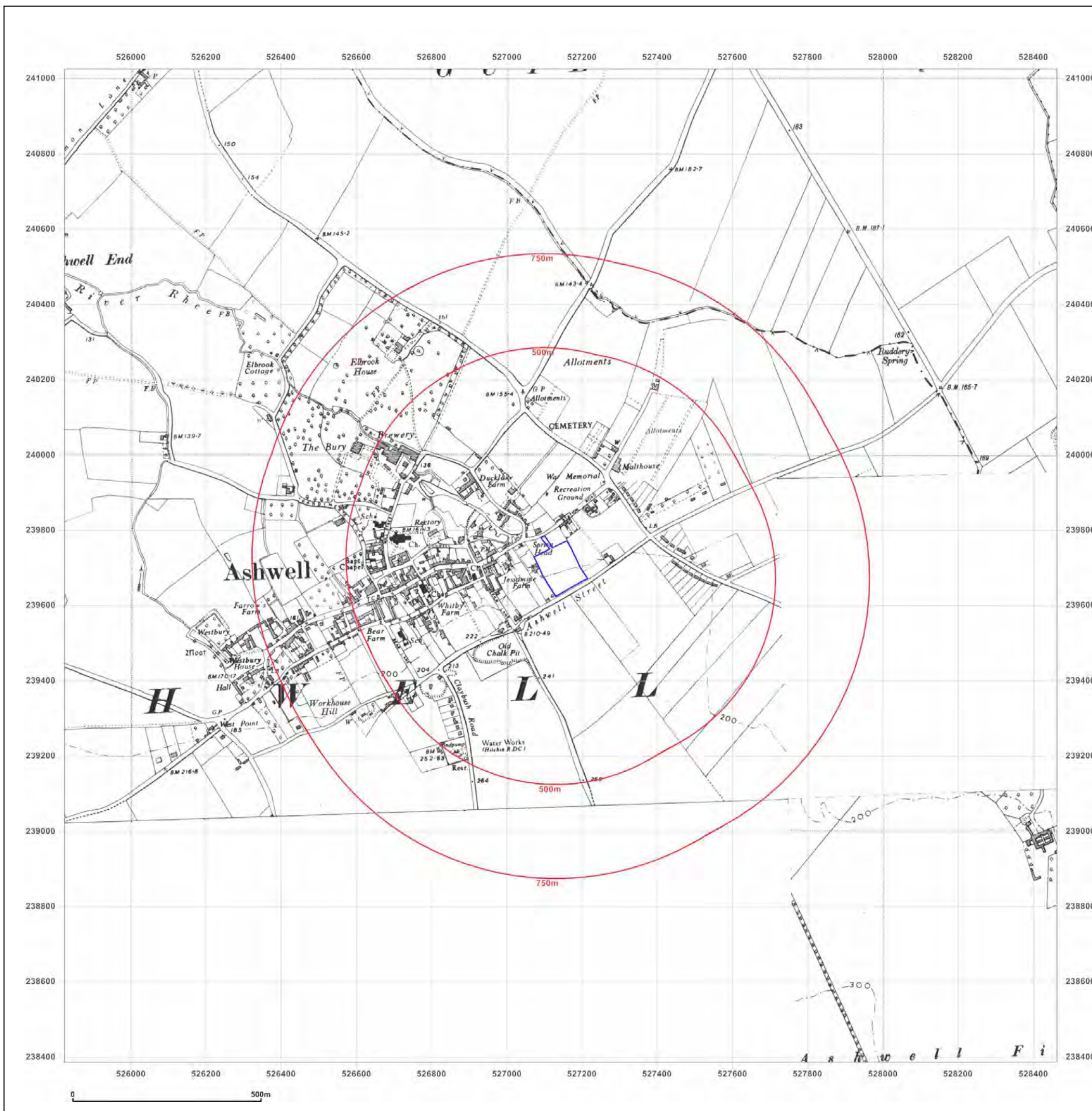


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Site Details:

LAND NORTH OF ASHWELL
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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: Provisional

Map date: 1951-1953

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

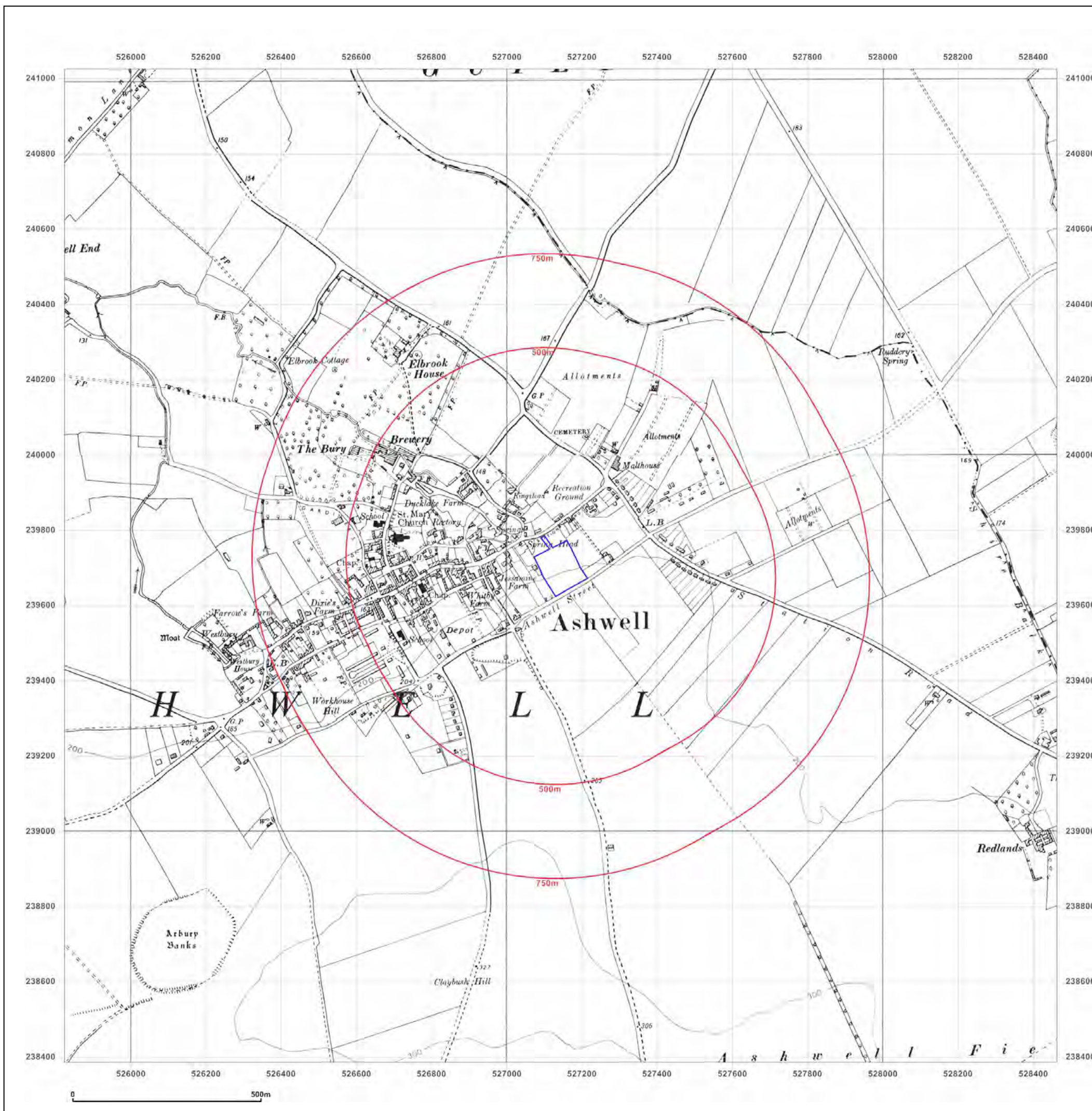


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Site Details:

LAND NORTH OF ASHWELL
STREET, ASHWELL, SG7 5LN

Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 1978-1982

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1978
Edition N/A
Copyright 1978
Levelled 1972

Surveyed 1974
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

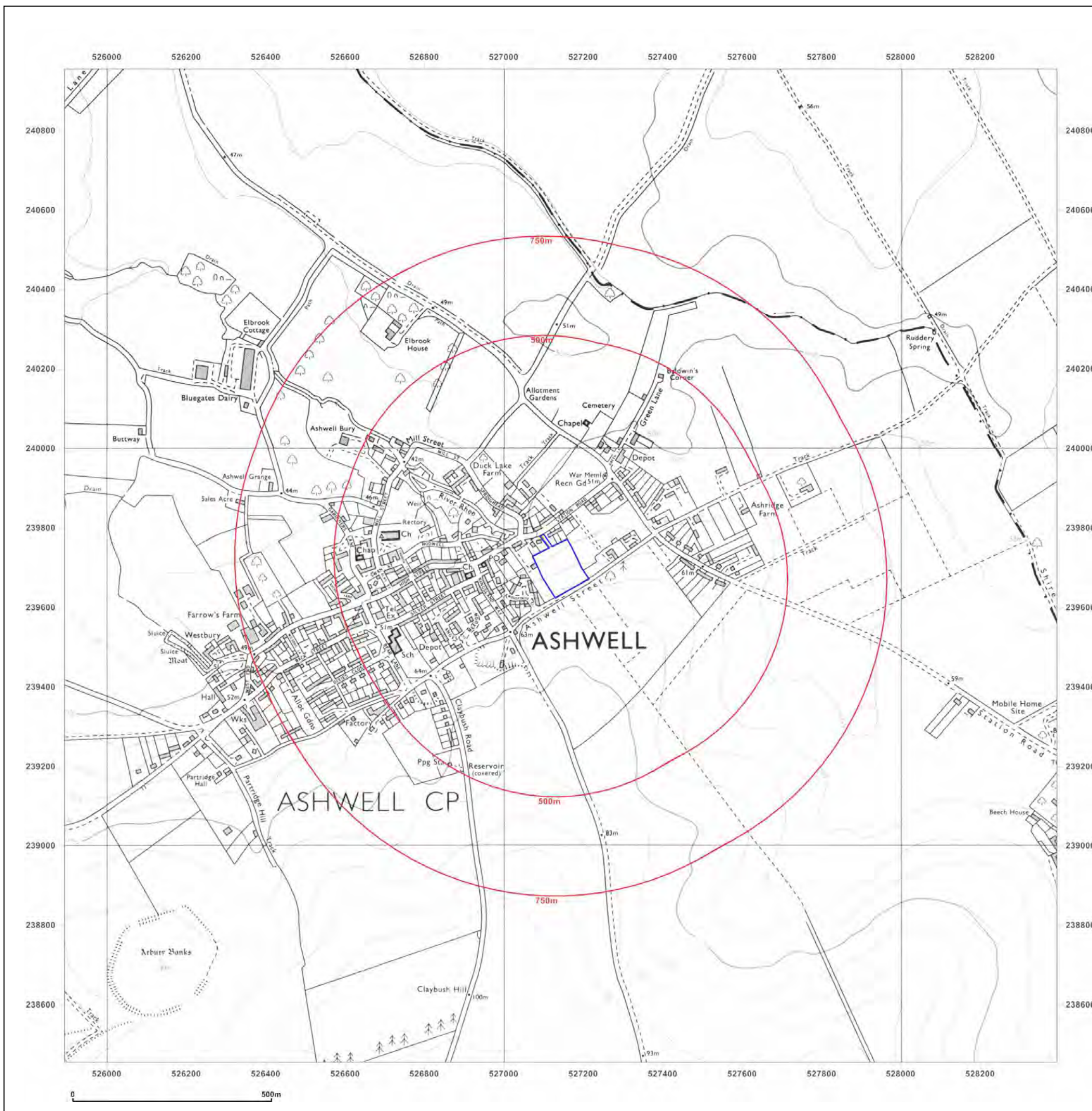


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Site Details:

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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

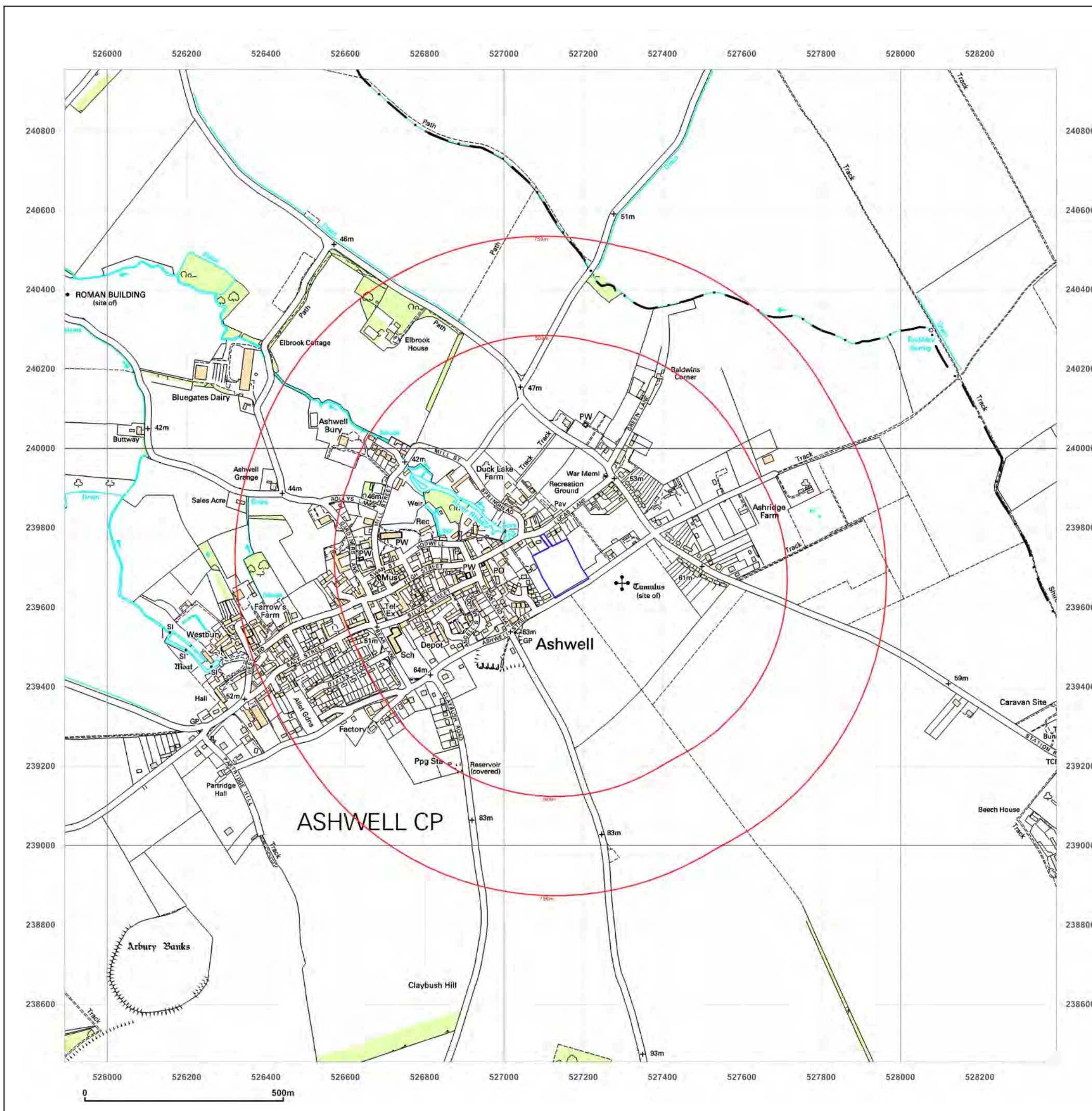


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Site Details:

LAND NORTH OF ASHWELL
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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

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Client Ref: GE17963
Report Ref: GS-5781805
Grid Ref: 527143, 239705

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



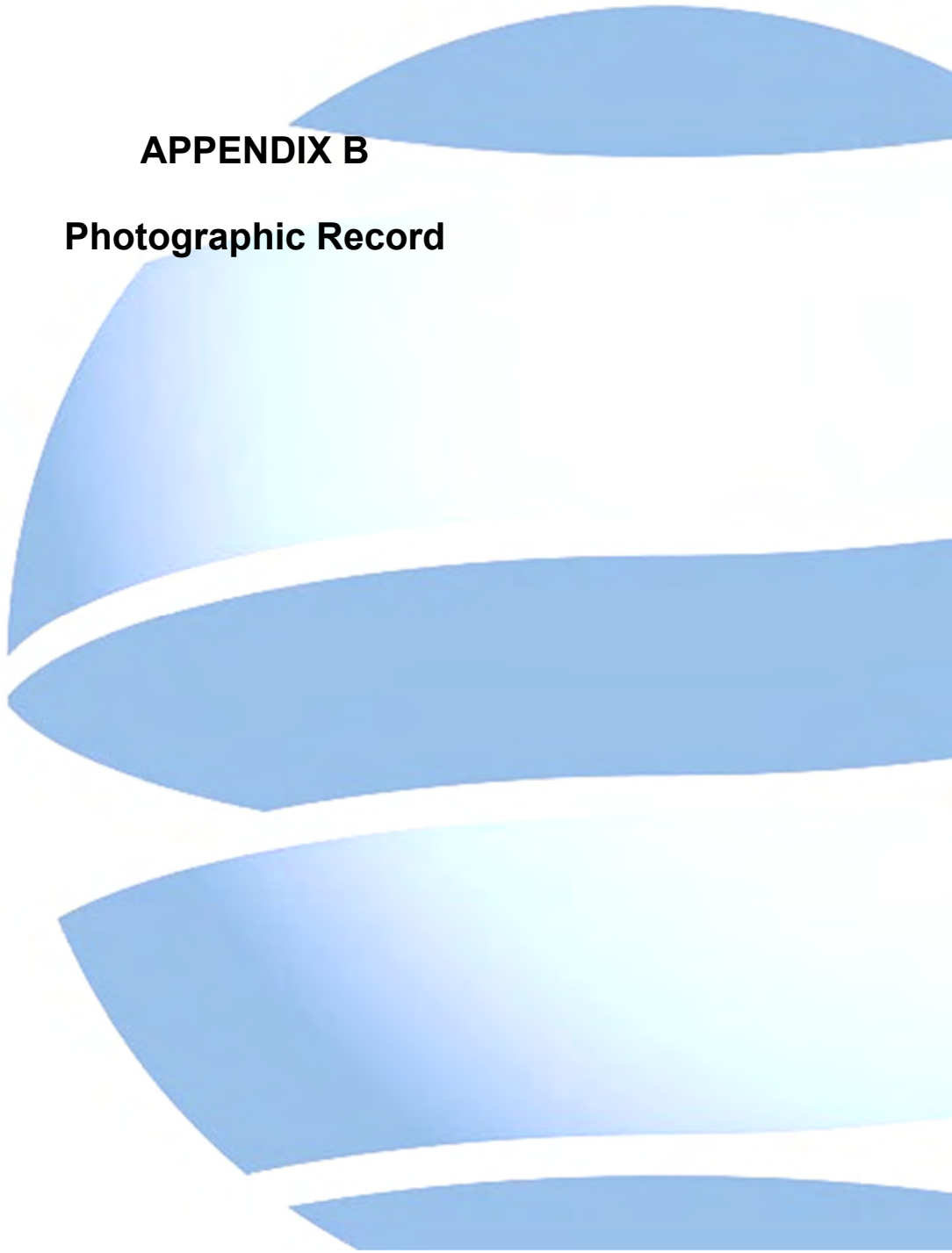
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APPENDIX B

Photographic Record



1 View east across the site



2 View south-east across the site



3 View south-east across the site



4 View south across the site



5 View north-west of the spur in the north



6 Evidence of potential drain along south-west boundary



7 Exposed chalk cliff to the south-west of the site



8 Residential development within the former offsite chalk pit