

GROUND ENGINEERING

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DESK STUDY REPORT

LINDHURST LODGE CARE HOME

LINDHURST ROAD

BARNSLEY

SOUTH YORKSHIRE

Report Reference C12987

On behalf of:-

**Lindhurst Lodge Care Home
Lindhurst Road
Athersley South
Barnsley
South Yorkshire
S71 3PJ**

May 2013

LINDHURST LODGE CARE HOME

NENE CONSTRUCTION MANAGEMENT SERVICES LIMITED

DESK STUDY REPORT AND
COAL MINING RISK ASSESSMENT
FOR
LINDHURST LODGE CARE HOME
LINDHURST ROAD
BARNSELY
SOUTH YORKSHIRE

Report Reference No. C12987

May 2013

INTRODUCTION

The client, Lindhurst Lodge Care Home, proposes to redevelop the Lindhurst Lodge Care Home, at Lindhurst Road, Athersley North, Barnsley, South Yorkshire.

Ground Engineering Limited was instructed by the client to undertake a Phase 1 desk study of the site including a coal mining risk assessment. The study has been compiled from historical map research, and reference to environmental database, Geological Survey and Coal Authority information.

This report summarises the findings of the desk study and develops a conceptual model with an evaluation relating to the nature of the underlying ground, including coal mining risk assessment, together with the likelihood of ground contamination being present beneath the site.

LOCATION, TOPOGRAPHY, HYDROGEOLOGY AND GEOLOGY OF THE SITE

The site of Lindhurst Lodge Care Home is on the northern side of Lindhurst Road and opposite its junction with Mansfield Road, in Athersley North, Barnsley. The site is approximately 3km north of Barnsley town centre in South Yorkshire. The site is centred at approximate National Grid Reference SE 349 098. A site location plan is presented following the report text. The irregular shaped site is approximately 80m long fronting Lindhurst Road, and extends north by 70m where it has a 45m frontage along Radcliffe Road to the north.

The Care Home on-site was centrally located and comprised a two-storey building with single-storey flat roofed wings, a small basement was present beneath the western wing. Around the building were asphalt surfaced car parks to the north and south of the building. Grassed areas were also around the building. Trees were present around the boundaries of the site, and within the eastern and southern parts of the site. The site survey plan of the site provided to Ground Engineering Limited indicated Willow, Cherry, Beech, Sycamore and Silver Birch trees on and around the site.

The site stands at an elevation of approximately 79mOD on ground which slopes down to the east.

The 2008 geological map, sheet 87 at 1:50,000 scale, shows the site covered by superficial Till, and underlain by the solid geology of the Pennine Middle Coal Measures Formation. A north-east to south-west aligned fault is shown approximately 40m north of the site, the direction of downthrow is not indicated but is suspected to be towards the north-west based on nearby faults. The Newhill (Steam) Coal seam is shown to sub-crop approximately 60m south of the site, beneath the superficial Till, and dipping north beneath the site.

COAL AUTHORITY COAL MINING REPORT

As part of the research for the site the South Yorkshire Mining Advisory Service (SYMAS) were contacted for information and the Geological Survey Memoir was reviewed for details. A Non-Residential Coal Authority Mining Report was also obtained from The Coal Authority. This information is reviewed and discussed below in relation to the proposed Care Home development and a copy of the Non-Residential Coal Authority Mining Report is included in Appendix 1.

Underground Mining

Coal is believed to exist at or close to surface that may have been mined at some time in the past, additionally the property is within the likely zone of influence on the surface from past workings in seven seams of coal at 140m to 410m depth, the last date of working being 1957. The property is in an area where a notice of entitlement to withdraw support was published in 1982. No present day mining is within the physical zone of influence of the site and no licences are being considered by The Coal Authority for future underground mining, although reserves of coal exist in the locality which could be worked in the future. The nearest collieries are believed to be East Gawber Hall Colliery 1km to the south, Wharnccliffe Woodmoor Colliery to the east, and Darton Main to the west.

Opencast Mining

The site is not located within the geographical boundary of a former or present day opencast site. No licences to extract coal by opencast methods have been granted or are awaiting determination within 800 metres of the site.

Mine Gas

There is no record of a mine gas emission requiring action by The Coal Authority within the boundary of the property.

Shafts and Adits

There are no (0) known mine entries (coal shafts) on, or within 20m of the boundary of the property.

With the presence of the Newhill (Steam) Coal at shallow depth beneath the site, estimated at between 20m and 40m depth, there is the potential for unrecorded working. The Geological Memoir for the area indicated that the Newhill Coal was 'unimportant' and 'worked a little at crop', however, the known workings were at Dalton Lane Head (approximately 2.5km to the west) and at West Melton (12km to the south-east) where the coal seam locally thickened. The Newhill Coal was indicated by SYMAS to be 0.60m thick close to the site, that there were no known workings, and that it was possible although unlikely that shallow workings are present beneath the site.

Surface Geology/Subsidence

The Coal Authority has no record of faults or other line of weakness having affected the stability of the property. No damage notice or claim, stop notice, or request to execute preventative works as a result of coal mining subsidence is in The Coal Authority records.

Summary of Coal Mining, Foundation Recommendations and Risk Assessment

Newhill (Steam) Coal is believed to exist at or close to surface that may have been mined at some time in the past, however, if there were any workings within the Newhill Coal it was likely to have been at crop approximately 60m south of the site. Deeper coal mine-workings beneath the site, at 140m to 410m depth, were last worked in 1957, a notice to withdraw support was published in 1982, and the Coal Authority consider that any ground movements from these workings should have stopped by now.

Mine-workings within the shallow (less than 20m depth) coal seams, although unlikely, could have a detrimental affect on the stability of the proposed development as would any shafts or 'bell pits', therefore, reinforced strip foundations with a suspended beam and block

floor are recommended, subject to the findings of a geotechnical investigation. During the site strip and excavations for foundations for the proposed Care Home development, observations should be made for evidence of mineshafts or 'bell pits'. If 'bell pits' or mineshafts are encountered, advice should be sought from The Coal Authority and the structural engineer with regard to stabilisation and the impact on the Care Home foundations. There are no (0) known mine entries (coal shafts) on, or within 20m of the boundary of the property.

SITE HISTORY

Historical maps dating from 1854 and internet based searches have been reviewed as part of this desk study. Selected map extracts are reproduced in Appendix 2 with relevant descriptions given below.

<i>OS Map Extract</i>	<i>Description</i>
1854 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure A	The site was within undeveloped parcels of land and crossed by field boundaries. North Royds Wood is shown to the north of the site. A small rectangular shaped pond is shown 90m west of the site.
1890-91 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure B	An enclosure crosses the south-eastern corner of the site. A house is within the enclosure, and a smaller enclosure to the rear (south-west) contains a small outbuilding. Two wells are shown to the south-east of the site. Wharncliffe Woodmoor Colliery Branch railway is shown 220m north-east of the site.
1893 Yorkshire Sheets 262.15 & 262.16 Scale 1:2500 Figure C	A lane or track aligned north-west to south-east crosses the north-eastern part of the site and enters the adjacent wood.
1904 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure D	The site and its immediately surrounding area appear generally unchanged since the previous map extract.
1906 Yorkshire Sheets 262.15 & 262.16 Scale 1:2500 Figure E	The site and its immediately surrounding area appear generally unchanged since the previous map extract.
1913 Yorkshire Sheets 262.15 & 262.16 Scale 1:2500 Figure F	The site area appears unchanged. The wells are not shown to the south-east of the site. The pond to the west is larger.

<i>OS Map Extract</i>	<i>Description</i>
1929-30 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure G	The site area is mostly undeveloped, with an enclosure and house in the south-eastern part of the site. North Royds Wood to the north of the site had been cleared and is now shown as an area of pasture. New housing is shown along the Laithes Lane 350m south of the site.
1938 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure H	The site and its immediately surrounding area appear generally unchanged since the 1929-30 map extracts. New roads, houses and a church are shown 450m south-west of the site.
1948 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure I	The site and its immediately surrounding area appear generally unchanged since the 1938 map extract. A school is shown 450m south of the site.
1951 Yorkshire Sheets 262SE & 274NE Scale 1:10,560 Figure J	The site remains undeveloped except for the enclosure in the south-eastern corner. New houses are shown 350m south of the site, and a new school built further south.
1958-60 Sheets SE3409 & SE3509 Scale 1:2500 Figure K	The site area is a vacant plot, however, the surrounding area has been extensively developed with roads and housing. The site is flanked to the east and west by pairs of semi-detached houses and gardens.
1965-66 Sheets SE30NW&NE & SE31SW&SE Scale 1:10,560 Figure L	The site area remains undeveloped within the Athersley North suburb of Barnsley. The railway to the north-east is a single track mineral railway. Two more schools have been built to the south of the site. A building (school) is shown 350m north-west of the site.
1973-78 Sheets SE30NW&NE & SE31SW&SE Scale 1:10,000 Figure M	An irregular shaped building is shown on-site. A public house and library are shown 300m west of the site along Lindhurst Road. The railway to the north-east has been dismantled.
1989-93 Sheets SE30NW&NE & SE31SW&SE Scale 1:10,000 Figure N	The site and its immediately surrounding area appear generally unchanged since the 1973-1978 map extract. A new building is shown 350m north-west, to the north of the library and south of the school.

<i>Map Extract</i>	<i>Description</i>
1991-93 Sheets SE3409NE & SE3509NW Scale 1:1250 Figure O	The building on-site is named Lindhurst Lodge, which has two small outbuildings adjacent the western site boundary. Vehicles access is shown from Lindhurst Road to the south and Radcliffe Road to the north.
2002 Sheets SE30NW&NE & SE31SW&SE Scale 1:10,000 Figure P	The site and its immediately surrounding area appear unchanged since the 1991-93 map extract. Schools 350m to the north-west, and 550m to the south, are no longer shown.
2012 Sheets SE3409NE & SE3509NW Scale 1:1250 Figure Q	The site and its immediately surrounding area appear generally unchanged since the 2002 map extract.
2012 Topographical Survey Figure R	The topographical survey shows Lindhurst Lodge centrally on site, with wings to the west, north and east. A basement is shown beneath the west wing of the building. Asphalt car parking areas are shown in the north-western and southern parts of the site. A garage is shown adjacent the western site boundary. Grassed areas are shown around the buildings and car parks, with planters and paved areas in the eastern part of the site. Trees are shown with details of their species and height.
2013 Site Location Plans & Aerial Photograph Pages 1 and 2, Appendix 2	The site and its immediately surrounding area appear generally unchanged since the 2012 map extract. Trees are shown along the site boundaries, and within the southern and eastern parts of the site. The photo shows buildings in the east and north of the site are flat roofed single-storey structures.

Historical Summary

The map of 1854 showed the area of the site within fields, with a large wood to the north of the site. The 1890-91 map extract showed an enclosure and house in the south-eastern corner of the site, and a colliery branch railway line 220m to the north-east. The wood to the north of the site had been cleared by 1929-30, and new housing was shown to the south of the site. The roads and housing surrounding the site were built in the 1950's, and Lindhurst Lodge was first shown on the 1973-78 map extract. The Care Home has remained largely unchanged to the present day.

ENVIRONMENTAL DATABASE INFORMATION

Appendix 3 contains information from Environmental Databases for a radius of up to 2km from the site. The information covers various datasets and contributors include the Environment Agency, Local Authorities, British Geological Survey, Ordnance Survey and the Coal Authority.

The results obtained are presented together with a detailed search on selected areas of enquiry, and typically described within 250m of the site.

Environmental Permits, Incidents & Registers

The following is a summary of the main points for environmental authorisations:

Statutory Authorisations: There are no (0) recorded sites authorised by the Environment Agency under Part I of the Environmental Protection Act 1990, to carry out processes subject to Integrated Pollution Control (IPC) or Part A(1) and Integrated Pollution Prevention and Control (IPPC) on, or within 250m of the site. There are no (0) recorded referrals under the Water Industry Act on, or within 250m of the site. There are no records (0) of 'Red List' Discharge Consents within 250m of the site. There are no (0) records of List 1 or List 2 Dangerous Substances within 250m of the site. There are no (0) records of Part A(2) or Part B activities and enforcements on, or within 250m of the site. There are no (0) recorded sites registered by the Environment Agency under the Radioactive Substances Act 1993, authorised to keep or use category 3 or 4 radioactive substances within 250m of the site. There are no (0) recorded consents issued, by the Environment Agency, to discharge to watercourses in accordance with the Water Resources Act 1991 on, or within 250m of the site. There are no (0) recorded sites subject to hazardous substances consents granted, by the relevant local authority under the Planning (Hazardous Substances) Act 1990 on, or within 500m of the site.

Control of Major Accidents and Notification of Installations Handling Hazardous Substances:

There are no (0) recorded sites regulated by the Health and Safety Executive under the Control of Major Accident Hazards (COMAH) regulations 1999, on, or within 500m of the site. There are no (0) recorded sites regulated by the Health and Safety Executive for storing specific dangerous substances under the NIHHS regulations 1982, on, or within 500m of the site.

Environment Agency Recorded Pollution Incidents and Prosecutions: There are no (0) recorded incidents on, or within 250m of the site.

Contaminated Land Register Entries & Notices: There are no (0) recorded entries or notices on the Contaminated Land Register listed on, or within 500m of the site.

Landfill & Waste Sites

The following is a summary of the main points for the Landfill section:

Landfill Sites: There are no (0) landfill sites either registered by the Environment Agency or recorded as Landfill Data within 250m of the site. There are no (0) British Geological Survey or Department of Environment landfill site surveys recorded within 250m of the site and there are also no (0) Local Authority landfill sites recorded within 250m of the site.

Landfill and Other Waste Sites Findings: There are no (0) operation waste treatment, transfer and disposal sites within 250m of the site. There are no (0) non-operational waste treatment, transfer and disposal sites within 250m of the site. There are no (0) Environment Agency licensed waste sites within 250m of the site.

Current Land Uses

The following is a summary of the main points for the Current Land Uses section:

Current Industrial Sites: There are no (0) recorded potentially contaminative uses recorded on site, however, there is one (1) within 250m of the site. The potentially contaminative use off-site comprises an electricity sub-station 169m south-east.

Petrol and Fuel Sites: There are no (0) recorded petrol and fuel sites on, or within 250m of the site.

Underground High Pressure Oil and Gas Pipelines: There are no (0) high pressure oil and gas pipelines recorded on, or within 250m of the site.

Geology, Hydrogeology and Hydrology – Pathways & Receptors

The following is a summary of the main points for the geology, hydrogeology, hydrology and flooding sections:

Artificial Ground & Made Ground: There are no (0) records of made ground on the site, or within 50m around the site.

Drift Deposits & Solid Geology: The site is recorded as being covered by Till (Boulder Clay) drift deposits. The made ground and drift deposits are underlain by the solid geology of the Pennine Middle Coal Measures Formation comprising mudstone, siltstone, sandstone and coal seams.

Groundwater Vulnerability: The site is designated by the Environment Agency as being underlain by Unproductive strata comprising the superficial Till, which in turn is underlain by a Secondary (A) Aquifer comprising the solid geology strata (Pennine Middle Coal Measures).

Water Abstractions: There are no (0) groundwater abstractions on, or within 250m of the site. There are no (0) surface water or potable water abstraction licenses held on, or within 250m of the site.

Source Protection Zones: There are no (0) Source Protection Zones within 250m of the site.

River Network: There are no (0) river networks on, or within 250m of the site.

Surface Water Features: There are no (0) surface water features on, or within 250m of the site.

Flood Risk: The site is not within 250m of an area at risk of flooding. There are no flood defences within 250m of the site. The site and 50m around has a very high risk of groundwater flooding based on the underlying geological conditions.

Environmentally Sensitive Receptors

The following is a summary of the main points for the designated environmentally sensitive sites section:

Environmentally Sensitive Areas: There are no (0) sites of special scientific interest, nature reserves, special areas of conservation, special protection areas, Ramsar sites, world heritage sites, environmentally sensitive areas, areas of outstanding natural beauty or national parks either on or within 250m of the site. The site is within a nitrate vulnerable zone.

Natural Hazards & Mining

The following is a summary of the main points for the natural hazards and mining sections:

Natural Hazards: Natural hazards sourced from BGS GeoSure Data for on site and within 50m of the site has been summarised below.

<i>Natural Hazard</i>	<i>Risk</i>
Shrink-Swell	Low
Landslides	Very Low
Soluble rocks	Null – Negligible
Compressible ground	Negligible
Collapsible rocks	Very Low
Running sand	Very Low

Radon Affected Area: The site is not within a radon affected area as less than 1% of properties are above the 'action' level. The site lies within an area where no radon protection measures are necessary in accordance with Building Research Establishment report BR211 (1999).

Mining: The site and the area within 75m of the site is within a coal mining area. The risk of subsidence relating to shallow mining within 150m of the site is low-moderate. There are no (0) recorded brine affected areas within 75m of the site.

PRELIMINARY RISK ASSESSMENT

In order to assess the risks associated with the presence of ground contamination the linkages between the sources and potential receptors to contamination need to be established and evaluated. This is in accordance with the Environmental Protection Act 1990, which provides a statutory definition of Contaminated Land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that

- *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
- *Pollution of controlled waters is being, or is likely to be, caused.*

There are three principal factors that are assessed whilst undertaking a qualitative risk assessment for any site. These are the presence of a contamination source, the existence of migration pathways and the presence of a sensitive target(s). It should be noted that it is necessary for each element of source, pathway and target to be present in order for exposure of a human or environmental receptor to occur.

UK Government guidance on the assessment of contaminated land, requires risk to human health and the environment to be reviewed using source – pathway – target relationships. If each of these elements is present, the linkage provides a potential risk to the identified targets. ***Contaminants or potential pollutants*** identified as ***sources*** in relation to the identified previous uses are listed below in Table 1.

Table 1: Identified Potential Contaminant Sources

<i>Contaminant Source</i>	<i>Comments</i>
Drainage	Effluent from leaking drains would provide a contaminant source.
Soil Beneath Site	Contamination may be present within any made ground materials on the site associated with the former use as a Care Home.
Soil Gas	Potential soil gas generated from the made ground or underlying geology such as coal seams.
Ground Contamination Outside Site Boundary	Ground contamination migrating from adjoining sites.

A **Pathway** is defined as one or more routes through which a receptor is being, or could be, exposed to, or affected by, a given contaminant.

Potential **Target or Receptors** fall within the categories of Human Health, Water Environment, Flora and Fauna, and Building Materials.

There are a number of possible pathways for the contaminants identified on the site to impact human and/or environmental receptors and these are summarised in Tables 2 and 3.

Table 2: Human Receptors and Pathways

<i>Human Receptor-Mechanism</i>	<i>Typical Exposure Pathway</i>
Human Inhalation	Breathing Dust and Fumes Breathing Gas emissions
Human Ingestion	Eating -contaminated soil, for example by small children -plants grown on contaminated soil Ingesting dust or soil on vegetables Drinking contaminated water
Human Contact	Direct skin contact with contamination Direct skin contact with contaminated liquids

Table 3: Water Receptors and Pathways

<i>Receptor-Water Environment</i>	<i>Typical Exposure Pathway</i>
<p>Groundwater</p> <p>The site is underlain by Unproductive superficial Till covering a Secondary (A) Aquifer (Pennine Middle Coal Measures).</p> <p>The site is not within a Source Protection Zone.</p>	<p>Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and migrate to underlying groundwater.</p> <p>Contamination leads to restriction/prevention of use as a resource, for example, drinking water, and can have secondary impacts on other resources, which depend on it.</p>
<p>Surface Water</p> <p>There are no surface water features or river networks within 250m of the site.</p>	<p>Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and laterally migrate.</p> <p>Contamination leads to a restriction/prevention of use: -as drinking water resource -for amenity use Effects on aquatic life.</p>

PRELIMINARY CONCEPTUAL MODEL

Assessment of the potential linkage between ground contamination sources, human and environmental receptors have been assessed based on the desk study research documented in the earlier sections.

A generalised preliminary conceptual model relative to the construction phase and completed development is presented below in Table 4.

Table 4: Preliminary Conceptual Model Relative to Existing Site and Future Development

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage	Soil	Soil Gas	Off-Site Sources
Human Health – ground workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Low likelihood	Low likelihood	Low likelihood	Low likelihood
Human Health – users of completed Development	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Low likelihood	Low likelihood	Low likelihood	Low likelihood
Water Environment	Migration through ground into surface water or groundwater	Unlikely	Low likelihood	Unlikely	Low likelihood
Flora	Vegetation on site growing on contaminated soil	Unlikely	Low likelihood	Unlikely	Unlikely
Building Materials	Contact with contaminated soil	Unlikely	Low likelihood	N/A	Unlikely

Key to Table 4 Estimated Potential for Linkage with Contaminant Source	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.
N/A	Not Applicable

CONCLUSIONS

The proposal is to redevelop the site for a Care Home use.

Drainage/Buildings

The perceived risk of leakage contamination from the existing drainage associated with the former Care Home is considered as a low likelihood. It is recommended that a survey is carried out to establish the nature of any services which cross the site.

The Lindhurst Lodge Care Home was shown on the 1973-78 map extract, with the out-buildings shown on the 1991-93 map extract. Asbestos may be present within some of the buildings.

Contaminated Soil

It is expected that any contaminants present would primarily be within any made ground associated with the former use of the site comprising a Care Home. In the absence of test results it would be prudent to assume a perceived risk from ground contamination to the existing and future use of a Care Home as a low likelihood.

If subsequent chemical test results from an investigation reveals materials that are contaminated then remediation works may be required.

Soil Gas

According to the environmental database there are no landfills within influencing distance of the site. The site lies within an area where less than 1% of homes are above the BRE action level for radon and no radon protection measures are required. The Coal Authority has no record of mine gas emission. Any made ground beneath the site, mine workings with voids and coal seams within the solid geology could provide a source of gas. It is considered a low likelihood that soil gas could affect the existing or proposed development.

Water Environment

There are no water features within 250m of the site. The site is indicated as being underlain by Unproductive superficial Till strata, covering a Secondary (A) Aquifer comprising the solid geology strata (Pennine Middle Coal Measures Formation). The groundwater flow is anticipated to the north-east. It is considered a low likelihood that the soil beneath the site could adversely affect the water environment beneath the site.

Ground Contamination Outside Site Boundary

The soils beneath the land adjacent the site may contain contaminants. The migration of such contamination will depend on the nature and permeability of the underlying soils.

It is considered a low likelihood that such off site contamination has affected the site.

Geotechnical Considerations

It is anticipated that the site will be covered by made ground, overlying superficial Till, and in turn the solid geology of the Pennine Middle Coal Measures.

Mine-workings within the shallow coal seams could have a detrimental affect on the stability of the proposed development as would any shafts or 'bell pits'. Therefore, reinforced strip foundations bearing with the solid geology strata, with a suspended beam and block floor are recommended, subject to the findings of a geotechnical investigation. Shrinkable clays will require a suspended floor in any case. Foundations will need to be locally deepened in areas of deeper made ground, or piled foundations which are likely to have good bearing properties as long as they are designed to avoid over-stressing underlying coal workings, and that floor slabs may need to be suspended on such foundations if deep made ground is present or trees are within influencing distance in clay soils. Any foundations or structures remaining in the ground should be removed where encountered otherwise they may obstruct the new foundations

or form 'hard spots' beneath floor slabs or a raft. Excavations for services trenches may also encounter the buried foundations.

During the site strip and excavations for foundations for the proposed development, observations should be made for made ground and evidence of mineshafts or 'bell pits'. If 'bell pits' or mineshafts are encountered advice should be sought from the Coal Authority and the structural engineer with regard to stabilisation and the impact on the house foundations.

Further Works

Where new buildings are proposed it is recommended that an intrusive ground investigation is undertaken to determine the nature of any ground contamination, together with the geotechnical nature of the ground for foundation design and construction. The investigation should also confirm the depth and extent of any made ground, thickness of the glacial Till, gas monitoring, and depth affected by tree roots. During the investigation observations should be made for evidence of mineshafts or 'bell pits'. If 'bell pits' or mineshafts are encountered, advice should be sought from The Coal Authority and the structural engineer with regard to stabilisation and the impact on the Care Home foundations. If intrusive investigation into coal seams beneath the site is required, Coal Authority permission and payment of a fee to them will be required to enter or disturb the Coal Authority mining interests, and a completion/validation report is required within 90 days of the investigation.

GROUND ENGINEERING LIMITED



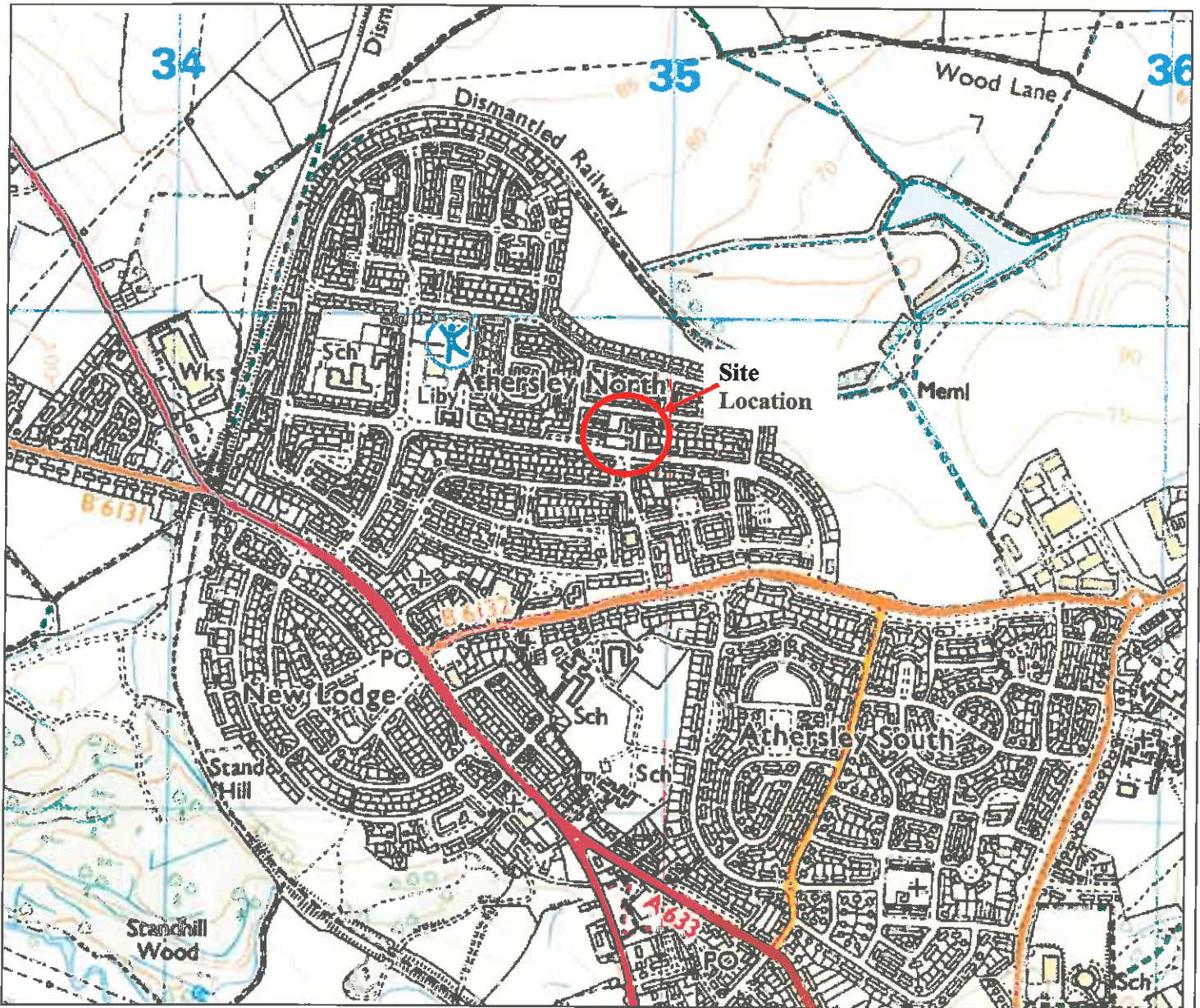
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Site Location Plan

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Not To Scale

Project : Lindhurst Lodge Care Home, Lindhurst Road,
Barnsley, South Yorkshire

Client : Lindhurst Lodge Care Home

**GROUND
ENGINEERING
LIMITED**

Peterborough

Tel : 01733 566566

Project No.

C12987

Appendix 1

The Coal Authority Report

The COAL AUTHORITY

Issued by:

The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

GROUND ENGINEERING LIMITED
NEWARK ROAD
PETERBOROUGH
PE1 5UA

Our reference: **51000278608001**
Your reference: **SW/C12987**
Date of your enquiry: **02 May 2013**
Date we received your enquiry: **02 May 2013**
Date of issue: **02 May 2013**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

LINDHURST ROAD, BARNSELY, SOUTH YORKSHIRE, S71 3DD

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 7 seams of coal at 140m to 410m depth, and last worked in 1957.

Any ground movement from these coal workings should have stopped by now.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast coal mining

Past

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is in an area for which a notice of entitlement to withdraw support was published in 1982.

The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Comments on Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional Remarks

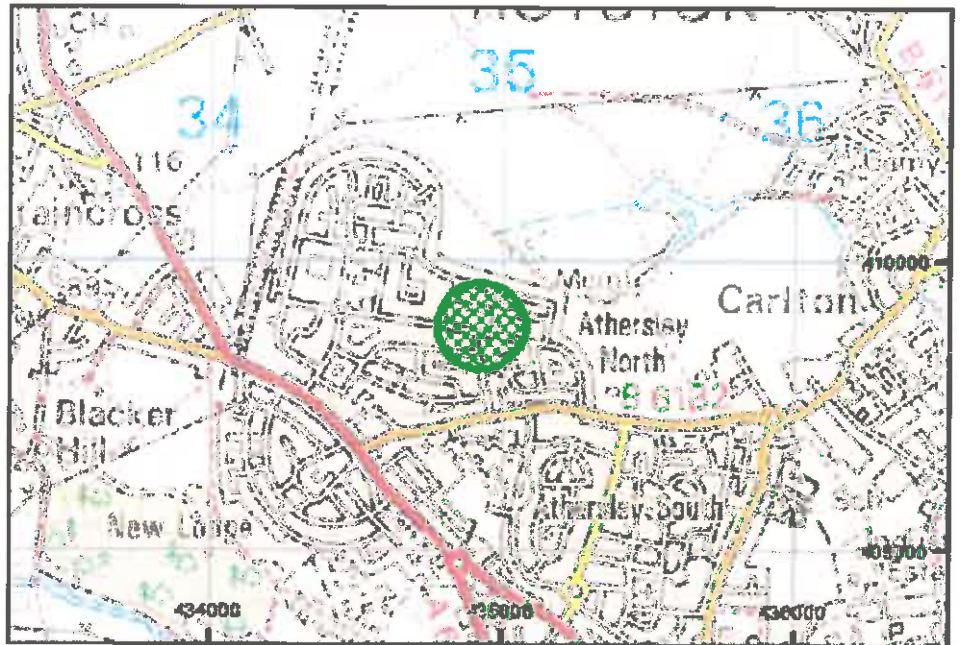
This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006. The Coal Authority owns the copyright in this report. The information we have used to write this report is protected by our database right. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Tax Point Date:	02 May 2013
Issued to:	GROUND ENGINEERING LIMITED NEWARK ROAD PETERBOROUGH PE1 5UA
Property Search for:	LINDHURST ROAD, BARNSELY, SOUTH YORKSHIRE, S71 3DD
Reference Number:	51000278608001
Date of Issue:	02 May 2013
Cost:	£59.00
VAT @ 20%:	£11.80
Total Received:	£70.80
VAT Registration	598 5850 68

Location map



Approximate position of property



Enquiry boundary

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Key

Approximate position of enquiry boundary shown



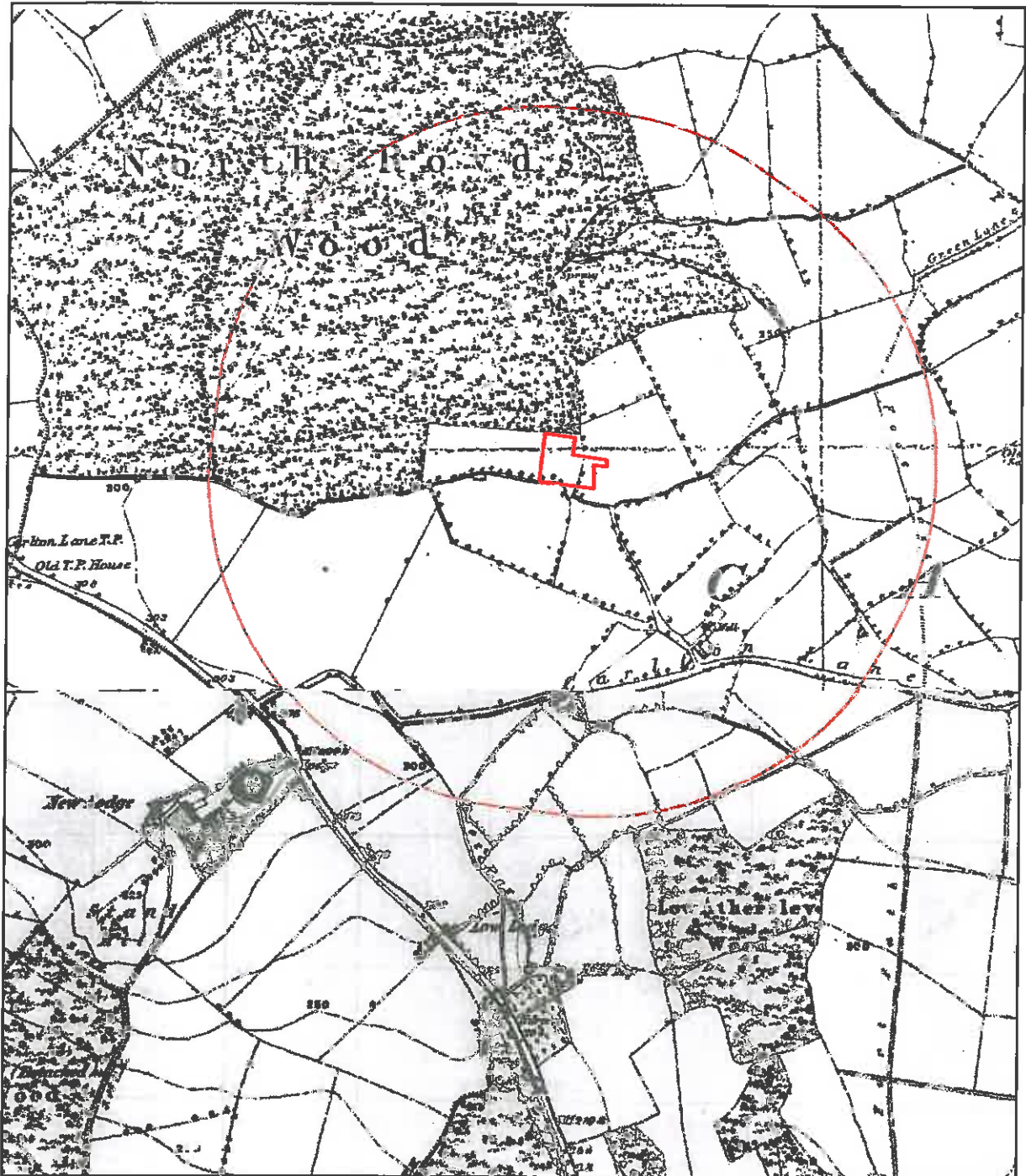
Appendix 2

Historical Map Sheets

Site History

Figure A

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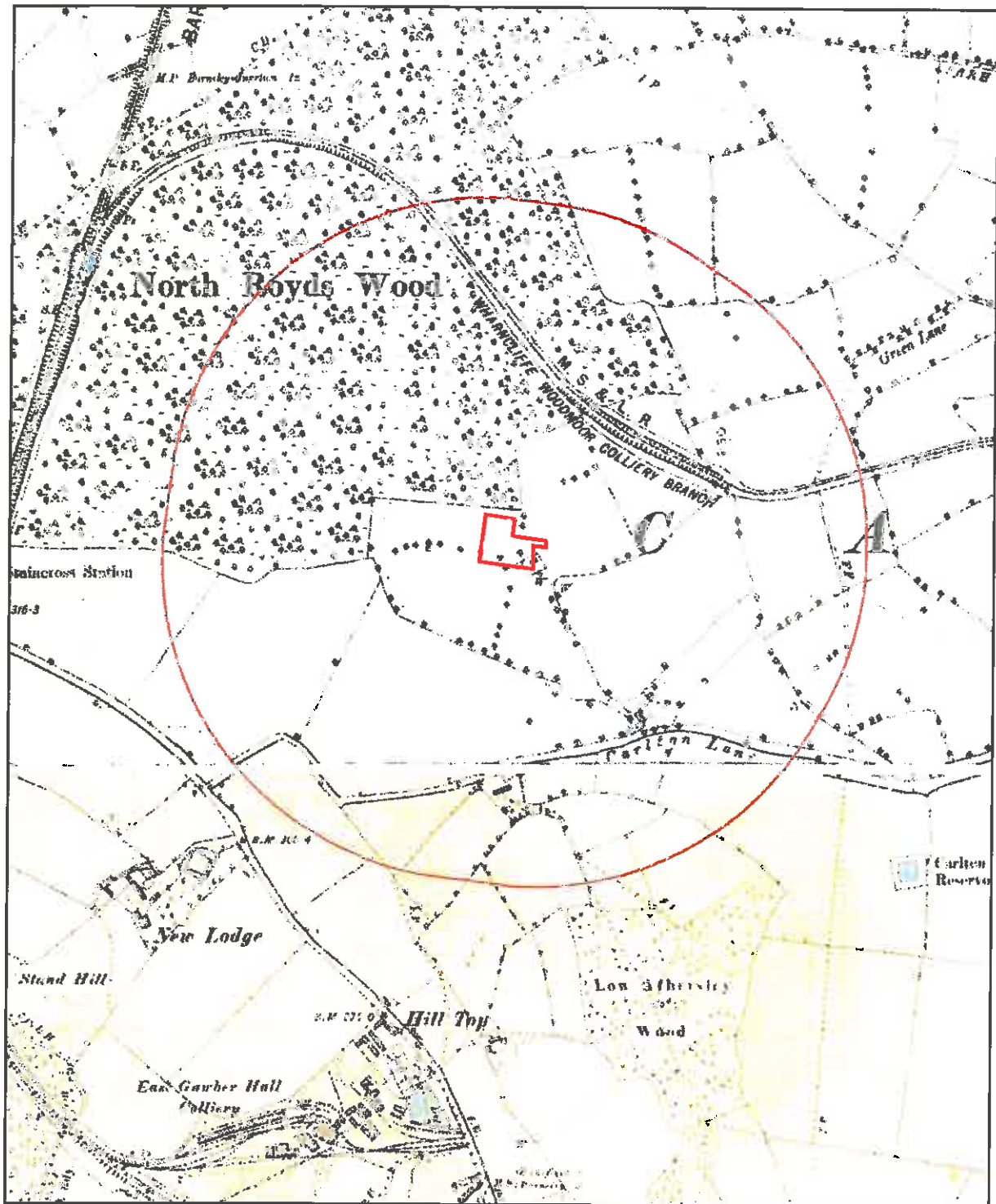
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Site History

Figure B

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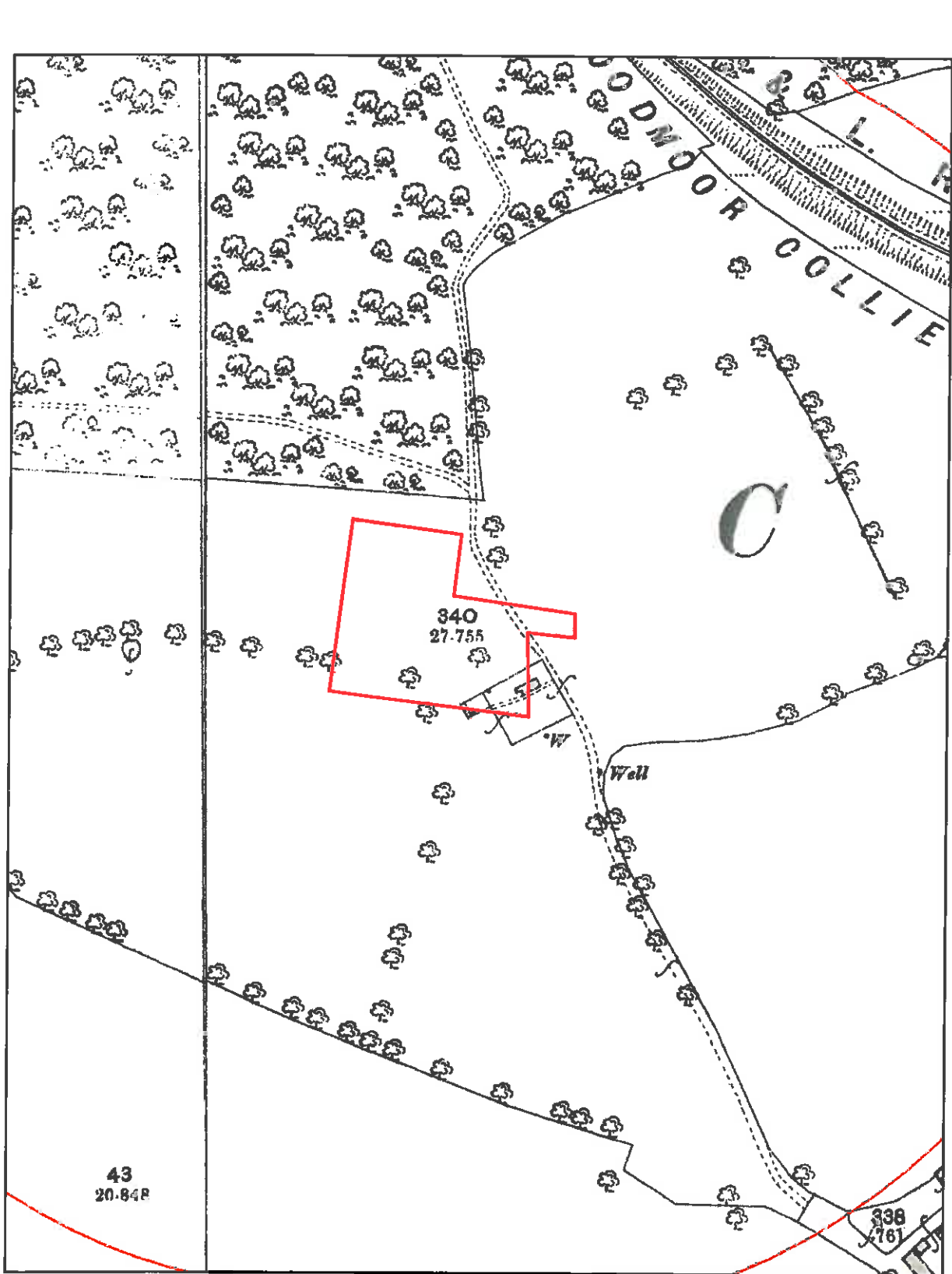
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Site History

Figure C

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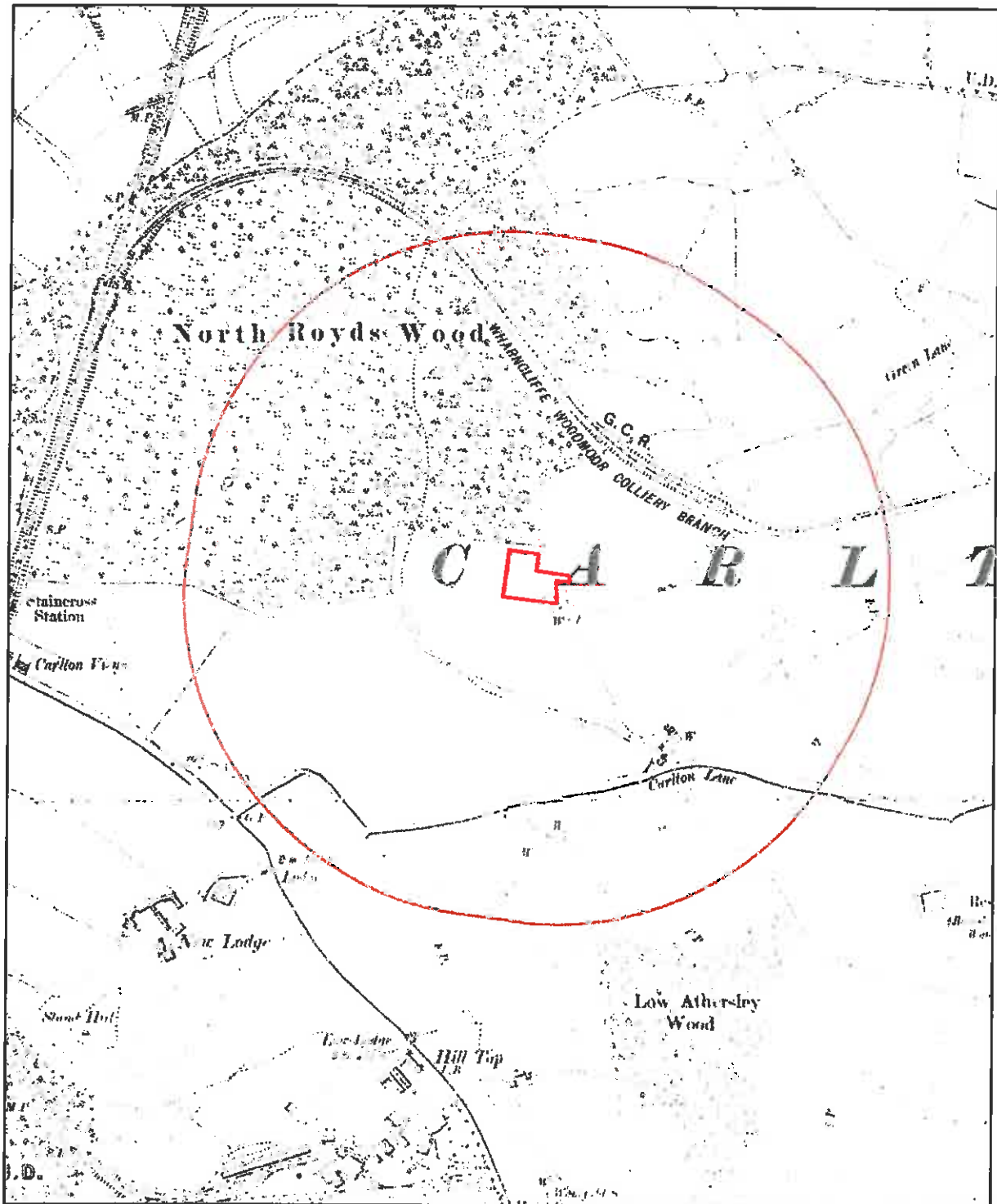
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Figure D

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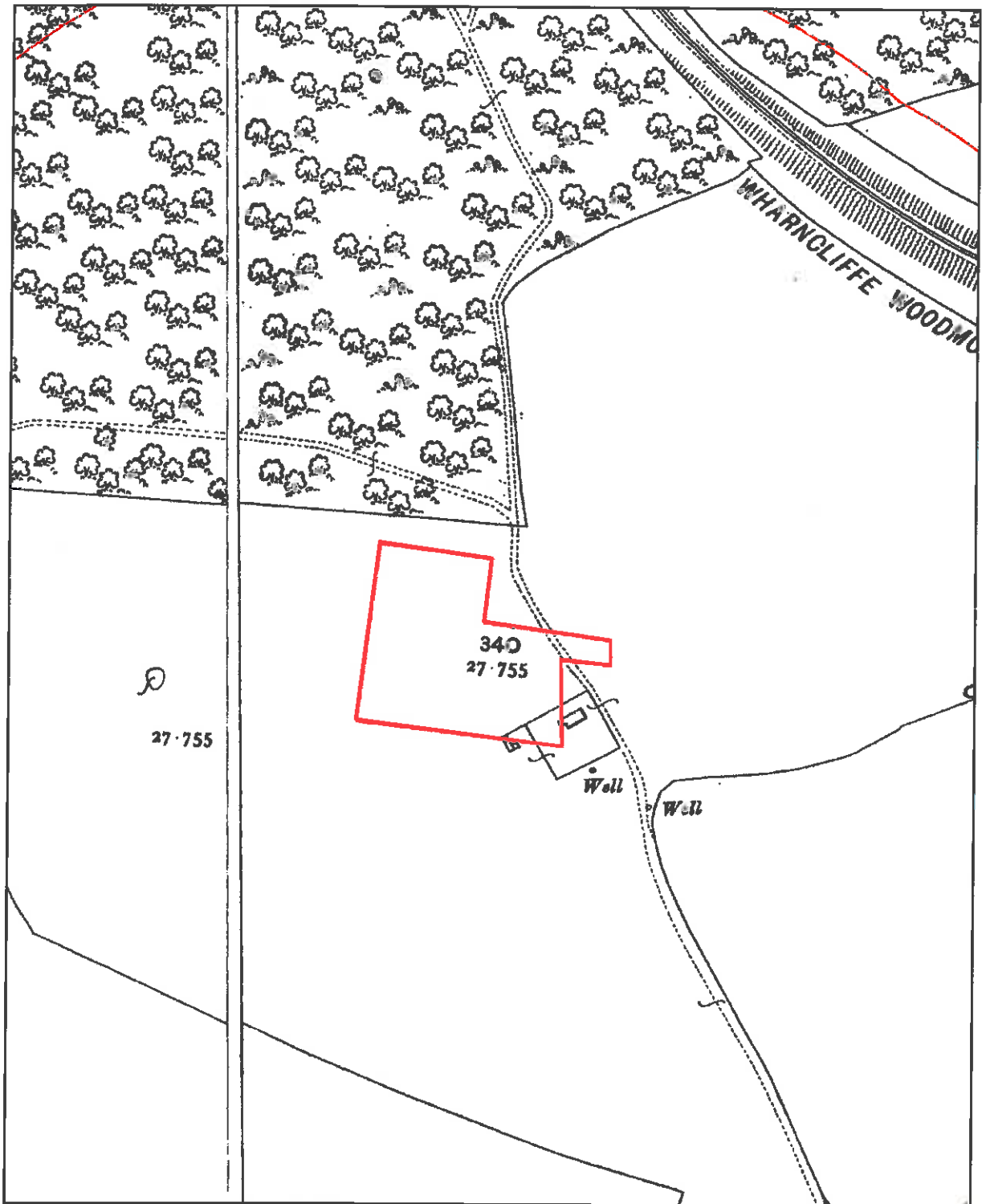
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Figure E

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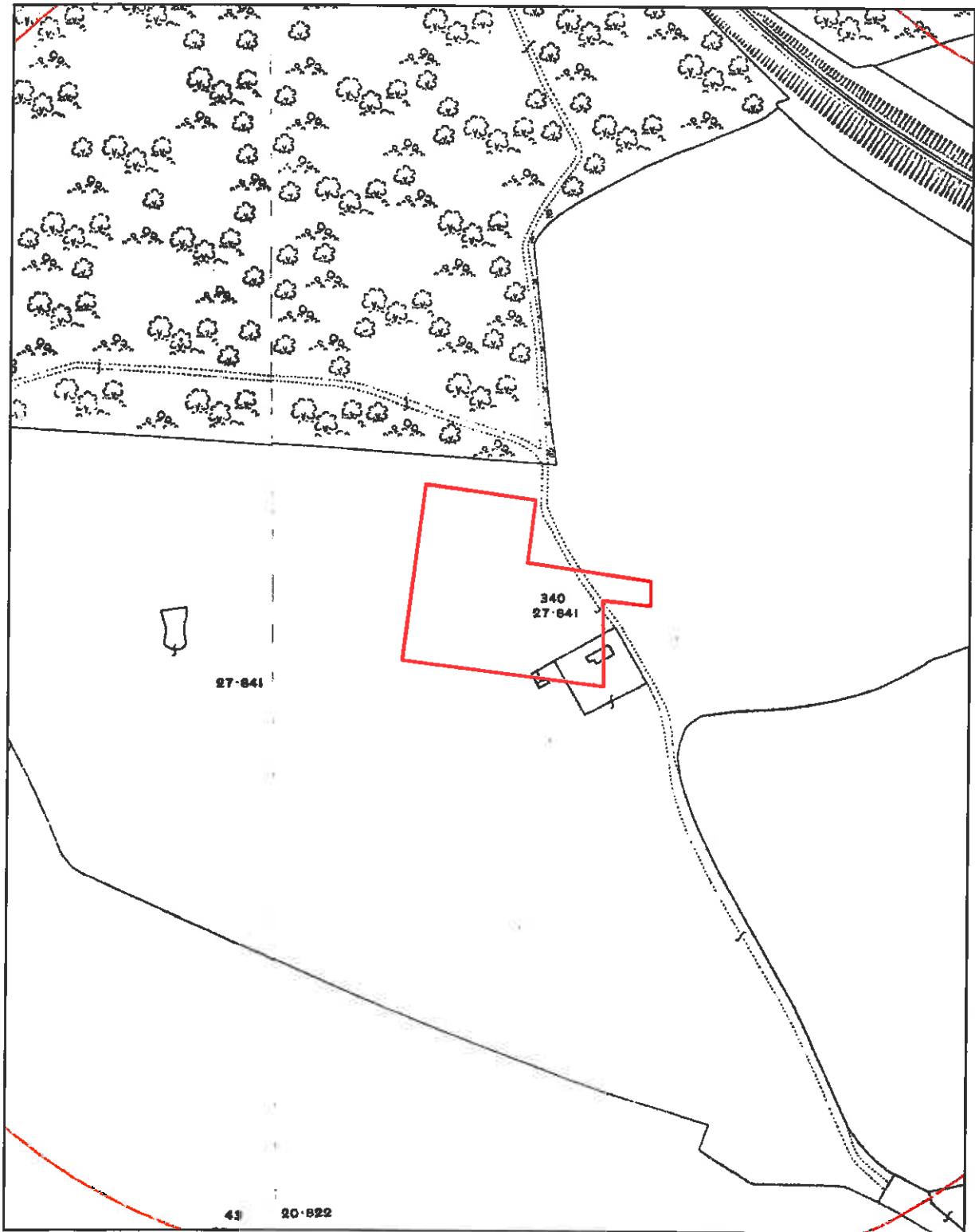
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Figure F

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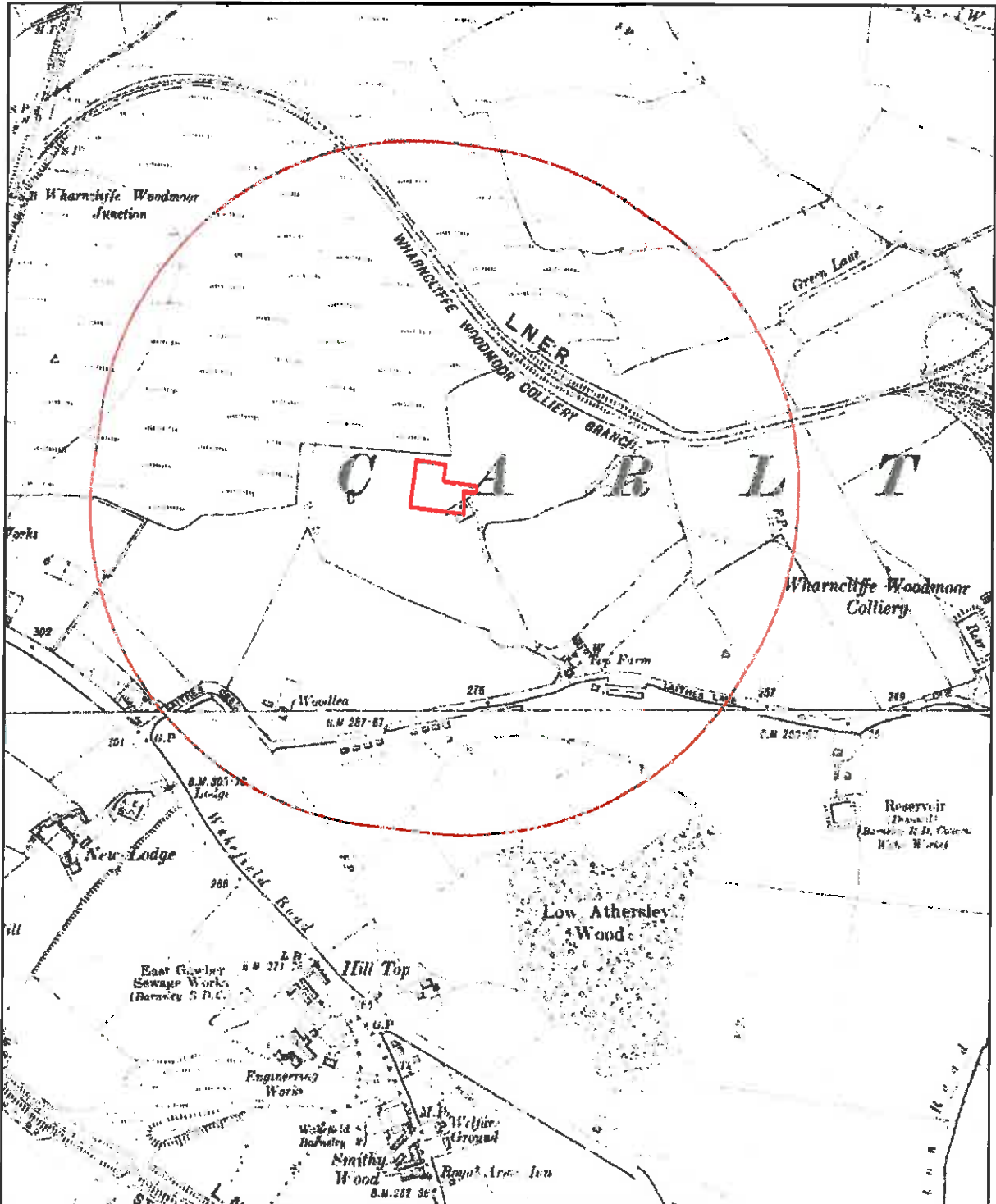
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Figure G

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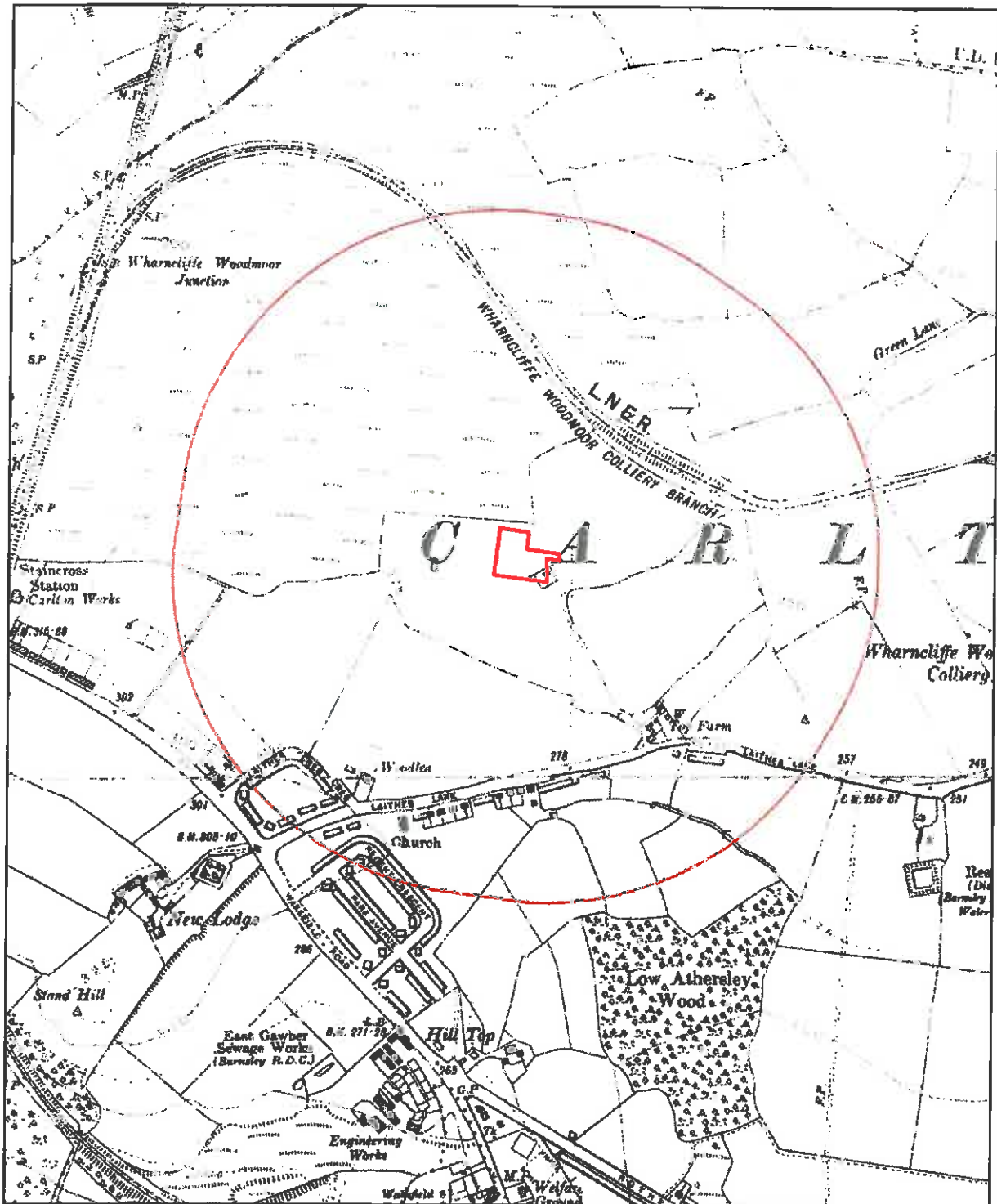
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Site History

Figure H

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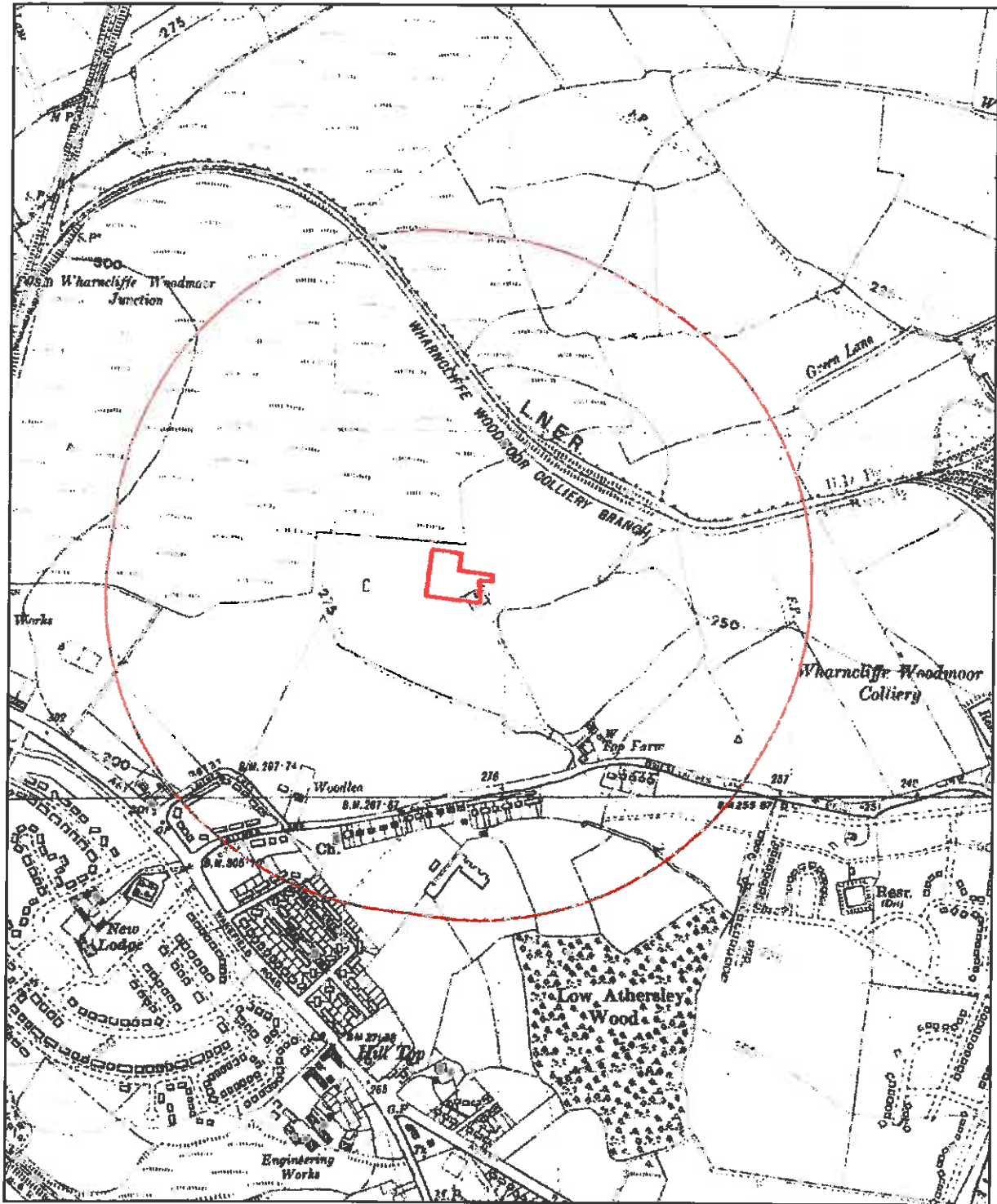
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Site History

Figure 1

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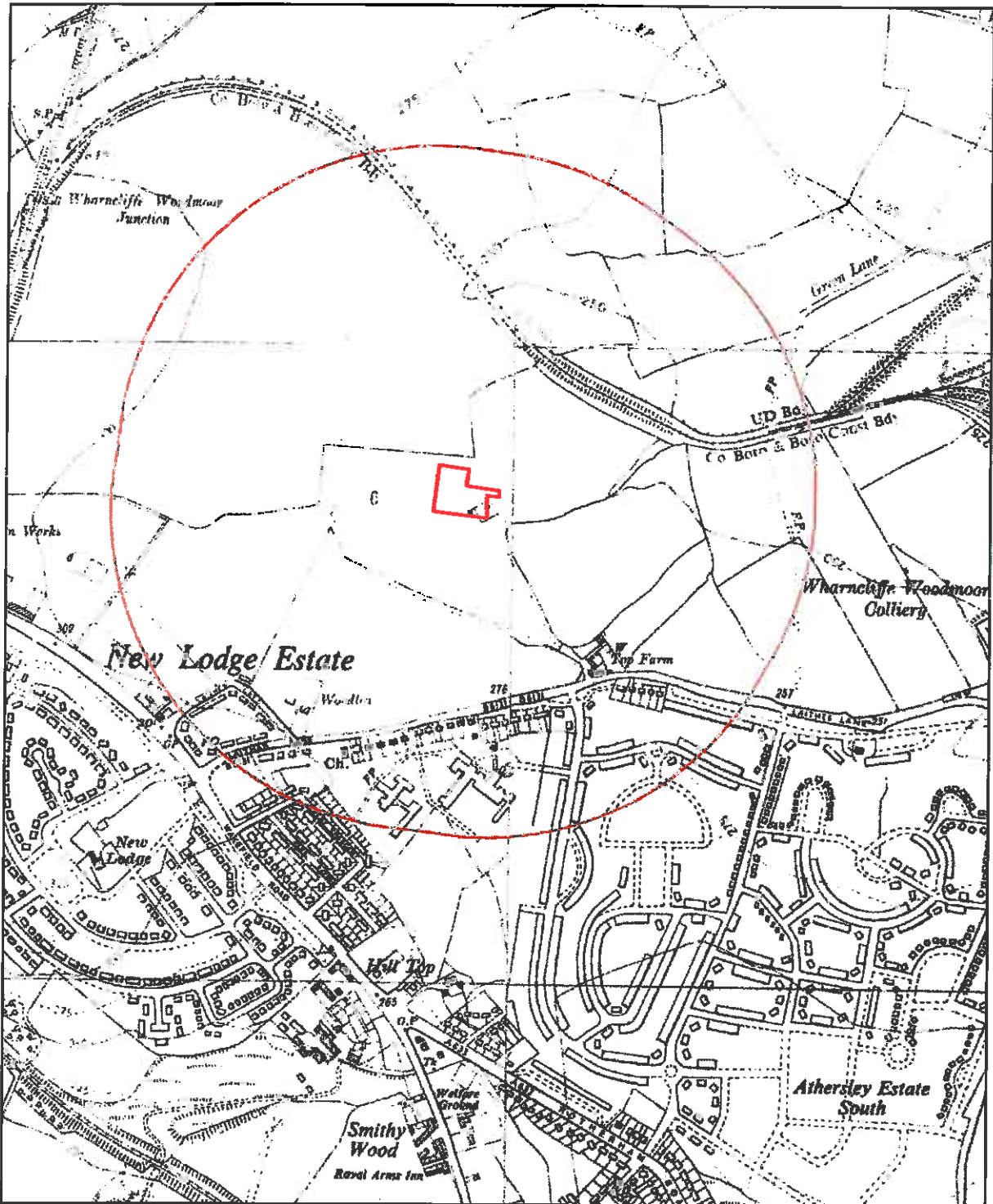
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Figure J

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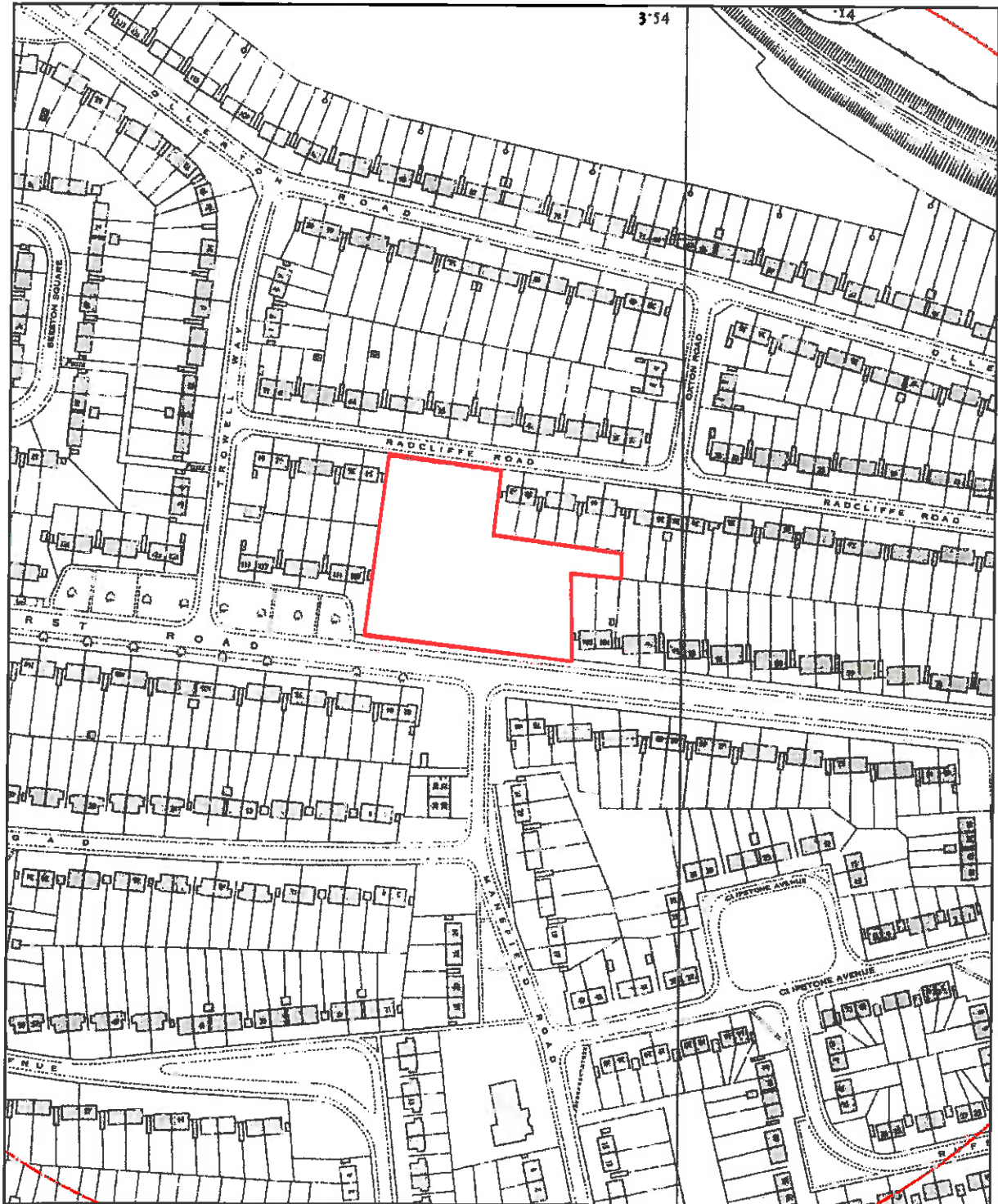
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Site History

Figure K

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Site History

Figure L

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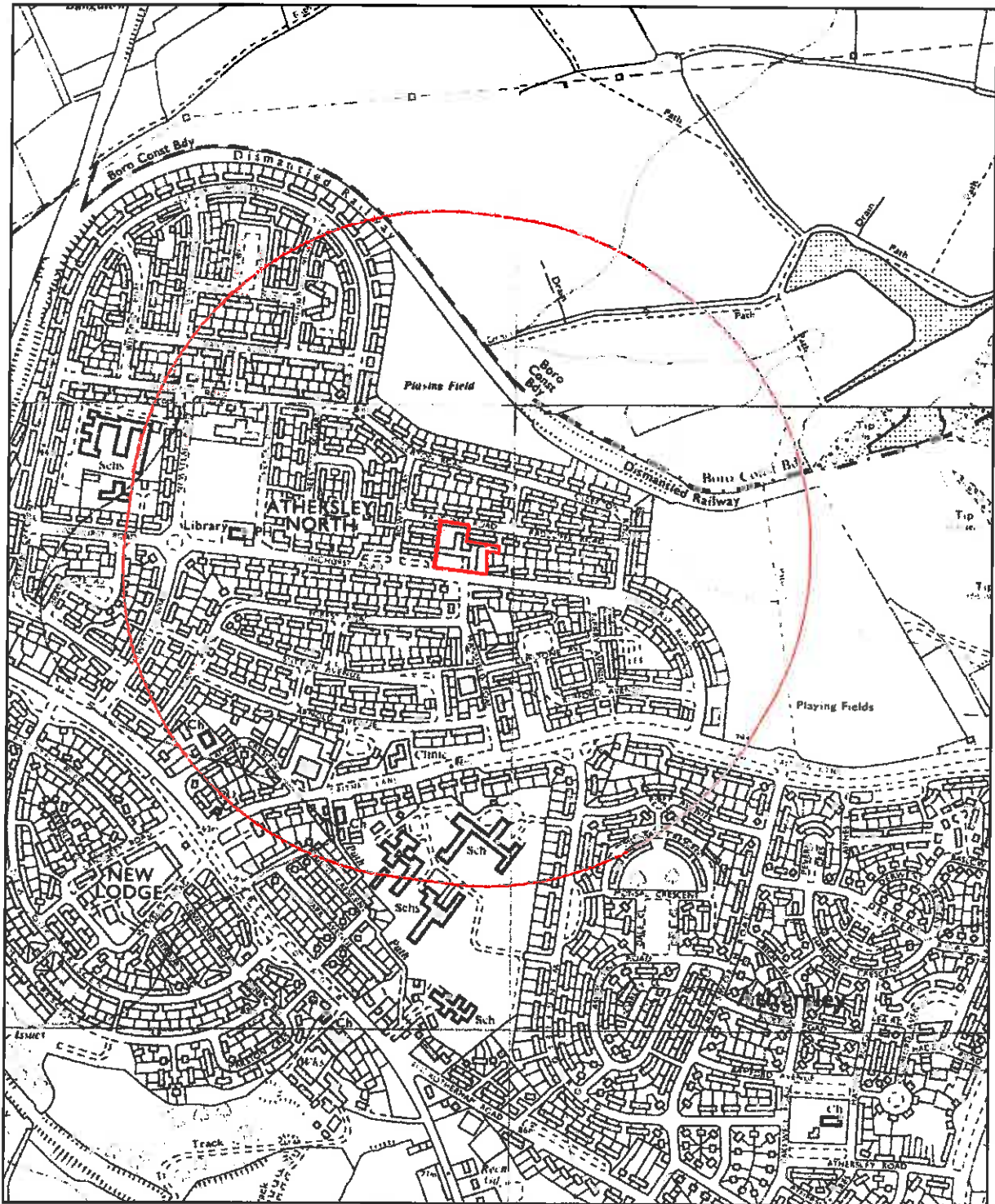
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Figure M

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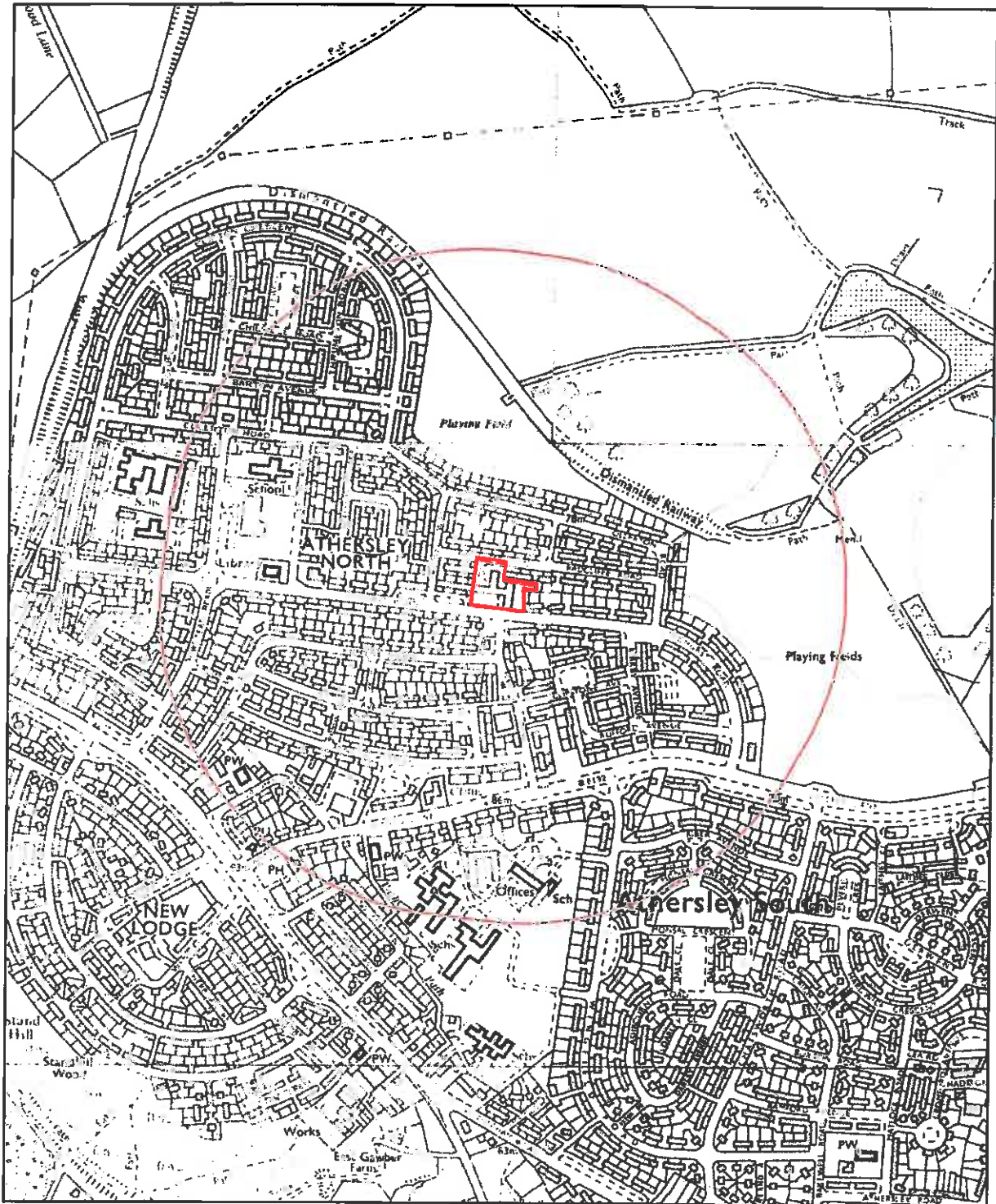
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Figure N

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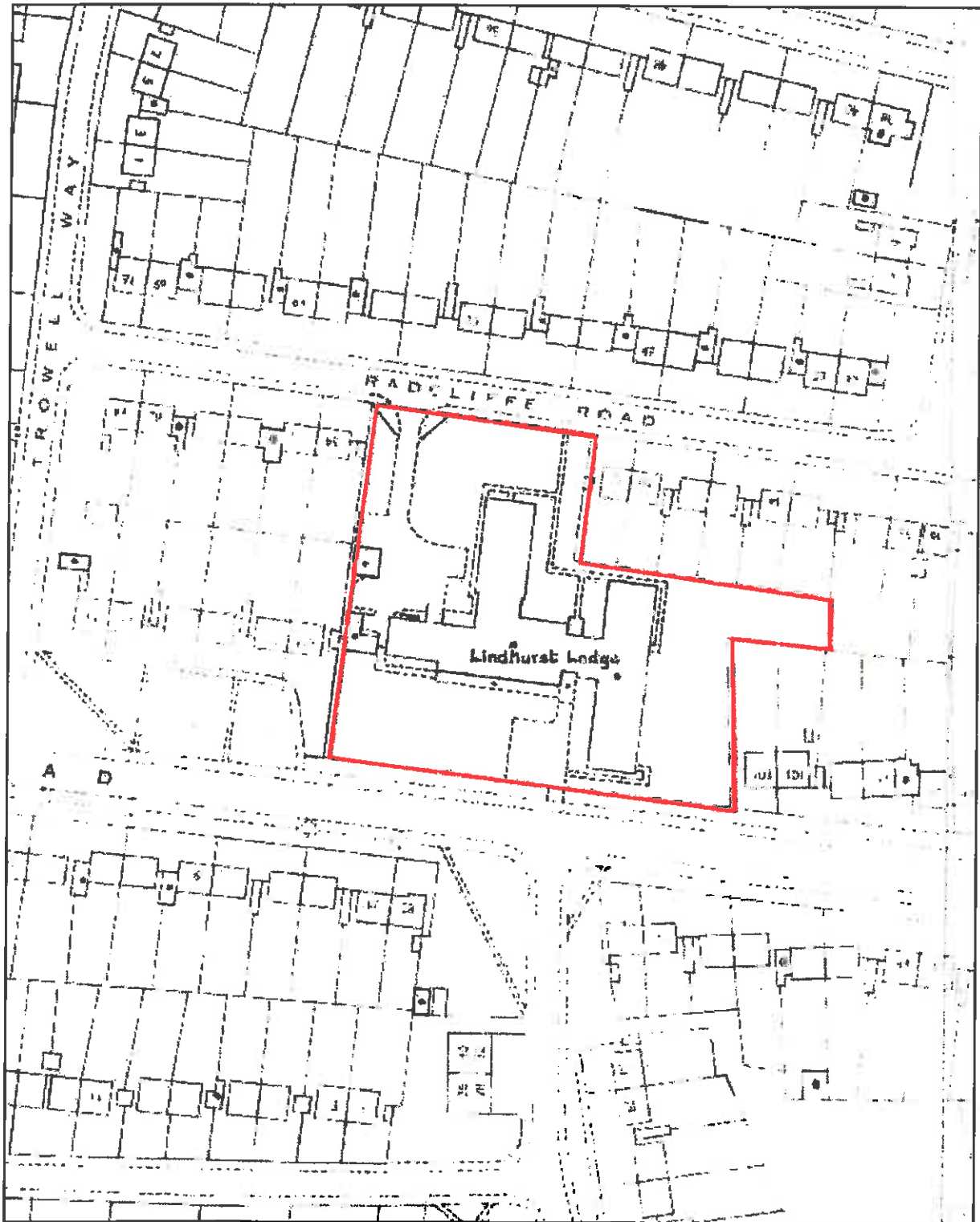
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Figure O

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Figure P

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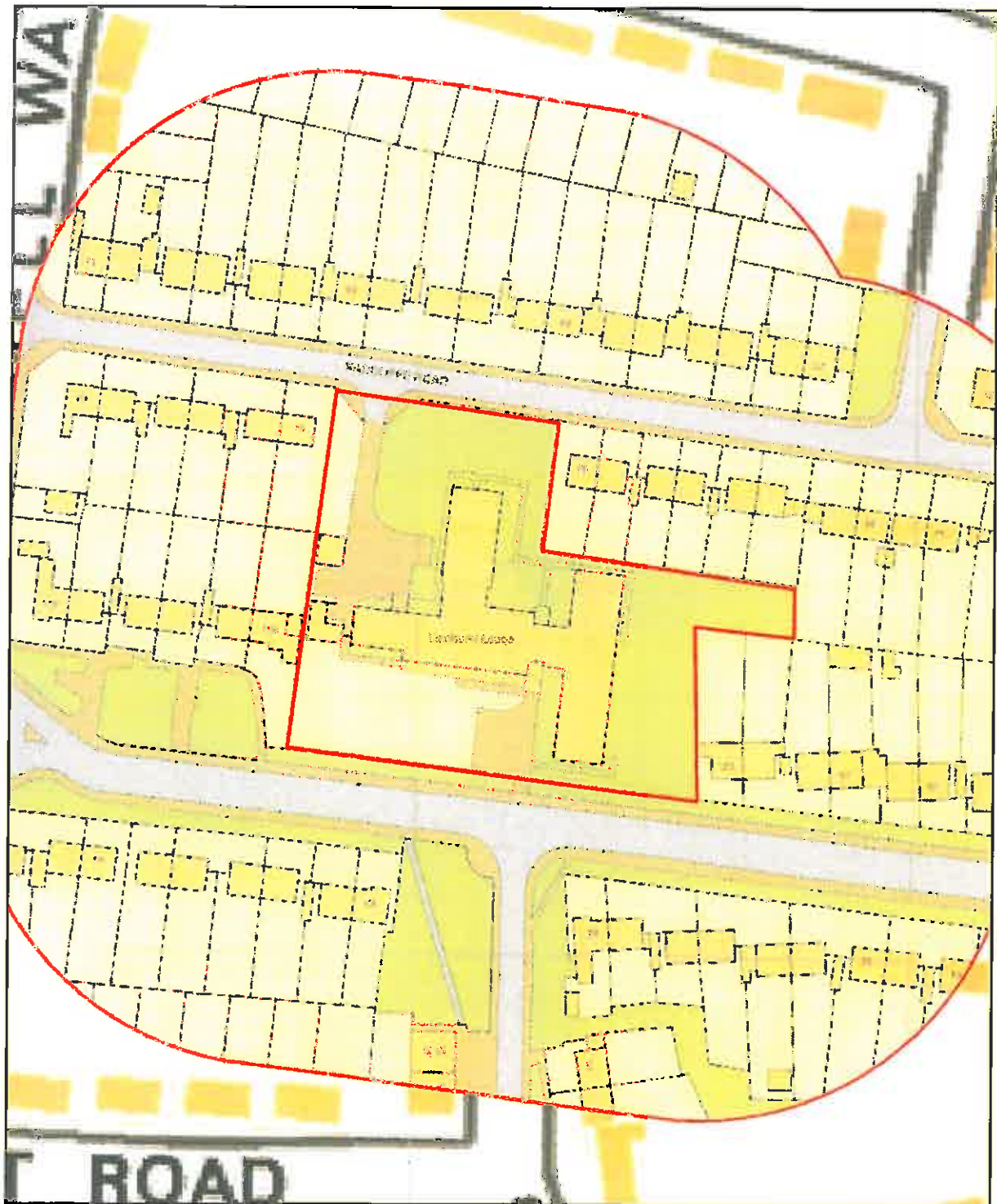
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Site History

Figure Q

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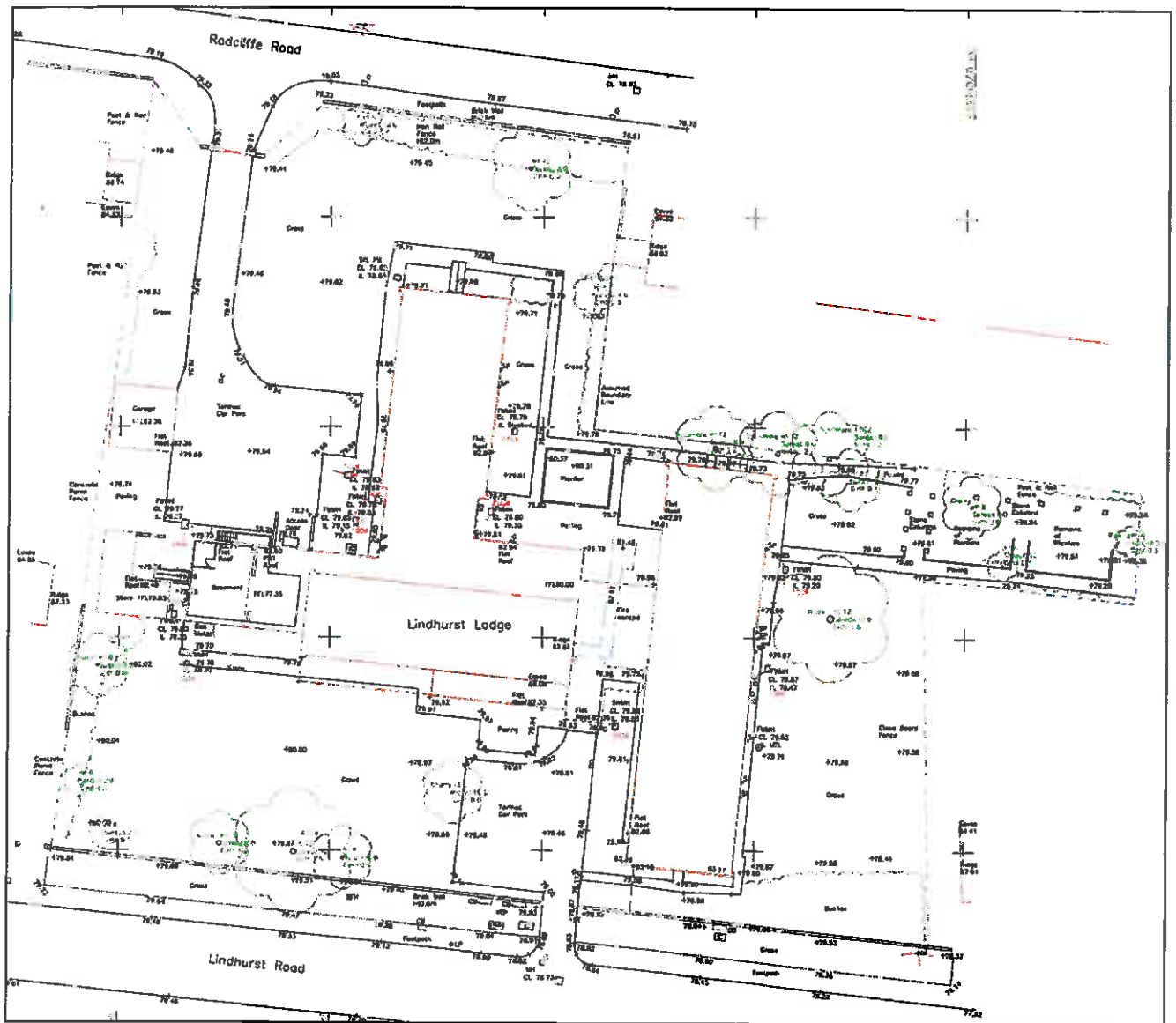
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Site History

Figure R

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Appendix 3

Environmental Search Records

GroundSure EnviroInsight

Address: LINDHURST LODGE, LINDHURST ROAD, BARNSELY, S71 3DD

Date: 30 Apr 2013

GroundSure Reference: GS-770978

Your Reference: SW/C12987

Client: Ground Engineering Limited



Brought to you by GroundSure

Aerial Photograph of Study Site



Site Name: LINDHURST LODGE, LINDHURST ROAD, BARNSELY, S71 3DD
Grid Reference: 434912, 409778
Size of Site: 0.51 ha

Aerial photography supplied by Getmapping PLC.
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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.

Report Section	Number of records found within (X) m of the study site boundary					
	on-site	0-50	51-250	251-500	501-1000	1000-1500
1. Environmental Permits, Incidents and Registers						
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	0	0	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0	-	-
Records of Licensed Discharge Consents	0	0	0	0	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0	-	-
1.2 Records of COMAH and NIHHS sites	0	0	0	0	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	0	0	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-
2. Landfill and Other Waste Sites						
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	0	-
Landfill Data – Operational Landfill Sites	0	0	0	0	0	-
Environment Agency Historic Landfill Sites	0	0	0	0	1	3
Landfill Data – Non-Operational Landfill Sites	0	0	0	0	0	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	1
GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	2
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Environment Agency Licensed Waste Sites	0	0	0	0	1	8

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	0	0	1	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	0	0	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology

	Description
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? *	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? *	Yes
4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section. Source: Scale: 1:50,000 BGS Sheet 087	

* This includes an automatically generated 50m buffer zone around the site.

5. Hydrogeology and Hydrology

	on-site	0-50	51-250	251-500	501-1000	1001-2000
5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?				Yes		
5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?				Yes		
5.3 Groundwater Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	0
5.4 Surface Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	0
5.5 Potable Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	0
5.6 Are there any Source Protection Zones within 500m of the study site?					No	
5.7 River Quality						
Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
5.8 Detailed River Network entries within 500m of the site	0	0	0	4	-	-
5.9 Surface water features within 250m of the study site	No	No	No	-	-	-

6. Flooding

6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Very High
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate

7. Designated Environmentally Sensitive Sites

	on-site	0-50	51-250	251-500	501-1000	1001-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.3 Records of Local Nature Reserves (LNR)	0	0	0	0	0	1
7.4 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.6 Records of Ramsar sites	0	0	0	0	0	0
7.7 Records of World Heritage Sites	0	0	0	0	0	0
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.10 Records of National Parks	0	0	0	0	0	0
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.12 Records of Nitrate Vulnerable Zones	1	0	1	0	0	0
7.13 Records of Ancient Woodlands	0	0	0	0	0	3

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence? Low

9. Mining

9.1 Are there any coal mining areas within 75m of the study site? Yes

9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site? Low-Moderate

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

Using this Report

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

1. 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.

2. 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.

3. 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 underground oil and gas pipelines.

4. Geology

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

5. Hydrogeology and Hydrology

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

6. Flooding

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

7. 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. These searches are conducted using radii of up to 500m.

8. 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.

9. Mining

Provides information on areas of coal and shallow mining.

10. 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.

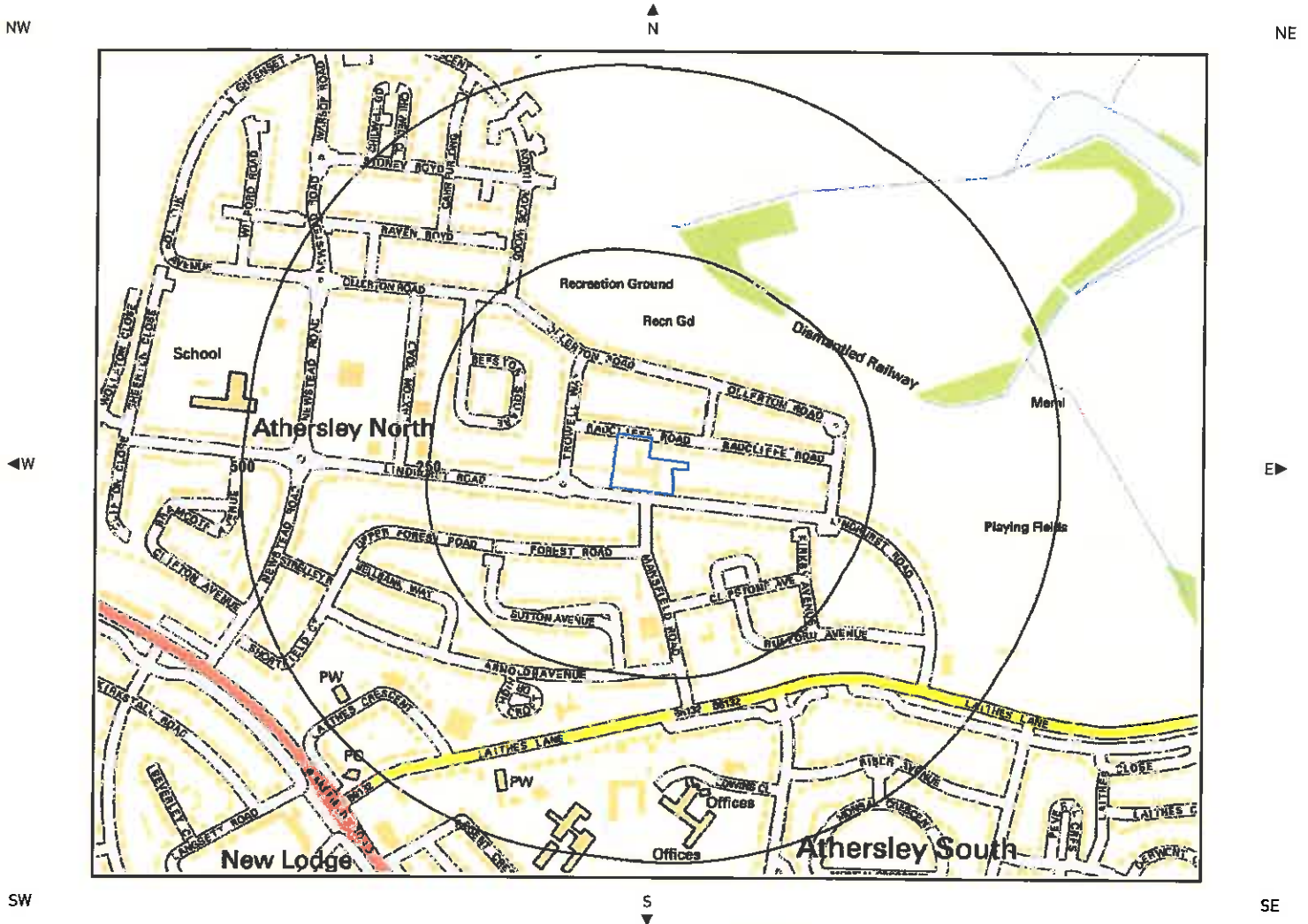
Note: Maps

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. Environmental Permits, Incidents and Registers Map



Authorisations, Incidents and Registers Legend



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

1. Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

Records of historic IPC Authorisations within 500m of the study site: 0

Database searched and no data found.

Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: 0

Database searched and no data found.

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.

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.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: 0

Database searched and no data found.

Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: 0

Database searched and no data found.

Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: 0

Database searched and no data found.

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site: 0

Database searched and no data found.

Records of Licensed Discharge Consents within 500m of the study site: 0

Database searched and no data found.

Report Reference: [GS-770978](#)

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: 0

Database searched and no data found.

Records of National Incidents Recording System, List 1 within 250m of the study site: 0

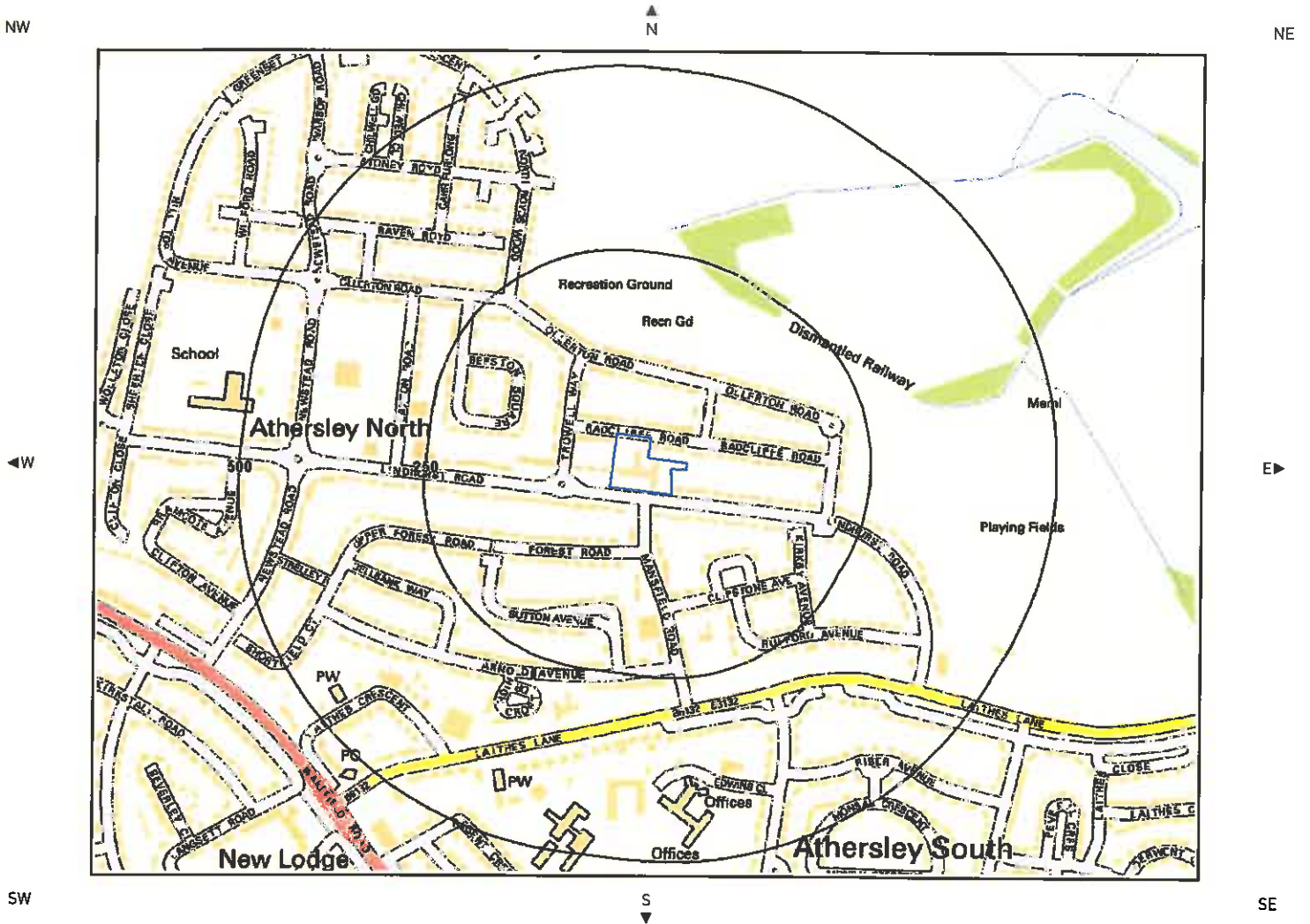
Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

2. Landfill and Other Waste Sites Map



Landfill & Other Waste Sites Legend



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- | | | | | | |
|--|--------------------|--|---------------------------------------|--|-------------------------------------|
| | Site Outline | | E.A. Active Landfill | | Operational Waste Treatment Licence |
| | Search Buffers (m) | | E.A. Historic Landfill (Area Data) | | Closed Waste Treatment Licence |
| | | | E.A. Historic Landfill (Point Data) | | REGIS Waste Licence |
| | | | BGS / DoE Survey Landfill | | Operational Landfill |
| | | | Local Authority Landfill (Area Data) | | Closed Landfill |
| | | | Local Authority Landfill (Point Data) | | |

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: 0

Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: 0

Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site: 4

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

ID	Distance	Direction	NGR	Details
Not shown	748.0	W	434000, 409900	Site Address: On waste land to the rear of Subseal Works, Subseal Works, Wakefield Road, Staincross Waste Licence: Yes Site Reference: WD20 B364, 4400/B364, 20B364(82) Waste Type: Inert, Industrial, Commercial, Household Regis Reference: - Licence Issue: 14-Apr-1983 Licence Surrendered: Licence Hold Address: - Operator: William Freeman and Company Limited
Not shown	1235.0	S	434800, 408400	Site Address: Land adjacent to Wakefield Road, Barnsley Waste Licence: - Site Reference: - Waste Type: - Regis Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: Prospect Estates Limited
Not shown	1251.0	S	434900, 408300	Site Address: Dalestone Works, Wakefield Road, Barnsley Waste Licence: - Site Reference: 4400/(142) Waste Type: - Regis Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: -
Not shown	1322.0	W	433500, 409400	Site Address: Blacker Hill Quarry, Wentworth Road, Mapplewell, Barnsley Waste Licence: Yes Site Reference: WD20 B278 Waste Type: Inert, Industrial, Commercial Regis Reference: - Licence Issue: 01-Apr-1980 Licence Surrendered: 06-Jul-1984 Licence Hold Address: 114 Wentworth Road, Mapplewell, Barnsley Operator: Mr R Smith

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: 0

Database searched and no data found.

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 1

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

ID	Distance	Direction	NGR	Details
Not shown	1451.0	S	434700, 408300	Address: Smithy Green Tip, Smithies Lane, Barnsley, Yorks BGS Number: 1890.0 Risk: No risk to aquifer Waste Type: N/A

Report Reference: GS-770978

Records of Local Authority landfill sites within 1500m of the study site:
2

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

ID	Distance	Direction	Site Address	Source	Data Type
Not shown	1280.0	S	Refuse Tip	1970 mapping	Polygon
Not shown	1331.0	S	Refuse Tip	1970 mapping	Polygon

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site:
0

Database searched and no data found.

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site:
0

Database searched and no data found.

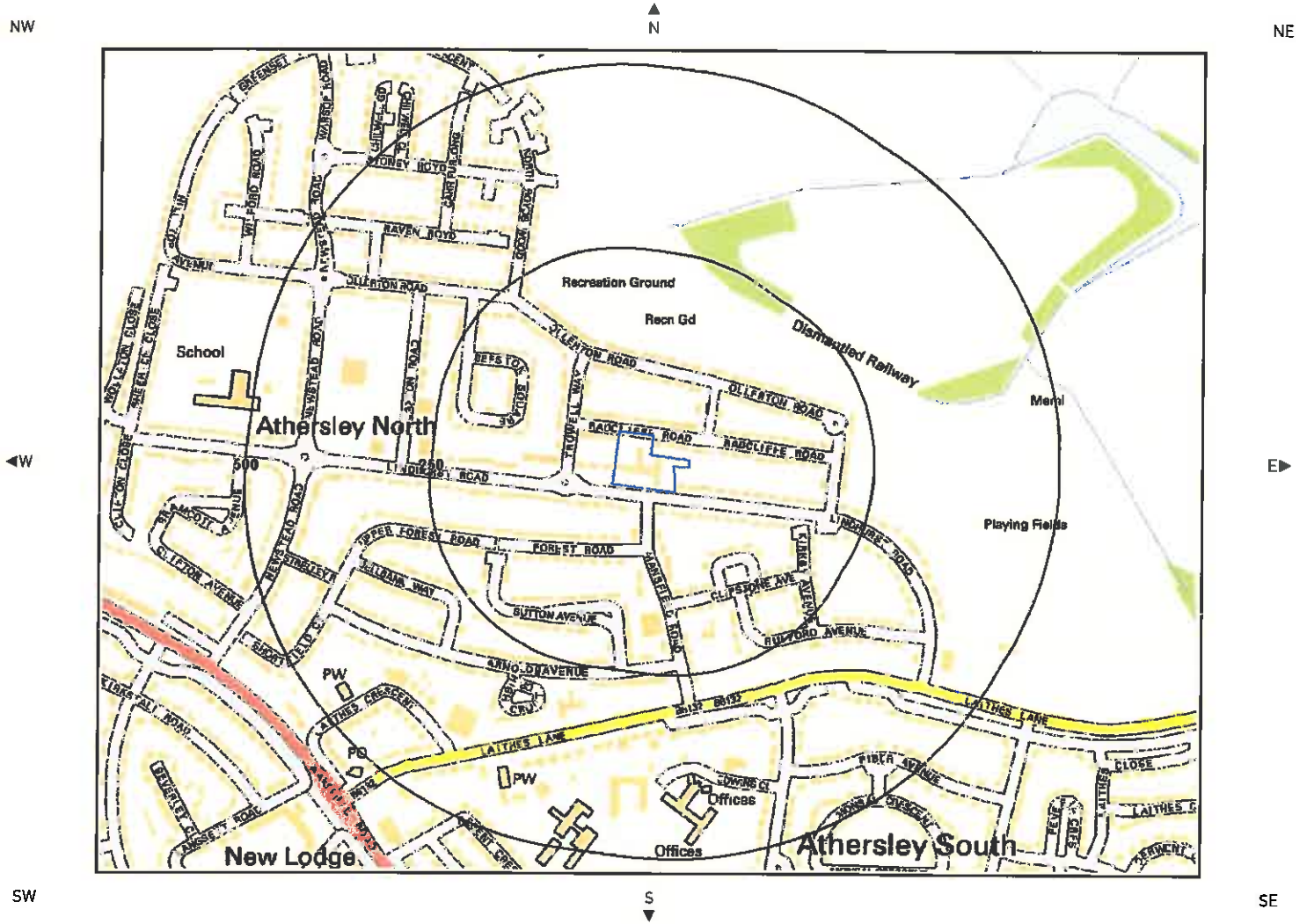
Records of Environment Agency licensed waste sites within 1500m of the study site:
9

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details
Not shown	815.0	E	435787, 409679	Site Address: Units 27 & 28 Wharnccliffe Business Park, Longfields Road, Carlton, Barnsley, South Yorkshire, S71 3HT Type: Metal recycling site Size: < 25000 tonnes Regis Licence Number: JBL002 EPR reference: EA/EPR/EB3532RE/A001 Operator: J Blackburn & Sons Ltd Waste Management licence No: 103797 Annual Tonnage: 74999.0 Issue Date: 23/03/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: J Blackburn & Sons Ltd Correspondence Address: -, -
Not shown	1213.0	E	436187, 409697	Site Address: 418, Carlton Road, Carlton, Barnsley, S71 3HX Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: 000094 EPR reference: - Operator: Glass Recycling (uk) Ltd Waste Management licence No: 65300 Annual Tonnage: 0.0 Issue Date: 18/05/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Carlton Road Site Correspondence Address: Mr R England, 418, Carlton Road, Carlton, Barnsley, S71 3HX
Not shown	1213.0	E	436187, 409697	Site Address: 418, Carlton Road, Carlton, Barnsley, S71 3HX Type: Physical Treatment Facility Size: >= 75000 tonnes Regis Licence Number: 000094 EPR reference: - Operator: Glass Recycling (uk) Ltd Waste Management licence No: 65300 Annual Tonnage: 0.0 Issue Date: 18/05/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Carlton Road Site Correspondence Address: -, 418, Carlton Road, Carlton, Barnsley, S71 3HX

Not shown	1213.0	E	436187, 409697	<p>Site Address: 418, Carlton Road, Carlton, Barnsley, South Yorkshire, S71 3HX</p> <p>Type: Physical Treatment Facility Size: >= 75000 tonnes Regis Licence Number: 000094 EPR reference: EA/EPR/GP3792ZE/V002 Operator: Glass Recycling (U K) Ltd Waste Management licence No: 65300 Annual Tonnage: 400000.0</p>	<p>Issue Date: 18/05/2005 Effective Date: - Modified: 22/04/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Carlton Road Site Correspondence Address: -, *</p>
Not shown	1324.0	E	436300, 409800	<p>Site Address: 418, Carlton Road, Carlton, Barnsley, South Yorkshire, S71 3HX</p> <p>Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Regis Licence Number: GLA001 EPR reference: EA/EPR/YP3190ZW/V002 Operator: Glass Recycling (U K) Ltd Waste Management licence No: 60596 Annual Tonnage: 5000.0</p>	<p>Issue Date: 24/03/1992 Effective Date: - Modified: 22/04/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Glass Recycling U K Correspondence Address: -, -</p>
Not shown	1472.0	S	435300, 408300	<p>Site Address: Rotherham Road, Carlton, Barnsley, South Yorkshire, S27 2AG</p> <p>Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: YOR007 EPR reference: EA/EPR/AP3090ZE/S002 Operator: Yorkshire Water Services Ltd Waste Management licence No: 60547 Annual Tonnage: 39521.0</p>	<p>Issue Date: 31/01/1994 Effective Date: - Modified: - Surrendered Date: 01/11/2000 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Carlton Road Depot Correspondence Address: -, -</p>
Not shown	1472.0	S	435300, 408300	<p>Site Address: Rotherham Road, Carlton, Barnsley, South Yorkshire, S27 2AG</p> <p>Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: YOR007 EPR reference: - Operator: Yorkshire Water Services Waste Management licence No: 60547 Annual Tonnage: 0.0</p>	<p>Issue Date: 31/01/1994 Effective Date: - Modified: - Surrendered Date: 01/11/2000 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Carlton Road Depot Correspondence Address: -, Western House, Western Way, Halifax Road, Bradford, West Yorkshire, BD6 2LZ</p>
Not shown	1494.0	W	433400, 409500	<p>Site Address: Land/premises At, Wentworth Road, Mapplewell, Barnsley, South Yorkshire, S75 6BS</p> <p>Type: Metal Recycling Site (Vehicle Dismantler) Size: < 25000 tonnes Regis Licence Number: MAP001 EPR reference: EA/EPR/AP3890ZG/A001 Operator: Mapplewell Auto Salvage Waste Management licence No: 60555 Annual Tonnage: 5000.0</p>	<p>Issue Date: 22/11/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mapplewell Auto Salvage Correspondence Address: -, *</p>
Not shown	1494.0	W	433400, 409500	<p>Site Address: Wentworth Road, Mapplewell, Barnsley, S Yorks, S75 6BS</p> <p>Type: Metal Recycling Site (Vehicle Dismantler) Size: < 25000 tonnes Regis Licence Number: MAP001 EPR reference: - Operator: Mapplewell Autosalvage Waste Management licence No: 60555 Annual Tonnage: 0.0</p>	<p>Issue Date: 22/11/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mapplewell Auto Salvage Correspondence Address: -, Wentworth Road, Mapplewell, Barnsley, S Yorks, S75 6BS</p>

3. Current Land Use Map



Current Land Use Legend



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- Site Outline
- Current Industrial Sites
- Petrol & Fuel Sites
- Underground High Pressure Oil & Fuel Pipelines
- Search Buffers (m)

3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 1

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

ID	Distance	Direction	Company	Address	Activity	Category
1	169.0	SE	Electricity Sub Station	S71	Electrical Features	Infrastructure and Facilities

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: 0

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

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

4.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON

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

4.3 Bedrock and Solid Geology

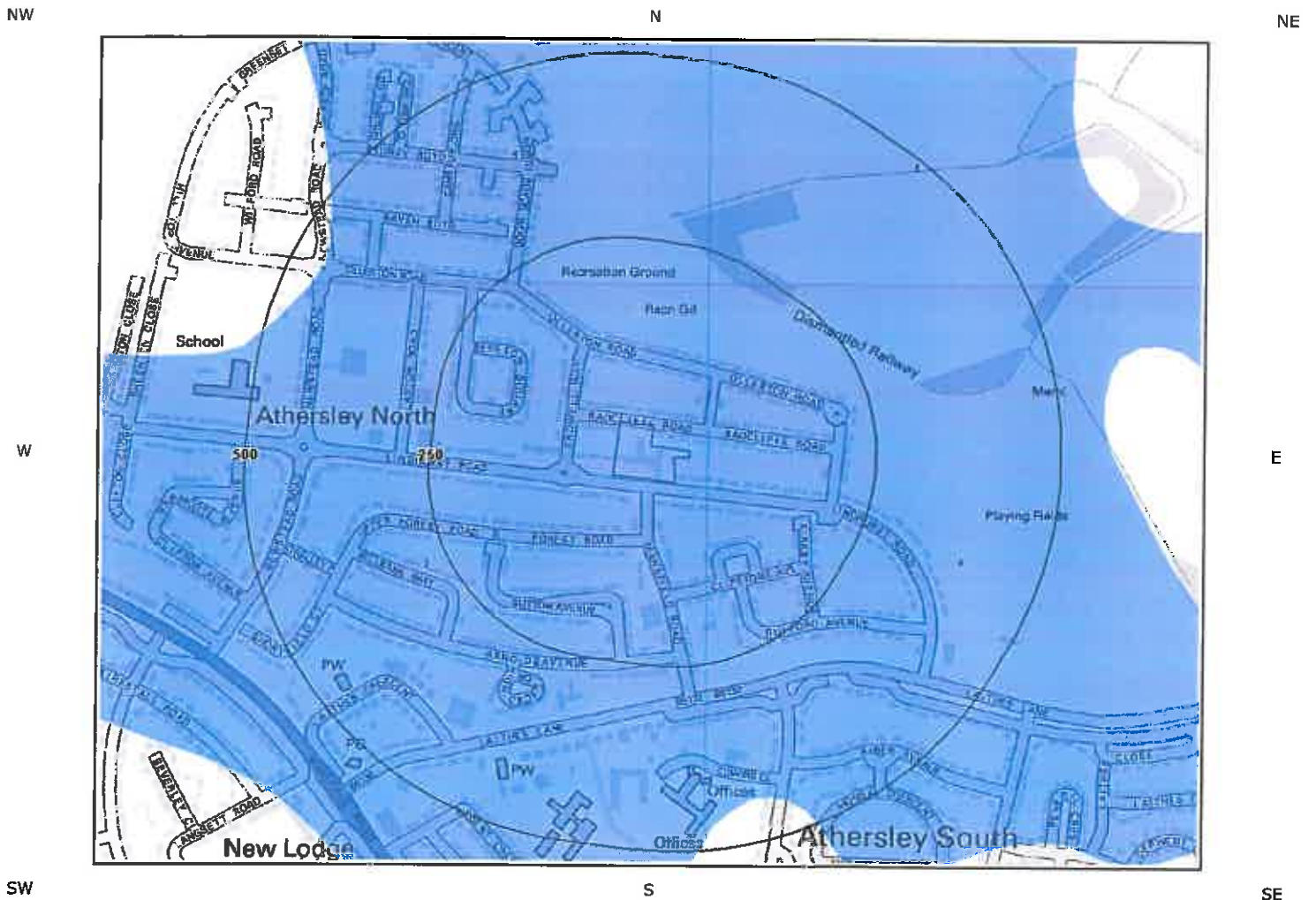
The database has been searched on site, including a 50m buffer.

LEX Code	Description	Rock Type
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE

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

For more detailed geological and ground stability data please refer to the "GroundSure GeoInsight". Available from our website.

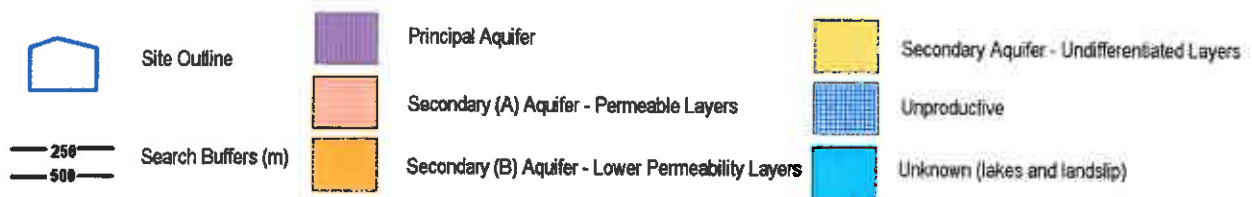
5a. Hydrogeology - Aquifer Within Superficial Geology



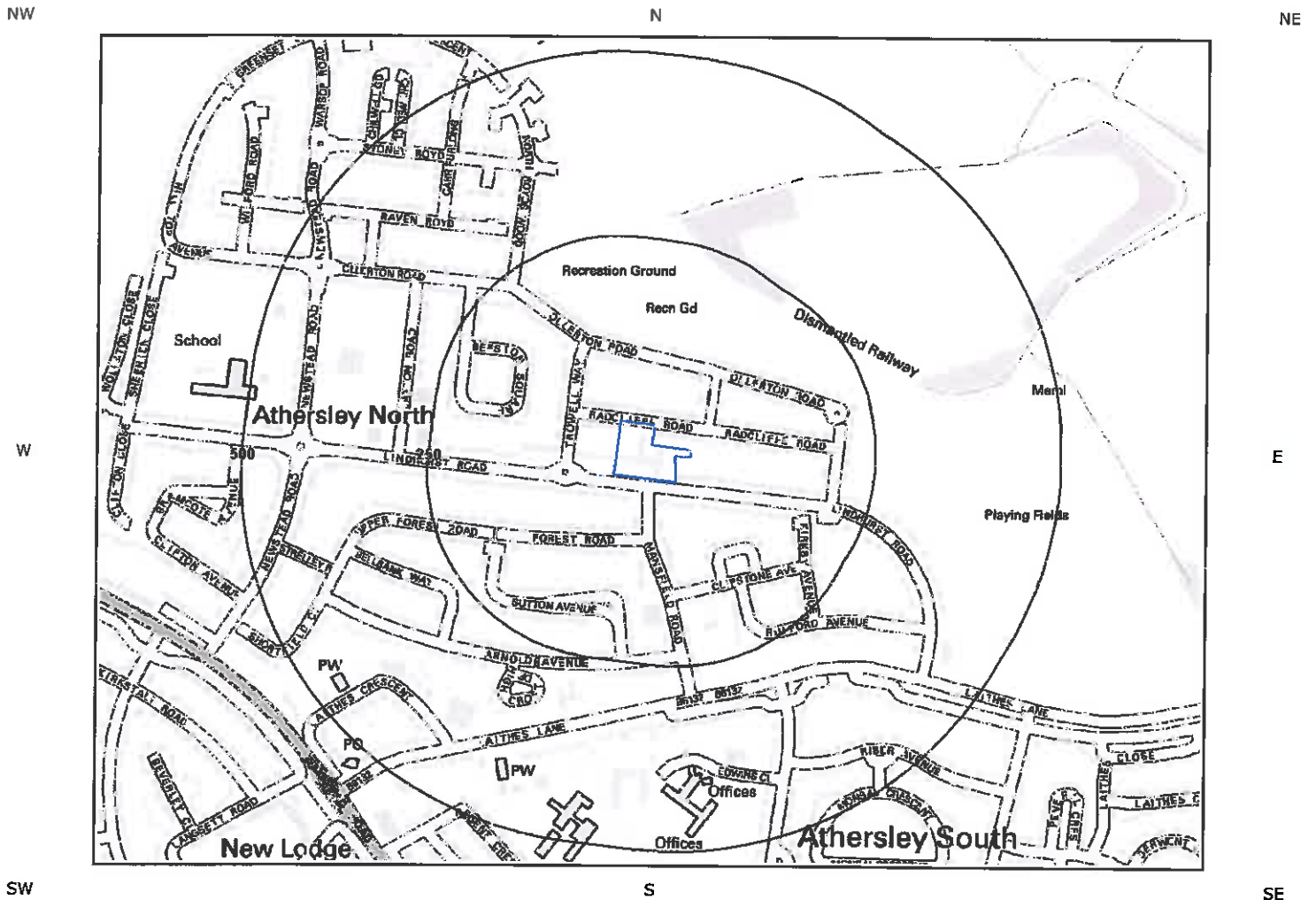
Aquifer Within Superficial Geology Legend

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5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



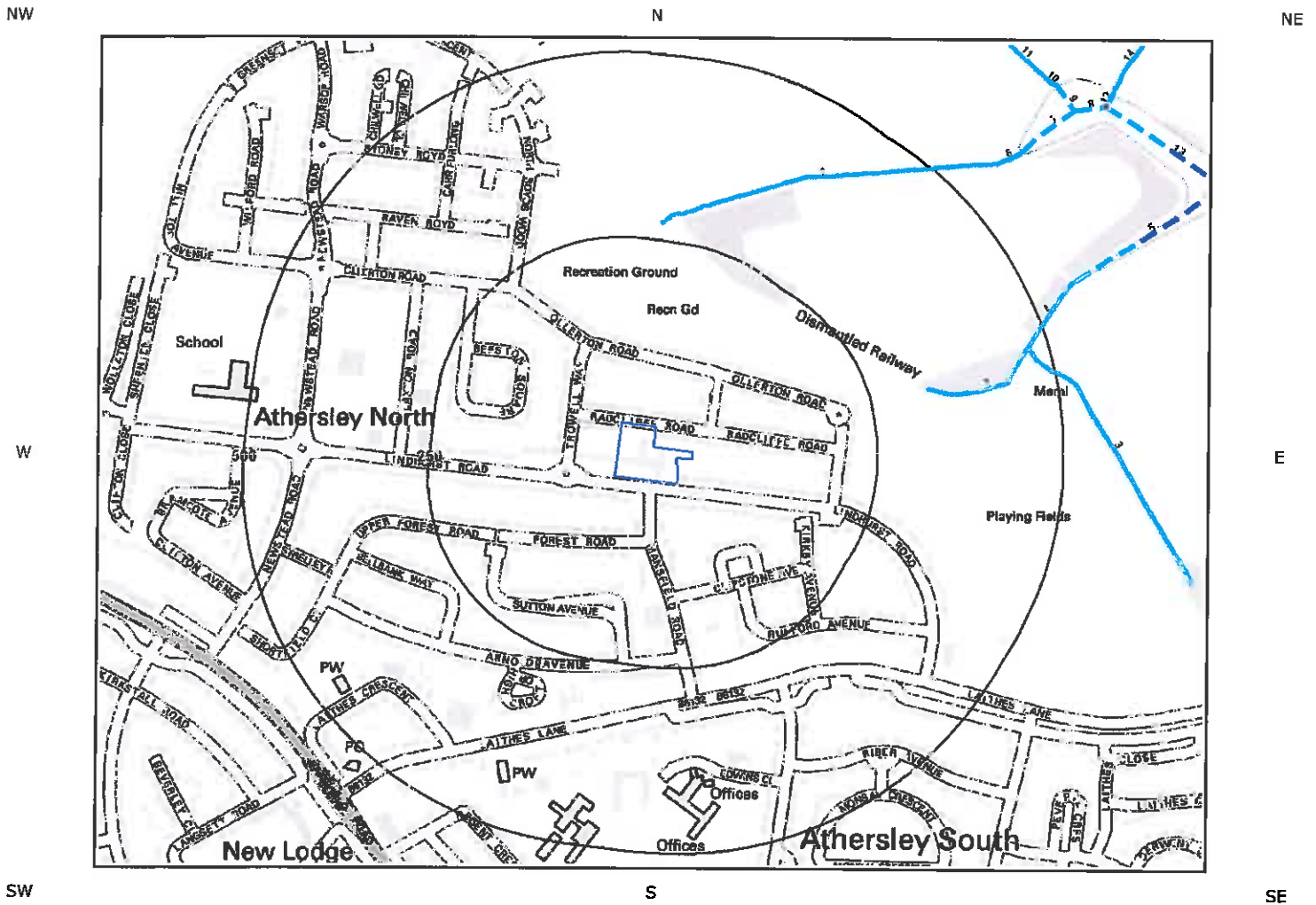
SPZ and Potable Water Abstraction Licenses Legend


















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5d. Hydrology – Detailed River Network and River Quality



Hydrology Legend

- | | | | | | |
|---|------------------------|---|---------------------------------------|---|-------------------------------------|
|  | Site Outline |  | Primary River |  | Canal |
|  | 250 Search Buffers (m) |  | Secondary River |  | Canal Tunnel |
|  | 500 Search Buffers (m) |  | Tertiary River |  | Extended Culvert (greater than 50m) |
| | |  | Lake/Reservoir |  | D/S of High Water Mark |
| | |  | Underground River (inferred) |  | D/S seaward extension |
| | |  | General Quality Assessment: Chemistry |  | General Quality Assessment: Biology |



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5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

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

Yes

From 1 April 2010, the Environment Agency'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 Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

ID	Distance [m]	Direction	Designation	Description
3	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	24.0	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	187.0	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
6	206.0	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.2 Aquifer within Bedrock Deposits

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

From 1 April 2010, the Environment Agency'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 Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance [m]	Direction	Designation	Description
1	0.0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	24.0	E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	187.0	N	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	206.0	N	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

5.3 Groundwater Abstraction Licences

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

No

Report Reference: GS-770978

Database searched and no data found.

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? **No**

Database searched and no data found.

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? **No**

Database searched and no data found.

5.6 Source Protection Zones

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

Database searched and no data found.

5.7 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? **No**

Biological Quality:

Database searched and no data found.

Chemical Quality:

Database searched and no data found.

5.8 Detailed River Network

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

The following Detailed River Network records are represented on the Hydrology Map (5d):

ID	Distance	Direction	Details
1	273.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

Report Reference: GS-770978

2	327.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
3	475.0	E	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
4	475.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

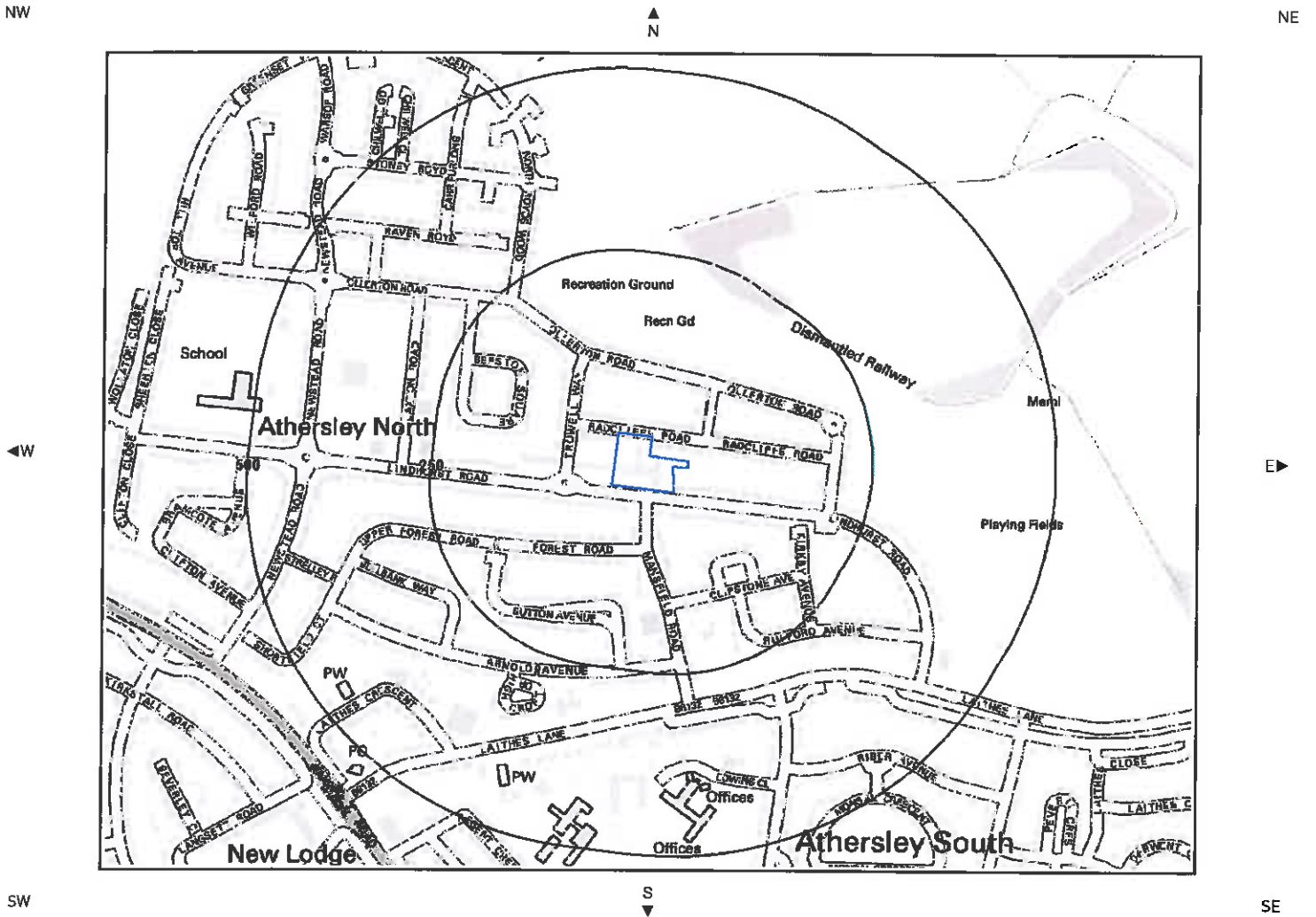
5.9 Surface Water Features

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

No

Database searched and no data found.

6. Environment Agency Flood Map



Environment Agency Flood Legend



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- Site Outline
- Search Buffers (m)
- Zone 2 Floodplain
- Zone 3 Floodplain
- Flood Storage Area
- Area Benefiting from Flood Defences
- Flood Defences

6. Flooding

6.1 Zone 2 Flooding

Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? **No**

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? **No**

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? **No**

6.4 Areas benefiting from Flood Defences

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

6.5 Areas used for Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? **No**

6.6 Groundwater Flooding Susceptibility Areas

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

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

6.7 Groundwater Flooding Confidence Areas

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















Moderate

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.



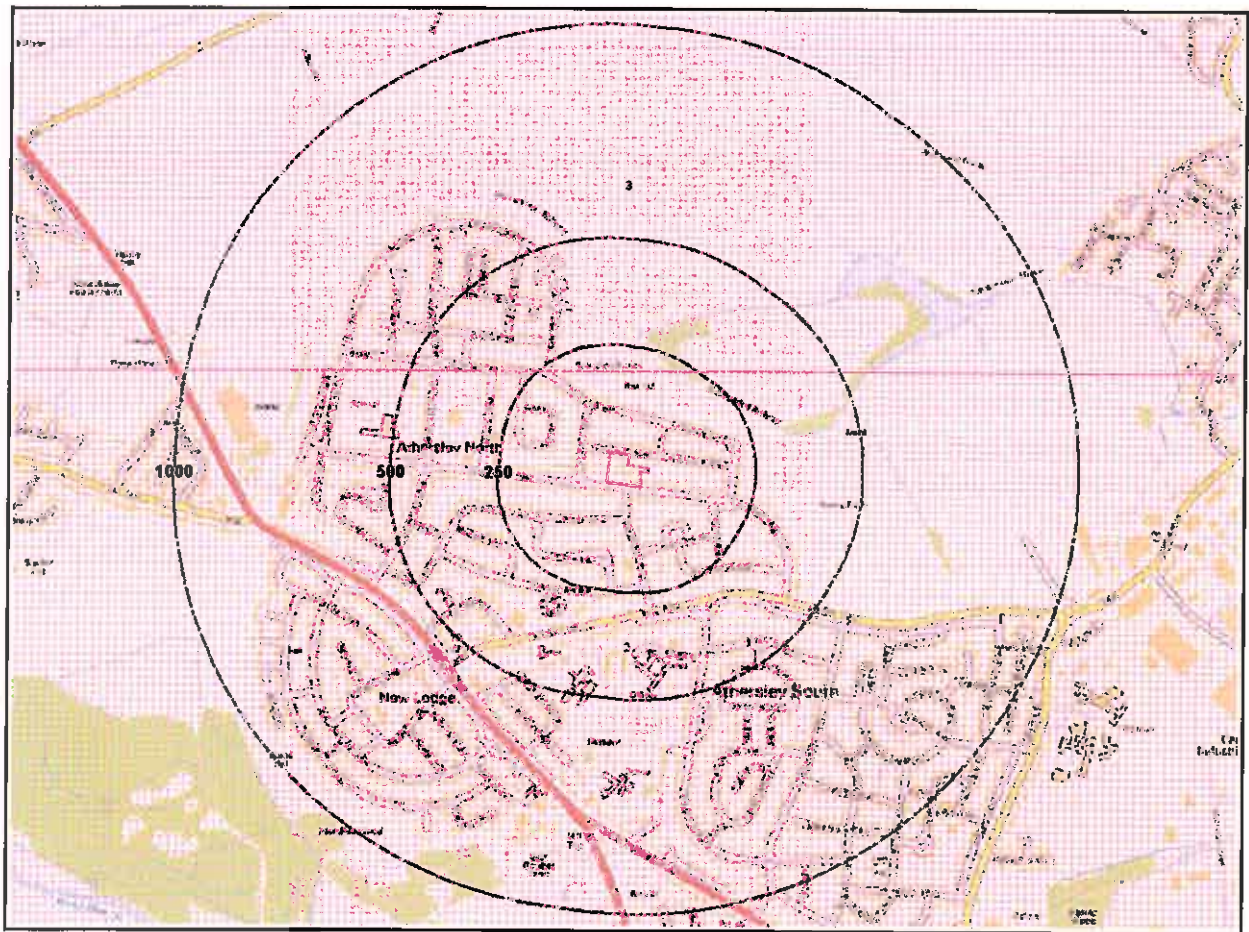
-  Site Outline
-  SAC
-  SSSI
-  NNR
-  World Heritage Sites
-  SPA
-  Ramsar
-  LNR
-  Environmentally Sensitive Areas
-  Areas of Outstanding Natural Beauty
-  Nitrate Vulnerable Zones
-  Nitrate Sensitive Areas
-  National Parks
-  Ancient Woodlands

NW



NE

W



E

SW



SE

Designated Environmentally Sensitive Sites Legend



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7. Designated Environmentally Sensitive Sites

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

Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 0

Database searched and no data found.

Records of National Nature Reserves (NNR) within 2000m of the study site: 0

Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 2000m of the study site: 0

Database searched and no data found.

Records of Special Protection Areas (SPA) within 2000m of the study site: 0

Database searched and no data found.

Records of Ramsar sites within 2000m of the study site: 0

Database searched and no data found.

Records of Local Nature Reserves (LNR) within 2000m of the study site: 1

The following Local Nature Reserve (LNR) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	LNR Name	Data Source
Not shown	1562.0	NW	Notton Wood	Natural England

Records of World Heritage Sites within 2000m of the study site: 0

Database searched and no data found.

Records of Environmentally Sensitive Areas within 2000m of the study site: 0

Database searched and no data found.

Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 0

Database searched and no data found.

Report Reference: [GS-770978](#)

Records of National Parks (NP) within 2000m of the study site: 0

Database searched and no data found.

Records of Nitrate Sensitive Areas within 2000m of the study site: 0

Database searched and no data found.

Records of Nitrate Vulnerable Zones within 2000m of the study site: 2

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

ID	Distance	Direction	NVZ Type	Data Source
2	0.0	On Site	NVZ Area	DEFRA
3	187.0	N	NVZ Area	DEFRA

Records of Ancient Woodland within 2000m of the study site: 3

The following Ancient Woodland records are supplied by English Nature/Scottish Natural Heritage/Countryside Council for Wales and are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	Ancient Woodland Name	Type
Not shown	1562.0	NW	NOTTON PARK	Ancient and Semi-Natural Woodland
Not shown	1674.0	NW	NOTTON PARK	Ancient Replanted Woodland
Not shown	1727.0	N	NOTTON PARK	Ancient Replanted Woodland

8. Natural Hazards Findings

8.1 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 GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

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

Low

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

Hazard

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

8.1.2 Landslides

What is the maximum Landslide* 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

Slope instability problems are unlikely to be present. 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.

8.1.3 Soluble Rocks

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

Null - Negligible

Soluble rocks are not present in the search area. 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.

8.1.4 Compressible Ground

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

Negligible

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

Hazard

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

Report Reference: [GS-770978](#)

8.1.5 Collapsible Rocks

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

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

Hazard

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

8.1.6 Running Sand

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

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

Hazard

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

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

9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?

Yes

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*?

Low-Moderate

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?

No

Database searched and no data found.

10. Contacts

GroundSure Helpline

Telephone: 08444 159 000
info@4c.groundsure.com



British Geological Survey (England & Wales)

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276. Email:
enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological
enquiries



Environment Agency

National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
Tel: 08708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk



Health Protection Agency

Chilton, Didcot, Oxon, OX11 0RQ
Tel: 01235 822622 www.hpa.org.uk/radiation
Radon measures and general radon information and
guidance



The Coal Authority

200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5
Web: www.groundstability.com



Ordnance Survey

Romsey Road
Southampton SO16 4GU
Tel: 08456 050505



Local Authority

Authority: Barnsley Metropolitan Borough Council
Phone: 01226 770770
Web: www.barnsley.gov.uk/index.asp
Address: Town Hall, Barnsley, South Yorkshire, S70 2TA

Get Mapping PLC

Virginia Villas, High Street, Hartley Witney, Hampshire RG27
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Acknowledgements

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Report Reference: GS-770978

GroundSure RadonCheck

Address: LINDHURST LODGE, LINDHURST ROAD, BARNSELY, S71 3DD

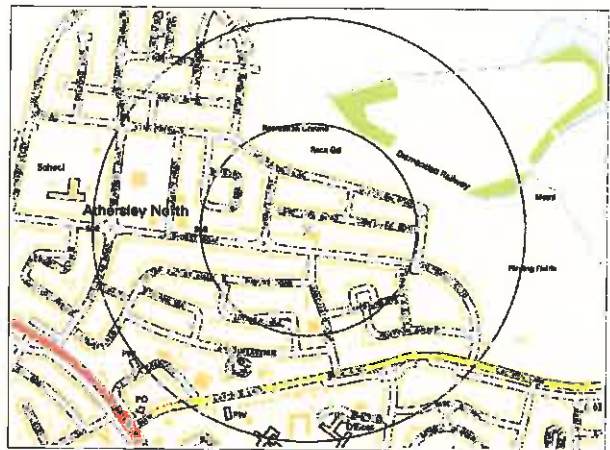
Date: 30 Apr 2013

GroundSure Reference: GS-770976

Your Reference: SW/C12987

Grid Reference: 434912,409778

Client: Ground Engineering Limited



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Report Reference: GS-770976

If you would like any further assistance regarding this report then please contact
GroundSure on (T) 08444 159 000, [F] 01273 763569, email: info@4c.groundsure.com

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1. Residential Radon Potential Result

1.1 Is the property in a Radon Affected Area?

The information in this section provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as *CON29 standard Enquiry of Local Authority; 3.13 Radon Gas: Location of the Property in a Radon Affected Area.*

Question: 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?

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

1.2 Are Radon Protective Measures required?

The information in this section will detail the level of protection required for new dwellings under as described in the latest Building Research Establishment guidance on radon protective measures for new dwellings. This may include extensions to the property.

Question: Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?

Answer: No Radon Protective Measures are necessary.

1.3 Combined Radon Guidance

Radon is a colourless, odourless radioactive gas which is present in all areas of the United Kingdom, usually at levels that pose a negligible risk to homebuyers. However, in some areas levels of radon are much higher than in others, and in these cases it can pose a health risk. The data supplied by the Health Protection Agency (HPA) and the British Geological Survey (BGS) is not able to determine exact Radon levels, as this information can only be obtained through site-specific, in-situ testing. As less than 1% of properties in the area may be radon affected, the HPA do not consider that further action is necessary.

The responses given on the level of Radon Protective Measures required are based on a joint radon potential dataset from the Health Protection Agency (HPA) and the British Geological Survey (BGS). No Radon Protective Measures are required for new builds or extensions.

1.4 Further details on Radon

Report Reference: [GS-770976](#)

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Radon is a naturally occurring radioactive gas, which enters buildings from the ground. Outdoors, it is diluted to very low levels. However, in some cases the radon level indoors can build up to high concentrations. In such cases, it does pose a serious risk to health. Exposure to high concentrations increases the risk of lung cancer. The Health Protection Agency recommends that radon levels should be reduced in homes where the annual average is at or above 200 becquerels per cubic metre (200 Bq m⁻³). This is termed the Action Level. The Health Protection Agency defines Radon Affected Areas as those with 1% chance or more of a house having a radon concentration at or above the Action Level of 200 Bq m⁻³.

The joint HPA-BGS digital Radon Potential Dataset used in this report provides the current definitive map of Radon Affected Areas in England and Wales.

Indoor radon levels can usually be substantially reduced at a cost comparable to many home improvements, such as replacing carpets. Details of methods of reducing radon levels are given on the Building Research Establishment Website. <http://www.bre.co.uk/radon/index.html>

2. Contact Details

GroundSure Helpline
Telephone: 08444 159 000
info@4c.groundsure.com



Local Authority - Bamsley Metropolitan Borough Council. Address:
Town Hall, Bamsley, South Yorkshire, S70 2TA. Web:
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British Geological Survey Enquiries
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BGS Geological Hazards Reports and general geological enquiries



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