

PHASE I DESK STUDY

AT

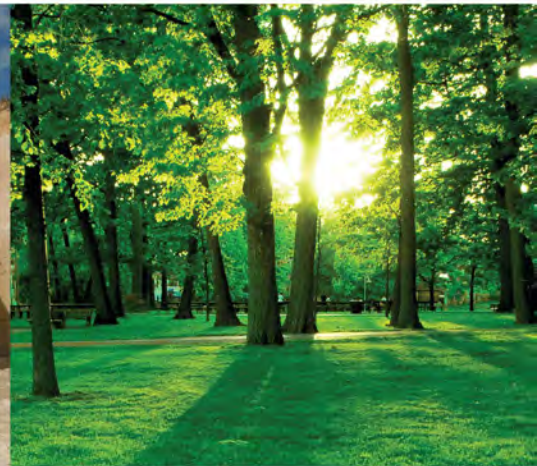
SACRED HEART, FIRGROVE GARDENS
ROCHDALE, OL16 3AF

FOR

SACRED HEART FOOTBALL CLUB

REPORT REF: SHFC 3526

Engineering Geologists and Environmental Scientists



Ashton Bennett



North: Bridge Mills, Huddersfield Road,
West Yorkshire, Holmfirth HD9 3TW

South: 4 Blomfield Road,
London, W9 1AH

Tel: 0300 088 2003

email: geoenviro@ashton-bennett.co.uk
www.ashton-bennett.com

PHASE I DESK STUDY

AT

SACRED HEART, FIRGROVE GARDENS, ROCHDALE
OL16 3AF

FOR

SACRED HEART FOOTBALL CLUB

REPORT REF: SHFC 3526

ASHTON BENNETT CONSULTANCY

Engineering Geologists & Environmental Scientists

AUGUST 2023

Ashton Bennett Limited Co Reg No: 3318828 is a member of the Ashton Bennett Consultancy
group of companies

CONTENTS

QUALITY MANAGEMENT FOR REPORT

- 1 INTRODUCTION
 - 1.1 The Proposals
 - 1.2 The Author
 - 1.3 Sources of Information
- 2 THE SITE
 - 2.1 Site Description
- 3 SITE HISTORY, HISTORIC and CURRENT LAND USE
 - 3.1 Historic Mapping
 - 3.2 Historic Industrial Land Use
 - 3.3 Current Industrial Land Use
- 4 REGULATED INDUSTRIES AND INFRASTRUCTURE
 - 4.1 Authorisations, Incidents and Registers
- 5 ENVIRONMENTALLY SENSITIVE SITES
- 6 POTENTIAL CONTAMINATION
- 7 SITE GEOLOGY
 - 7.1 Geology
 - 7.2 Geological Faults
 - 7.3 Engineering Geology
 - 7.4 Geological Hazards
 - 7.5 Previous Boreholes
- 8 HYDROLOGY AND HYDROGEOLOGY
 - 8.1 Hydrology
 - 8.2 Hydrogeology
- 9 QUARRYING AND MINING
 - 9.1 Quarrying
 - 9.2 Coal Mining
 - 9.2.1 The Coal Authority Report
 - 9.2.2 Shallow Mining
- 10 ENVIRONMENTAL RISK ASSESSMENT
 - 10.1 Environmental Risk
 - 10.1.1 General
 - 10.1.2 Sources of Contamination
 - 10.1.3 Potential Pathways for Migration
 - 10.1.4 Potential Sensitive Receptors
 - 10.2 Summary of Environmental Risk
- 11 ASSESSMENT AND RECOMMENDATIONS
 - 11.1 Introduction
 - 11.2 Geology and Groundwater
 - 11.3 Mining
 - 11.4 Contamination and Toxic Gas

- 11.5 Excavations
- 11.6 Underground Concrete
- 11.7 Waste Disposal
- 11.8 Foundation Recommendations

12 GENERAL REMARKS

FIGURES

Figure 1A	Site Location Plan
Figure 1B	Detailed Site Location Plan
Figure 2	Proposed Development Plan
Figure 3	Historic Industrial Land Use Plan
Figure 4	Waste and Landfill Sites
Figure 5	Artificial and Made Ground
Figure 6	Current Industrial Land Use Plan
Figure 7	Environmentally Sensitive Sites
Figure 8	SSSI Impact Zones and Units
Figure 9	Geological Faults and Bedrock Geology Plan
Figure 10	Superficial Deposits Geology Plan
Figure 11	Hydrology Plan
Figure 12	Hydrogeology of Superficial Deposits
Figure 13	Source Protection Zones and Abstractions
Figure 14	Coal Mining High Risk Development Areas

APPENDICES

APPENDIX A	Archival Maps
APPENDIX B	Conceptual Model
APPENDIX C	Coal Authority Report

QUALITY MANAGEMENT FOR REPORT

Project	Sacred Heart, Firgrove Gardens, Rochdale, OL16 3AF		
Client	Sacred Heart Football Club		
Date	August 2023		
Version	Issue 1		
Prepared by	Frances A Bennett	BSc (Hons), CGeol, FGS, FIMMM, C.WEM, MCIWEM, CEnv, AIEMA, MIEEnvSci	Director Ashton Bennett Ltd
	Tristan Bennett	BSc (Hons)	Engineer



1. INTRODUCTION

This report describes the results of a Phase 1 Desk Study undertaken on the site of Sacred Heart Football Ground, Firgrove Gardens, Rochdale, OL16 3AF. The work was commissioned by Mr Alan Davies of Northern Design Partnership on behalf of their client Sacred Heart Football Club and was carried out by the Ashton Bennett Consultancy.

It is proposed to construct a bungalow with hard cover car parking and landscaped areas. The Rochdale Borough Council Planning Application Number is 23/00693/OUT.

The purpose of this Phase 1 Study was to collate and assess information on the site including geological, hydrogeological and mining information, archival maps and historical review to determine past use, a database review, environmental data on water and soil, and to undertake a site reconnaissance to enable a desk top assessment of pathways of migration and potentially sensitive receptors, and to determine solutions to any geotechnical, environmental and mining concerns to the extension of the property for residential use with plant uptake.

This report describes the research work carried out, presents the results of the desk study and from the conceptual model of the site makes recommendations for solutions to any environmental, geotechnical and mining concerns to the proposed residential development.

The information for this report is from sources recommended by the Institute of Civil Engineers (ICE), the Association of Geotechnical and Geoenvironmental Specialists (AGS), Construction Industry Research and Information Association (CIRIA) and the Department of the Environment Transport and the Regions (DETR). The report has been compiled in accordance with the latest ICE, DETR, Department of Environment, Food and Rural Affairs (DEFRA), British Standard Draft Documents and British Standards, CIRIA, CLR 11 & other CLEA Reports and Eurocode 7.

In addition, the scope of the investigation has used the extensive knowledge and experience of the staff of Ashton Bennett Consultancy to assess the data and to interpret the findings.

1.1 The Proposals

Sacred Heart Football Club propose to construct a single storey residential property on the site with hard cover car parking.

1.2 The Author

This report was prepared by Frances A Bennett an engineering geologist who has a degree in Geology, a postgraduate qualification in Soil Mechanics and is a Chartered Geologist CGeol, Chartered Environmentalist CEnv and Chartered Water and Environmental Manager C.WEM and FIMMM with 45 years of experience in the fields of geology, geotechnical engineering, hydrogeology, contamination, mining, slope stability and waste disposal.

1.3 Sources of Information

The following data have been referenced in relation to compiling this Report:

- Geological mapping from British Geological Survey 1:50,000
- Geological mapping from British Geological Survey 1:10,000, Sheet SD91SW
- Karl Terzaghi, Ralph B Peck and Gholamreza Mesri, Soil Mechanics in Engineering Practice, John Wiley and Sons Inc., Third Edition (1996).
- M. J. Tomlinson, Foundation Design and Construction, Longman Scientific and Technical, Seventh Edition, (2017).
- BS 5930:2015, Code of Practice for Ground Investigations, British Standards Institute
- NHBC Part 4 Foundations, Chapter 4.4 Strip and Trench Fill Foundations,(2010 and 2020).
- Stroud, M. A., The Standard Penetration Test in insensitive clays and soft rocks, Proceedings of the European Symposium on Penetration Testing, 2, 367-375 (1975).

The information for this report is also from sources recommended by the Institute of Civil Engineers (ICE), the Association of Geotechnical and Geoenvironmental Specialists (AGS), Construction Industry Research and Information Association (CIRIA) and the Department of the Environment Transport and the Regions (DETR). The report has been compiled in accordance with the latest ICE, DETR, Department of Environment, Food and Rural Affairs (DEFRA), British Standard Draft Documents and British Standards, CIRIA, CLR 11 & other CLEA Reports and Eurocode 7.

In addition, the scope of the investigation has used the extensive knowledge and experience of the staff of Ashton Bennett Consultancy to assess the data and to interpret the findings.

2. THE SITE

2.1 Site Description

The site lies on the east side of Rochdale town centre, east of the A664 road and main railway line and west of the Rochdale Canal. The site forms the southern triangular tip of playing fields.



The site is bounded to the north by playing fields with a clubhouse, car parking and residential houses beyond. The site is bounded to the south by residential houses fronting onto Firgrove Gardens. The site is bounded to the west by the main railway line with residential houses beyond and bounded to the east by the Rochdale Canal with football pitches beyond.

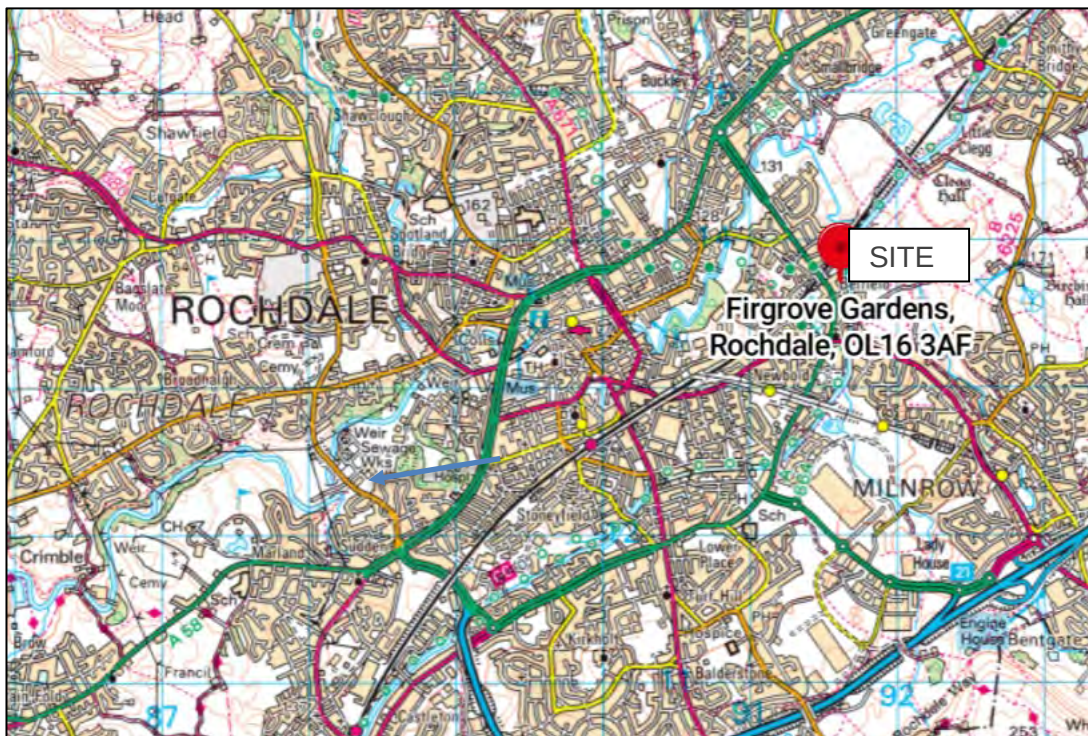


Figure 1A

Site Location Plan

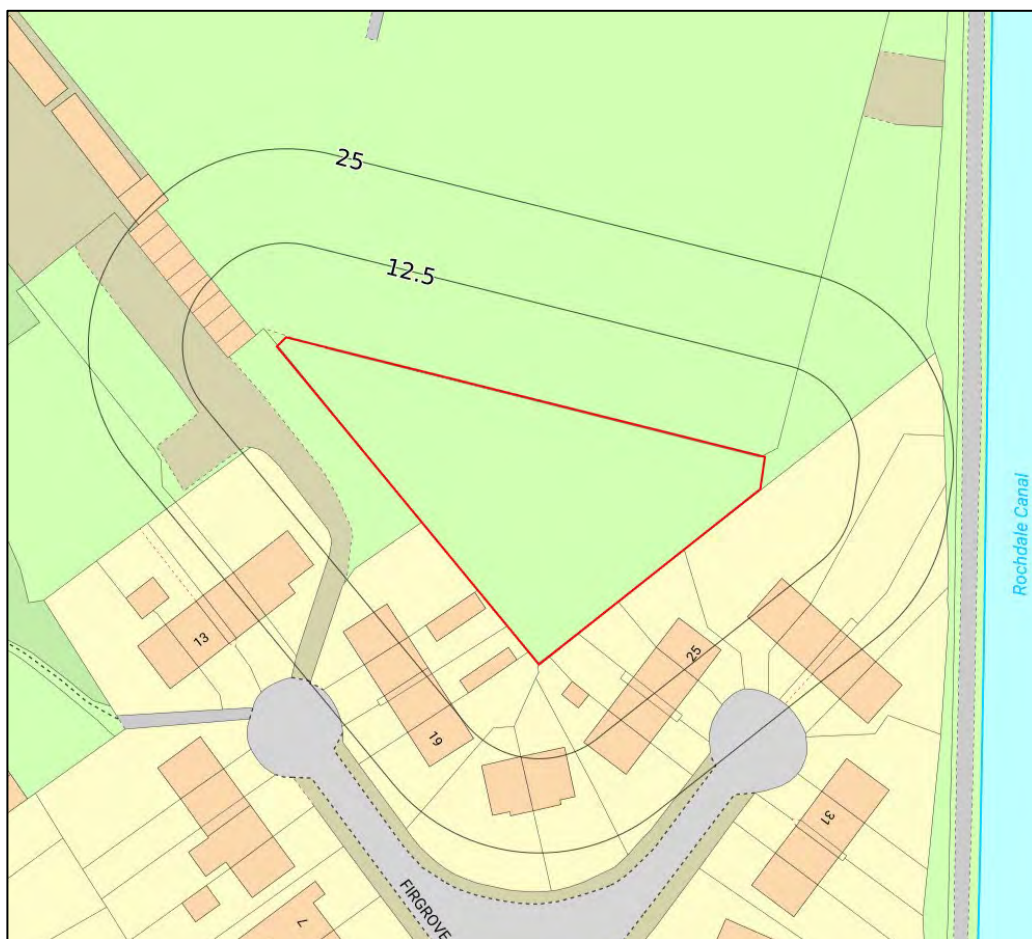


Figure 1B

Detailed Site Location Plan

The site lies around National Grid Reference 391626E 413755N at a height of around 149m above Ordnance Datum. A Site Location Plan is presented as Figure 1A and a Detailed Site Location Plan as Figure 1B. A Proposed Development Plan is presented as Figure 2. Historic Industrial Land use is presented as Figure 3, Waste and Landfill Sites as Figure 4 and Artificial and Made Ground as Figure 5 and Current Industrial Land Use as Figure 6. Environmentally Sensitive Sites are presented in Figure 7. SSSI Impact Zones and Units are presented in Figure 8.

A Bedrock Geology and Geological Faults Plan is presented as Figure 9 and a Superficial Deposits Geology Plan is presented as Figure 10. A Hydrology Plan is presented as Figure 11. A Hydrogeology of Superficial Deposits is presented as Figure 12 and a Source Protection Zones and Abstractions Plan is presented as Figure 13. Figure 14 is the Coal Mining High Risk Development Zone.

Archival Maps are presented in Appendix A and a Conceptual Model are presented in Appendix B. A Coal Authority Report is presented in Appendix C.

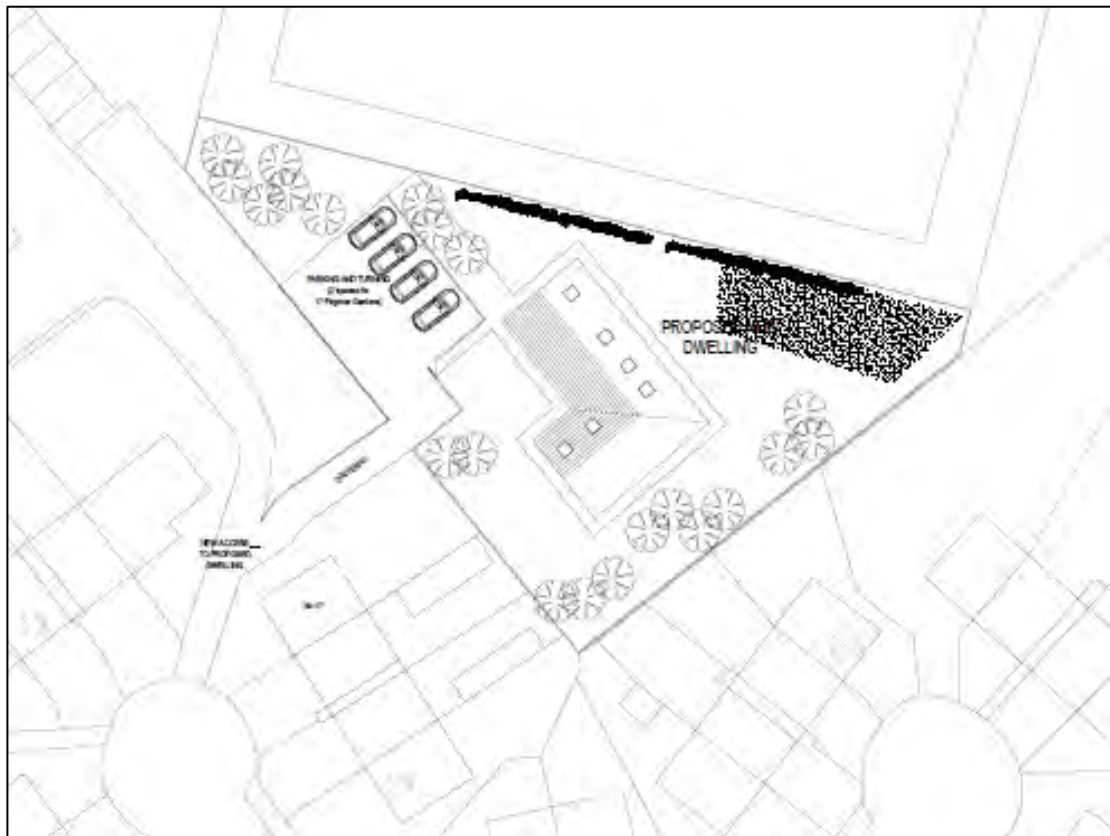


Figure 2 Proposed Development Plan

3 SITE HISTORY, HISTORIC and CURRENT LAND USE

3.1 Historic Mapping

The following maps and plans were inspected to assess the history of the site and its past environments. The archival Ordnance Survey maps are presented in Appendix A.

TABLE 1
Historical Maps Inspected

DATE	SCALE	DESCRIPTION	
		SITE	SURROUNDING AREA
1851	1:10,560	The site area is unoccupied during this time, though potentially in use in an agricultural manner.	The surrounding area indicates Rochdale Canal to the east, almost immediately, aligned north to south moving south west in the far distance. The Lancashire and Yorkshire Railway tracks are annotated to the north west of site, running south west to north east. Belfield centre is shown next to the tracks to the south west of site. Various mills and works annotated along tracks and canal to the north and south west of site. River Beal is shown to the far north east of site, aligned north east to south west.
1890-1 1891 1908 & 1910	1:2,500 & 1:10,560	During this time the site appears unchanged.	The surrounding area largely unchanged. Belfield Hall Farm shown to the south west and a reservoir annotated to the north east. Residential shown to the south east and north of site. By 1908 Lowfield Mill(cotton) annotated to the south east of site next to the canal.
1928 1930 & 1938	1:2,500 & 1:10,560	The site area remains unchanged during this time.	The immediate surrounding area to the south west, south and south east of site is in residential development, currently road structures are annotated. Development is also evident to the far south and north west.
1949- 54 1957 & 1958	1:10,560 1:1,250 & 1:2,500	The site remains open land until circa 1957 when the site and land to the immediate north is annotated as a sports ground.	The area to the immediate north of site incorporates the site and is listed as a sports ground. A pavilion, tennis court and bowling green are clearly shown.
1967-8 & 1976	1:10,560 & 1:10,000	The site area remains unchanged during this time.	The surrounding area to the north west, west and south is now predominantly residential. Area to the east beyond the canal remains open land.
1985-8 & 1988- 92	1:1,250	The site area remains unchanged during this time.	The surrounding area is largely unchanged. A depot with sub station and works is annotated to the south west of site beyond the immediate residential area. Tank and a sub station annotated at Lowfield Mill to south east of site.
2001 & 2003	1:10,000 & 1:1,250	No change to the site area.	The surrounding area is largely unchanged during this time.
2010 & 2023	1:10,000	This map indicates no change to the site.	This map indicates no largescale change to the immediate surrounding area. Lowfield Mill to the south west of site is no longer annotated and the area has been developed for residential houses.

In summary, the area is shown on the OS maps to have been open land prior to its incorporation into sports ground with land to the immediate north in circa 1957, consisting of a pavilion, tennis courts and bowling green. The immediate surrounding area has only been residential and open land while the Rochdale Canal, an SSSI, exists to the east of site and Manchester Yorkshire Railway tracks to the west. To the immediate south exists residential houses with gardens.

3.2 Historic Industrial Land Use

The site area has previously been unoccupied as open land and used as a sports ground.

In the surrounding area there has historically been a disused canal 30m to the east, circa 1976, railway cuttings 74-144m to the north west, north and west and four unspecified mills

97m, 102m and 106m to the south east and 237m to the north of site. Five pumps are also listed 144m to 247m to the west and south west of site.

Four historical tank areas existed within 250m of site, the closest located 167m to the south west of site, circa 1979-84.

There are four historical energy features within 250m of the site, the closest located 141m to the west of site in the form of an electricity sub station, circa 1979-84. The remaining features are also electricity sub stations.

There are no surrounding historical petrol stations within 250m of the site area.

There has been no historical military land within 500m surrounding the site area.

The historic land uses are unlikely to have detrimentally affected the nature of the site.

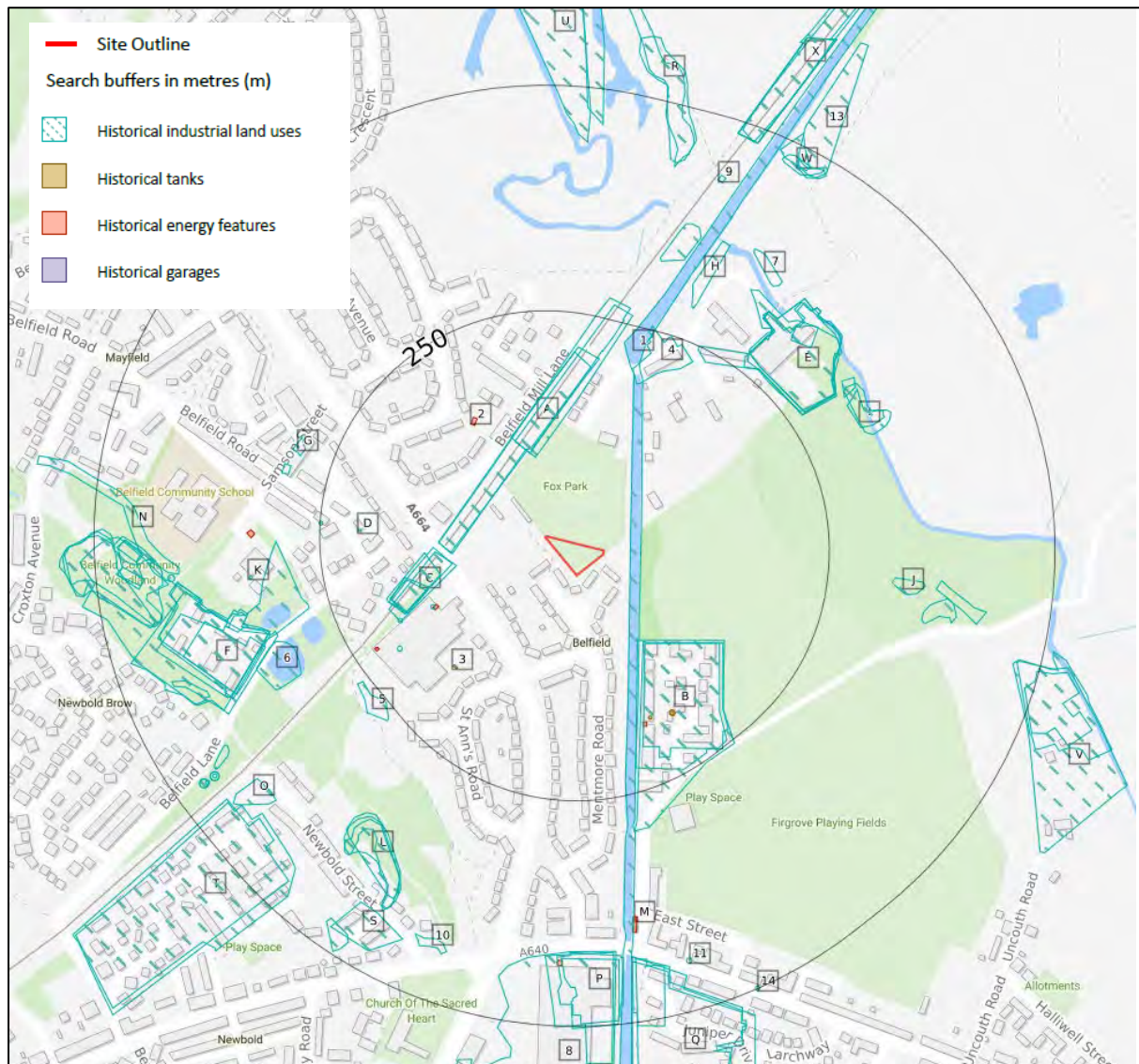


Figure 3 Historic Industrial Land Use Plan

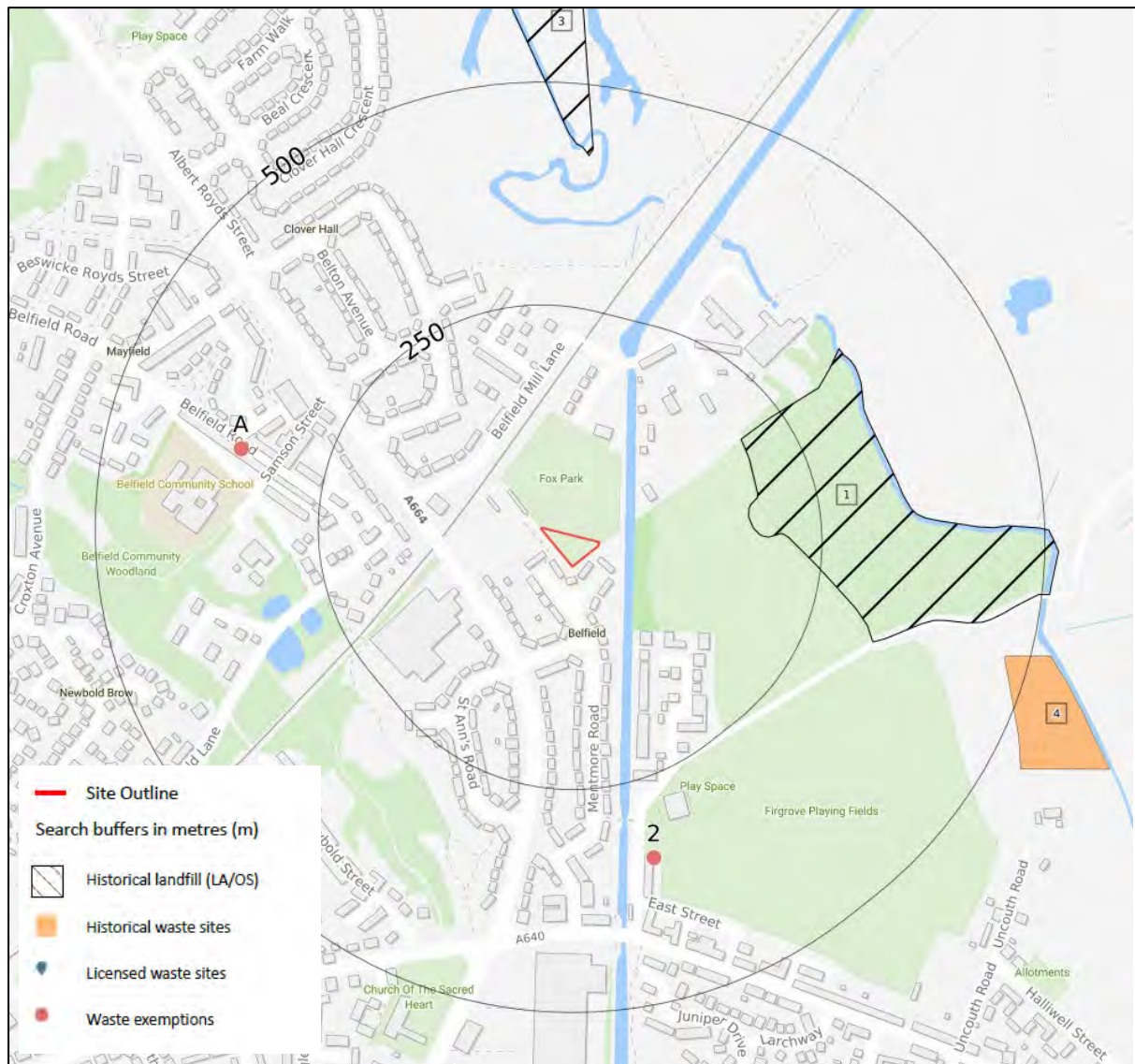


Figure 4 Waste and Landfill Sites

There are zero active or recent landfill sites within 500m of the site.

The BGS records and the LA/mapping indicate zero historical landfill within 500m of the site. There were two historical EA/NRW landfills and one historical or recently closed waste site within 500m of site. The closest historical landfill is located 170m to the east of site at Firgrove Playing Fields, used for inert, commercial waste between circa 1936-93. The remaining landfill was 421m to the north of site. The historical waste site was located 471m to the east of site, noted as a scrap yard circa 1988.

There are no active or recently closed waste sites under EA/NRW Regulation within 500m of the site area.

Three waste exemption licences exist within 500m of the site area, although the closest is 340m to the south of site using both agricultural and non-agricultural waste in construction.

Worked ground is evident 21m to the east of site and 68m to the north west of site. Made ground is evident 108m to the east of site, 225m to the south east of site and 238m to the south west of site. Further made ground is evident 250-500m distant. Artificial or made ground is not shown to be within the site area although made ground may be present.

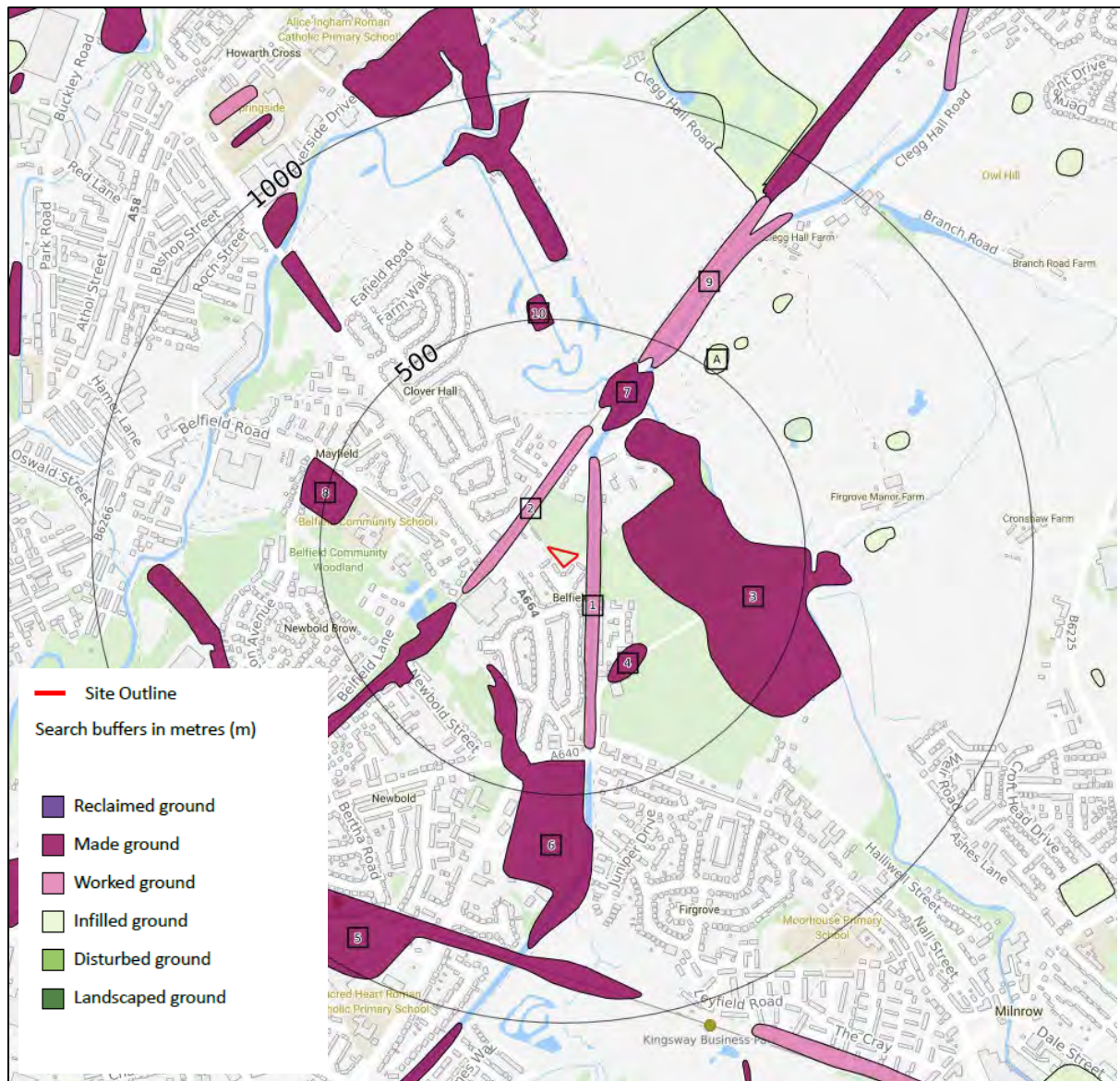


Figure 5 Artificial and Made Ground

3.3 Current Industrial Land Use

The site area is currently unoccupied.

There are no sites determined as Contaminated Land within 500m of the site.

Potentially contaminating industrial land use within 250m of the site area consist of a telecommunication mast 129m to the north, an electricity sub station 151m to the north west, a tank 185m to the south east and a scrap metal merchants 204m to the west of site.

Current industrial land uses are unlikely to detrimentally affect the site.

There are no local current petrol or fuel stations, sites determined as contaminated land, National Grid High Voltage underground electricity transmission cables or high pressure gas transmission pipelines on, or within 250m of the site.

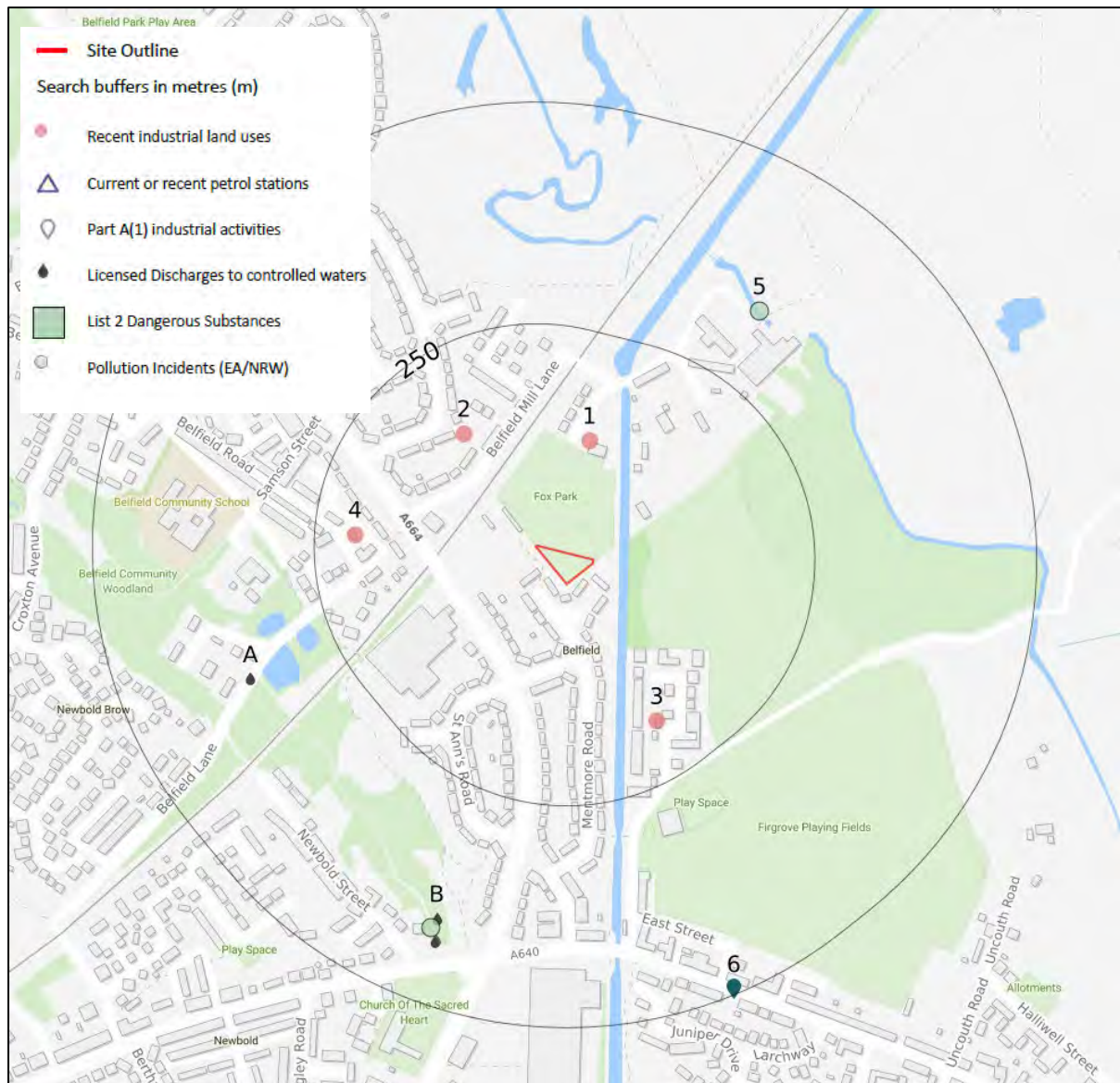


Figure 6 Current Industrial Land Use Plan

4. REGULATED INDUSTRIES AND INFRASTRUCTURE

4.1 Authorisations, Incidents and Registers

Results of searches for regulated industries are presented in Table 2.

TABLE 2
Authorisations, Incidents and Registers

	On SITE	Within 250m	DETAILS
Potentially Contaminative Uses identified in mapping	No	20	30m E – Disused Canal 74-144m N, NW, W – Cuttings 97-106m SE & 237m SW – Unspecified Mills 144-247m W, SW - Pumps
Historical Tanks	None	4	167-183m SW, SE – Unspecified Tanks
Historical Energy Features	None	4	141-222m W, NW, S, SW – Electricity Sub Station
Historical Petrol/Fuel Site	None	None	
Historical Garage/Motor Vehicle Repair	None	None	
Potentially infilled land	None	Yes	21m E & 68m NW – Worked Ground 108m E, 225m SE, 238m SW – Made Ground
Historic IPC Authorisations	None	None	
Part A(1) and IPPC Authorised Activities	None	None	
Records of Red List Discharge Consents	None	None	
Records of List 1 Dangerous Substances Inventory Sites	None	None	
Records of List 2 Dangerous Substances Inventory Sites	None	None	
Records of Part A(2) and Part B activities and enforcements	None	None	
Records of Category 3 or 4 Radioactive Consents	None	None	
Records of Licensed Discharge Consents	None	None	
Records of Planning Hazardous Substance Consents and Enforcements	None	None	
Records of COMAH and NIHHS sites	None	None	
Records of National Incidents Recording System List 2	None	None	
Records of National Incidents Recording System List 1	None	None	
Records of sites determined as contaminated land under Section 78R of EPA 1990	None	None	
Records from EA landfill Data	None	None	
Records of Operational Landfill Sites	None	None	
Records of EA historic landfill sites	None	1	170m E – Inert, Commercial waste, circa 1936-93
Records of non operational landfill sites	None	None	
Records of local authority landfill sites	None	None	
Records of operational and non operational waste treatment, transfer, exemptions or disposal sites	None	None	Detailed in Section 4
Records of EA licensed waste sites	None	None	
Current Industrial Land Use	None	4	Detailed in Section 4
Petrol and Fuel Sites	None	None	
Underground High Pressure Oil and Gas Pipelines	None	None	
Residential Property (within 250m)	None	Yes	Yes, residential properties within 250m of the site, to the immediate south.
Radon Protection Required	No	No	The property is not in a Radon Affected Areas as less than 1% of properties are above action level within the site area. Radon protection is not required according to BR211 by the Building Research Establishment.
Registered as Contaminated Land under Part IIA EPA 1990	No	No	-

Results of searches for regulated industries, pollution incidents and registered authorisations are presented in Table 2 above and indicate that the site is unlikely to be affected by current off-site activity.

Radon is a radioactive gas derived from naturally occurring uranium found in small quantities in soils and rock. The National Radiological Board recommends that where radon concentration exceeds the Action level of 200 Bqm⁻³ the householder should take measures to reduce it.

According to the BGS the site is in an area where basic radon protection measures are not required in new buildings. According to the National Radiological Protection Board, the site lies within an area where less than 1% of houses lie above the action level.

5. ENVIRONMENTALLY SENSITIVE SITES

The site does not lie within or within 2000m of a National Nature Reserve, a RAMSAR site, a World Heritage Site, an Environmentally Sensitive Area, an Area of Outstanding Natural Beauty, a Local Nature Reserve, Special Protection Areas, a Nitrate Sensitive Area or a Nitrate Vulnerable Zone.

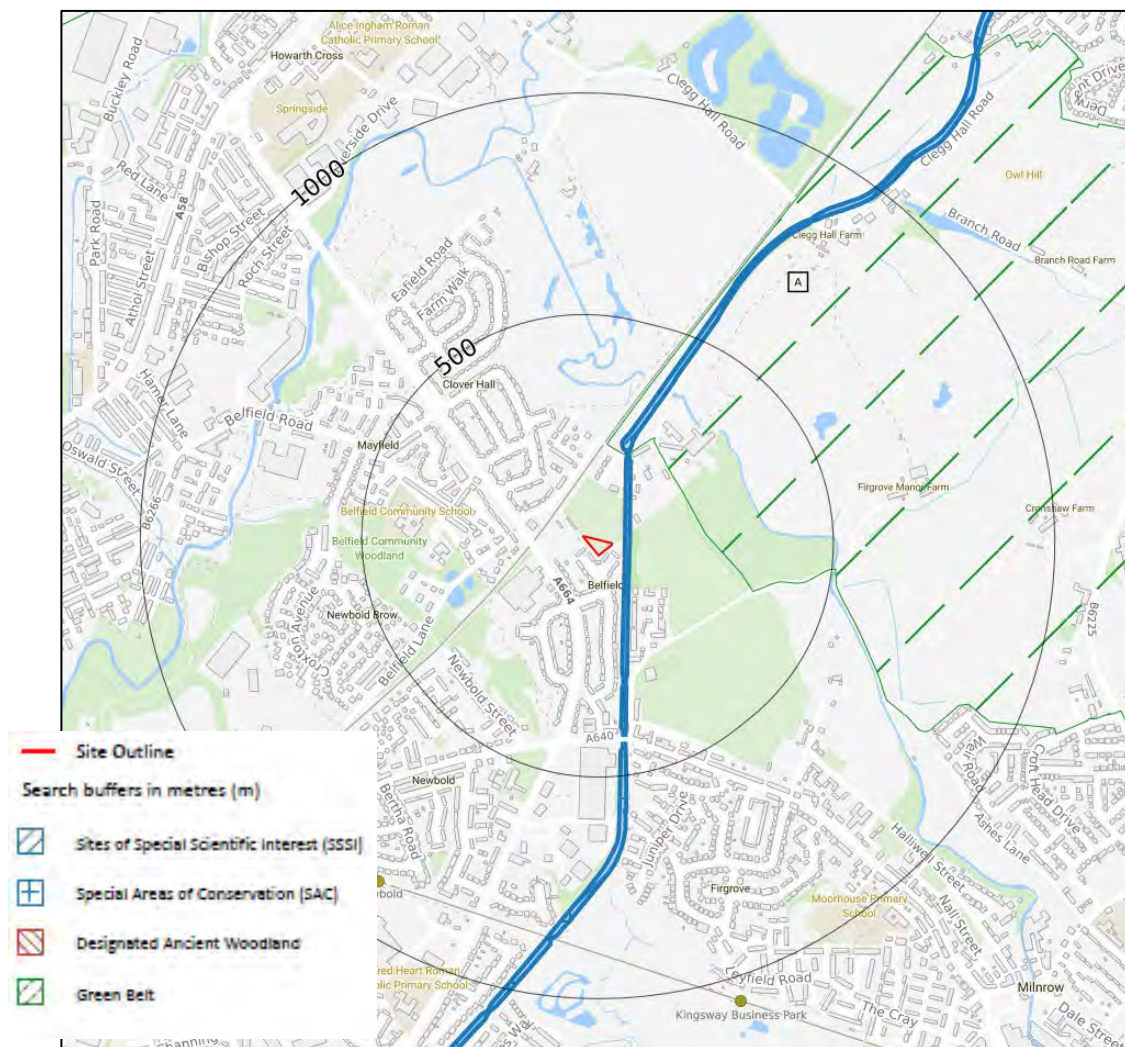


Figure 7 Environmentally Sensitive Sites

A Site of Special Scientific Interest (SSSI) lies 29m to the east, 429m to the south and 1749m to the north east in the form of Rochdale Canal. These are also listed as Special Areas of Conservation.

Green Belt Land exists 196m to the north east of the site named Merseyside and greater Manchester.

Designated Ancient Woodland exists 1868m and 1874m to the north west of site, namely Buckley Wood.

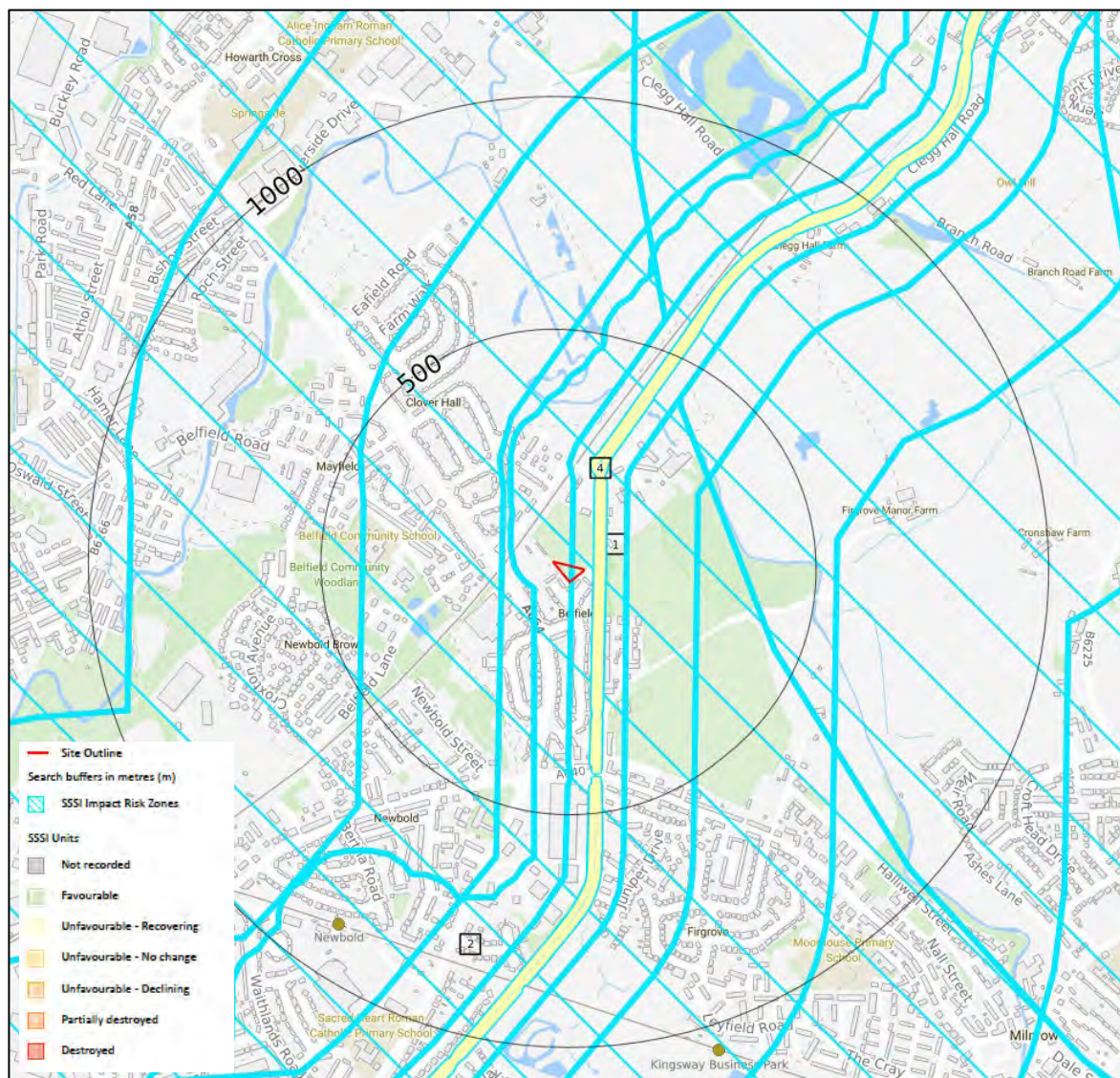


Figure 8 SSSI Impact Zones and Units

The site does lie within an SSSI Impact Risk Zone where all planning applications except householder applications require consultation. The site is unlikely to detrimentally affect these environmentally sensitive areas.

6. POTENTIAL CONTAMINATION

The site has been, and is used, as agricultural/open land and an area of sports ground.

Potential contamination is unlikely based on the past uses of the site.

7. SITE GEOLOGY

7.1 Geology

The published British Geological Survey Map (BGS) at a scale of 1:10,000 shows the site to be underlain by sandstones, mudstones and siltstones of the Pennine Lower Coal Measures Formation. The site is immediately underlain by mudstones and siltstones of the Pennine Lower Coal Measures Formation. The Old Lawrence Rock Sandstone outcrops to the north and north east of site, the Milnrow Sandstone outcrops to the south of the site, and the Darwren Flags Sandstone outcrops to the south east, divided by a geological fault which surround the site in all directions.

Superficial drift deposits are shown to overlie the solid strata in the form of Glaciofluvial Deposits Devensian Sand and Gravels. The geology is presented in Figures 9 and Figure 10.

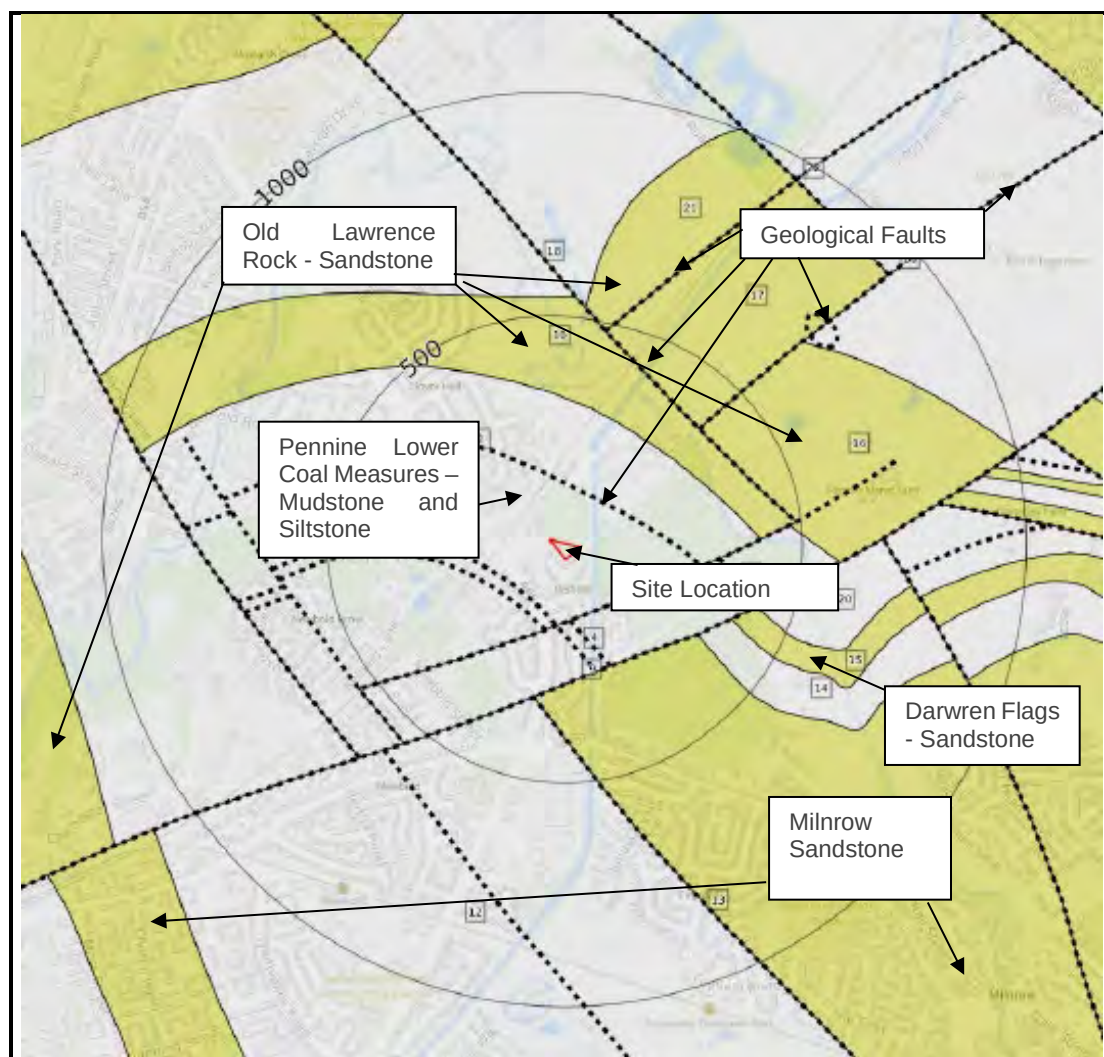


Figure 9 Bedrock Geology and Geological Faults Plan

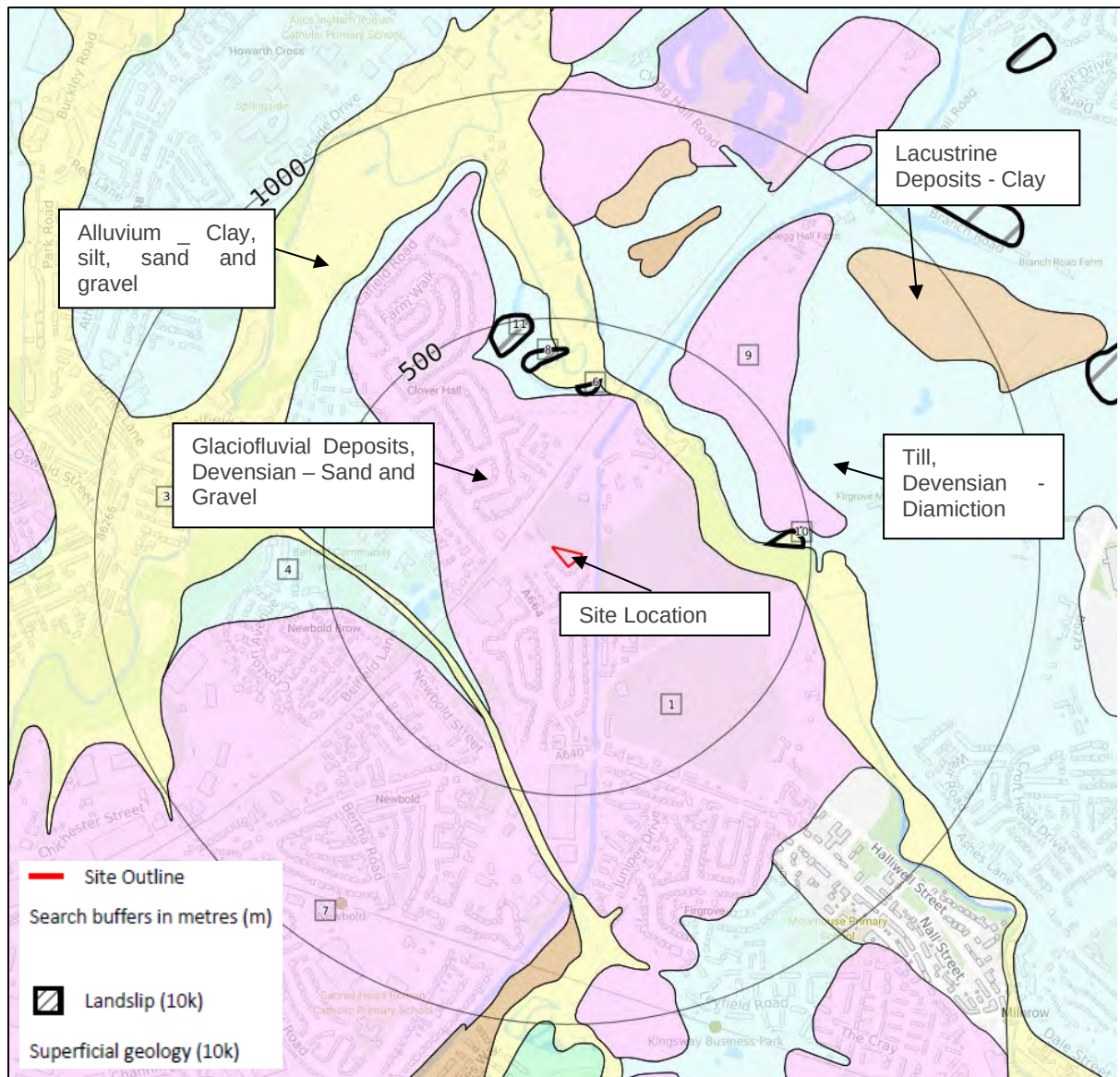


Figure 10 Superficial Deposits Geology Plan

7.2 Geological Faults

The BGS maps do not indicate the presence of any geological faults crossing the site. The maps show the presence of faults trending northwest to southeast and northeast to southwest on all sides of the site. It is possible that smaller faults sub parallel to this may exist in the strata causing fissuring and fracturing to the rock. Due to the cessation of tectonic activity in the area, faulting is unlikely to detrimentally affect the stability of the site.

7.3 Engineering Geology

Made ground may be present on the site. The strata of the sand and gravels glaciofluvial deposits may provide good bearing strata for low rise housing and this should be confirmed by ground investigation to assess its bearing capacity. The Pennine Lower Coal Measures mudstone and siltstone would provide good bearing strata where unweathered and unfaulted for carrying the bearing pressures imposed by low rise development without undue settlement.

7.4 Geological Hazards

According to the British Geological Survey there is a very low risk of running sands, landslides and collapsible deposits. There is a negligible risk of ground dissolution of soluble rocks, shrink and swell hazard from clays and compressible deposits. This is based on the geology and excludes made ground.

7.5 Previous Boreholes

There are recorded archival boreholes exist within 250m of the site area.

8. HYDROLOGY AND HYDROGEOLOGY

8.1 Hydrology

The rainfall over the area of the site will currently drain into the open land on the site. The closest surface water feature and surface water river network, manmade watercourse for water transfer, is located 34m to the east of site as shown on Figure 11. This is a canal containing water the year round.

The site is on land designated as WFD Surface Water body catchment for the River Beal and WFD Groundwater bodies for the Northern Manchester Carboniferous Aquifers, overall rated 'poor'.

The site is shown by the Environment Agency to not lie within a fluvial Flood Zone, flooding is unlikely to occur. There are no areas benefitting from flood storage within 250m of the site. There is no risk according to RoFRaS of flooding from rivers and seas and surface water flooding is seen as negligible.

There are eight recorded surface water abstractions within 500-2000m of the site. The closest three are all located 792m to the west of site for process water means taking from River Roch at Melloroid Works, Belfield.

It is important that any contamination found on site is not allowed to detrimentally affect any watercourses or ponds. Based on the past history of the site, it is unlikely that the site could be detrimentally affecting water courses.

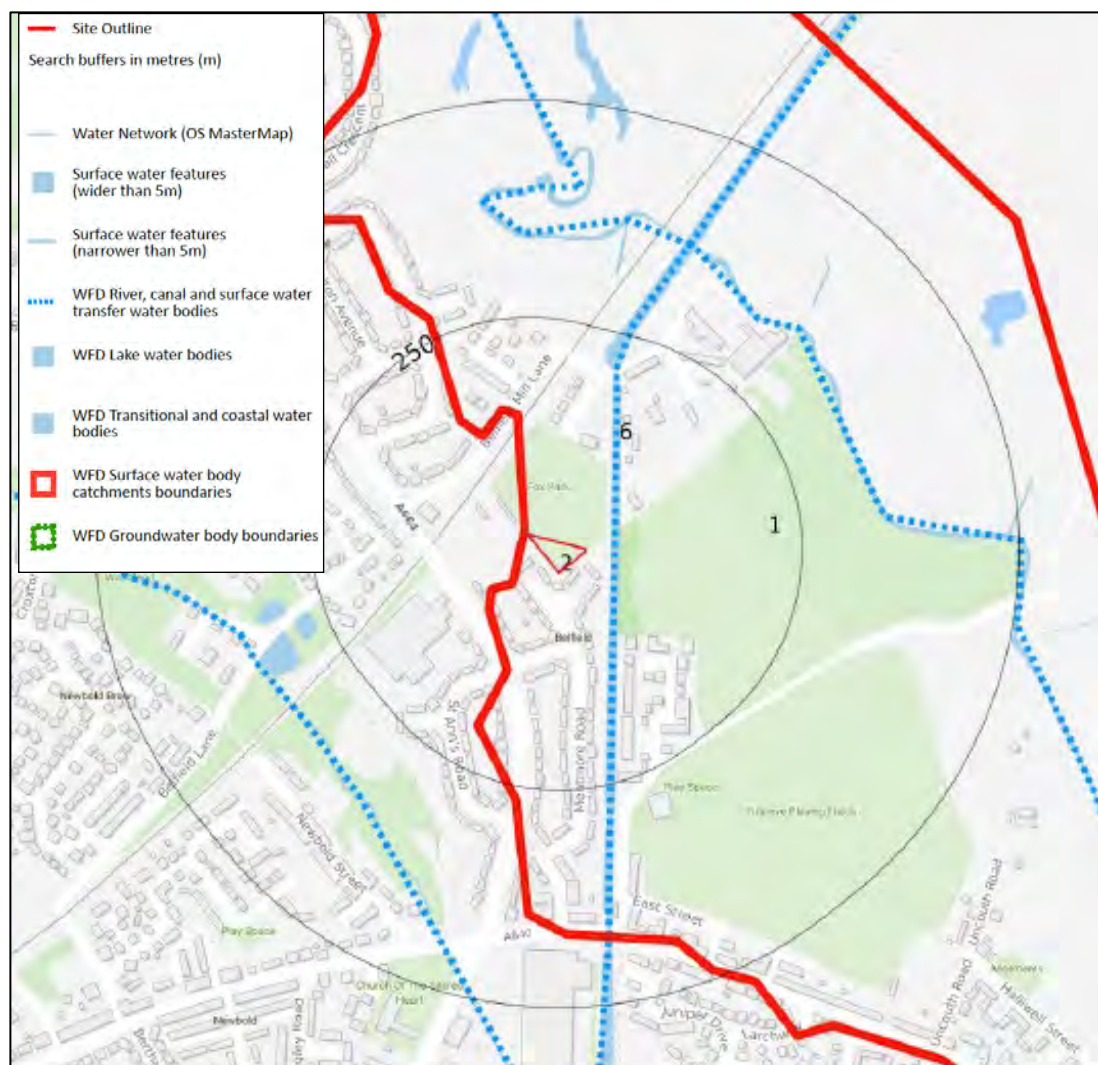


Figure 11 Hydrology Plan

8.2 Hydrogeology

The geological maps produced by the BGS indicate the site to be underlain by the Peninne Lower Coal Measures mudstone and siltstone. The bedrock is overlain by superficial deposits in the form of Glaciofluvial Deposits, Devensian, sand and gravels. A Secondary A Aquifer is held within the superficial deposits sand and gravels beneath the site and within the underlying bedrock. These are predominantly permeability 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. These aquifers are thought to have a high vulnerability to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid.

There are zero potable water abstractions within 2000m of the site.

The site is shown to not lie within a Source Protection Zone Outer catchment or an Inner Catchment however a Source Protection Zone Type 2 outer catchment exists 284m to the south of site.

There are two recorded groundwater abstractions within 2000m of the site. The two abstractions are located 659m to the east of site used for general use relating to secondary category via a spring fed tank.

Other unrecorded or unlicensed wells may be present close to the site. Historic wells may exist within 500m of the site. As the local groundwater may be utilised for abstraction from old unlicensed wells, it is important that it is protected from pollution. It is an offence to pollute the groundwater, whether or not it is used for abstraction.

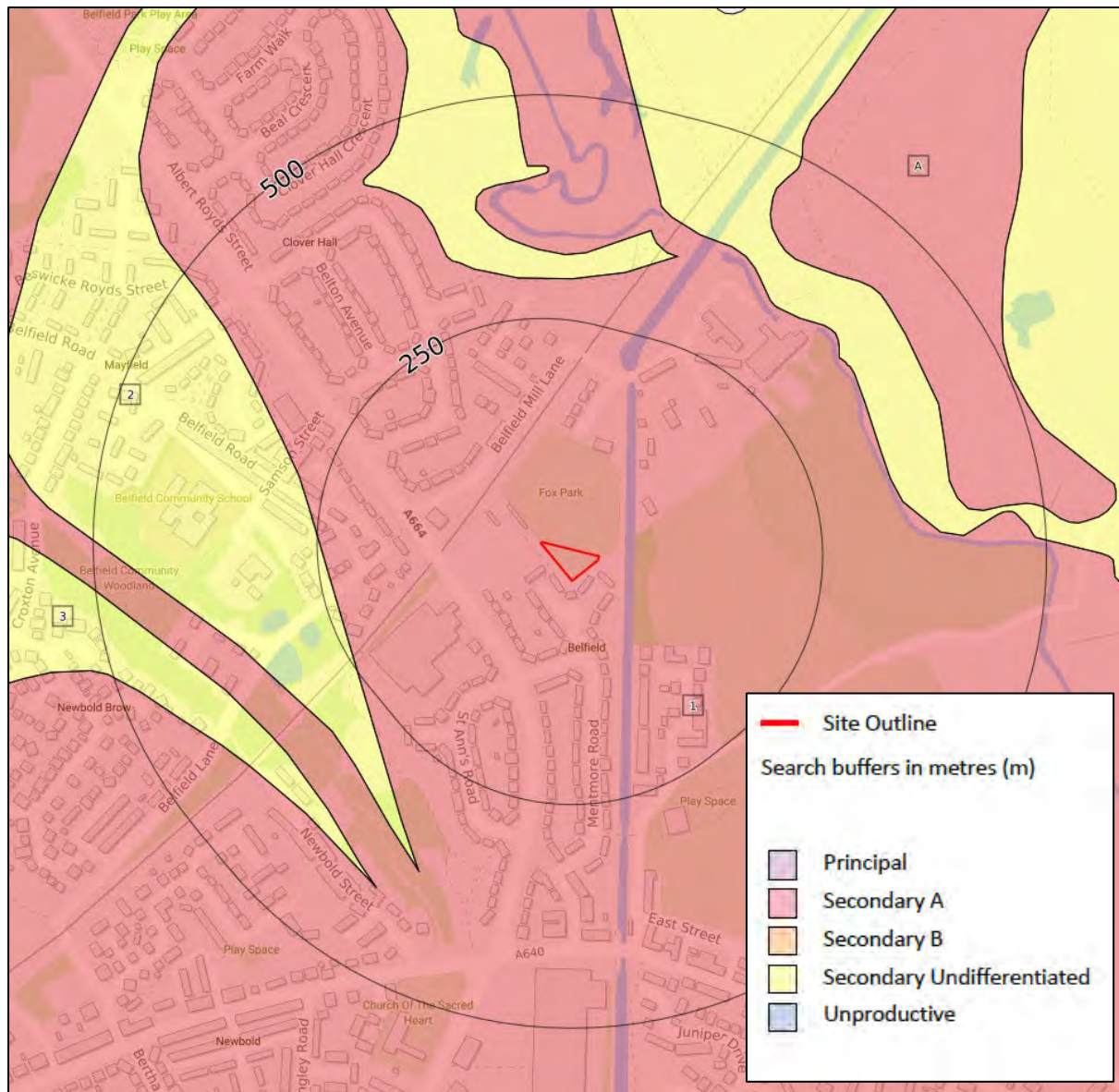


Figure 12 Hydrogeology of Superficial Deposits

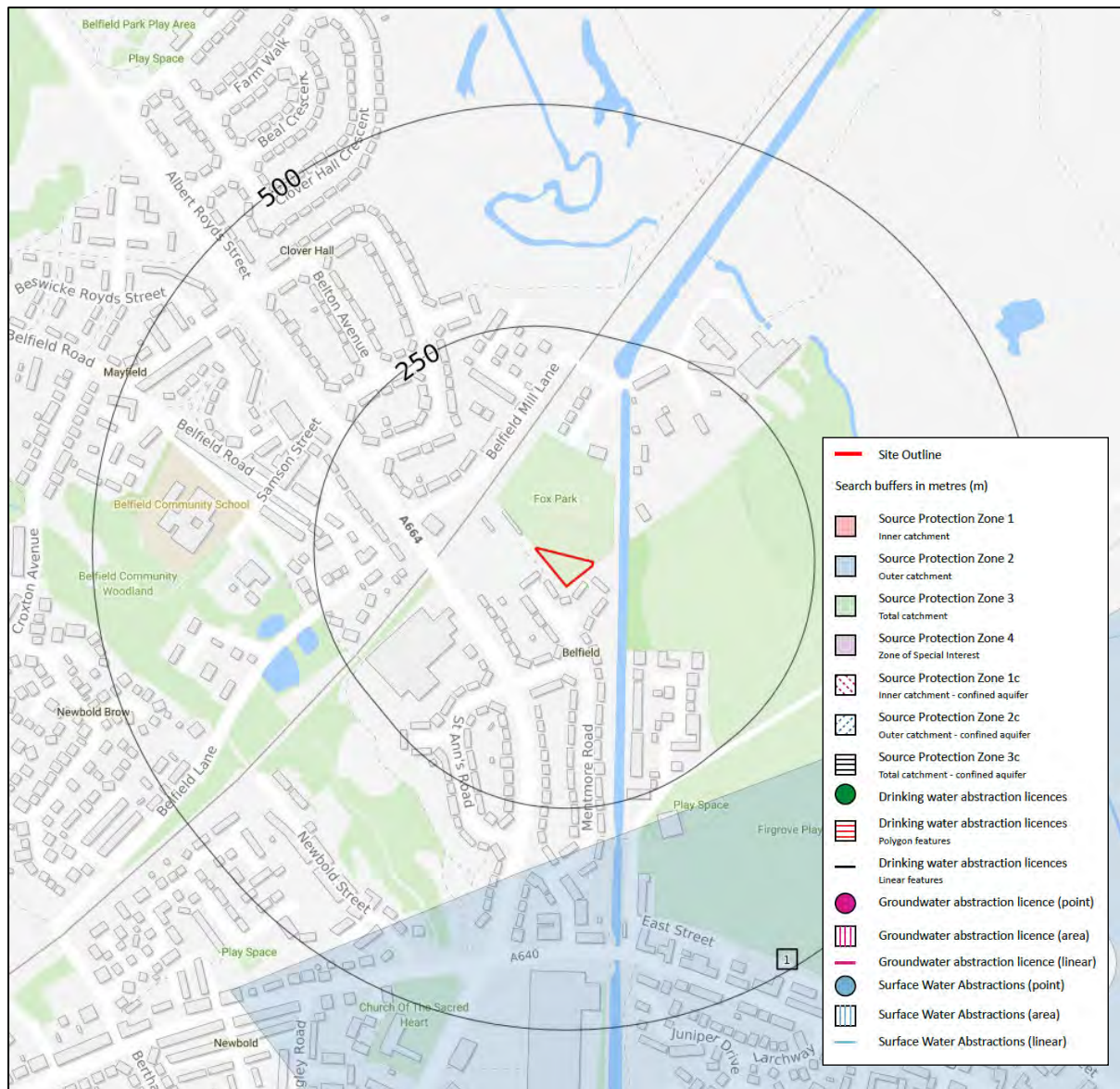


Figure 13 Source Protection Zones and Abstractions

9. QUARRYING AND MINING

9.1 Quarrying

The British Geological Survey Mines and Quarries Survey 1998 does not indicate any existing quarries on or within 250m of the site.

9.2 Coal Mining

9.2.1 The Coal Authority Report

The property is within a surface area that could be affected by underground mining in 1 seam of coal at 50m depth, and last worked in 1846. Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

The property is not within a surface area that could be affected by present underground workings.

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods. The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods or future underground coal mining is planned.

However, reserves of coal exist in the local area which could be worked at some time in the future. No notices have been given, under Section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

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

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

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

There are no licence requests outstanding to remove coal by opencast methods within 800metres of the boundary. The property is not within 800metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50metres of the enquiry boundary, since October 31st 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request have been, made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

The Coal Authority has no record of a mine gas emission requiring action.

The Coal Authority Report is presented in Appendix C.

9.2.2 Shallow Mining

The Coal Authority record mining of coal at 50m bgl within influencing distance of the site. This was completed by 1846 and therefore any ground movement should be completed.

The site lies between two areas of high risk for development according to the Coal Authority as detailed in Figure 12. These are areas of outcropping or shallow coal. The coal seams dip to the south west and therefore only one seam underlies the site which the Coal Authority confirm as 50m bgl.

There is a low risk therefore of any shallower coal existing beneath the site that might cause ground instability in the future.

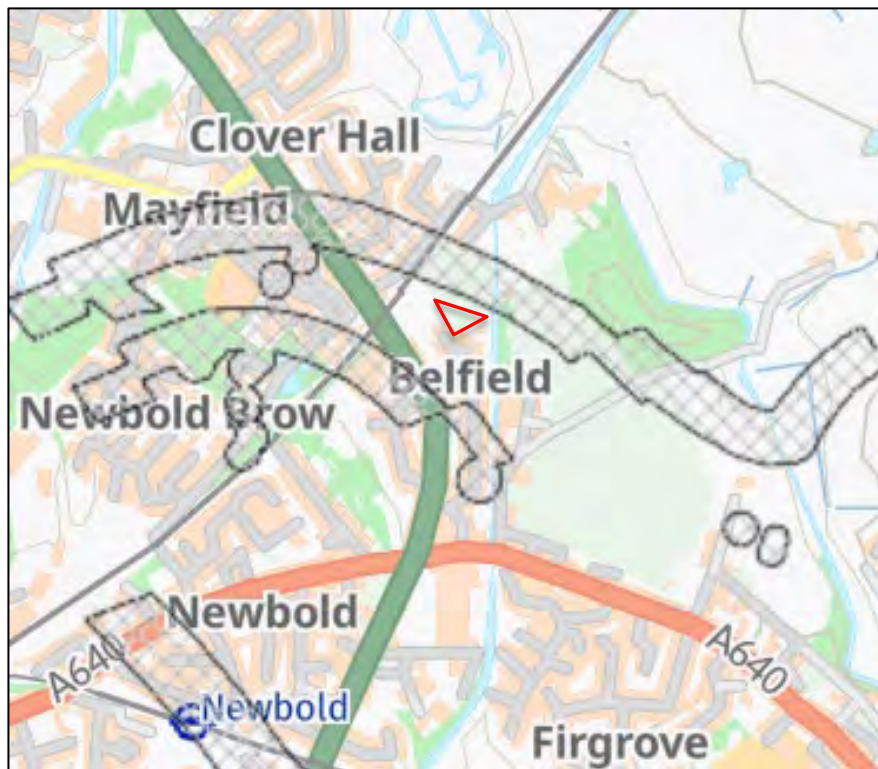


Figure 14 Coal Mining High Risk Development Areas (hatched)

10. ENVIRONMENTAL RISK ASSESSMENT

10.1 Environmental Risk

10.1.1 General

Sources of contamination were investigated through the desk study. The environmental liabilities of the site and risk assessments have been undertaken for residential use with plant uptake. If the site use changes then a further risk assessment may be required.

Environmental risk considerations on the site have been assessed by adopting a site specific qualitative approach to identify the risk, if any, of environmental harm. In accordance with the DETR Draft Statutory Guidance on Contaminated Land the approach is by identifying a hazardous source and establishing possible links between the source via exposure pathways to a potential receptor.

The hazard is a contaminant or potentially polluting substance that is in, on or under the land and which has the potential to cause harm or to cause pollution to controlled waters. The receptor is a living organism or organisms, an ecological system or piece of property, which is being harmed, interfered with or polluted by the contaminant. The pollutant linkage is by means of the pathway which is one or more routes by or through which that receptor is being, or could be, exposed to, or affected by, that contaminant. Thus the presence of a hazard on a site does not necessarily mean that there are risks unless pathways and receptors are present and are receptive to being affected by that specific hazard or contaminant.

- SOURCE - release of pollutant - eg. oil spills
- PATHWAY - route to receptor - eg. permeable strata
- RECEPTOR eg. - river

The likelihood of contamination affecting the environment depends on the migration and persistence of contaminants which varies with the nature of the contaminant and the ground and groundwater conditions, and the presence of sensitive receptors.

The following tables (Tables 3, 4, 5 and 6) which are extracted from CIRIA C552 'Contaminated Land Risk Assessment – A Guide to Good Practice' have been used to assess the risk to sensitive receptors from site contamination.

Any category which shows as medium risk or above may require investigation and if high risk is proven, remediation may be required following investigation.

TABLE 3
Risk Matrix – Comparison of Consequence and Probability

Risk = Probability x Consequences		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 4
Classification of Probability

Probability Classification	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 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.

TABLE 5
Classification of Consequence

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem or organisation forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem or organism forming part of such ecosystem, (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentration of a contaminant from site exceeds the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve. Lesser toxic and asphyxiate effects of carbon dioxide
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing, etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

TABLE 6
Classification of Risks and Likely Action Required

Risk Classification	Definition
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 undertaken already) 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 undertaken already) is required and remedial 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 relatively unlikely that any such harm would be severe. If any harm were to occur, it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
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 be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Any category which shows as moderate risk or above may require investigation and possibly subsequent remediation.

10.1.2 Sources of Contamination

It is a low risk that contamination exists on the site based on its past use as open land and a sports field.

10.1.3 Potential Pathways for Migration

a) Ingestion of and/or skin contact with contamination in the soil

Low Likelihood to Unlikely – There is a low potential for ingestion/skin contact with any contamination in soil due lack of historical industrial site usage and lack of contamination expected. There may be a risk to workmen which could be mitigated by appropriate use of Personal Protective Equipment.

b) Ingestion of contamination and uptake of contamination in plants/vegetables/animals/pets

Low likelihood to Unlikely - Vegetables and plants may be grown on the site. It is considered that animals in the food chain will not be present on site, but pets may be present on site. It is unlikely that there will be any uptake, due to lack of expected contamination from site history, of contamination in plants that could detrimentally affect site occupants in gardens / landscaped areas.

c) Ingestion of contaminated drinking water through leaching of contamination into groundwater flowing to underlying aquifers/water abstractions

Low Likelihood to Unlikely – Leaching of any contamination is unlikely to detrimentally affect groundwater. The site does not lie within a Source Protection Zone for potable groundwater abstractions. There are no groundwater/potable water abstractions within 500m /2000m respectively of the site. The site is unlikely to detrimentally affect potable water due to distance of local abstractions.

d) Inhalation of vapours produced by landfill/radon/hydrocarbons/old mines

Likely to Unlikely – There is a recorded landfill site and infilled ground within 250m of the site. The site does not lie within a radon protection area. Old mines are recorded beneath the site. It would be prudent to incorporate a methane membrane in construction due to the local landfill and infilled ground together with a passive ventilation beneath the floor and air bricks.

e) Inhalation of contaminated airborne dust

Low Likelihood to Unlikely – The appropriate safety measures must be exercised to protect both the workers and the local residents from dust during construction. Provided this work is carried out diligently, the ongoing risk is low.

f) Contamination of controlled waters

Low Likelihood to Unlikely – Leaching of contamination from the site into the closest surface water on site is unlikely due to expected lack of contamination from previous site use. Surface water exists <50m from site SSSI canal. There is a low potential for leaching of any contaminants into groundwater and underlying Secondary A aquifer within the superficial deposits and underlying bedrock due to lack of contamination expected.

10.1.4 Potential Sensitive Receptors

Potential Sensitive Receptors to any undetected contamination on the site could include workmen.

10.2 Summary of Environmental Risk

By considering where a viable pathway exists which connects a source to a receptor, this assessment will identify where pollutant linkages may exist. If there is no pollutant linkage, then theoretically there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. On this site there is unlikely to be contamination and a low potential for undetected contamination to be present due to its lack of past industrial use. The site will be used in the future for the high sensitivity land use scenario of residential use with gardens.

The risk is assessed by the combination of the probability of the risk and the severity of the risk in line with CIRIA recommendations and the risks are presented in Table 7. If any material is likely to be removed from site for development, then waste categorisation and Waste Acceptance Criteria Tests will be required to categorise the soils.

TABLE 7
Risk Assessment for a Residential Site Use

Pathways	Receptors	Perceived Risk	Probability of Risk	Consequence of Risk	RISK
Environmental					
Inhalation of vapours such as methane from landfill and hydrocarbons from ground contamination	Existing/future occupants of the buildings and workmen.	Methane & Carbon Dioxide	Likely too Unlikely	Severe-Methane can be explosive in air. Carbon dioxide can be fatal. Hydrocarbon can have long term health effects.	Moderate – landfill & infilled land within 250m Deep mining. Reduced to Low if mitigating measures employed in construction
Ingestion of and/or skin contact from contaminated soil	Existing/future occupants of the building and workmen	Contaminated Soil	Low Likelihood To Unlikely	Mild	Low – Due to lack of likely contamination due to past land use as open ground and sports field
Ingestion of contaminated drinking water	Local abstraction wells	Contamination of potable water	Low likelihood to Unlikely	Medium-prosecution can occur if site is affecting controlled waters	Low – No Potable boreholes within 2000m. Site does not lie in a source protection zone for potable water
Transportation by surface and/or groundwater	Groundwater	Contamination of shallow groundwater by hydrocarbons	Low Likelihood to Unlikely	Medium-prosecution can occur if site is affecting controlled waters.	Low - It is unlikely that contamination could be affecting groundwater. Closest groundwater abstraction >500m
	Surface Water	Contamination of surface water	Unlikely		Low- Due to expected lack of contamination Surface water <50m from site, SSSI canal
Ingestion and uptake of contamination in plants/animals/vegetables.	Future occupants	Ingestion of contamination via home grown produce	Low Likelihood to Unlikely	Medium	Low – vegetables and plants may be grown on site. Low likelihood of contamination
Inhalation of airborne dust	Workmen, occupants of building,	Dust during any future demolition or construction.	Low likelihood to Unlikely	Medium	Low - provided good construction practice on site.

	neighbouring users				
Irradiation	Humans	Radon gas	Unlikely	Mild	Low-Radon protection not required in buildings
Geotechnical					
Settlement or Heave	Buildings and car park	Damage to hard and surface buildings	Unlikely	Medium	Low – provided foundations placed on high strength sand/gravels or bedrock
Landslip	Buildings	Level site	Unlikely	Severe	Low risk – site is level.
Chemical attack	Buildings	Sulphate can, under certain conditions, attack concrete.	Low to medium likelihood	Medium	Low - sulphate resisting concrete is required for underground concrete unless sulphate tests prove otherwise.
Groundwater	Buildings	Rising groundwater	Unlikely	Medium	Low
Mining					
Shallow Mining	Land and Structures	Damage to hard and surface buildings	Unlikely	Medium	Low – No recorded shallow mining
Deep Mining	Buildings	Damage to hard and surface buildings	Unlikely	Severe	Low risk - deep mining at 50m bgl

The potential sensitive receptors on the site which could be detrimentally affected by any contamination, mining and geotechnical risks are assessed in Table 7.

The risk assessment has been based on the future use of the site for residential use with garden and hard cover. If the site is to be used for any other purpose a reassessment of the risk may be necessary.

In line with CIRIA, a risk assessment has indicated that there is a low risk of the contamination detrimentally affecting humans or the environment. Due to the depth to groundwater and the distance to surface water, increased hard cover, the site is unlikely to detrimentally affect controlled waters.

Workmen should always take the usual precaution of wearing gloves when handling soil.

11. ASSESSMENT AND RECOMMENDATIONS

11.1 Introduction

A Desk Study has been undertaken to assess the geotechnical, mining and environmental conditions for the proposed development of the site for residential use with plant uptake.

The desk study has been sufficient to allow an assessment of the site conditions.

This section of the report provides an interpretation of the findings in the form of a ground model, and provides advice and recommendations with respect to the proposed development.

11.2 Geology and Groundwater

The site is underlain by superficial deposits sand and gravels with underlying mudstone/siltstone.

Due to the previous site uses as open land and sports field it is not expected that contamination will be present in the soils.

If any made ground is encountered it is likely to be highly compressible unsuitable for foundations. The underlying sand and gravel may have a high strength and this requires confirming by investigation and soil testing. The underlying mudstone / siltstone where unweathered, is expected to have an adequate bearing capacity for low rise housing.

It is not expected that groundwater will be a concern during development, and any water during and after heavy rainfall could be dealt with by sump pumping. Any softened ground due to water ingress should be removed prior to pouring of concrete for foundations or services.

11.3 Mining

The Coal Authority mining report states that the site is undermined for coal from 1 seam of coal at 50m depth and last working in 1846, any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

The Coal Authority Coal Mining Report is presented in Appendix C and should be read in full.

11.4 Contamination and Toxic Gas

Ordnance Survey maps inspected indicated the site has been occupied by open land and sports fields.

There is a low risk of any undetected contamination detrimentally affecting humans. Due to the depth to groundwater and lack of contamination found the site is unlikely to detrimentally affect controlled waters.

There are no recorded abstraction licences which could be detrimentally affected by the site. The underlying aquifer of the permeable strata within the superficial deposits and Coal Measures is unlikely to be detrimentally affected by the site.

As a precaution all builders should also use gloves when handling soil for Health and Safety and work in accordance with HSE and CIRIA guidelines.

A local landfill and infilled ground exists within 250m and it would be prudent to install a 1200 gauge methane resistant membrane in construction with underfloor passive ventilation and air bricks.

Basic radon protection measures are not required on this site according to BRE BR211.

11.5 Excavations

Excavations for services could be achieved by mechanical excavator. All excavations for foundations and services will require temporary support for construction in the short and long term.

Groundwater may be encountered especially during and after heavy rainfall. If rainwater falls into the excavations it is expected to be easily dealt with by sump pumping. If this occurs, the softened surface of the strata should be removed prior to any pouring of concrete.

11.6 Underground Concrete

If made ground is encountered on site then tests should be undertaken for soluble sulphate to determine any special precautions for design of underground concrete. If sandstone is encountered then no special consideration will be required for underground concrete.

11.7 Waste Disposal

Any spoil arising from excavations or landscaping works will need to be disposed of to a licensed tip in accordance with the EP (Duty of Care) Regs 1991 and Landfill (England and Wales) Regulations (2002) amended. Under the European Waste Directive landfills are classified as accepting inert non-hazardous or hazardous wastes in accordance with the EU Waste Directive.

The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material if provided with the results of waste categorisation.

11.8 Foundation Recommendations

It is proposed to construct a bungalow with hard cover parking and gardens.

Any made ground encountered is unsuitable material on which to construct foundations due to its low strength and variable nature both laterally and vertically.

It is recommended that foundations are placed on the sand and gravel if it is proven to have sufficient bearing capacity with a Factor of Safety of 3. Alternatively foundations could be extended to the underlying bedrock. The mudstone/siltstone bedrock is expected to have a bearing capacity in excess of 150kN/m².

If during and after heavy rainfall the surface of excavations in the weathered sandstone are softened, then the softened material should be removed before pouring of concrete.

Care should be taken to ensure foundations are constructed on similar strata.

12. GENERAL REMARKS

This report truly reflects the conditions found during the desk study. Whilst the desk study was undertaken in a professional manner taking due regard of additional information which became available as a result of ongoing research, the results portrayed only pertain to the information attained, and it is possible that other undetected information and undetected ground and gas conditions, undetected mining conditions and undetected contamination may exist. The desk study was only undertaken within the site boundaries and should not be used for interpretation purposes elsewhere. These conclusions are only a brief summary of the report, and it is recommended that the report is read in full to ensure that all recommendations have been understood.

This report is provided for the sole use of the client (Sacred Heart Football Club) and no responsibility will be accepted by this Consultancy to any other parties who rely on this report entirely at their own risk. The copyright for this report is held by Ashton Bennett Consultancy and no reproduction of any part or all of the report can be undertaken or any other reproduction undertaken without the written approval of this Consultancy.

Tristan T A Bennett
BSc

Frances A Bennett
BSc, Creole, FGS, FIMMM, C.WEM, MCIWEM, CEnv, AIEMA, MIEEnvSci.

Appendix **A**



Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1891

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

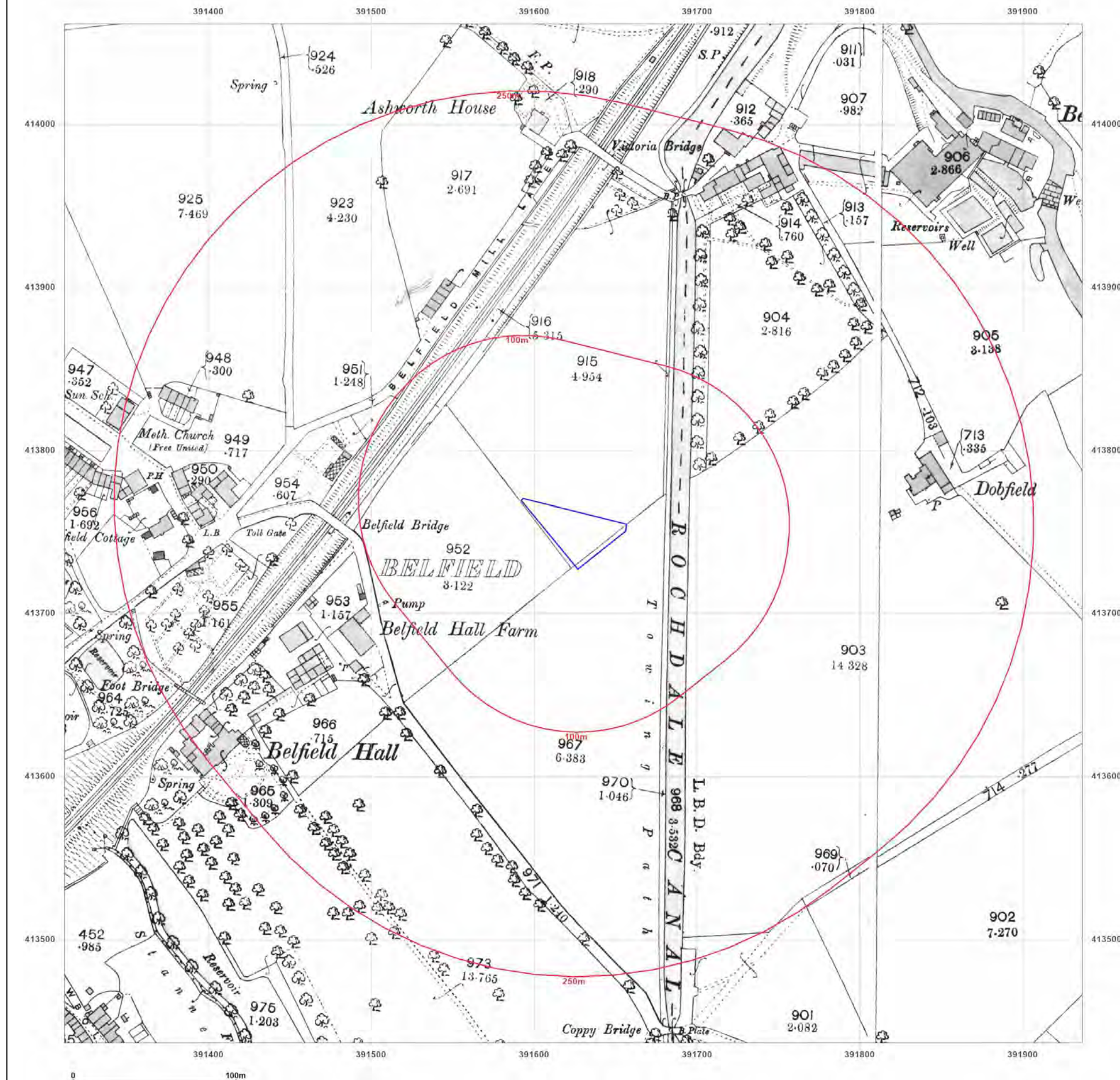


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1930

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1930
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1930
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

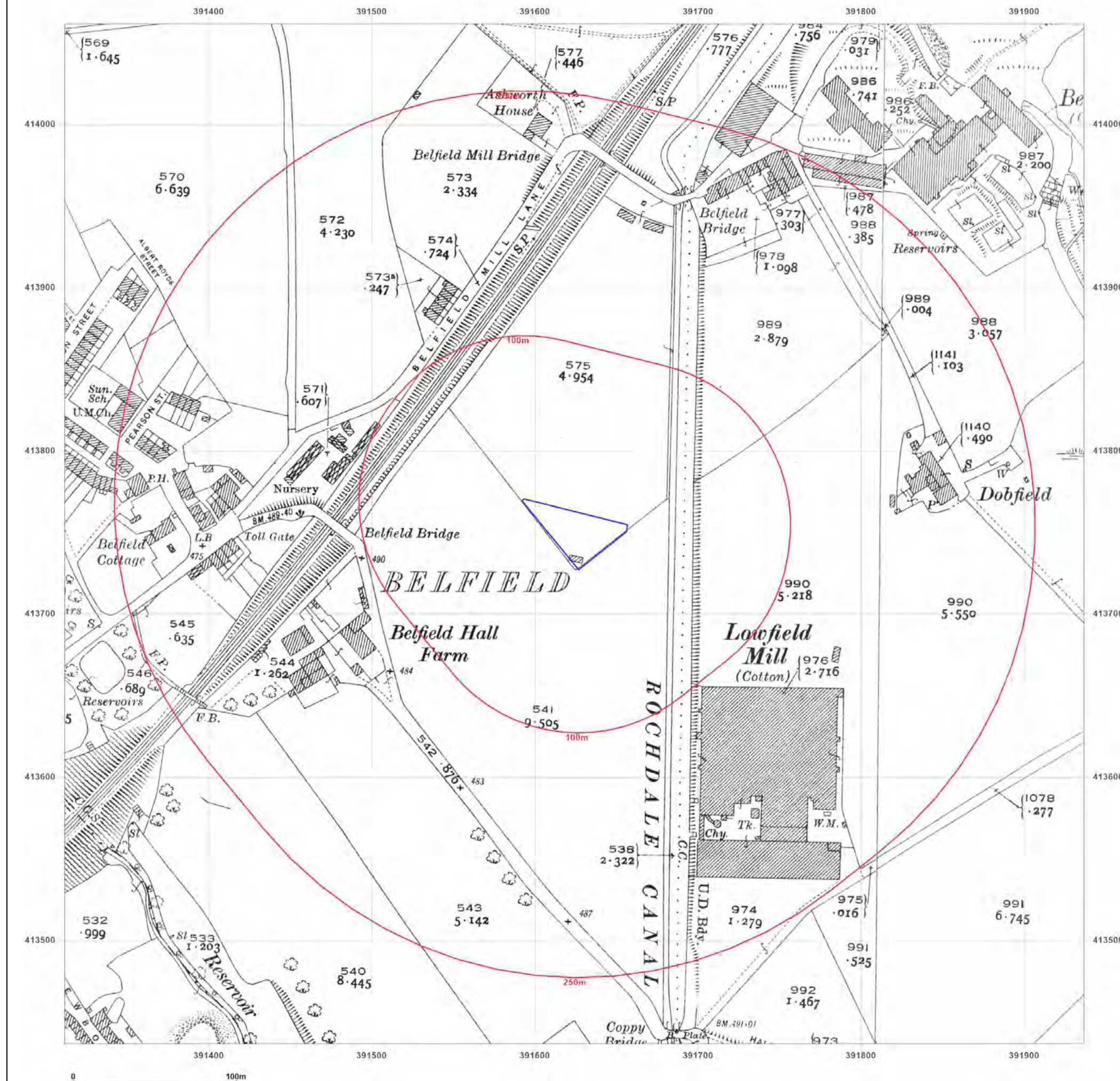


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: National Grid

Map date: 1957

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928



Produced by
Groundsure Insights
www.groundsure.com

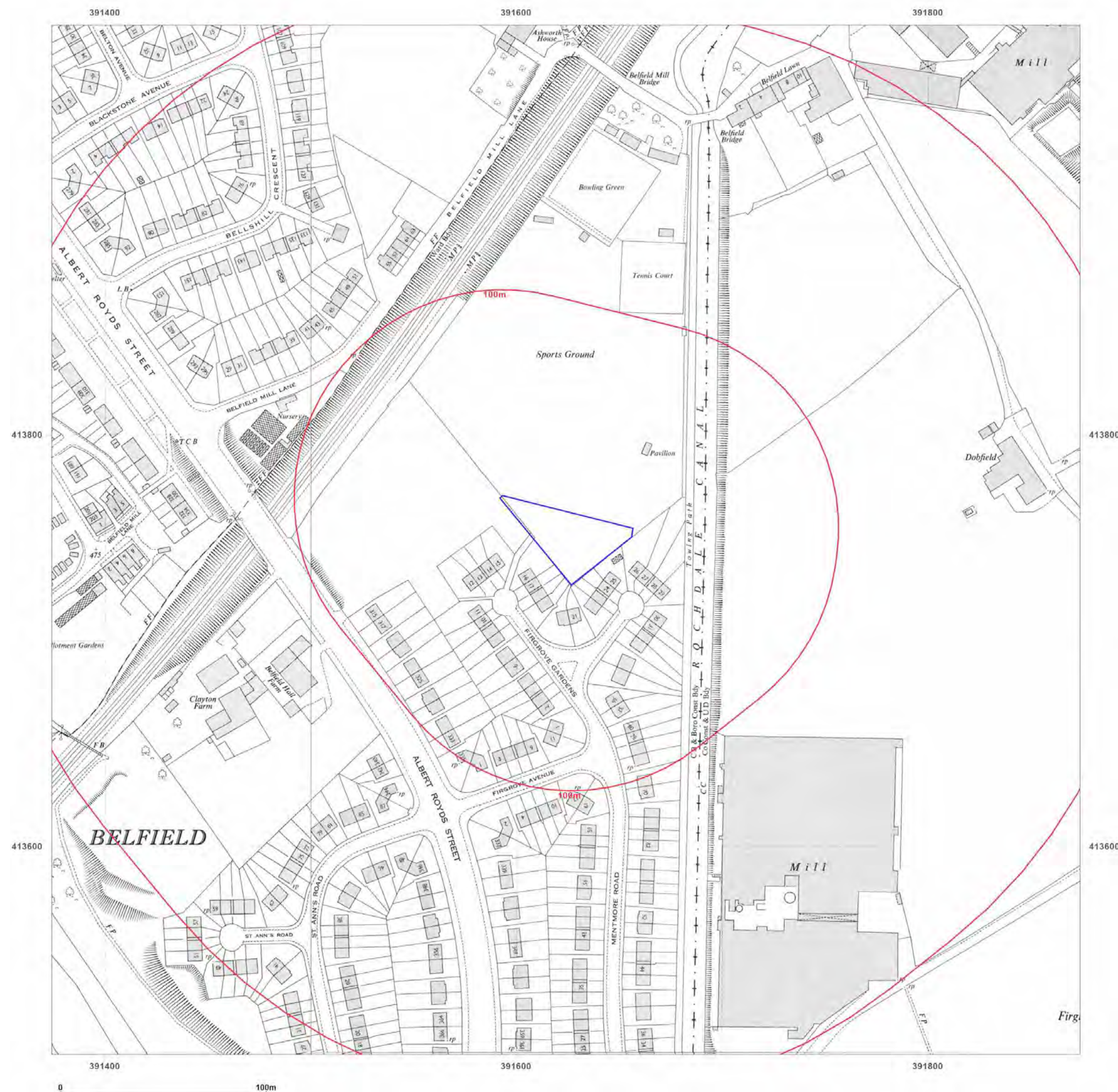


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: National Grid

Map date: 1958

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
Revised N/A
Edition N/A
Copyright 1958
Levelled 1928

Surveyed 1957
Revised N/A
Edition N/A
Copyright 1958
Levelled 1928

Surveyed 1957
Revised N/A
Edition N/A
Copyright 1958
Levelled N/A

Surveyed 1957
Revised N/A
Edition N/A
Copyright 1958
Levelled 1928



Produced by
Groundsure Insights
www.groundsure.com

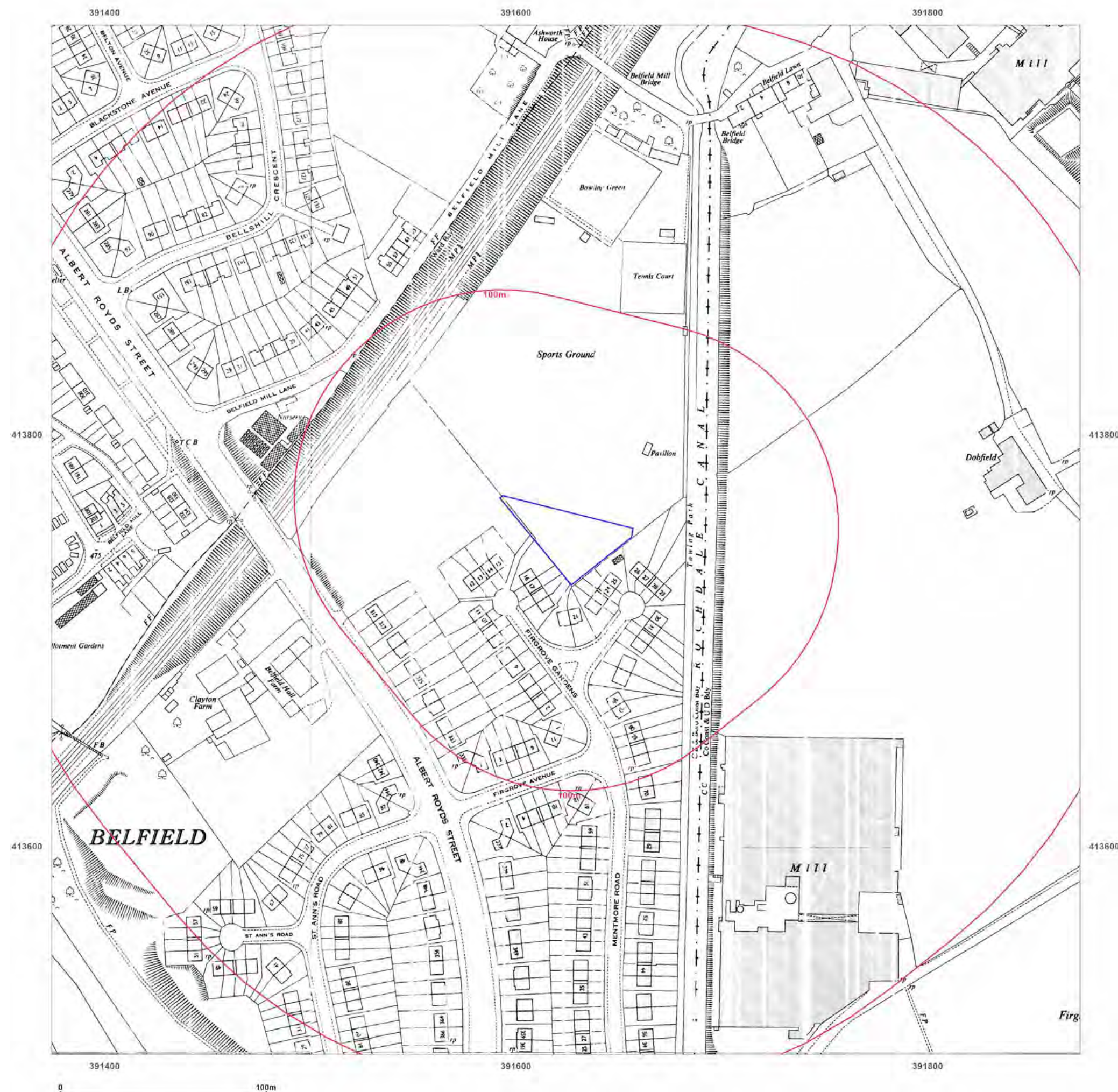


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1851

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

Surveyed 1848
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

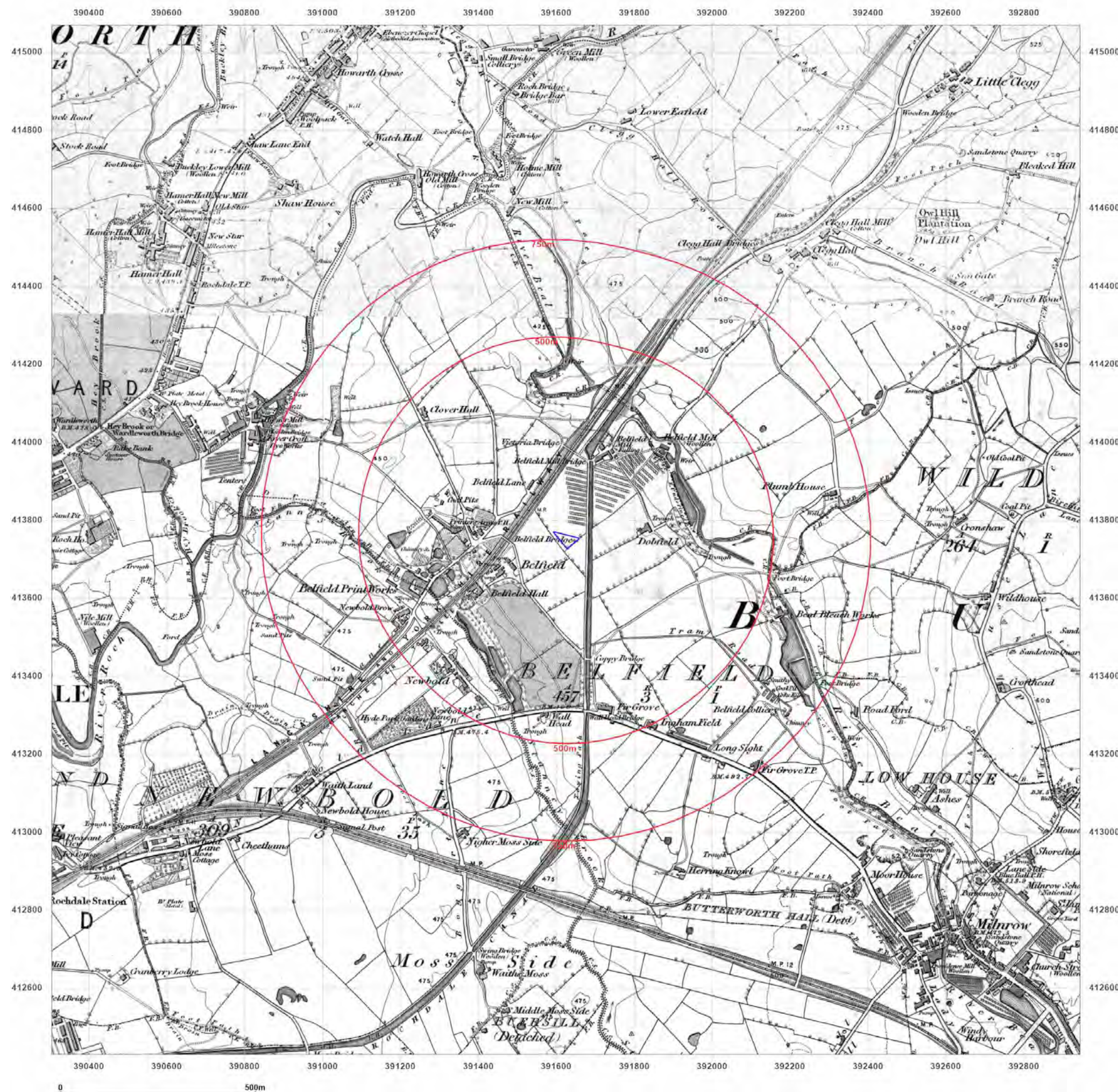


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1908

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised 1908
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1848
Revised 1908
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

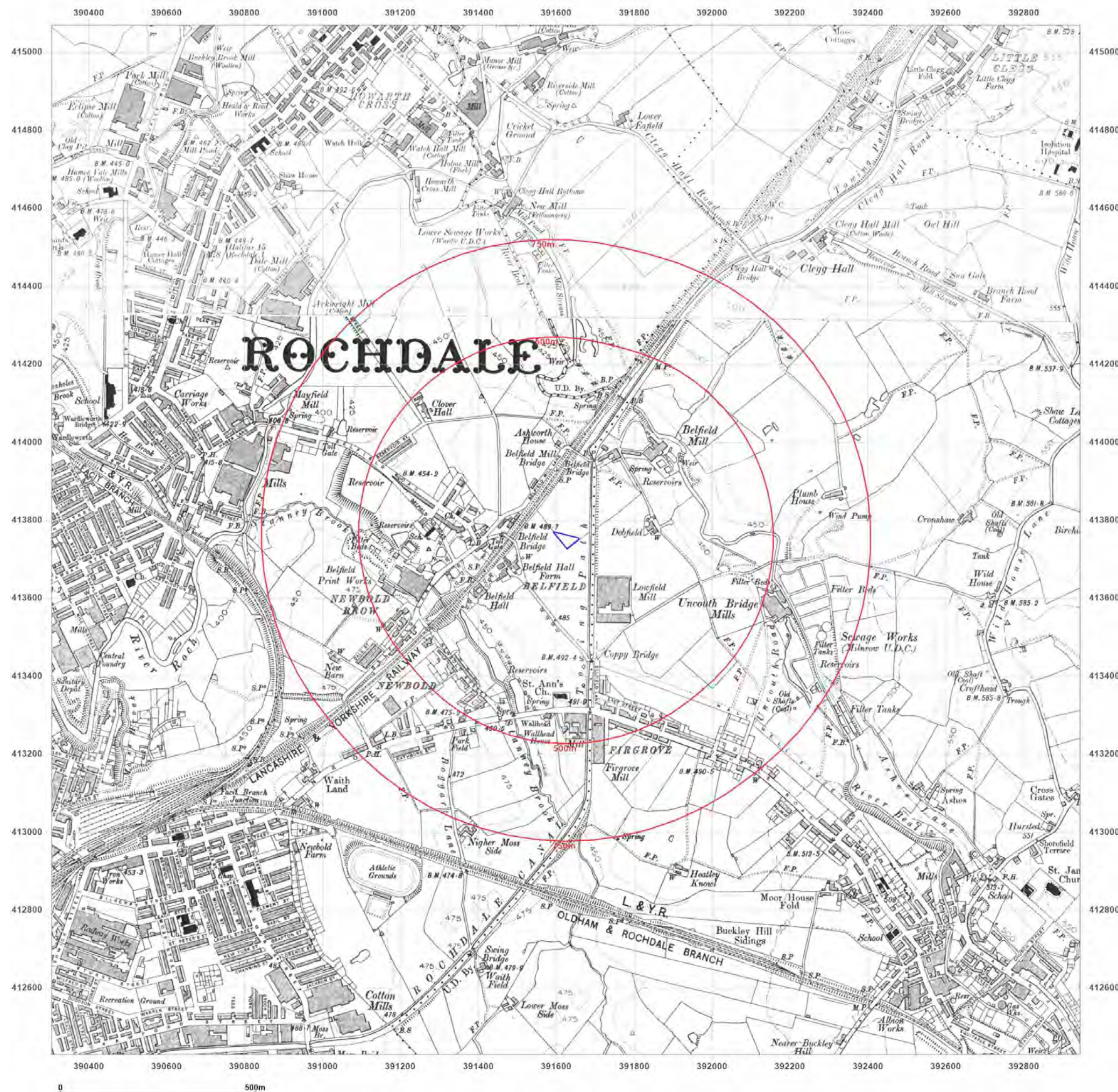


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1928

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1848
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

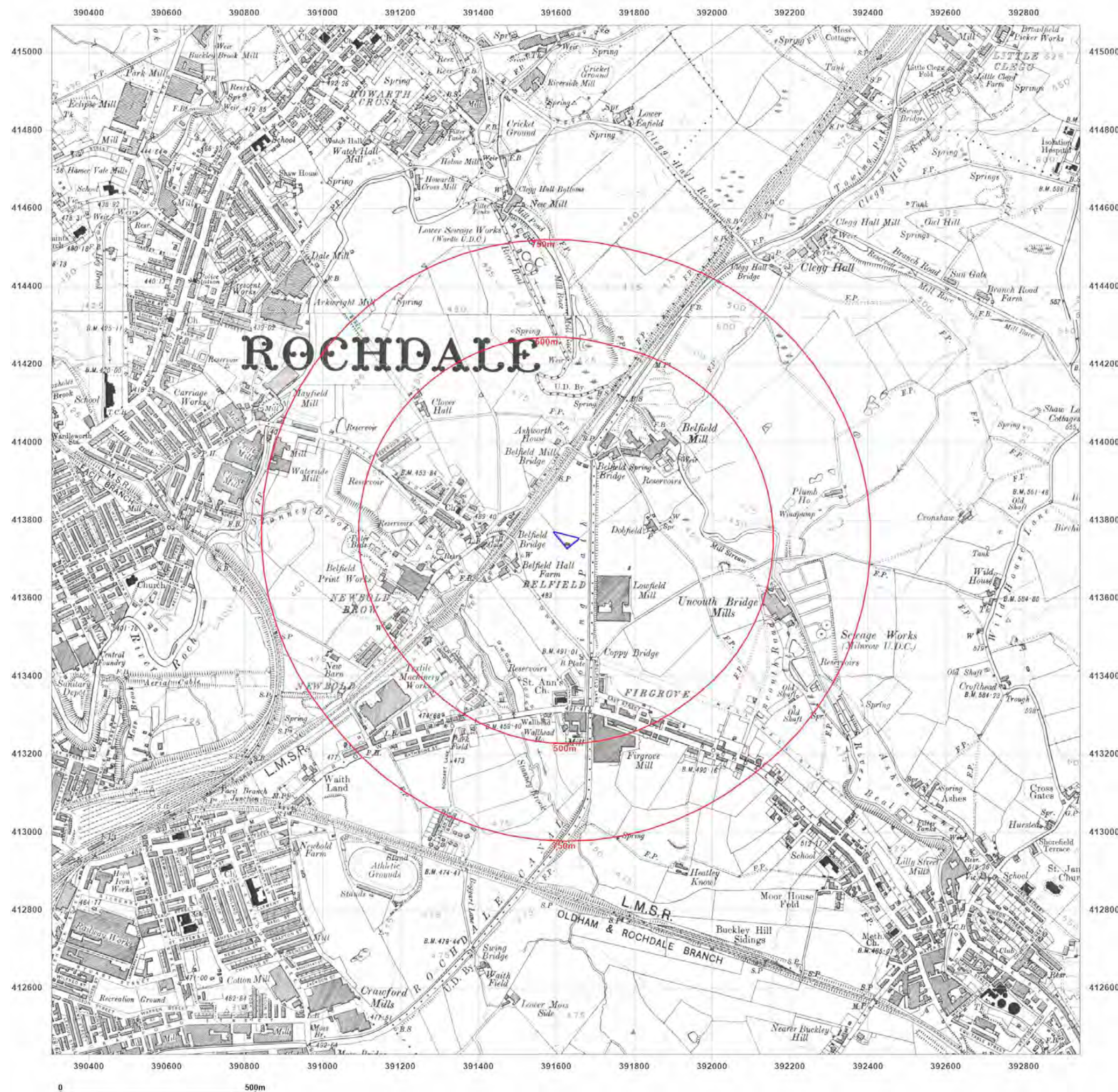


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1848
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

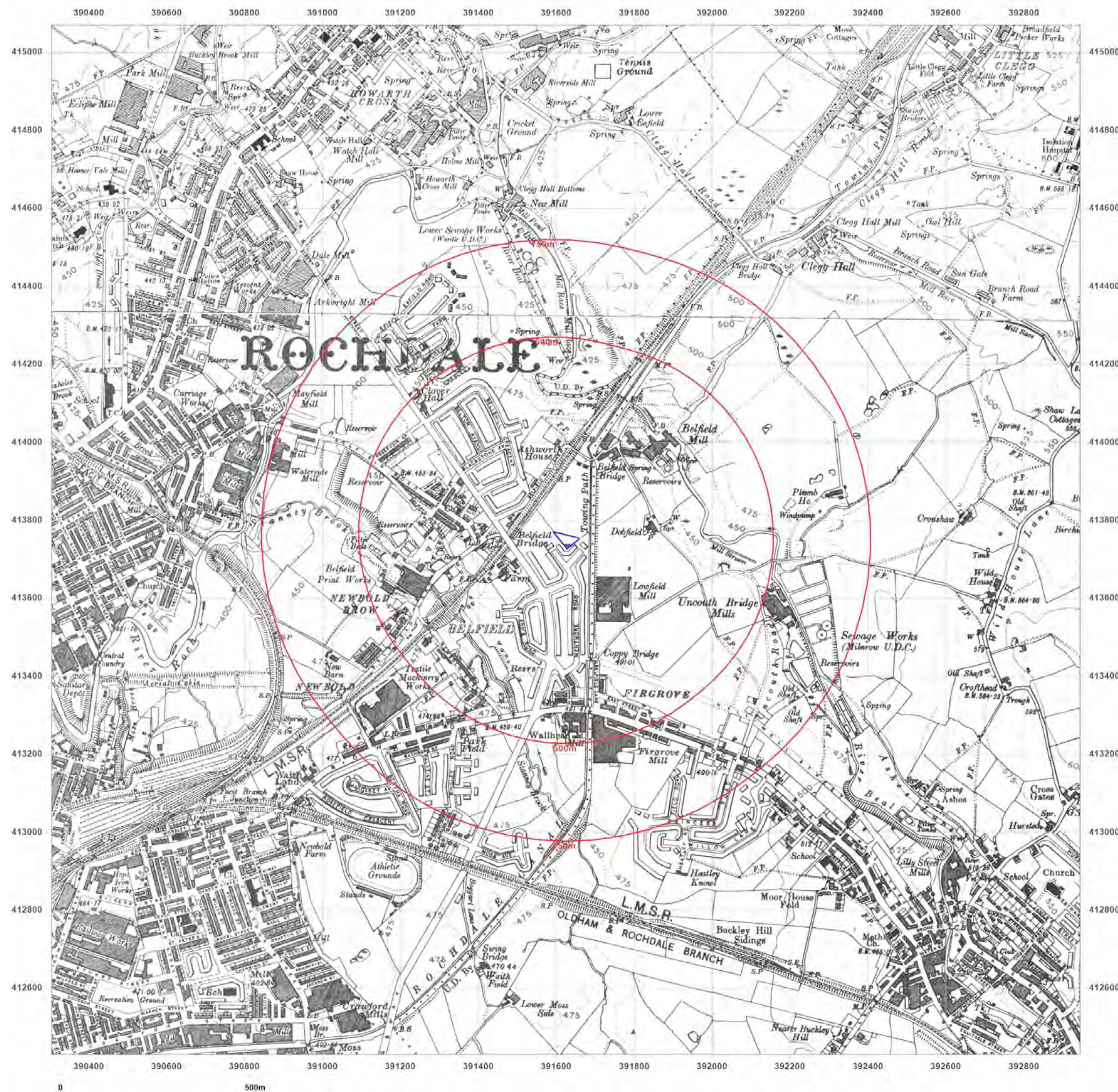


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: Provisional

Map date: 1949-1954

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1949
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1954
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

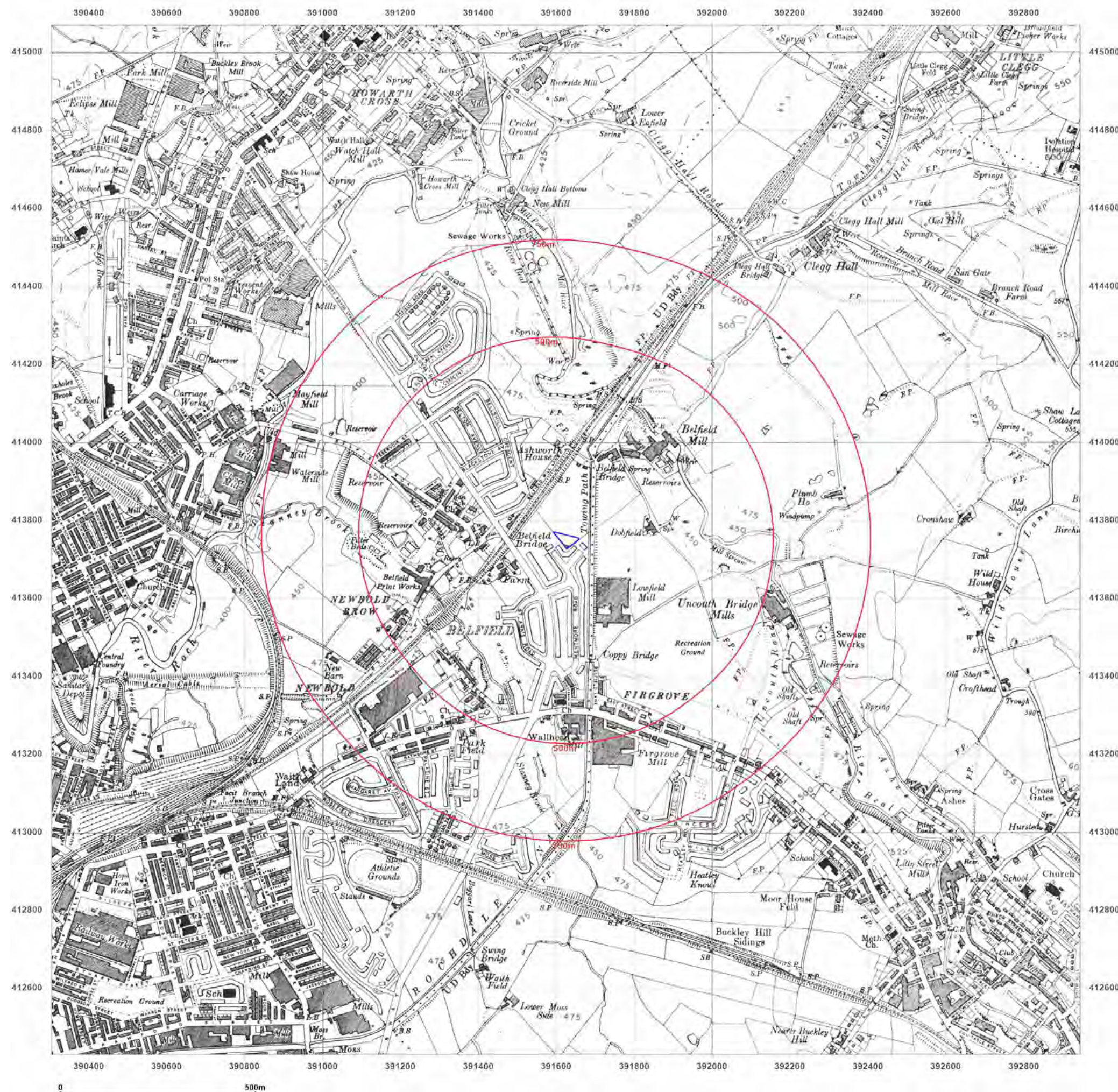


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: National Grid

Map date: 1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1976
Revised 1978
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

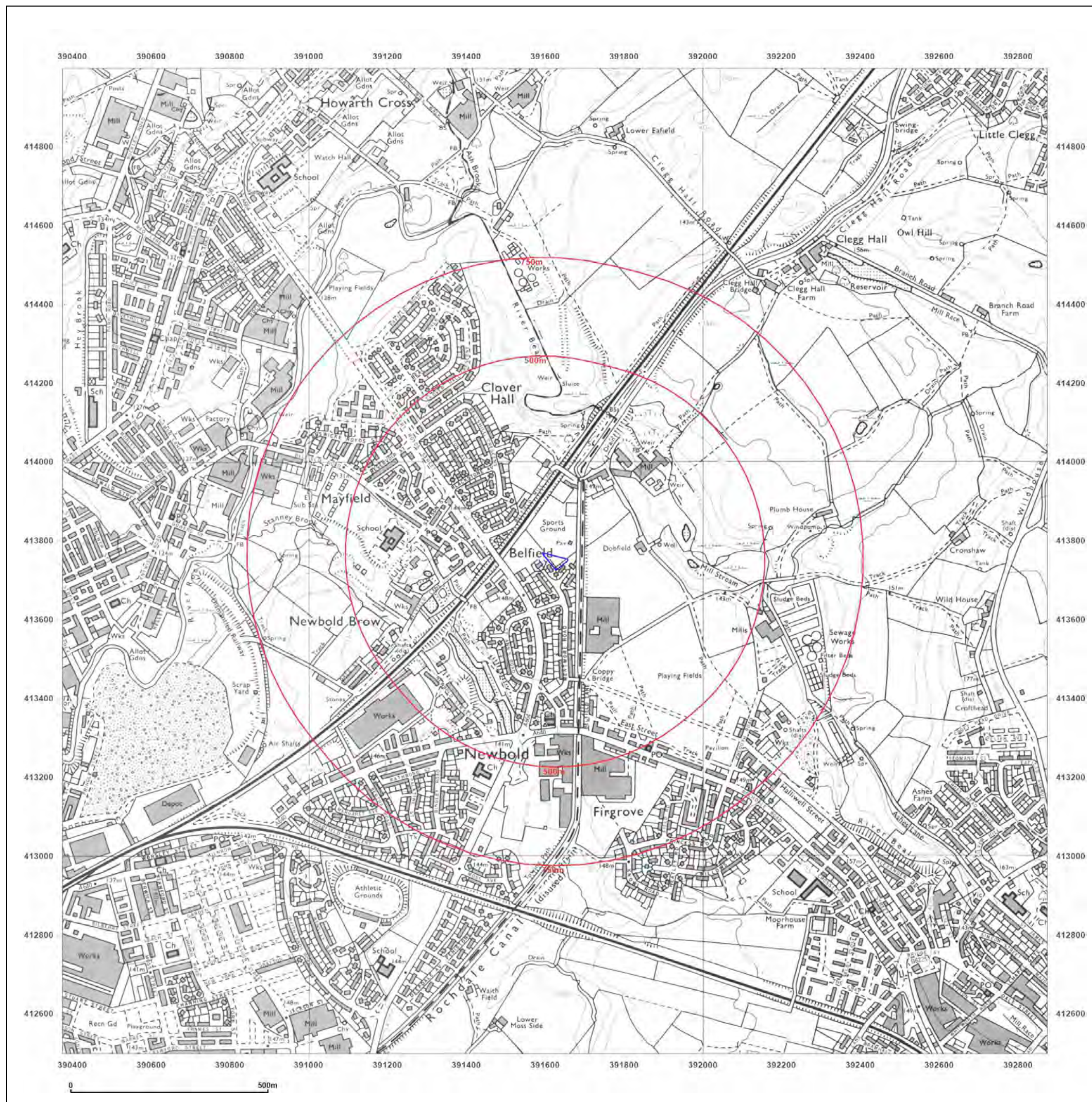


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



Produced by
Groundsure Insights
www.groundsure.com

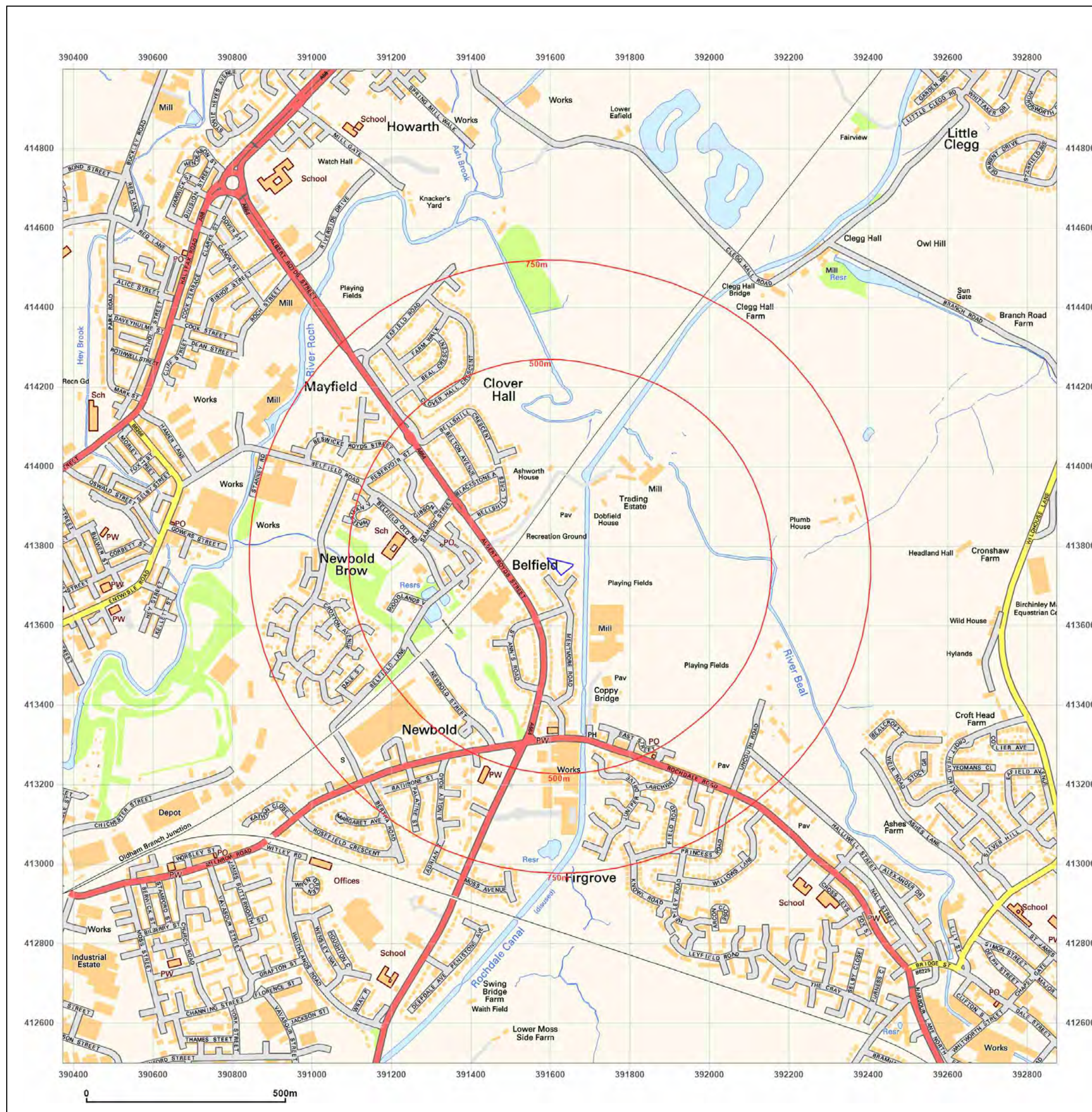


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

17 Firgrove Gardens, OL16 3AF

Client Ref: CMAPS-CM-1121746-4873-230823
Report Ref: CMAPS-CM-1121746-4873-230823HIS
Grid Ref: 391624, 413749

Map Name: National Grid

Map date: 2023

Scale: 1:10,000

Printed at: 1:10,000



Produced by
Groundsure Insights
www.groundsure.com

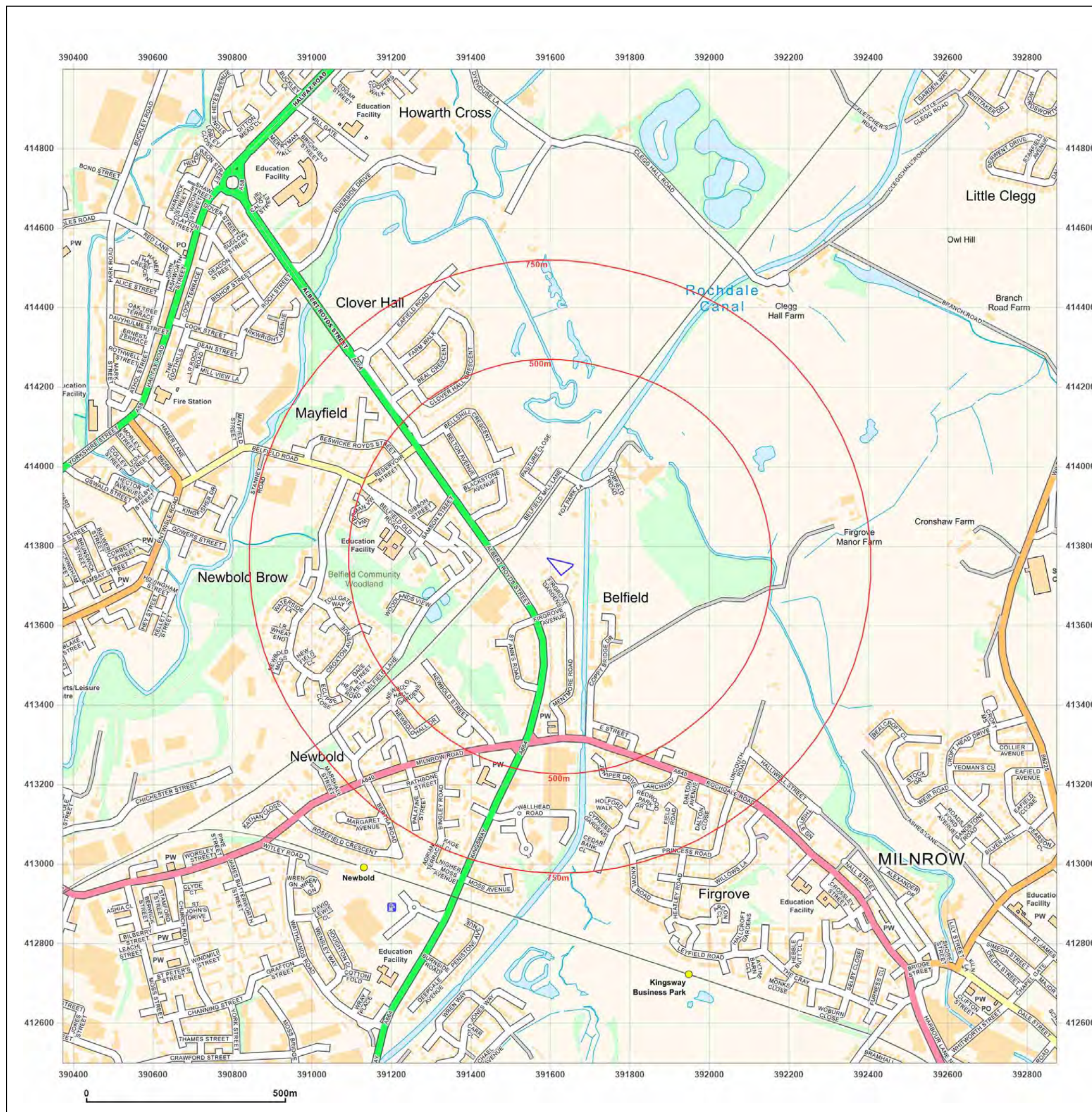


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 23 August 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

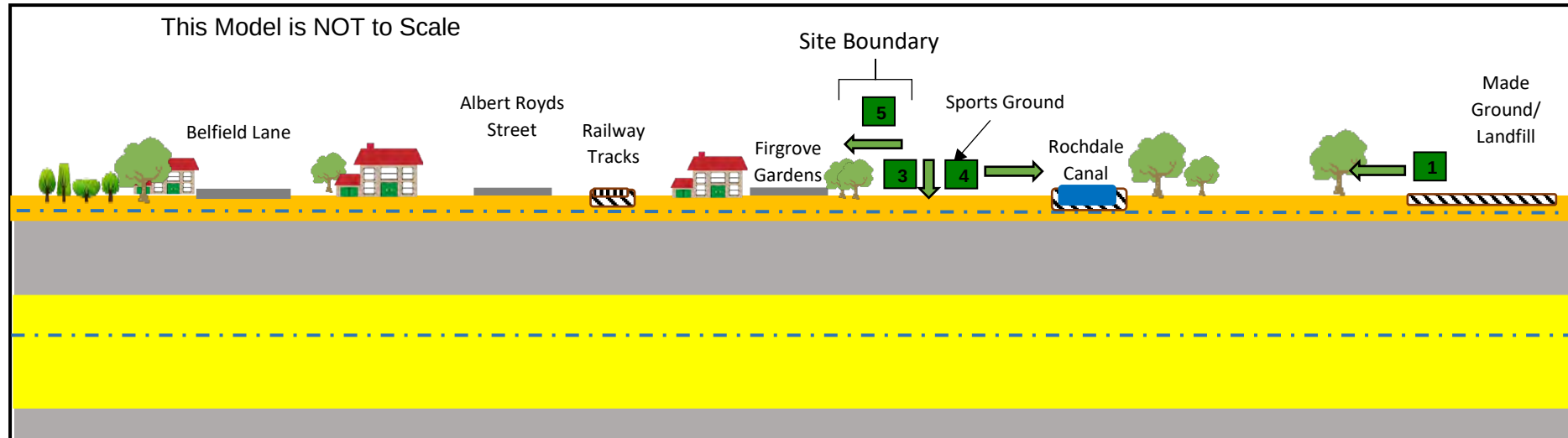


Appendix **B**



Conceptual Model

Sacred Heart, Firgrove Gardens, Rochdale – Residential



Sources	Pathways	Receptors	Risk	Geology
Historical Use As Open land Current Use As Open land Sports Ground Off Site Residential	1	Inhalation of vapours from landfill	Workmen / Future site users / adjacent land users	Low – Infilled land to far east. No radon Mitigating measures required for low risk
	2	Ingestion and/or skin contact	Workmen / Future site users / adjacent land users	Low - Site residential with garden no contamination expected
	3	Ingestion of drinking water/ leaching to groundwater	Local abstraction wells.	Low - abstraction wells >650m distant. Lack of expected contamination.
	4	Leaching to surface water	Surface Water<100m from site	Low - Due to lack of expected contamination
	5	Inhalation of dust	Workmen / adjacent land users	Low - Provided appropriate measures during construction.
	6	Slope failure	Future land users	Low - BGS indicates very low risk
	7	Ingestion of contamination in plants and vegetables	Neighboring land users	Low - Lack of contamination expected
				 Sand & Gravels Sandstone Mudstone Groundwater
				Job No 3526

Appendix C





The Coal
Authority

CON29M

coal mining report

SACRED HEART, FIRGROVE GARDENS, ROCHDALE, ROCHDALE, OL16 3AF



Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 5



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. It is unlikely that these features will impact on the stability of the enquiry boundary.

Your reference: **3526**
Our reference: **51003374262001**
Date: **23 August 2023**

Client name:
**ASHTON BENNETT
CONSULTANCY**

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk

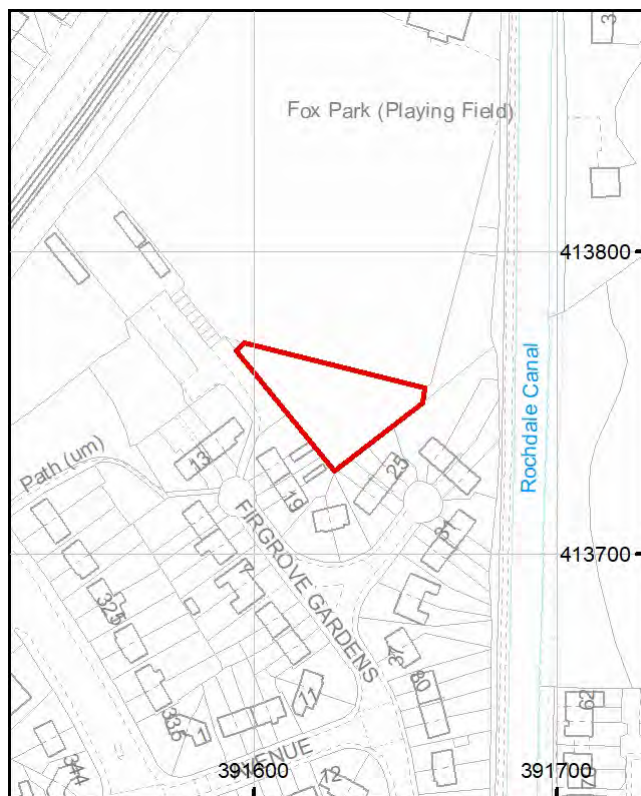


The Law
Society

Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.
Ordnance Survey Licence number: 100020315.

This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Professional opinion



Future development

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 specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. 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.

1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 1 seam of coal at 50m depth, and last worked in 1846.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

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

The property is not in an area likely to be affected from any planned future underground coal mining.

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

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4 Mine entries

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

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

5 Coal mining geology

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

6 Past opencast coal mining

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

7 Present opencast coal mining

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

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

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.

9 Coal mining subsidence

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

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

The Coal 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.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

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

12 Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

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

13 Working facilities order

The property is not in an area where 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.

14 Payments to owners of former copyhold land

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

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **0800 288 4242**. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

mine gas - reports of alleged mine gas emissions received by the Coal Authority within the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

