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Phase 1 Desk Top Geo-environmental Report

ON

PROPOSED DEVELOPMENT

AT

FORMER FIRE STATION, MANCHESTER ROAD, MARSDEN

FOR

SB HOMES LTD

DECEMBER 2017

E17/7092/R001

Prepared by

M.Huddleston MEng

Haigh Huddleston Associates is the trading name of Haigh Huddleston Associates Limited
Registered Office: Firth Buildings, 99-101 Leeds Road, Dewsbury, WF12 7BU
Registered in England Number 6458196

INDEX

1.0 INTRODUCTION

1.1 This report is commissioned to examine the risk of contamination for the above site in line with the recommendations of Part II of the Environmental Protection Act 1990 PPS 23. It is based on information provided by both the client and statutory bodies in both written and verbal format. It is assumed that all information given is correct and factual at the time of writing this report. No liabilities can be accepted for information provided by third parties and subsequently found to be in error.

2.0 THE SITE

2.1 The site is located at the former fire station, Manchester Road, Marsden. It is situated around Ordnance Survey grid reference 404939, 411461. A site location plan is included in Appendix A.

2.2 The site is irregular in shape and divided into four separate areas by steel palisade fences and concrete post and chain link fences. The overall site area is approximately 0.30ha.

2.3 The eastern half of the site is primarily overgrown hard standing with the single storey stone build fire station adjacent the northern boundary. There is vehicular access to this area from Manchester Road in the north eastern corner. In the north west corner is an area of overgrown gravels surrounded by a steel palisade fence. Vehicular access to this is from the property to the west.

2.4 In the south west of the site is a wooded area with pedestrian access through the dividing fences. A gas governor is located here in an area of hardstanding that is separated from the remainder of the site by a concrete post and chain link fence.

2.5 The eastern, southern and western boundaries are formed by a stone wall. The north western boundary with the property to the north west is formed in a mix of chain link fence, concrete panel fence and steel palisade fence.

2.6 The site slopes from east to west at an average grade of 1 in 53. A high point of approximately 188.500m AOD is located in the eastern corner of the site and a low point of approximately 186.86m towards the western corner.

3.0 SITE HISTORY

A number of historical Ordnance Survey plans from 1854-2014 have been consulted. These are contained for reference within Appendix C to the rear of the report. Below is a brief description outlining the significant developments that may effect future construction of the site.

	Historical uses on site	Historical findings within 100m perimeter of the site	Historical findings further than 100m perimeter of the site
1854	i). The site is shown as open field. ii). Northern boundary formed by highway.	i). Iron Foundry 100m to south east. ii). Marsden centre 100m north.	i). Woollen mills 125m and 200m south west. ii). River heading south to north 175m to the west. iii). Ponds 150m south and 175m south west.
1890	i) Gas works shown in south west corner of site.	i). Foundry expanded to south.	i) Mills expanded to west and south west.
1904	i). The on-site features are similar to the previous sheet.	i). Cricket ground to the west.	i). Mills 150m to the north.
1930	i). Fire station shown adjacent northern boundary on site. ii). Second gas holder shown towards north of site and building shown along southern boundary.	i). Foundry to south now labelled as mill buildings. ii). Cricket ground now a football ground.	i). No significant developments within 500m of the site.
1955-1956	i). The on-site features are similar to the previous sheet.	i). No significant developments within 100m of the site.	i) No significant developments within 500m of the site.
1980	i). Building on southern boundary reduced in size to occupy south eastern corner.	i) Works immediately north west of site.	i). No significant developments within 500m of the site.
2002	I). Only fire station shown on site now.	i). No significant developments within 100m of the site.	i) No significant developments within 500m of the site.
2010	i). The on-site features are similar to the previous sheet.	i). No significant developments within 100m of the site.	i) No significant developments within 500m of the site.
2014	i). The on-site features are similar to the previous sheet.	i). No significant developments within 100m of the site.	i) No significant developments within 500m of the site.

4.0 SITE GEOLOGY & MINING

4.1 The BGS Digital Geological Map of Great Britain at 1:10,000 scale has been consulted and we would report as follows:-

4.2 No artificial or superficial strata is shown overlying the site.

4.3 The site is underlain by the Marsden Formation consisting of Mudstone and Siltstone.

4.4 The nearest fault line is located 17m north of the site and heads from east to west.

4.5 A low risk of landslides is noted on site. Consideration should be given to stability if changes to drainage or excavations take place.

4.6 The Coal Authority Report is included in Appendix B and states that the property is not within a surface area that could be affected by past underground mining.

4.7 The property is not in area where the Coal Authority has granted, or plans to grant, a licence to remove or otherwise work coal using underground methods.

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

4.9 There are no deep BGS boreholes recorded in the vicinity of the site.

5.0 ENVIRONMENTAL CONSIDERATIONS

5.1 Radon

The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

Basic Radon Protective Measures are necessary.

5.2 Landfill Sites

There are no recorded historical or current landfill sites located within 250m of the site.

5.3 Flood Risk

The westernmost corner of the site lies within both Zone 2 and Zone 3 EA defined flood zones.

5.4 Groundwater

The bedrock underlying the site is classified as a Secondary (A) Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flows to rivers. These are generally aquifers formerly classified as minor aquifers.

There are no recorded groundwater abstraction licences recorded within 250m of the site.

There are thirteen recorded surface water abstraction licenses recorded within 250m of the site. Two are located 118m north of the site, one is located 183m north east of the site and the remaining ten are located 237m south east of the site.

There are two recorded licensed discharge consents within 250m of the site. These are located 240m south west of the site and discharge to Wessenden Brook.

There are five recorded pollution incidents in controlled waters within 250m of the site. Four of these were Category (3) Minor incidents recorded 107m north west, 140m north west, 150m north and 186m north. A category 2 (Significant) Incident was recorded 125m north west of the site.

The site is not located in a Source Protection Zone.

A culverted watercourse is recorded crossing the site from north west to south east. This connects two lengths of un-named tertiary river. Recent on-site investigations through dye-testing have proved that the culvert passes to the north of Manchester Road, over 40m north of the position indicated in the Groundsure report.

6.0 PRELIMINARY CONCEPTUAL SITE MODEL

6.1 The initial stage in assessing the risks posed from contaminated land during the redevelopment of a site is to prepare a conceptual model. A generalised conceptual model can be developed highlighting the main pollutant linkages through a contaminant ► pathway ►receptor model for the construction of a residential development. In order to prepare the conceptual model for a particular site the following parameters need to be reviewed as discussed below.

6.2 Contamination of existing land can be caused by a number of factors, including:-

i) Possible historical/current industrial activities.
ii) Disposal of waste materials.
iii) Storage of materials.
iv) A number of natural processes can also lead to hazardous gases and elevated heavy metals.

6.3 Potential pathways can include ground and surface water, permeable strata, existing services providing a conduit and voided ground. Potential receptors can include human health, ecosystems, controlled waters and building structures. There are a number of ways that a receptor can be exposed to the contaminant these include, inhalation, direct contact, ingestion, dermal contact and uptake.

6.4 The site has been used as a gas holder station from re have been no historical uses of the site, or immediately adjacent the site, likely to cause contamination on site. However, there is a risk of contamination from the following:

i. Use of the site as gas holding station from 1890 to 2000. (possible ground and gas contamination).
ii. Demolition material from former buildings located on site.
iii. Possible infill material to any former cellars located on site.
iv. Construction material to existing hardstanding areas.

Therefore the potential for some contamination to exist on site is considered to be moderate/high.

6.5 Considering the proposed residential end use of the site, there will be two possible human receptor groups exposed to the existing onsite contamination:-

a) Site operatives during development.
b) End users, future site users (the critical receptor is a 6 year old female).

6.6 Human receptors may be exposed to site contamination by a number of possible pathways. These pathways are summarised in Table 1 below.

Table 1- Potential Human Exposure Pathways

Human Exposure Pathway	Site Users	Construction Workers
Soil Ingestion	YES	YES
Consumption of Home Grown Vegetables	YES	NO
Dermal Contact	YES	YES
Dust Inhalation	YES	YES
Gases/Vapours	YES	NO

6.7 The construction workers will come into contact with any contaminated soil to a far greater extent than future residents. The exposure pathways are generally through dermal contact and indirect ingestion. However their exposure will be for a limited time and the provision and correct use of personnel protective equipment and adequate welfare facilities during construction should restrict their risks to acceptable levels.

6.8 The risk of pollution to controlled waters by existing contamination is considered low. There has been no recorded pollution incidents to the culverted watercourse crossing the site and it is shown to be underlain by mudstones and siltstones.

6.9 No specific areas of ecological importance have been identified in the initial desk top study. Therefore the site is considered to be in a low risk environmental setting.

6.10 It is proposed to construct residential properties on the site with private garden areas. The presence of elevated sulphates and hydrocarbons could affect the long term integrity of buried concrete structures, including foundations and drainage pipes. Plastic water supply pipes can also be damaged by the presence of hydrocarbon contamination.

7.0 CONCLUSIONS

7.1 The site has been used as a gas holding station from 1890 to the 2000s, with smaller buildings also located on site that have now been demolished. There has been a mixture of industrial and residential development in the vicinity of the site.

7.2 We would recommend that a detailed Stage II Ground Investigation is undertaken to determine the underlying strata and allow foundations for the new development to be specified.

7.3 As gas mains and an adopted sewer are shown to cross the site, it is essential that the locations of these are confirmed and marked on site prior to undertaking any investigation works.

7.4 Soil samples from any made ground present or natural strata should be taken for contamination testing for metals, metalloids, PAH and asbestos. Due to the former use of the site as a gas holder station, samples should also be checked for EPH and BTEX. In Appendix D are extracts from "Soil and Groundwater Remediation Technologies for Former Gasworks and Gasholder Sites" by CL:AIRE identifying contaminants that may be present on site. If any contamination is found, a site remediation report should outline the most effective method of dealing with the contamination and any validation requirements.

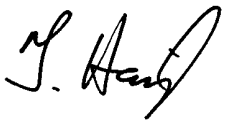
7.5 Due to the potential for deep excavation works associated with the former gasholder station, it is recommended that window sampling is undertaken to determine the depth of possible infill material on site. Additionally, gas monitoring stations should be established to determine whether waste materials that may remain in the ground from the gas works are likely to affect the proposed development through ground gas generation.

7.6 Plasticity testing should also be undertaken to determine the shrinkage of the existing clays, to enable the new foundations to be designed and constructed in accordance with the current standards.

Prepared by

M. Huddleston. MEng

Checked by



T. Haigh. BSc.,C.Eng.M.I.C.E.

December 2017

APPENDIX A

LOCATION PLAN

SITE SURVEY

PLANNING LAYOUT

Enviro Insight

Address:	**MANCHESTER ROAD, SLAITHWAITE, HUDDERSFIELD, HD7 5JX**
Date:	**13 Nov 2017**
Reference:	**GS-4463510**
Client:	**Haigh Huddleston & Associates**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	26-Mar-2012
Grid Reference:	404939,411461
Site Size:	0.30ha

Report Reference: GS-4463510
Client Reference: SB_HOMES_7092

0m	Scale 1:50	4m
0m	Scale 1:100	8m
0m	Scale 1:200	16m
0m	Scale 1:500	40m
0m	Scale 1:1250	100m

(When to scale of original plan bar = 8cm)

Former Fire Station

Gas Plant

Emergency House

Bus Shelter

1.3m high stone wall

2.4m high steel pallisade fence

1.5m high stone wall

2.4m high steel pallisade fence

2.4m high steel pallisade fence

2.4m high steel pallisade fence

concrete panel fence

chain link fence

2.4m high concrete post and chain link fence

2.4m high concrete post and chain link fence

2.4m high concrete post and chain link fence

steel pallisade fence over stone wall

stone wall

stone wall

max 2.0m high stone wall

STN1 E 971.240 N 2000.000 El 187.550

STN2 E 971.240 N 2000.000 El 187.090

STN3 E 1002.850 N 1986.630 El 187.400

STN4 E 1011.420 N 1959.940 El 188.140

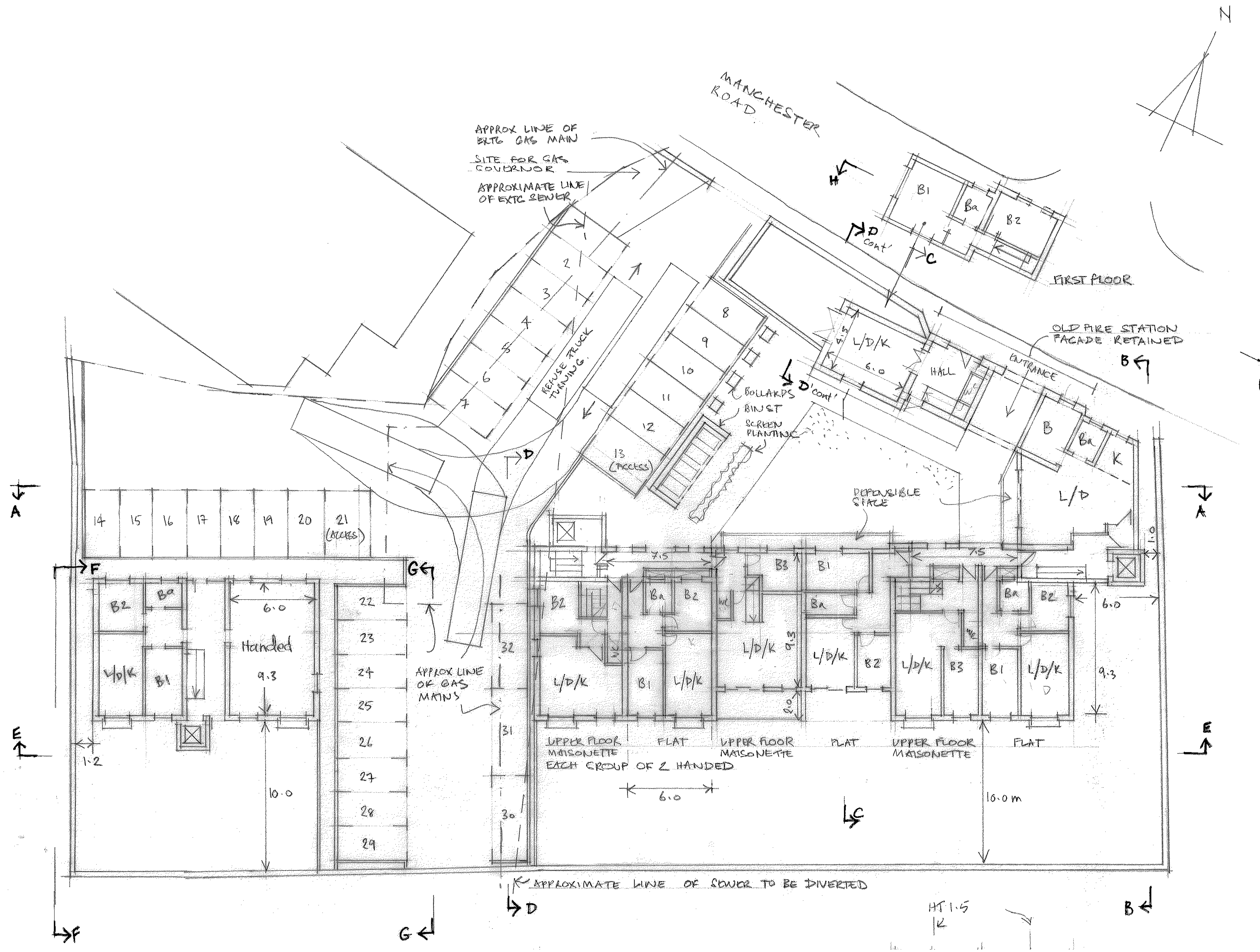
STN5 E 979.170 N 1971.470 El 187.270

STN7 E 945.450 N 1952.550 El 186.800

NOTE:
1. Tree locations indicative only.
2. Perimeter of site is banked up with earth so not a true reflection of ground levels.

N

Sk 06 - Topographical Survey.
Former Fire Station, Manchester Road, Marsden.
Scale 1:200 @ A2.
November 2017.


N
MANCHESTER ROAD
APPROX LINE OF EXTG GAS MAIN
SITE FOR GAS GOVERNOR
APPROXIMATE LINE OF EXTG SEWER
FIRST FLOOR
B1
Ba
B2
L/D/K
HALL
ENTRANCE
OLD FIRE STATION FACADE RETAINED
REFUSE TRUCK TURNING
BOLLARDS
BINS
SCREEN PLANTING
13 (ACCESS)
21 (ACCESS)
DEFENSIBLE SPACE
L/D
K
Handed
UPPER FLOOR MAISONETTE
FLAT
EACH GROUP OF 2 HANDED
APPROX LINE OF GAS MAINS
APPROXIMATE LINE OF SEWER TO BE DIVERTED
16.0 m
HT 1.5

APPENDIX B

MINING REPORT

GEOLOGICAL REPORT

The Coal Authority

Resolving the impacts of mining

CON29M Non-Residential Mining Report

FORMER FIRE STATION
HUDDERSFIELD
WEST YORKSHIRE

Date of enquiry:	13 November 2017
Date enquiry received:	13 November 2017
Issue date:	13 November 2017
Our reference:	51001688243001
Your reference:	SB HOMES 7092

CON29M Non-Residential Mining Report

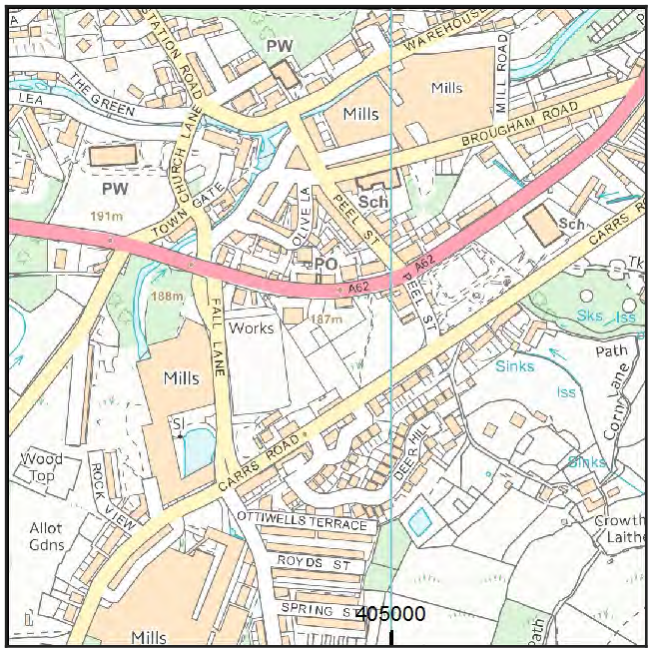
This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

HAIGH HUDDLESTON & ASSOCIATES

Enquiry address

FORMER FIRE STATION, HUDDERSFIELD, WEST YORKSHIRE



Approximate position of property

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

/company/the-coal-authority
/thecoalauthority
/coalauthority

Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	No
2	Present underground coal mining	No
3	Future underground coal mining	No
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

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

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 plans to grant a licence to remove coal using 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.

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 known coal mine entries within, or within 20 metres of, the boundary of the property.

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 31st 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 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.

15. Information from the Cheshire Brine Subsidence Compensation Board
The property lies outside the Cheshire Brine Compensation District.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. 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 applicable at the time the report was produced.

Disclaimer

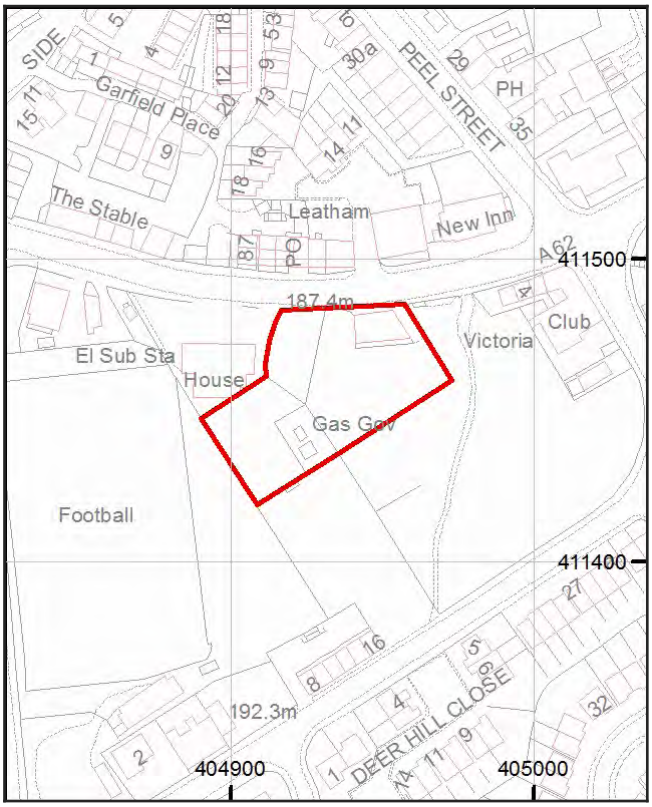
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



Map data

How to contact us

0345 762 6848 (UK)
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200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

/company/the-coal-authority
/thecoalauthority
/coalauthority

Groundsure
LOCATION INTELLIGENCE

Haigh Huddleston & Associates

99-101, LEEDS ROAD,
DEWSBURY, WF12 7BU

Groundsure Reference:	GS-4463511
Your Reference:	SB_HOMES_7092
Report Date	13 Nov 2017
Report Delivery Method:	Email - pdf

Geo Insight

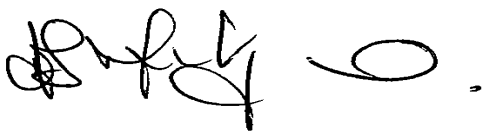
Address: MANCHESTER ROAD, SLAITHWAITE, HUDDERSFIELD, HD7 5JX

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**MANCHESTER ROAD, SLAITHWAITE, HUDDERSFIELD, HD7 5JX**
Date:	**13 Nov 2017**
Reference:	**GS-4463511**
Client:	**Haigh Huddleston & Associates**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	26-Mar-2012
Grid Reference:	404939,411461
Site Size:	0.30ha

Groundsure
LOCATION INTELLIGENCE

Contents Page

Overview of Findings

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

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

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

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

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	Yes
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	Yes

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.
	3.2Radon Protection	Basic radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	9	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	1	8

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	1	0	2	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

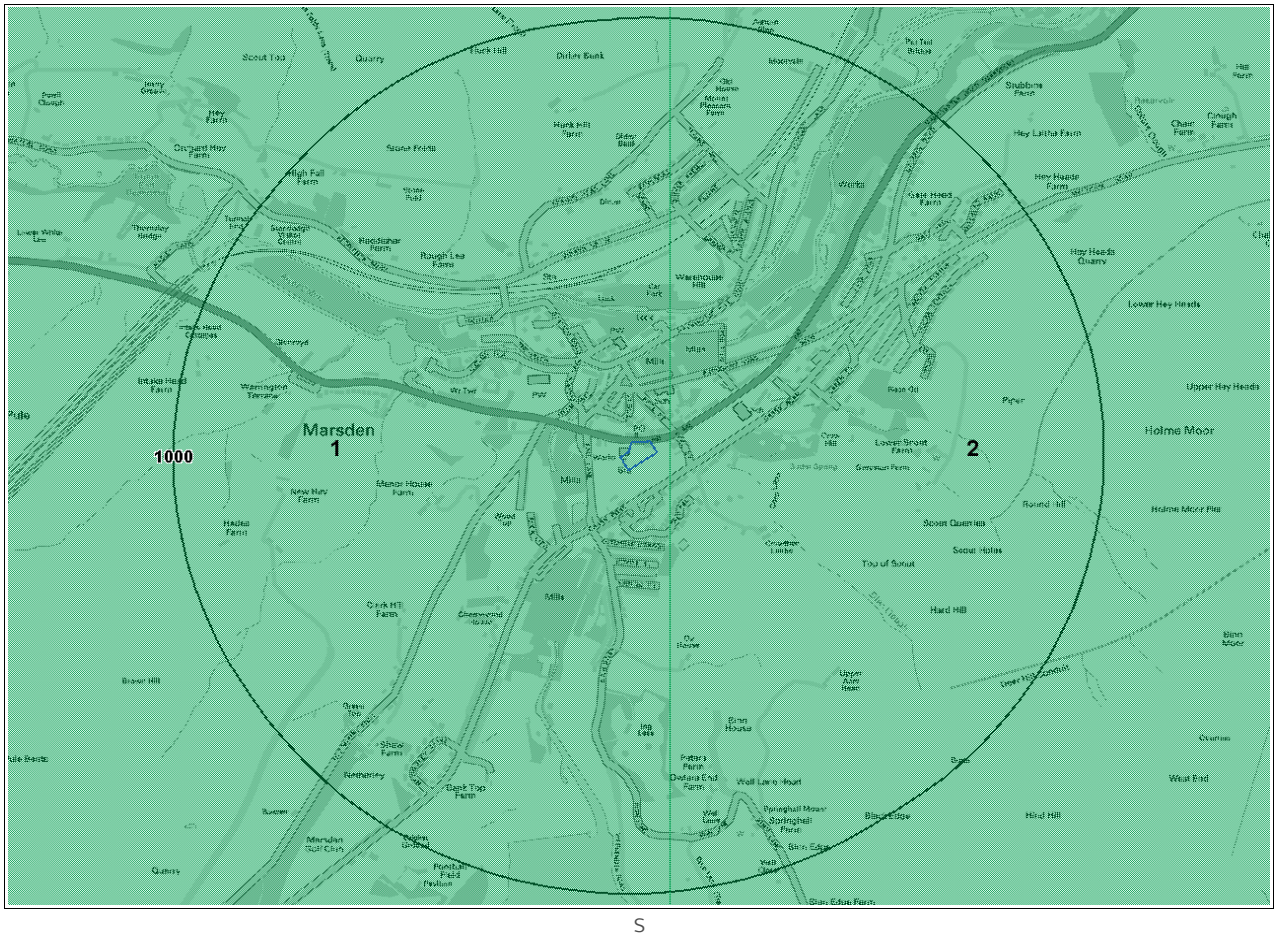
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Moderate
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Negligible

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	0	1

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	1	8	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	1	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



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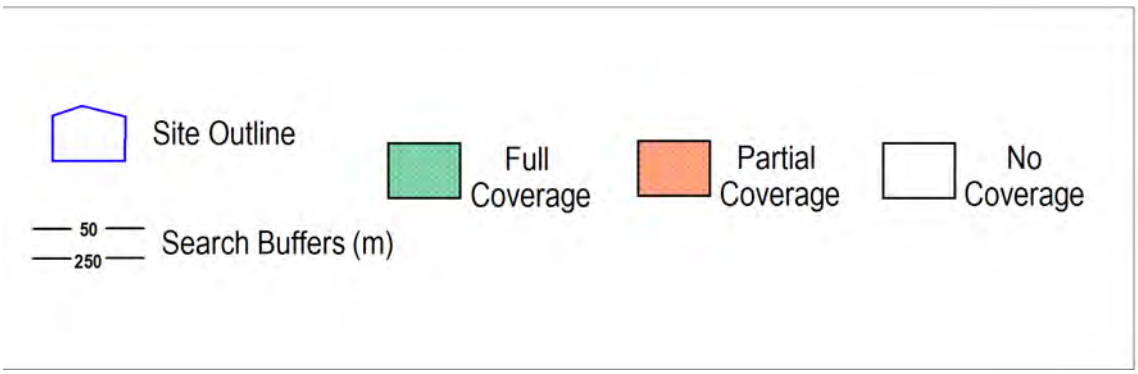


Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	27.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1419.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N4	1422.0	Some deposits are mapped	Full	Full	Some deposits are mapped

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

The definitions of coverage are as follows:

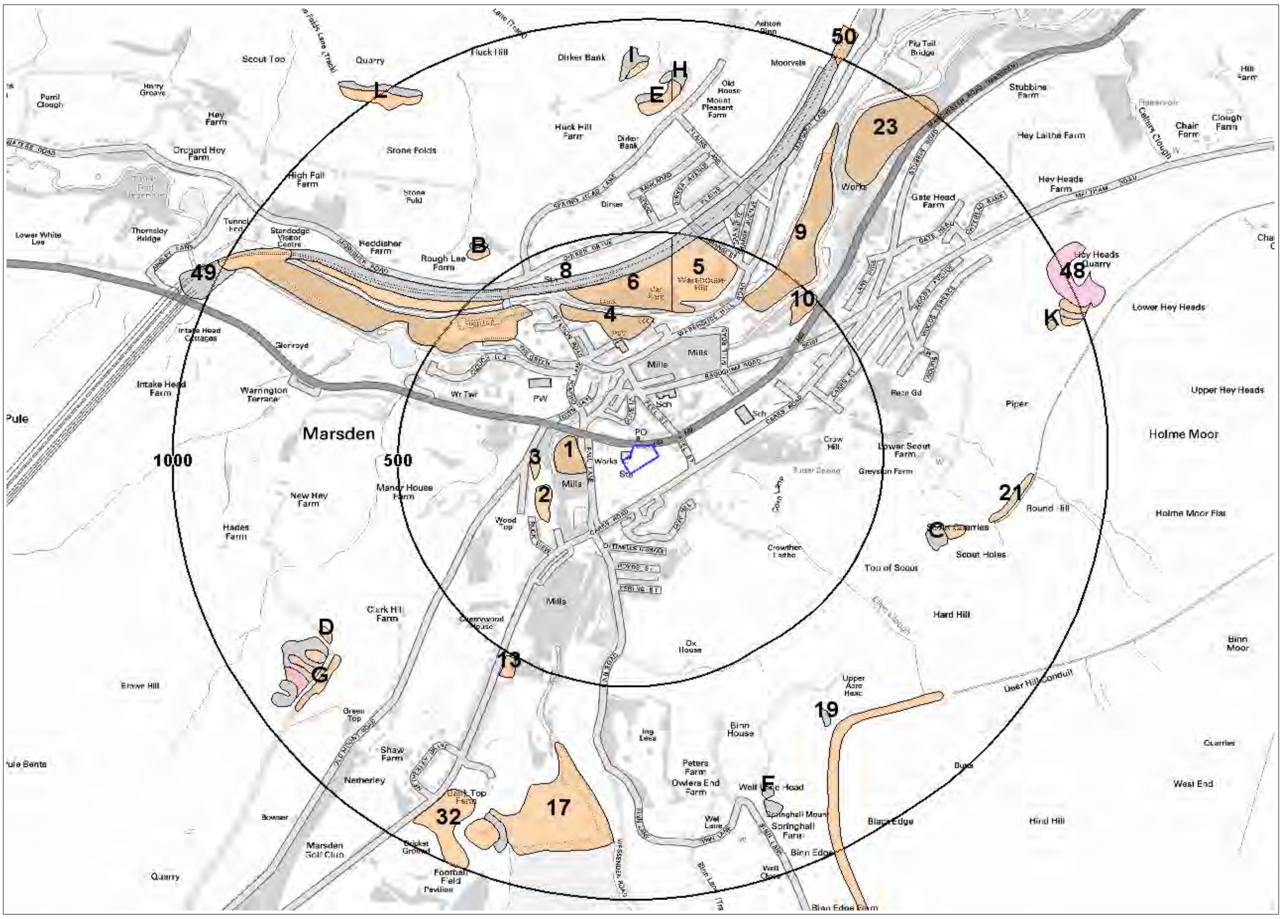
Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits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

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)

NW N NE

W E



SW S SE

Artificial Ground Legend

- Site Outline
- Search Buffers (m): 500, 1000
- Made Ground (undivided)
- Worked Ground (undivided)
- Infilled Ground
- Disturbed Ground (undivided)
- Landscaped Ground (undivided)
- Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

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

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

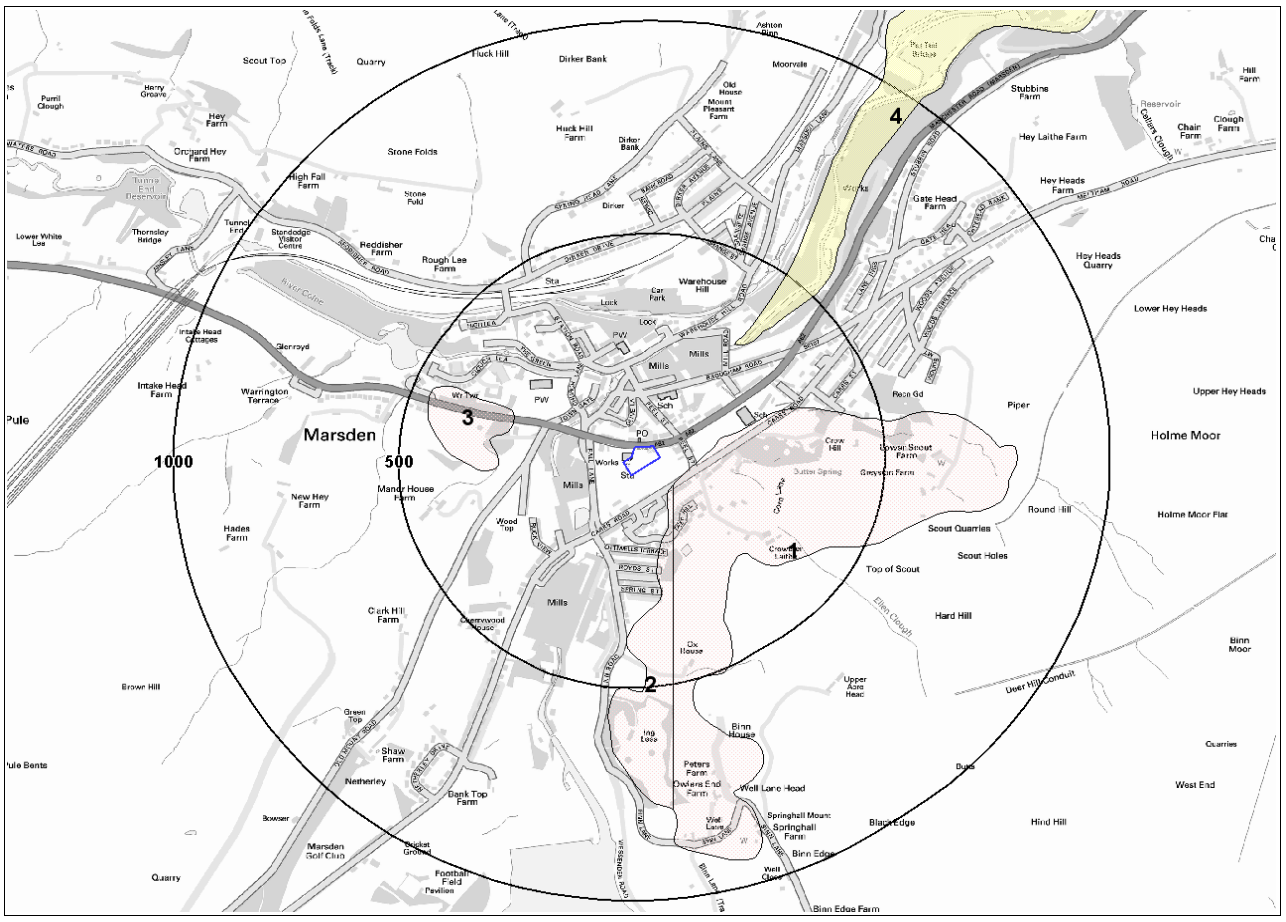
ID	Distance	Direction	LEX Code	Description	Rock Description
1	82.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	170.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	183.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	252.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	317.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	317.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7A	369.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	389.0	N	WGR-VOID	Worked Ground (Undivided)	Void
9	391.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	418.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11A	448.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
12	449.0	N	WGR-VOID	Worked Ground (Undivided)	Void

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

NW N NE

W E

SW S SE



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
4	302.0	NE	ALV-CZ	Alluvium - Silty Clay	Clay, Silty

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	63.0	SE	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry
2	69.0	SE	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry
3	261.0	W	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry

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

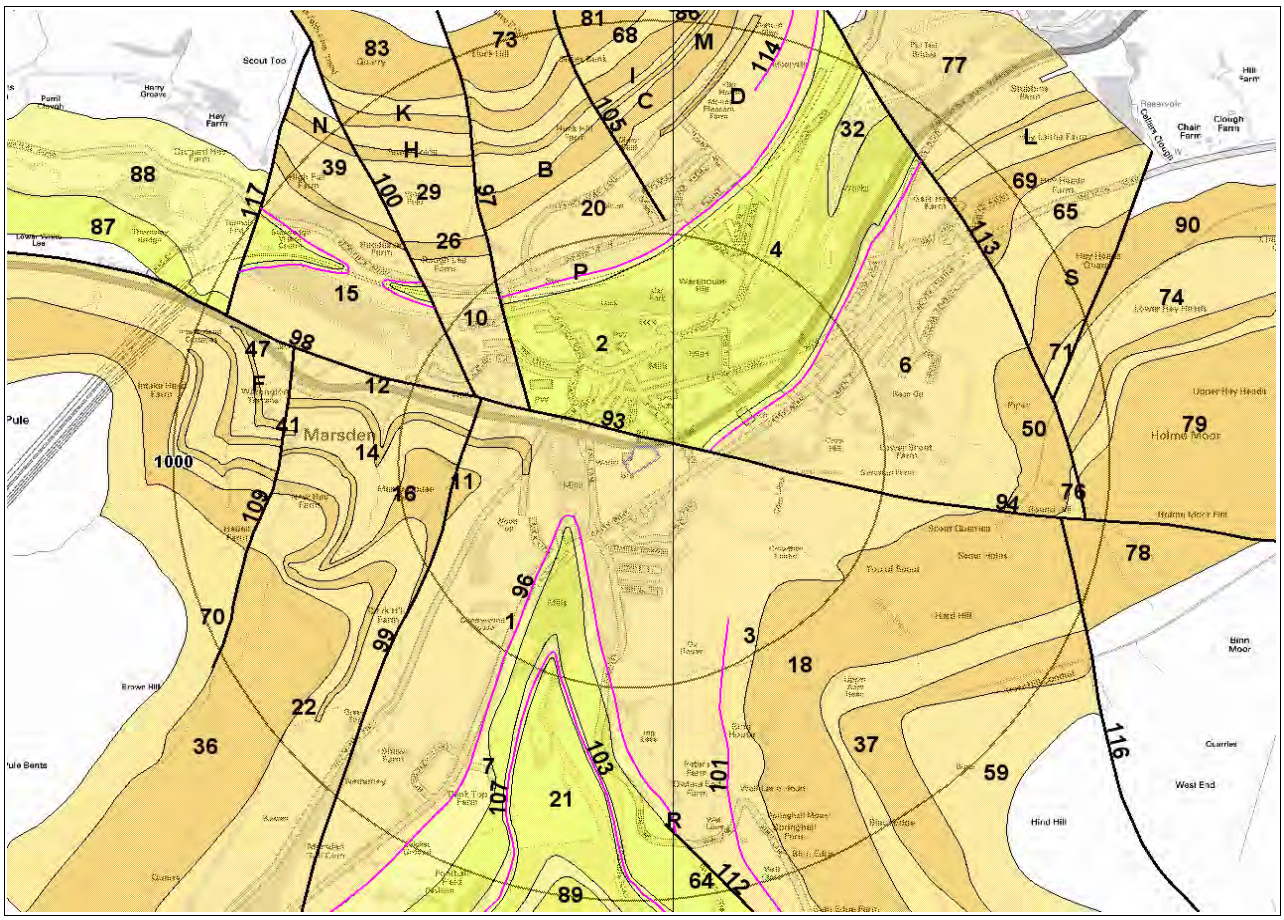
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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

NW N NE

W E

SW S SE



Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
2	17.0	N	UK-SDST	Upper Kinderscout Grit - Sandstone	Kinderscoutian Sub-age
3	27.0	E	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
4	40.0	NE	UK-SDST	Upper Kinderscout Grit - Sandstone	Kinderscoutian Sub-age
5O	90.0	E	HEBD-MDSI	Hebden Formation - Mudstone And Siltstone	Kinderscoutian Sub-age
6	109.0	E	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
7	163.0	SW	HEBD-MDSI	Hebden Formation - Mudstone And Siltstone	Kinderscoutian Sub-age
8	185.0	SW	UK-SDST	Upper Kinderscout Grit - Sandstone	Kinderscoutian Sub-age
9	205.0	W	RDG-SDST	Readycon Dean Flags - Sandstone	Marsdenian Sub-age
10	240.0	NW	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
11	320.0	W	EC-SDST	East Carlton Grit - Sandstone	Marsdenian Sub-age
12	345.0	W	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
13	346.0	W	RDG-SDST	Readycon Dean Flags - Sandstone	Marsdenian Sub-age
14	349.0	W	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
15	363.0	NW	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
16	366.0	W	EC-SDST	East Carlton Grit - Sandstone	Marsdenian Sub-age
17P	395.0	N	HEBD-MDSI	Hebden Formation - Mudstone And Siltstone	Kinderscoutian Sub-age
18	399.0	SE	MGG-SDST	Midgley Grit - Sandstone	Marsdenian Sub-age
19	410.0	SW	HEBD-MDSI	Hebden Formation - Mudstone And Siltstone	Kinderscoutian Sub-age
20	421.0	N	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
21	463.0	S	LK-SDST	Lower Kinderscout Grit - Sandstone	Kinderscoutian Sub-age
22	465.0	W	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
23Q	478.0	N	HEBD-MDSI	Hebden Formation - Mudstone And Siltstone	Kinderscoutian Sub-age
24D	494.0	N	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	Category Description	Feature Description
93	17.0	N	FAULT	Normal fault, inferred; crossmarks on downthrow side
94	40.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
95O	109.0	E	FOSSIL_HORIZON	Fossil horizon, marine band ()
96	163.0	SW	FOSSIL_HORIZON	Fossil horizon, marine band ()
97	240.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
98	240.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
99	345.0	W	FAULT	Normal fault, inferred; crossmarks on downthrow side
100	363.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
101	402.0	SE	FOSSIL_HORIZON	Fossil horizon, marine band ()
102P	421.0	N	FOSSIL_HORIZON	Fossil horizon, marine band ()
103	451.0	S	FOSSIL_HORIZON	Fossil horizon, lingula band ()
104Q	494.0	N	FOSSIL_HORIZON	Fossil horizon, marine band ()

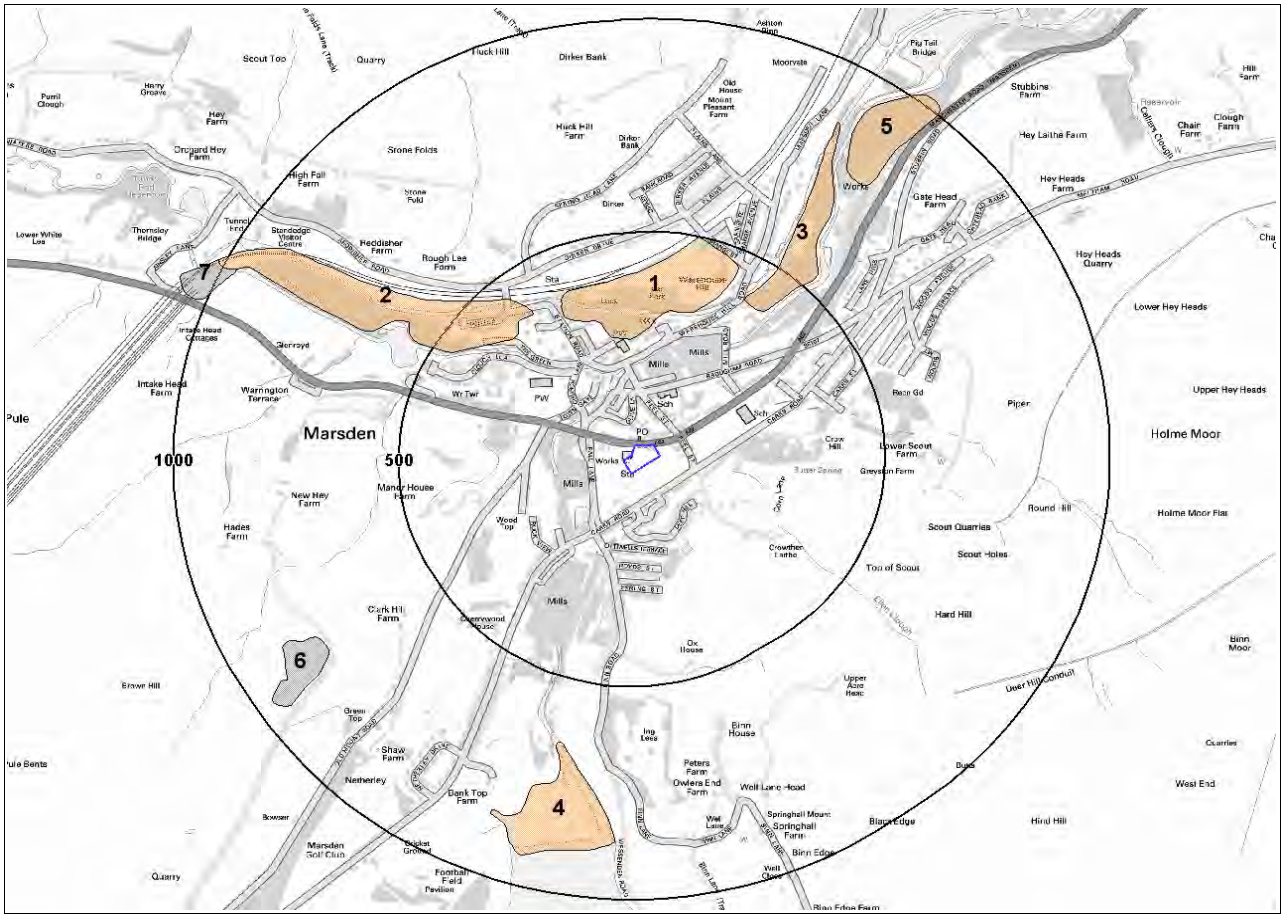
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

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

2 Geology 1:50,000 Scale

2.1 Artificial Ground map

NW N NE



W E

SW S SE

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 086

2.1.1 Artificial/ Made Ground

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	251.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	369.0	NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	391.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

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

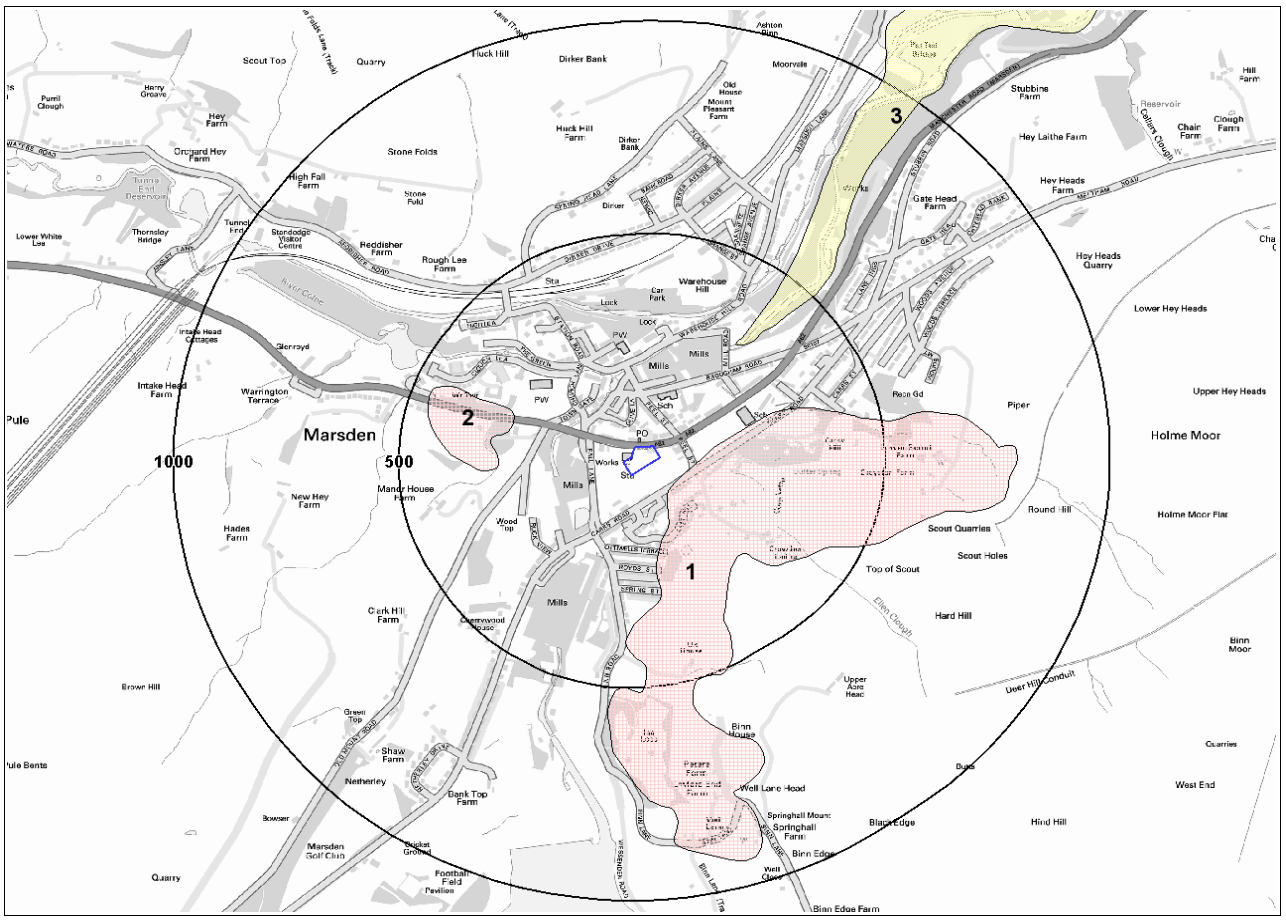
Database searched and no data found.

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

NW N NE

W E

SW S SE



Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
3	302.0	NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	63.0	SE	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
2	261.0	W	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

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

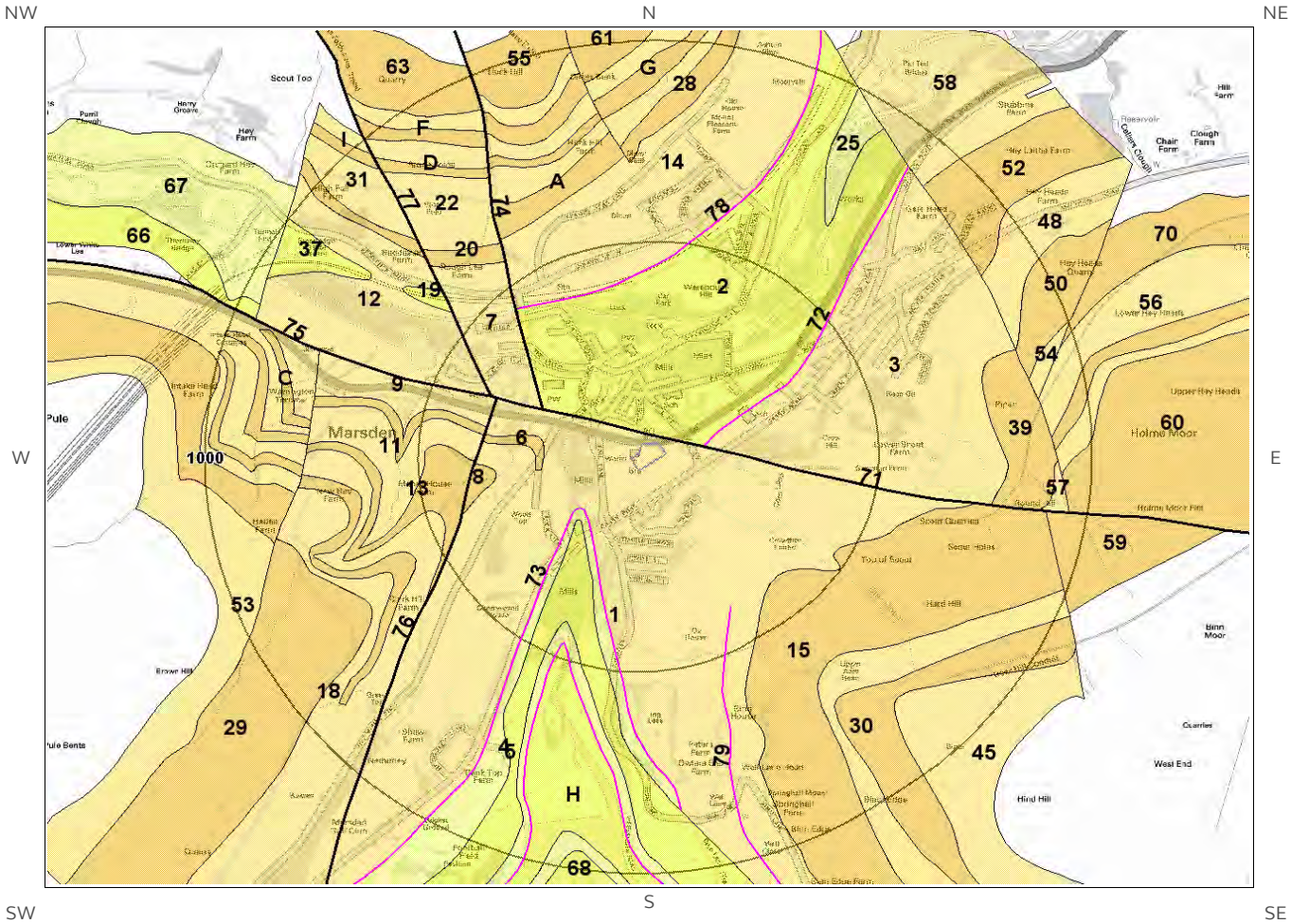
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

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

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 086

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
2	17.0	N	UK-SDST	UPPER KINDERSCOUT GRIT - SANDSTONE	NAMURIAN
3	90.0	E	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
4	162.0	SW	HEBD-MDSI	HEBDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
5	185.0	SW	UK-SDST	UPPER KINDERSCOUT GRIT - SANDSTONE	NAMURIAN
6	205.0	W	RDG-SDST	READYCON DEAN FLAGS - SANDSTONE	NAMURIAN
7	240.0	NW	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
8	320.0	W	EC-SDST	EAST CARLTON GRIT - SANDSTONE	NAMURIAN
9	345.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
10	346.0	W	RDG-SDST	READYCON DEAN FLAGS - SANDSTONE	NAMURIAN
11	349.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
12	363.0	NW	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
13	366.0	W	EC-SDST	EAST CARLTON GRIT - SANDSTONE	NAMURIAN
14	395.0	N	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
15	399.0	SE	MGG-SDST	MIDGLEY GRIT - SANDSTONE	NAMURIAN
16J	410.0	SW	HEBD-MDSI	HEBDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
17H	464.0	S	LK-SDST	LOWER KINDERSCOUT GRIT - SANDSTONE	NAMURIAN
18	466.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN

2.3.2 Permeability of Bedrock Ground

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

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Low	Low

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
17.0	N	Fracture	High	Moderate
27.0	E	Fracture	Low	Low
40.0	NE	Fracture	High	Moderate

2.3.3 Linear features

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

ID	Distance	Direction	Category Description	Feature Description
71	17.0	N	FAULT	Fault, inferred
72	90.0	E	FOSSIL_HORIZON	Marine band
73	162.0	SW	FOSSIL_HORIZON	Marine band
74	240.0	NW	FAULT	Fault, inferred
75	240.0	NW	FAULT	Fault, inferred
76	345.0	W	FAULT	Fault, inferred
77	363.0	NW	FAULT	Fault, inferred
78	395.0	N	FOSSIL_HORIZON	Marine band
79	402.0	SE	FOSSIL_HORIZON	Marine band
80J	464.0	S	FOSSIL_HORIZON	Lingula band

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

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

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? Basic radon protective measures are necessary.

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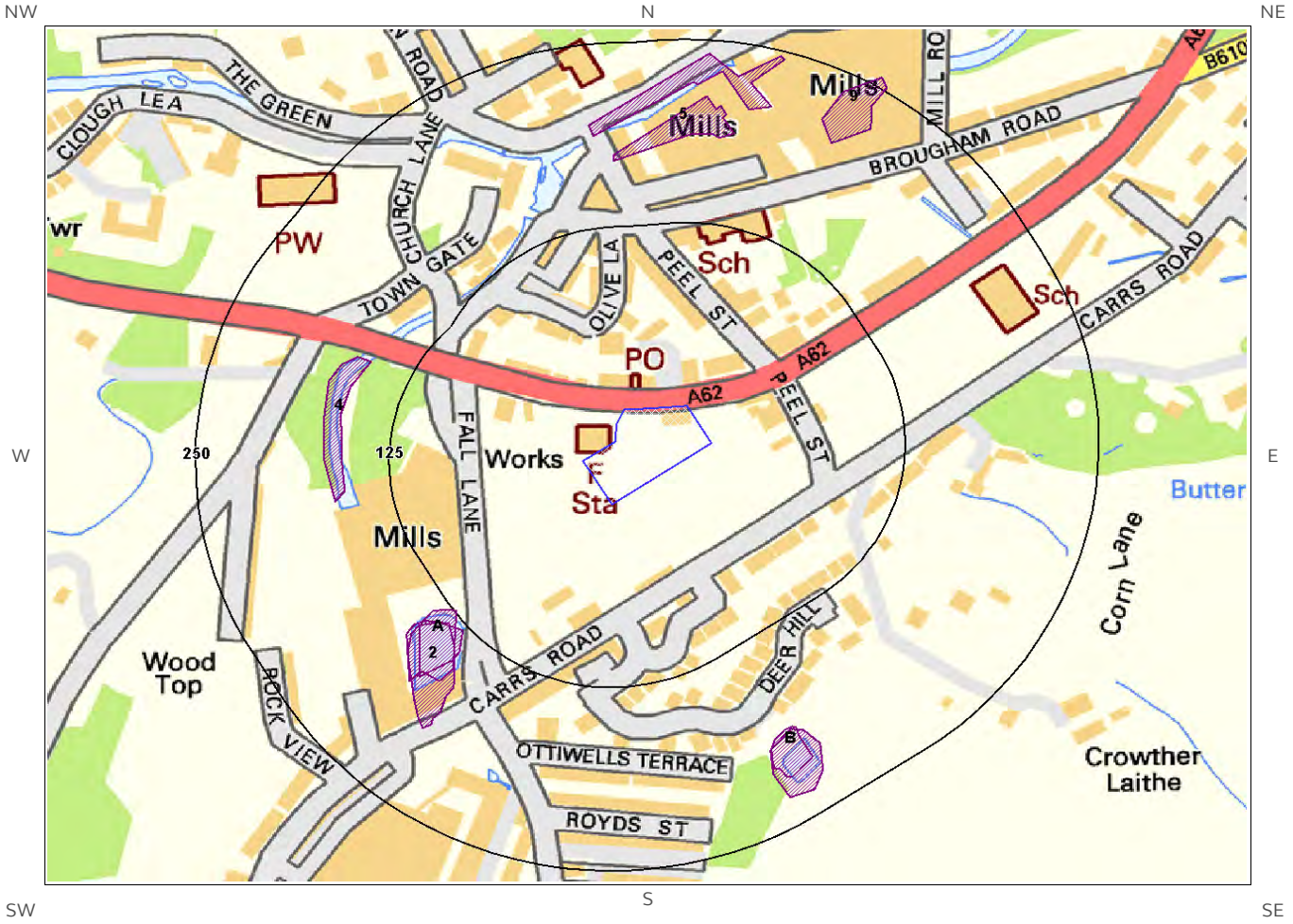
4 Ground Workings map



Ground Workings Legend

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	124.0	SW	404796 411323	Pond	1980
2	129.0	SW	404795 411302	Water Body	1890
3A	133.0	SW	404792 411318	Pond	1930
4	153.0	NW	404728 411470	Pond	1930
5	170.0	N	404948 411674	Pond	1890
6	187.0	N	404937 411698	Pond	1930
7B	190.0	SE	405025 411250	Reservoir	1951
8B	191.0	SE	405028 411242	Reservoir	1930
9	202.0	NE	405065 411687	Pond	1890

4.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

4.3 Current Ground Workings

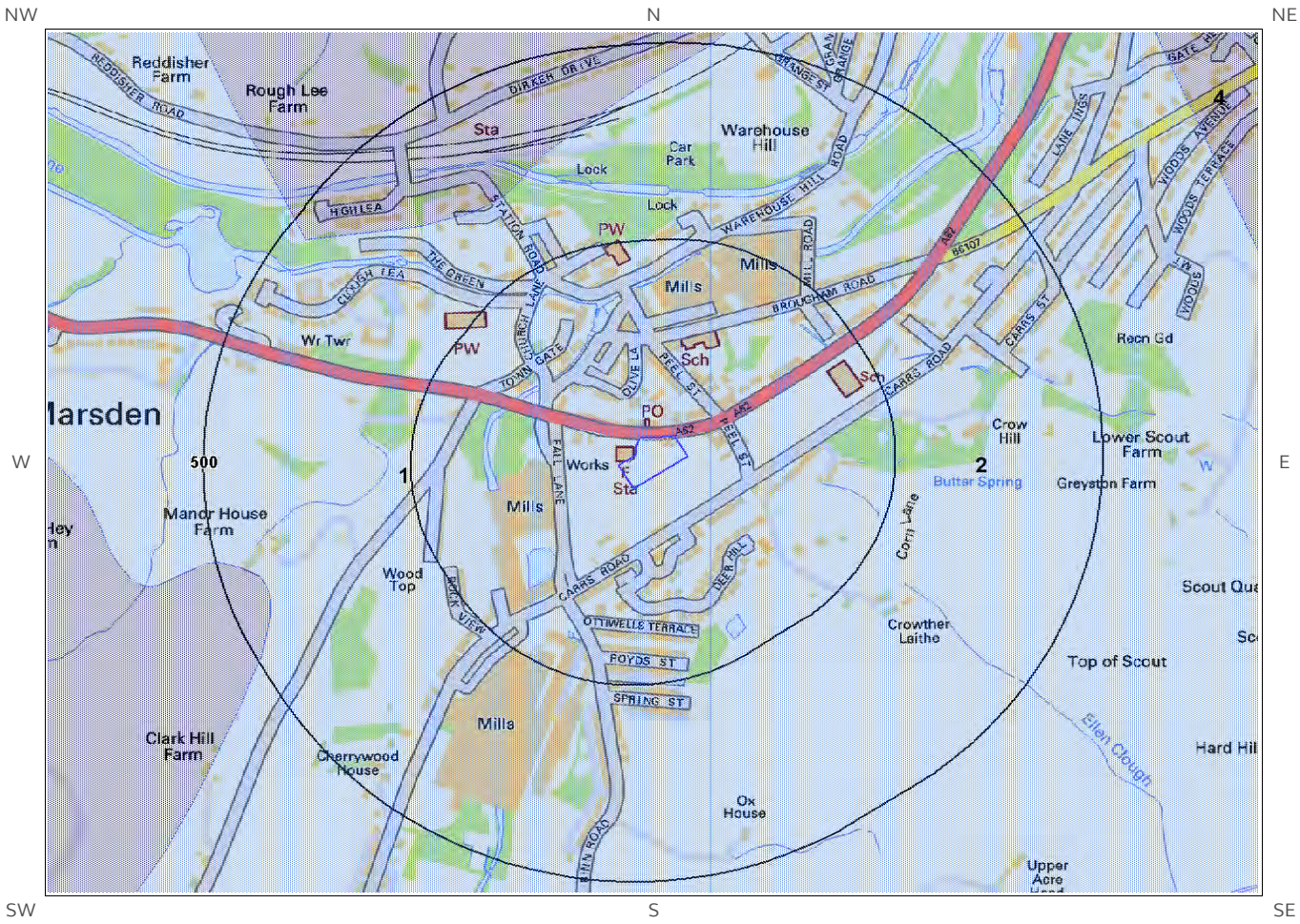
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	465.0	SE	405328 411159	Sandstone	Pasture Wood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	653.0	E	405595 411260	Sandstone	Scout	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	757.0	SW	404233 411072	Sandstone	Netherley	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	810.0	SE	405220 410671	Sandstone	Well Lane Head	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	815.0	N	404953 412300	Sandstone	Dirker Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	854.0	SW	404175 410980	Sandstone	Netherley	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	881.0	N	405017 412364	Sandstone	Dirker Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	922.0	N	404912 412406	Sandstone	Dirker Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	962.0	NW	404417 412305	Sandstone	Stone Folds	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

Site Outline

250
500
Search Buffers (m)

Historical Mining

Non-Coal Mining Cavities

Natural Cavities

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

Database searched and no data found.

5.2 Coal Mining

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

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

Database searched and no data found.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

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

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
2	27.0	E	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
3	349.0	NW	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
4	499.0	N	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

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

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Tin Mining

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

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

Database searched and no data found.

5.10 Clay Mining

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

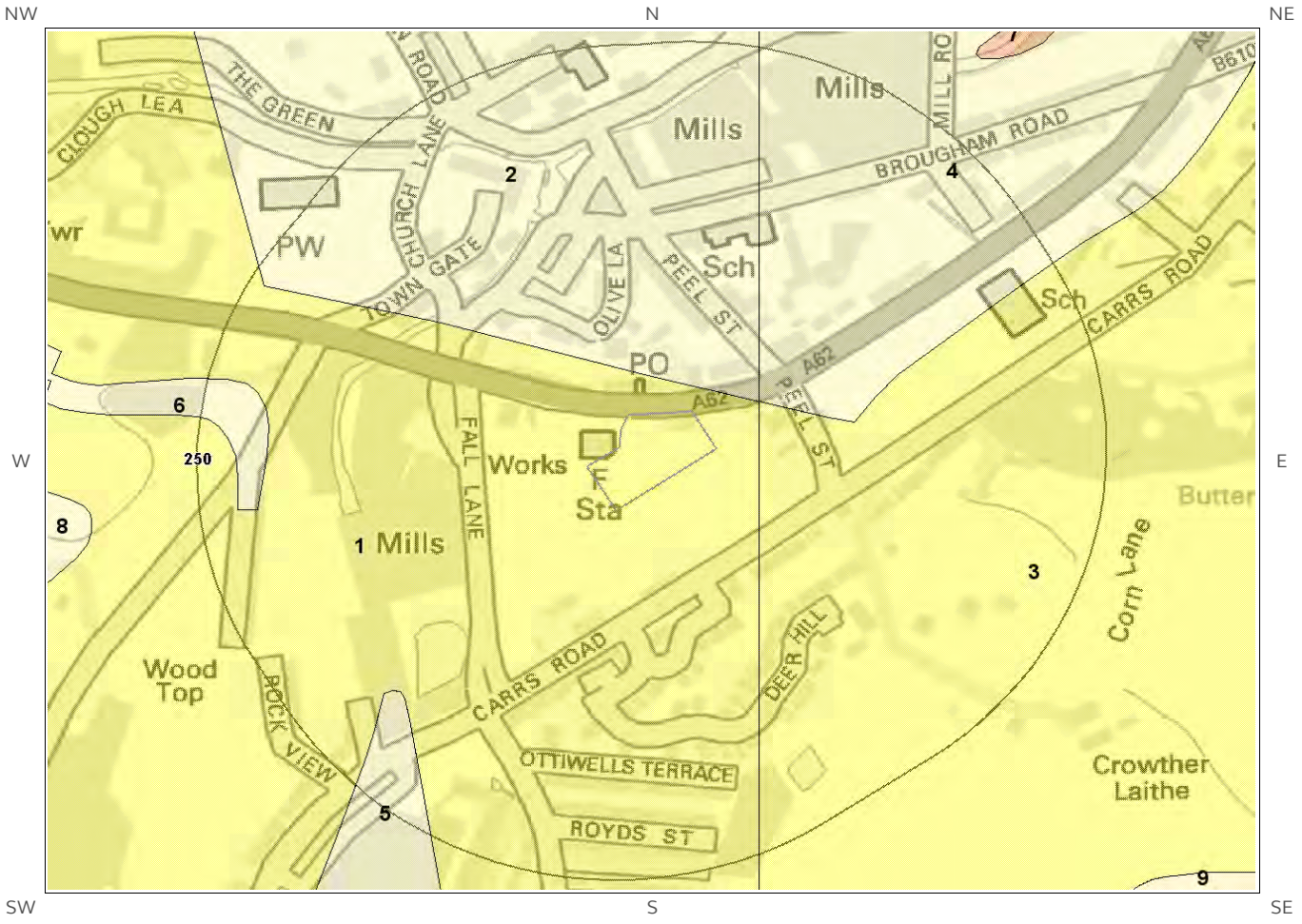
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

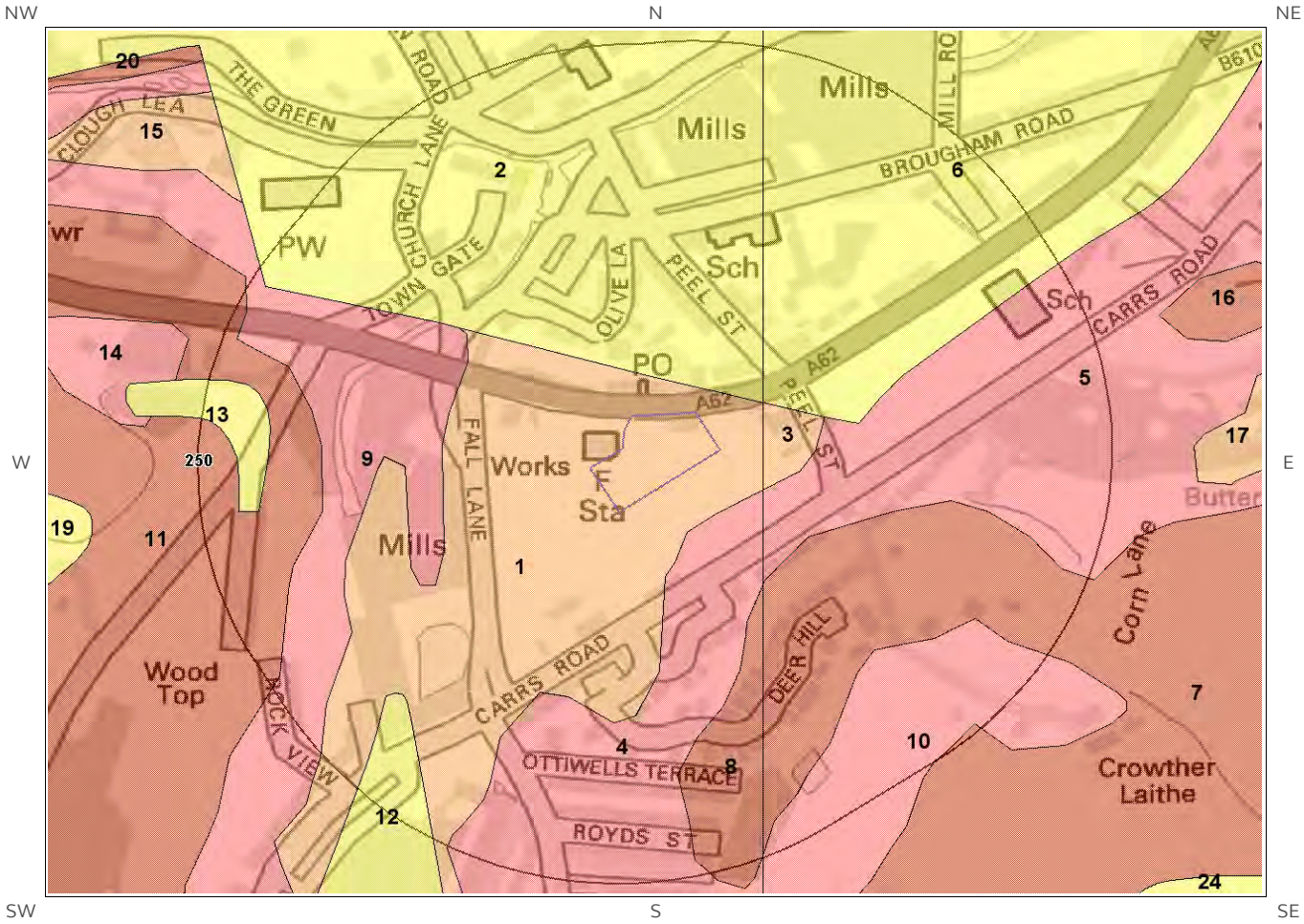
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.2 Landslides map



Landslides Legend

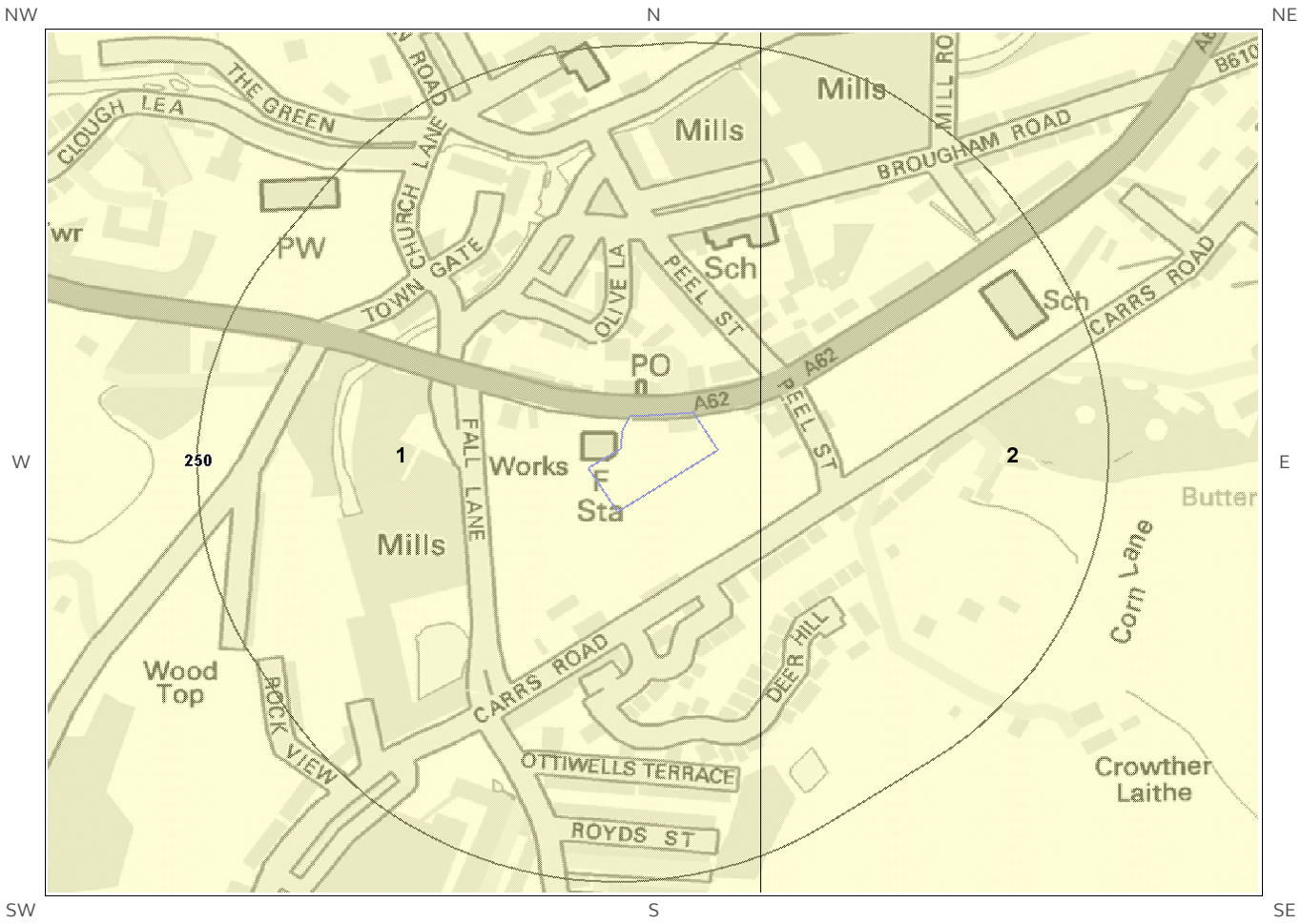
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution Soluble Rocks Legend

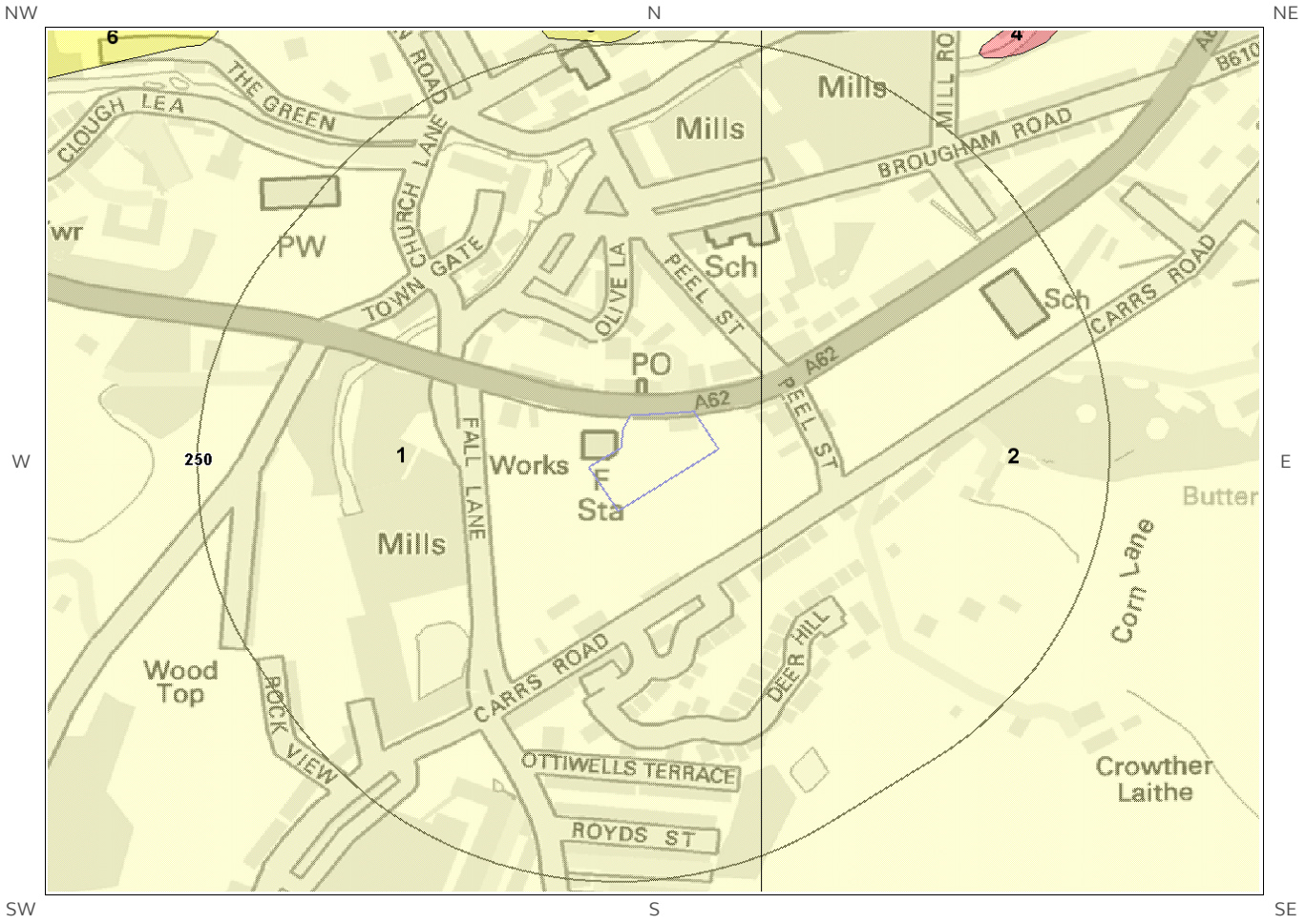
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.4 Compressible Deposits map



Compressible Deposits Legend

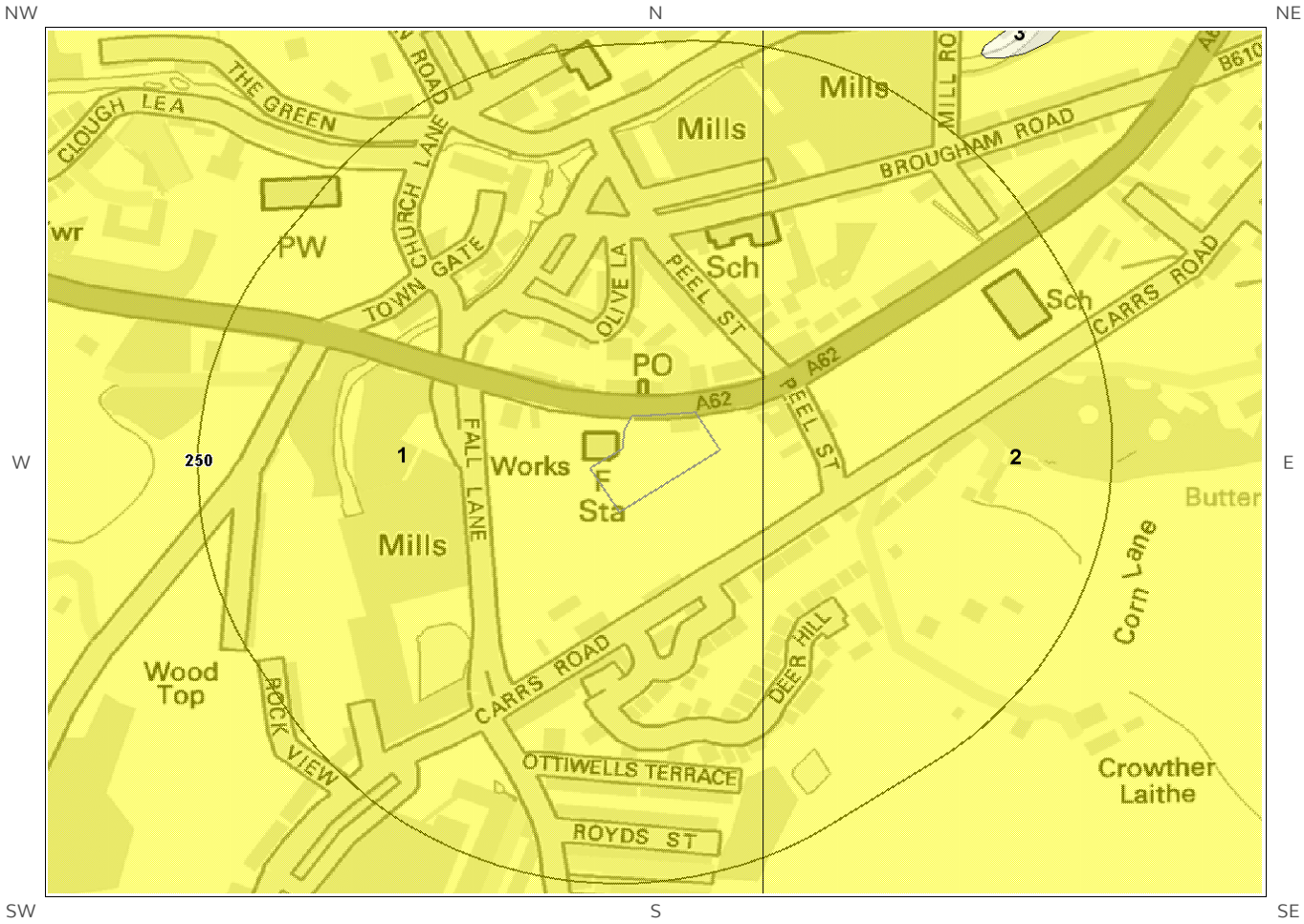
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.5 Collapsible Deposits map



Collapsible Deposits Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null

Negligible

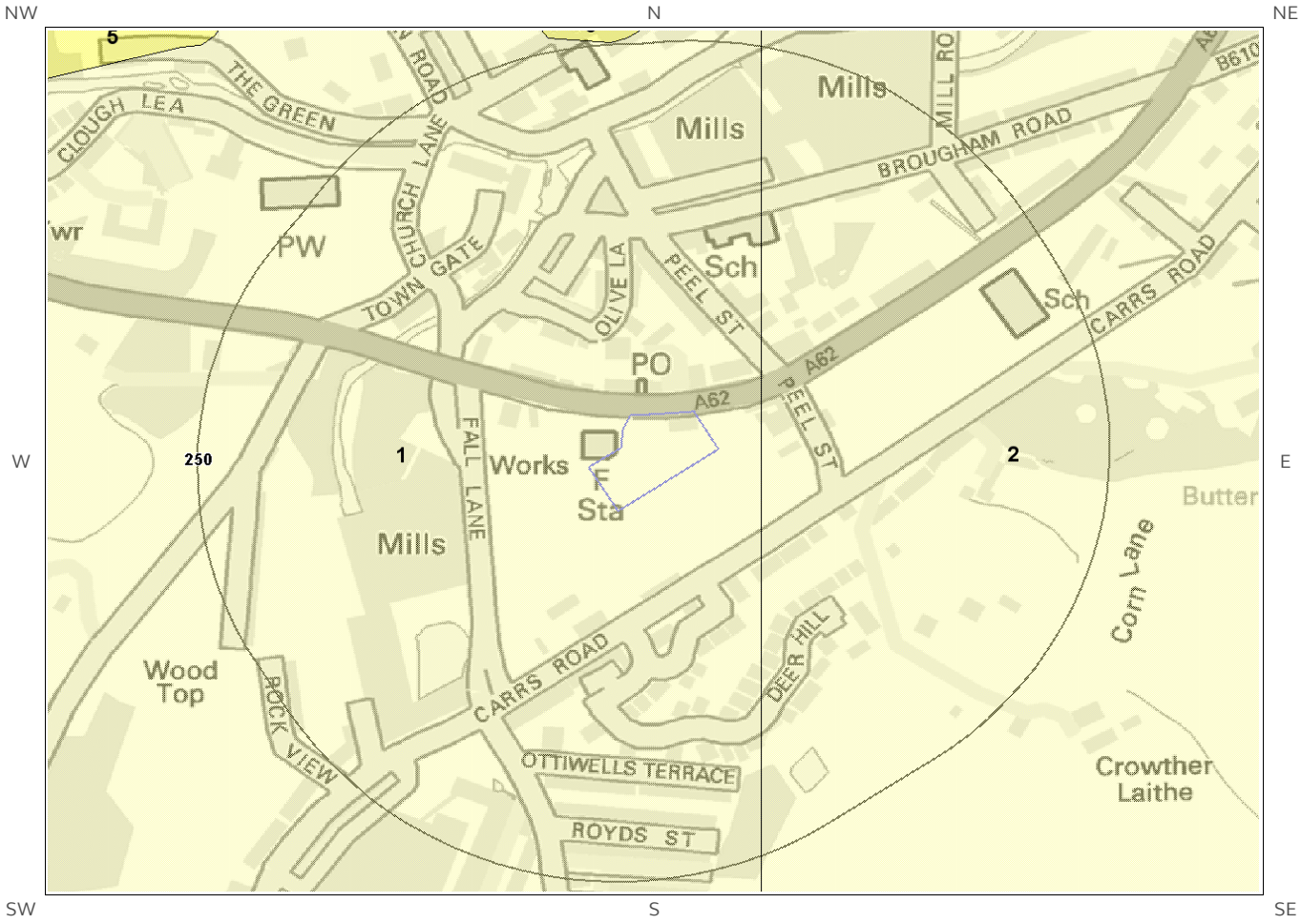
Very Low

Low

Moderate

High

6.6 Running Sand map



Running Sand Legend

6 Natural Ground Subsidence

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

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

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	17.0	N	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
3	27.0	E	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
4	40.0	NE	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

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

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
2	17.0	N	Very Low	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.
3	27.0	E	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
4	34.0	SE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
5	38.0	SE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
6	40.0	NE	Very Low	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.

6.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
2	27.0	E	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	27.0	E	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

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

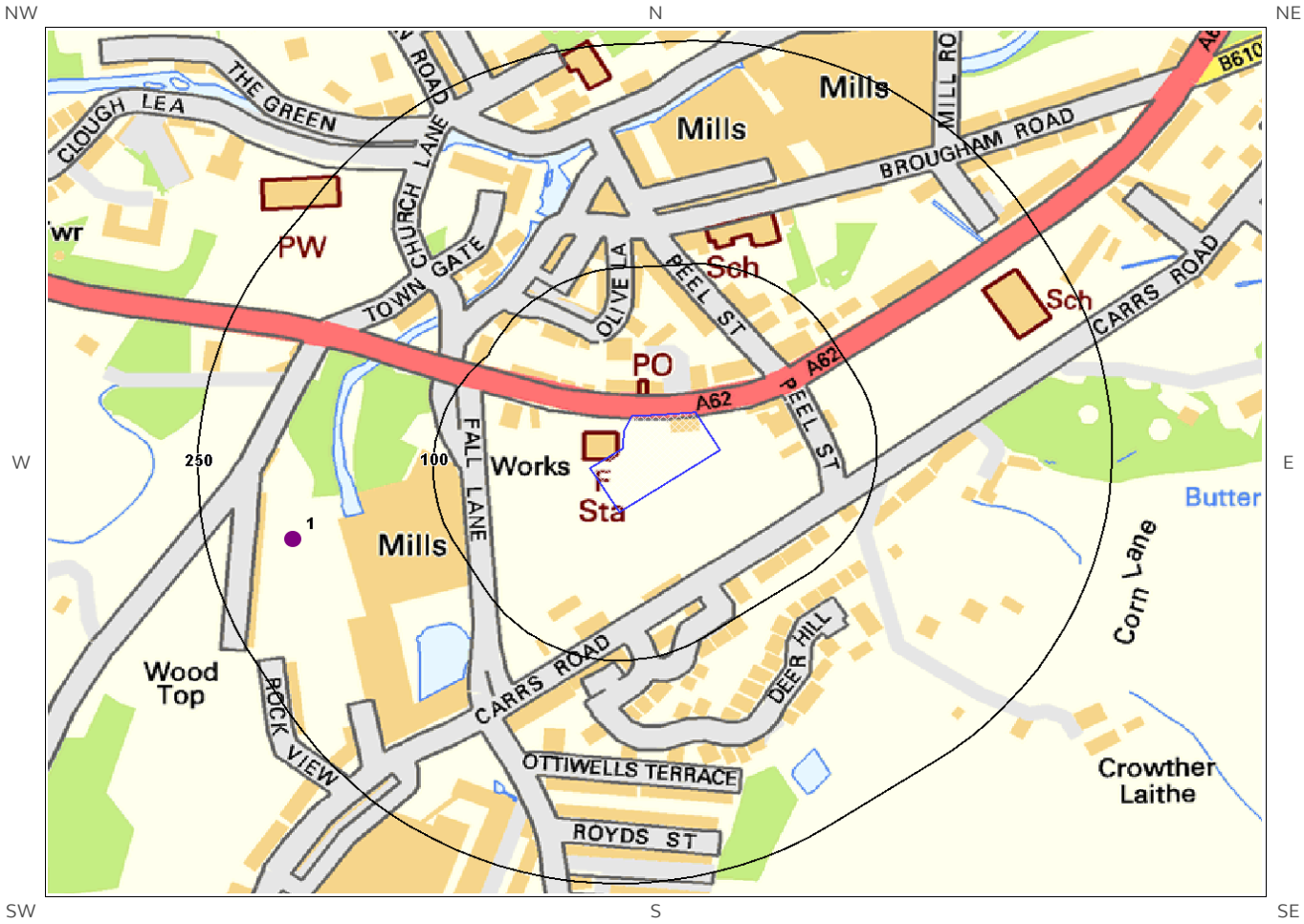
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	27.0	E	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	27.0	E	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

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

Records of boreholes within 250m of the study site boundary: 1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	196.0	W	404700 411400	SE01SW4	10.0	OLD MOUNT RD MARSDEN 1

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

#1: scans.bgs.ac.uk/sobi_scans/boreholes/36971

8 Estimated Background Soil Chemistry

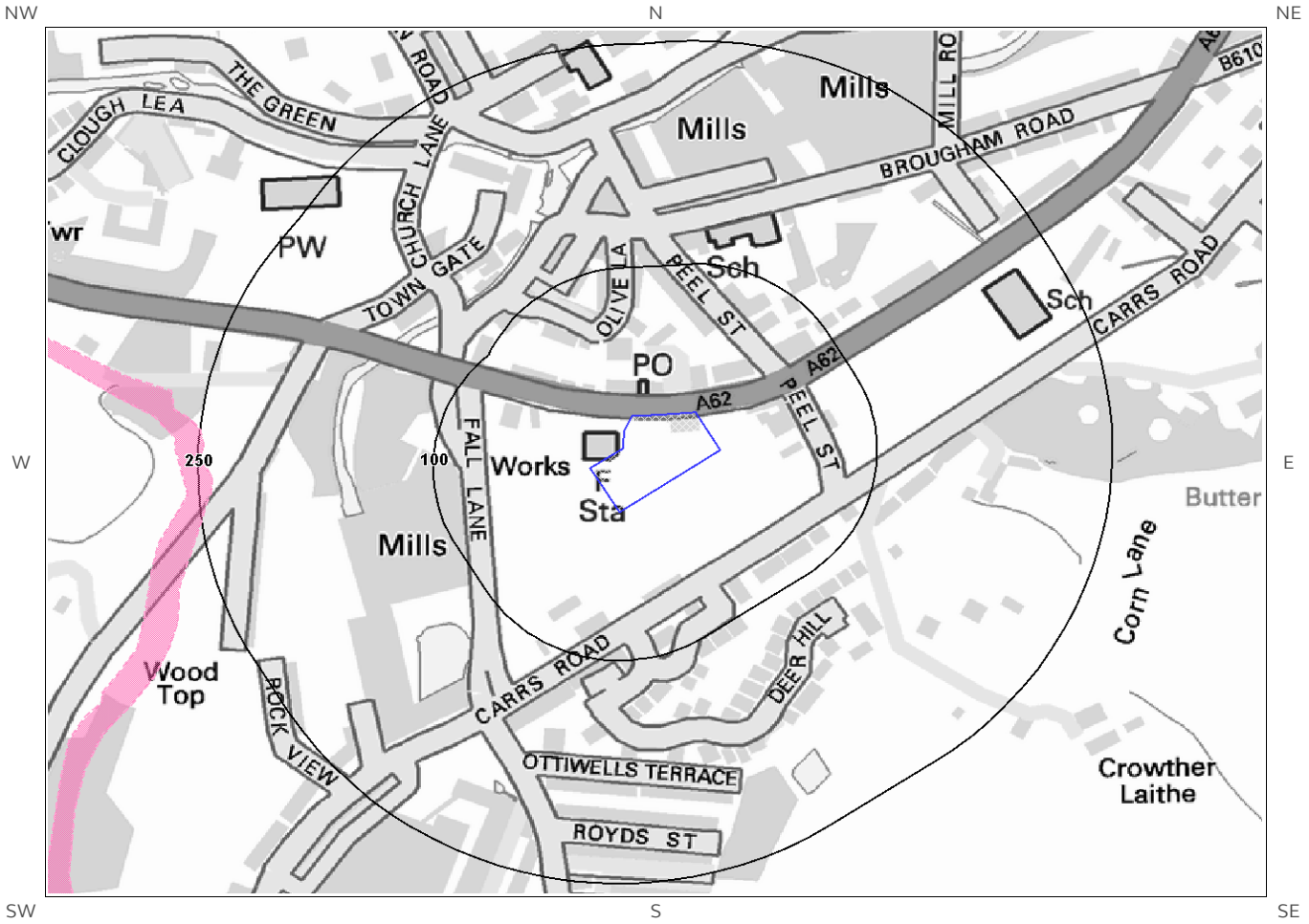
Records of background estimated soil chemistry within 250m of the study site boundary: 9

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
15.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
27.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
27.0	E	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
44.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
44.0	NE	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
47.0	SE	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
50.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
50.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

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

9 Railways and Tunnels map



Railways and Tunnels Legend

- Site Outline
- Search Buffers (m) — 250 — 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

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

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

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

Database searched and no data found.

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

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

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

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

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	241	W	404592 411298	Railway Sidings	1904

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

9.3 Historical Railways

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

Database searched and no data found.

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

9.5 Railway Projects

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

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

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

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

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

Contact Details

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info@groundsure.com

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Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
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Loughborough
Leicestershire
LE12 6HX

The Coal Authority

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

Public Health England

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

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Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-sept-2016/

APPENDIX C

GROUNDSURE REPORT

HISTORICAL MAPS

Haigh Huddleston & Associates

99-101, LEEDS ROAD,
DEWSBURY, WF12 7BU

Groundsure Reference:	GS-4463510
Your Reference:	SB_HOMES_7092
Report Date	13 Nov 2017
Report Delivery Method:	Email - pdf

Enviro Insight

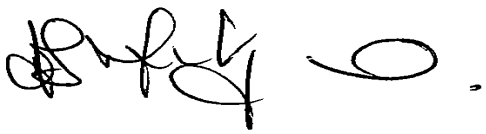
Address: MANCHESTER ROAD, SLAITHWAITE, HUDDERSFIELD, HD7 5JX

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**MANCHESTER ROAD, SLAITHWAITE, HUDDERSFIELD, HD7 5JX**
Date:	**13 Nov 2017**
Reference:	**GS-4463510**
Client:	**Haigh Huddleston & Associates**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	26-Mar-2012
Grid Reference:	404939,411461
Site Size:	0.30ha

Report Reference: GS-4463510
Client Reference: SB_HOMES_7092

Contents Page

Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	15	0	24	58
1.2 Additional Information – Historical Tank Database	6	0	2	14
1.3 Additional Information – Historical Energy Features Database	6	3	8	4
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	1	0	0	2
1.6 Potentially Infilled Land	0	0	9	20

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	1
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	1	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	2	1
2.1.9 Records of Water Industry Referrals	0	0	0	1
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	6	5
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	1	2	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	1	2	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	1	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	1	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	2	6	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	2	3	9	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	1	12
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	13	9	11	14
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	Yes	No	Yes	No
6.10 Detailed River Network entries within 500m of the site	1	0	18	22	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

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

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	4	20
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	2	3
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	2	3
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	5
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	1	0	0	1

Section 8: Designated Environmentally Sensitive Sites

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

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Moderate
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	Basic radon protective measures are necessary.

Section 10: Mining

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

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

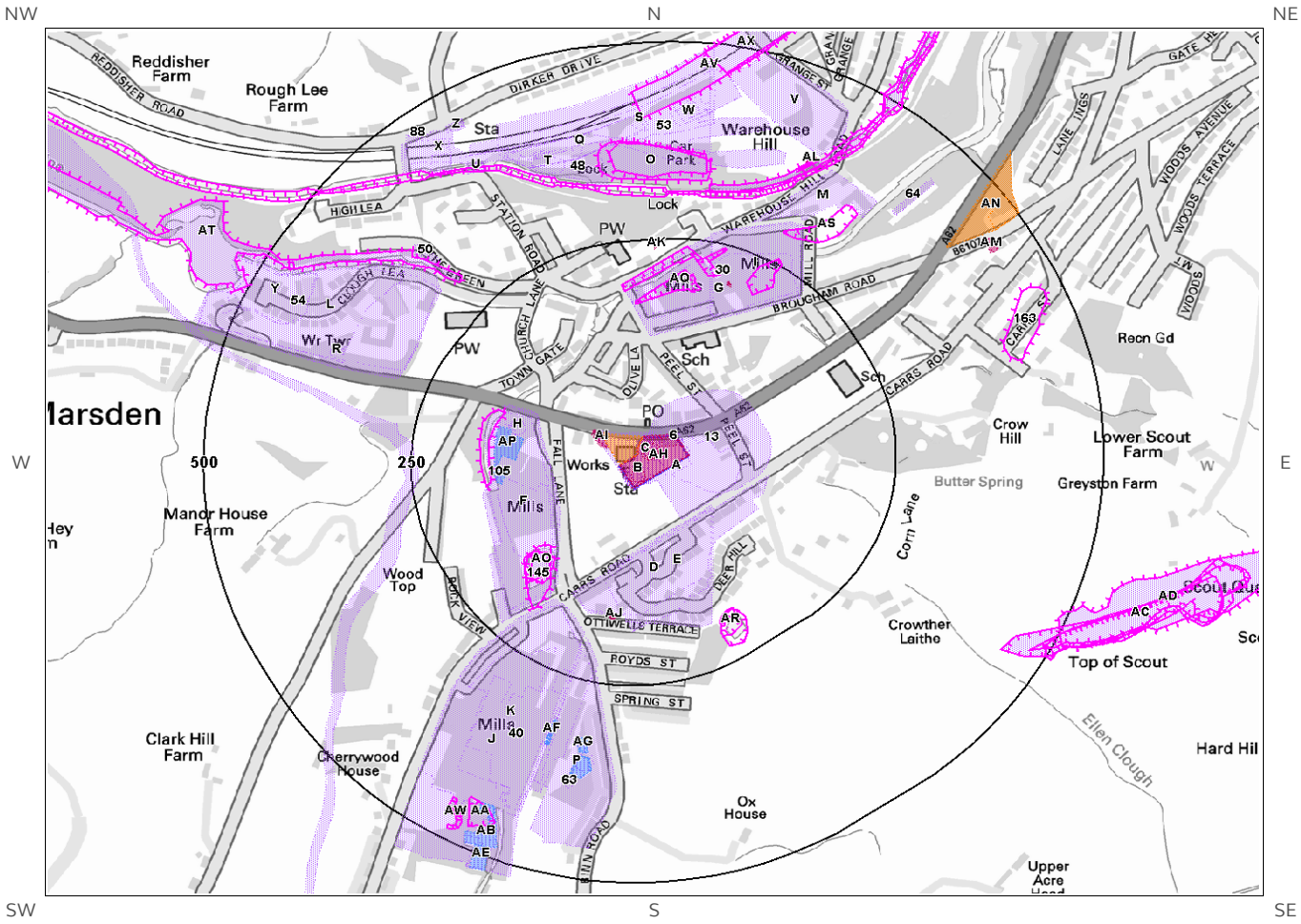
Note: Maps

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

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

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

1. Historical Land Use



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

Industrial Land Use

Potentially Infilled Land

Site Outline

Search Buffers (m)
250
500

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 97

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Gas Works	1890
2A	0	On Site	Gas Works	1904
3A	0	On Site	Gas Works	1930
4AH	0	On Site	Unspecified Works	1980
5B	0	On Site	Unspecified Tank	1955
6	0	On Site	Fire Station	1980
7B	0	On Site	Gasometers	1890
8B	0	On Site	Gasometers	1904
9C	0	On Site	Unspecified Commercial/Industrial	1955
10C	0	On Site	Gasometer	1930
11C	0	On Site	Unspecified Tank	1980
12C	0	On Site	Unspecified Tank	1955
13	0	On Site	Smithy	1890
14B	0	On Site	Gasometer	1930
15B	0	On Site	Unspecified Tank	1980
16D	67	SE	Unspecified Mill	1955
17D	70	SE	Unspecified Mills	1980
18E	73	SE	Unspecified Foundry	1930
19E	73	SE	Unspecified Foundry	1890
20E	73	SE	Unspecified Foundry	1904
21F	80	W	Unspecified Mills	1980
22F	81	W	Unspecified Mills	1955
23F	87	W	Unspecified Mills	1930
24F	89	SW	Unspecified Mills	1904
25F	89	SW	Unspecified Mills	1890
26H	122	W	Unspecified Tanks	1930
27G	128	N	Unspecified Mills	1890
28G	128	N	Unspecified Mills	1904
29H	130	W	Unspecified Tanks	1955
30	149	N	Unspecified Mills	1930
31AQ	156	N	Unspecified Mills	1980
32I	157	N	Unspecified Mills	1955
33I	157	N	Unspecified Mills	1978

34J	169	SW	Unspecified Mills	1955
35J	169	SW	Unspecified Mills	1980
36K	174	SW	Unspecified Mills	1930
37P	197	S	Unspecified Commercial/Industrial	1955
38K	223	SW	Unspecified Mills	1904
39	241	W	Railway Sidings	1904
40	275	S	Unspecified Mill	1890
41L	285	NW	Unspecified Mills	1955
42L	286	NW	Unspecified Mills	1930
43M	287	N	Unspecified Mills	1904
44M	287	N	Unspecified Mills	1890
45AT	295	NW	Mill Pond	1955
46N	311	N	Disused Canal	1978
47N	311	N	Disused Canal	1955
48	322	N	Railway Carriage and Iron Works	1890
49O	325	N	Unspecified Heap	1980
50	329	NW	Unspecified Mill	1980
51O	329	N	Unspecified Heap	1955
52P	339	S	Unspecified Tank	1955
53	347	N	Railway Sidings	1930
54	350	NW	Unspecified Mills	1980
55T	351	N	Railway Buildings	1930
56S	360	N	Railway Sidings	1955
57R	362	NW	Unspecified Tank	1930
58Q	362	N	Railway Sidings	1904
59Q	362	N	Railway Sidings	1890
60R	363	NW	Unspecified Tank	1955
61S	365	N	Railway Sidings	1980
62T	374	N	Railway Building	1980
63	377	S	Unspecified Tank	1930
64	385	NE	Unspecified Tanks	1955
65U	387	NW	Railway Building	1890
66U	389	NW	Railway Building	1930
67U	389	NW	Railway Building	1904
68S	391	N	Railway Buildings	1890
69S	391	N	Railway Buildings	1904
70W	393	N	Goods Shed	1930
71V	396	NE	Smithy	1904
72V	396	NE	Smithy	1890
73X	396	NW	Railway Station	1955
74W	400	N	Railway Building	1955
75AV	405	N	Cuttings	1904
76X	408	NW	Railway Station	1904
77X	408	NW	Railway Station	1930

78X	410	NW	Railway Station	1890
79Y	424	NW	Unspecified Mills	1890
80Y	427	NW	Unspecified Mills	1904
81X	435	NW	Railway Station	1980
82AA	437	SW	Unspecified Heap	1955
83Z	447	NW	Railway Station	1904
84AW	448	SW	Unspecified Ground Workings	1955
85AC	449	SE	Unspecified Quarries	1930
86Z	450	NW	Railway Station	1930
87AA	454	S	Unspecified Tanks	1930
88	463	NW	Railway Building	1930
89AB	464	S	Unspecified Tanks	1955
90AX	465	N	Cuttings	1930
91AB	471	S	Unspecified Tanks	1930
92AC	478	SE	Unspecified Quarries	1955
93AE	483	S	Unspecified Tanks	1955
94AD	491	SE	Unspecified Quarry	1890
95AD	491	SE	Unspecified Quarry	1904
96AE	491	S	Unspecified Tanks	1930
97AC	493	SE	Unspecified Disused Quarries	1978

1.2 Additional Information – Historical Tank Database

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

Records of historical tanks within 500m of the search boundary: 22

ID	Distance (m)	Direction	Use	Date
98C	0	On Site	Gasholder Station	1994
99C	0	On Site	Gasholder Station	1967
100C	0	On Site	Gasholder	1967
101B	0	On Site	Gasholder	1967
102C	0	On Site	Gasholder	1988
103C	0	On Site	Gasholder Station	1988
104AP	120	W	Tanks	1967
105	135	W	Tanks	1967
106AF	308	S	Tanks	1994
107AF	309	S	Tanks	1967
108AF	310	S	Tanks	1988
109AG	321	S	Unspecified Tank	1994
110AG	321	S	Unspecified Tank	1967

111AG	321	S	Unspecified Tank	1988
112P	344	S	Unspecified Tank	1994
113P	344	S	Unspecified Tank	1967
114P	345	S	Unspecified Tank	1988
115AA	437	SW	Tanks	1967
116AA	437	SW	Tanks	1988
117AA	437	SW	Tanks	1994
118AB	451	S	Tanks	1966
119AE	487	S	Tanks	1966

1.3 Additional Information – Historical Energy Features Database

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

Records of historical energy features within 500m of the search boundary: 21

ID	Distance (m)	Direction	Use	Date
120B	0	On Site	Gasholder	1967
121AH	0	On Site	Gasholder Station	1988
122AH	0	On Site	Gasholder Station	1967
123AH	0	On Site	Gasholder Station	1994
124AH	0	On Site	Gasholder	1988
125AH	0	On Site	Gasholder	1967
126AI	26	NW	Electricity Substation	1967
127AI	27	NW	Electricity Substation	1988
128AI	27	NW	Electricity Substation	1994
129AJ	162	S	Electricity Substation	1967
130AJ	163	S	Electricity Substation	1988
131AJ	164	S	Electricity Substation	1994
132G	200	N	Electricity Substation	1995
133G	201	N	Electricity Substation	1967
134AK	239	N	Electricity Substation	1988
135AK	240	N	Electricity Substation	1967
136AK	242	N	Electricity Substation	1994
137AL	379	NE	Electricity Substation	1967
138AL	388	NE	Electricity Substation	1995
139AM	446	NE	Electricity Substation	1995
140AM	448	NE	Electricity Substation	1967

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 3

ID	Distance (m)	Direction	Use	Date
141AI	0	On Site	Garage	1967
142AN	404	NE	Garage	1967
143AN	466	NE	Garage	1995

1.6 Potentially Infilled Land

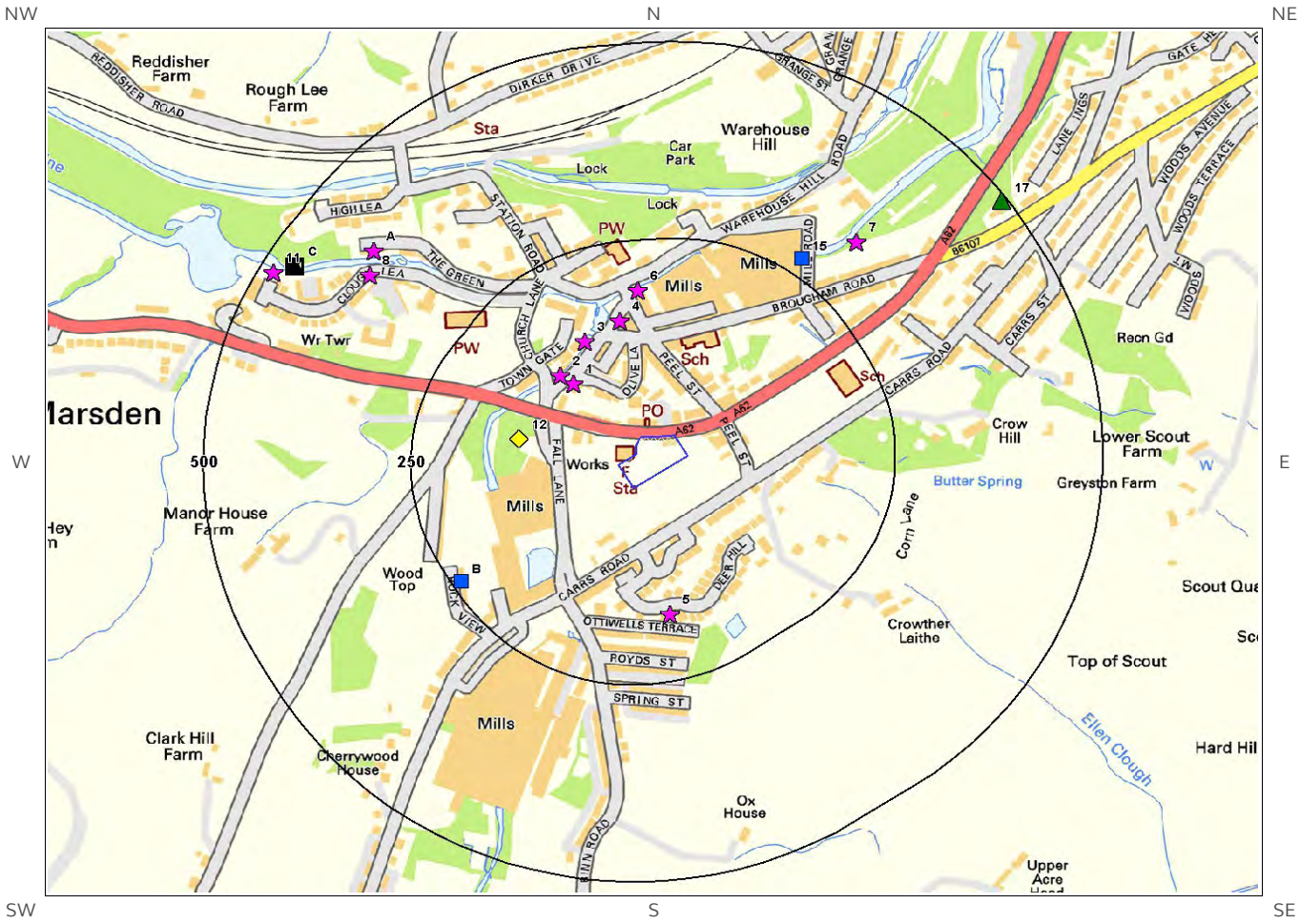
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 29

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

ID	Distance(m)	Direction	Use	Date
144AO	124	SW	Pond	1980
145	129	SW	Water Body	1890
146AO	133	SW	Pond	1930
147AP	153	NW	Pond	1930
148AQ	170	N	Pond	1890
149	187	N	Pond	1930
150AR	190	SE	Reservoir	1955
151AR	191	SE	Reservoir	1930
152I	202	NE	Pond	1890
153AS	288	NE	Pond	1890
154AS	288	NE	Pond	1904
155AT	295	NW	Mill Pond	1955
156AU	303	N	Canal	1890
157AU	303	N	Canal	1930
158AU	303	N	Canal	1904
159N	311	N	Disused Canal	1955
160N	311	N	Disused Canal	1978
161O	325	N	Unspecified Heap	1980
162O	329	N	Unspecified Heap	1955
163	405	E	Pond	1890

164AV	405	N	Cuttings	1904
165AW	437	SW	Unspecified Heap	1955
166AA	448	SW	Unspecified Ground Workings	1955
167AC	449	SE	Unspecified Quarries	1930
168AX	465	N	Cuttings	1930
169AC	478	SE	Unspecified Quarries	1955
170AD	491	SE	Unspecified Quarry	1890
171AD	491	SE	Unspecified Quarry	1904
172AC	493	SE	Unspecified Disused Quarries	1978

2. Environmental Permits, Incidents and Registers Map



- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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

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

1

The following IPC Authorisations are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
19C	464	NW	404500 411700	Operator: J Bailly Ancion Ltd (dissolved) Address: Clough Lee Mills, Marsden, Huddersfield, West Yorkshire, HD7 6DL Process: Coating Processes And Printing	Permit Number: AU7826 Original Permit Number: IPCAPP Date Approved: 29-8-1996 Effective Date: 1-9-1996 Status: Revoked

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
12	124	W	404770 411480	Name: John Crowther & Sons, Marsden, Huddersfield Status: Not Active Receiving Water: Unknown	Authorised Substances: Cyfluthrin

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

1

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

ID	Distance (m)	Direction	NGR	Details	
17	493	NE	405351 411782	Address: Burnlee Garage, Meltham Road, Marsden, Huddersfield, HD7 6JW Process: Waste Oil Burner <0.4MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

3

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

ID	Distance (m)	Direction	NGR	Details	
13B	240	SW	404700 411300	Address: J E CROWTHER LTD, BANK BOTTOM MILLS, MARSDEN, HUDDERSFIELD, HD7 6HR Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: WRA7012 Permit Version: 1	Receiving Water: WESSENDEN BROOK Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 04/01/1994 Effective Date: 04-Jan-1994 Revocation Date: 18/11/1996

ID	Distance (m)	Direction	NGR	Details	
14B	240	SW	404700 411300	Address: J E CROWTHER LTD, BANK BOTTOM MILLS, MARSDEN, HUDDERSFIELD, HD7 6HR Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: WRA7012 Permit Version: 2	Receiving Water: WESSENDEN BROOK Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 19/11/1996 Effective Date: 19-Nov-1996 Revocation Date: -
15	272	NE	405110 411710	Address: BROUGHAM ROAD CSO, OFF BROUGHAM ROAD (R/O NO.44), MARSDEN, HUDDERSFIELD, WEST YORKSHIRE Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9254 Permit Version: 1	Receiving Water: RIVER COLNE Status: SURRENDERED UNDER EPR 2010 Issue date: 04/09/2007 Effective Date: 04-Sep-2007 Revocation Date: 27/03/2012

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

1

The following Water Industry Referral records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Address	Permission reference	Local Authority	First Date Received	Last Date Received	Status
20C	464	NW	J BAILLY ANCION LTD (DISSOLVED), CLOUGH LEE MILLS, MARSDEN, HUDDERSFIELD, WEST YORKSHIRE, HD7 6DL	AH2494	WAKEFIELD CITY COUNCIL	01-Jun-2001	01-Jul-2017	DEAD (APPLICATION)

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

11

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

ID	Distance (m)	Direction	NGR	Details	
1	107	NW	404834 411551	Incident Date: 17-Dec-2002 Incident Identification: 126457 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	125	NW	404819 411561	Incident Date: 19-Apr-2004 Incident Identification: 230629 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	140	NW	404848 411605	Incident Date: 12-Jun-2002 Incident Identification: 84535 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	150	N	404890 411631	Incident Date: 12-Jun-2002 Incident Identification: 84538 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	166	S	404951 411258	Incident Date: 30-Jul-2003 Incident Identification: 177768 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
6	186	N	404912 411669	Incident Date: 04-Nov-2002 Incident Identification: 118700 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7	329	NE	405175 411731	Incident Date: 23-Feb-2003 Incident Identification: 138699 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
8	385	NW	404590 411689	Incident Date: 30-Jan-2002 Incident Identification: 55347 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9A	400	NW	404594 411719	Incident Date: 25-Feb-2003 Incident Identification: 139241 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
10A	400	NW	404594 411719	Incident Date: 25-Feb-2003 Incident Identification: 139241 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
11	483	NW	404473 411692	Incident Date: 28-Oct-2002 Incident Identification: 117073 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

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

0

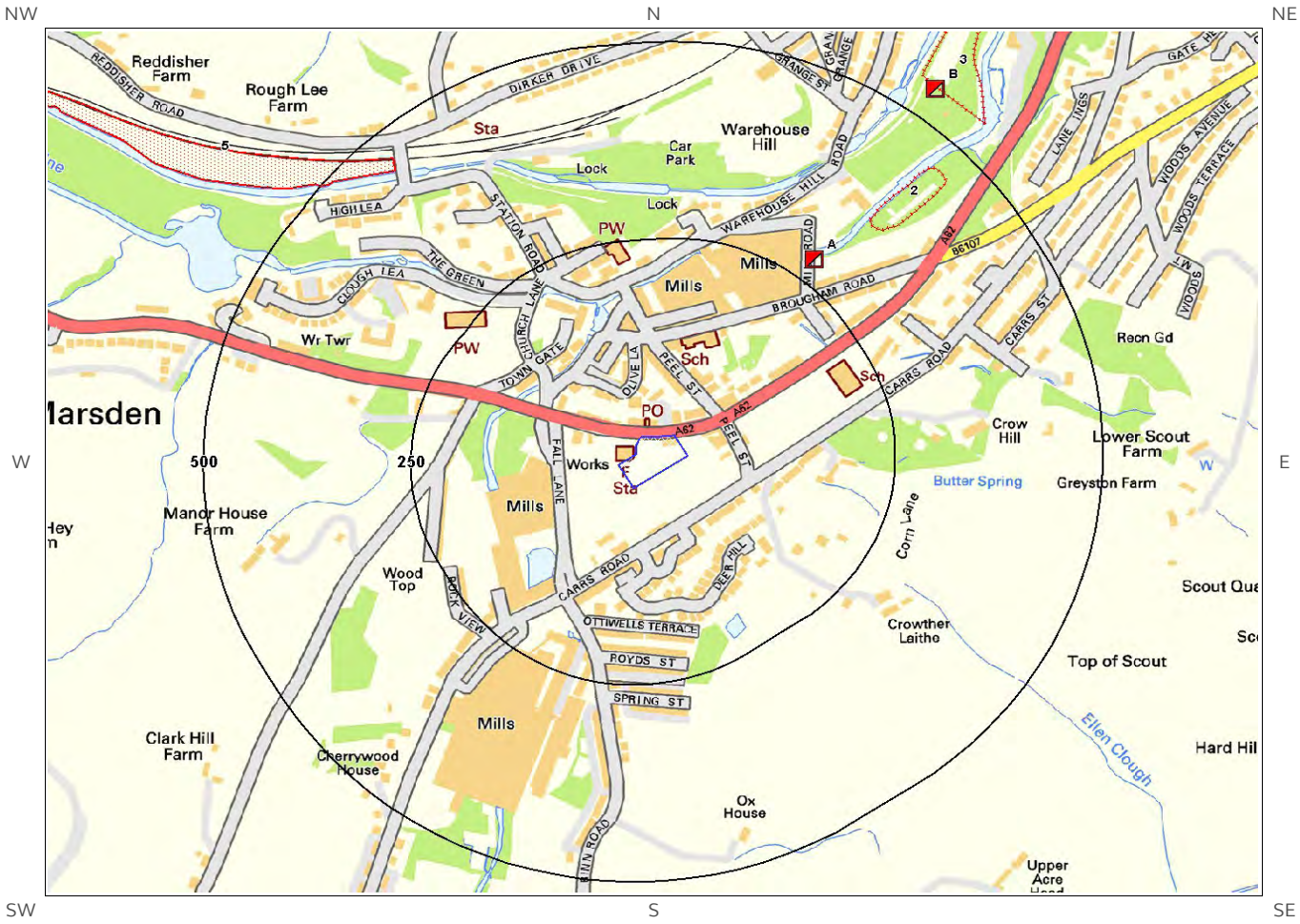
Database searched and no data found.

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

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

Database searched and no data found.

3. Landfill and Other Waste Sites Map



Site Outline

250 / 500 Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

3

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	357	NE	405125 411709	Address: Bank Bottom Mills, Marsden, Huddersfield, West Yorkshire, HD7 6HR Landfill Reference: 60998.0 Environmental Permitting Regulations (Waste) Reference: JEC003 Landfill Type: A05: Landfill taking Non-Biodegradeable Wastes	Operator: J E Crowther (Holdings) Plc Status: Issued IPPC Reference: EPR Reference:
3	543	NE	405271 411926	Address: Land/premises At, Off Marsden Lane, Smithy Holme Bridge, Marsden, West Yorkshire, HD1 2TG Landfill Reference: 60997.0 Environmental Permitting Regulations (Waste) Reference: KIR002 Landfill Type: A04: Household, Commercial & Industrial Waste Landfill	Operator: Kirklees Council Status: Issued IPPC Reference: EPR Reference:
Not shown	847	SW	404485 410659	Address: Mount Road, Marsden, West Yorkshire Landfill Reference: 60991.0 Environmental Permitting Regulations (Waste) Reference: JEC002 Landfill Type: A04: Household, Commercial & Industrial Waste Landfill	Operator: John Edward Crowther Limited Status: Closure IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales 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 (m)	Direction	NGR	Details	
5	449	NW	404300 411800	Site Address: Tunnel End, Off High Lea, Marsden Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	720	NE	405400 412200	Site Address: Wood Bottom, Manchester Road, Marsden, West Yorkshire Waste Licence: Yes Site Reference: 4700/WY033 Waste Type: Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 14-Oct-1977 Licence Surrendered: Licence Holder Address: - Operator: Colne Valley Urban District Council Licence Holder: - First Recorded: - Last Recorded: 28-Oct-1979
Not shown	961	E	405900 411800	Site Address: Hey Heads Quarry, Meltham Road, Marsden Waste Licence: - Site Reference: - Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1040	NE	405719 412427	Site Address: Cellars Clough Mills, Manchester Road, Huddersfield, Marsden, West Yorkshire Waste Licence: Yes Site Reference: - Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 05-Aug-1985 Licence Surrendered: Licence Holder Address: Manchester Road, Huddersfield, Marsden, West Yorkshire Operator: Mr K S Cooper Licence Holder: Mr K S Cooper First Recorded: - Last Recorded: -

3.1.3 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 (m)	Direction	NGR	Details	
Not shown	979	NE	405500.0 412300.0	Address: Wood Bottom, Manchester Rd, Marsden BGS Number: 1981.0	Risk: No risk to aquifer Waste Type: N/A

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

1

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

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	854	NE	405477 412240	Refuse Tip	1967 mapping	Polygon

3.2 Other Waste Sites

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

0

Database searched and no data found.

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

10

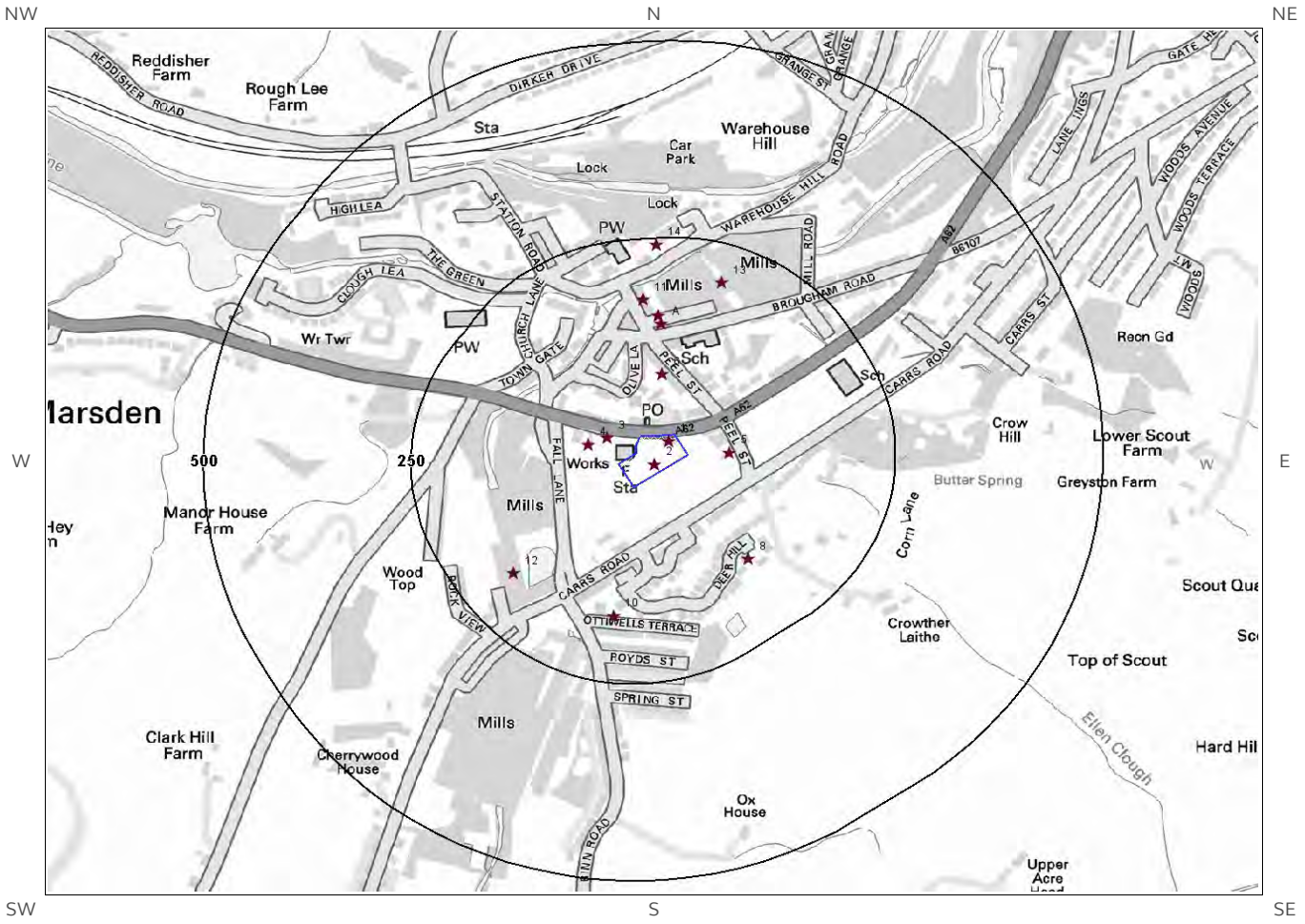
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
9A	280	NE	405125 411709	Site Address: Bank Bottom Mills, Marsden, Huddersfield, West Yorkshire, HD7 6HR Type: Landfill taking Non-Biodegradeable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JEC003 EPR reference: EA/EPR/XP3095ZP/A001 Operator: J E Crowther (Holdings) Plc Waste Management licence No: 60998 Annual Tonnage: 4000.0	Issue Date: 21/01/1985 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Wood Bottom Correspondence Address: -
10A	280	NE	405125 411709	Site Address: Wood Bottom, Marsden, Huddersfield, West Yorkshire, HD7 6HR Type: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JEC003 EPR reference: - Operator: J E Crowther (Holdings) Plc Waste Management licence No: 60998 Annual Tonnage: 0.0	Issue Date: 21/01/1985 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Wood Bottom Correspondence Address: Bank Bottom Mills, Marsden, Huddersfield, West Yorkshire, HD7 6HR

ID	Distance (m)	Direction	NGR	Details	
11B	541	NE	405271 411926	Site Address: Land/premises At, Off Marsden Lane, Smithy Holme Bridge, Marsden, West Yorkshire, HD1 2TG Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KIR002 EPR reference: EA/EPR/XP3395ZX/A001 Operator: Kirklees Council Waste Management licence No: 60997 Annual Tonnage: 5000.0	Issue Date: 05/07/1984 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Marsden Dredsing Disposal Site Correspondence Address: -
12B	541	NE	405271 411926	Site Address: Off Marsden Lane, Smithy Holme Bridge, Marsden, West Yorkshire, HD1 2TG Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KIR002 EPR reference: - Operator: Kirklees Metropolitan Council Waste Management licence No: 60997 Annual Tonnage: 5000.0	Issue Date: 05/07/1984 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Marsden Dredsing Disposal Site Correspondence Address: South Pennine Ring, Middle Warehouse, Castle Quay, Manchester, M15 4NJ
13B	541	NE	405271 411926	Site Address: Off Marsden Lane, Next To Smithy Holme Bird, Marsden, HD1 2TG Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KIR002 EPR reference: - Operator: Kirklees Metropolitan Borough Council Waste Management licence No: 60997 Annual Tonnage: 0.0	Issue Date: 05/07/1984 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Canal Dredgings Site Correspondence Address: Planning Services, Civic Centre, Huddersfield, HD1 2TG
14B	541	NE	405271 411926	Site Address: Off Marsden Lane, Smithy Holme Bridge, Marsden, West Yorkshire, HD1 2TG Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KIR002 EPR reference: - Operator: British Waterways-yorkshire Business Waste Management licence No: 60997 Annual Tonnage: 0.0	Issue Date: 05/07/1984 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Marsden Dredsing Disposal Site Correspondence Address: South Pennine Ring, Middle Warehouse, Castle Quay, Manchester, M15 4NJ
Not shown	870	SW	404485 410659	Site Address: Mount Road, Marsden, West Yorkshire Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JEC002 EPR reference: EA/EPR/UP3495ZU/V004 Operator: John Edward Crowther Limited Waste Management licence No: 60991 Annual Tonnage: 0.0	Issue Date: 28/02/1978 Effective Date: - Modified: 12/02/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Mount Road Landfill Site Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	870	SW	404485 410659	Site Address: Bank Bottom Mills, Marsden, Huddersfield, West Yorkshire, HD7 6HR Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JEC002 EPR reference: EA/EPR/UP3495ZU/A001 Operator: J E Crowther Limited Waste Management licence No: 60991 Annual Tonnage: 8000.0	Issue Date: 28/02/1978 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mount Road Correspondence Address: -
Not shown	1211	NE	405719 412427	Site Address: Cellars Clough Mills, Manchester Road, Marsden, Huddersfield, West Yorkshire, HD7 6NA Type: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MRK001 EPR reference: - Operator: Mr K S Cooper Waste Management licence No: 61000 Annual Tonnage: 0.0	Issue Date: 05/08/1985 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Cellars Clough Mills Correspondence Address: Cellars Clough Mills, Manchester Road, Marsden, Huddersfield, West Yorkshire, HD7 6NA
Not shown	1211	NE	405719 412427	Site Address: Cellars Clough Mills, Manchester Road, Marsden, Huddersfield, West Yorkshire, HD7 6NA Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MRK001 EPR reference: EA/EPR/XP3595ZH/A001 Operator: Mr K S Cooper Waste Management licence No: 61000 Annual Tonnage: 4000.0	Issue Date: 05/08/1985 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked Site Name: Cellars Clough Mills Correspondence Address: -

4. Current Land Use Map



Site Outline

Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 14

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Gas Holder Station	404950 411478	HD7	Gas Features	Infrastructure and Facilities
2	0	On Site	Gas Holder Station	404933 411448	HD7	Gas Features	Infrastructure and Facilities
3	37	NW	Electricity Sub Station	404875 411482	HD7	Electrical Features	Infrastructure and Facilities
4	45	NW	Works	404853 411473	HD7	Unspecified Works Or Factories	Industrial Features
5	50	E	Telephone Exchange	405023 411463	HD7	Telecommunications Features	Infrastructure and Facilities
6	78	N	Huddersfield Stoves Ltd	404941 411562	30a, Peel Street, Marsden, Huddersfield, HD7 6BW	Cookers and Stoves - Non Electrical	Consumer Products
7A	142	N	Mumbles Magazine	404940 411626	2, Derby Terrace, Huddersfield, HD7 6BW	Published Goods	Industrial Products
8	150	SE	Jackson Electrical Contracting	405045 411328	55, Deer Hill Drive, Marsden, Huddersfield, HD7 6LF	Electrical and Electronic Engineers	Engineering Services
9A	153	N	E C C Electronic Engineering	404937 411637	19, Peel Street, Marsden, Huddersfield, HD7 6BW	Electrical and Electronic Engineers	Engineering Services
10	165	S	Electricity Sub Station	404883 411256	HD7	Electrical Features	Infrastructure and Facilities
11	174	N	Fishcake Publications	404919 411657	7a, Peel Street, Marsden, Huddersfield, HD7 6BR	Published Goods	Industrial Products
12	182	SW	Heyfield Engineering Ltd	404762 411310	Unit 6 Mount Road Industrial Units, Mount Road, Marsden, Huddersfield, HD7 6NU	Industrial Engineers	Engineering Services
13	202	N	Electricity Sub Station	405013 411679	HD7	Electrical Features	Infrastructure and Facilities
14	243	N	Electricity Sub Station	404935 411727	HD7	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

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

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

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5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

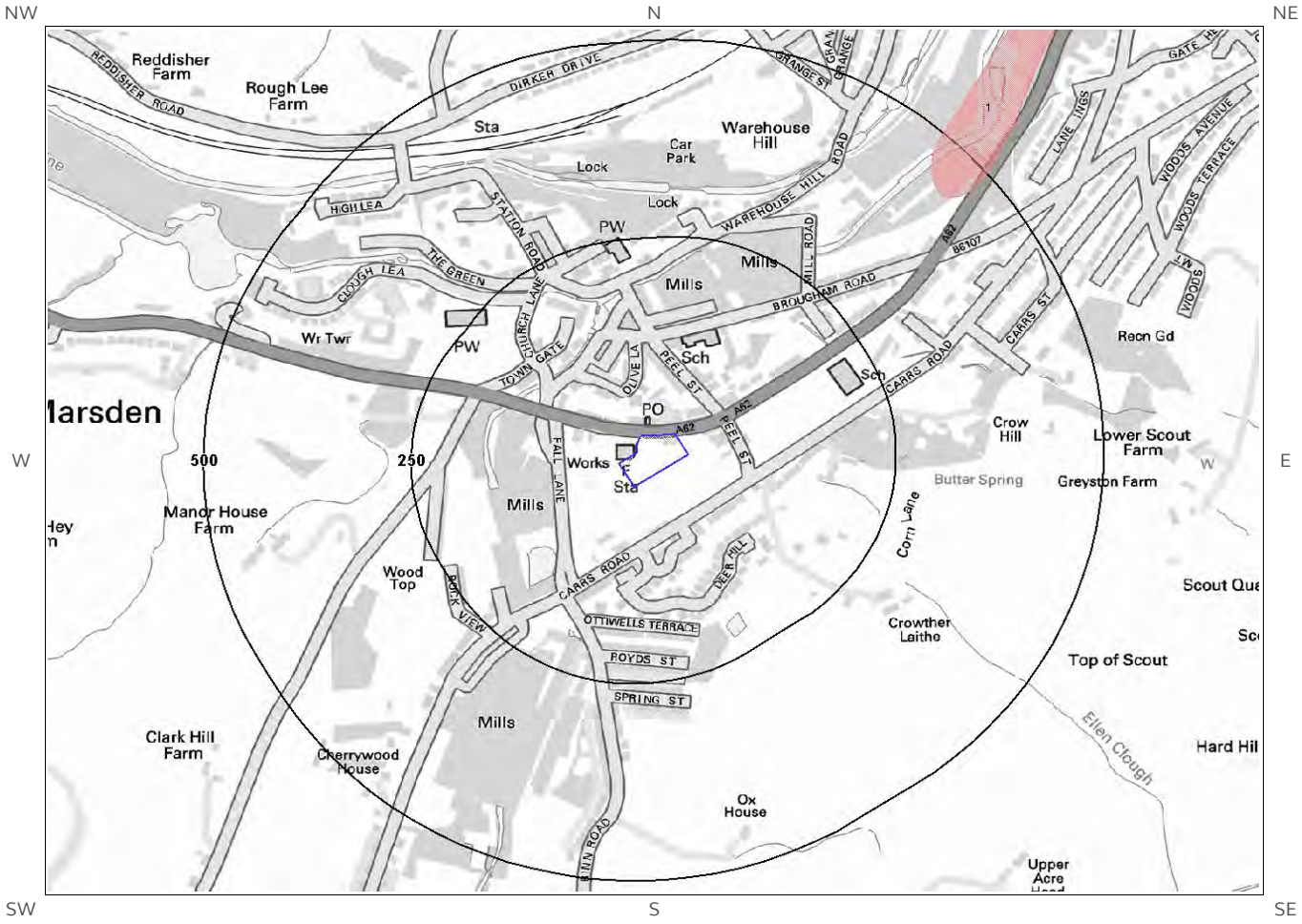
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MARSD-MDSI	MARSDEN FORMATION	MUDSTONE AND SILTSTONE
UK-SDST	UPPER KINDERSCOUT GRIT	SANDSTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250 — 500 — Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

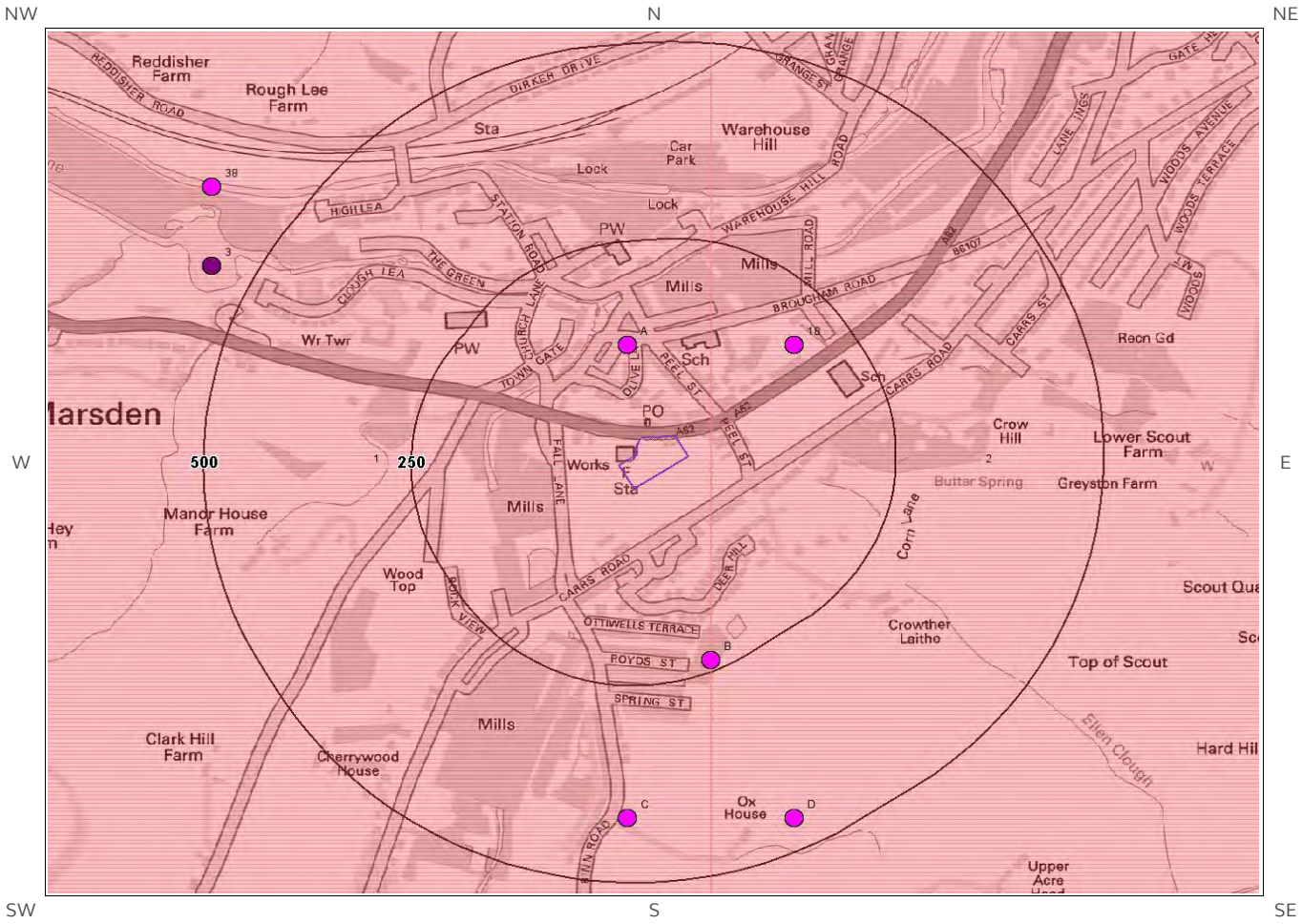
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



Site Outline

250 — 500 — Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

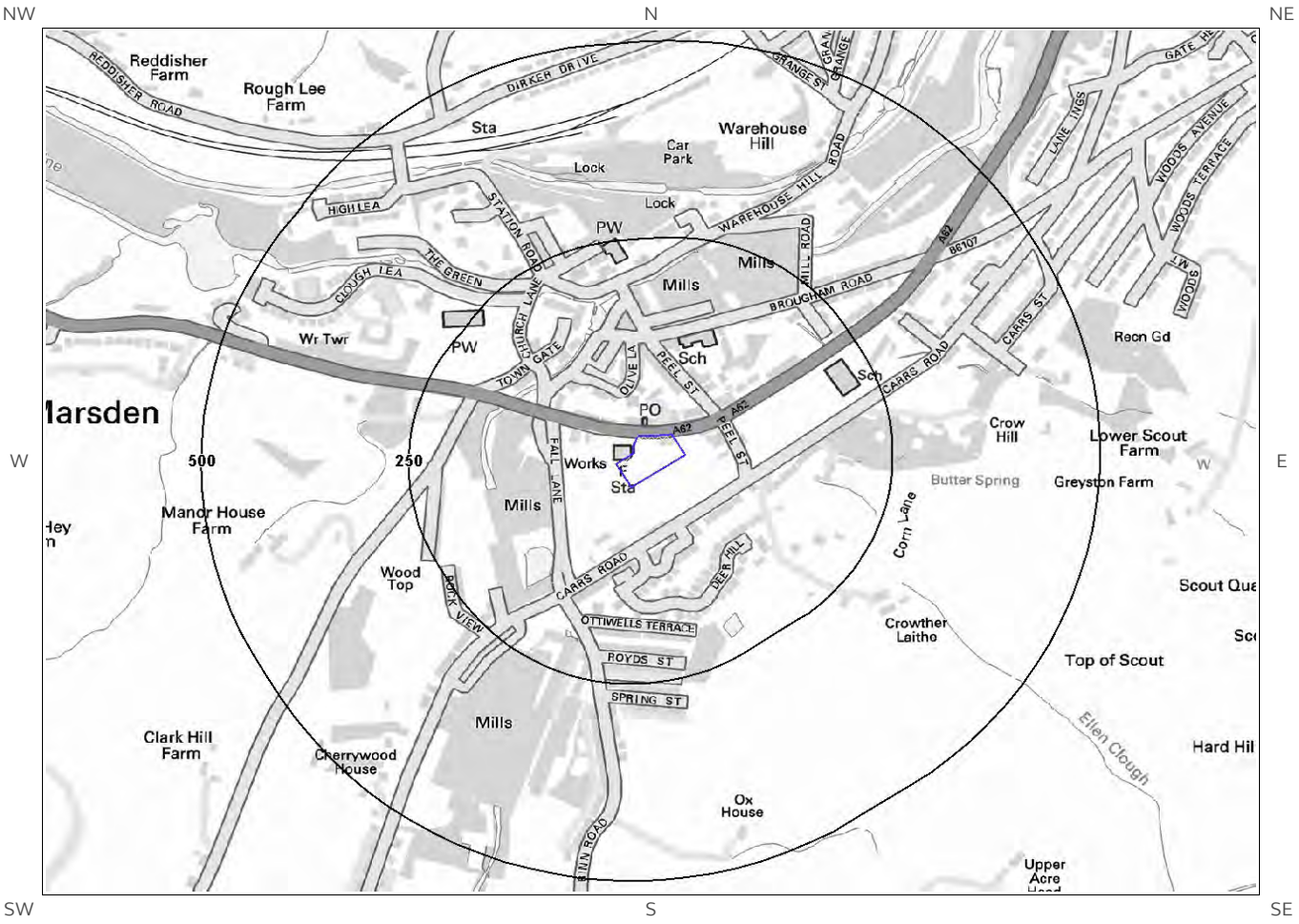
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

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



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

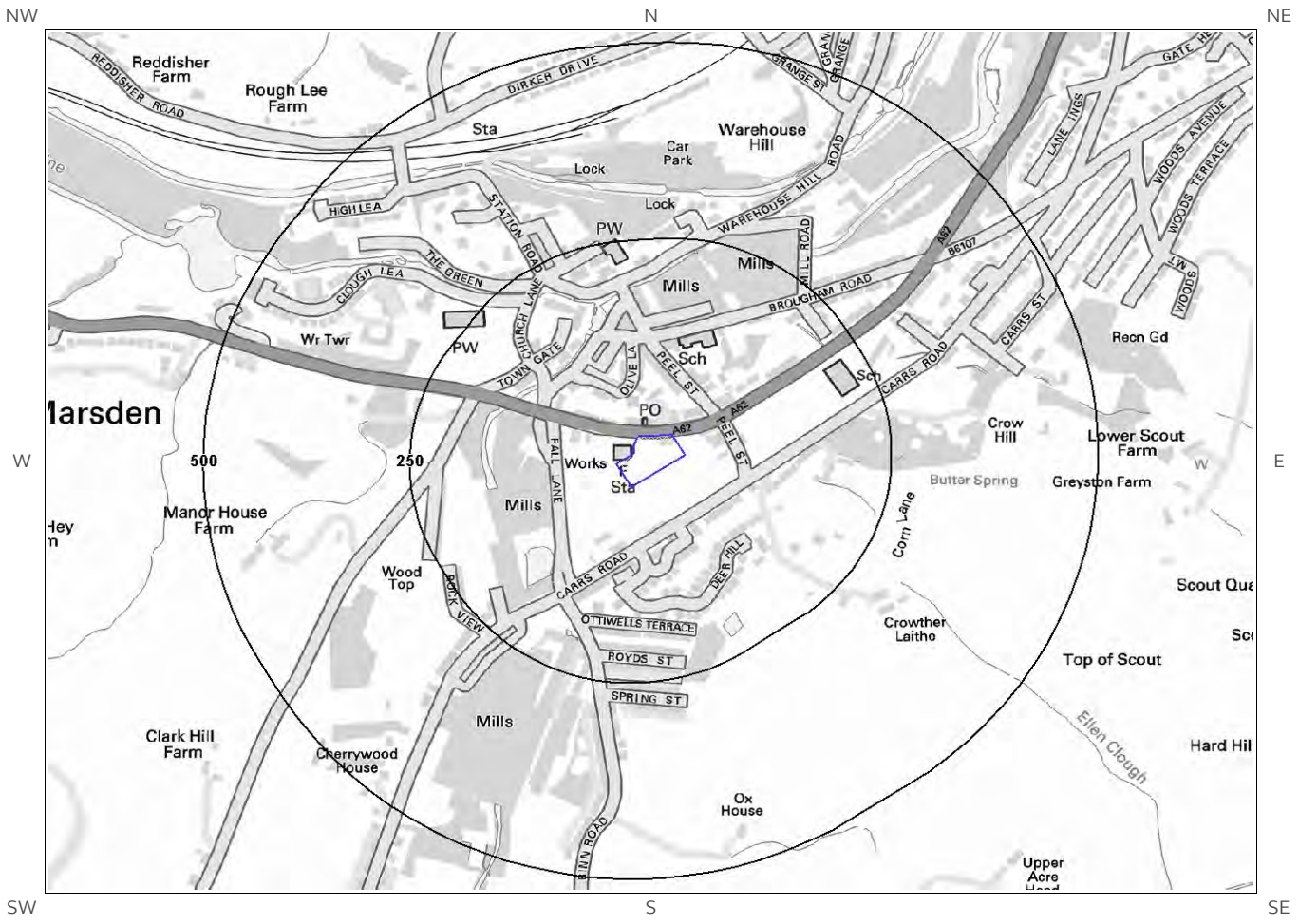
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

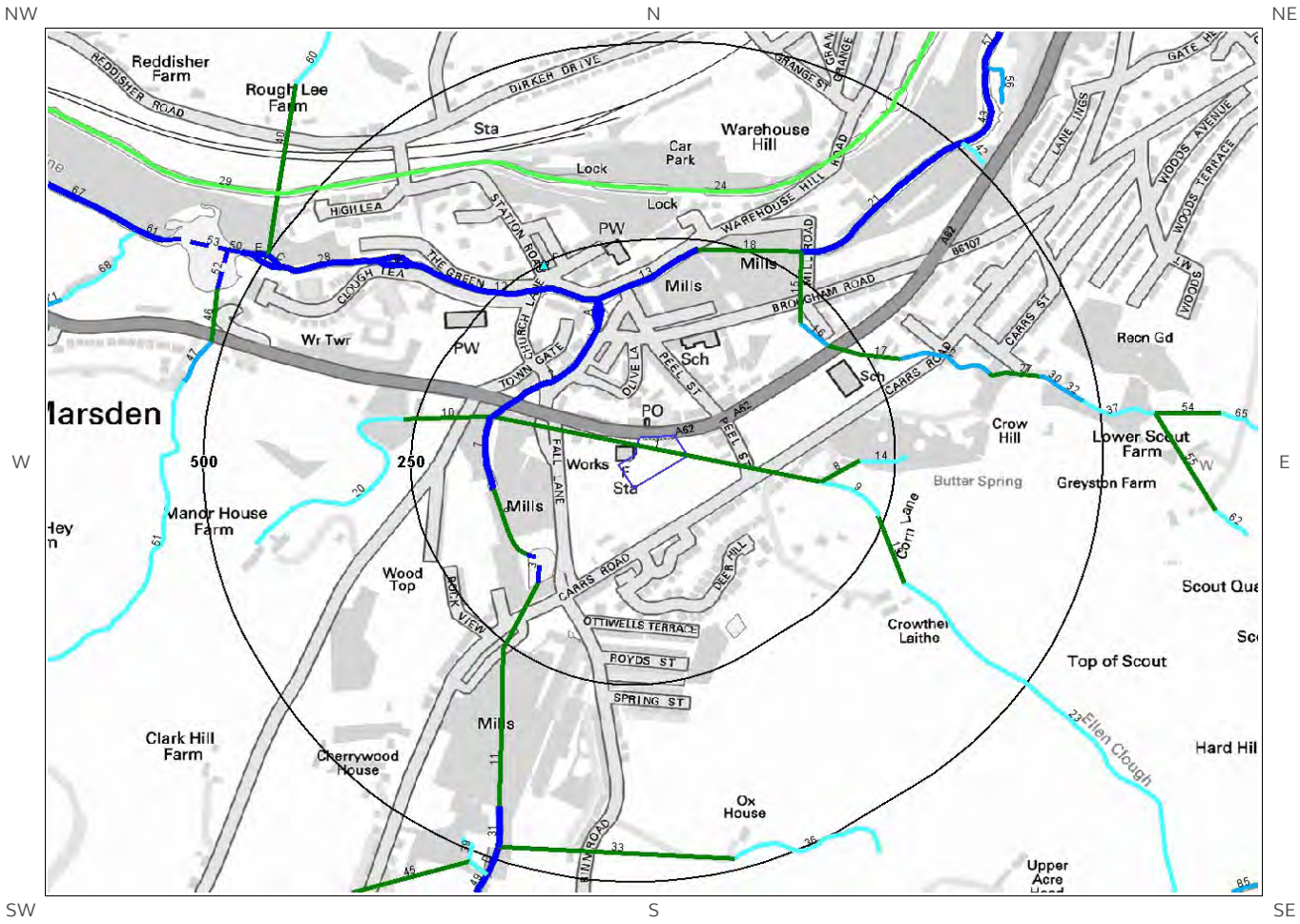
Source Protection Zone 3C - Total Catchment within Confined Aquifer

Site Outline

Potable Water Abstraction Licence

250 — 500 — Search Buffers (m)

6e. Hydrology – Detailed River Network and River Quality



Site Outline

250 Search Buffers (m)
500

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	441	NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	27	E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.3 Groundwater Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
3	551	NW	404400 411700	Status: Historical Licence No: 2/27/11/054 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Spring Data Type: Point Name: S B HOMES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 68902 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 7/5/1999 Version End Date:
Not shown	1118	SW	404350 410450	Status: Historical Licence No: 2/27/11/180 Details: Spray Irrigation - Direct Direct Source: Groundwaters Point: Borehole Data Type: Point Name: MARSDEN GOLF CLUB	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 6764 Original Start Date: 11/10/1996 Expiry Date: 30/11/2006 Issue No: 100 Version Start Date: 11/10/1996 Version End Date:
Not shown	1118	SW	404350 410450	Status: Historical Licence No: 2/27/11/180 Details: Spray Irrigation - Direct Direct Source: Groundwaters Point: Borehole - Millstone Grit - Marsden Data Type: Point Name: MARSDEN GOLF CLUB	Annual Volume (m^3): 5600 Max Daily Volume (m^3): 50 Original Application No: 6764 Original Start Date: 11/10/1996 Expiry Date: 30/11/2006 Issue No: 100 Version Start Date: 11/10/1996 Version End Date:
Not shown	1118	SW	404350 410450	Status: Historical Licence No: 2/27/11/192 Details: Spray Irrigation - Direct Direct Source: Groundwaters Point: Borehole - Millstone Grit - Marsden Data Type: Point Name: MARSDEN GOLF CLUB	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 50 Original Application No: 8252 Original Start Date: 1/4/2007 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 1/4/2008 Version End Date:
Not shown	1121	SW	404280 410490	Status: Active Licence No: 2/27/11/192/R01 Details: General Washing/Process Washing Direct Source: Groundwaters Point: Borehole - Millstone Grit - Marsden Data Type: Point Name: Boustead	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 50 Original Application No: NPS/WR/017244 Original Start Date: 1/4/2015 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:
Not shown	1121	SW	404280 410490	Status: Active Licence No: 2/27/11/192/R01 Details: Spray Irrigation - Direct Direct Source: Groundwaters Point: Borehole - Millstone Grit - Marsden Data Type: Point Name: Boustead	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 50 Original Application No: NPS/WR/017244 Original Start Date: 1/4/2015 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1815	N	405000 413300	Status: Historical Licence No: 2/27/11/092 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring - Slaithwaite Hall Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 0043005 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	1815	N	405000 413300	Status: Historical Licence No: 2/27/11/092 Details: General Farming & Domestic Direct Source: Groundwaters Point: Slaithwaite Hall Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 43005 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	1815	N	405000 413300	Status: Active Licence No: 2/27/11/092 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring - Slaithwaite Hall Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): 15597 Max Daily Volume (m^3): 42.73 Original Application No: 430(5) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
Not shown	1977	E	406900 411900	Status: Historical Licence No: 2/27/11/099 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring-os Field 1816 Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 0043012 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	1977	E	406900 411900	Status: Historical Licence No: 2/27/11/099 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring-os Field 1816 Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 0043012 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	1977	E	406900 411900	Status: Historical Licence No: 2/27/11/099 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 43012 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	1977	E	406900 411900	Status: Active Licence No: 2/27/11/099 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring - Os Field 1816 Data Type: Point Name: THE DARTMOUTH YORKSHIRE ESTATE	Annual Volume (m^3): 7467 Max Daily Volume (m^3): 20.45 Original Application No: 430(12) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:

6.4 Surface Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
16A	118	N	404900 411600	Status: Historical Licence No: 2/27/11/101 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Wessenden Brook Data Type: Point Name: COLNE VALLEY SPINNING CO LTD	Annual Volume (m^3): 129688 Max Daily Volume (m^3): 545.52 Application No: 1623 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/6/1980 Version End Date:
17A	118	N	404900 411600	Status: Active Licence No: 2/27/11/101 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Wessenden Brook - Marsden Data Type: Point Name: COLNE VALLEY SPINNING CO LTD	Annual Volume (m^3): 129688 Max Daily Volume (m^3): 545.52 Application No: 1623 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/6/1980 Version End Date:
18	183	NE	405100 411600	Status: Active Licence No: 2/27/11/101 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Colne Data Type: Point Name: COLNE VALLEY SPINNING CO LTD	Annual Volume (m^3): 129688 Max Daily Volume (m^3): 545.52 Application No: 1623 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/6/1980 Version End Date:
19B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Tributary Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
20B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Tributary Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
21B	237	SE	405000 411200	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
22B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Unnamed Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 01624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
23B	237	SE	405000 411200	Status: Active Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
24B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Tributary Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
25B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Unnamed Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
26B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Unnamed Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
27B	237	SE	405000 411200	Status: Historical Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Unnamed Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
28B	237	SE	405000 411200	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Tributary - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
29C	419	S	404900 411000	Status: Historical Licence No: 2/27/11/101 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Scout Stream Data Type: Point Name: COLNE VALLEY SPINNING CO LTD	Annual Volume (m^3): 129688 Max Daily Volume (m^3): 545.52 Application No: 1623 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/6/1980 Version End Date:
30C	419	S	404900 411000	Status: Active Licence No: 2/27/11/101 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Scout Stream - Marsden Data Type: Point Name: COLNE VALLEY SPINNING CO LTD	Annual Volume (m^3): 129688 Max Daily Volume (m^3): 545.52 Application No: 1623 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/6/1980 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
31D	460	SE	405100 411000	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Binn Stream - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
32D	460	SE	405100 411000	Status: Active Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Binn Stream - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
33D	460	SE	405100 411000	Status: Historical Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Binn Stream Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
34D	460	SE	405100 411000	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Binn Stream - Marsden Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
35D	460	SE	405100 411000	Status: Historical Licence No: 2/27/11/102 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Binn Stream Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 01624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
36D	460	SE	405100 411000	Status: Historical Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Binn Stream Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
37D	460	SE	405100 411000	Status: Historical Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Binn Stream Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
38	603	NW	404400 411800	Status: Active Licence No: 2/27/11/053 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Colne Data Type: Point Name: S B HOMES LTD	Annual Volume (m^3): 145470 Max Daily Volume (m^3): 636 Application No: 689(1) Original Start Date: 20/1/1966 Expiry Date: - Issue No: 102 Version Start Date: 3/4/2002 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	653	S	404700 410800	Status: Historical Licence No: 2/27/11/102 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Wessenden Brook Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 01624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	653	S	404700 410800	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Wessenden Brook Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	653	S	404700 410800	Status: Active Licence No: 2/27/11/102 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface Water Point: Wessenden Brook Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	653	S	404700 410800	Status: Active Licence No: 2/27/11/102 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Wessenden Brook Data Type: Point Name: J E CROWTHER LTD	Annual Volume (m^3): 1652505.58 Max Daily Volume (m^3): 6787.32 Application No: 1624 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/4/1966 Version End Date:
Not shown	826	S	404800 410600	Status: Active Licence No: 2/27/11/065 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Butterley Reservoir Data Type: Point Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): 12410000 Max Daily Volume (m^3): 12410000 Application No: NPS/WR/012982 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 7/3/2013 Version End Date:
Not shown	826	S	404800 410600	Status: Historical Licence No: 2/27/11/065 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Spring - Butterley Reservoir Data Type: Point Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 0224601 & 0224602 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 19/12/1980 Version End Date:
Not shown	906	NE	405410 412270	Status: Active Licence No: 2/27/11/108 Details: Lake & Pond Throughflow Direct Source: Surface Water Point: River Colne-marsden Data Type: Point Name: Cellars Clough Properties Ltd	Annual Volume (m^3): 4091481 Max Daily Volume (m^3): 23939.7 Application No: NPS/WR/018590 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 104 Version Start Date: 4/3/2015 Version End Date:
Not shown	927	NE	405400 412300	Status: Historical Licence No: 2/27/11/108 Details: Lake & Pond Throughflow Direct Source: Surface Water Point: River Colne Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 00218 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 18/5/2002 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	927	NE	405400 412300	Status: Historical Licence No: 2/27/11/108 Details: Milling & Water power other than electricity generation Direct Source: Surface Water Point: River Colne Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	927	NE	405400 412300	Status: Historical Licence No: 2/27/11/108 Details: Lake & Pond Throughflow Direct Source: Surface Water Point: River Colne Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 18/5/2002 Version End Date:
Not shown	1293	NW	402800 411000	Status: Active Licence No: 2/27/11/064 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Scammonden Intakes And Catchwater In Colne S/c Data Type: Line Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): 5840000 Max Daily Volume (m^3): 5840000 Application No: NPS/WR/012983 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 101 Version Start Date: 7/3/2013 Version End Date:
Not shown	1304	NE	405800 412480	Status: Active Licence No: 2/27/11/108 Details: Lake & Pond Throughflow Direct Source: Surface Water Point: Park Gate Clough-marsden Data Type: Point Name: Cellars Clough Properties Ltd	Annual Volume (m^3): 4091481 Max Daily Volume (m^3): 23939.7 Application No: NPS/WR/018590 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 104 Version Start Date: 4/3/2015 Version End Date:
Not shown	1304	NE	405800 412480	Status: Historical Licence No: 2/27/11/109 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Park Gate Clough-marsden Data Type: Point Name: SMITH DEVELOPMENTS LTD	Annual Volume (m^3): 18184 Max Daily Volume (m^3): 72.7 Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/10/2004 Version End Date:
Not shown	1304	NE	405800 412480	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Park Gate Clough-marsden Data Type: Point Name: SMITH DEVELOPMENTS LTD	Annual Volume (m^3): 18184 Max Daily Volume (m^3): 72.7 Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/10/2004 Version End Date:
Not shown	1319	NE	405800 412500	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Park Gate Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 0021802 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	1319	NE	405800 412500	Status: Historical Licence No: 2/27/11/109 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Park Gate Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1319	NE	405800 412500	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Park Gate Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	1324	NE	406000 412300	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Cellars Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	1324	NE	406000 412300	Status: Historical Licence No: 2/27/11/109 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: Cellars Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	1324	NE	406000 412300	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Cellars Clough Data Type: Point Name: COOPER	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 0021802 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 29/5/1990 Version End Date:
Not shown	1341	NE	406030 412290	Status: Active Licence No: 2/27/11/108 Details: Lake & Pond Throughflow Direct Source: Surface Water Point: Cellars Clough-marsden Data Type: Point Name: Cellars Clough Properties Ltd	Annual Volume (m^3): 4091481 Max Daily Volume (m^3): 23939.7 Application No: NPS/WR/018590 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 104 Version Start Date: 4/3/2015 Version End Date:
Not shown	1341	NE	406030 412290	Status: Historical Licence No: 2/27/11/109 Details: Boiler Feed Direct Source: Surface Water Point: Cellars Clough-marsden Data Type: Point Name: SMITH DEVELOPMENTS LTD	Annual Volume (m^3): 18184 Max Daily Volume (m^3): 72.7 Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/10/2004 Version End Date:
Not shown	1341	NE	406030 412290	Status: Historical Licence No: 2/27/11/109 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: Cellars Clough-marsden Data Type: Point Name: SMITH DEVELOPMENTS LTD	Annual Volume (m^3): 18184 Max Daily Volume (m^3): 72.7 Application No: 218(2) Original Start Date: 28/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/10/2004 Version End Date:
Not shown	1597	NE	406100 412600	Status: Historical Licence No: 2/27/11/110 Details: Milling & Water Power Other Than Electricity Generation Direct Source: Surface Water Point: River Colne Data Type: Point Name: LILA HURST LTD	Annual Volume (m^3): 110013 Max Daily Volume (m^3): 287.76 Application No: 219 Original Start Date: 28/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 4/9/1987 Version End Date:

6.5 Potable Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	826	S	404800 410600	Status: Active Licence No: 2/27/11/065 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Butterley Reservoir Data Type: Point Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): 12410000 Max Daily Volume (m^3): 12410000 Original Application No: NPS/WR/012982 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	826	S	404800 410600	Status: Historical Licence No: 2/27/11/065 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Spring - Butterley Reservoir Data Type: Point Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 0224601 & 0224602 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1293	NW	402800 411000	Status: Active Licence No: 2/27/11/064 Details: Potable Water Supply - Direct Direct Source: Surface Water Point: Scammonden Intakes And Catchwater In Colne S/c Data Type: Line Name: YORKSHIRE WATER SERVICES LTD	Annual Volume (m^3): 5840000 Max Daily Volume (m^3): 5840000 Original Application No: NPS/WR/012983 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:

6.6 Source Protection Zones

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

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
410	SE	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

6.9 River Quality

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

6.9.1 Biological Quality:

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

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

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
102F	246	NW	404800 411700	River Name: Colne Reach: Haigh Reservoir Embawessenden Brook End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
103F	246	NW	404800 411700	River Name: Wessenden Brook Reach: Butterley Reservoir River Colne End/Start of Stretch: End of Stretch NGR	D	C	C	C	C
Not shown	925	S	404800 410500	River Name: Wessenden Brook Reach: Butterley Reservoir River Colne End/Start of Stretch: Start of Stretch NGR	D	C	C	C	C

6.9.2 Chemical Quality:

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

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

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
105F	246	NW	404800 411700	River Name: River Colne Reach: Wessenden Brook Lingards Woods End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A

6.10 Detailed River Network

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

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

ID	Distance (m)	Direction	Details	
1	0	On Site	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
2	121	NW	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
3	147	SW	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
4A	152	N	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
5A	152	N	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
6	153	W	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
7	153	W	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
8	164	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
9	164	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
10	165	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
11	167	SW	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
12	182	N	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
13	182	N	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
14	207	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
15	208	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
16	208	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
17	217	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
18	238	N	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
19	242	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
20	266	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
21	280	NE	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
22	284	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
23	307	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
24	312	N	River Name: Huddersfield Narrow Canal Welsh River Name: - Alternative Name: -	River Type: Canal Main River Status: Currently Undefined
25B	352	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
26B	352	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
27	379	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
28	388	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
29	422	NW	River Name: Huddersfield Narrow Canal Welsh River Name: - Alternative Name: -	River Type: Canal Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
30	435	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
31	436	S	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
32	451	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
33	464	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
34C	478	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
35C	478	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
36	478	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
37	481	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
38D	485	S	River Name: Wessenden Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
39	489	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
40	499	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
41E	499	NW	River Name: River Colne Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

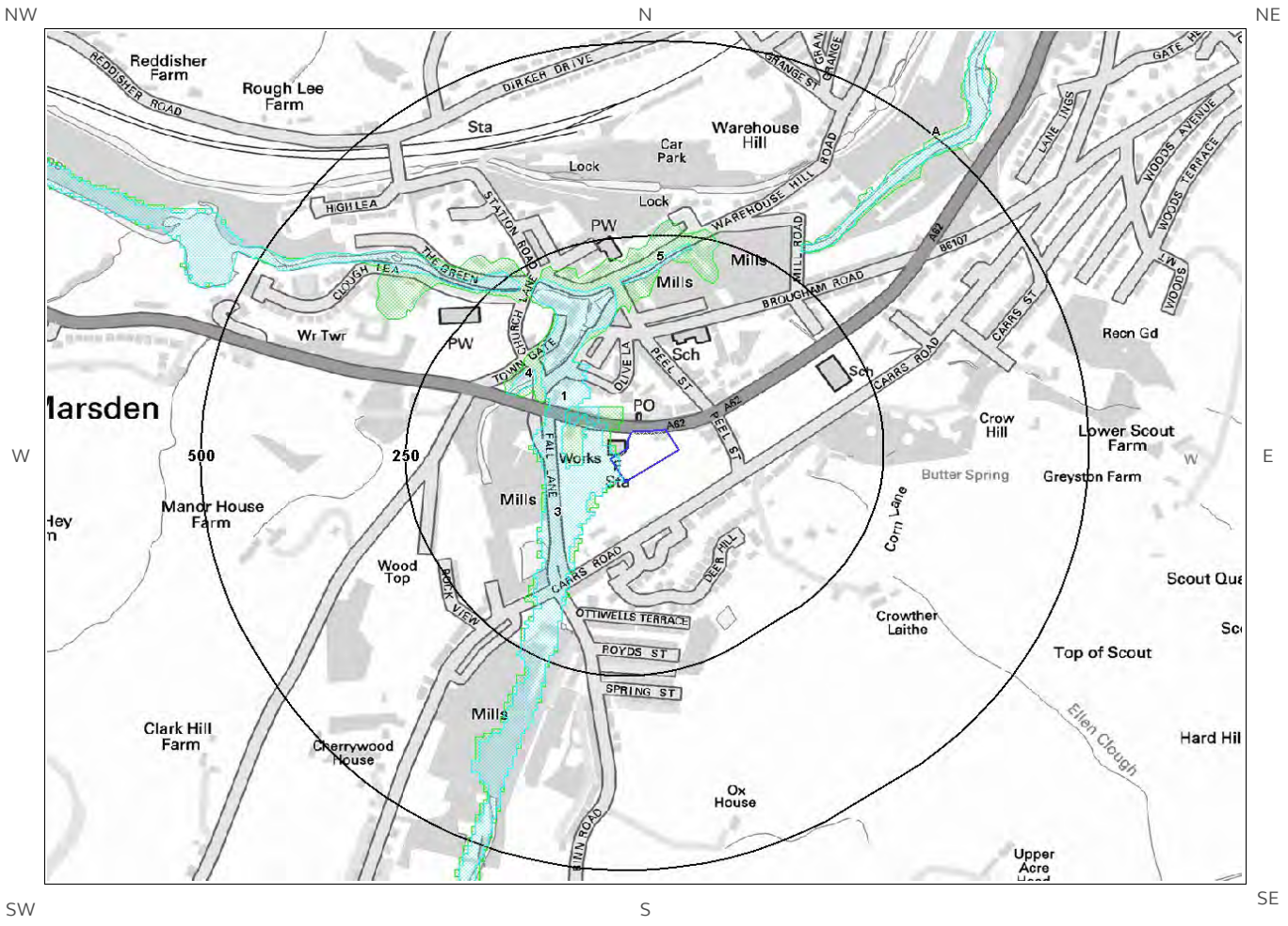
6.11 Surface Water Features

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

The following surface water records are not represented on mapping:

Distance (m)	Direction
119	NW
127	SW
134	NW
148	W
164	E
190	N
229	NW

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



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

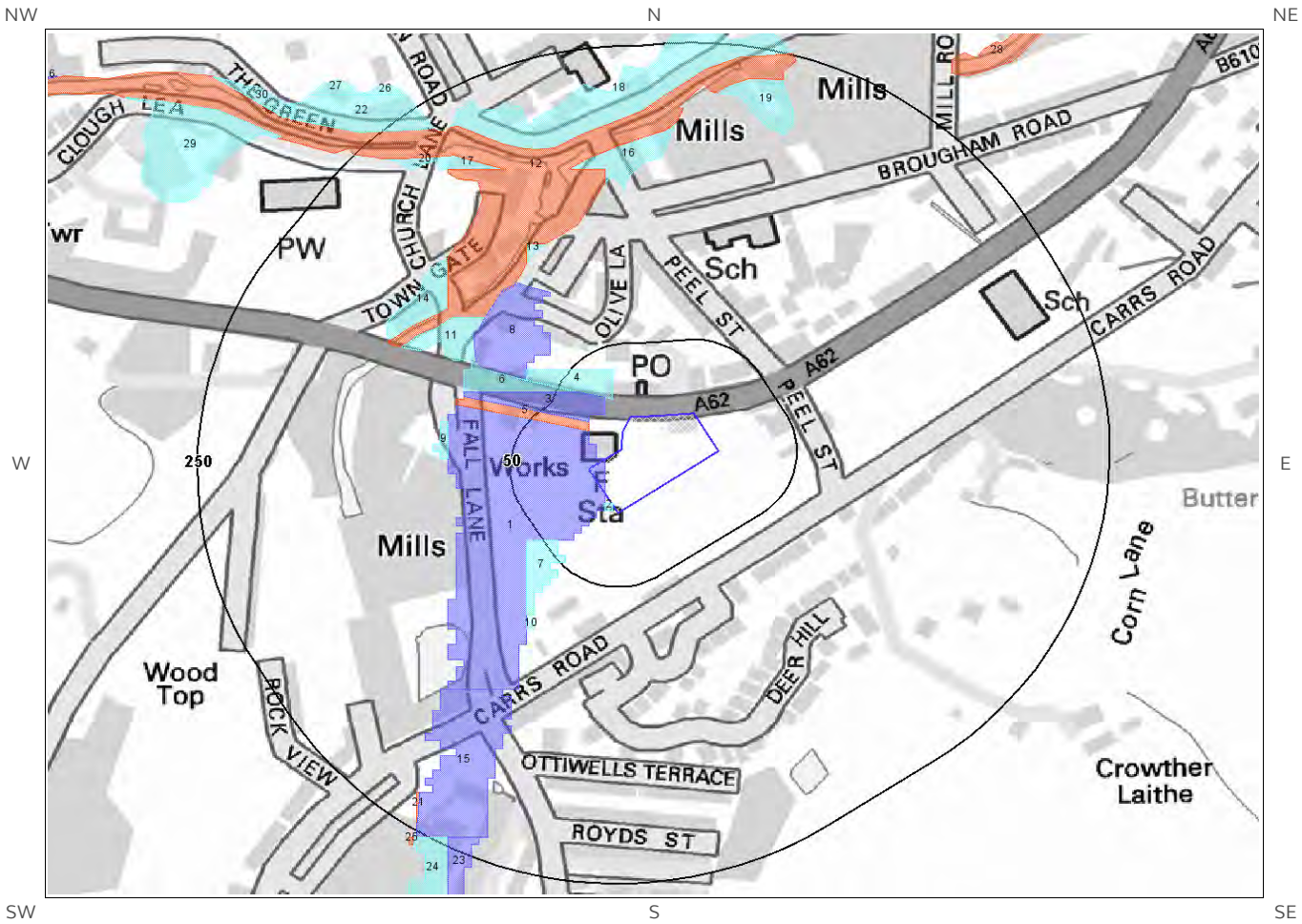
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

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



Site Outline

100 / 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

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

ID	Distance (m)	Direction	Update	Type
1	0	On Site	17-Aug-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

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

ID	Distance (m)	Direction	Update	Type
1	0	On Site	22-Aug-2017	Zone 3 - (Fluvial Models)
	133	NW	22-Aug-2017	Zone 3 - (Fluvial Models)
	190	N	22-Aug-2017	Zone 3 - (Fluvial Models)
	229	NW	22-Aug-2017	Zone 3 - (Fluvial Models)

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

What is the highest risk of flooding onsite? Medium

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

RoFRaS data for the study site indicates the property is in an area with a Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Medium
2	0.0	On Site	Low
3	16.0	NW	Medium
4	17.0	NW	Low
5	22.0	W	High
6	37.0	NW	Low
7	42.0	SW	Low

7.4 Flood Defences

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

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

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

7.6 Areas benefiting from Flood Storage

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

7.7 Groundwater Flooding Susceptibility Areas

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

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

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

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

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

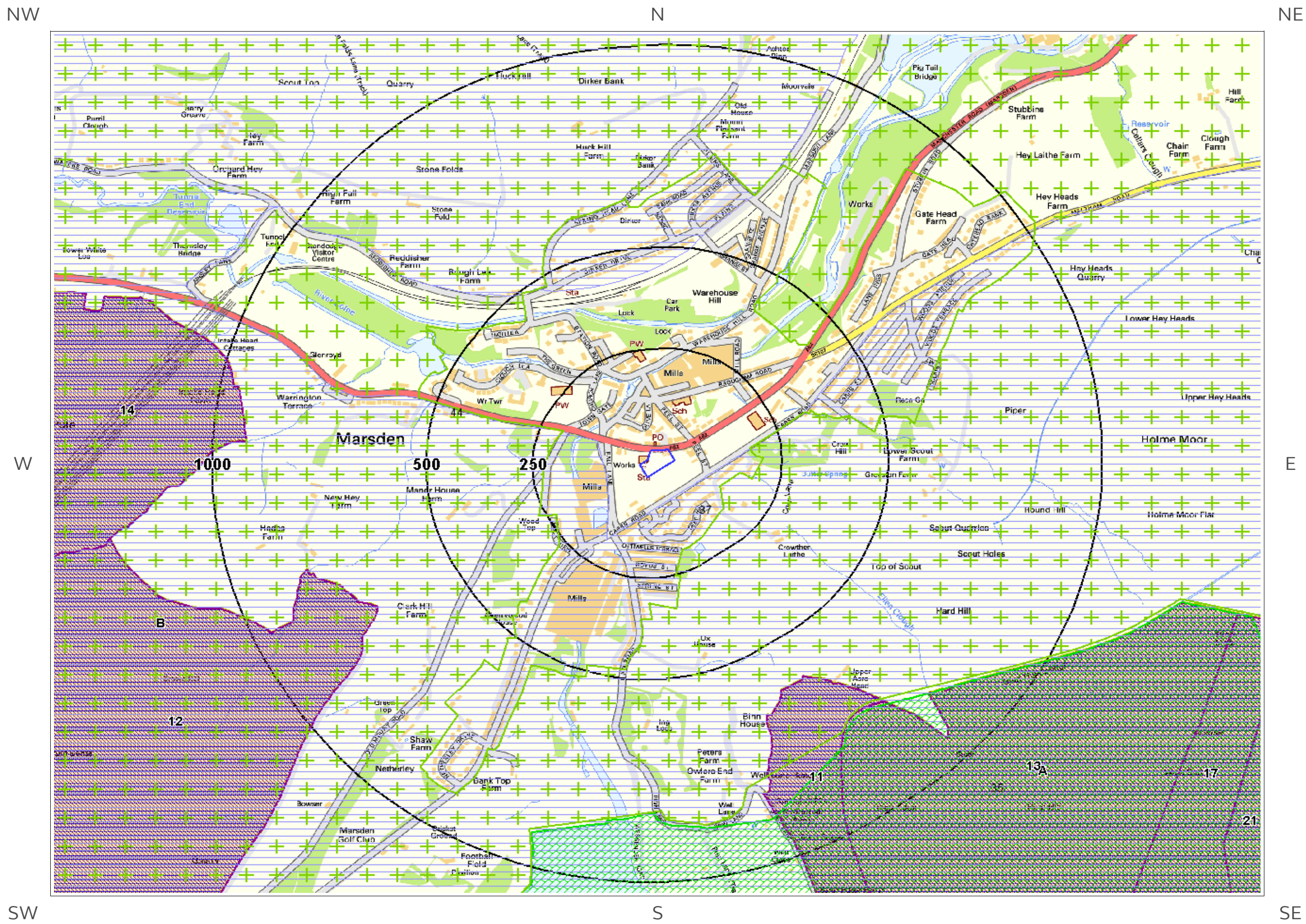
7.8 Groundwater Flooding Confidence Areas

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

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

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

8. Designated Environmentally Sensitive Sites Map



8. Designated Environmentally Sensitive Sites

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

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

24

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

ID	Distance (m)	Direction	SSSI Name	Data Source
11	610	SE	Dark Peak	Natural England
12	705	SW	South Pennine Moors	Natural England
13	753	SE	Dark Peak	Natural England
14	921	W	South Pennine Moors	Natural England
Not shown	1110	S	Dark Peak	Natural England
Not shown	1219	N	South Pennine Moors	Natural England
17	1369	E	Dark Peak	Natural England
Not shown	1419	S	Dark Peak	Natural England
Not shown	1443	SW	Dark Peak	Natural England
Not shown	1458	SW	Dark Peak	Natural England
21	1498	E	Dark Peak	Natural England
Not shown	1540	SW	Dark Peak	Natural England
Not shown	1574	SE	Dark Peak	Natural England
Not shown	1600	SW	Dark Peak	Natural England
Not shown	1621	SE	Dark Peak	Natural England
Not shown	1698	NW	South Pennine Moors	Natural England
Not shown	1758	SE	Dark Peak	Natural England
Not shown	1792	N	South Pennine Moors	Natural England
Not shown	1806	SW	Dark Peak	Natural England

ID	Distance (m)	Direction	SSSI Name	Data Source
Not shown	1827	W	South Pennine Moors	Natural England
Not shown	1858	W	South Pennine Moors	Natural England
Not shown	1899	S	Dark Peak	Natural England
Not shown	1964	SW	Dark Peak	Natural England
Not shown	1994	SE	Dark Peak	Natural England

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

0

Database searched and no data found.

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

5

The following Special Area of Conservation (SAC) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SAC Name	Data Source
1A	610	SE	South Pennine Moors	Natural England
2B	705	SW	South Pennine Moors	Natural England
Not shown	1110	S	South Pennine Moors	Natural England
Not shown	1219	N	South Pennine Moors	Natural England
Not shown	1419	S	South Pennine Moors	Natural England

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

5

The following Special Protection Area (SPA) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SPA Name	Data Source
6A	609	SE	Peak District Moors (South Pennine Moors Phase 1)	Natural England
7B	704	SW	South Pennine Moors Phase 2	Natural England

ID	Distance (m)	Direction	SPA Name	Data Source
Not shown	1108	S	Peak District Moors (South Pennine Moors Phase 1)	Natural England
Not shown	1221	N	South Pennine Moors Phase 2	Natural England
Not shown	1419	S	Peak District Moors (South Pennine Moors Phase 1)	Natural England

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

0

Database searched and no data found.

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

5

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

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1222	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1288	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1662	SE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1662	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1745	S	UNKNOWN	Ancient and Semi-Natural Woodland

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	ESA Name	Data Source
37	73	SE	North Peak	Natural England
Not shown	1419	S	North Peak	Natural England

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NP Name	Data Source
35	762	SE	Peak District	Natural England
Not shown	1419	S	Peak District	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
44	123	SE	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

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

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

Hazard
Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

9.1.3 Soluble Rocks

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

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

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

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

9.1.4 Compressible Ground

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

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

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

9.1.5 Collapsible Rocks

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

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

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

9.1.6 Running Sand

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

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

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

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

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

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? Basic radon protective measures are necessary.

10. Mining

10.1 Coal Mining

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

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? Yes

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

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
27.0	E	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

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

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

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

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

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

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

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

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

Local Authority
Authority: Kirklees Council
Phone: 01484 221 000
Web: http://www.kirklees.gov.uk/
Address: Civic Centre 3, Market Street, Huddersfield, HD1 1WG

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

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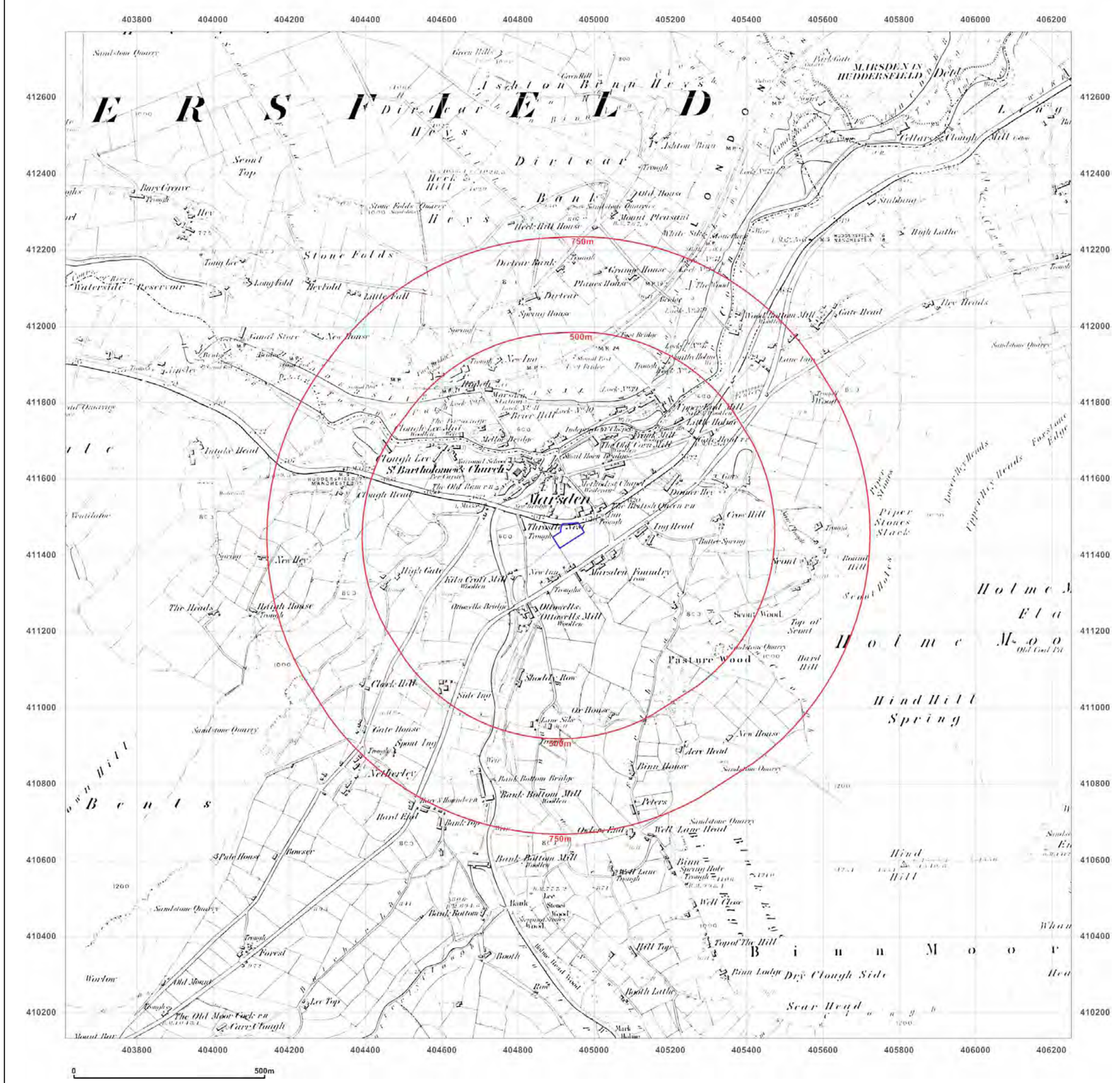

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INSIGHTS

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MANCHESTER ROAD,
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Report Ref:	GS-4463512
Grid Ref:	404931, 411452

Map Name:	County Series
Map date:	**1854**
Scale:	1:10,560
Printed at:	1:10,560

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Surveyed 1850
Revised N/A
Edition 1854
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Levelled 1853

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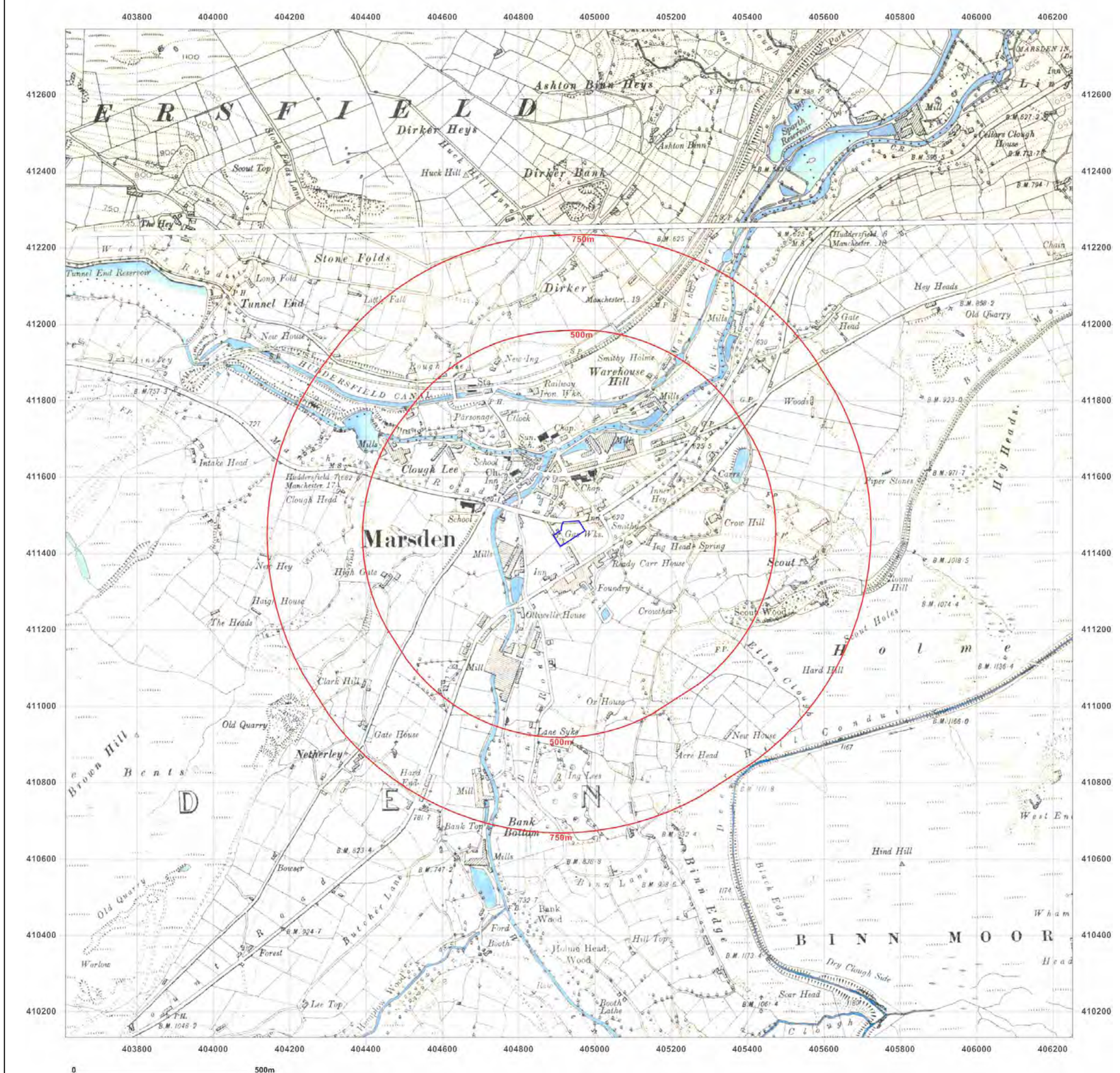

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Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1890**

Scale: 1:10,560

Printed at: 1:10,560

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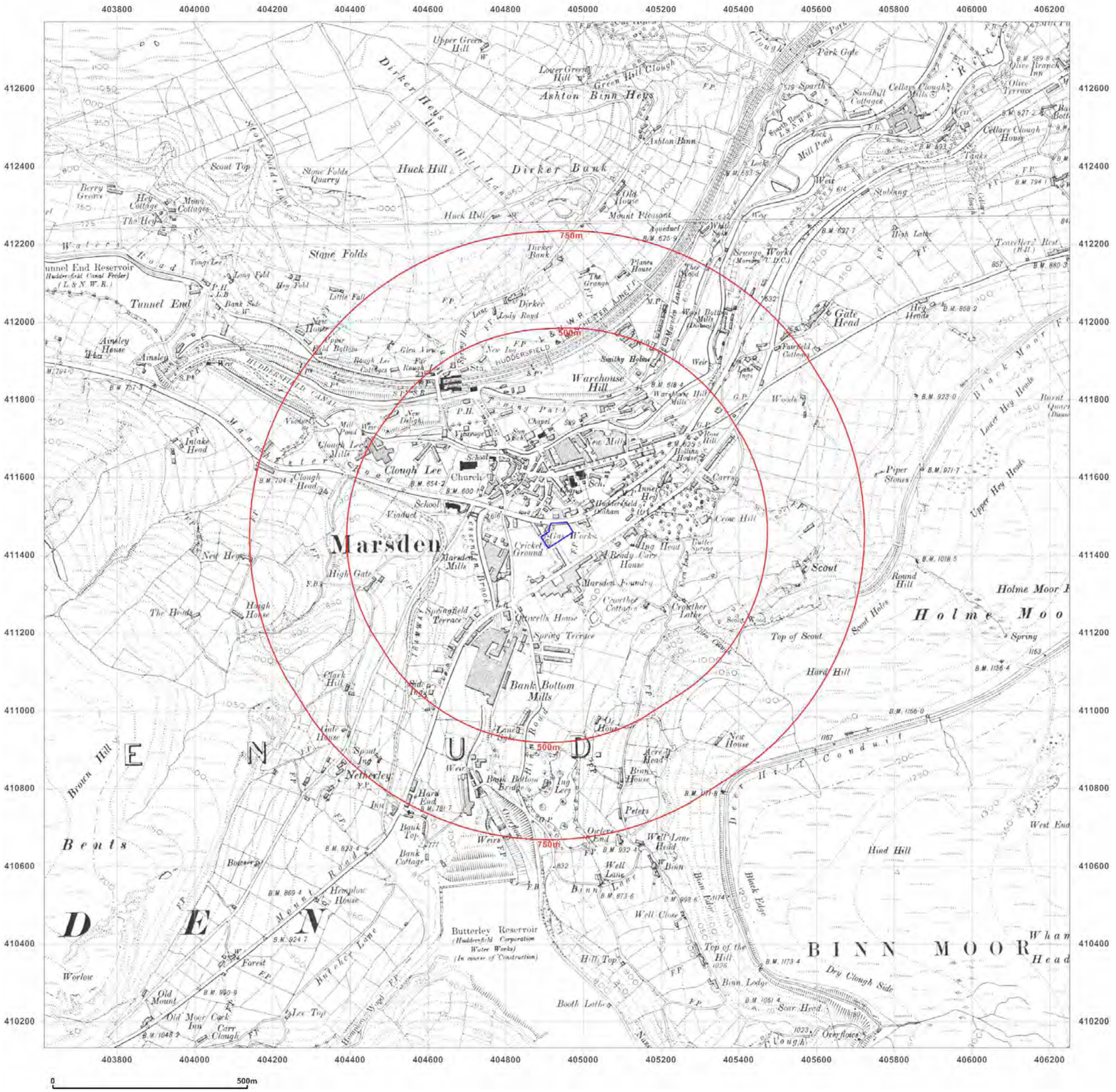

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Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1904**

Scale: 1:10,560

Printed at: 1:10,560

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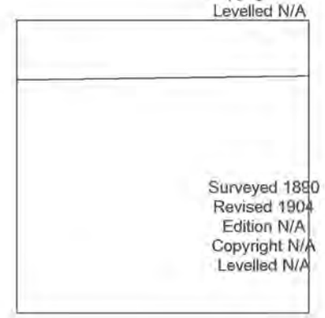
Surveyed 1890
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



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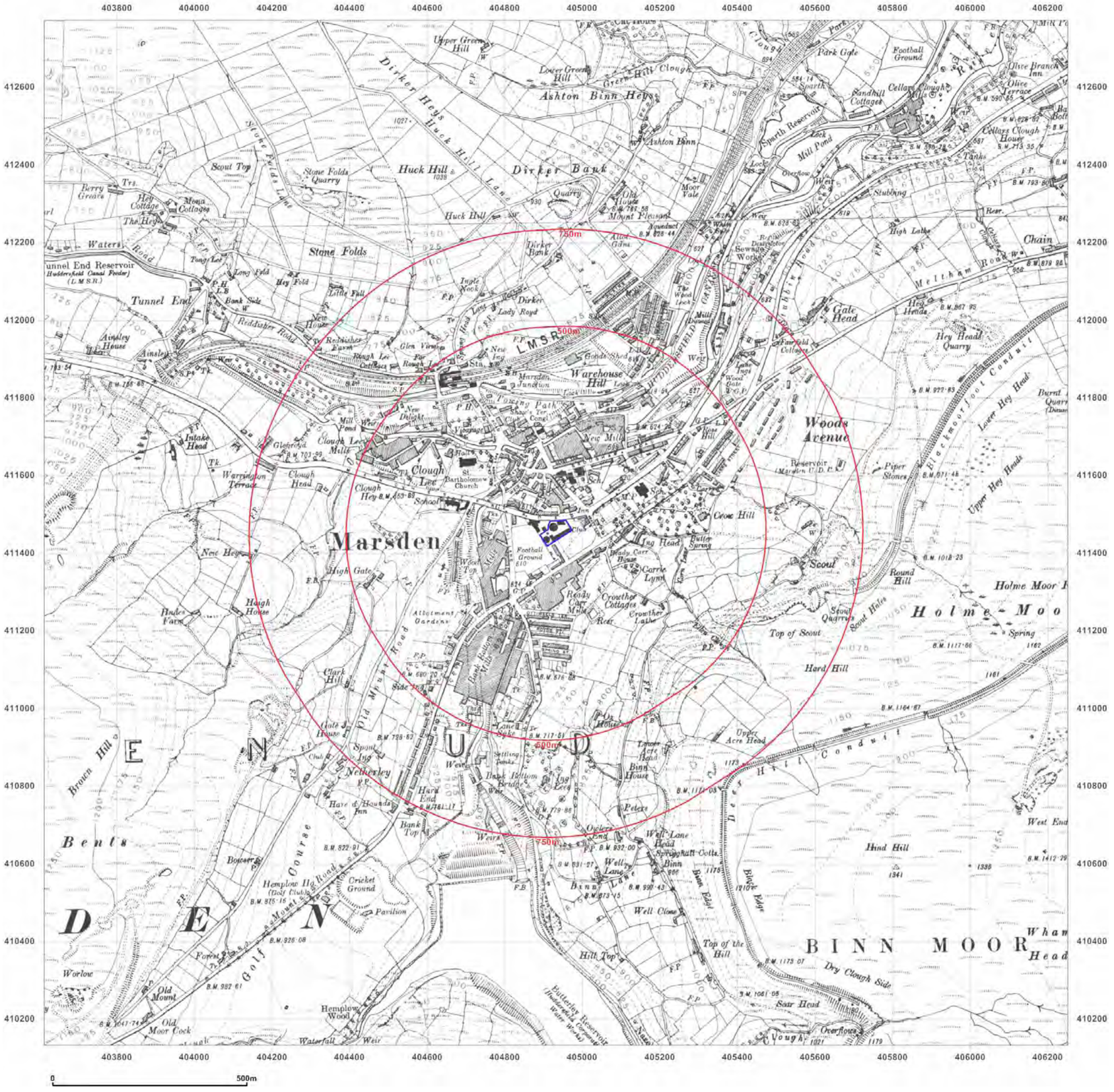

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Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1930**

Scale: 1:10,560

Printed at: 1:10,560

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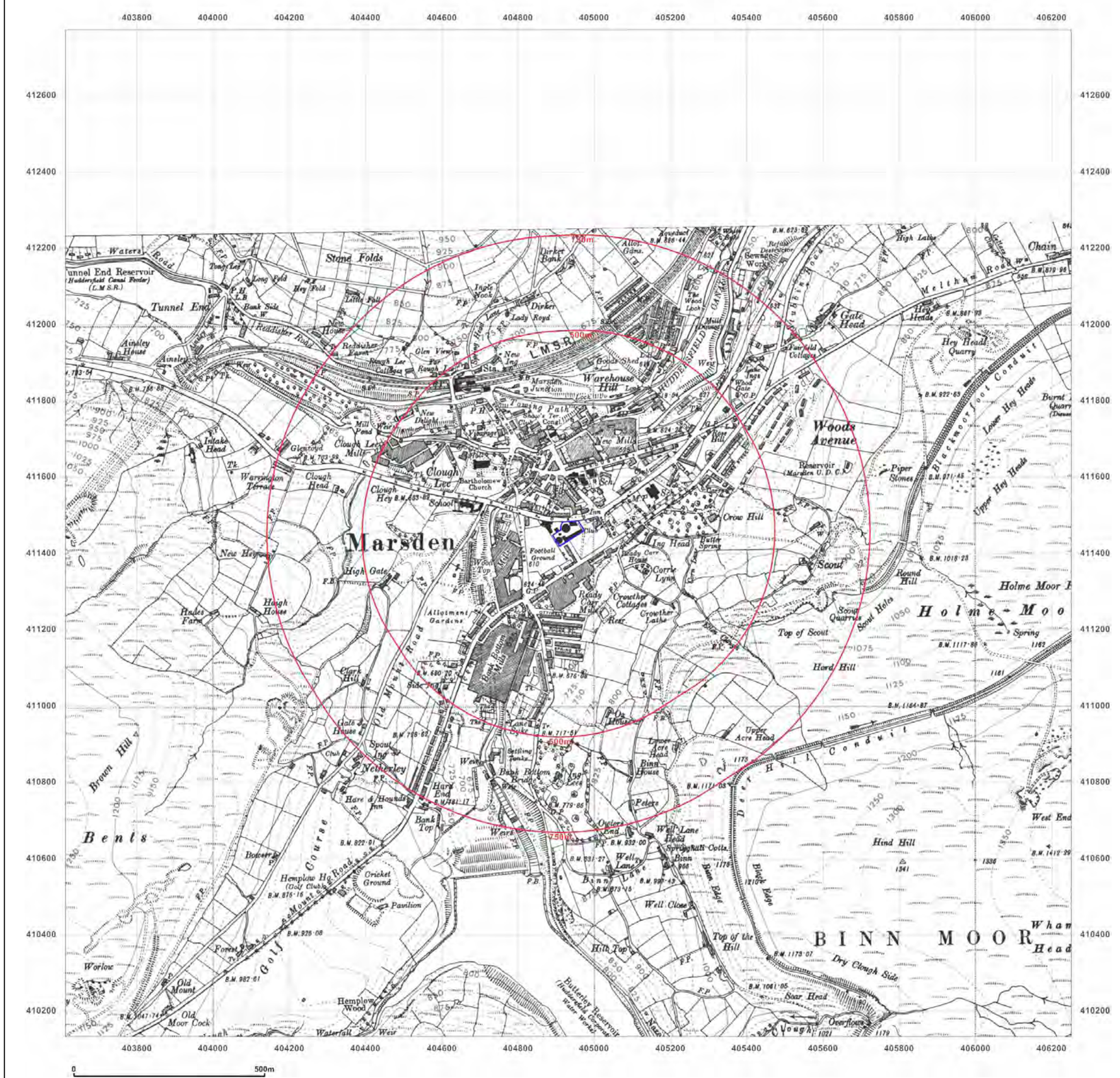

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Printed at:	1:10,560

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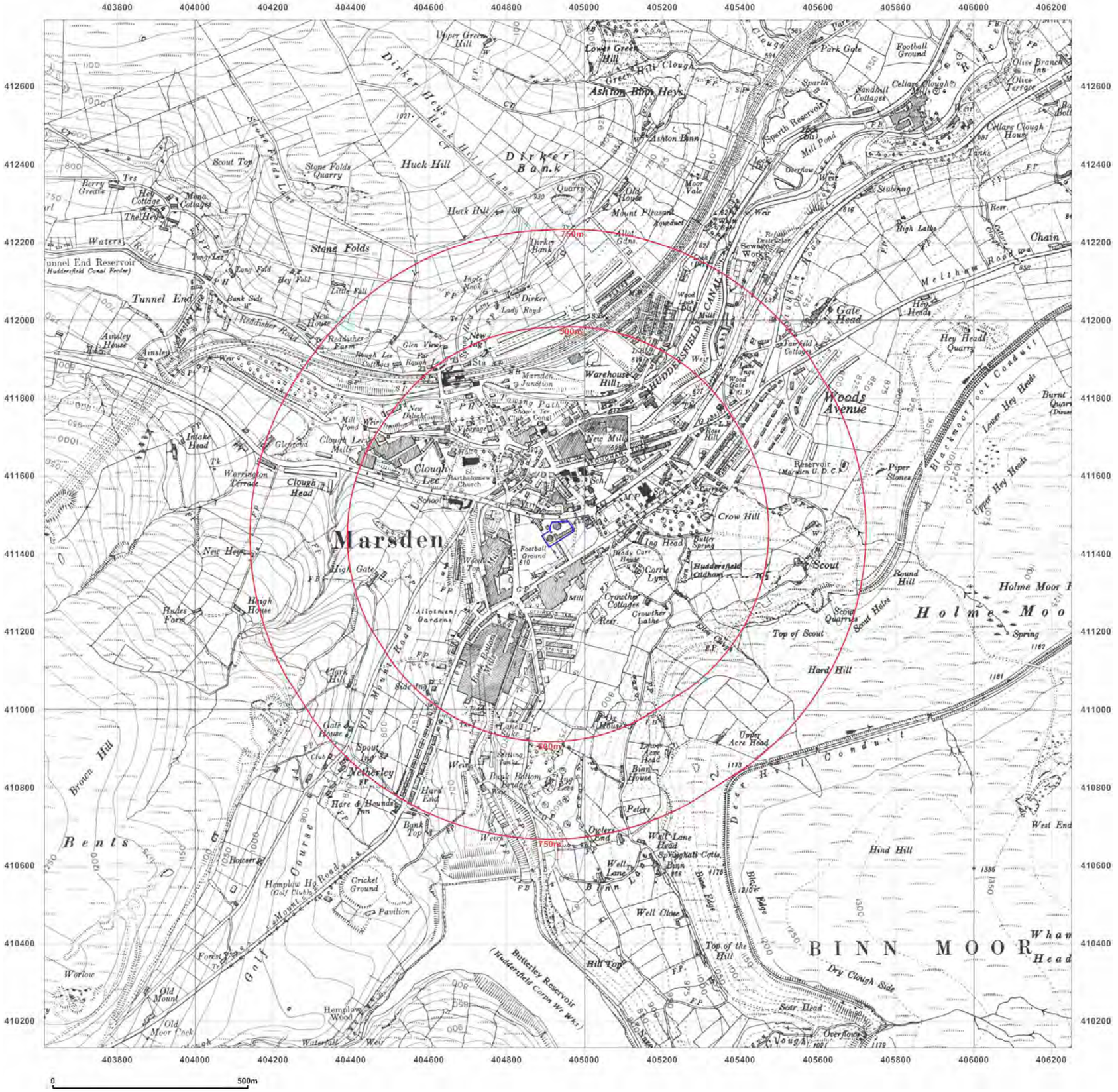

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Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

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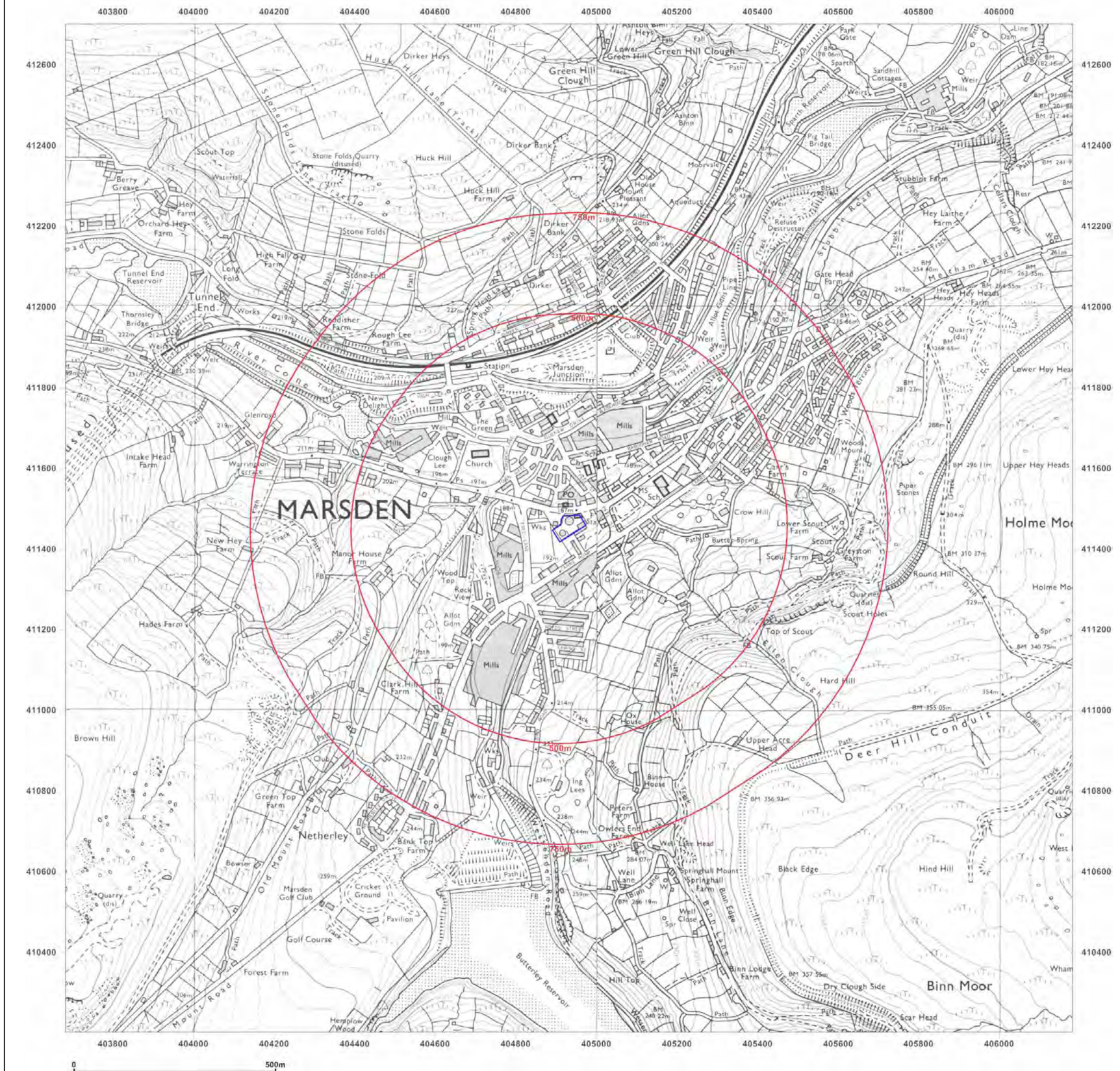

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Scale:	1:10,000
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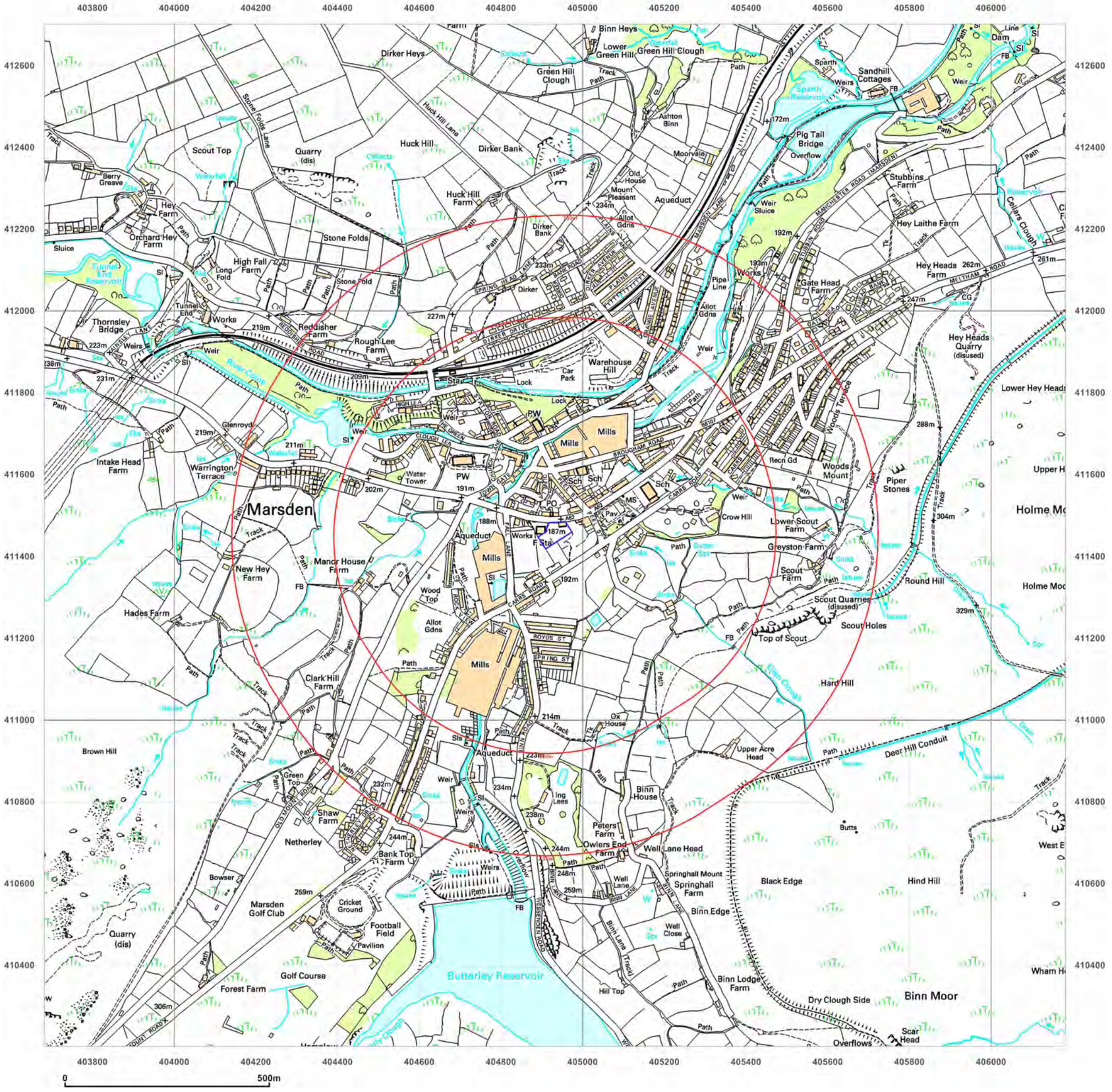

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Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

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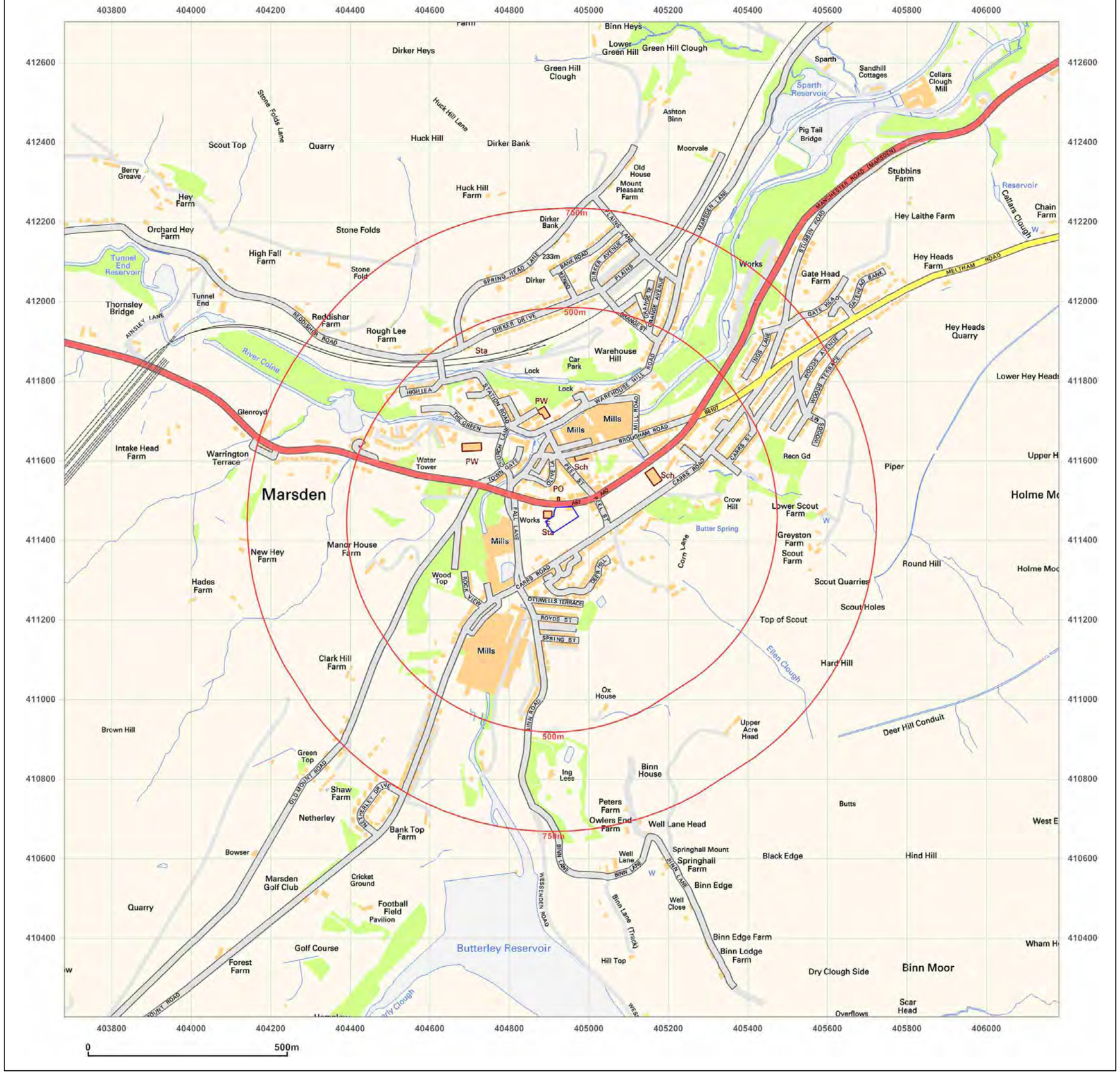

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Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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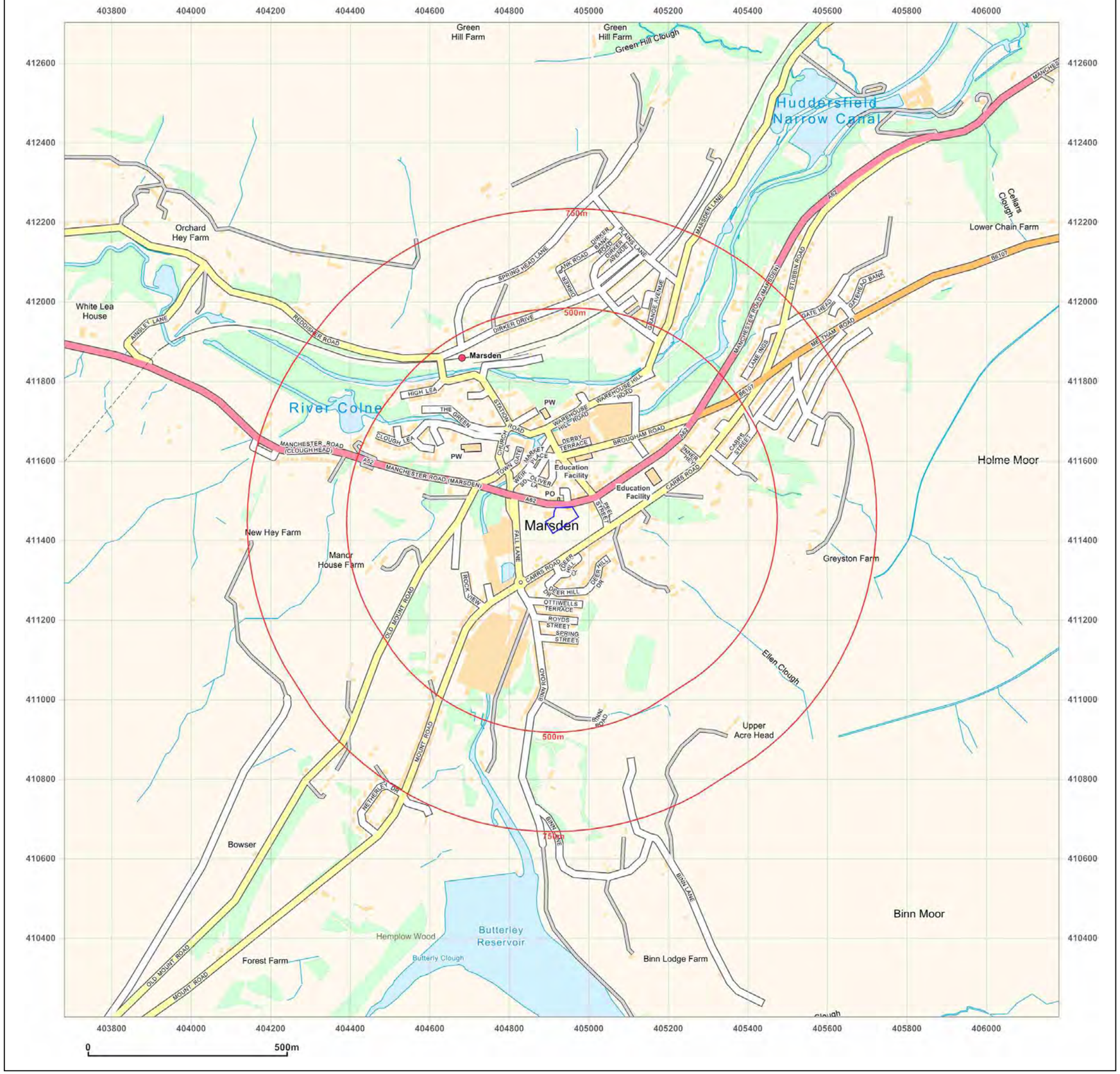

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Site Details:

MANCHESTER ROAD,
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HUDDERSFIELD, HD7 5JX

Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

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SLAITHWAITE,
HUDDERSFIELD, HD7 5JX

Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1892
Revised 1892
Edition N/A
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Levelled N/A

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Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1906**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1906
Revised 1906
Edition N/A
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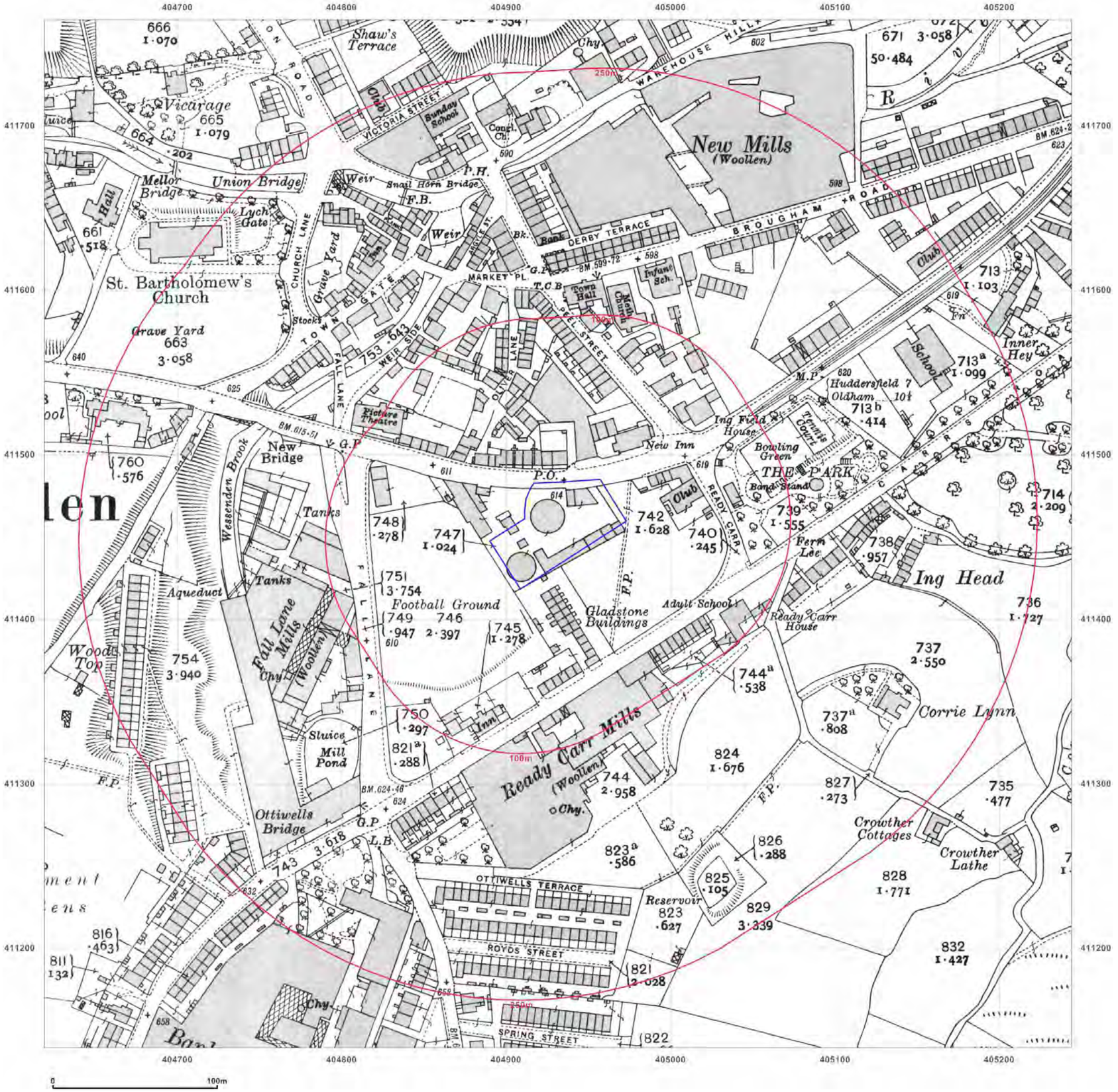

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Site Details:

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HUDDERSFIELD, HD7 5JX

Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1932
Revised 1932
Edition N/A
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Levelled N/A

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Site Details:

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Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1967
Revised 1967
Edition N/A
Copyright 1968
Levelled 1966

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Site Details:

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Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **1988-1993**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1966	Surveyed N/A
Revised 1988	Revised N/A
Edition N/A	Edition N/A
Copyright 1988	Copyright 1993
Levelled 1966	Levelled N/A

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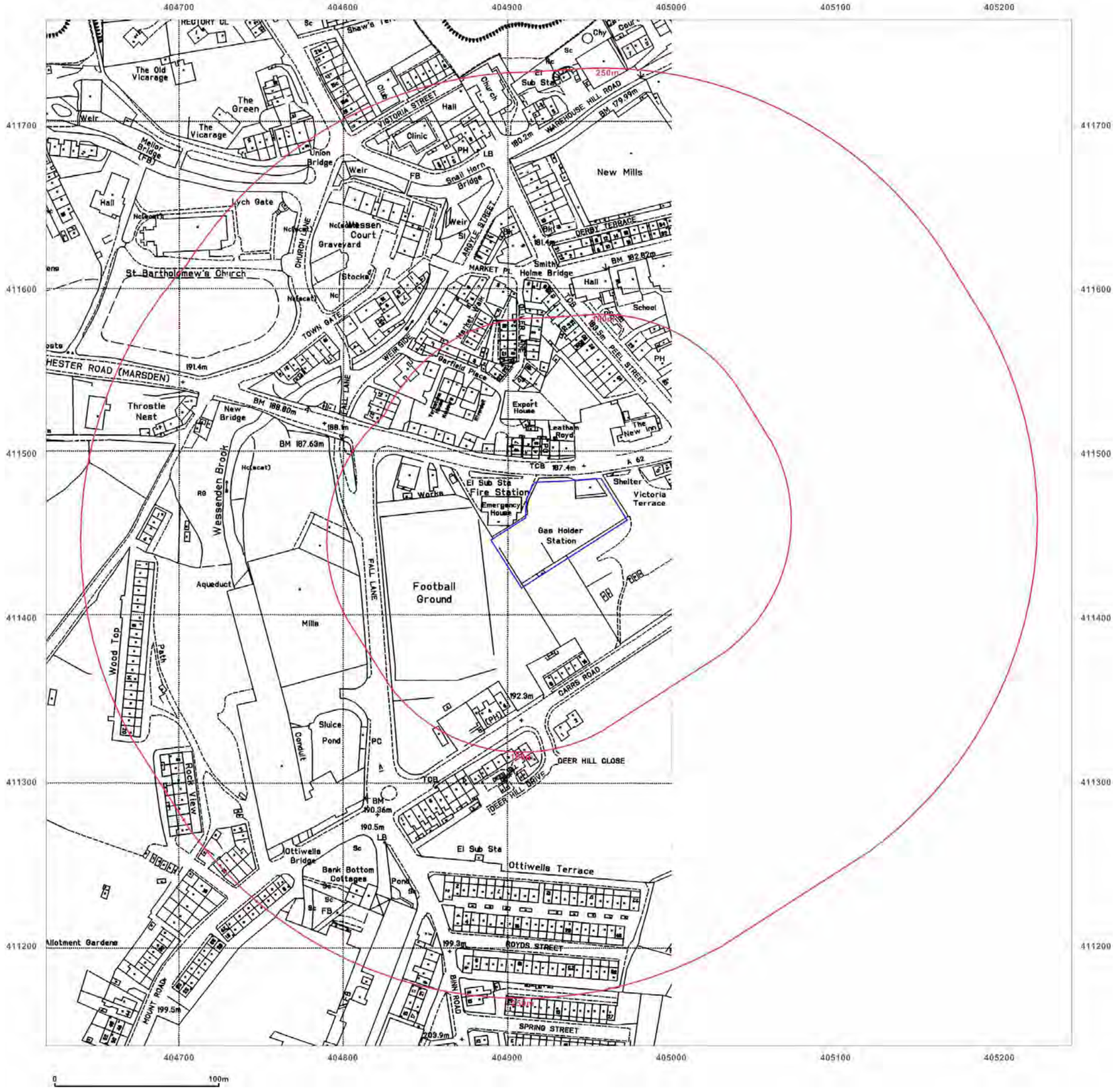

Groundsure INSIGHTS

Site Details:

MANCHESTER ROAD,
SLAITHWAITE,
HUDDERSFIELD, HD7 5JX

Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

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Site Details:

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Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **1993-1995**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A	Surveyed 1995
Revised N/A	Revised N/A
Edition N/A	Edition N/A
Copyright 1993	Copyright 1995
Levelled N/A	Levelled N/A

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Groundsure INSIGHTS

Site Details:

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HUDDERSFIELD, HD7 5JX

Client Ref: SB_HOMES_7092
Report Ref: GS-4463512
Grid Ref: 404931, 411452

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed 1995
Revised 1995
Edition N/A
Copyright 1995
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APPENDIX D

POTENTIAL CONTAMINANTS

Table 1.1: Summary of the principal waste types at gasworks sites (Source: Adapted from Department of Environment & Conservation, New South Wales 2005)

Principal waste type	**Source**	**Distinguishing characteristics**	**Likely chemical groups**
Coal tar Tar oils	Separated from gas and liquors at various stages of the purification processes.	Dark brown to black colour Strong phenolic odour May be present as non-aqueous phase liquids, either dense (DNAPLs) or light (LNAPLs) Lower melting point than petroleum tars Different phases have low to high density and viscosity	PAHs Petroleum hydrocarbons, including BTEX Phenols
Spent oxides (including complex cyanides)	Used to remove sulphur during gas purification.	Strong sulphurous odour Distinctive Prussian blue or Berlin green colour when weathered/oxidised Brown/grey/black/green, very dusty when not weathered/oxidised Granular appearance Iron staining common	Complex cyanides Free cyanides Metals Thiocyanate Sulphur (acidic forming sulphuric acid)
Ash, Clinker residues (glassy material)	By-products of carbonisation.	Fine granular material (ash) or glassy smooth irregular lumps. Brown to black	PAHs Metals
Coke, cokebreeze	Furnace residues.	Spongy granular material of low density. Light grey in colour	PAHs Metals
Light oils Drip oils	Light oils used around all machinery and as scrubbing agent in recovery process. Drip oils condensed from gas	Oily smell and appearance	Petroleum hydrocarbons, including BTEX
Ammoniacal recovery wastes	Nitrogen removal during gas purification processes	Ammoniacal odours Fine powders or sludges	Phenols, ammonium compounds, nitrates, sulphates, sulphides, PAHs and cyanides.
Asbestos	Used as lagging around many of the ‘hot’ processes and pipes. Commonly present in a wide range of Asbestos Containing Materials (ACMs) such as cement board and insulating board.	Fibrous to powdery texture, grey-white/blue/greenish colour (crystalline)	Asbestos
Lead, mercury, zinc	Lead from batteries, pipelines, paint, etc. Mercury sometimes used in metering switches.	Generally not visible other than mercury, which, where present, is a dense metallic silver liquid, typically seen as ‘pin heads’ in soil.	Metals

Table 1.2: Principal contaminants of interest at gasworks sites (Source: Adapted from Department of Environment & Conservation, New South Wales 2005)

Inorganic compounds	**Metals and metalloids**	**BTEXs**	**Phenolics**	**Polycyclic aromatic hydrocarbons (PAHs)**
Ammonia	Aluminium	Benzene	Phenol	Acenaphthene
Cyanide	Antimony	Ethyl benzene	2-Methylphenol	Acenaphthylene
Nitrate	Arsenic	Toluene	4-Methylphenol	Anthracene
Sulphate	Barium	Total xylenes	2,4-Dimethylphenol	Benzo(a)anthracene
Sulphide	Cadmium			Benzo(a)pyrene
Thiocyanate	Chromium			Benzo(b)fluoranthene
	Copper			Benzo(g,h,I)perylene
	Iron			Benzo(k)fluoranthene
	Lead			Chrysene
	Manganese			Dibenzo(a,h)anthracene
	Mercury			Fluoranthene
	Nickel			Fluorene
	Selenium			Naphthalene
	Silver			Phenanthrene
	Vanadium			Pyrene
	Zinc			Indeno (1,2,3-cd) pyrene