

Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid

Map date: 1974

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1974
Edition N/A
Copyright N/A
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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid
Map date: 1974-1975
Scale: 1:1,250
Printed at: 1:2,000



Surveyed 1959
Revised 1974
Edition N/A
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Surveyed 1959
Revised 1974
Edition N/A
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Surveyed 1958
Revised 1973
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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid

Map date: 1980

Scale: 1:10,000

Printed at: 1:10,000



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Revised 1980
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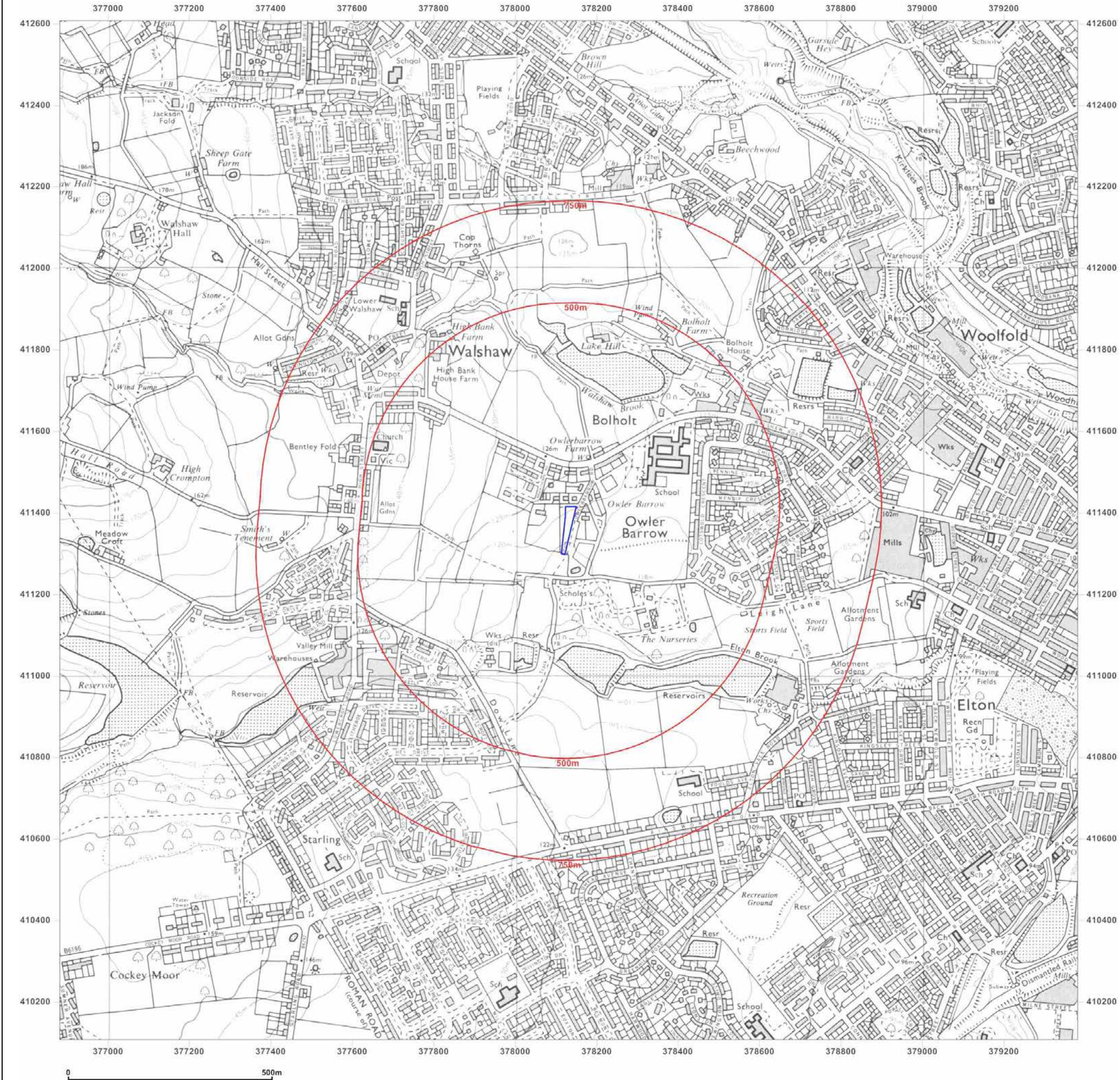


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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid
Map date: 1989-1992
Scale: 1:1,250
Printed at: 1:2,000



Surveyed 1962
Revised 1989
Edition N/A
Copyright 1989
Levelled 1962

Surveyed 1991
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1992
Revised 1992
Edition N/A
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Revised 1992
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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



2002



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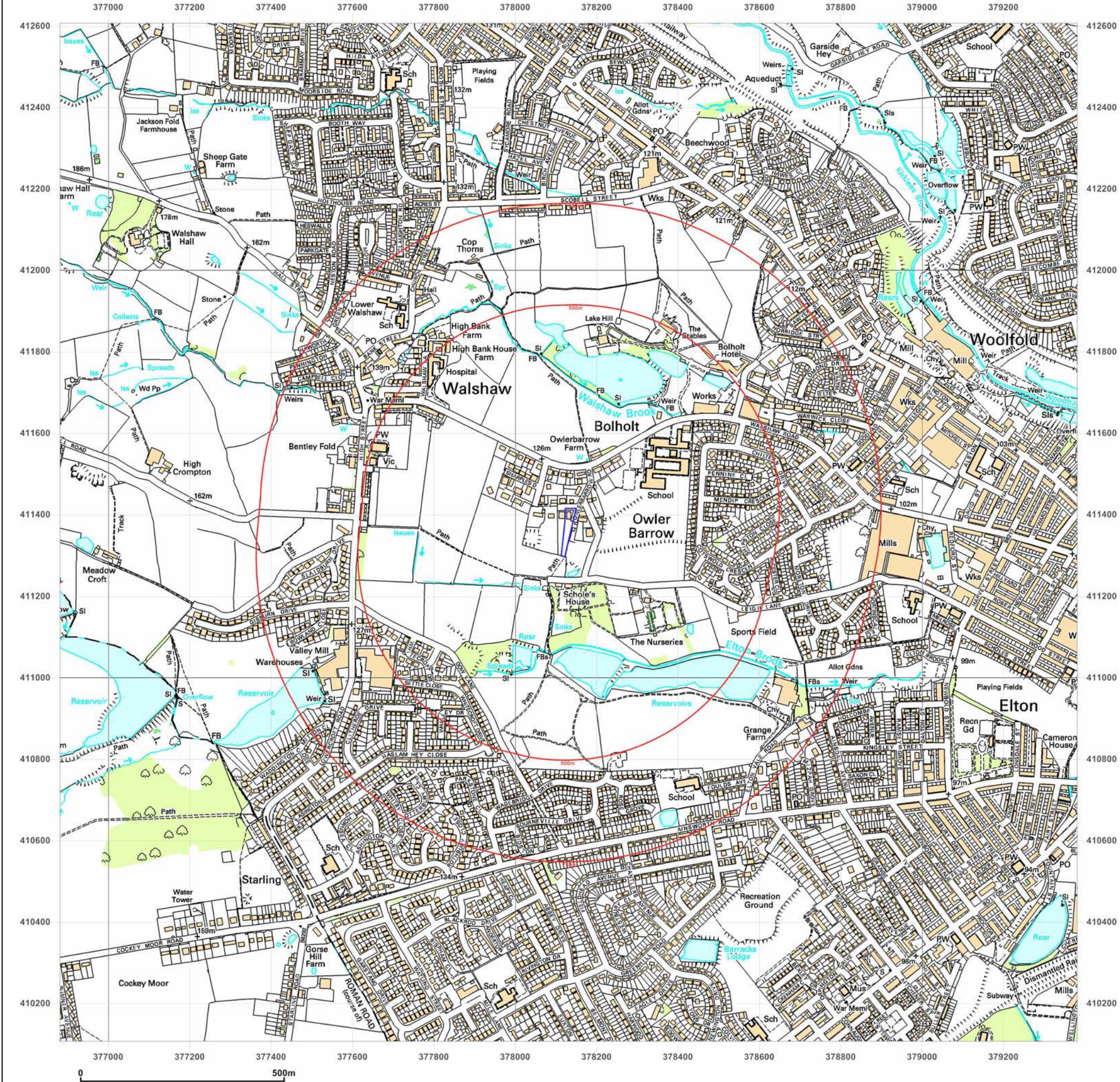


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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



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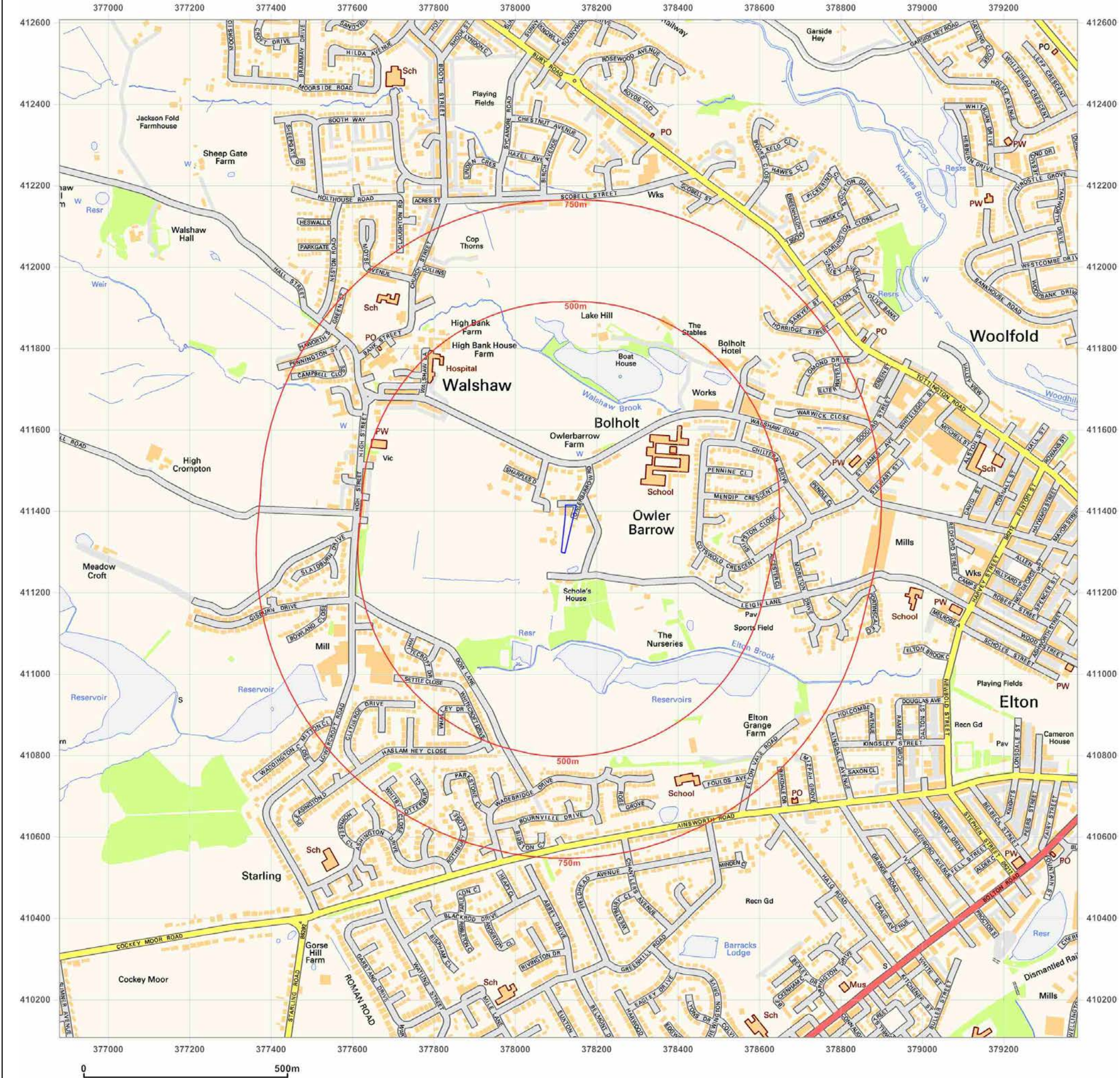


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Site Details:

Client Ref: EMS_467299_627436
Report Ref: EMS-DE-467299_627436
Grid Ref: 378131, 411357

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



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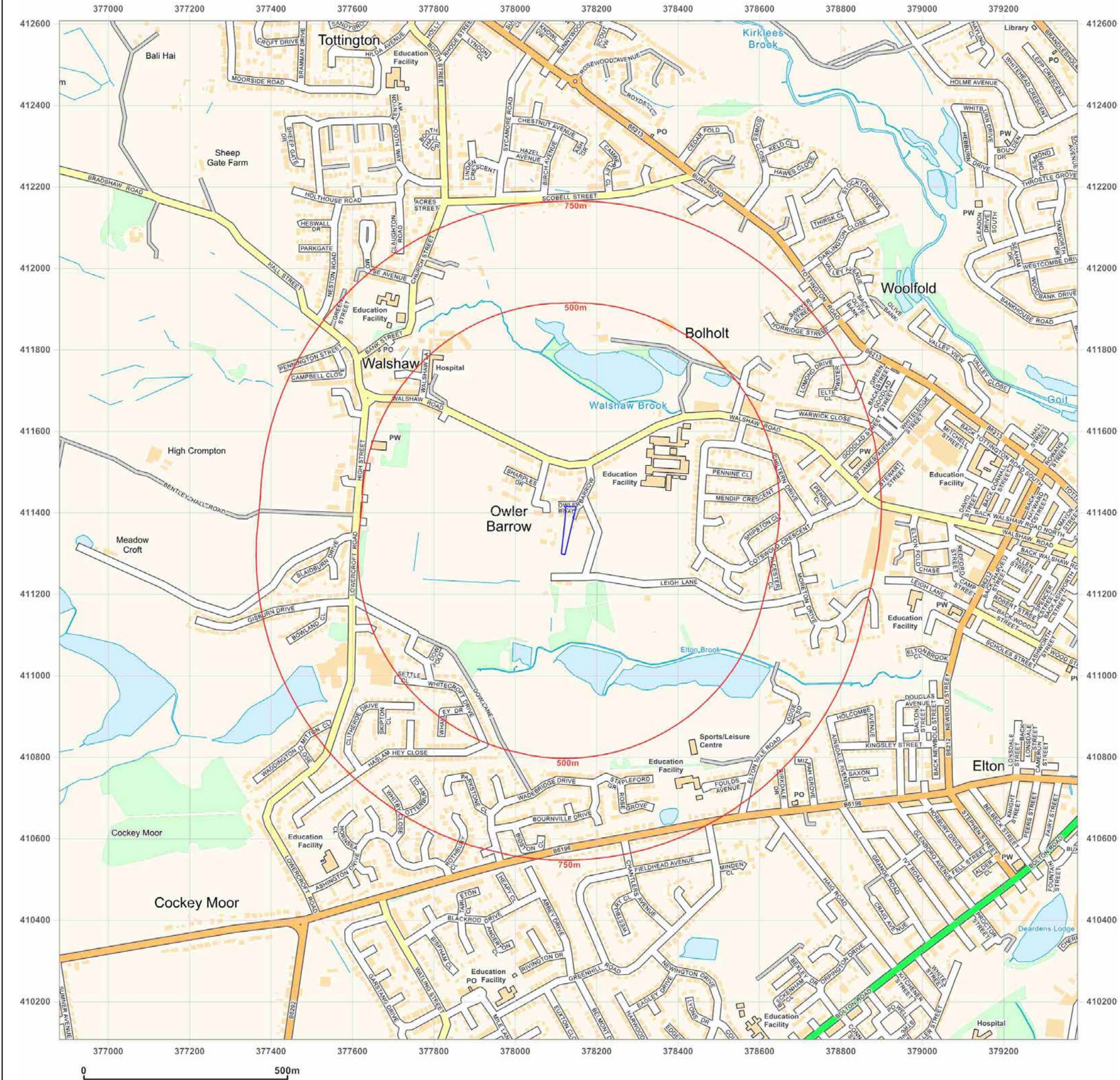


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Production date: 14 March 2018

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APPENDIX J: GROUNDSURE REPORTS

Demeter Environmental Ltd
Hanover House, Hanover Street,
Liverpool, L3 3DZ

Report Reference: EMS-DE-467299_627437

Your Reference: EMS_467299_627437

Report Date 14 Mar 2018

Report Delivery Method: Email - pdf

Geo Insight

Address: ,

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 159 000 quoting the above Groundsure reference number.

Yours faithfully,

Demeter Environmental ltd

Enc.
Groundsure Geo Insight

Address: ,
Date: 14 Mar 2018
Reference: EMS-DE-467299_627437
Client: Demeter Environmental Ltd



Aerial Photograph Capture date: 26-Mar-2012
Grid Reference: 378128,411367
Site Size: 0.20ha

Contents Page

Contents Page.....	3
Overview of Findings.....	5
1:10,000 Scale Availability.....	8
Availability of 1:10,000 Scale Geology Mapping.....	9
1 Geology (1:10,000 scale).....	10
1.1 Artificial Ground map (1:10,000 scale).....	10
1. Geology 1:10,000 scale.....	11
1.1 Artificial Ground.....	11
1.2 Superficial Deposits and Landslips map (1:10,000 scale).....	12
1.2 Superficial Deposits and Landslips.....	13
1.2.1 Superficial Deposits/ Drift Geology.....	13
1.2.2 Landslip.....	13
1.3 Bedrock and linear features map (1:10,000 scale).....	14
1.3 Bedrock and linear features.....	15
1.3.1 Bedrock/ Solid Geology.....	15
1.3.2 Linear features.....	16
2 Geology 1:50,000 Scale.....	18
2.1 Artificial Ground map.....	18
2. Geology 1:50,000 scale.....	19
2.1 Artificial Ground.....	19
2.1.1 Artificial/ Made Ground	19
2.1.2 Permeability of Artificial Ground.....	19
2.2 Superficial Deposits and Landslips map (1:50,000 scale).....	20
2.2 Superficial Deposits and Landslips.....	21
2.2.1 Superficial Deposits/ Drift Geology.....	21
2.2.2 Permeability of Superficial Ground	21
2.2.3 Landslip.....	21
2.2.4 Landslip Permeability.....	21
2.3 Bedrock and linear features map (1:50,000 scale).....	22
2.3 Bedrock, Solid Geology & linear features.....	23
2.3.1 Bedrock/Solid Geology.....	23
2.3.2 Permeability of Bedrock Ground.....	24
2.3.3 Linear features.....	25
3 Radon Data.....	26
3.1 Radon Affected Areas.....	26
3.2 Radon Protection.....	26
4 Ground Workings map.....	27
4 Ground Workings.....	28
4.1 Historical Surface Ground Working Features derived from Historical Mapping.....	28
4.2 Historical Underground Working Features derived from Historical Mapping.....	29
4.3 Current Ground Workings.....	30
5 Mining, Extraction & Natural Cavities.....	32
5.1 Historical Mining.....	32
5.2 Coal Mining.....	32
5.3 Johnson Poole and Bloomer.....	32
5.4 Non-Coal Mining.....	33
5.5 Non-Coal Mining Cavities.....	33
5.6 Natural Cavities.....	33
5.7 Brine Extraction.....	33
5.8 Gypsum Extraction.....	33
5.9 Tin Mining.....	34
5.10 Clay Mining.....	34
6 Natural Ground Subsidence.....	35
6.1 Shrink-Swell Clay map.....	35
6.2 Landslides map.....	36
6.3 Ground Dissolution of Soluble Rocks map.....	37
6.4 Compressible Deposits map.....	38
6.5 Collapsible Deposits map.....	39
6.6 Running Sand map.....	40

6 Natural Ground Subsidence.....	41
6.1 Shrink-Swell Clays.....	41
6.2 Landslides.....	41
6.3 Ground Dissolution of Soluble Rocks.....	41
6.4 Compressible Deposits.....	42
6.5 Collapsible Deposits.....	42
6.6 Running Sands.....	42
7 Borehole Records.....	44
8 Estimated Background Soil Chemistry.....	45
9 Railways and Tunnels map.....	46
9 Railways and Tunnels.....	47
9.1 Tunnels	47
9.2 Historical Railway and Tunnel Features	47
9.3 Historical Railways.....	48
9.4 Active Railways.....	48
9.5 Railway Projects.....	48

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?*	Yes
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	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?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

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

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

Yes

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

Yes

Section 3: Radon

3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

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

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

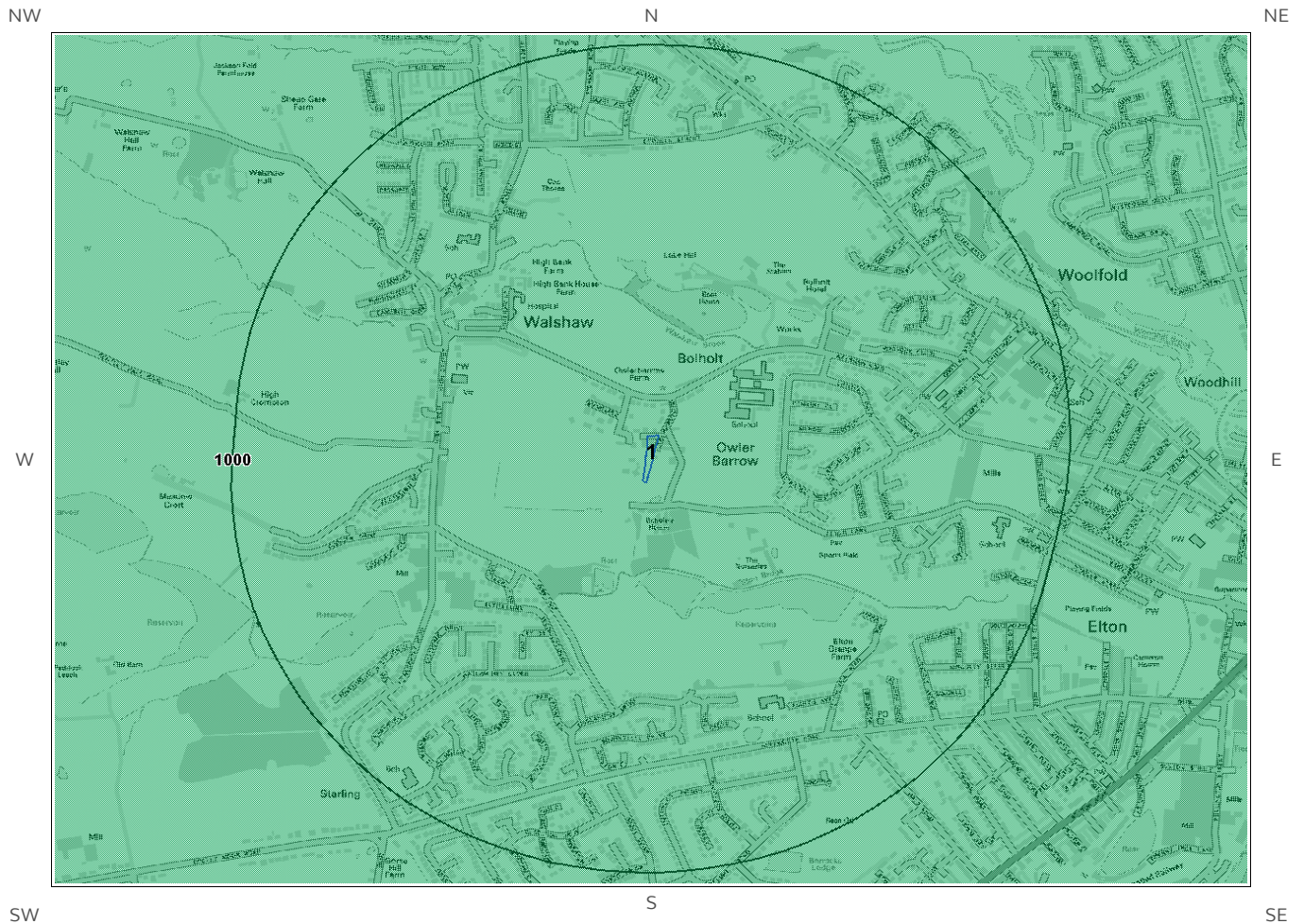
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	4	30	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	2	0	1
4.3 Current Ground Workings	0	0	0	0	1

Section 5: Mining, Extraction & Natural Cavities

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

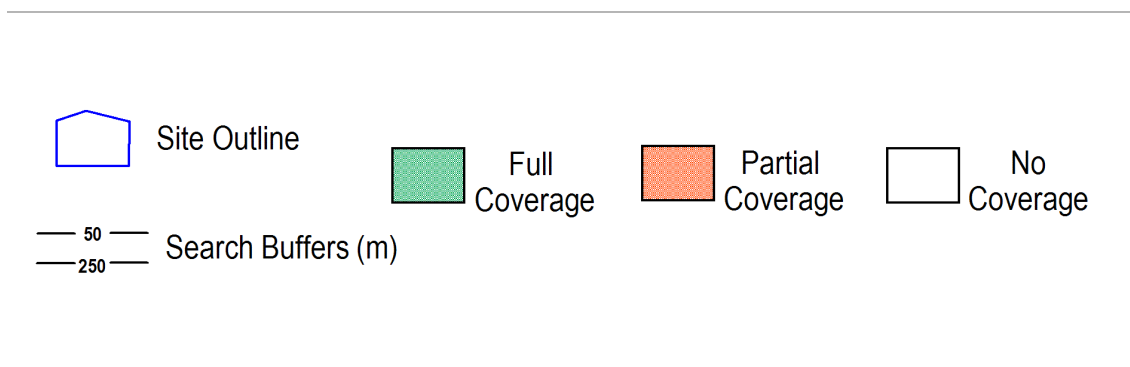
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Very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

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N2	1298.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1851.0	Some deposits are mapped	Full	Full	Some deposits are mapped

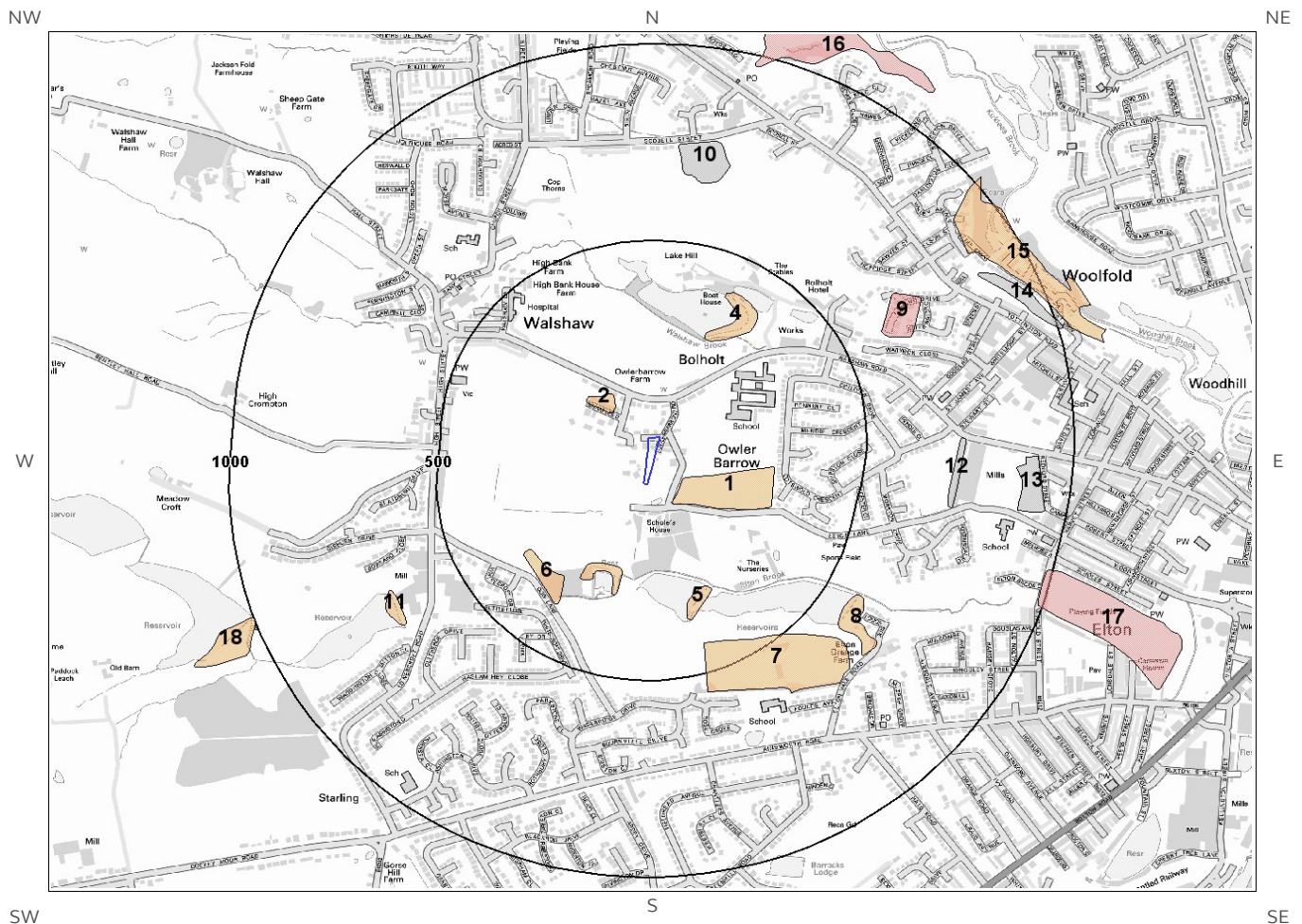
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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

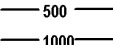
1 Geology (1:10,000 scale).

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



Artificial Ground Legend

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	Site Outline		Made Ground (undivided)		Disturbed Ground (undivided)
	Search Buffers (m)		Worked Ground (undivided)		Landscaped Ground (undivided)
			Infilled Ground		Reclaimed Ground

1. Geology 1:10,000 scale

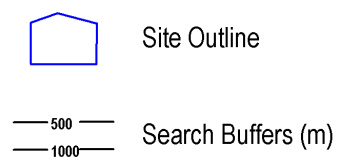
1.1 Artificial Ground

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	72.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	108.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	220.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	274.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	292.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	306.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	425.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
2	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	282.0	SW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	352.0	N	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

1.2.2 Landslip

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

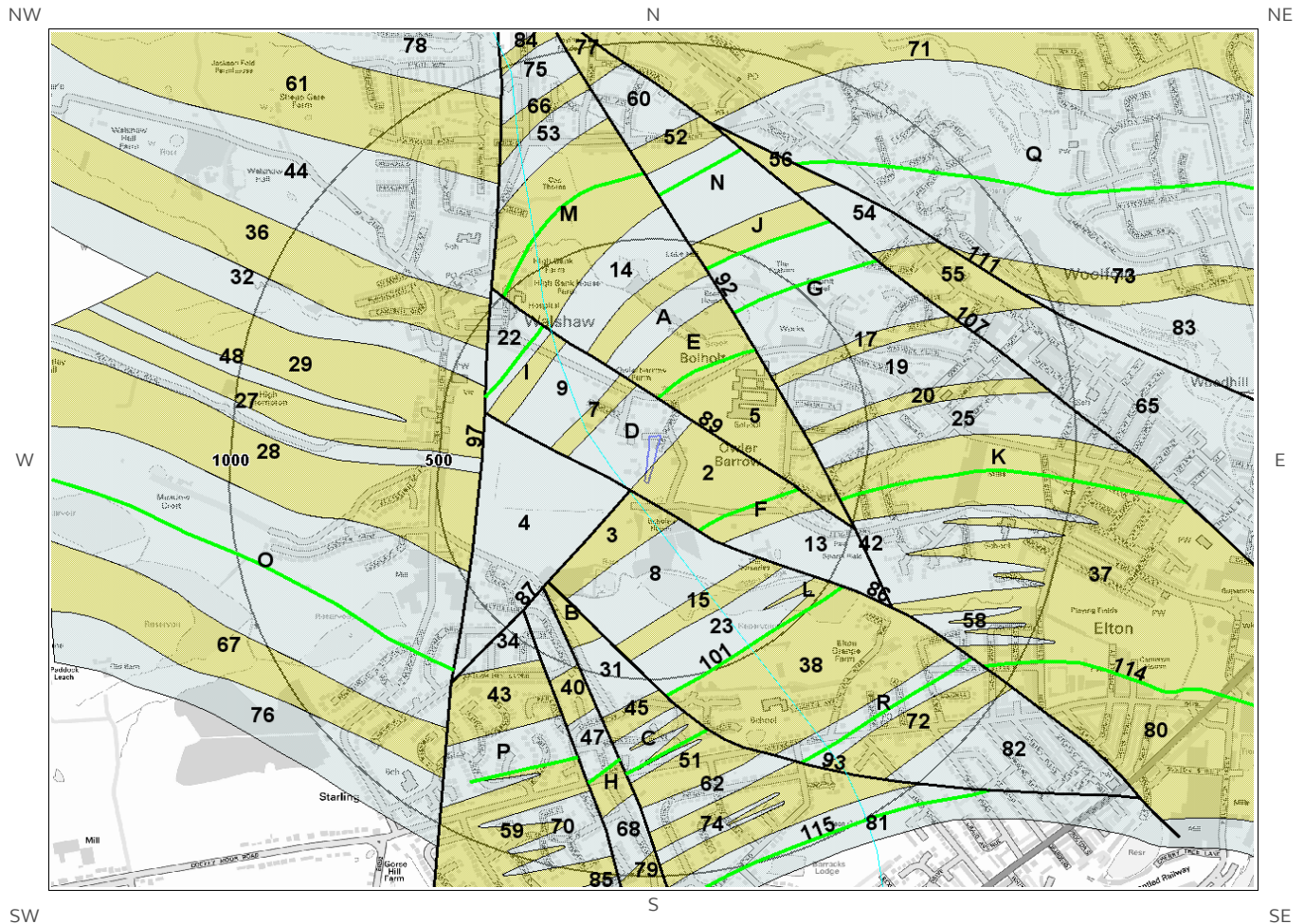
No

Database searched and no data found.

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

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

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

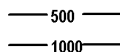


Bedrock and linear features Legend

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Site Outline



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
1D	0.0	On Site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
2	0.0	On Site	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
3	37.0	SW	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
4	41.0	SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
5	76.0	NE	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
6E	96.0	N	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
7	110.0	NW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
8	118.0	SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
9	153.0	NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
10A	156.0	N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
11F	171.0	SE	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
12A	211.0	NW	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
13	234.0	SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
14	260.0	NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
15	302.0	SE	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
16I	302.0	NW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
17	306.0	NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
18G	306.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
19	307.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
20	343.0	E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
21B	344.0	SW	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
22	349.0	NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
23	360.0	SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
24M	361.0	NW	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
25	362.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
26B	364.0	SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
27	396.0	W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
28	397.0	W	OL-SDST	Old Lawrence Rock - Sandstone	Langsettian Sub-age
29	397.0	W	OL-SDST	Old Lawrence Rock - Sandstone	Langsettian Sub-age
30K	400.0	E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
31	401.0	S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
32	414.0	W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
33L	423.0	SE	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
34	438.0	SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
35J	439.0	N	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
36	448.0	NW	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
37	457.0	E	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
38	478.0	SE	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
39O	482.0	SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
40	490.0	S	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
41N	491.0	N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
42	496.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian 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
86	37.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
87	41.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
88D	45.0	SW	LANDFORM	Buried channel or valley margin
89	76.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
90E	96.0	N	ROCK	Coal seam, inferred coincident with bedrock geology boundary
91F	171.0	SE	ROCK	Coal seam, inferred coincident with bedrock geology boundary

ID	Distance (m)	Direction	Category Description	Feature Description
92	306.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
93	344.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
94G	359.0	NE	ROCK	Coal seam, inferred
95H	364.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
96I	371.0	NW	ROCK	Coal seam, inferred
97	396.0	W	FAULT	Normal fault, inferred; crossmarks on downthrow side
98H	438.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
99J	439.0	N	ROCK	Coal seam, inferred coincident with bedrock geology boundary
100K	457.0	E	ROCK	Coal seam, inferred coincident with bedrock geology boundary
101	478.0	SE	ROCK	Coal seam, inferred coincident with bedrock geology boundary
102L	478.0	SE	ROCK	Coal seam, inferred coincident with bedrock geology boundary
103M	499.0	NW	ROCK	Coal seam, inferred

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.