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Overview of Findings

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

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow 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

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	Yes
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	Yes
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	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 relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	Yes
1.4 Radon data	1.4.1 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
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

Section 2:Ground Workings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	4	18	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Workings	0	0	1	3	5

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0
3.2 Coal Mining	1	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	0	0	0	0	0
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

Section 4: Natural Ground Subsidence	On-site
4.1 Shrink Swell Clay	Very Low
4.2 Landslides	Very Low
4.3 Ground Dissolution of Soluble Rocks	Negligible
4.4 Compressible Deposits	Negligible
4.5 Collapsible Deposits	Very Low
4.6 Running Sand	Very Low

Section 5: Borehole Records	On-site	0-50m	51-250
5 BGS Recorded Boreholes	0	0	0

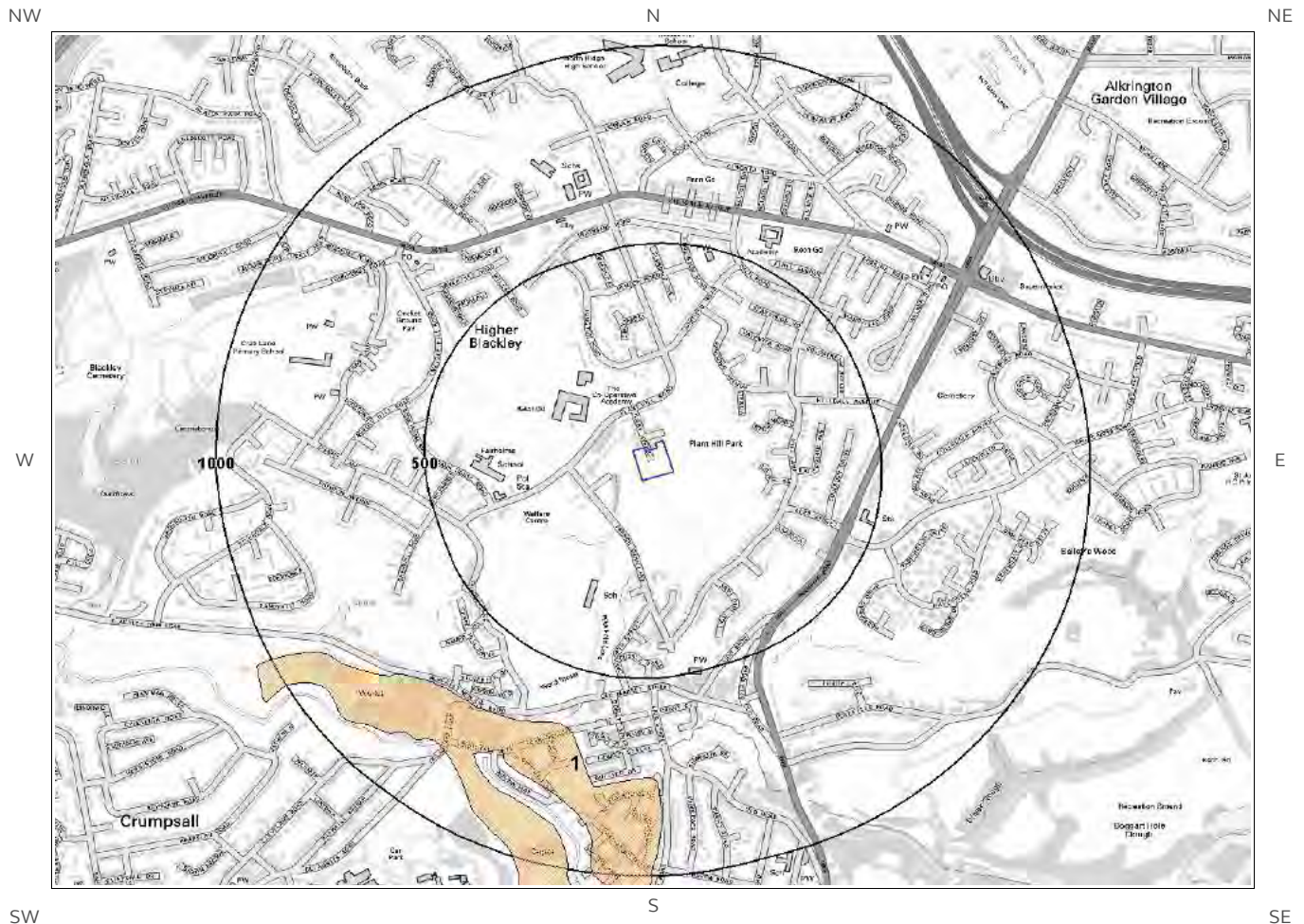
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	3	1	6

Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500
7.1 Tunnels	0	0	0	Not Searched
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
7.3 Historical Railways	0	0	0	Not Searched
7.4 Active Railways	0	0	0	Not Searched

Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0

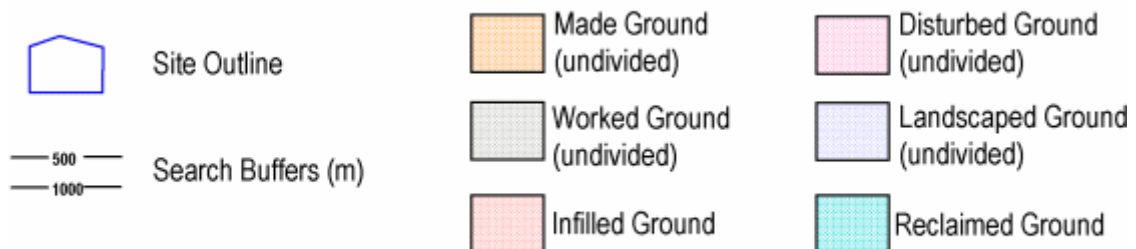
1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend

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1 Geology

1.1 Artificial Ground

1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:085

Are there any records of Artificial/Made Ground within 500m of the study site boundary? No

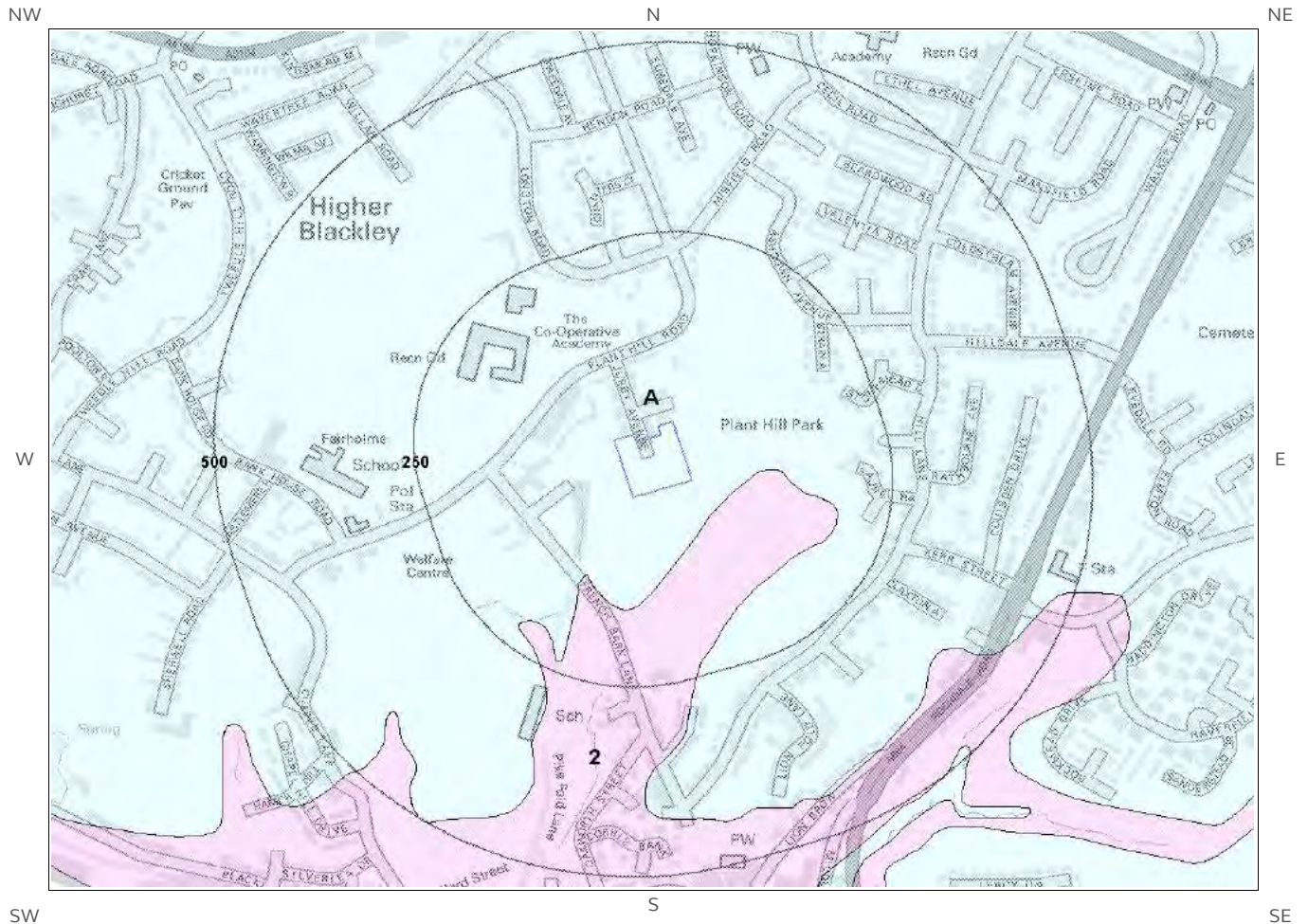
Database searched and no data found.

1.1.2 Permeability of Artificial Ground

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

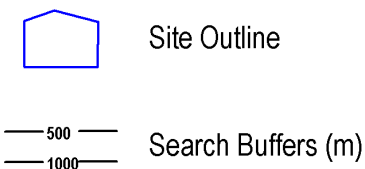
Database searched and no data found.

1.2 Superficial Deposits and Landslips Map



**Superficial Deposits and Landslips
Legend**

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1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1A	0.0	On Site	TILLD	TILL, DEVENSIAN	DIAMICTON
4A	0.0	On Site	TILLD	TILL, DEVENSIAN	DIAMICTON
2	47.0	SE	GFSDD	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
3	486.0	SE	TILLD	TILL, DEVENSIAN	DIAMICTON

1.2.2 Permeability of Superficial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low
47.0	SE	Intergranular	Very High	High

1.2.3 Landslip

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

Database searched and no data found.

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.

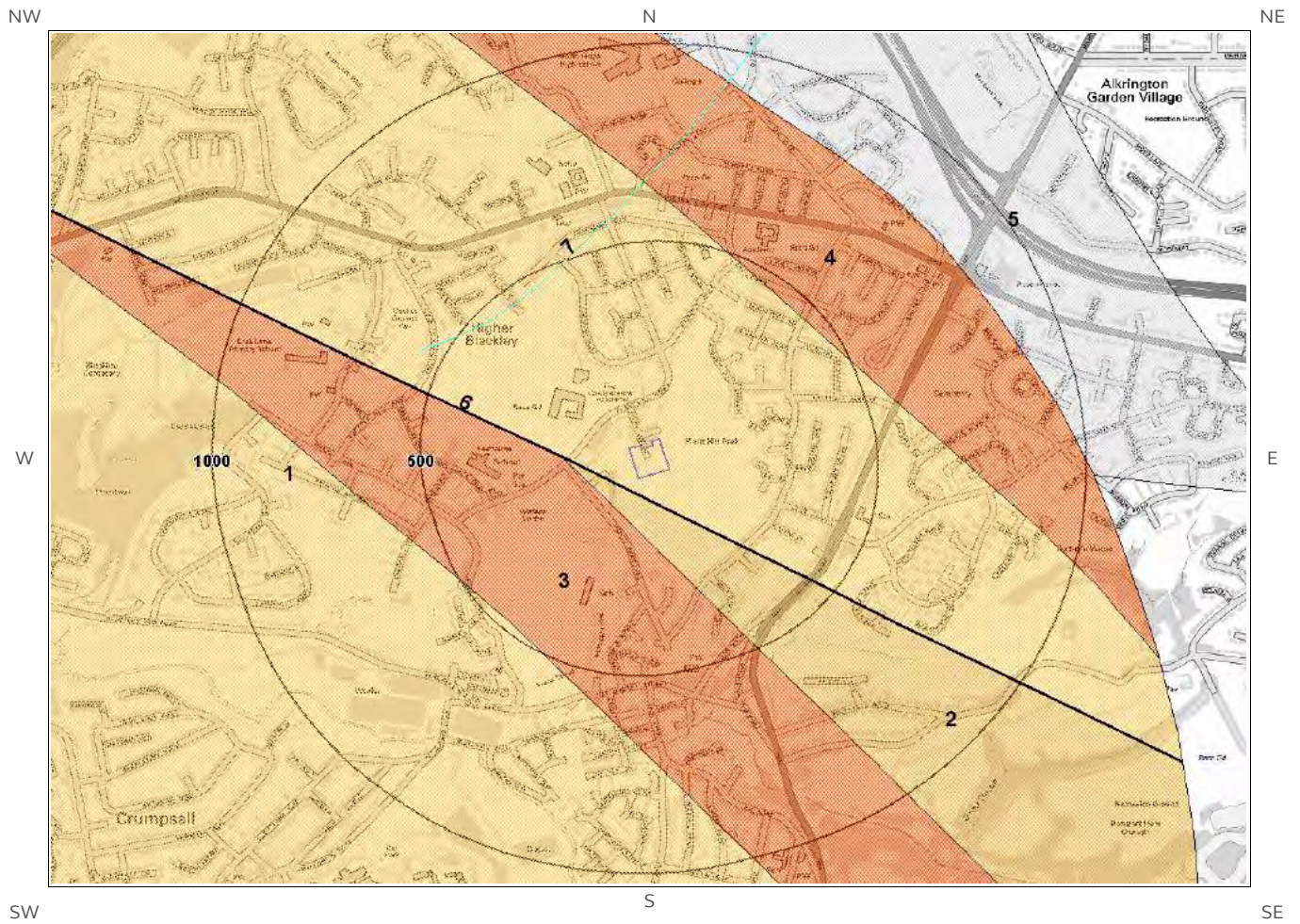
1.2.4 Landslip Permeability

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

Database searched and no data found.

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

1.3 Bedrock and Faults Map

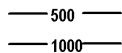


Bedrock and Faults Legend

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Site Outline



Search Buffers (m)

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:085

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	CPB-SDST	Chester Pebble Beds Formation - Sandstone	No Details
2	37.0	SW	CS-SDST	Collyhurst Sandstone Formation - Sandstone	No Details
3	93.0	SW	MM-MDST	Manchester Marls Formation - Mudstone	No Details
4	458.0	NE	MM-MDST	Manchester Marls Formation - Mudstone	No Details

1.3.2 Permeability of Bedrock Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Moderate
37.0	SW	Intergranular	High	High

1.3.3 Faults

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

ID	Distance (m)	Direction	Category Description	Feature Description
6	37.0	SW	FAULT	Fault, inferred, crossmark on downthrow side, throw in metres
7	458.0	NW	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley; beads to outside

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 nationwide coverage.

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

1.4 Radon Data

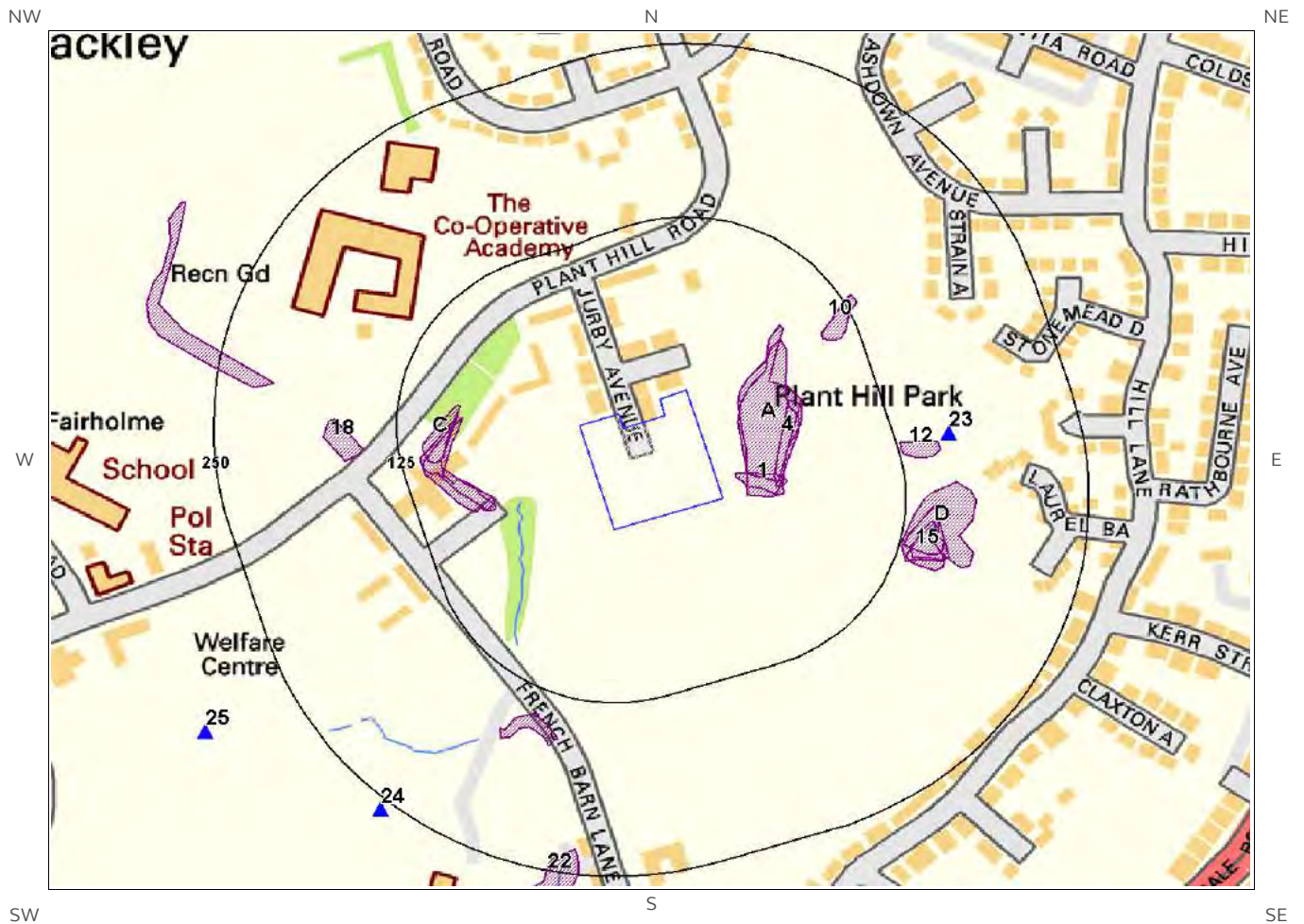
1.4.1 Radon Affected Areas

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

1.4.2 Radon Protection

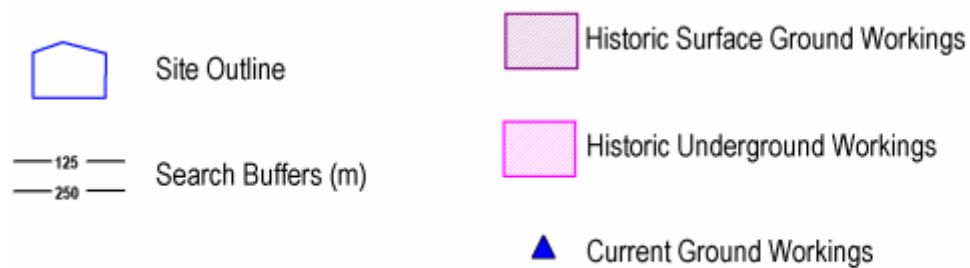
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary

2 Ground Workings Map



Ground Workings Legend

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2 Ground Workings

2.1 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

The following Historical Surface Ground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
1	13.0	E	385623 403508	Refuse Heap	1956
2A	19.0	E	385628 403557	Unspecified Pit	1923
3A	22.0	E	385629 403567	Unspecified Ground Workings	1915
4	38.0	E	385642 403538	Unspecified Ground Workings	1938
5B	72.0	W	385400 403523	Ponds	1891
6B	72.0	W	385398 403524	Ponds	1923
7C	83.0	W	385405 403545	Pond	1915
8C	83.0	W	385405 403545	Pond	1933
9C	83.0	W	385405 403545	Pond	1906
10	101.0	E	385676 403629	Unspecified Ground Workings	1938
11D	126.0	E	385744 403479	Unspecified Pit	1956
12	127.0	E	385732 403533	Refuse Heap	1956
13D	128.0	E	385734 403475	Sand Pit	1915
14D	128.0	E	385734 403475	Sand Pit	1933
15	132.0	E	385735 403464	Sand Pit	1923
16D	132.0	E	385738 403468	Sand Pit	1938
17	144.0	SW	385446 403332	Unspecified Ground Workings	1956
18	149.0	W	385338 403540	Unspecified Heap	1891
19E	211.0	W	385209 403645	Refuse Heap	1980
20E	211.0	W	385209 403645	Refuse Heap	1975

ID	Distance (m)	Direction	NGR	Use	Date
21E	211.0	W	385209 403645	Refuse Heap	1966
22	232.0	S	385479 403174	Unspecified Ground Workings	1956

2.2 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.

2.3 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.

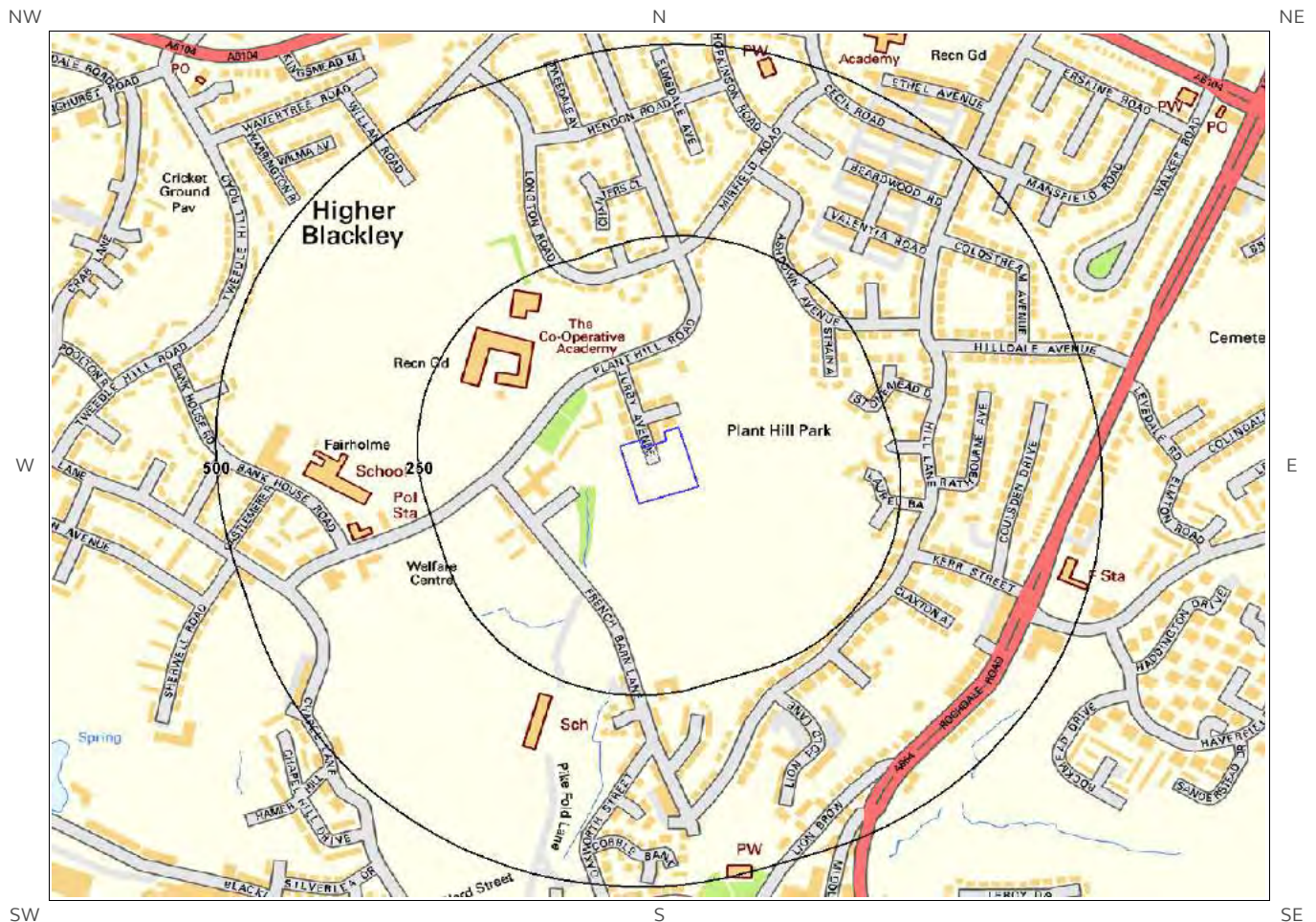
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

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
23	161.0	E	385751 403545	Sand	Haze Bottom Top Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
24	258.0	SW	385363 403274	Sand	Pike Fold Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
25	316.0	SW	385243 403330	Clay & Shale	Pike Fold Clay Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	468.0	SW	385147 403197	Sand	Pike Fold Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	538.0	SE	385966 403106	Silica Sand	Blackley Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	566.0	SE	386090 403220	Sand	Blackley Parsonage Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	566.0	SE	386090 403220	Silica Sand	Blackley Parsonage Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	754.0	NE	386247 403913	Sand & Gravel	Crosslee Gravel pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	817.0	SW	384881 402970	Sand	Blackley Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend

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3 Mining, Extraction & Natural Cavities

3.1 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.

3.2 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? Yes

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

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

3.3 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.

3.4 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? No

Database searched and no data found.

3.5 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.

3.6 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.

3.7 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.

3.8 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.

3.9 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.

3.10 Clay Mining

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

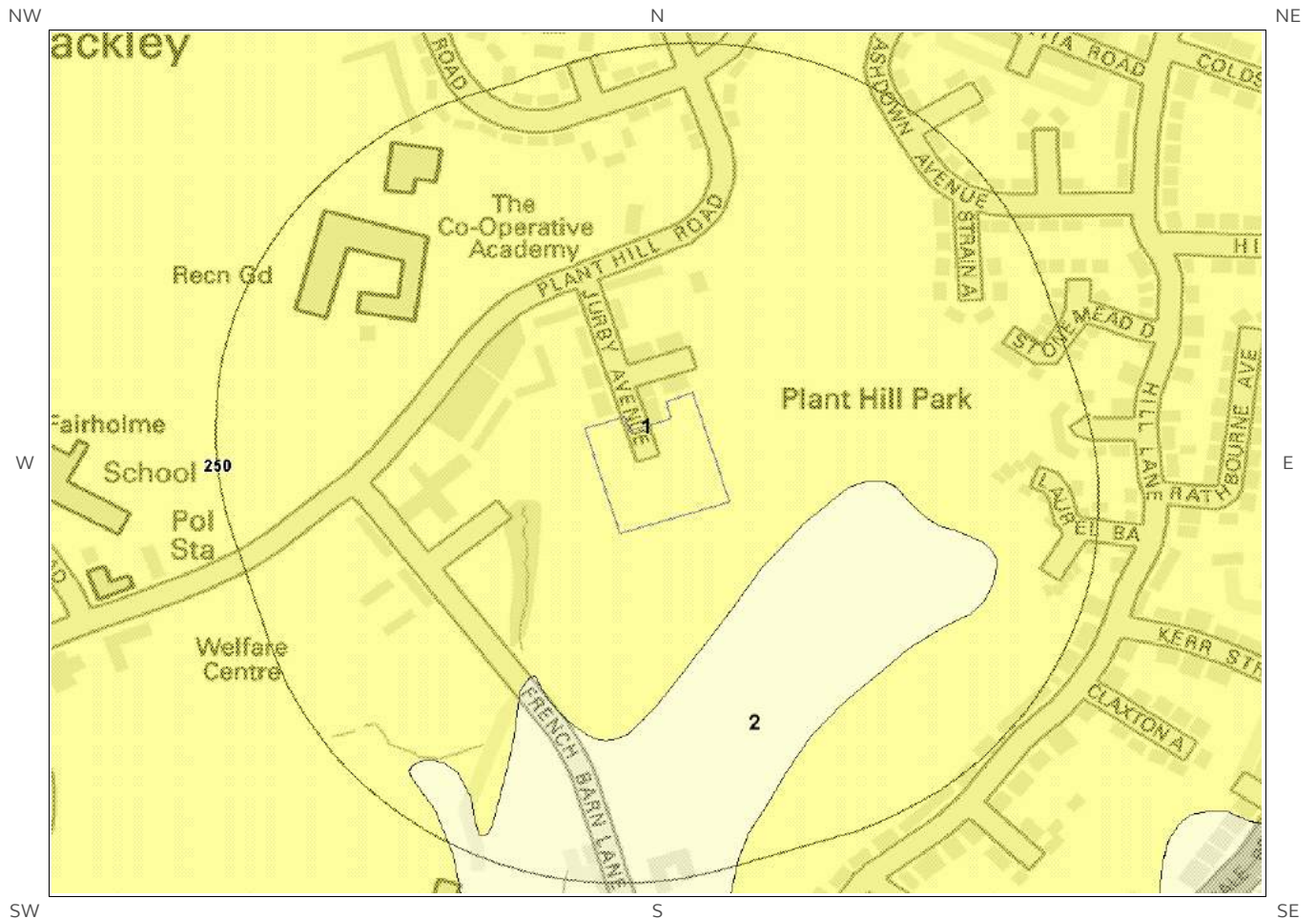
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

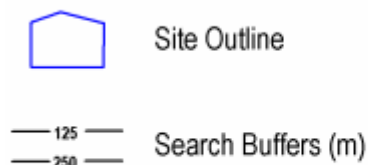
4 Natural Ground Subsidence

4.1 Shrink-Swell Clay Map

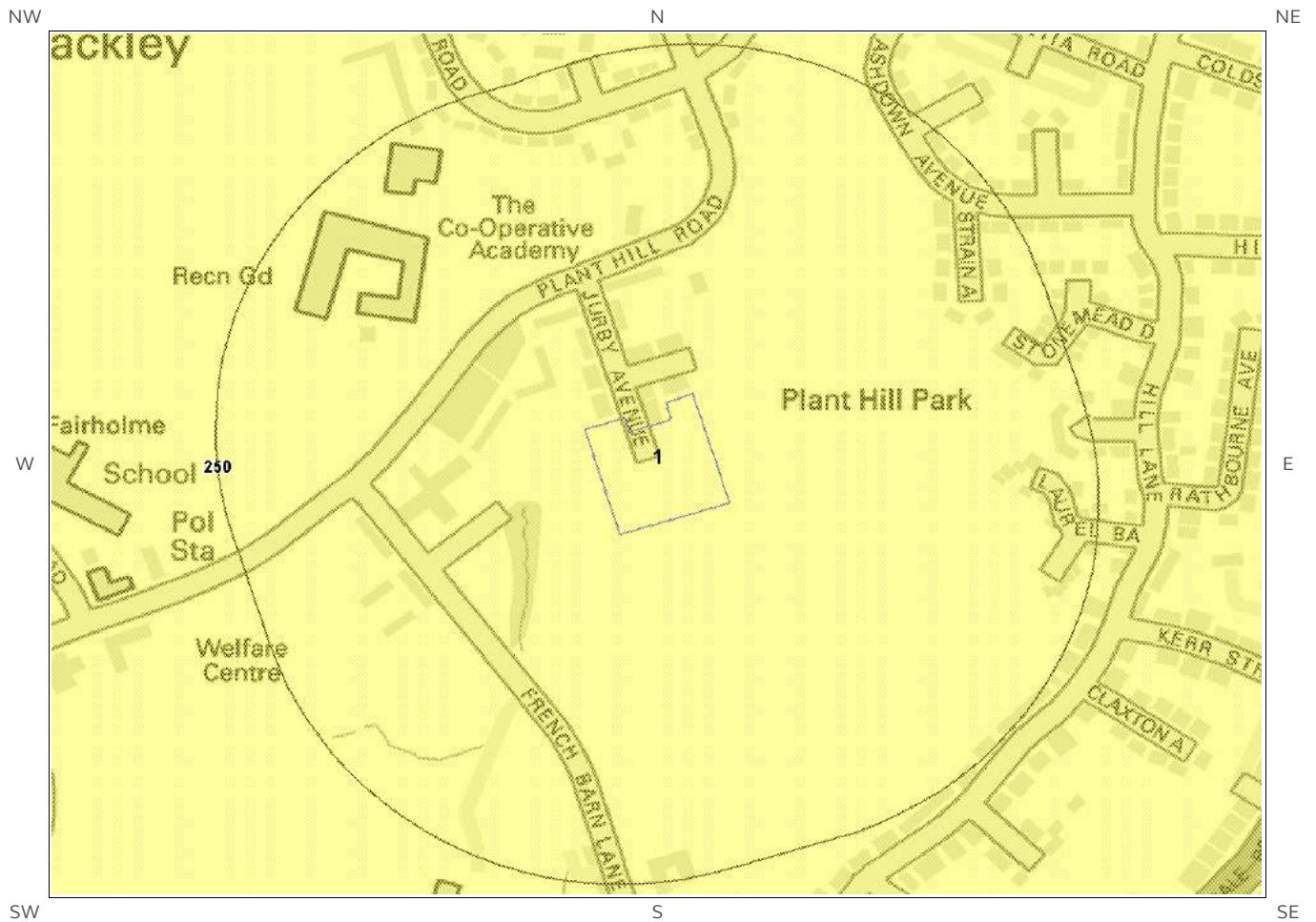


Shrink Swell Clay Legend

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4.2 Landslides Map

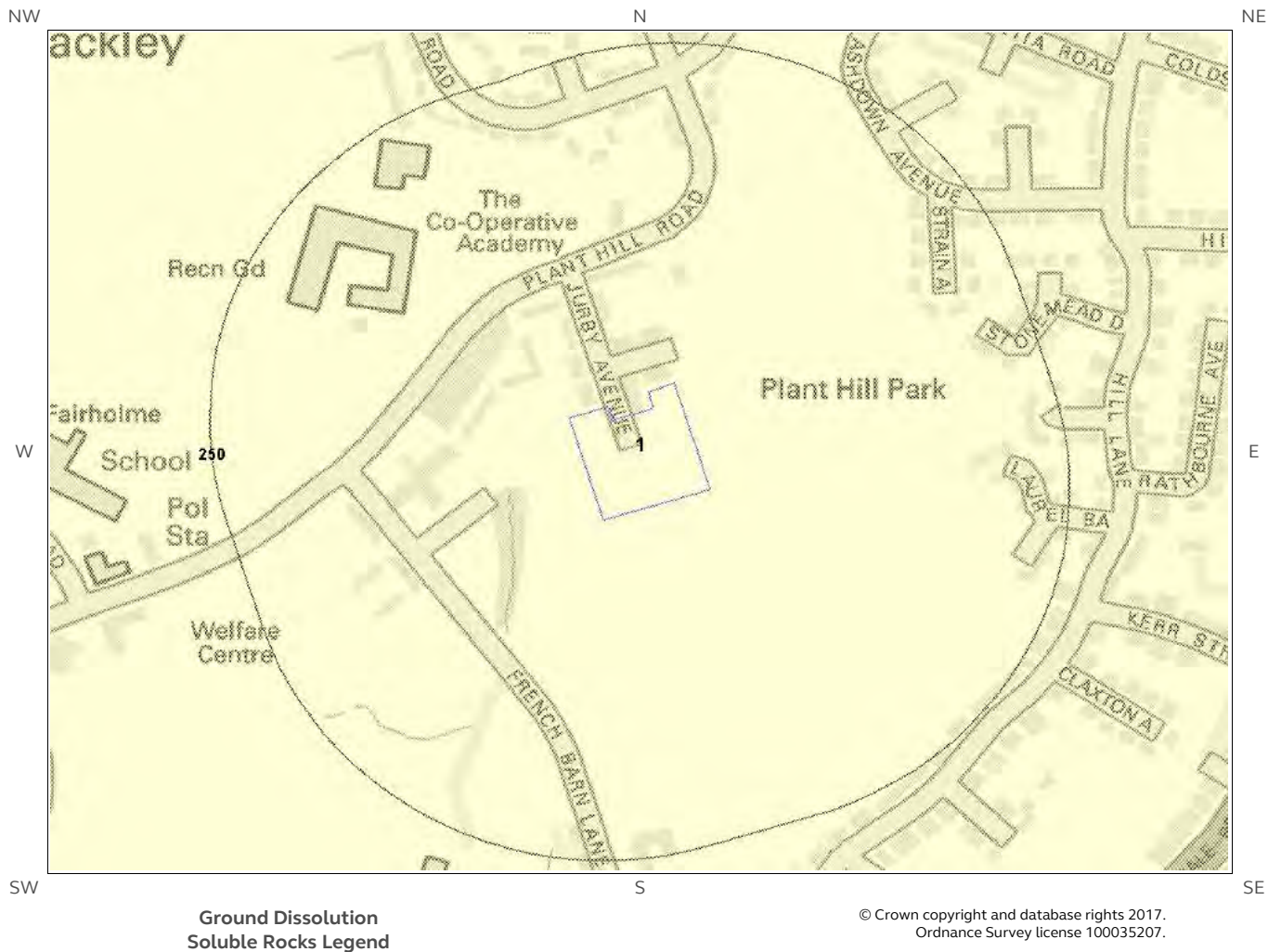


Landslides Legend

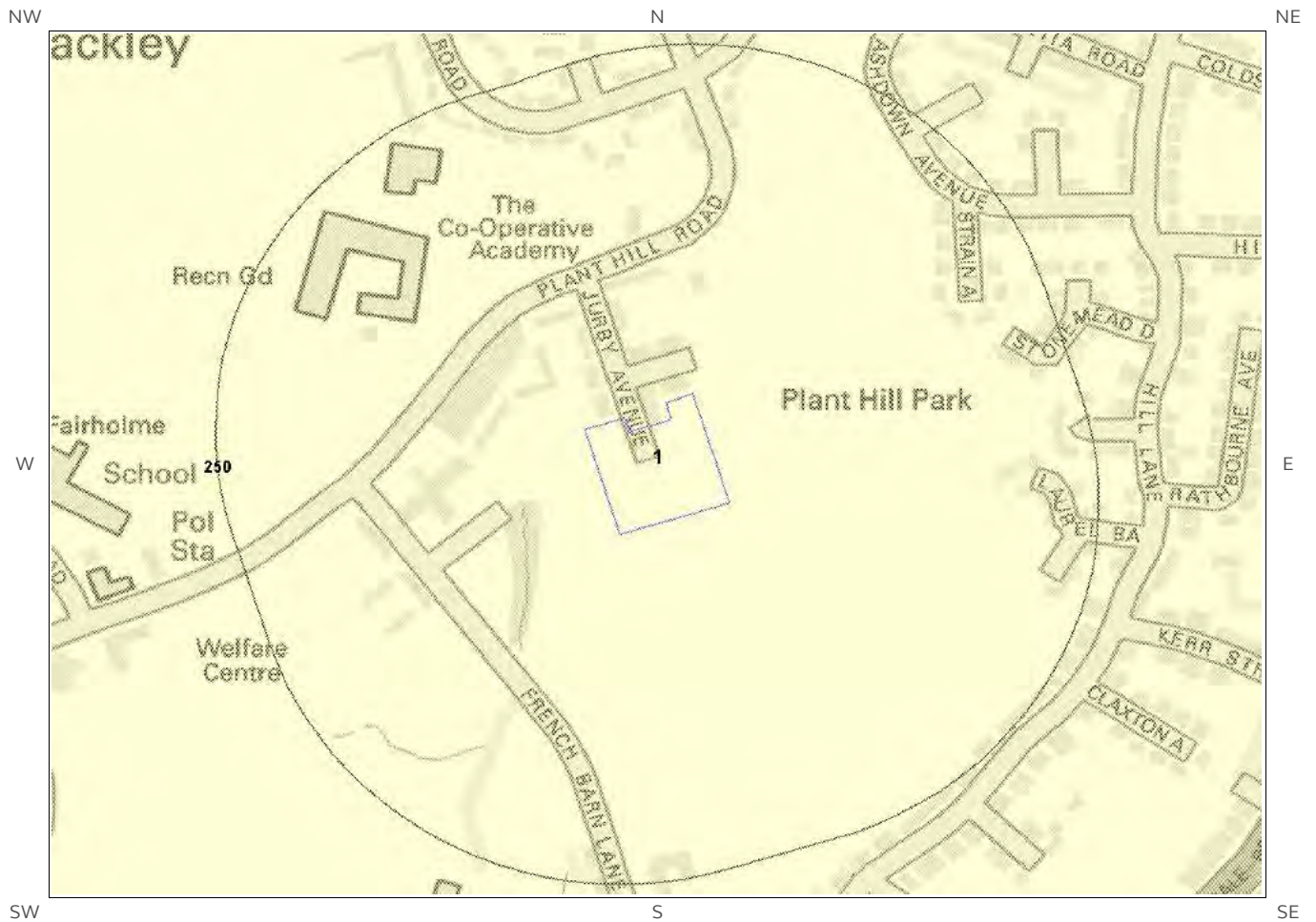
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4.3 Ground Dissolution Soluble Rocks Map



4.4 Compressible Deposits Map

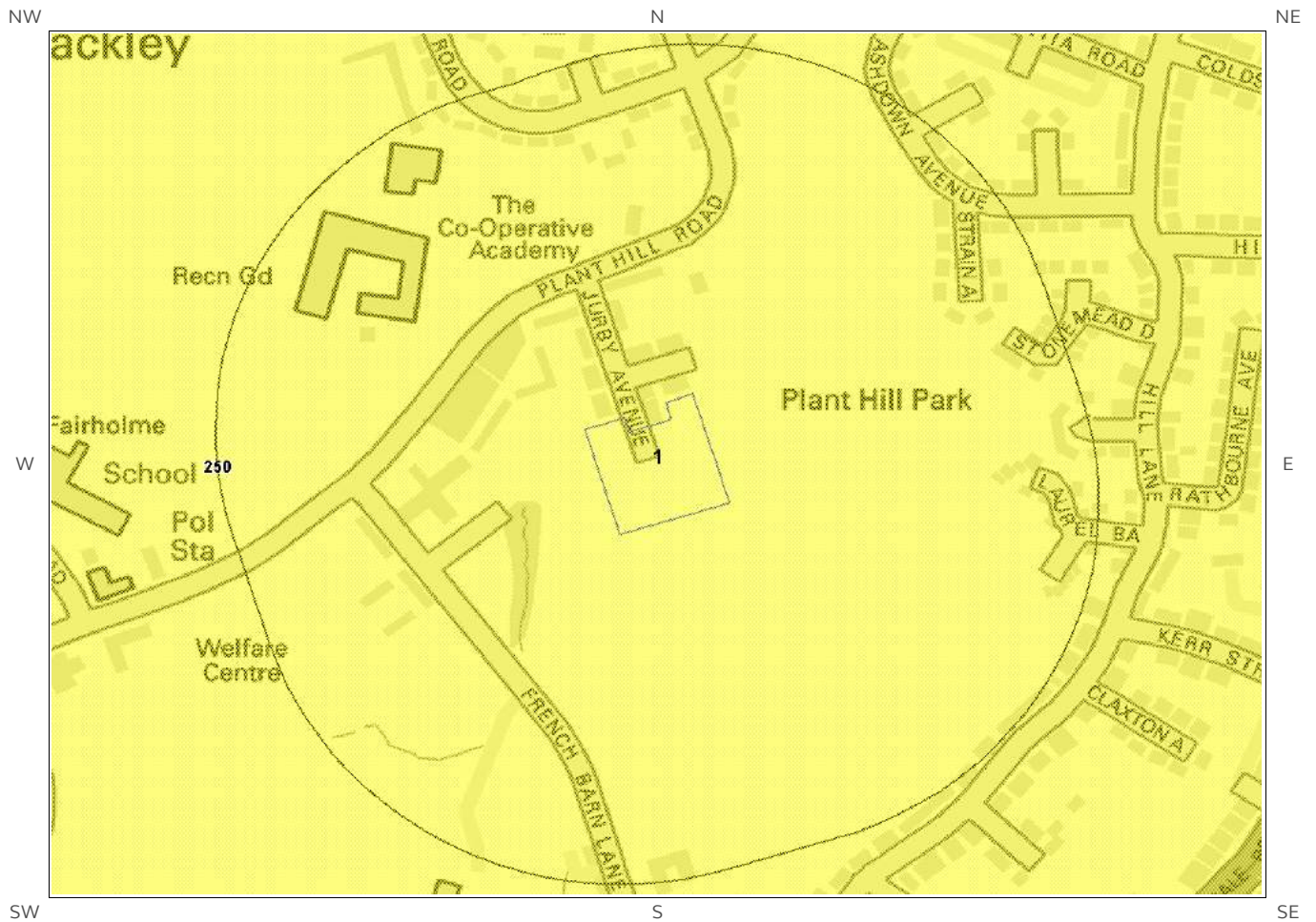


Compressible Deposits Legend

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4.5 Collapsible Deposits Map

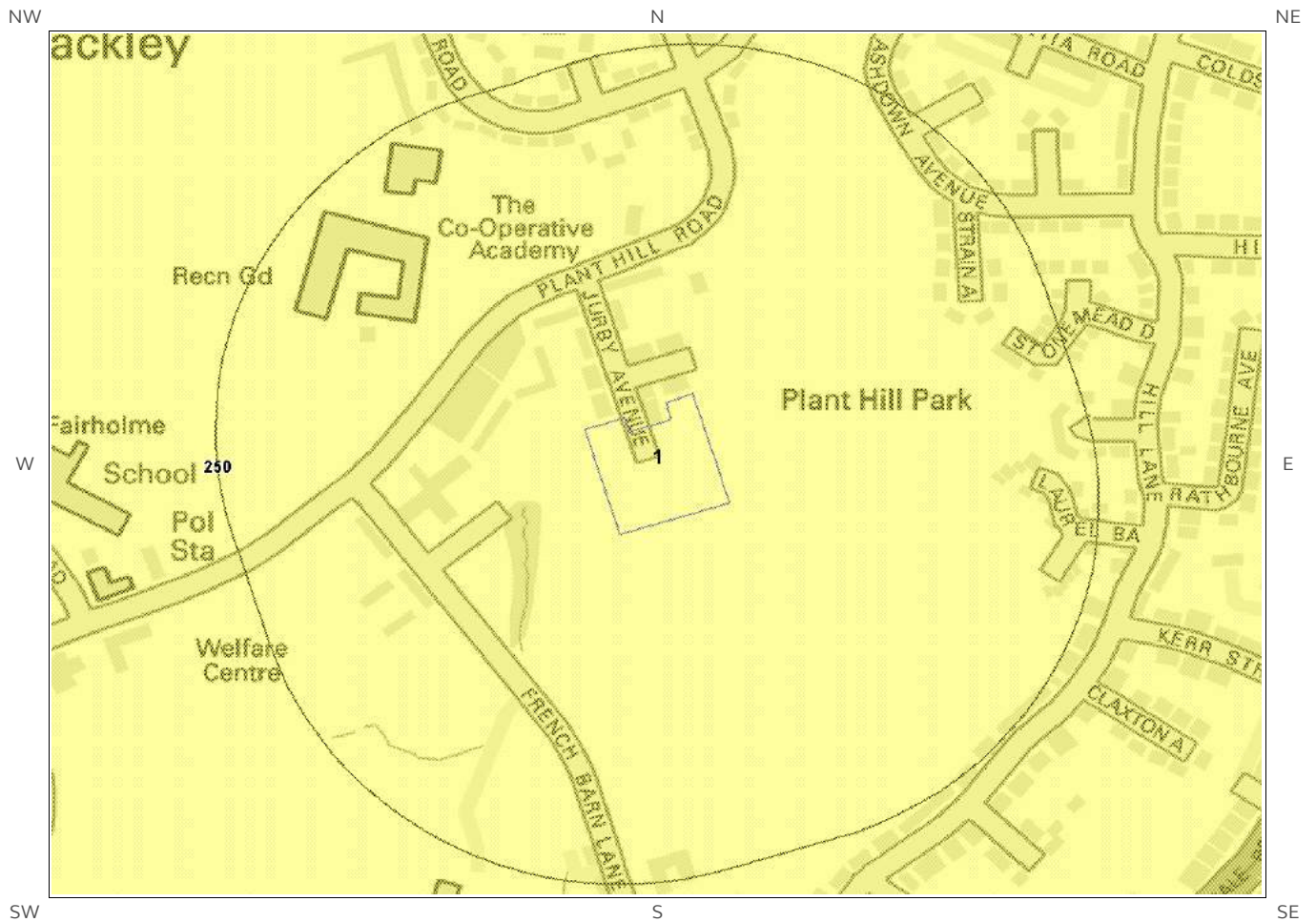


Collapsible Deposits Legend

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4.6 Running Sand Map



Running Sand Legend

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4 Natural Ground Subsidence

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

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

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

4.1 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	47.0	SE	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 due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

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

4.3 Ground Dissolution of Soluble Rocks

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

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

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

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

4.5 Collapsible Deposits

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

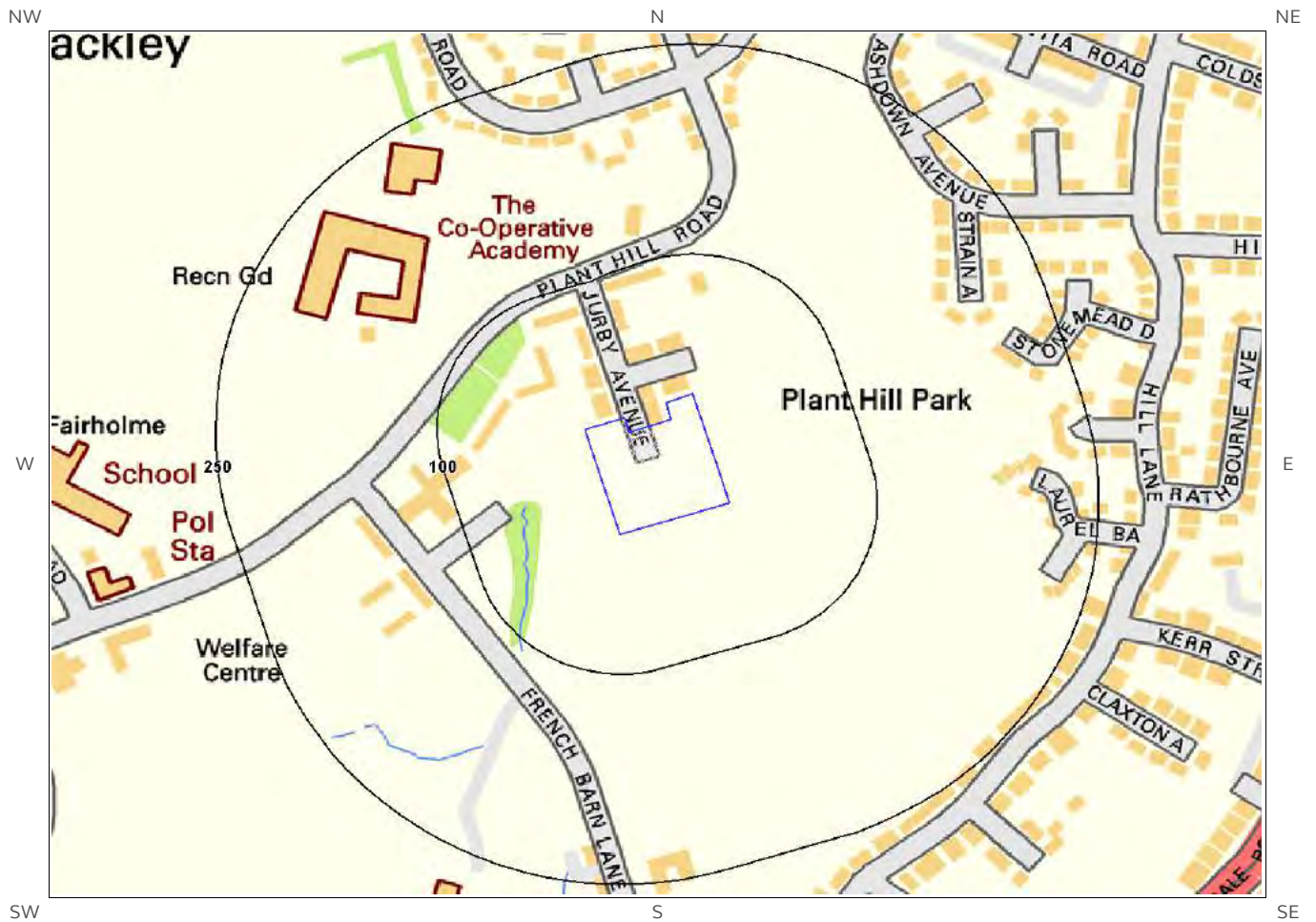
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

4.6 Running Sands

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

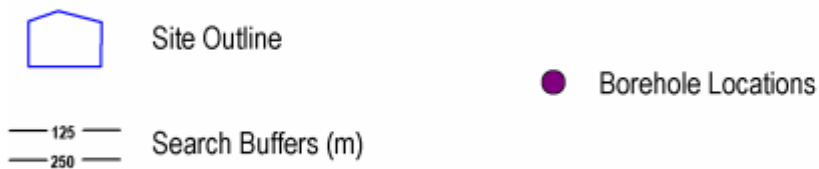
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

5 Borehole Records Map



Borehole Records Legend

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5 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: 0

Database searched and no data found.

6 Estimated Background Soil Chemistry

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

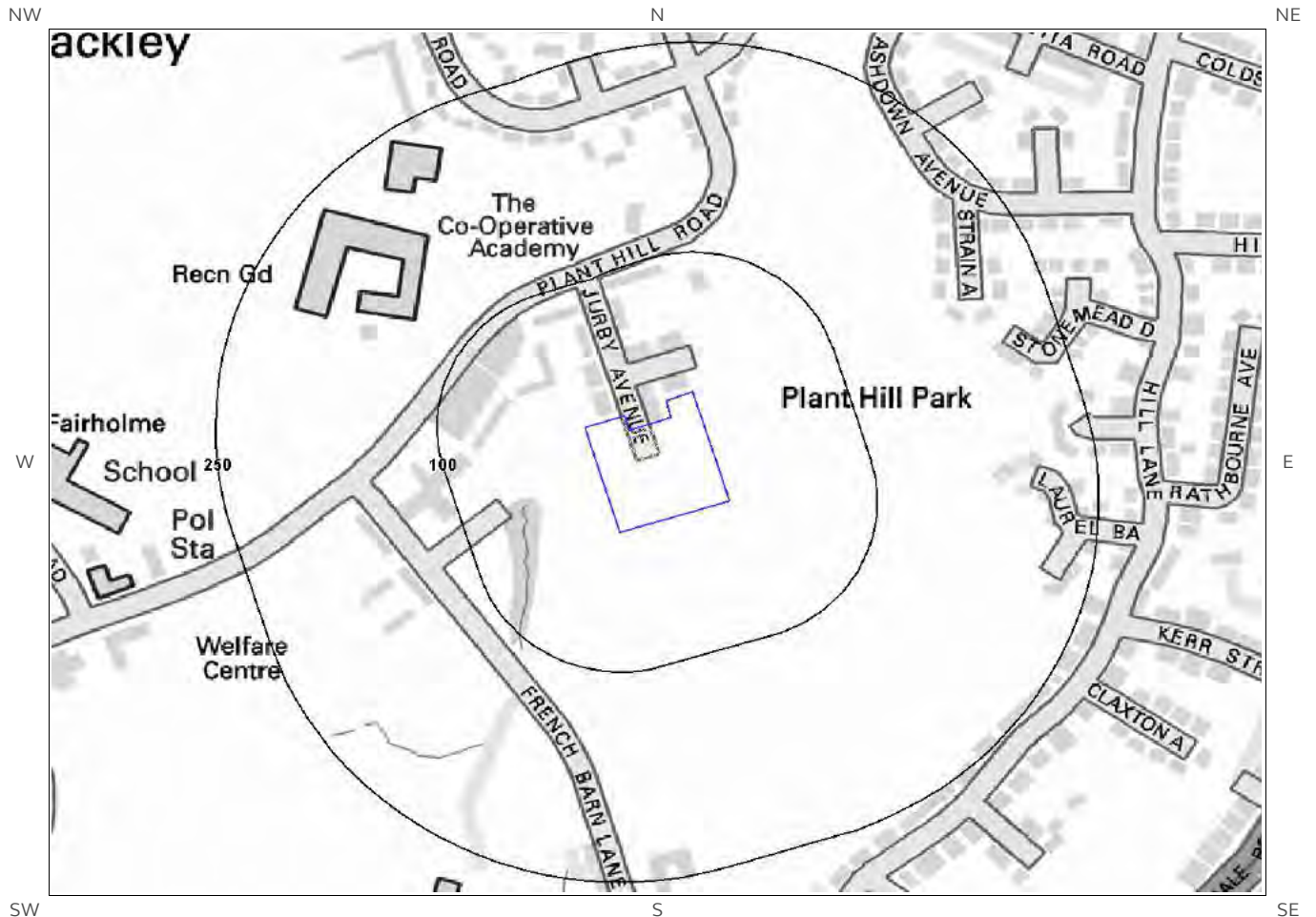
10

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	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
15.0	W	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
58.0	SW	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
58.0	SW	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
101.0	SW	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
125.0	S	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
168.0	W	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
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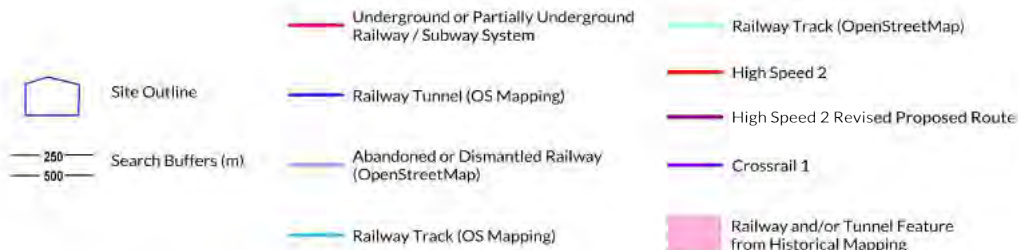
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

7 Railways and Tunnels Map



Railways and Tunnels Legend

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7 Railways and Tunnels

7.1 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.

7.2 Historical Railway and Tunnel Features

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

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

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

Database searched and no data found.

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

7.3 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.

Note: 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.

7.4 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.

Note: 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.

7.5 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.

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

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

Contact Details

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Fax: 0115 936 3276.
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Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries



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LE12 6HX



The Coal Authority

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



Public Health England

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



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Website: <http://www.ordnancesurvey.co.uk/>



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Site Details:

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MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1893

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1893
Revised 1893
Edition N/A
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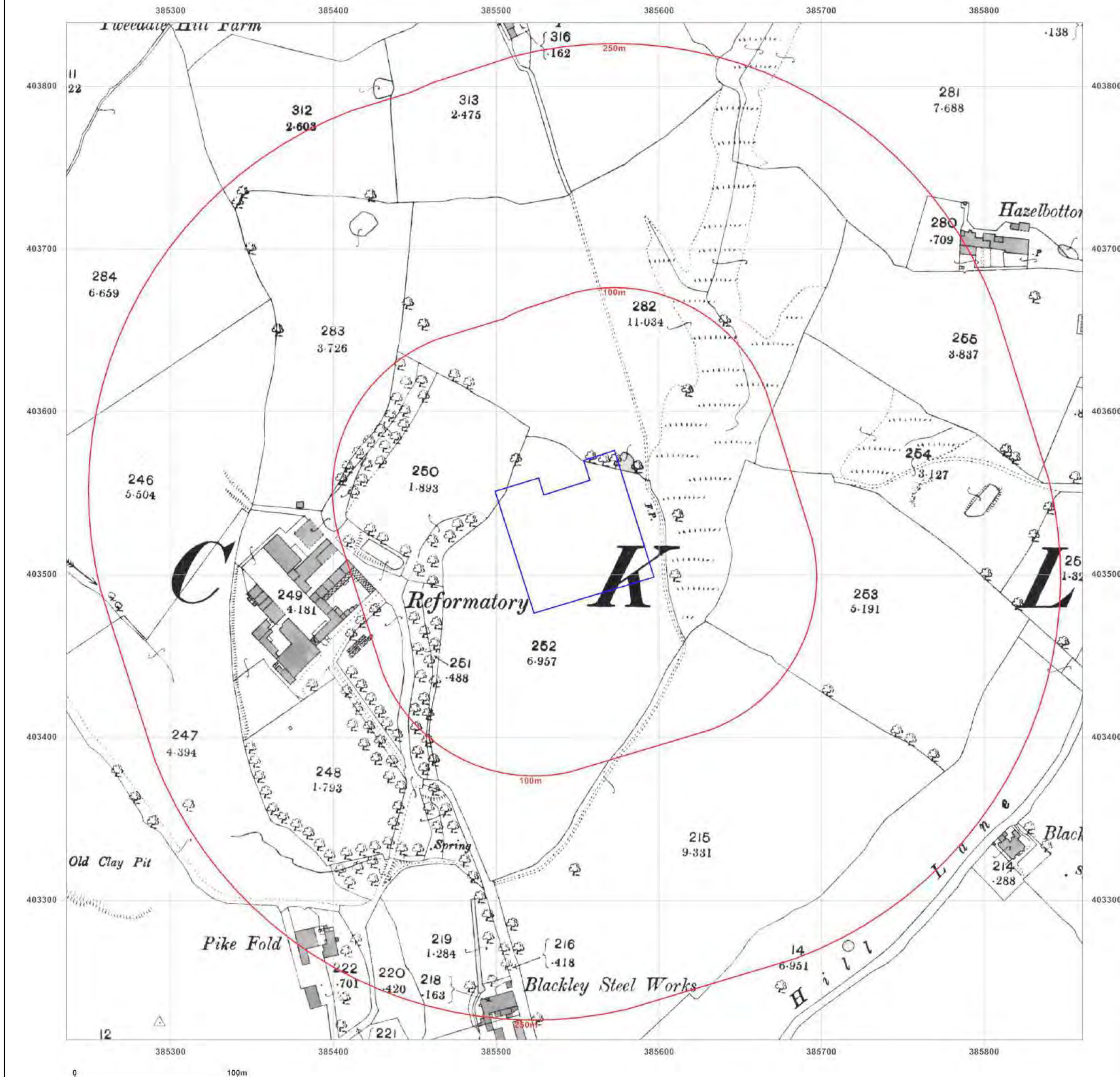


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Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1909

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1909
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Edition N/A
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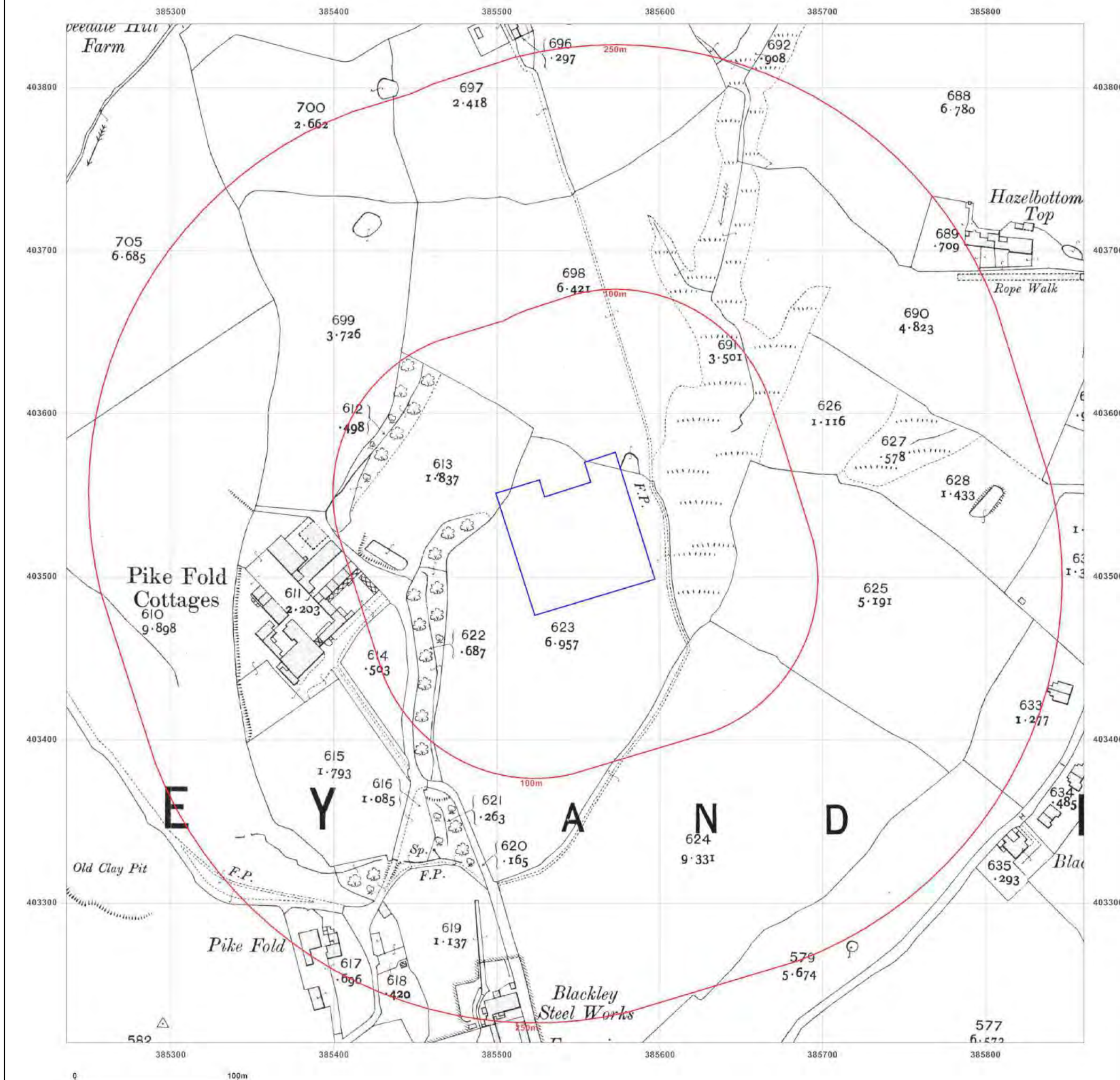


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Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1922

Scale: 1:2,500

Printed at: 1:2,500



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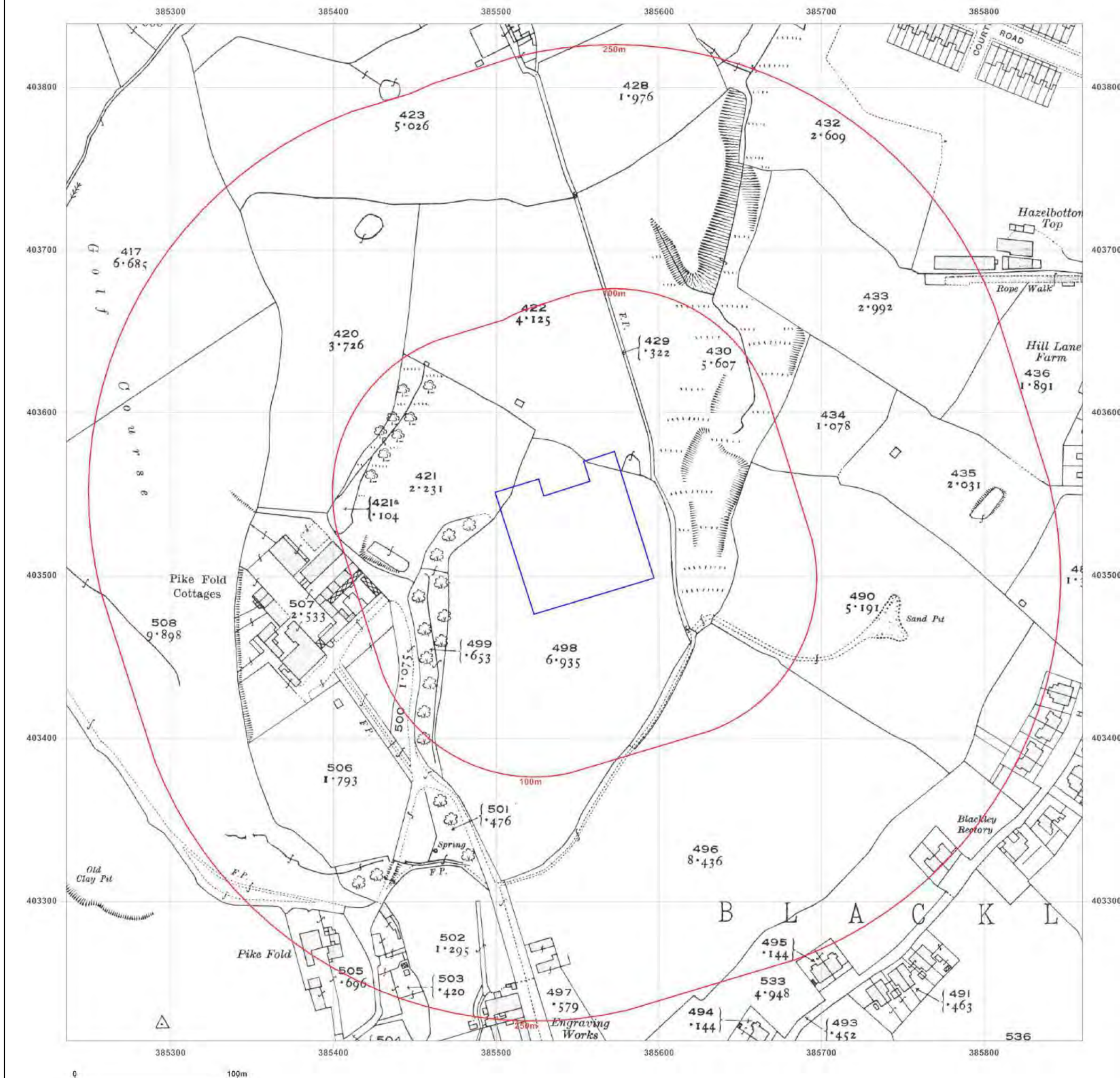


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Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1932

Scale: 1:2,500

Printed at: 1:2,500



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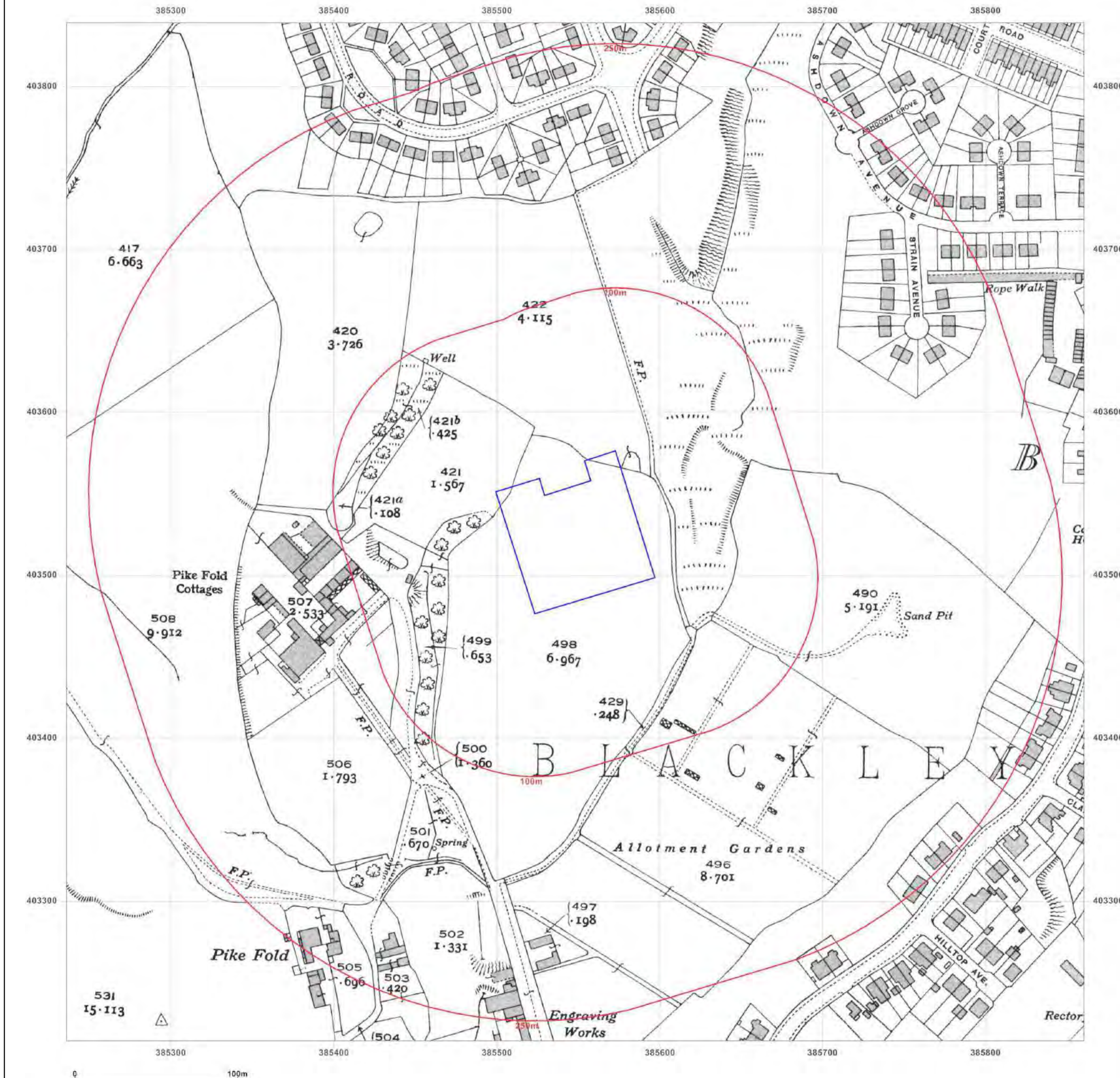


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1951
Edition N/A
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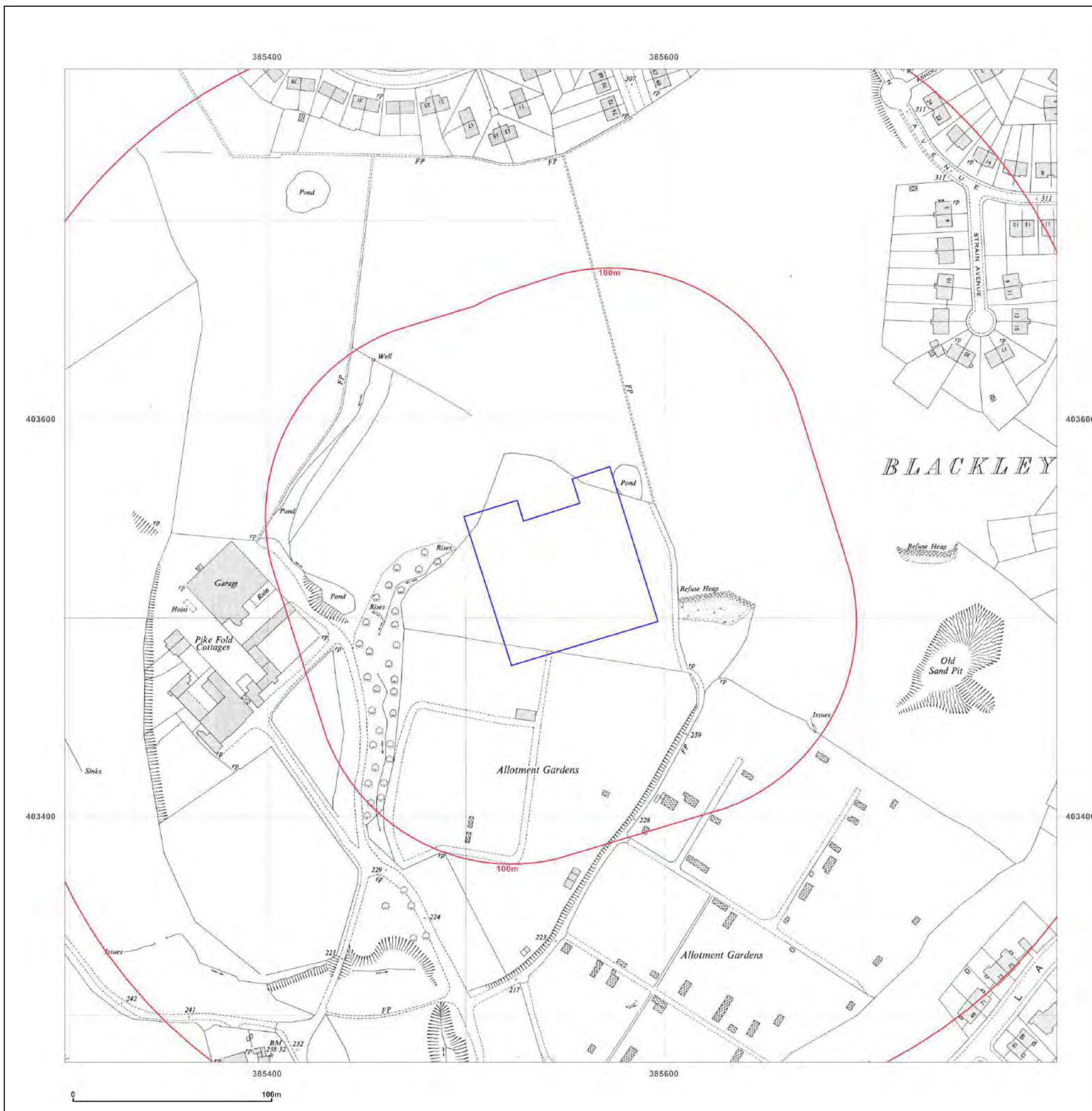


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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1951

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1951
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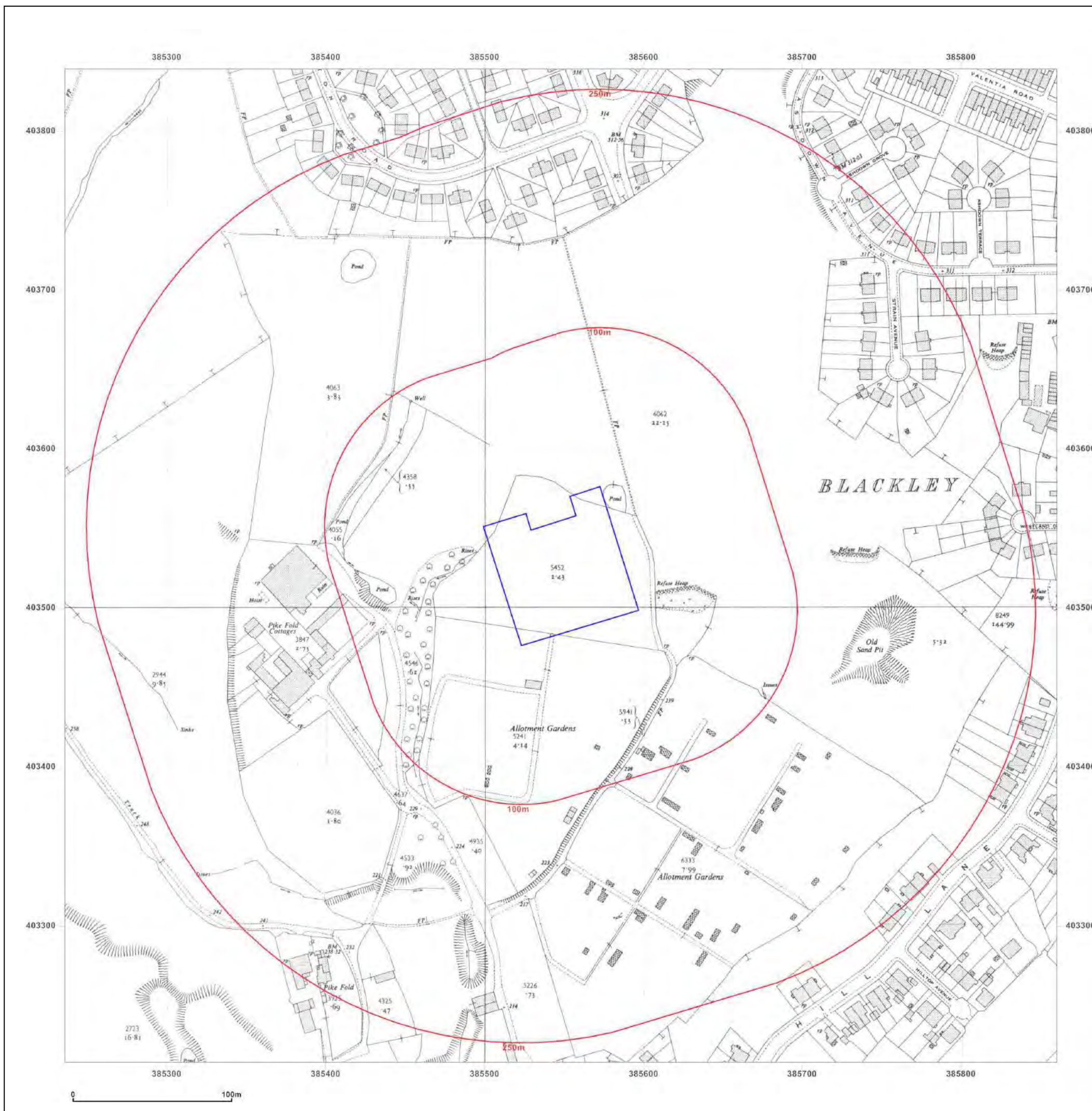


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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1955

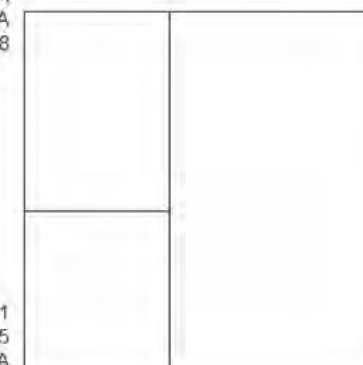
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Edition N/A
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Surveyed 1951
Revised 1955
Edition N/A
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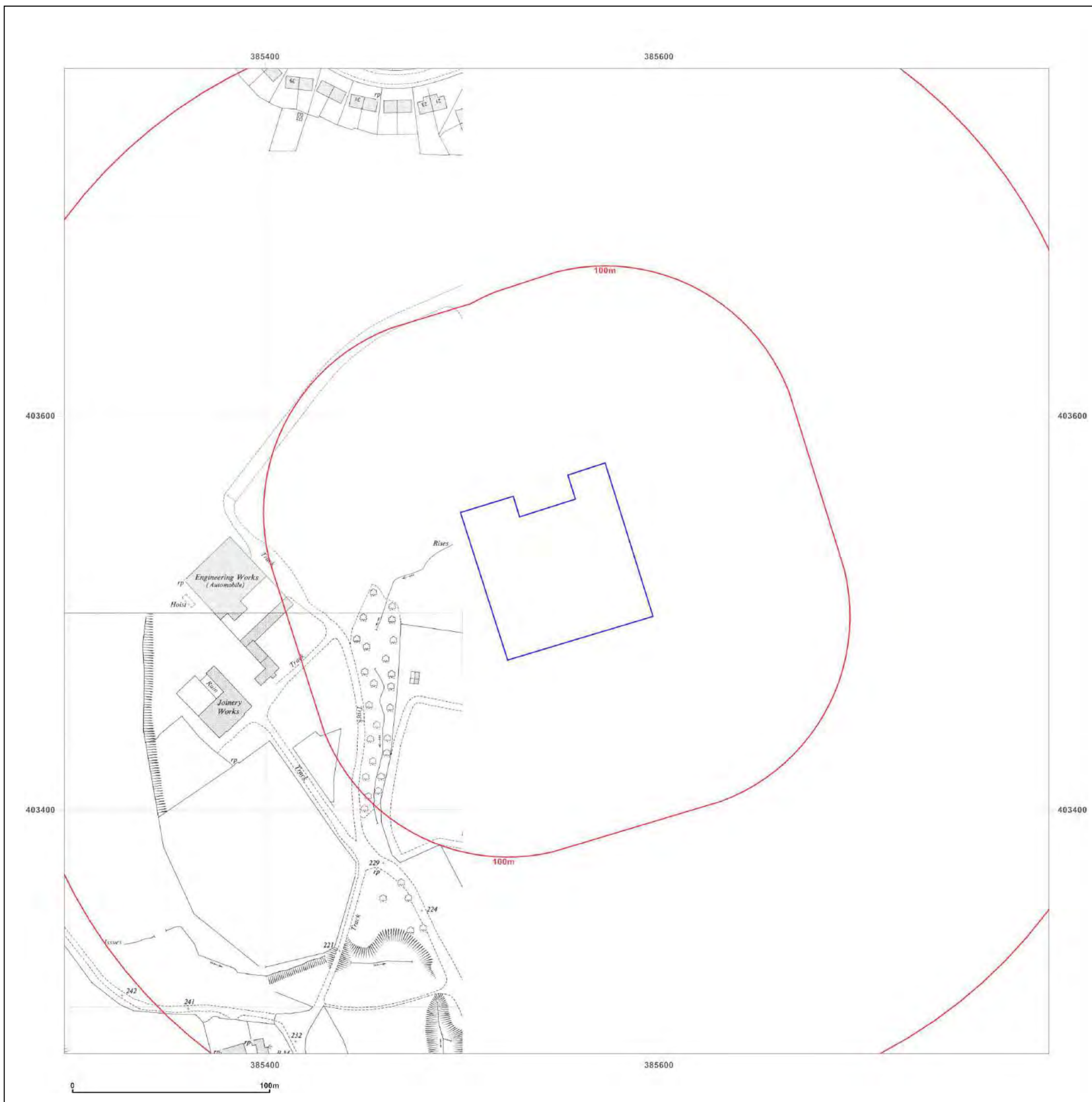


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Client Ref: 3025H
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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1963-1964

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Revised 1962
Edition N/A
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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1964

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1964
Revised 1964
Edition N/A
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Levelled 1964

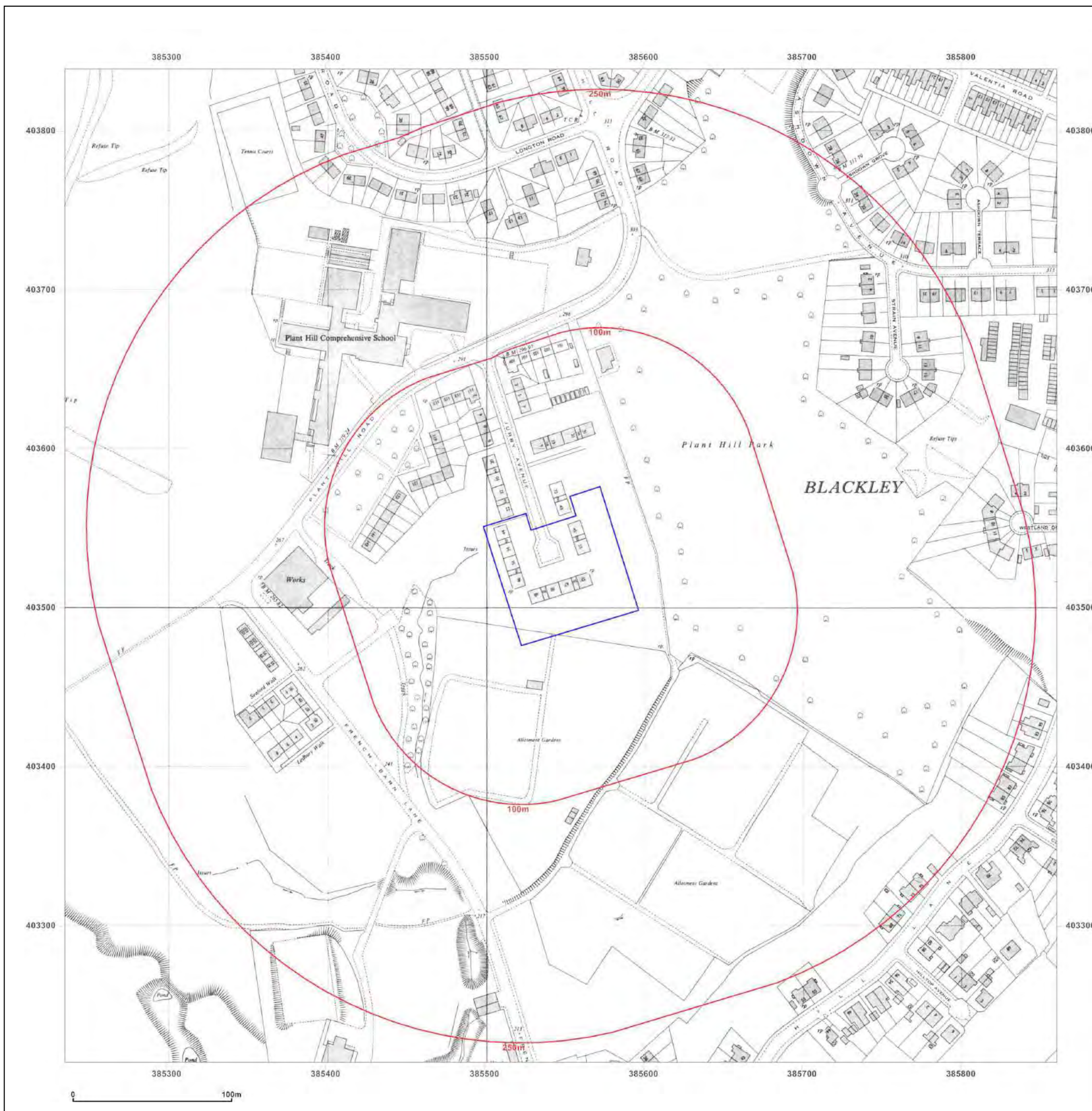


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1975-1980

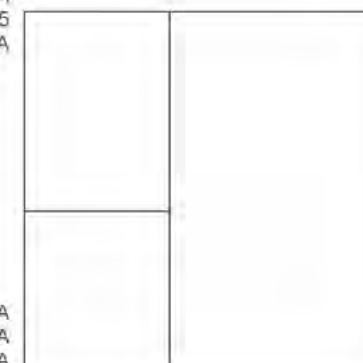
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Edition N/A
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Revised N/A
Edition N/A
Copyright 1980
Levelled 1950

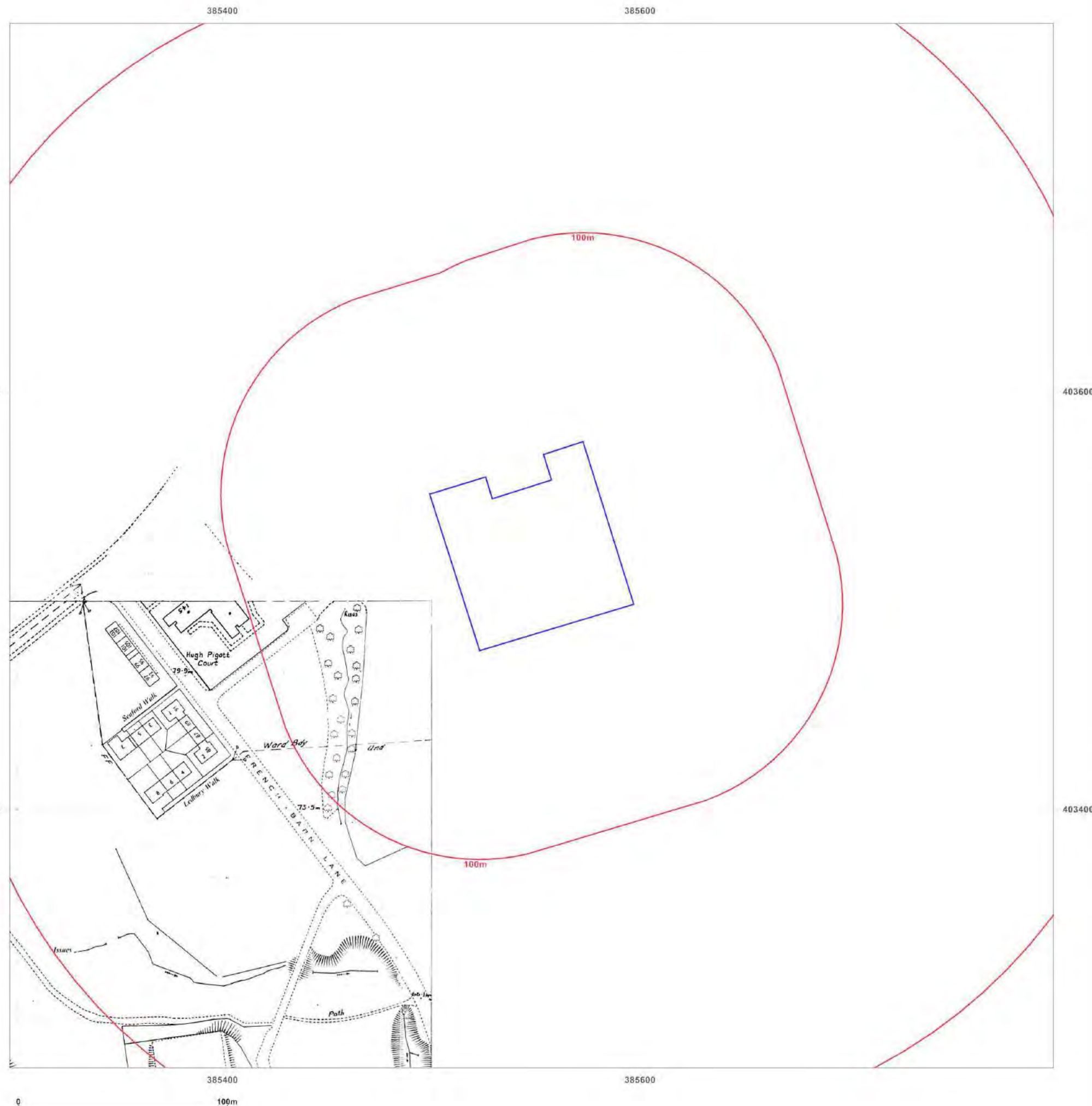


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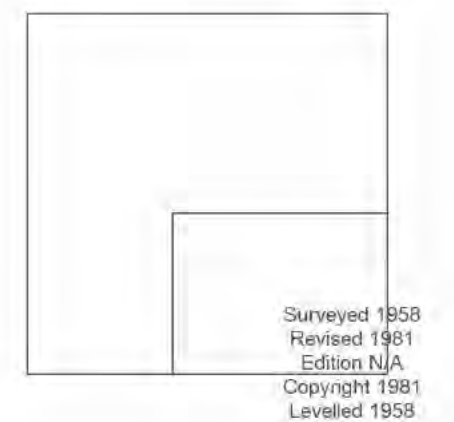
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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1981

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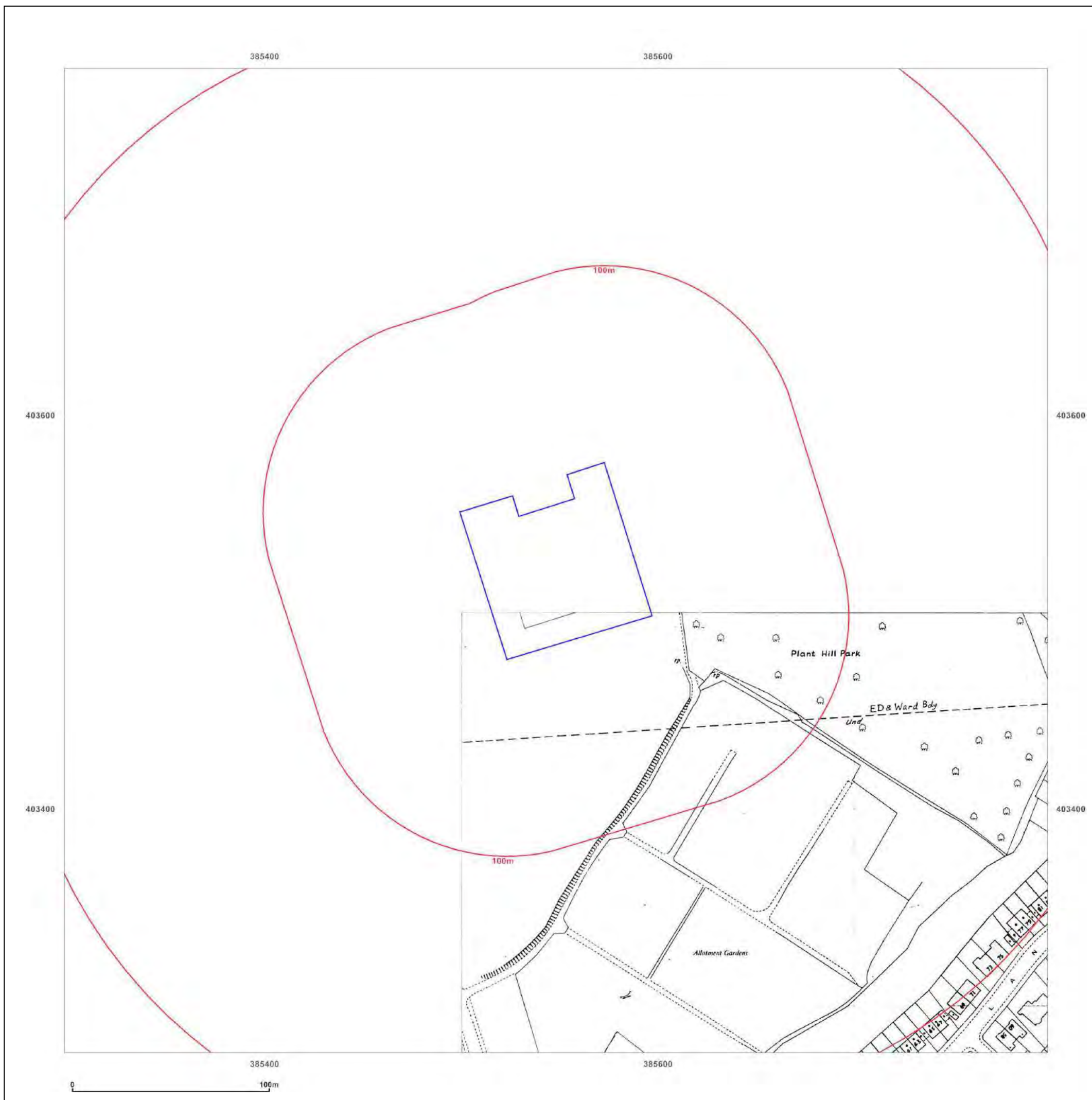


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Client Ref: 3025H
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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1988-1992

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Surveyed 1992
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Surveyed 1958
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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1992-1995

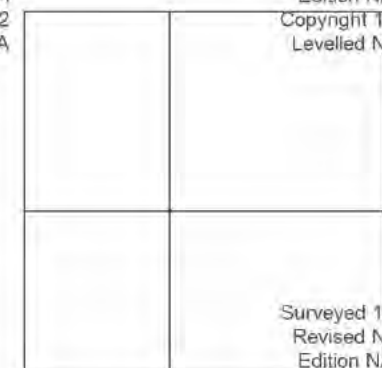
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Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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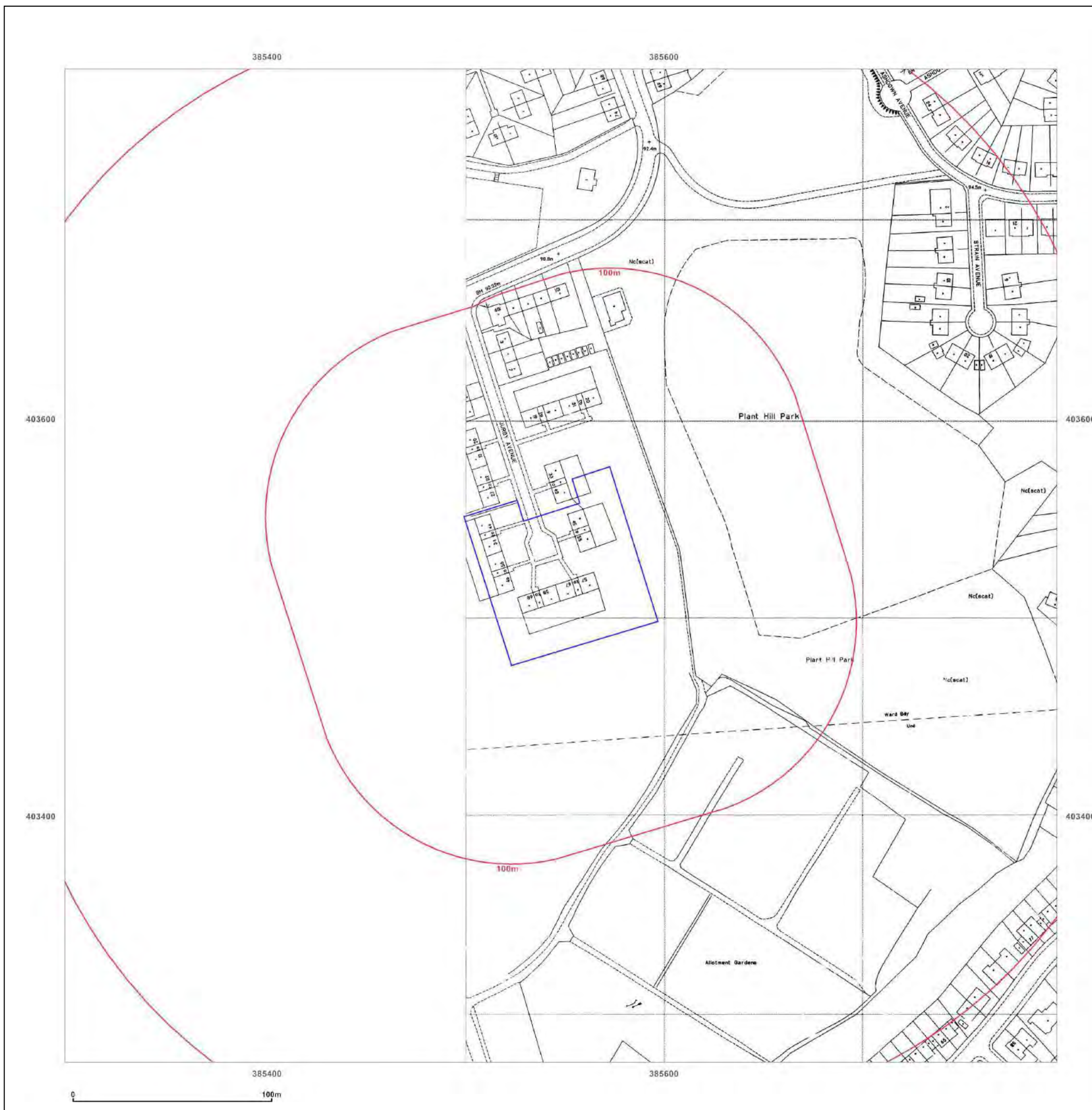


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1848

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1845
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

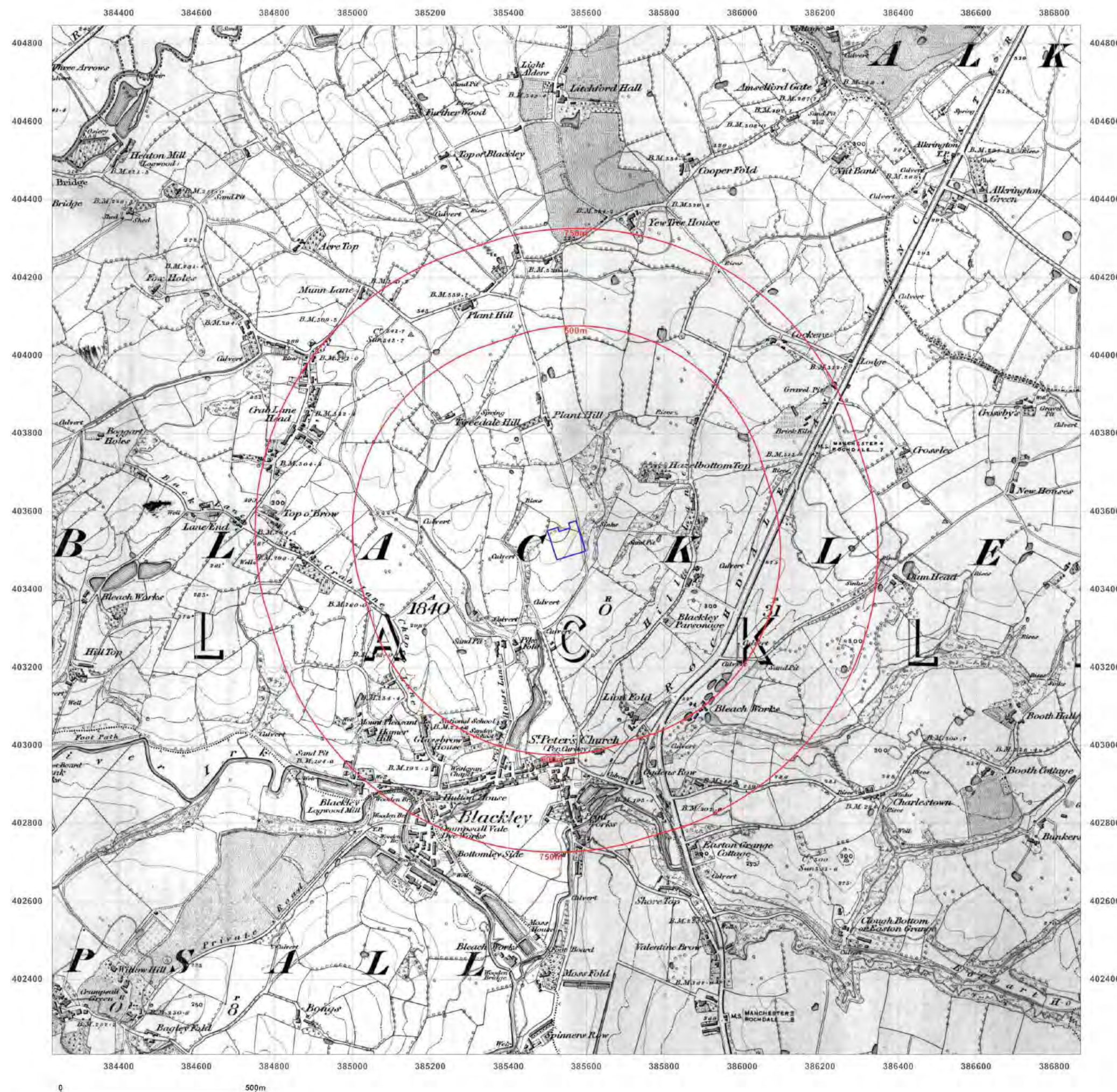


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1891

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1891
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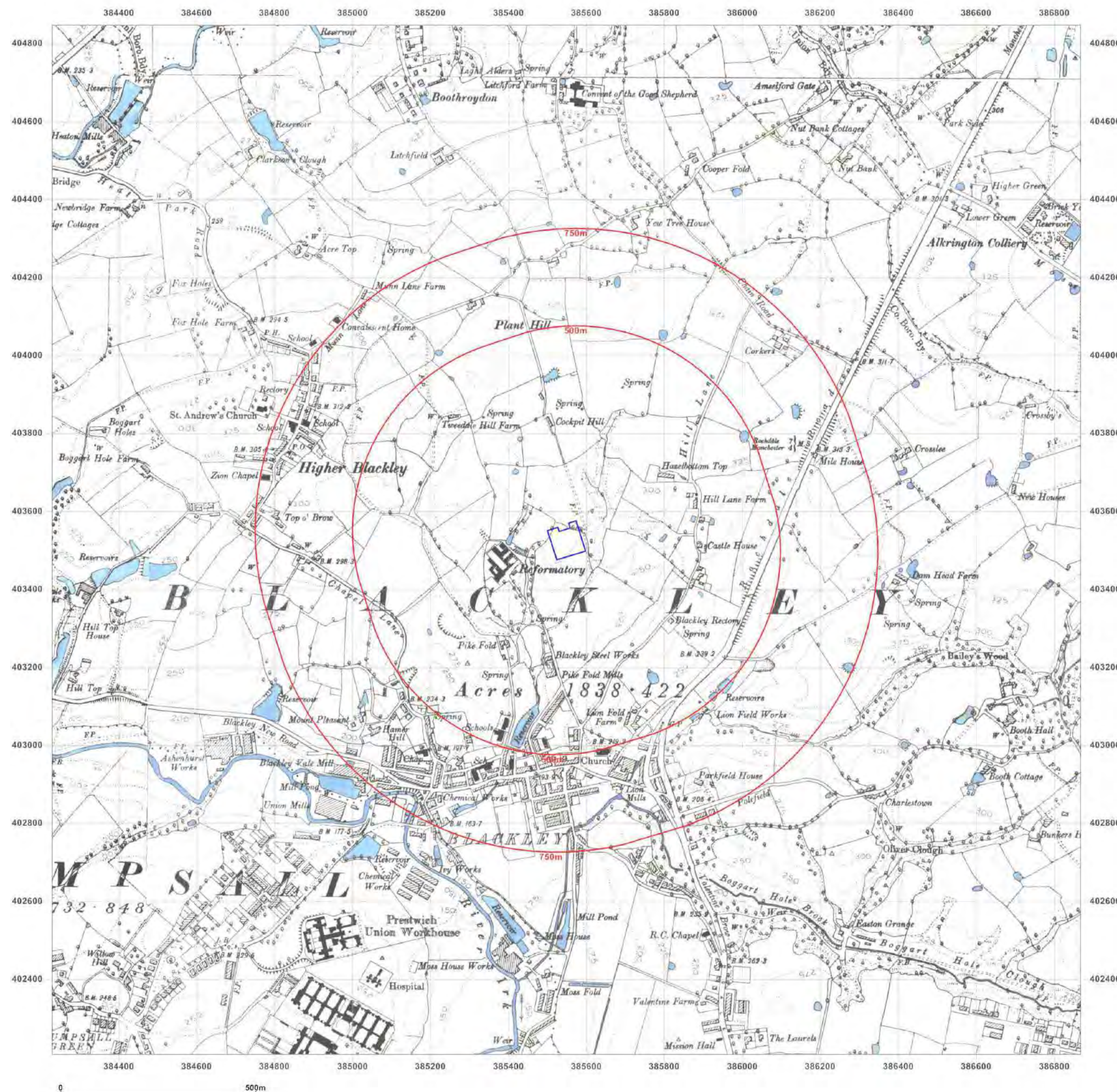


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1906-1907

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
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Surveyed 1844
Revised 1907
Edition N/A
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Surveyed 1844
Revised 1907
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Surveyed 1844
Revised 1906
Edition N/A
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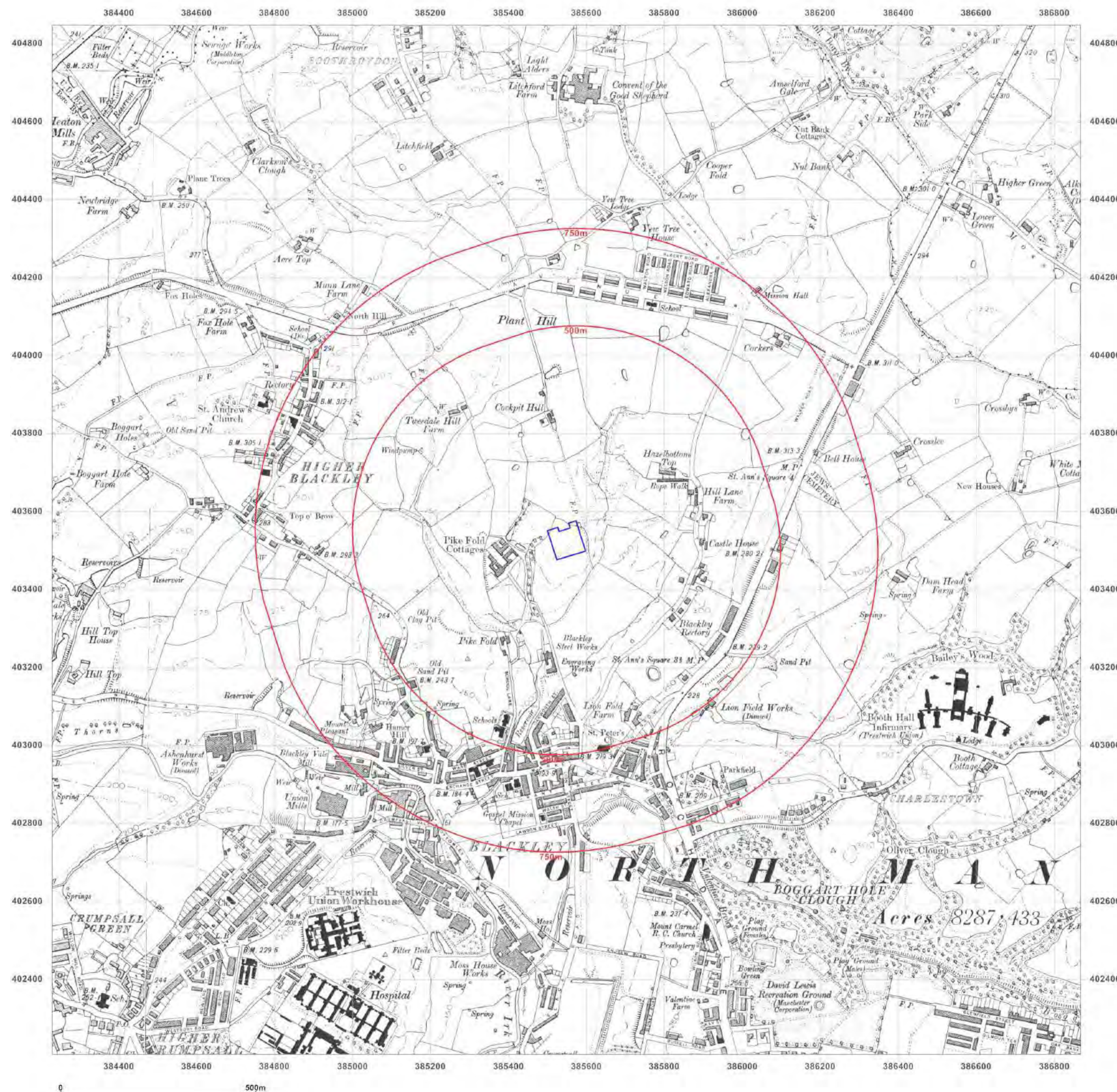


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Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1915

Scale: 1:10,560

Printed at: 1:10,560



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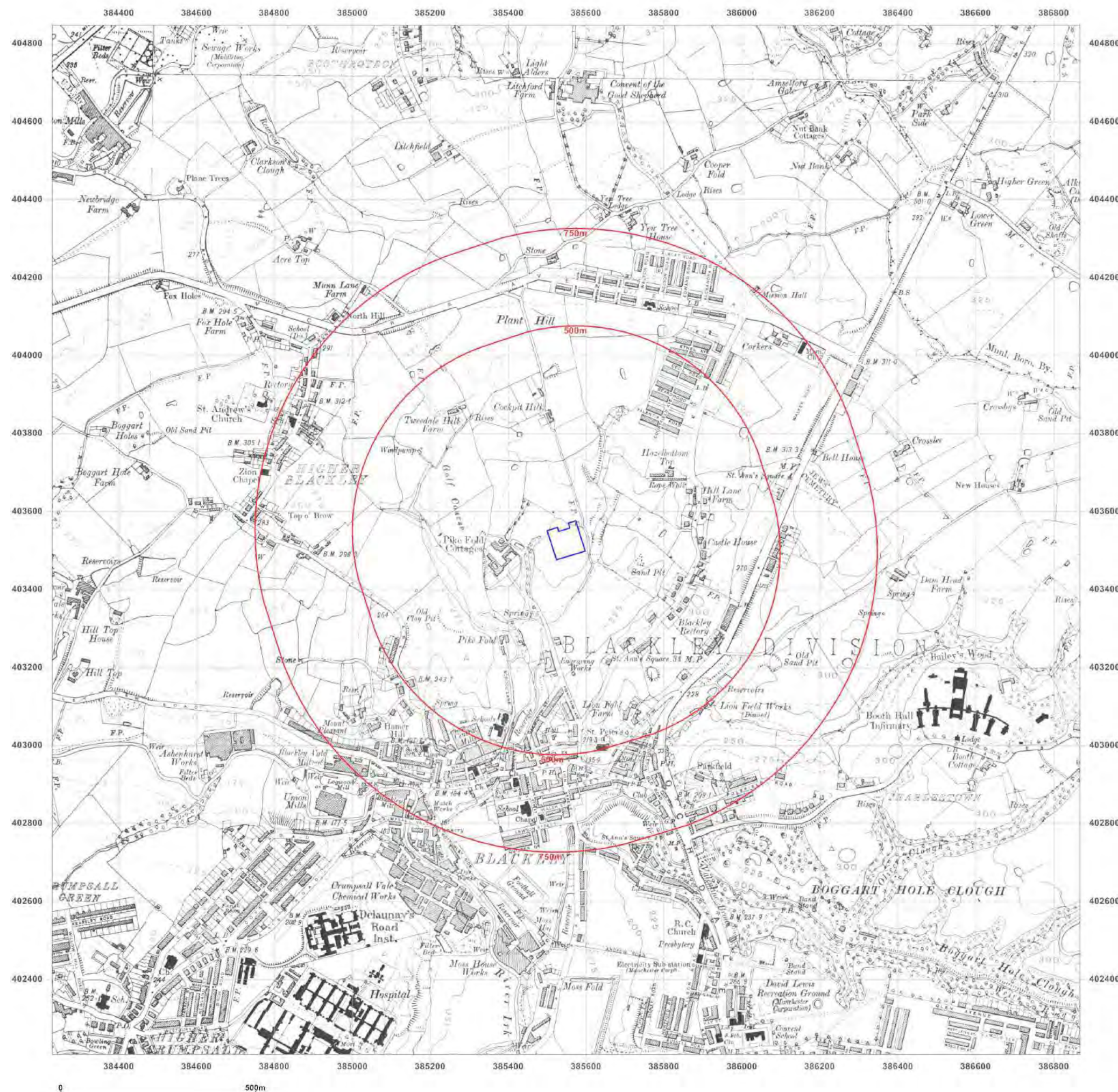


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Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1923
Edition N/A
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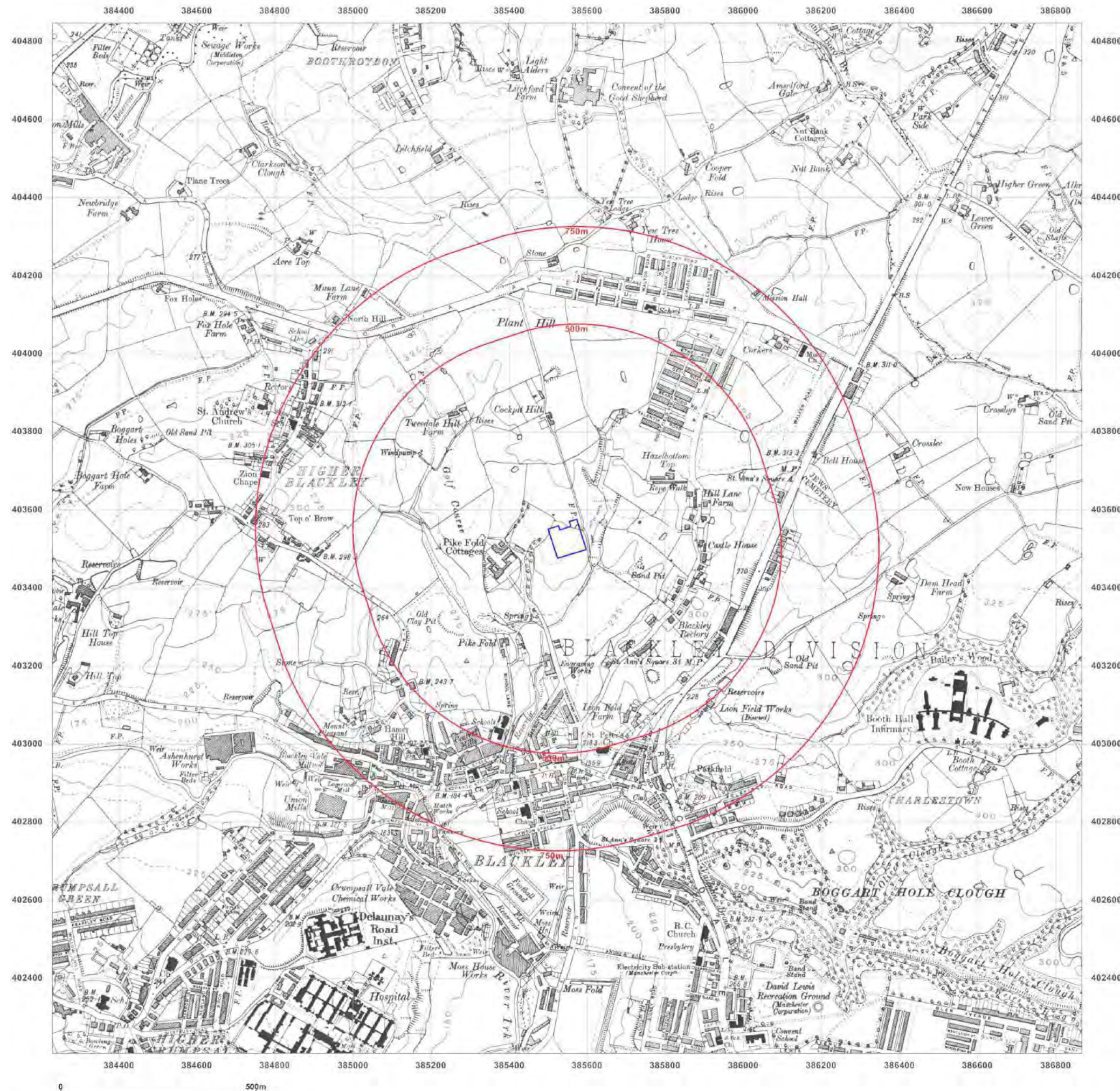


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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1932-1933

Scale: 1:10,560

Printed at: 1:10,560



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Edition N/A
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Surveyed 1844
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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Revised 1933
Edition N/A
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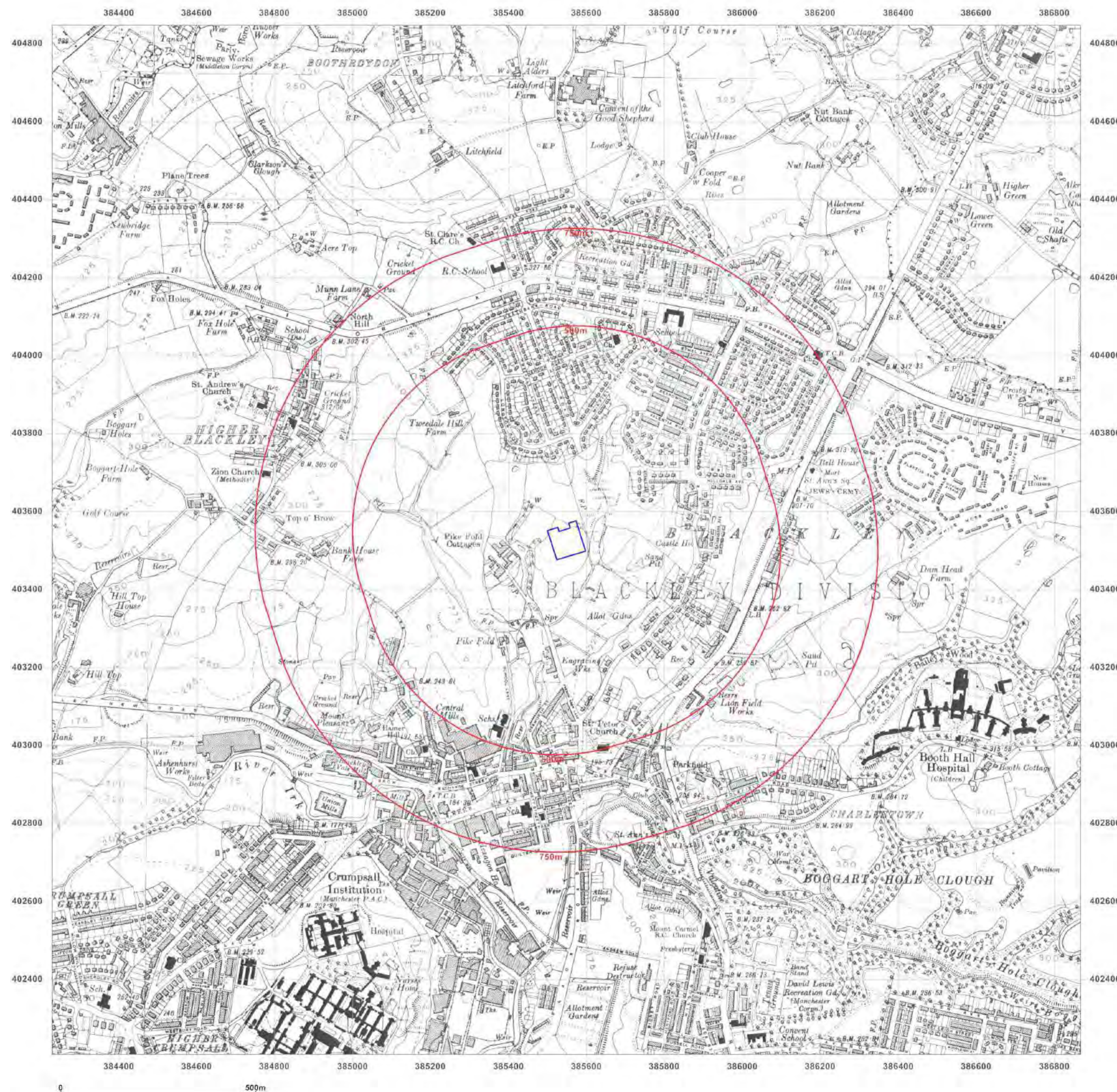


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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1938
Edition N/A
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Surveyed 1844
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Surveyed 1844
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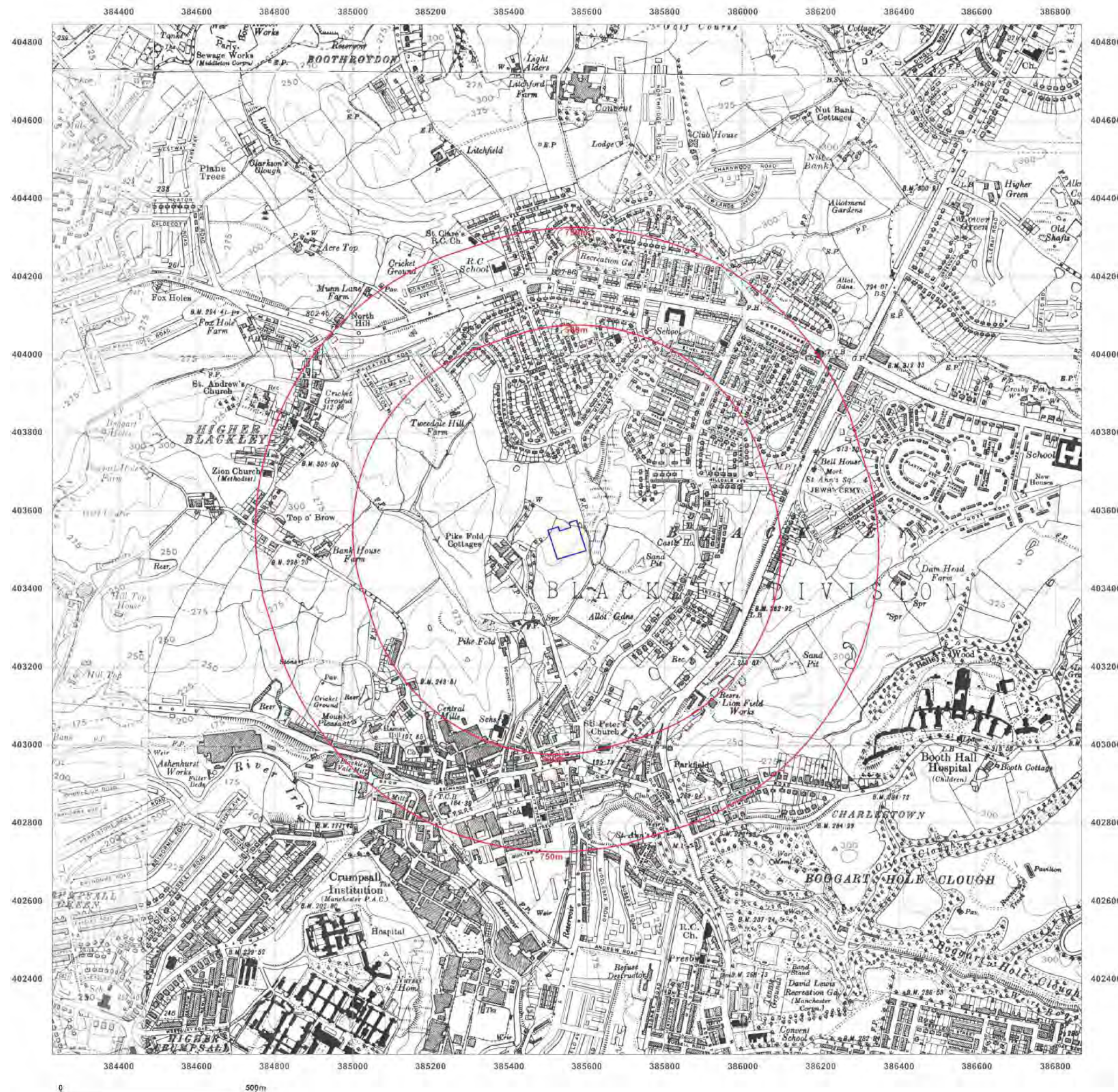


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Site Details:

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MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: Provisional

Map date: 1956

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1956
Revised 1956
Edition N/A
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Edition N/A
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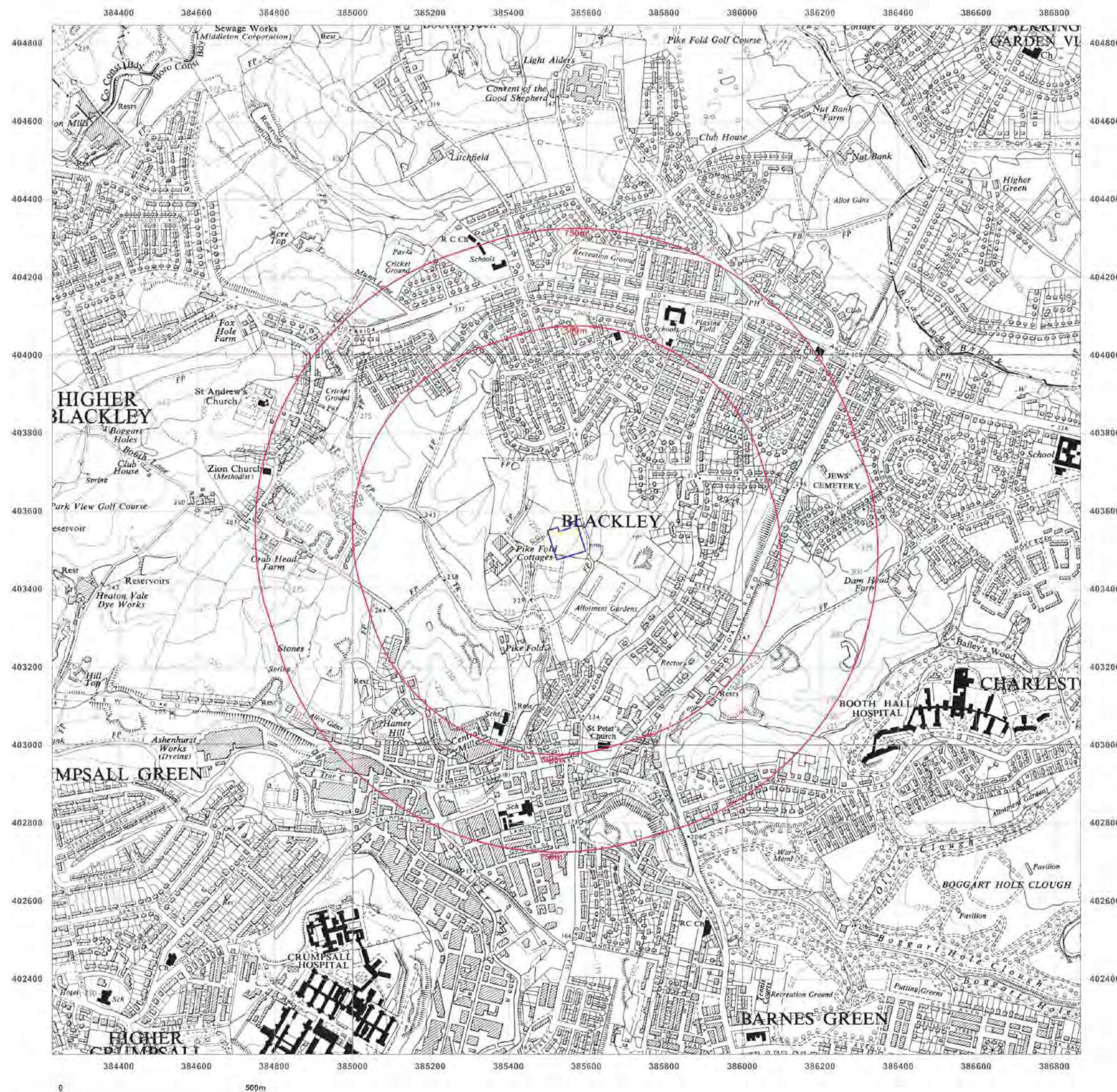


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Site Details:

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Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: Provisional

Map date: 1966-1968

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1968
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Edition N/A
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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1975-1977

Scale: 1:10,000

Printed at: 1:10,000



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Edition N/A
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Surveyed 1975
Revised 1975
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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1980-1985

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1985
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Edition N/A
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Surveyed 1980
Revised 1980
Edition N/A
Copyright N/A
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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

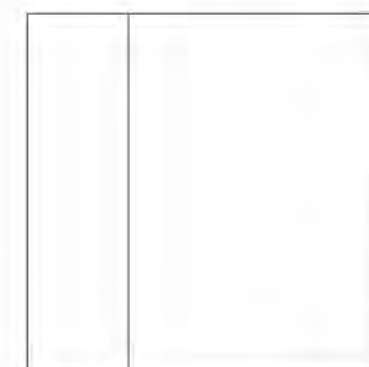
Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 1988

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1987
Revised 1988
Edition N/A
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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



2002

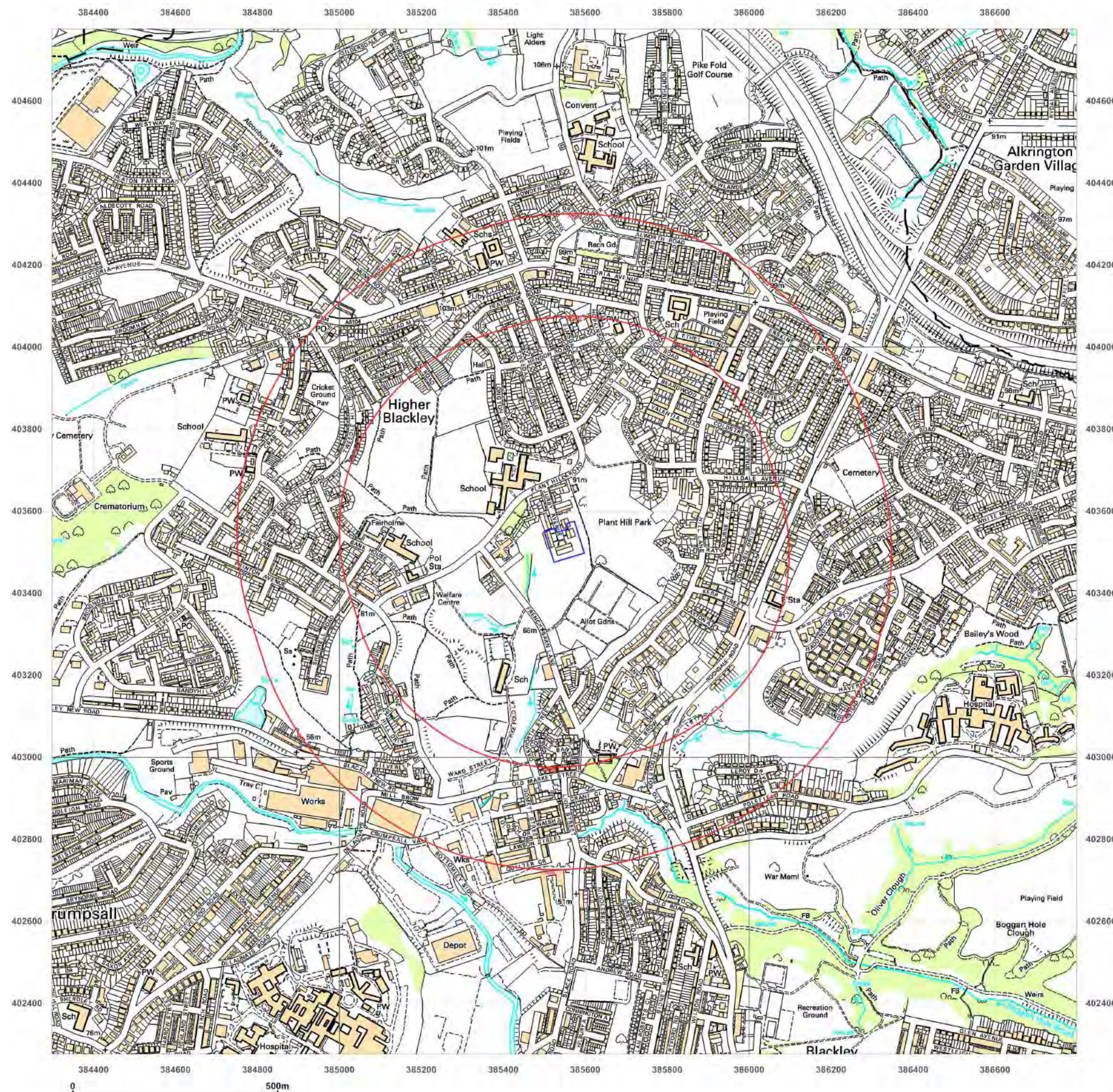


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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

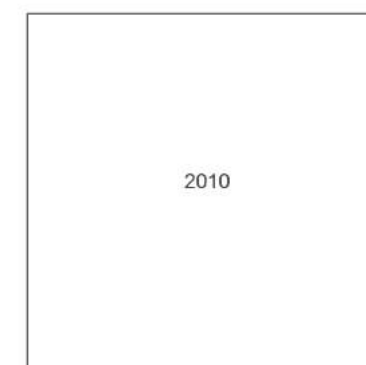
Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

JURBY AVENUE,
MANCHESTER, M9 6NG

Client Ref: 3025H
Report Ref: HMD-3629122
Grid Ref: 385548, 403526

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



2014



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APPENDIX 3

Con29m Non-residential Coal Mining Report



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

JURBY AVENUE
MANCHESTER
MANCHESTER
M9 6NG

Date of enquiry: 06 March 2017
Date enquiry received: 06 March 2017
Issue date: 06 March 2017

Our reference: 51001393520005
Your reference: 13917



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

CAULMERT LTD

Enquiry address

JURBY AVENUE, MANCHESTER, MANCHESTER, M9
6NG

How to contact us

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

200 Lichfield Lane
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www.groundstability.com

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



Approximate position of property



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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	Yes
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.

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

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

4. Mine entries

There are no 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, since 31 October 1994.

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

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

10. Mine gas

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

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the 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.

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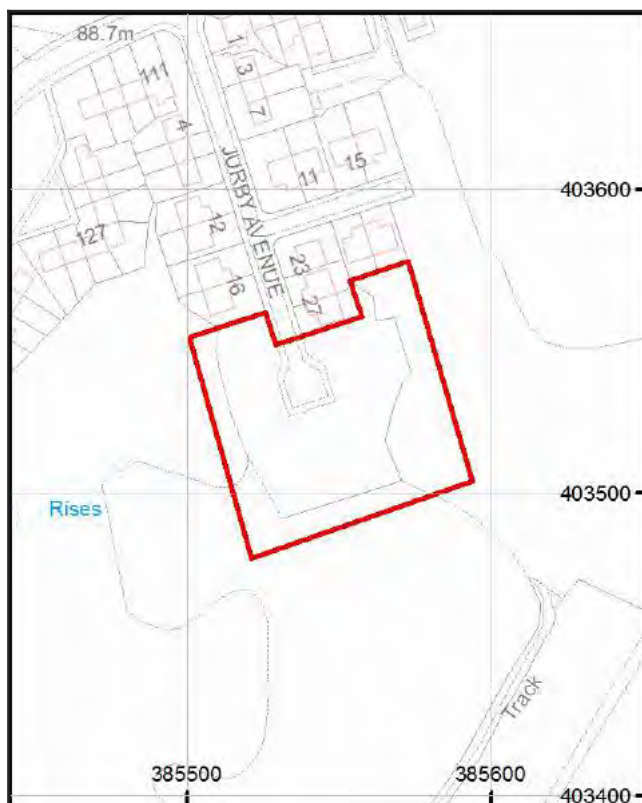
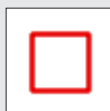
Alternative formats

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

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

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

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APPENDIX 4

Express Preliminary UXO Risk Assessment



Express Preliminary UXO Risk Assessment

www.1stlinedefence.co.uk

Client	Caulmert Ltd
Project	Jurby Avenue
Site Address	Jurby Avenue, Blackley, Manchester, M9 6NG
Report Reference	EP4491-00
Date	09/03/17
Originator	SM

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the Jurby Avenue site. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

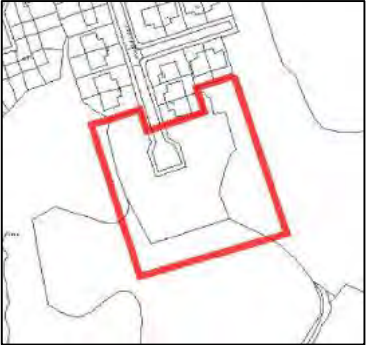
This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced.



Risk Assessment Considerations	
Site location and description/current use	The proposed site is located in the Higher Blackley area of Manchester. It is located approximately 5.5km north of Manchester city centre. The site is an approximately square-shaped parcel of land, which currently consists primarily of open vegetation. A small area of hard-standing is also included within the site boundary, which forms the end of Jurby Avenue. The site is approximately centred on the OS grid reference: SD 855 5103520 
Are there any indicators of current/historical military activity on/close to the site?	1st Line Defence holds no records in-house of military activity on or immediately surrounding the site of proposed works. Reference was found to a pillbox in the Blackley area – while the exact location of this installation could not be confirmed, evidence suggests that it was situated over 300m from the site to the south. A HAA (heavy anti-aircraft) battery was also situated approximately 2.2km to the west of the site.
What was the pre- and post-WWII history of the site?	Pre- and early post-WWII OS mapping indicate that the site consisted of open ground in this period. The post-war map edition suggests that a small section of the site was in use for allotment gardens, though it is unclear whether this was the case during wartime. The nearest developed area to the site appears in the form of Pike Fold Cottages approximately 100m to the west, in which minor alterations are evident to structures between pre- and post-war editions. One structure is labelled in the latter map as a 'Ruin'. Significant development is first noted on site in the 1955-1964 edition of mapping, in which several residential properties and Jurby Avenue are shown to be constructed on site. These structures were later demolished prior to 2000.
Was the area subject to bombing during WWII?	During WWII the site was situated within the County Borough of Manchester. According to Home Office statistics, this district sustained an overall low-moderate bombing density of 27.1 items dropped per 1,000 acres. This consisted of 712 HE (high explosive) bombs, 18 parachute mines, 7 oil bombs and 1 V-1 flying bombs. Due to the site's location on the periphery of the Manchester the area immediately surrounding the proposed site appears to have sustained a far lower 'localised' bombing density than the borough average. A bomb map for the 'Manchester Blitz' period of 22nd-24th December 1940 (in which the worst of bombing was inflicted on the city) is held by the University of Manchester and was accessed for this report. This does not record any bombing incidents on or near the site.
Is there any evidence of bomb damage on/close to the site?	As the site consisted of open fields both pre- and post-WWII, it is not possible to identify indicators of bomb damage in historical mapping. A 'Ruin' is noted in the Pike Fold premises approximately 100m to the west of site. Such features can often be indicative of bomb damage; though as no strikes are recorded in this location in available Manchester bomb mapping, it is more likely that this condition resulted from general decay or other factors.



To what degree would the site have been subject to access?	It is not anticipated that the site was regularly accessed during WWII. However, as bombing raids in the local area appear to have been infrequent, the likelihood that potential strikes on site/nearby would have been observed and referenced is deemed to be higher than in areas of a high bomb density. Observation of the site may have come from local agricultural use and from neighbouring/commercial properties.
To what degree has the site been developed post-WWII?	Post-war, development took place in the form of several residential properties and a roadway. These properties were subsequently demolished prior to 2000. The risk of encountering UXO is considered partially mitigated down to the depths and in the locations of post-war excavations.
What is the nature and extent of the intrusive works proposed?	The scope of intrusive works on the site was not known at the time of writing this report.

Summary and Conclusions

The site was situated within the County Borough of Manchester during WWII, which according to Home Office statistics, sustained a low-moderate bombing density of 27 items per 1,000 acres. A bomb map for the 'Manchester Blitz' period of 22nd-24th December 1940, accessed at this preliminary stage, does not record any bombing incidents on or near the site in this period. Pike Fold Cottages, situated approximately 100m west of the site, is labelled to contain a small 'Ruin' on post war mapping but no evidence could be found in-house to link this to bomb damage, as opposed to general decay. Due to its size and distance any potential bomb damage at this structure is likely to have been isolated, and is not anticipated to have affected the site area.

Pre- and early post-WWII OS mapping suggest that the site comprised open ground in wartime and may have been partially occupied by allotments. While it is not anticipated that the site would have been specifically checked for UXO in wartime, taking into account the low 'localised' bombing density and the likelihood that potential strikes on site/nearby would have been observed, the risk from UXO is not considered to be elevated above 'background' in this area.

Recommendations

Given the findings of this report, 1st Line Defence has not identified any significant risk of encountering items of UXO at the Jurby Avenue site. 1st Line Defence could conduct further research into this site in the form of a Detailed UXO Risk Assessment. However, it is not considered likely that additional research will significantly alter the assessment of minimal/low risk given the information currently available. As such, it is recommended that **no further action** is taken for this site.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

APPENDIX 5

Factual Ground Investigation Information

			Project: North Manchester Homes Jurby Avenue			Ref: WS1-6					
Boring date: 10/03/2017			Logged by: PAC			Client: Willmott Partnership Homes Ltd			Project ID: 3025.06		
Elevation			88.60			Coordinates		E 385517.082, N 403544.963			
Depth (m)			Description								
from		to									
0.00		0.10	Grass over soft dark brown silty slightly sandy CLAY with many rootlets (MADE GROUND).								
0.10		0.30	Grey and red-brown mottled angular to subangular fine to coarse GRAVEL of crushed concrete and brick in a soft brown sandy clay matrix (MADE GROUND).								
0.30		0.60	Buff yellow becoming pink sandy fine to coarse angular to subangular GRAVEL of crushed sandstone (MADE GROUND).								
0.60		2.10	Soft becoming firm orange-brown mottled orange and light grey silty slightly sandy CLAY. Rare fine gravel of coal. Becoming firm below 1.70 (TILL).								
2.10		2.70	Loose orangish-brown slightly clayey silty fine SAND (TILL).								
2.70		4.00	Soft to firm brown silty sandy CLAY. Rare fine gravel of mixed lithology (TILL).								
End of borehole at 4.00m											
											
Notes.			Borehole location scanned by GPR and set-out by SEP Ltd prior to attending site.								
			Window sample boreholes formed by CC Geotechnical Ltd under supervision of Caulmert.								
			Groundwater – Encountered at 2.10mBGL. Standing water level at 1.85mBGL after 50 minutes.								
			Dynamic probing from 4.00 to .00mBGL.								
Sampling & Recovery Details (m)						SPT test details					
Depth (m)		Recovery (%)	comments	Depth (m)		Blow count	N	Comment			
from	to										
0	1	85		1.0	1,0/2,2,2,3	9					
1	2	100		2.0	2,2/2,2,2,2	8					
2	3	95		3.0	2,2/2,5,4,4	15					
3	4	30		4.0-5.0	1,2,1,1,2,1,2,1,2		Dynamic probe				
				5.0-6.0	1,1,2,2,2,5,6,6,6,6		Dynamic probe				

			Project: North Manchester Homes Jurby Avenue		Ref: WS2-6		
Boring date: 10/03/2017		Logged by: PAC		Client: Willmott Partnership Homes Ltd		Project ID: 3025.06	
Elevation		88.55		Coordinates		E 385524.670, N 403530.532	
Depth (m)		Description					
from	to						
0.00	0.20	Grass over soft dark brown silty slightly sandy CLAY with many rootlets (MADE GROUND).					
0.20	3.65	Firm light orange-brown mottled light grey silty slightly sandy CLAY. Rare fine gravel of coal and sandstone. Below 1.00m becoming brown and slightly gravelly and below 2.40 no grey mottling. Occasional sand layers / lenses (TILL).					
3.65	4.00	Medium dense orange-brown silty fine SAND (TILL).					
End of borehole at 4.45m							
							
Notes.		Borehole location scanned by GPR and set-out by SEP Ltd prior to attending site.					
		Window sample boreholes formed by CC Geotechnical Ltd under supervision of Caulmert.					
		Groundwater – Encountered at 2.30mBGL in sand layer. Water level at 2.93mBGL after 30 minutes.					
Sampling & Recovery Details (m)				SPT test details			
Depth (m)		Recovery (%)	comments	Depth (m)	Blow count	N	Comment
from	to						
0	1	95		1.0	2,3/2,2,3,2	9	
1	2	90		2.0	2,2/3,2,2,2	9	
2	3	100		3.0	2,2/3,2,3,3	11	
3	4	95		4.0	2,4/4,4,5,4	17	

			Project: North Manchester Homes Jurby Avenue		Ref: WS3-6		
Boring date: 10/03/2017		Logged by: PAC	Client: Willmott Partnership Homes Ltd		Project ID: 3025.06		
Elevation		88.58	Coordinates	E 385544.346, N 403513.849			
Depth (m)		Description					
from	to						
0.00	0.05	Grass over soft dark brown silty slightly sandy CLAY with many rootlets (MADE GROUND).					
0.05	1.00	Soft to firm orange-brown mottled light grey silty slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse including brick, and concrete. Frequent pockets of black sand and gravel of ash and clinker (MADE GROUND).					
1.00	2.10	Firm brown mottled grey silty sandy CLAY with some rootlets (TILL).					
2.10	4.00	Firm orangish-brown silty slightly sandy CLAY. Rare fine gravel of coal and sandstone (TILL).					
End of borehole at 4.45m							
							
Notes.		Borehole location scanned by GPR and set-out by SEP Ltd prior to attending site.					
		Window sample boreholes formed by CC Geotechnical Ltd under supervision of Caulmert.					
		Groundwater – None encountered.					
		Falling head test completed in borehole.					
Sampling & Recovery Details (m)				SPT test details			
Depth (m)		Recovery (%)	comments	Depth (m)	Blow count	N	Comment
from	to						
0	1	85		1.0	2,3/4,3,3,3	13	
1	2	100		2.0	2,2/3,4,5,5	17	
2	3	100		3.0	3,3/2,3,3,2	10	
3	4	75		4.0	3,2/3,3,3,3	12	

			Project: North Manchester Homes Jurby Avenue		Ref: WS4-6		
Boring date: 10/03/2017		Logged by: PAC	Client: Willmott Partnership Homes Ltd		Project ID: 3025.06		
Elevation		88.98	Coordinates	E 385555.531, N 403533.618			
Depth (m)		Description					
from	to						
0.00	0.10	Grass over soft dark brown silty slightly sandy CLAY with many rootlets (MADE GROUND).					
0.10	0.20	Black fine tom coarse SAND and angular to subrounded fine to coarse GRAVEL of ash and clinker with some brick (MADE GROUND).					
0.20	2.40	Firm to stiff orange-brown mottled light grey silty slightly sandy CLAY (TILL).					
2.40	3.60	Firm to stiff brown silty slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed natural lithology (TILL).					
3.60	3.80	Orange-brown fine to medium SAND (TILL).					
3.80	4.00	Firm to stiff brown silty slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed natural lithology (TILL).					
End of borehole at 4.45m							
							
Notes.		Borehole location scanned by GPR and set-out by SEP Ltd prior to attending site.					
		Window sample boreholes formed by CC Geotechnical Ltd under supervision of Caulmert.					
		Groundwater – None encountered during drilling. Water level at 3.44mBGL after 30 minutes (depth to base of borehole 3.69mBGL).					
		Gas and groundwater monitoring installation at 2.0m.					
Sampling & Recovery Details (m)				SPT test details			
Depth (m)		Recovery (%)	comments	Depth (m)	Blow count	N	Comment
from	to						
0	1	90		1.0	1,1/2,2,4,4	12	
1	2	0	Possible obstruction	2.0	7,6/5,6,5,5	21	
2	3	100		3.0	2,2/3,2,3,3	11	
3	4	100		4.0	3,2/3,3,3,3	12	

			Project: North Manchester Homes Jurby Avenue		Ref: WS5-6		
Boring date: 10/03/2017		Logged by: PAC	Client: Willmott Partnership Homes Limited		Project ID: 3025.06		
Elevation		89.20	Coordinates	E 385549.680, N 403548.551			
Depth (m)		Description					
from	to						
0.00	0.15	Grass over soft dark brown silty slightly sandy slightly gravelly CLAY with many rootlets. Gravel is angular to subangular of brick and coal (MADE GROUND).					
0.15	0.30	Dark grey and brown mottled fine to coarse SAND and angular to subangular fine to coarse GRAVEL of crushed concrete and brick in a soft brown sandy clay matrix (MADE GROUND).					
0.30	2.15	Firm brown mottled grey silty slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium including coal and sandstone (TILL).					
2.15	2.50	Loose orangish-brown slightly clayey silty fine to medium SAND (TILL).					
2.50	2.70	Firm brown mottled grey silty slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium including coal and sandstone (TILL).					
2.70	5.00	Loose orangish-brown silty fine SAND with occasional soft clay laminations (TILL).					
End of borehole at 4.45m							
							
Notes.		Borehole location scanned by GPR and set-out by SEP Ltd prior to attending site.					
		Window sample boreholes formed by CC Geotechnical Ltd under supervision of Caulmert.					
		Groundwater – Damp at 2.70mBGL.					
		Brick caught in first 1.0m run, first core re-drilled 600mm to the south.					
Sampling & Recovery Details (m)				SPT test details			
Depth (m)		Recovery (%)	comments	Depth (m)	Blow count	N	Comment
from	to						
0	1	(0) / 100	Re-drilled	1.0	2,3/2,3,3,3	11	
1	2	95		2.0	2,3/2,3,3,2	10	
2	3	100		3.0	2,2/2,2,3,3	10	
3	4	75		4.0	2,2/2,2,3,3	10	
4	5	80		5.0	2,2/3,2,3,3	11	

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Willmott Partnership Homes Ltd
Site: NM Homes
Date: 21/03/2017

Quote No:
Visit No: 1 of 6
Operator: Dominic Ostafijczuk

Project Manager: Paul Clayden

	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
Monitoring Point	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
WS4	0.00	0.00	0.0	0.0	0.2	0.2	0	0	0	0	21.0	21.0			0.00	0	-000.02	30	0.33	1.86	
Max	0.0	0.0	0.0	0.0	0.2	0.2	0	0	0	0	21.0	21.0	NR	ND	0.0	0.0	ND	30	0.33	1.86	
Min	0.0	0.0	0.0	0.0	0.2	0.2	0	0	0	0	21.0	21.0	NR	0.0	0.0	0.0	30	0.33	1.86		

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground: ☐ Dry ☒ Moist ☐ Wet ☐ Snow ☐ Frozen
 Wind: ☒ Calm ☐ Light ☐ Moderate ☐ Strong
 Cloud cover: ☐ None ☒ Slight ☐ Cloudy ☐ Overcast
 Precipitation: ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Time monitoring performed: Start End
 Barometric pressure (mbar): Start End
 Pressure trend (Daily): Falling ☐ Steady Rising
 Source:
 Air Temperature (Deg. C): Before After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA10942
 Gas Range: **CH₄** 0 - 100% **CO₂** 0 - 100% **O₂** 0 - 25%
 Gas Flow range: +100/-50 l/hour
 Differential Pressure: (+/-) 1000 Pa
Date of last calibration:
Date of next calibration:

Ambient air check: **CH₄** **CO₂** **O₂**

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Willmott Partnership Homes Ltd
Site: NM Homes
Date: 30/03/2017

Quote No:
Visit No: 2 of 6
Operator: Dominic Ostafijczuk

Project Manager: Paul Clayden

	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
Monitoring Point	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
WS4	0.00	0.00	0.0	0.0	0.0	0.0	0	0	0	0	20.8	20.8			0.01	0.01	-000.30	30	0.79	1.90	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	20.8	20.8	NR	NR	0.0	0.0	ND	30	0.79	1.90	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	20.8	20.8	NR	NR	0.0	0.0	0.0	30	0.79	1.90	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground: ☐ Dry ☒ Moist ☐ Wet ☐ Snow ☐ Frozen
Wind: ☒ Calm ☐ Light ☐ Moderate ☐ Strong
Cloud cover: ☐ None ☒ Slight ☒ Cloudy ☐ Overcast
Precipitation: ☒ None ☐ Slight ☐ Moderate ☐ Heavy
Time monitoring performed: Start End
Barometric pressure (mbar): Start End
Pressure trend (Daily): Falling ☐ Steady Rising
Source:
Air Temperature (Deg. C): Before After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA10942
Gas Range: CH₄ 0 - 100% CO₂ 0 - 100% O₂ 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration:
Date of next calibration:

Ambient air check: CH₄ CO₂ O₂

APPENDIX 6

Laboratory Testing Results - Contamination

Willmott Partnership Homes Ltd: Jurby Avenue (3025.06) - Soil Sample Testing Results

	Sample ID	2.5%	Borehole ID	WS1-6	WS3-6	WS5-6	WS5-6
Determinand	Units	Threshold Values (mg/kg)	Depth (m)	0.10 - 0.30	0.50 - 0.70	0.15 - 0.30	0.50
			Relevant Standard	Made Ground	Made Ground	Made Ground	Brown Clay
ACM Type	N/A	-	-	Amosite fibres	-	-	-
Asbestos Identification	%	-	-	Yes	N.D.	N.D.	-
Asbestos Quantification	%	-	-	<0.001	-	-	-
Moisture Content	%	-	-	15	17	15	14
pH	units	-	-	8.2	8.2	8.3	8.2
Sulphate (2:1 water soluble)	g/l	-	-	-	<0.1	-	<0.1
Soil Organic Matter	%	-	-	-	3.1	-	-
Arsenic	mg/kg	32	C4SL	8	11	9	-
Barium	mg/kg	1300 *1	CLAIRE (2010)	140	75	240	-
Beryllium	mg/kg	1.7	S4UL	<2	<2	<2	-
Boron (water soluble)	mg/kg	290	S4UL	<1	<1	<1	-
Cadmium	mg/kg	10	C4SL	<1	<1	<1	-
Chromium	mg/kg	-	-	16	17	22	-
Chromium (Trivalent)	mg/kg	910	LQM	-	-	-	-
Chromium (Hexavalent)	mg/kg	6	C4SL	-	-	-	-
Copper	mg/kg	2400	S4UL	23	21	37	-
Lead	mg/kg	82-210	C4SL	44	21	100	-
Mercury	mg/kg	1.2	S4UL	<1	<1	<1	-
Nickel	mg/kg	180	S4UL	12	15	19	-
Selenium	mg/kg	250	S4UL	<3	<3	<3	-
Vanadium	mg/kg	410	S4UL	18	21	28	-
Zinc	mg/kg	3700	LQM	86	46	160	-
TPH							
Total Petroleum Hydrocarbons *5	mg/kg	65	LQM	4	<1	47	-
PAH							
Naphthalene	mg/kg	5.6	LQM	<0.1	<0.1	<1.0	-
Acenaphthylene	mg/kg	420	LQM	<0.1	<0.1	<1.0	-
Acenaphthene	mg/kg	510	LQM	<0.1	<0.1	<1.0	-
Fluorene	mg/kg	400	LQM	<0.1	<0.1	<1.0	-
Phenanthrene	mg/kg	220	LQM	<0.1	<0.1	1.5	-
Anthracene	mg/kg	5400	LQM	<0.1	<0.1	<1.0	-
Fluoranthene	mg/kg	560	LQM	0.2	<0.1	2.7	-
Pyrene	mg/kg	1200	LQM	0.2	<0.1	2.5	-
Benzo[a]anthracene	mg/kg	11	LQM	<0.1	<0.1	1	-
Chrysene	mg/kg	22	LQM	<0.1	<0.1	1.3	-
Benzo[b]fluoranthene	mg/kg	3.3	LQM	<0.1	<0.1	1.7	-
Benzo[k]fluoranthene	mg/kg	93	LQM	<0.1	<0.1	1	-
Benzo[a]pyrene	mg/kg	2.7	LQM/C4SL *2	<0.1	<0.1	1.3	-
Indeno(1,2,3-c,d)Pyrene	mg/kg	36	LQM	<0.1	<0.1	<1.0	-
Dibenz(a,h)Anthracene	mg/kg	0.28	LQM	<0.1	<0.1	<1.0	-
Benzo[g,h,i]perylene	mg/kg	340	LQM	<0.1	<0.1	<1.0	-
PAH (total)	mg/kg	-	-	0.3	<0.1	13	-

Generic Assessment Criteria Source	
SGV	Soil Guidance Values published by the EA
	Nickel value withdrawn.
C4SL	Category 4 Screening Levels, DEFRA December 2014
LQM	LQM/CIEH Suitable for Use Levels for Human Health Risk Assessment (S4UL), November 2014.
	(Copyright Land Quality Management Limited, reduced with permission; Publication Number S4UL3059. All rights reserved).
	Assumed no free product present in VOCs.
EIC	EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment derived using CLEA V.1.06
ND	Not soil organic matter dependent
	Not Derived.
Skin	Direct skin contact with phenol
NOTES	
*1	Values only presented for residential without plant up-take due to limited research on plant up-take factors.
*2	C4SL advocates using BAP as a surrogate for all PAHs.
3	Values in brackets are values derived by DEFRA.
4	Barium - Soil Generic Assessment Criteria for Human Health Risk Assessment CL:AIRE January 2010.
*5	Total TPH value assumed as lowest threshold criteria for EC8-C10 range.

Exceeds Threshold Value

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: Report A 639224-1

Date of Report: 22-Mar-2017

Customer: Caulmert Ltd.
8 St Georges Court
Altrincham Business Park
Dairyhouse Lane
Altrincham
Cheshire
WA14 5UA

Customer Contact: Mr Paul Clayden

Customer Job Reference:

Customer Purchase Order: PO13950

Customer Site Reference: Jurby Avenue

Date Job Received at Concept: 10-Mar-2017

Date Analysis Started: 13-Mar-2017

Date Analysis Completed:

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept SOPs



Report checked
and authorised by :

Issued by :
Sara Abou-Shakra
Project Manager



Concept Reference: 639224 Project Site: Jurby Avenue Customer Reference:								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference					639224 001	639224 002	639224 003	639224 004
Customer Sample Reference					WS1-6 ES1	WS3-6 ES1	WS5-6 ES1	WS5-6 ES2
Top Depth					0.10	0.50	0.15	
Bottom Depth					0.30	0.70	0.30	0.50
Date Sampled					10-MAR-2017	10-MAR-2017	10-MAR-2017	10-MAR-2017
Type					Sandy Soil	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	15	17	15	14
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 639224 Project Site: Jurby Avenue Customer Reference:							
Soil CLEA Metals		Analysed as Soil					
Concept Reference					639224 001	639224 002	639224 003
Customer Sample Reference					WS1-6 ES1	WS3-6 ES1	WS5-6 ES1
Top Depth					0.10	0.50	0.15
Bottom Depth					0.30	0.70	0.30
Date Sampled					10-MAR-2017	10-MAR-2017	10-MAR-2017
Type					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	8	11	9
Barium	T6	A40	1	mg/kg	140	75	240
Beryllium	T6	A40	2	mg/kg	<2	<2	<2
Boron (water-soluble)	T6	AR	1	mg/kg	<1	<1	<1
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	16	17	22
Copper	T6	M40	1	mg/kg	23	21	37
Lead	T6	M40	1	mg/kg	44	21	100
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	12	15	19
Selenium	T6	M40	3	mg/kg	<3	<3	<3
Vanadium	T6	M40	1	mg/kg	18	21	28
Zinc	T6	M40	1	ma/ka	86	46	160

Concept Reference: 639224 Project Site: Jurby Avenue Customer Reference:									
Soil		Analysed as Soil							
pH									
				Concept Reference		639224 001	639224 002	639224 003	639224 004
				Customer Sample Reference		WS1-6 ES1	WS3-6 ES1	WS5-6 ES1	WS5-6 ES2
				Top Depth		0.10	0.50	0.15	
				Bottom Depth		0.30	0.70	0.30	0.50
				Date Sampled		10-MAR-2017	10-MAR-2017	10-MAR-2017	10-MAR-2017
				Type		Sandy Soil	Sandy Soil	Sandy Soil	Clay
Determinand		Method	Test Sample	LOD	Units				
pH		T7	AR			8.2	8.2	8.3	8.2

Notes

Asbestos subcontracted to REC Asbestos
Report A to report Jurby Avenue samples only

Method Index

Value	Description
T2	Grav
T8	GC/FID
T27	PLM
T162	Grav (1 Dec) (105 C)
T287	Calc TOC/0.58
T7	Probe
T6	ICP/OES
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Asbestos ID	T27	AR			SU	001-003
SO4(2:1)	T6	AR	0.1	g/l	N	002,004
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Barium	T6	A40	1	mg/kg	U	001-003
Beryllium	T6	A40	2	mg/kg	U	001-003
Boron (water-soluble)	T6	AR	1	mg/kg	N	001-003
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
Selenium	T6	M40	3	mg/kg	M	001-003
Vanadium	T6	M40	1	mg/kg	M	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-004
Soil Organic Matter	T287	AR	0.1	%	N	002
TPH (C10-C35)	T8	M105	1	mg/kg	M	001-003
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: Supplemental 642084-1

Date of Report: 04-Apr-2017

Customer: Caulmert Ltd.
8 St Georges Court
Altrincham Business Park
Dairyhouse Lane
Altrincham
Cheshire
WA14 5UA

Customer Contact: Mr Paul Clayden

Customer Job Reference: NM Holmes

Customer Purchase Order: PO13950

Customer Site Reference: Jurby Avenue

Date Job Received at Concept: 10-Mar-2017

Date Analysis Started: 23-Mar-2017

Date Analysis Completed: 30-Mar-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept SOPs

Report checked
and authorised by :
Sara Abou-Shakra
Project Manager

Issued by :
Sara Abou-Shakra
Project Manager



Concept Reference: 642084 Project Site: Jurby Avenue Customer Reference: NM Holmes Soil Analysed as Soil Asbestos Quantification					
Concept Reference				642084 001	
Customer Sample Reference				WS1-6 (639224-001)	
Date Sampled				10-MAR-2017	
Determinand	Method	Test Sample	LOD	Units	
Asbestos Quantification	T27	AR	0.001	%	Amosite Fibres Detected <0.001

Index to symbols used in Supplemental 642084-1

Value	Description
AR	As Received
S	Analysis was subcontracted
U	Analysis is UKAS accredited

Notes

Asbestos subcontracted to REC Asbestos
Supplmental report to change site name from Faversham Street to Jurby Avenue

Method Index

Value	Description
T27	PLM

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Asbestos Quantification	T27	AR	0.001	%	SU	001

APPENDIX 7

Laboratory Testing Results – Geotechnical

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Shear Strength (kN/m ²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425m m (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
WS2-6	BD	1.00	1.50	18	-	-	-	32	16	16	100	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded mudstone. (BS1377Pt2:3.2,4.4,5)
WS3-6	BD	1.00	1.50	17	-	-	-	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded mudstone. (BS1377Pt2:3.2)
WS5-6	BD	1.00	1.50	16	-	-	-	31	16	15	98	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded mudstone. (BS1377Pt2:3.2,4.4,5)
WS5-6	SD	1.50	1.50	17	-	-	-	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded mudstone. (BS1377Pt2:3.2)
WS5-6	SD	2.00	2.00	18	-	-	-	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded mudstone. (BS1377Pt2:3.2)
WS5-6	BD	2.15	2.50	-	-	-	-	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular coal and sandstone. (BS1377Pt2:9.2)

SITE: JURBY AVENUE, MANCHESTER (CCG-C-17-9499.6)

DATE: 16.03.17

CLIENT: CAULMERT / WILLMOTT

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample

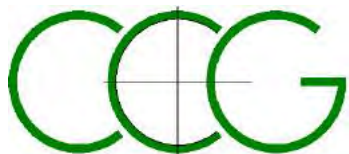
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic

(* Denotes Hand Shear Vane test result)

Sample description not accredited by UKAS



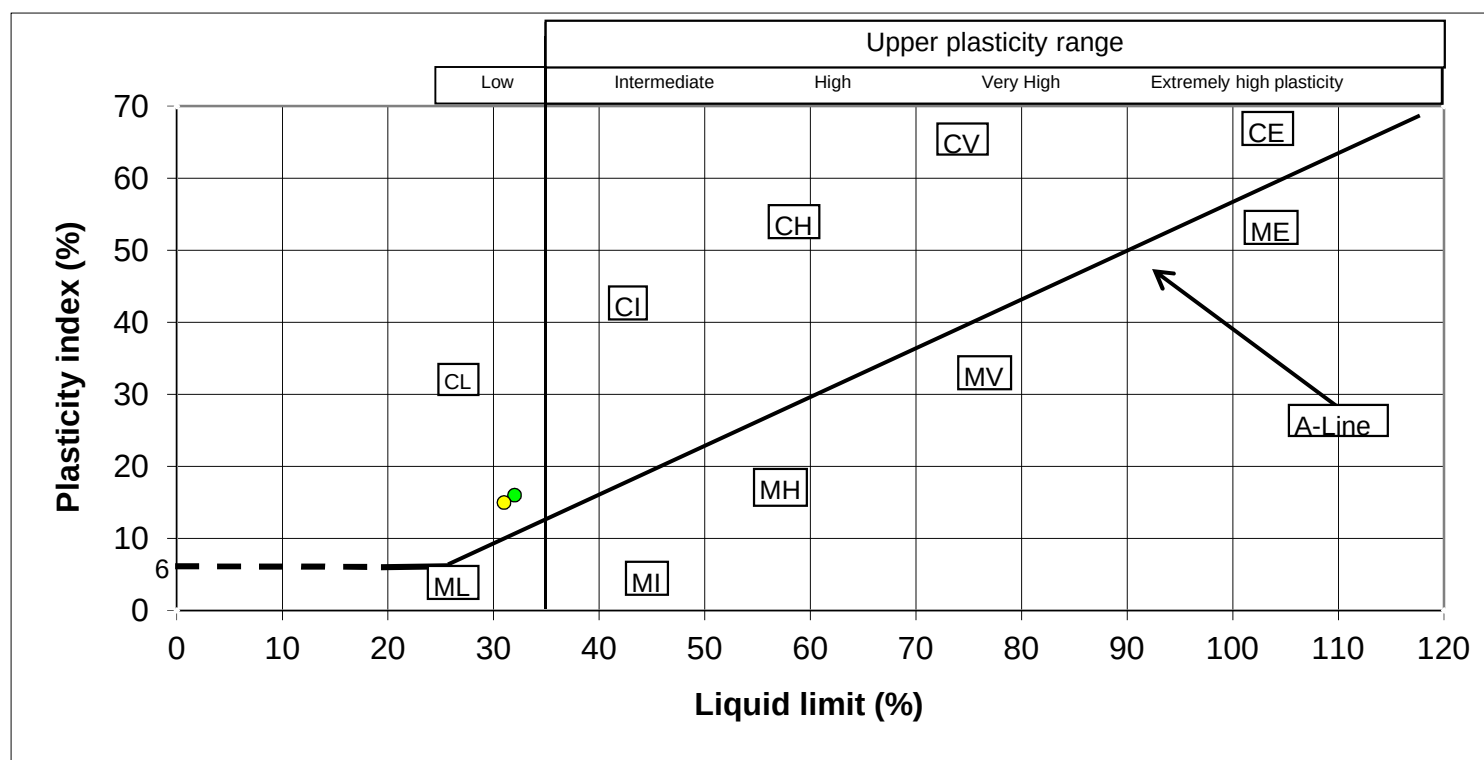
9499.6 RES.xls



ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
WS2-6	1.0-1.5	32.0	16.0
WS5-6	0.5-1.0	31.0	15.0



CLIENT: CAULMERT / WILLMOTT DIXON

SITE: JURBY AVENUE, MANCHESTER (CCG-C-17-9499.6)

CCG-CMS-FO-204 Issue 1

Geotechnical		Tel: 0151-523-0202 Fax: 0151-523-0252		DETERMINATION OF PARTICLE SIZE DISTRIBUTION		HOLE NO. WS5-6	
CLIENT CAULBERT/WILLMOTT DIXON				SITE JURBY AVENUE			
SAMPLE DEPTH 2.15 - 2.50				SAMPLE REF 4		JOB NO. 17/9499.6	
METHOD OF PRETREATMENT				METHOD OF TEST Wet Sieve			

	Size (microns)								Size (mm)													
Sieve Size	63	75	150	212	300	425	600	1.18	2	3.35	5	6.3	10	14	20	28	37.5	50	63	75	100	150
% by Mass passing Sieve	53	57	88	95	96	97	98	98	98	99	99	99	100	100	100	100	100	100	100	100	100	100

Particle size in mm

CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
%	-			45			2			0

SAMPLE DESCRIPTION Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular coal and sandstone.	REMARKS
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