

CCG-C-21-12661-A

**PHASE I GEOENVIRONMENTAL REPORT FOR LAND
WITHIN THE CURTILAGE OF TESCO STORE
PARR WOODS LANE
EAST DIDSBURY
MANCHESTER
M20 5NP
April 2022**

Prepared for:

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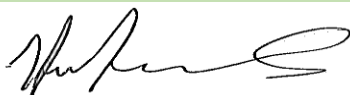
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1.0 INTRODUCTION

CC GEOTECHNICAL LIMITED (CCG) is providing consultancy services to **DANDARA LIVING** (the *Client*) in connection with the proposed redevelopment of land located within the curtilage of Tesco Store, off Parr Woods Lane, East Didsbury, Manchester, M20 5NP.

It is understood that the site is to be redeveloped for residential use by the construction of a 6-storey apartment block with ground floor car parking and apartments on floors above. External works comprise peripheral hard and soft landscaping.

The existing and proposed site layouts, together with elevations of the proposed development are shown on **HODDER AND PARTNERS** architectural drawings contained herein.

The proposed development falls within the administrative jurisdiction of **MANCHESTER CITY COUNCIL**.

This Phase I report was devised to generally comply with the relevant principles and requirements of a wide range of guidance including BS5930:1999 as amended 2007: *"Code of Practice for Site Investigations"*, BS10175: 2011 *"Investigation of Potentially Contaminated Sites - Code of Practice"*, and the DEFRA/Environment Agency Report CLR11 *"Model Procedures for the Management of Land Contamination"*.

The site was the subject of an intrusive ground investigation, undertaken by **CCG** in July 2020, and Reported under Report Reference No. CCG-C-11474. A discussion pertaining to the findings of this investigation is presented in section 7.0 hereunder.

This report should be read in conjunction with the above referenced ground investigation report and with **CCG** Notes on Limitations, given in Appendix B.

2.0 PURPOSE & AIMS OF THE STUDY

The primary aim of the Phase I Desk Study was to assess whether the site is likely to be affected by contamination to an extent that it may pose a risk to human health and/or the built environment and/or the wider natural environment or is affected by any other natural or man-made features which may impact on the proposed redevelopment.

Specific tasks undertaken to achieve these objectives were as follows:

- Undertaking of a review of available historical mapping, environmental databases, and Environment Agency data
- Undertaking of a site walkover inspection
- Development of Preliminary Conceptual Model
- Development of a Phase 2 intrusive investigation strategy

3.0 SITE DATA

3.1 Site Location

The study site is located within the curtilage of Tesco Superstore, off Parr Woods Lane (A5145), East Didsbury, Manchester, M20 5NP, as shown on **CCG** Drawing No. CCG-C-21-12661-1 and Aerial Plate No. CCG-C-21-12661-2 contained herein. The **ORDNANCE SURVEY** co-ordinates for the approximate site centre are 385466 390486. The approximate site centre stands at an elevation of c.39maOD.

3.2 Site Description & Walkover Observations

The site was visited during October 2021 on completion of a review of all relevant historical and environmental mapping data (provided in Appendix D). Photographs taken at the time of the site visit are presented in Appendix E.

It was observed that the site is situated within a commercial context and comprises a triangular shaped parcel of land which extends to the approximate dimensions of c.72m x 39m, its long axis being on an east – west alignment.

At the time of undertaking the site walkover survey, it was evident that the site is currently utilised by the nearby retail store as a car parking facility with associated areas of soft landscaping.

It is bound to the south and east by public pavement extending along its Wood Lane (A5145) frontage, and to the west by pavements leading

into the nearby retail store (Tesco Superstore). Its northern boundary is adjoined by hard paved car parking facilities associated with the nearby superstore.

The surface topography across the site was seen to be sensibly flat with surface cover comprising predominantly tarmac paving with localised pockets of ornamental planting and semi-mature deciduous woodland species, with permanent lighting columns positioned around the periphery.

At the time of undertaking the site walkover survey, there was no visual evidence of the presence of non-native / invasive plant species within or adjoining the site boundary.

Vehicle / pedestrian access to the site via its Wood Lane frontage to the south

The information obtained from the visit is summarised in Table 1 hereunder.

Table 1: Summary of Walkover Observations

FEATURE		OBSERVATION
Current use of proposed development Land		Hard paved car parking facility
Context		Commercial context.
Topography / Surface		The surface topography across the site was seen to be sensibly flat with surface cover comprising predominantly tarmac paving with localised pockets of ornamental planting and semi-mature deciduous woodland species and permanent lighting columns positioned around the periphery.
Dimensions		c.72m x 39m, its long axis being on an east – west alignment
Access		Vehicle / pedestrian access to the site via its Wood Lane frontage to the south
Buildings Adjacent to the Site		None
Services		Given the presence of permanent lighting columns, it is assumed that the power supply associated with these features, and surface water drainage systems, may be buried beneath the existing car parking facility
Boundary	North	Car parking facilities associated with nearby retail store
	South	Public pavements extending along Wood Lane
	East	Public pavements extending along Wood Lane
	West	Access / egress pavement associated with nearby retail store
Material storage		None observed
Waste disposal		None observed
*Invasive plant species		None observed
Other potential contamination		Hydrocarbons associated with onsite car parking facilities

**These comments on the ecology are for initial preliminary assessment only and are based on observations undertaken by a person who is a trained ecologist but who has not undertaken a comprehensive Phase I Habitat Survey or similar.*

4.0 SITE HISTORY

The history of the site and its immediate surrounds was investigated by consultation with a range of archive resources. Geographical information, historical mapping and environmental data were primarily based on GroundSure Reports (CMAPS-AAG-994592-4165-051021, dated October 2021) presented in Appendix D, along with accompanying historical mapping data.

A summary of the historical mapping data is given hereunder:

Table 2: Historical Map Review

YEAR	SCALE	ON SITE	ADJACENT TO SITE	<250M
1849	1:10,560	Undeveloped / vacant land	S: Road [later recognised as Parrswood Lane]	Much of the land surrounding the site is undeveloped / vacant land c.120m SE: Unspecified property with associated nurseries [extending to the E] c.220m W: Gravel Pit [not recognised in subsequent mapping data] c.230m SE: Property recognised as “Parrswood”
1881 1892-93 1893-94 1897	1:2,500 1:10,560 1:2,500 1:10,560	No significant change	No significant change	c.200m NE: Railway Line [approx.. NW-SE alignment] c.200m W: Parrswood House [later recognised as Didsbury Lodge]
1907 1910	1:2,500 1:2,500	No significant change	NW: Railway in course of construction	

1911	1:10,560			
1911	1:10,560			
1922	1:2,500	No significant change	No significant change	c.150m SW: East Didsbury & Parrs Wood Station
1923	1:10,560			
1923	1:10,560			
1934	1:2,500	Site forms part of Parrs Wood Bus Depot, which extends beyond the N/SW boundaries	N/SW: Extension of Parrs Wood Bus Depot	Much of the land to the W of the site developed for residential land use [semi-detached properties] c.200m N: Development of semi-detached residential properties and associated gardens [extending to the N] c.200m W: Children's Home [former Didsbury Lodge] adjacent School to the N c.210m N: Playing Field [extending to the N] c.230m S: Tennis Ground c.230m W: Tennis Grounds with associated Pavilion c.250m W: Cricket Ground [extending to the W]
1934-38	1:10,560			
1938	1:10,560			
1938	1:10,560			
1938	1:10,560			
1954-55	1:10,560			
1956-57	1:1,250	No significant change	No significant change	c.60m E: Allotment Gardens [extending to the NE] c.85m SW: Garage recognised c.110m N: Tank
1957	1:2,500			
1957-58	1:1,250			
1965-67	1:10,560			
1974	1:1,250	No significant change	No significant change	c.120m SE: Rural Studies Centre c.160m S: School [extending to the S], adjacent Tennis Courts to the N
1970-75	1:1,250			
1976-81	1:10,000			
1982-84	1:1,250			
1984	1:1,250			
1983-88	1:10,000			
1989	1:10,000	Depot no longer recognised	N/SW: Depot no longer recognised	No significant change
1988-92	1:1,250			
1992	1:1,250	Car parking facility	SW: Road [extending to the N] E: Clock Tower	c.80m N: Superstore
1992-94	1:1,250			
1994	1:1,250			
1995	1:10,000			
2001	1:10,000			
2003	1:1,250			
2010	1:10,000			
2021	1:10,000			

5.0 ENVIRONMENTAL SETTING

5.1 Documented Geology

The geology at the site is summarised on **BRITISH GEOLOGICAL SURVEY (BGS)** Sheet 098, Stockport, 1: 50,000 and 1:63,360 Scale Solid and Drift Editions (1971 - 1977) and Taylor, B.J. (1963) *et.al*, 'Geology of the country around Stockport and Knutsford. Explanation of sheet 098', HM Stationery Office, London.

The **BGS** drift mapping data indicated that the study site is underlain by natural drift deposits comprising glaciofluvial sheet deposits comprising permeable sands and gravel overlying diamicton (*boulder clay*) comprising impermeable clay silt sands and gravel, both geological units being of glacial origin (*Pleistocene Epoch - Late Quaternary - Devensian Sub Age*).

The solid geology is documented as the Chester Formation (*formerly the Chester Pebble Beds*) of the Sherwood Sandstone Group comprising permeable fine to coarse grained locally pebbly cross-bedded sandstones with sporadic argillaceous mudstone and siltstone horizons of the Early-Triassic Epoch (*Olenekian Sub-Age*).

The general dip of the solid geology within the surrounding area is seen to be in a south-westerly direction.

There are records pertaining to the presence of geological lines of weakness (i.e. faults etc.) within 250m of the study site. The nearest fault, extending on a north – south alignment, being located c.48m west of the study site. Its downthrow is seen to be to the west.

The 'Indicative Atlas of Radon in England and Wales' (Miles. J.C.H *et.al*, 2007) Map 13 'Northern Welsh Marches and Liverpool', shows the site to be situated within an area where it is believed that less than 1% of the properties within the area are affected by Radon and therefore no Radon Protection Measures will be required for new structures in contact with the ground.

Geological Information obtained from the GroundSure Environmental Report is presented in Appendix D, and summarised hereunder:

Table 3: Summary of Geological Data from GroundSure Report

GEOLOGY		
Data	Distance	Comments
Artificial Ground	On Site	Artificial ground and/or reworked ground deposits associated with the development of the site & its immediate surroundings.
Superficial Deposits / Drift Geology	On Site	Glaciofluvial sheet deposits, Devensian
Permeability of clay deposits (GSD)	Maximum Permeability	Very High
	Minimum Permeability	High
Superficial Deposits / Drift Geology	On Site	Diamicton, Devensian
Permeability of clay deposits (Diamicton)	Maximum Permeability	High
	Minimum Permeability	Low
Bedrock and Solid Geology	On Site	Chester Formation of the Early-Triassic Period Epoch
Permeability of Bedrock: On Site	Maximum Permeability	High
	Minimum Permeability	High
Geological Lines of Weakness	On Site	No records
	<250m	1nr c.48m W
Radon Affected Area	On Site	The site is not in a Radon Affected Area, as less than 1% of properties are above the action level
Radon Protection	On Site	No radon protective measures are necessary
MINING, GROUNDWORKINGS AND NATURAL CAVITIES		
Data	Distance	Comments
Natural cavities	<500m	No records
BritPits	<500m	190m SW: Parrs Wood Gravel Pit [Sand & Gravel] - Ceased
Surface ground workings	<250m	113m SW: Unspecified Put 124m S: Unspecified Pit 141m SW: Unspecified Heap 148m SW: Unspecified Heap 176-77m N: Cuttings 180-81m N: Cuttings 182m SW: Gravel Pit 185m N: Cuttings 186m NE: Brick Field 248m NE: Unspecified Pit
Underground workings	<1000m	No records
Historical Mineral Planning Areas	<500m	No records
Non-coal mining	<1000m	No records
Mining cavities	<1000m	No records
Coal mining	On Site	No records
Brine areas	On Site	No records
Gypsum areas	On Site	No records
Tin mining	On Site	No records
Clay mining	On Site	No records
HAZARDS		
Data	Distance	Comments
Maximum shrink swell clays	On site	Very Low
Maximum running sands	On site	Negligible
Maximum compressible deposits	On site	Very Low
Maximum collapsible deposits	On site	Negligible
Maximum landslides	On site	Very Low
Maximum ground dissolution of soluble rocks	On site	Very Low

5.2 Historical Coal Mining

The appended environmental data, **BGS** mapping data and **COAL AUTHORITY** Gazetteer confirm that the site is not located within an area which is believed to be underlain by productive coal measures which may have been worked in the past and therefore a **COAL AUTHORITY** mining report was not procured.

5.3 Hydrology and Hydrogeology

Information on hydrology and hydrogeology obtained from a GroundSure Environmental Report is presented in Appendix D, and summarised hereunder:

Table 5: Summary of Hydrology and Hydrogeological Data from GroundSure Environmental Report

HYDROGEOLOGY AND HYDROLOGY		
Aquifer within Superficial Drift Deposits	On site	Till, Devensian: Secondary Undifferentiated: Assigned where it is not possible to attribute either category A or B. In general, these layers have previously been designated as both minor and no-aquifers in different locations due to the variable characteristics.
Aquifer within Superficial Drift Deposits	On site	Glaciofluvial Sheet Deposits: Secondary A: Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
Aquifer within Bedrock Deposits	On site	Chester Formation – Principal Aquifer: Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
Groundwater Abstraction Licenses	<1000m	No records
Surface Water Abstraction Licenses	<1000m	No records
Potable Water Abstraction Licences	<1000m	No records
Source Protection Zones	<500m	No records
Source Protection Zones (confined aquifer)	<500m	No records
Water Network (OS Mastermap)	<250m	No records
Surface water features	<250m	No records
WFD Surface water body catchments	On Site	On Site: River WB catchment. Operational catchment: Bollin, Dean, Upper Mersey
WFD Surface water bodies	<250m	No records
WFD Groundwater bodies	<250m	On Site: Manchester and East Cheshire Permo-Triassic Sandstone Aquifers. Overall rating: Poor
FLOODING		
Risk of Flooding from Rivers and Sea (RoFRaS)	<50m	No records
Historical Flood Events	<250m	No records
Flood Defences	<250m	No records
Areas Benefitting from Flood Defences	<250m	No records
Flood Storage Areas	<250m	No records
Flood Zone 2	<50m	No records
Flood Zone 3	<50m	No records
Surface water flooding: Highest risk	On Site	1 in 1000 year, 0.1m – 0.3m
	<50m	1 in 100 year, 0.1m – 0.3m
Groundwater flooding: Highest risk	On Site	High
	<50m	High

For simplified interpretation, the geological succession underlying the site may be regarded as a series of discrete units in terms of their hydrogeological significance, as illustrated hereunder:

Table 5: Hydrogeological Interpretation

UNIT	PROPERTIES	HYDROGEOLOGICAL DESIGNATION
Made / Reworked Ground	If present, likely to be generally granular and permeable and will permit vertical and lateral transmission of groundwater.	Unproductive Aquifer
Glaciofluvial Sheet Deposits	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers	Secondary A
Till, Devensian	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type	Secondary Undifferentiated
Chester Formation	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers	Principal Aquifer

6.0 FURTHER ENVIRONMENTAL DATA

Environmental data was researched using several sources including Environment Agency Maps and GroundSure Envirosight Report presented in Appendix D and is summarised hereunder in Table 6. This environmental data has been used to carry out a Preliminary Qualitative Risk Assessment (Tier 1) and formulate the preliminary conceptual model as discussed in Section 8.0 of this report.

Table 7: Summary of Environmental Data

POTENTIALLY CONTAMINATIVE USES IDENTIFIED FROM 1:10,000 SCALE MAPPING		
Data	Distance	Comments
Historical industrial land uses	<250m	On Site: Unspecified Depot [1983] On Site: Bus Depot [1935-74] 71m SW: Railway Sidings [1974-83] 76m SW: Railway Sidings [1923] 102m N: Unspecified Tank [1965-83] 113m SW: Unspecified Pit [1934-38] 124m S: Unspecified Pit [1934] 141m SW: Unspecified Heap [1923] 141m SW: Railway Station [1923-34] 143m SW: Railway Station [1955-74] 148m SW: Railway Station [1938] 150m SW: Railway Station [1938] 164m SW: Railway Building [1974-83] 176m N: Cuttings [1893] 176m SW: Railway Sidings [1955-65] 177m SW: Railway Station [1983-89] 177m N: Cuttings [1938] 180-81m N: Cuttings [1934-38] 182m SW: Gravel Pit [11851] 185m N: Cuttings [1955] 185m SW: Railway Sidings [1923] 186m NE: Brick Field [1851] 202m S: Railway Buildings [1974-83] 210m S: Railway Sidings [1934] 223m SW: Railway Sidings [1938] 233m SW: Railway Building [1923] 243m SW: Railway Building [1923] 248m NE: Unspecified Pit [1911]
Historical tanks	<250m	100m N: Unspecified Tank [1975-88] 105-06m N: Unspecified Tank [1957-88]
Historical energy features	<250m	163m W: Electricity House [1975]
Historical petrol stations	<250m	No records
Historical garages	<250m	70m SW: Garage
Historical military land	<250m	No records
Records of Current Industrial Land Use		
Data	Distance	Comments
Recent industrial land uses	<250m	93m S: Gas Governor [Gas Features] 100m N: Mast [Telecommunications Features] 106m SE: Electric Sub-Station [Electric Sub-Station] 114m N: Mast [Telecommunications Features] 123m E: Didsbury Magazine [Published Goods] 138m SW: Electric Sub-Station [Electrical Features] 146m SW: Electric Sub-Station [Electrical Features] 173m NE: Electric Sub-Station [Electrical Features] 190m S: North West Equipment [Food and Beverage Industry Machinery] 191m SW: East Didsbury Rail Station [Railway Stations, Junctions and Halts] 192m NE: East Didsbury (Manchester Metrolink) [Tram, Metro and Light Railway Stations and Stops] 199m SE: Electric Sub-Stations [Electrical Features] 209m SE: Electric Sub-Station [Electrical Features]
Current or recent petrol stations	<250m	67m SW: Obsolete
Electricity cables	<250m	No records
Gas pipelines	<250m	No records
Sites determined as Contaminated Land	<250m	No records
Control of Major Accident Hazards (COMAH)	<250m	No records
Regulated explosive sites	<250m	No records
Hazardous substance storage/usage	<250m	No records
Historical licensed industrial activities (IPC)	<250m	No records
Licensed industrial activities (Part A(1))	<250m	No records
Licensed pollutant release (Part A(2)/B)	<250m	95m W: The Laundry Room. Process: Dry Cleaning. Current Permit – Part B 218m SW: Parrs Wood Service Station. Process: Petrol Vapour Recovery. Historical Permit – Part B
Radioactive Substance Authorisations	<250m	No records
Licensed Discharges to controlled waters	<250m	No records
Pollutant release to surface waters (Red list)	<250m	No records
Pollutant release to public sewer	<250m	No records
List 1 Dangerous Substances	<250m	No records
List 2 Dangerous Substances	<250m	No records

Pollution Incidents (EA/NRW)	<250m	No records
Pollution inventory substances	<250m	No records
Pollution inventory waste transfers	<250m	No records
Pollution inventory radioactive waste	<250m	No records
WASTE AND LANDFILL		
Data	Distance	Comments
Active or recent landfill	<500m	No records
Historical landfill (BGS records)	<500m	No records
Historical landfill (LA/mapping records)	<500m	No records
Historical landfill (EA/NRW records)	<500m	No records
Historical waste sites	<500m	No records
Licensed waste sites	<500m	No records
Waste exemptions	<500m	172m S: Parrswood Entertainment Centre [Storing waste exemption] 429m SW: Oracle Scotscroft Towers [Treating waste exemption] 439m SW: Scotscroft Building Towers Business Park [Storing waste exemption] 470m NE: 6 Queensway [Treating / Storing waste exemption]
ENVIRONMENTAL DESIGNATIONS		
Data	Distance	Comments
Sites of Special Scientific Interest (SSSI)	<500m	None
Conserved wetland sites (Ramsar sites)	<500m	None
Special Areas of Conservation (SAC)	<500m	None
Special Protection Areas (SPA)	<500m	None
National Nature Reserves (NNR)	<500m	None
Local Nature Reserves (LNR)	<500m	None
Designated Ancient Woodland	<500m	None
Biosphere Reserves	<500m	None
Forest Parks	<500m	None
Marine Conservation Zones	<500m	None
Green Belt	<500m	367m SE: Merseyside and Greater Manchester [Stockport] 386m SE: Merseyside and Greater Manchester [Manchester]
Proposed Ramsar sites	<500m	None
Possible Special Areas of Conservation (PSAC)	<500m	None
Potential Special Protection Areas (pSPA)	<500m	None
Nitrate Sensitive Areas	<500m	None
Nitrate Vulnerable Zones	<500m	None

7.0 PREVIOUS SITE INVESTIGATIONS / REPORTS

The study site was the subject of an intrusive ground investigation, undertaken in June 2020 by **CCG**, and reported under Report Reference No. CCG-C-11474, dated July 2020. The purpose of this report was to provide the Client with factual geotechnical / geochemical information pertaining to existing ground conditions at this site, and no **CCG** interpretations were placed on the findings.

The scope of works undertaken in connection with the above referenced report comprised the sinking of 3nr cable percussive boreholes using a Dando 150 shell and auger rig to a notional depth of 10mbgl.

The ground conditions encountered comprised black bituminous paving and associated sub-base overlying superficial made ground deposits comprising brown slightly silty sands and gravel extending to 0.5m > 0.7mbgl. Thereafter the sequence continued in natural drift deposits comprising loose locally very loose silty gravelly sands to 4.5mbgl, locally firm brown clay to 6.1mbgl, then medium dense varying to dense red/ / brown slightly gravelly clayey sand thereafter, proven to 10mbgl.

There was no visual and/or olfactory evidence of contaminant and/or biodegradable material affecting the made ground deposits at any sampling position.

Monitored standing water levels were in the order of 4.19mbgl.

Sub-samples of borehole recovery from each position were analysed from a broad range of contaminants, the results of which were assessed against current assessment criteria applicable for a 'Commercial / Industrial' land use scenario, which confirmed that no contaminant exceeded its respective soil human health assessment criteria.

8.0 PRELIMINARY QUALITATIVE RISK ASSESSMENT (TIER 1)

8.1 Introduction

Notwithstanding the findings of the previous study, since the site served for 40 years as a bus depot, there is a potential for the presence of contamination associated with the historic developments within and/or immediately adjoining the study site of the site, and hence a preliminary risk assessment was undertaken.

The risk assessment methodologies adopted by **CCG** are based on current available guidance from several sources and are included in Appendix D.

The Tier 1 Risk Assessment and Preliminary Conceptual Model (PCM) were formulated using the information discussed above and based on the following assumptions:

- The site is to be redeveloped for residential use by the construction of a 7-storey apartment block with ground floor car parking and apartments on floors above. External works comprise peripheral hard and soft landscaping.

The existing and proposed site layouts, together with elevations of the proposed development are shown on **HODDER AND PARTNERS** architectural drawings contained herein.

- Drinking water will be from a mains supply.

In constructing the Preliminary Conceptual Model (PCM), **CCG** applied the guidance contained in CIRIA C552: 2001. This recommends use of a Risk Matrix which classifies risk based on the product of Probability of a source being present, and the Consequence of receptors being exposed to the source. Guidance tables setting out the classifications of probability and consequence together with a risk matrix are given in Tables 8 - 9 hereunder. In using this approach **CCG** recommends actual intrusive investigation of any Risk Classification of “Moderate” or over.

Table 8: Matrix of consequences against probability to gain a risk classification [CIRIA C552, 2001]

		CONSEQUENCE			
		SEVERE	MEDIUM	MILD	MINOR
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table 9: Classification Definitions (C552 CIRIA, 2001)

CLASSIFICATION	DEFINITION
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard. Or, there is evidence that server harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be server, or if any harm were to occur it is more likely that harm would be relatively mild. Investigation (if not undertaken already) is normally required to clarify the risk and to determine to potential liability. Some remedial works may be required in the longer term.
Moderate / Low	
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be server.

8.2 Preliminary Conceptual Model

By application of the risk assessment methodology outlined above, the following PCM was constructed.

Table 10: Preliminary Conceptual Model (PCM)

POLLUTANT LINKAGE	SOURCE	PATHWAY	RECEPTOR	PROBABILITY	CONSEQUENCE	RISK RATING
1	Broad spectrum of heavy metals, aggressive pH, hydrocarbons, PAH's in Made Ground associated with the development of the site & adjoining area and site long term use as a Bus Depot	Soil and / or soil dust ingestion	Construction workers Future occupants (adults & infants) Offsite receptors Flora	Likely	Medium	Moderate
2	Asbestos containing materials (ACM) in made ground soils associated with the development of the site & adjoining area	Fibre Inhalation	Construction workers Future occupants (adults & infants) Offsite receptors	Likely	Severe (ACM)	High
3	Inhalation of vapours associated with potential made ground deposits etc.	Inhalation	Future residents	Unlikely	Medium	Moderate
4	Inhalation of ground gases from onsite or offsite sources i.e. made ground soils etc.	Inhalation	Future residents	Unlikely	Medium	Moderate
5	pH & Sulphate attack on concrete	Future building	Future building	Likely	Mild	Moderate / Low
6	Organic contamination associated with onsite parking facilities & historical bus depot	Direct contact with water mains	Potable water supply	Unlikely	Medium	Moderate

The contaminants of concern associated with those risks which require intrusive investigation were researched by reference to published industry profiles, and are summarised hereunder:

Table 11: Summary of Contaminants of Concern based on PCM

LINKAGE NO.	METALS	NON-METALS	ORGANICS	GASES	OTHERS
PL1, PL2, PL4, PL5	Cd, Cr, Ni, Cu, Pb, Hg, Se, Zn	As, sulphates	TPHCWG, PAH's, BTEX, Volatiles (by PID)	-	pH Asbestos
PL3	-	-	-	CH ₄ , CO ₂ , H ₂ S	-
PL1-PL5	Cd, Cr, Ni, Cu, Pb, Hg, Se, Zn	As, sulphates	TPHCWG, BTEX PAH's, Volatiles (by PID)	CH ₄ , CO ₂ , H ₂ S	pH Asbestos

8.3 Summary of Risks

The foregoing analysis has identified a significant number of potential risks, and if present, these could adversely impact on human or environmental receptors, and since no previous site investigation has been undertaken, an intrusive phase of investigation is recommended to determine whether the postulated pollutant linkages are present on site.

9.0 AIMS AND PROPOSED SCOPE OF PHASE II INTRUSIVE INVESTIGATION

Based on the findings above, it is recommended that an intrusive investigation be undertaken prior to the commencement of any proposed redevelopment works. The Phase II Intrusive Investigation should include for exploratory holes to be sunk through made ground into the underlying natural strata.

The primary objectives of a ground investigations are to obtain enough data to reliably ascertain ground conditions on site, and to aid confirmation of the potential pollution linkages identified within the Preliminary Conceptual Model above. Enough soil and groundwater/soil leachate contamination data should be obtained to reliably allow the Preliminary Conceptual Model to be tested and refined by the performance of a quantitative risk assessment.

Using the guidance contained in BS10175: 2011 and R&D Technical Report P5-0066/TR: 2000 and taking into account recent ground investigation works, and given the nature of the redevelopment and loads imposed, it is proposed that 2nr boreholes be sunk to a notional depth of 15mbgl, or refusal in rockhead, whichever is the lesser using light cable percussive methods. It is further proposed that 6nr be trial pit excavations, or light dynamic sampling boreholes be undertaken to assess shallow ground conditions.

Given the potential for the presence of made ground deposits of an unknown composition it is proposed that 2nr boreholes be utilised for the installation of standpipes, thus enabling a programme of ground gas monitoring to be undertaken. To comply with CIRIA C665 for a "Moderate" risk site, it is proposed that gas monitoring is undertaken as a minimum on 6nr occasions over a period of 3 months.

The prime objective of any intrusive ground investigation is to provide reliable soil geotechnical data to assist with foundation / floor slab design options, and geochemical data and to assess the potential risk to human health and sensitive environmental receptors.

The proposed scope of works is summarised in Table 12 hereunder:

Table 12: Proposed Scope of Works

RISK	METHOD OF ASSESSMENT
Is the superficial ground impacted by contamination to the extent it may present a risk to human health?	Using the guidance contained in BS10175: 2011 and R&D Technical Report P5-0066/TR: 2000 and taking into account recent ground investigation works, and given the nature of the redevelopment and loads imposed, it is proposed that 2nr borehole be sunk to a notional depth of 15mbgl, or refusal in rockhead, whichever is the lesser using light cable percussive methods. It is further proposed that 6nr be trial pit excavations, or light dynamic sampling boreholes be undertaken to assess shallow ground conditions. Broad spectrum contamination analyses will be performed on selective subsamples (6nr) of recovered made ground to suite in Table 11
What are the geotechnical properties of the ground?	Standard Penetration Test's (SPT's) to be carried out at regular depth increments throughout the boreholes, with U100 samples being recovered in cohesive strata. A programme of soil engineering laboratory testing will be carried out to characterise soil classification parameters The <i>in-situ</i> tests and soil engineering test data will be used in formulating suitable foundation solutions.
Is the site affected by migrating gas from made ground deposits?	The evidence of the desk study is that there is a low – moderate risk of the site being contaminated by ground gases and therefore 2nr boreholes will be utilised for the installation of gas / groundwater monitoring standpipes. CIRIA C665 recommends monitoring on 6nr occasions over a period of 3 month.
Does the site pose a risk to the underlying aquifer	Soil water samples will be recovered from the standpipes and will be analysed to the suite proposed in Table 11. In the event that water does not accumulate in the standpipes, soil leachate analyses will be undertaken to the suite in Table 7. The results will be assessed against Drinking Water Standards and Environmental Quality Standards.

The layout of the proposed intrusive investigation is as annotated on **CCG** Drawing No's. CCG-C-21-12661-3 '*Site Investigation Layout Plan*' contained herein.

Please note to ensure that no borehole position impacts on any buried service, the final positioning of the borehole will be determined following a review of '*Clients*' buried service drawings.

Given that the site is to be redeveloped for continued residential land use, contamination data obtained as part of the above recommended Phase II intrusive investigation will be based on criteria contained in publication LQM/CIEH S4UL's for Human Health Risk Assessment (2015) (**CCG** Licence No. S4UL3233), applicable to the "*Public Open Space Land*" land use scenario. Given this document does not provide criteria for Lead contaminants, it is proposed that Lead results are compared to the C4SL published by DEFRA SP1010 Development of Category 4 Screening Levels for '*Public Open Space Land*' use.

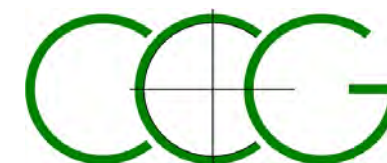
APPENDIX A: DRAWINGS:

**21-12661 – SITE LOCATION PLAN
21-12661 – AERIAL PLATE
ARCHITECTURAL DRAWINGS**



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Notes: Study Site



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UNIT 1 DELTIC WAY
KNOWSLEY INDUSTRIAL ESTATE
LIVERPOOL
L33 7BA
0151 545 2750

Client:
Dandara

Project:
Phase I-II Geoenvironmental Report for Land at
Tesco Store, Parr Woods Lane, East Didsbury,
Manchester, M20 5NP

Title:
Aerial Photograph

Scale:
NTS

Issue:
01

Drawn by:
DG

Date:
October 2021

Project No.
CCG-C-21-12661

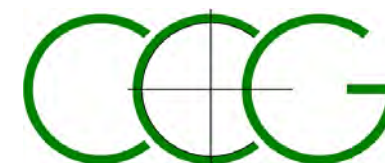
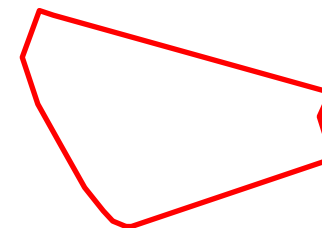
Drawing No.
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0151 545 2750

Client:
Dandara

Project:
Phase I-II Geoenvironmental Report for Land at
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Title:
Aerial Photograph

Scale:
NTS

Issue:
01

Drawn by:
DG

Date:
October 2021

Project No.
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Drawing No.
02

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revisions + notes:	
REV. A 16072021	AMENDED AMENITY SPACE EXTERIOR WALL
REV. B 30072021	AMENDED PLAN
REV. C 28102021	Massing Update
REV. D 05112021	Consultant information update
REV. E 30112021	Client information update

DRAFT

- Community
- Plant/Bins/Bikes
- 1B1P
- 2B3P

client:	date:	
Dandara	NOVEMBER 2021	
project:	scale:	drawn by:
Didsbury, Parris Wood	1:125 at A1	NW
title:	drawing number:	
GROUND FLOOR PLAN	L(—)000	
status:	job number:	revision:
PLANNING	0629	E

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revisions + notes:

REV. A 30/11/2021 Client Information Update

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client:

Dandara

date:

NOVEMBER 2021

project:

Didsbury, Parris Wood

scale:

1:125 at A1

drawn by:

NW

title:

ROOF PLAN

drawing number:

L(-)00R

status:

PLANNING

job number:

0629

revision:

A



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revisions + notes:		
REV. A	15/07/2021	AMENDED EXTERIOR WALL WINDOWS AND BALCONIES
REV. B	30/07/2021	AMENDED PLAN
REV. C	28/10/2021	Massing Update
REV. D	05/11/2021	Consultant information update
REV. E	30/11/2021	Client information update

DRAFT

- 1B1P
- 1B2P
- 2B3P
- 3B4P

client:	Dandara	date:	NOVEMBER 2021
project:	Didsbury, Parris Wood	scale:	1:125 at A1
title:	FIRST FLOOR PLAN	drawing number:	L(-)001
status:	PLANNING	job number:	0629
		revision:	E

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revisions + notes:
REV. A 15/07/2021 AMENDED EXTERIOR WALL WINDOWS AND BALCONIES
REV. B 29/07/2021 AMENDED PLAN
REV. C 28/10/2021 Massing Update
REV. D 05/11/2021 Consultant Information Update
REV. E 30/11/2021 Client Information Update

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- 1B1P
- 1B2P
- 2B3P
- 3B4P

client:	Dandara			date:	NOVEMBER 2021		
project:	Didsbury, Parris Wood			scale:	1:125 at A1	drawn by:	NW
title:	TYPICAL FLOOR PLAN			drawing number:	L(-)002		
status:	PLANNING			job number:	0629	revision:	E

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revisions + notes:
REV. A 30/07/2021 AMENDED PLAN
REV. B 28/10/2021 Massing Update
REV. C 05/11/2021 Consultant Information Update
REV. D 30/11/2021 Client Information Update

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- 1B1P
- 1B2P
- 2B3P
- 3B4P

client:	Dandara	date:	NOVEMBER 2021
project:	Didsbury, Parris Wood	scale:	1:125 at A1
title:	SIXTH FLOOR PLAN	drawing number:	L(-)006
status:	PLANNING	job number:	0629
		revision:	D

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REV. A 28/10/2021 Massing Update
REV. B 05/11/2021 Consultant information update
REV. C 30/11/2021 Client information update

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client:	Dandara	
date:	SEPTEMBER 2021	
project:	Didsbury, Parris Wood	
scale:	1:100 at A1	drawn by: RC
title:	North Elevation	
drawing number:	L(-)210	
status:	PLANNING	
job number:	0629	revision: C

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REV. A 28/10/2021 Massing Update
REV. B 05/11/2021 Consultant information update
REV. C 30/11/2021 Client information update

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client:	Dandara	
date:	SEPTEMBER 2021	
project:	Didsbury, Parris Wood	
scale:	1:100 at A1	drawn by: RC
title:	East Elevation	
drawing number:	L(-)211	
status:	PLANNING	
job number:	0629	revision: C

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REV. A 28/10/2021 Massing Update
REV. B 05/11/2021 Consultant information update
REV. C 30/11/2021 Client information update

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client:	Dandara	
date:	SEPTEMBER 2021	
project:	Didsbury, Parris Wood	
scale:	1:100 at A1	drawn by: RC
title:	South Elevation	
drawing number:	L(-)212	
status:	PLANNING	
job number:	0629	revision: C

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revisions + notes:
REV. A 28/10/2021 Massing Update
REV. B 05/11/2021 Consultant information update
REV. C 30/11/2021 Client information update

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client:	Dandara	
date:	SEPTEMBER 2021	
project:	Didsbury, Parris Wood	
scale:	1:100 at A1	drawn by: RC
title:	West Elevation	
drawing number:	L(-)213	
status:	PLANNING	
job number:	0629	revision: C

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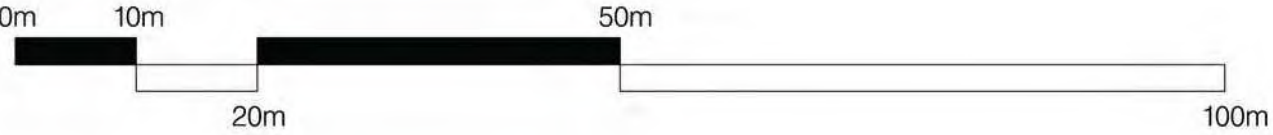


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client:	DANDARA			date:	SEPTEMBER 2021		
project:	TESCO PARRS WOOD, DIDSBURY			scale:	1:125 at A1	drawn by:	RC
title:	Site Location Plan_Proposed			drawing number:	L(-)901		
status:	PLANNING			job number:	0629	revision:	-

APPENDIX B: NOTES ON LIMITATIONS

General

CC GEOTECHNICAL LTD has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from **CC GEOTECHNICAL LTD** and a charge may be levied against such approval.

CC GEOTECHNICAL LTD accepts no responsibility or liability for:

- The consequences of this document being used for any purpose or project other than for which it was commissioned and/or
- The consequences of use of this document by any party with whom an agreement has not been executed.

Phase I Environmental Audits / Desk Studies

The work undertaken to provide the basis of a Phase 1 Desk Study report comprises a study of available documented information from a variety of sources (including the client), together with (where appropriate) a walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in a Desk Study report have been dictated by finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in the report, **CC GEOTECHNICAL LTD** reserves the right to review such information and to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits

The investigation of the site has been carried out with the intention of providing enough information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated to potential human targets, building materials, the environment (including adjacent land), and surface and groundwater.

The amount of exploratory work and chemical testing undertaken may have been restricted by the timescale available, and the locations of the exploratory holes may have been restricted to areas unoccupied by the building(s) on the site, and further restricted by the existence of buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, several important engineering and environmental issues may need to be resolved.

For those reasons, if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” of contamination where concentrations may be significantly higher than those encountered.

Geoenvironmental Ground Investigations

The investigation of the site has been carried out to provide sufficient information within the agreed scope of the investigation, under the general headings of type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions, to provide a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to the site remediation, these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of the site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the sites which have not been disclosed by this investigation, and which have therefore not been considered in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal, weather, or other effects.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

**APPENDIX C: CURRENT CONTAMINATED LAND GUIDANCE / LEGISLATION & RISK ASSESSMENT
METHODOLOGIES**

CURRENT CONTAMINATED LAND LEGISLATION / GUIDANCE & ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY

LEGISLATION OVERVIEW

This report includes hazard identification and risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach". When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land.

Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

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

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

"the entry into controlled waters of **any** poisonous, noxious or polluting matter or **any** solid waste matter".

To assist in establishing if there is a "significant possibility of significant harm" there must be a "significant pollutant linkage" for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of source-pathway-receptor is termed a "pollutant linkage or SPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations, especially DEFRA Circular 01/2006 Contaminated Land (this replaces DETR Circular 02/2000). Part IIA defines the duties of Local Authorities in dealing with it. Except for situations of very high pollution risk, Part IIA places contaminated land responsibility on the planning and redevelopment process. In situations where there is very high pollution risk direct action from the Local Authority is usually necessary. Planning Policy Statement 23 (PPS23) provides guidance on the planning process and requires that sites which have been developed shall not be capable of being determined "contaminated land" under Part IIA.

The criteria for assessing levels of pollutants and hence determining whether a site represents a hazard are based on a range of techniques, models, and guidance. Within this context it is relevant to note that Government objectives are:

- (a) to identify and remove unacceptable risks to human health and the environment;
- (b) to seek to bring damaged land back into beneficial use;
- (c) to seek to ensure that the cost burdens faced by individuals, companies and society are proportionate, manageable, and economically sustainable.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

- (a) ensuring that land is suitable for its current use - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise; the contaminated land regime provides the regulatory mechanisms to achieve this;
- (b) ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and
- (c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of pollutants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the current and proposed end use of the site.

RISK ASSESSMENT METHODOLOGY

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby “risk” is defined as:

- “(a) The probability, or frequency, or occurrence of a defined hazard; and
- (b) The magnitude (including the seriousness) of the consequences.”

The UK’s approach to the assessment of environmental risk is set out in by the Department of the Environment (2000) publication “A Guide to Risk Assessment and Risk Management for Environmental Protection.” This established an iterative, systematic staged process which comprises:

- (a) Hazard identification
- (b) Hazard assessment
- (c) Risk estimation
- (d) Risk evaluation
- (e) Risk Assessment

At each stage during the investigation process the above steps are repeated as more detailed information becomes available for the site.

CLR11- ‘Model Procedures for the Management of Land Contamination’, a document published by the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) outlines a tiered approach to the assessment of risks posed by contaminated land, as summarised hereunder:

Tier 1: Preliminary Risk Assessment

A Preliminary Risk Assessment is usually undertaken as part of a desk study, outlines potential risks posed by potential contamination to all receptors by defining plausible “pollution linkages” and developing a preliminary conceptual model (PCM). The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant meets, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora, and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a “pollution linkage”. It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

The absence of one or more of each component (source, pathway, receptor) would prevent a pollutant linkage being established and there would be no significant environmental risk.

The PCM is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a PCM is formed. Based on the PCM, potential pollutant linkages can be assessed. If the PCM and hazard assessment indicate that a pollution linkage is not of significance, then no further assessment or action is required due to this linkage. For each significant and possible linkage, a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is usually termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the PCM and assess the level of risk from each pollutant linkage. Risk assessment will usually include Tier 2 Generic Quantitative Risk Assessment and / or, if necessary, a Tier 3 Detailed Quantitative Risk Assessment.

Tier 2: Generic Quantitative Risk Assessment (GQRA)

GQRA requires an intrusive investigation to characterise the site assisting in the re-assessment of the source-pathway receptor linkage. The conceptual model should be refined accordingly.

Upon completion of an intrusive investigation a it must be decided whether Generic Assessment Criteria (GAC) are suitable for assessing the risk posed by potential contamination at the site. If GAC are deemed unacceptable for risk assessment purposes or cannot be developed a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is required.

If GQRA reveals that unacceptable risks are not present, then no further action is required. If GQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not required, an Options Appraisal should be undertaken. If further risk assessment is required, the scope nature of further risk assessment must be decided – it is possible that a Tier 3 DQRA will be undertaken in this scenario.

Tier 3: Detailed Quantitative Risk Assessment (DQRA)

DQRA is used when pollutant linkages require further assessment. DQRA is often undertaken for pollutant linkages where GAC are unavailable or inappropriate for or more conservative than the actual circumstances of the site. Site specific data is used to create Site Specific Assessment Criteria (SSAC) and enable a more accurate assessment of the risks. Further investigation may or may not be required to formulate SSAC depending on the

site-specific conditions and information already obtained.

If DQRA reveals that unacceptable risks are not present, then no further action is required. If DQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not required, an Options Appraisal should be undertaken. If further risk assessment is required, the scope and nature of further risk assessment must be decided at this point.

NOTE: A Tier 1 Preliminary Risk Assessment is undertaken as part of a Desk Study Report and a Preliminary Conceptual Model is developed for all pollutant linkages. However, the methodologies for assessing the risks to human health, risks to controlled waters and risk posed by ground gas using quantitative techniques vary considerably, therefore GQRA and DQRA for human health, controlled waters and ground gas must be undertaken separately. The risk assessment methodologies where quantitative assessment is used for risks to human health, risks to controlled waters and risks posed by ground gas, if relevant, are described hereunder.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO HUMAN HEALTH

Background

In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the EA published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports (CLR7-10) together with associated “SGV” documents have since been withdrawn (August 2008) and the following documents have been published as revised guidance to the CLEA assessment:

Environment Agency : 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3

Environment Agency : 2008: Human Health Toxicological Assessment of Contaminants in Soil SC050021/SR2

Additional guidance on statistical assessment replacing CLR 7 is provided in:

CL:AIRE :2008 Guidance on Comparing Data with a Critical Concentration

Other guidance/software used in spatial / statistical assessment is provided in:

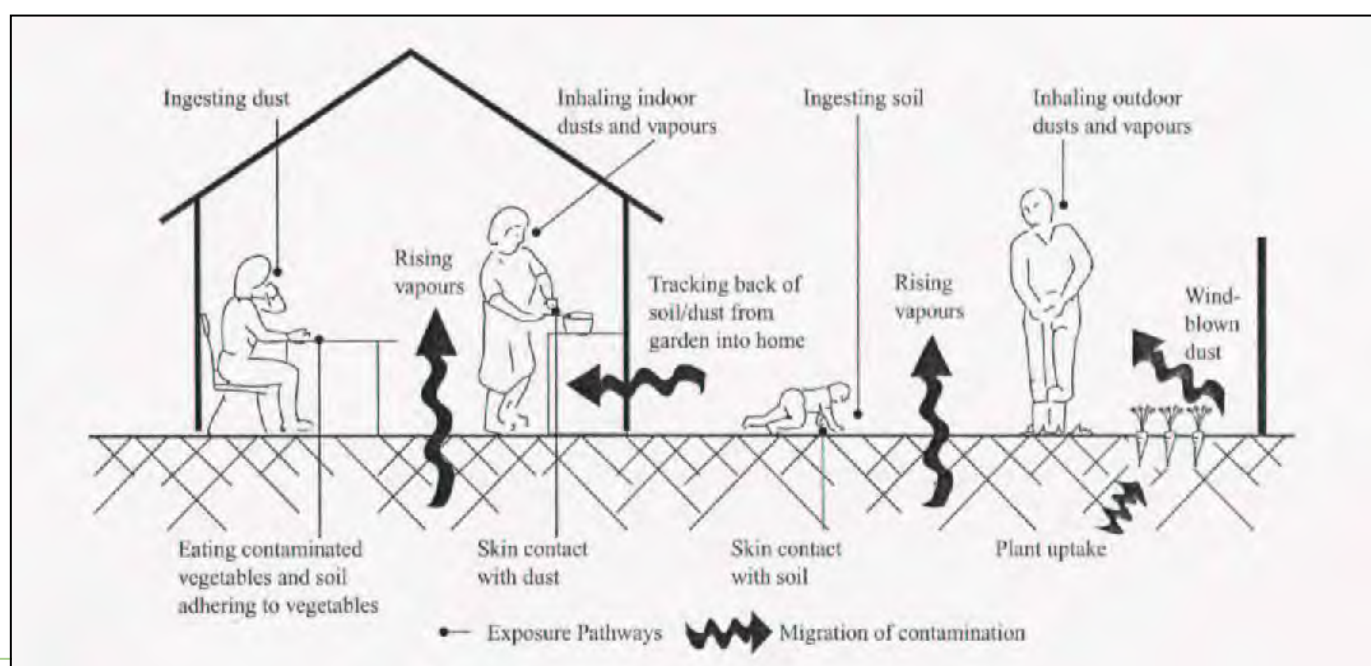
USEPA 2006: Data Quality Assessment: Statistical Methods for Practitioners

Spatial Analysis and Decision Assistance (SADA) – The University of Tennessee

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to determine whether the site is suitable for new development in according with Planning guidance. This is discussed further in CL:AIRE :2008 “Guidance on Comparing Data with a Critical Concentration”.

A program for the derivation of GAC’s based on the above guidance is provided by the Environment Agency and is entitled “CLEA Software Version 1.04”.

The CLEA model has been developed to calculate an estimated tolerable daily soil intake (TDSI) for site users given a set ‘default’ exposure pathway. Ten human exposure pathways are covered in the CLEA model as presented below:



Ingestion

ingestion of outdoor soil
ingestion of indoor dust
ingestion of home grown produce
ingestion of soil attached to home grown produce

Dermal Contact

dermal contact with outdoor soil
dermal contact with indoor dust

Inhalation

inhalation of outdoor dust
inhalation of indoor dust
inhalation of outdoor soil vapour
inhalation of indoor soil vapour

It should be noted that there are other potential exposure pathways on some sites not included in the CLEA model e.g. certain organic compounds can pass through plastic water pipes into drinking water supply.

Where contaminated water is present at a depth less than 2.00mbgl and there is a potential risk of inhalation of vapours (only when volatile compounds are present) the risk from inhalation of vapours from soil water will be assessed using a UK compliant version of BP Risc v4.02.

The presence and/or significance of each of the above exposure pathways are dependent on the type of land use being considered and the nature of the contaminant under scrutiny. Accordingly, the CLEA model considers for principle 'default' land use types and makes a series of 'default' assumptions about human exposure frequency, duration and critical human target groups for each land use considered:

residential
allotments
commercial / industrial land use

The above land use categories defined in the CLEA are detailed below:

Residential: This generic scenario assumes a typical residential property consisting of a two-storey house built on a ground-bearing slab with a private garden consisting of lawn, flowerbeds, and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden area.

Allotments: This generic scenario assumes a plot of open space (about 250 m²), commonly made available by the local authority to tenants to grow fruit and vegetables for their own consumption. There are usually several plots to a site and the overall site area may cover more than a hectare. The tenants are assumed to be parents or grandparents and that young children make occasional accompanied visits to the plot.

Commercial/Industrial: There are many kinds of workplace and work-related activities. This generic scenario assumes a typical commercial or light industrial property consisting of a three-storey building at which employees spend most time indoors and are involved in office based or relatively light physical work.

Human Health Risk Assessment Methodology

Assessment of risk for the protection of human health is undertaken using the methodology as outlined previously, and summarised hereunder:

Tier 1 Preliminary Risk Assessment
Tier 2 Generic Quantitative Risk Assessment
Tier 3 Detailed Quantitative Risk Assessment

The Tier 1 Preliminary Risk Assessment is undertaken as part of the desk study report and includes the development of a Preliminary Conceptual Model. Tier 2 and Tier 3 Quantitative Risk Assessments are undertaken to develop and refine the Preliminary Conceptual Model aiding a more detailed assessment of the risk posed by contaminants revealed by site investigation and soil / soil water chemical analyses.

The methods used by CC GEOTECHNICAL LTD to derive assessment criteria, to statistically analyse chemical data and to compare chemical data to the derived assessment criteria are discussed hereunder.

Derivation of Generic Assessment Criteria (GAC) and Site-Specific Assessment Criteria (SSAC)

GAC's are derived based on the proposed land use and the associated applicable exposure pathways. It should be noted that there are difficulties in establishing soil concentrations of contaminants beyond which risks from exposure to these contaminants would be 'unacceptable' and the GAC value does not necessarily equate to the level for "significant possibility of significant harm" as defined in Part IIA of The Environmental Protection Act (1990) to determine whether land is "contaminated." This ultimately requires detailed 'toxicological' information of the health effects of individual contaminants and a scientific judgement on what constitutes an 'unacceptable' risk. The primary purpose of the CLEA derived GAC's are as 'minimal risk thresholds' for the assessment of human health risks in relation to land use.

Minimal risk thresholds calculated using generic input parameters for each of the above land uses are termed Generic Assessment Criteria (GAC) and

are used for Generic Quantitative Risk Assessment (GQRA). However, further assessment may be required taking into consideration site specific factors such as the way the land is used, the soil type, the building characteristics and the exact nature of the receptor, to determine whether there is a significant possibility of risk to human health to site users. Such an assessment is known as a Detailed Quantitative Risk Assessment (DQRA) and the resultant threshold concentrations are known as Site Specific Assessment Criteria (SSAC). Such assessments should be conducted with the agreement of the local authority (or the Environment Agency) since it is the authority that determines whether land is Contaminated Land or whether Planning Permission for a new development may be granted.

For the purposes of this report, assessment criteria have been derived in accordance with current guidance based on the conceptual model for the proposed land use using the CLEA v1.04 software. These criteria are not intended to indicate whether the site may be contaminated land, nor do they replace any published soil guideline values. However, the values are intended to provide guidance for the local authority on whether the site may be considered uncontaminated. If, based on the site's proposed future use, the site would be considered by the local authority to be uncontaminated and therefore, on the basis of soil concentrations, fit for purpose, then no further risk assessment based on soil concentrations and the risk to human health would be necessary. However, should these criteria be exceeded, or the conceptual site model vary from the model used in the risk assessment to derive these values then the risk assessment should be updated accordingly.

For contaminants routinely analysed where inhalation is a significant pathway (naphthalene, phenanthrene, Aromatic EC5-EC7, Aromatic EC7-EC8, Aromatic EC8-EC10, Aromatic EC10-EC12, Aromatic EC12-EC16, Aliphatic EC5-EC6, Aliphatic EC8-EC10, Aliphatic EC10-EC12, Aliphatic EC12-EC16), plots of the GAC as a function of Soil Organic Matter (SOM) are used to determine if they pose a potential risk to human health, which are presented hereunder. Where there is an exceedance further assessment may be undertaken.

Statistical Assessment of Soil Contamination Data & Comparison of Contamination Data to Threshold Values

In any site investigation only a small fraction of the soil on the site is analysed. Therefore, the mean derived from the contamination data for a contaminant may not be the same as the true mean for the contaminant distribution on the site. To improve the reliability of any assessment a statistical analysis is undertaken in line with the CL:AIRE document "Guidance on Comparing Soil Contamination Data with a Critical Concentration".

Statistical assessment of soil data is undertaken using programs based on the guidance in the CL:AIRE document or the USEPA software ProUCL v4.0.

Where the number of results in a dataset is less than four, a statistical assessment is not undertaken, and the assessment is performed by comparison of the maximum value(s) with a Health Criteria Value (HCV), such as Generic Assessment Criteria value(s).

For the Planning situation, the regulator needs to check whether the concentration of contaminants is low compared to the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is lower than the HCV.

For the Part IIA scenario the regulator needs to determine whether the concentration of contaminants is greater than the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is higher than the HCV. However, the regulator may proceed with determination if there is just a 51% probability, "on the balance of probabilities".

The Outlier Test used in the statistical assessment may not be able identify separate populations if numerous populations are present. To ensure that this is not the case a spatial assessment of the data will be undertaken using SADA.

If the screening levels are exceeded, then more sophisticated quantitative risk assessment or remedial action may be undertaken. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO CONTROLLED WATER

Definition of Controlled Waters

The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

"Territorial Waters...which extend seawards for three miles..., coastal waters..., inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

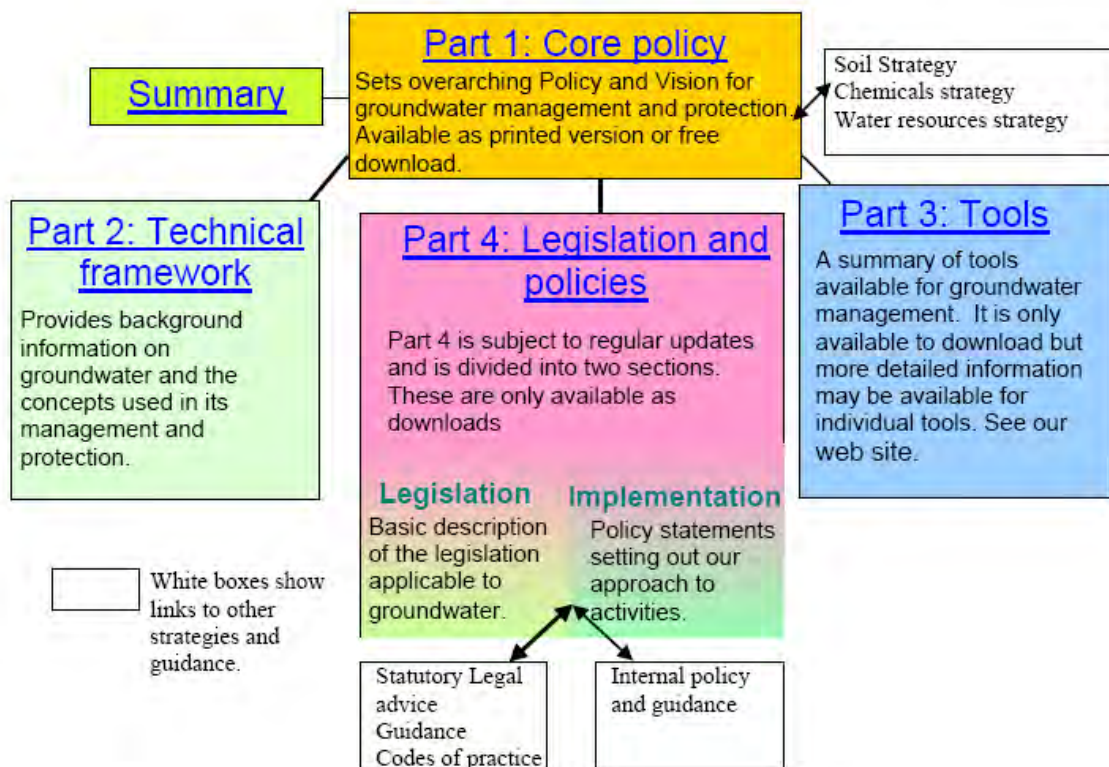
Environment Agency Guidance

Legislation and guidance surrounding the protection of controlled waters in the UK is abundant and can be complex. The Environment Agency's overall position on groundwater is "To protect and manage groundwater resources for present and future generation in ways that are appropriate for the risks that we identify" (Groundwater Protection : Policy and Practice GP3, 2006). In brief, the core objectives of the existing legislation serve to enforce this position.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document was influential as it provided a focus for key developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was then revised in 1998, since which there have been substantial changes in legislation, driven by Europe. Key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991. Further to legislative changes, gaps identified in the 1998 PPPG required addressing. These changes are reflected in the forthcoming Environment Agency Policy document entitled Groundwater Protection : Policy and Practice (GP3), a draft

version of which was available for public consultation (Parts 1 to 3) ending July 2006 with Part 4 issued in March 2008. Part 4 includes a section on key groundwater legislation and the Environment Agency's interpretation of it.

The following gives a breakdown of the structure of the document (taken from the Environment Agency GP3 draft consultation document, 2006)



Controlled Water Risk Assessment Methodology

The risk posed to controlled water is assessed by CC GEOTECHNICAL in accordance with current guidance as outlined hereunder.

In order for a developer of a potentially contaminated site to fulfil their obligations under the legislation, a site assessment would be required to be undertaken in order to identify any potential risks to controlled waters and to derive suitable clean-up criteria if necessary to ensure the protection of controlled waters. The general approach for Groundwater Protection is detailed further in Part 3 of GP3.

When assessing groundwater impact the Environment Agency advocate the application of their framework methodology "Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination" Environment Agency (2006). The methodology has four levels of assessment as described below:

Level 1 considers whether contaminant concentrations in "pore water" in contaminated soil are enough to impact on the receptor, ignoring dilution, dispersion, and attenuation along the pathway. The "pore water" concentration is determined from:

measured "pore water" concentrations or perched water quality

- ii) soil leaching tests
- iii) theoretical calculations based on soil/water partitioning equations

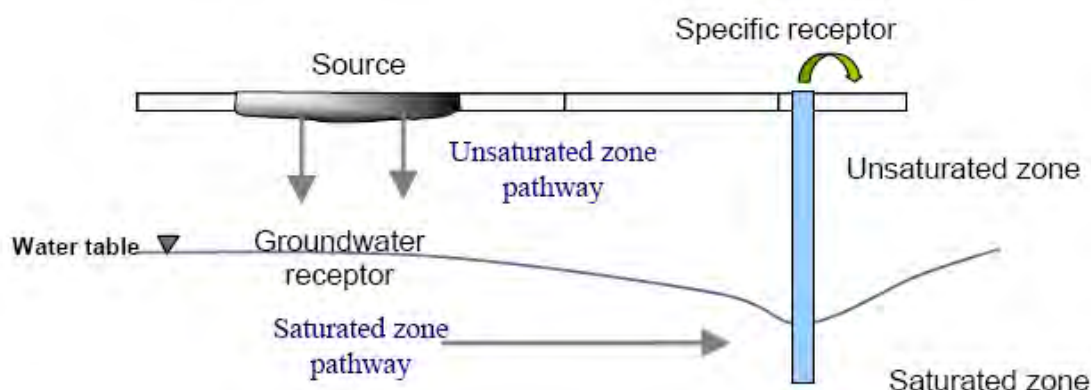
Level 2 considers dilution by the receiving groundwater or surface water body and whether this is enough to reduce contaminant concentrations to acceptable levels. The remedial target is defined as the target concentration multiplied by a dilution factor (DF).

Levels 3 and 4 consider whether natural attenuation (including dispersion, retardation, and degradation) of the contaminant as it moves through the unsaturated and saturated zones to the receptor are enough to reduce contaminant concentrations to acceptable levels. The remedial target is defined as target concentration multiplied by a dilution factor (DF) and attenuation factor (AF). In Level 3 simple analytical models are used to calculate the significance of attenuation. The Environment Agency has released a "Remedial targets worksheet v3.1" to carry out basic calculations using a conservative approach up to Level 3 using basic principles assuming a simple migration of contaminants from the source zone into the aquifer receptor. Level 4 assessment uses more sophisticated numerical models and allows for the introduction of additional geological horizons and is used mainly to determine whether soil contaminants will reach their target within a specified timeframe. Use of such software should only be used once agreement has been obtained from the Environment Agency.

Three main stages apply to any risk assessment of controlled waters, these are:

1. Risk Screening (Tier 1 Preliminary Risk Assessment): The understanding of the Conceptual Site Model (CSM) is the key to assessing any site. Using

a robust CSM, potential pathways or receptors may be screened out from any further assessment at an early stage. For example, if the pathway through the unsaturated zone is blocked by the presence of a significant thickness of low permeability clay. A greater understanding of the CSM is achieved with each tier of risk assessment. An example of a basic CSM is given below (taken from the Environment Agency GP3 draft consultation document, 2006):



2. Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Level 1): When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with screening criteria. Published values of screening criteria with which chemical test results can be compared are published in the following guidance:

Water Supply (Water Quality) Regulations 2000

The Private Water Supplies Regulations 1991

Environmental Quality Standards for surface waters based on The EC Dangerous Substances Directive (76/464/EEC and Daughter Directives)

The Surface Waters (Abstraction for Drinking Water Classification) Regulations 1996

World Health Organisation Drinking Water Standards 2004

Should the Level 1 assessment indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

To devise suitable remedial solutions

To carry out more investigation, sampling, and analysis

To conduct a site specific Detailed Quantitative Risk Assessment (DQRA) to determine if the materials are suitable for their proposed use, or devise site specific clean-up level

3. Detailed Quantitative Risk Assessment (EA Remedial Targets Methodology Levels 2 to 4): The decision to carry out a DQRA will be dependant on the extent and implications of the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the previous levels of assessment. The conceptual model will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment, the remainder having been screened out.

Additional site-specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

Remediation criteria, if derived, will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or compliance point. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED BY GROUND GAS

Origin of Ground and Landfill Gases

When carrying out a ground gas risk assessment, the origin or source of the gases is important as potential risks will vary depending on the source. This Appendix relates to the risk of the two main ground gases of concern; methane and carbon dioxide and does not apply to other ground gases (e.g. radon or vapours from hydrocarbon spills). Methane and carbon dioxide are major constituents of landfill gas but can also occur from a variety of anthropogenic and natural sources, as summarised in Table 5 below:

Gas	Source	Comments
Landfill Gas	Anaerobic decomposition of degradable waste within landfill sites. Typically, 60% methane and 40% carbon dioxide during methanogenic phase.	Composition varies over time, particularly in early stages. Contains a range of minor constituents (particularly carbon monoxide and hydrogen sulphide).
Landfill Associated	- Anaerobic degradation of leachate external to the site; - Degassing of dissolved gases in groundwater;	Can result in secondary (external) production of methane or carbon dioxide.

Gas	Source	Comments
Gases	- Evolution of gases following interaction between leachate and groundwater	
Made Ground	Anaerobic degradation of organic components	Very variable depending on source
Sewer Gas, Cess Pits	Anaerobic degradation of organic components of sewage producing methane and carbon dioxide.	Often characterised by hydrogen sulphide odour.
Mains Gas	Leakage from underground pipework or storage tanks. Mainly methane but often contains higher alkanes.	An odourise is added to permit detection of leaks. Typically, 90% CH ₄ , but 1 to 27% C ₂ -C ₄ alkanes, May also contain other trace gases e.g. CO, helium and CO ₂ (from degradation of CH ₄ in the ground).
Other Anthropogenic Sources	- Degradation of leaked or spilled hydrocarbons or other industrial chemicals; - Anaerobic degradation of organic contaminants in groundwaters (e.g. silage liquor); - Reactions between monitoring well construction components and environment; - Burial grounds/cemeteries.	Hydrocarbon spillages often have an 'oily' odour. Fuel spillages common – Petrol or Diesel and can contain a wide range of VOC's. Can degrade to produce methane / carbon dioxide.
Alluvium / Marsh / Peat Gas	Anaerobic microbial degradation of organic material (usually waterlogged vegetation / peat). Often associated with the presence of alluvial deposits or dredging's.	
Geogenic Gas	Natural seepages of carbon dioxide and hydrocarbon gases derived from geologic sources such as coal seams and deep oil / gas source formations. Can be present in solution in groundwaters.	Methane most common but can contain carbon dioxide and higher alkanes.
Mine Gases	Various types. Most common is "fire damp" with high methane, produced by the desorption of gas trapped in coal. "Black damp" (Scythe gas) with high carbon dioxide and denser than air. "White damp" is high in carbon monoxide.	Methane most common. Can contain higher alkanes, carbon dioxide and carbon monoxide. Often low in oxygen.
Natural Shallow Ground Gas	Various types - high carbon dioxide formed by subsurface aerobic activity leading to depleted oxygen and elevated carbon dioxide; - chemical degradation of rocks (e.g. carbonates) producing carbon dioxide; - carbon dioxide production in root zone of soils by plants.	Gases can be emitted from ground under falling barometric pressure conditions.

Table 5. Potential Sources of Ground Gases

This Appendix does not provide guidance for the assessment of risk when other gases are present due to 'Other Sources' from the above table (particularly organic compounds such as BTEX and VOC's or for the risk from radon or hydrogen sulphide).

To determine the origin of the gas a range of factors must be considered together, including;

1. Proximity of likely sources
2. Ground conditions (geology, hydrogeology, anthropogenic pathways etc)
3. Properties of gases present including:
 - Chemical composition
 - Physical properties
 - Ratios of components e.g. methane : carbon dioxide
4. Timeframe of activities such as infilling periods, capping works, installation of gas control systems etc

Identification of the originating source may be problematic given that there may be more than one source present and trace gas analysis may be required. Identification of the sources of the gases encountered during monitoring is usually carried out through a process of eliminating the most unlikely potential sources (given the site setting) and selecting those which are most likely.

Hazards Associated with Presence of Methane

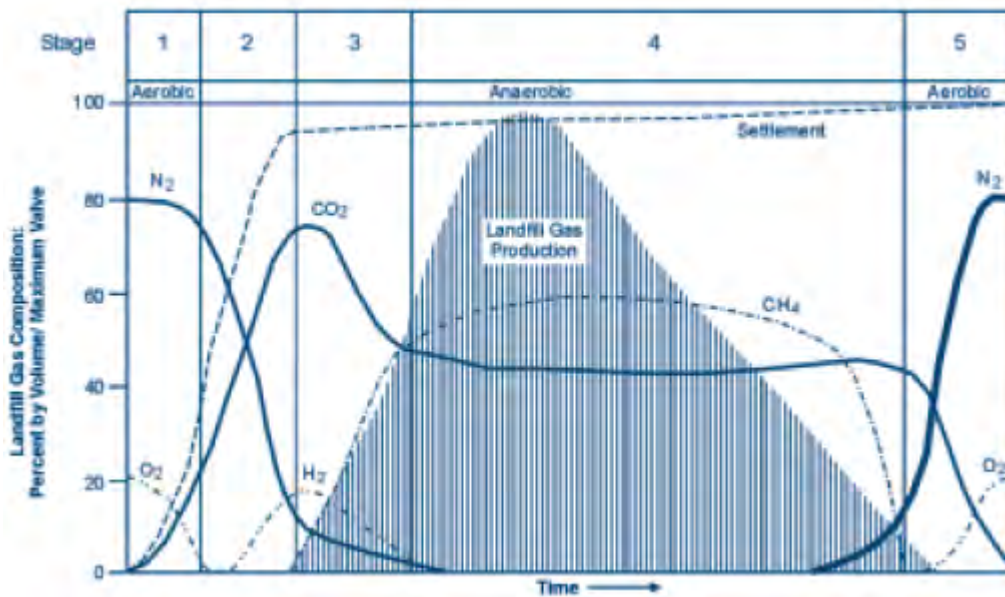
Methane gas is combustible and potentially explosive. When the concentration of methane in air is between the limits of 5.0%v/v and 15.0%v/v an explosive mixture is formed. The Lower Explosive Limit (LEL) of methane is 5.0%v/v, which is equivalent to 100% LEL. The 15.0%v/v limit is known as the Upper Explosive Limit (UEL), but concentrations above this level cannot be assumed to represent safe concentrations. Further, the LEL and UEL will vary (up and down) depending upon the proportion of other gases (including oxygen). However, the fact that methane is a colourless, odourless gas means that there is no simple indicator of the presence of the gas until such a time as explosive limits are reached, and an incident occurs. Methane is lighter than air and has a low toxicity. However, at high concentrations it can result in asphyxiation due to oxygen displacement.

Hazards Associated with Presence of Carbon Dioxide

Carbon dioxide is a colourless, odourless gas, which, although non-flammable, is both toxic and an asphyxiant. As carbon dioxide is denser than air, it will collect in low points and depressions. The UK Health & Safety Executive (HSE) has published information relating to concentrations of carbon dioxide that humans may be exposed to, which uses concentrations contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended). These are the Long-Term Occupational Exposure Limit (LTOEL, 8-hour period) and the Short-Term Occupational Exposure Limit (STOEL, 15-minute period), which are 0.5% and 1.5% carbon dioxide, respectively.

Parameters Influencing the Rate of Ground Gas Production

The figure below is taken from EA guidance document LFTGN 03 illustrates typical ground gas generation curves from biodegradable materials:



The production of methane and carbon dioxide at a landfill site may be expected to be considerable and ongoing. Concentrations of methane will eventually decrease, followed by concentrations of carbon dioxide, but the duration and rate of gas production can vary markedly between sites. Five distinct phases of gas production occur during the process which are, in order of event as marked above, as follows:

1. An aerobic phase involving oxygen depletion and temperature increase through aerobic respiration;
2. The establishment of anaerobic conditions and the evolution of carbon dioxide and hydrogen through acidogenic activity;
3. Commencement of methanogenic activity; the establishment of populations of methanogenic bacteria;
4. A phase of stable methanogenic activity, which may go on for many tens of years;
5. A phase of decreasing methanogenic activity, representing depletion of the organic material and a return to aerobic conditions.

The time scale for the return to the normal ground gas concentrations will be highly variable, depending upon the types and quantities of materials present. In addition, the optimum parameters influencing the rate of decomposition and ground gas production within the ground at a site are as follows:

High water content with adequate rainfall and water infiltration to provide moisture content between approximately 20 to 26%;

Conditions that either are or are very close to anaerobic;

High proportion of biodegradable materials;

A pH between 6.5 and 8.5, ideally verging slightly on the acidic between pH 6 to 7;

Temperature between 25°C and 55°C;

The ratio of the biochemical and chemical oxygen demands (BOD:COD);

High permeability;

Small particle size, as finer subsurface materials possess a greater surface area to provide a growing 'face' for the micro-organisms, but high fines levels reduces permeability and reduces decomposition rate.

For this reason, it is vital that sources of methane and carbon dioxide are identified prior to the commencement of any work on a construction site, and that the ground gas regime is characterised at the worst temporal conditions a site may experience. From this, a risk assessment is carried out to identify the risk at the site from ground gases so that suitable protection measures can be designed and incorporated into a development to prevent a dangerous build-up of gas occurring.

Factors Influencing the Migration and Behaviour of Ground Gases

There are many factors that influence the migration of ground gases which can affect the risk from a gassing source:

driving force – pressure differential along a pathway, diffusion and dissolved in solution;

meteorological conditions – short term and seasonal conditions including atmospheric pressure changes (e.g. rapidly falling pressure causes gas to expand increasing emission rates), rainfall, frozen ground and thawing, temperature;

geological and groundwater conditions – these can have the over riding influence on the direction/pathways and quantity of migrating gas;

anthropogenic influences – man-made pathways include mine shafts, service runs/drains, foundation piles, underground voids/pits/basements, foundation/building design/construction

Current Guidance

Previous versions of Building Regulations Approved Document C provided statutory guidance stating that consideration should be given to appropriate action and / or specific solutions in situations where methane concentration exceeded 1%v/v or carbon dioxide concentrations exceeded

5%v/v. The latest Building Regulations Approved Document C (DoE 2004) no longer endorses this approach and recommends the use of a risk-based approach to interpreting a gas monitoring survey. This is in line with current EA guidance for landfill gas (LFTGN 03, 2004) which recommends the use of a structured risk-based approach like that outlined in CLR 11. On this basis, recent guidance has been produced in 2006 and 2007 with the aim of providing up to date advice in relation to residential and commercial development. The guidance does not address issues associated with gas derived from landfills, for this refer to "Guidance on the Management of Landfill Gas" (Environment Agency 2004) for an overview.

Recent guidance relevant to gas assessments for residential and commercial development includes;

Wilson et al. (CIRIA C665, December 2007) "Assessing Risks Posed by Hazardous Ground Gases for Buildings."

This document provides up to date advice on all aspects of ground gas risk assessment such as investigation, monitoring programmes, data collection and interpretation. The guidance presents separate methodologies for the characterisation of:

All development types except low rise housing with gardens (Situation A)

Low rise housing with gardens (Situation B)

Boyle and Witherington (NHBC / RSK Group, Report 10627-R01(04) January 2007) "Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present."

This document presents the "Traffic Lights System" detailed below and is relevant only for low rise properties (e.g. bungalows and town houses) that have a ventilated sub-floor void (i.e. Situation B as described in CIRIA C665).

British Standard (BS 8485, December 2007) "Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments"

This document provides an overview of gas characterisation and assessment. The Standard is intended to be used by designers of gas protection measures and regulators involved in the assessment of design solutions.

Further guidance, Wilson, and Card (CIEH) "Ground Gas Handbook for Designers and Regulators" providing practical guidance on ground gas assessments and the design and evaluation of protection measures, is expected to be published in March 2009.

Each of these documents continues to highlight the importance of, and give further guidance towards, carrying out a tiered risk-based decision-making process in accord with government policy on dealing with contamination from historic or natural sources and highlight the importance of the Conceptual Model in site characterisation.

Ground Gas Risk Assessment Methodology

Assessment of risk posed by ground gas is undertaken using the methodology as outlined previously, and summarised hereunder:

Tier 1 Preliminary Risk Assessment

Tier 2 Generic Quantitative Risk Assessment

Tier 3 Detailed Quantitative Risk Assessment

The methodology used in each of the above assessments with concern to ground gas is discussed hereunder.

Tier 1 Preliminary Risk Assessment

All potential sources of methane and carbon dioxide are identified in the Preliminary Conceptual Model and the generation potential determined. The background information discussed earlier is referred to in order to determine the potential for a source to generate ground gas.

CIRIA C665 provides idealised monitoring frequency / period dependant upon generation potential of gas source and sensitivity of the proposed land use as below:

Idealised Frequency and Period of Monitoring (after Table 5.5a and 5.5b, CIRIA C665)

		Generation Potential of Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4/1	6/2	6/3	12/6	12/12
	Moderate (Flats)	6/2	6/3	9/6	12/12	24/24
	High (Residential with Gardens)	6/3	9/6	12/6	24/12	24/24

Notes

1. First number is the number of readings and the second is the minimum period in months (e.g. 6/2 – six sets of readings over two months).
2. At least two sets of readings must be at low (preferably under 1,000 mb) and falling pressure.

The monitoring programme is decided using the above table prior to the intrusive site investigation. However, if the intrusive investigation reveals that the potential source is better or worse than anticipated the monitoring programme should be modified accordingly. For example, if the made ground contains no evidence of organic material and comprises entirely granular brick fill, the potential for that made ground to generate ground gas is reduced considerably.

Tier 2 Generic Quantitative Risk Assessment

Generic Quantitative Risk Assessment is undertaken upon completion of the required gas monitoring period.

All three current guidance documents propose that both ground gas concentrations and flow rates are used to calculate the limiting gas well gas volume flow rates for methane and carbon dioxide, based on the ground gas conditions monitored for during the worse-case temporal conditions. This limiting gas well volume flow rate is termed the Gas Screening Value (GSV, note that this was termed borehole gas volume flow), and is calculated as follows:

$$\text{GSV (l/hr)} = \frac{[\text{gas well gas concentration (\%v/v)}] \times [\text{gas well flow rate (l/hr)}]}{100}$$

GSV's are compared to typical max concentrations and limiting gas screening values derived for either Situation A - All development except low rise housing with gardens, or Situation B low rise housing with gardens (NHBC Traffic Light System). Table 8.5 from CIRIA C665 is used for comparison of gas screening values for "Situation A Developments" and is presented hereunder:

Characteristic Situation (CIRIA R149)	Comparable Partners in Technology gas Regime (see Box 8.2)	Risk Classification	Gas Screening Value (CH ₄ or CO ₂) (l/hr) ¹	Additional Factors	Typical Source of Generation
1	A	Very low risk	<0.07	Typically, methane ≤ 1% and/or carbon dioxide ≤ 5%. Otherwise consider increase to Situation 2	Natural soils with low organic content "Typical" made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/organic content. "Typical" made ground
3	C	Moderate risk	<3.5		Old landfill, inert waste, mineworking flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking susceptible to flooding, completed landfill (WMP 26B criteria)
5	E	High risk	<70		Mineworking unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Table 8.5 from CIRIA C665 Modified Wilson and Card Classification

Table 8.7 is used for comparison of gas screening values for "Situation B Developments" and is presented hereunder:

Traffic Light	Methane ¹		Carbon Dioxide ²	
	Typical max concentration ³ (% by volume)	Gas screening value ^{2,4} (litres/hour)	Typical concentration ³ (% max by volume)	Gas screening value ^{2,4} (litres/hour)
Green				
Amber 1	1	0.13	5	0.78
Amber 2	5	0.63	10	1.60
Red	20	1.60	30	3.10

Notes:

- The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter will be the decoder as to what Traffic Light is allocated;
- Borehole Gas Volume Flow Rate, in litres per hour as defined in Wilson and Card (1999), is the borehole flow rate multiplied by the concentration in the air stream of the gas being considered;
- The Typical Maximum Concentration can be exceeded in certain circumstances should the Conceptual Site Model indicate it is safe to do so;
- The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment considering site-specific conditions.

Table 8.7 from CIRIA C665 - NHBC Traffic light system for 150 mm void

Dependant on the outcome of the assessment of risk posed by ground gas it is determined whether gas protection measures are required for the proposed development, and or whether a detailed quantitative risk assessment is required for the site.

Selection & Design of Protective Measures

Table 8.6 and Box 8.4 of CIRIA C665 contain information on the detailed design of protection measures and were initially intended for the purposes of determining then level of protection measures a development requires. These tables and related text include some useful information on the design of gas protection measures, however BS8485:2007, which supersedes the guidance included within CIRIA C665, is used for selection of gas protection measures.

BS8485: 2007 uses a scoring system dependant on the Characteristic Situation / NHBC Traffic Light and proposed end use of the site. The scoring system is summarised in BS8485:2007 Table 2 as presented hereunder:

Characteristic situation, CS	gas	NHBC traffic light	Required gas protection			
			Non-managed property e.g. private housing	Public building (a)	Commercial buildings	Industrial buildings (b)
1		Green	0	0	0	0
2		Amber 1	3	3	2	1 (c)
3		Amber 2	4	3	2	2
4		Red	6 (d)	5(d)	4	3
5				6(e)	5	4
6					7	6

NOTE Traffic light indications are taken from NHBC Report no.:10627-RO1 (04) and are mainly applicable to low-rise residential housing¹. These are for comparative purposes but the boundaries between the traffic light indications and CS values do not coincide.

a) Public buildings include, for example, managed apartments, schools, and hospitals.
b) Industrial buildings are generally open and well ventilated. However, areas such as office pods might require a separate assessment and may be classified as commercial buildings and require a different scope of gas protection to the main building.
c) Maximum methane concentration 20% otherwise consider and increase to CS3.
d) Residential building on higher traffic light/CS sites is not recommended unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.
e) Consideration of issues such as ease of evacuation and how false alarms will be handled are needed when completing the design specification of any gas protection scheme

¹ The NHBC guidance and CIRIA C665 guidance refers to low rise housing (which is up to three storeys without lifts) that is constructed with a 150mm ventilated sub-floor void.

BS8485:2007 Table 2 Required gas protection by characteristic gas situation and type of building

Once a score is assigned, a combination of protection systems / elements is chosen from BS8485:2007 Table 3 shown below:

PROTECTION ELEMENT/SYSTEM		SCORE	COMMENTS
a) Venting/dilution (See Annex A BS8485)			
Passive sub floor ventilation (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)A Subfloor ventilation with active abstraction/pressurization (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)A Ventilated car park (basement or under croft)	Very good performance	2.5	Ventilation performance in accordance with Annex A (BS8485) If passive ventilation is poor this is generally unacceptable, and some form of active system will be required. There must be robust management systems in place to ensure the continued maintenance of any ventilation system. Active ventilation can always be designed to meet good performance. Mechanically assisted systems come in two forms: extraction and positive pressurization.
	Good performance	1	
		2.5	
		4	
b) Barriers			
Floor slabs			It is good practice to install ventilation in all foundation systems to effect pressure relief as a minimum. Breaches in floor slabs such as joints must be effectively sealed against gas ingress in order to maintain these performances.
Block and beam floor slab		0	
Reinforced concrete ground bearing slab		0.5	
Reinforced concrete ground bearing foundation raft with limited service penetrations that are cast into slab		1.5	
Reinforced concrete cast in situ suspended floor slab with minimal service penetrations and water bars around all slab penetrations and at joints		1.5	
Fully tanked basement		2	
c) Membranes			
Taped and sealed membrane to reasonable levels of workmanship/in line with current good practice with validation B,C		0.5	The performance of membranes is heavily dependent on the quality of design of the installation, resistance to damage after installation, and the integrity of joints.
Proprietary gas resistant membrane to reasonable levels of workmanship /in line with good practice under independent inspection (CQA)B,C		1	
Proprietary gas resistant membrane installed to reasonable levels of workmanship/in line with current good practice under CQA with integrity testing and independent validation		2	
d) Monitoring and detection (not applicable to non-managed property, or in isolation)			
Intermittent monitoring using handheld equipment		0.5	Where fitted, permanent monitoring systems ought

Permanent monitoring and alarm system A	Installed in the underfloor venting/dilution system	2	to be installed in the underfloor venting/dilution system in the first instance but can also be provided within the occupied space as a fail safe.
	Installed in the building	1	
e) Pathway Intervention			
Pathway intervention		-	This can consist of site protection measures for off-site or on-site sources (see Annex A, BS8485)
NOTE In practice the choice of materials might well rely on factors such as construction method and the risk of damage after installation. It is important to ensure that the chosen combination gives an appropriate level of protection			
It is possible to test ventilation systems by installing monitoring probes for post installation validation.			
If a 1 200g DPM material is to function as a gas barrier it should be installed according to BRE 212 /BRE 414 being taped and sealed to all penetrations			
Polymeric Materials> 1200 g (proportional to thickness) but their physical properties mean that they are more robust and resistant to damage.			

BS8485:2007 Table 3 Solution Scores

Where the gas situation is 4 or more (and for NHBC Red situations) the site requires a comprehensive risk assessment to confirm the scope of protection measures. These are higher risk sites and reliance on Table 2 and 3 alone is not enough.

For a site which is impacted by migratory gases from an off-site source, the development may be protected by imposing pathway intervention methods, which if successfully validated, could also remove the need for further analysis. It is essential that the gas regime in these circumstances has been fully characterised and that the only source impacting the site is located off site and that the pathway is clearly defined and its interception equally proven before construction commences. Pathway intervention methods may include vertical membrane installations, venting trenches, rows of stone columns, activated trenches and various proprietary systems. These systems are particularly relevant to domestic housing where there is limited scope for foundation type solutions.

CURRENT GUIDANCE ON REMEDIATION

When risk assessment of the site has been completed and it indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication CLR11 (2004) "Model Procedures for the Management of Land Contamination." The stages of managing remediation are as follows:

- (a) Options Appraisal and develop Remediation Strategy;
- (b) Develop Implementation Plan and Verification Plan;
- (c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

APPENDIX D: COMMERCIAL ENVIRONMENTAL DATA

Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

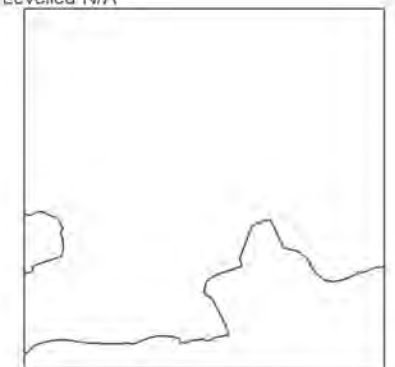
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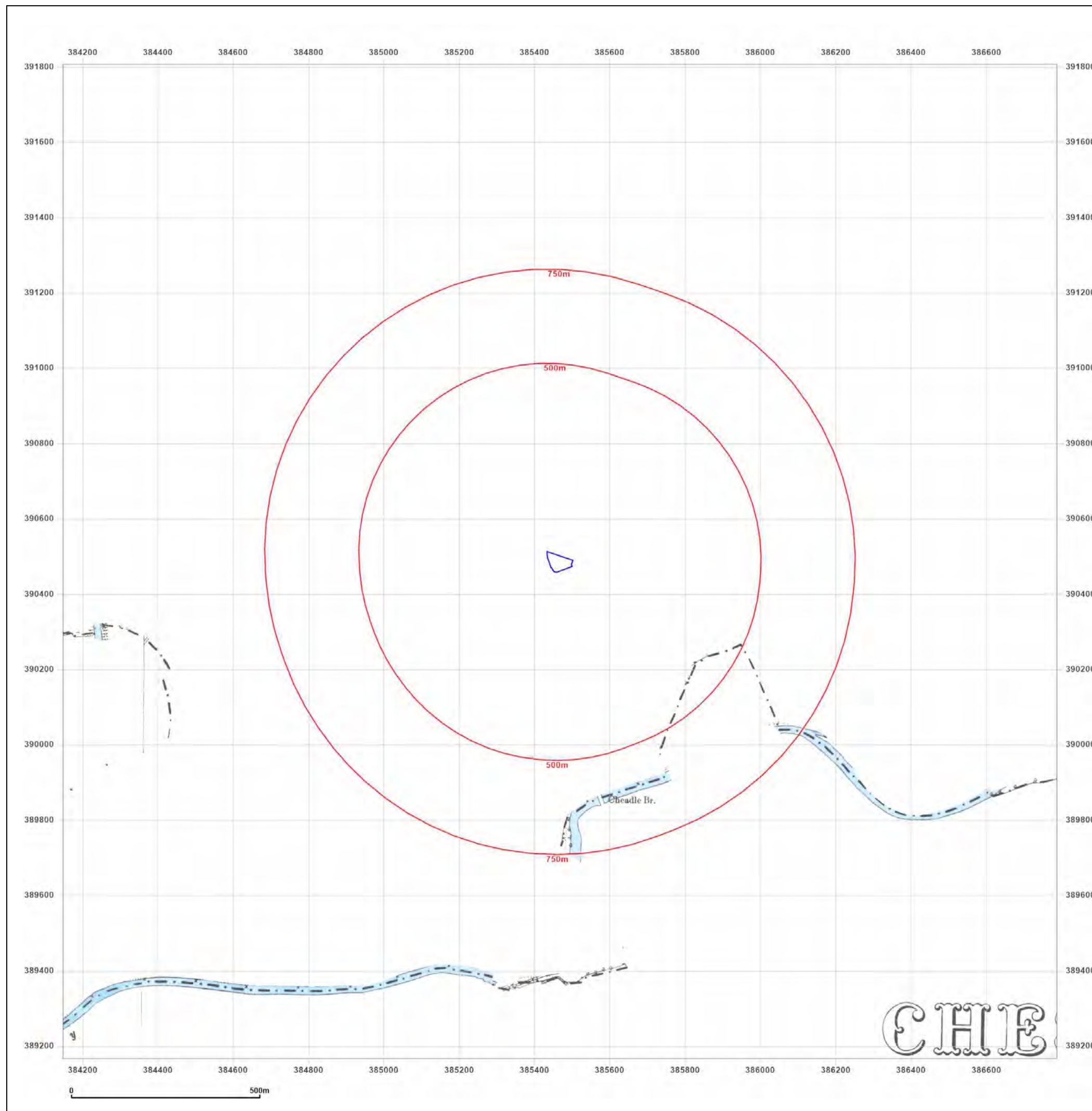


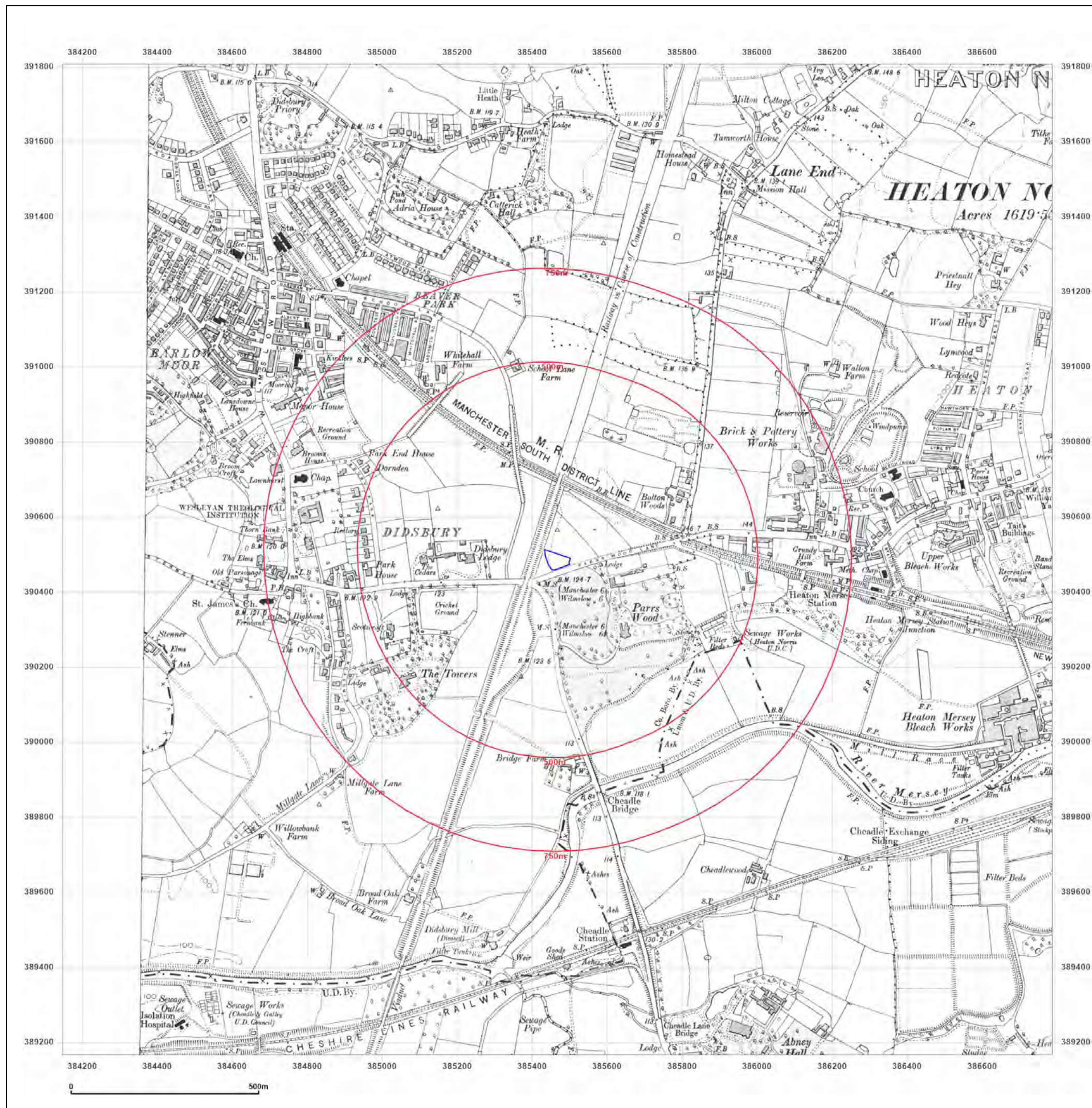
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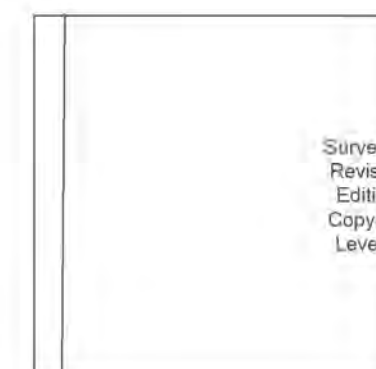
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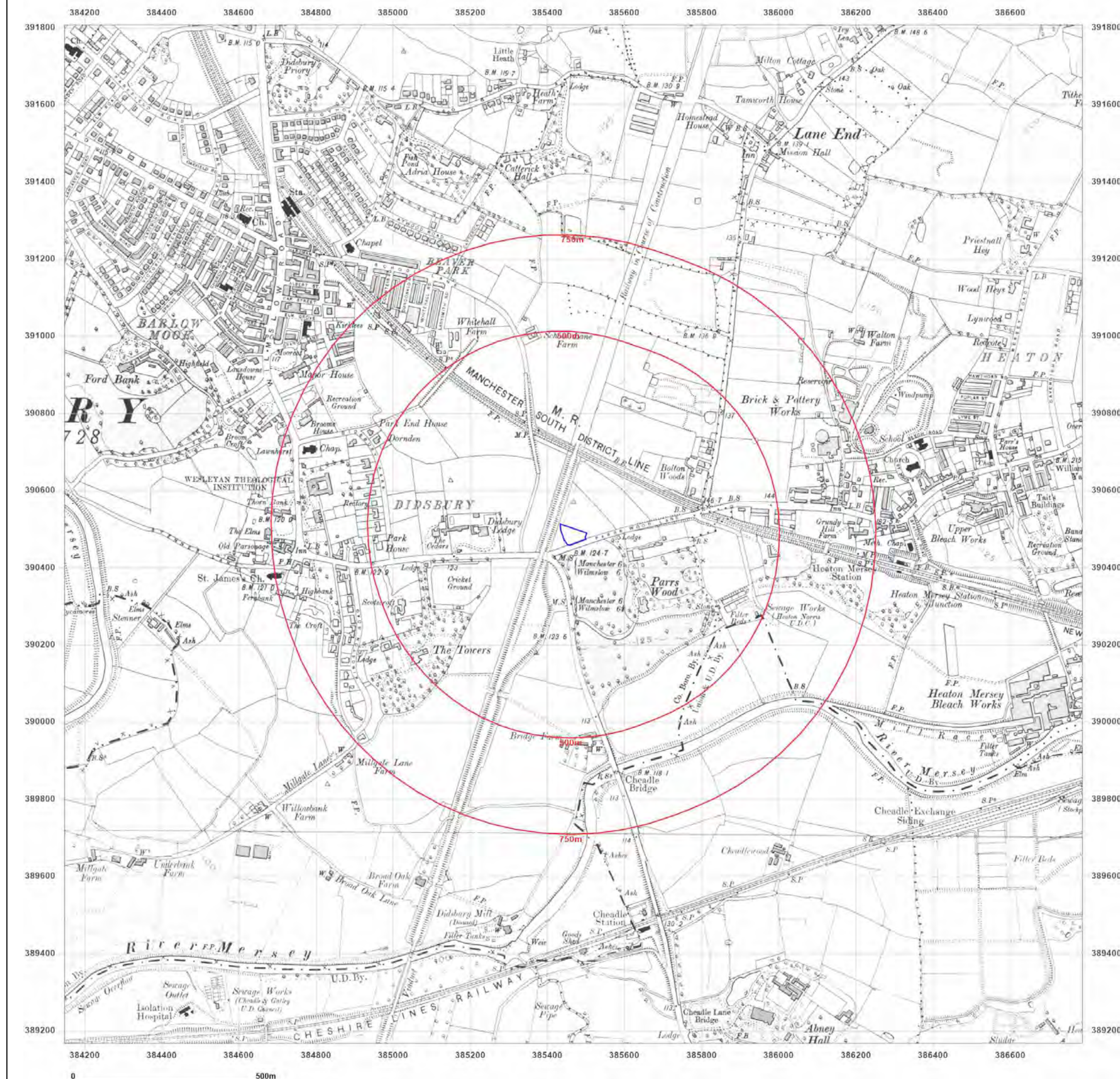


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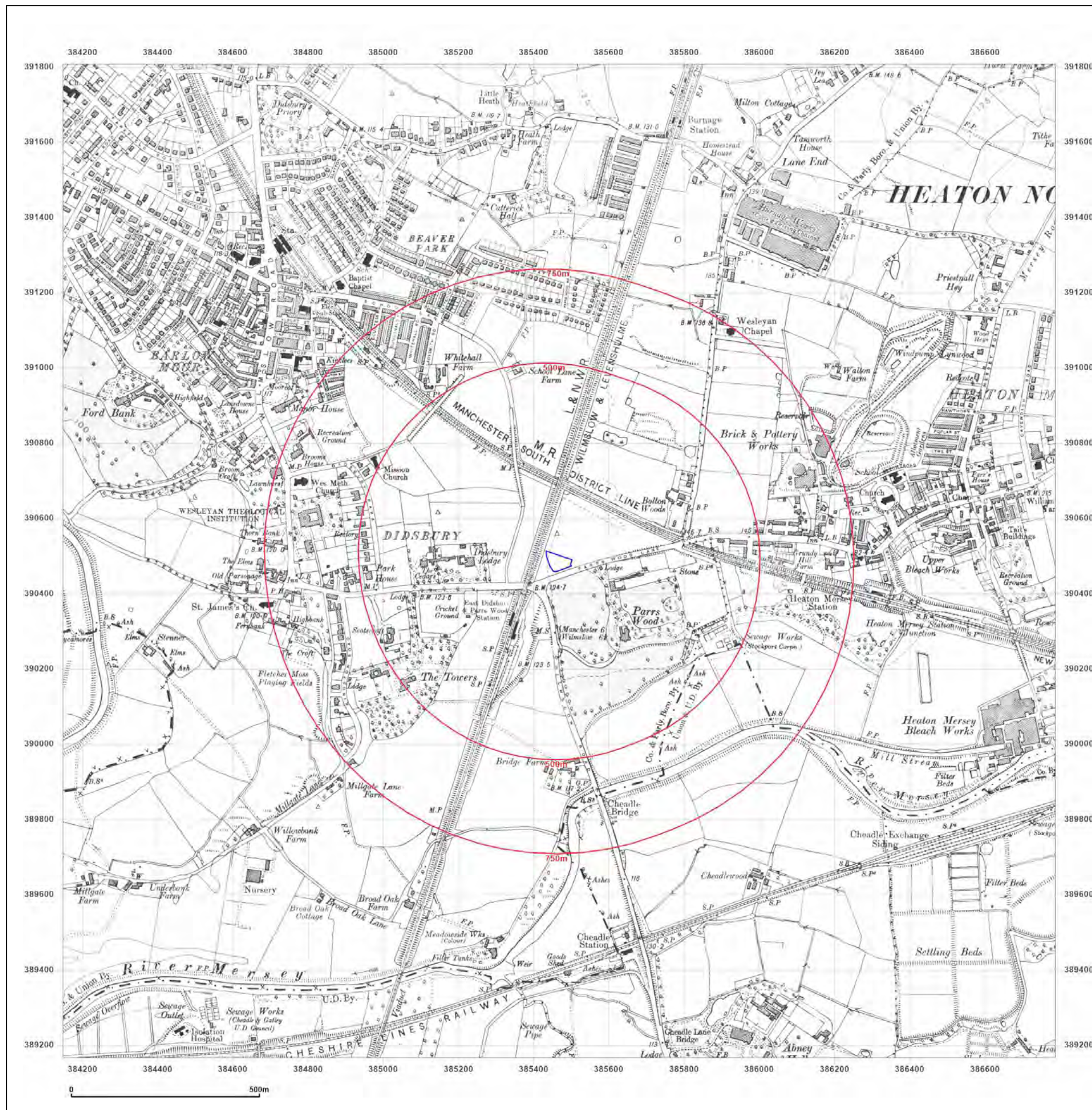


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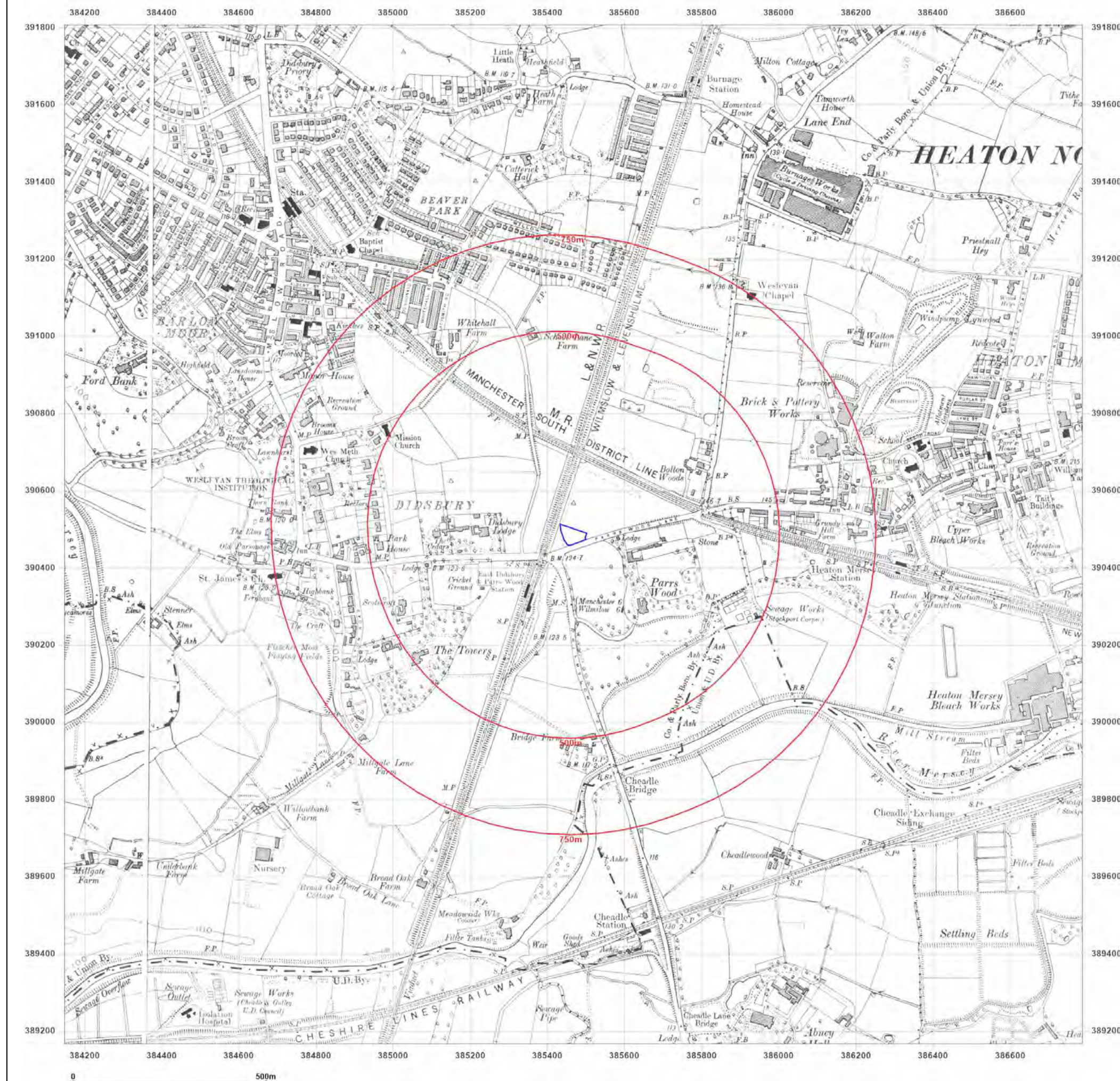


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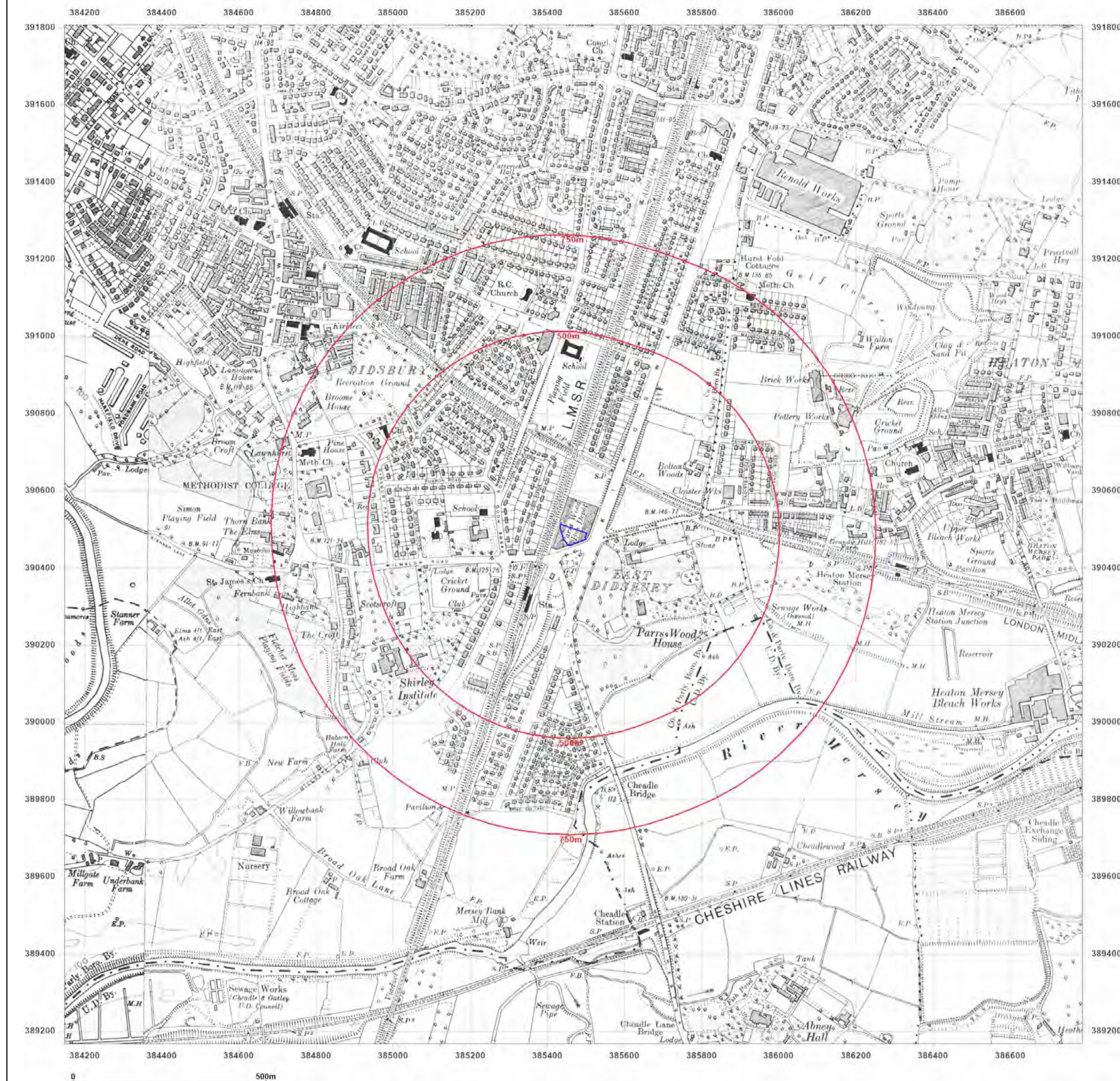


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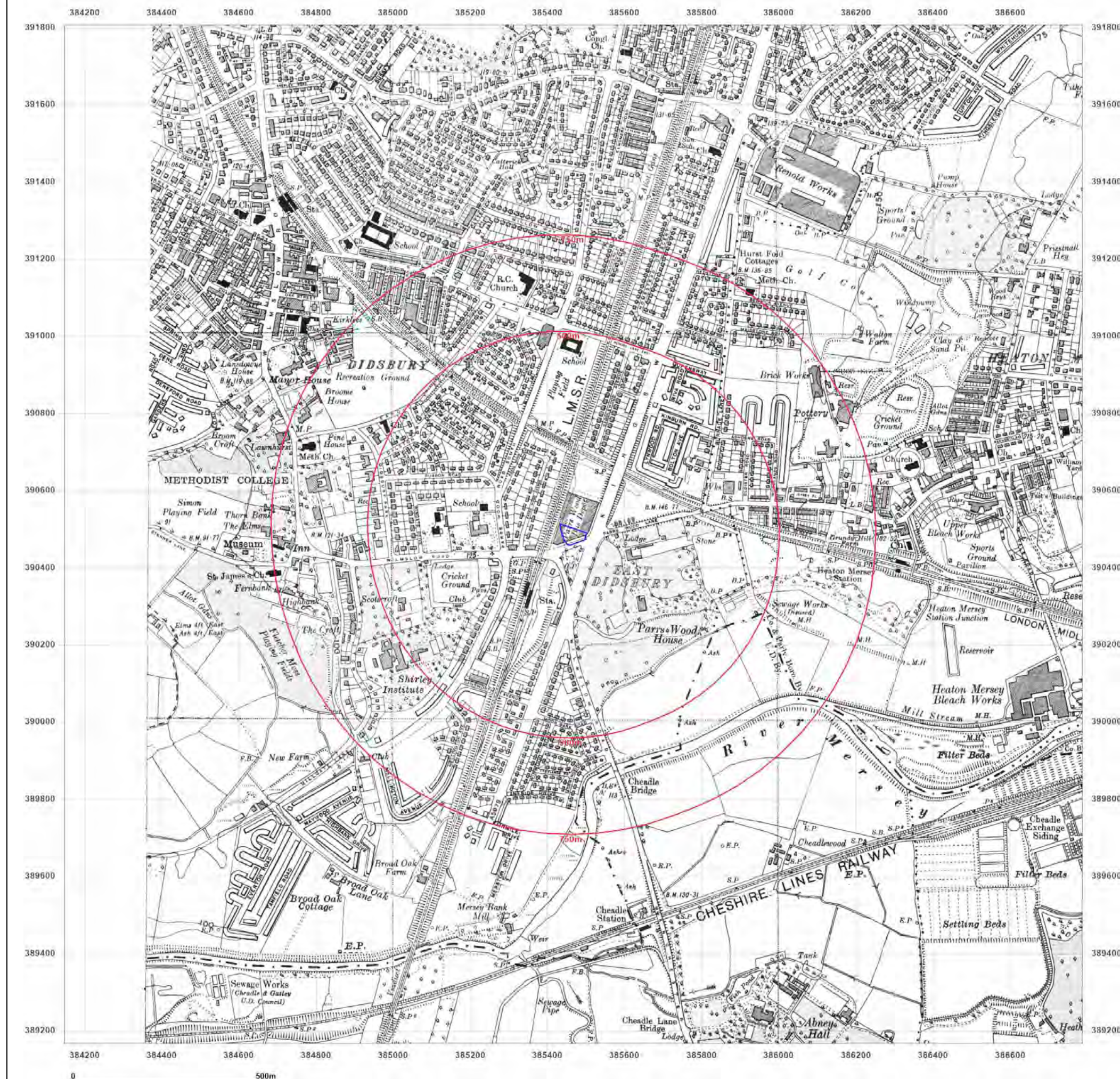


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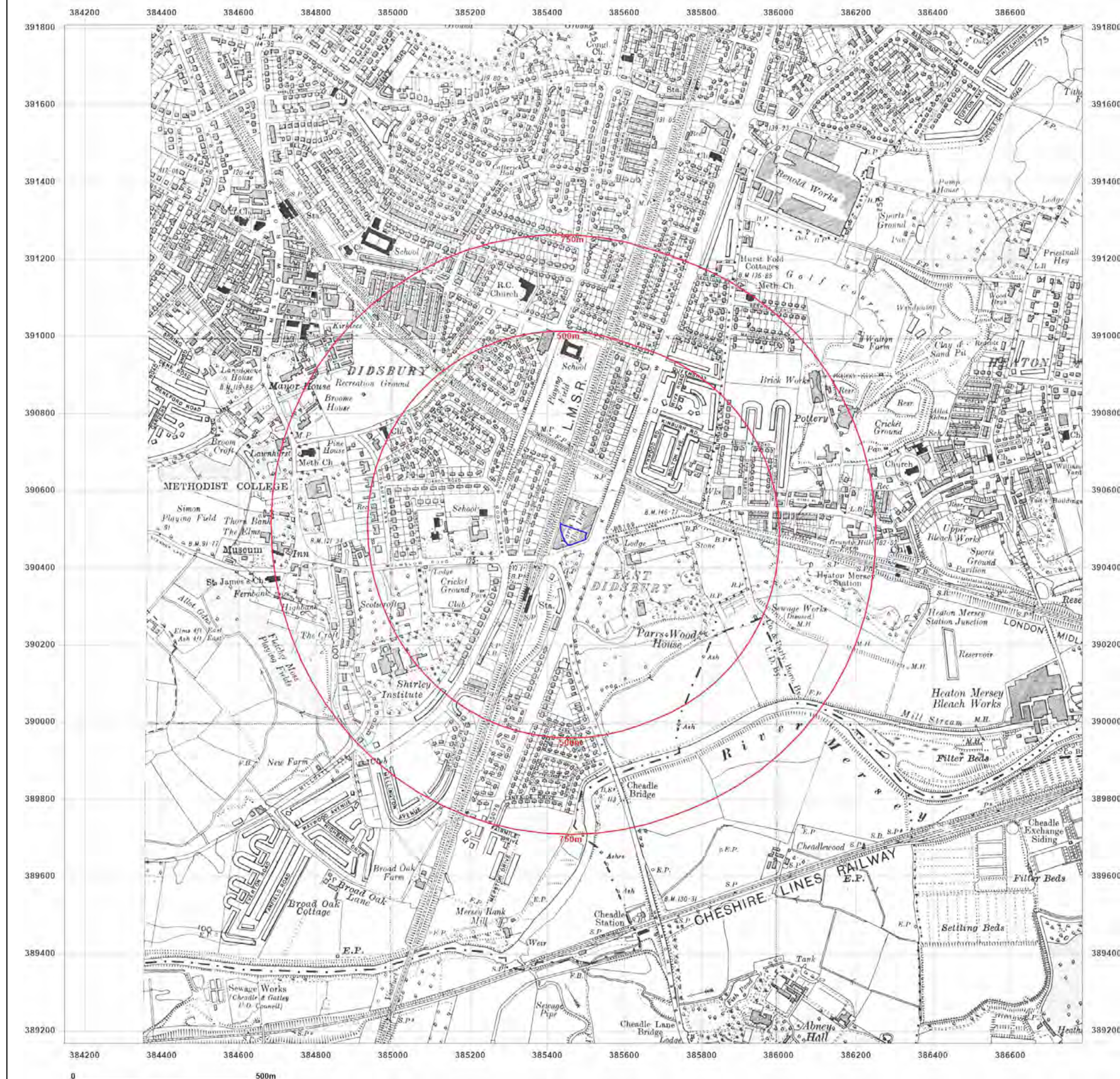


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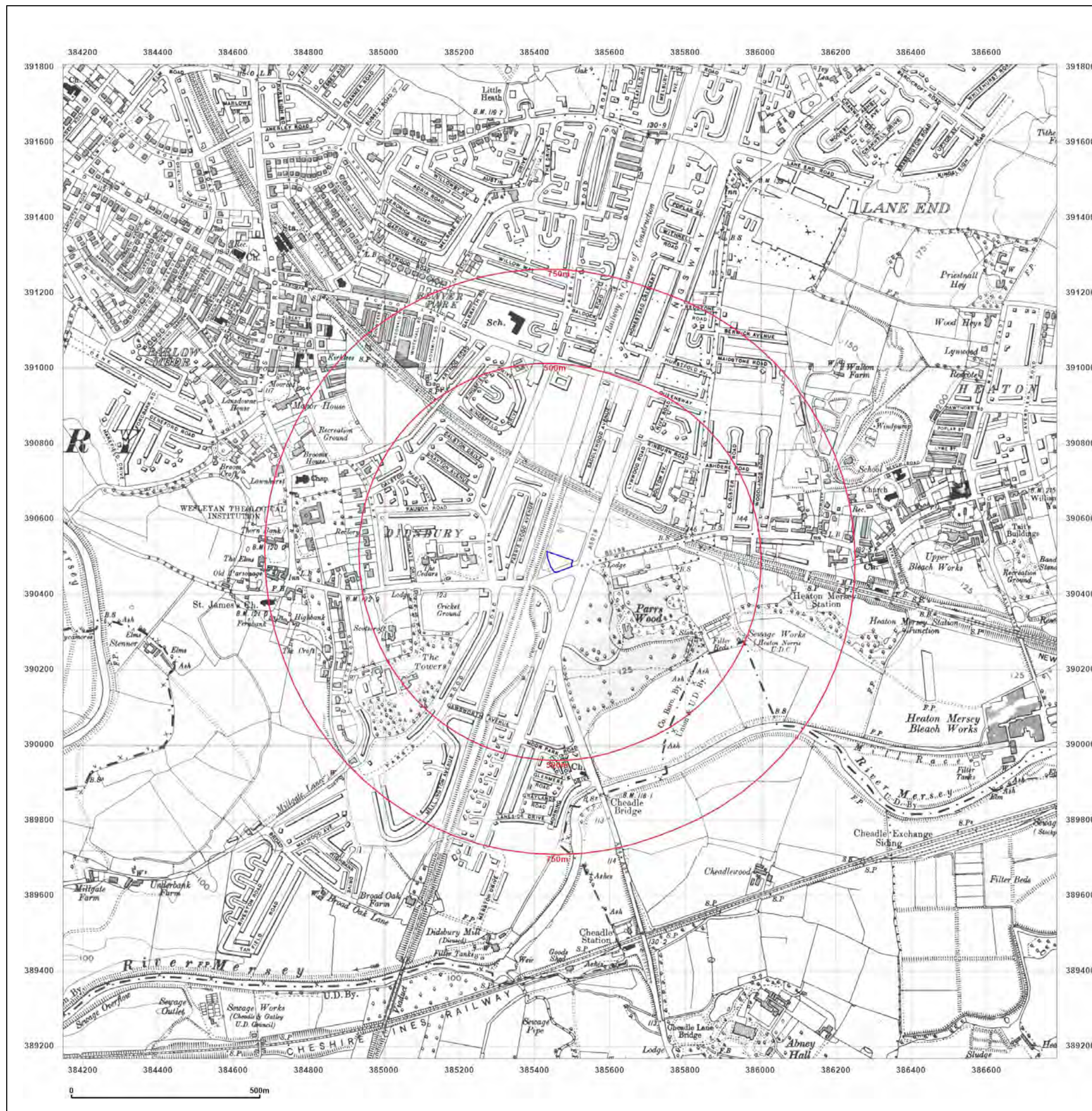


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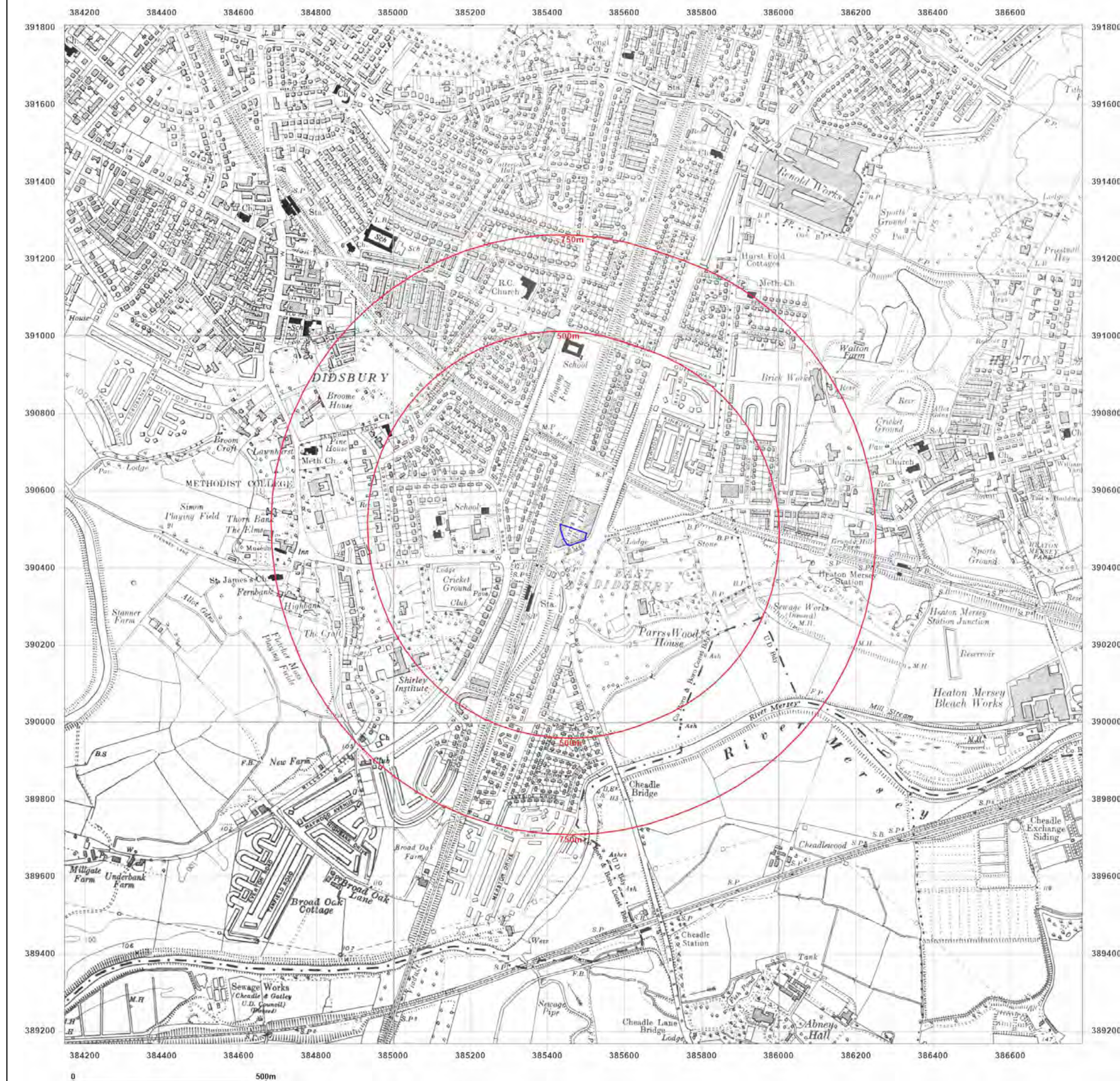


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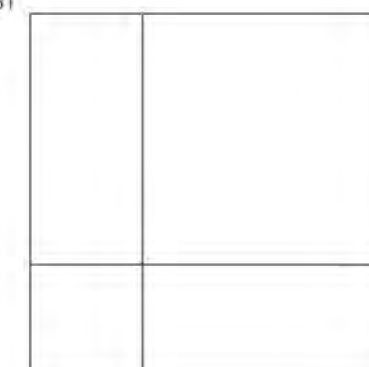
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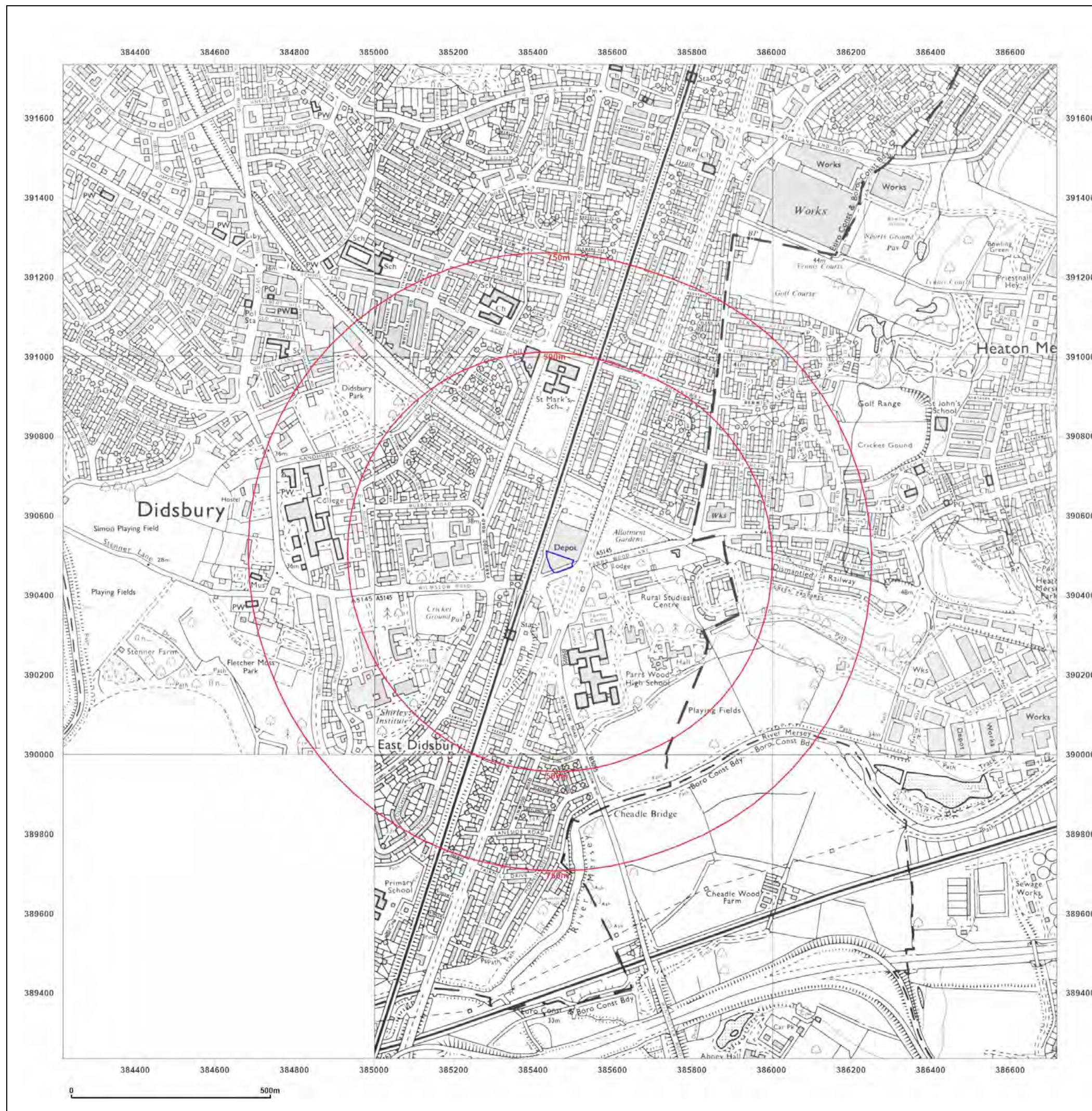


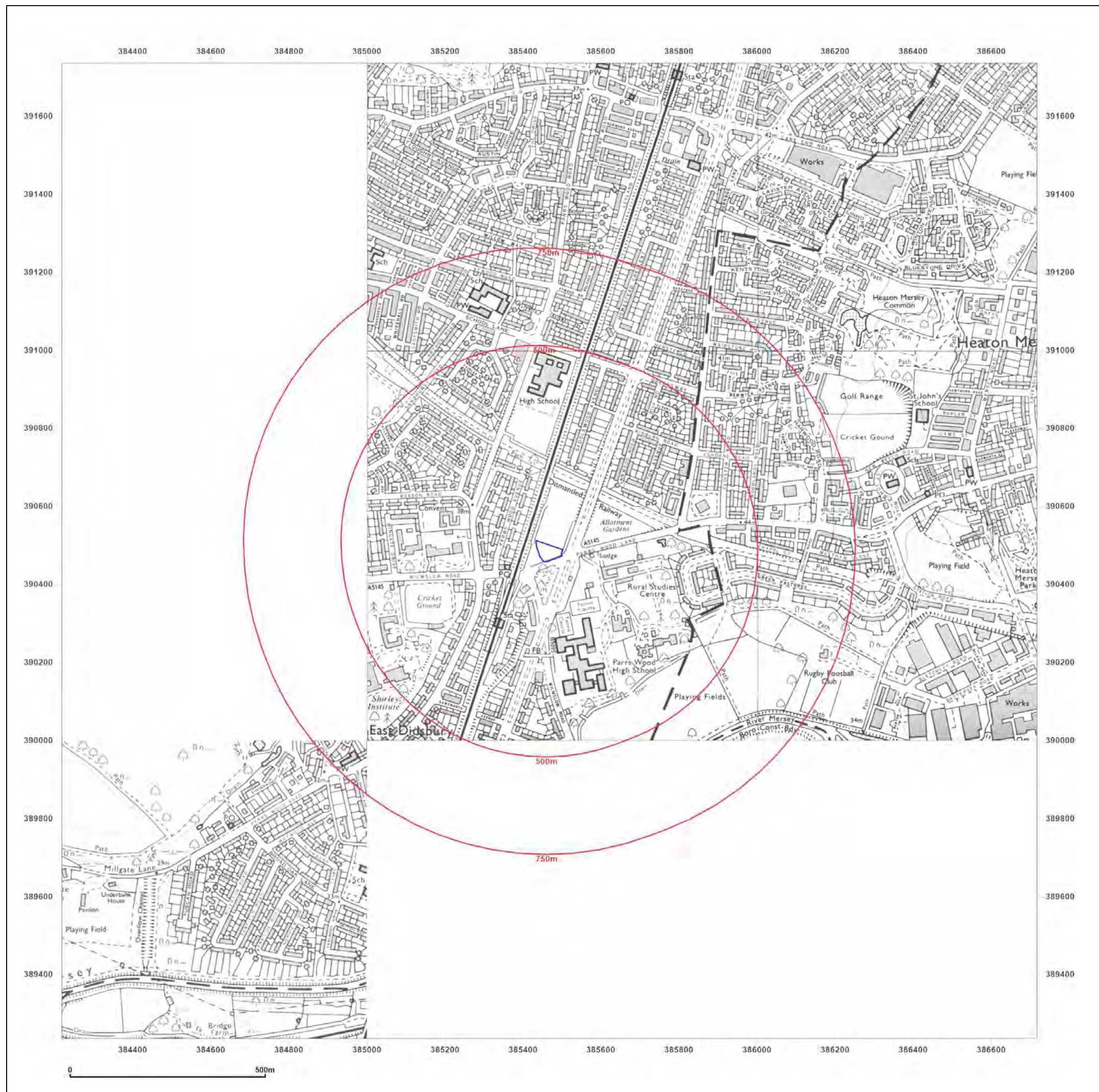
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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
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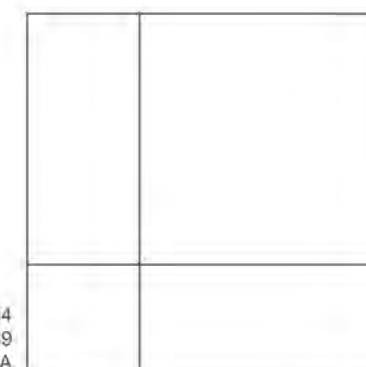
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Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1986
Revised 1989
Edition N/A
Copyright 1989
Levelled 1981



Surveyed 1984
Revised 1989
Edition N/A
Copyright 1989
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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1995

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1984
Revised 1995
Edition N/A
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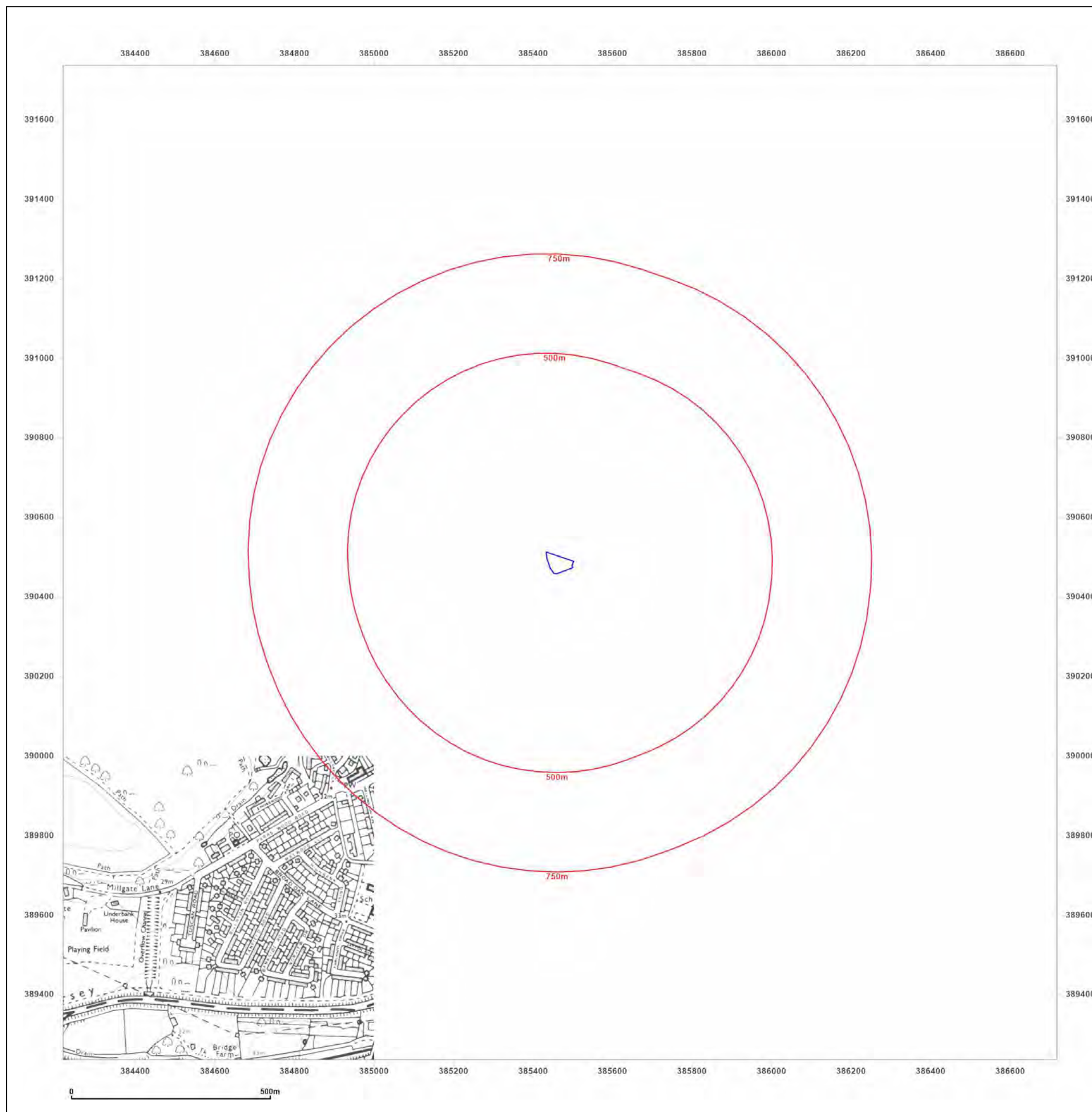


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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

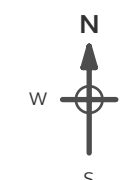
Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



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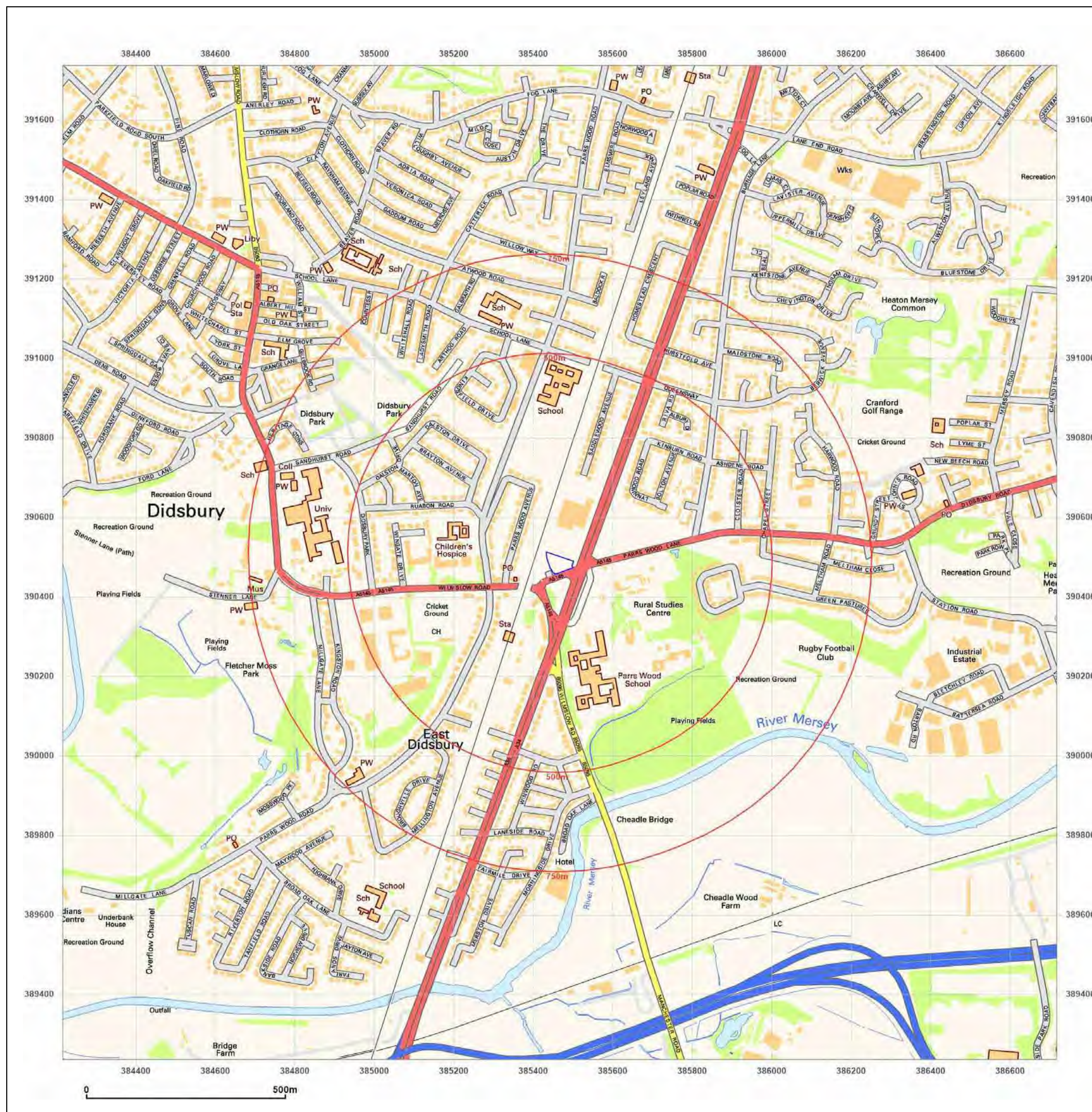


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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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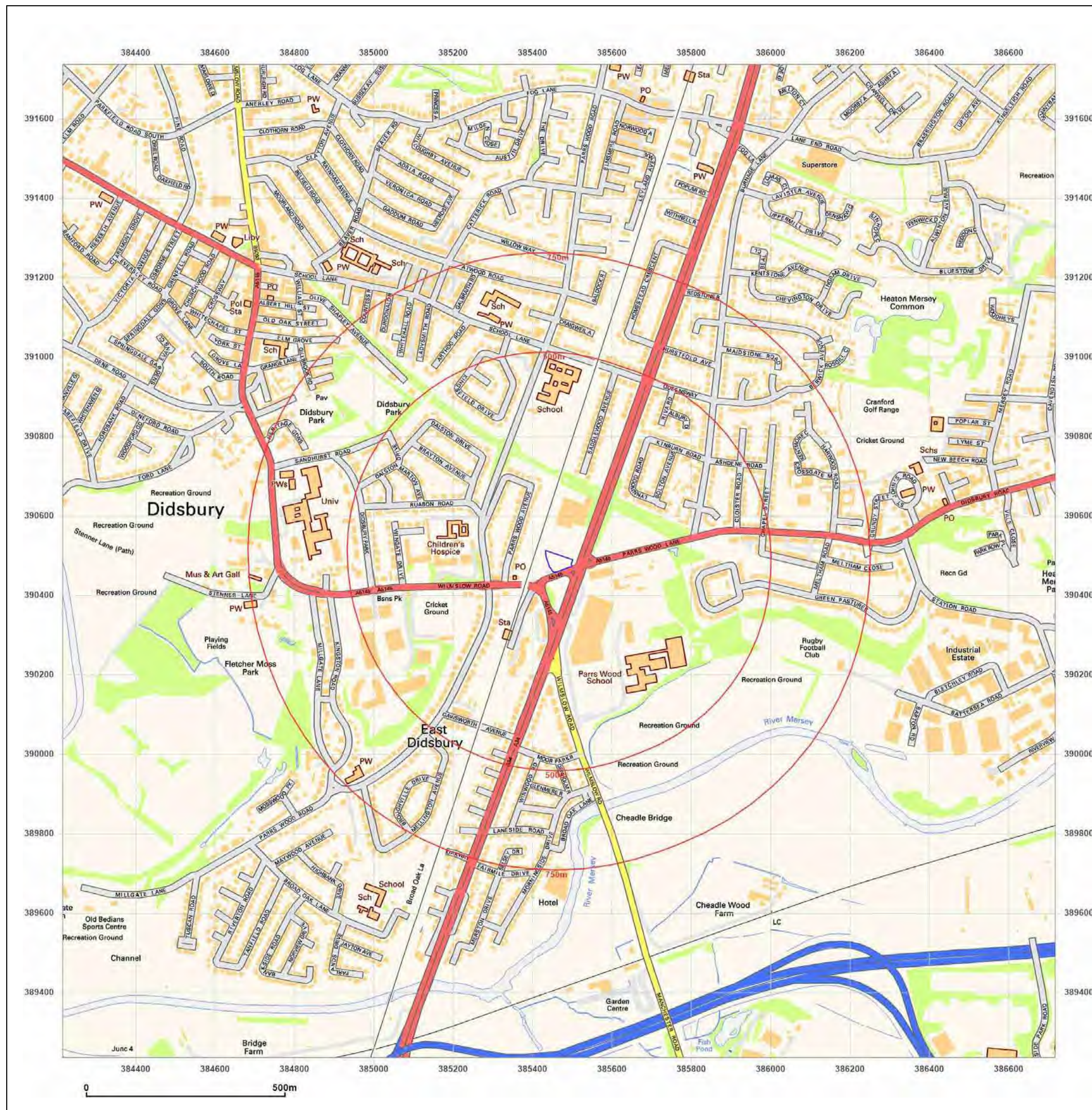


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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



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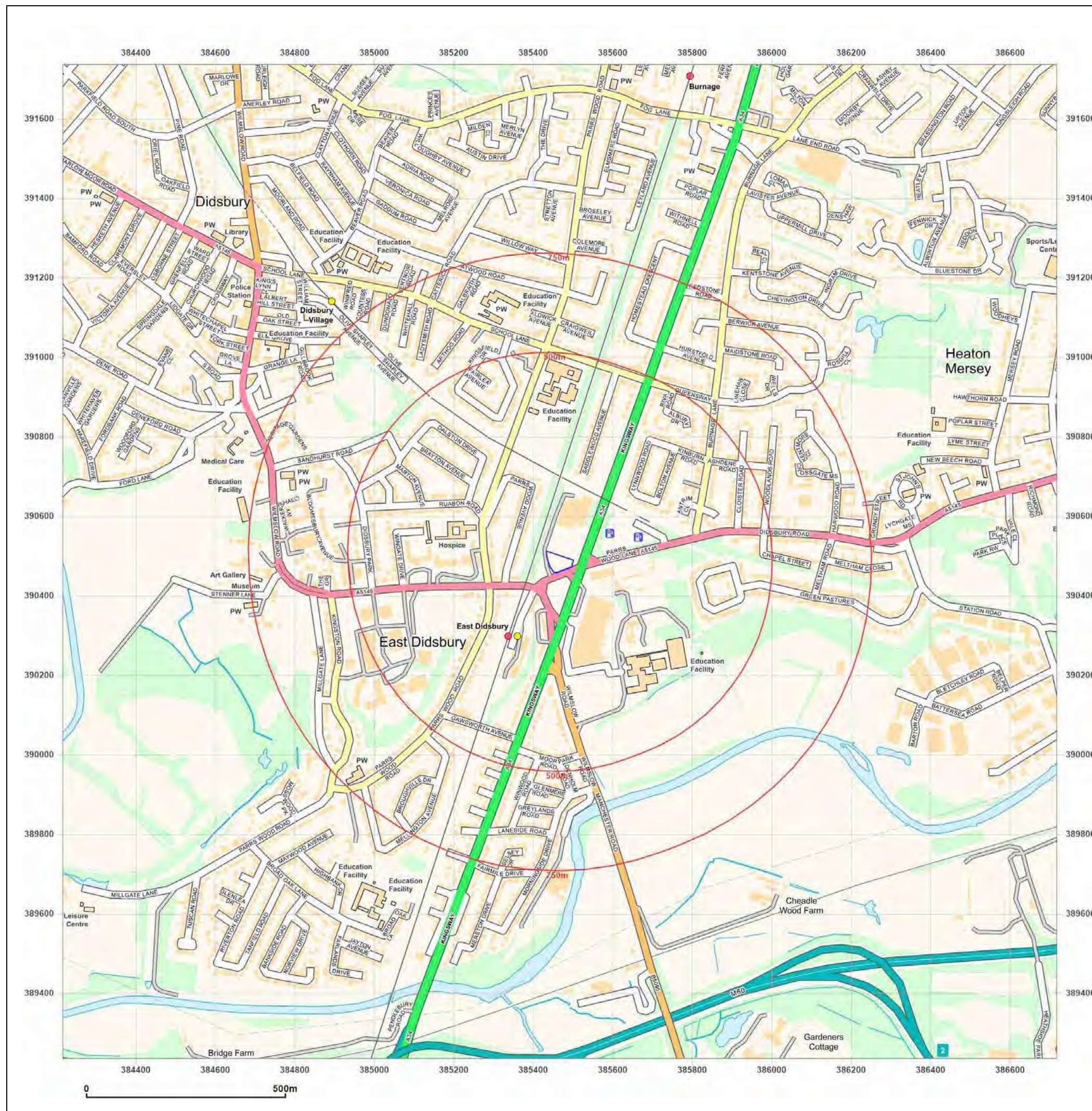


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Site Details:

Tesco Stores Parrs Wood Lane,
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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



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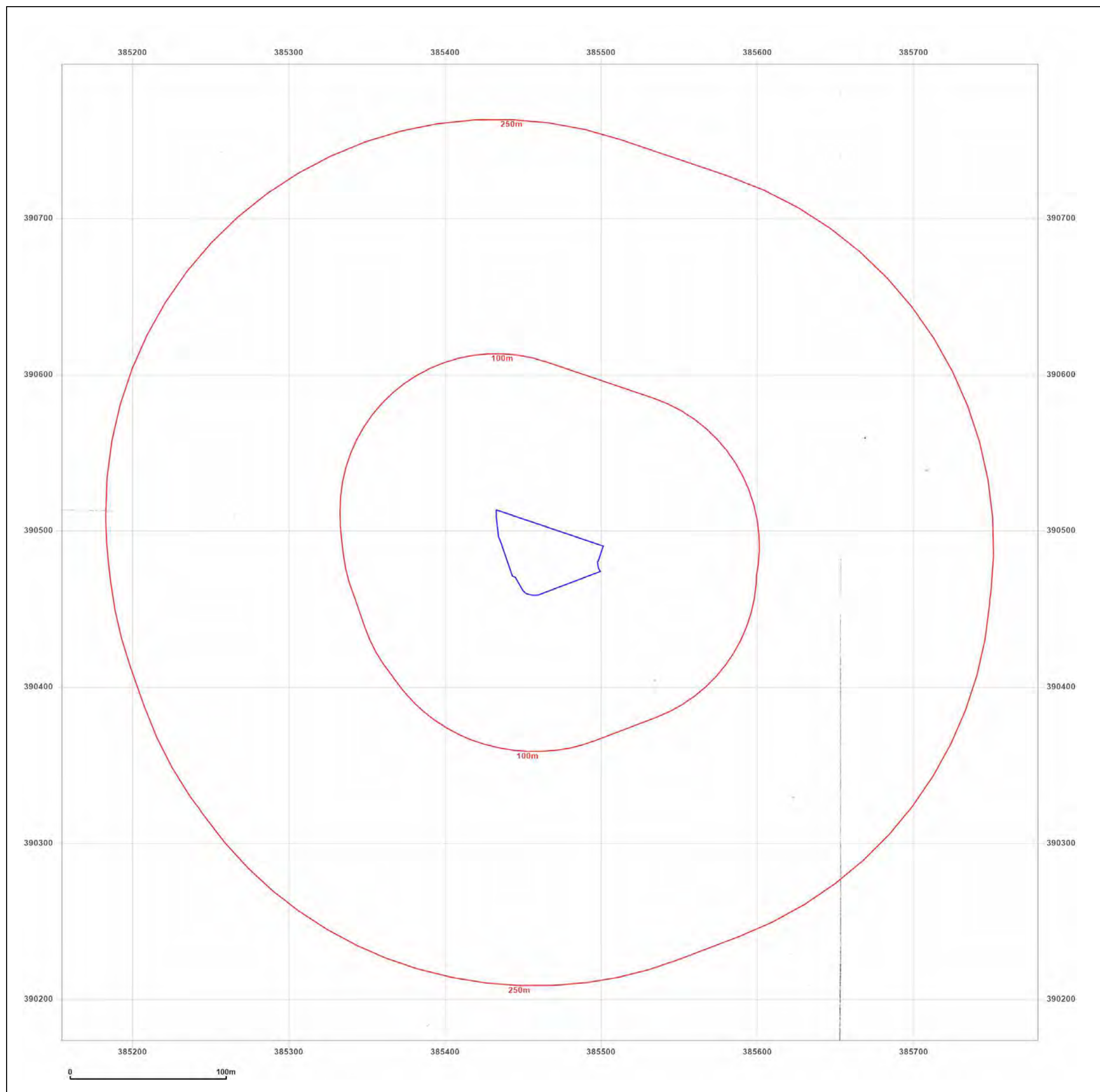


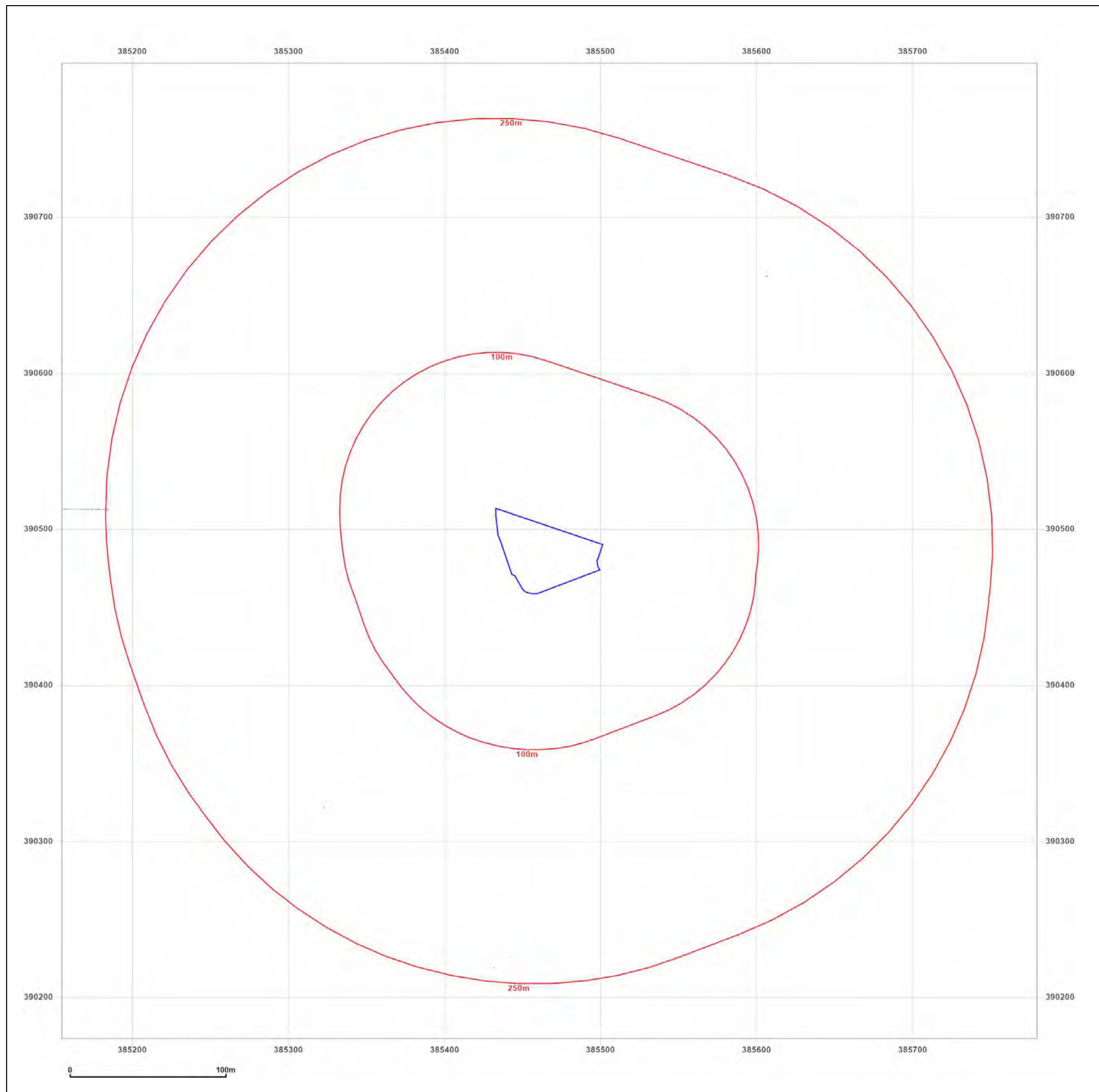
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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



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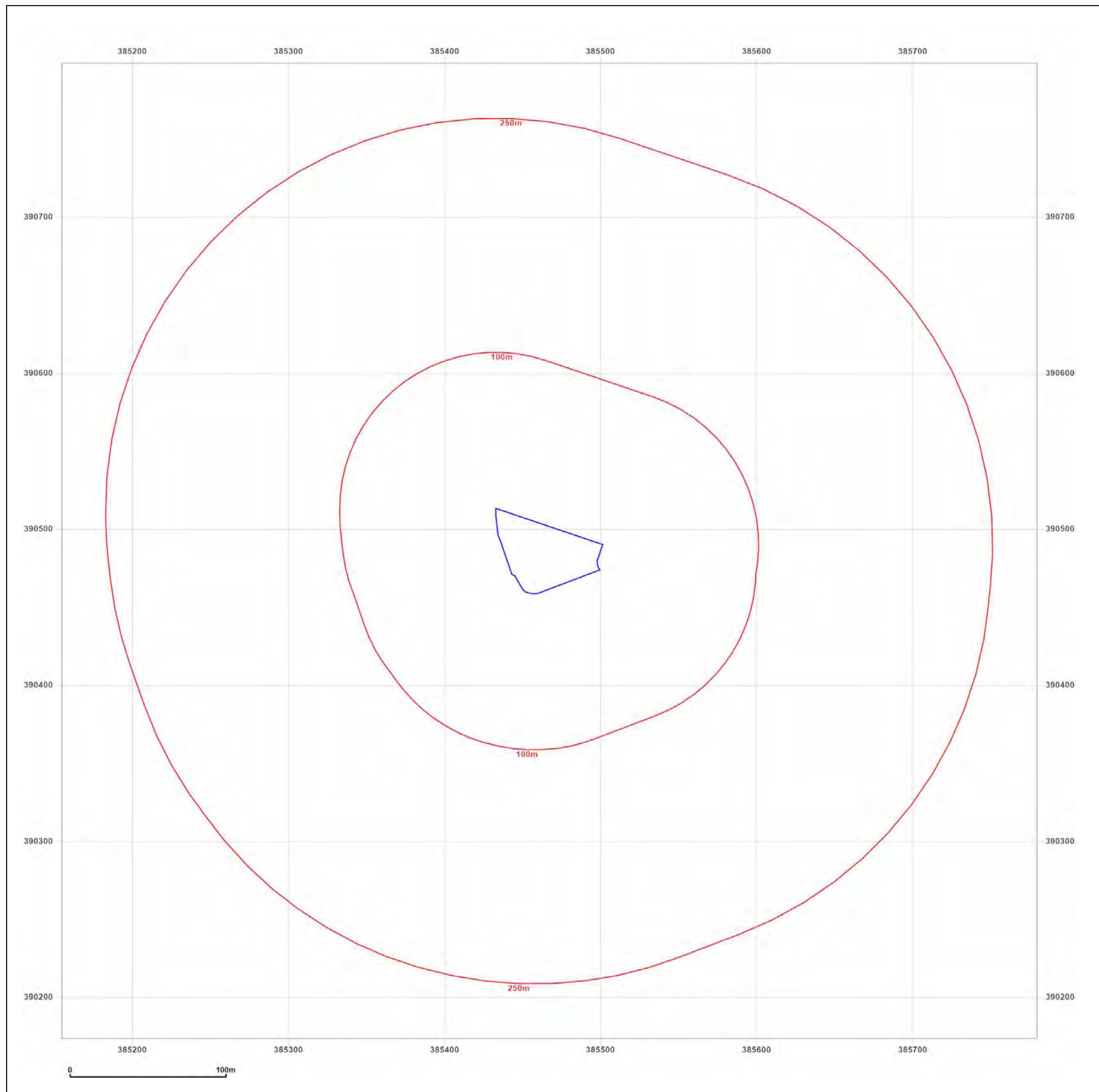


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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1872
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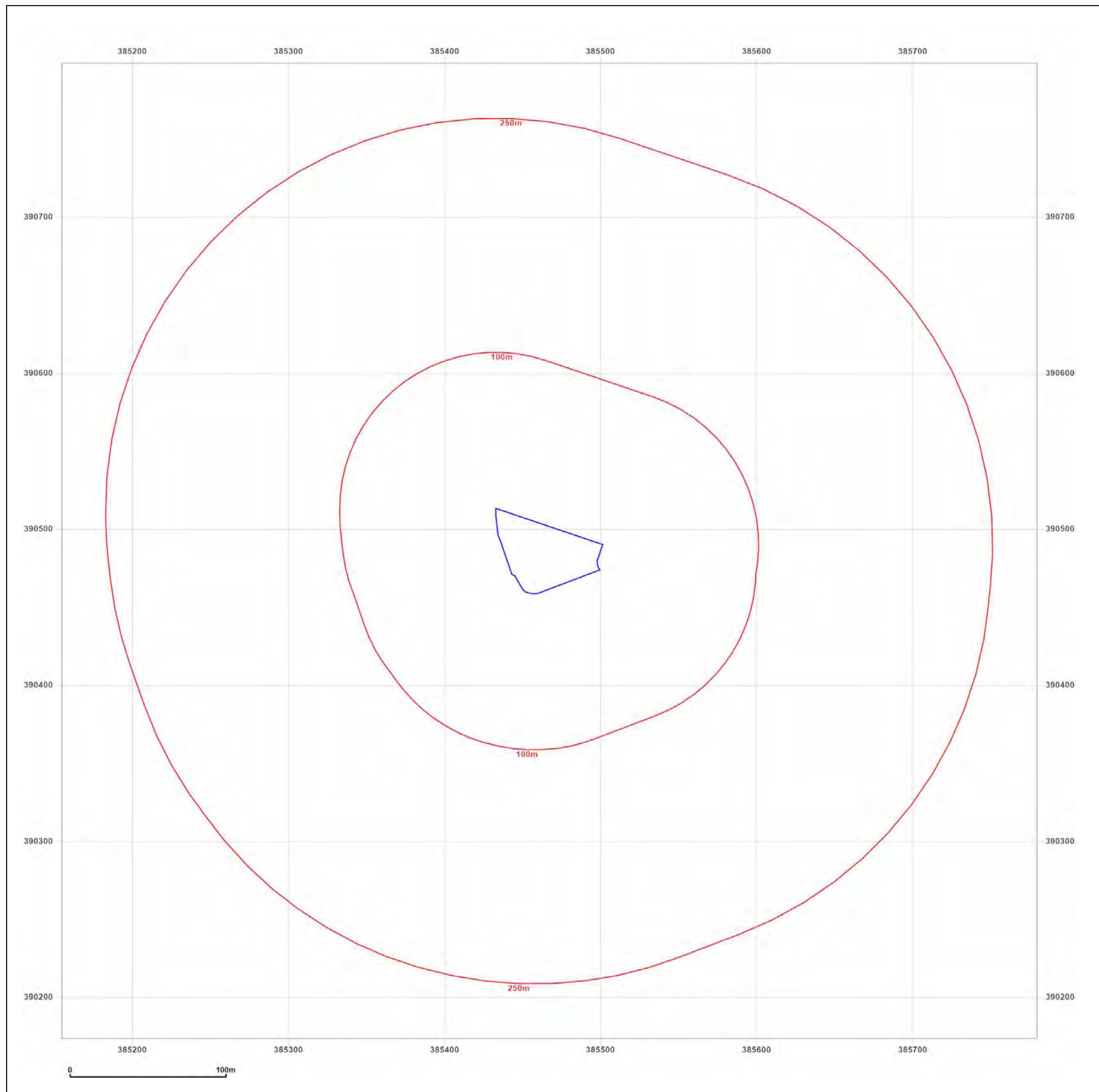


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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

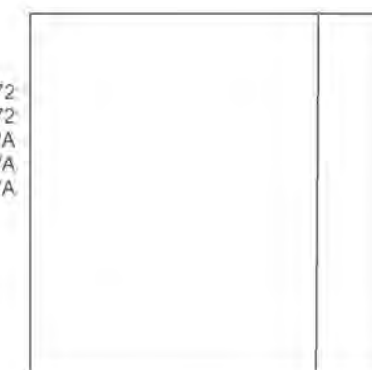
Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1881

Scale: 1:2,500

Printed at: 1:2,500



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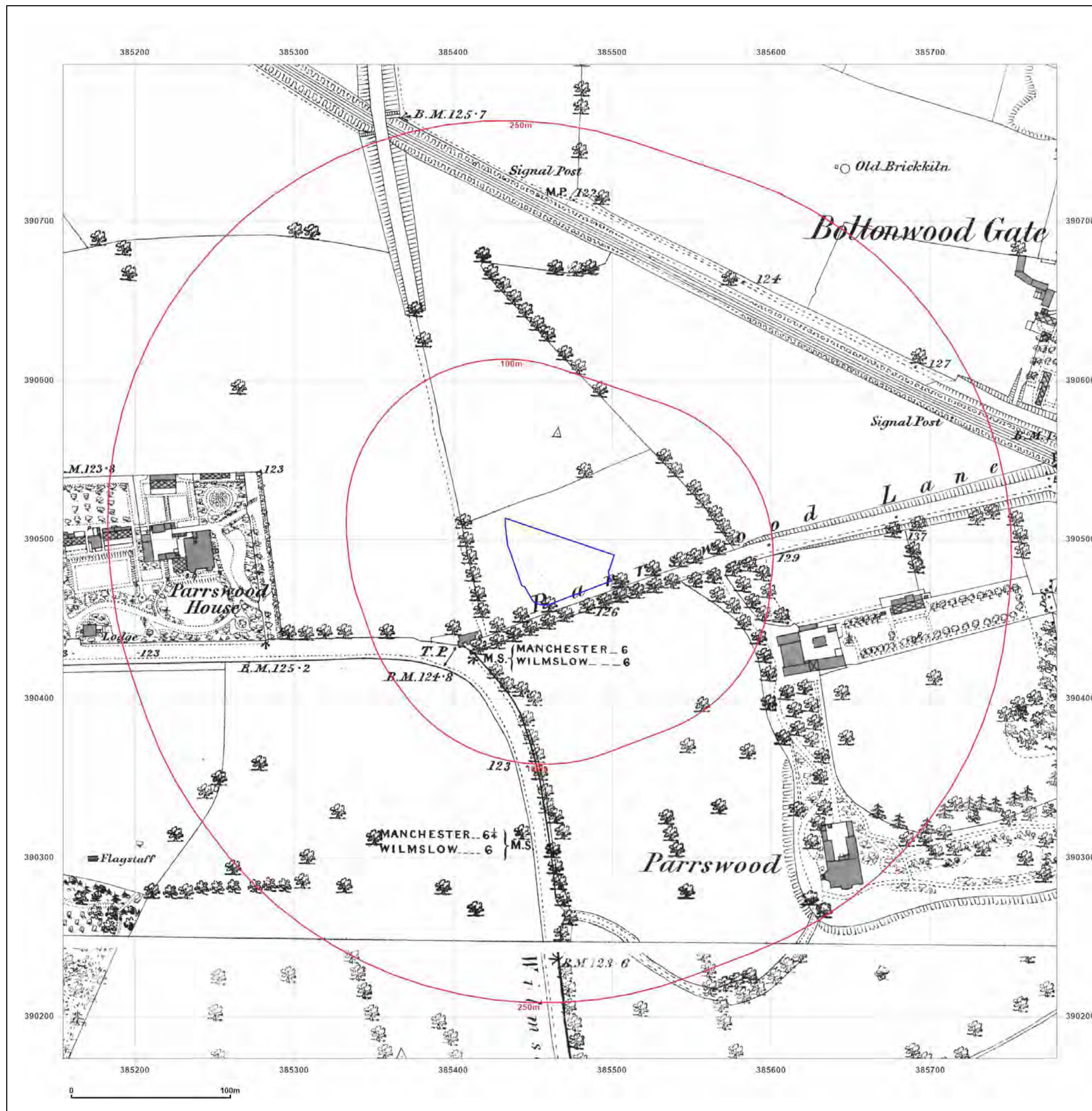


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1893-1894

Scale: 1:2,500

Printed at: 1:2,500



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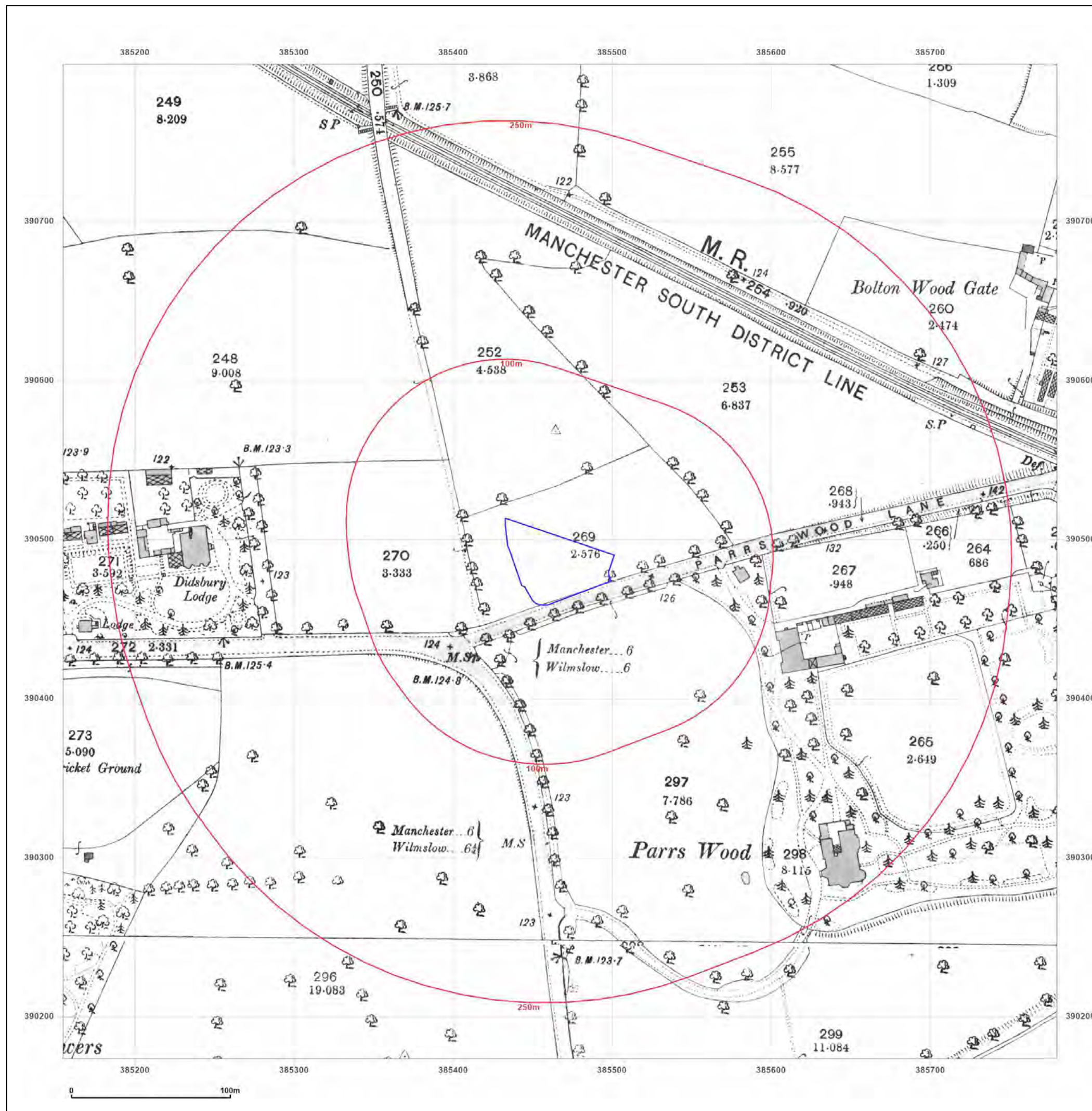


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



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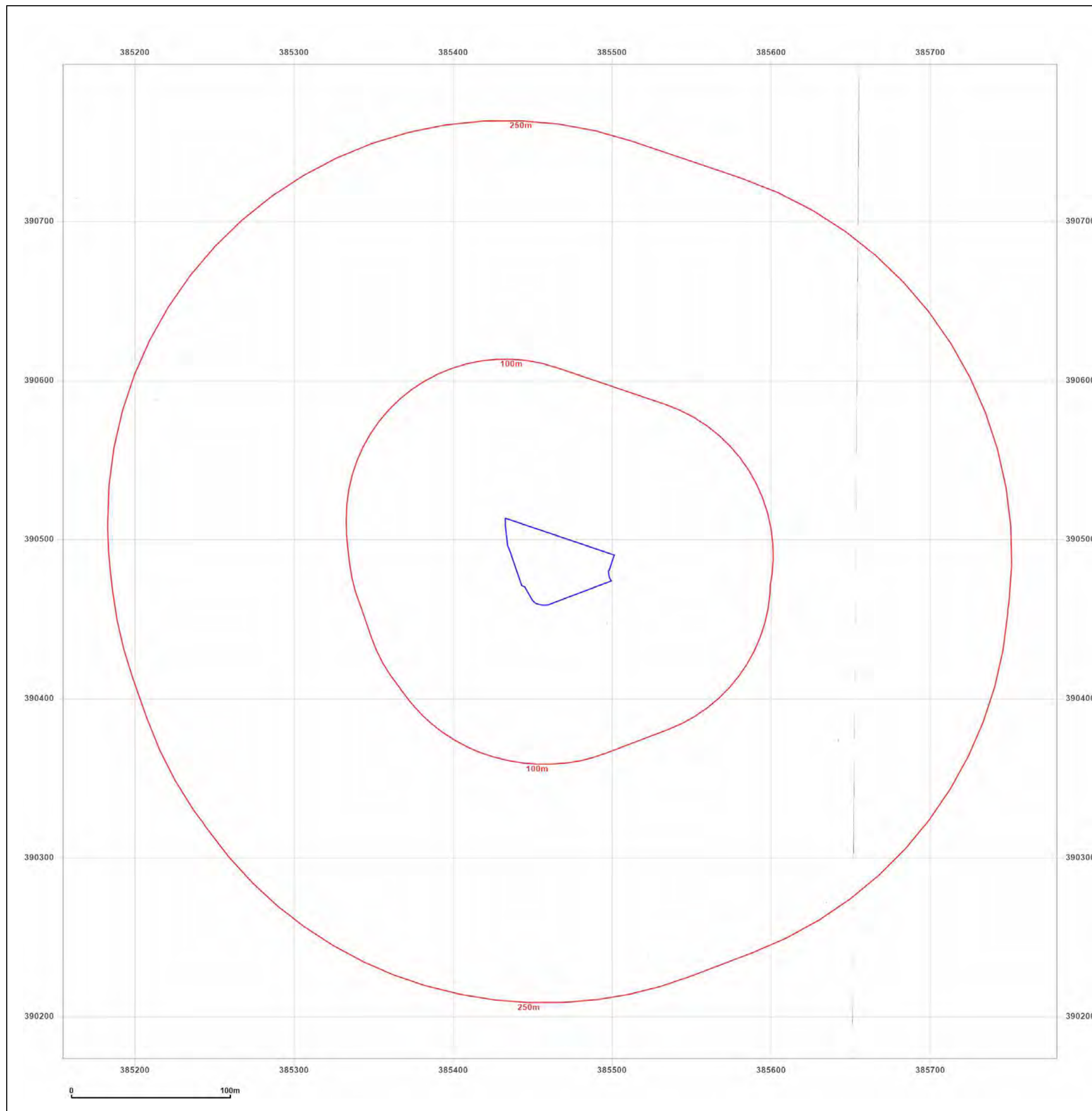


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1907

Scale: 1:2,500

Printed at: 1:2,500



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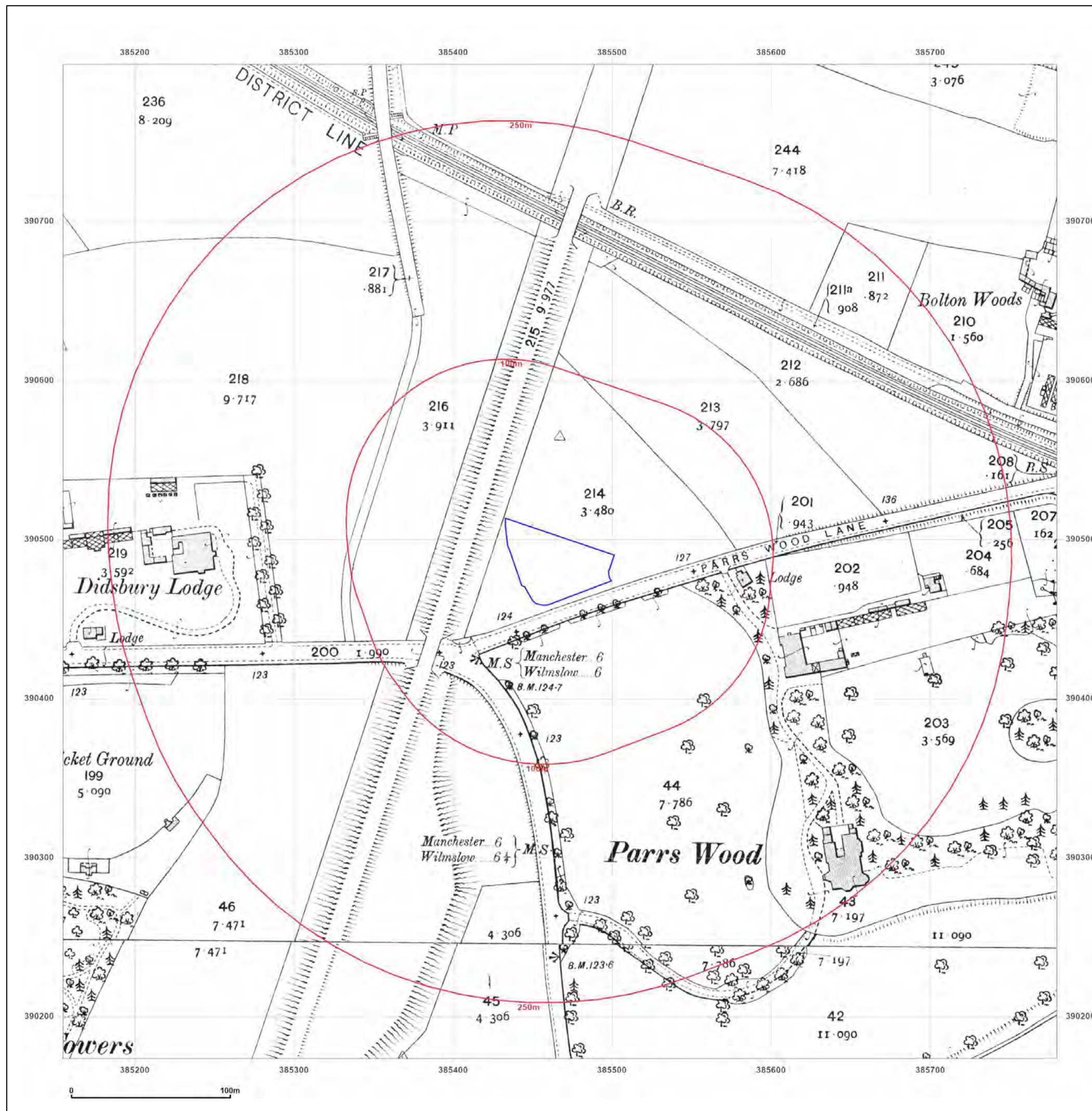


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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1910

Scale: 1:2,500

Printed at: 1:2,500



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Edition 1910
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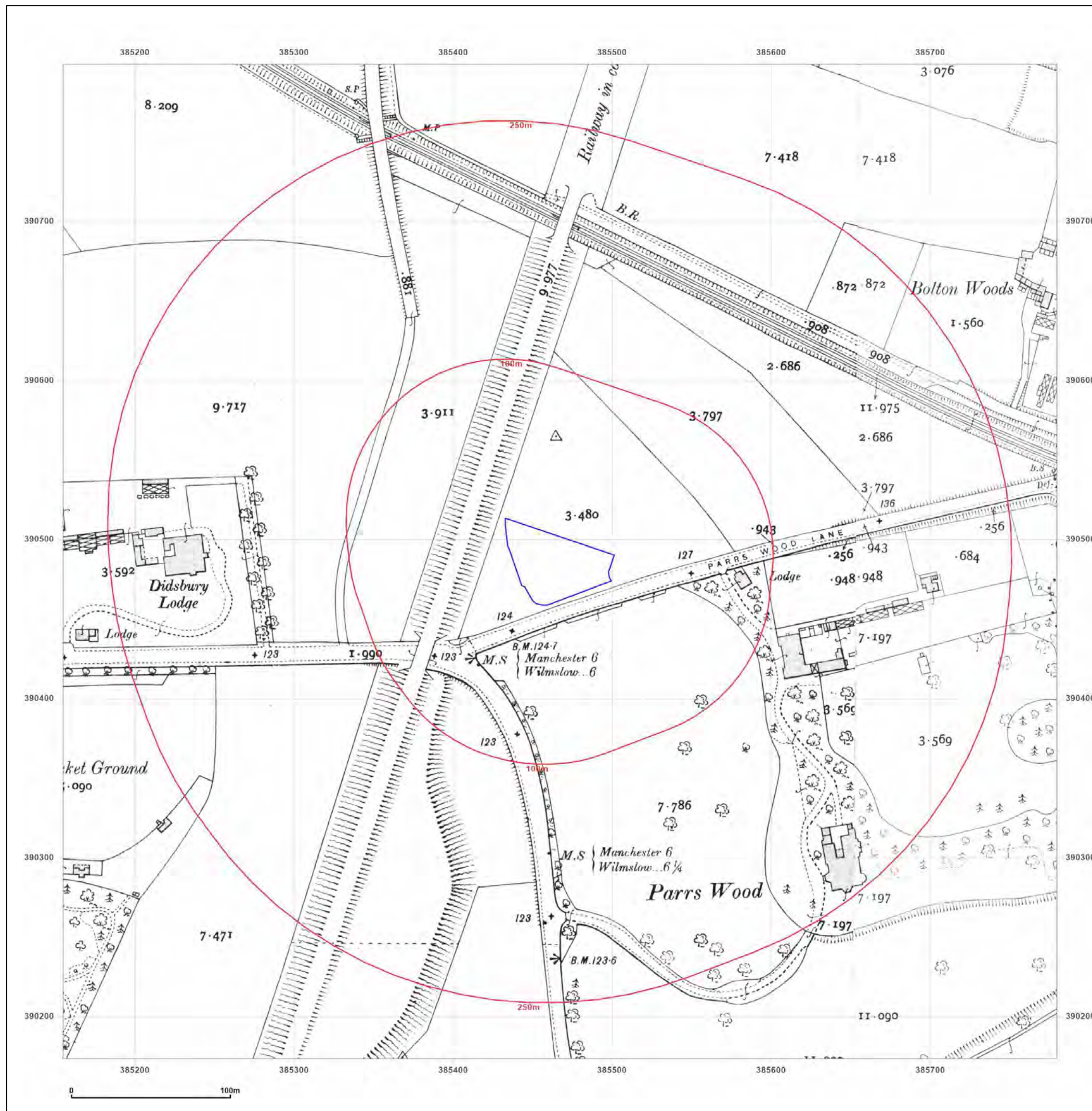


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1922

Scale: 1:2,500

Printed at: 1:2,500



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Surveyed 1922
Revised 1916
Edition 1922
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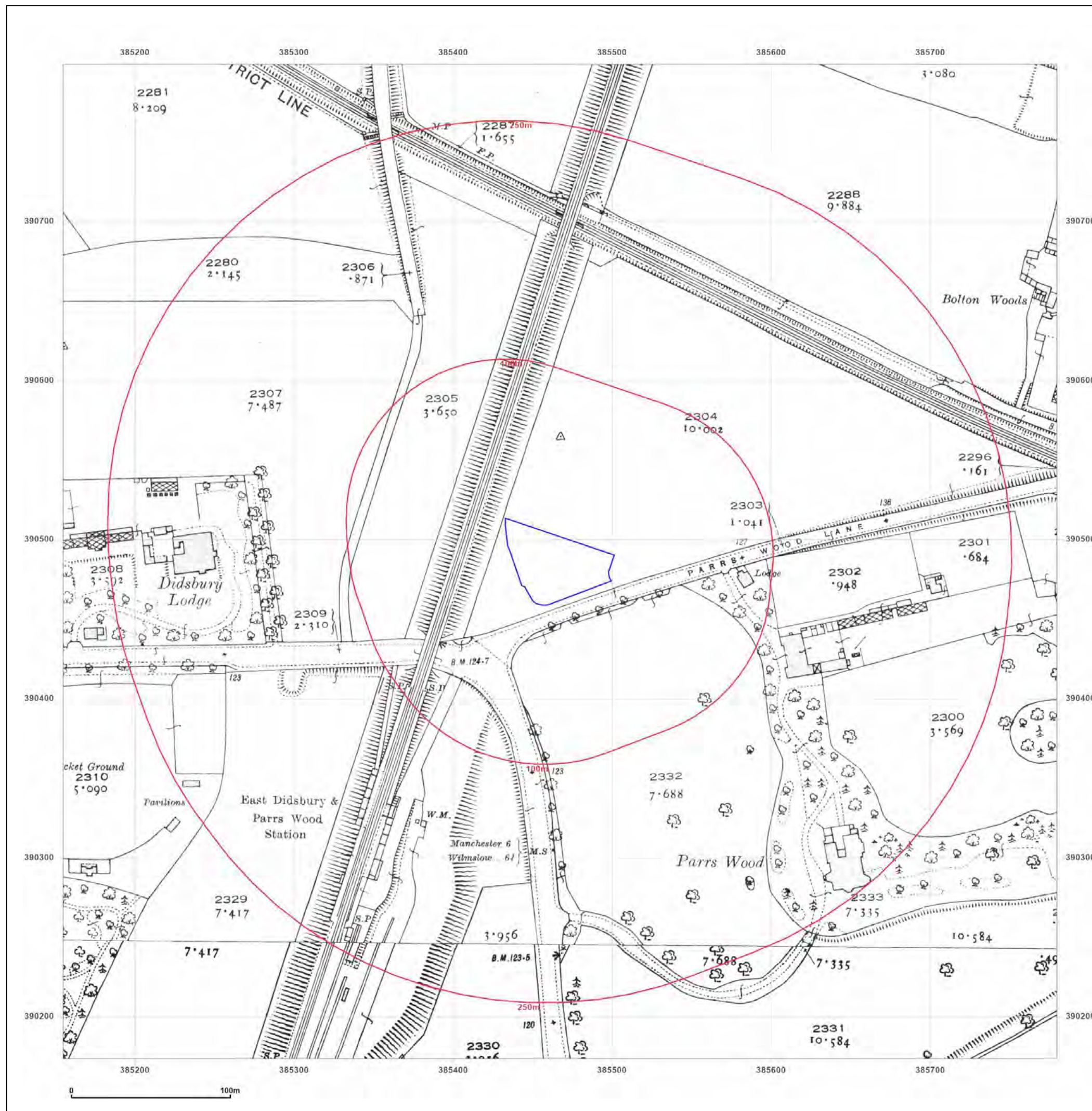


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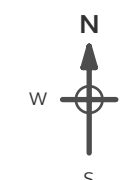
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Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: County Series

Map date: 1934

Scale: 1:2,500

Printed at: 1:2,500



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Surveyed 1873
Revised 1934
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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1956-1957

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
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Revised 1957
Edition N/A
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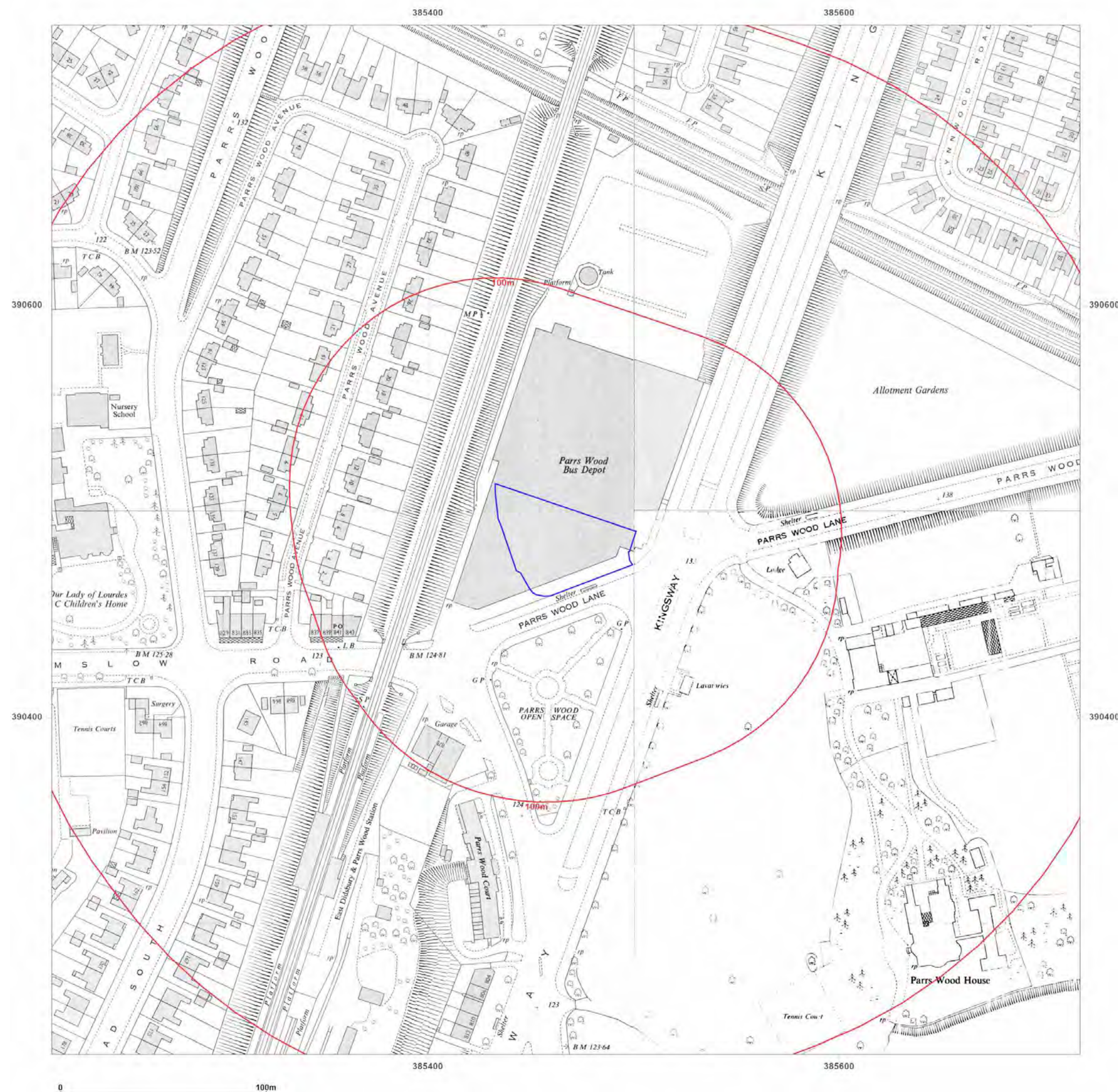


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1957

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1957
Revised 1957
Edition N/A
Copyright 1959
Levelled 1949



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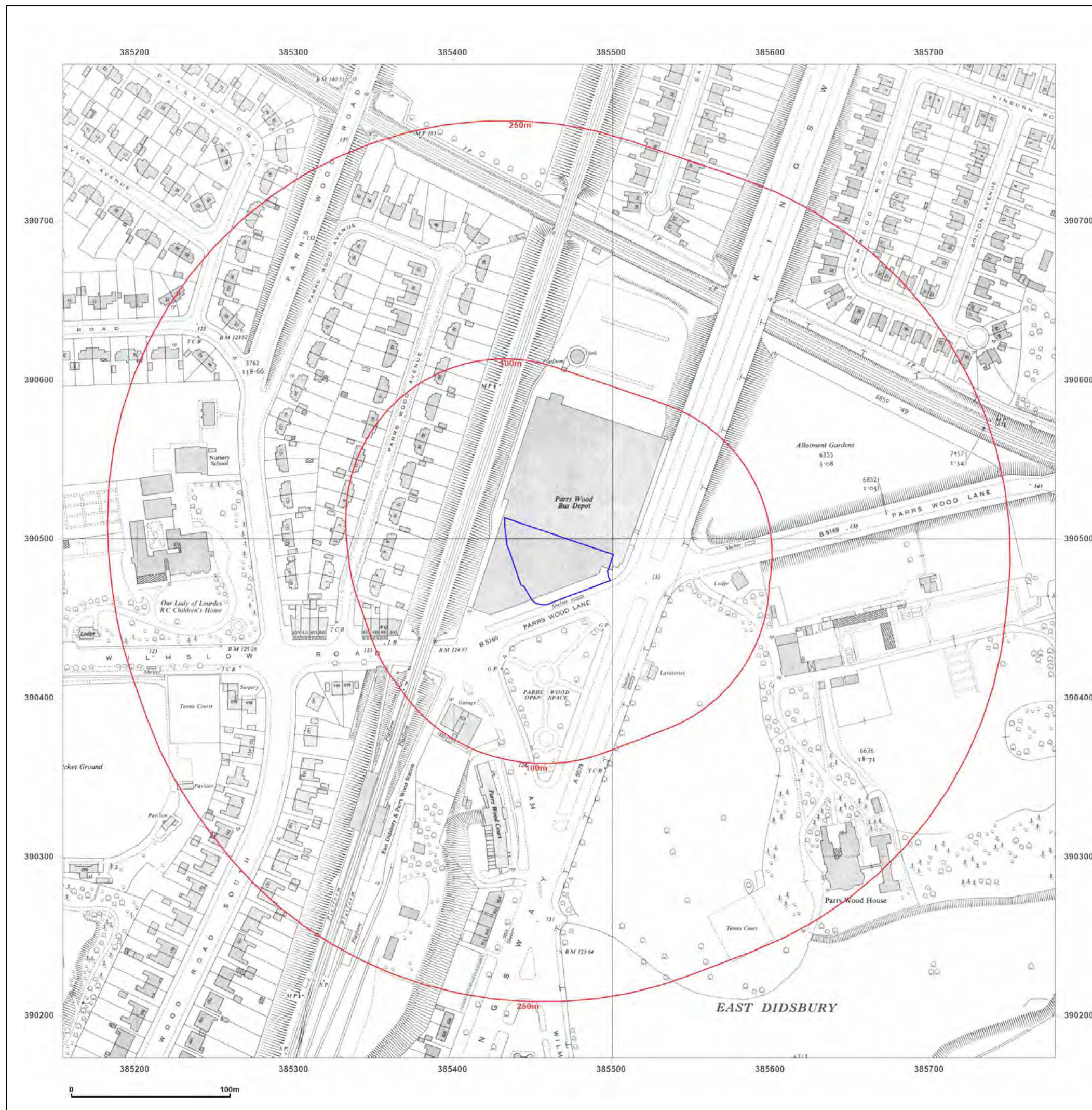


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Site Details:

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Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1957-1958

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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Revised N/A
Edition N/A
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Surveyed 1957
Revised 1957
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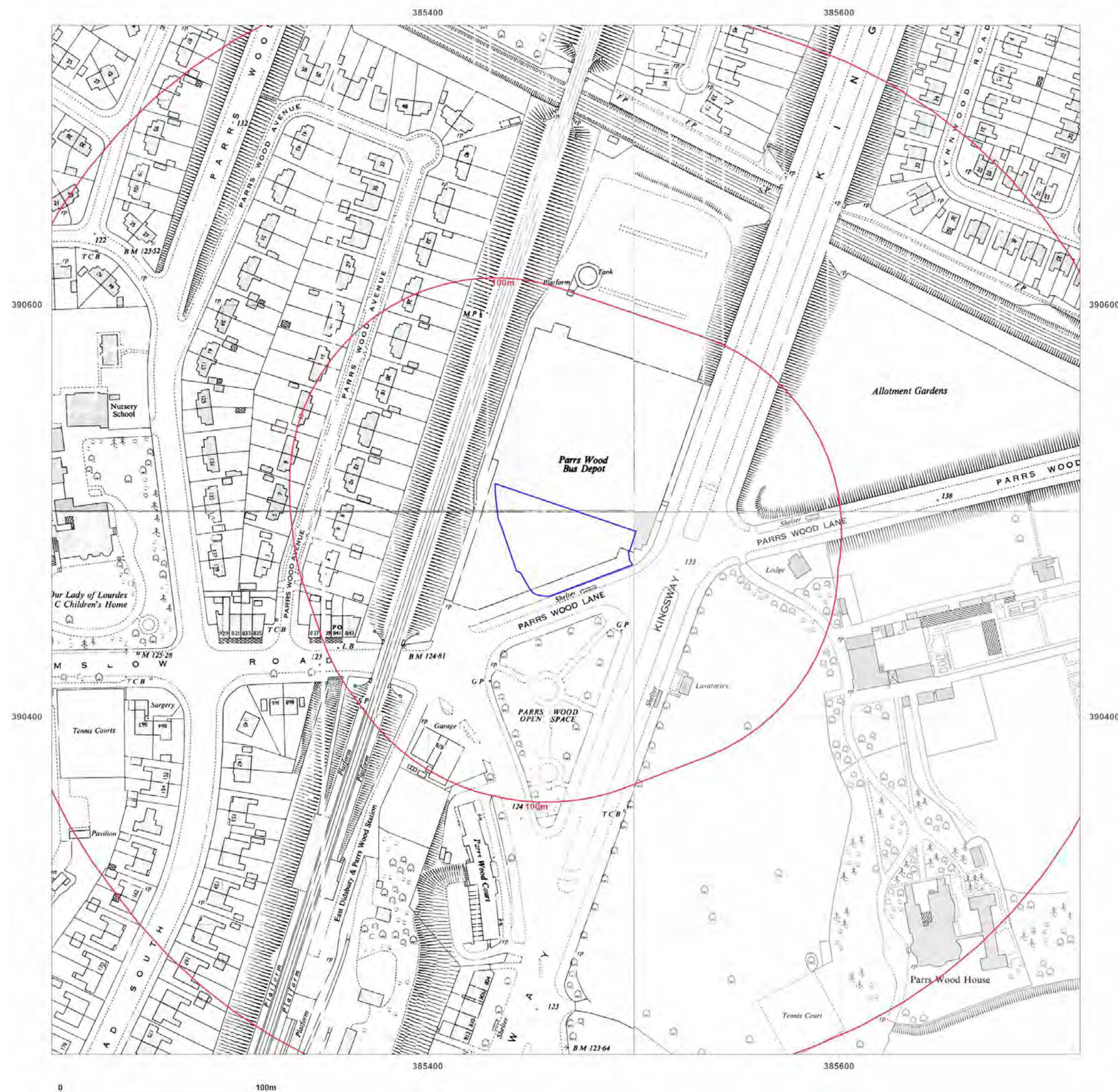


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Site Details:

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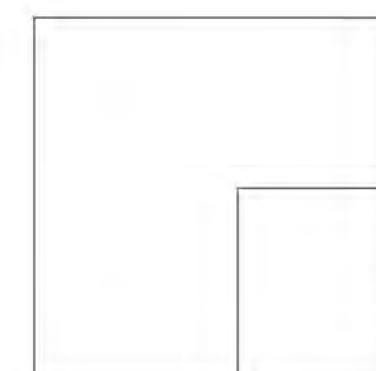
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Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1974

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

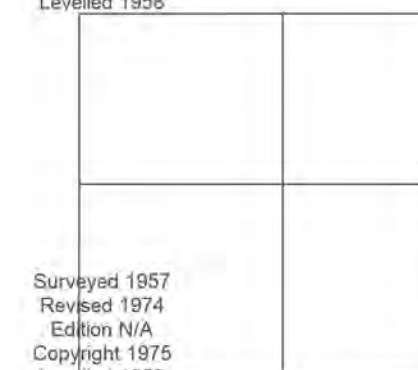
Map date: 1970-1975

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
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Edition N/A
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Revised 1974
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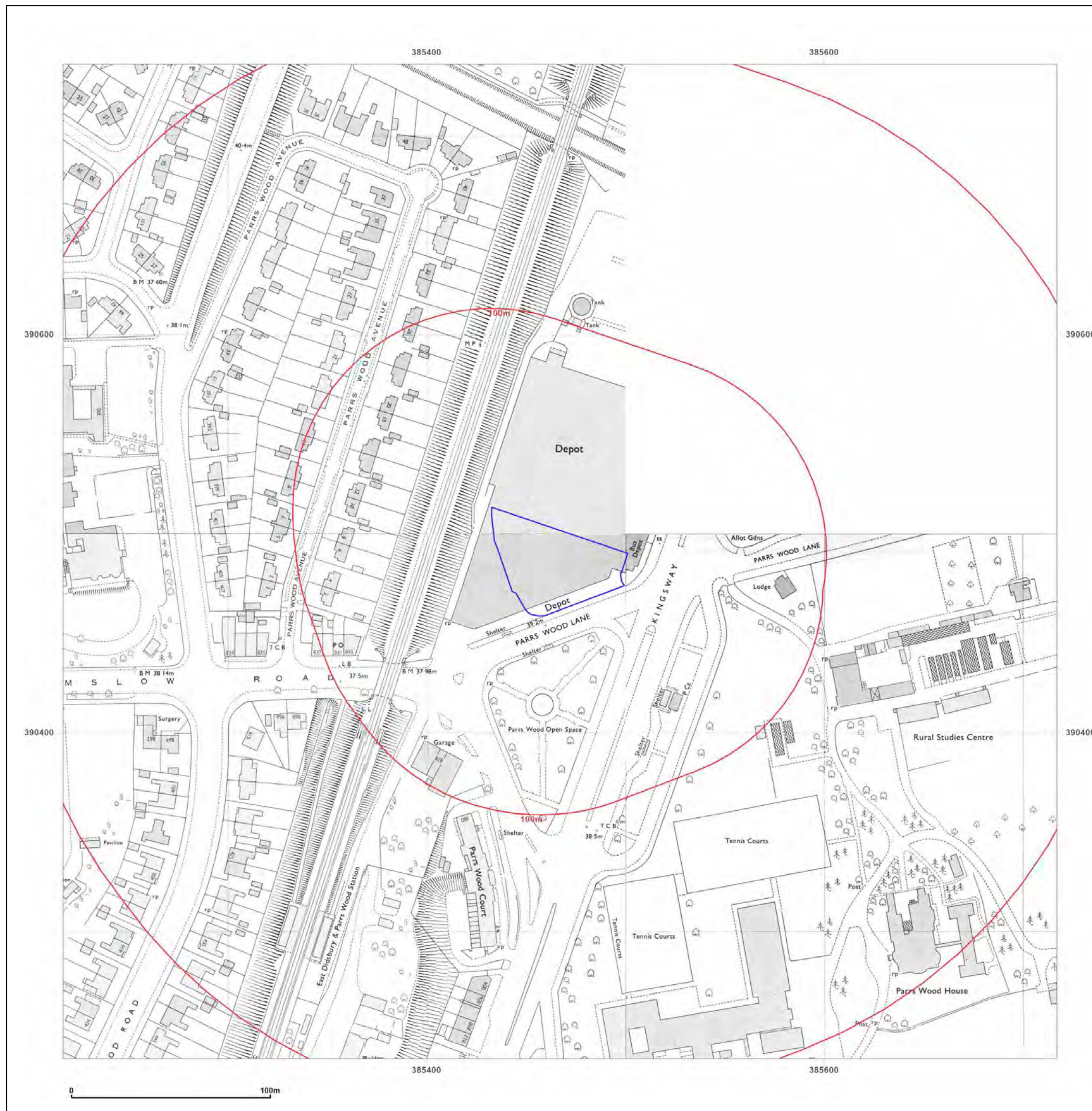


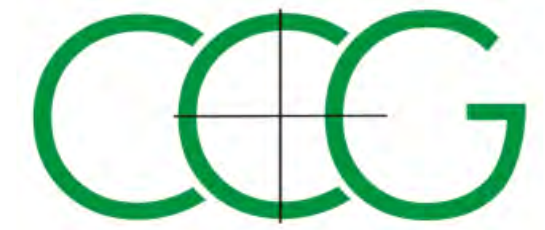
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Site Details:

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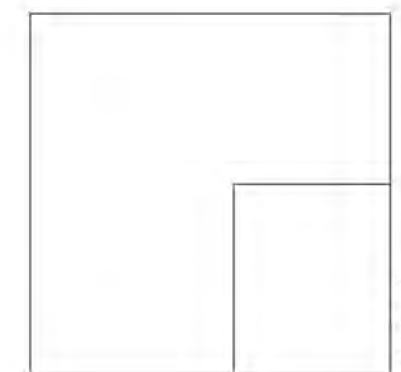
Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1984

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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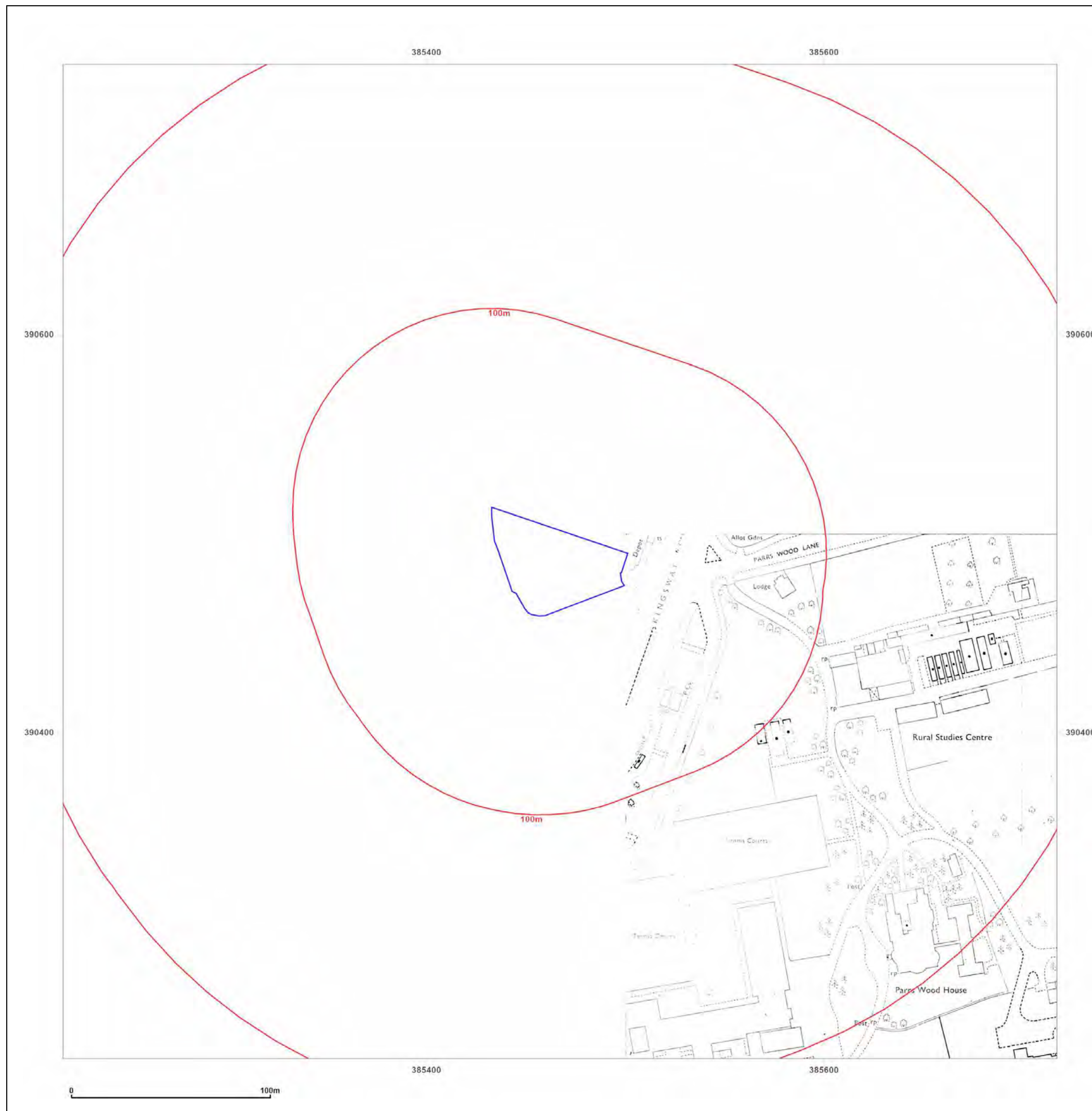


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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1982-1984

Scale: 1:1,250

Printed at: 1:2,000



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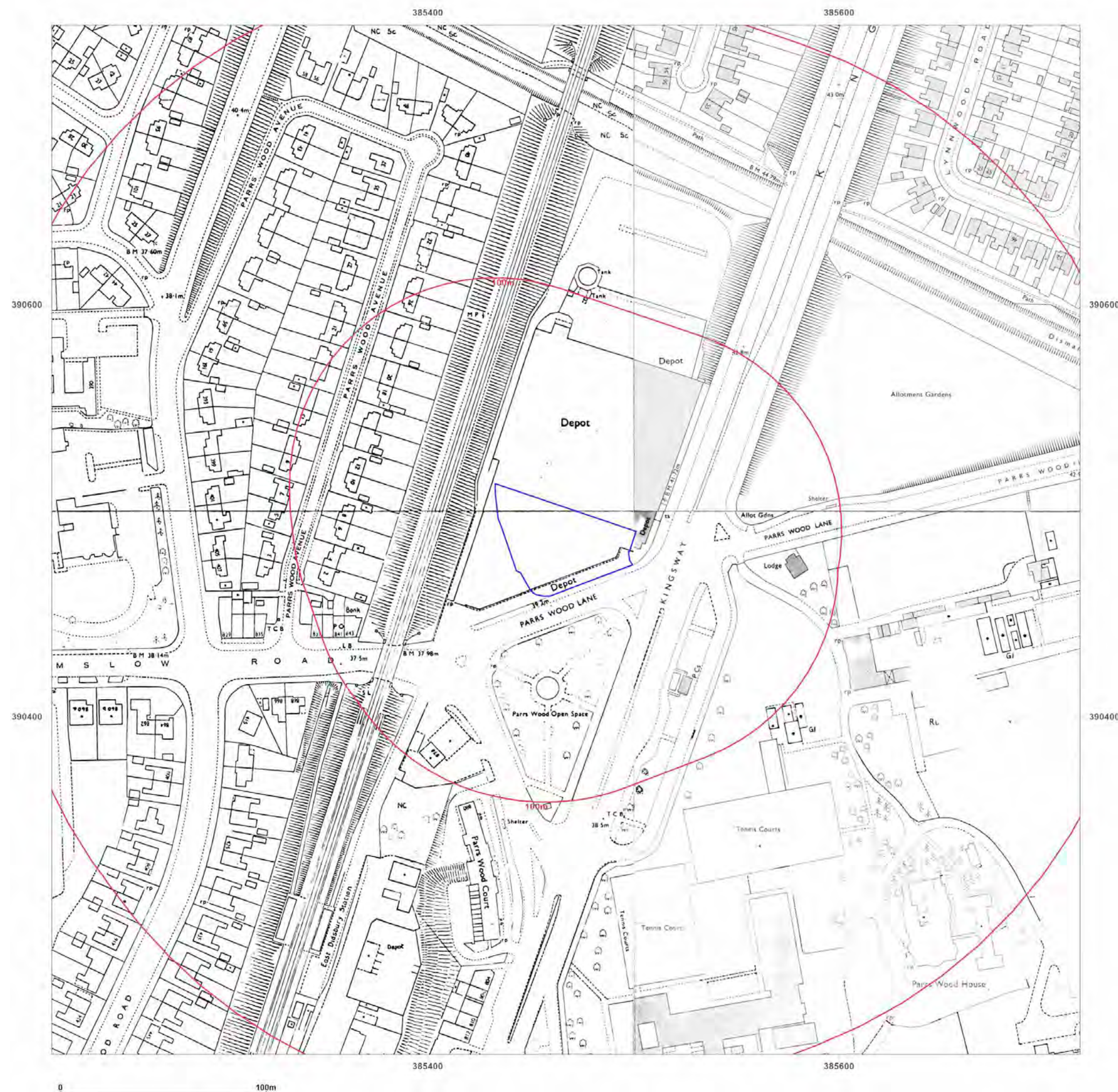


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Site Details:

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M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1988-1992

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1988
Edition N/A
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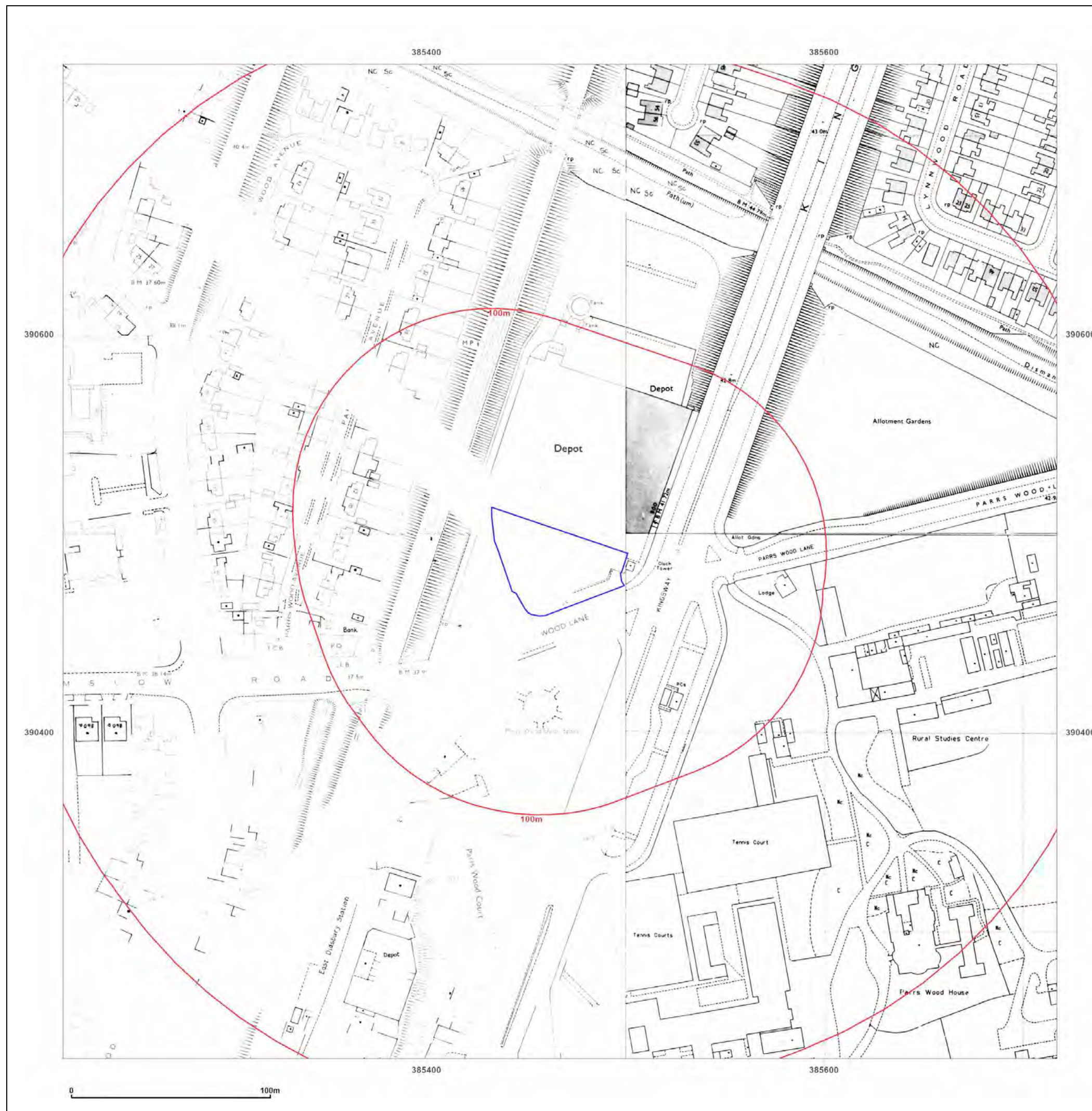


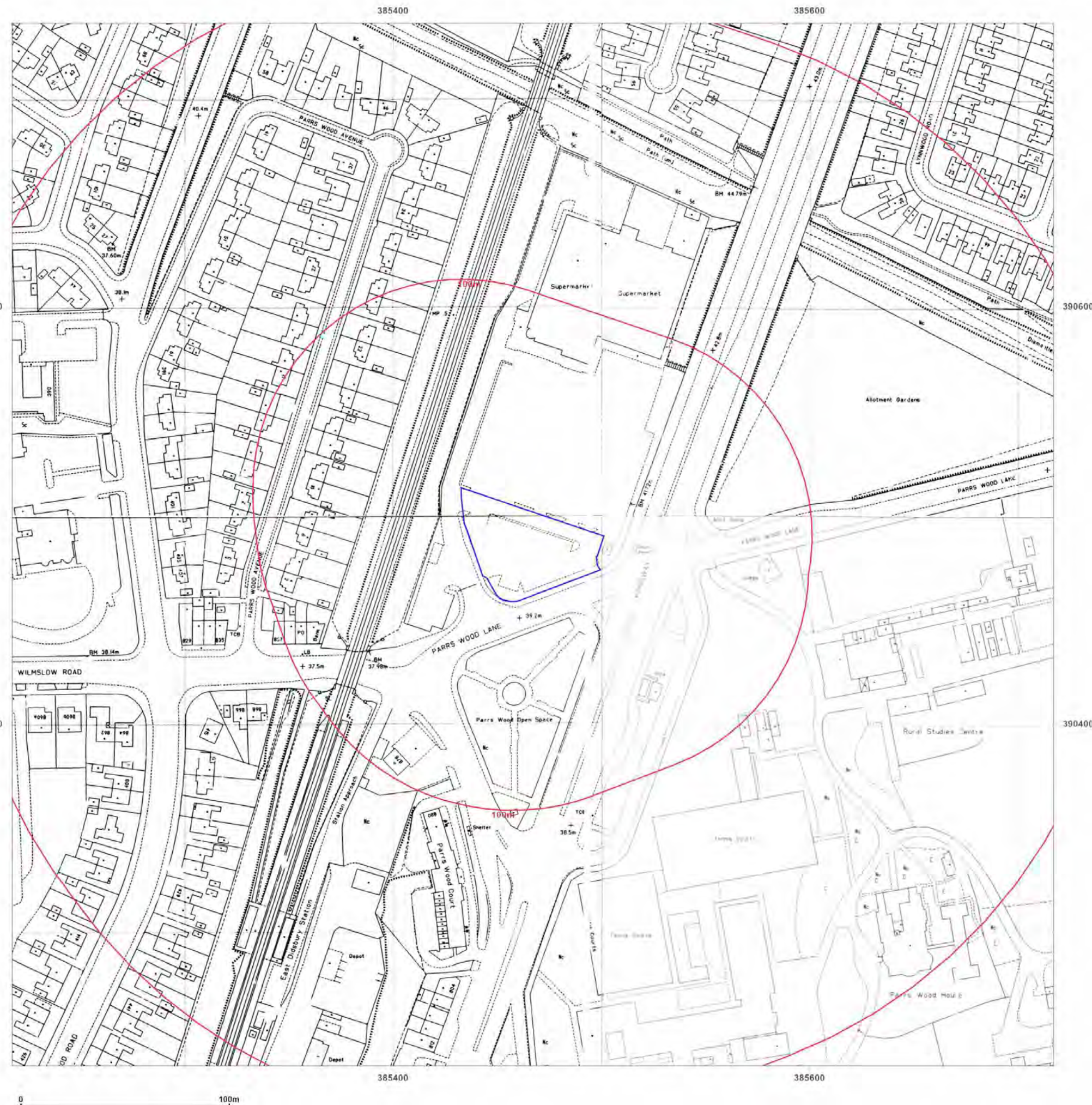
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Production date: 05 October 2021

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





Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name:	National Grid
------------------	---------------

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1992
Revised 1992
Edition N/A
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Levelled N/A

Surveyed 1992
Revised 1992
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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

Map date: 1992-1994

Scale: 1:1,250

Printed at: 1:2,000



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Production date: 05 October 2021

Map legend available at:
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Site Details:

Tesco Stores Parrs Wood Lane,
M20 5NP

Client Ref: 4165
Report Ref: CMAPS-AAG-994592-4165-051021HIS
Grid Ref: 385467, 390486

Map Name: National Grid

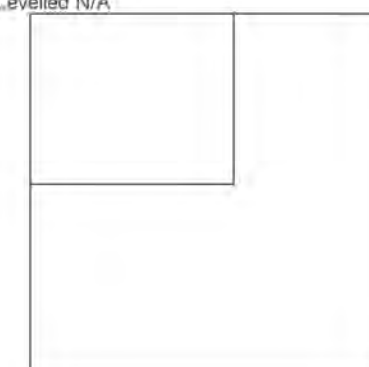
Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1994
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Production date: 05 October 2021

Map legend available at:
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Tesco Stores Parrs Wood Lane, M20 5NP

Order Details

Date: 06/10/2021
Your ref: 4165
Our Ref: CMAPS-AAG-994592-4165-051021EDRGEO
Client: CENTREMAPS

Site Details

Location: 385466 390486
Area: 0.22 ha
Authority: [Manchester City Council](#)



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Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.12 groundsure.com/insightuserguide

Contact us with any questions at:

info@groundsure.com

08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	5	0	33	74	-
18	1.2	Historical tanks	0	0	3	8	-
18	1.3	Historical energy features	0	0	1	9	-
19	1.4	Historical petrol stations	0	0	0	0	-
19	1.5	Historical garages	0	0	1	0	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	Historical industrial land uses	7	0	43	115	-
27	2.2	Historical tanks	0	0	9	14	-
29	2.3	Historical energy features	0	0	1	18	-
30	2.4	Historical petrol stations	0	0	0	0	-
30	2.5	Historical garages	0	0	4	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
31	3.1	Active or recent landfill	0	0	0	0	-
31	3.2	Historical landfill (BGS records)	0	0	0	0	-
32	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
32	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
32	3.5	Historical waste sites	0	0	0	0	-
32	3.6	Licensed waste sites	0	0	0	0	-
32	3.7	Waste exemptions	0	0	1	10	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
34	4.1	Recent industrial land uses	0	0	13	-	-
35	4.2	Current or recent petrol stations	0	0	1	0	-
36	4.3	Electricity cables	0	0	0	0	-
36	4.4	Gas pipelines	0	0	0	0	-
36	4.5	Sites determined as Contaminated Land	0	0	0	0	-



36	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
36	4.7	Regulated explosive sites	0	0	0	0	-
37	4.8	Hazardous substance storage/usage	0	0	0	0	-
37	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
37	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
37	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	2	0	-
38	4.12	Radioactive Substance Authorisations	0	0	0	0	-
38	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
38	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
38	4.15	Pollutant release to public sewer	0	0	0	0	-
38	4.16	<u>List 1 Dangerous Substances</u>	0	0	0	2	-
39	4.17	List 2 Dangerous Substances	0	0	0	0	-
39	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
39	4.19	Pollution inventory substances	0	0	0	0	-
39	4.20	Pollution inventory waste transfers	0	0	0	0	-
40	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
41	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
43	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
45	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
46	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
46	5.5	Groundwater vulnerability- local information	None (within 0m)				
47	5.6	<u>Groundwater abstractions</u>	0	0	0	0	5
49	5.7	<u>Surface water abstractions</u>	0	0	0	0	2
50	5.8	Potable abstractions	0	0	0	0	0
50	5.9	Source Protection Zones	0	0	0	0	-
50	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
51	6.1	Water Network (OS MasterMap)	0	0	0	-	-

51	6.2	Surface water features	0	0	0	-	-
52	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
52	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
53	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
54	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
54	7.2	Historical Flood Events	0	0	0	-	-
54	7.3	Flood Defences	0	0	0	-	-
55	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
55	7.5	Flood Storage Areas	0	0	0	-	-
56	7.6	Flood Zone 2	None (within 50m)				
56	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
57	8.1	<u>Surface water flooding</u>	1 in 100 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
59	9.1	<u>Groundwater flooding</u>	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
60	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
61	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
61	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
61	10.4	Special Protection Areas (SPA)	0	0	0	0	0
61	10.5	National Nature Reserves (NNR)	0	0	0	0	0
62	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	6
62	10.7	Designated Ancient Woodland	0	0	0	0	0
62	10.8	Biosphere Reserves	0	0	0	0	0
63	10.9	Forest Parks	0	0	0	0	0
63	10.10	Marine Conservation Zones	0	0	0	0	0
63	10.11	<u>Green Belt</u>	0	0	0	2	1
63	10.12	Proposed Ramsar sites	0	0	0	0	0



64	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
64	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
64	10.15	Nitrate Sensitive Areas	0	0	0	0	0
64	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
65	10.17	SSSI Impact Risk Zones	0	-	-	-	-
65	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
66	11.1	World Heritage Sites	0	0	0	-	-
67	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
67	11.3	National Parks	0	0	0	-	-
67	11.4	Listed Buildings	0	0	2	-	-
68	11.5	Conservation Areas	0	0	1	-	-
68	11.6	Scheduled Ancient Monuments	0	0	0	-	-
68	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
69	12.1	Agricultural Land Classification	Urban (within 250m)				
70	12.2	Open Access Land	0	0	0	-	-
70	12.3	Tree Felling Licences	0	0	0	-	-
70	12.4	Environmental Stewardship Schemes	0	0	0	-	-
70	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
71	13.1	Priority Habitat Inventory	0	0	6	-	-
72	13.2	Habitat Networks	0	0	0	-	-
72	13.3	Open Mosaic Habitat	0	0	0	-	-
72	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
73	14.1	10k Availability	Identified (within 500m)				
74	14.2	Artificial and made ground (10k)	0	2	5	3	-
76	14.3	Superficial geology (10k)	1	0	2	6	-

77	14.4	Landslip (10k)	0	0	0	0	-
78	14.5	<u>Bedrock geology (10k)</u>	1	0	1	3	-
79	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	1	1	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
80	15.1	<u>50k Availability</u>	Identified (within 500m)				
81	15.2	Artificial and made ground (50k)	0	0	0	0	-
81	15.3	Artificial ground permeability (50k)	0	0	-	-	-
82	15.4	<u>Superficial geology (50k)</u>	1	0	2	1	-
83	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
83	15.6	Landslip (50k)	0	0	0	0	-
83	15.7	Landslip permeability (50k)	None (within 50m)				
84	15.8	<u>Bedrock geology (50k)</u>	1	1	0	0	-
85	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
85	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	1	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
86	16.1	<u>BGS Boreholes</u>	0	2	25	-	-
Page	Section	Natural ground subsidence					
89	17.1	<u>Shrink swell clays</u>	Negligible (within 50m)				
90	17.2	<u>Running sands</u>	Very low (within 50m)				
91	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
92	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
93	17.5	<u>Landslides</u>	Very low (within 50m)				
94	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
95	18.1	Natural cavities	0	0	0	0	-
96	18.2	<u>BritPits</u>	0	0	1	0	-
96	18.3	<u>Surface ground workings</u>	0	0	15	-	-
97	18.4	Underground workings	0	0	0	0	0
97	18.5	Historical Mineral Planning Areas	0	0	0	0	-



97	18.6	Non-coal mining	0	0	0	0	0
98	18.7	Mining cavities	0	0	0	0	0
98	18.8	<u>JPB mining areas</u>	Identified (within 0m)				
98	18.9	Coal mining	None (within 0m)				
98	18.10	Brine areas	None (within 0m)				
99	18.11	Gypsum areas	None (within 0m)				
99	18.12	Tin mining	None (within 0m)				
99	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
100	19.1	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
101	20.1	<u>BGS Estimated Background Soil Chemistry</u>	3	2	-	-	-
101	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
102	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
103	21.1	Underground railways (London)	0	0	0	-	-
103	21.2	Underground railways (Non-London)	0	0	0	-	-
104	21.3	Railway tunnels	0	0	0	-	-
104	21.4	<u>Historical railway and tunnel features</u>	0	0	19	-	-
105	21.5	Royal Mail tunnels	0	0	0	-	-
105	21.6	<u>Historical railways</u>	0	0	1	-	-
105	21.7	<u>Railways</u>	0	3	25	-	-
107	21.8	Crossrail 1	0	0	0	0	-
107	21.9	Crossrail 2	0	0	0	0	-
107	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 22/04/2019

Site Area: 0.22ha



Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.22ha



Recent site history - 2009 aerial photograph

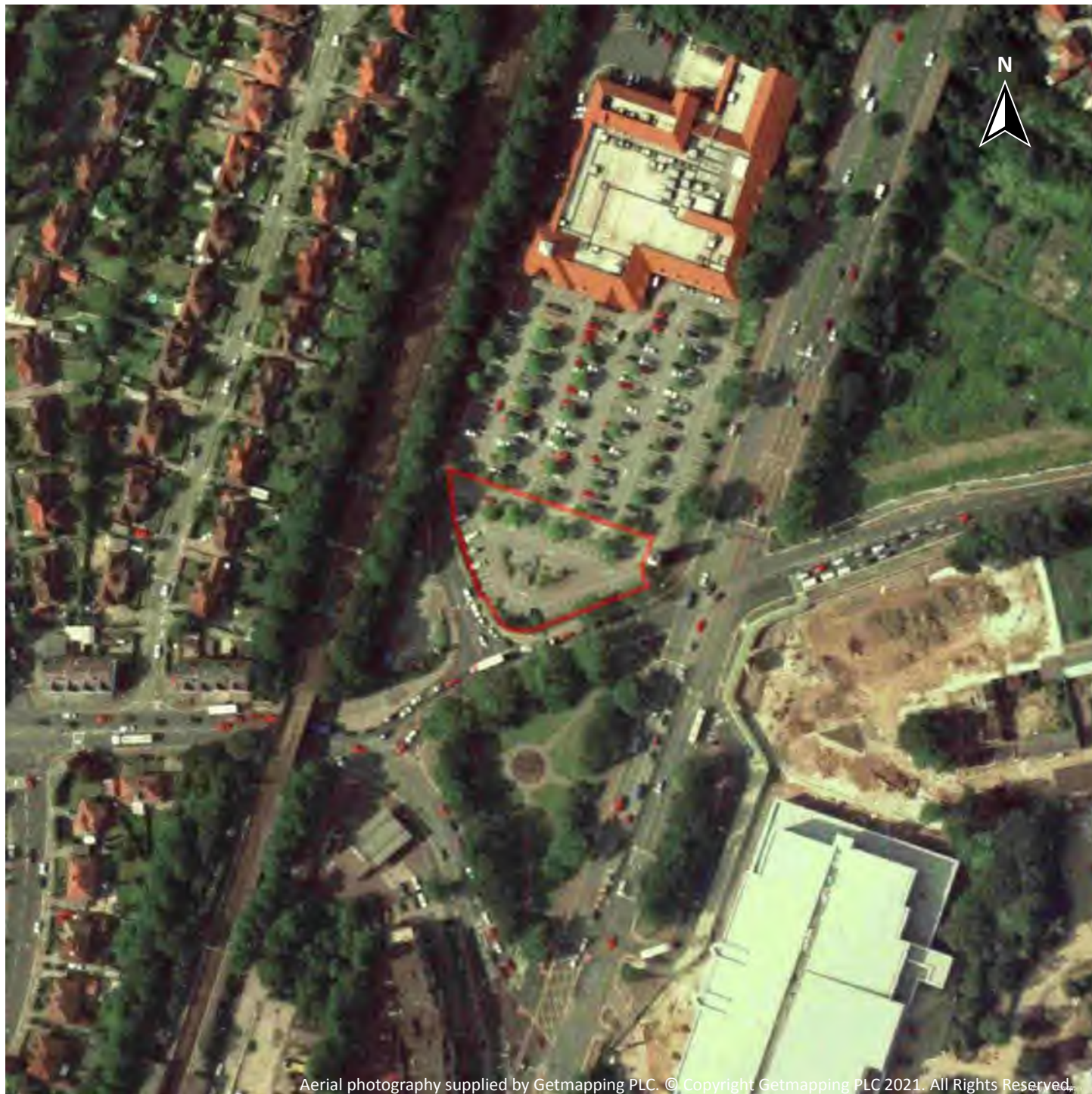


Capture Date: 02/06/2009

Site Area: 0.22ha



Recent site history - 2000 aerial photograph



Capture Date: 19/06/2000

Site Area: 0.22ha

OS MasterMap site plan



Site Area: 0.22ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

112

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Depot	1983	818457

ID	Location	Land use	Dates present	Group ID
A	On site	Bus Depot	1965 - 1974	914167
A	On site	Bus Depot	1938	919992
A	On site	Bus Depot	1934	945617
A	On site	Bus Depot	1955	979639
B	71m SW	Railway Sidings	1974	963352
B	71m SW	Railway Sidings	1983	986435
B	76m SW	Railway Sidings	1923	893042
C	102m N	Unspecified Tank	1983	876860
C	102m N	Unspecified Tank	1965 - 1974	952977
D	113m SW	Unspecified Pit	1934 - 1938	916609
D	113m SW	Unspecified Pit	1938	918951
B	124m S	Unspecified Pit	1934	840528
D	141m SW	Unspecified Heap	1923	882119
B	141m SW	Railway Station	1923 - 1934	909067
B	143m SW	Railway Station	1955 - 1974	900989
B	148m SW	Railway Station	1938	918315
B	150m SW	Railway Station	1938	856752
B	164m SW	Railway Building	1974	949569
B	164m SW	Railway Building	1983	957395
E	176m N	Cuttings	1893	891369
F	176m SW	Railway Sidings	1955 - 1965	861399
B	177m SW	Railway Station	1983 - 1989	942448
E	177m N	Cuttings	1938	882106
E	180m N	Cuttings	1938	938160
E	181m N	Cuttings	1934	961038
D	182m SW	Gravel Pit	1851	807883
E	185m N	Cuttings	1955	915659
F	185m SW	Railway Sidings	1923	883296



ID	Location	Land use	Dates present	Group ID
3	186m NE	Brick Field	1851	817974
B	202m S	Railway Buildings	1974	833696
B	202m S	Railway Building	1983	820237
F	210m S	Railway Sidings	1934	971431
F	223m SW	Railway Sidings	1938	968326
F	223m SW	Railway Sidings	1938	849980
B	233m SW	Railway Building	1923	820238
B	243m SW	Railway Building	1923	820239
4	248m NE	Unspecified Pit	1911	920370
G	256m NW	Cuttings	1893	964764
G	258m N	Cuttings	1911 - 1938	901548
G	265m NW	Cuttings	1938	970637
G	268m N	Cuttings	1911	867187
G	274m NW	Cuttings	1983 - 1989	874536
G	274m NW	Cuttings	1955	895584
G	274m NW	Cuttings	1965 - 1974	913143
H	294m E	Cuttings	1938	935171
H	300m E	Cuttings	1911 - 1974	845518
H	314m E	Cuttings	1893	866818
I	316m E	Unspecified Works	1934 - 1938	870707
H	317m E	Cuttings	1911	895193
I	325m E	Unspecified Pit	1911	964080
I	327m E	Unspecified Works	1965 - 1974	966265
I	330m E	Unspecified Commercial/Industrial	1989	796935
I	330m E	Unspecified Works	1983	870217
F	333m SW	Railway Building	1923	820240
F	342m SW	Railway Building	1923	820241
K	358m NE	Unspecified Heap	1934	983056

ID	Location	Land use	Dates present	Group ID
H	359m E	Cuttings	1923	909867
K	360m NE	Unspecified Heap	1911 - 1923	891102
K	364m NE	Unspecified Heap	1911 - 1923	883035
L	369m SE	Disused Sewage Works	1934 - 1938	884380
L	369m SE	Sewage Work	1923	795017
L	370m SE	Sewage Works	1923	969069
L	370m SE	Sewage Works	1911	915732
L	370m SE	Sewage Works	1911	948865
L	371m SE	Sewage Works	1938	914966
L	373m SE	Disused Sewage Works	1938	934805
M	373m NE	Unspecified Pit	1934	845447
M	377m NE	Unspecified Pit	1911 - 1923	966410
M	380m NE	Unspecified Pit	1923	976553
L	380m SE	Disused Sewage Works	1955	898055
M	385m NE	Unspecified Pit	1911	851448
L	387m SE	Filter Beds	1911	892672
L	387m SE	Filter Beds	1911	969779
L	387m SE	Filter Beds	1938	982135
L	398m SE	Filter Beds	1893	966345
L	399m SE	Filter Beds	1911	890761
N	445m SW	Unspecified Heap	1983 - 1989	878116
N	445m SW	Unspecified Heap	1974	888711
H	447m E	Unspecified Ground Workings	1923	800672
H	448m E	Unknown Filled Ground	1911 - 1923	947129
H	450m E	Unspecified Pit	1911	985169
O	460m NE	Unspecified Pit	1911	972861
O	468m NE	Unspecified Pit	1911	949902
P	469m E	Unspecified Heap	1934	899603



ID	Location	Land use	Dates present	Group ID
P	472m E	Unspecified Heap	1955	930506
H	475m E	Unspecified Pit	1934	920953
Q	480m NW	Railway Sidings	1923	865868
H	481m E	Unspecified Ground Workings	1938	800671
H	481m E	Unspecified Pit	1911 - 1923	880241
H	483m E	Unspecified Pit	1911	855595
Q	486m NW	Railway Sidings	1923	904670
R	486m S	Unspecified Heap	1911 - 1923	880201
Q	486m NW	Railway Sidings	1911	923859
Q	487m NW	Railway Sidings	1938	902237
R	489m S	Unspecified Heap	1955	891978
L	490m SE	Unspecified Tank	1911 - 1923	977184
Q	490m NW	Railway Sidings	1938	874167
S	490m NW	Cuttings	1938	930957
L	491m SE	Unspecified Tank	1938	959866
Q	491m NW	Railway Sidings	1934	851258
Q	491m NW	Cuttings	1923 - 1934	955197
Q	492m NW	Railway Sidings	1955 - 1966	922909
Q	493m NW	Cuttings	1893	877641
S	493m NW	Cuttings	1923	925757
Q	493m NW	Railway Sidings	1911	903364
Q	493m NW	Railway Sidings	1911	913195
T	494m S	Railway Sidings	1955	872150
T	494m S	Railway Sidings	1966	931248
S	494m NW	Cuttings	1955	850468
S	496m NW	Cuttings	1965 - 1983	898907
Q	496m NW	Railway Sidings	1938	886861

This data is sourced from Ordnance Survey / Groundsure.



1.2 Historical tanks

Records within 500m

11

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
C	100m N	Unspecified Tank	1975 - 1988	137299
C	105m N	Unspecified Tank	1957 - 1988	133197
C	106m N	Unspecified Tank	1957 - 1975	122884
5	260m SE	Unspecified Tank	1970 - 1992	135553
L	403m SE	Tanks	1907 - 1922	128852
L	414m SE	Tanks	1907 - 1922	136027
L	416m SE	Tanks	1910	149253
9	423m NW	Unspecified Tank	1894	116936
L	448m SE	Tanks	1922	107209
L	489m SE	Unspecified Tank	1907 - 1922	125495
L	490m SE	Tanks	1910	107208

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

10

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**



ID	Location	Land use	Dates present	Group ID
2	163m W	Electricity House	1975	63681
J	327m NW	Electricity Substation	1994	80059
J	328m NW	Electricity Substation	1975	83519
J	329m NW	Electricity Substation	1982 - 1988	76756
6	352m N	Electricity Substation	1982 - 1992	76673
7	375m W	Electricity Substation	1982 - 1992	84170
8	396m SW	Electricity Substation	1992	62388
F	417m SW	Electricity Substation	1975	84072
F	419m SW	Electricity Substation	1982 - 1992	76913
I	427m E	Electricity Substation	1982 - 1992	74540

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0
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Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1
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Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
1	70m SW	Garage	1957 - 1975	25676



This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

165

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	On site	Bus Depot	1934	945617
A	On site	Bus Depot	1938	919992
A	On site	Bus Depot	1938	919992

ID	Location	Land Use	Date	Group ID
A	On site	Bus Depot	1974	914167
A	On site	Unspecified Depot	1983	818457
A	On site	Bus Depot	1955	979639
A	On site	Bus Depot	1965	914167
C	71m SW	Railway Sidings	1974	963352
C	71m SW	Railway Sidings	1983	986435
C	76m SW	Railway Sidings	1923	893042
D	102m N	Unspecified Tank	1974	952977
D	102m N	Unspecified Tank	1983	876860
D	102m N	Unspecified Tank	1965	952977
E	113m SW	Unspecified Pit	1938	916609
E	113m SW	Unspecified Pit	1934	916609
E	113m SW	Unspecified Pit	1938	918951
C	124m S	Unspecified Pit	1934	840528
E	141m SW	Unspecified Heap	1923	882119
C	141m SW	Railway Station	1923	909067
C	143m SW	Railway Station	1955	900989
C	147m SW	Railway Station	1974	900989
C	147m SW	Railway Station	1965	900989
C	147m SW	Railway Station	1934	909067
C	148m SW	Railway Station	1938	918315
E	148m SW	Unspecified Heap	1923	882119
C	150m SW	Railway Station	1938	856752
C	151m SW	Railway Station	1923	909067
C	164m SW	Railway Building	1974	949569
C	164m SW	Railway Building	1983	957395
F	176m N	Cuttings	1893	891369
C	176m SW	Railway Sidings	1965	861399

ID	Location	Land Use	Date	Group ID
C	177m SW	Railway Station	1983	942448
C	177m SW	Railway Station	1989	942448
F	177m N	Cuttings	1938	882106
F	180m N	Cuttings	1938	938160
F	181m N	Cuttings	1934	961038
E	182m SW	Gravel Pit	1851	807883
F	185m N	Cuttings	1955	915659
C	185m SW	Railway Sidings	1923	883296
2	186m NE	Brick Field	1851	817974
C	202m S	Railway Buildings	1974	833696
C	202m S	Railway Building	1983	820237
C	205m S	Railway Sidings	1955	861399
C	210m S	Railway Sidings	1934	971431
C	223m SW	Railway Sidings	1938	968326
C	223m SW	Railway Sidings	1938	849980
C	233m SW	Railway Building	1923	820238
C	243m SW	Railway Building	1923	820239
G	248m NE	Unspecified Pit	1911	920370
G	248m NE	Unspecified Pit	1911	920370
H	256m NW	Cuttings	1893	964764
H	258m N	Cuttings	1923	901548
H	258m N	Cuttings	1923	901548
H	258m N	Cuttings	1911	901548
H	265m NW	Cuttings	1938	970637
H	266m NW	Cuttings	1938	901548
H	267m NW	Cuttings	1938	901548
H	268m N	Cuttings	1911	867187
H	270m NW	Cuttings	1934	901548

ID	Location	Land Use	Date	Group ID
H	274m NW	Cuttings	1974	913143
H	274m NW	Cuttings	1983	874536
H	274m NW	Cuttings	1989	874536
H	274m NW	Cuttings	1955	895584
H	274m NW	Cuttings	1965	913143
J	294m E	Cuttings	1938	935171
J	295m E	Cuttings	1938	935171
J	300m E	Cuttings	1938	845518
J	304m E	Cuttings	1974	845518
J	304m E	Cuttings	1955	845518
J	304m E	Cuttings	1965	845518
J	314m E	Cuttings	1893	866818
K	316m E	Unspecified Works	1938	870707
K	316m E	Unspecified Works	1934	870707
J	317m E	Cuttings	1911	895193
J	317m E	Cuttings	1923	845518
J	317m E	Cuttings	1934	845518
J	317m E	Cuttings	1911	845518
K	325m E	Unspecified Pit	1911	964080
K	325m E	Unspecified Pit	1911	964080
K	327m E	Unspecified Works	1965	966265
K	330m E	Unspecified Works	1974	966265
K	330m E	Unspecified Works	1983	870217
K	330m E	Unspecified Commercial/Industrial	1989	796935
C	333m SW	Railway Building	1923	820240
C	342m SW	Railway Building	1923	820241
N	358m NE	Unspecified Heap	1934	983056
J	359m E	Cuttings	1923	909867

ID	Location	Land Use	Date	Group ID
N	360m NE	Unspecified Heap	1911	891102
N	360m NE	Unspecified Heap	1923	891102
N	364m NE	Unspecified Heap	1923	883035
N	367m NE	Unspecified Heap	1911	883035
N	367m NE	Unspecified Heap	1911	883035
O	369m SE	Disused Sewage Works	1934	884380
O	369m SE	Sewage Work	1923	795017
O	369m SE	Disused Sewage Works	1938	884380
O	370m SE	Sewage Works	1923	969069
O	370m SE	Sewage Works	1911	915732
O	370m SE	Sewage Works	1911	948865
O	370m SE	Sewage Works	1911	948865
O	371m SE	Sewage Works	1938	914966
O	373m SE	Disused Sewage Works	1938	934805
P	373m NE	Unspecified Pit	1934	845447
P	377m NE	Unspecified Pit	1911	966410
P	377m NE	Unspecified Pit	1923	966410
P	380m NE	Unspecified Pit	1923	976553
O	380m SE	Disused Sewage Works	1955	898055
P	385m NE	Unspecified Pit	1911	851448
P	385m NE	Unspecified Pit	1911	851448
O	387m SE	Filter Beds	1911	969779
O	387m SE	Filter Beds	1911	892672
O	387m SE	Filter Beds	1911	892672
O	387m SE	Filter Beds	1938	982135
O	398m SE	Filter Beds	1893	966345
O	399m SE	Filter Beds	1911	890761
O	399m SE	Filter Beds	1911	890761



ID	Location	Land Use	Date	Group ID
R	445m SW	Unspecified Heap	1974	888711
R	445m SW	Unspecified Heap	1983	878116
R	445m SW	Unspecified Heap	1989	878116
J	447m E	Unspecified Ground Workings	1923	800672
J	448m E	Unknown Filled Ground	1911	947129
J	448m E	Unknown Filled Ground	1923	947129
J	450m E	Unspecified Pit	1911	985169
J	450m E	Unspecified Pit	1911	985169
S	460m NE	Unspecified Pit	1911	972861
S	468m NE	Unspecified Pit	1911	949902
S	468m NE	Unspecified Pit	1911	949902
T	469m E	Unspecified Heap	1934	899603
T	472m E	Unspecified Heap	1955	930506
J	475m E	Unspecified Pit	1934	920953
U	480m NW	Railway Sidings	1923	865868
J	481m E	Unspecified Ground Workings	1938	800671
J	481m E	Unspecified Pit	1923	880241
J	481m E	Unspecified Pit	1911	880241
J	481m E	Unspecified Pit	1923	880241
J	483m E	Unspecified Pit	1911	855595
J	483m E	Unspecified Pit	1911	855595
U	486m NW	Railway Sidings	1923	904670
V	486m S	Unspecified Heap	1923	880201
V	486m S	Unspecified Heap	1911	880201
V	486m S	Unspecified Heap	1923	880201
U	486m NW	Railway Sidings	1911	923859
U	487m NW	Railway Sidings	1938	902237
V	489m S	Unspecified Heap	1955	891978

ID	Location	Land Use	Date	Group ID
O	490m SE	Unspecified Tank	1923	977184
U	490m NW	Railway Sidings	1938	874167
O	490m SE	Unspecified Tank	1911	977184
U	490m NW	Railway Sidings	1938	874167
U	490m NW	Cuttings	1938	930957
O	491m SE	Unspecified Tank	1938	959866
U	491m NW	Railway Sidings	1934	851258
U	491m NW	Cuttings	1934	955197
U	492m NW	Railway Sidings	1955	922909
U	492m NW	Railway Sidings	1965	922909
U	493m NW	Cuttings	1923	955197
U	493m NW	Cuttings	1893	877641
U	493m NW	Cuttings	1923	925757
U	493m NW	Railway Sidings	1911	903364
U	493m NW	Railway Sidings	1911	913195
W	494m S	Railway Sidings	1966	931248
W	494m S	Railway Sidings	1955	872150
U	494m NW	Cuttings	1955	850468
U	496m NW	Cuttings	1974	898907
U	496m NW	Cuttings	1983	898907
U	496m NW	Cuttings	1965	898907
U	496m NW	Railway Sidings	1938	886861

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

23

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.



Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
D	100m N	Unspecified Tank	1988	137299
D	100m N	Unspecified Tank	1982	137299
D	100m N	Unspecified Tank	1975	137299
D	105m N	Unspecified Tank	1988	133197
D	105m N	Unspecified Tank	1982	133197
D	106m N	Unspecified Tank	1957	122884
D	106m N	Unspecified Tank	1975	122884
D	106m N	Unspecified Tank	1957	133197
D	106m N	Unspecified Tank	1957	133197
I	260m SE	Unspecified Tank	1984	135553
I	260m SE	Unspecified Tank	1984	135553
I	261m SE	Unspecified Tank	1970	135553
I	261m SE	Unspecified Tank	1992	135553
O	403m SE	Tanks	1907	128852
O	403m SE	Tanks	1922	128852
O	414m SE	Tanks	1907	136027
O	414m SE	Tanks	1922	136027
O	416m SE	Tanks	1910	149253
4	423m NW	Unspecified Tank	1894	116936
O	448m SE	Tanks	1922	107209
O	489m SE	Unspecified Tank	1907	125495
O	489m SE	Unspecified Tank	1922	125495
O	490m SE	Tanks	1910	107208

This data is sourced from Ordnance Survey / Groundsure.



2.3 Historical energy features

Records within 500m

19

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
1	163m W	Electricity House	1975	63681
L	327m NW	Electricity Substation	1994	80059
L	328m NW	Electricity Substation	1975	83519
L	329m NW	Electricity Substation	1988	76756
L	329m NW	Electricity Substation	1982	76756
M	352m N	Electricity Substation	1992	76673
M	352m N	Electricity Substation	1988	76673
M	352m N	Electricity Substation	1982	76673
Q	375m W	Electricity Substation	1988	84170
Q	375m W	Electricity Substation	1982	84170
Q	375m W	Electricity Substation	1992	84170
3	396m SW	Electricity Substation	1992	62388
C	417m SW	Electricity Substation	1975	84072
C	419m SW	Electricity Substation	1988	76913
C	419m SW	Electricity Substation	1982	76913
C	419m SW	Electricity Substation	1992	76913
K	427m E	Electricity Substation	1988	74540
K	428m E	Electricity Substation	1992	74540
K	428m E	Electricity Substation	1982	74540

This data is sourced from Ordnance Survey / Groundsure.



2.4 Historical petrol stations

Records within 500m**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m**4**

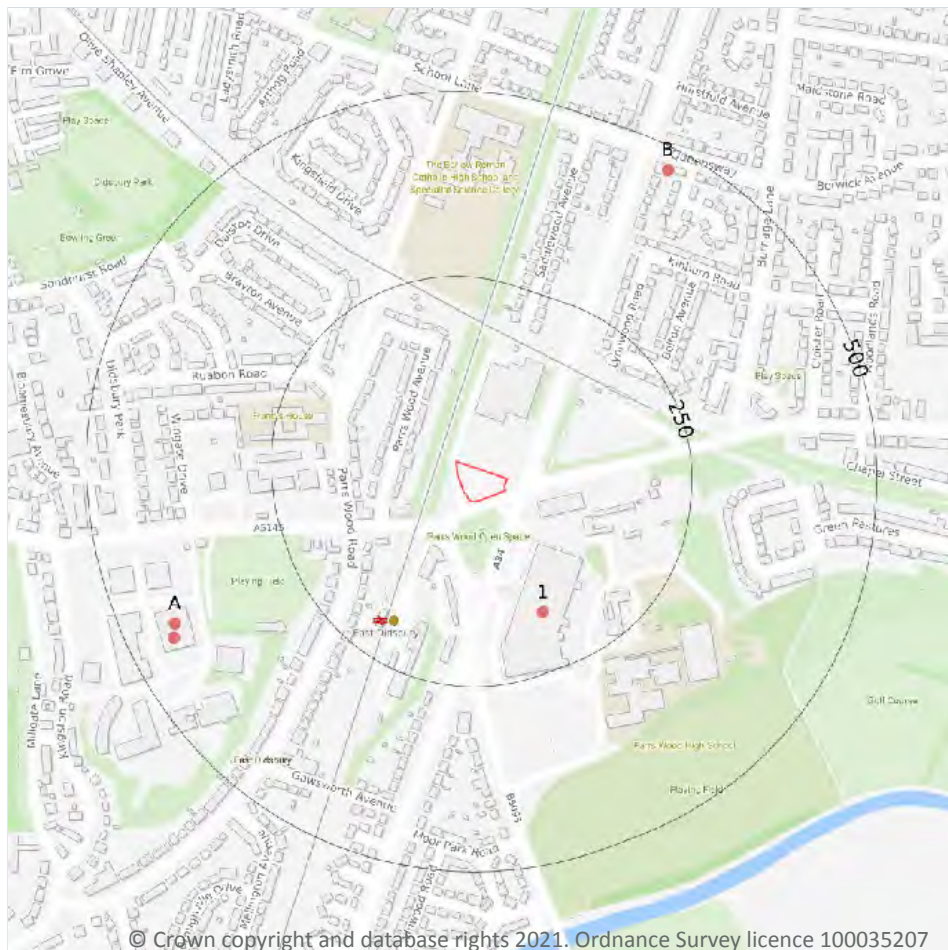
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
B	70m SW	Garage	1957	25676
B	70m SW	Garage	1957	25676
B	74m SW	Garage	1957	25676
B	74m SW	Garage	1975	25676

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m**0**

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m**11**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

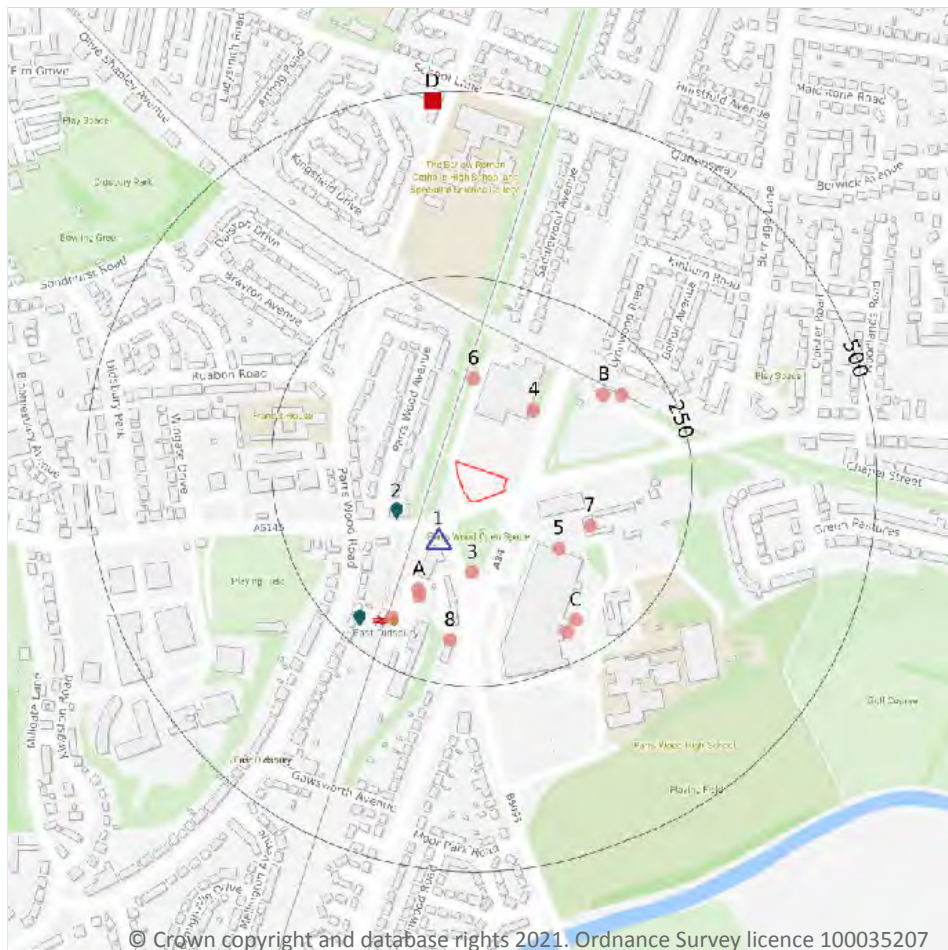
Features are displayed on the Waste and landfill map on **page 31**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	172m S	PARRSWOOD ENTERTAINMENT CENTRE, WILMSLOW ROAD, MANCHESTER, M20 5PG	WEX110669	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	429m SW	Oracle Scotscroft Towers Manchester M20 2RY	EPR/PH0416D B/A001	Treating waste exemption	Non-Agricultural Waste Only	Crushing waste fluorescent tubes
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX255682	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX255682	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX113660	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX113660	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX112310	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	439m SW	SCOTSCROFT BUILDING, TOWERS BUSINESS PARK, WILMSLOW ROAD, MANCHESTER, M20 2RY	WEX112310	Storing waste exemption	Not on a farm	Storage of waste in a secure place
B	470m NE	6, QUEENSWAY, MANCHESTER, M19 1QP	WEX141562	Storing waste exemption	Not on a farm	Storage of waste in a secure place
B	470m NE	6, QUEENSWAY, MANCHESTER, M19 1QP	WEX141562	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	470m NE	6, QUEENSWAY, MANCHESTER, M19 1QP	WEX141562	Storing waste exemption	Not on a farm	Storage of waste in secure containers

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Licensed pollutant release (Part A(2)/B)
- List 1 Dangerous Substances

4.1 Recent industrial land uses

Records within 250m

13

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Company	Address	Activity	Category
3	95m S	Gas Governor	Greater Manchester, M20	Gas Features	Infrastructure and Facilities
4	100m N	Mast	Greater Manchester, M20	Telecommunications Features	Infrastructure and Facilities
5	106m SE	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
6	114m N	Mast	Greater Manchester, M20	Telecommunications Features	Infrastructure and Facilities
7	123m E	Didsbury Magazine	3 The Stables Parrswood Entertainment Centre, Wilmslow Road, Manchester, Greater Manchester, M20 5PG	Published Goods	Industrial Products
A	138m SW	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
A	146m SW	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
B	173m NE	Electricity Sub Station	Greater Manchester, M19	Electrical Features	Infrastructure and Facilities
8	190m S	North West Equipment	804, Kingsway, Manchester, Greater Manchester, M20 5WY	Food and Beverage Industry Machinery	Industrial Products
A	191m SW	East Didsbury Rail Station	Greater Manchester, M20	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
B	192m NE	East Didsbury (Manchester Metrolink)	Greater Manchester, M19	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
C	199m SE	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
C	209m SE	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Company	Address	LPG	Status
1	67m SW	OBSOLETE	878, Wilmslow Road, Parrs Wood, Manchester, Greater Manchester, M20 0WP	Not Applicable	Obsolete

This data is sourced from Experian.



4.3 Electricity cables

Records within 500m**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

2

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Address	Details	
2	95m W	The Laundry Room, 839 Wilmslow Road, Didsbury, Manchester, M20 5WD	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
A	218m SW	Parrswood Serv Stn, Wilmslow Rd, M20 5WP	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.



4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m

2

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Name	Status	Receiving Water	Authorised Substances
D	488m N	Kruger Tissue (manufacturing) Ltd	Not Active	River Sett, Manchester Ship Canal	Mercury (other), Cadmium, Hexachlorocyclohexane, Pentachlorophenol



ID	Location	Name	Status	Receiving Water	Authorised Substances
D	488m N	Kruger Tissue (manufacturing) Ltd	Active	River Sett, Manchester Ship Canal	Mercury (other), Cadmium, Hexachlorocyclohexane, Pentachlorophenol

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0
----------------------------	----------

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0
----------------------------	----------

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0
----------------------------	----------

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0
----------------------------	----------

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m

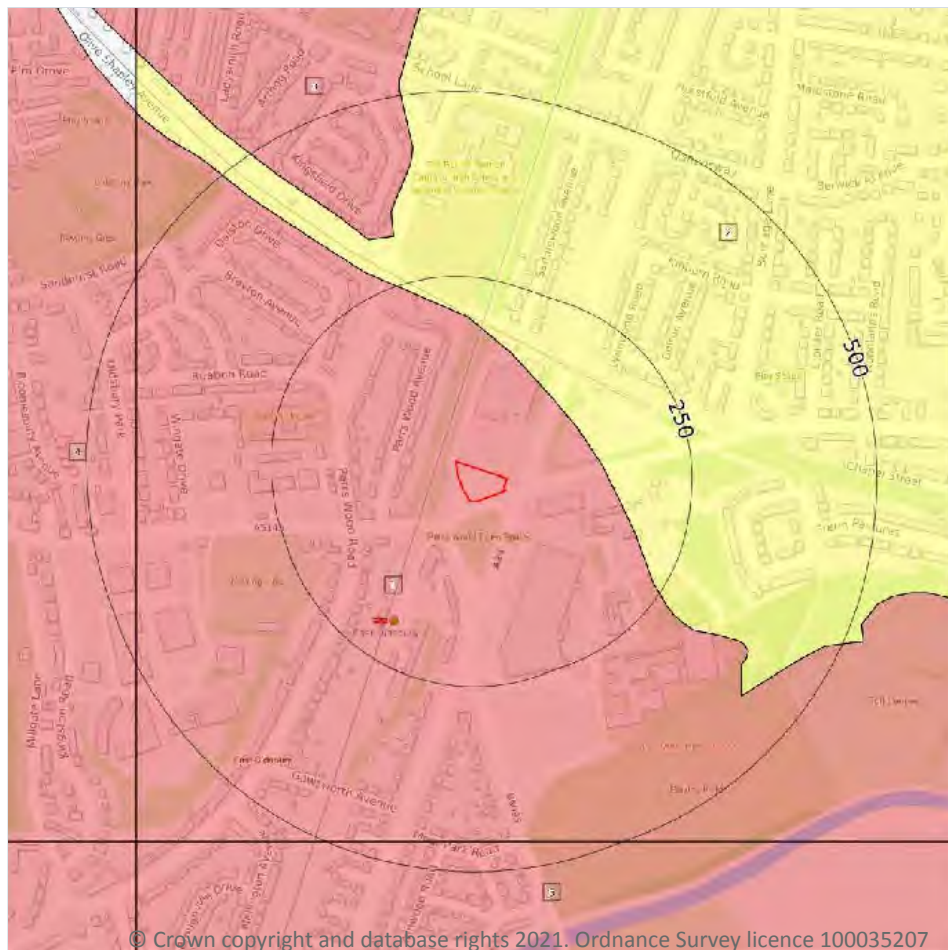
0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



5 Hydrogeology - Superficial aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

5

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 41**

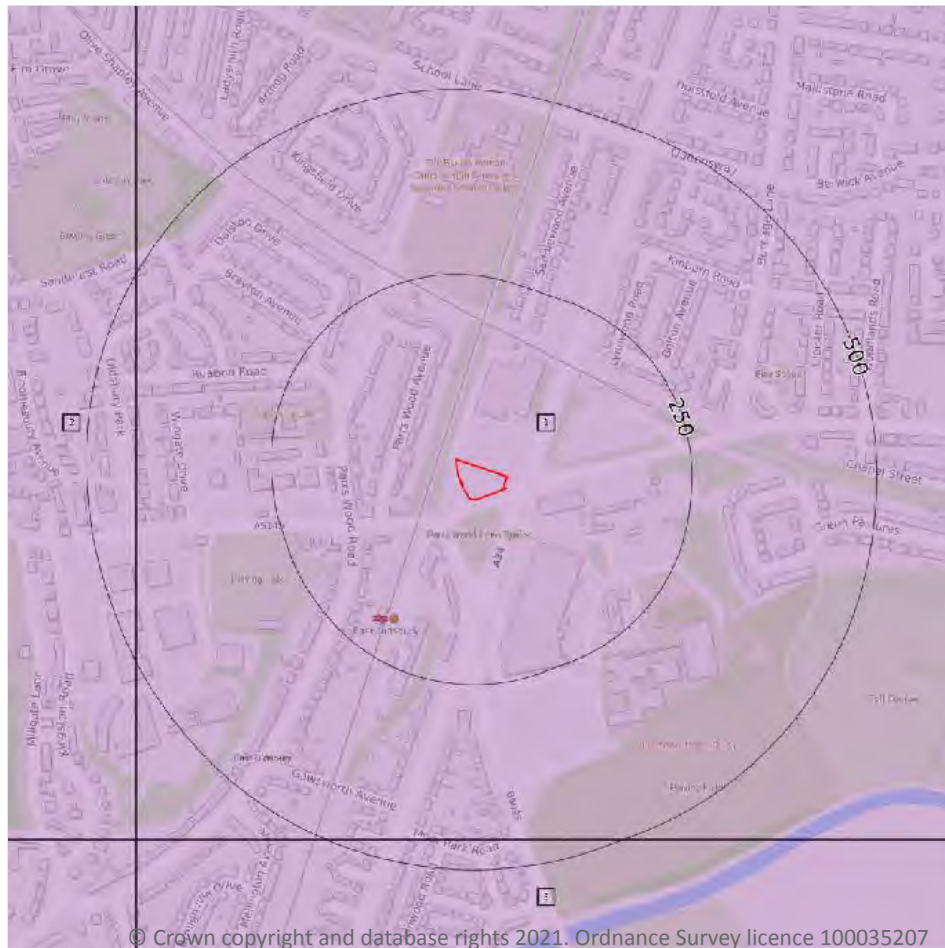
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	117m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	316m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	433m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	459m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 43**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	433m W	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

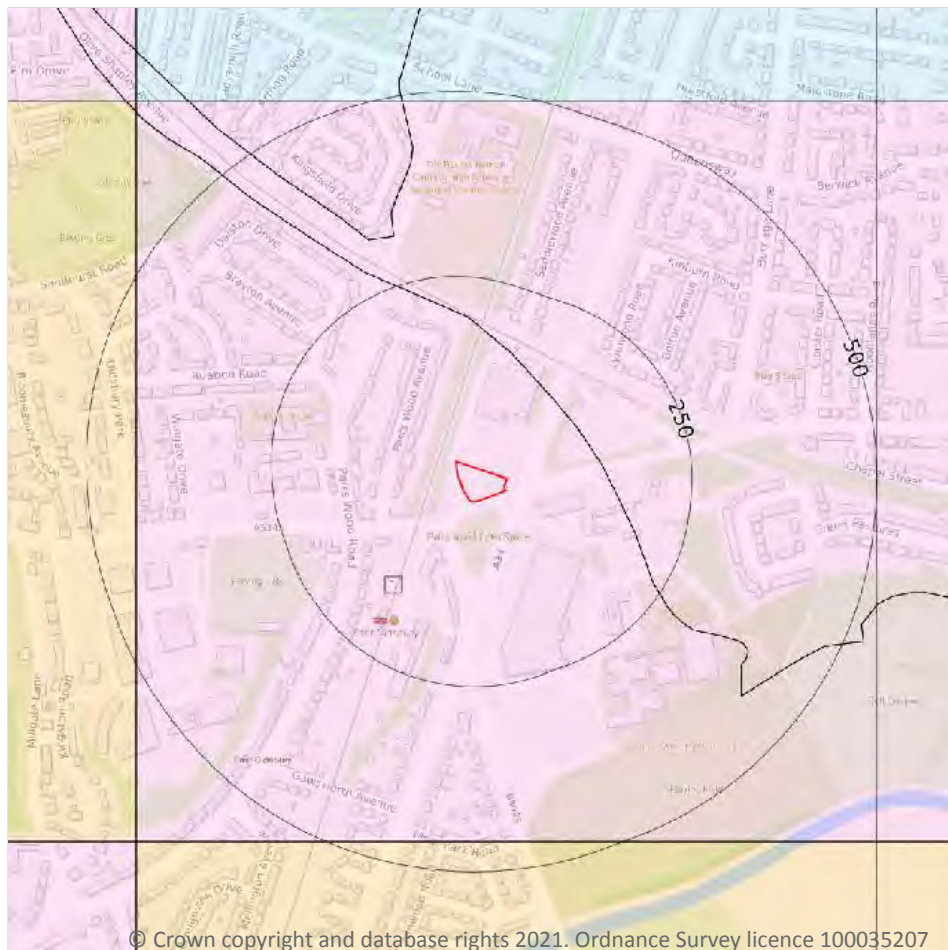


ID	Location	Designation	Description
3	459m S	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 45**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)**
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

5

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 47**

ID	Location	Details	
-	1418m E	Status: Historical Licence No: 2569013019 Details: Lake & Pond Throughflow Direct Source: Ground Water - North West Region Point: "A BOREHOLE AT HEATON MERSEY LODGE,VALE ROAD, STOCKPORT" Data Type: Point Name: SHAW Easting: 386880 Northing: 390150	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/12/1996 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1996 Version End Date: -
-	1418m E	Status: Historical Licence No: 2569013019 Details: Lake & Pond Throughflow Direct Source: Ground Water - North West Region Point: A BOREHOLE AT HEATON MERSEY LODGE,VALE ROAD, STOCKPORT Data Type: Point Name: SHAW Easting: 386880 Northing: 390150	Annual Volume (m ³): 4860 Max Daily Volume (m ³): 18 Original Application No: - Original Start Date: 24/12/1996 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1996 Version End Date: -
-	1483m W	Status: Historical Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DIDSBURY GOLF CLUB, NORTHENDEN, WYTHENSHAW," Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1992 Version End Date: -
-	1483m W	Status: Historical Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIDSBURY GOLF CLUB, NORTHENDEN, WYTHENSHAW, Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1992 Version End Date: -

ID	Location	Details	
-	1483m W	Status: Active Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIDSBURY GOLF CLUB NORTHENDEN WYTHENSHAW Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m ³): 9,092 Max Daily Volume (m ³): 68.19 Original Application No: - Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

2

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 47**

ID	Location	Details	
-	1587m S	Status: Historical Licence No: 2569014038 Details: Lake & Pond Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: ABNEY HALL POND CHORLTON BROOK CHEADLE STOCKPORT CHESHIRE Data Type: Point Name: STOCKPORT METROPOLITAN BOROUGH COUNCIL Easting: 386093 Northing: 389002	Annual Volume (m ³): 355192 Max Daily Volume (m ³): 1946.26 Original Application No: - Original Start Date: 17/12/2006 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 17/12/2006 Version End Date: -
-	1587m S	Status: Active Licence No: 2569014038/R01 Details: Lake & Pond Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: ABNEY HALL POND CHORLTON BROOK CHEADLE STOCKPORT CHESHIRE Data Type: Point Name: STOCKPORT METROPOLITAN BOROUGH COUNCIL Easting: 386093 Northing: 389002	Annual Volume (m ³): 355,192 Max Daily Volume (m ³): 1,944 Original Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.



5.8 Potable abstractions

Records within 2000m

0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 51**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	River WB catchment	Mersey (upstream of Manchester Ship Canal)	GB112069061030	Bollin, Dean, Upper Mersey	Upper Mersey

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 51**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	597m S	River	Mersey (upstream of Manchester Ship Canal)	GB112069061030	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site

1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 51**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	<u>GB41201G101100</u>	Poor	Poor	Poor	2015

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

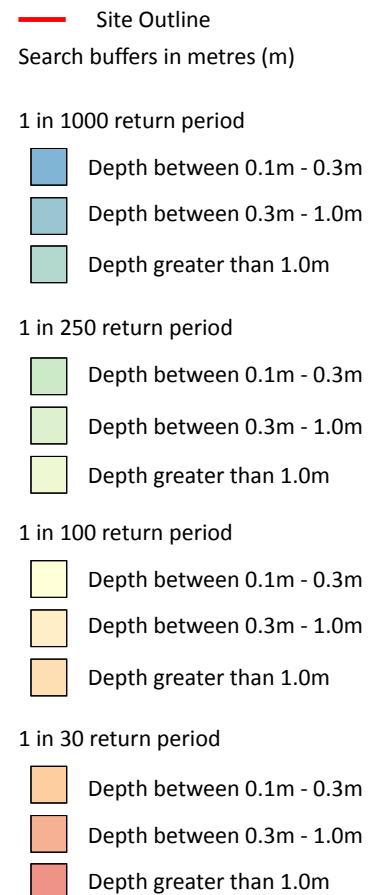
0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 1000 year, 0.1m - 0.3m

Highest risk within 50m

1 in 100 year, 0.1m - 0.3m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 57**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

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9.1 Groundwater flooding

Highest risk on site

High

Highest risk within 50m

High

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 59**

This data is sourced from Ambiental Risk Analytics.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m**6**

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 60**

ID	Location	Name	Data source
4	776m SW	Stenner Woods and Milgate Fields, Didsbury	Natural England
5	834m SE	Mersey Vale Nature Park	Natural England
6	837m NE	Heaton Mersey Common	Natural England
7	1196m SE	Abney Hall	Natural England
8	1199m E	Mersey Vale Nature Park	Natural England
-	1790m SW	Gatley Carrs	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m**0**

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m**0**

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.9 Forest Parks

Records within 2000m**0**

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m**0**

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m**3**

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 60**

ID	Location	Name	Local Authority name
1	367m SE	Merseyside and Greater Manchester	Stockport
2	386m SE	Merseyside and Greater Manchester	Manchester
3	613m W	Merseyside and Greater Manchester	Manchester

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m**0**

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.



10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m**0**

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m**0**

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site

0

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

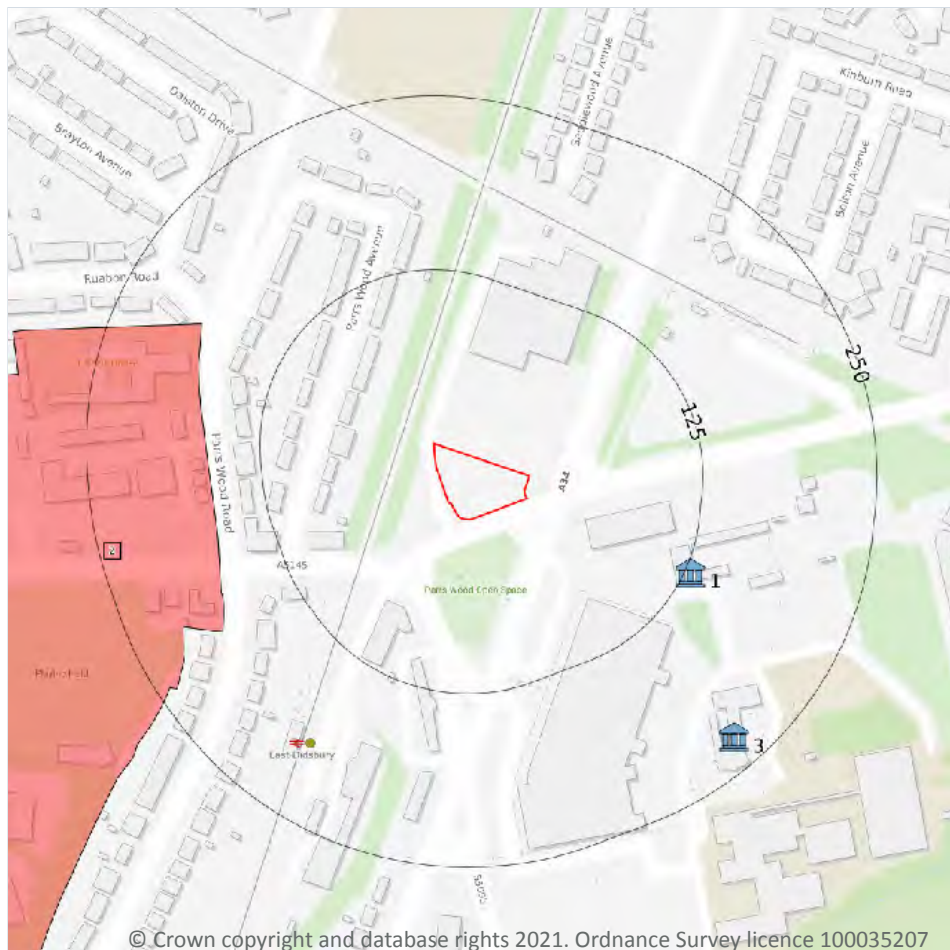
0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

2

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 66**

ID	Location	Name	Grade	Reference Number	Listed date
1	129m SE	Former Coach House/Stable Block To North Of Parrs Wood House And Attached Yard Wall, Didsbury, Manchester, M20	II	1254972	03/10/1974
3	227m SE	Parrs Wood House, Didsbury, Manchester, M20	II*	1254971	25/02/1952

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.5 Conservation Areas

Records within 250m

1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 66**

ID	Location	Name	District	Date of designation
2	162m W	Didsbury St James	Manchester	01/11/1970

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

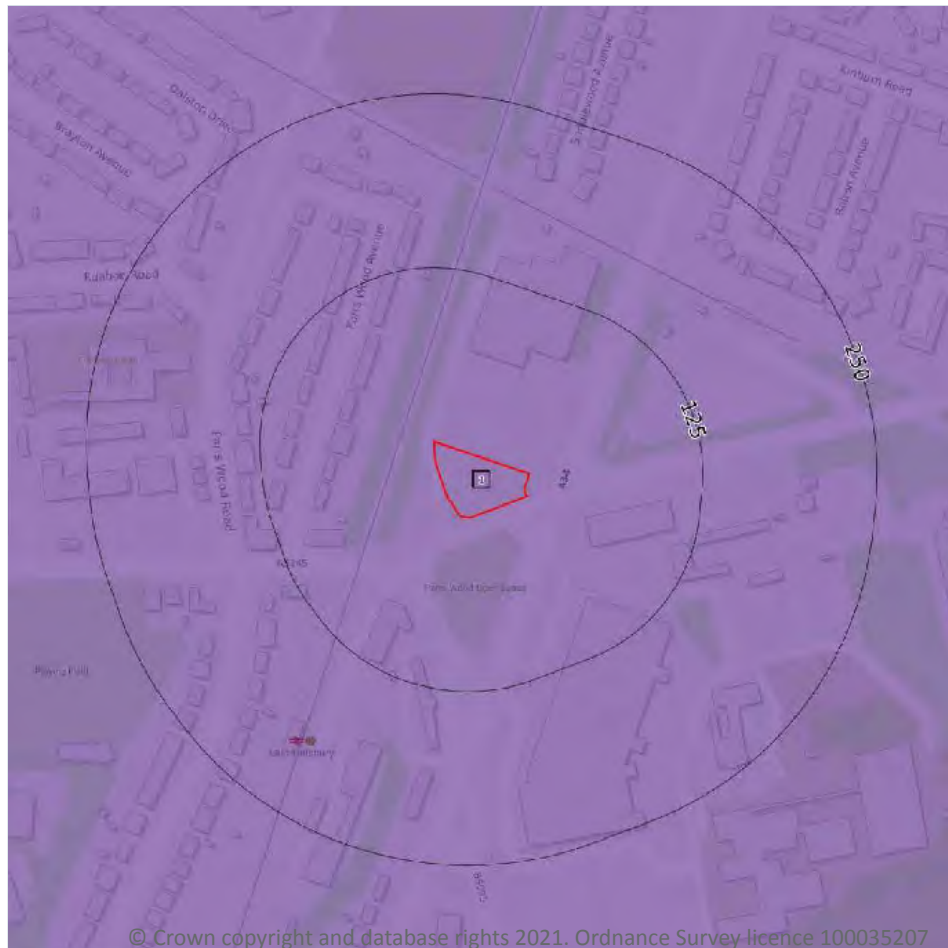
Records within 250m

0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 69**

ID	Location	Classification	Description
1	On site	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m**0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m**0**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

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-  Site Outline

Search buffers in metres (m)

 Priority Habitat Inventory

 Open Mosaic Habitat

 Limestone Pavement Orders

Habitat Networks

 Primary Habitat

 Restorable Habitat

 Associated Habitats

 Habitat Restoration-Creation

 Network Enhancement Zone 1

 Network Enhancement Zone 2

Records within 250m	6
---------------------	---

Features are displayed on the Habitat designations map on **page 71**

ID	Location	Main Habitat	Other habitats
1	128m E	No main habitat but additional habitats present	Additional: TORCH (INV 50%)
2	198m E	Traditional orchard	Main habitat: TORCH (INV > 50%)
A	229m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	231m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
A	242m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	246m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

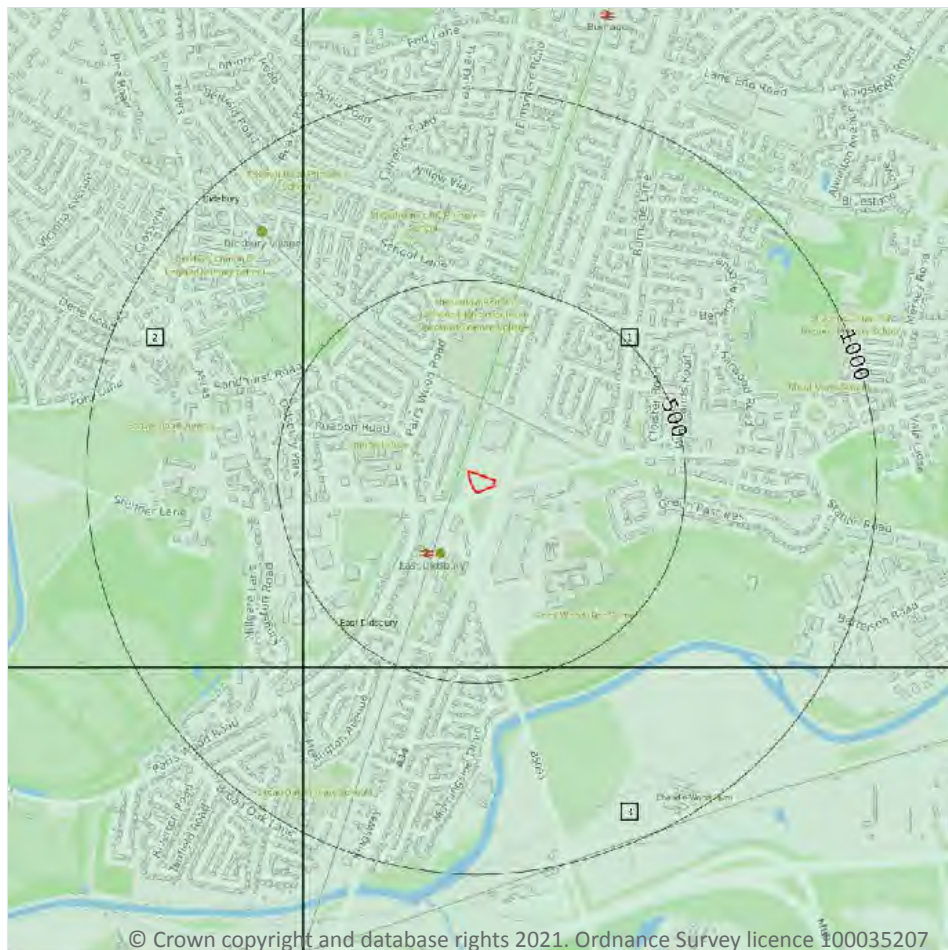
Records within 250m

0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

3

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

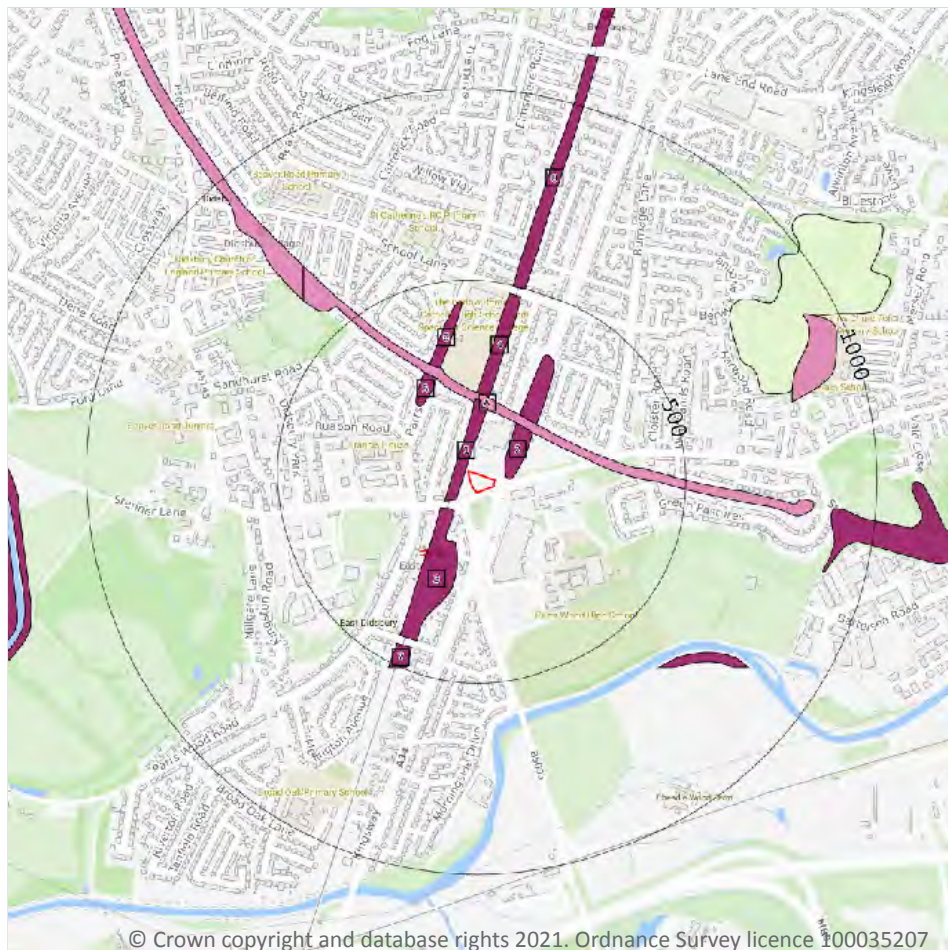
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 73**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SJ89SE
2	433m W	Full	Full	Full	No coverage	SJ89SW
3	459m S	No coverage	Full	Full	No coverage	SJ88NE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

10

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 74**

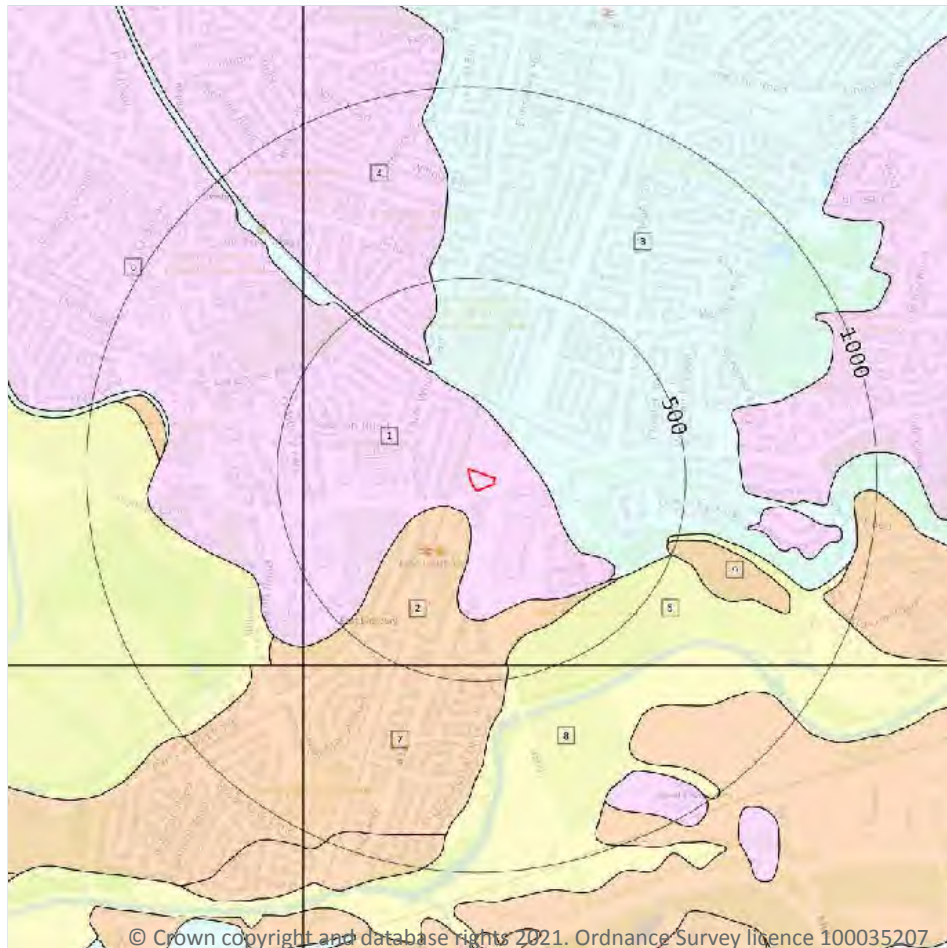
ID	Location	LEX Code	Description	Rock description
1	8m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	31m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	75m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	158m NE	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
A	181m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	199m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	211m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	279m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	440m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	497m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

9

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 76**

ID	Location	LEX Code	Description	Rock description
1	On site	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
2	67m SW	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
3	98m NE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
4	292m N	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel



ID	Location	LEX Code	Description	Rock description
5	381m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
6	433m W	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
7	459m S	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
8	466m S	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
9	481m E	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

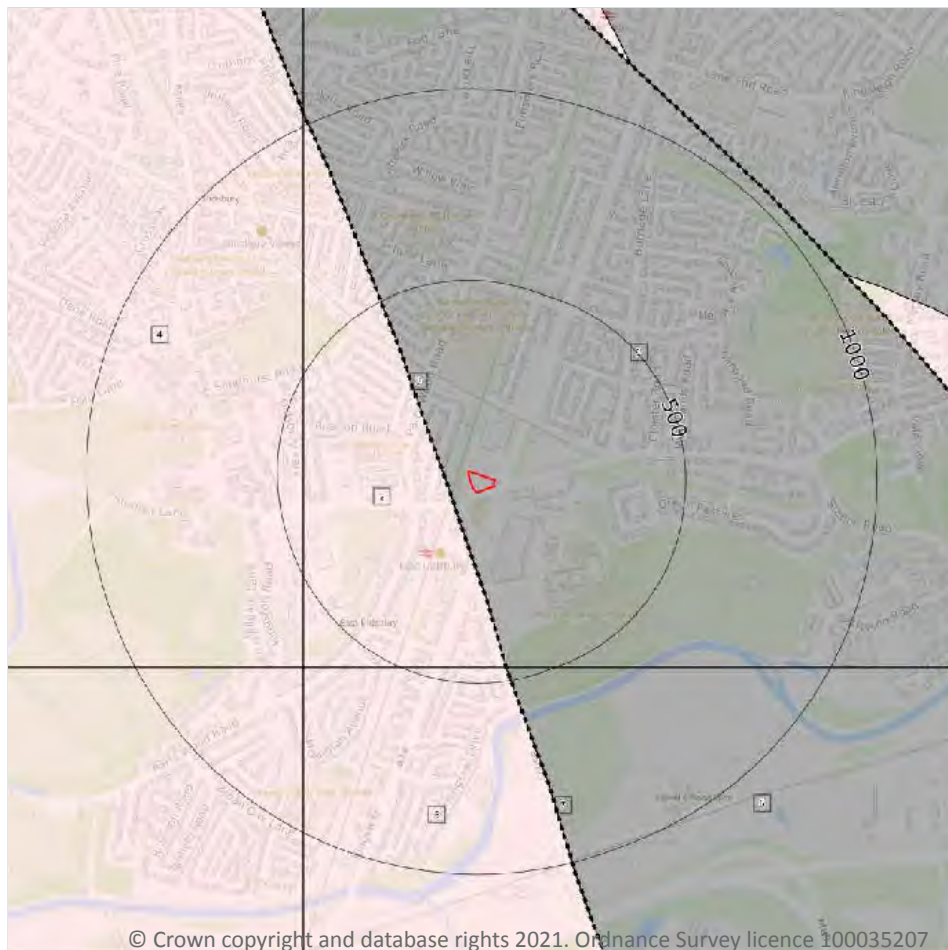
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

5

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 78**

ID	Location	LEX Code	Description	Rock age
1	On site	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
2	60m W	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch
4	433m W	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch
5	459m S	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch

ID	Location	LEX Code	Description	Rock age
6	464m S	CPB-PESST	Chester Pebble Beds Formation - Pebbly (gravelly) Sandstone	Early Triassic Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

2

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 78**

ID	Location	Category	Description
3	60m W	FAULT	Normal fault, inferred; crossmarks on downthrow side
7	464m S	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.



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☐ Geological map tile

80

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

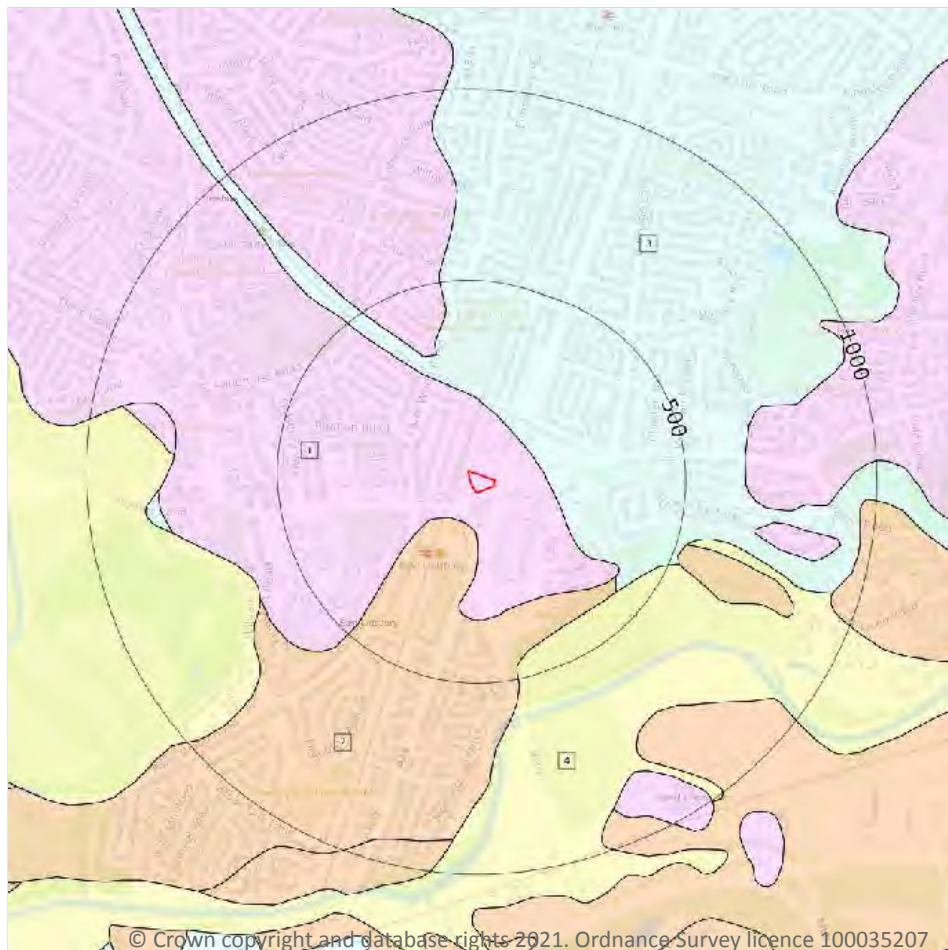
Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

4

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 82**

ID	Location	LEX Code	Description	Rock description
1	On site	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL
2	86m S	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
3	117m NE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	407m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

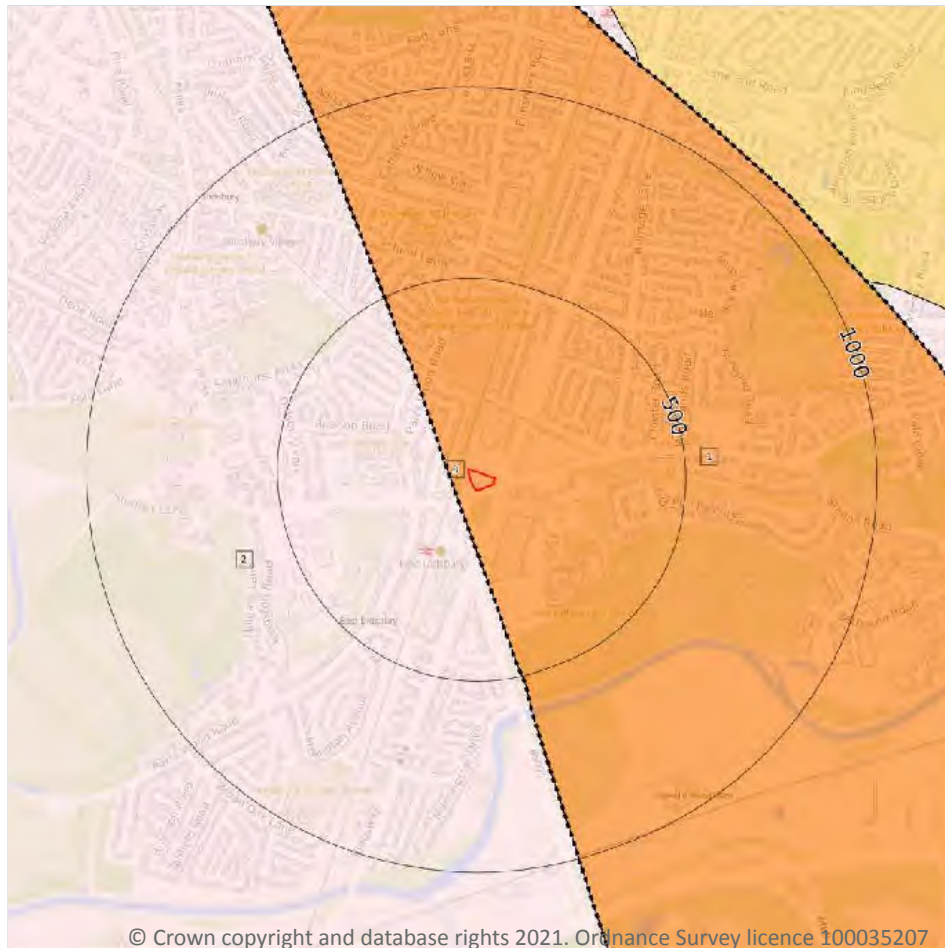
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

2

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 84**

ID	Location	LEX Code	Description	Rock age
1	On site	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
2	48m W	WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Moderate
48m W	Intergranular	High	High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

1

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

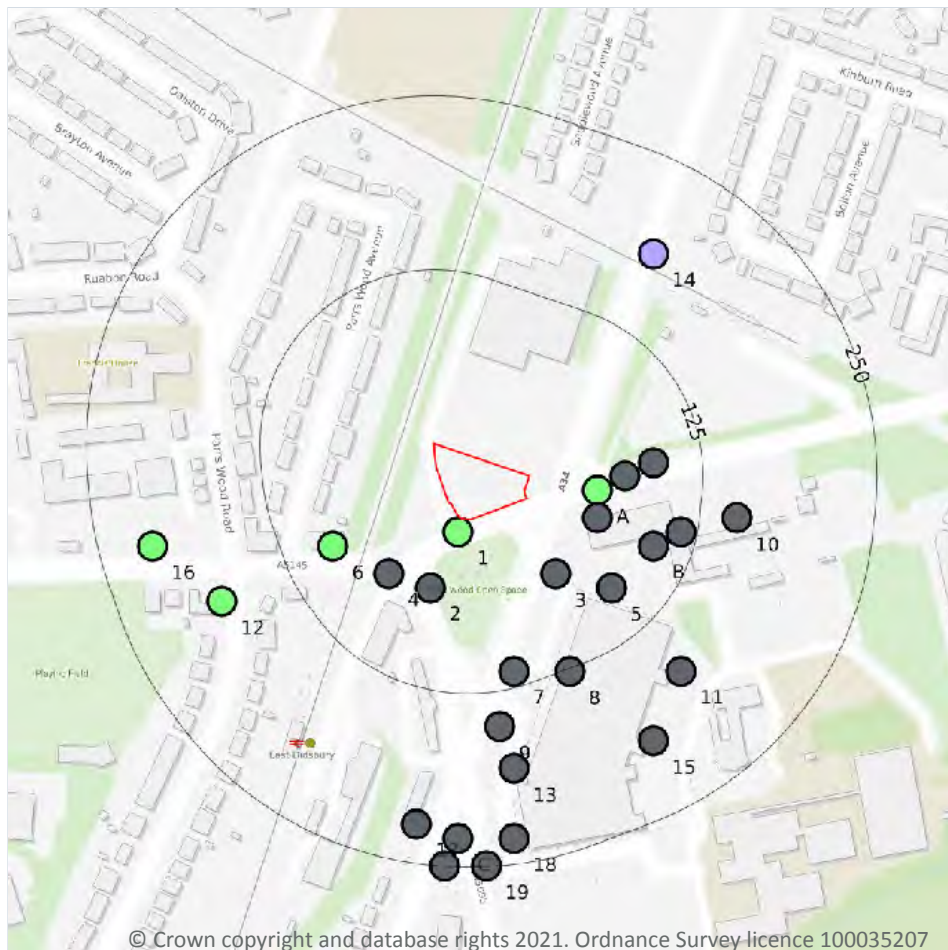
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 84**

ID	Location	Category	Description
3	48m W	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



16.1 BGS Boreholes

Records within 250m

27

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 86**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	10m S	385450 390450	DIDSBURY NO.107	11.43	N	866288
A	50m E	385550 390480	DIDSBURY NO.108	14.02	N	866289

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	53m E	385550 390460	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH2	-	Y	N/A
2	55m SW	385430 390410	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH16	-	Y	N/A
3	58m S	385520 390420	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH3	-	Y	N/A
4	65m SW	385400 390420	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH5	-	Y	N/A
A	69m E	385570 390490	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH1	-	Y	N/A
5	88m SE	385560 390410	PARRS WOOD SCHOOL REDEVELOPMENT TPB	-	Y	N/A
6	89m W	385360 390440	DIDSBURY NO.106	11.33	N	866287
A	90m E	385590 390500	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH15	-	Y	N/A
B	97m E	385590 390440	PARRS WOOD SCHOOL REDEVELOPMENT 1	-	Y	N/A
7	113m S	385490 390350	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH4	-	Y	N/A
B	113m E	385610 390450	PARRS WOOD SCHOOL REDEVELOPMENT TPF	-	Y	N/A
8	127m S	385530 390350	PARRS WOOD SCHOOL REDEVELOPMENT 2	-	Y	N/A
9	150m S	385480 390310	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH14	-	Y	N/A
10	151m E	385650 390460	PARRS WOOD SCHOOL REDEVELOPMENT 12	-	Y	N/A
11	166m SE	385610 390350	PARRS WOOD SCHOOL REDEVELOPMENT 11	-	Y	N/A
12	178m SW	385280 390400	DIDSBURY NO.103	11.99	N	866284
13	182m S	385490 390280	PARRS WOOD SCHOOL REDEVELOPMENT 3	-	Y	N/A
14	183m NE	385590 390650	DIDSBURY NO.109	6.1	N	866290
15	196m SE	385590 390300	PARRS WOOD SCHOOL REDEVELOPMENT 10	-	Y	N/A
16	212m W	385230 390440	DIDSBURY NO.105	11.43	N	866286
17	222m S	385420 390240	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH6	-	Y	N/A
C	229m S	385450 390230	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH9	-	Y	N/A
18	231m S	385490 390230	PARRS WOOD SCHOOL REDEVELOPMENT TPD	-	Y	N/A

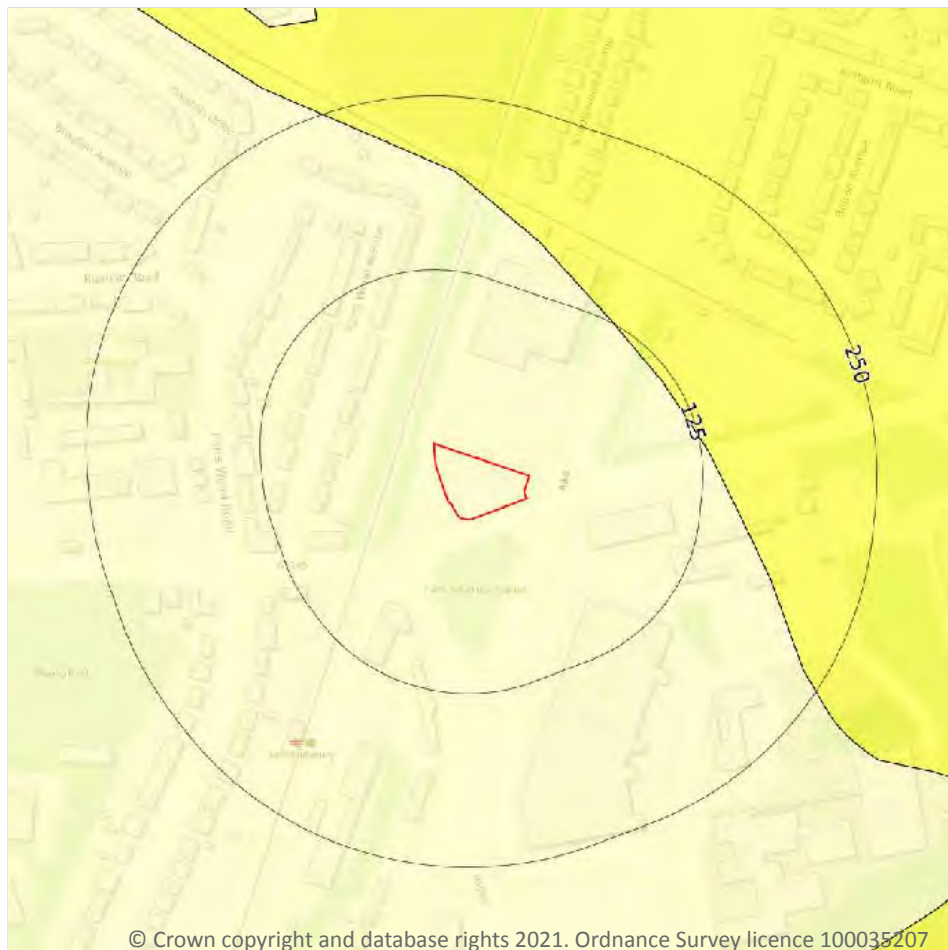


ID	Location	Grid reference	Name	Length	Confidential	Web link
19	249m S	385470 390210	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH10A	-	Y	N/A
C	249m S	385440 390210	PARRSWOOD DEVELOPMENT ROAD IMPROVEMENTS TH10	-	Y	N/A

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

1

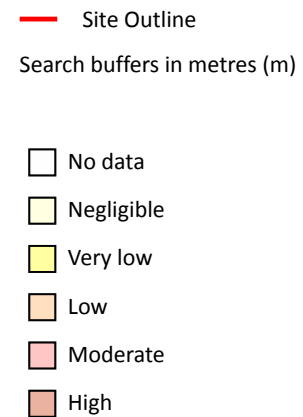
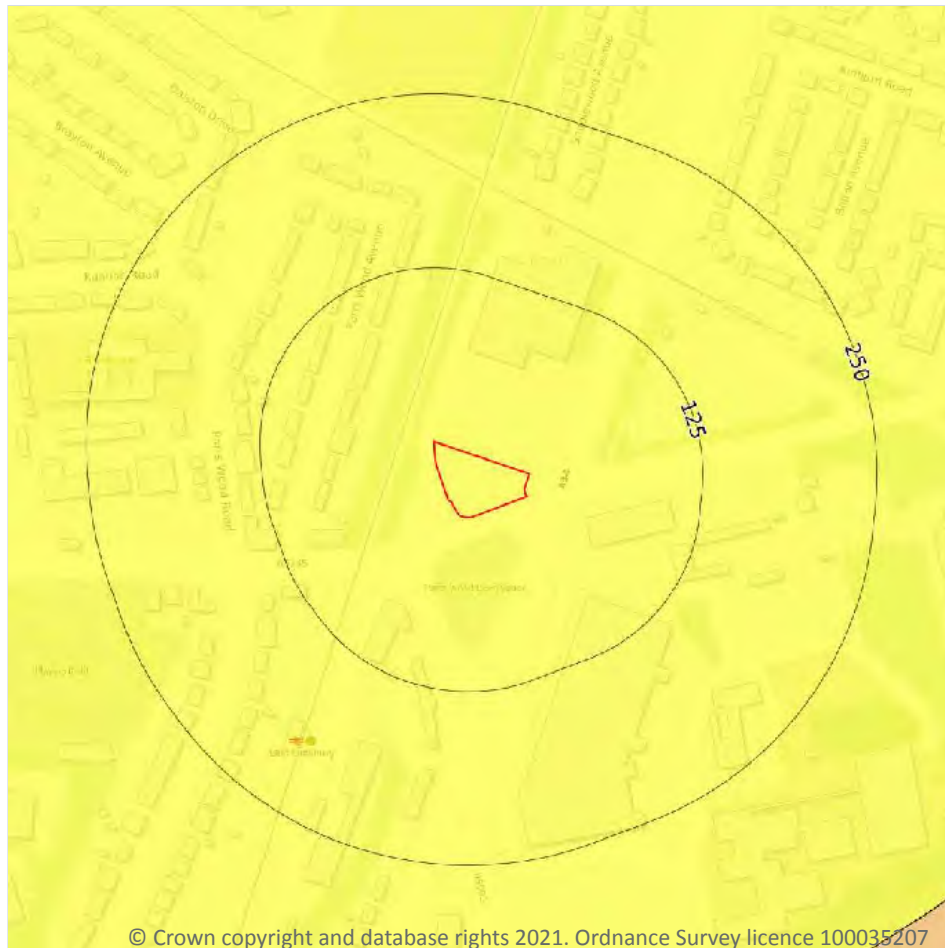
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 89**

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



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17.2 Running sands

Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 90**

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



— Site Outline
Search buffers in metres (m)

- ☐ No data
- ☐ Negligible
- ☐ Very low
- ☐ Low
- ☐ Moderate
- ☐ High

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17.3 Compressible deposits

Records within 50m

1

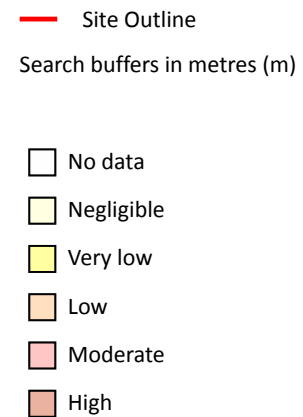
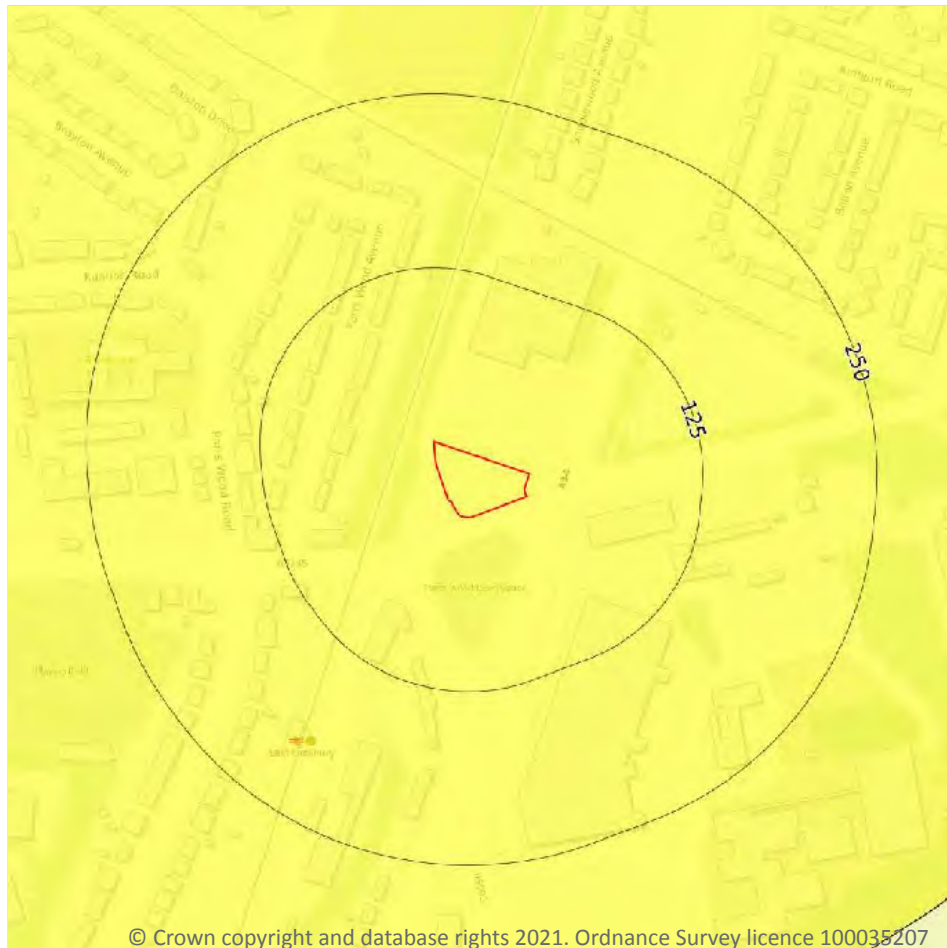
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 91**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



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17.4 Collapsible deposits

Records within 50m

1

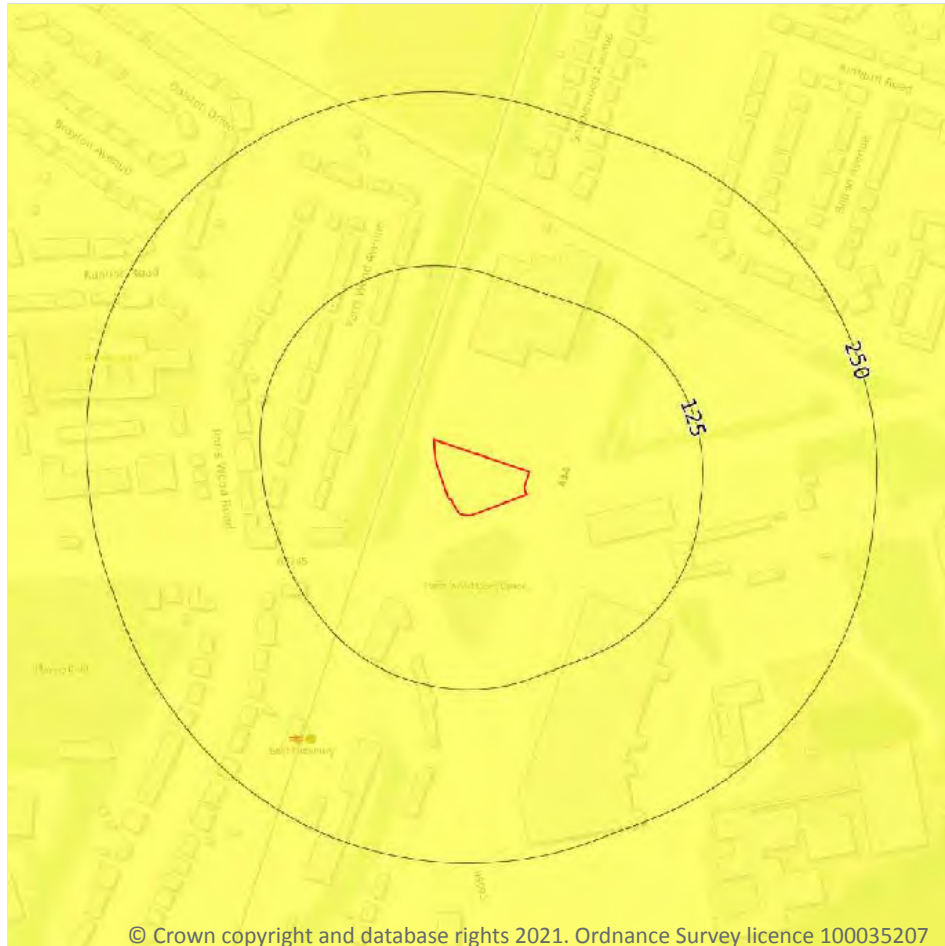
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 92**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

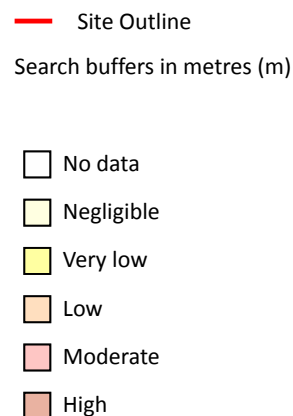
Features are displayed on the Natural ground subsidence - Landslides map on **page 93**

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 94**

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

1

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 95**

ID	Location	Details	Description
A	190m SW	Name: Parrs Wood Gravel Pit Address: Didsbury, MANCHESTER, Lancashire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

15

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 95**

ID	Location	Land Use	Year of mapping	Mapping scale
A	113m SW	Unspecified Pit	1938	1:10560
A	113m SW	Unspecified Pit	1934	1:10560
A	113m SW	Unspecified Pit	1938	1:10560
1	124m S	Unspecified Pit	1934	1:10560
A	141m SW	Unspecified Heap	1923	1:10560
A	148m SW	Unspecified Heap	1923	1:10560
B	176m N	Cuttings	1893	1:10560
B	177m N	Cuttings	1938	1:10560
B	180m N	Cuttings	1938	1:10560
B	181m N	Cuttings	1934	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	182m SW	Gravel Pit	1851	1:10560
B	185m N	Cuttings	1955	1:10560
2	186m NE	Brick Field	1851	1:10560
C	248m NE	Unspecified Pit	1911	1:10560
C	248m NE	Unspecified Pit	1911	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.



18.7 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

1

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

Location	Details
On site	Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) may have information such as mining plans and maps held within their archive that have occurred within 1km of this property. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk .

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site

0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site

0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.



18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

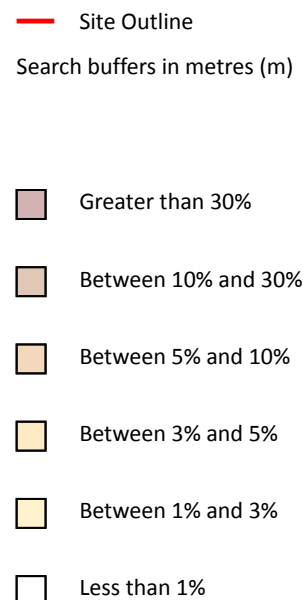
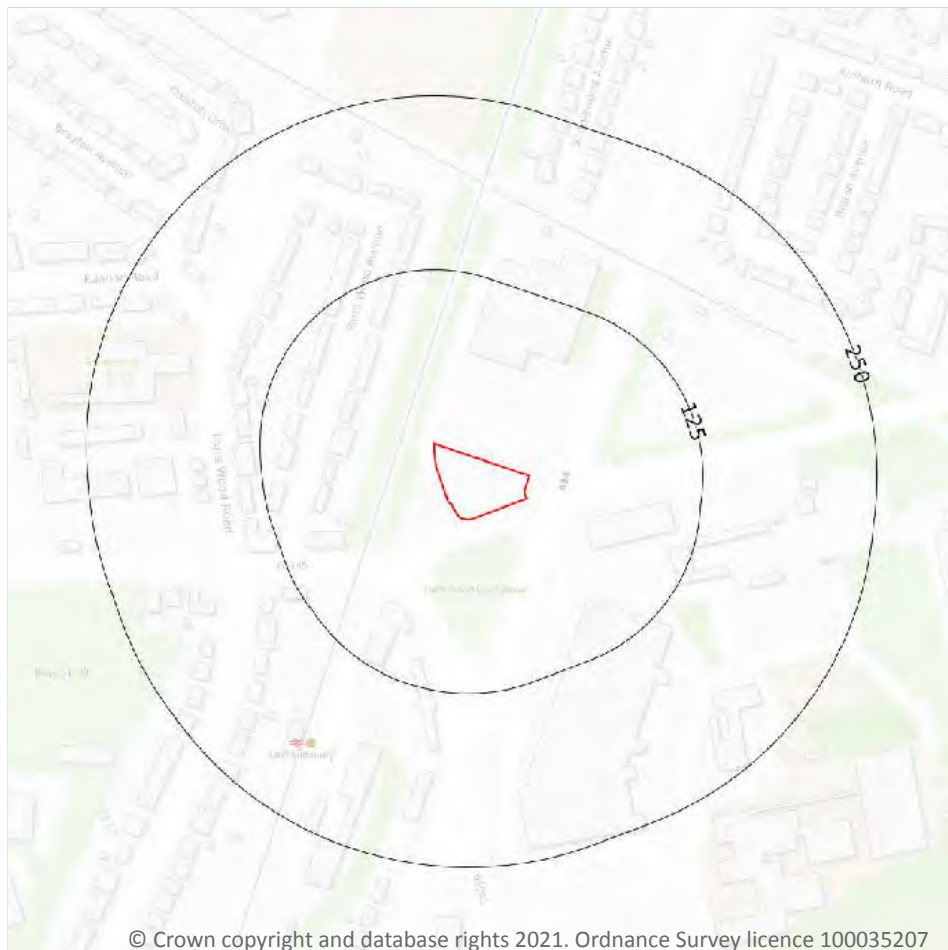
18.13 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 100**

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

5

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
9m NE	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
48m SW	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.



20.3 BGS Measured Urban Soil Chemistry

Records within 50m

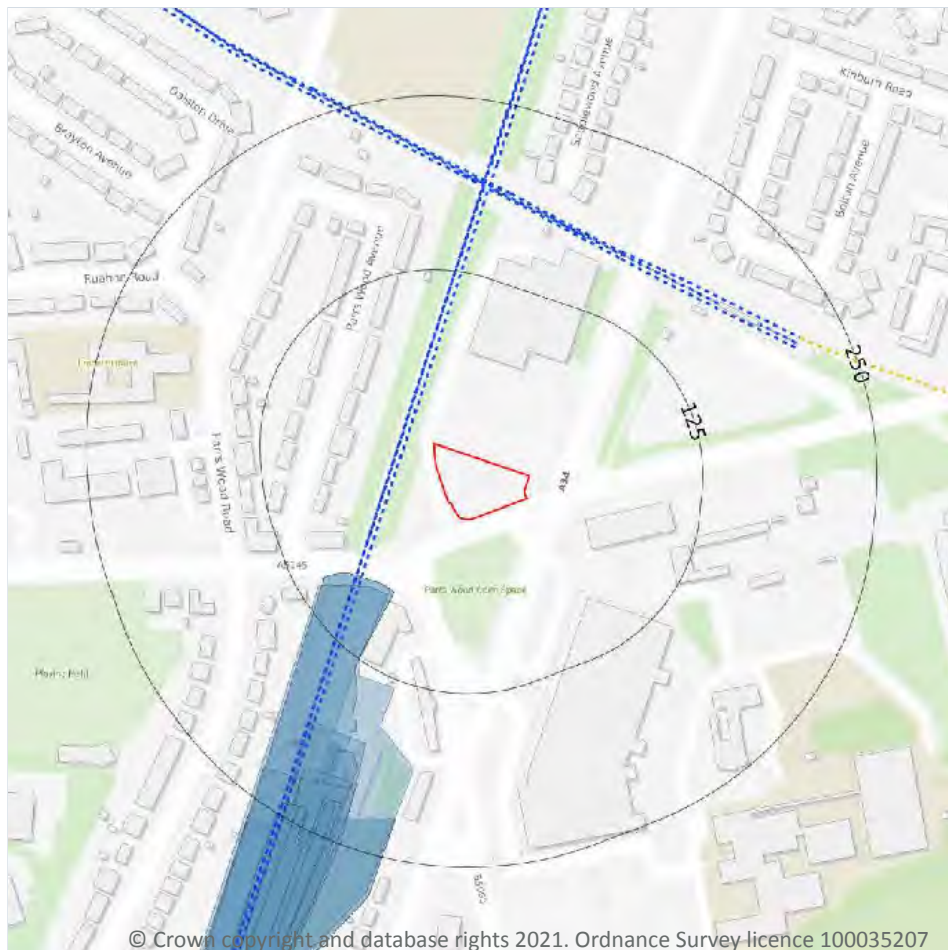
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

19

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 103**

Location	Land Use	Year of mapping	Mapping scale
71m SW	Railway Sidings	1974	10000
71m SW	Railway Sidings	1983	10000
76m SW	Railway Sidings	1923	10560
176m SW	Railway Sidings	1965	10560
185m SW	Railway Sidings	1957	2500
185m SW	Railway Sidings	1923	10560
186m SW	Railway Sidings	1957	1250
205m S	Railway Sidings	1955	10560
210m S	Railway Sidings	1934	10560
220m S	Railways	1922	-
220m S	Railways	1934	-
221m SW	Railway Sidings	1922	2500
221m SW	Railway Sidings	1934	2500
223m SW	Railway Sidings	1938	10560
223m SW	Railway Sidings	1938	10560
235m SW	Railway Sidings	1922	2500
235m SW	Railway Sidings	1934	2500



Location	Land Use	Year of mapping	Mapping scale
241m SW	Railway Sidings	1922	2500
241m SW	Railway Sidings	1934	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

1

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 103**

Location	Description
219m NE	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

28

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 103**

Location	Name	Type
20m W	Styal Line	rail
24m W	Styal Line	rail
24m W	Not given	Multi Track

Location	Name	Type
63m SW	Styal Line	rail
66m SW	Styal Line	rail
85m SW	Styal Line	rail
88m SW	Styal Line	rail
169m NE		light_rail
170m NE		light_rail
170m N		light_rail
172m NE	Not given	Multi Track
173m N		light_rail
173m N		light_rail
174m NE		light_rail
174m N		light_rail
176m NE		light_rail
177m N	Styal Line	rail
178m N	Styal Line	rail
183m N		light_rail
188m N		light_rail
188m N		light_rail
190m NE		light_rail
191m N	Not given	Multi Track
195m N		light_rail
197m NE		light_rail
198m NE	Not given	Multi Track
205m N	Styal Line	rail
206m N	Styal Line	rail

This data is sourced from Ordnance Survey and OpenStreetMap.



21.8 Crossrail 1

Records within 500m**0**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference>.

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APPENDIX E: SITE PHOTOGRAPHS



1. Ornate planting within the south-western section of the study site
2. Study site as seen from its eastern boundary





- 3. Western section of the study site
- 4. Trolley storage facility within approx. site centre





- 5. Ornate planting within approx. site centre
- 6. As above. Positioned along eastern boundary





- 7. Central section of the study site, northly aspect
- 8. As Figure 6 above





- 9. Clock tower positioned close to the eastern site boundary
- 10. Ornate planting within approx. site centre

