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PLANS		
Plan Reference	Revision	Title
19047 01	-	Project Location Plan
19047 02_1.1	-	Preliminary Development Constraints Plan
19047 03_1.1	-	Illustrative Preliminary CSM
19008_SK10	-	Tuffix Site Plan Option 2 – Proposed Site Boundary

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by Savills on behalf of Tilstone Industrial to undertake a Preliminary Environmental Risk Assessment for a site at Nexus Industrial in Knowsley.

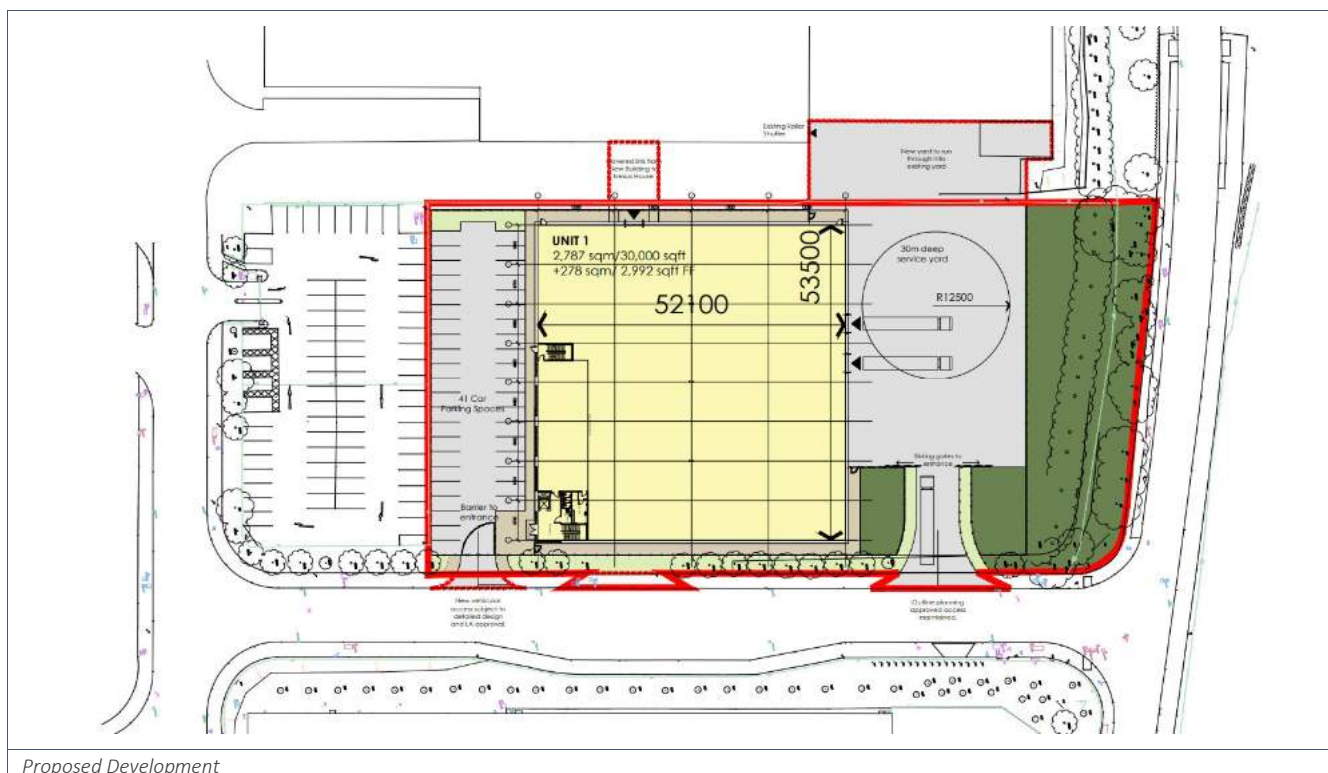
The objectives of the Preliminary Environmental Risk Assessment were to establish the site's environmental and geotechnical background in order to generate a Conceptual Site Model to identify any potential constraints and linkages which may affect the redevelopment of the site.

The report has been undertaken to fulfil the requirements of a preliminary risk assessment in accordance with CLR11 "Model Procedures for the Management of Land Contamination".

1.2 Proposed Development

The proposed development comprises developing the strip of land to the east of the existing Nexus building as demonstrated on the extract below.

The development consists of a single commercial unit with associated service yard to the north and car park to the south. The proposed service yard will extend into the existing yard to the west and a covered link between the new unit and Nexus House is also proposed. The proposed site layout is presented to the rear of this report in plan 19008_SK10 - Tuffix Site Plan Option 2 – Proposed Site Boundary.



1.3 Limitations

This Preliminary Environmental Risk Assessment is based on information obtained from a number of sources, and the information is assumed to be correct.

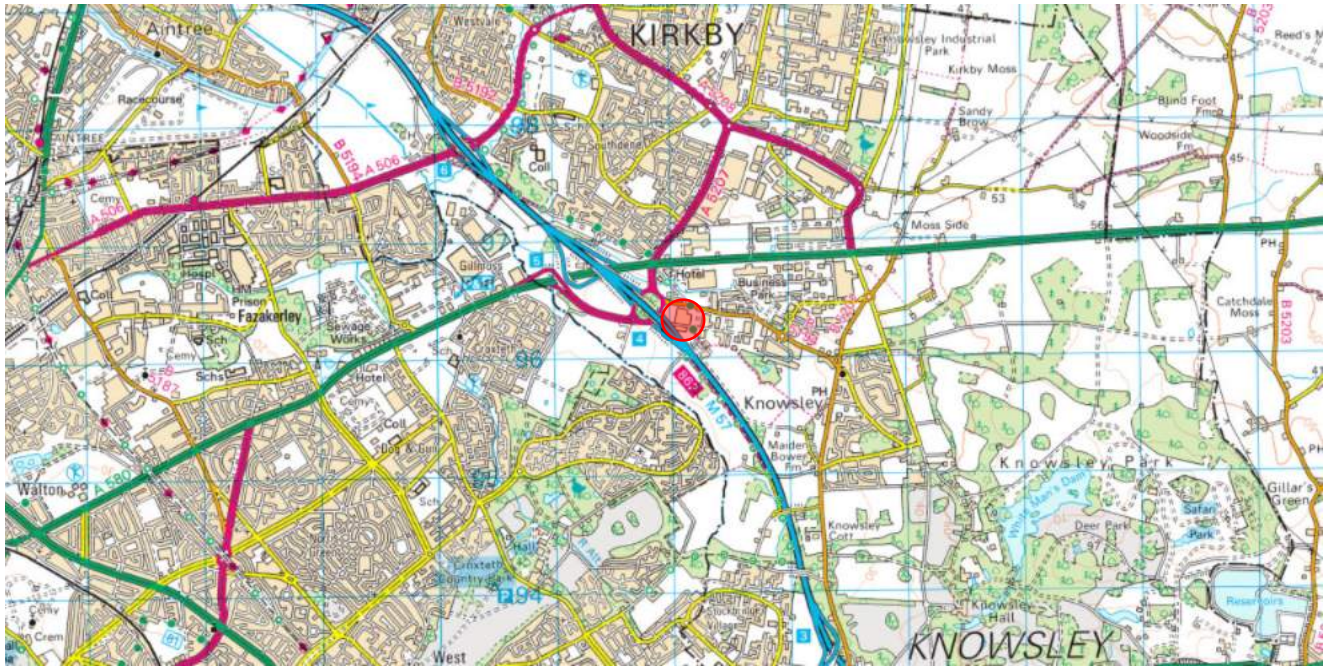
Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

The assessment has been prepared for the exclusive use of the client. No third parties may rely on or reproduce the contents of the report without the written permission of Groundtech Consulting Limited. If any unauthorised third party comes into possession of the report, they rely on it at their own risk and Groundtech Consulting Limited will not be obliged to provide a duty of care.

2.0 SITE SETTING

2.1 Location

The site is located circa 5.60 miles west of St Helens Town Centre in the borough of Knowsley, as shown on the Project Location Plan 19047 01. The site is approximately centred on National Grid Reference 342115, 396344.



Access to the site is gained off Gellings Road to the east and Randles Road to the south.

2.2 Site Description

The site comprises a strip of land orientated north to south along the eastern edge of the existing Nexus Industrial building and associated car park areas.

The site is approximately rectangular in shape and covers an area of circa 0.66 hectares. The area is generally topographically level, however a grassed mound exists in the north western corner measuring approximately 1.0m in height.

Where the northern extent of the site meets the B5194 road to the north, there is a small vegetated bank measuring approximately 1.5m in height which slopes up towards the road. The embankment appears to have been formed by cutting in the site to form a level platform. The cutting of this part of the area also forms a bank measuring approximately 1.0m high along the north eastern boundary with Gellings Road and the B5194 and gradually reduces in height as it extends in a southerly direction.

The site is formed by a vegetated area covered with grass in the south and thick bushes, shrubs and grass in the north. Some semi-mature and mature trees are present along the boundaries particularly along the northern boundary with the B5194 and the eastern boundary with Gellings Road which is lined with semi-mature trees.

The site is bounded by the following land uses or features:

- North - B5194 highway.
- East - Gellings Road.

- West - Metal fence separates the area from the neighbouring Nexus building.
- South - Car park surfaced with tarmac.

Site photographs are presented in Appendix 2, and any relevant features are recorded on the Development Constraints Plan 19047 02_1.1.

3.0 ENVIRONMENTAL SETTING

3.1 Site History

Available historical maps have been obtained, a list of dates and scales are listed in the table below:

Scale	Date
1:1,250	1959, 1974 -1978, 1978, 1993.
1:2,500	1867, 1893, 1908, 1927, 1937, 1960 -1961.
1:10,000/10,560	1891-1892, 1906-1907, 1925, 1938, 1956, 1966, 1978, 1988, 2002, 2010, 2014.

The plans were examined and potential issues have been identified and summarised in the table below.

Date	Site	Surrounding Area
1867	Undeveloped.	Undeveloped surrounding area.
1891-1892	Formed by fields. Road exists which passes through the south western corner.	Knowsley Delph c.25m north. Gelling's Pits c.250m south.
1908	No change.	No change.
1925	No change.	Gelling's Farm and Delph Farm c.300m south of the site.
1956	No change.	Development of Penrhyn Pits c.500m east.
1959	No change.	Various small ponds c.80m south.
1960 -1961	No change.	Knowsley Delph no longer shown, possibly infilled .
1966	No change.	Significant commercial and residential development including a factory c.400m north Penrhyn pits now developed with housing
1974 -1978	Site remains undeveloped. Nexus Building is constructed immediately to the west.	Works building including above ground tanks and chimney developed to the west of the site in its current layout. Significant development of highways in all directions including the M57 motorway immediately to the west and south. Factory c.90m south. Works c.25m east and c.90m south east. The area to the north and east has generally been developed with commercial buildings. Unspecified tanks c.20m south. Electricity substation 72m south. Small ponds south of the site no longer shown.
1993	No change.	Surrounding area generally developed as part of Knowsley Industrial Estate.
2014	No change.	Gelling's Farm and Delph Farm no longer present.

The historical plans are presented in Appendix 3.

3.2 Geology

The following British Geological Survey (BGS) records and other available information were inspected to accurately determine the geology underlying the site:

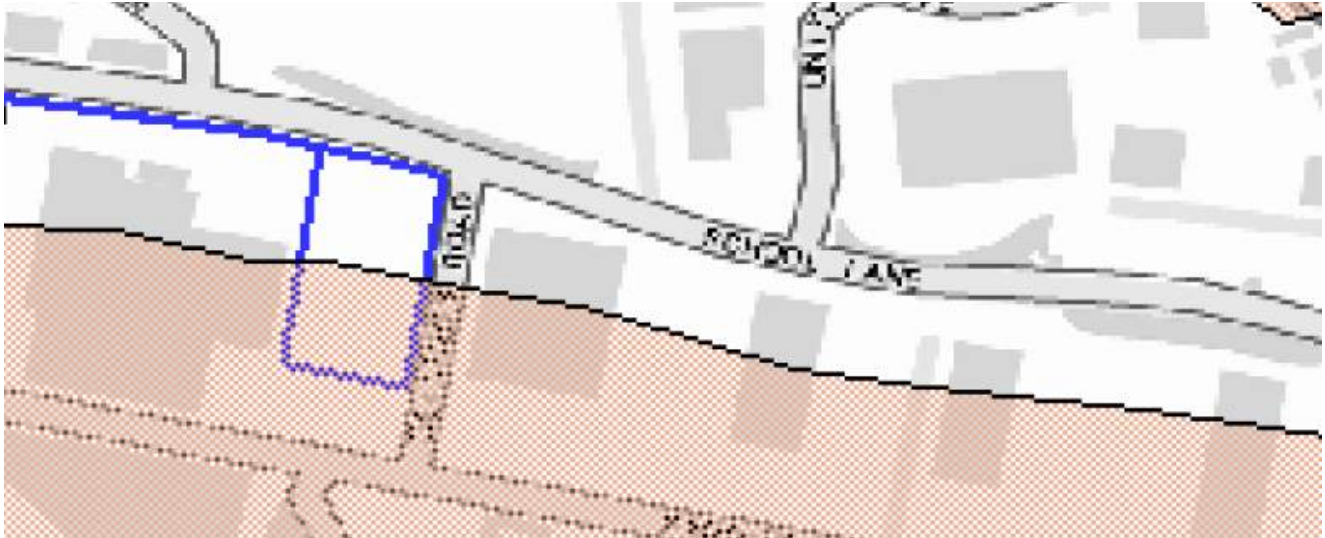
- 1:50,000 Scale Geological Sheet 84, Wigan – Solid and Drift Edition.
- BGS Records.
- Groundsure GeoInsight.

Made Ground

Made ground is indicated to underlie the southern portion of the site.

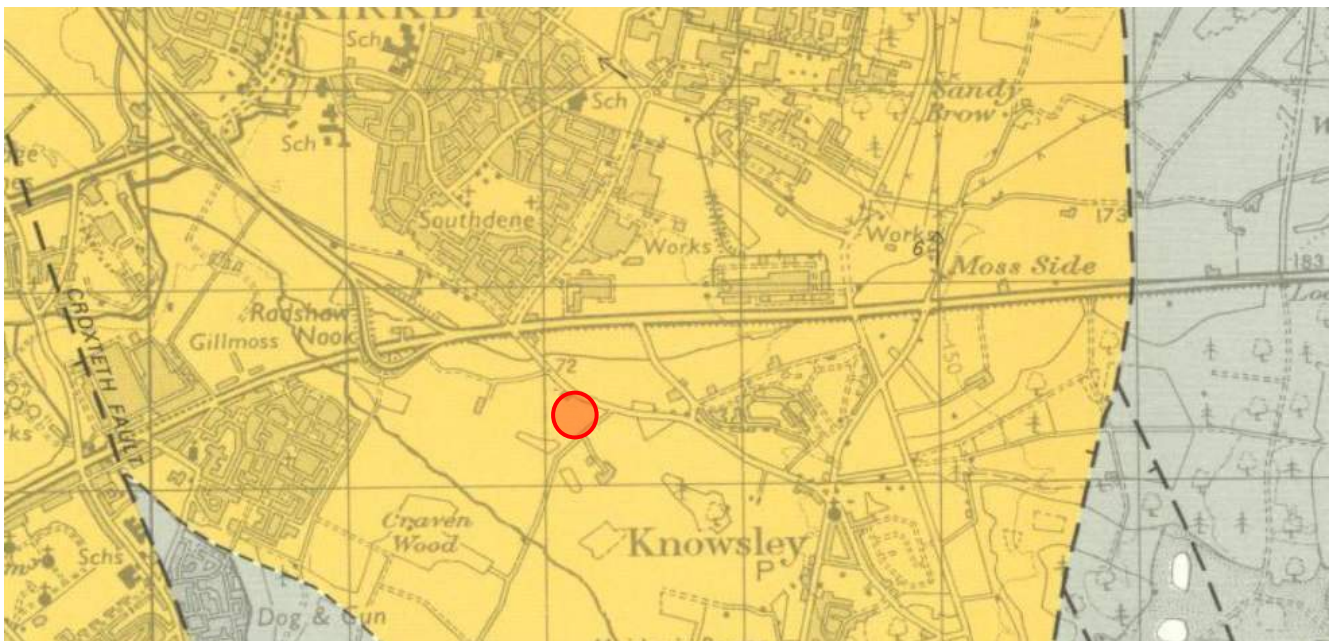
Superficial Deposits

The southern half of the site is indicated to be underlain by the Shirdley Hill Sand formation, this stratum characteristically comprises sand. No superficial deposits are indicated on the northern half of the site as shown on the extract below.



Solid Geology

The site is indicated to be underlain with bedrock geology consisting of the Chester Sandstone Formation - comprising fine to coarse grained, commonly pebbly sandstone with conglomerates and sporadic siltstones



No faults are shown on or within an influencing distance of the site, the nearest is the Croxteth Fault 362m south west of the site.

BGS Records

The nearest BGS borehole is located 120m north of the site and the nearest deep BGS borehole record is located 220m south of the site. The records confirm Shirdley Hill Sands over sandstone bedrock.

The BGS records are presented in Appendix 4.

3.3 Hydrogeology

The Shirdley Hill Sand superficial deposits in this area are classified by the Environment Agency as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as Minor Aquifers.

Chester Pebble Beds are classified as a Principal Aquifer, which is 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.

Soils on site are classified as being of high leaching potential, and are assumed to be highly permeable in the absence of site-specific information.

The site is indicated to lie within a Source Protection Zone, Zone III, Total Catchment (the area needed to support the discharge from the protected groundwater source) for a groundwater abstraction well. There is one active groundwater abstraction licence within 750m of the site, this is 534m to the north relating to Dairy Crest Ltd in Kirkby.

3.4 Hydrology

The nearest named watercourse is Knowsley Brook 101m north of the site.

The site is not located within a floodplain and the Risk of Flooding from Rivers and Seas (RoFRaS) is classified as very low.

There are two licenced discharge consents within 500m of the site. These are 452m east at Merseyside Polymer Processing Ltd, Caddick Road and have now been revoked.

No surface water abstractions are recorded within 2km of the site.

3.5 Environmental Consultations

A request has been submitted to the Contaminated Land Officer at Knowsley Council for information pertaining to the site. The full response is available in Appendix 6, however the key points are summarised below:

- Knowsley Delph lies to the north of the study site. However, this is not present on post war maps following the development of the business park, suggesting that it has been infilled.
- The records Environmental Health hold for the area are largely limited to noise, waste, odour, smoke and nuisance. Our database does contain some service requests for fly-tipping, burning of trade waste, odour complaints and drainage complaints in the area. However, the majority of these service requests are one off events, unlikely to give rise to significant environmental concern.
- The site itself has been prioritised as a medium risk due to historic maps identifying the building as 'works'.

An environmental search has been conducted through Groundsure, which accesses British Geological Survey and Environment Agency databases. The complete Groundsure Report can be found in Appendix 5, a summary of the more relevant points is presented in the table below.

Record	<250m	250 – 500m	Description
Authorised Processes	0	1	Processes involving use of inorganic chemicals 261m north east of the site
Pollution Incidents	2	4	Nearest recorded incident 31m east involving pollution from sewage. The impact on water was recorded as minor
Landfill and Waste Treatment	0	0	-
Discharge Consents	0	2	Cooling water discharge consent 452m east of the site at Merseyside Polymer Processing Ltd - Revoked in 2013.
Petrol Filling Stations	0	0	-
Current industrial Uses	31	-	Chimney 24m south. Rubber, Silicones and Plastics Industrial products 31m north. Precision Engineers 33m north. Electricity Substation 62m north.

3.6 Radon

Map 13 'Northern Welsh Marches and Liverpool' from BRE 211 and HPA were examined which defines areas requiring radon protective measures. The probability is less than 1% and Nexus is not an area requiring radon precautions in foundations in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2015 Edition.



The radon data in the Groundsure report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland, it confirms that the maximum radon potential is <1%. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supersede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. A site specific assessment should be carried out through UK Radon or BGS.

3.7 Coal Authority Consultation

The site is outside the area of a designated coalfield, the Law Society and Coal Authority state a mining search is not required.

Additional Mineral Workings/Extractions

Knowsley Delph was located c.25m north of the site which was an historic Quarry.

4.0 LAND QUALITY CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

4.1 Introduction

The potential level of risk posed by contaminants in soil and/or groundwater will be influenced by the type and concentration of the contamination at source, the likelihood of exposure occurring, the potential pollution linkages and the likely chronic or acute effects on the receptors.

A contaminant is defined as a substance that has the potential to cause harm, a risk is considered to exist if such a substance is present at sufficient concentrations to cause harm and if a pathway is present a receptor could be exposed to the contaminant.

Section 4.0 compiles the information from the previous sections to assemble a Conceptual Site Model to inform the risk assessment process. The potential sources identified on the site and off the site that are within influencing distance are assessed to determine if pollution linkages exist and an unacceptable risk is posed to human health and controlled waters. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model, the potential pollution linkages are displayed on 19047 03_1.1 - Illustrative Preliminary CSM.

Three potential types of impacts exist for a site and all three need to be considered in the qualitative preliminary risk assessment:

- Impacts from sources on the subject site.
- Impacts to the surrounding area from the subject site.
- Impacts to the subject site from the surrounding area.

4.2 Potential Contamination Sources

On-Site Sources and Associated Contaminants

From the information obtained during the Preliminary Environmental Risk Assessment, potential sources of contamination exist which may affect the redevelopment of the site for commercial end use.

Made ground is indicated to be present beneath the southern portion of the site associated with construction of the Nexus Industrial development. Potential contaminants may include metals, PAHs, asbestos and permanent ground gas. The area has historically formed part of fields used for farming. Although unlikely, potential contaminants associated with agricultural use may include fertilisers, pesticides and herbicides.

Off-Site Sources and Associated Contaminants

A number of possible off-site sources of contamination have been identified through the consultations and include the following:

- Former Quarry known as Knowsley Delph which may have been infilled 25m north (permanent ground gases depending on the nature of any fill material).
- Former ponds 80m south (permanent ground gases depending if they have been backfilled).
- Nexus Industrial including above ground tanks (metals, asbestos, organic compounds including hydrocarbons).
- Knowsley Industrial Estate including above ground tanks, chimneys and electrical substations (metals, asbestos, PolyChlorinated Biphenyls (PCBs) organic compounds including hydrocarbons).

4.3 Pollution Linkages

The definition of a pollution linkage is a medium which allows a contaminant to impact a receptor. Potential pollution linkages have been recognised for the commercial development from the identified contamination sources that exist.

At this stage, the potential contaminants identified above are considered to pose an unacceptable risk human health and controlled waters through the following pollution linkages:

- Direct soil and dust ingestion.
- Dermal contact with soil both indoors and outdoors.
- Indoor air inhalation from soil and vapour.
- Outdoor inhalation of soil and vapour.
- Migration and accumulation of ground gas into internal spaces.
- Impaction of groundwater from soil contamination (diffuse and point).
- Impaction of groundwater from groundwater plume.
- Migration of soil and groundwater contamination impacting surface waters.

4.4 Receptors

Receptors generally fall into the categories of human health or controlled waters within the river basin system. The recognised receptors are listed below:

- Site end users.
- Clean potable water supply pipe.
- Secondary A Aquifer within the superficial deposits.
- Principal Aquifer within the bedrock.
- Knowsley Brook.

4.5 Preliminary Conceptual Site Model (CSM)

The factual information obtained from the searches and summarised in Section 2.0 and 3.0 has been used to compile a Preliminary CSM. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in Appendix 6.

Human Health Pollution Linkage Assessment

PL	POTENTIAL SOURCE	POLLUTION LINKAGE	LIKELIHOOD	SEVERITY	LEVEL OF RISK	RATIONALE
PL1	Contaminated Soils	Ingestion of soil and dust Dermal contact with soil	Unlikely	Medium	Low	Artificial ground is indicated to be present beneath the southern half of the site, the northern boundary of the area appears to have been cut in forming an embankment up to the B5194, therefore the artificial ground is likely related to a cut and fill balance excavation to generate a level platform for Nexus Industrial and will consist of reworked natural soils. A mound was identified on the north western corner by the site reconnaissance and is also likely to be associated with construction of the Nexus Industrial, and may also be reworked natural soils. The majority of the area appears to have never been developed so significant contamination is not anticipated. The proposed development is predominantly hardsurfacing with an area of soft landscaping along the northern boundary. Therefore, no realistic pollution linkage exists and the risk is considered to be Low. The composition of the artificial/made ground should be determined to implement any requirements for the soft landscaping area. The area is surrounded by the Knowsley Industrial Estate and the Nexus Industrial building - features include above ground tanks, chimneys and electrical substations. The risk from potential off-site sources is considered to be Low as the surrounding areas are generally covered with hardsurfacing or buildings which will have prevented impaction of the underlying soils and therefore contamination would not migrate and remain localised.
PL2	Contaminated Soils	Inhalation of vapour	Unlikely	Medium to Severe	Low	No sources of volatile contamination have been identified by the consultations, the risk is considered to be Low. Numerous above ground tanks exist in the surrounding area and may have been used to store organic compounds, significant impaction of the soils is unlikely and the sources are at sufficient distance not to impact the subject site.

PL	POTENTIAL SOURCE	POLLUTION LINKAGE	LIKELIHOOD	SEVERITY	LEVEL OF RISK	RATIONALE
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users	Unlikely	Medium	Low	Significant contamination is not anticipated to be present beneath the site and it is to be developed with similar commercial units to the Nexus Industrial building and the Knowsley Industrial Estate. Therefore, the risk is considered to pose a Low risk.
PL4	Contaminated Soils	Attacking potable water supply pipe	Unlikely	Medium	Low	Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site users of the tainted water supply. Given that the majority of the site appears to have been undeveloped the risk is considered to be Low . A UU Risk Assessment should be undertaken to confirm the level of protection required.
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces	Likely	Medium to Severe	Moderate to High	A significant source of potential ground gas has been identified in close proximity to the site in the form of Knowsley Delph c.25m north. It is possible that the former quarry/pond has been infilled. Depending on the nature of the fill material it may be a significant source of permanent ground gas. Superficial deposits consisting of sand are indicated to underlie the site so ground gas migration to the site is feasible. The risk is considered to be moderate to high. Various historic ponds were identified in close proximity to the site, they are likely to have dried out when development of the surrounding area occurred and if they were backfilled the gas source is small and likely to have already exhausted.

Controlled Waters Pollution Linkage Assessment

PL	POTENTIAL SOURCE	POLLUTION LINKAGE	LIKELIHOOD	SEVERITY	LEVEL OF RISK	RATIONALE
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	No significant sources of contamination have been identified during the consultations. Artificial ground is recorded on the southern extent of the site, however it is likely to be reworked natural soils. The proposed development will also be largely covered with hardsurfacing and the installation of a new drainage system will prevent infiltration and subsequently potential leaching. The Chester Pebble Beds are a Principal Aquifer and both areas are in a SPZ which is related to a groundwater abstraction c.534m north of the site. The risk to groundwater is considered to be Low due to no source of contamination being identified.
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium to Severe	Low	Pollution Linkage 7 refers to the impaction of the Knowsley Brook 101m to the north from contaminated soils and groundwater. Significant contamination is not anticipated beneath the site and the risk to surface waters is considered to be Low.

5.0 GROUND ENGINEERING RECOMENDATIONS AND POTENTIAL LIMITATIONS

5.1 Preliminary Foundation Assessment

Artificial ground is recorded beneath the south of the site. The site is indicated to be underlain by superficial sand deposits. No superficial deposits are indicated in the northern half of the site. Bedrock is likely to exist at relatively shallow depths.

The proposed development consist of a commercial unit with associated car parks and service yard.

Traditional pad and/or strip foundations are likely to be appropriate for the proposed development. Foundations will need to be taken through all made ground to found on adequate natural deposits. The above preliminary foundation recommendations are based on desk-based information and should be confirmed by a Ground Investigation in accordance with current guidance.

5.2 Additional Limitations

SuDS drainage may be a feasible option as it is anticipated that the site will be underlain by permeable granular sand deposits or sandstone bedrock.

The site is not located in an area affected by historic coal mining legacy.

No invasive species were observed during the site reconnaissance. Clearance of vegetation is required as part of the enabling works.

Small embankments exist along the boundary with the B5194 and Gellings Road along the eastern and north eastern extents of the site, this should be considered as part of the development layout.

6.0 CONCLUSIONS AND GROUND INVESTIGATION SCOPE RATIONALE

6.1 Land Quality

The site formed part of fields until the surrounding areas were developed with highways and industrial units between 1974 and 1978 reducing the site to a small undeveloped vegetated area. No significant changes have occurred since and the site has never been developed. Evidence suggests a cut and fill balance excavation has taken place on the site.

The site is to have a continued commercial use predominantly covered with hardsurfacing and the risk to human health is considered to be low.

The superficial deposits are classified as Secondary A Aquifer and the bedrock is classified as a Principal Aquifer. Significant contamination is not anticipated to be present on the site due to no previous development. The risk to controlled waters is considered to be low.

Significant sources of potential ground gas have been identified as the infilled former quarry/ pond c.25m north of the site, therefore the risk is considered to be moderate to high and further investigation is required.

6.2 Ground Engineering

Traditional pad and/or strip foundations within the underlying superficial sands or shallow bedrock are likely to be a suitable option for the proposed development, depending on the construction of the buildings.

SuDS drainage may be a feasible option as it is anticipated that the site will be underlain by permeable granular sand deposits or sandstone bedrock.

6.3 Additional Considerations

The site is not affected by historic coal mining legacy.

Small embankments exist along the boundary with the B5194 and Gellings Road along the eastern and north eastern extents of the site, this should be considered as part of the development layout.

6.4 Recommended Ground Investigation Scope of Investigation

Based on the information in this report, we consider a main investigation is required in accordance with BS 10175:2013 and BS 22475. The following scope of works is recommended based on the Preliminary CSM compiled, additional works may be required as the result of planning conditions for the proposed development:

Method of Investigation	G / E
10 No. windowless sample boreholes to 4.0m bgl.	G/E
Soil percolation testing in accordance with BRE 365.	G
Shallow gas monitoring installations to confirm the ground gas regime.	E
Geo-Environmental testing comprising metals, PAHs and asbestos.	E
Geotechnical testing comprising classification and aggressivity.	G
Groundwater and gas monitoring.	E

Note Environmental (E) / Geotechnical (G)

APPENDIX 1 - Plans



 GROUNDTECH CONSULTING	CLIENT	DATE				Status		Notes  The Site
	TILSTONE INDUSTRIAL	MARCH 2019				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	NEXUS INDUSTRIAL, KNOWSLEY	NTS				Issued		
	PLAN TITLE	PLAN NUMBER				For Comment		
	PROJECT LOCATION PLAN	19047 01	Rev.	Details	Date	Approved		

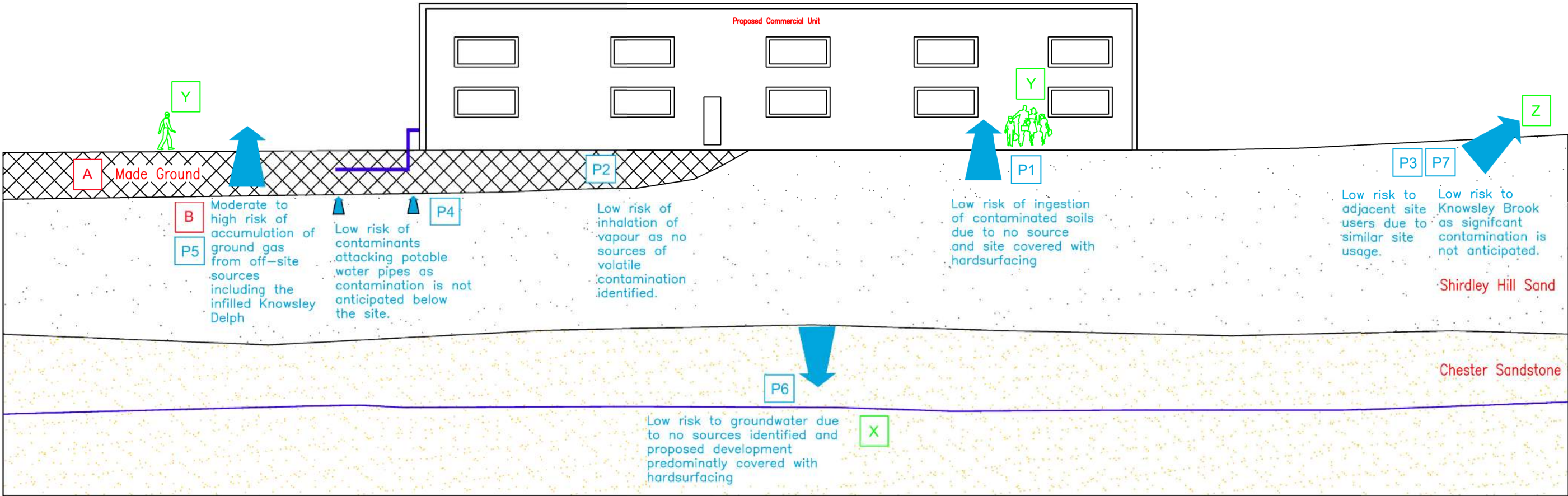


	CLIENT	DATE			Status		Notes
	TILSTONE INDUSTRIAL	MARCH 2019			Preliminary		
	PROJECT TITLE	SCALE			Draft		
	NEXUS INDUSTRIAL, KNOWSLEY	NTS			Issued	●	
	PLAN TITLE	PLAN NUMBER			For Comment		
	PRELIMINARY DEVELOPMENT CONSTRAINTS PLAN	19047 02_1.1	Rev.	Details	Date	Approved	

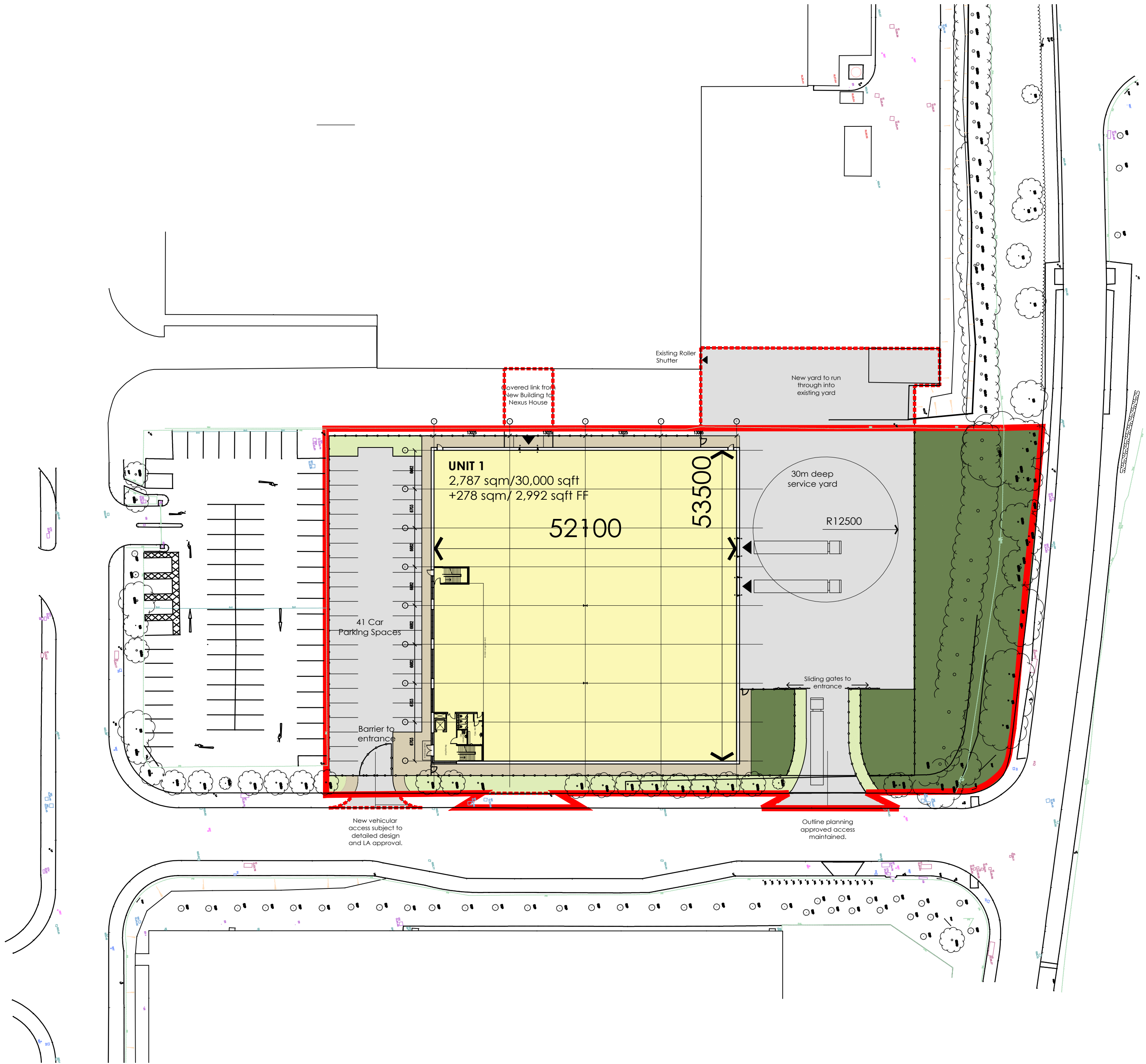
SOURCES
A. Contaminated soils / Made ground. B. Ground gas.

POLLUTION LINKAGES
P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.

RECEPTORS
Y. Site end users X. Groundwater within the Secondary and Principal Aquifer. Z. Adjacent site users.



	CLIENT	DATE				Status	Notes
	TILSTONE INDUSTRIAL	05 MARCH 2019				Preliminary	
	PROJECT TITLE	SCALE				Draft	
	NEXUS INDUSTRIAL, KNOWSLEY	NTS				Issued	
	PLAN TITLE	PLAN NUMBER				For Comment	
	ILLUSTRATIVE PRELIMINARY CSM	19047 03_1.1	Rev.	Details	Date	Approved	



General Notes

All site dimensions shall be verified by the Contractor on site prior to commencing any works.

Do not scale from this drawing.

Only work to written dimensions.

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- Proposed fence line
- Outline planning boundary
- Extent of proposed works

Revision

Scale 1:500@A2
Status SK
Drawn by JB
Date 26.05.21
Client

TILSTONE MANAGING WAREHOUSE
REIT PLC
Project
Gellings Road, Knowsley

Drawing Description
Tuffx Site Plan Option 2 - Proposed Site
Boundary

Drawing No. 19008_SK10 Rev.

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APPENDIX 2 – Site Photographs



Site viewed from Gellings Road.



View of mound in the north western corner.



Trees lining Gellings Road.



Thick vegetation on the northern extent of the site.



Banking along boundary with Gellings Road.



Vegetated banking along northern boundary of site.



Car park bounding the southern extent of the site.

APPENDIX 3 - Historical Maps

County Series 1:10,560 scale

VEGETATION



Fir Wood



Deciduous Wood



Mixed Wood



Brushwood



Orchard



Reeds



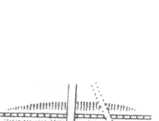
Rough Pasture



Furze



Marsh



Osiers

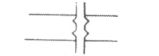
ROADS



Railway over Road



Road over Railway



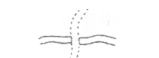
Road over River or Canal



Level Crossing



Railway over River



Road over Stream



Road over Stream



Sunken Road



Raised Road

RAILWAYS

Double Lines of Railway



Single Lines of Railway and Tramway

GENERAL FEATURES



Gravel Pit



Sand Pit



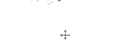
Quarry



Shingle



Other Pits



Antiquities, Site of



Arrow, showing direction of flow of water



Trigonometrical Station

BOUNDARIES

County Boundary

Parish Boundary

Contours

Parliamentary Division Boundary

Union Boundary

Rural District Boundary

National Grid 1:10,000 scale

HEIGHTS (METRES)

Values are given in metres above mean sea level at Newlyn.

Surface heights determined by ground survey + 163m
air survey + 16m

Bench marks and their values are shown on large scale maps, and bench mark lists containing fuller and possibly later levelling information are obtainable from the Director General, Ordnance Survey.

Contours are at 5 metres vertical interval.

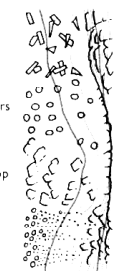
ROCK FEATURES

Loose rock

Boulders

Outcrop

Scree



CONVERSION SCALE

Metres - Feet

2000 Metres 6500 Feet

6000

5000

1500

4000

ABBREVIATIONS

BP,BS Boundary Post or Stone
Ch Church
CH Club House
F Sta Fire Station
FB Foot Bridge
Fn Fountain
GP Guide Post
MP,MS Mile Post or Stone
P Pole or Post
Pol Sta Police Station

PO Post Office
PC Public Convenience
PH Public House
S Stone
Spr Spring
TCB Telephone Call Box
TCP Telephone Call Post
TH Town Hall
W Well
Y Youth hostel

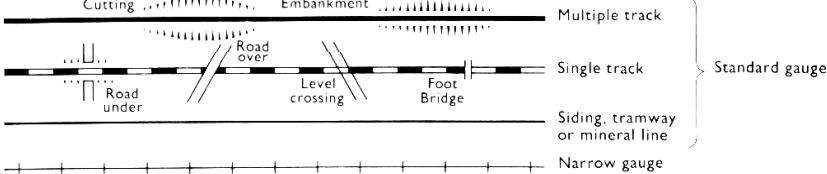
ROADS

Road

Track
Where unfenced shown by pecked lines.

Path

RAILWAYS



GENERAL FEATURES

Antiquity, (site of)

Boulders

Building

Pylon

Pole

Electricity transmission line

Glasshouse

Triangulation station

Lake, loch or pond

Sloping masonry

= Chalk pit, clay pit or quarry

= Gravel pit

= Sand pit

Refuse or slag heap

Direction of flow of water

Shingle

Sand

VEGETATION

Bracken, rough grassland

Scrub

Heath

Marsh

Saltings

Reeds

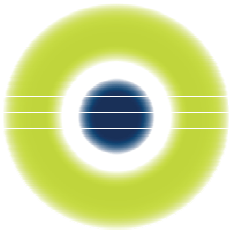
Coppice

Orchard

Coniferous trees

Non-coniferous trees

In some areas bracken () and rough grassland () are shown separately.



GroundSure

Historical Map Pack Legend

County Series & National Grid 1:10,560 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

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Technical Helpline

Tel 08444159000

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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1891-1892

Scale: 1:10,560

Printed at: 1:10,560



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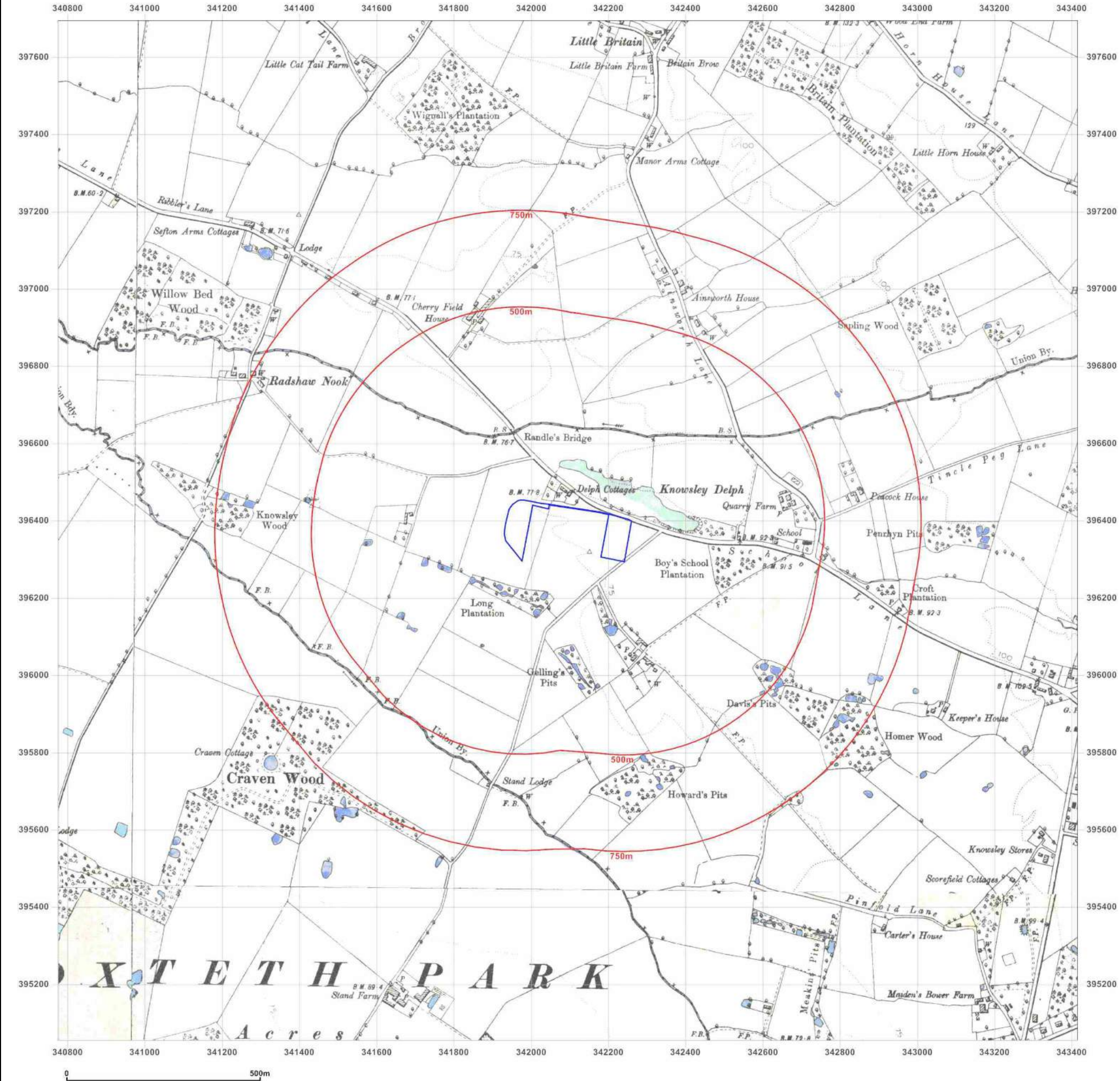


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Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1906-1907

Scale: 1:10,560

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Revised 1907
Edition N/A
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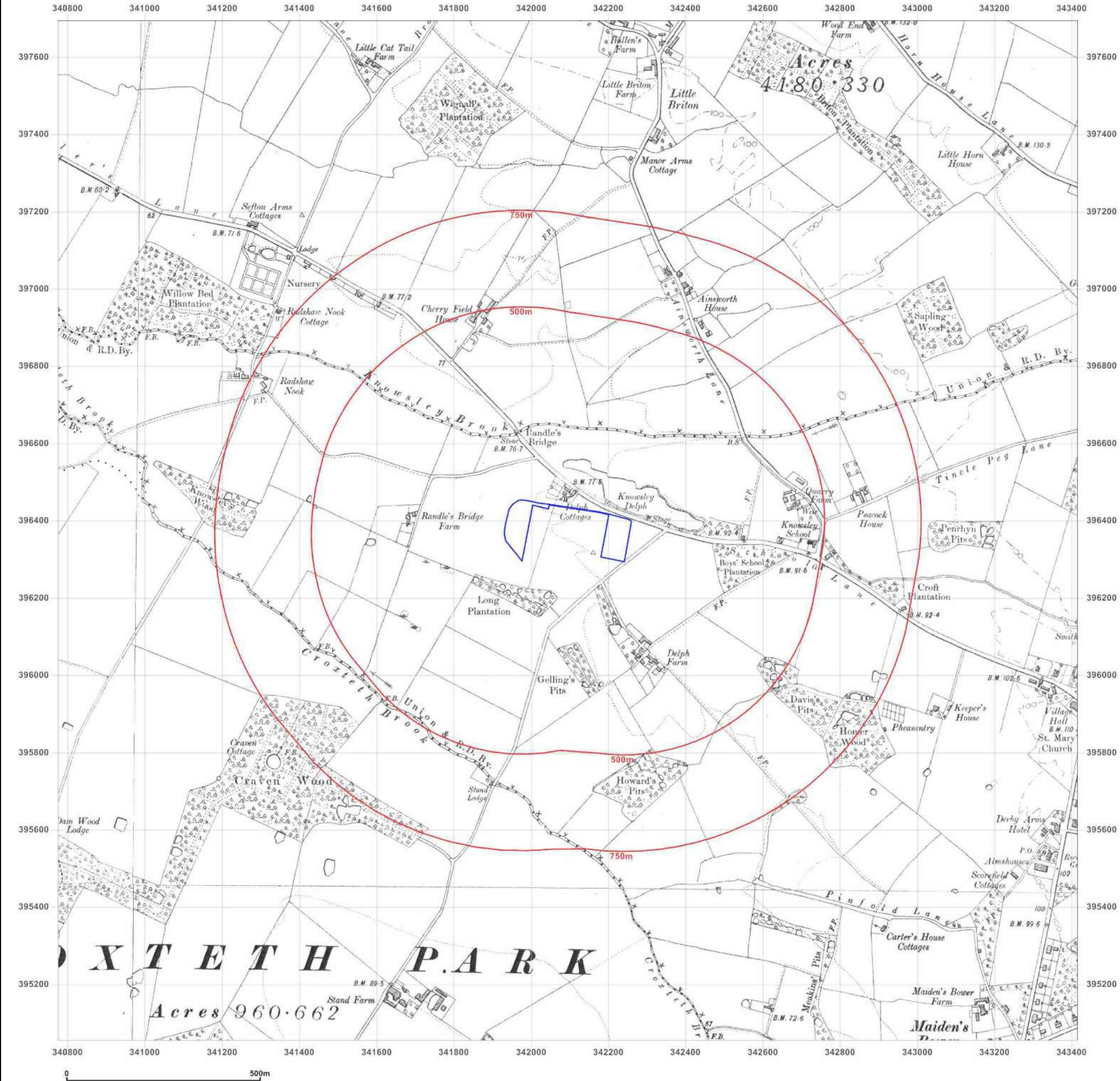


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Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1925

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1849
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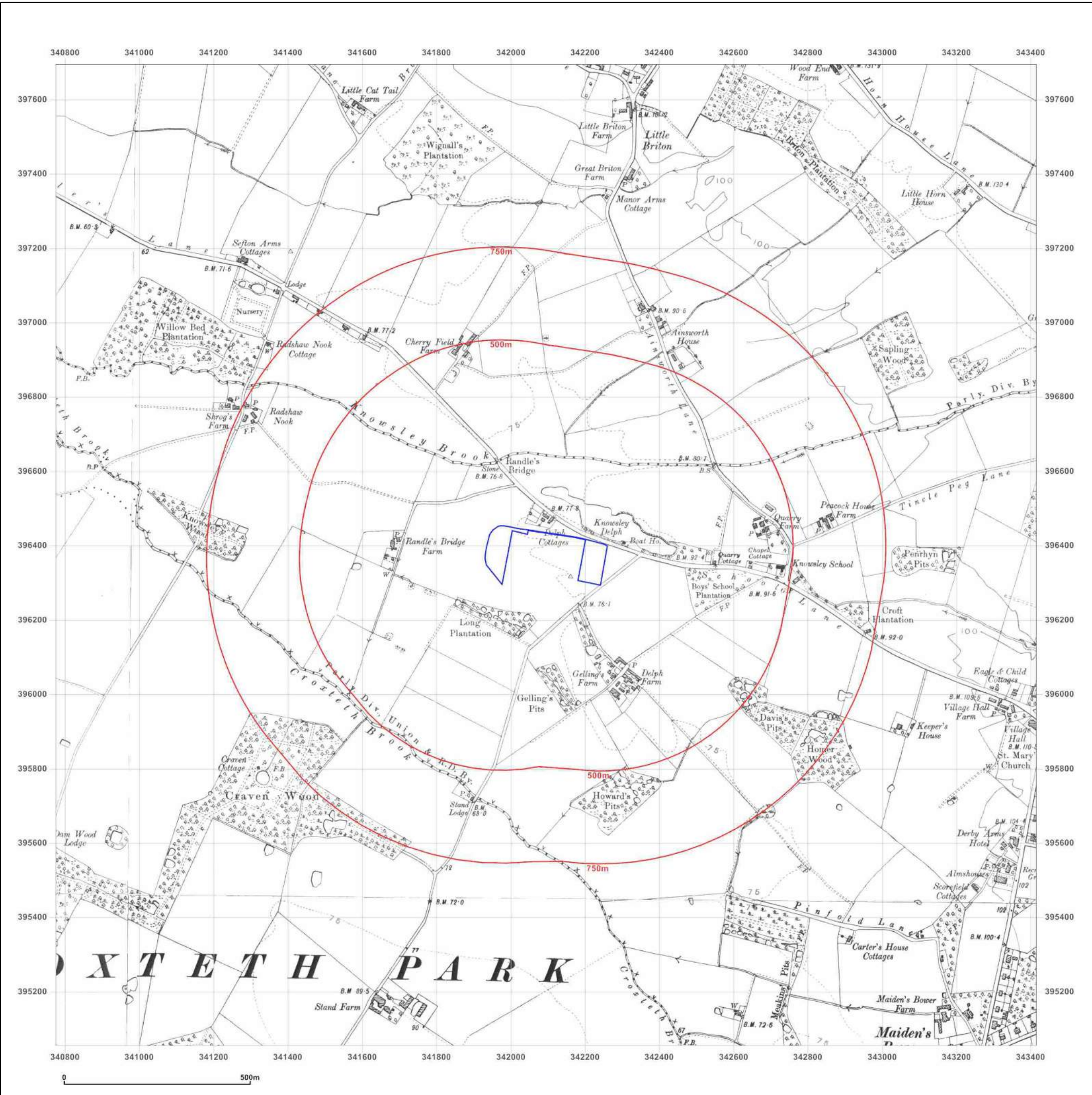


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Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1925

Scale: 1:10,560

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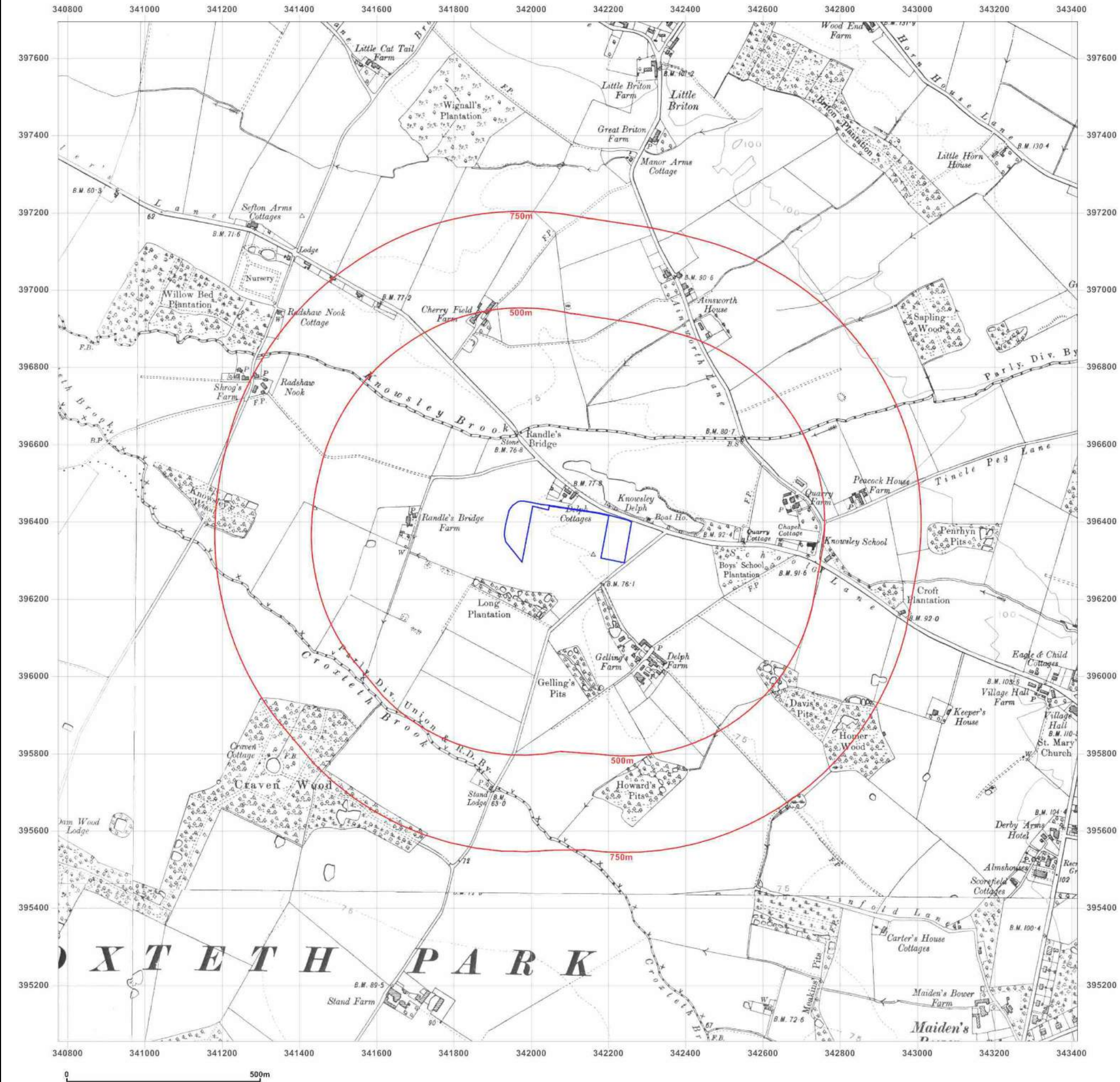


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1925

Scale: 1:10,560

Printed at: 1:10,560



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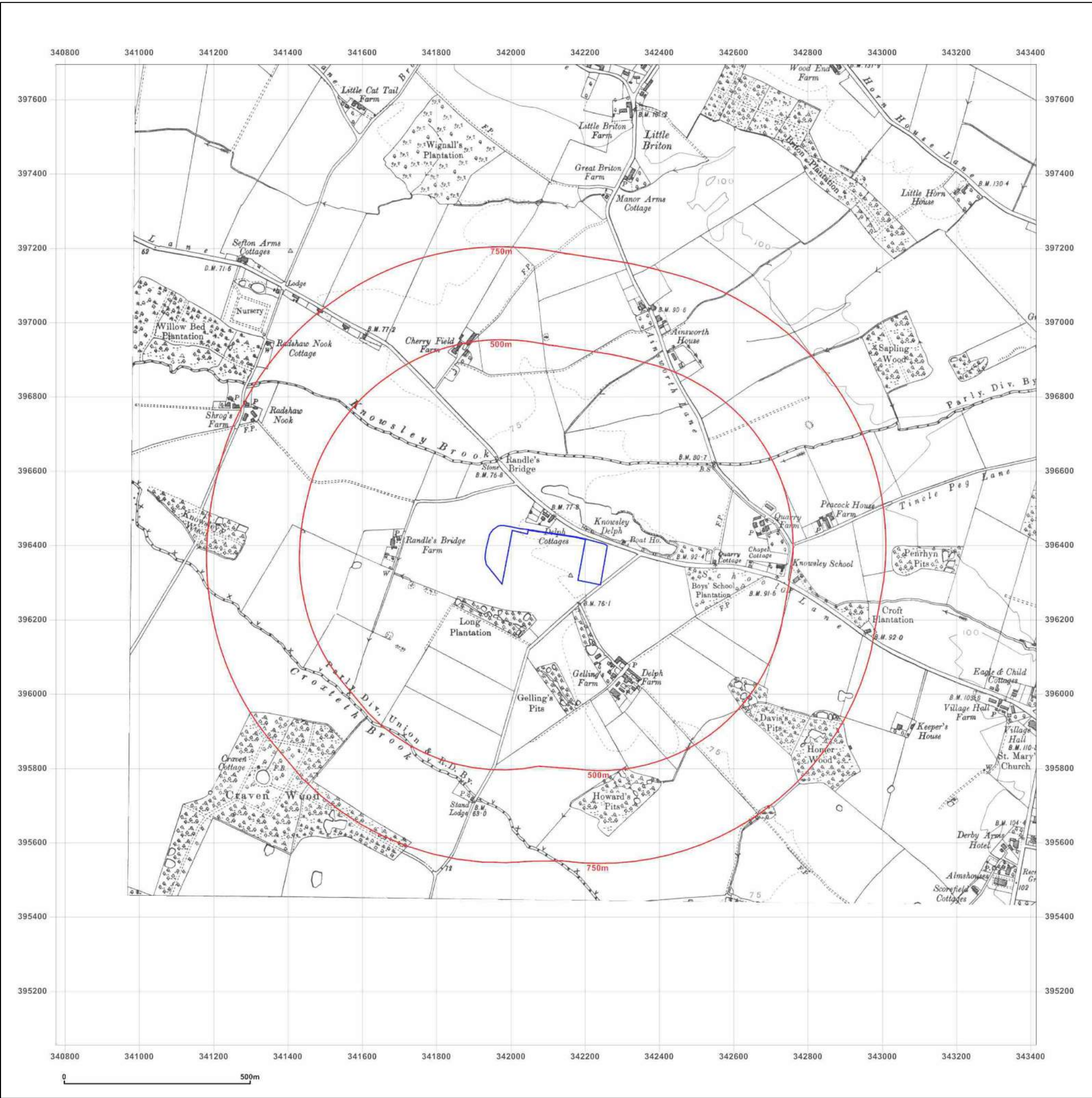


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1938

Scale: 1:10,560

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Edition N/A
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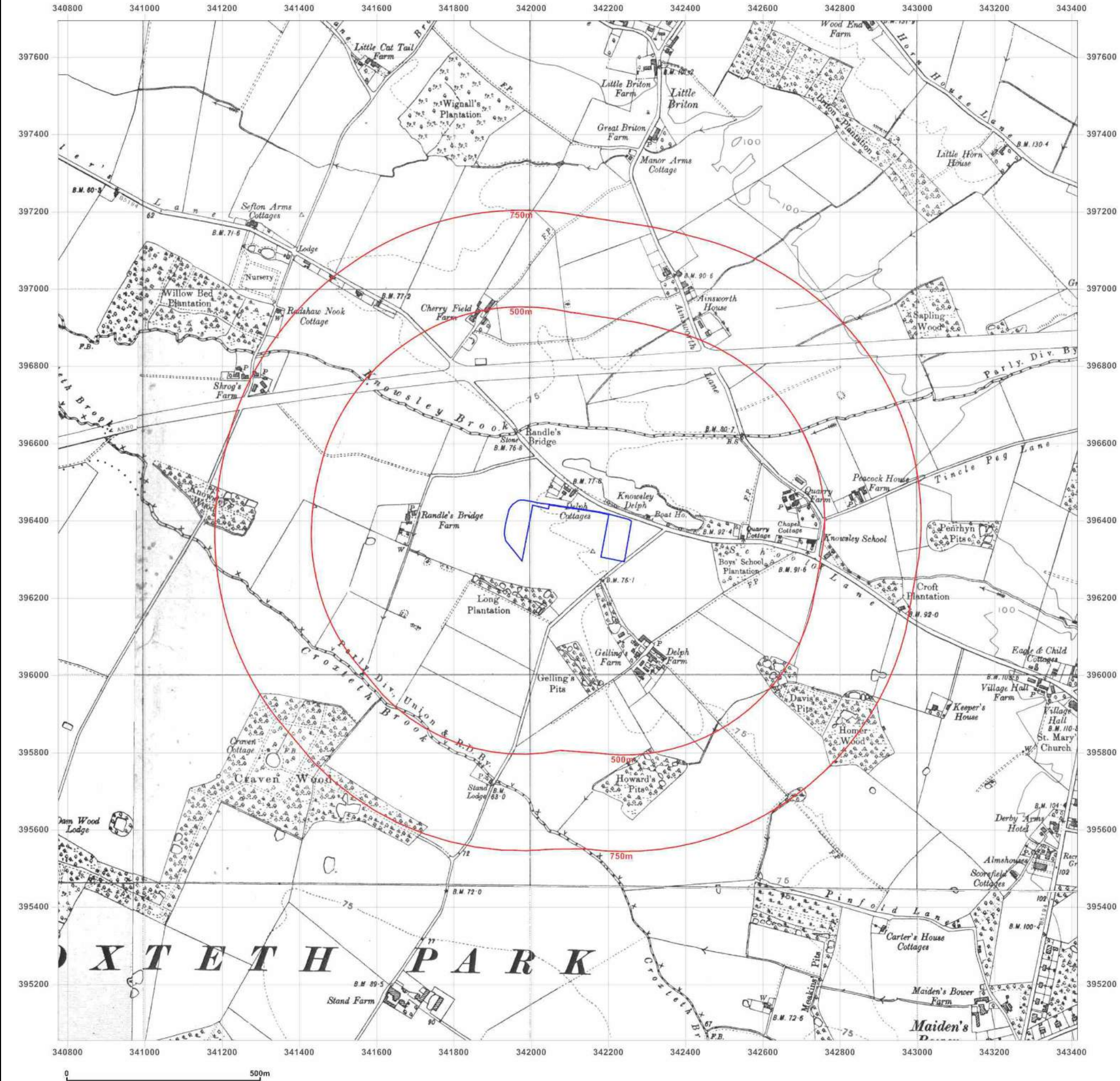


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1938

Scale: 1:10,560

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Edition N/A
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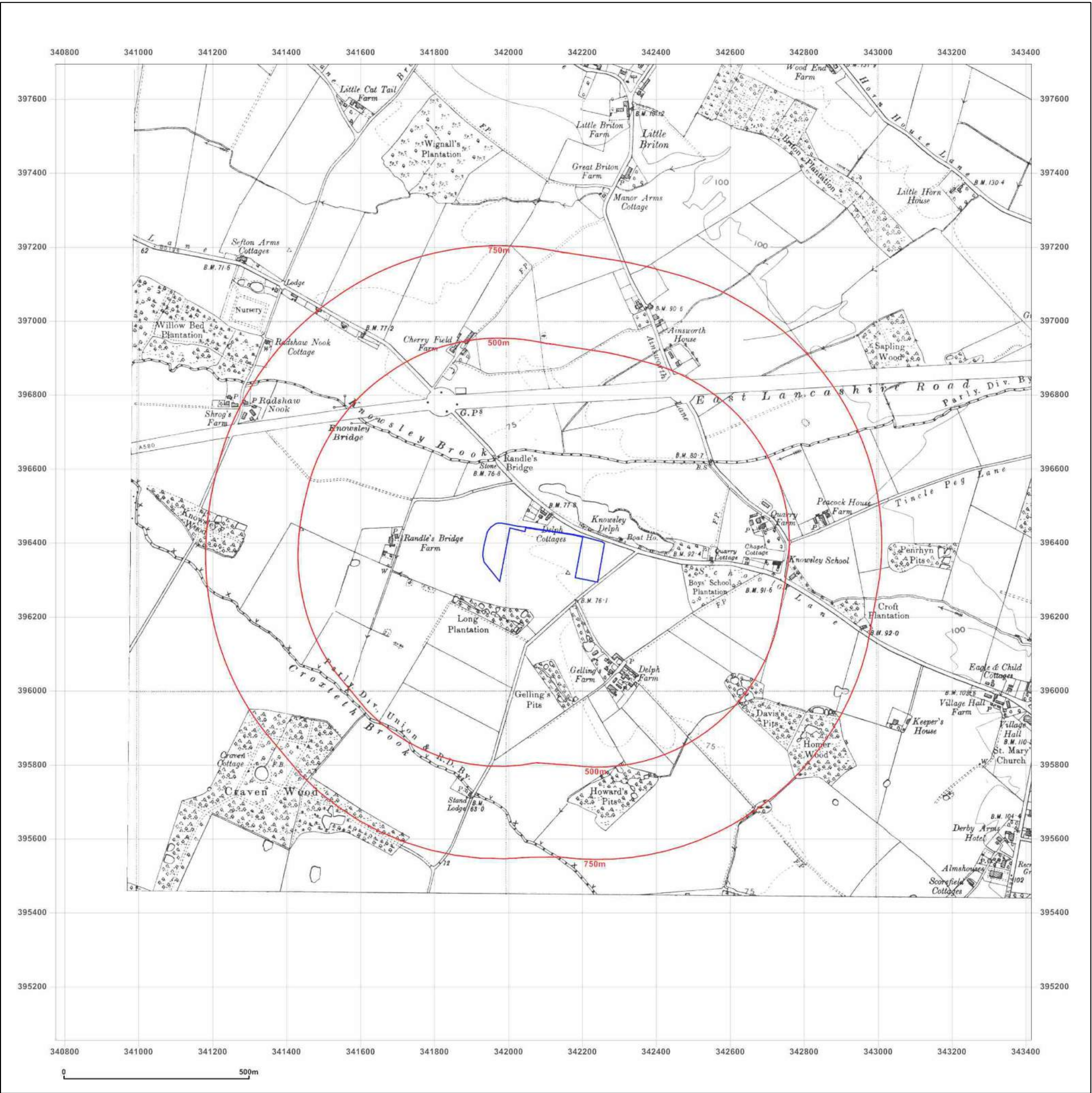


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: Provisional

Map date: 1956

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1955
Edition N/A
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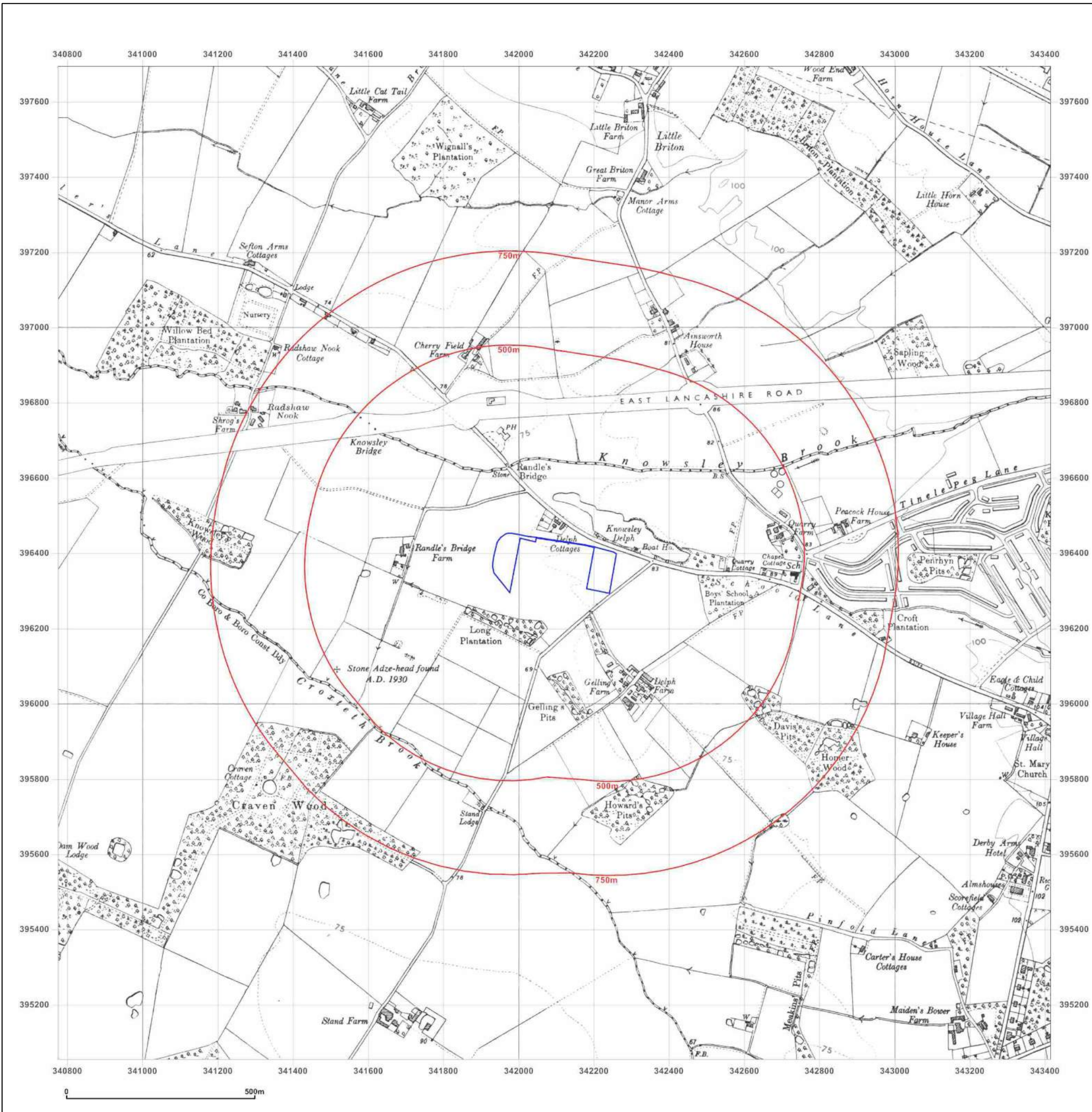


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: Provisional

Map date: 1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1966
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Edition N/A
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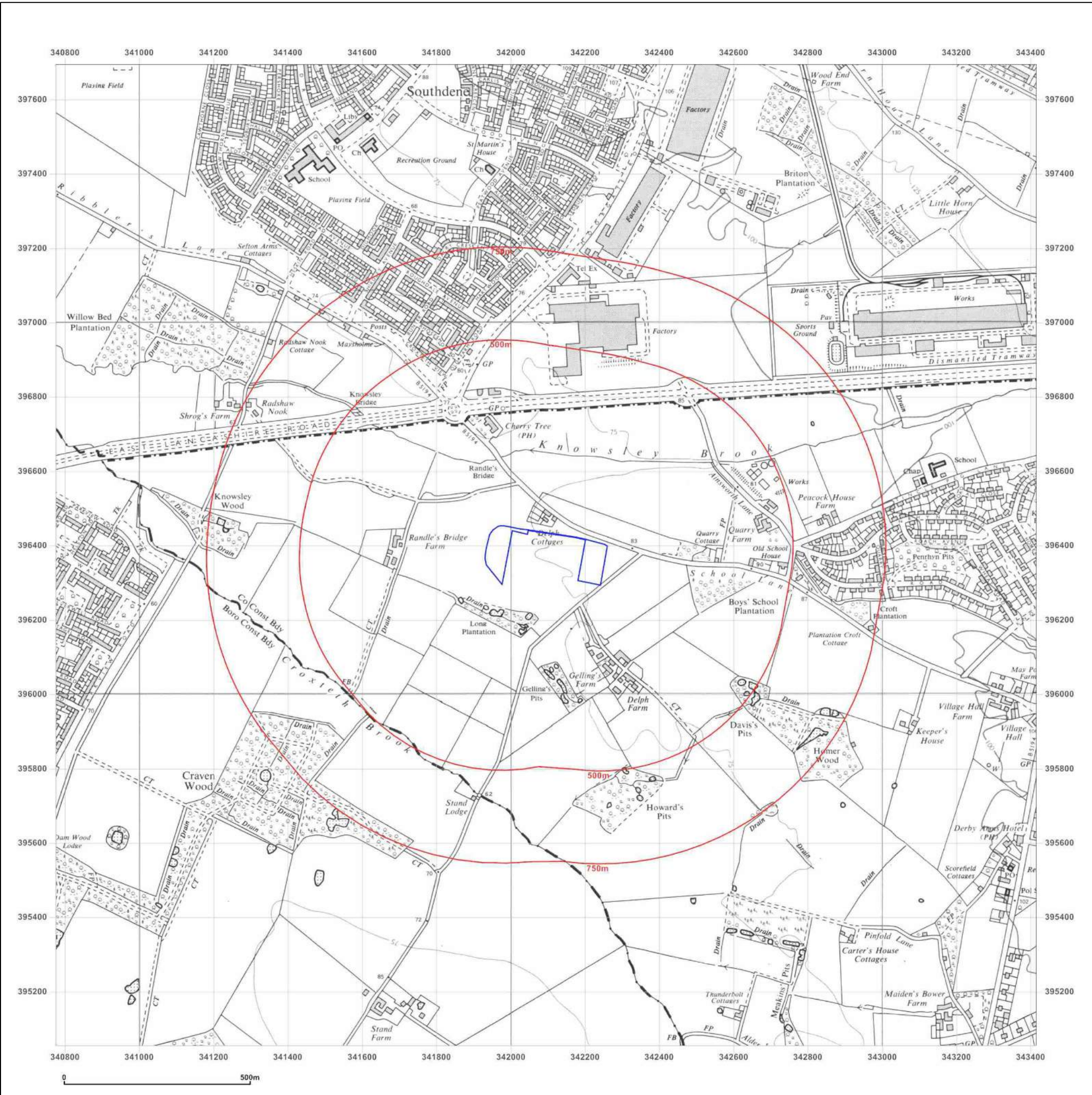


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1978

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1975
Revised 1977
Edition N/A
Copyright 1978
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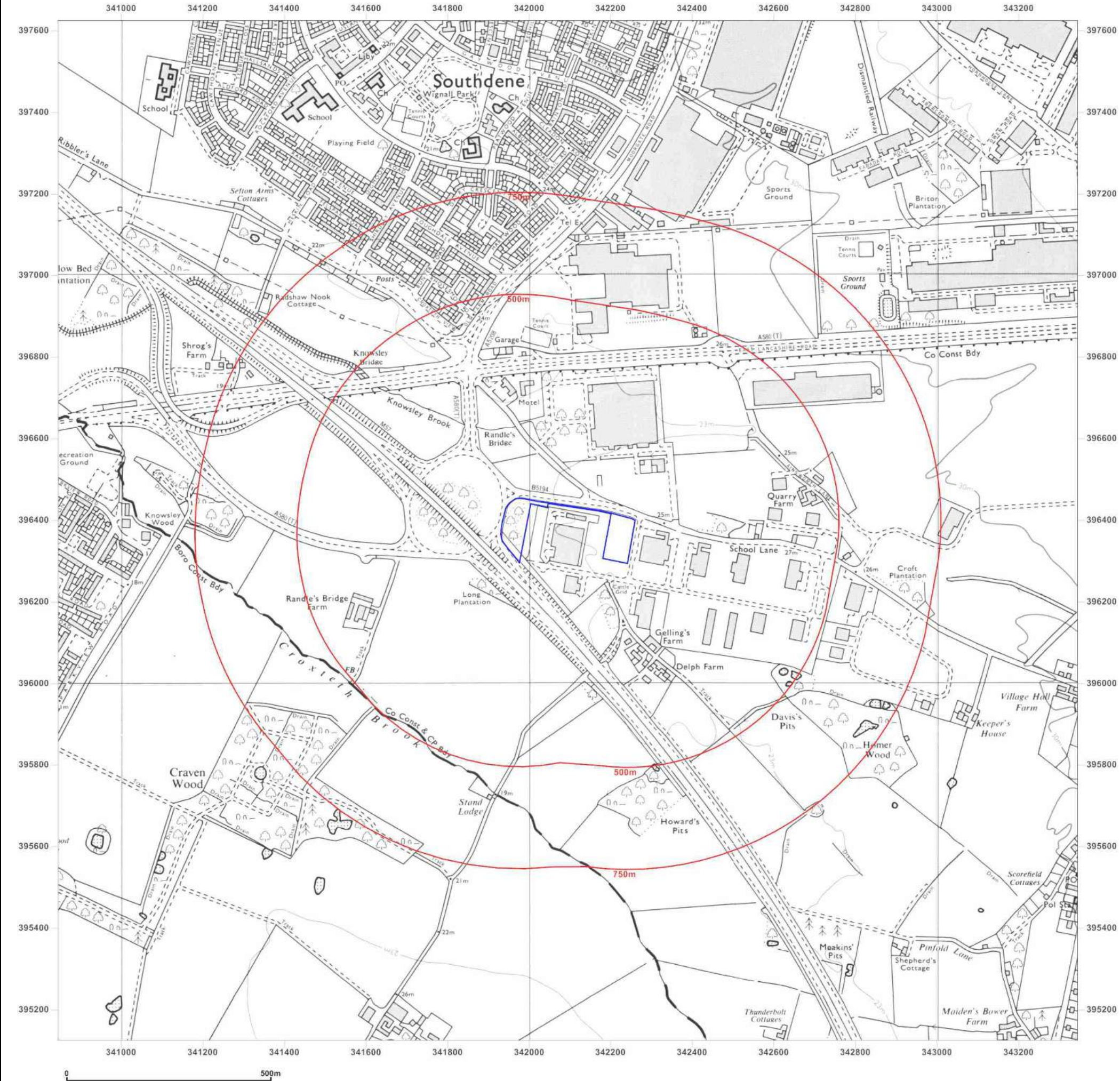


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Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1988

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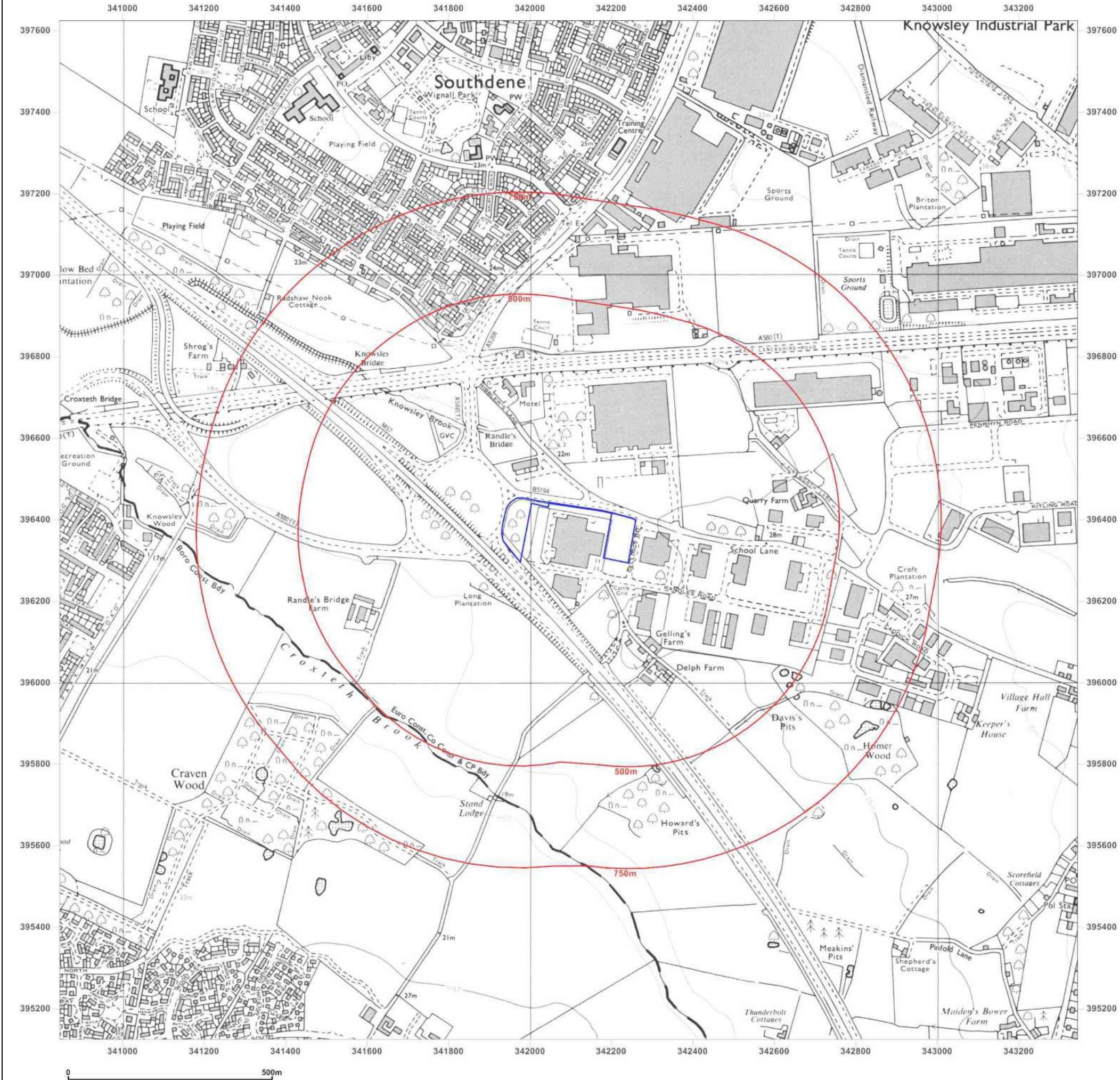


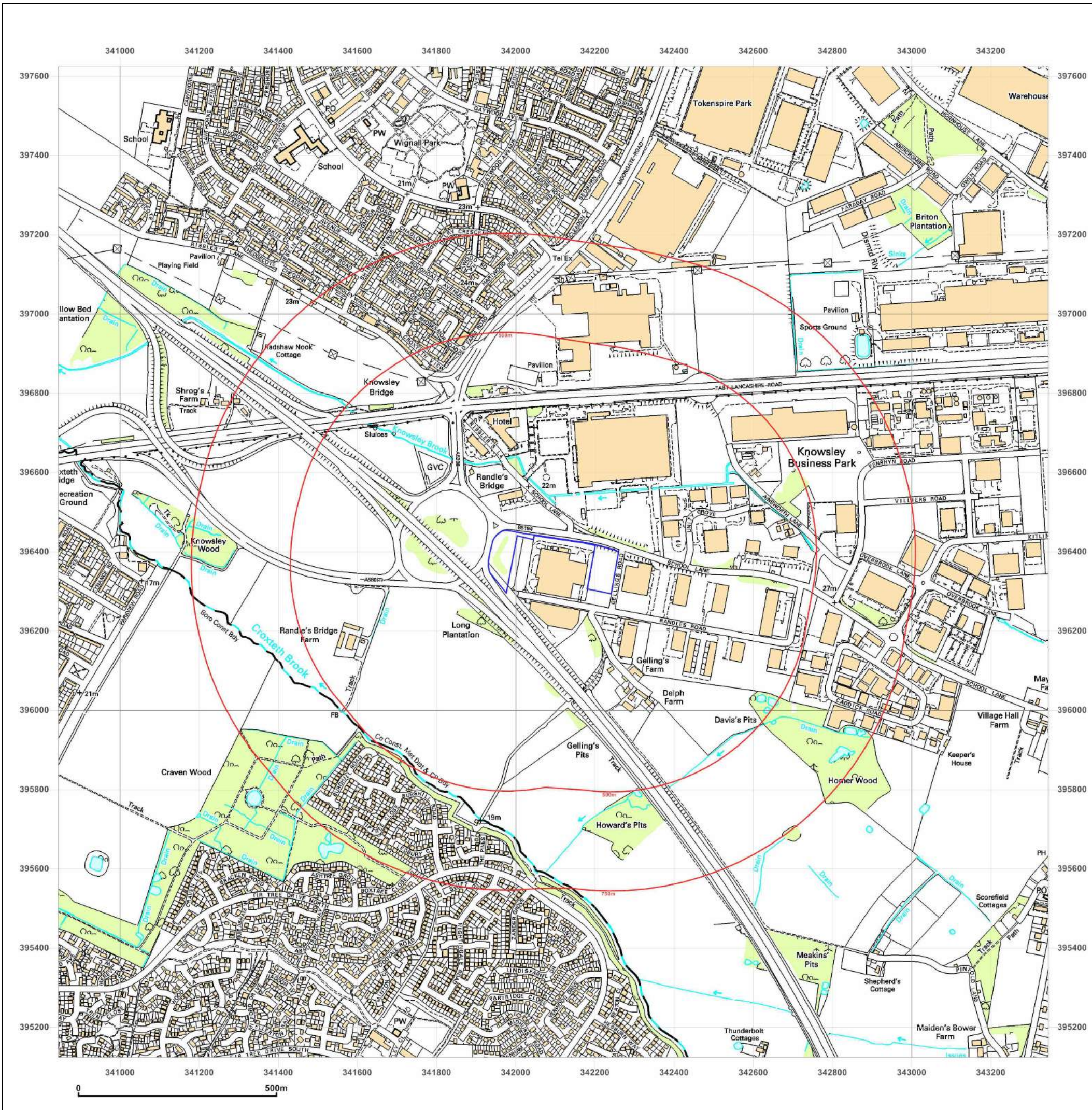
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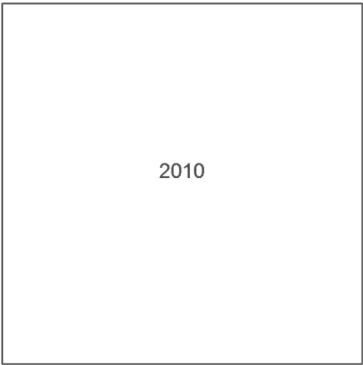
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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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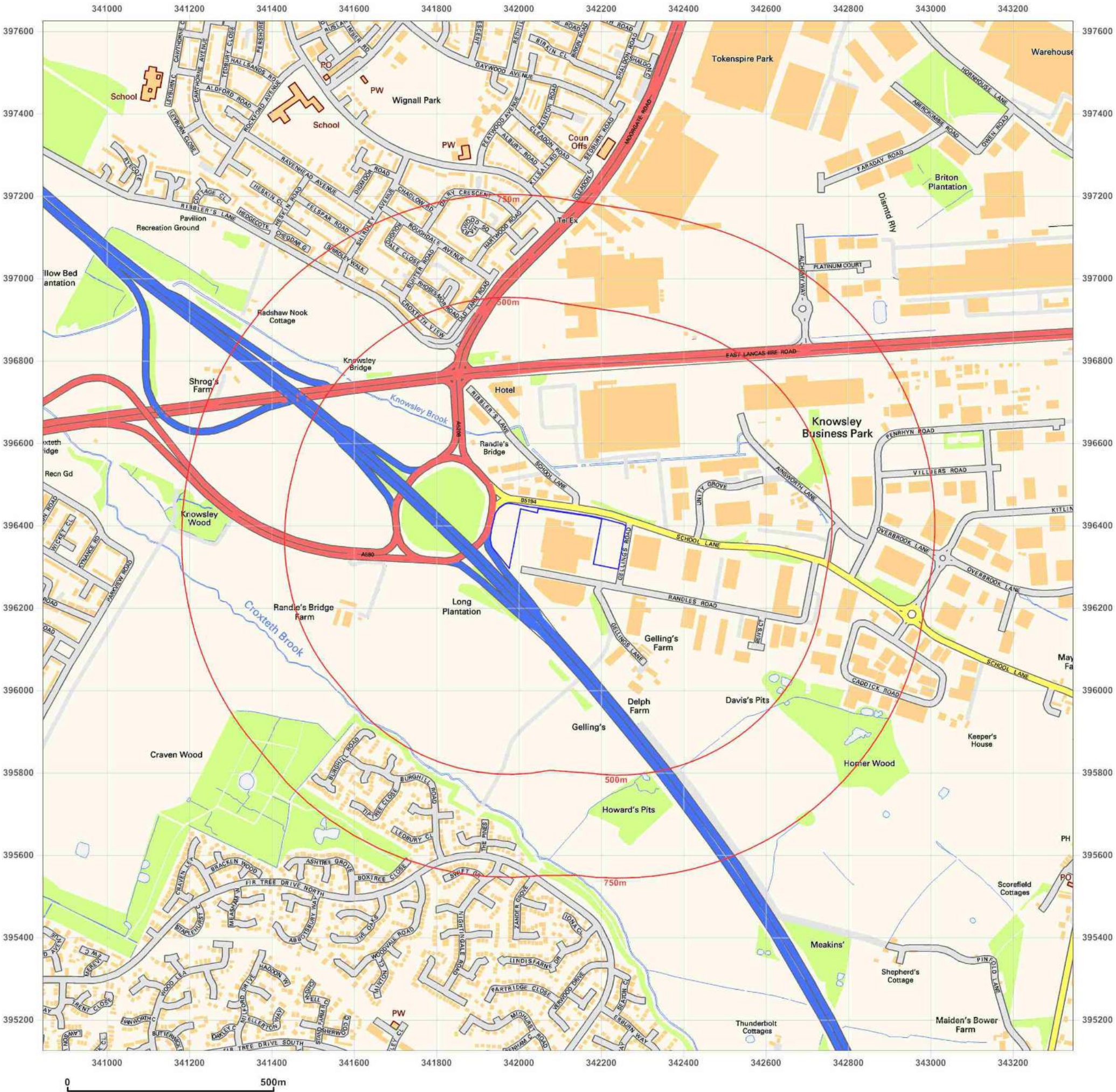


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



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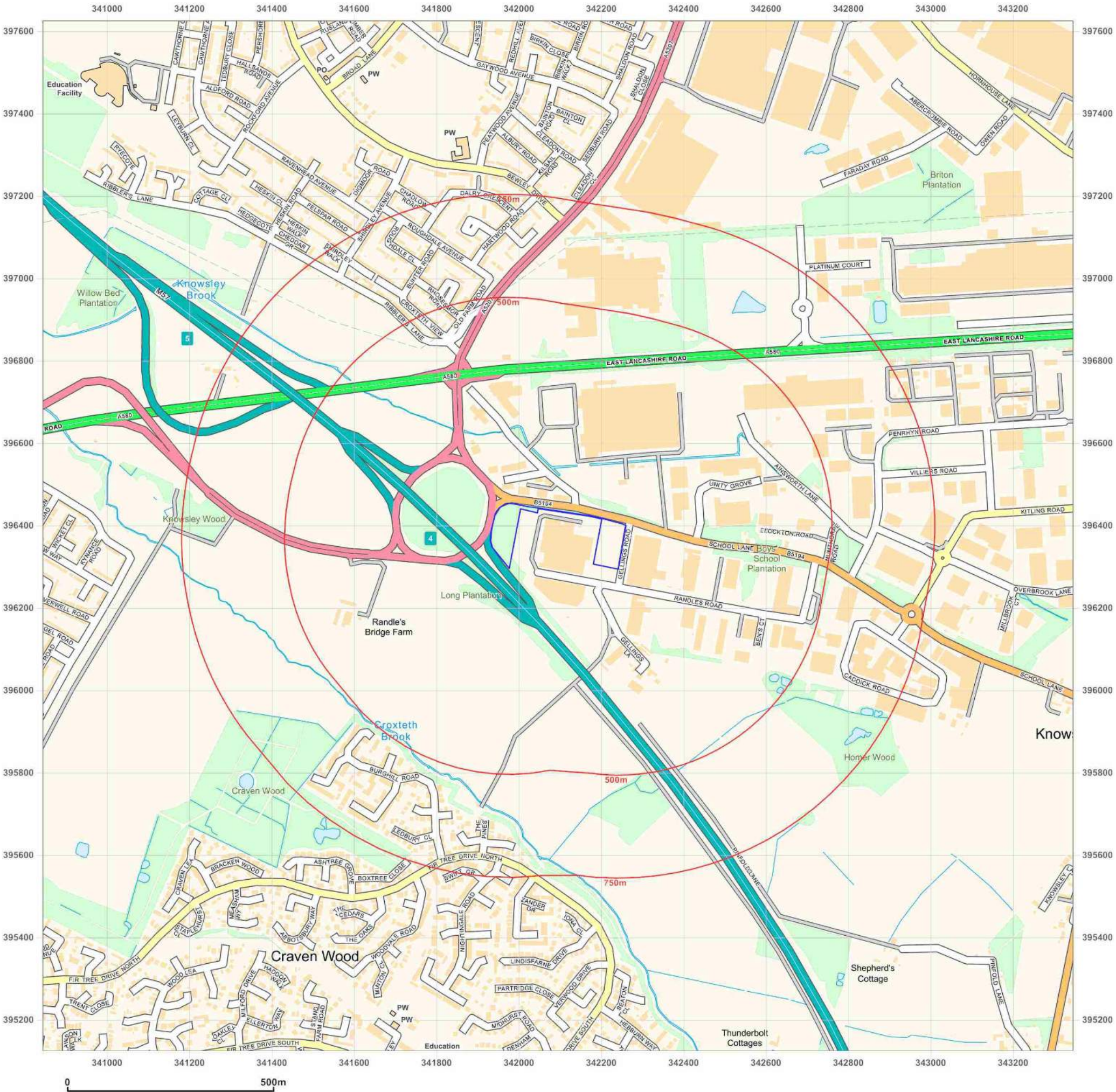


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County Series 1:2,500 scale

National Grid 1:2,500 / 1:1,250 scale



Historical Map Pack Legend

County Series
1:1,250 scale
~

County Series &
National Grid
1:2,500 scale

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GENERAL FEATURES	
	Wood
	Marsh
	Reeds
	Fir
	Mixed Wood
	Brush Wood
	Osiers
	Orchard
	Bush
	Rough Pasture
	Furze
	Ford
	Stepping Stones
	Ferry
	Sloping Masonry
	Flat Rock
	Lock
	Waterfall
	Quarry
	Sand Pit
	Refuse Heap
	Clay Pit
	Shingle
	Gravel Pit
	Trigonometrical Station
	Altitude at Trigonometrical Station
	Bench Mark
	Surface Level
	Permanent Traverse Station
	Antiquities (site of)
	Arrow denotes flow of water
	Sluice
	Trough
	Spring
	Well
	Mooring Ring
	Mooring Post
	Boundary Stone
	Boundary Post

ROADS	
	Road over single stream
	Road crossing railway
	Road over River or Canal
RAILWAYS	
	Railway crossing River or Canal
	Railway crossing Road
	Level Crossing
	Embankment
	Cutting

ABBREVIATIONS	
	Trigonometrical Station
	Altitude at Trigonometrical Station
	Bench Mark
	Surface Level
	Permanent Traverse Station
	Antiquities (site of)
	Arrow denotes flow of water
	Sluice
	Trough
	Spring
	Well
	Mooring Ring
	Mooring Post
	Boundary Stone
	Boundary Post

ABBREVIATIONS	
	Beer House
	Bench Mark
	Boundary Post
	Boundary Stone
	Crane
	Club House
	Chimney
	Capstan
	Drinking Fountain
	Dock
	Electricity Pillar or Post
	Electricity Transmission Line
	Fire Alarm
	Fire Alarm Pillar
	Filter Bed, Foot Bridge
	Fundamental Bench Mark
	Flagstaff
	Fire Station
	Guide Post
	Gas Valve Compound
	Hydrant or Hydraulic
	Hectares
	Lecter Box
	Lifeboat Station
	Level Crossing
	Loading Gauge
	Lighthouse
	Lighting Tower
	Metres
	Mean High Water
	Mean High Water Springs
	Mean Low Water
	Mean Low Water Springs
	Mile or Mooring Post
	Mail Pick-up
	Mile Stone
	National Trust
	Normal Tidal Limit
	National Trust for Scotland
	Pillar, Pole or Post
	Public Convenience
	Police Call Box
	Public House
	Post Office
	Pump
	Police Telephone Pillar
	Reservoir
	Road House
	Revision Point
	Stone
	Signal Box
	Signal Light
	Sluice
	Signal Post
	Spring
	Signal Station
	Telephone Call Box
	Telephone Call Post
	Tank or Track
	Trough
	Traverse Station
	Well
	Weighbridge
	Wind Pump
	Works
	Water Point
	Water Tap

GENERAL FEATURES	
	Non-coniferous Trees
	Coniferous Trees
	Surveyed Trees
	Orchard Trees
	Copple, Osier
	Scrub
	Bracken
	Heath
	Rough Grassland
	Marsh, Saltings
	Reeds
	Slopes
	Cliff
	Cave Entrance
	Rock
	Boulders
	Sloping Masonry
	Roofed Building
	Glasshouse
	Archway
	Change of boundary marking
	AREAS notes
	Antiquity (site of)
	Culvert
	Direction of water flow
	Electricity Pylon
	Electricity Transmission Line
	Triangulation Station
	Traverse Station (permanent)
	Bench Mark
	Surface Level
	Revision Point (instrumentally fixed)
	Revision Point & Bench Mark coincident
	Top
	Slopes
	Quarry
	Refuse Heap
	Sloping Masonry
	Flat Rock
	Sand
	Sand Pit
	Culvert
	Archway
	Shingle
	Boulders
	Gravel Pit
	Cliff Face
	Glazed Roof Building

BOUNDARIES	
England & Wales	
	County Boundary (geographical)
	County & Civil Parish Boundary coterminous
	Admin County or County Borough Boundary
	London Borough Boundary
	County District Boundaries based on civil parish
England, Wales & Scotland	
	Civil Parish Boundary
	Parly & Ward Boundaries based on civil parish
	Parly & Ward Boundaries not based on civil parish
Scotland	
	County Boundary (geographical)
	County Council Boundary
	County of the City Boundary
	Burgh Boundary
	District Council Boundary
	* Not with parish
	† Coincident with parish

Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1867

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1867
Revised 1867
Edition N/A
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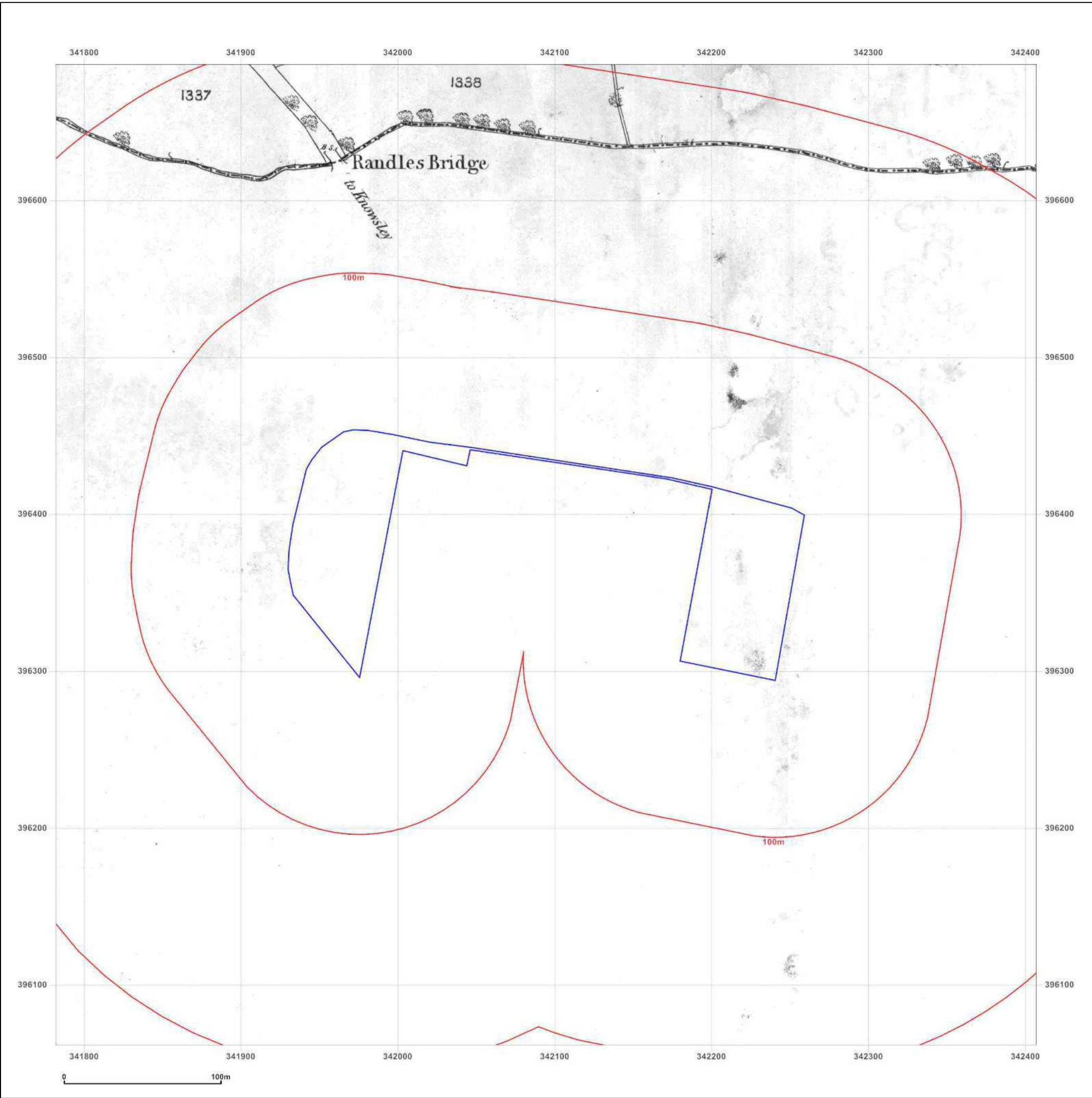


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1893

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1893
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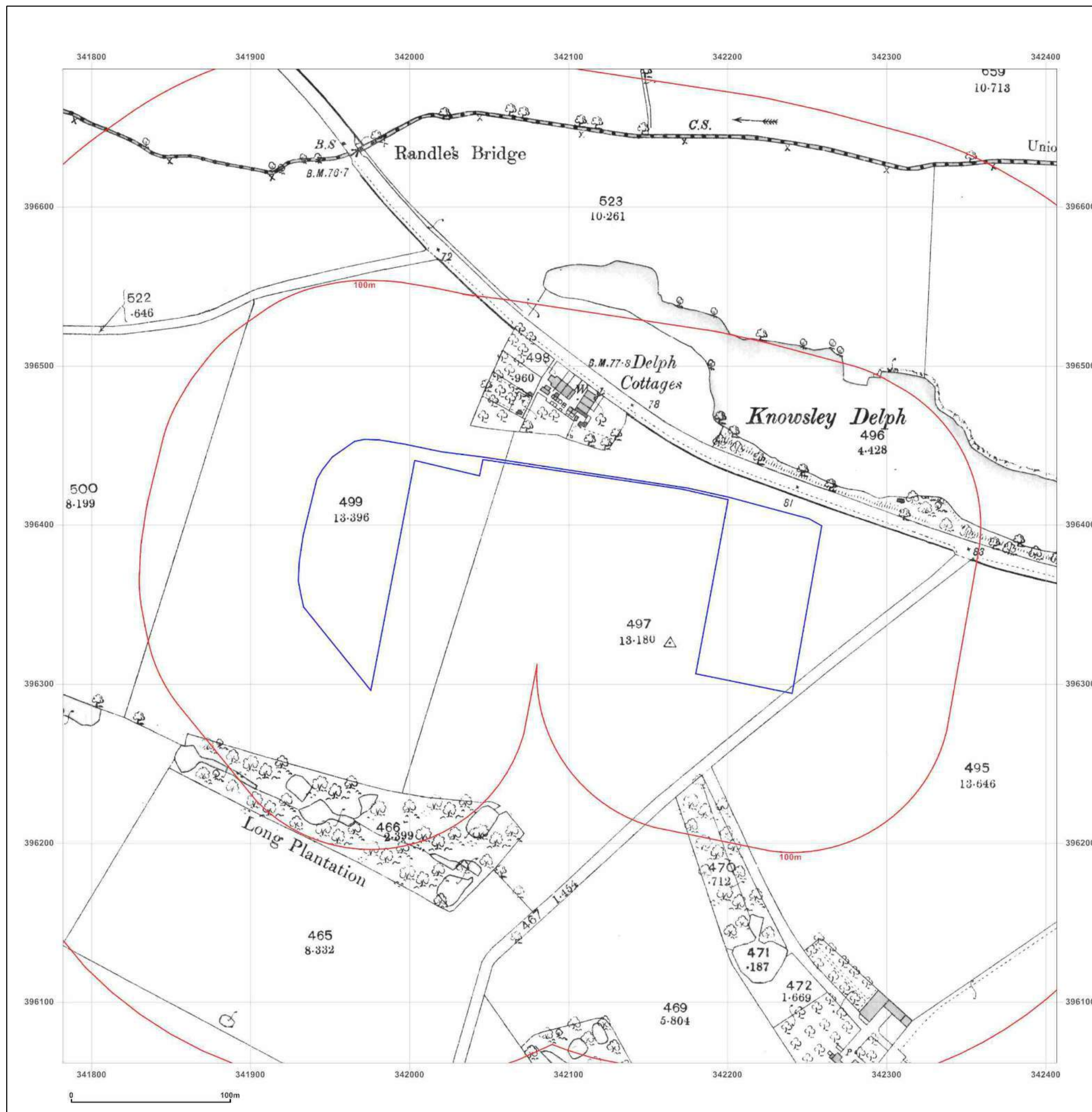


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1908

Scale: 1:2,500

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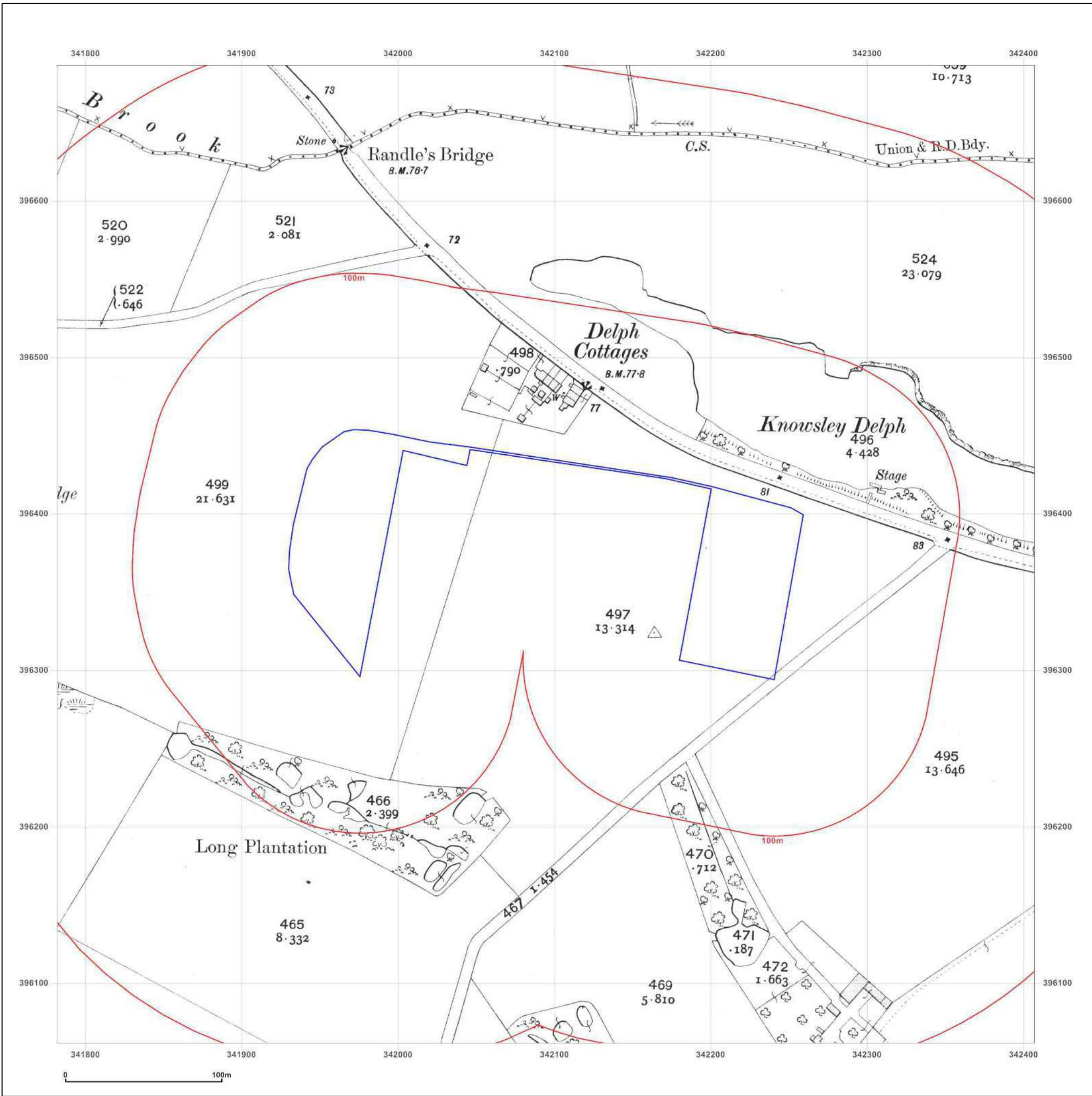


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Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1927

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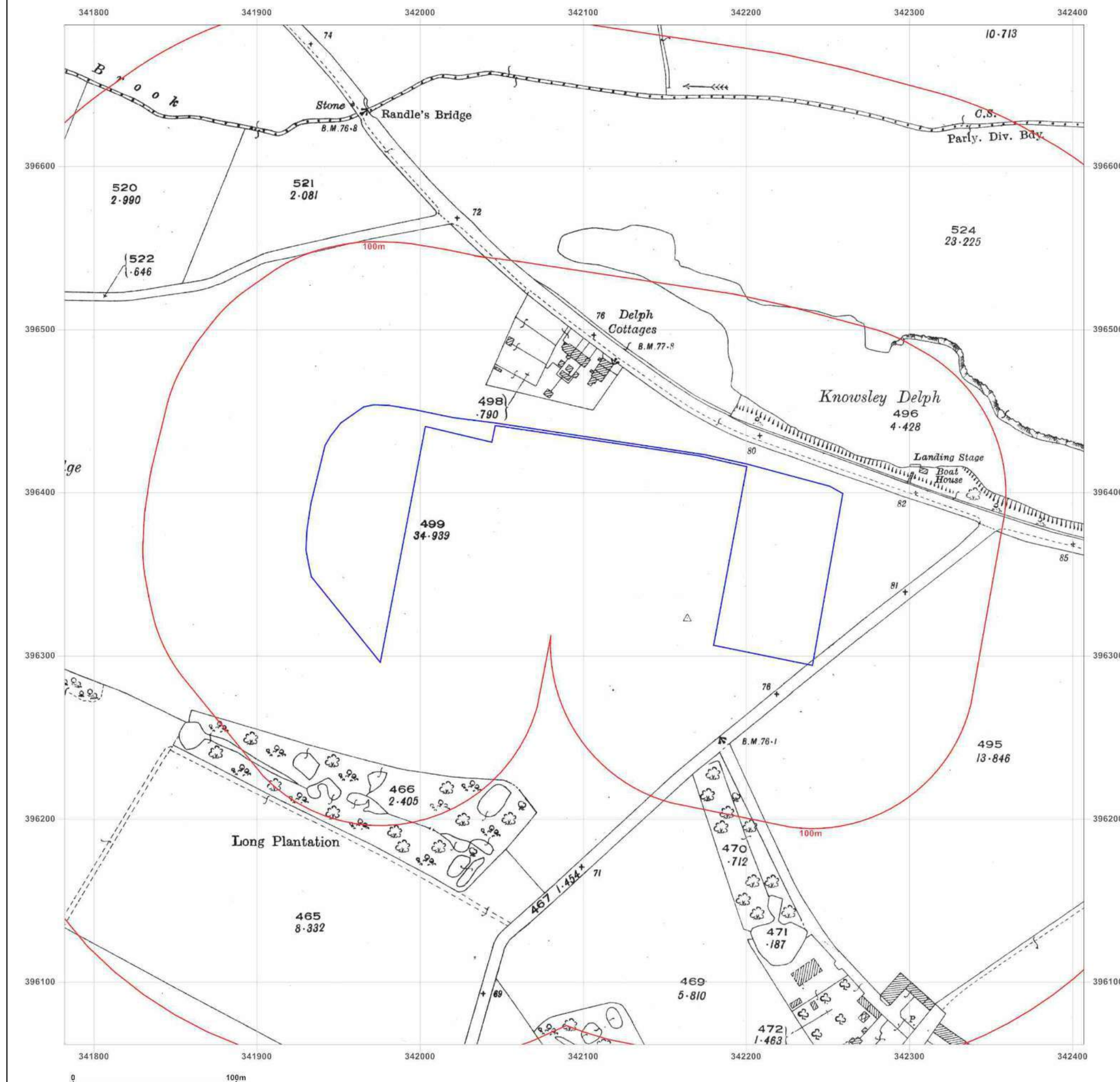


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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1937
Revised 1937
Edition N/A
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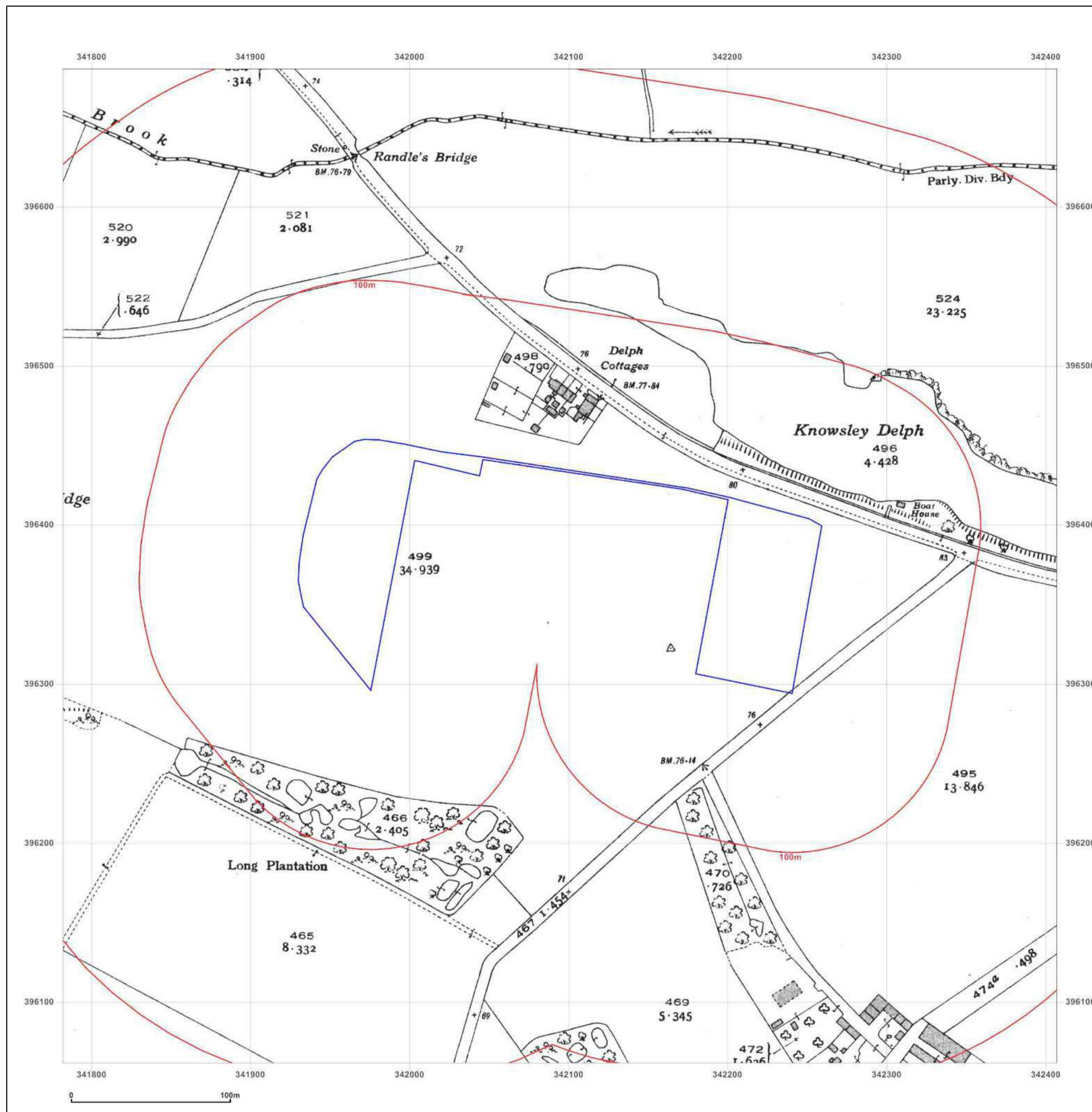


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Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1959

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1958
Edition N/A
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Surveyed 1959
Revised 1959
Edition N/A
Copyright 1959
Levelled 1946

Surveyed 1958
Revised 1958
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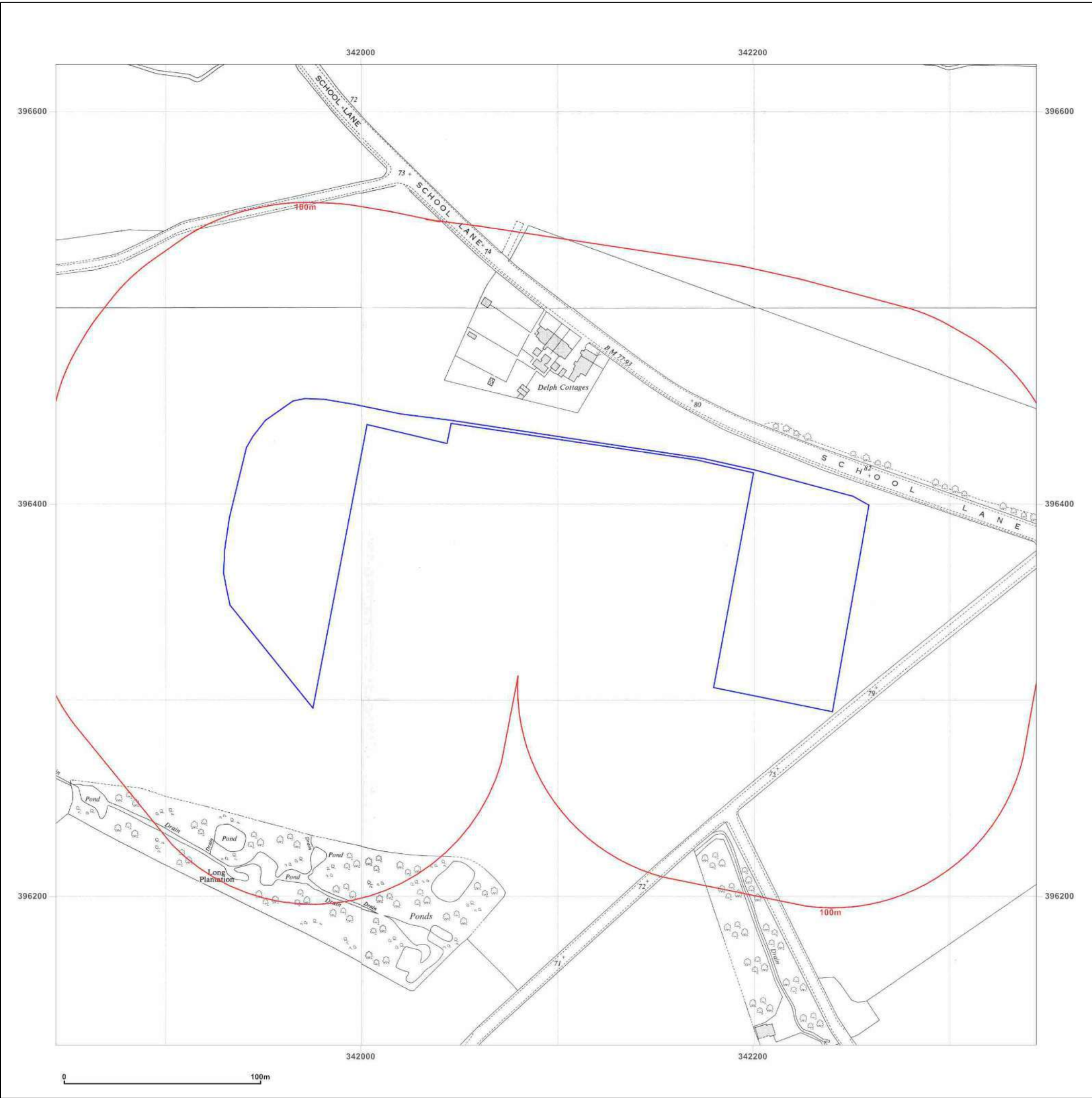


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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1960-1961

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1958
 Edition 1961
 Copyright 1961
 Levelled 1946

Surveyed 1959
 Revised 1959
 Edition 1960
 Copyright 1960
 Levelled 1946



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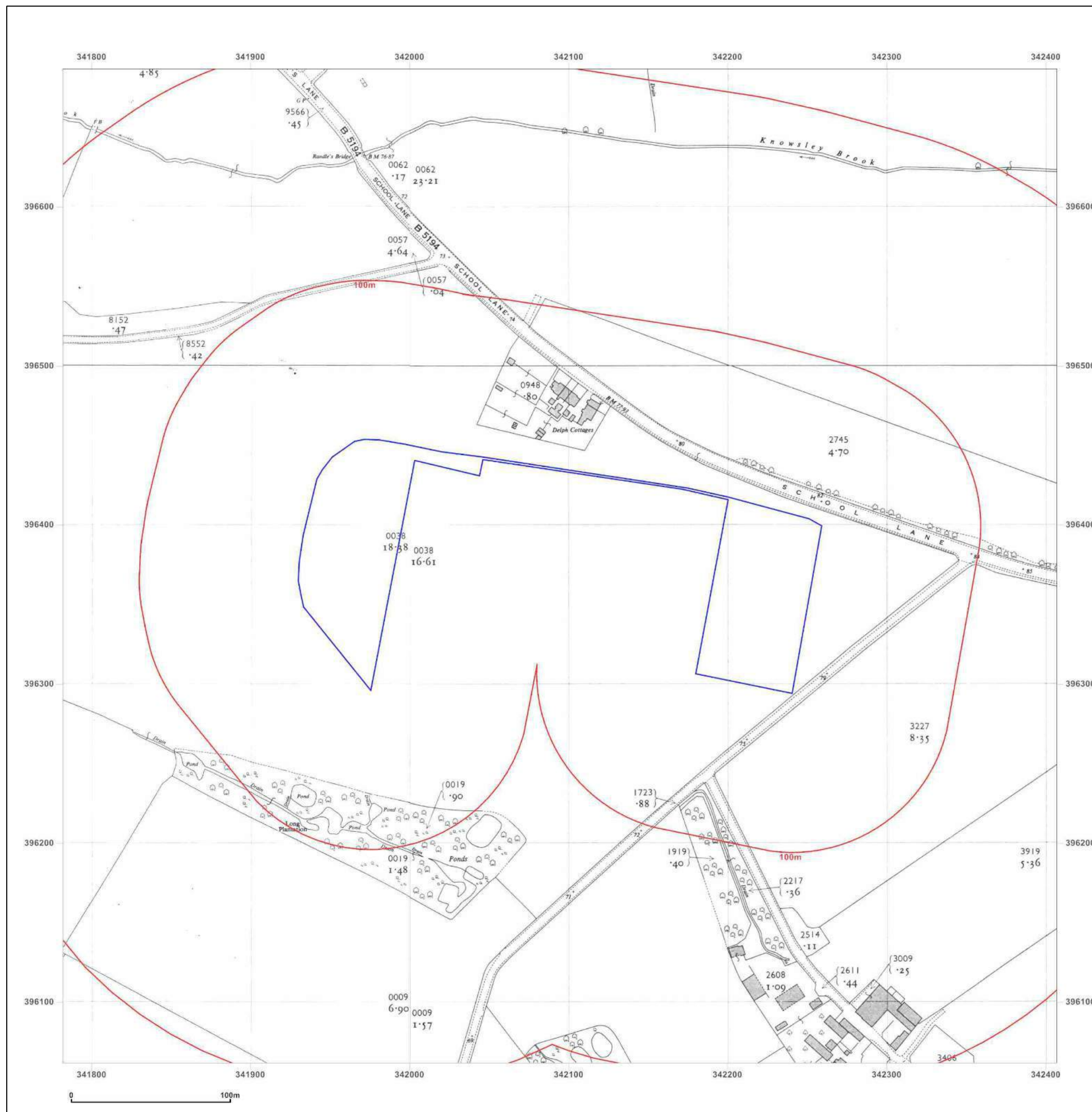


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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1974-1978

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1975
Edition N/A
Copyright 1975
Levelled 1960

Surveyed 1959
Revised 1973
Edition N/A
Copyright 1974
Levelled 1960

Surveyed 1958
Revised 1975
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Surveyed 1959
Revised 1978
Edition N/A
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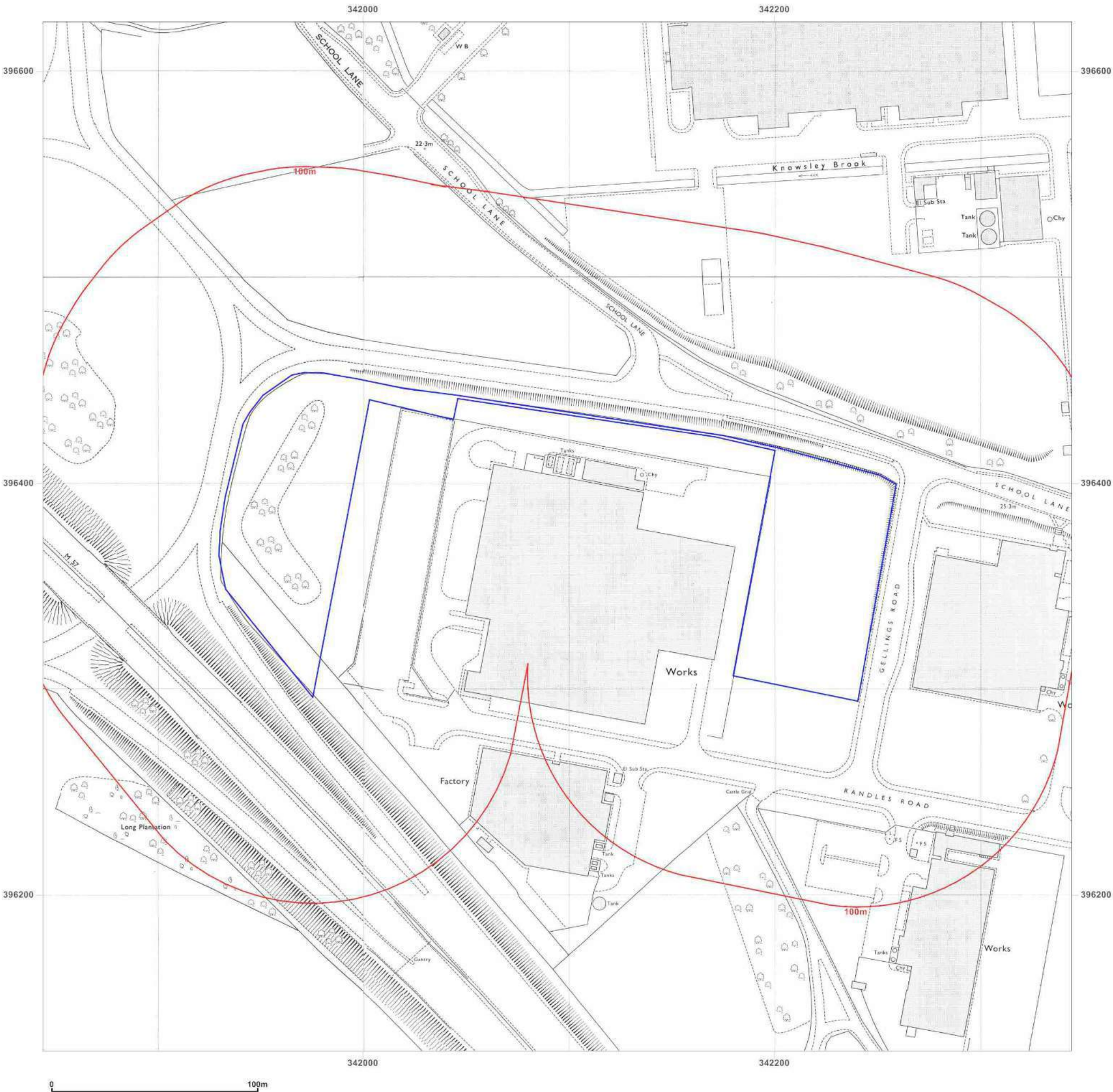


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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1978

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1959
Revised 1978
Edition N/A
Copyright 1978
Levelled 1960



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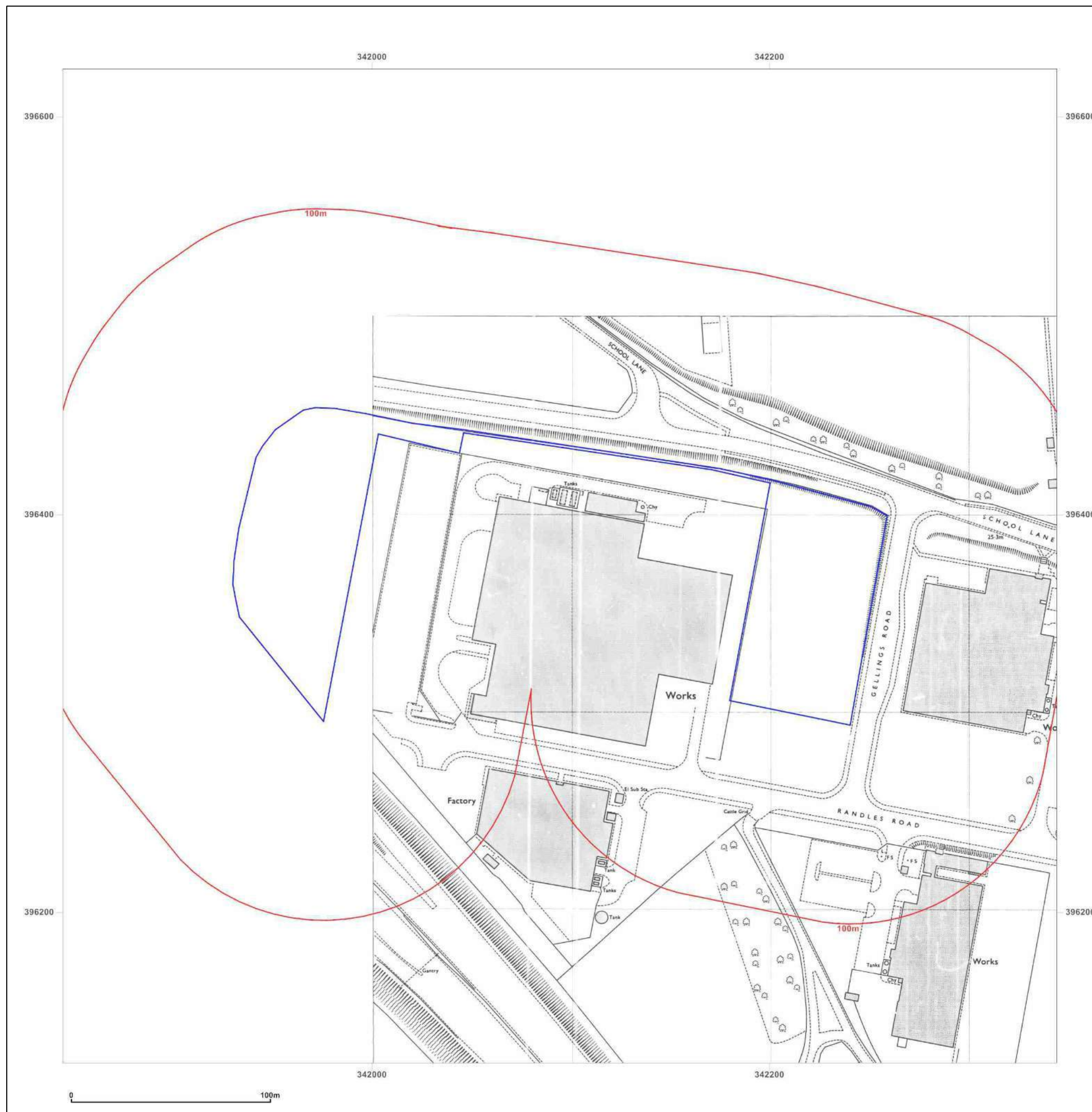


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Site Details:

Nexus Knowsley

Client Ref: EMS_527528_709477
Report Ref: EMS-527528_709477
Grid Ref: 342094, 396374

Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
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APPENDIX 4 – BGS Borehole Records

OBSERVATION WELLS:- WELL DATA SHEET

WDU Ref No

SJ49/49

British Geological Survey

IGS Ref No

LOCATION

Site: GELLINGS FARMHydrometric area: 69

NGR

ST 4229 9608

WELL DETAILS

Depth

Diameter

Length of
solid lining (feet) (inches) (feet)36.60 (metres) 10.1 (cms) 15.8L (metres)Measuring point: O.D. of surface O.D. of measuring point: 23.54mGeological succession:

Thickness Depth

<u>Sand.</u>	<u>3.20</u>	<u>3.81</u>
<u>Boulder clay</u>	<u>2.59</u>	<u>6.40</u>
<u>Sand.</u>	<u>3.96</u>	<u>10.36</u>
<u>Boulder clay</u>	<u>4.27</u>	<u>14.63</u>
<u>Red Sst</u>	<u>21.96</u>	<u>36.59</u>

Aquifers:

MEASUREMENT

Automatic recorder: type : operatedgauge scale : Time traverse inches per dayManual measurements: frequency MonthlyMeasuring authority: NWHA Rivers DivisionRecord charts changed by:

REMARKS

Records available from: November 1966Interference effects: from adjacent discharging wells ; barometric ;
river influence ; tidal ; miscellaneous ;
(add details on accompanying sheet)Disused or used (hours pumped per) Sunk as observation well: ✓Surface run-off gauging stations: Nearest rainfall station:

534/14/9/76

IGES	19 Talisman Square, KENILWORTH, CV8 1JB. Tel: 01926 851113 Fax: 01926 851394	Job No. 6463	Site : MERSEYSIDE HIRE CENTRE, RANDLES BRIDGE, KNOWSLEY INDUSTRIAL PARK - SOUTH Client : PORTAKABIN Engineer :	TRIAL PIT LOG					
				TP 5					
				Sheet 1 of 1					
Method JCB 3CX MECHANICAL EXCAVATOR	Date 02/10/96	Ground Slope Level	Logged By KM	Scale 1:25					
Length 1.60	Breadth 0.65	Depth 2.80	Ground Level m. R.L.						
Depth m.	SOIL SAMPLES/TESTS		Water Level	LL/PL %	M/C %	Ease of Dig	Depth m.	Description of Strata	Legend
	Type	Strength							
	D					M	0.50	TOPSOIL	
0.60	D						0.70	Brown silty fine to medium sand with occasional rootlets. MADE GROUND.	
0.80	D						0.90	Dark brown sandy soil with much rootlets. RELIC TOPSOIL.	
1.20	D							Orange brown fine to medium SAND. SHIRDLEY HILL SAND	
1.90	D					D	2.00	Orange brown fine to coarse SAND with much fine to coarse sandstone gravel and occasional mixed gravel. WEATHERED BUNTER SANDSTONE	
2.80	D						2.80		
GROUNDWATER DETAILS :							KEY		
							EASE OF DIG : E = EASY DIGGING		
							M = MODERATE DIGGING		
							D = DIFFICULT DIGGING		
							VH = VERY HARD DIGGING		
							SAMPLES : B = BULK		
							D = JAR		
							W = WATER		
							STRENGTH : V = HAND VANE SHEAR STRENGTH (kN/m ²)		
							P = HAND PENETROMETER SHEAR STRENGTH		
							GROUNDWATER : ∇ ENTRY		
							X STANDING LEVEL		
STABILITY OF PIT WALLS :									
1/ Pit walls remained stable whilst open									
GENERAL REMARKS :									
1/ No groundwater encountered									

APPENDIX 5 - Groundsure Report



EmapSite

Masdar House, 1 Reading Road,
Eversley, RG27 0RP

Groundsure
Reference:

EMS-527528_709479

Your Reference:

EMS_527528_709479

Report Date

15 Feb 2019

Report Delivery
Method:

Email - pdf

Enviro Insight

Address: Nexus Knowsley ,

Dear Sir/ Madam,

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

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.

Groundsure Enviroinsight

Address: Nexus Knowsley ,
Date: 15 Feb 2019
Reference: EMS-527528_709479
Client: EmapSite

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 11-Jun-2015
Grid Reference: 342087,396374
Site Size: 1.4788ha

Report Reference: EMS-527528_709479
Client Reference: EMS_527528_709479

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	1	6	11	30
1.2 Additional Information – Historical Tank Database	0	4	21	20
1.3 Additional Information – Historical Energy Features Database	0	0	17	15
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	3
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	8	33	28
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	2
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	1	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	2
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	1
2.2 Records of COMAH and NIHHS sites	0	0	0	1
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	1	1	4
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

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

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	7	24	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	Identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	4	7
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	7
6.6 Source Protection Zones (within 500m of the study site)	1	0	0	1	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology		0-500m				
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	20	34	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding	
7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Low

Section 8: Designated Environmentally Sensitive Sites		On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	2	
8.8 Records of World Heritage Sites	0	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	0	0	1
8.14 Records of Green Belt land	1	0	0	0	1	1

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Negligible
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Very Low
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

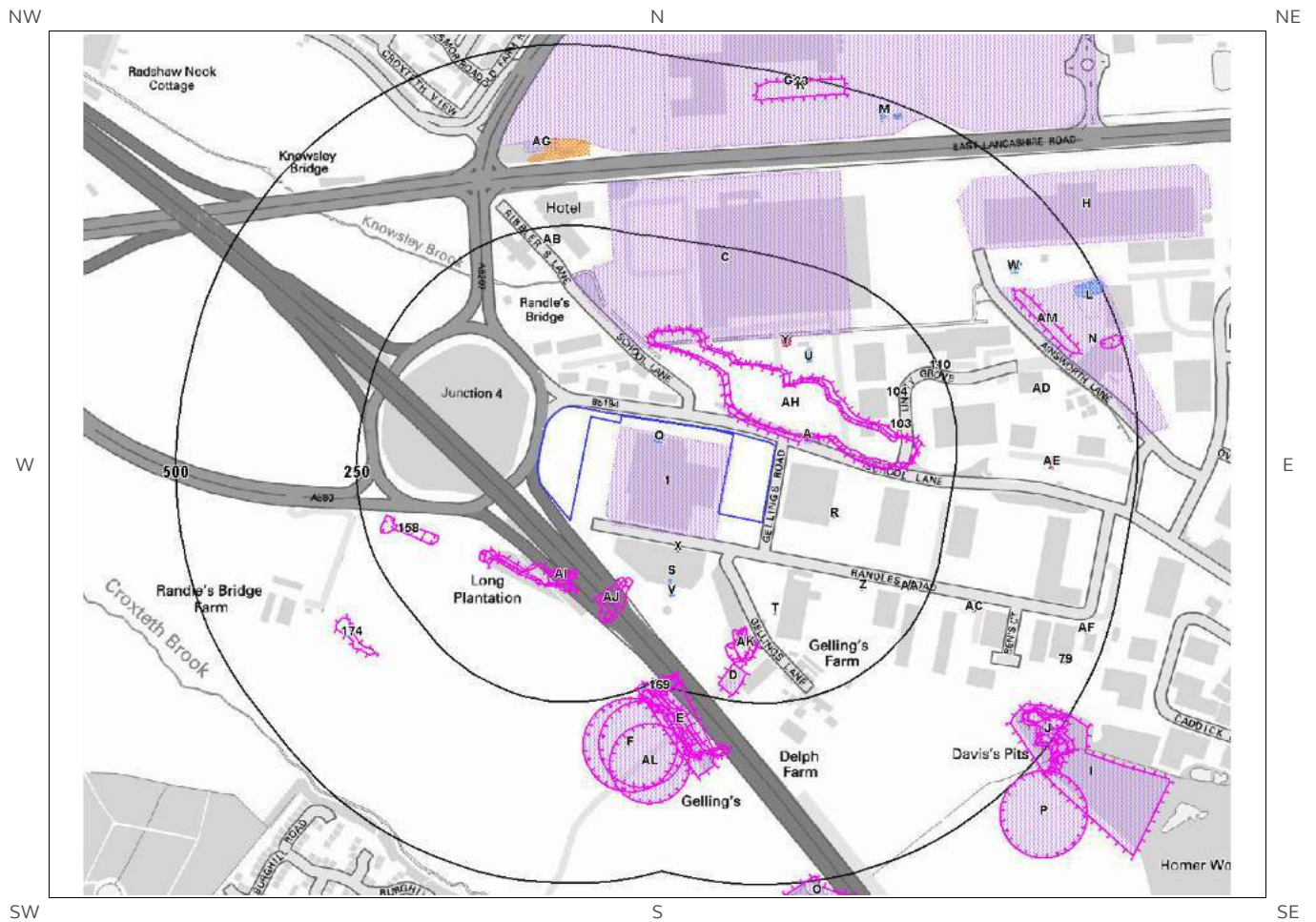
Note: Maps

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

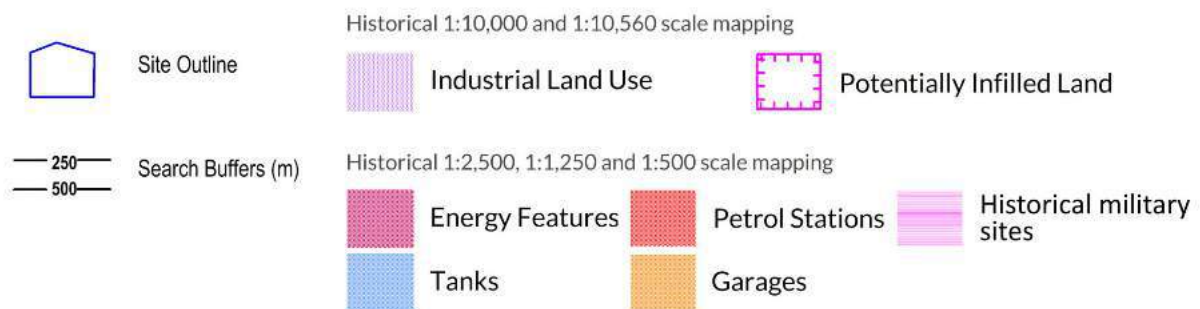
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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

1. Historical Land Use



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1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 48

ID	Distance [m]	Direction	Use	Date
1	0	On Site	Unspecified Commercial/Industrial	1988
2A	38	E	Boat House	1938
3A	39	E	Boat House	1925
4A	39	E	Boat House	1925
5A	39	E	Boat House	1925
6A	40	E	Boat House	1938
7A	48	E	Boat House	1955
8B	83	N	Delph	1925
9B	83	N	Delph	1925
10C	94	N	Unspecified Commercial/Industrial	1988
11C	102	N	Unspecified Commercial/Industrial	1976
12D	198	S	Cuttings	1976
13D	198	S	Cuttings	1988
14E	232	S	Unspecified Pits	1925
15E	232	S	Unspecified Pits	1925
16E	235	S	Unspecified Pits	1938
17E	235	S	Unspecified Pits	1925
18E	235	S	Unspecified Pits	1907
19F	256	S	Unspecified Pits	1938
20F	264	S	Unspecified Pits	1966
21AL	297	S	Unspecified Pits	1955
22AG	354	N	Garage	1976
23	358	N	Unspecified Factory	1966
24G	372	N	Unspecified Commercial/Industrial	1976
25G	372	N	Unspecified Commercial/Industrial	1988
26N	374	NE	Unspecified Works	1966
27H	384	NE	Unspecified Commercial/Industrial	1976
28H	384	NE	Unspecified Commercial/Industrial	1988
29AM	389	NE	Unspecified Heap	1966
30I	438	SE	Unspecified Pits	1925

31I	438	SE	Unspecified Pits	1925
32J	446	SE	Unspecified Pits	1938
33J	446	SE	Unspecified Pits	1907
34J	446	SE	Unspecified Pits	1925
35J	446	SE	Unspecified Pits	1892
36K	458	N	Unspecified Heap	1976
37K	458	N	Unspecified Heap	1966
38K	458	N	Unspecified Heap	1988
39L	460	NE	Unspecified Tanks	1955
40L	463	NE	Unspecified Tanks	1966
41M	469	N	Unspecified Tanks	1976
42M	469	N	Unspecified Tanks	1988
43N	471	E	Unspecified Heap	1966
44O	493	S	Unspecified Pits	1925
45O	493	S	Unspecified Pits	1925
46P	500	SE	Unspecified Pits	1988
47P	500	SE	Unspecified Pits	1976
48P	500	SE	Unspecified Pits	1966

1.2 Additional Information – Historical Tank Database

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

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

45

ID	Distance (m)	Direction	Use	Date
49Q	21	S	Tanks	1978
50Q	21	S	Tanks	1978
51Q	22	S	Tanks	1978
52Q	22	S	Tanks	1993
53R	95	E	Tanks	1978
54R	95	E	Tanks	1993
55R	95	E	Tanks	1978
56S	104	SW	Unspecified Tank	1978
57S	105	SW	Unspecified Tank	1978
58S	105	SW	Unspecified Tank	1993
59S	112	SW	Tanks	1978
60S	113	SW	Tanks	1978
61S	113	SW	Tanks	1993
62T	122	S	Tanks	1978
63T	123	S	Tanks	1978
64T	123	S	Tanks	1993
65U	123	NE	Unspecified Tank	1974

66U	124	NE	Unspecified Tank	1993
67U	124	NE	Unspecified Tank	1984
68V	125	SW	Unspecified Tank	1978
69V	127	SW	Unspecified Tank	1978
70V	127	SW	Unspecified Tank	1993
71U	131	NE	Unspecified Tank	1974
72U	131	NE	Unspecified Tank	1993
73U	132	NE	Unspecified Tank	1984
74W	403	NE	Unspecified Tank	1985
75W	403	NE	Unspecified Tank	1994
76W	404	NE	Unspecified Tank	1994
77W	406	NE	Unspecified Tank	1985
78W	407	NE	Unspecified Tank	1994
79	458	SE	Tanks	1981
80L	464	NE	Tanks	1974
81L	464	NE	Tanks	1959
82L	464	NE	Tanks	1974
83L	464	NE	Unspecified Tank	1959
84M	473	N	Unspecified Tank	1984
85M	474	N	Unspecified Tank	1974
86M	474	N	Unspecified Tank	1993
87M	479	N	Tanks	1984
88M	481	N	Unspecified Tank	1993
89M	481	N	Unspecified Tank	1974
90M	481	N	Tanks	1974
91M	481	N	Unspecified Tank	1984
92M	481	N	Tanks	1993
93L	485	NE	Unspecified Tank	1959

1.3 Additional Information – Historical Energy Features Database

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

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

32

ID	Distance (m)	Direction	Use	Date
94X	72	SW	Electricity Substation	1978
95X	73	SW	Electricity Substation	1978
96X	73	SW	Electricity Substation	1993
97Y	133	N	Electricity Substation	1993
98Y	133	N	Electricity Substation	1974
99Y	134	N	Electricity Substation	1984
100Z	163	SE	Electricity Substation	1978

101Z	163	SE	Electricity Substation	1993
102Z	163	SE	Electricity Substation	1978
103	173	E	Gas Meter House	1993
104	178	E	Electricity Substation	1993
105AA	221	SE	Gas Governor	1978
106AA	221	SE	Gas Governor	1978
107AA	221	SE	Gas Governor	1993
108AB	223	N	Electricity Substation	1975
109AB	224	N	Electricity Substation	1984
110	248	NE	Electricity Substation	1993
111AC	313	E	Electricity Substation	1981
112AC	313	E	Electricity Substation	1988
113AC	314	E	Electricity Substation	1996
114AC	314	E	Electricity Substation	1994
115AD	371	E	Electricity Substation	1988
116AD	371	E	Electricity Substation	1994
117AD	371	E	Electricity Substation	1996
118AE	377	E	Electricity Substation	1988
119AE	378	E	Electricity Substation	1981
120AE	378	E	Electricity Substation	1994
121AE	378	E	Electricity Substation	1996
122AF	469	E	Electricity Substation	1981
123AF	470	E	Electricity Substation	1988
124AF	470	E	Electricity Substation	1994
125AF	470	E	Electricity Substation	1996

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

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

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

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

ID	Distance (m)	Direction	Use	Date
126AG	342	N	Garage	1958

127AG	349	N	Garage	1959
128AG	349	N	Garage	1975

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

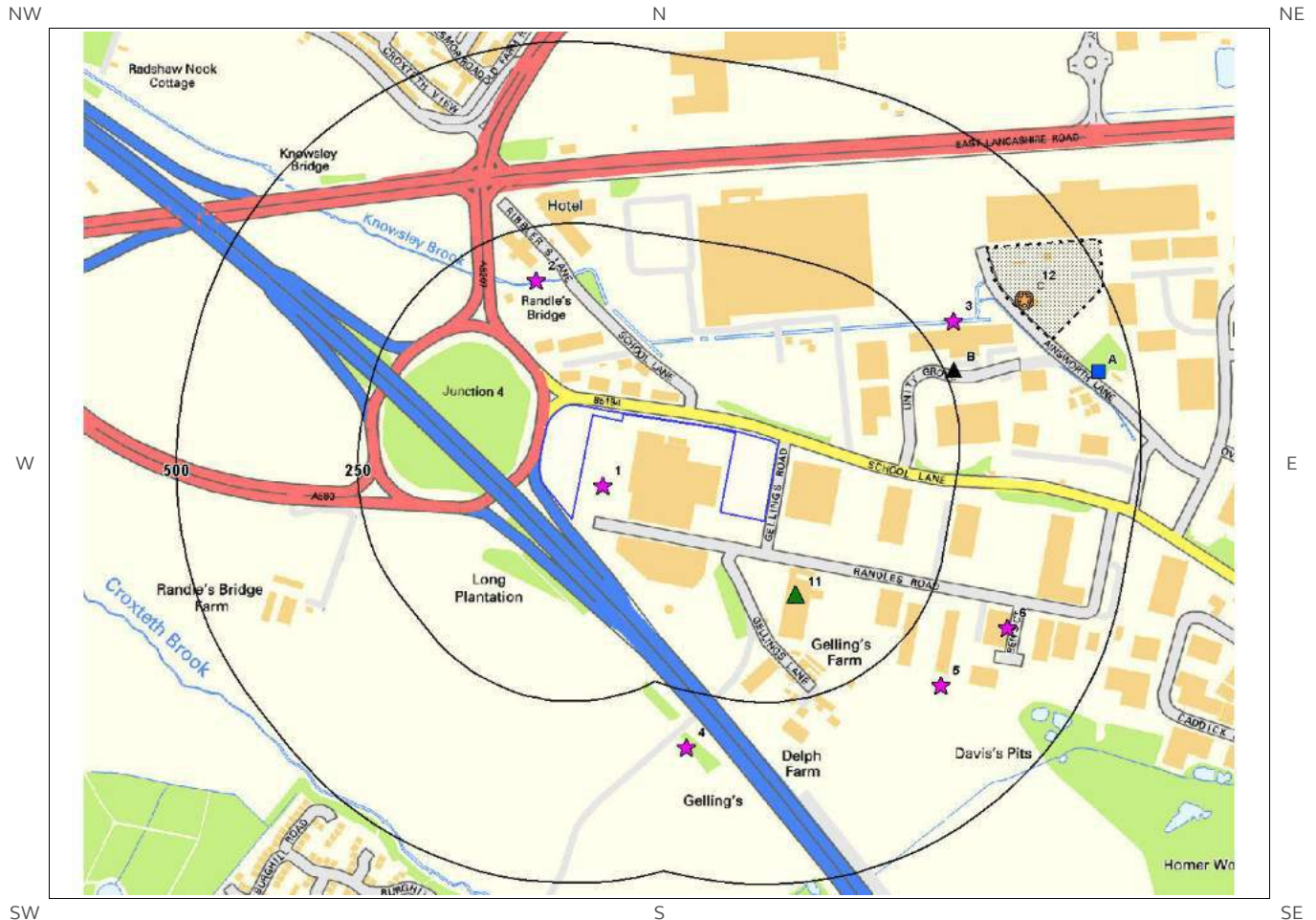
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 69

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

ID	Distance(m)	Direction	Use	Date
129AH	15	N	Water Body	1925
130AH	15	N	Water Body	1925
131AH	19	N	Water Body	1955
132AH	20	NE	Water Body	1938
133AH	20	NE	Pond	1938
134AH	20	NE	Water Body	1892
135AH	20	NE	Water Body	1907
136AH	20	NE	Water Body	1925
137AI	68	S	Pond	1966
138AI	70	S	Ponds	1907
139AI	70	S	Ponds	1925
140AI	70	S	Ponds	1938
141AI	70	S	Ponds	1938
142AI	70	S	Ponds	1892
143AI	71	S	Ponds	1955
144AJ	103	SE	Ponds	1938
145AJ	103	SE	Ponds	1892
146AJ	103	SE	Ponds	1925
147AJ	103	SE	Ponds	1938
148AJ	103	SE	Ponds	1907
149AJ	109	SE	Ponds	1955
150AJ	109	SE	Ponds	1966
151AK	148	S	Pond	1907
152AK	148	S	Pond	1938
153AK	148	S	Pond	1925

154AK	148	S	Pond	1938
155AK	150	S	Pond	1925
156AK	150	S	Pond	1925
157AK	154	S	Pond	1892
158	159	SW	Ponds	1892
159D	198	S	Cuttings	1988
160D	198	S	Cuttings	1976
161E	232	S	Ponds	1955
162E	232	S	Ponds	1966
163E	232	S	Unspecified Pits	1925
164E	232	S	Unspecified Pits	1925
165E	235	S	Unspecified Pits	1907
166E	235	S	Unspecified Pits	1925
167E	235	S	Ponds	1938
168E	235	S	Unspecified Pits	1938
169	243	S	Ponds	1892
170F	256	S	Unspecified Pits	1938
171E	256	S	Pond	1892
172F	264	S	Unspecified Pits	1966
173AL	297	S	Unspecified Pits	1955
174	323	SW	Ponds	1892
175AM	389	NE	Unspecified Heap	1966
176I	438	SE	Unspecified Pits	1925
177I	438	SE	Unspecified Pits	1925
178J	446	SE	Unspecified Pits	1925
179J	446	SE	Unspecified Pits	1938
180J	446	SE	Unspecified Pits	1892
181J	446	SE	Ponds	1938
182J	446	SE	Unspecified Pits	1907
183J	447	SE	Ponds	1925
184J	447	SE	Ponds	1925
185J	452	SE	Ponds	1955
186J	452	SE	Ponds	1966
187J	452	SE	Ponds	1988
188J	452	SE	Ponds	1976
189K	458	N	Unspecified Heap	1966
190K	458	N	Unspecified Heap	1976
191K	458	N	Unspecified Heap	1988
192N	471	E	Unspecified Heap	1966
193O	493	S	Unspecified Pits	1925
194O	493	S	Unspecified Pits	1925
195P	500	SE	Unspecified Pits	1988
196P	500	SE	Unspecified Pits	1976
197P	500	SE	Unspecified Pits	1966

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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

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

0

Database searched and no data found.

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

2

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
14B	261	NE	342500 396500	Operator: DEMETAL LTD Installation Name: KNOWSLEY METAL RECOVERY Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERWISE PRESCRINED) (UNLESS GLAZING ETC) Permit Number: WP3339KV Original Permit Number: SP3738LR EPR Reference: - Issue Date: - Effective Date: 20/01/2010 Last date noted as effective: 2018-12-03 Status: SURRENDER EFFECTIVE
15B	261	NE	342500 396500	Operator: DEMETAL LTD Installation Name: KNOWSLEY METAL RECOVERY Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERWISE PRESCRINED) (UNLESS GLAZING ETC) Permit Number: SP3738LR Original Permit Number: SP3738LR EPR Reference: - Issue Date: 07/07/2006 Effective Date: 07/07/2006 Last date noted as effective: 2018-12-03 Status: SUPERCEDED

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NGR	Details
11	112	S	342283 396191	Address: Pentre Timber Reels, Randles Road, Knowsley Industrial Park, Kirkby, L34 9HX Process: Combustion & Incineration Status: Revoked Permit Type: Part B Enforcement: Enforcement Notified Date of Enforcement: 31/10/1994 Comment: Section 13 enforcement.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NGR	Details
7A	452	E	342700 396500	Address: MERSEYSIDE POLYMER PROCESSING LTD, CADDICK ROAD, KNOWSLEY BUSINESS PARK, MERSEYSIDE, L34 9HP Receiving Water: TRIB 69-50-101-101-5-20 Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 05-Dec-1977 Revocation Date: 22/07/2013 Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 016990269 Permit Version: 1
8A	452	E	342700 396500	Address: MERSEYSIDE POLYMER PROCESSING LTD, CADDICK ROAD, KNOWSLEY BUSINESS PARK, MERSEYSIDE, L34 9HP Receiving Water: TRIB 69-50-101-101-5-20 Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 05-Dec-1977 Revocation Date: 22/07/2013 Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 016990269 Permit Version: 1

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	Application Reference Number	NGR	Application Status	Application Date	Address	Details	Details of Enforcement Action
16C	392	NE	95/00644/H SC	342597 396598	Approved	18/12/1995	Flogas UK Ltd ppka Flogas Direct Ltd, Knowsley Business Park, Ainsworth Lane, Knowsley Business Park, Knowsley, L34 9EU	Proposal to increase storage of LPG (commercial and butane)	Enforcement: Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.2 Dangerous or Hazardous Sites

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

1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
12	374	NE	Flogas Britain Limited	Flogas Britain Limited, Liverpool, Knowsley Business Park, Ainsworth Lane, Prescot, Merseyside, L34 9EU	Current COMAH Site	COMAH Lower Tier Operator

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

6

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

ID	Distance (m)	Direction	NGR	Details
1	31	E	342016 396343	Incident Date: 31-May-2001 Incident Identification: 7103 Pollutant: Sewage Materials Pollutant Description: Process Effluent Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	177	N	341925 396625	Incident Date: 31-May-2001 Incident Identification: 7114 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	294	NE	342499 396570	Incident Date: 13-Aug-2013 Incident Identification: 1147204 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
4	327	S	342132 395983	Incident Date: 31-Oct-2001 Incident Identification: 40317 Pollutant: Specific Waste Materials Pollutant Description: Clinical Waste Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5	331	SE	342482 396068	Incident Date: 21-May-2008 Incident Identification: 589039 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Animal and Vegetable Oil Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
6	363	SE	342573 396148	Incident Date: 05-Apr-2005 Incident Identification: 303480 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)

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

0

Database searched and no data found.

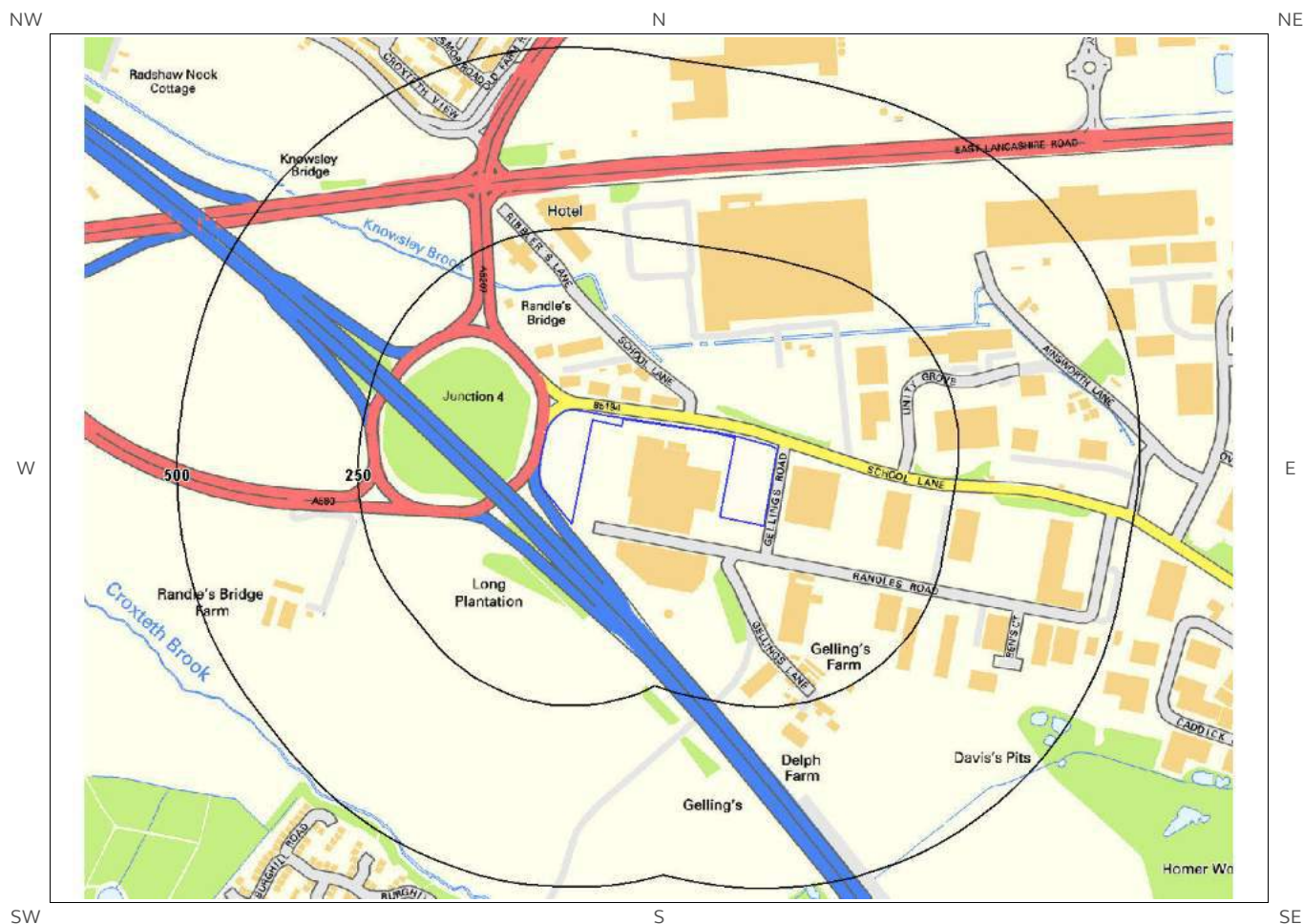
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site

0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

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

0

Database searched and no data found.

3.2 Other Waste Sites

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

0

Database searched and no data found.

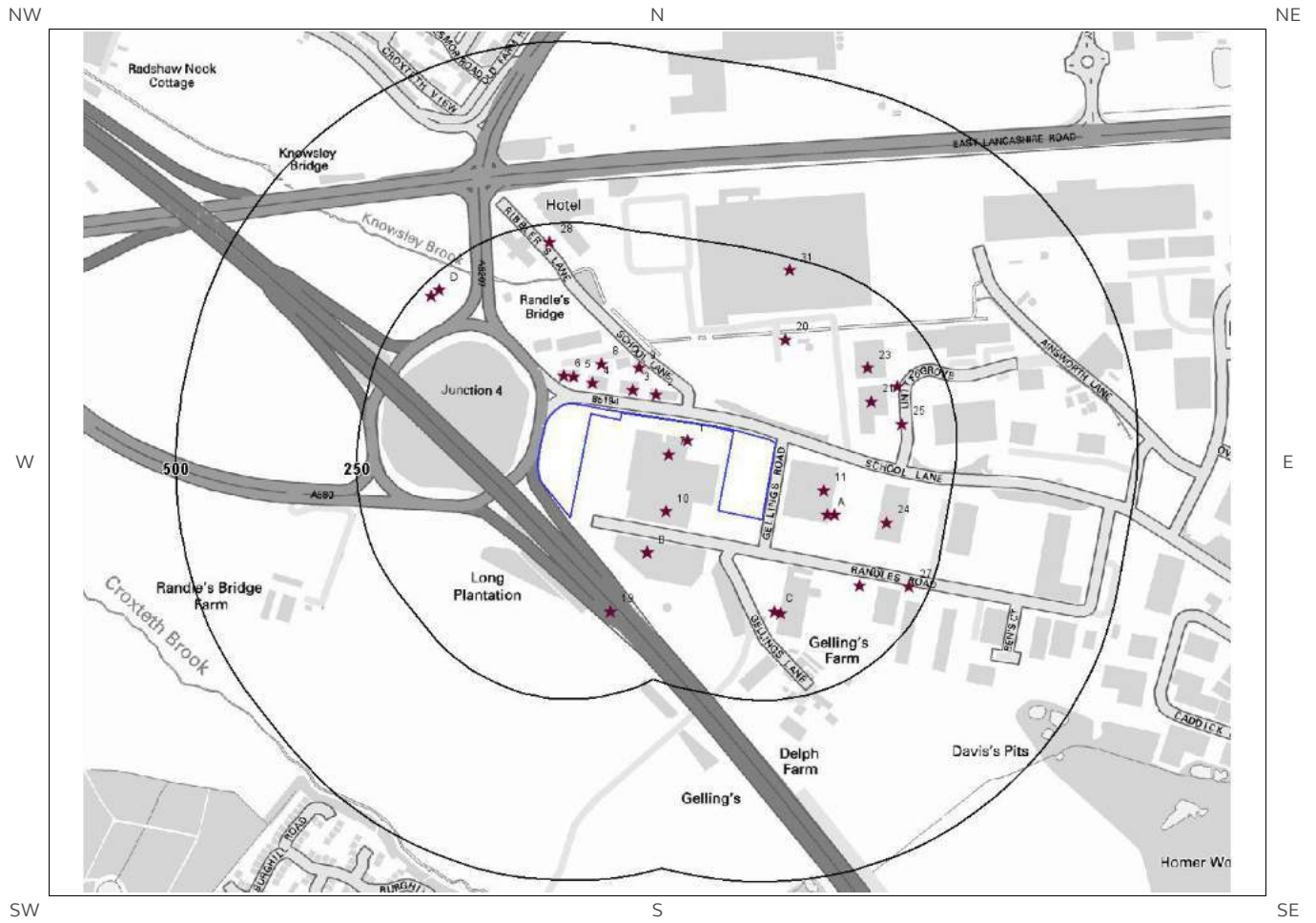
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

3

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

ID	Distance (m)	Direction	NGR	Details
Not shown	878	E	343137 396386	Site Address: Laurel House, Kitling Road, Knowsley Business Park, Prescott, Merseyside, L34 9JA Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EWC028 EPR reference: EA/EPR/CP3793SX/A001 Operator: Environmental Waste Controls Ltd Waste Management licence No: 100684 Annual Tonnage: 24999.0 Issue Date: 30/10/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Laurel House M R F Correspondence Address: -
Not shown	878	E	343137 396386	Site Address: Laurel House, Kitling Road, Knowsley Business Park, Prescott, Merseyside, L34 9JA Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EWC028 EPR reference: EA/EPR/CP3793SX/V002 Operator: Environmental Waste Controls Plc Waste Management licence No: 100684 Annual Tonnage: 24999.0 Issue Date: 30/10/2008 Effective Date: - Modified: 20/07/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Laurel House M R F Correspondence Address: -
Not shown	878	E	343137 396386	Site Address: Laurel House, Kitling Road, Knowsley Business Park, Prescott, Merseyside, L34 9JA Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EWC028 EPR reference: EA/EPR/CP3793SX/V003 Operator: Environmental Waste Controls Limited Waste Management licence No: 100684 Annual Tonnage: 24999.0 Issue Date: 30/10/2008 Effective Date: - Modified: 05/04/2018 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Laurel House M R F Correspondence Address: -

4. Current Land Use Map



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- | | | |
|--|--|--|
|  Site Outline |  Current Industrial Sites |  Electricity Transmission Cables |
|  Search Buffers (m) |  Petrol & Fuel Sites |  Gas Transmission Pipelines |

4. Current Land Uses

4.1 Current Industrial Data

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

31

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	24	S	Chimney	342136 396404	Merseyside, L34	Chimneys	Industrial Features
2	31	N	Radius Arches Ltd	342093 396467	Unit 2 Gateway, School Lane, Knowsley, Prescot, Merseyside, L34 9EN	Rubber, Silicones and Plastics	Industrial Products
3	33	N	Reva Engineering	342061 396474	School Lane, Knowsley Business Park, Prescot, Merseyside, L34 9AA	Precision Engineers	Engineering Services
4	33	N	William & Jones	342005 396483	School Lane, Knowsley Business Park, Prescot, Merseyside, L34 9AA	Lifting and Handling Equipment	Industrial Products
5	38	N	I P Truck Parts	341979 396492	School Lane, Knowsley, Prescot, Merseyside, L34 9EN	Vehicle Parts and Accessories	Motoring
6	40	N	3 L G Print Signs & Displays	341966 396493	Unit 8 Gateway, School Lane, Knowsley, Prescot, Merseyside, L34 9EN	Published Goods	Industrial Products
7	46	S	Simply Store Ltd	342110 396385	Unit 9-11, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Container and Storage	Transport, Storage and Delivery
8	62	N	Electricity Sub Station	342018 396510	Merseyside, L34	Electrical Features	Infrastructure and Facilities
9	64	N	Switchgear Integrated Maintenance Ltd	342070 396504	Unit 10 Gateway, School Lane, Knowsley, Prescot, Merseyside, L34 9EN	Electrical Production and Manipulation Equipment	Industrial Products
10	73	W	Glow Heated Glass	342107 396306	Nexus House, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Glass	Industrial Products
11	75	E	Tratos	342324 396335	Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Cable, Wire and Fibre Optics	Industrial Products
12A	87	E	Chimney	342330 396301	Merseyside, L34	Chimneys	Industrial Features
13A	96	E	Tank	342339 396301	Merseyside, L34	Tanks (Generic)	Industrial Features
14B	114	SW	Refresh	342081 396249	Nexus House, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Glass	Industrial Products

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
15B	114	SW	Eco Vitro	342081 396249	Nexus House, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Conservatories	Consumer Products
16B	114	SW	Tuffx	342081 396249	Nexus House, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Glass	Industrial Products
17C	127	S	Tank	342257 396168	Merseyside, L34	Tanks (Generic)	Industrial Features
18C	132	S	Chimney	342265 396165	Merseyside, L34	Chimneys	Industrial Features
19	139	SE	Gantry	342030 396168	Merseyside, L34	Travelling Cranes and Gantries	Industrial Features
20	139	N	Electricity Sub Station	342271 396543	Merseyside, L34	Electrical Features	Infrastructure and Facilities
21	144	NE	Rosler UK	342390 396458	1, Unity Grove, Knowsley Business Park, Prescot, Merseyside, L34 9GT	Industrial Coatings and Finishings	Industrial Products
22	161	SE	Electricity Sub Station	342374 396204	Merseyside, L34	Electrical Features	Infrastructure and Facilities
23	164	NE	Terumo	342385 396504	3, Unity Grove, Knowsley Business Park, Prescot, Merseyside, L34 9GT	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
24	169	E	Eatwell	342411 396291	Unit 7, Randles Road, Knowsley Business Park, Prescot, Merseyside, L34 9HX	Catering and Non Specific Food Products	Foodstuffs
25	175	E	Gas Meter House	342432 396427	Merseyside, L34	Gas Features	Infrastructure and Facilities
26	185	NE	Electricity Sub Station	342426 396478	Merseyside, L34	Electrical Features	Infrastructure and Facilities
27	222	SE	Gas Governor Station	342442 396202	Merseyside, L34	Gas Features	Infrastructure and Facilities
28	226	N	Electricity Sub Station	341946 396678	Merseyside, L34	Electrical Features	Infrastructure and Facilities
29D	232	NW	Gas Valve Compound	341793 396612	Merseyside, L34	Gas Features	Infrastructure and Facilities
30D	233	NW	Gas Valve Compound	341783 396604	Merseyside, L34	Gas Features	Infrastructure and Facilities
31	234	N	Singleton Trading	342277 396639	Saturn Park, School Lane, Knowsley Business Park, Prescot, Merseyside, L34 9JG	Hobby, Sports and Pastime Products	Consumer Products

4.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
SSA-S	SHIRDLEY HILL SAND FORMATION	SAND

5.3 Bedrock and Solid Geology

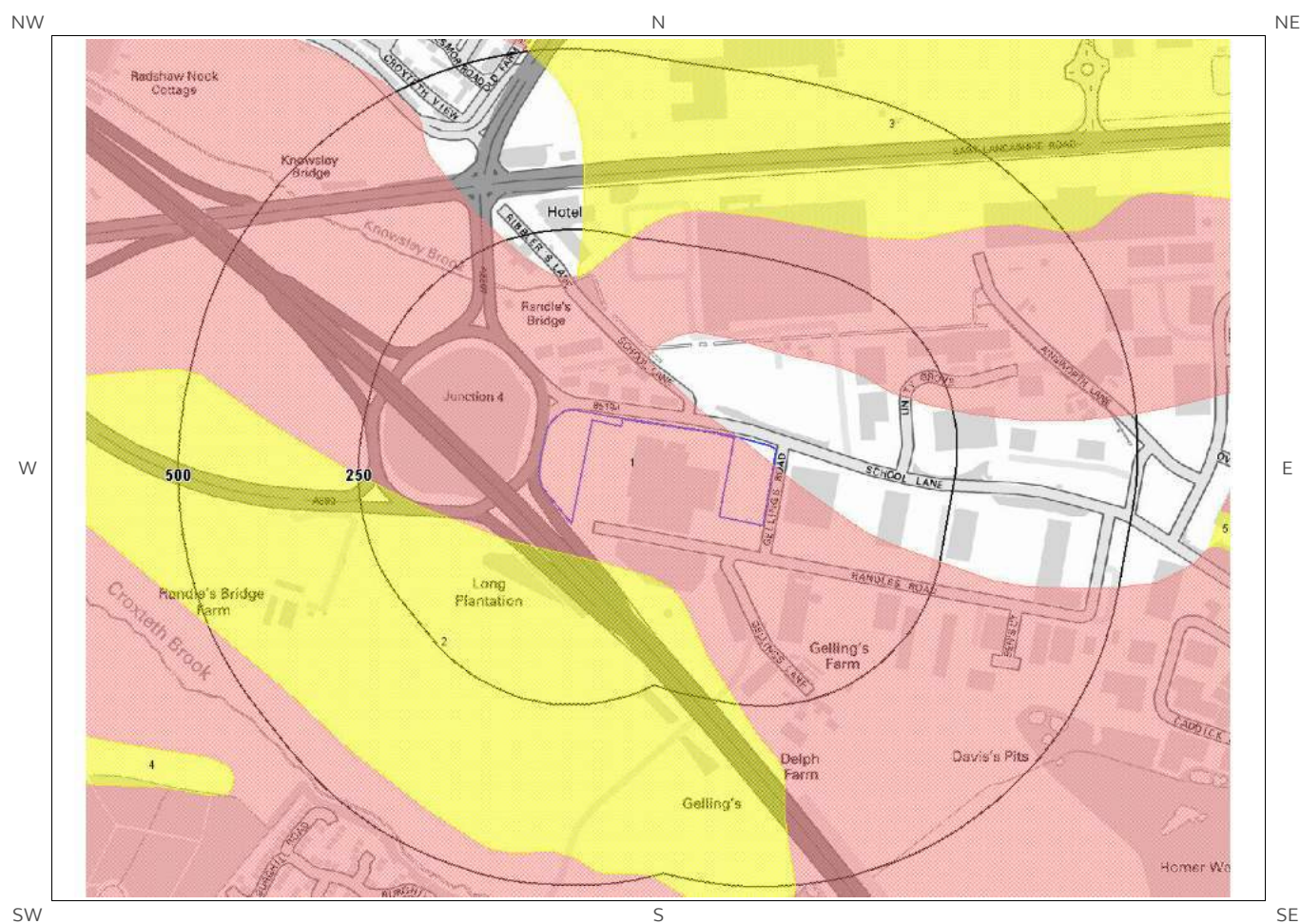
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
CHES-SDST	CHESTER FORMATION	SANDSTONE

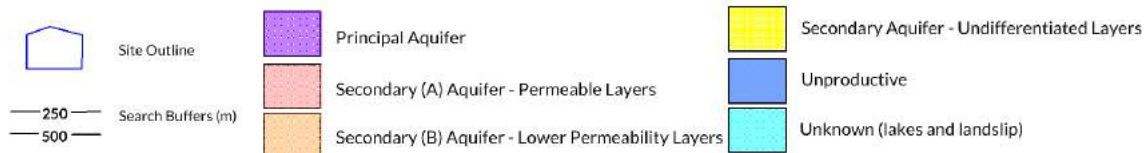
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

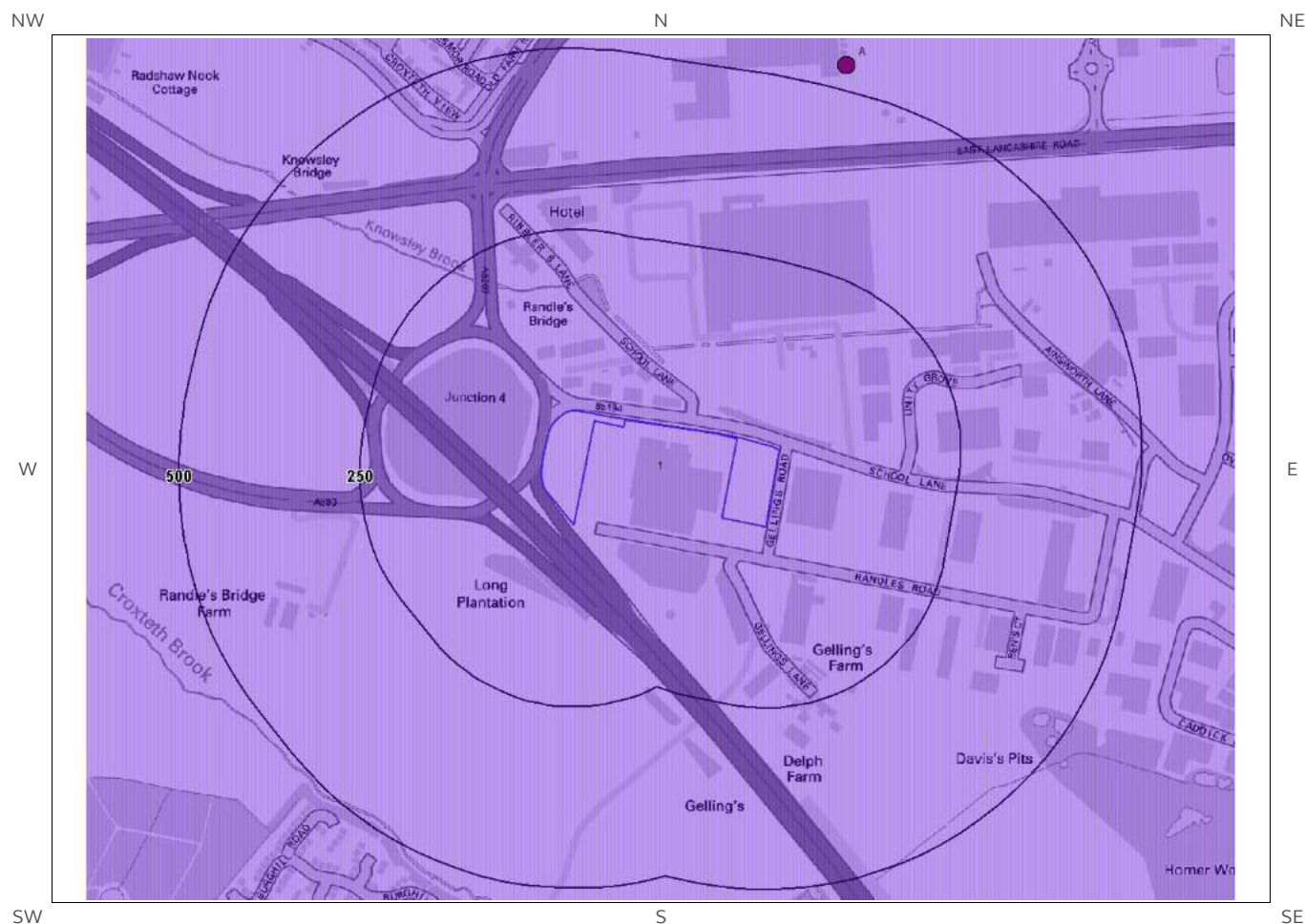
6a. Aquifer Within Superficial Geology



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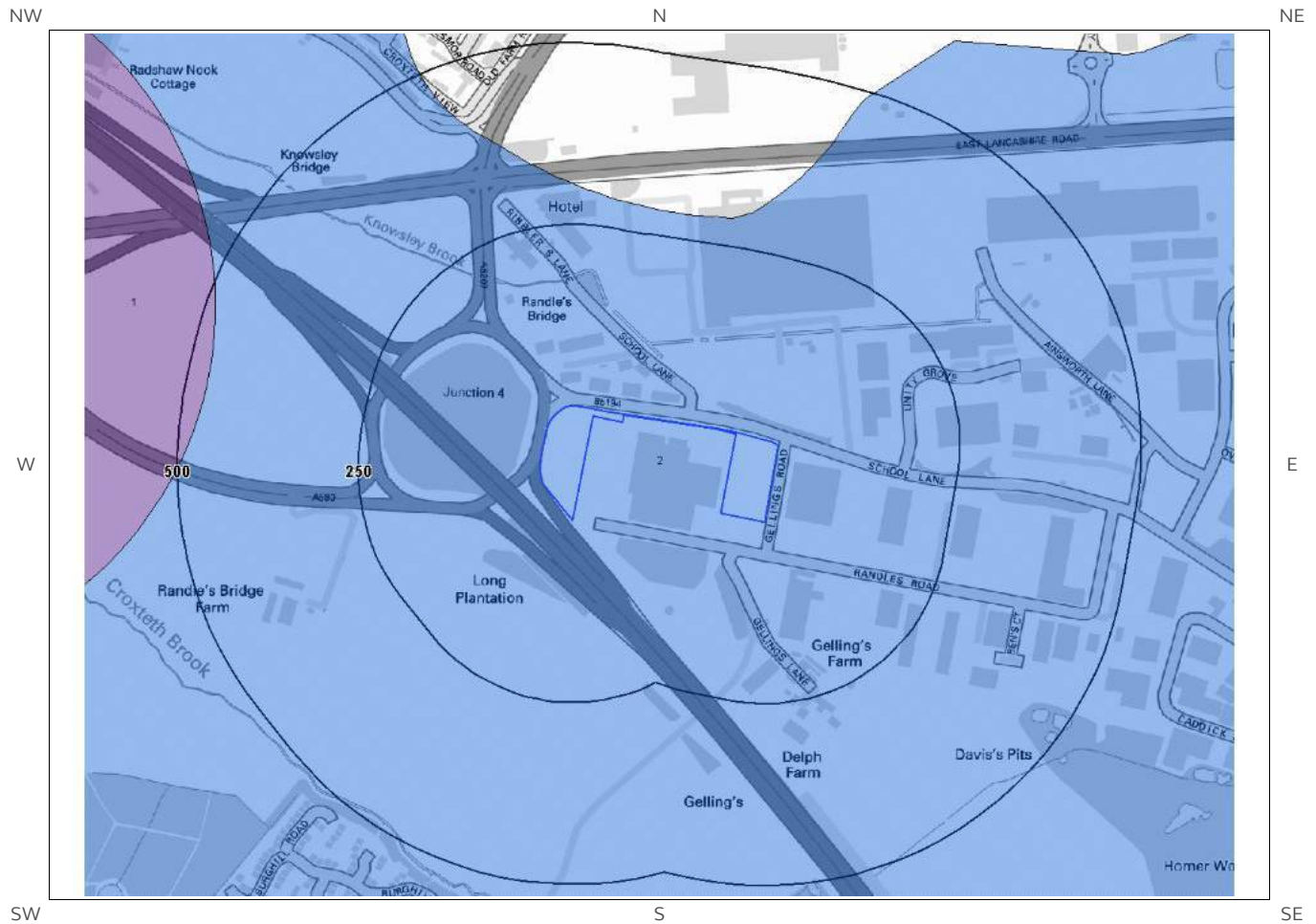
6b. Aquifer Within Bedrock Geology and Abstraction Licences



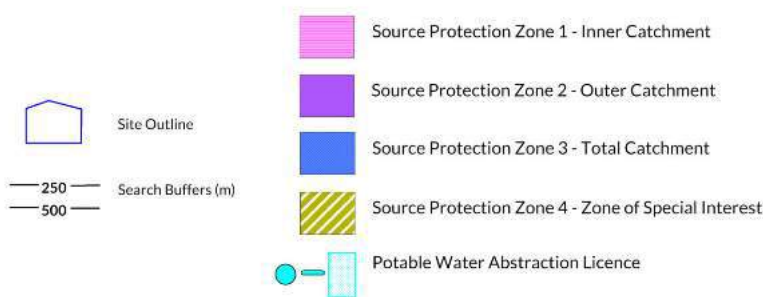
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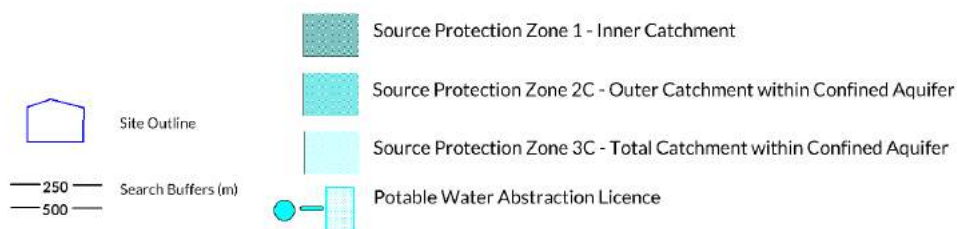
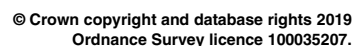
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



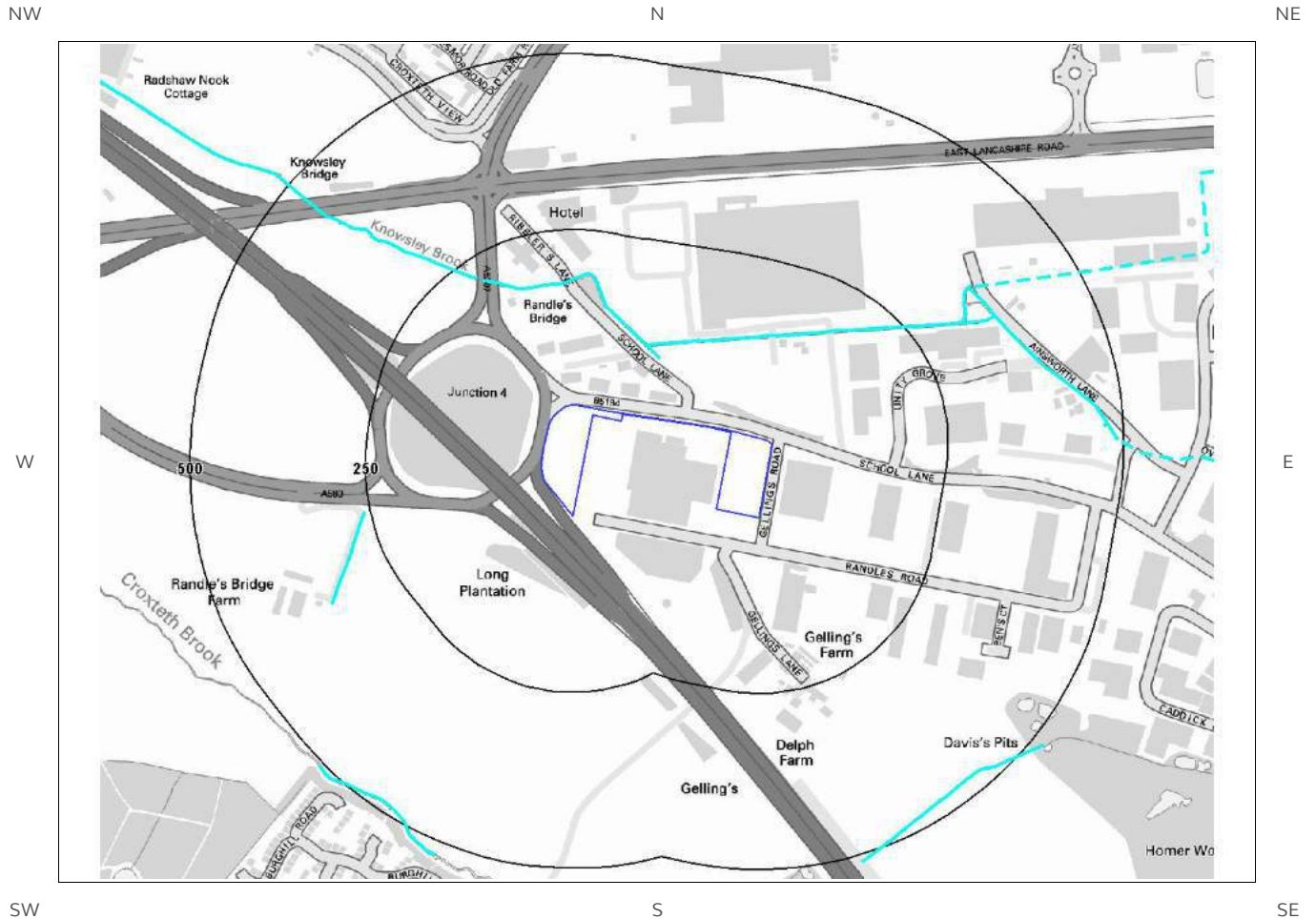
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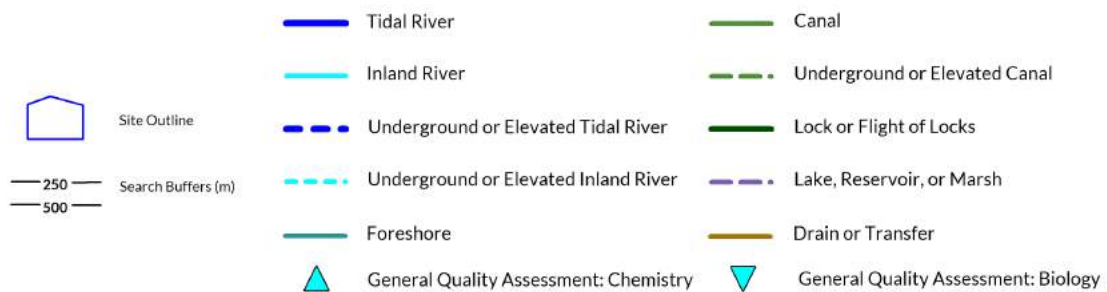
6d. Hydrogeology – Source Protection Zones within confined aquifer



6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	42	S	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
3	185	N	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

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

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

ID	Distance (m)	Direction	NGR	Details
2A	534	N	342350 396930	Status: Historical Licence No: 2569031142 Details: Process Water Direct Source: Ground Water - North West Region Point: LAND @ DAIRY CREST, KIRKBY Data Type: Point Name: DAIRY CREST LTD Annual Volume (m³): 219000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 11/08/2004 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 11/08/2004 Version End Date:
3A	534	N	342350 396930	Status: Historical Licence No: 2569031142 Details: Evaporative Cooling Direct Source: Ground Water - North West Region Point: LAND @ DAIRY CREST, KIRKBY Data Type: Point Name: DAIRY CREST LTD Annual Volume (m³): 219000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 11/08/2004 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 11/08/2004 Version End Date:
4A	534	N	342350 396930	Status: Active Licence No: 2569031142R01 Details: Evaporative Cooling Direct Source: Ground Water - North West Region Point: LAND @ DAIRY CREST, KIRKBY Data Type: Point Name: DAIRY CREST LTD Annual Volume (m³): 219000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 01/04/2015 Version End Date:
5A	534	N	342350 396930	Status: Active Licence No: 2569031142R01 Details: Process Water Direct Source: Ground Water - North West Region Point: LAND @ DAIRY CREST, KIRKBY Data Type: Point Name: DAIRY CREST LTD Annual Volume (m³): 219000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 01/04/2015 Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS, ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE \$215 Data Type: Point Name: UNITED UTILITIES WATER PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: 10/02/1995 Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "B/HOLES, WELLS, ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE \$215" Data Type: Point Name: UNITED UTILITIES WATER PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: 10/02/1995 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1053	W	340900 396600	Status: Active Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS,ADITS & HEADINGS AT KNOWSLEY RANGLES BRIDGE Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m³): 2.905e+006 Max Daily Volume (m³): 9092.18 Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/11/2017 Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS,ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE215 Data Type: Point Name: NORTH WEST WATER LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: 10/02/1995 Version End Date:
Not shown	1877	E	344000 397100	Status: Historical Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "WELL, BOREHOLE AND WELLS AND BOREHOLES (2) AT KNOWSLEY" Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/1966 Version End Date:
Not shown	1877	E	344000 397100	Status: Active Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: WELL BOREHOLE AND WELLS AND BOREHOLES X 2 AT KNOWSLEY Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m³): 2.074e+006 Max Daily Volume (m³): 7500 Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/11/2017 Version End Date:
Not shown	1877	E	344000 397100	Status: Historical Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: WELL, BOREHOLE AND WELLS AND BOREHOLES (2) AT KNOWSLEY Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/1966 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

Identified

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1053	W	340900 396600	Status: Active Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS,ADITS & HEADINGS AT KNOWSLEY RANGLES BRIDGE Data Type: Point Name: UNITED UTILITIES WATER LTD Annual Volume (m³): 2.905e+006 Max Daily Volume (m³): 9092.18 Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS,ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE \$215 Data Type: Point Name: UNITED UTILITIES WATER PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: B/HOLES, WELLS,ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE215 Data Type: Point Name: NORTH WEST WATER LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1053	W	340900 396600	Status: Historical Licence No: 2569031024 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "B/HOLES, WELLS,ADITS & HEADINGS@KNOWSLEY RANGLES BRIDGE \$215" Data Type: Point Name: UNITED UTILITIES WATER PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 02/11/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1877	E	344000 397100	Status: Active Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: WELL BOREHOLE AND WELLS AND BOREHOLES X 2 AT KNOWSLEY Data Type: Point Name: UNITED UTILITIES WATER LTD Annual Volume (m³): 2.074e+006 Max Daily Volume (m³): 7500 Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1877	E	344000 397100	Status: Historical Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: WELL, BOREHOLE AND WELLS AND BOREHOLES (2) AT KNOWSLEY Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details
Name: UNITED UTILITIES WATER PLC				
Not shown	1877	E	344000 397100	Status: Historical Licence No: 2569031016 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: "WELL, BOREHOLE AND WELLS AND BOREHOLES (2) AT KNOWSLEY" Data Type: Point Name: UNITED UTILITIES WATER PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

Identified

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
2	0	On Site	3	Total catchment
1	471	W	2	Outer catchment

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

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

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	85 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
30	85 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
2	101 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
3	101 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
31	101 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
32	101 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
4	119 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	119 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
33	119 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	119 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
6	122 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
35	122 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 3.8
7	173 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
36	173 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
8	175 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	175 N	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	201 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
38	201 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	220 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
39	220 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
11	258 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	258 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	320 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
13	320 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
41	320 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
42	320 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
14	325 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
43	325 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	354 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
16	354 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
44	354 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
45	354 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
17	360 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	360 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
18	361 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	361 NE	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
19	363	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
Not shown	363 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
20	365 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
Not shown	365 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
21	366 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
50	366 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
22	367 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
51	367 NW	Knowsley Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
23	472 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	472 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
24	475 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	475 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	477 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.1
Not shown	477 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
26	487 SW	Croxteth Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
Not shown	487 SW	Croxteth Brook	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
27	491 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	491 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Alt Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

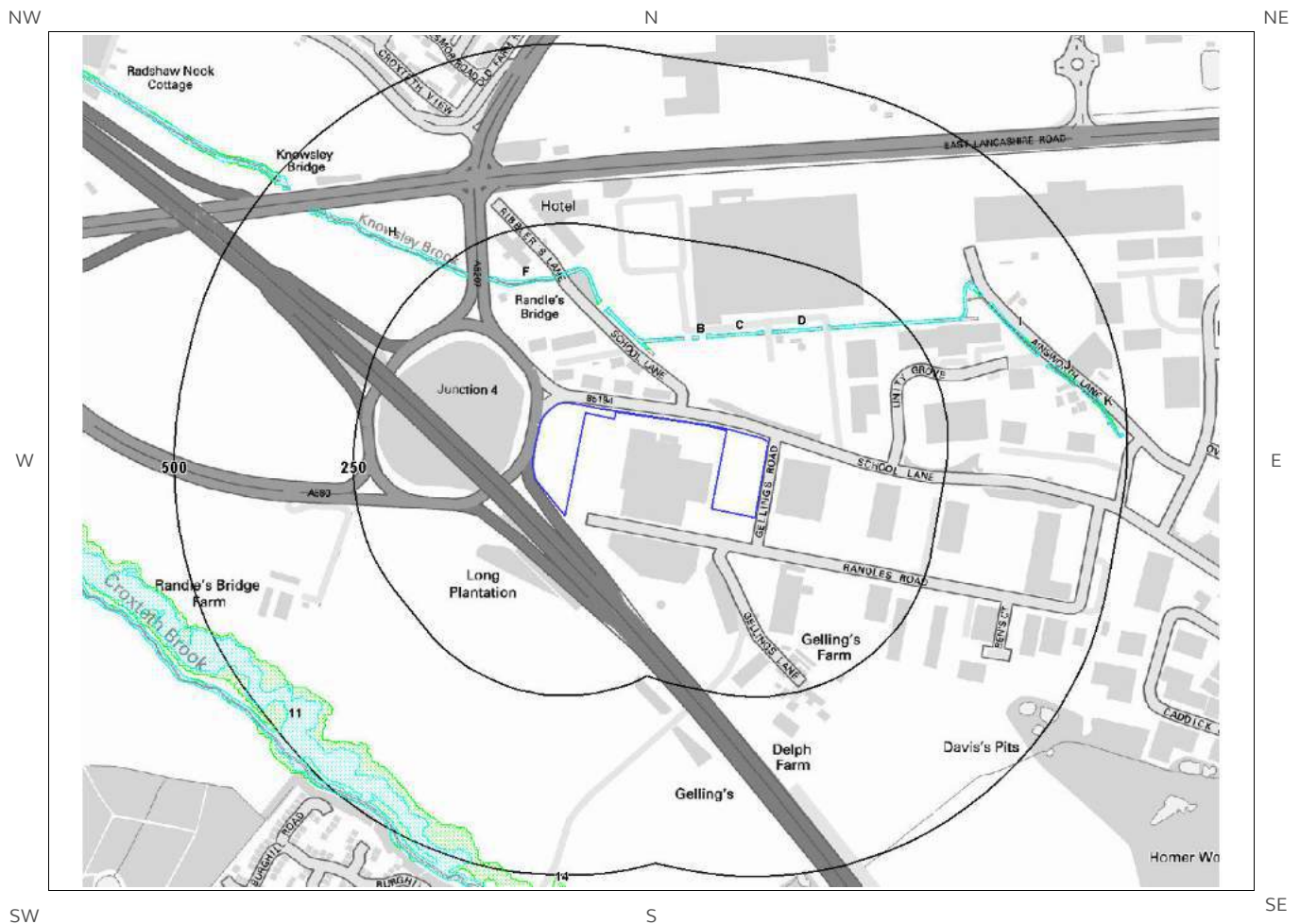
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
84	N
120	N
144	N
145	N
172	N
179	NE
217	NW

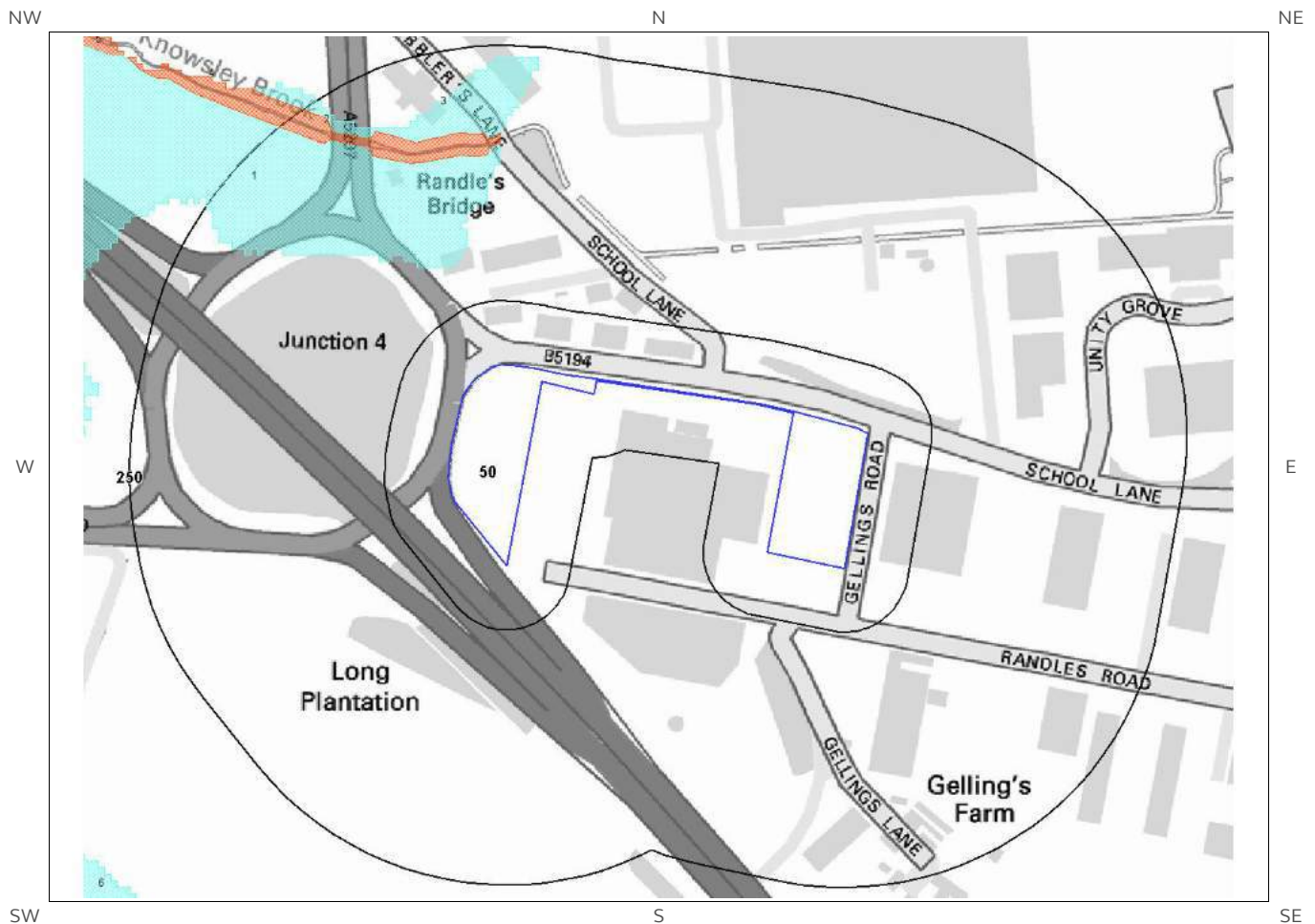
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



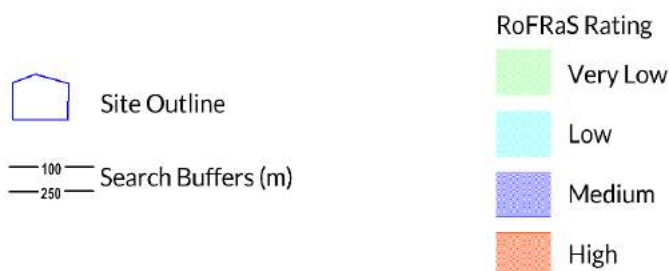
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m

Identified

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

ID	Distance (m)	Direction	Update	Type
1A	91	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
2B	114	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
3C	118	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
4E	143	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
5D	144	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
6F	171	N	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
7G	178	NE	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
8H	217	NW	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

Identified

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

ID	Distance (m)	Direction	Update	Type
1A	93	N	12-Oct-2018	Zone 3 - (Fluvial Models)
2B	114	N	12-Oct-2018	Zone 3 - (Fluvial Models)
3C	118	N	12-Oct-2018	Zone 3 - (Fluvial Models)
4E	144	N	12-Oct-2018	Zone 3 - (Fluvial Models)
5D	145	N	12-Oct-2018	Zone 3 - (Fluvial Models)

6F	171	N	12-Oct-2018	Zone 3 - (Fluvial Models)
7G	178	NE	12-Oct-2018	Zone 3 - (Fluvial Models)
8H	217	NW	12-Oct-2018	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite Very Low

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

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site None identified
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site Identified

Clearwater Flooding or Superficial Deposits Flooding Clearwater Flooding

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

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

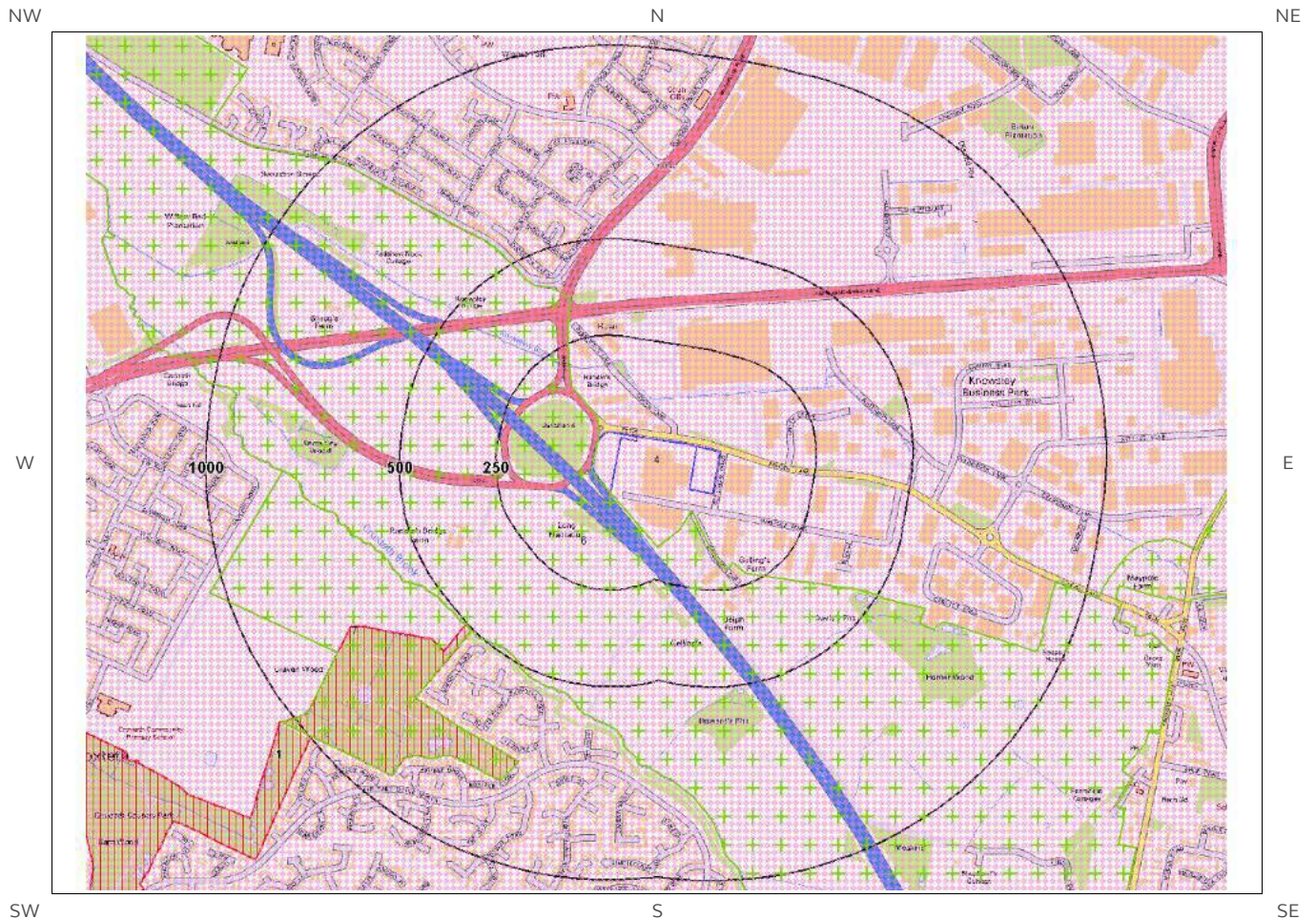
British Geological Survey confidence rating in this result

Low

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

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

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

3

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	505	SW	Croxteth	Natural England
Not shown	1332	S	Croxteth	Natural England
Not shown	1792	NE	Acornfield Plantation	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NVZ Name	Data Source
4	0	On Site	Existing	DEFRA
Not shown	1930	W	Existing	DEFRA

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

3

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

ID	Distance	Direction	Green Belt Name	Local Authority Name
6	0	On Site	Liverpool, Manchester and West Yorks Greenbelt	Knowsley
7	504	SW	Liverpool, Manchester and West Yorks Greenbelt	Liverpool District (B)
Not shown	1316	S	Liverpool, Manchester and West Yorks Greenbelt	Liverpool District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

Maximum Shrink-Swell** hazard rating identified on the study site Negligible

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

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

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Very Low

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

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

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

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

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

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

Very Low

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

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

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

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

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

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site

Low

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

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

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

9.2.1 Radon Affected Areas

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

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

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**The Coal
Authority**

Ordnance Survey

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Tel: 08456 050505



Local Authority

Authority: Knowsley Metropolitan Borough Council
Phone: 0151 489 6000

Web: <http://www.knowsley.gov.uk/>

Address: Municipal Buildings, Cherryfield Drive, Knowsley, L32 1TX

Gemapping PLC

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



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<https://www.groundsure.com/terms-and-conditions-feb11-2019>



EmapSite

Masdar House, 1 Reading Road,
Eversley, RG27 0RP

Report Reference: EMS-527528_709478

Your Reference: EMS_527528_709478

Report Date 15 Feb 2019

Report Delivery Email - pdf
Method:

Geo Insight

Address: Nexus Knowsley ,

Dear Sir/ Madam,

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

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
Groundsure Geo Insight

Address: Nexus Knowsley ,
Date: 15 Feb 2019
Reference: EMS-527528_709478
Client: EmapSite



Aerial Photograph Capture date: 11-Jun-2015
Grid Reference: 342087,396374
Site Size: 1.4788ha

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Overview of Findings

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

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

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

Section 1: Geology 1:10,000 Scale

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

Section 2: Geology 1:50,000 Scale

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

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

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

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

Yes

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

Yes

Section 3: Radon

3. Radon

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

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

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

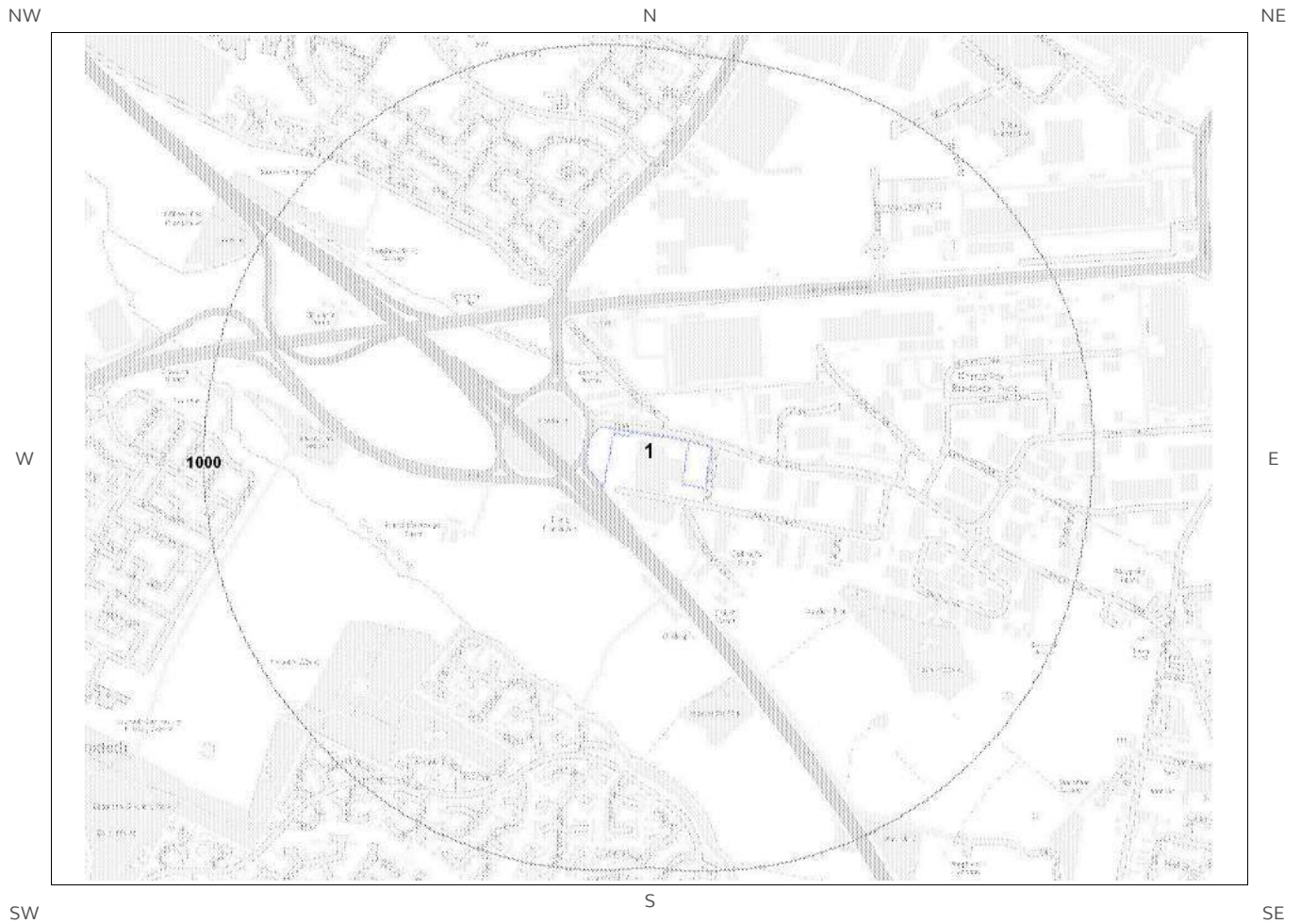
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	8	33	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	1	2	0

Section 5: Mining, Extraction & Natural Cavities

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

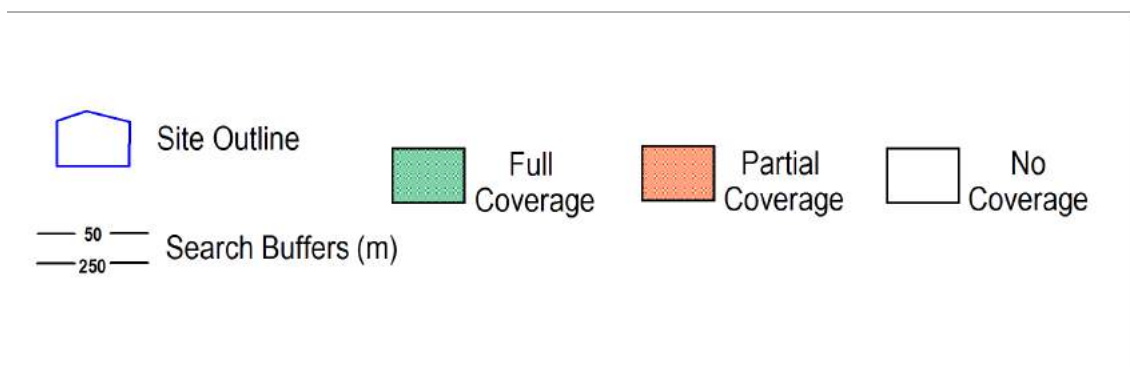
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Negligible				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Very Low				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	11		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	3	3	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

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

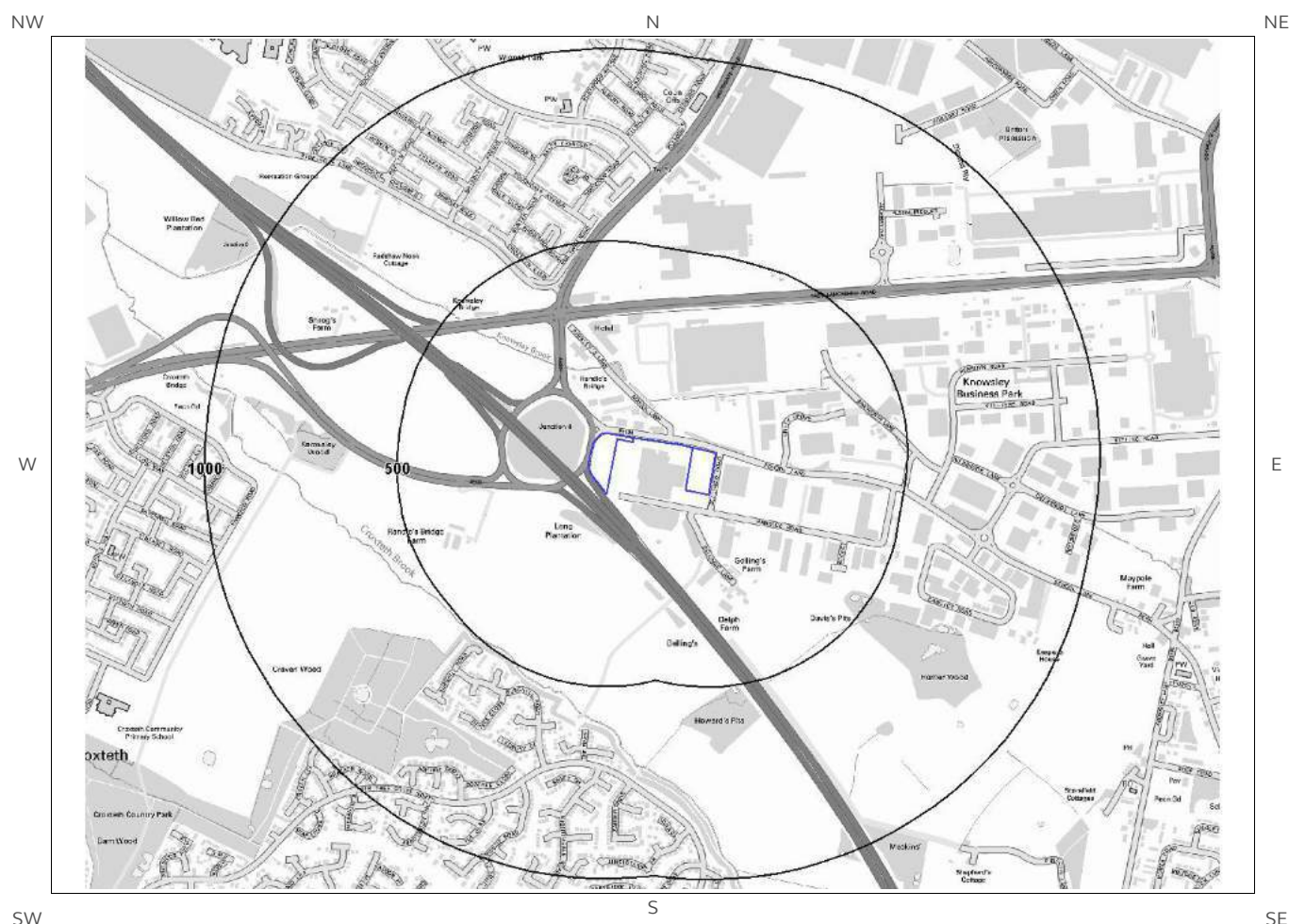
ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage

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

The definitions of coverage are as follows:

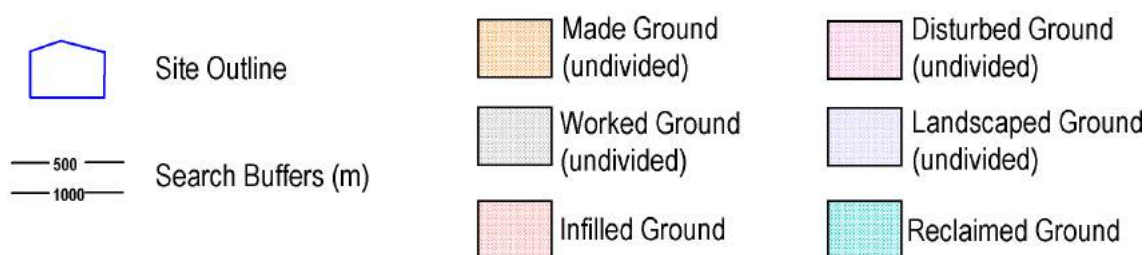
Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits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

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



Artificial Ground Legend

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1. Geology 1:10,000 scale

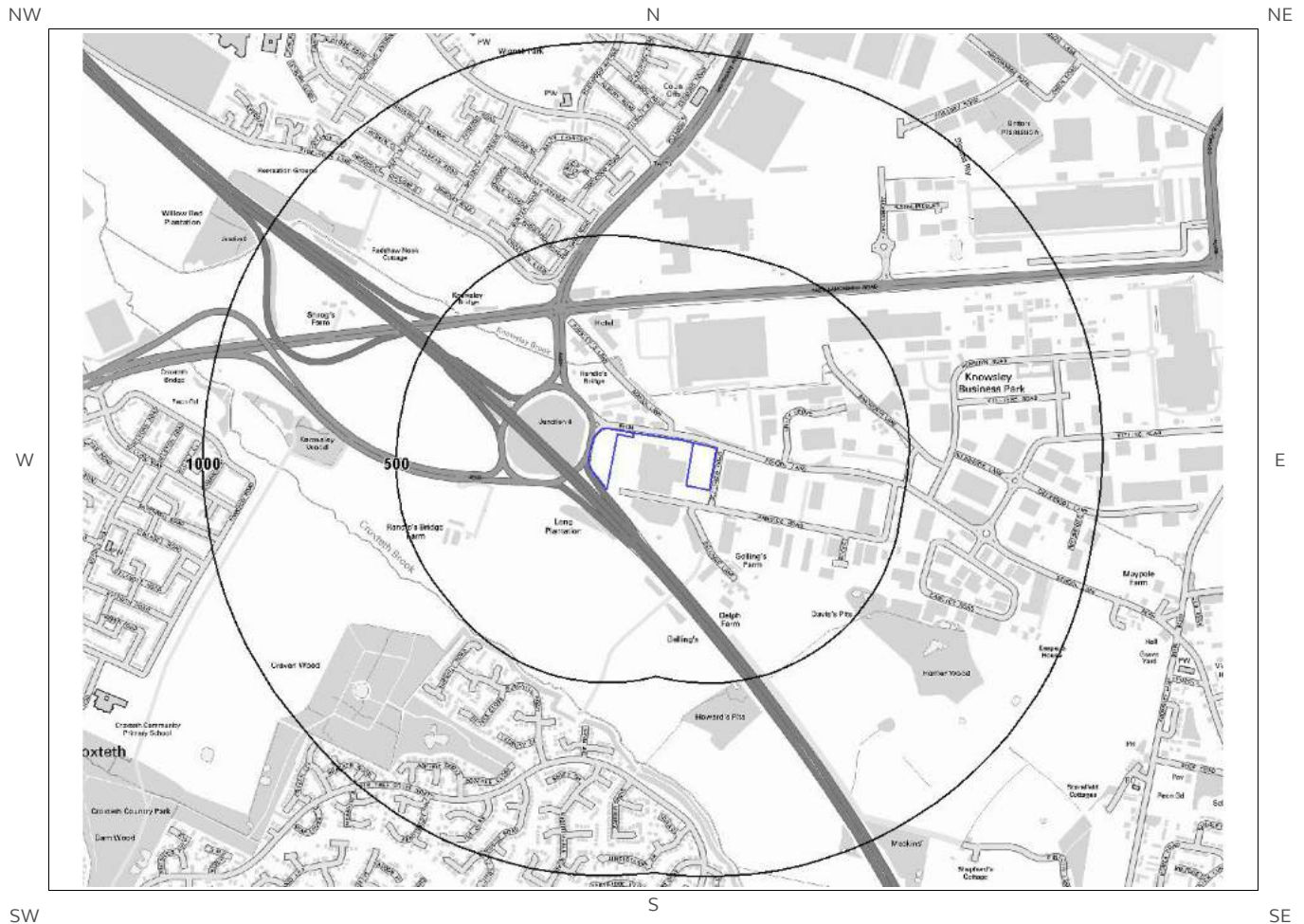
1.1 Artificial Ground

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

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

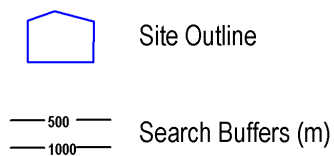
Database searched and no data found.

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



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

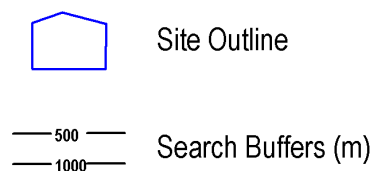
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

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

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

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1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

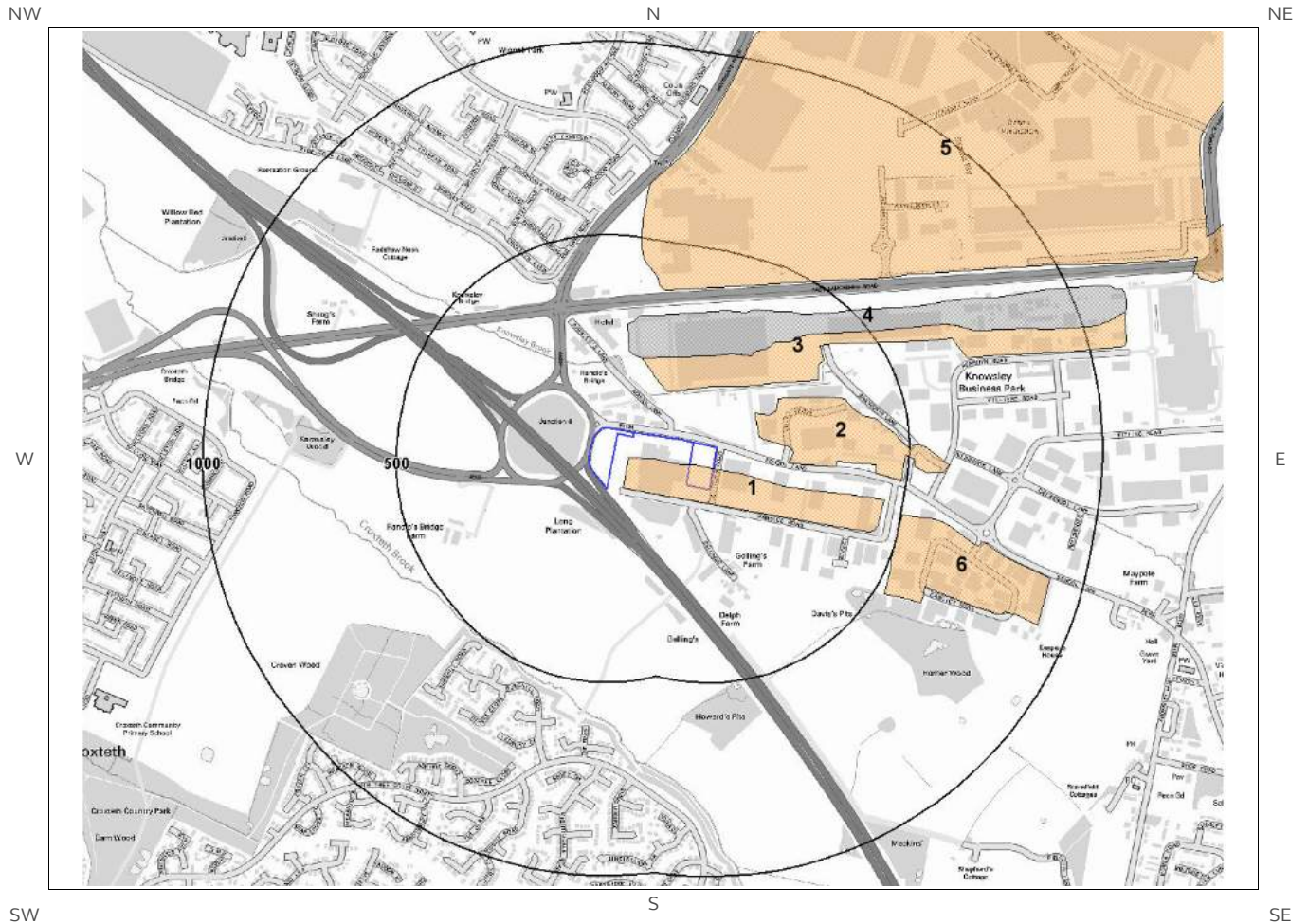
Database searched and no data found at this scale.

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

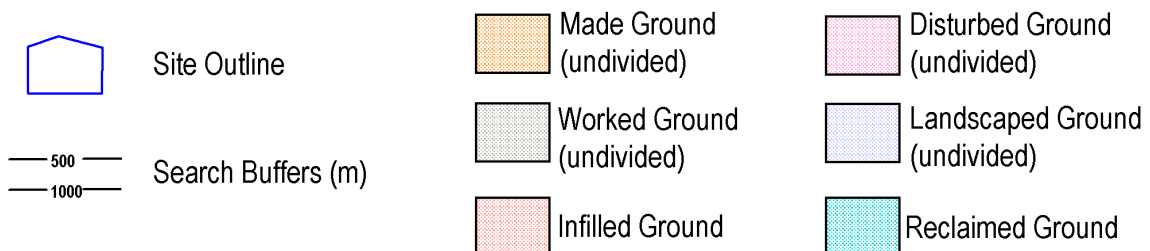
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 084

2.1.1 Artificial/ Made Ground

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

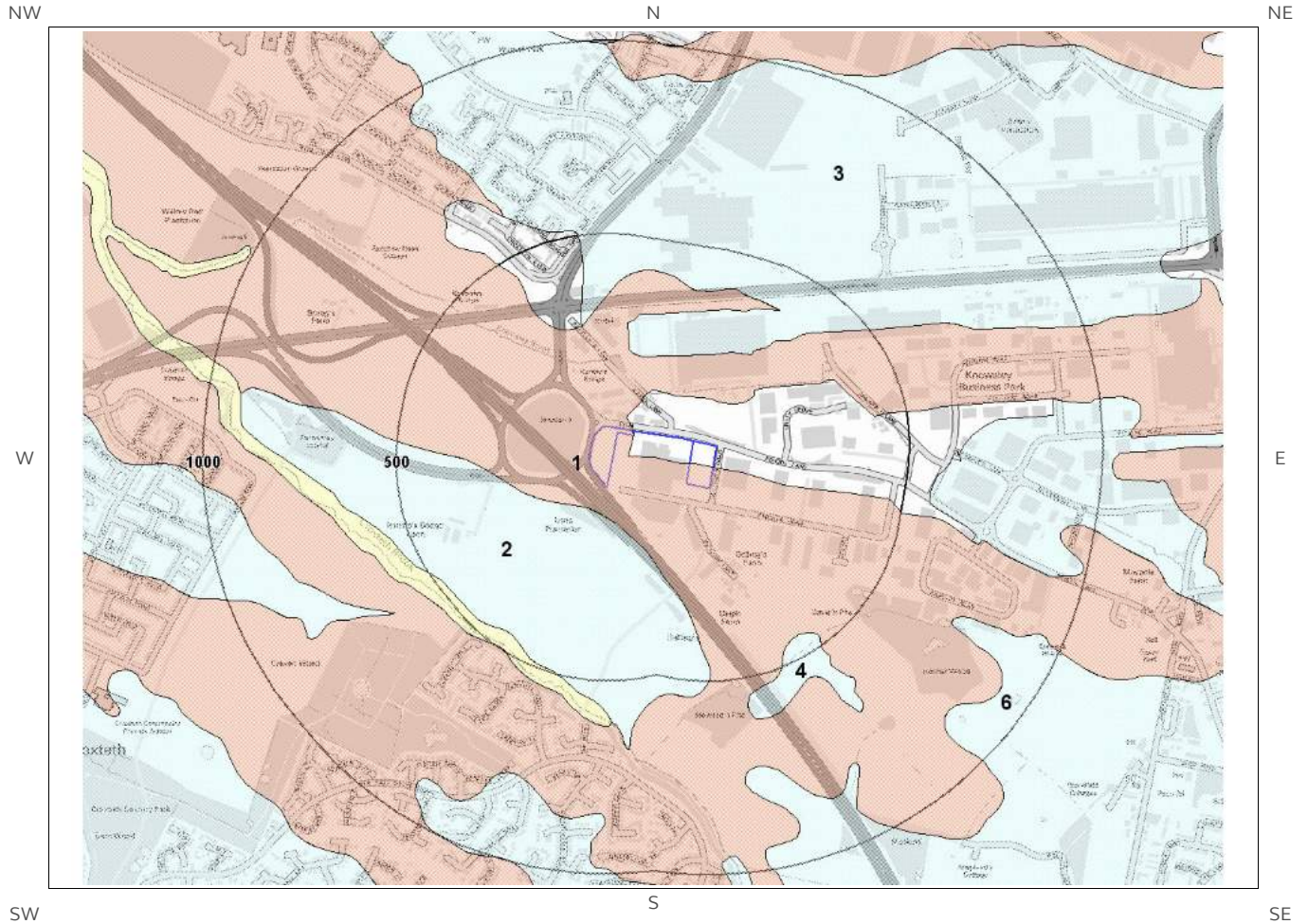
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	114.0	E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	116.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
4	194.0	N	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
5	375.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
6	500.0	E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

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

Database searched and no data found.

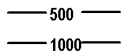
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	SSA-S	SHIRDLEY HILL SAND FORMATION	SAND
2	68.0	SW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	194.0	N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	443.0	SE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
5	453.0	SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	High	High
42.0	S	Mixed	High	Low

2.2.3 Landslip

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

Database searched and no data found.

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

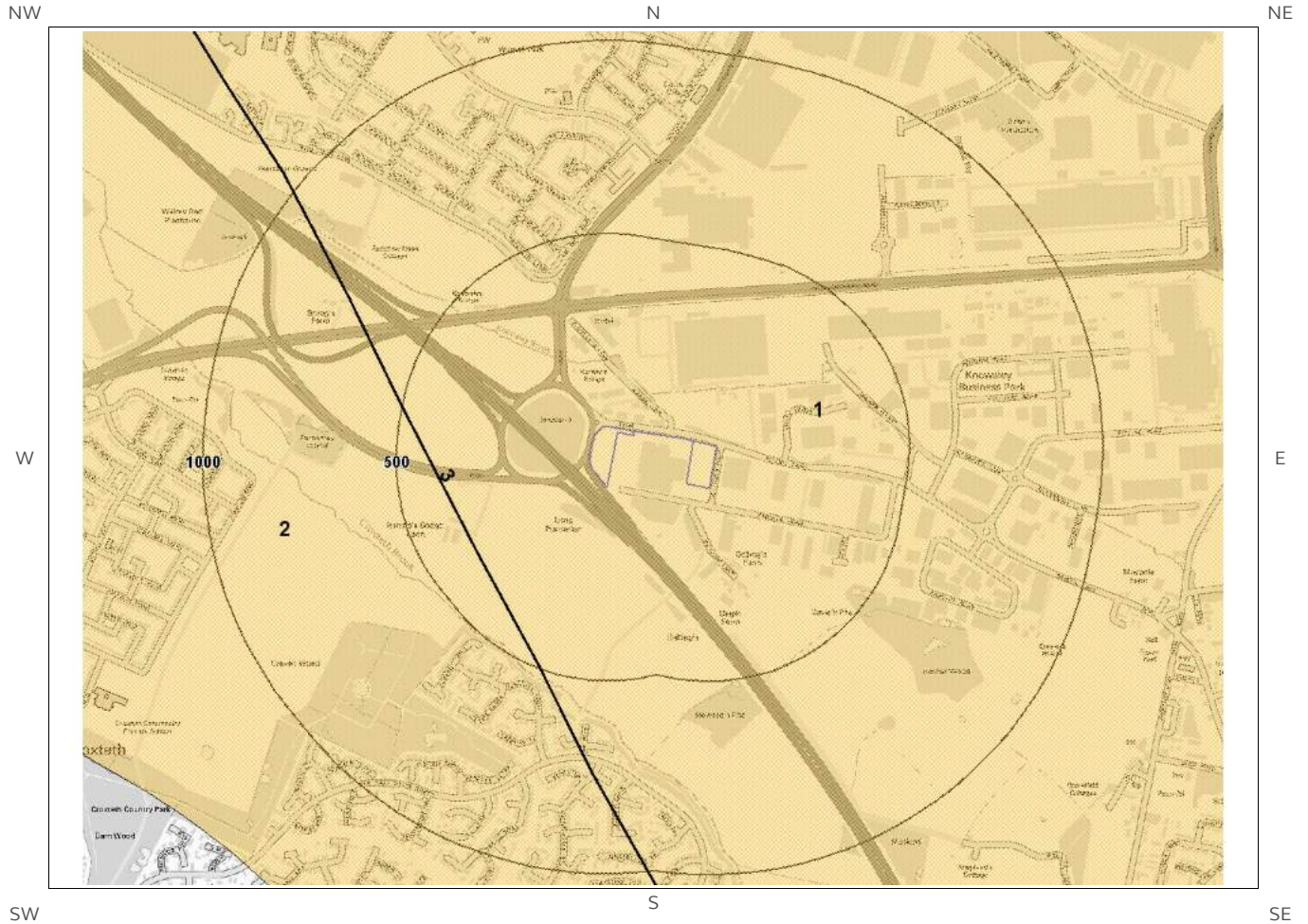
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

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

Database searched and no data found.

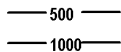
2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 084

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN
2	362.0	SW	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN

2.3.2 Permeability of Bedrock Ground

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

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	High

2.3.3 Linear features

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

ID	Distance	Direction	Category Description	Feature Description
3	362.0	SW	FAULT	Fault, inferred

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

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

3 Radon Data

3.1 Radon Affected Areas

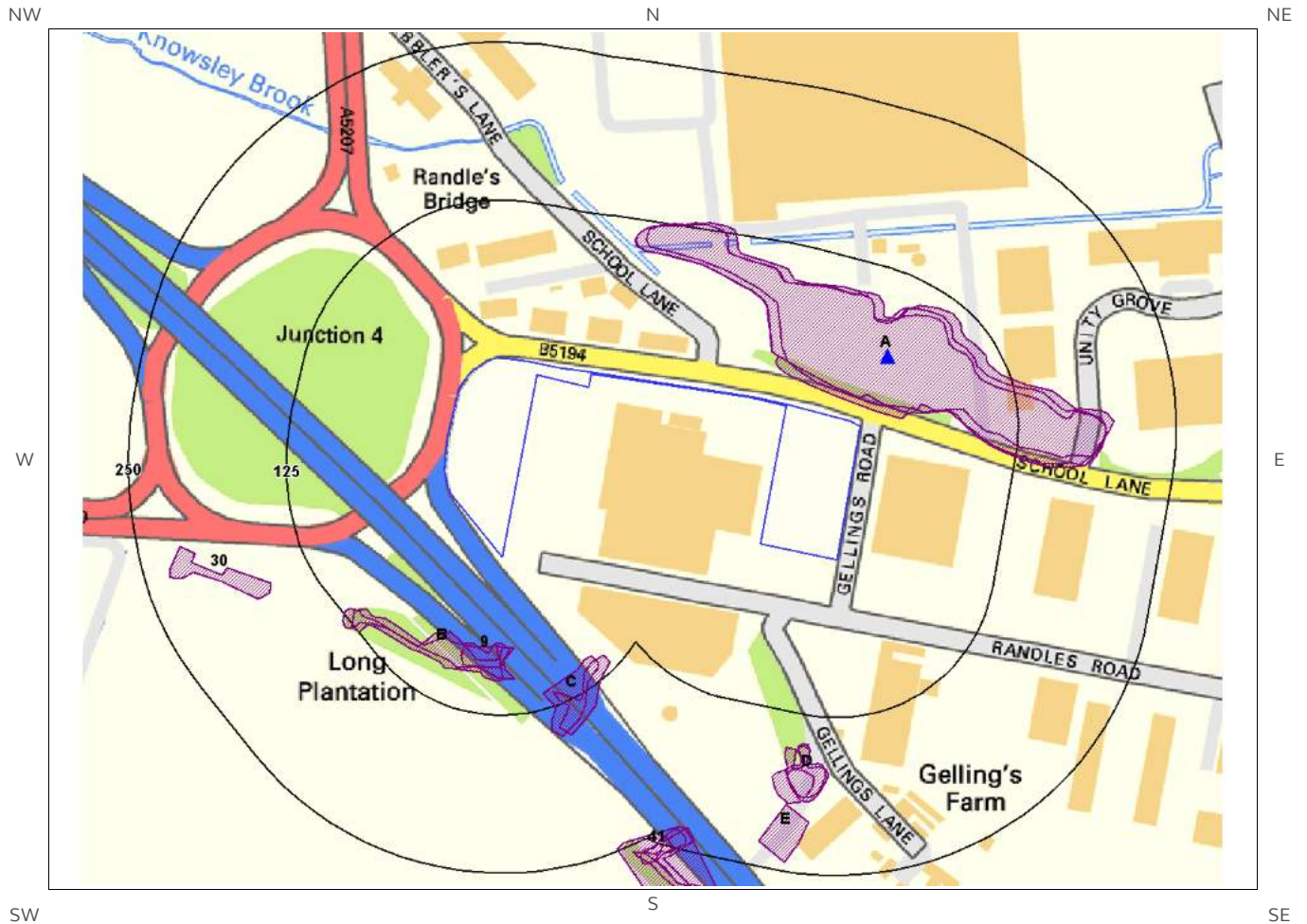
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

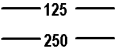
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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- | | | | |
|---|--------------------|---|----------------------------------|
|  | Site Outline |  | Historic Surface Ground Workings |
|  | Search Buffers (m) |  | Historic Underground Workings |
| | |  | Current Ground Workings |

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	15.0	N	342267 396464	Water Body	1925
2A	15.0	N	342267 396464	Water Body	1925
3A	19.0	N	342275 396468	Water Body	1955
4A	20.0	NE	342268 396465	Water Body	1925
5A	20.0	NE	342268 396465	Water Body	1938
6A	20.0	NE	342268 396465	Water Body	1907
7A	20.0	NE	342268 396465	Pond	1938
8A	20.0	NE	342268 396465	Water Body	1892
9	68.0	S	341963 396218	Pond	1966
10B	70.0	S	341913 396227	Ponds	1938
11B	70.0	S	341913 396227	Ponds	1938
12B	70.0	S	341913 396227	Ponds	1892
13B	70.0	S	341913 396227	Ponds	1925
14B	70.0	S	341913 396227	Ponds	1907
15B	71.0	S	341921 396228	Ponds	1955
16C	103.0	SE	342030 396187	Ponds	1938
17C	103.0	SE	342030 396187	Ponds	1938
18C	103.0	SE	342030 396187	Ponds	1892
19C	103.0	SE	342030 396187	Ponds	1907
20C	103.0	SE	342030 396187	Ponds	1925
21C	109.0	SE	342022 396187	Ponds	1966

ID	Distance (m)	Direction	NGR	Use	Date
22C	109.0	SE	342022 396187	Ponds	1955
23D	148.0	S	342216 396127	Pond	1925
24D	148.0	S	342216 396127	Pond	1907
25D	148.0	S	342216 396127	Pond	1938
26D	148.0	S	342216 396127	Pond	1938
27D	150.0	S	342217 396124	Pond	1925
28D	150.0	S	342217 396124	Pond	1925
29D	154.0	S	342206 396124	Pond	1892
30	159.0	SW	341722 396284	Ponds	1892
31E	198.0	S	342198 396078	Cuttings	1988
32E	198.0	S	342198 396078	Cuttings	1976
33F	232.0	S	342131 396026	Ponds	1966
34F	232.0	S	342131 396026	Ponds	1955
35F	232.0	S	342121 396013	Unspecified Pits	1925
36F	232.0	S	342121 396013	Unspecified Pits	1925
37F	235.0	S	342124 396026	Ponds	1938
38F	235.0	S	342124 396026	Unspecified Pits	1938
39F	235.0	S	342124 396026	Unspecified Pits	1925
40F	235.0	S	342124 396026	Unspecified Pits	1907
41	243.0	S	342098 396065	Ponds	1892

4.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

4.3 Current Ground Workings

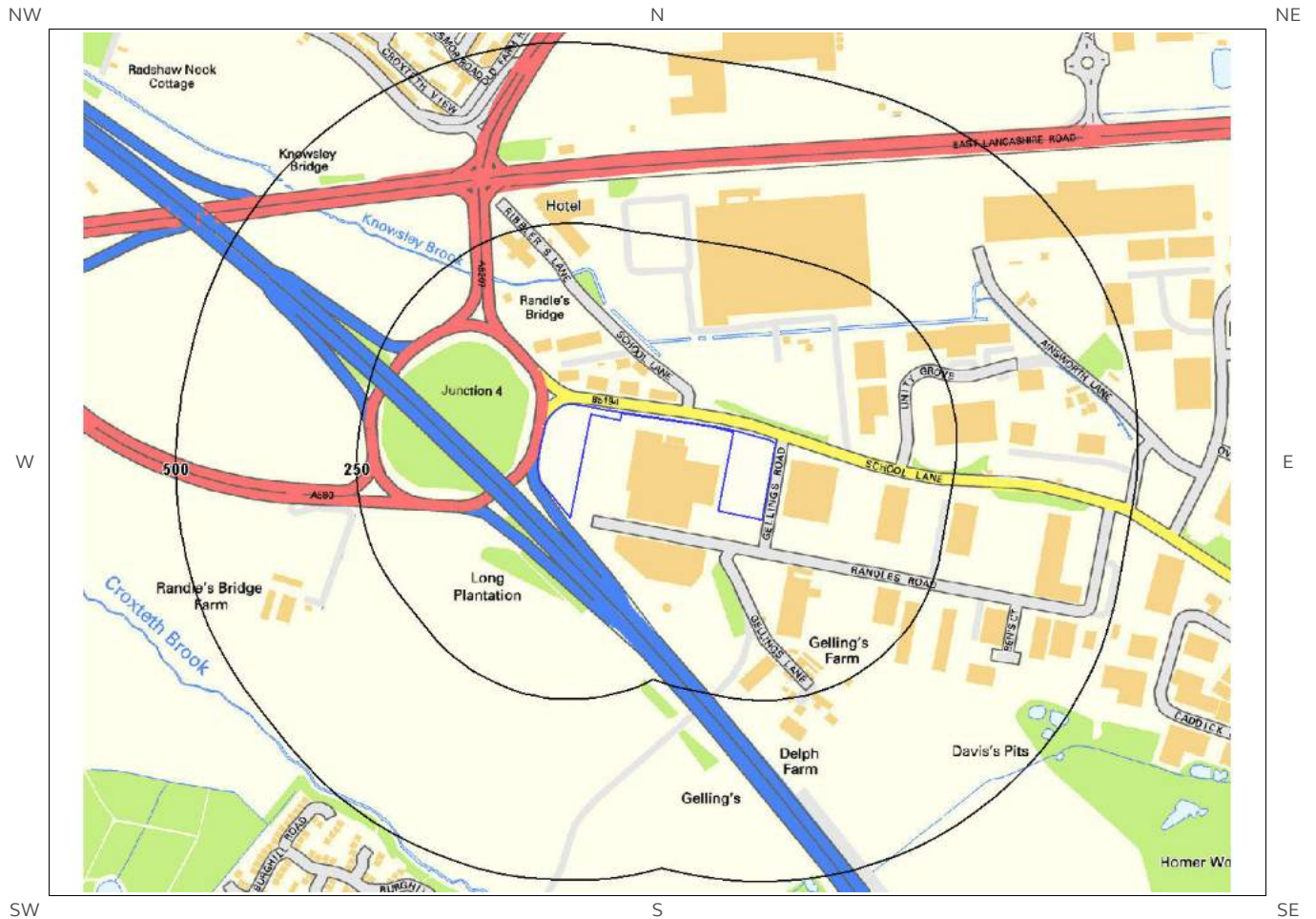
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

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

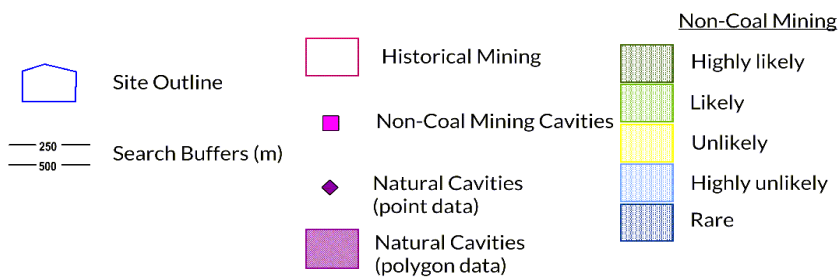
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
42A	59.0	NE	342280 396455	Sandstone	Knowsley Delph	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	426.0	N	341847 396862	Sand & Gravel	Cherry Field House Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	484.0	W	341453 396457	Sand & Gravel	Radshaw Nook Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

Database searched and no data found.

5.2 Coal Mining

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

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

Database searched and no data found.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

Database searched and no data found.

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

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

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Tin Mining

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

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

Database searched and no data found.

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

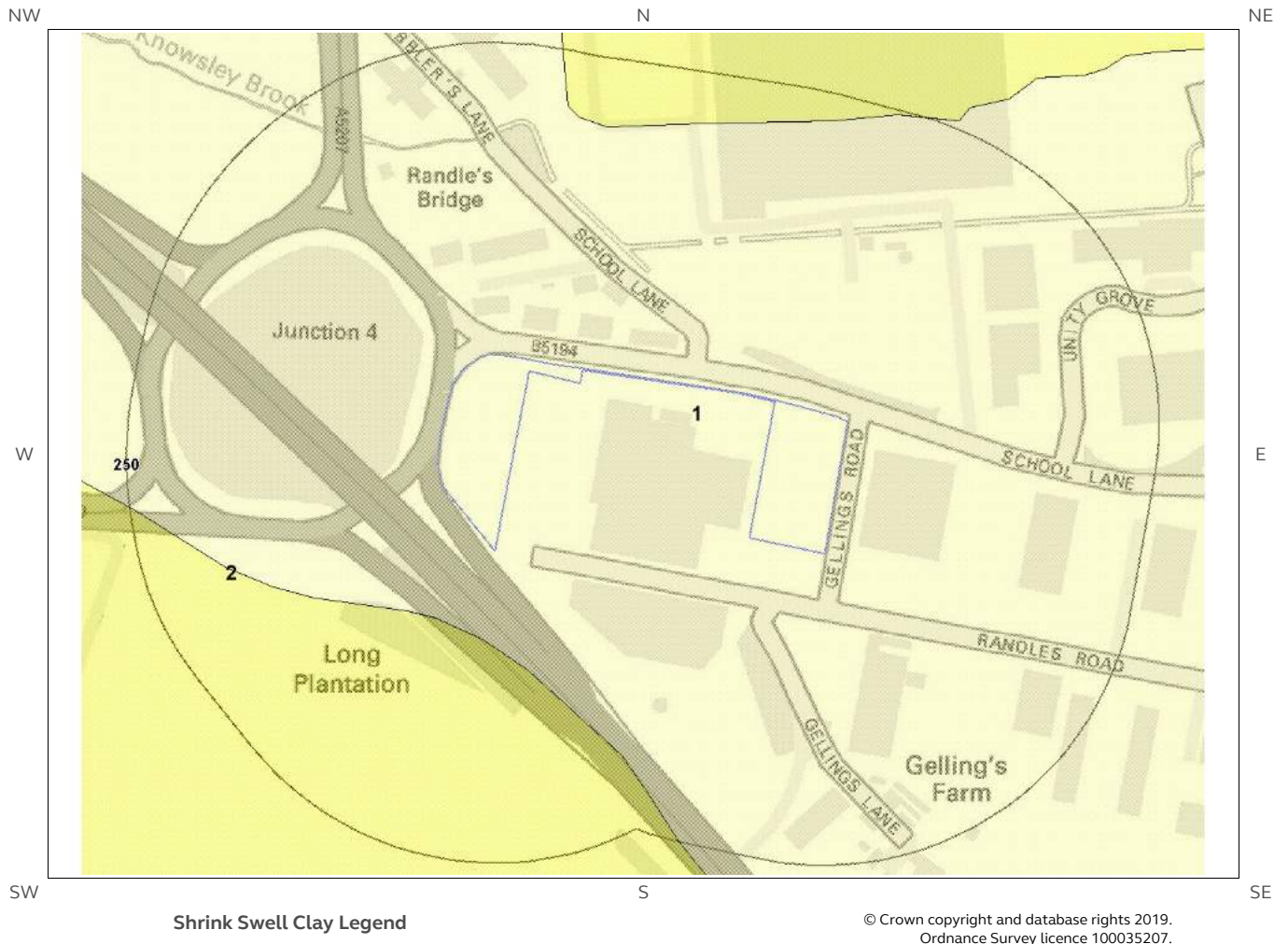
Are there any Clay Mining areas within 1000m of the study site boundary?

No

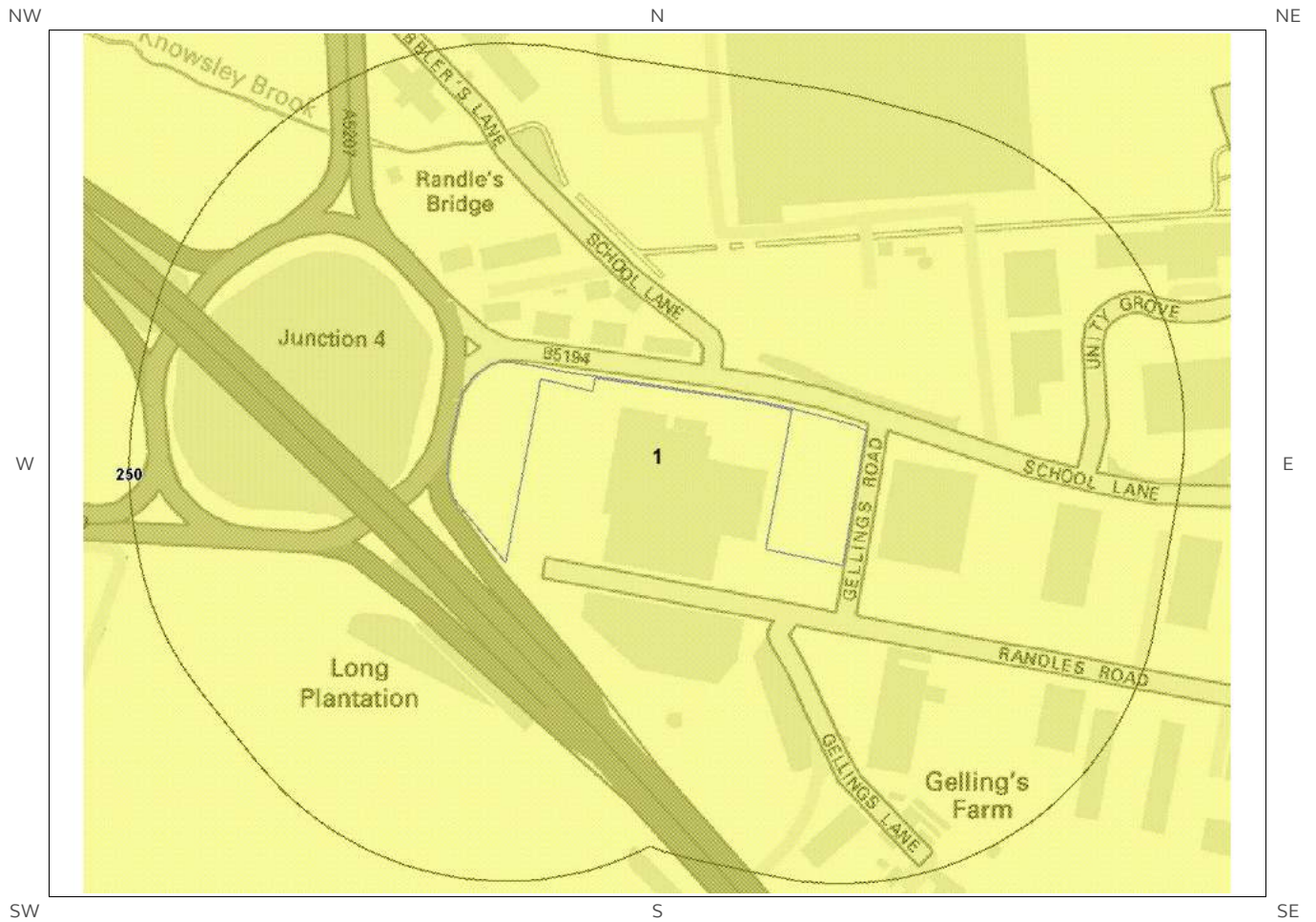
Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



6.2 Landslides map

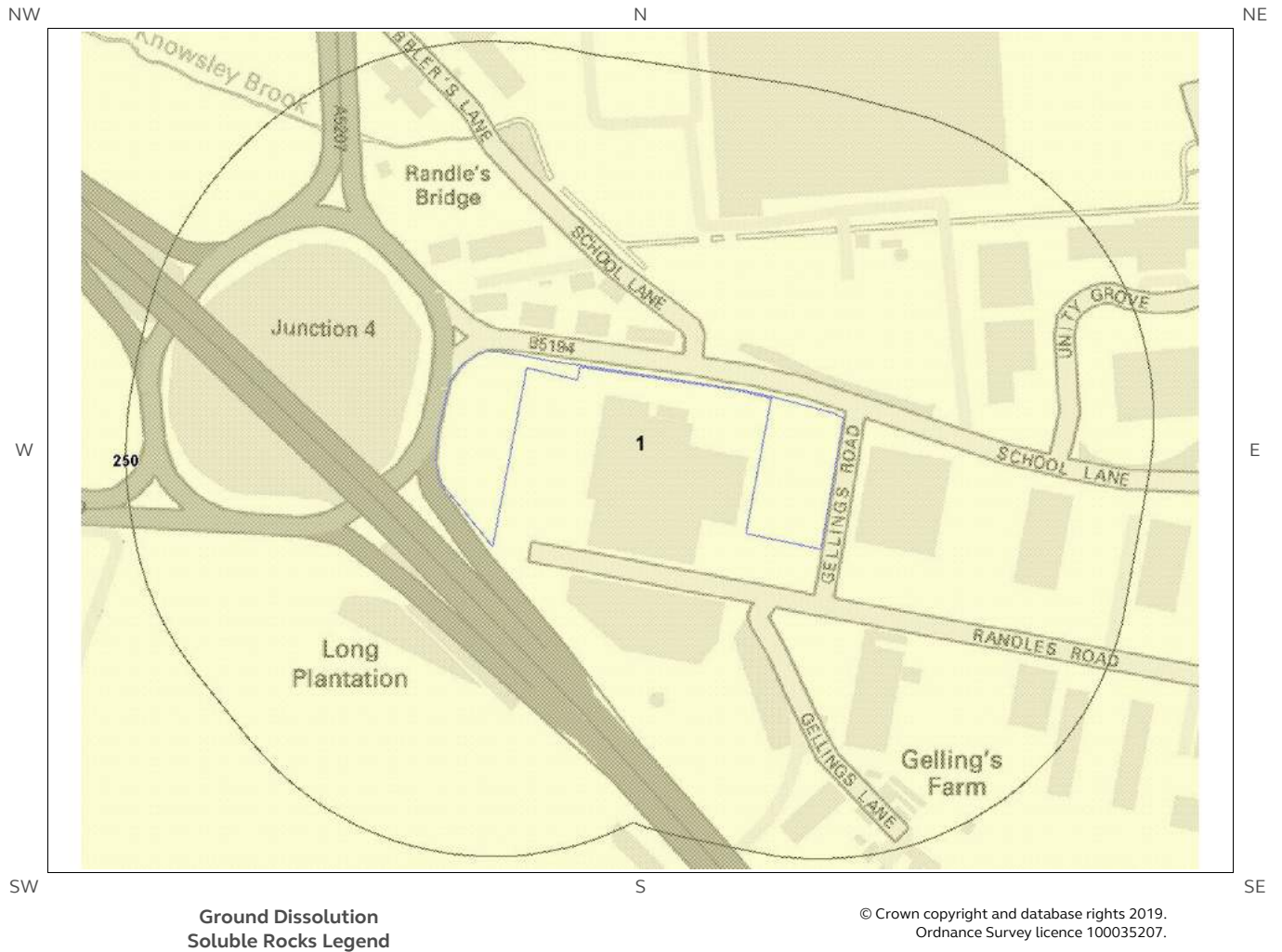


Landslides Legend

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6.3 Ground Dissolution of Soluble Rocks map



Site Outline

Search Buffers (m)
— 125 —
— 250 —

No Data / Null

Negligible

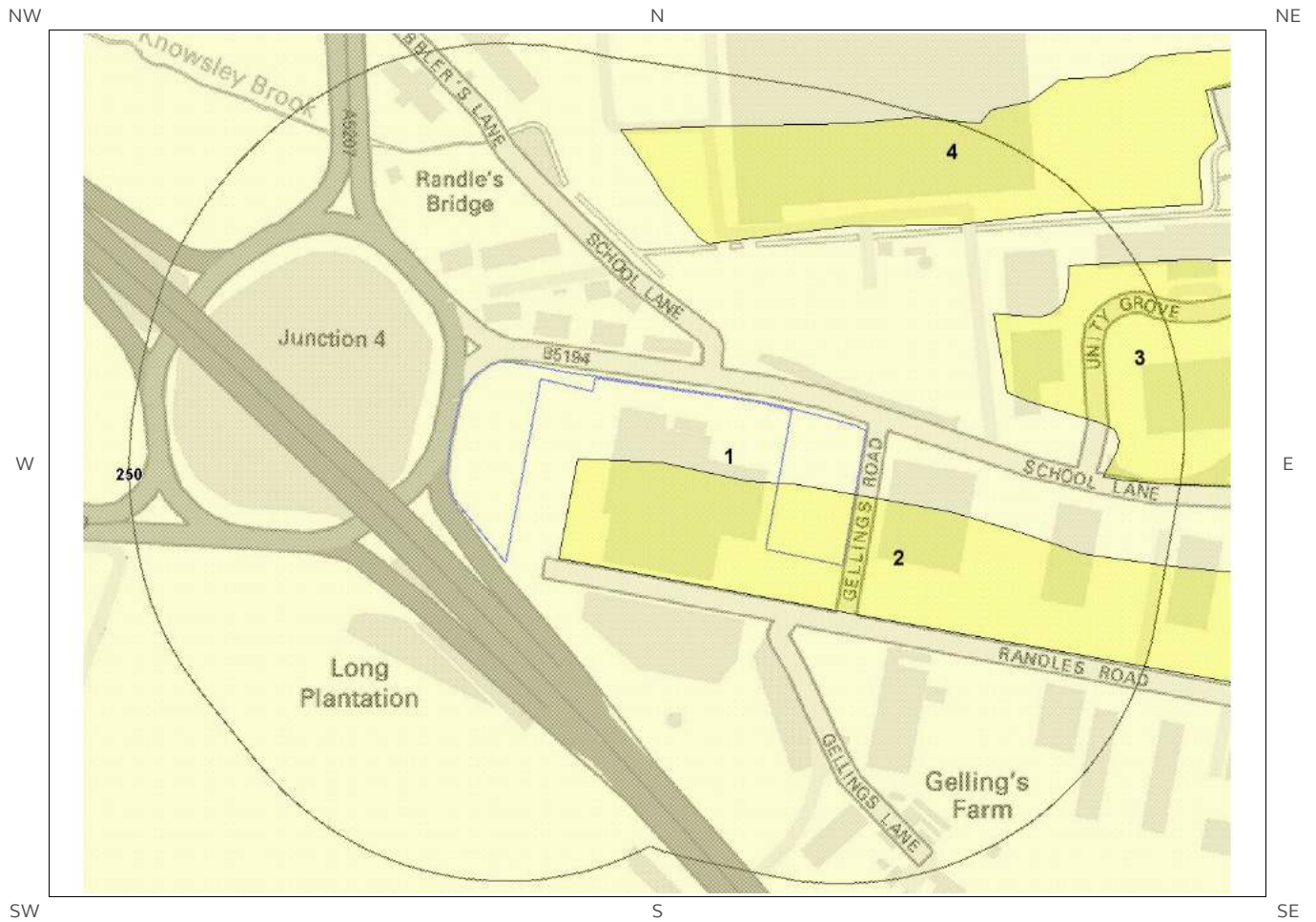
Very Low

Low

Moderate

High

6.4 Compressible Deposits map

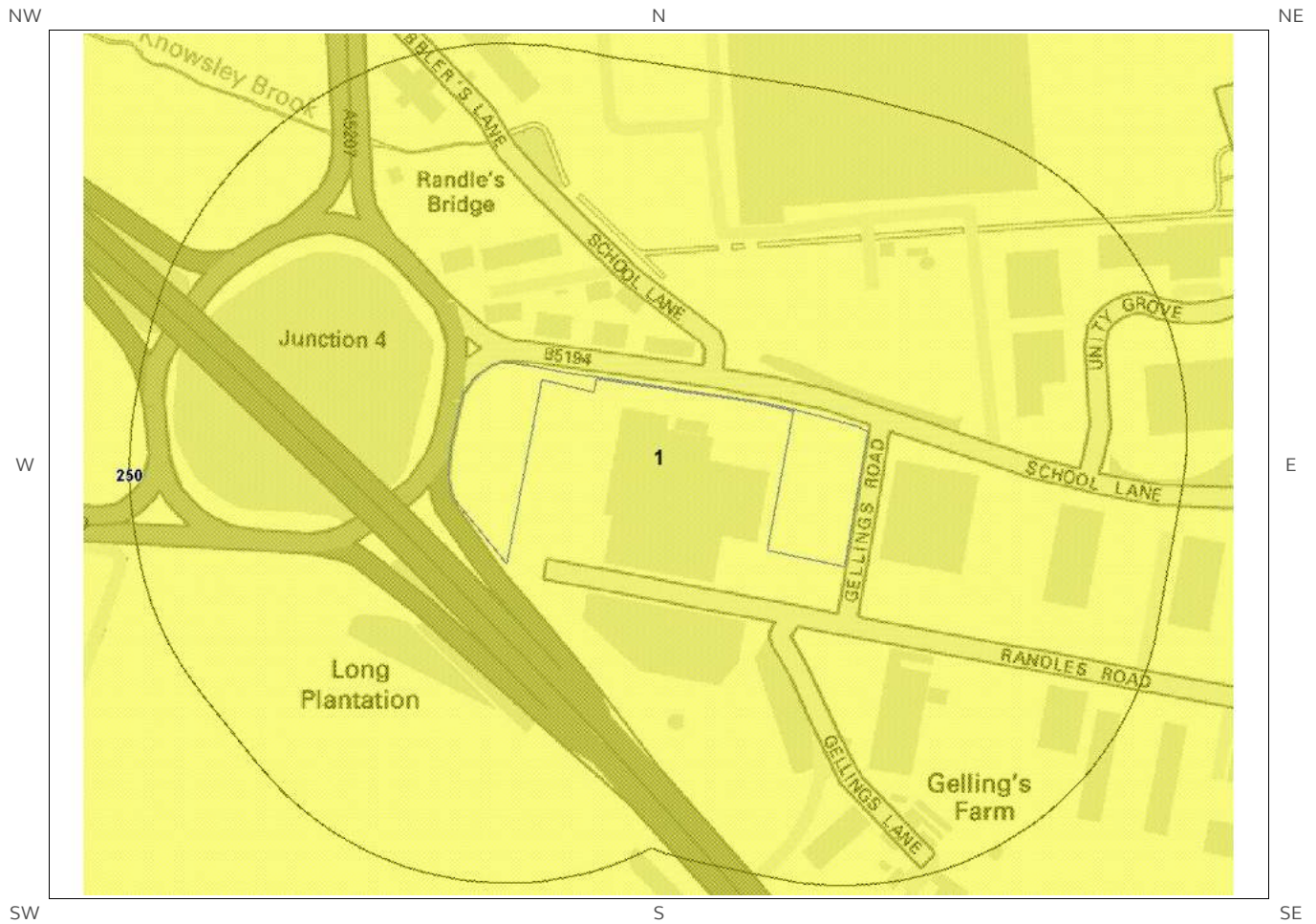


Compressible Deposits Legend

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6.5 Collapsible Deposits map

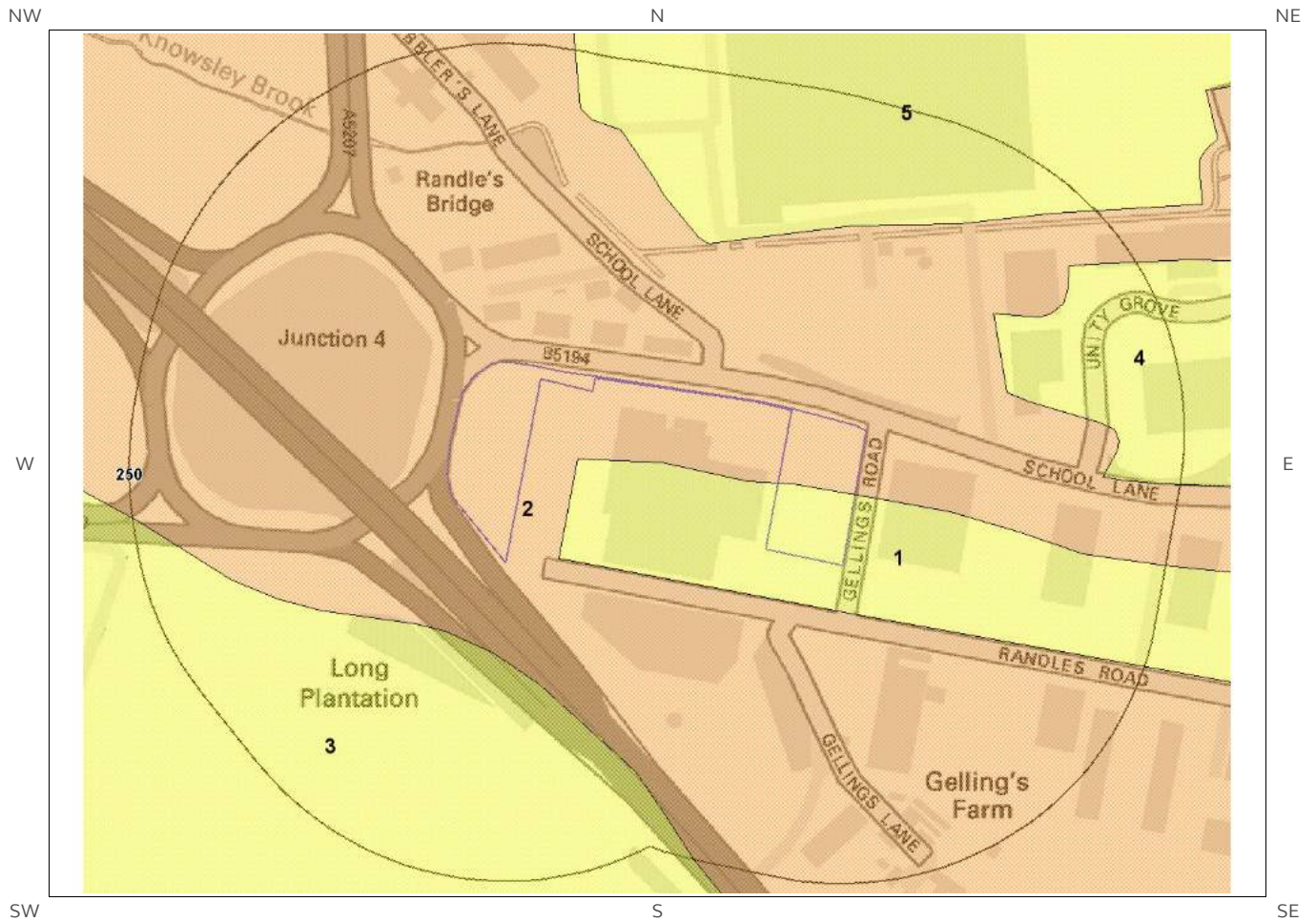


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

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

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

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

6.4 Compressible Deposits

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

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

6.5 Collapsible Deposits

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

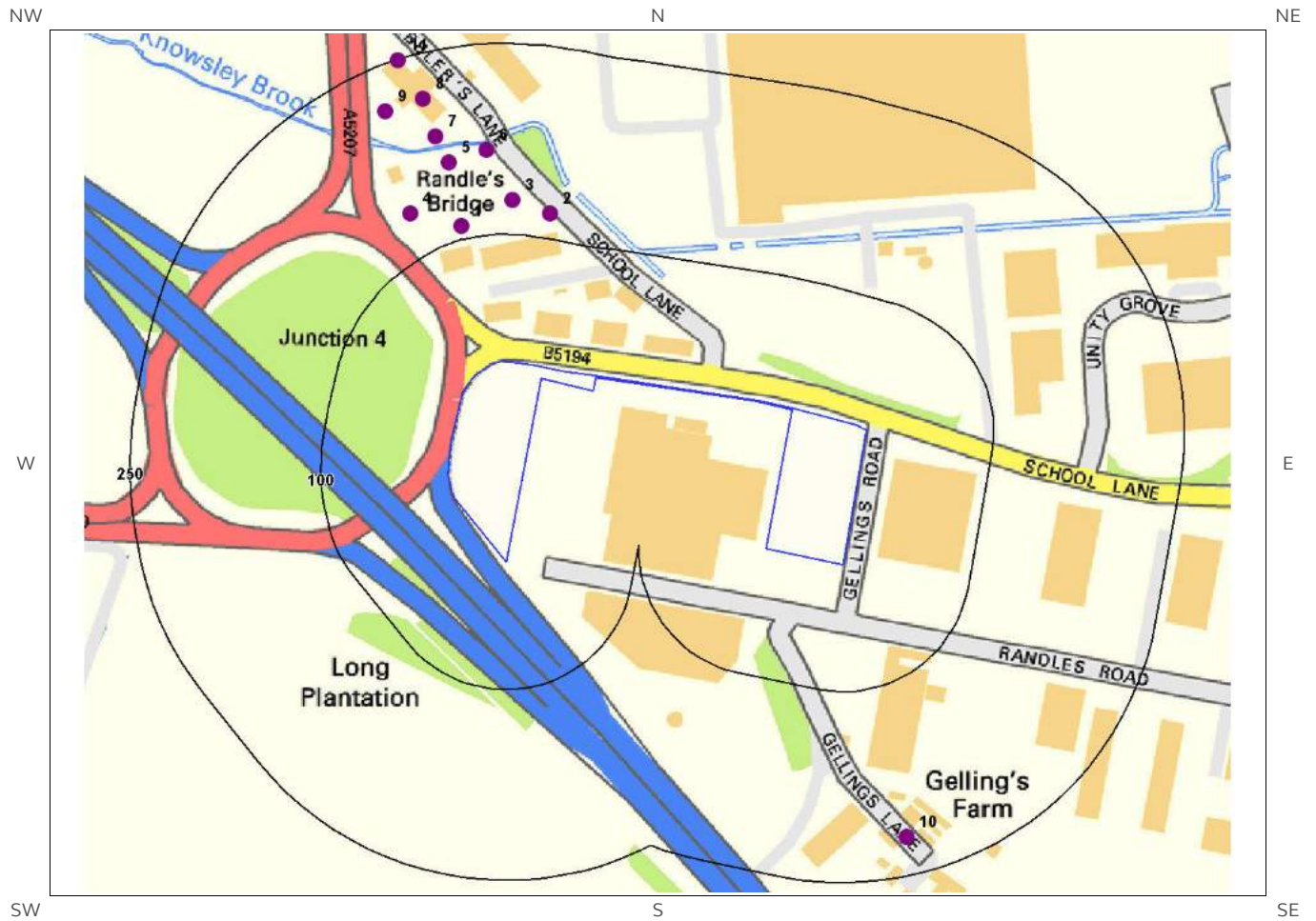
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

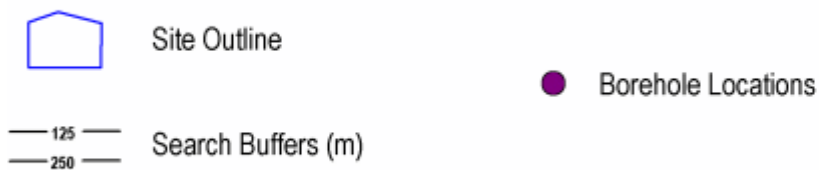
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

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

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

11

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	110.0	N	341940 396560	SJ49NW184	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 9
2	120.0	N	342010 396570	SJ49NW180	2.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 5
3	126.0	N	341980 396580	SJ49NW181	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 6
4	134.0	NW	341900 396570	SJ49NW185	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 10
5	161.0	N	341930 396610	SJ49NW183	2.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 8
6	167.0	N	341960 396620	SJ49NW182	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 7
7	183.0	N	341920 396630	SJ49NW179	2.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 4
8	215.0	N	341910 396660	SJ49NW178	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 3
9	215.0	NW	341880 396650	SJ49NW186	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 11
10	220.0	S	342290 396080	SJ49NW648	36.6	GELLINGS FARM
11	249.0	N	341890 396690	SJ49NW177	1.0	MERSEYSIDE HIRE CENTRE,KNOWSLEY TP 2

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

- #1: scans.bgs.ac.uk/sobi_scans/boreholes/165150
- #2: scans.bgs.ac.uk/sobi_scans/boreholes/165146
- #3: scans.bgs.ac.uk/sobi_scans/boreholes/165147
- #4: scans.bgs.ac.uk/sobi_scans/boreholes/165151
- #5: scans.bgs.ac.uk/sobi_scans/boreholes/165149
- #6: scans.bgs.ac.uk/sobi_scans/boreholes/165148
- #7: scans.bgs.ac.uk/sobi_scans/boreholes/165145
- #8: scans.bgs.ac.uk/sobi_scans/boreholes/165144
- #9: scans.bgs.ac.uk/sobi_scans/boreholes/165152
- #10: scans.bgs.ac.uk/sobi_scans/boreholes/165614
- #11: scans.bgs.ac.uk/sobi_scans/boreholes/165143

8 Estimated Background Soil Chemistry

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

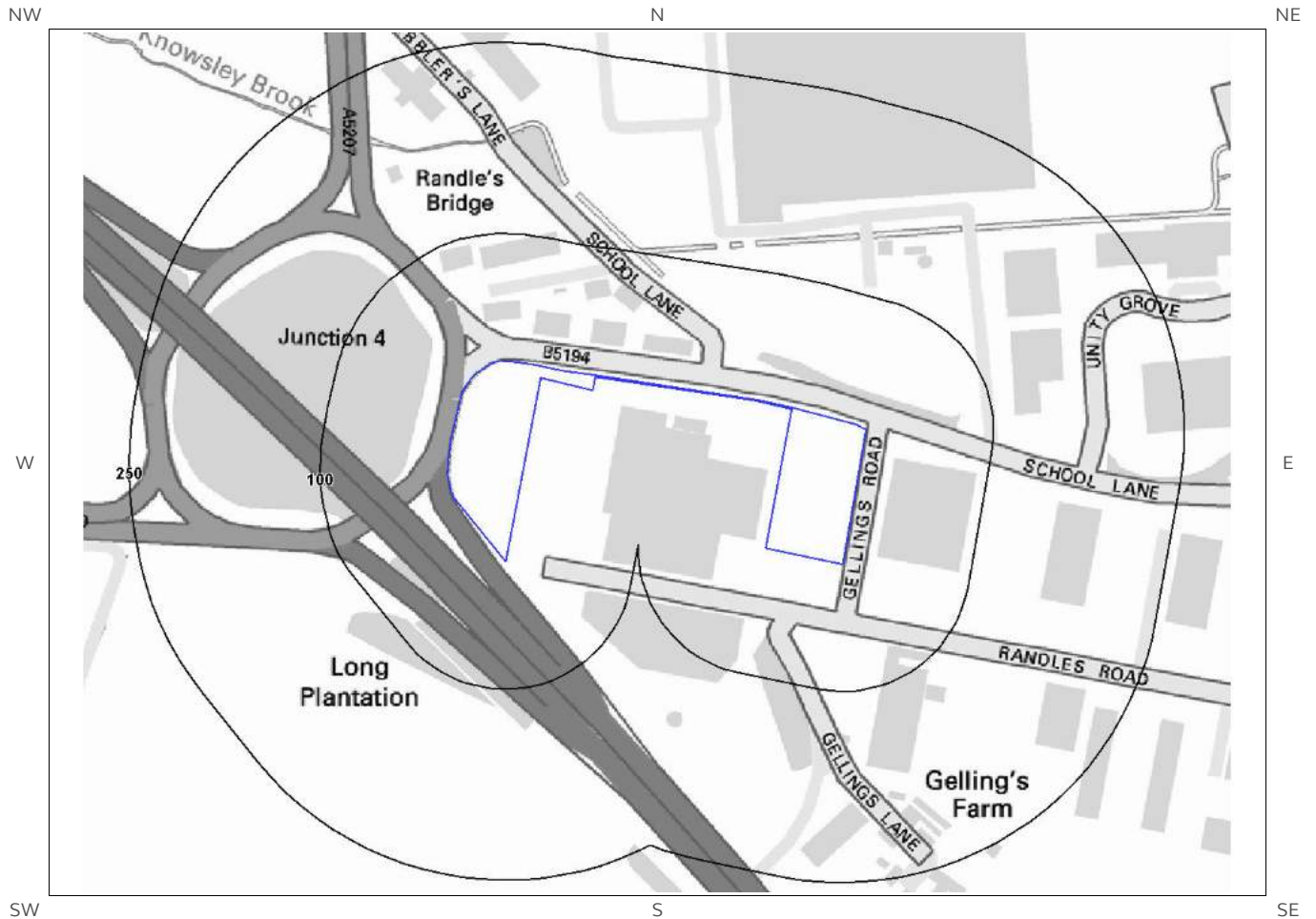
6

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
42.0	S	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	120 - 180 mg/kg	15 - 30 mg/kg	<100 mg/kg
46.0	N	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
49.0	N	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg

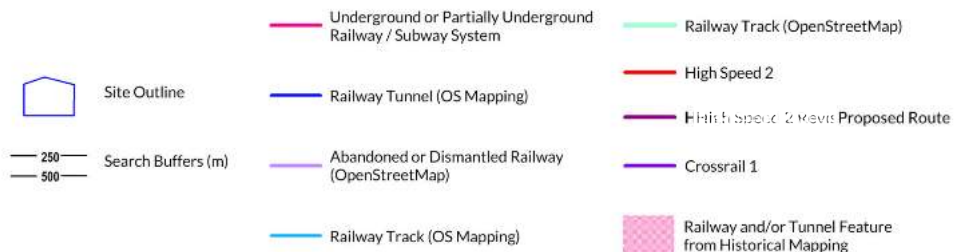
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

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

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

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

Database searched and no data found.

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

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

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

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

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

Database searched and no data found.

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

9.5 Railway Projects

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

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

Is the study site within 500m of the route of the Crossrail 1 rail project? No

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

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

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

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NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS Geological Hazards Reports and general geological enquiries

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The Coal
Authority

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



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Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-feb11-2019>

APPENDIX 6 – Contaminated Land Officers Report



Knowsley Council

Mr Callum Holden
Groundtech Consulting Limited,
PO Box 499,
Manchester.
M28 8EE

Dear Mr Holden,

Nexus, Gellings Lane, Knowsley, Knowsley, L34 9HX

Further to your environmental information request please find the responses to your questions below:

1. Details of any known environmental problems or land reclamation schemes that would affect the site.

Environmental Health are not aware of any environmental problems or land reclamation scheme that would affect the site.

2. Whether the Local Authority considers the site to be, or likely to be, contaminated land under Section S78 of the Environmental Protection Act 1990 as amended by the Environment Act 1995.

The study site has not been determined as contaminated land under part 2A of the Environmental Protection Act 1990. The Knowsley Business Park area, including the study site, has been prioritised as part of the strategic inspection of the borough due to the historic commercial and industrial land use. The priority status is high, but at present we have no plans to carry out further investigations under Part 2A of the Environmental Protection Act 1990. This could change if we obtained further information which demonstrated that a clear risk to human health or controlled water was present.

3. Whether the site is likely to be considered the subject of a Remediation Notice either currently or in the future.

At this present time the site is not likely to be considered the subject of a Remediation Notice and unless, as stated in point 2 above we obtain further information, we have no plans to serve one in the future.

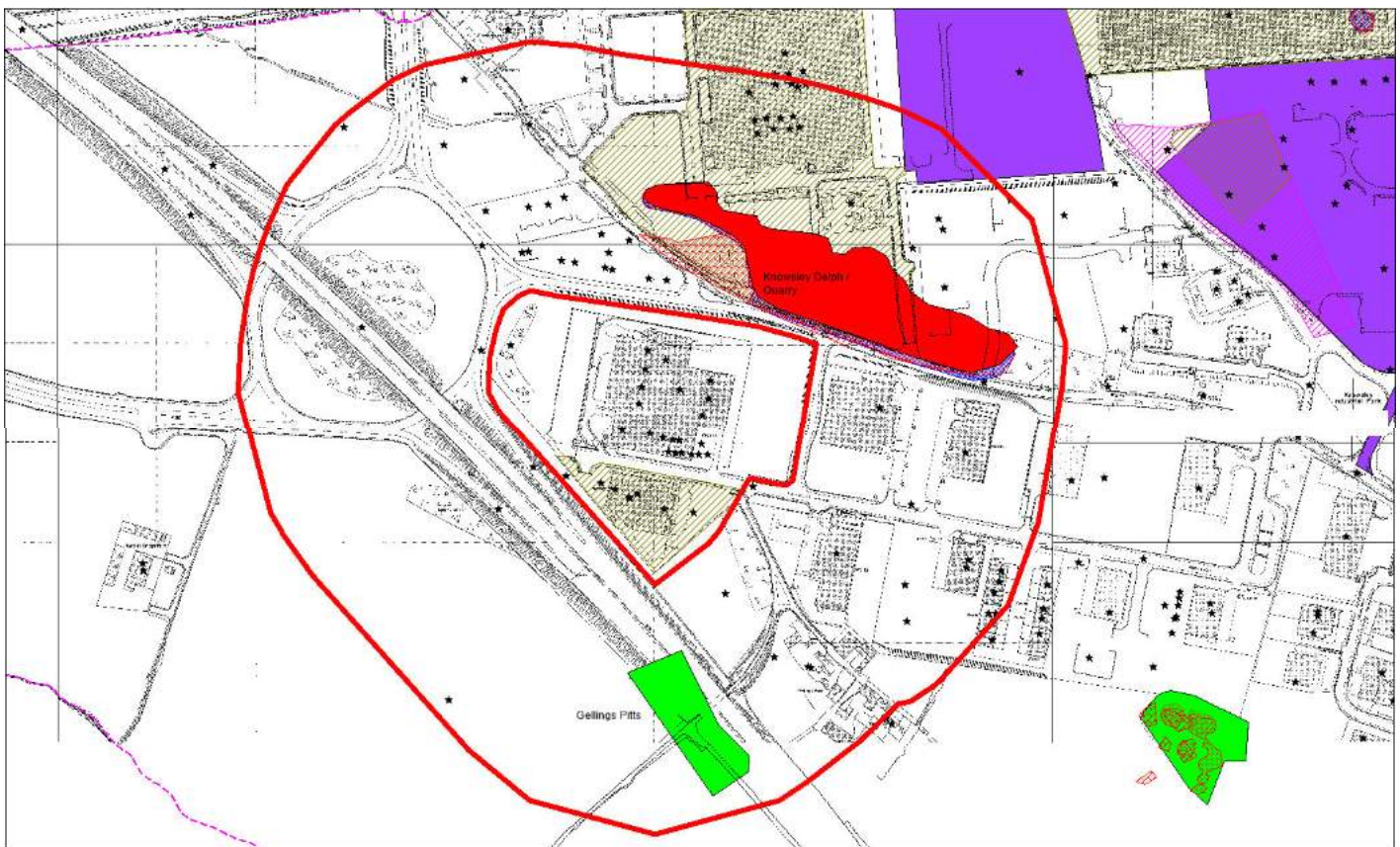
4. Whether the site could be considered a Special Site.

We have no information to suggest the site could be considered a special site

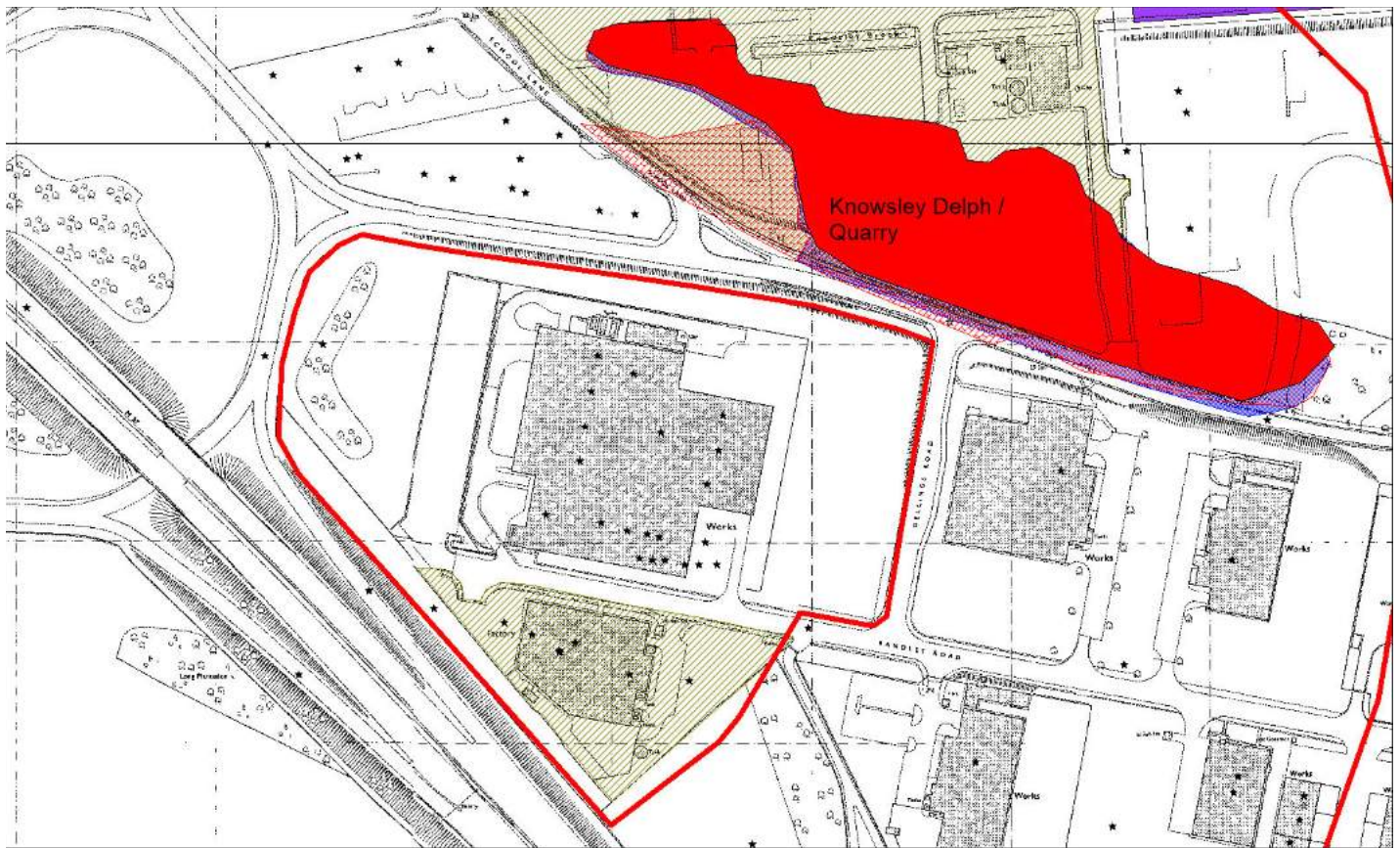
5. Landfill sites, either current, suspected or disused which may be within 250m of the site.

We have no records of landfill sites within 250m of the study site. Historic maps show that Knowsley Delph lies to the north of the study site. However, this is not present on post war maps following the development of the business park, suggesting that it has been infilled. We have no information regarding the fill material. *Please see the maps below;*

Map showing a 250m buffer zone around the site.



Map showing the approximate extent of Knowsley Delph.



6. Any record of pollution incidences on or in the vicinity of the site.

The records Environmental Health hold for the area are largely limited to noise, waste, odour, smoke and nuisance. Our database does contain some service requests for fly-tipping, burning of trade waste, odour complaints and drainage complaints in the area. However, the majority of these service requests are one off events, unlikely to give rise to significant environmental concern.

7. Any other information which could assist in our assessment.

The site itself has been prioritised as a medium risk due to historic maps identifying the building as 'works'.

The Knowsley Business Park area, including the study site, has been prioritised as part of the strategic inspection of the borough due to the historic commercial and industrial land use. The study site and neighbouring sites are not the subject of any current or proposed investigations. At present we have no plans to carry out further investigations under Part 2A of the Environmental Protection Act 1990, but this could change if we obtained further information which demonstrated that a clear risk to human health or controlled water was present.

Please note the following disclaimer applies: "The information provided is based on that currently available to the Authority. The Authority and its officers do not accept any responsibility for the accuracy or comprehensiveness of the information provided nor any liability whatsoever for any loss or damage arising from the reliance on whatsoever or howsoever, interpretation or use of the information.

If you need further information, please see contact details below.

Yours sincerely

Customer Liaison Team.

Freedom.ofinformation@knowsley.gov.uk



Knowsley Metropolitan Borough Council
PO Box 21 Archway Road Huyton Knowsley Merseyside L36 9YU
Telephone: 0151 489 6000 www.knowsley.gov.uk



APPENDIX 7 - CIRIA Risk Assessment Methodology

Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification ➡ Hazard Assessment ➡ Risk Estimation ➡ Risk Evaluation

CLR11 outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process. Under CLR11, three tiers of risk assessment exist - Preliminary, Generic Quantitative and Detailed Quantitative.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- **High likelihood:** There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely:** There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood:** There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;
- **Unlikely:** There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe:** Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- **Medium:** Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;
- **Mild:** Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.
- **Minor:** harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

- **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 severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation 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 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 any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;
- **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 severe.

APPENDIX 8 - Relevant Contaminated Land Legislation

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

- 1) Significant harm is being caused or there is a significant possibility of such harm being caused;
- 2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- CLR11 – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act.

APPENDIX 9 - Limitations

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2017, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous properties and as investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater

conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.

