



**Proposed Redevelopment of  
WIC House,  
Transport Way,  
Cowley,  
Oxford**

**Phase 1 Ground Condition Assessment**

On behalf of **T-Squared P4 Limited**

Project Ref: 48055/3501 | Rev: 00 | Date: January 2021

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## Document Control Sheet

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# 1 Introduction

## 1.1 Preamble

- 1.1.1 Stantec UK Limited (Stantec) has been commissioned by T-Squared P4 Limited (the Client) to undertake a Phase 1 Ground Condition Assessment for the proposed redevelopment of WIC House, Transport Way, Cowley, Oxford.
- 1.1.2 This report presents the findings of desk study research, together with observations from a site walkover. It includes a preliminary land stability appraisal and a Tier 1 (preliminary/qualitative) contamination risk assessment.
- 1.1.3 It should be noted that the Phase 1 is a land condition assessment and does not purport to be an ecological, flood risk, archaeological survey etc. and as such additional surveys may be required to support a planning application.
- 1.1.4 Guidance on the use of this report is provided in **Section 7**.

## 1.2 Proposed Development

- 1.2.1 Under the proposed scheme, the existing site buildings will be demolished and replaced with a new 3 storey building containing laboratories and offices. The location and areal extent of the proposed building is almost identical to the existing buildings.

## 1.3 Objectives

- 1.3.1 The primary objective of this assessment is to meet the requirements of the National Planning Policy Framework (NPPF) (MHCLG, 2019) and specifically the requirements in Clauses 170 (e) & (f) and 178. The NPPF states the following:

*Planning policies and decisions should ensure that:*

*a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);*

*b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*

*c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.*

## 1.4 Methodology

### Ground Conditions - Land Instability

- 1.4.1 As required by the NPPF consideration has been given to risks arising from land instability. The preliminary land instability assessment methodology adopted by Stantec follows the guidance given in the Planning Practice Guidance for Land Stability (MHCLG, 2019) accessed from <https://www.gov.uk/guidance/land-stability>.

## Ground Conditions - Contamination

- 1.4.2 The principal planning objective is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.
- 1.4.3 As required by the NPPF this work has been carried out in accordance with “established procedures”. The approach follows online guidance called: Land contamination: risk management (LC:RM) (which can be downloaded from <https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks>).
- 1.4.4 The guidance presents three stages of risk management (Risk Assessment, Options Appraisal and Remediation) and each stage has three tiers. The three tiers of Stage 1 Risk Assessment are:
- Tier 1 - Preliminary Risk Assessment (PRA) - a qualitative assessment to develop an outline conceptual model (CM).
  - Tier 2 - Generic Quantitative Risk Assessment (GQRA) - a quantitative assessment using published criteria based on generic assumptions to screen site-specific ground condition data.
  - Tier 3 - Detailed Quantitative Risk Assessment (DQRA) - a quantitative assessment involving the generation of site-specific assessment criteria (SSAC).
- 1.4.5 The risk assessment stage is an iterative process noting that all assessments must start with a PRA. Progression to the next tier is not always required if the assessment provides adequate confidence that the level of risk is acceptable.
- 1.4.6 This report presents a Tier 1 Preliminary Risk Assessment (PRA). Further information on the approach adopted by Stantec is set out in our guide entitled Methodology for Land Contamination Assessment, a copy of which is presented in **Appendix A**.

## 1.5 Sources of Information

- 1.5.1 The following sources of information were used in the preparation of this report:
- A walkover survey, by a Stantec engineer, on the 23<sup>rd</sup> November 2020 to observe existing conditions both on the site and surrounding the land parcel – photographs from the walkover are presented in **Appendix B**.
  - An ‘Enviro+Geo Insight Report’ and historical maps provided by Groundsure (GS, 2020) which is presented in **Appendices C and D**.
  - Review of the Natural Cavity and Mining (non-coal) Cavity databases managed and enhanced by Stantec.
  - Review of borehole records held by the British Geological Society (BGS) accessed via their website, <http://www.bgs.ac.uk/data/boreholescans/home.html> with pertinent borehole logs presented in **Appendix E**.
  - Review of map records held by the BGS accessed via their website <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
  - Review of the MAGIC (Multi-Agency Geographic Information for the Countryside) web site, <http://www.magic.gov.uk>. The MAGIC website provides authoritative geographic

information about the natural environment from across government. The information covers rural, urban, coastal and marine environments across Great Britain. It is presented in an interactive map which can be explored using various mapping tools.

- A search of the Stantec project database to identify any ground condition reports near the site (within 250 m).
- Review of risk map records of Regional Unexploded Bomb Risk held by Zetica UXO and located at <https://zeticauxo.com/downloads-and-resources/risk-maps/>.
- A review of historical aerial photography accessed via Google Earth Pro.
- A review of the Public Health England Radon Atlas and Interactive Radon Map, available at [www.ukradon.org](http://www.ukradon.org).
- Review of historical planning records on Oxford City Council's online planning portal.
- A response from Oxford City Council's Land Quality team for environmental information pertinent to the site. The response is presented in **Appendix F**.

## 2 Land Use Information

### 2.1 Introduction

- 2.1.1 This section presents a summary of current and historical land uses on and immediately adjacent to the site. Land use is used to inform the hazard identification element of the risk assessment.
- 2.1.2 Current land use information is based on a site reconnaissance survey undertaken by an engineer from Stantec on the 23<sup>rd</sup> November 2020. Selected photographs taken during the site walkover are presented in **Appendix B**.
- 2.1.3 The historical land use information is based on Ordnance Survey maps, and plans provided by Groundsure (GS, 2020) presented in **Appendix C**, supplemented by a review of Google Earth historical aerial photographs.

### 2.2 Site Location and General Description

- 2.2.1 The site is centred on National Grid Reference 455728 203507, approximately 5.3 km southeast of Oxford City Centre and 0.6 km southeast of the Eastern Bypass in Cowley. The location of the site is shown on the Site Location Plan presented as **Figure 1**. The layout of the site and location of pertinent features are presented on **Figure 2**.
- 2.2.2 The site is rectangular in shape and mostly comprises the existing laboratory and office building known as WIC House, together with associated car parking with site access present to the southwest of the existing building. The total plan area of the site is approximately 0.5 hectare.

### 2.3 Current Land Use

#### On Site

- 2.3.1 The site is located in the County Trading Estate area of Cowley, Oxford. The site is accessed from the southwest corner of the site boundary via an asphalt bell mouth off Transport Way. The current access road and car parking area is located in the western and northern sections of the site. There is an exit onto the adjacent Oxford Biomedica site to the east located at the northeast corner of the site. The site boundary comprises metal security fencing which is in good condition.
- 2.3.2 The buildings which occupy the site comprise a three-storey office building fronting Transport Way behind which is located a larger two storey plant and pharmaceutical laboratory complex. Incoming gas and electric are served from a small building adjacent to the site entrance where there is also an electricity substation.
- 2.3.3 Most of the external areas of the site are down to concrete paving which in general was found to be in good condition. The site is generally level although the land slopes gently down from the western and northern boundaries where rainwater is collected in a series of channel gullies located in the access roads and parking. There is limited soft landscaping on the site and what is present generally comprises shrubs and occasional larger trees planted in raised brick planting beds.
- 2.3.4 The office and plant/laboratory buildings are linked and are of relatively modern construction. The office is formed of a steel frame with glass panels fronting Transport Way and brickwork and glass panels forming the western elevation. The plant/laboratory building is formed of a steel frame with brick cladding, internal breeze block walls and modern partitioning in the offices. The external walls are clad above a brick fascia with profiled plastic-coated steel panels.

- 2.3.5 Substantial air handling and chiller plant are located outside the western elevation of the plant/laboratory building with further air handling equipment in plant rooms located on the northern elevation.
- 2.3.6 General waste in skips was located adjacent to the plant rooms located on the northern elevation. This area appeared to be in good order with no evidence of significant spillages or staining to the concrete surfacing.
- 2.3.7 Internally the office building comprises three floors of modern open plan offices with associated meeting rooms, enclosed offices, toilet and rest facilities. The offices were connected to the adjacent Oxford Biomedica building by a link located on the north eastern corner of the building. The offices were occupied at the time of our visit.
- 2.3.8 To the rear of the office building, the plant/laboratory building is laid out broadly with laboratories on the ground floor and plant rooms on the first floor. The boiler room is located on the ground floor just to the rear of the office building on the western elevation. Apart from one small laboratory area, the main laboratory building was largely unoccupied at the time of our survey, though some of it was being used for storage. A link corridor ran internally north to south along the eastern side of the building although access through the building could be made via the laboratories also.
- 2.3.9 On the first-floor extensive ductwork associated with the air handling, heating and electrical systems were located, together with electrical switch gear and other apparatus.

### Off-Site

- 2.3.10 To the east of the site, Oxford Biomedica occupy a modern office and laboratory complex which is connected to WIC House by a link. To the south, across Transport Way are further industrial and commercial buildings. To the west at the junction with Watlington Road, a supermarket is located and to the north automotive works associated with BMW are present.

## 2.4 Historical Land Use

- 2.4.1 This section presents a summary of historical land uses on the site and in the immediate surrounding area identified from historical Ordnance Survey (OS) mapping obtained from the late nineteenth century onwards, copies of which are presented in **Appendix D**.
- 2.4.2 The available historical OS map editions and aerial photographs supplied by Groundsure cover the period between 1878 and 2020.

### On-Site

- 2.4.3 The earliest available OS map edition from the late 19<sup>th</sup> Century shows the site boundary to be located within an open field at this time. The site remained undeveloped through the early part of the 20<sup>th</sup> century, being shown as part of a Sports Ground, presumably to the neighbouring pressed steel works, on the 1937/39 OS map edition. By the mid-1950s, early signs of development are noted with the historical maps from this period showing a new road adjacent to the southern site boundary and an unspecified tank present adjacent to the southeast corner of the site.
- 2.4.4 The wider industrial estate (County Trading Estate) developed during the early 1960s with the first development of the site observed on the 1966 OS map edition. On the 1971 OS map edition a rectangular building labelled "Coach Depot" is present in the southern half of the site, and the wider site area is labelled "Transport Depot". On the 1976 map edition, the building is labelled "Vehicle Repair Depot".

2.4.5 Partial mapping dated 1988 shows that the site has been redeveloped, with the former depot building demolished and replaced with a building broadly representing the current layout; the rear of this building is labelled "Works". Planning approval for the redevelopment of the site for pharmaceutical use was granted in 1983.

2.4.6 The 2003 map edition labels the site building as Isis House. Historical mapping shows no further significant changes through to the present day.

### Off-Site

2.4.7 The earliest available OS mapping from the late 19<sup>th</sup> Century shows the southwest / northeast trending Thame branch of the Great Western Railway present some 120m to the north of the site boundary. A small quarry is indicated approximately 200m to the east of the site boundary, which is later shown as disused by 1920.

2.4.8 By the 1937/39 OS map edition, large scale industrial development is evident to the north of the site with a rail sidings yard (named "Coal & Goods Depot" on the 1954 map edition) located approximately 50m north of the site boundary at the closest point. A large industrial building and complex, pressed steel works, latterly motor works, are present to the north of the sidings. An iron foundry is located approximately 100m west of the site boundary. Mapping dated 1954 no longer shows the quarry to the east.

2.4.9 By the mid-1960s, the area surrounding the site has been developed with commercial / industrial units (variously named "Depot" and "Works") including the development of a gasometer 120m to the southeast of the site boundary. On the 1971 map edition, the site is bordered by a Garage and Vehicle Repair Depot to the east, and a Motor Vehicle Delivery Depot to the west. To the south, opposite Transport Way, are various industrial land-uses including an Ice Cream Depot, Bookbinding Works, Transport Depot and Engineering Works. By the late 1980s, a Garage is shown to the west of the site boundary.

2.4.10 By 2003, the neighbouring depot to the east of the site boundary has been redeveloped to broadly its current layout, named Windrush House. A link is noted connecting that building to the current site building.

2.4.11 No further significant changes to the surrounding area are noted on subsequent map editions.

## 3 Environmental Setting

### 3.1 Introduction

- 3.1.1 Information on the environmental setting is presented in this section and the data is used to inform the Stability Assessment and Preliminary Risk Assessment presented in **Sections 4 & 5**.

### 3.2 Published Geology

#### Geological Mapping

- 3.2.1 The 1:50,000 scale geological map of the area: Sheet 237, Thame, Solid and Drift, published by the British Geological Survey (BGS, 1994) indicates the site is underlain by solid geology of the Beckley Sand Member of the Corallian Formation. This unit is described by the BGS as a “grey, weathering brown to yellow sand with calcareous sandstone beds and doggers, and thin, sandy, shelly bioclastic limestone beds”.
- 3.2.2 No Superficial Deposits are mapped on and adjacent to the site. Made Ground is recorded in the geological map to the north of the site associated with the railway and sidings (possibly embankment). Made Ground associated with the historical and current developments of the site would be expected to overlie the natural geology.

#### BGS Historical Borehole Records

- 3.2.3 The BGS online archives contains three exploratory hole records located within 250m of the site boundary. These exploratory hole records indicate that the near surface Beckley Sand Member comprises an orangish brown SAND with intermittent sandstone beds. Extracts from these records are presented in **Appendix E**.

### 3.3 Industrial Setting

- 3.3.1 Information on the environmental industrial setting of the site is presented in the Groundsure Report (GS, 2020) and reproduced in **Appendix C**. The results of the database search are summarised on the following table and discussed in the following sections;

Table 3.1 Summary of Environmental and Industrial Setting

Data Type	Number on Site <sup>(1)</sup>	Number within 250 m of Site <sup>(1)</sup>
<b>Waste Regulation</b>		
Landfill Sites	0 (0)	0 (0)
Licensed Waste Management Facilities	0 (0)	0 (0)
<b>Statutory Permits/Authorisations</b>		
Pollution Prevention and Control <sup>(2)</sup>	0 (0)	0 (0)
Radioactive Substance Authorisations	0 (0)	0 (11)
Planning Hazardous Substances	0 (0)	1 (6)
COMAH Sites <sup>(3)</sup>	0 (0)	0 (0)
NIHHS Sites <sup>(4)</sup>	0 (0)	0 (3)



Data Type	Number on Site (1)	Number within 250 m of Site (1)
<b>Recorded Pollution / Potential Pollution</b>		
Substantiated Pollution Incidents	0	0
Contaminated Land (5)	0	0
<b>Potential Contaminative Uses</b>		
Fuel Stations	0 (0)	0 (1)
<p>Note:</p> <p>1) Numbers in brackets denotes number of authorisations, licenses or permits that are lapsed, revoked, cancelled, superseded, defunct, surrendered, not applicable, inactive, withdrawn or not yet started.</p> <p>2) Includes Integrated Pollution Controls, Integrated Pollution Prevention and Control, Local Authority Integrated Pollution Prevention and Control and Local Authority Pollution Prevention and Control permits.</p> <p>3) COMAH denotes Control of Major Accident Hazards</p> <p>4) NIHHS denotes Notification of Installations Handling Hazardous Substances</p> <p>5) Sites determined as Contaminated Land under Part 2A of the Environmental Protection Act</p>		

- 3.3.2 **Radioactive Substance Authorisations:** Eleven historical authorisations relating to the use and / or disposal of radioactive substances are recorded for the building adjacent to the east of the site boundary. These authorisations have been issued to British Biotechnology Ltd, Vernalis R and D, Prosidion Ltd and Osi Pharmaceuticals UK Ltd; online research suggests that these are all pharmaceutical companies.
- 3.3.3 Considering that the adjacent building forms part of the current occupancy and operation as the site, there is potential that radioactive material has been used and / or stored within the laboratories present on site. However, considering the sensitive and controlled nature of pharmaceutical work it is considered that any such usage would have been strictly controlled and it is therefore considered unlikely that any radioactive materials would have adversely impacted on soils beneath the site.
- 3.3.4 **Planning Hazardous Substances & NIHHS Sites:** Seven planning hazardous substance entries and three lapsed NIHHS sites are recorded, relating to the bulk storage of gas within the gasometer present approximately 150m to the east. Stantec are aware that this gasometer has been recently decommissioned. Therefore, these entries are not expected to represent a particular hazard to the current site or the proposed development.
- 3.3.5 **Fuel Stations:** An entry relating to an 'obsolete' petrol station is recorded approximately 50m to the southwest of the site. Aerial photography indicates that the supermarket observed at this location during the site walkover was constructed around 2006. Planning records indicate that the site was remediated as part of the development as a supermarket and it is expected that any gross contamination associated with the former petrol station use would have been remediated at that time. Therefore, this entry is not expected to represent a significant ongoing hazard to the site or the proposed development.

### 3.4 Controlled Waters – Groundwater

- 3.4.1 **Table 3.2** summarises information recorded in the Groundsure Report (GS, 2020) regarding hydrogeology and groundwater vulnerability.

Table 3.2 Summary of the Hydrogeology and Groundwater Vulnerability Related Information

Item	Details
Bedrock Aquifer Classification	Beckley Sand Member - 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.
Depth to Groundwater	Hydrogeological mapping indicates that groundwater level is expected at about 60 m OD, which is approximately 10m below ground level. Groundwater flow direction in the Corallian Formation is anticipated to the south/south-east.
Groundwater Vulnerability	High Vulnerability meaning the site is underlain by soils able to easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability Superficial Deposits.
Groundwater Abstraction	There are no recorded groundwater abstractors within 2.0km of the site.
Source Protection Zone (SPZ)	The site does not lie within a drinking water Source Protection Zone for abstraction of groundwater for potable or other use.

### 3.5 Controlled Waters – Surface Water

3.5.1 **Table 3.3** summarises the information recorded in the Groundsure Report (GS, 2020) regarding hydrology.

Table 3.3 Summary of Surface Water Related Information

Item	Details
Surface Water Features	There are no watercourses or water features on site. The nearest surface water feature is the westerly flowing un-named stream located approximately 90m to the south of the site boundary.
Abstraction	There are no recorded surface water abstractions close to the site boundary.
Flood Risk *	There is no recorded risk of flooding associated with rivers and the sea.
* The scope of this report does not include or comprise a flood risk assessment.	

### 3.6 Former Contaminative Land Uses

3.6.1 **On-site** The site was formerly occupied by a coach and vehicle repair depot. It is expected that this would have included maintenance operations and probably included underground fuel tanks and pumps to allow for vehicle refuelling (based on available planning records). As such, there may be a legacy of contamination associated with the depot, with potential contaminants of concern including hydrocarbons (fuels and waste oils), anti-freeze, brake fluids, chlorinated and non-chlorinated solvents, inorganic compounds (asbestos, sulphates etc.), metals and metal compounds. It is expected that some remediation would have been carried out as part of the redevelopment of the site in the 1980s including the removal of grossly contaminated soils, however any remedial works are unlikely to have met modern standards. As such it is expected that some contamination may be present associated with, for example, former underground tanks and fuel lines.

3.6.2 **Off-site** Land adjacent to the western site boundary was historically operated as a vehicle repair garage and fuel station and land adjacent to the eastern site boundary was historically a vehicle

depot. Both operations are broadly similar in nature to the historical depot present on site and as such a similar range of potential contaminants might be associated with such uses. Both neighbouring sites have been redeveloped more recently into a supermarket and a pharmaceutical office / laboratory, respectively. From a search of planning records, the former garage site was investigated and remediated as part of the supermarket redevelopment with validation works around the former location of underground fuel tanks reported by Joynes Pike and Associates Ltd in December 2006.

3.6.3 Various industrial land-uses have been recorded or are present in the vicinity of the site.

### 3.7 Ecological Systems

3.7.1 The MAGIC website and the Enviro+Geo Insight Report (GS, 2020) indicates that there are no ecologically designated areas recorded on or within 1km of the site boundary. The nearest record is for a Site of Scientific Special Interest (SSSI) located approximately 1.3 km north of the site relating to an area of woodland. It is considered unlikely that the site conditions or the proposed development would adversely impact upon this feature.

3.7.2 It should be noted that the statement above regarding ecological systems does not purport to be an ecological risk assessment which might require a separate commission.

### 3.8 Property – Buildings

3.8.1 The MAGIC website and the Enviro+Geo Insight Report (GS, 2020) indicates that there are no records of listed buildings on the site or in the immediate vicinity.

### 3.9 Property – Animal or Crop Effect

3.9.1 The site is set within an industrial estate; the nearest agricultural land is located approximately 240m to the east. It is considered unlikely that this land would be adversely impacted by the conditions at the site or the proposed development.

### 3.10 Unexploded Ordnance (UXO)

3.10.1 The Zetica bomb risk map indicates that the site is located in a Low risk area for unexploded bombs (UXB). This designation has been given based on the density of bombing hits and the low number of potential targets in the area.

### 3.11 Stantec Database Search

3.11.1 A review of the Stantec project database did not reveal any relevant projects within 250 m of the site boundary.

### 3.12 Regulatory Correspondence

3.12.1 A request for environmental related information has been submitted to Oxford City Council (OCC) and the response is included as **Appendix F**. The information received provides no additional land use information over and above that established by Stantec from site reconnaissance and environmental database searches.

3.12.2 An information request relating to possible records of underground fuel tanks at the site was lodged with Oxfordshire County Council's Trading Standards department. At the time of issue of this report, no response had been received.

## 4 Ground Stability Assessment

### 4.1 Introduction

- 4.1.1 In accordance with the requirements of the National Planning Policy Framework (MHCLG, 2019), the potential for the proposed development to contribute to or to be adversely affected by land instability has been assessed.
- 4.1.2 The potential for land instability at the site has been considered, in relation to;
- Naturally Occurring Geological Hazards
  - Natural and Mining Cavities
  - Slope Stability
  - Potentially Adverse Foundation Conditions
- 4.1.3 Consideration is given below to the risk of these potential geotechnical constraints arising from existing ground conditions at the site, as identified in this data review. The geological constraints to the development are those relating to the natural ground conditions and any geological hazards on the site, and the constraints relating to the previous and current use of the site.

### 4.2 Naturally Occurring Geological Hazards

- 4.2.1 An assessment of potential geological hazards that may give rise to instability or adverse foundation or construction conditions as supplied by the BGS from their National Geoscience Information Service (NGIS) are presented in the Groundsure Report (GS, 2020) reproduced in **Appendix C**. The generic assessment is generated automatically based on digital geological maps and the scope and the accuracy is limited by the methods used to create the dataset and is therefore only indicative for the search area.
- 4.2.2 The information contained in the report has been reviewed and where considered necessary reassessed considering the specific information available for the Site. The modified assessment of the potential for geological hazards to be present on the Site is summarised in **Table 4.1** below.

Table 4.1 Summary of Geological Hazards On-Site

Hazard	BGS-NGIS Assessed Hazard Potential On-Site	Stantec Assessment
Coal Mining Affected Areas	In an area that might not be affected by coal mining	Agree
Non-Coal Mining Areas of Great Britain	No Hazard	Agree
Collapseable Ground Stability	Very Low	Agree
Compressible Ground Stability	Very Low	Disagree. See Section 4.4.
Dissolution	Very Low	Agree
Landslide Ground Stability	Very Low	Agree

Hazard	BGS-NGIS Assessed Hazard Potential On-Site	Stantec Assessment
Running Sand	Very Low	Agree. Although not anticipated as part of this proposed development, any deep excavations or boring below groundwater level in the Beckley Sand may encounter running sand conditions.
Shrinking or Swelling Clay	Very Low	<p>The Beckley Sand Member is predominantly granular but has variable fines content and, from experience, has been locally classified as a soil with a low volume change potential.</p> <p>Foundation design should consider the results of site-specific ground investigation and testing and minimum foundation depths in accordance with BS 8004:2015 as necessary.</p>

### 4.3 Natural and Mining Cavities

- 4.3.1 The Stantec Natural and Mining (non-coal) Cavities Database and Groundsure Report (GS, 2020) indicates that there are no recorded naturally occurring or mine related cavities present within 1.0km of the site boundary. Given the anticipated ground conditions natural or mining cavities would not be expected at the site.

### 4.4 Potential Adverse Foundation Conditions

- 4.4.1 The Geological Hazards summarised in Table 4.1 indicate that the expected natural ground conditions at the site are likely to have 'No Hazard' or Very Low hazard with respect to a proposed development.
- 4.4.2 Made Ground associated with the historical and current development of the site is anticipated overlying the natural ground. The thickness of Made Ground may be locally variable associated with, for example, the presence of infilled vehicle inspection pits or backfilled excavations associated with the removal of old underground tanks. A ground investigation should be undertaken to confirm the ground conditions for new foundation design. Any foundations should extend through Made Ground to bear on the underlying natural ground.
- 4.4.3 Intermittent rock beds in the Beckley Sand Member have been known locally to represent obstructions for deep foundations i.e. piles. Placement of adjacent shallow pad foundations variably on rock and non-rock should be avoided or the differential settlement that could occur should be considered in the design. The presence of old foundations or old underground tanks might also represent potential obstructions and should be grubbed out or lifted where encountered with the remaining void backfilled with materials with similar properties to the surrounding soil.
- 4.4.4 Excavations for foundations in the natural ground should not present problems specific to the site area with the exception of the presence of shallow rock beds. Excavation through these beds may require the use of hydraulic breakers to fracture the material. Once fractured, it should be possible to excavate these materials using conventional excavators.

## 4.5 Conclusions

- 4.5.1 Overall, the geotechnical constraints to the development of the site associated with the ground conditions, potential geological hazards and the historical and present land uses is considered to be **Low**.
- 4.5.2 A ground investigation will be required in due course to inform the design of foundations, infrastructure and the drainage strategy for the site.

## 5 Tier 1 Preliminary Geoenvironmental Risk Assessment

### 5.1 Introduction

- 5.1.1 The methodology developed and adopted by Stantec for the assessment of ground conditions is presented in **Appendix A**. In accordance with guidance presented in LCRM (Environment Agency guidance on Land Contamination Risk Management 2020) we adopt a staged approach to risk assessment and this report presents a Tier 1 assessment or first stage.
- 5.1.2 The underlying principle to ground condition assessment is the identification of pollutant linkages to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences.

### 5.2 Conceptual Site Model

- 5.2.1 The Tier 1 Preliminary Risk Assessment includes the development of a Conceptual Site Model (CSM). The CSM describes the types and locations of potential contamination sources, the identification of potential receptors and the identification of potential transport/migration pathways.
- 5.2.2 For a pollutant linkage to be identified a connection between all three elements (source-pathway-receptor) is required.

### 5.3 Geoenvironmental Hazard Classification

- 5.3.1 Based on the historical and current land use of the site and immediate surrounding area (see **Section 3.6**), the contamination potential from on-site sources is considered to be **Moderate** (Classification Score 3 out of 5 in Table 1, **Appendix A**).
- 5.3.2 **On Site** Contaminants associated with the historical on-site usage as vehicle repair depot include leaks, spills and disposal of waste oils and other fluids including solvents from vehicle maintenance areas. There is also potential for fuel spills and leaks to have occurred associated with refuelling apparatus including underground fuel tanks. Other persistent contaminants such as heavy metals and asbestos may also be present in Made Ground.
- 5.3.3 The current pharmaceutical site usage is unlikely to have been significantly contaminative owing to the sensitive and controlled nature of the work.
- 5.3.4 **Off Site** The site is located in an industrial area and there have been various industrial land-uses in the vicinity of the site boundary. Some potential sources of contamination have been remediated as sites have been redeveloped. The contamination potential from off-site sources is considered to be **Moderate**.

### 5.4 Pathways

- 5.4.1 Potential environmental hazards need a pathway connecting the source (if present) to potential receptors in order to be able to impact upon the receptors. These pathways are capable of conveying the contaminants. Pathways can be anthropogenic (artificial) or natural.
- 5.4.2 Anthropogenic pathways are artificial routes capable of conveying contaminants and include such routes as surface water drains, high permeability backfill materials, poorly consolidated Made Ground, foundations, and persons disturbing contamination sources in such a way as to liberate contaminants.



- 5.4.3 Natural pathways include the underlying Beckley Sand. From experience, the Beckley Sand has a variable permeability due to the presence of sub horizontal lenses and beds of silt and clay with low permeability and sand and sandstone with higher permeabilities. Therefore, there is likely to be some attenuation in these soils and potential contaminants will not necessarily be readily transmitted.
- 5.4.4 The proposed development is commercial in nature and covered in hard standing segregating future users and any potential contamination in the soil therefore the only potential pathways relevant to future site users would be inhalation of vapours/gases both within the buildings and within external areas.
- 5.4.5 In the case of site workers carrying out groundworks (e.g. to lay foundations or install services) direct contact with the source in the soil if present becomes possible, and pathways such as dermal contact or inhalation.

## 5.5 Hazard Assessment

- 5.5.1 The receptors considered as part of this land contamination assessment are summarised in **Table 5.1** and based on the information reviewed either eliminated from further consideration or allocated a sensitivity score in accordance with the Stantec Methodology. The sensitivity score informs the consequence element of the risk estimation process, definitions of which can be found in Table 2 of **Appendix A**.

Table 5.1 Potential Receptors and Sensitivity Score

Receptor Type	Comment	Sensitivity Score
Human Health – Current	Commercial offices and laboratories	4
Human Health – Future	Commercial offices and laboratories	4
Human Health – Construction	Construction workers	4
Human Health – Neighbours	Workers in nearby commercial units	4
Groundwater	Beckley Sand is a Secondary Aquifer	2
Surface Water	No surface water features within 50 m of the site boundary	Eliminated
Property - Buildings	Proposed building deemed 'Replaceable'	1
Property - Animal or Crop Effect	No agricultural land in close proximity to the site	Eliminated
Ecological Systems	No local designations	1

- 5.5.2 Table 2 in the Stantec methodology describes possible pathways for each receptor type. Each of these possible pathways is then considered when assessing the possible pollutant linkage (see below).



- 5.5.3 Potential pollutant linkages have been identified using the information on potential sources (contaminant types), receptors and exposure pathways. The table in **Appendix A** identifies which pollutant linkages are considered to potentially exist.

## 5.6 Risk Estimation

- 5.6.1 When there is a pollutant linkage (and therefore some measure of risk) it is necessary to determine whether the risk is significant and therefore whether further action is required. Risk estimation involves predicting the likely consequence (what degree of harm might result) and the probability that the consequences will arise (how likely the outcome is).
- 5.6.2 Based on the information available, the estimated risks have been designated with further comments in the sections below. The outcomes of the risk assessment are presented in **Appendix G** giving an assessment of consequence and probability.
- 5.6.3 A summary of the worst-case risk estimation for the site based on localised potential hazards is presented in Table 5-2 below.

Table 5.2 Worst - Case Risk Estimation

Receptor	Risk Estimation
Human Health – Current	Low
Human Health - Future	Low
Human Health - Neighbours	Low
Human Health - Construction	Moderate
Groundwater	Low
Property – Buildings	Very Low
Ecological Systems	Very Low

## 5.7 Risk Evaluation

- 5.7.1 Possible pollutant linkages are determined using professional judgement. If a linkage is considered possible, it is considered that this represents a potentially 'unacceptable risk' and therefore requires further consideration. This may be through remediation or mitigation or through further tiers of assessment.
- 5.7.2 Possible pollutant linkages have been identified for human health, groundwater, property and ecological systems and the level of risk is generally **Very Low** to **Low**. Construction workers are at higher risk due to the greater likelihood of exposure to potential contamination associated with groundworks etc. The risk estimation for construction workers is **Moderate**.
- 5.7.3 A moderate risk means that harm could arise to a designated receptor from an identified hazard. However, it is unlikely that any harm would be severe. Some ground investigation is normally required to clarify the risk and some remedial works may be required. Given the low sensitivity of the proposed development, it is considered that any requirement for ground investigation can be carried out as a planning condition. Possible remedial works required, depending on the actual conditions, could involve the removal of underground tanks and any grossly contaminated soils, gas/vapour protection measures for new building and the use of barrier pipe for new water supply.

- 5.7.4 Based on the above, it is considered unlikely that the site would be designated as Contaminated Land under Part IIa of the Environmental Protection Act 1990.

## **5.8 Data Gaps and Uncertainty**

The available ground condition data is preliminary in nature, based solely on desk-based studies. However, it is considered that there is a reasonable level of confidence that the information presented in this report provides a good understanding of the likely ground conditions and enables identification of potential risks.

## 6 Conclusions and Recommendations

### 6.1 Geoenvironmental Considerations

- 6.1.1 The site is considered to have a **Moderate** potential for contamination to be present and when assessed in the context of the sensitivity of the proposed development and sensitivity of the environmental setting the estimated risks for most receptors is **Very Low to Low** and **Moderate** for construction workers.
- 6.1.2 Some ground investigation is normally required to clarify the risk to potential receptors and some remedial works may be required. It is considered very unlikely that the local planning authority will designate the site as Contaminated Land under Part 2a of the Environmental Protection Act 1990.

### 6.2 Ground Stability

- 6.2.1 The ground conditions are, in general, expected to be suitable for the construction of the proposed development. There may be some underground obstructions present on-site associated with old building foundations and other historical land-uses. Variable thicknesses of Made Ground may be present associated with historical and current land-uses. Locally the thickness of Made Ground may change over short distances associated with, for example, infilled vehicle inspection pits and other backfilled excavations. The Beckley Sand Member is generally a suitable stratum for shallow foundations but contains rock beds that could represent obstructions for deep foundations and excavations.
- 6.2.2 Overall, the geotechnical constraints to the development of the site associated with the ground conditions are **Low**.

### 6.3 Recommendations

- 6.3.1 The ground condition data used in this report is largely qualitative in nature and as such there is a degree of uncertainty as to the actual ground conditions present. It is recommended that an intrusive investigation is undertaken to fully characterise the ground conditions and to provide information for the design of foundations, drainage and pavements. Given the low sensitivity of the proposed development, it is considered that any requirement for ground investigation can be carried out as a planning condition.

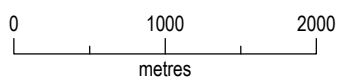
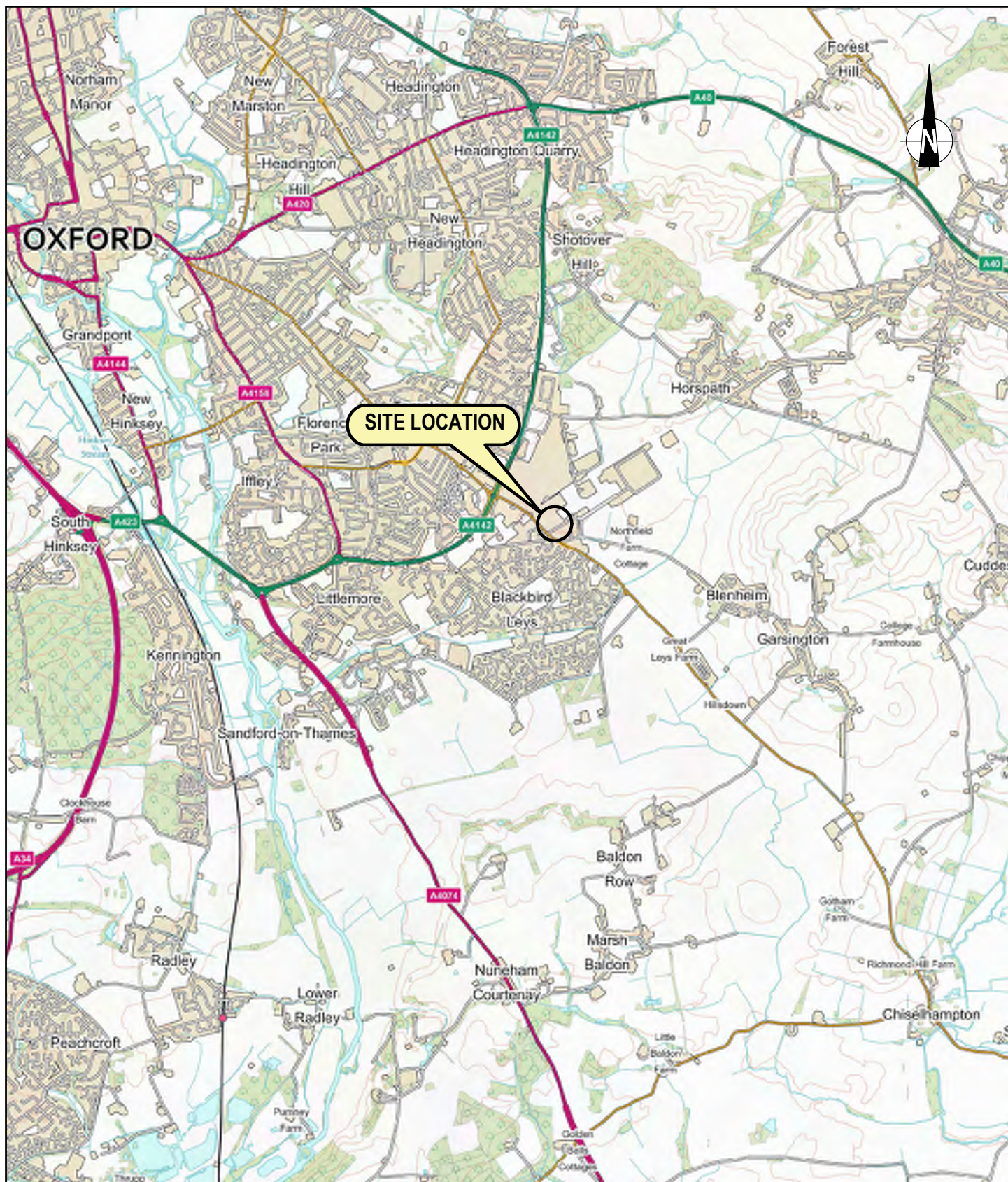
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- 7.1.8 Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

## 8 References

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Site Grid Ref: SP 557 034

WIC HOUSE, OXFORD

## SITE LOCATION PLAN

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02.12.2020

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davco

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Figure Number

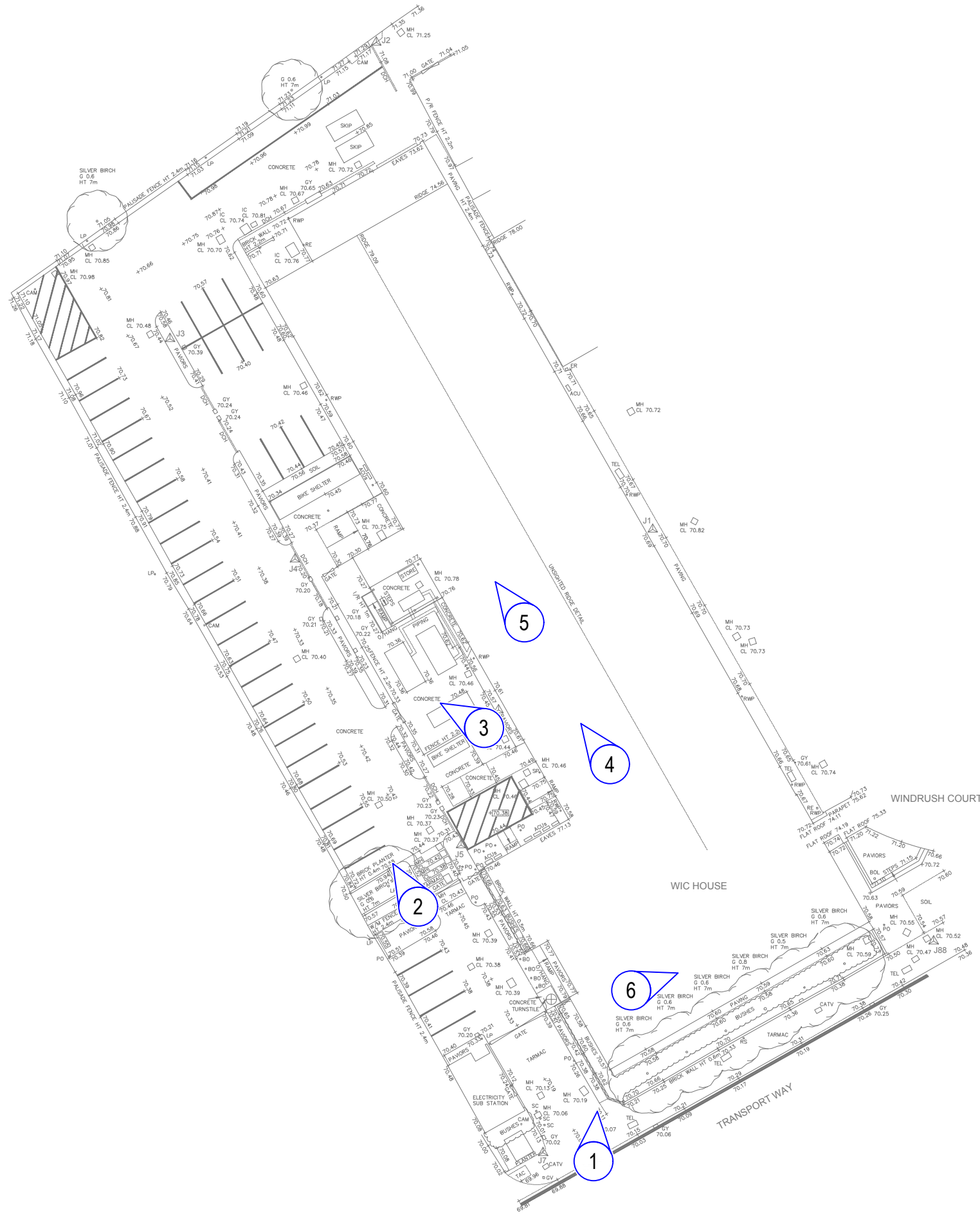
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1 Photograph Location

WIC HOUSE, OXFORD

SITE LAYOUT PLAN

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Date of 1st Issue  
02.12.2020

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A3 Scale  
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## **Appendix A      Methodology for Assessment of Land Contamination (England)**



# Stantec Guide: Methodology for Assessment of Land Contamination (England)

## 1 INTRODUCTION

This document defines the approach adopted by Stantec in relation to the assessment of land contamination in England. The aim is for the approach to (i) be systematic and objective, (ii) provide for the assessment of uncertainty and (iii) provide a rational, consistent, transparent framework.

When preparing our methodology, we have made reference to various technical guidance documents and legislation referenced in Section 7 of which the principal documents are (i) Contaminated Land Statutory Guidance (Defra 2012), (ii) online guidance Land Contamination: Risk Management (LC:RM) accessed from GOV.UK which is expected to replace Contaminated Land Research (CLR) Report 11: Model Procedures for the Management of Contamination (EA 2004). It should be noted that LCRM is currently due to be revised following consultation and CLR 11 is archived, (iii) Contaminated land risk assessment: A guide to good practice (C552) (CIRIA 2001) (iv) National Planning Policy Framework (NPPF, 2019) (v) BS 10175 Investigation of potentially contaminated sites - Code of Practice (BSI 2017) and (vi) The series of British Standards on Soil Quality BS 18400.

## 2 DEALING WITH LAND CONTAMINATION

Government policy on land contamination aims to prevent new contaminated land from being created and promotes a risk-based approach to addressing historical contamination. For historical contamination, regulatory intervention is held in reserve for land that meets the legal definition and cannot be dealt with through any other means, including through planning. Land is only considered to be “contaminated land” in the legal sense if it poses an unacceptable risk.

UK legislation on contaminated land is principally contained in Part 2A of the Environmental Protection Act, 1990 (which was inserted into the 1990 Act by section 57 of the Environment Act 1995). Part 2A was introduced in England on 1 April 2000 and provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment.

The Model Procedures for the Management of Land Contamination (CLR 11), were developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. The process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK. The approach, concepts and principles for land contamination management promoted by LC:RM (and its predecessor CLR 11) are applied to the determination of planning applications. The

guidance given in LC:RM follows the same principles.

Other legislative regimes may also provide a means of dealing with land contamination issues, such as the regimes for waste, water, environmental permitting, and environmental damage. Further, the law of statutory nuisance may result in contaminants being unacceptable to third parties whilst not attracting action under Part 2A or other environmental legislation.

### 2.1 Part 2A

The Regulations and Statutory Guidance that accompanied the Act, including the Contaminated Land (England) Regulations 2006, has been revised with the issue of The Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263) and the Contaminated Land Statutory Guidance for England 2012.

Part 2A defines contaminated land as “*land which appears to the Local Authority in whose area it is situated to be in such a condition that, by reason of substances in, on or under the land that significant harm is being caused, or there is a significant possibility that such significant harm (SPOSH) could be caused, or significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution (SPOSP) being caused*”.

Harm is defined as “*harm to the health of living organisms or other interference with the ecological systems of which they form part, and in the case of man, includes harm to his property*”.

Part 2A provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment, and under the guidance enforcing authorities should seek to find and deal with such land. It states that “*under Part 2A the starting point should be that land is not contaminated land unless there is reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with the Guidance, should be considered as meeting the Part 2A definition of contaminated land*”. Further, the guidance makes it clear that “*regulatory decisions should be based on what is reasonably likely, not what is hypothetically possible*”.

The overarching objectives of the Government’s policy on contaminated land and the Part 2A regime are:

- “(a) To identify and remove unacceptable risks to human health and the environment.
- (a) To seek to ensure that contaminated land is made suitable for its current use.
- (b) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of

## Stantec Guide: Methodology for Assessment of Land Contamination (England)

*sustainable development”.*

The enforcing authority may need to decide whether and how to act in situations where decisions are not straight forward, and where there is uncertainty. *“In so doing, the authority should use its judgement to strike a reasonable balance between: (a) dealing with risks raised by contaminants in land and the benefits of remediating land to remove or reduce those risks; and (b) the potential impacts of regulatory intervention including financial costs to whoever will pay for remediation, health and environmental impacts of taking action, property blight, and burdens on affected people”.*

The authority is required to *“take a precautionary approach to the risks raised by contamination, whilst avoiding a disproportionate approach given the circumstances of each case”.* The aim is *“that the regime produces net benefits, taking account of local circumstances”.*

The guidance recognises that *“normal levels of contaminants in soils should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise”.* Normal levels are quoted as:

- “a) natural presence of contaminants’ such as from underlying geology ‘that have not been shown to pose an unacceptable risk to health and the environment*
- b) ...low level diffuse pollution, and common human activity...”*

Similarly the guidance states that significant pollution or significant possibility of significant pollution of controlled waters is required for land to be considered contaminated and the *“fact that substances are merely entering water”* or *“where discharge from land is not discernible at a location immediately downstream”* does not constitute contaminated land.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised Statutory Guidance presented a new four category system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high.

For land that cannot be readily placed into Categories 1 or 4 further assessment is required. If there is sufficient concern that the risks could cause significant harm or have the significant possibility of significant harm the land is to be placed into Category 2. If the concern is not met land is considered Category 3.

The technical guidance clearly states that the currently published Soil Guidance Values (SGV's) and Generic Assessment Criteria (GAC's) represent *“cautious estimates of level of contaminants in soils”* which should be considered *“no risk to health or, at most, a minimal risk”.* These values do not represent the boundary between categories 3 and 4 and *“should be considered to be comfortably within Category 4”.*

At the end of 2013 technical guidance in support of Defra's revised Statutory Guidance (SG) was published and then revised in 2014 (CL: AIRE 2014) which provided:

- A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and
- A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

For controlled waters, the revised Statutory Guidance states that the following types of pollution should be considered to constitute significant pollution of controlled waters:

- “(a) Pollution equivalent to “environmental damage” to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.*
- (b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.*
- (c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.*
- (d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)).”*

The guidance also states that, in some circumstances, significant concentrations at a compliance point (in groundwater or surface water) may constitute pollution of controlled waters.

As with SPOSH for human health, the revised Statutory Guidance presents a four-category system for Significant Pollution of controlled waters. Category 1 covers land where there is a strong and compelling case for SPOSP, for example where significant pollution would almost certainly occur if no action was taken to avoid it. Category 4 covers land where there is no risk or the risk is low, for

## Stantec Guide: Methodology for Assessment of Land Contamination (England)

example, where the land contamination is having no discernible impact on groundwater or surface water quality. Category 2 is for land where the risks posed to controlled waters are not high enough to consider the land as Category 1 but nonetheless are of sufficient concern to constitute SPOSP, Category 3 is for land where the risks posed to controlled waters are higher than low but not of sufficient concern to constitute SPOSP.

### 2.2 Planning

The Local Planning Authority (LPA) is responsible for the control of development, and in doing so it has a duty to take account of all material considerations, including contamination.

The principal planning objective is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.

The National Planning Policy Framework (NPPF, 2019), includes the following.

Paragraph 118 states that planning policies and decisions should “(c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land.”

Paragraph 179 states “Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner”.

Paragraph 170 states “planning policies and decisions should contribute to and enhance the natural and local environment by:

- (e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- (f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”

Paragraph 178 describes the policy considerations the Government expects LPA's to have in regard to land affected by contamination when preparing policies for development plans and in taking decisions on applications.

Paragraph 178 states “planning policies and decisions should ensure that:

- (a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);
- (b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and
- c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.”

Paragraph 183 states “The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

The Glossary in Annex 2 provides the following:

**Brownfield land registers:** Registers of previously developed land that local planning authorities consider to be appropriate for residential development, having regard to criteria in the Town and Country Planning (Brownfield Land Registers) Regulations 2017. Local planning authorities will be able to trigger a grant of permission in principle for residential development on suitable sites in their registers where they follow the required procedures.

**Competent person (to prepare site investigation information):** A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation.

**Previously developed land:** Land which is or was occupied by a permanent structure, including the curtilage of the developed land (although it should not be assumed that the whole of the curtilage should be developed) and any associated fixed surface infrastructure. This excludes: land that is or was last occupied by agricultural or forestry buildings; land that has been developed for minerals extraction or waste disposal by landfill, where provision for restoration has been made through development management procedures; land in built-up areas such as residential gardens, parks, recreation grounds and allotments; and land that was previously developed but where the

## Stantec Guide: Methodology for Assessment of Land Contamination (England)

*remains of the permanent structure or fixed surface structure have blended into the landscape.*

**Site investigation information:** *Includes a risk assessment of land potentially affected by contamination, or ground stability and slope stability reports, as appropriate. All investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 Investigation of Potentially Contaminated Sites – Code of Practice).*

Stantec adopt the principle that a Preliminary Investigation (Desk Study and Site Reconnaissance) and Preliminary Risk Assessment (see below) is the minimum assessment requirement to support a planning application.

The level at which contamination is deemed to be unacceptable, or, gives rise to adverse effects under a planning context has not been identified but is envisaged to be more precautionary than the level required to determine land as contaminated under Part 2A.

### 2.3 Building Control

The building control department of the local authority or private sector approved inspectors are responsible for the operation and enforcement of the Building Regulations (DCLG 2010) to protect the health, safety and welfare of people in and around buildings. Approved Document C requires the protection of buildings and associated land from the effects of contamination, to be applied (non-exclusively) in all changes of use from commercial or industrial premises, to residential property.

## 3 APPROACH

As with CLR11 the guidance given in LC:RM presents three stages of risk management: -

- (a) Stage 1 - Risk Assessment;
- (b) Stage 2 - Options Appraisal; and
- (c) Stage 3 - Remediation.

Each stage has three tiers. The three tiers of Stage 1 Risk Assessment are: -

- Tier 1 - Preliminary Risk Assessment (PRA) - first tier of RA that develops the outline conceptual model (CM) and establishes whether there are any potentially unacceptable risks.
- Tier 2 - Generic Quantitative Risk Assessment (GQRA) - carried out using generic assessment criteria and assumptions to estimate risk.
- Tier 3 - Detailed Quantitative Risk Assessment (DQRA) - carried out using detailed site-specific information to generate Site Specific

Assessment Criteria (SSAC) as risk evaluation criteria.

For each tier of a Stage 1 - Risk Assessment you must:

1. Identify the hazard - establish contaminant sources.
2. Assess the hazard - use a source-pathway-receptor (S-P-R) pollutant linkage approach to find out if there is the potential for unacceptable risk.
3. Estimate the risk - predict what degree of harm or pollution might result and how likely it is to occur.
4. Evaluate the risk - decide whether a risk is unacceptable.

A Stantec Preliminary Investigation report normally comprises a desk study, walkover site reconnaissance and preliminary risk assessment (PRA). The project specific proposal defines the actual scope of work which might include review of ground investigation data in which case the report includes a GQRA.

Risk estimation involves identifying the magnitude of the potential consequence (taking into account both the potential severity of the hazard and the sensitivity of the receptor) and the magnitude of the likelihood i.e. the probability (taking into account the presence of the hazard and the receptor and the integrity of the pathway). This approach is promoted in current guidance such as R&D 66 (NHBC 2008).

For a PRA, Stantec's approach is that if a pollution linkage is identified then it represents a potentially unacceptable risk which either (1) remediation / direct risk management or (2) progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection and enabling refinement of the CM using the site specific data.

## 4 IDENTIFICATION OF POLLUTANT LINKAGES AND DEVELOPMENT OF A CONCEPTUAL MODEL (CM)

For all Tiers of a Stage 1 Risk Assessment, the underlying principle to ground condition assessment is the identification of *pollutant linkages* in order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements: -

- A source/hazard – a substance or situation which has the potential to cause harm or pollution;
- A pathway – a means by which the hazard moves along / generates exposure; and
- A receptor/target – an entity which is vulnerable to the potential adverse effects of the hazard.

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The *Conceptual Model* identifies the types and locations of potential contaminant sources/hazards and potential receptors and potential migration/transportation pathway(s). The CM is refined through progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection.

### 4.1 Hazard Identification

A hazard is a substance or situation that has the potential to cause harm. Hazards may be chemical, biological or physical.

In a PRA the potential for hazards to be present is determined from consideration of the previous or ongoing activities on or near to the site in accordance with the criteria presented in the **Table 1**.

Based on the land use information Contaminants of Potential Concern (COPC) are identified. The COPC direct the scope of the collection of site-specific data and the analytical testing selected for subsequent Tiers.

At Tier 2 the site-specific data is evaluated using appropriate published assessment criteria (refer to Stantec document entitled *Rationale for the Selection of Evaluation Criteria for a Generic Quantitative Risk Assessment (GQRA)*). In general, published criteria have been developed using highly conservative assumptions and therefore if the screening criterion is not exceeded (and if enough samples from appropriate locations have been analysed) then the COPC is eliminated as a potential Hazard. It should be noted that exceedance does not necessarily indicate that a site is contaminated and/or unsuitable for use only that the COPC is retained as a potential Hazard. Published criteria are generated using models based on numerous and complex assumptions. Whether or not these assumptions are appropriate or sufficiently protective requires confirmation on a project by project basis. Manipulation of the default assumptions would normally form part of a Tier 3 Detailed Quantitative Risk Assessment (DQRA).

When reviewing or assessing site specific data Stantec utilise published guidance on comparing contamination data with a critical concentration (CL:AIRE/CIEH 2008) which presents a structured

process for employing statistical techniques for data assessment purposes.

### 4.2 Receptor and Pathway Identification

For all Tiers the potential receptors (for both on site and adjoining land) that will be considered are:

- Human Health – including current and future occupiers, construction and future maintenance workers, and neighbouring properties/third parties;
- Ecological Systems; <sup>1</sup>
- Controlled Waters <sup>2</sup> – Under section 78A(9) of Part 2A the term “pollution of controlled waters” means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term “controlled waters” in relation to England has the same meaning as in Part 3 of the Water Resources Act 1991, except that “ground waters” does not include waters contained in underground strata but above the saturation zone.
- Property - Animal or Crop (including timber; produce grown domestically, or on allotments, for consumption; livestock; other owned or domesticated animals; wild animals which are the subject of shooting or fishing rights); and
- Property - Buildings (any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables including archaeological sites and ancient monuments).

If a receptor is taken forward for further assessment it will be classified in terms of its sensitivity, the criteria for which are presented in **Table 2**. Table 2 has been generated using descriptions of environmental receptor importance/value given in various guidance documents including R&D 66 (NHBC 2008), EA 2017 and Transport Analysis Guidance (based on DETR 2000). Human health and buildings classifications have been generated by Stantec using the attribute description for each class. Surface water sensitivity is classified using the Water Framework Directive (WFD) status for the River Basin obtained from: <https://environment.data.gov.uk/catchment-planning/>

<sup>1</sup> International or nationally designated sites (as defined in the statutory guidance (Defra Circular 04/12)) “*in the local area*” will be identified as potential ecological receptors. A search radius of 1, 2 or 5km will be utilised depending on the site-specific circumstances (see also pathway identification). The Environment Agency has published an ecological risk assessment framework (EA 2008) which promotes (as opposed to statutorily enforces) consideration of additional receptors to include locally protected sites and protected or notable species. These additional potential receptors will only be considered if a Phase 1 habitat survey, undertaken in accordance with guidance (JNCC 1993), is commissioned and the data provided to Stantec. It should be noted that

without such a survey a Land Contamination risk assessment may conclude that the identification of potential ecological receptors is inconclusive (refer to Stantec Specification for a Preliminary Investigation (Desk Study and Site Reconnaissance)).

<sup>2</sup> The definition of “pollution of controlled water” was amended by the introduction of Section 86 of the Water Act 2003. For the purposes of Part 2A groundwater does not include waters above the saturated zone and our assessment does not therefore address perched water other than where development causes a pathway to develop.

## Stantec Guide: Methodology for Assessment of Land Contamination (England)

The exposure pathway and modes of transport that will be considered are presented in **Table 3**.

### 4.3 Note regarding Ecological Systems

The Environment Agency (EA) has developed an ecological risk assessment framework which aims to provide a structured approach for assessing the risks to ecology from chemical contaminants in soils (EA 2008). In circumstances where contaminants in water represent a potential risk to aquatic ecosystems then risk assessors will need to consider this separately.

The framework consists of a three-tiered process: -

- Tier 1 is a screening step where the site soils chemical data is compared to a soil screening value (SSV)
- Tier 2 uses various tools (including surveys and biological testing) to gather evidence for any harm to the ecological receptors
- Tier 3 seeks to attribute the harm to the chemical contamination

Tier 1 is preceded by a desk study to collate information about the site and the nature of the contamination to assess whether pollutant linkages are feasible. The framework presents ten steps for ecological desk studies and development of a conceptual model as follows.

1. Establish Regulatory Context
2. Collate and Assess Documentary Information
3. Summarise Documentary Information
4. Identify Contaminants of Potential Concern
5. Identify Likely Fate Transport of Contaminants
6. Identify Potential Receptors of Concern
7. Identify Potential Pathways of Concern
8. Create a Conceptual Model
9. Identify Assessment and Measurement Endpoints
10. Identify Gaps and Uncertainties

The information in a standard PRA report covers Steps 1 to 4 inclusive. Step 5 considers fate and transport of contaminants and it should be noted that our standard report adopts a simplified approach considering only transport mechanisms. A simplified approach has also been adopted in respect of Steps 6 and 7 receptors (a detailed review of the ecological attributes has not been undertaken) and pathways (a food chain assessment has not been undertaken). Step 9 is outside the scope of our standard PRA report.

It should be noted that the PRA report will present an assessment for ecological systems (where identified as a receptor for a land contamination assessment) considering the viability of the mode of transport given the site-specific circumstances and not specific pathways. The PRA may conclude that the risk to potential ecological receptors is inconclusive.

### 4.4 Note regarding controlled waters

Controlled waters are rivers, estuaries, coastal waters, lakes and groundwaters, but not perched waters.

The EU Water Framework Directive (WFD) 2000/60/EC provides for the protection of sub-surface, surface, coastal and territorial waters through a framework of river basin management. The EU Updated Water Framework Standards Directive 2014/101/EU amended the EU WFD to update the international standards therein; it entered into force on 20 November 2014 with the requirements for its provisions to be transposed in Member State law by 20 May 2016. Other EU Directives in the European water management framework include:

- the EU Priority Substances Directive 2013/39/EU;
- EU Groundwater Pollutants Threshold Values Directive 2014/80/EU amending the EU Groundwater Directive 2006/118/EC; and
- EU Biological Monitoring Directive 2014/101/EU.

The Ground Water Daughter Directive (GWDD) was enacted by the Groundwater Regulations (2009), which were subsumed by the Environmental Permitting Regulations (2010) which provide essential clarification including on the four objectives specifically for groundwater quality in the WFD: -

Achieve 'Good' groundwater chemical status by 2015, commonly referred to as 'status objective';  
Achieve Drinking Water Protected Area Objectives;  
Implement measures to reverse any significant and sustained upward trend in groundwater quality, referred to as 'trend objective'; and

Prevent or limit the inputs of pollutants into groundwater, commonly referred to as 'prevent or limit' objectives

The Water Act 2003 (Commencement No.11) Order 2012 amends the test for 'contaminated land' which relates to water pollution so that pollution of controlled waters must now be "significant" to meet the definition of contaminated land.

The Water Framework Directive (WFD) requires the preparation, implementation and review of River Basin Management Plans (RBMP) on a six-year cycle. River basins are made up of lakes, rivers, groundwaters, estuaries and coastal waters, together with the land they drain. River Basin Districts (RBD) and the WFD Waterbodies that they comprise are important spatial management units, regularly used in catchment management studies. River Basin Management Plans (RBMP) have been developed for the 11 River Basin Districts in England and Wales.



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These were released by Defra in 2009 (Defra 2009) and updated in 2015.

These RBMP's establish the current status of waters within the catchments of the respective Districts and the current status of adjoining waters identified. As part of a Tier 2 risk assessment water quality data is screened against the WFD assessment criteria. Comparison with the RBMP's current status of waters for the catchment under consideration would form part of a Tier 3 assessment.

### 5 RISK ESTIMATION

Risk estimation classifies what degree of harm might result to a receptor (defined as consequence) and how likely it is that such harm might arise (probability).

At Tier 1 the consequence classification is generated by multiplying the hazard classification score and the receptor sensitivity score. This approach follows that presented in the republished R&D 66 (NHBC 2008).

The criteria for classifying probability are set out in **Table 4** and have been taken directly from Table 6.4 CIRIA C552 (CIRIA 2001). Probability considers the integrity of the exposure pathway.

The consequence classifications detailed in **Table 5** have been adapted from Table 6.3 presented in C552 and R&D 66 (Annex 4 Table A4.3).

The Tier 1 risk classification is estimated for each pollutant linkage using the matrix given in **Table 6** which is taken directly from C552 (Table 6.5).

Subsequent Tiers refine the CM through retention or elimination of potential hazards and pollutant linkages.

### 6 RISK EVALUATION

Evaluation criteria are the parameters used to judge whether harm or pollution needs further assessment or is unacceptable. The evaluation criteria used will depend on:

- the reasons for doing the RA and the regulatory context such as Part 2A or planning;
- the CM and pollutant linkages present;
- any criteria set by regulators;
- any advisory requirements such as from Public Health England;
- the degree of confidence and precaution required;
- the level of confidence required to judge whether a risk is unacceptable;
- how you've used or developed more detailed assessment criteria in the later tiers of RA;
- the availability of robust scientific data;
- how much is known - for example, about the pathway mechanism and how the contaminants affect receptors; and

- any practical reasons such as being able to measure or predict against the criteria.

In order to put the Tier 1 risk classification into context the likely actions are described in **Table 7** which is taken directly from Table 6.6 of C552 (CIRIA 2001).

### REFERENCES

BSI 2017 BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of Practice

BSI 2019 BS 8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

CIRIA 2001: Contaminated land risk assessment – a guide to good practice C552.

CIRIA 2008: Assessing risks posed by hazardous ground gases to buildings C655

CL: AIRE/CIEH 2008 Guidance on Comparing Soil Contamination Data with a Critical Concentration. Published by Contaminated Land: Applications in Real Environments (CL: AIRE) and the Chartered Institute of Environmental Health (CIEH)

CL: AIRE 2013 SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report published by Contaminated Land: Applications in Real Environments (CL: AIRE) 20th December 2013

DCLG 2010 Building Regulations 2010 Approved Document C Site preparation and resistance to contaminants and moisture.

DETR 2000 Methodology for Multi Modal Studies. Volume 2 Section 4. The Environmental Objective.

DEFRA 2012 Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance. Department for Environment, Food and Rural Affairs

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DEFRA, 2013 Environmental Damage (Prevention and Remediation) Regulations 2009: Guidance for England and Wales

Defra '2009 Water for Life and Livelihoods. River Basin Management Plan. (11 Districts: Anglia, Dee, Humber, Northumbria, Northwest, Severn, Solway

## **Stantec Guide: Methodology for Assessment of Land Contamination (England)**

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Report 11: The Model Procedures for the  
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2017

JNCC 1993 Handbook for Phase 1 Habitat Survey  
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the Joint Nature Conservancy Council (JNCC)

NHBC/EA/CIEH 2008: R&D Publication 66  
Guidance for the safe development of housing on  
land affected by contamination.

National Planning Policy Framework (February  
2019 revised), published by the Ministry of Housing,  
Communities and Local Government (MHCLG) at:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/810197/NPPF\\_Feb\\_2019\\_revised.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf)



# Stantec Methodology for Assessment of Land Contamination (England)

**Table 1: Criteria for Classifying Hazards / Potential for Generating Contamination**

Classification/Score	Potential for generating contamination/gas based on land use
Very Low 1	Land Use: Residential, retail or office use, agriculture Contamination: Limited. Gas generation potential: Soils with low organic content
Low 2	Land Use: Recent small scale industrial and light industry Contamination: locally slightly elevated concentrations. Gas generation potential: Soils with high organic content (limited thickness)
Moderate 3	Land Use: Railway yards, collieries, scrap yards, engineering works. Contamination: Possible widespread slightly elevated concentrations and locally elevated concentrations. Gas generation potential: Dock silt and substantial thickness of organic alluvium/peat
High 4	Land Use: Heavy industry, non-hazardous landfills. Contamination: Possible widespread elevated concentrations. Gas generation potential: Shallow mine workings Pre 1960s landfill
Very High 5	Land Use: Hazardous waste landfills, gas works, chemical works, Contamination: Likely widespread elevated concentrations. Gas generation potential: Landfill post 1960

*"Greenfield" is land which has not been developed and there has been no use of agrochemicals*

**Table 2: Criteria for Classifying Receptor Sensitivity/Value**

Classification	Definition
Very Low 1	Receptor of limited importance <ul style="list-style-type: none"> <li>Groundwater: Unproductive strata (Strata with negligible significance for water supply or river baseflow) (previously Non-aquifer), Secondary B (water-bearing parts of non-aquifers), Secondary undifferentiated (previously minor or non-aquifer, but information insufficient to classify as secondary A or B)</li> <li>Surface water: WFD Surface Water status Bad</li> <li>Ecology: No local designation</li> <li>Buildings: Replaceable</li> <li>Human health: Unoccupied/limited access</li> </ul>
Low 2	Receptor of local or county importance with potential for replacement <ul style="list-style-type: none"> <li>Groundwater: Secondary A aquifer</li> <li>Surface water: WFD Surface Water status Poor</li> <li>Ecology: local habitat resources</li> <li>Buildings: Local value</li> <li>Human health: Minimum score 4 where human health identified as potential receptor</li> </ul>
Moderate 3	Receptor of local or county importance with potential for replacement <ul style="list-style-type: none"> <li>Groundwater: Principal aquifer</li> <li>Surface water: WFD Surface Water status Moderate</li> <li>Ecology: County wildlife sites, Areas of Outstanding Natural Beauty (AONB)</li> <li>Buildings: Area of Historic Character</li> <li>Human health: Minimum score 4 where human health identified as potential receptor</li> </ul>
High 4	Receptor of county or regional importance with limited potential for replacement <ul style="list-style-type: none"> <li>Groundwater: Source Protection Zone 2 or 3</li> <li>Surface water: WFD Surface Water status Good</li> <li>Ecology: SSSI, National or Marine Nature Reserve (NNR or MNR)</li> <li>Buildings: Conservation Area</li> <li>Human health: Minimum score 4 where human health identified as potential receptor</li> </ul>
Very High 5	Receptor of national or international importance <ul style="list-style-type: none"> <li>Groundwater: Source Protection Zone (SPZ) 1</li> <li>Surface water: WFD Surface Water status High</li> <li>Ecology: Special Areas of Conservation (SAC and candidates), Special Protection Areas (SPA and potentials) or wetlands of international importance (RAMSAR)</li> <li>Buildings: World Heritage site</li> <li>Human health: Residential, open spaces and uses where children are present</li> </ul>

## Stantec Methodology for Assessment of Land Contamination (England)

**Table 3: Exposure Pathway and Modes of Transport**

Receptor	Pathway	Mode of transport
<b>Human health</b>	Ingestion	Fruit or vegetable leaf or roots
		Contaminated water
		Soil/dust indoors
		Soil/dust outdoors
	Inhalation	Particles (dust / soil) – outdoor
		Particles (dust / soil) - indoor
		Vapours – outdoor - migration via natural or anthropogenic pathways
		Vapours - indoor - migration via natural or anthropogenic pathways
	Dermal absorption	Direct contact with soil
		Direct contact with waters (swimming / showering)
		Irradiation
<b>Groundwater</b>	Leaching	Gravity / permeation
	Migration	Natural – groundwater as pathway Anthropogenic (e.g. boreholes, culverts, pipelines etc.)
<b>Surface Water</b>	Direct	Runoff or discharges from pipes
	Indirect	Recharge from groundwater
	Indirect	Deposition of windblown dust
<b>Buildings</b>	Direct contact	Sulphate attack on concrete, hydrocarbon corrosion of plastics
	Gas ingress	Migration via natural or anthropogenic paths
<b>Ecological systems</b>	See Notes	Runoff/discharge to surface water body
	See Notes	Windblown dust
	See Notes	Groundwater migration
	See Notes	At point of contaminant source
<b>Animal and crop</b>	Direct	Windblown or flood deposited particles / dust / sediments
	Indirect	Plants via root up take or irrigation. Animals through watering
	Inhalation	By livestock / fish - gas / vapour / particulates / dust
	Ingestion	Consumption of vegetation / water / soil by animals

**Table 4: Classification of Probability**

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

## Stantec Methodology for Assessment of Land Contamination (England)

**Table 5: Classification of Consequence (score = magnitude of hazard and sensitivity of receptor)**

<b>Classification Score</b>	<b>Examples</b>
<b>Severe</b> <b>17-25</b> <b>(3 out of 25 outcomes)</b>	<p>Human health effect - exposure likely to result in "significant harm" as defined in the Defra (2012) Part 2A Statutory Guidance <sup>1</sup>.</p> <p>Controlled water effect - short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Equivalent to EA Category 1 incident (persistent and/or extensive effects on water quality leading to closure of potable abstraction point or loss of amenity, agriculture or commercial value. Major fish kill.</p> <p>Ecological effect - short-term exposure likely to result in a substantial adverse effect.</p> <p>Catastrophic damage to crops, buildings or property</p>
<b>Medium</b> <b>10-16</b> <b>(7 out of 25 outcomes)</b>	<p>Human health effect - exposure could result in "significant harm" <sup>1</sup>.</p> <p>Controlled water effect - equivalent to EA Category 2 incident requiring notification of abstractor</p> <p>Ecological effect - short-term exposure may result in a substantial adverse effect.</p> <p>Damage to crops, buildings or property</p>
<b>Mild</b> <b>5-9</b> <b>(7 out of 25 outcomes)</b>	<p>Human health effect - exposure may result in "significant harm" <sup>1</sup>.</p> <p>Controlled water effect - equivalent to EA Category 3 incident (short lived and/or minimal effects on water quality).</p> <p>Ecological effect - unlikely to result in a substantial adverse effect.</p> <p>Minor damage to crops, buildings or property. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).</p>
<b>Minor</b> <b>1-4</b> <b>(8 out of 25 outcomes)</b>	<p>No measurable effect on humans. Protective equipment is not required during site works.</p> <p>Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.</p> <p>Repairable effects to crops, buildings or property. The loss of plants in a landscaping scheme. Discolouration of concrete.</p>

<sup>1</sup> Significant harm includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive function. The local authority may also consider other health effects to constitute significant harm such as physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Whether or not these would constitute significant harm would depend on the seriousness of harm including impact on health, quality of life and scale of impact.

**Table 6: Classification of Risk (Combination of Consequence Table 5 and Probability Table 4)**

	<b>Consequence</b>			
<b>Probability</b>	<b>Severe</b>	<b>Medium</b>	<b>Mild</b>	<b>Minor</b>
<b>High likelihood</b>	Very high	High	Moderate	Low
<b>Likely</b>	High	Moderate	Moderate/	Low
<b>Low likelihood</b>	Moderate	Moderate	Low	Very low
<b>Unlikely</b>	Low	Low	Very low	Very low

## Stantec Methodology for Assessment of Land Contamination (England)

**Table 7: Description of Risks and Likely Action Required**

<b>Risk Classification</b>	<b>Description</b>
<b><i>Very high risk</i></b>	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 to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation is likely to be required in the short term.
<b><i>High risk</i></b>	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
<b><i>Moderate risk</i></b>	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 is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
<b><i>Low risk</i></b>	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.
<b><i>Very low risk</i></b>	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 B      Site Walkover Photographs**



Plate 1 – View of site frontage form Transport Way



Plate 2 – External view northwards showing car park areas and bike store


 <b>Stantec</b>  Caversham Bridge House, Waterman Pl, Reading, RG1 8DN Tel 0118 950 0761	Client  <b>T-Squared P4 Limited</b>	<b>Proposed Development at WIC House, Transport Way, Cowley, Oxford</b>	Date	30/12/2020
			Scale	-
			Drawn	MG
			Checked	RF
			Appendix	<b>B</b>



Plate 3 – Showing external air conditioning units



Plate 4 – Showing internal air conditioning ducting


 <b>Stantec</b>  Caversham Bridge House, Waterman Pl, Reading, RG1 8DN Tel 0118 950 0761	Client  <b>T-Squared P4 Limited</b>	<b>Proposed Development at WIC House, Transport Way, Cowley, Oxford</b>	Date	30/12/2020
			Scale	-
			Drawn	MG
			Checked	RF
			Appendix	<b>B</b>





Plate 5 – Showing generic view of laboratory area

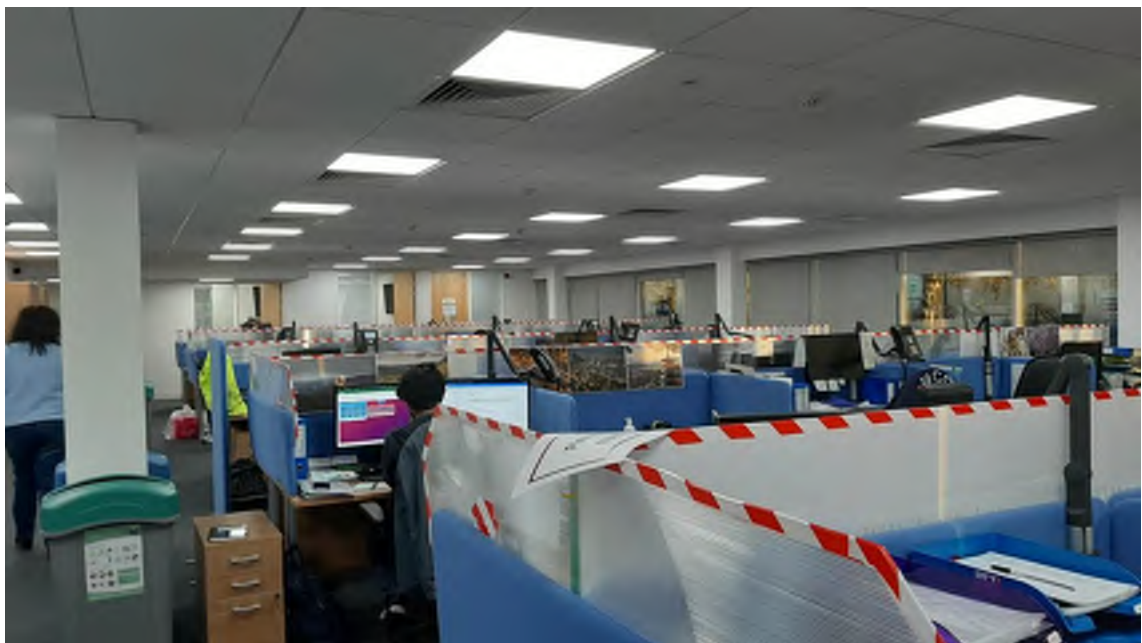



Plate 6 – Showing generic view of office area

 <b>Stantec</b>  Caversham Bridge House, Waterman Pl, Reading, RG1 8DN Tel 0118 950 0761	Client  <b>T-Squared P4 Limited</b>	<b>Proposed Development at WIC House, Transport Way, Cowley, Oxford</b>	Date	30/12/2020
			Scale	-
			Drawn	MG
			Checked	RF
			Appendix	<b>B</b>



## **Appendix C      Groundsure Report**

UNIT B, BISHOPS MEWS, TRANSPORT WAY, OXFORD, OX4 6HD

## Order Details

**Date:** 17/11/2020  
**Your ref:** WIC\_House  
**Our Ref:** GS-7283934  
**Client:** Stantec UK Ltd

## Site Details

**Location:** 455728 203507  
**Area:** 0.48 ha  
**Authority:** [Oxford City Council](#)



**Summary of findings**

p. 2

**Aerial image**

p. 8

**OS MasterMap site plan**

p.13

[groundsure.com/insightuserguide](https://groundsure.com/insightuserguide)

## Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">14</a>	<a href="#">1.1</a>	<a href="#"><u>Historical industrial land uses</u></a>	2	1	33	14	-
<a href="#">16</a>	<a href="#">1.2</a>	<a href="#"><u>Historical tanks</u></a>	1	5	21	34	-
<a href="#">19</a>	<a href="#">1.3</a>	<a href="#"><u>Historical energy features</u></a>	1	0	9	17	-
20	1.4	Historical petrol stations	0	0	0	0	-
<a href="#">21</a>	<a href="#">1.5</a>	<a href="#"><u>Historical garages</u></a>	3	0	0	0	-
21	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">22</a>	<a href="#">2.1</a>	<a href="#"><u>Historical industrial land uses</u></a>	2	1	36	17	-
<a href="#">25</a>	<a href="#">2.2</a>	<a href="#"><u>Historical tanks</u></a>	1	8	34	49	-
<a href="#">28</a>	<a href="#">2.3</a>	<a href="#"><u>Historical energy features</u></a>	1	0	22	40	-
31	2.4	Historical petrol stations	0	0	0	0	-
<a href="#">31</a>	<a href="#">2.5</a>	<a href="#"><u>Historical garages</u></a>	5	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
32	3.1	Active or recent landfill	0	0	0	0	-
32	3.2	Historical landfill (BGS records)	0	0	0	0	-
33	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
33	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
<a href="#">33</a>	<a href="#">3.5</a>	<a href="#"><u>Historical waste sites</u></a>	0	0	0	2	-
34	3.6	Licensed waste sites	0	0	0	0	-
<a href="#">34</a>	<a href="#">3.7</a>	<a href="#"><u>Waste exemptions</u></a>	0	0	2	1	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">35</a>	<a href="#">4.1</a>	<a href="#"><u>Recent industrial land uses</u></a>	2	5	37	-	-
<a href="#">38</a>	<a href="#">4.2</a>	<a href="#"><u>Current or recent petrol stations</u></a>	0	0	1	0	-
39	4.3	Electricity cables	0	0	0	0	-
39	4.4	Gas pipelines	0	0	0	0	-
39	4.5	Sites determined as Contaminated Land	0	0	0	0	-



<b>39</b>	<b>4.6</b>	<b><u>Control of Major Accident Hazards (COMAH)</u></b>	0	0	3	0	-
40	4.7	Regulated explosive sites	0	0	0	0	-
<b>40</b>	<b>4.8</b>	<b><u>Hazardous substance storage/usage</u></b>	0	0	7	0	-
<b>41</b>	<b>4.9</b>	<b><u>Historical licensed industrial activities (IPC)</u></b>	0	0	0	6	-
42	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
<b>42</b>	<b>4.11</b>	<b><u>Licensed pollutant release (Part A(2)/B)</u></b>	0	0	1	11	-
<b>44</b>	<b>4.12</b>	<b><u>Radioactive Substance Authorisations</u></b>	0	7	4	0	-
<b>45</b>	<b>4.13</b>	<b><u>Licensed Discharges to controlled waters</u></b>	0	0	2	3	-
46	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
46	4.15	Pollutant release to public sewer	0	0	0	0	-
47	4.16	List 1 Dangerous Substances	0	0	0	0	-
47	4.17	List 2 Dangerous Substances	0	0	0	0	-
<b>47</b>	<b>4.18</b>	<b><u>Pollution Incidents (EA/NRW)</u></b>	0	0	0	2	-
47	4.19	Pollution inventory substances	0	0	0	0	-
48	4.20	Pollution inventory waste transfers	0	0	0	0	-
48	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
<b>49</b>	<b>5.1</b>	<b><u>Superficial aquifer</u></b>	Identified (within 500m)				
<b>51</b>	<b>5.2</b>	<b><u>Bedrock aquifer</u></b>	Identified (within 500m)				
<b>52</b>	<b>5.3</b>	<b><u>Groundwater vulnerability</u></b>	Identified (within 50m)				
<b>53</b>	<b>5.4</b>	<b><u>Groundwater vulnerability- soluble rock risk</u></b>	Identified (within 0m)				
53	5.5	Groundwater vulnerability- local information	None (within 0m)				
54	5.6	Groundwater abstractions	0	0	0	0	0
54	5.7	Surface water abstractions	0	0	0	0	0
54	5.8	Potable abstractions	0	0	0	0	0
54	5.9	Source Protection Zones	0	0	0	0	-
55	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
<b>56</b>	<b>6.1</b>	<b><u>Water Network (OS MasterMap)</u></b>	0	0	2	-	-



<b>57</b>	<b><u>6.2</u></b>	<b><u>Surface water features</u></b>	0	0	1	-	-
<b>57</b>	<b><u>6.3</u></b>	<b><u>WFD Surface water body catchments</u></b>	1	-	-	-	-
<b>57</b>	<b><u>6.4</u></b>	<b><u>WFD Surface water bodies</u></b>	0	0	0	-	-
<b>58</b>	<b><u>6.5</u></b>	<b><u>WFD Groundwater bodies</u></b>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
59	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
59	7.2	Historical Flood Events	0	0	0	-	-
59	7.3	Flood Defences	0	0	0	-	-
59	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
60	7.5	Flood Storage Areas	0	0	0	-	-
61	7.6	Flood Zone 2	None (within 50m)				
61	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
<b>62</b>	<b><u>8.1</u></b>	<b><u>Surface water flooding</u></b>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
<b>64</b>	<b><u>9.1</u></b>	<b><u>Groundwater flooding</u></b>	Negligible (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>65</b>	<b><u>10.1</u></b>	<b><u>Sites of Special Scientific Interest (SSSI)</u></b>	0	0	0	0	2
66	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
66	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
66	10.4	Special Protection Areas (SPA)	0	0	0	0	0
66	10.5	National Nature Reserves (NNR)	0	0	0	0	0
67	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
<b>67</b>	<b><u>10.7</u></b>	<b><u>Designated Ancient Woodland</u></b>	0	0	0	0	2
67	10.8	Biosphere Reserves	0	0	0	0	0
67	10.9	Forest Parks	0	0	0	0	0
68	10.10	Marine Conservation Zones	0	0	0	0	0
<b>68</b>	<b><u>10.11</u></b>	<b><u>Green Belt</u></b>	0	0	1	0	2
68	10.12	Proposed Ramsar sites	0	0	0	0	0



68	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
69	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
69	10.15	Nitrate Sensitive Areas	0	0	0	0	0
<b>69</b>	<b>10.16</b>	<b><u>Nitrate Vulnerable Zones</u></b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>70</b>	<b>10.17</b>	<b><u>SSSI Impact Risk Zones</u></b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>71</b>	<b>10.18</b>	<b><u>SSSI Units</u></b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
73	11.1	World Heritage Sites	0	0	0	-	-
73	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
73	11.3	National Parks	0	0	0	-	-
73	11.4	Listed Buildings	0	0	0	-	-
74	11.5	Conservation Areas	0	0	0	-	-
74	11.6	Scheduled Ancient Monuments	0	0	0	-	-
74	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>75</b>	<b>12.1</b>	<b><u>Agricultural Land Classification</u></b>	<b>Grade 3 (within 250m)</b>				
76	12.2	Open Access Land	0	0	0	-	-
76	12.3	Tree Felling Licences	0	0	0	-	-
76	12.4	Environmental Stewardship Schemes	0	0	0	-	-
76	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
77	13.1	Priority Habitat Inventory	0	0	0	-	-
77	13.2	Habitat Networks	0	0	0	-	-
77	13.3	Open Mosaic Habitat	0	0	0	-	-
77	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<b>78</b>	<b>14.1</b>	<b><u>10k Availability</u></b>	<b>Identified (within 500m)</b>				
<b>79</b>	<b>14.2</b>	<b><u>Artificial and made ground (10k)</u></b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>-</b>
<b>80</b>	<b>14.3</b>	<b><u>Superficial geology (10k)</u></b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>-</b>



81	14.4	Landslip (10k)	0	0	0	0	-
<b>82</b>	<b>14.5</b>	<b><u>Bedrock geology (10k)</u></b>	1	0	1	1	-
83	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<b>84</b>	<b>15.1</b>	<b><u>50k Availability</u></b>	Identified (within 500m)				
<b>85</b>	<b>15.2</b>	<b><u>Artificial and made ground (50k)</u></b>	0	1	0	0	-
<b>86</b>	<b>15.3</b>	<b><u>Artificial ground permeability (50k)</u></b>	0	1	-	-	-
<b>87</b>	<b>15.4</b>	<b><u>Superficial geology (50k)</u></b>	0	0	0	2	-
88	15.5	Superficial permeability (50k)	None (within 50m)				
88	15.6	Landslip (50k)	0	0	0	0	-
88	15.7	Landslip permeability (50k)	None (within 50m)				
<b>89</b>	<b>15.8</b>	<b><u>Bedrock geology (50k)</u></b>	1	0	1	1	-
<b>90</b>	<b>15.9</b>	<b><u>Bedrock permeability (50k)</u></b>	Identified (within 50m)				
90	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
<b>91</b>	<b>16.1</b>	<b><u>BGS Boreholes</u></b>	0	2	13	-	-
Page	Section	Natural ground subsidence					
<b>93</b>	<b>17.1</b>	<b><u>Shrink swell clays</u></b>	Negligible (within 50m)				
<b>94</b>	<b>17.2</b>	<b><u>Running sands</u></b>	Very low (within 50m)				
<b>96</b>	<b>17.3</b>	<b><u>Compressible deposits</u></b>	Very low (within 50m)				
<b>98</b>	<b>17.4</b>	<b><u>Collapsible deposits</u></b>	Very low (within 50m)				
<b>99</b>	<b>17.5</b>	<b><u>Landslides</u></b>	Very low (within 50m)				
<b>100</b>	<b>17.6</b>	<b><u>Ground dissolution of soluble rocks</u></b>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
102	18.1	Natural cavities	0	0	0	0	-
<b>103</b>	<b>18.2</b>	<b><u>BritPits</u></b>	0	0	1	0	-
<b>103</b>	<b>18.3</b>	<b><u>Surface ground workings</u></b>	0	0	11	-	-
104	18.4	Underground workings	0	0	0	0	0
104	18.5	Historical Mineral Planning Areas	0	0	0	0	-



104	18.6	Non-coal mining	0	0	0	0	0
104	18.7	Mining cavities	0	0	0	0	0
105	18.8	JPB mining areas	None (within 0m)				
105	18.9	Coal mining	None (within 0m)				
105	18.10	Brine areas	None (within 0m)				
105	18.11	Gypsum areas	None (within 0m)				
105	18.12	Tin mining	None (within 0m)				
106	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<b><u>107</u></b>	<b><u>19.1</u></b>	<b><u>Radon</u></b>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<b><u>108</u></b>	<b><u>20.1</u></b>	<b><u>BGS Estimated Background Soil Chemistry</u></b>	2	0	-	-	-
108	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
108	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
109	21.1	Underground railways (London)	0	0	0	-	-
109	21.2	Underground railways (Non-London)	0	0	0	-	-
110	21.3	Railway tunnels	0	0	0	-	-
<b><u>110</u></b>	<b><u>21.4</u></b>	<b><u>Historical railway and tunnel features</u></b>	0	1	14	-	-
111	21.5	Royal Mail tunnels	0	0	0	-	-
<b><u>111</u></b>	<b><u>21.6</u></b>	<b><u>Historical railways</u></b>	0	0	1	-	-
<b><u>111</u></b>	<b><u>21.7</u></b>	<b><u>Railways</u></b>	0	0	11	-	-
112	21.8	Crossrail 1	0	0	0	0	-
112	21.9	Crossrail 2	0	0	0	0	-
112	21.10	HS2	0	0	0	0	-



## Recent aerial photograph



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Capture Date: 05/07/2019

Site Area: 0.48ha





## Recent site history - 2016 aerial photograph



Capture Date: 04/05/2016

Site Area: 0.48ha





## Recent site history - 2015 aerial photograph



Capture Date: 10/09/2015

Site Area: 0.48ha





## Recent site history - 2006 aerial photograph



Capture Date: 29/10/2006

Site Area: 0.48ha





## Recent site history - 1999 aerial photograph



Capture Date: 05/10/1999

Site Area: 0.48ha





## OS MasterMap site plan



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Site Area: 0.48ha



## 1 Past land use



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

### 1.1 Historical industrial land uses

Records within 500m

50

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Commercial/Industrial	1965	1824731



ID	Location	Land use	Dates present	Group ID
<b>A</b>	<b>On site</b>	<b>Unspecified Commercial/Industrial</b>	<b>1965</b>	<b>1800524</b>
A	14m SE	Unspecified Commercial/Industrial	1974	1797130
D	50m NW	Railway Sidings	1938	1814955
3	50m NW	Railway Sidings	1965	1797977
E	55m NW	Railway Sidings	1974	1821602
F	74m NW	Railway Building	1974	1765419
4	76m SW	Unspecified Works	1965	1797114
G	78m S	Sewage Farm	1938	1794727
G	89m S	Sewage Farm	1922	1819933
H	112m SE	Gas Holder Station	1974	1758623
E	112m NW	Railway Buildings	1938	1789162
I	114m W	Iron Foundry	1938	1774218
E	115m NW	Railway Buildings	1974	1827636
I	117m W	Unspecified Works	1974	1838689
E	119m NW	Railway Sidings	1922	1783597
5	121m W	Cuttings	1880	1752564
A	125m E	Unspecified Tank	1965	1812765
J	125m NW	Unspecified Depot	1974	1764013
7	143m N	Cuttings	1880	1793095
E	144m N	Railway Building	1922	1765423
A	145m E	Unspecified Tank	1974	1781948
K	150m NW	Pressed Steel Works	1938	1772369
E	151m NW	Railway Building	1922	1765421
A	154m E	Unspecified Quarry	1880 - 1898	1829594
A	154m E	Unspecified Old Quarry	1922	1838153
A	154m E	Unspecified Old Quarry	1938	1809081
M	155m NW	Unspecified Commercial/Industrial	1974	1796203
M	155m NW	Unspecified Works	1965	1833787





ID	Location	Land use	Dates present	Group ID
E	157m NW	Railway Building	1922	1765422
N	161m SE	Timber Yard	1974	1752720
E	168m NW	Unspecified Tanks	1974	1835974
E	172m NW	Unspecified Tanks	1965	1785905
8	184m W	Cuttings	1880	1752562
P	201m NE	Unspecified Works	1965	1771600
10	243m NE	Cuttings	1922	1808405
12	263m W	Unspecified Commercial/Industrial	1938	1786466
Q	267m W	Railway Sidings	1974	1806555
Q	267m W	Railway Sidings	1965 - 1966	1846296
P	318m NE	Sewage Works	1974	1760242
M	323m N	Motor Works	1974	1773120
V	379m NE	Cuttings	1898	1821633
V	380m NE	Cuttings	1922	1807482
V	380m NE	Cuttings	1880	1832192
M	390m NW	Hospital	1938	1773808
X	391m SE	Unspecified Commercial/Industrial	1965	1753148
Y	403m NE	Unspecified Tank	1974	1769128
V	424m NE	Railway Sidings	1974	1790376
X	434m SE	Unspecified Tanks	1965	1761698
AD	444m NE	Unspecified Commercial/Industrial	1965	1753147

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.2 Historical tanks

### Records within 500m

61

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



Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
<b>C</b>	<b>On site</b>	<b>Unspecified Tank</b>	<b>1954</b>	<b>289225</b>
C	1m NE	Unspecified Tank	1954	293758
C	19m NE	Tanks	1976	287777
C	24m NE	Tanks	1988	287776
B	43m SW	Unspecified Tank	1954	289029
2	47m SE	Unspecified Tank	1969 - 1976	297249
B	65m SW	Unspecified Tank	1976	285174
A	75m SE	Gasholder Station	1969 - 1976	296686
A	75m SE	Gas Holder Station	1988	288207
H	105m SE	Unspecified Tank	1954	292390
H	106m SE	Unspecified Tank	1969 - 1971	293034
H	107m SE	Unspecified Tank	1976	293907
A	142m E	Gas Holder	1988	287942
A	143m E	Gasholder	1969 - 1976	294498
A	145m E	Unspecified Tank	1988	291742
A	147m E	Unspecified Tank	1969 - 1976	291813
L	158m NE	Unspecified Tank	1954	285165
J	166m NW	Unspecified Tank	1954 - 1965	292690
E	169m NW	Tanks	1954 - 1965	300652
E	169m NW	Tanks	1971	291757
O	183m NW	Tanks	1954	294198
O	187m NW	Tanks	1971	287769
N	203m SE	Unspecified Tank	1988	298434
N	203m SE	Unspecified Tank	1969	289628
N	203m SE	Unspecified Tank	1971	291556
N	203m SE	Unspecified Tank	1976	294855
D	239m N	Unspecified Tank	1971	285166



ID	Location	Land use	Dates present	Group ID
11	258m NE	Unspecified Tank	1971	285164
M	274m N	Tanks	1954	292197
M	285m N	Unspecified Tank	1971	285173
M	286m N	Unspecified Tank	1954 - 1971	299841
M	292m N	Unspecified Tank	1971	285172
M	300m NW	Unspecified Tank	1971	285171
S	306m NE	Unspecified Tank	1970	285162
S	307m NE	Unspecified Tank	1971	285161
T	310m NE	Tanks	1954	287765
T	311m NE	Unspecified Tank	1954	285163
M	317m N	Unspecified Tank	1954	295526
K	328m N	Tanks	1971	287764
14	328m W	Unspecified Tank	1954	296255
15	331m W	Tanks	1972	287775
K	332m N	Tanks	1971	287763
K	353m N	Unspecified Tank	1971	285157
M	354m N	Unspecified Tank	1954	290718
K	370m N	Unspecified Tank	1971	285158
K	373m N	Unspecified Tank	1971	299204
K	373m N	Unspecified Tank	1954	288884
K	392m N	Unspecified Tank	1954	289117
K	392m N	Unspecified Tank	1954	292440
K	392m N	Unspecified Tank	1965	301868
M	396m NW	Unspecified Tank	1954	295654
Y	404m NE	Unspecified Tank	1970 - 1971	288606
Z	406m NE	Unspecified Tank	1954 - 1971	288393
AB	415m W	Unspecified Tank	1972	285169
AC	437m NW	Unspecified Tank	1954	285167

ID	Location	Land use	Dates present	Group ID
Z	445m NE	Unspecified Tank	1970	301593
Z	445m NE	Unspecified Tank	1971	295235
AC	448m NW	Unspecified Tank	1961	285168
18	453m NW	Tanks	1993 - 1995	293776
19	487m N	Unspecified Tank	1994	285150
AD	491m NE	Unspecified Tank	1971	285156

*This data is sourced from Ordnance Survey / Groundsure.*

### 1.3 Historical energy features

#### Records within 500m

27

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
<b>C</b>	<b>On site</b>	<b>Electricity Substation</b>	<b>1988</b>	<b>170865</b>
A	75m SE	Gasholder Station	1969 - 1976	175278
A	75m SE	Gas Holder Station	1988	171781
F	86m W	Electricity Substation	1971	170870
6	132m SW	Electricity Substation	1954 - 1988	186861
A	142m E	Gas Holder	1988	171581
A	143m E	Gasholder	1969 - 1976	176797
L	153m NE	Electricity Substation	1971	170866
9	191m S	Electricity Substation	1971 - 1988	176668
N	235m SE	Electricity Substation	1971 - 1988	180975
13	280m SE	Electricity Substation	1969 - 1988	177918
R	290m SW	Electricity Substation	1971 - 1994	179836



ID	Location	Land use	Dates present	Group ID
R	297m SW	Electricity Substation	1993	180357
K	345m N	Electricity Substation	1971	170868
U	369m NE	Electricity Substation	1971	174395
U	369m NE	Electricity Substation	1970 - 1994	185538
W	380m S	Electricity Substation	1988	178039
W	380m S	Electricity Substation	1971 - 1976	184780
K	405m N	Electricity Substation	1971	170869
G	406m S	Electricity Substation	1969 - 1988	185708
AA	409m SW	Electricity Substation	1971 - 1994	177953
AA	410m SW	Electricity Substation	1993	177864
16	414m SE	Electricity Substation	1970 - 1994	178873
17	427m SE	Electricity Substation	1969 - 1988	184486
AB	430m W	Electricity Substation	1993 - 1995	177959
AE	445m N	Electricity Substation	1971	170867
AE	480m N	Electricity Substation	-	168082

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.4 Historical petrol stations

### Records within 500m

0

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

*This data is sourced from Ordnance Survey / Groundsure.*



## 1.5 Historical garages

**Records within 500m****3**

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
B	On site	Garage	1988	54865
B	On site	Garage and Vehicle Repair Depot	1969 - 1976	59728
C	On site	Vehicle Repair Depot	1976	54918

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.6 Historical military land

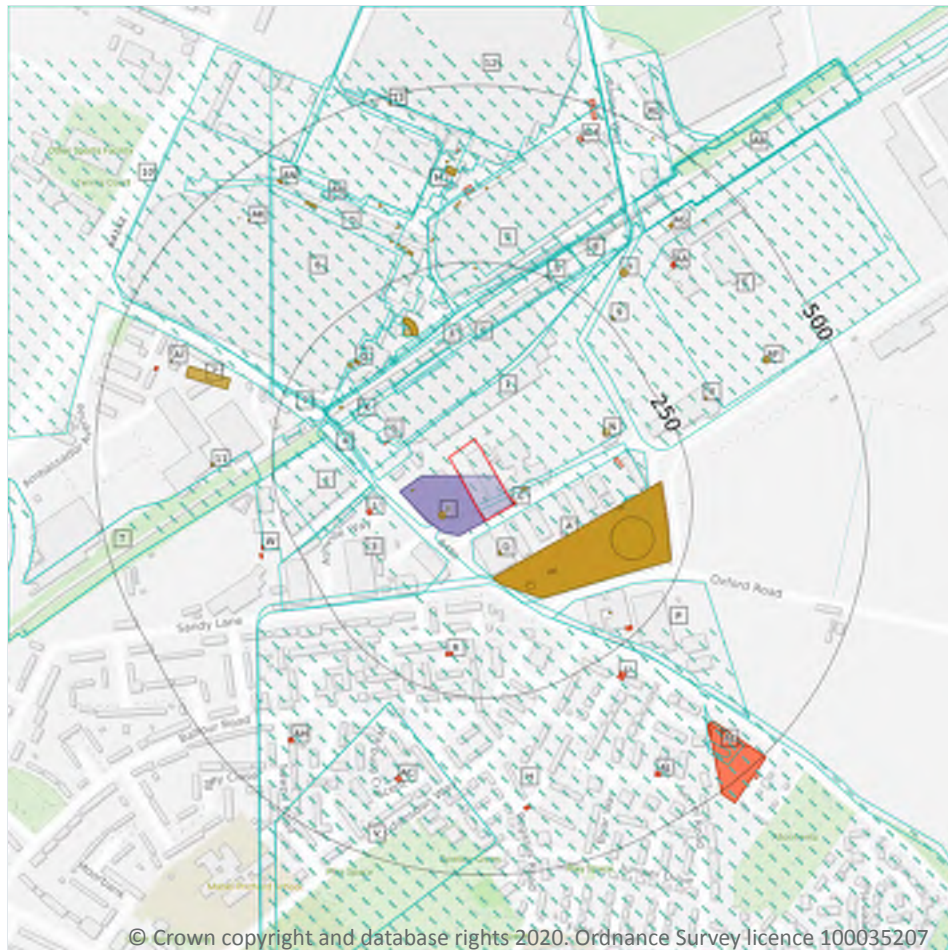
**Records within 500m****0**

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

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



## 2 Past land use - un-grouped



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

### 2.1 Historical industrial land uses

Records within 500m

56

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

Features are displayed on the Past land use - un-grouped map on **page 22**

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Commercial/Industrial	1965	1824731
A	On site	Unspecified Commercial/Industrial	1965	1800524
A	14m SE	Unspecified Commercial/Industrial	1974	1797130





ID	Location	Land Use	Date	Group ID
E	50m NW	Railway Sidings	1938	1814955
2	50m NW	Railway Sidings	1965	1797977
F	55m NW	Railway Sidings	1974	1821602
G	74m NW	Railway Building	1974	1765419
3	76m SW	Unspecified Works	1965	1797114
H	78m S	Sewage Farm	1938	1794727
H	89m S	Sewage Farm	1922	1819933
I	112m SE	Gas Holder Station	1974	1758623
F	112m NW	Railway Buildings	1938	1789162
J	114m W	Iron Foundry	1938	1774218
F	115m NW	Railway Buildings	1974	1827636
J	117m W	Unspecified Works	1974	1838689
F	119m NW	Railway Sidings	1922	1783597
4	121m W	Cuttings	1880	1752564
A	125m E	Unspecified Tank	1965	1812765
K	125m NW	Unspecified Depot	1974	1764013
F	127m NW	Railway Sidings	1922	1783597
5	143m N	Cuttings	1880	1793095
F	144m N	Railway Building	1922	1765423
A	145m E	Unspecified Tank	1974	1781948
M	150m NW	Pressed Steel Works	1938	1772369
F	151m NW	Railway Building	1922	1765421
A	154m E	Unspecified Old Quarry	1922	1838153
A	154m E	Unspecified Quarry	1880	1829594
A	154m E	Unspecified Old Quarry	1938	1809081
A	154m E	Unspecified Quarry	1898	1829594
A	154m E	Unspecified Old Quarry	1922	1838153
6	155m NW	Unspecified Works	1965	1833787



ID	Location	Land Use	Date	Group ID
O	155m NW	Unspecified Commercial/Industrial	1974	1796203
F	157m NW	Railway Building	1922	1765422
P	161m SE	Timber Yard	1974	1752720
F	168m NW	Unspecified Tanks	1974	1835974
F	172m NW	Unspecified Tanks	1965	1785905
7	184m W	Cuttings	1880	1752562
S	201m NE	Unspecified Works	1965	1771600
8	243m NE	Cuttings	1922	1808405
10	263m W	Unspecified Commercial/Industrial	1938	1786466
T	267m W	Railway Sidings	1974	1806555
T	267m W	Railway Sidings	1965	1846296
V	290m SW	Sewage Farm	1922	1819933
V	290m SW	Sewage Farm	1922	1819933
S	318m NE	Sewage Works	1974	1760242
O	323m N	Motor Works	1974	1773120
AB	379m NE	Cuttings	1898	1821633
AB	380m NE	Cuttings	1922	1807482
AB	380m NE	Cuttings	1880	1832192
AD	390m NW	Hospital	1938	1773808
AE	391m SE	Unspecified Commercial/Industrial	1965	1753148
AF	403m NE	Unspecified Tank	1974	1769128
12	405m N	Unspecified Works	1965	1833787
AB	424m NE	Railway Sidings	1974	1790376
AE	434m SE	Unspecified Tanks	1965	1761698
AL	444m NE	Unspecified Commercial/Industrial	1965	1753147

*This data is sourced from Ordnance Survey / Groundsure.*



## 2.2 Historical tanks

### Records within 500m

92

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

Features are displayed on the Past land use - un-grouped map on **page 22**

ID	Location	Land Use	Date	Group ID
<b>C</b>	<b>On site</b>	<b>Unspecified Tank</b>	<b>1954</b>	<b>289225</b>
C	1m NE	Unspecified Tank	1954	293758
C	19m NE	Tanks	1976	287777
C	24m NE	Tanks	1988	287776
B	43m SW	Unspecified Tank	1954	289029
B	43m SW	Unspecified Tank	1954	289029
D	47m SE	Unspecified Tank	1971	297249
D	47m SE	Unspecified Tank	1976	297249
D	47m SE	Unspecified Tank	1969	297249
B	65m SW	Unspecified Tank	1976	285174
A	75m SE	Gasholder Station	1971	296686
A	75m SE	Gasholder Station	1976	296686
A	75m SE	Gasholder Station	1969	296686
A	75m SE	Gas Holder Station	1988	288207
I	105m SE	Unspecified Tank	1954	292390
I	106m SE	Unspecified Tank	1971	293034
I	106m SE	Unspecified Tank	1969	293034
I	106m SE	Unspecified Tank	1954	292390
I	107m SE	Unspecified Tank	1976	293907
A	142m E	Gas Holder	1988	287942
A	143m E	Gasholder	1971	294498
A	143m E	Gasholder	1976	294498
A	143m E	Gasholder	1969	294498



ID	Location	Land Use	Date	Group ID
A	145m E	Unspecified Tank	1988	291742
A	147m E	Unspecified Tank	1971	291813
A	147m E	Unspecified Tank	1976	291813
A	147m E	Unspecified Tank	1969	291813
N	158m NE	Unspecified Tank	1954	285165
K	166m NW	Unspecified Tank	1954	292690
K	167m NW	Unspecified Tank	1954	292690
K	167m NW	Unspecified Tank	1965	292690
F	169m NW	Tanks	1954	300652
F	169m NW	Tanks	1971	291757
F	169m NW	Tanks	1954	300652
F	169m NW	Tanks	1965	300652
Q	183m NW	Tanks	1954	294198
Q	183m NW	Tanks	1954	294198
Q	187m NW	Tanks	1971	287769
P	203m SE	Unspecified Tank	1988	298434
P	203m SE	Unspecified Tank	1971	291556
P	203m SE	Unspecified Tank	1976	294855
P	203m SE	Unspecified Tank	1969	289628
E	239m N	Unspecified Tank	1971	285166
9	258m NE	Unspecified Tank	1971	285164
O	274m N	Tanks	1954	292197
O	274m N	Tanks	1954	292197
O	285m N	Unspecified Tank	1971	285173
O	286m N	Unspecified Tank	1971	299841
O	286m N	Unspecified Tank	1954	299841
O	286m N	Unspecified Tank	1954	299841
O	292m N	Unspecified Tank	1971	285172



ID	Location	Land Use	Date	Group ID
O	300m NW	Unspecified Tank	1971	285171
X	306m NE	Unspecified Tank	1970	285162
X	307m NE	Unspecified Tank	1971	285161
Y	310m NE	Tanks	1954	287765
Y	311m NE	Unspecified Tank	1954	285163
O	317m N	Unspecified Tank	1954	295526
O	317m N	Unspecified Tank	1954	295526
M	328m N	Tanks	1971	287764
Z	328m W	Unspecified Tank	1954	296255
Z	328m W	Unspecified Tank	1954	296255
11	331m W	Tanks	1972	287775
M	332m N	Tanks	1971	287763
M	353m N	Unspecified Tank	1971	285157
O	354m N	Unspecified Tank	1954	290718
O	354m N	Unspecified Tank	1954	290718
M	370m N	Unspecified Tank	1971	285158
M	373m N	Unspecified Tank	1971	299204
M	373m N	Unspecified Tank	1954	288884
M	373m N	Unspecified Tank	1954	288884
M	392m N	Unspecified Tank	1954	289117
M	392m N	Unspecified Tank	1965	301868
M	392m N	Unspecified Tank	1954	292440
AD	396m NW	Unspecified Tank	1954	295654
AD	396m NW	Unspecified Tank	1954	295654
AF	404m NE	Unspecified Tank	1970	288606
AF	405m NE	Unspecified Tank	1971	288606
AG	406m NE	Unspecified Tank	1971	288393
AG	406m NE	Unspecified Tank	1954	288393



ID	Location	Land Use	Date	Group ID
AG	407m NE	Unspecified Tank	1954	288393
AG	410m NE	Unspecified Tank	1970	288393
AI	415m W	Unspecified Tank	1972	285169
AK	437m NW	Unspecified Tank	1954	285167
AG	445m NE	Unspecified Tank	1970	301593
AG	445m NE	Unspecified Tank	1971	295235
AK	448m NW	Unspecified Tank	1961	285168
AN	453m NW	Tanks	1994	293776
AN	453m NW	Tanks	1995	293776
AN	453m NW	Tanks	1995	293776
AN	453m NW	Tanks	1993	293776
13	487m N	Unspecified Tank	1994	285150
AL	491m NE	Unspecified Tank	1971	285156

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.3 Historical energy features

### Records within 500m

63

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

Features are displayed on the Past land use - un-grouped map on **page 22**

ID	Location	Land Use	Date	Group ID
<b>C</b>	<b>On site</b>	<b>Electricity Substation</b>	<b>1988</b>	<b>170865</b>
A	75m SE	Gasholder Station	1971	175278
A	75m SE	Gasholder Station	1976	175278
A	75m SE	Gasholder Station	1969	175278
A	75m SE	Gas Holder Station	1988	171781
G	86m W	Electricity Substation	1971	170870
L	132m SW	Electricity Substation	1954	186861



ID	Location	Land Use	Date	Group ID
L	133m SW	Electricity Substation	1971	186861
L	133m SW	Electricity Substation	1954	186861
L	133m SW	Electricity Substation	1976	186861
L	133m SW	Electricity Substation	1969	186861
L	133m SW	Electricity Substation	1988	186861
A	142m E	Gas Holder	1988	171581
A	143m E	Gasholder	1971	176797
A	143m E	Gasholder	1976	176797
A	143m E	Gasholder	1969	176797
N	153m NE	Electricity Substation	1971	170866
R	191m S	Electricity Substation	1971	176668
R	191m S	Electricity Substation	1976	176668
R	191m S	Electricity Substation	1988	176668
P	235m SE	Electricity Substation	1988	180975
P	235m SE	Electricity Substation	1971	180975
P	235m SE	Electricity Substation	1976	180975
U	280m SE	Electricity Substation	1988	177918
U	281m SE	Electricity Substation	1971	177918
U	281m SE	Electricity Substation	1976	177918
U	281m SE	Electricity Substation	1969	177918
W	290m SW	Electricity Substation	1971	179836
W	290m SW	Electricity Substation	1994	179836
W	290m SW	Electricity Substation	1994	179836
W	297m SW	Electricity Substation	1993	180357
W	297m SW	Electricity Substation	1993	180357
M	345m N	Electricity Substation	1971	170868
AA	369m NE	Electricity Substation	1971	174395
AA	369m NE	Electricity Substation	1971	185538





ID	Location	Land Use	Date	Group ID
AA	369m NE	Electricity Substation	1970	185538
AA	370m NE	Electricity Substation	1994	185538
AC	380m S	Electricity Substation	1988	178039
AC	380m S	Electricity Substation	1971	184780
AC	380m S	Electricity Substation	1976	184780
M	405m N	Electricity Substation	1971	170869
H	406m S	Electricity Substation	1988	185708
H	407m S	Electricity Substation	1971	185708
H	407m S	Electricity Substation	1976	185708
H	407m S	Electricity Substation	1969	185708
AH	409m SW	Electricity Substation	1971	177953
AH	410m SW	Electricity Substation	1993	177864
AH	410m SW	Electricity Substation	1994	177953
AH	410m SW	Electricity Substation	1994	177953
AE	414m SE	Electricity Substation	1976	178873
AE	415m SE	Electricity Substation	1994	178873
AE	416m SE	Electricity Substation	1970	178873
AE	416m SE	Electricity Substation	1971	178873
AJ	427m SE	Electricity Substation	1988	184486
AJ	428m SE	Electricity Substation	1971	184486
AJ	428m SE	Electricity Substation	1976	184486
AJ	428m SE	Electricity Substation	1969	184486
AI	430m W	Electricity Substation	1994	177959
AI	430m W	Electricity Substation	1995	177959
AI	430m W	Electricity Substation	1995	177959
AI	431m W	Electricity Substation	1993	177959
AM	445m N	Electricity Substation	1971	170867
AM	480m N	Electricity Substation	-	168082

*This data is sourced from Ordnance Survey / Groundsure.*



## 2.4 Historical petrol stations

**Records within 500m****0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.5 Historical garages

**Records within 500m****5**

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

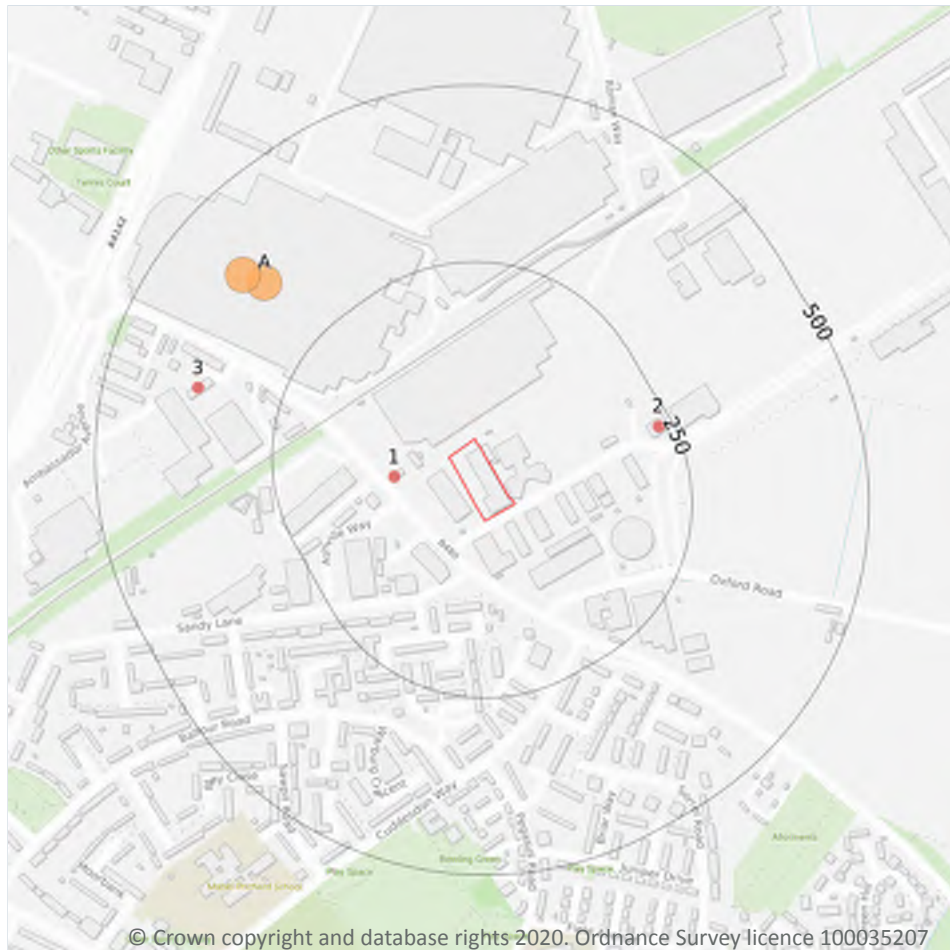
Features are displayed on the Past land use - un-grouped map on **page 22**

ID	Location	Land Use	Date	Group ID
B	On site	Garage	1988	54865
B	On site	Garage and Vehicle Repair Depot	1971	59728
B	On site	Garage and Vehicle Repair Depot	1976	59728
B	On site	Garage and Vehicle Repair Depot	1969	59728
C	On site	Vehicle Repair Depot	1976	54918

*This data is sourced from Ordnance Survey / Groundsure.*



## 3 Waste and landfill



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

### 3.1 Active or recent landfill

Records within 500m

0

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

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

### 3.2 Historical landfill (BGS records)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

### 3.3 Historical landfill (LA/mapping records)

Records within 500m

0

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

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

### 3.4 Historical landfill (EA/NRW records)

Records within 500m

0

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

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

### 3.5 Historical waste sites

Records within 500m

2

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

Features are displayed on the Waste and landfill map on **page 32**

ID	Location	Address	Further Details	Date
A	334m NW	Site Address: BMW (UK) Manufacturing, Garsington Road, Cowley, OXFORD, Oxfordshire, OX4 2NG	Type of Site: Waste Transfer Station Planning application reference: 01/0207/NF Description: Scheme comprises construction of a part single and two storey waste management centre of 4,238 sqm. Works also include skip storage area, racking storage area, general storage area, paper and cardboard area, scrap storage area, vehicle crusher, waste oil tanks, drum storage, weighbridge, ancillary office and toilets. Works will also include access road, turning circle and landscaping. Construction - planting, road drainage, white lining site works. An application (ref: 01/0207/NF) for Detailed Planning permission was granted by Oxford C.C. on 17th May 2001. It has been confirmed that tenders were returned late August 2001. Appointment of a main contractor is anticipated late September 2001. Data source: Historic Planning Application Data Type: Point	-

ID	Location	Address	Further Details	Date
A	364m NW	Site Address: BMW UK Manufacturing Ltd, Garsington Road, Cowley, OXFORD, Oxfordshire, OX4 6NX	Type of Site: Waste Transfer Station (Extension) Planning application reference: 05/02133/FUL Description: Scheme comprises extensions to waste management centre and hazardous good store. An application (ref: 05/02133/FUL) for Detailed Planning permission was submitted to Oxford C.C. Tender and programme details remain to be finalised. Detailed plans submitte d.  Data source: Historic Planning Application Data Type: Point	-

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

### 3.6 Licensed waste sites

<b>Records within 500m</b>	<b>0</b>
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Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

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

### 3.7 Waste exemptions

<b>Records within 500m</b>	<b>3</b>
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Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

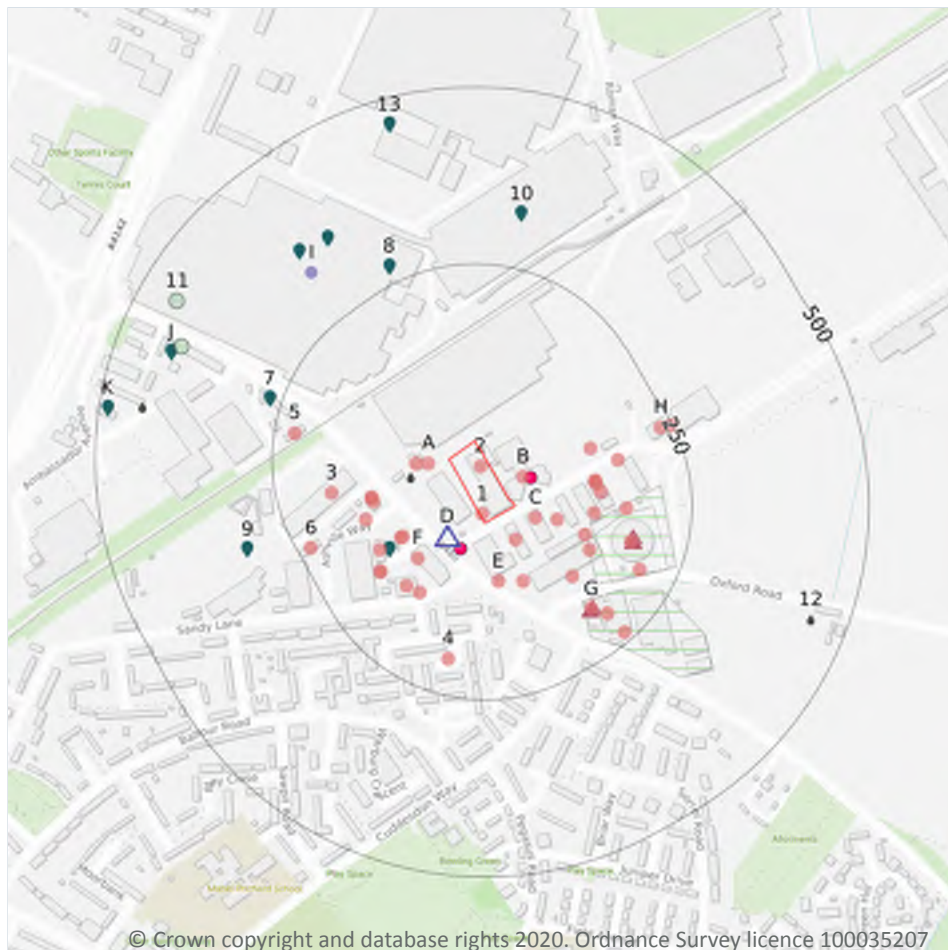
Features are displayed on the Waste and landfill map on **page 32**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	83m W	SHELL HOUSE WATLINGTON ROAD OXFORDSHIRE OX4 6NF	EPR/SF0908MJ /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
2	229m NE	COUNTY TRADING ESTATE, TRANSPORT WAY, COWLEY, OXFORD, OX4 6LS	WEX072402	Storing waste exemption	Not on a farm	Storage of waste in a secure place
3	368m W	Unit 11-13 Fenchurch Court, Bobby Fryer Close, Cowley, Oxford, OX4 6ZN	WEX123320	Storing waste exemption	Not on a farm	Storage of waste in a secure place

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



## 4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Control of Major Accident Hazards
- ▲ Hazardous substance storage/usage
- Historical licensed industrial activities
- Licensed pollutant release (Part A(2)/B)
- Radioactive Substance Authorisations
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

### 4.1 Recent industrial land uses

Records within 250m

44

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Company	Address	Activity	Category
1	On site	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
2	On site	Works	Oxfordshire, OX4	Unspecified Works Or Factories	Industrial Features
A	30m W	Tank	Oxfordshire, OX4	Tanks (Generic)	Industrial Features





ID	Location	Company	Address	Activity	Category
B	33m NE	Oxford Biomedica	Windrush Court, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6LT	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
C	33m SE	Euro Car Parts	Unit 10 Chancerygate Business Centre Oxford, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6HE	Vehicle Parts and Accessories	Motoring
C	42m SE	A D Instruments	Unit B Bishops Mews, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6HD	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
A	46m W	Depot	Oxfordshire, OX4	Container and Storage	Transport, Storage and Delivery
C	63m E	Business Centre	Oxfordshire, OX4	Business Parks and Industrial Estates	Industrial Features
E	85m S	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
E	97m SE	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
C	106m E	Oxford Bearings Ltd	Unit 4 Chancerygate Business Centre Oxford, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6HE	General Construction Supplies	Industrial Products
F	107m SW	Formula One Autocentres	Unit 1 Oxford Trade Centre, Harrow Road, Oxford, Oxfordshire, OX4 6NU	Vehicle Repair, Testing and Servicing	Repair and Servicing
F	110m SW	Avis Rent A Car	Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NF	Vehicle Hire and Rental	Hire Services
C	112m E	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
F	113m SW	Budget Rent A Car	Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NF	Vehicle Hire and Rental	Hire Services
C	119m E	Oxford Granites	County Trading Estate, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6LX	Stone Quarrying and Preparation	Extractive Industries
C	119m E	East Oxford Garage	County Trading Estate, Transport Way, Cowley, Oxford, Oxfordshire, OX4 6LX	Vehicle Repair, Testing and Servicing	Repair and Servicing
C	119m E	Works	Oxfordshire, OX4	Unspecified Works Or Factories	Industrial Features
F	122m SW	Enterprise Rent-A-Car	10, Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NF	Vehicle Hire and Rental	Hire Services





ID	Location	Company	Address	Activity	Category
F	122m SW	Rudolph & Hellmann Automotive Ltd	I L C Gate, 10 Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NL	Distribution and Haulage	Transport, Storage and Delivery
C	122m E	East Oxford Garage	Unit B County Trading Estate, Transport Way, Oxford, Oxfordshire, OX4 6LX	Vehicle Repair, Testing and Servicing	Repair and Servicing
F	122m SW	Walker Brothers Electrical Engineers Ltd	12 Bridge View, Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NF	Electrical and Electronic Engineers	Engineering Services
C	123m SE	Parker Merchanting	Unit 3 Cowley Business Centre, Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6NH	Workwear	Industrial Products
C	129m SE	Cowley Business Centre	Oxfordshire, OX4	Business Parks and Industrial Estates	Industrial Features
C	134m NE	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
F	135m SW	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
F	142m SW	Halfords Autocentre	Unit 5 Oxford Trade Centre, Harrow Road, Oxford, Oxfordshire, OX4 6NU	Vehicle Repair, Testing and Servicing	Repair and Servicing
F	145m SW	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
F	147m SW	Warehouse	Oxfordshire, OX4	Container and Storage	Transport, Storage and Delivery
C	157m E	Tank	Oxfordshire, OX4	Tanks (Generic)	Industrial Features
C	160m NE	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
F	161m SW	Depot	Oxfordshire, OX4	Container and Storage	Transport, Storage and Delivery
F	163m SW	M & J (Engineers) Ltd	Atlas House, Harrow Road, Oxford, Oxfordshire, OX4 6NP	Construction and Tool Hire	Hire Services
C	173m E	Gas Holder Station	Oxfordshire, OX4	Gas Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
3	173m W	Oxford Bus Company	Cowley House, Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6GA	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure
G	181m SE	Hirebase	Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6LN	Construction and Tool Hire	Hire Services
C	198m SE	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
4	198m S	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
G	201m SE	Tank	Oxfordshire, OX4	Tanks (Generic)	Industrial Features
5	221m W	2 Cousins Powered Access	Unit 3 Old Station Yard, Watlington Road, Oxford, Oxfordshire, OX4 6FE	Access Equipment	Industrial Products
6	232m SW	Giles Service Centre Ltd	Unit 6, Ashville Way, Cowley, Oxford, Oxfordshire, OX4 6TU	Vehicle Repair, Testing and Servicing	Repair and Servicing
H	234m NE	Depot	Oxfordshire, OX4	Container and Storage	Transport, Storage and Delivery
G	236m SE	Electricity Sub Station	Oxfordshire, OX4	Electrical Features	Infrastructure and Facilities
H	246m NE	Gantry	Oxfordshire, OX4	Travelling Cranes and Gantries	Industrial Features

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

**Records within 500m**

**1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Company	Address	LPG	Status
D	56m SW	OBSOLETE	Watlington Road, Cowley, Oxford, Oxfordshire, OX4 6LU	Not Applicable	Obsolete

*This data is sourced from Experian.*



### 4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

### 4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

### 4.5 Sites determined as Contaminated Land

Records within 500m

0

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

*This data is sourced from Local Authority records.*

### 4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

3

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Company	Address	Operational status	Tier
C	110m E	Southern Gas Networks Plc	Southern Gas Networks Plc, Cowley Holder Station, Watlington Road, Oxford, Oxfordshire, OX4 5NQ	Historical NIHHS Site	-
C	113m SE	British Gas	British Gas, Cowley Holder Station, Garsington Road, Cowley, OX4 5NH	Historical NIHHS Site	-
G	165m SE	RJ Johnson&company Ltd	RJ Johnson&company Ltd, Watlington Road, Cowley	Historical NIHHS Site	-

*This data is sourced from the Health and Safety Executive.*



## 4.7 Regulated explosive sites

### Records within 500m

**0**

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

*This data is sourced from the Health and Safety Executive.*

## 4.8 Hazardous substance storage/usage

### Records within 500m

**7**

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Details	
C	171m E	Application reference number: HL/09/1457 Application status: Historical Consent Application date: 01/01/2009 Address: British Gas Southern, Cowley Holder Station, Garsington Road, Cowley, Oxon, OX4 5NH	Details: 83 tonnes of flammable gas. Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
C	173m E	Application reference number: 01/00050/NF Application status: Approved Application date: 10/01/2001 Address: Southern Gas Networks Plc, Cowley Holder Station, Watlington Road, Cowley, Oxford, Oxfordshire, England, OX4 6NH	Details: Continuation of Hazardous Substances consent for gas holder (Transco). Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
C	173m E	Application reference number: 00/01025/WX Application status: Historical Consent Application date: 08/06/2000 Address: Gas Holder Station, Watlington Road, Cowley, Oxford, OX4 6BZ	Details: Application of continued use for Hazardous Substances Consent for storage of gas Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
G	179m SE	Application reference number: No Details Application status: Historical Consent Application date: No Details Address: R. J. Johnson & Co Limited, Watlington Road, Cowley, Oxfordshire, OX4 5LN	Details: 50 tonnes of LPG. Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
G	181m SE	Application reference number: 97/01706/NF Application status: Approved Application date: 20/10/1997 Address: Johnsons Building Supplies Ltd, Watlington Road, Cowley, Oxford, Oxfordshire, England, OX4 6NB	Details: Application for Hazardous Substances Consent to continue external storage and supply of butane and propane gas. Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified



ID	Location	Details	
G	181m SE	Application reference number: 92/01058/WF Application status: Historical Consent Application date: 03/11/1992 Address: Johnsons, Watlington Road, Cowley, Oxford, OX4 6LN	Details: Application for Hazardous Substance Consent to continue use for storage and supply of butane and propane gas. Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
G	181m SE	Application reference number: 92/01060/NF Application status: Historical Consent Application date: 28/10/1992 Address: Johnsons, Watlington Road, Cowley, Oxford, OX4 6LN	Details: Application for Hazardous Substances Consent for storage of gas. (Gas Holder Station, Watlington Road) Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

### Records within 500m

6

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Details	
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: AF9951	Original Permit Number: IPCAPP Date Approved: 1-4-1993 Effective Date: 1-4-1993 Status: Superseded By Variation
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: AL3825	Original Permit Number: IPCMINVAR Date Approved: 24-1-1994 Effective Date: 24-1-1994 Status: Superseded By Variation
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: AM6544	Original Permit Number: IPCMINVAR Date Approved: 15-3-1994 Effective Date: 21-3-1994 Status: Superseded By Variation
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: AN4571	Original Permit Number: IPCMINVAR Date Approved: 13-9-1994 Effective Date: 20-9-1994 Status: Superseded By Variation
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: AT0567	Original Permit Number: IPCMINVAR Date Approved: 17-8-1995 Effective Date: 22-8-1995 Status: Superseded By Variation



ID	Location	Details	
I	327m NW	Operator: Bmw (UK) Manufacturing Ltd Address: Plant 34 Oxford, Cowley, Oxford, OX4 6NL Process: Combustion Processes Permit Number: BD2764	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc

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

## 4.10 Licensed industrial activities (Part A(1))

<b>Records within 500m</b>	<b>0</b>
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Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

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

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

<b>Records within 500m</b>	<b>12</b>
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Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Address	Details	
F	136m SW	Hartwell Oxford Ltd, Watlington Rd, Cowley	Process: Respraying of Road Vehicles; Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
7	268m W	Harpers Of Cowley, 208 Garsington Road, Oxford, OX4 5NQ	Process: Waste Oil Burner 0.4 MW Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
8	275m NW	Rover Group, Garsington Rd, Cowley	Process: Combustion & Incineration Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

ID	Location	Address	Details	
9	312m SW	Dyer Structural Steel, Watlington Rd, Cowley	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
10	327m N	BMW(UK) Manufacturing Ltd, Plant Oxford, Oxford, OX4 6NL	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
I	353m NW	BMW (UK) Manufacturing Ltd Plant Oxford, Eastern Bypass Road, Cowley, Oxford, OX4 6NL	Process: Coating Processes Status: Current Permit Permit Type: Part A2	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
I	353m NW	BMW(UK) Manufacturing Ltd Plant Oxford, Oxford, OX4 6NL	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
I	362m NW	BMW(UK) Manufacturing Ltd, Plant Oxford, Oxford, OX4 6NL	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
J	421m W	Harpers of Cowley, 208 Garsington Road, Oxford, OX4 5NQ	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
J	421m W	Harpers of Cowley, 208 Garsington Road, Oxford, OX4 5NQ	Process: Waste Oil Burner 0.4 MW Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
13	462m N	Rover Group, Garsington Rd, Cowley	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
K	488m W	Harpers Of Cowley, Garsington Rd, Oxford	Process: Waste Oil Burner 0.4 MW Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified





This data is sourced from Local Authority records.

## 4.12 Radioactive Substance Authorisations

Records within 500m

11

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Address	Details	
B	42m NE	Osi Pharmaceuticals Uk Ltd, Watlington Road,cowley, Oxford, OX4 6LT	Operator: Osi Pharmaceuticals Uk Ltd Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BM7014 Date of approval: 23/03/2002	Effective from: 11/04/2002 Last date of update: 01/01/2015 Status: Revoked/cancelled
B	42m NE	Osi Pharmaceuticals Uk Ltd, Watlington Road, Cowley, Oxford, OX4 6LT	Operator: Osi Pharmaceuticals Uk Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BM7022 Date of approval: 11/04/2002	Effective from: 10/05/2002 Last date of update: 01/01/2015 Status: Superseded By Variation
B	42m NE	Osi Pharmaceuticals Uk Ltd, Watlington Road, Cowley, Oxford, OX4 6LT	Operator: Osi Pharmaceuticals Uk Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BM7022 Date of approval: 01/12/2003	Effective from: 01/01/2004 Last date of update: 01/01/2015 Status: Revoked/cancelled
B	42m NE	Prosidion Ltd, Watlington Road,cowley, Oxford, OX4 6LT	Operator: Prosidion Ltd Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BU7626 Date of approval: 18/08/2003	Effective from: 19/08/2003 Last date of update: 01/01/2015 Status: Superseded By Variation
B	42m NE	Prosidion Ltd, Watlington Road,cowley, Oxford, OX4 6LT	Operator: Prosidion Ltd Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BU7626 Date of approval: 25/11/2003	Effective from: 26/11/2003 Last date of update: 01/01/2015 Status: Effective
B	42m NE	Prosidion Ltd, Watlington Road, Cowley, Oxford, OX4 6LT	Operator: Prosidion Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BU7634 Date of approval: 19/08/2003	Effective from: 16/09/2003 Last date of update: 01/01/2015 Status: Superseded By Variation



ID	Location	Address	Details	
B	42m NE	Prosidion Ltd, Watlington Road, Cowley, Oxford, OX4 6LT	Operator: Prosidion Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BU7634 Date of approval: 26/11/2003	Effective from: 24/12/2003 Last date of update: 01/01/2015 Status: Effective
D	50m SW	Vernalis (r And D) Ltd, Watlington Road, Cowley, Oxford, OX4 6LY	Operator: Vernalis (r And D) Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6498 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Superseded By Variation
D	50m SW	Vernalis (r And D) Ltd, Watlington Road, Cowley, Oxford, OX4 6LY	Operator: Vernalis (r And D) Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6498 Date of approval: 01/07/1998	Effective from: 28/07/1998 Last date of update: 01/01/2015 Status: Superseded By Variation
D	50m SW	Vernalis (r And D) Ltd, Watlington Road, Cowley, Oxford, OX4 6LY	Operator: Vernalis (r And D) Ltd Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6498 Date of approval: 22/09/2001	Effective from: 23/09/2001 Last date of update: 01/01/2015 Status: Revoked/cancelled
D	50m SW	British Biotechnology Ltd, Brook House, Watlington Road, Cowley, Oxford, Oxfordshire, OX4 5LY	Operator: British Biotechnology Ltd Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AD6501 Date of approval: 28/01/1998	Effective from: 29/01/1998 Last date of update: 01/01/2015 Status: Revoked/cancelled

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

## 4.13 Licensed Discharges to controlled waters

### Records within 500m

5

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Address	Details	
A	60m SW	SHELL HOUSE, WATLINGTON ROAD, OXFORD, OXFORDSHIRE, OX4 6NF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CAWM.1311 Permit Version: 1 Receiving Water: LAND	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 19/07/2006 Effective Date: 19/07/2006 Revocation Date: -



ID	Location	Address	Details	
A	60m SW	SHELL HOUSE, WATLINGTON ROAD, OXFORD, OXFORDSHIRE, OX4 6NF	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: CAWM.1333 Permit Version: 1 Receiving Water: LAND	Status: SURRENDERED UNDER EPR 2010 Issue date: 19/07/2006 Effective Date: 19/07/2006 Revocation Date: 13/08/2012
K	440m W	REAR OF 190-196 GARSINGTON ROAD, CO, REAR OF 190-196 GARSINGTON ROAD , COWLEY OXFORD	Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTWC.0043 Permit Version: 1 Receiving Water: NORTHFIELD BROOK WEST	Status: REVOKED - UNSPECIFIED Issue date: 15/04/1985 Effective Date: 15/04/1985 Revocation Date: 29/05/1991
K	440m W	REAR OF 190-196 GARSINGTON ROAD, CO, REAR OF 190-196 GARSINGTON ROAD , COWLEY OXFORD	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0042 Permit Version: 1 Receiving Water: NORTHFIELD BROOK WEST	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 15/04/1985 Effective Date: 15/04/1985 Revocation Date: 01/10/1996
12	447m E	GUYDENS HAMLET, OXFORD ROAD, GARSINGTON, OXFORDSHIRE, OX44 9AZ	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRCB3391AD Permit Version: 1 Receiving Water: GROUNDWATER VIA AN INFILTRATIO	Status: NEW ISSUED UNDER EPR 2010 Issue date: 30/04/2015 Effective Date: 30/04/2015 Revocation Date: -

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

#### 4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

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

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

#### 4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

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



## 4.16 List 1 Dangerous Substances

Records within 500m

0

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

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

## 4.17 List 2 Dangerous Substances

Records within 500m

0

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

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

## 4.18 Pollution Incidents (EA/NRW)

Records within 500m

2

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

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Details	
J	410m NW	Incident Date: 25/10/2001 Incident Identification: 39161 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
11	444m NW	Incident Date: 05/09/2002 Incident Identification: 105984 Pollutant: Inorganic Chemicals/Products Pollutant Description: Alkalis	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

## 4.19 Pollution inventory substances

Records within 500m

0

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

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

## 4.20 Pollution inventory waste transfers

Records within 500m

0

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

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

## 4.21 Pollution inventory radioactive waste

Records within 500m

0

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

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



## 5 Hydrogeology - Superficial aquifer



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

### 5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 49**

ID	Location	Designation	Description
1	434m E	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
2	488m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

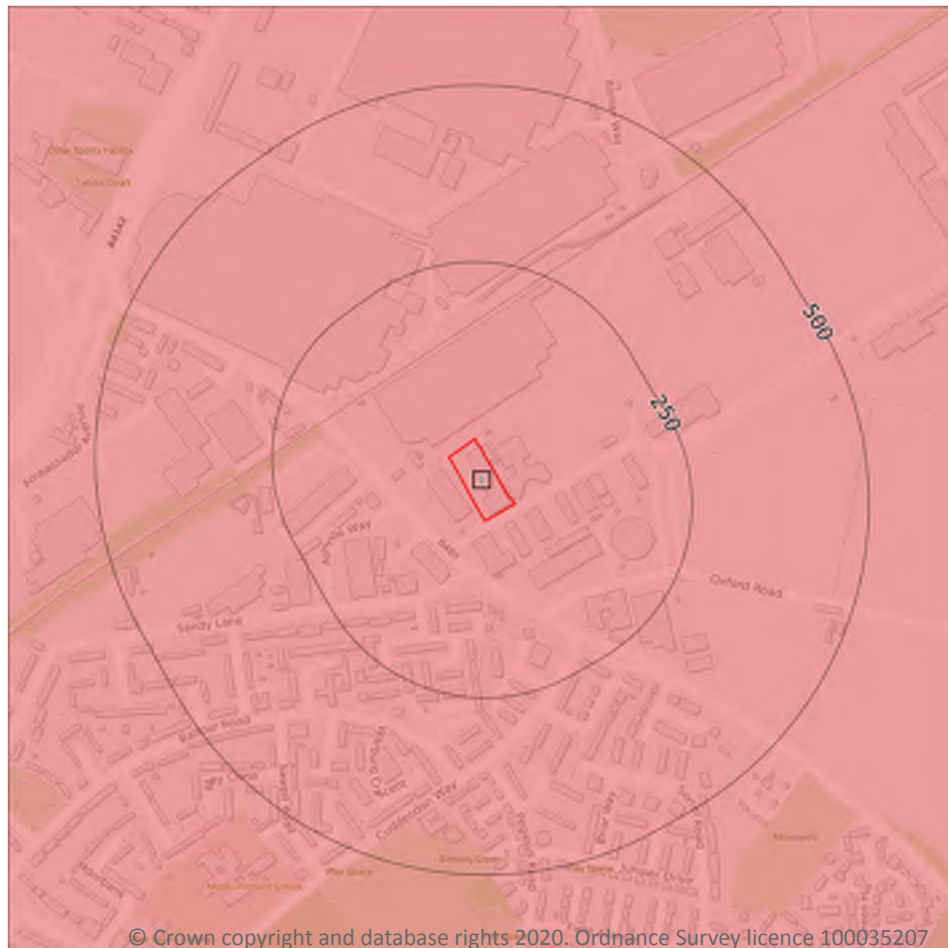


*This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.*





## Bedrock aquifer



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

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### 5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

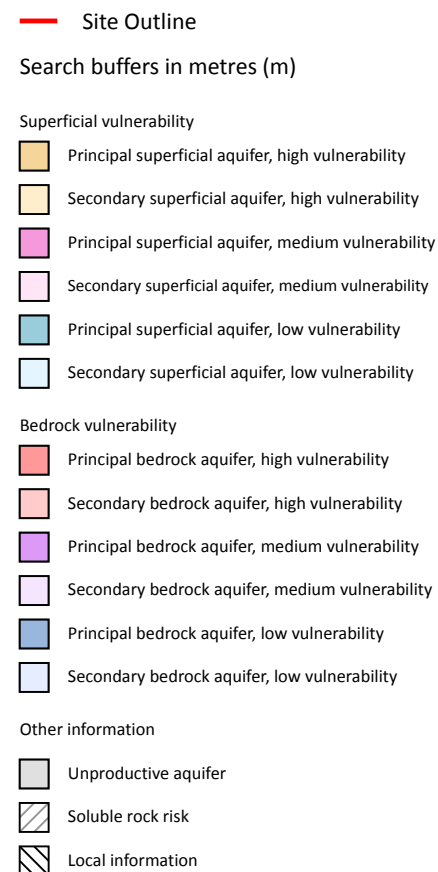
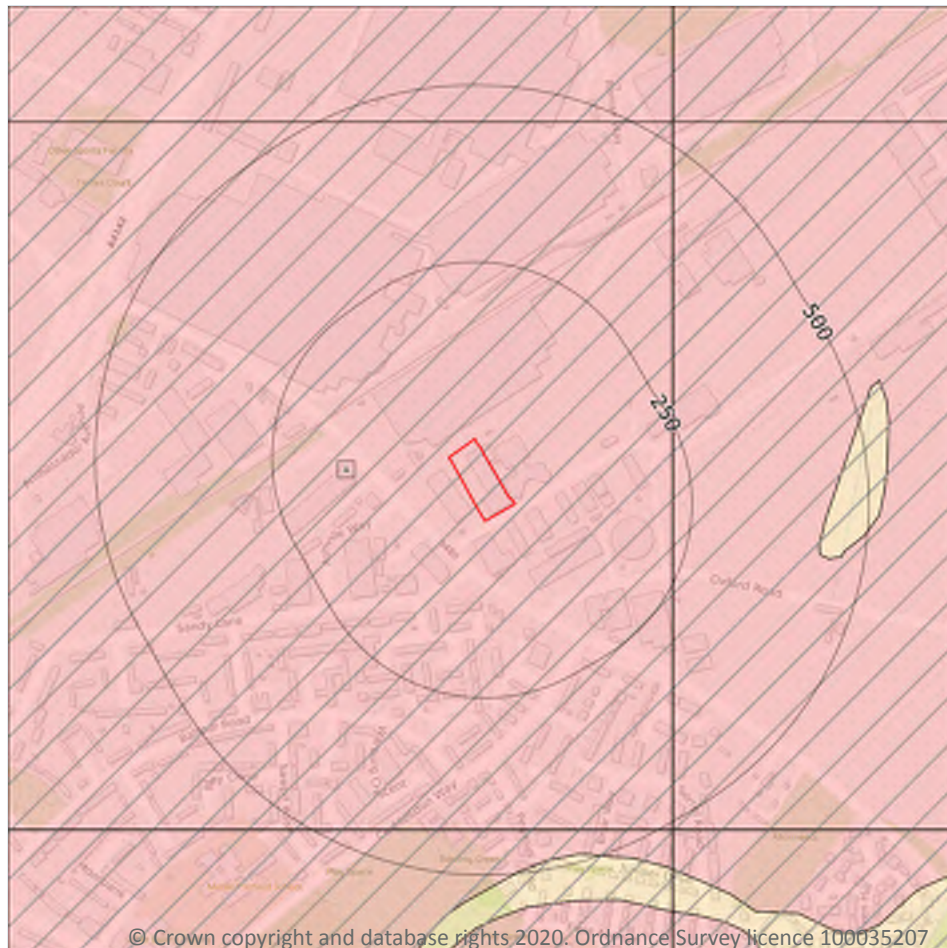
Features are displayed on the Bedrock aquifer map on **page 51**

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

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



## Groundwater vulnerability



### 5.3 Groundwater vulnerability

#### Records within 50m

1

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

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

Features are displayed on the Groundwater vulnerability map on **page 52**



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
A	On site	<b>Summary Classification:</b> Secondary bedrock aquifer - High Vulnerability <b>Combined classification:</b> Productive Bedrock Aquifer, No Superficial Aquifer	<b>Leaching class:</b> Intermediate <b>Infiltration value:</b> 40- 70% <b>Dilution value:</b> <300mm/year	<b>Vulnerability:</b> - <b>Aquifer type:</b> - <b>Thickness:</b> <3m <b>Patchiness value:</b> <90% <b>Recharge potential:</b> No Data	<b>Vulnerability:</b> High <b>Aquifer type:</b> Secondary <b>Flow mechanism:</b> Well connected fractures

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

## 5.4 Groundwater vulnerability- soluble rock risk

<b>Records on site</b>	<b>1</b>
------------------------	----------

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	<b>Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.</b>	<b>3.0%</b>

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

## 5.5 Groundwater vulnerability- local information

<b>Records on site</b>	<b>0</b>
------------------------	----------

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

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

## Abstractions and Source Protection Zones

### 5.6 Groundwater abstractions

Records within 2000m

0

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

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

### 5.7 Surface water abstractions

Records within 2000m

0

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

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

### 5.8 Potable abstractions

Records within 2000m

0

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

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

### 5.9 Source Protection Zones

Records within 500m

0

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

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

## 5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

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

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







ID	Location	Type of water feature	Ground level	Permanence	Name
B	242m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

*This data is sourced from the Ordnance Survey.*

## 6.2 Surface water features

<b>Records within 250m</b>	<b>1</b>
----------------------------	----------

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

Features are displayed on the Hydrology map on **page 56**

*This data is sourced from the Ordnance Survey.*

## 6.3 WFD Surface water body catchments

<b>Records on site</b>	<b>1</b>
------------------------	----------

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

Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River WB catchment	Northfield Brook (Source to Thames) at Sandford	GB106039030180	Ock	Gloucestershire and the Vale

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

## 6.4 WFD Surface water bodies

<b>Records identified</b>	<b>1</b>
---------------------------	----------

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

water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed. Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1558m SW	River	Northfield Brook (Source to Thames) at Sandford	<a href="#">GB106039030180</a>	Poor	Good	Poor	2016

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

## 6.5 WFD Groundwater bodies

<b>Records on site</b>	<b>1</b>
------------------------	----------

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

Features are displayed on the Hydrology map on **page 56**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
<b>A</b>	<b>On site</b>	<b>Headington Corallian</b>	<a href="#">GB40602G600700</a>	<b>Good</b>	<b>Good</b>	<b>Good</b>	<b>2015</b>

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

## 7 River and coastal flooding

### 7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

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

### 7.2 Historical Flood Events

Records within 250m

0

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

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

### 7.3 Flood Defences

Records within 250m

0

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

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

### 7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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



## 7.5 Flood Storage Areas

Records within 250m

0

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

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



## River and coastal flooding - Flood Zones

### 7.6 Flood Zone 2

Records within 50m

0

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

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

### 7.7 Flood Zone 3

Records within 50m

0

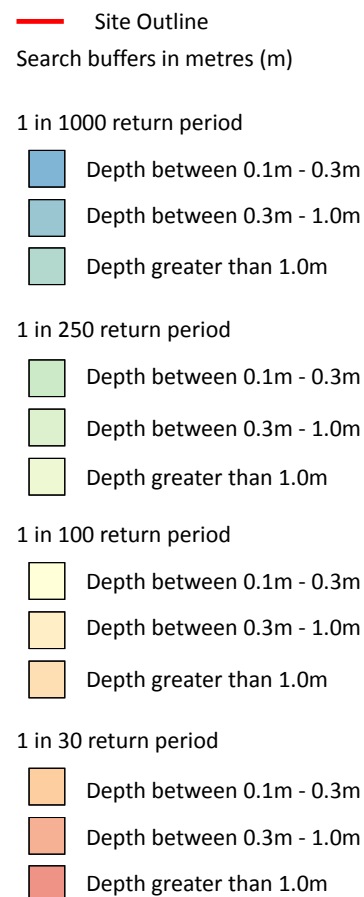
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

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





## 8 Surface water flooding



### 8.1 Surface water flooding

**Highest risk on site**

**1 in 30 year, 0.3m - 1.0m**

**Highest risk within 50m**

**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 62**

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

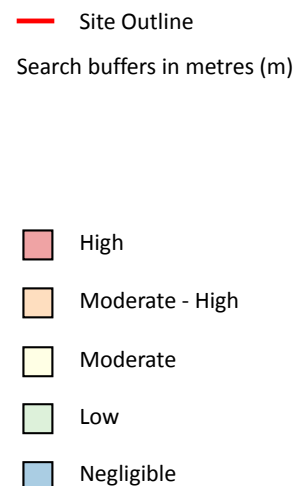
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

*This data is sourced from Ambiantal Risk Analytics.*



## 9 Groundwater flooding



### 9.1 Groundwater flooding

Highest risk on site

Negligible

Highest risk within 50m

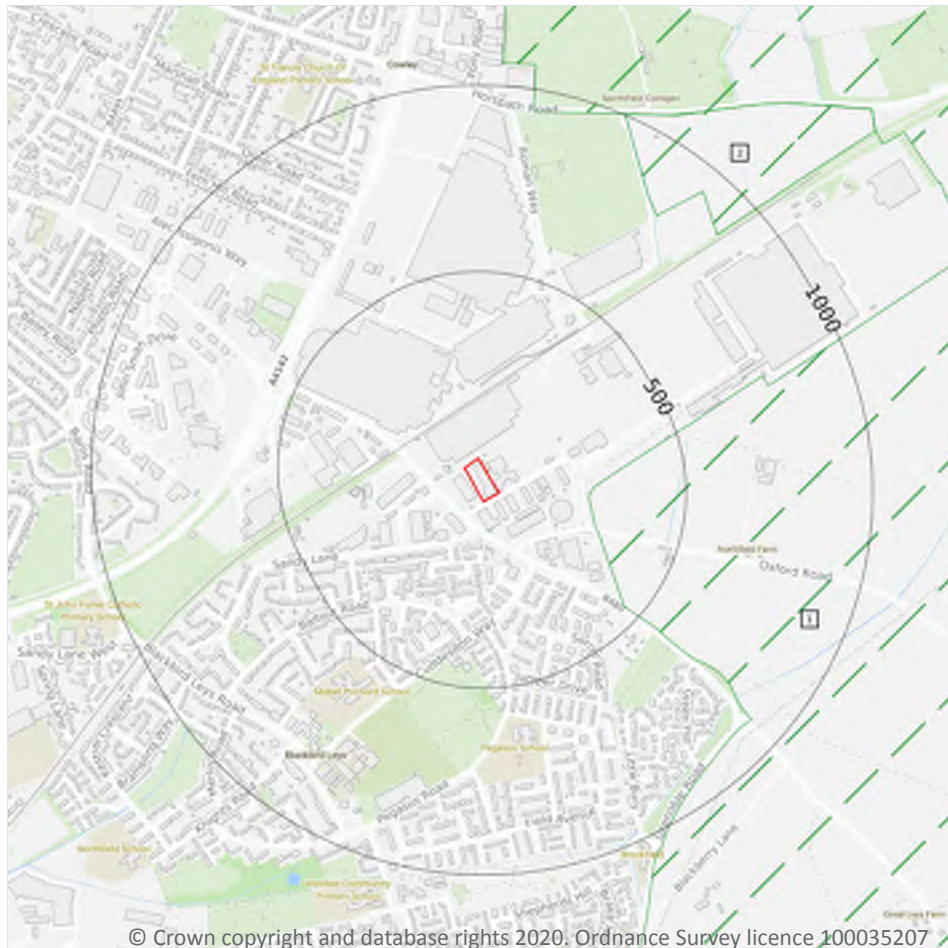
Negligible

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

Features are displayed on the Groundwater flooding map on **page 64**

*This data is sourced from Ambiantal Risk Analytics.*

## 10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- Designated Ancient Woodland
- Green Belt

### 10.1 Sites of Special Scientific Interest (SSSI)

#### Records within 2000m

2

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Data source
-	1344m N	Brasenose Wood and Shotover Hill	Natural England



ID	Location	Name	Data source
-	1848m NW	Lye Valley	Natural England

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

## 10.2 Conserved wetland sites (Ramsar sites)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

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

## 10.3 Special Areas of Conservation (SAC)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

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

## 10.4 Special Protection Areas (SPA)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

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

## 10.5 National Nature Reserves (NNR)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

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



## 10.6 Local Nature Reserves (LNR)

**Records within 2000m****0**

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

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

## 10.7 Designated Ancient Woodland

**Records within 2000m****2**

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

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Woodland Type
-	1558m N	Brasenose Wood	Ancient & Semi-Natural Woodland
-	1997m SE	Unknown	Ancient & Semi-Natural Woodland

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

## 10.8 Biosphere Reserves

**Records within 2000m****0**

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

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

## 10.9 Forest Parks

**Records within 2000m****0**

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

*This data is sourced from the Forestry Commission.*





## 10.10 Marine Conservation Zones

Records within 2000m

0

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

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

## 10.11 Green Belt

Records within 2000m

3

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

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Local Authority name
1	240m E	Oxford	South Oxfordshire
2	807m NE	Oxford	Oxford
-	1348m N	Oxford	Oxford

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

## 10.12 Proposed Ramsar sites

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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



## 10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.16 Nitrate Vulnerable Zones

Records within 2000m

5

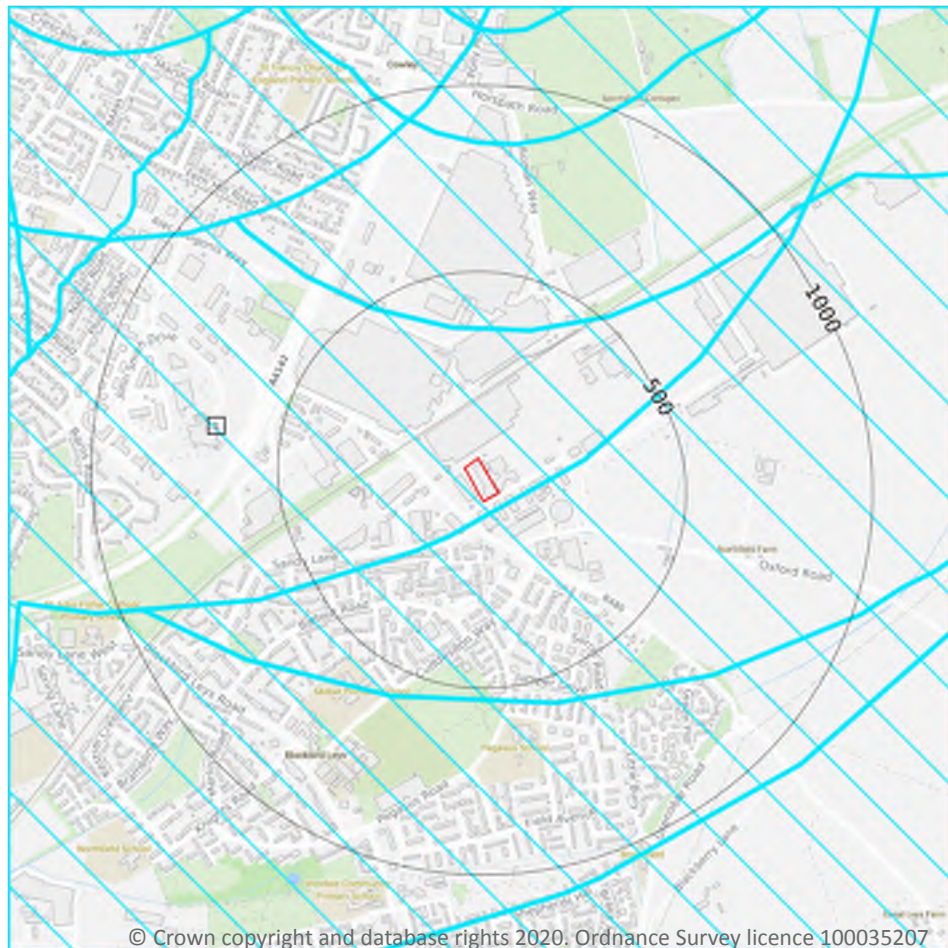
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
<b>On site</b>	<b>Northfield Brook (Source to Thames) at Sandford NVZ</b>	<b>Surface Water</b>	<b>S477</b>	<b>Existing</b>
1100m S	THAMES (LEACH TO EVENLODE) NVZ	Surface Water	S482	Existing
1449m SE	Thame (Scotsgrove Brook to Thames) NVZ	Surface Water	S479	Existing
1592m SW	Northfield Brook (Source to Thames) at Sandford NVZ	Surface Water	S477	Existing
1602m SW	THAMES (LEACH TO EVENLODE) NVZ	Surface Water	S482	Existing

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



## SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

### 10.17 SSSI Impact Risk Zones

#### Records on site

1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 70**

ID	Location	Type of developments requiring consultation
1	On site	<p>Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &gt; 200m<sup>2</sup> &amp; manure stores &gt; 250t).</p> <p>Combustion - General combustion processes &gt;20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management</p> <p>Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m<sup>2</sup> or more.</p>

*This data is sourced from Natural England.*

## 10.18 SSSI Units

<b>Records within 2000m</b>	<b>3</b>
-----------------------------	----------

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

Features are displayed on the SSSI Impact Zones and Units map on **page 70**

ID: -  
 Location: 1344m N  
 SSSI name: Brasenose Wood and Shotover Hill  
 Unit name: Brasenose Wood  
 Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland  
 Condition: Favourable  
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	01/10/2010
Populations of nationally scarce butterfly species - Strymonidia pruni, Black Hairstreak	Favourable	01/10/2010

ID: -  
Location: 1475m N  
SSSI name: Brasenose Wood and Shotover Hill  
Unit name: Grassland  
Broad habitat: Neutral Grassland - Lowland  
Condition: Favourable  
Reportable features:

Feature name	Feature condition	Date of assessment
Invert. assemblage F003 scrub-heath & moorland	Favourable	01/10/2010
Populations of nationally scarce butterfly species - Strymonidia pruni, Black Hairstreak	Favourable	01/10/2010

ID: -  
Location: 1848m NW  
SSSI name: Lye Valley  
Unit name: South  
Broad habitat: Fen, Marsh And Swamp - Lowland  
Condition: Unfavourable - Recovering  
Reportable features:

Feature name	Feature condition	Date of assessment
Invert. assemblage W312 sphagnum bog	Not Recorded	01/01/1900
Valley fen (lowland)	Not Recorded	01/01/1900

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



## 11 Visual and cultural designations

### 11.1 World Heritage Sites

Records within 250m

0

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

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

### 11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

### 11.3 National Parks

Records within 250m

0

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

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

### 11.4 Listed Buildings

Records within 250m

0

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





*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.5 Conservation Areas

**Records within 250m**

**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.6 Scheduled Ancient Monuments

**Records within 250m**

**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.7 Registered Parks and Gardens

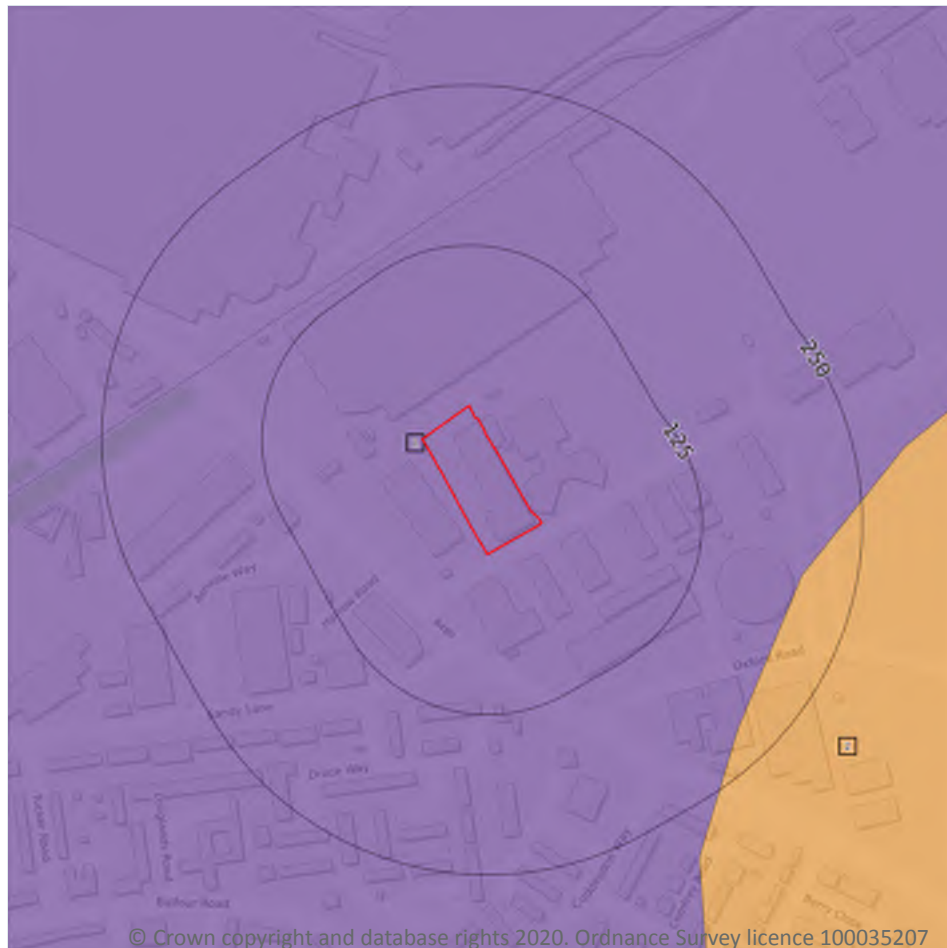
**Records within 250m**

**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 12 Agricultural designations



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

### 12.1 Agricultural Land Classification

Records within 250m

2

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

Features are displayed on the Agricultural designations map on **page 75**

ID	Location	Classification	Description
1	On site	Urban	-
2	203m SE	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

*This data is sourced from Natural England.*

## 12.2 Open Access Land

Records within 250m

0

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

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

## 12.3 Tree Felling Licences

Records within 250m

0

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

*This data is sourced from the Forestry Commission.*

## 12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

*This data is sourced from Natural England.*

## 12.5 Countryside Stewardship Schemes

Records within 250m

0

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

*This data is sourced from Natural England.*

## 13 Habitat designations

### 13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

*This data is sourced from Natural England.*

### 13.2 Habitat Networks

Records within 250m

0

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

*This data is sourced from Natural England.*

### 13.3 Open Mosaic Habitat

Records within 250m

0

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

*This data is sourced from Natural England.*

### 13.4 Limestone Pavement Orders

Records within 250m

0

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

*This data is sourced from Natural England.*



## 14 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
  - Partial coverage
  - No coverage

### 14.1 10k Availability

#### Records within 500m

1

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

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

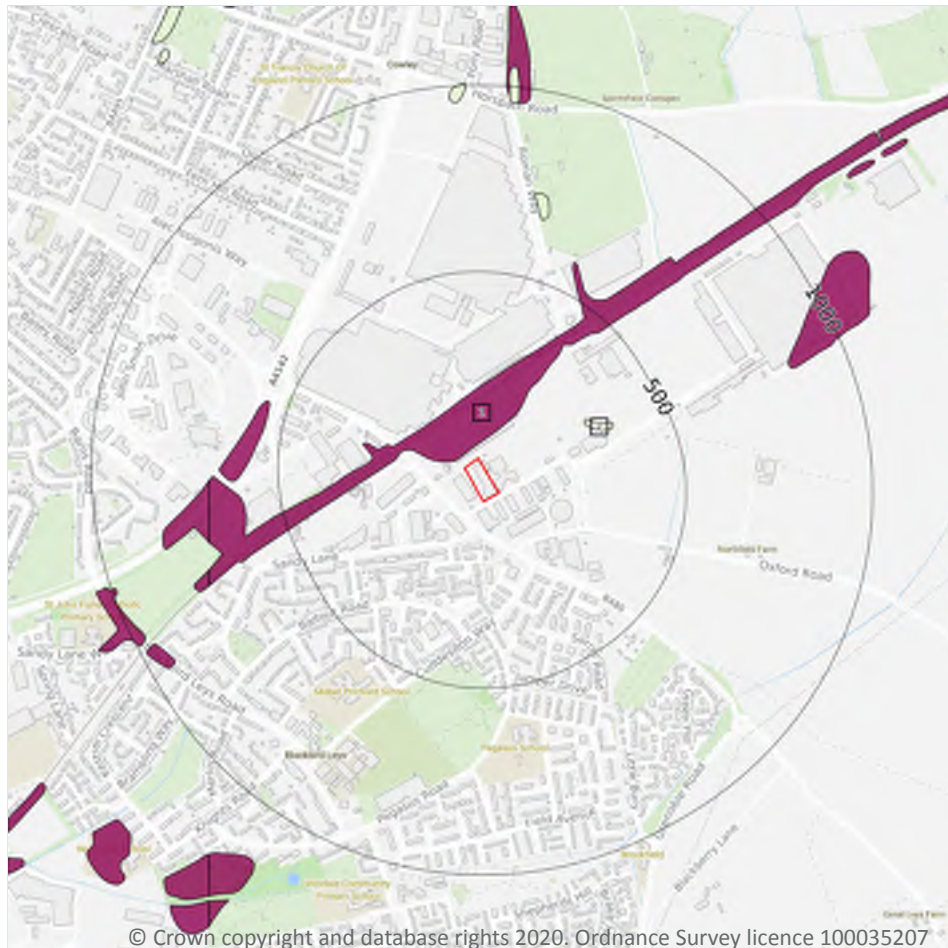
ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SP50SE

*This data is sourced from the British Geological Survey.*





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



- Site Outline
- Search buffers in metres (m)
- Reclaimed ground
  - Made ground
  - Worked ground
  - Infilled ground
  - Disturbed ground
  - Landscaped ground

### 14.2 Artificial and made ground (10k)

#### Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 79**

ID	Location	LEX Code	Description	Rock description
1	30m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	294m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit

*This data is sourced from the British Geological Survey.*



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

## 80

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

Records within 500m

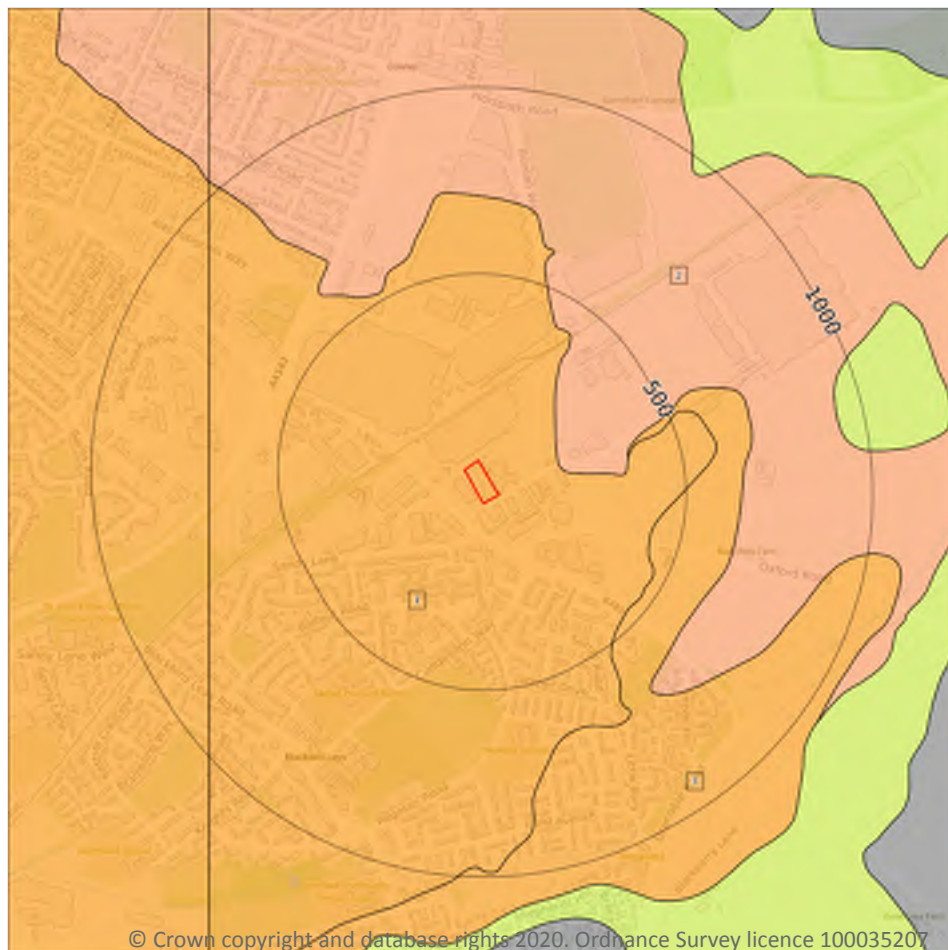
0

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

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

### 14.5 Bedrock geology (10k)

#### Records within 500m

3

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 82**

ID	Location	LEX Code	Description	Rock age
1	On site	BYSA-SDST	Beckley Sand Member - Sandstone	Oxfordian Age
2	178m NE	WYLS-LMST	Wheatley Limestone Member - Limestone	Oxfordian Age
3	359m E	LITC-LSMD	Littlemore Member - Interbedded Limestone And Mudstone	Oxfordian Age

*This data is sourced from the British Geological Survey.*

## 14.6 Bedrock faults and other linear features (10k)

**Records within 500m**

**0**

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

*This data is sourced from the British Geological Survey.*



## 15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- ☐ Geological map tile

### 15.1 50k Availability

#### Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

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

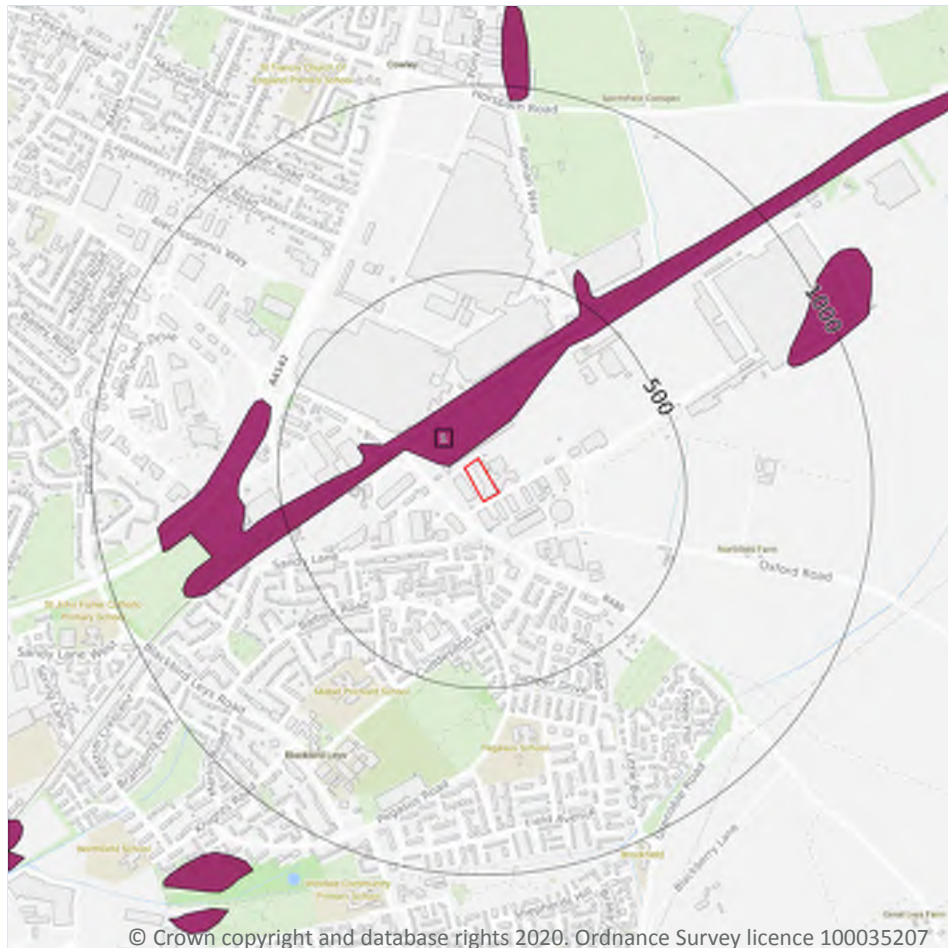
ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW237_thame_v4

*This data is sourced from the British Geological Survey.*





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



- Site Outline
- Search buffers in metres (m)
- Made ground
  - Worked ground
  - Infilled ground
  - Disturbed ground
  - Landscaped ground

### 15.2 Artificial and made ground (50k)

#### Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 85**

ID	Location	LEX Code	Description	Rock description
1	28m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

*This data is sourced from the British Geological Survey.*



### 15.3 Artificial ground permeability (50k)

#### Records within 50m

**1**

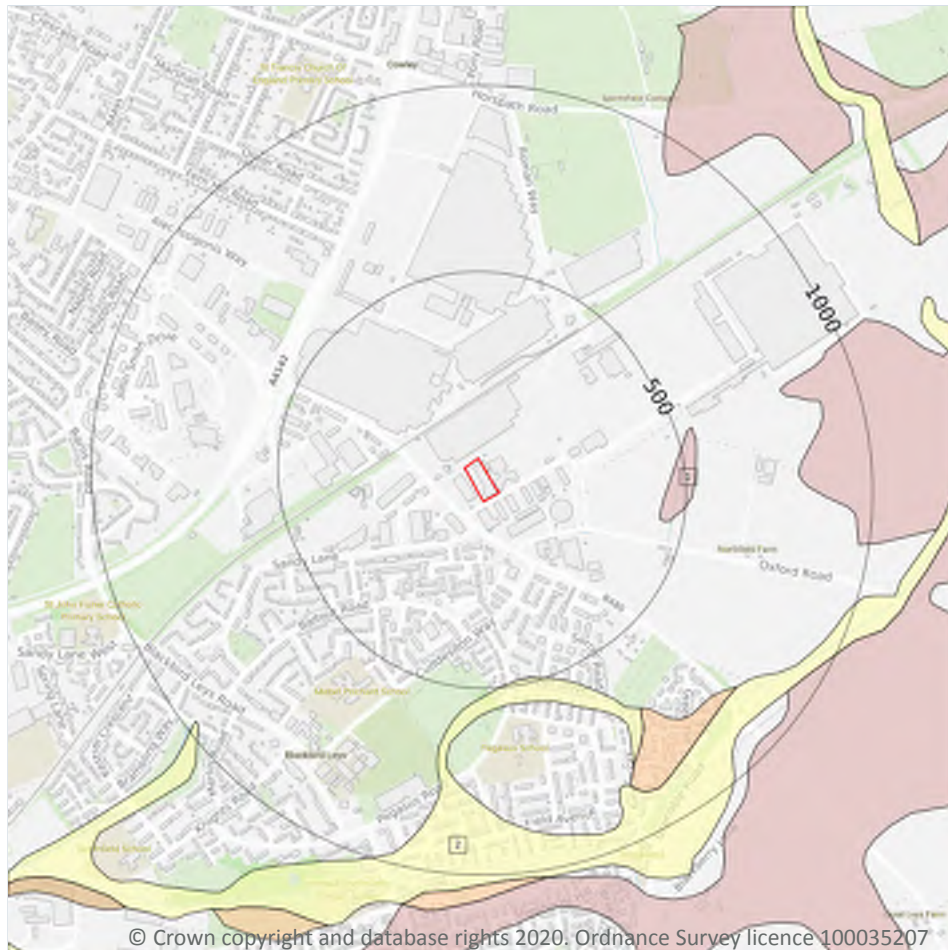
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
28m NE	Mixed	Very High	Low

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

▣ Landslip (50k)

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

### 15.4 Superficial geology (50k)

#### Records within 500m

2

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 87**

ID	Location	LEX Code	Description	Rock description
1	434m E	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
2	488m S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

*This data is sourced from the British Geological Survey.*



## 15.5 Superficial permeability (50k)

Records within 50m

0

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

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

## 15.7 Landslip permeability (50k)

Records within 50m

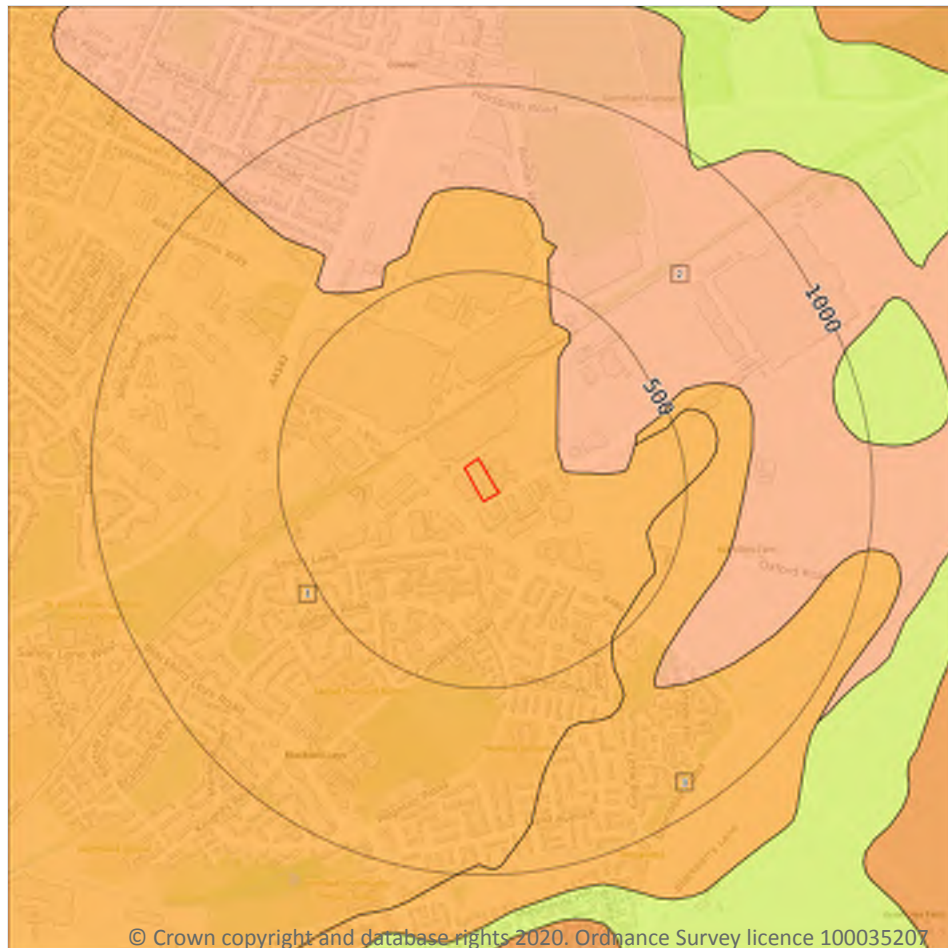
0

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

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

### 15.8 Bedrock geology (50k)

Records within 500m

3

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 89**

ID	Location	LEX Code	Description	Rock age
1	On site	BYSA-SDST	BECKLEY SAND MEMBER - SANDSTONE	OXFORDIAN
2	181m E	WYLS-LMST	WHEATLEY LIMESTONE MEMBER - LIMESTONE	OXFORDIAN
3	385m E	LITC-LSMD	LITTLEMORE MEMBER - LIMESTONE AND MUDSTONE, INTERBEDDED	OXFORDIAN

*This data is sourced from the British Geological Survey.*

## 15.9 Bedrock permeability (50k)

Records within 50m

1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	High

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

Records within 500m

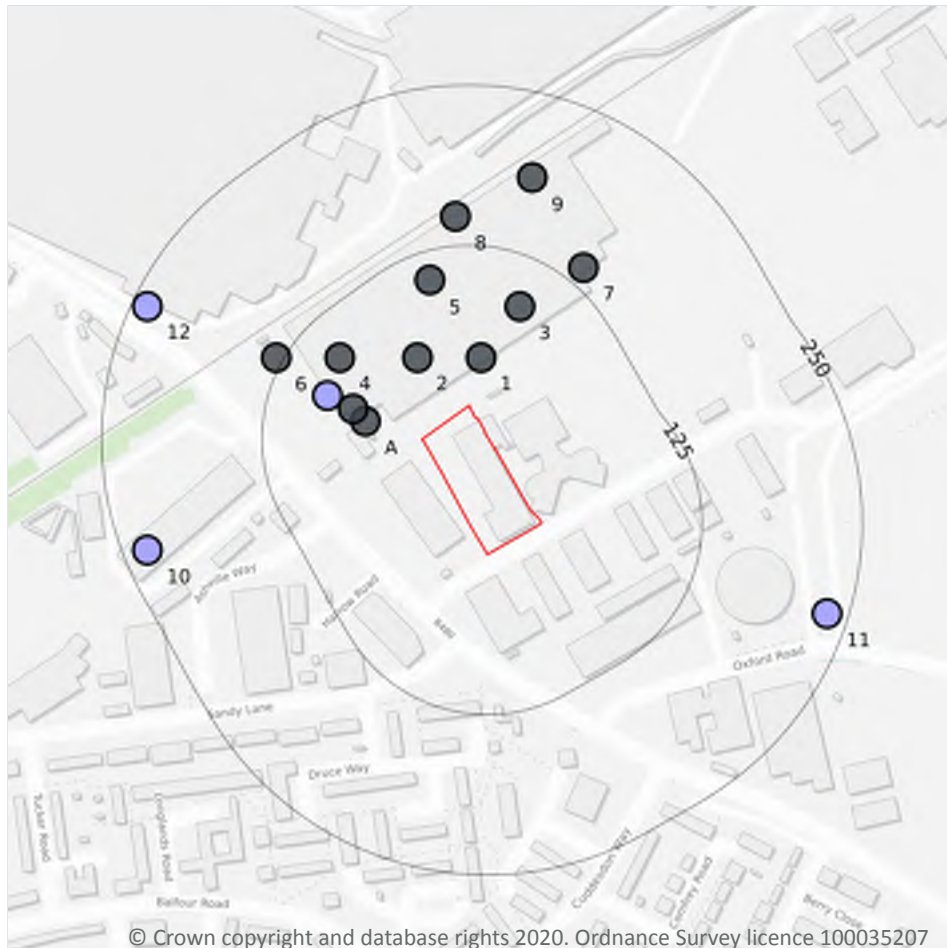
0

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

*This data is sourced from the British Geological Survey.*



## 16 Boreholes



— Site Outline  
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

### 16.1 BGS Boreholes

#### Records within 250m

15

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

Features are displayed on the Boreholes map on **page 91**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	39m N	455730 203590	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP B	-	Y	N/A
A	46m W	455640 203540	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP A	-	Y	N/A



ID	Location	Grid reference	Name	Length	Confidential	Web link
2	54m NW	455680 203590	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP H	-	Y	N/A
A	59m NW	455630 203550	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP J	-	Y	N/A
A	81m NW	455610 203560	DYER WORKS WATLINGTON ROAD OXFORD 8	2.0	N	<a href="#">335418</a>
3	87m NE	455760 203630	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP C	-	Y	N/A
4	90m NW	455620 203590	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP K	-	Y	N/A
5	102m N	455690 203650	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP G	-	Y	N/A
6	131m NW	455570 203590	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP L	-	Y	N/A
7	140m NE	455810 203660	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP D	-	Y	N/A
8	148m N	455710 203700	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP F	-	Y	N/A
9	184m N	455770 203730	I L C DEVELOPMENT ROVER PLANT COWLEY OXFORD TP E	-	Y	N/A
10	231m W	455470 203440	DYER WORKS WATLINGTON ROAD OXFORD 7	0.6	N	<a href="#">335417</a>
11	234m E	456000 203390	NORTHFIELD BROOK OXFORD 5	3.0	N	<a href="#">335385</a>
12	238m NW	455470 203630	DYER WORKS WATLINGTON ROAD OXFORD 2	2.5	N	<a href="#">335412</a>

*This data is sourced from the British Geological Survey.*



## 17 Natural ground subsidence - Shrink swell clays



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

### 17.1 Shrink swell clays

#### Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 93**

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

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Running sands



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

### 17.2 Running sands

#### Records within 50m

2

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

Features are displayed on the Natural ground subsidence - Running sands map on **page 94**

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

Location	Hazard rating	Details
28m NW	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Compressible deposits



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

### 17.3 Compressible deposits

#### Records within 50m

2

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

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 96**

Location	Hazard rating	Details
<b>On site</b>	<b>Negligible</b>	<b>Compressible strata are not thought to occur.</b>
28m NW	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.



*This data is sourced from the British Geological Survey.*





## Natural ground subsidence - Collapsible deposits



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

### 17.4 Collapsible deposits

#### Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 98**

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

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Landslides



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

### 17.5 Landslides

#### Records within 50m

1

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

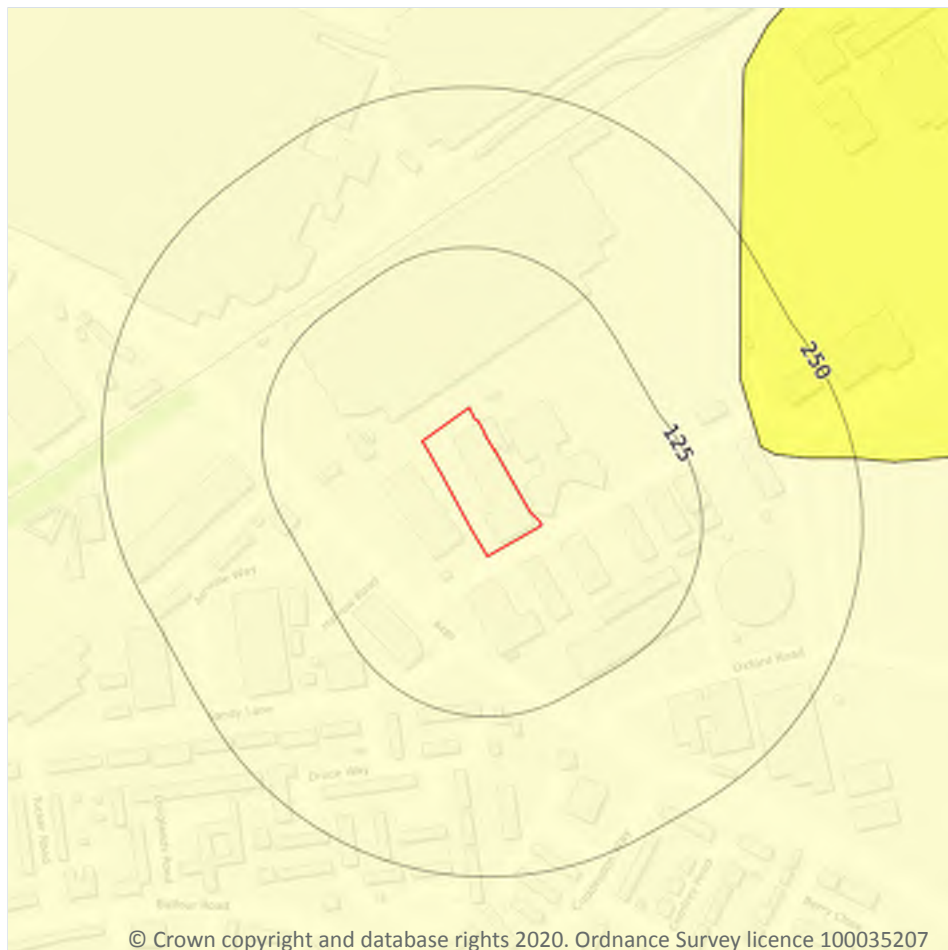
Features are displayed on the Natural ground subsidence - Landslides map on **page 99**

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

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Ground dissolution of soluble rocks



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

### 17.6 Ground dissolution of soluble rocks

#### Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 100**

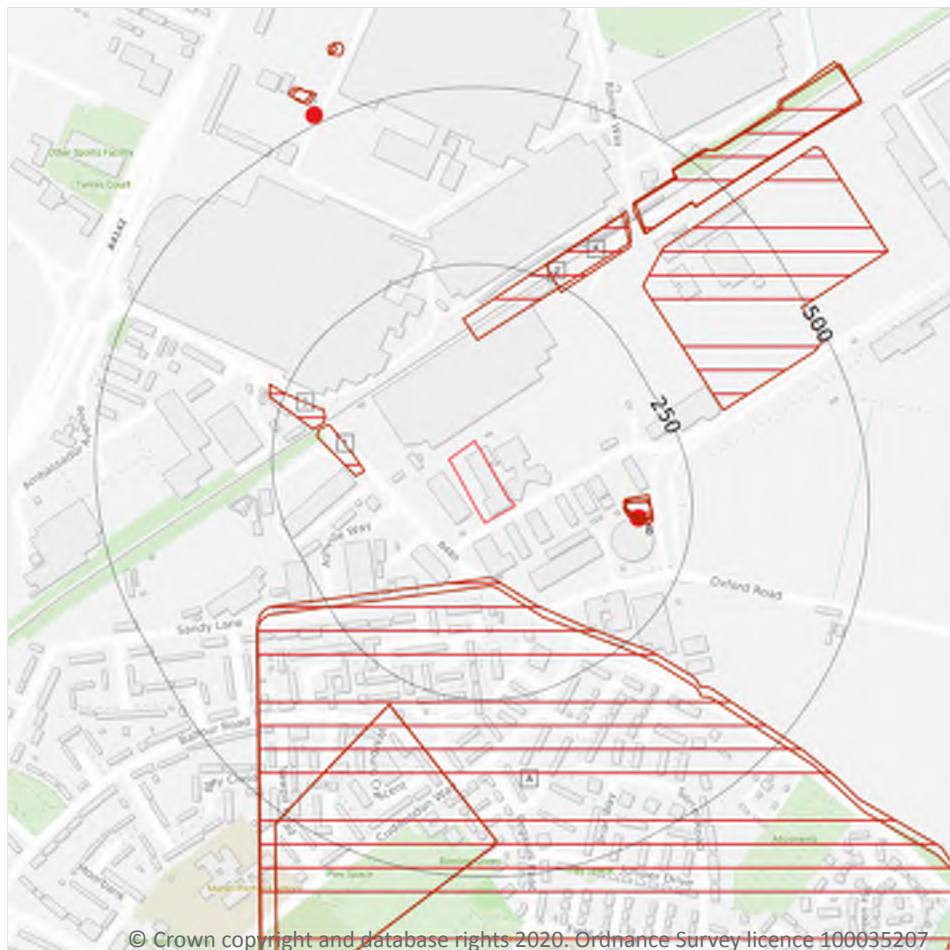
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



*This data is sourced from the British Geological Survey.*



## 18 Mining, ground workings and natural cavities



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

### 18.1 Natural cavities

Records within 500m

0

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

*This data is sourced from Peter Brett Associates (PBA).*

## 18.2 BritPits

### Records within 500m

**1**

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Details	Description
B	174m E	Name: Guydens Farm Address: Blackbird Leys, OXFORD, Oxfordshire Commodity: Sandstone Status: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Type: Ceased Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

*This data is sourced from the British Geological Survey.*

## 18.3 Surface ground workings

### Records within 250m

**11**

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 102**

ID	Location	Land Use	Year of mapping	Mapping scale
A	78m S	Sewage Farm	1938	1:10560
A	89m S	Sewage Farm	1922	1:10560
1	121m W	Cuttings	1880	1:10560
2	143m N	Cuttings	1880	1:10560
B	154m E	Unspecified Old Quarry	1922	1:10560
B	154m E	Unspecified Quarry	1880	1:10560
B	154m E	Unspecified Old Quarry	1938	1:10560
B	154m E	Unspecified Quarry	1898	1:10560
B	154m E	Unspecified Old Quarry	1922	1:10560
3	184m W	Cuttings	1880	1:10560
4	243m NE	Cuttings	1922	1:10560





*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground workings

**Records within 1000m**

**0**

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

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.5 Historical Mineral Planning Areas

**Records within 500m**

**0**

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

*This data is sourced from the British Geological Survey.*

## 18.6 Non-coal mining

**Records within 1000m**

**0**

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

*This data is sourced from the British Geological Survey.*

## 18.7 Mining cavities

**Records within 1000m**

**0**

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

*This data is sourced from Peter Brett Associates (PBA).*



## 18.8 JPB mining areas

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

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

*This data is sourced from Johnson Poole and Bloomer.*

## 18.9 Coal mining

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

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

*This data is sourced from the Coal Authority.*

## 18.10 Brine areas

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

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

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

## 18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.12 Tin mining

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

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Mining Searches UK.*

## 18.13 Clay mining

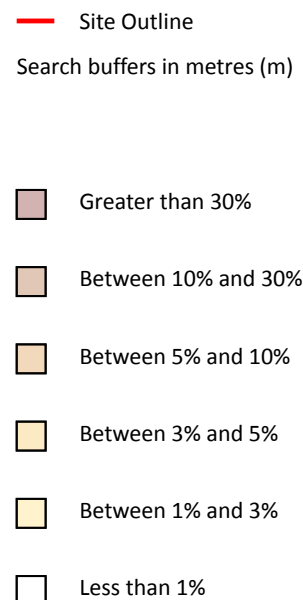
Records on site	0
-----------------	---

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

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



## 19 Radon



### 19.1 Radon

#### Records on site

1

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

Features are displayed on the Radon map on **page 107**

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

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



## 20 Soil chemistry

### 20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

*This data is sourced from the British Geological Survey.*

### 20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

*This data is sourced from the British Geological Survey.*

### 20.3 BGS Measured Urban Soil Chemistry

Records within 50m

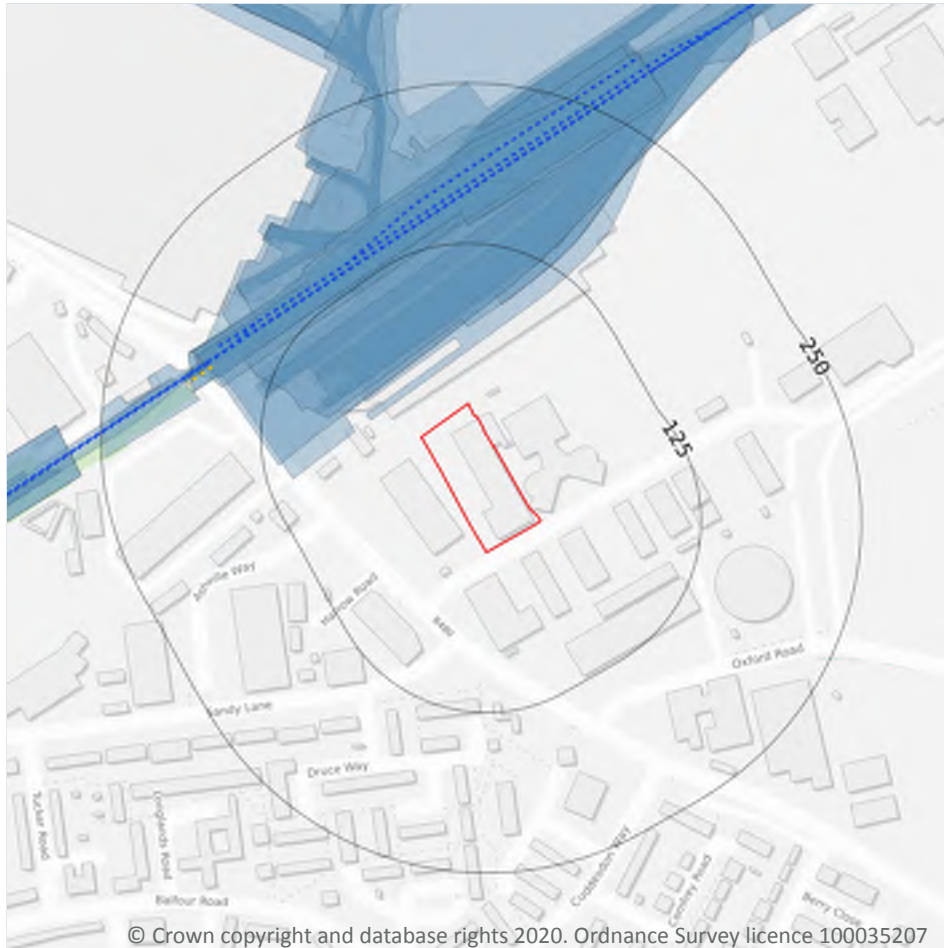
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

*This data is sourced from the British Geological Survey.*



## 21 Railway infrastructure and projects



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

### 21.1 Underground railways (London)

Records within 250m

0

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

*This data is sourced from publicly available information by Groundsure.*

### 21.2 Underground railways (Non-London)

Records within 250m

0

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





*This data is sourced from publicly available information by Groundsure.*

## 21.3 Railway tunnels

**Records within 250m**

**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

## 21.4 Historical railway and tunnel features

**Records within 250m**

**15**

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

Features are displayed on the Railway infrastructure and projects map on **page 109**

Location	Land Use	Year of mapping	Mapping scale
34m NW	Railway Sidings	1965	1250
50m NW	Railway Sidings	1938	10560
50m NW	Railway Sidings	1965	10560
55m NW	Railway Sidings	1974	10000
60m NW	Railway Sidings	1939	2500
61m NW	Railway Sidings	1971	1250
61m NW	Railway Sidings	1954	2500
61m NW	Railway Sidings	1954	1250
119m NW	Railway Sidings	1922	10560
127m NW	Railways	1921	-
127m NW	Railways	1889	-
127m NW	Railway Sidings	1922	10560
127m NW	Railways	1881	-
143m NW	Railway Sidings	1921	2500
197m W	Railway Sidings	1921	2500

*This data is sourced from Ordnance Survey/Groundsure.*



## 21.5 Royal Mail tunnels

**Records within 250m****0**

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

*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

**Records within 250m****1**

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

Features are displayed on the Railway infrastructure and projects map on **page 109**

Location	Description
172m W	Abandoned

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

**Records within 250m****11**

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

Features are displayed on the Railway infrastructure and projects map on **page 109**

Location	Name	Type
139m NW	Not given	Single Track
139m NW	Cowley Works freight line	rail
143m NW	-	rail
144m NW	-	rail
152m NW	Not given	Single Track
156m NW	-	rail
165m NW	Cowley Works freight line	rail
177m W	Cowley Works freight line	rail



Location	Name	Type
177m W	Not given	Single Track
190m W	Not given	Single Track
192m W	Cowley Works freight line	rail

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 21.8 Crossrail 1

**Records within 500m** **0**

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

*This data is sourced from publicly available information by Groundsure.*

## 21.9 Crossrail 2

**Records within 500m** **0**

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

*This data is sourced from publicly available information by Groundsure.*

## 21.10 HS2

**Records within 500m** **0**

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

*This data is sourced from HS2 Ltd.*



## Data providers

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

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## **Appendix D      Historical Ordnance Survey Mapping**

#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

**Map date:** 1878-1881

**Scale:** 1:2,500

**Printed at:** 1:2,500



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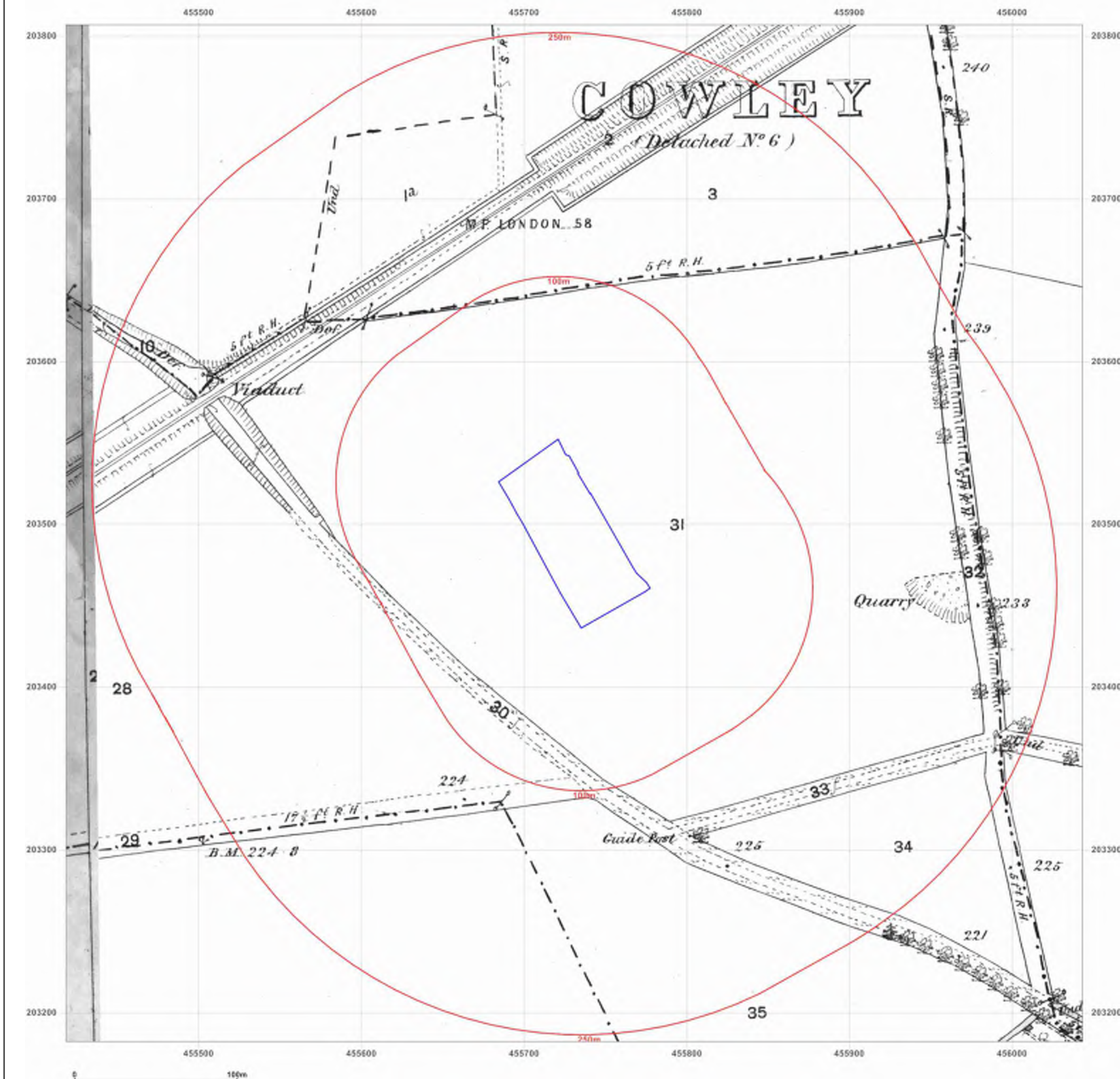


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#### Site Details:

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OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

**Map date:** 1899-1900

**Scale:** 1:2,500

**Printed at:** 1:2,500



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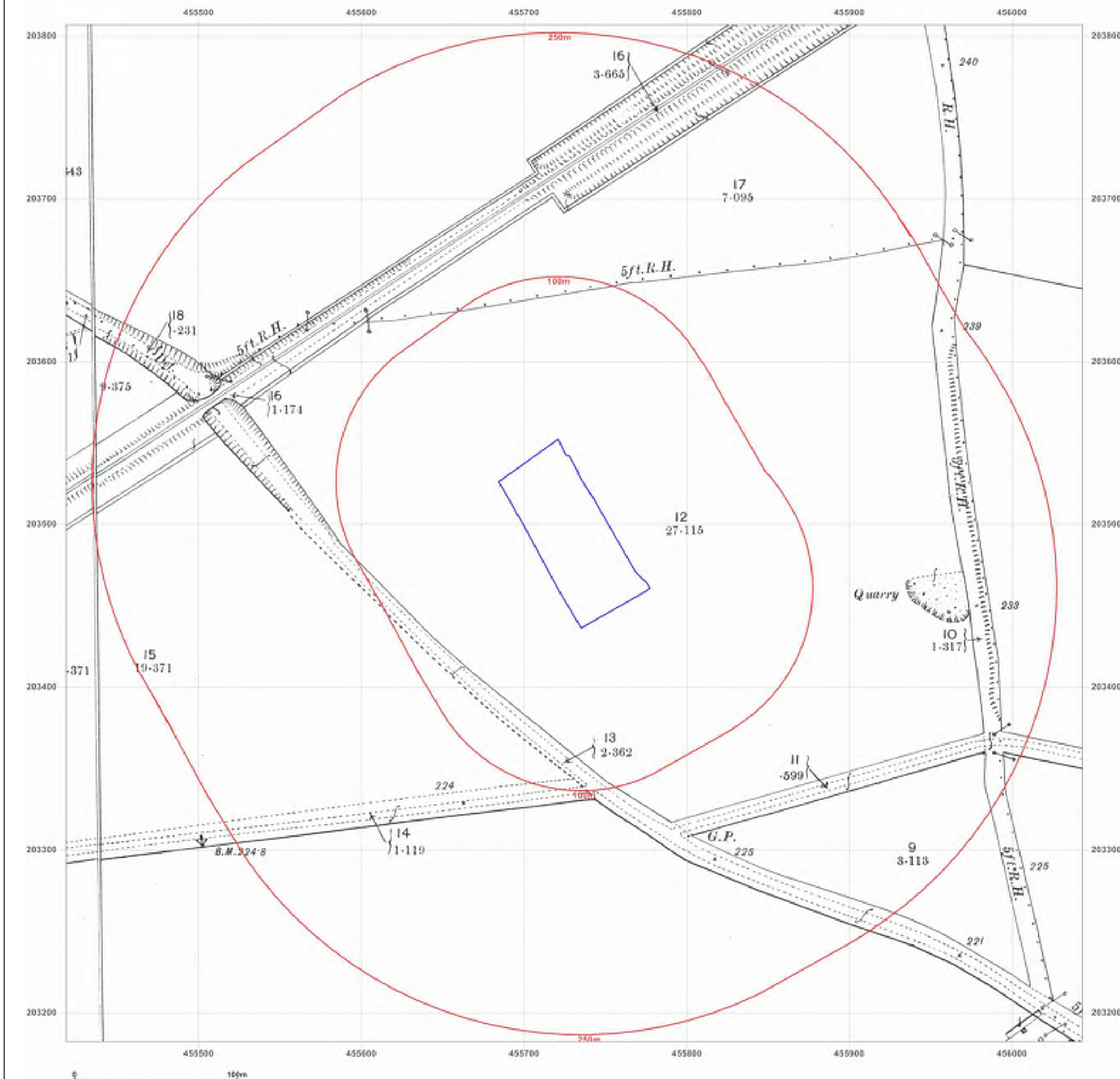


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**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

**Map date:** 1921

**Scale:** 1:2,500

**Printed at:** 1:2,500



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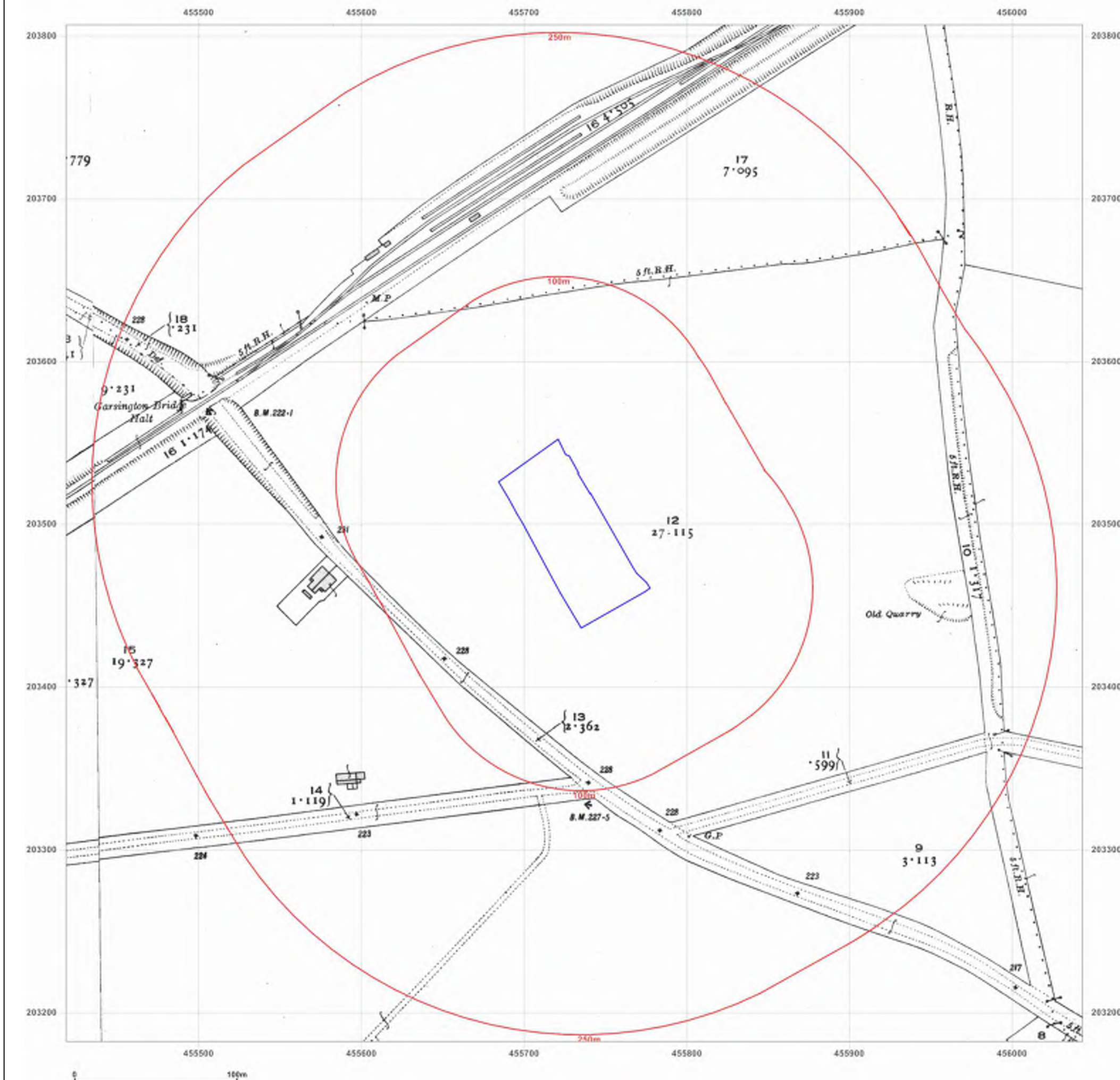


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**Map Name:** County Series

**Map date:** 1937-1939

**Scale:** 1:2,500

**Printed at:** 1:2,500



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**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1954

**Scale:** 1:1,250

**Printed at:** 1:2,000



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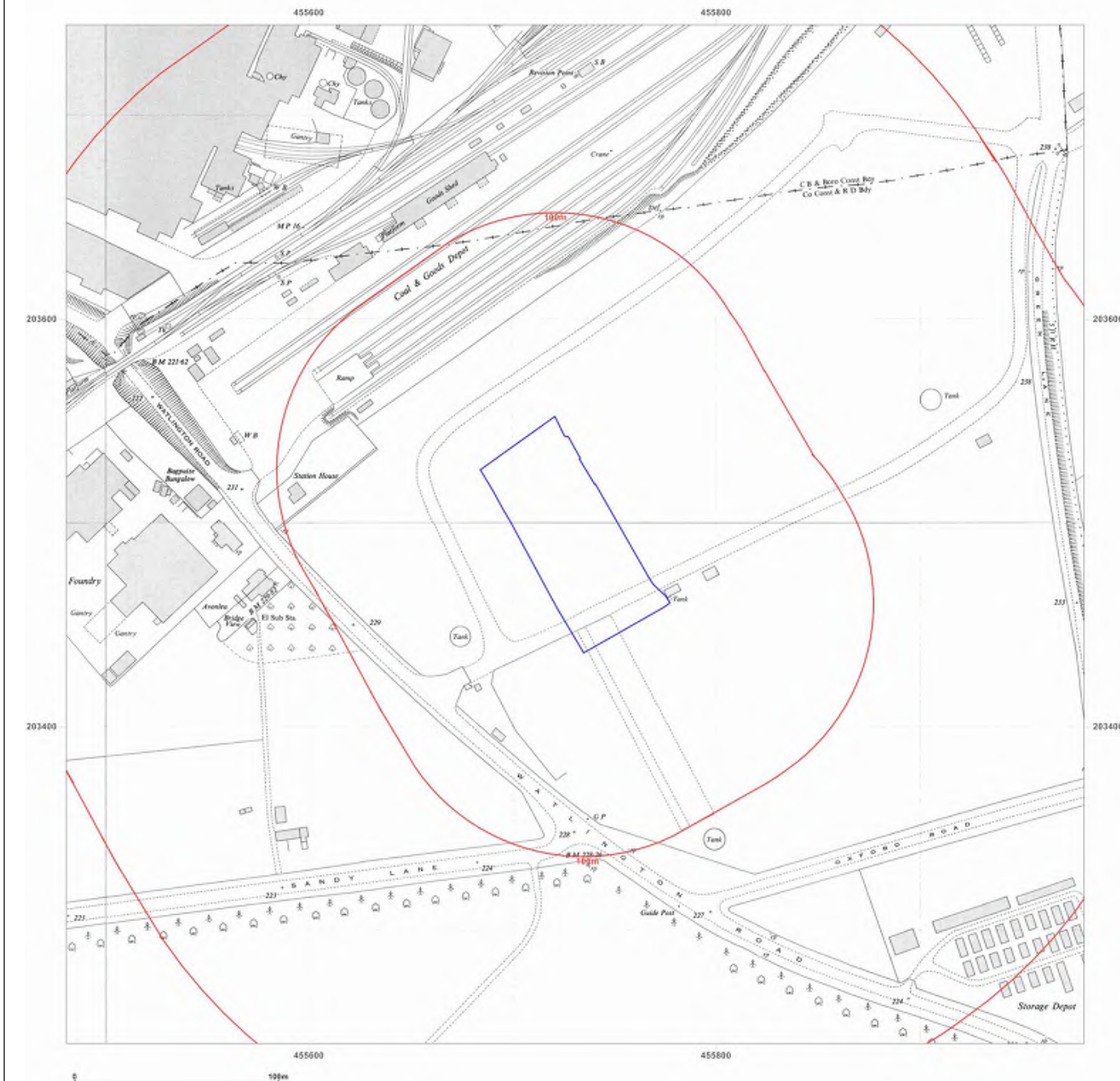


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**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1954

**Scale:** 1:2,500

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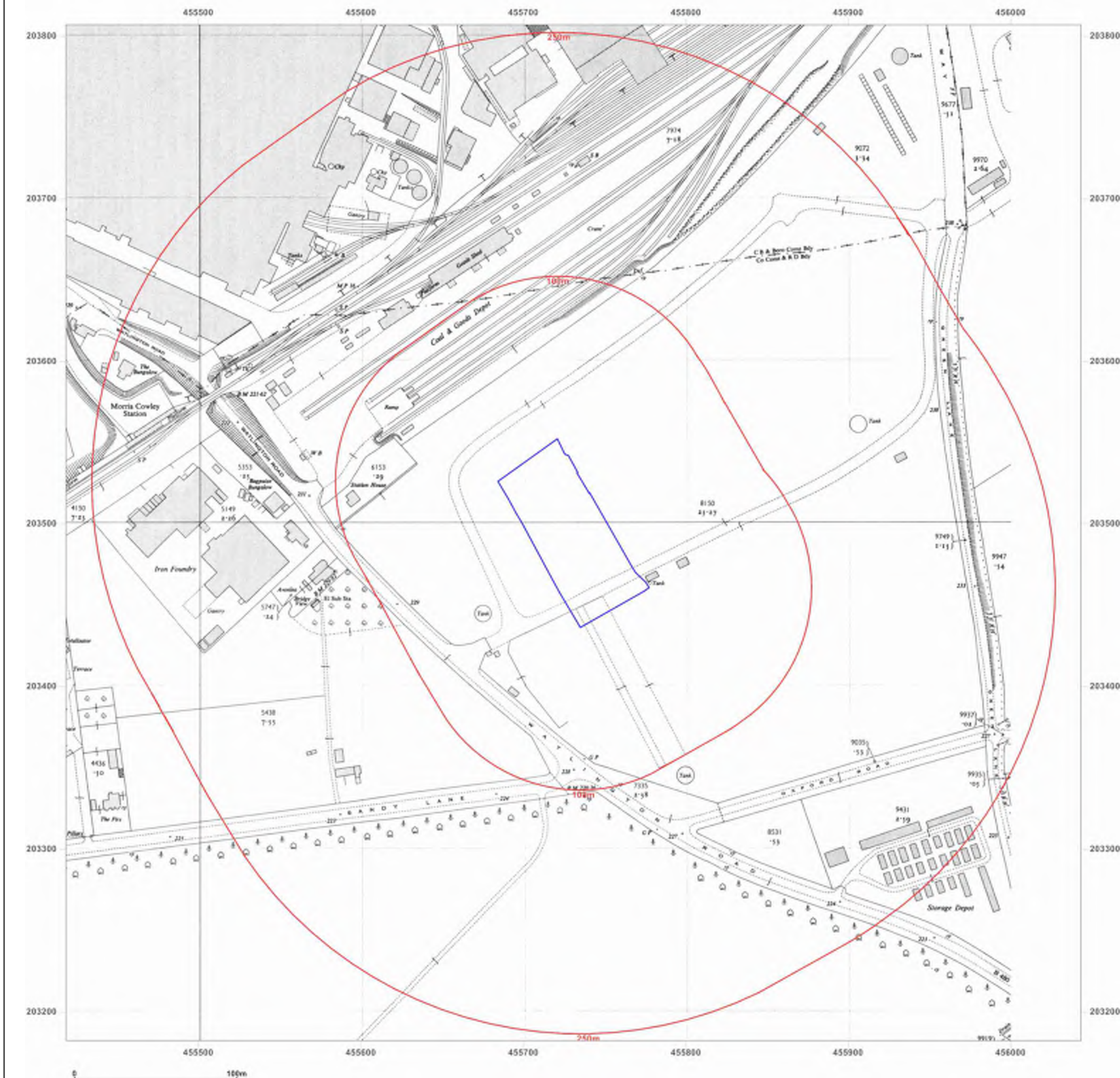


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**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1955

**Scale:** 1:1,250

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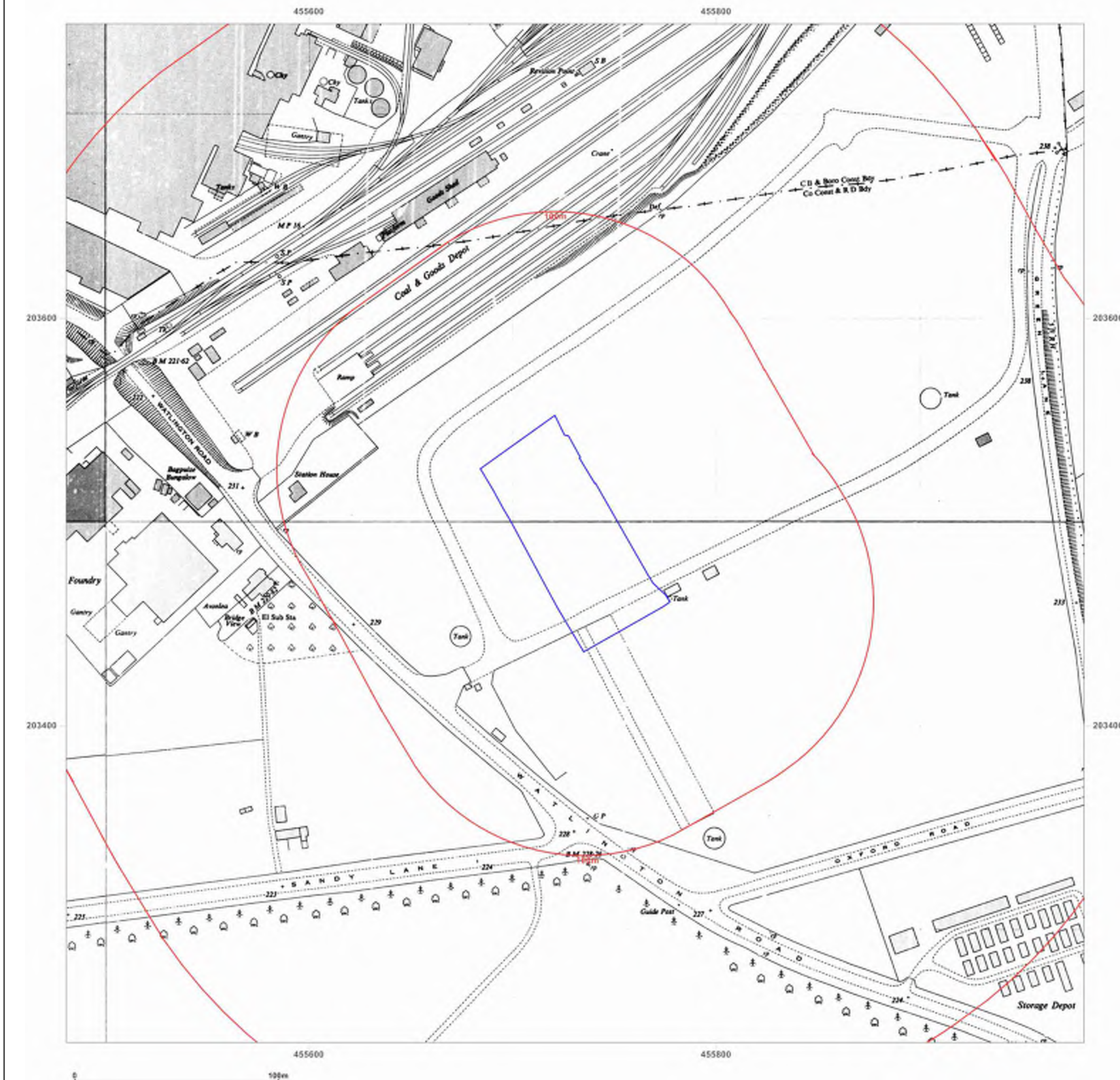


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**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1961-1965

**Scale:** 1:1,250

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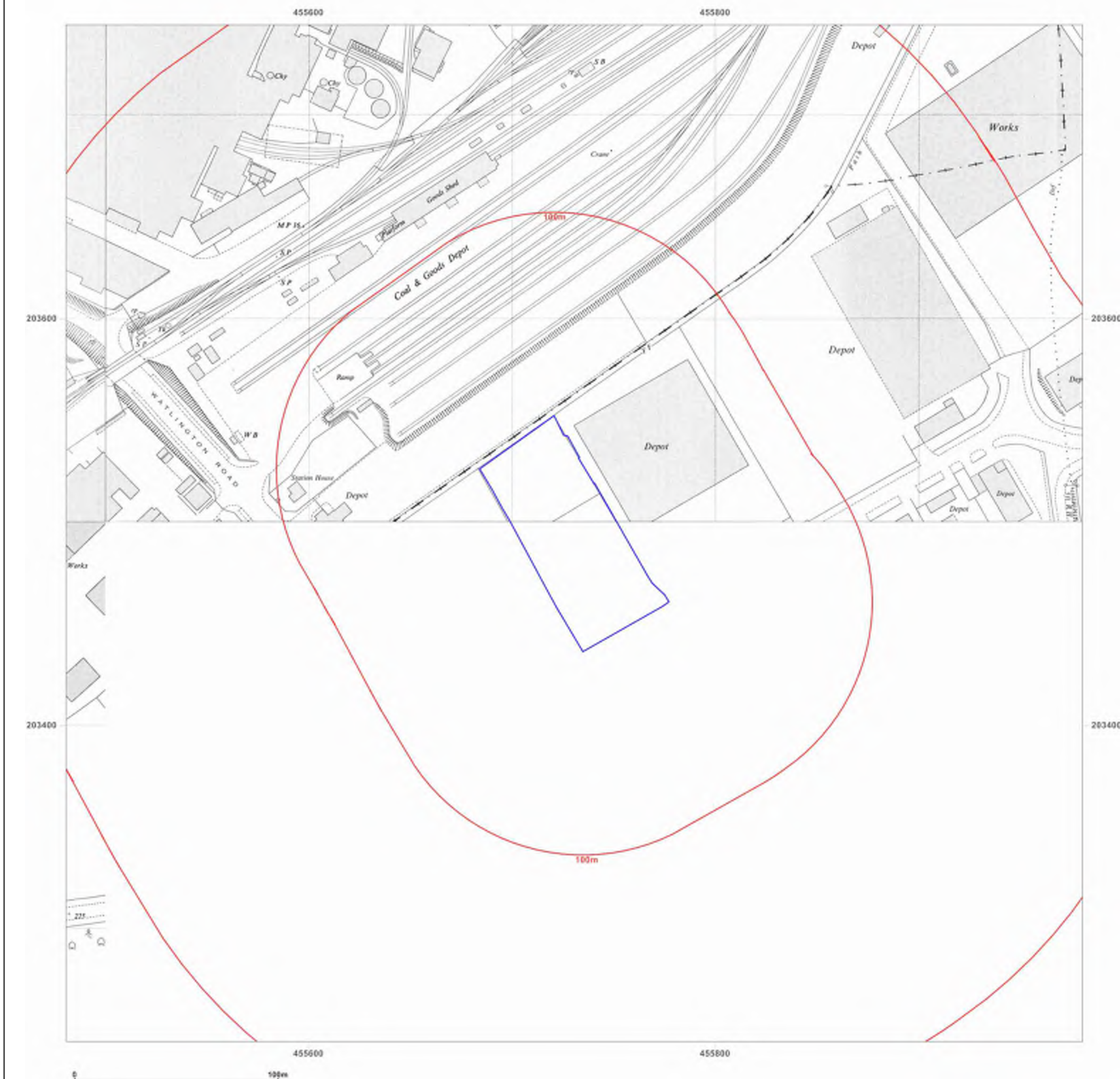


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**Client Ref:** WIC\_House  
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**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1971

**Scale:** 1:1,250

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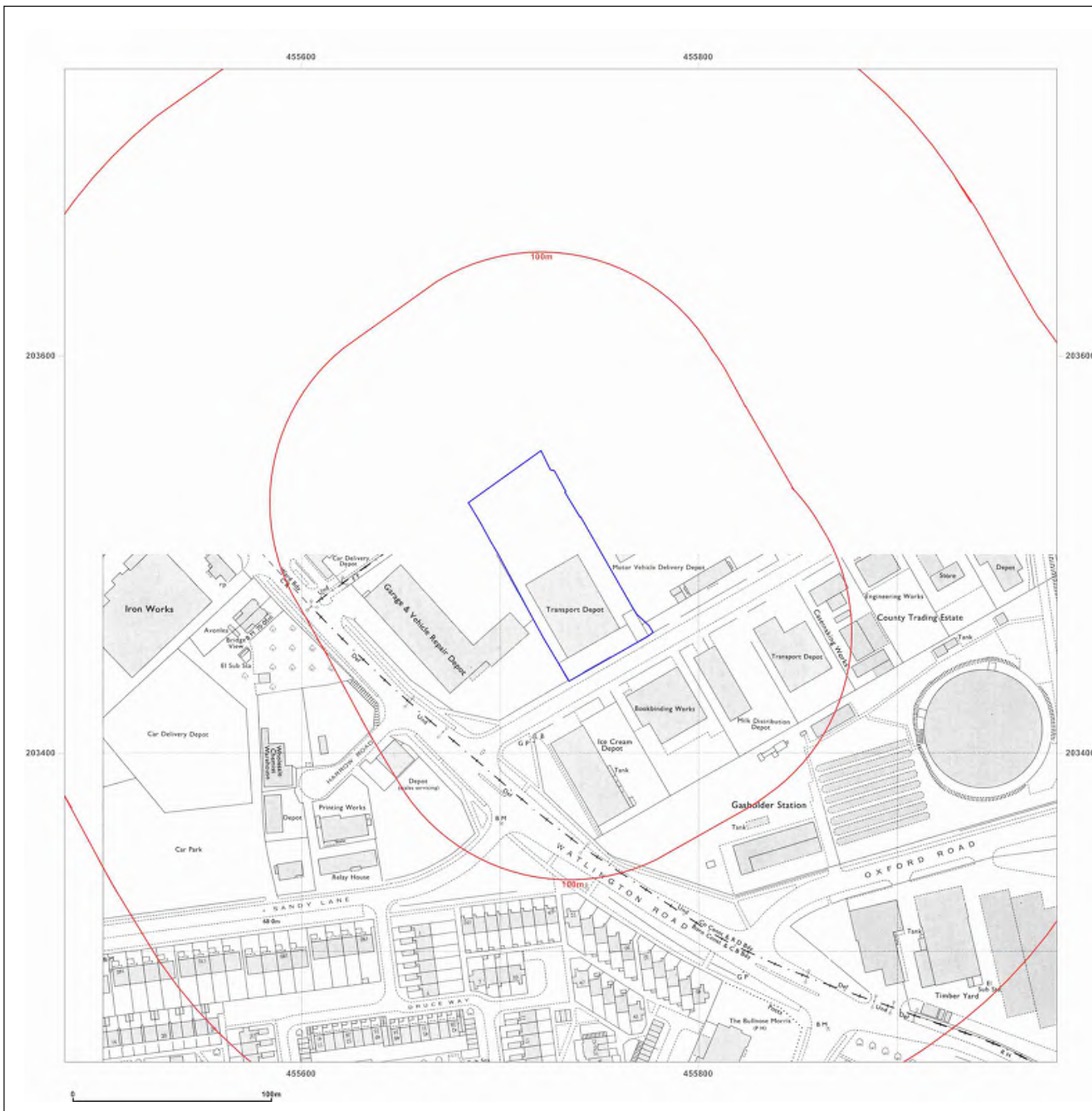


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**Client Ref:** WIC\_House  
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**Map Name:** National Grid

**Map date:** 1969-1972

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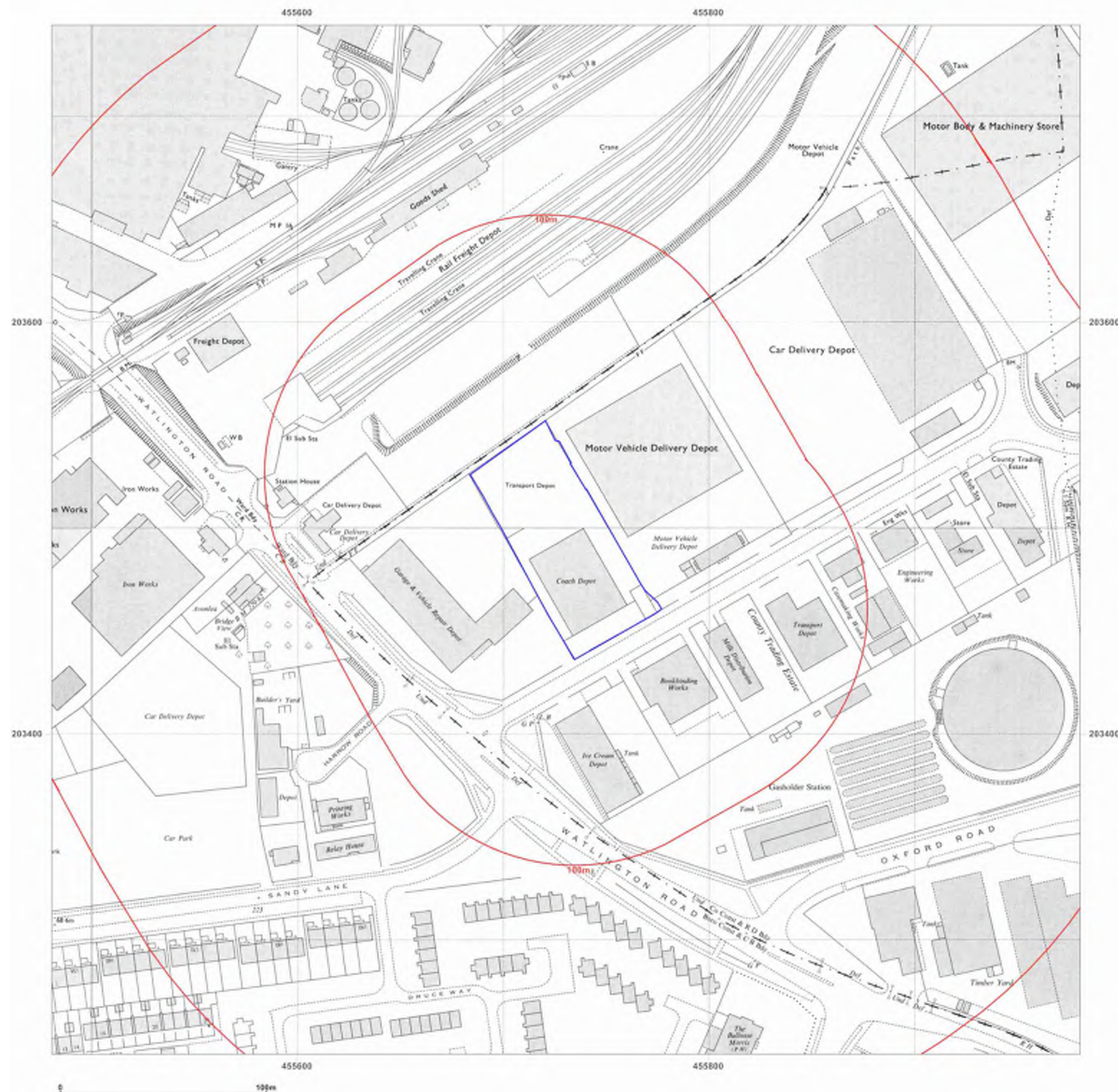


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**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1976

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**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1988-1993

**Scale:** 1:1,250

**Printed at:** 1:2,000



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**Map Name:** National Grid

**Map date:** 1993-1994

**Scale:** 1:1,250

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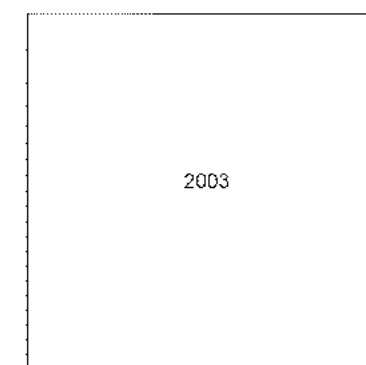
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**Grid Ref:** 455731, 203494

**Map Name:** LandLine

**Map date:** 2003

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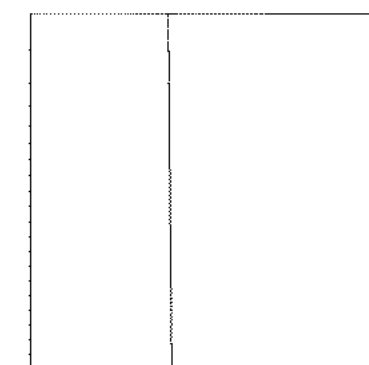
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**Map date:** 1880

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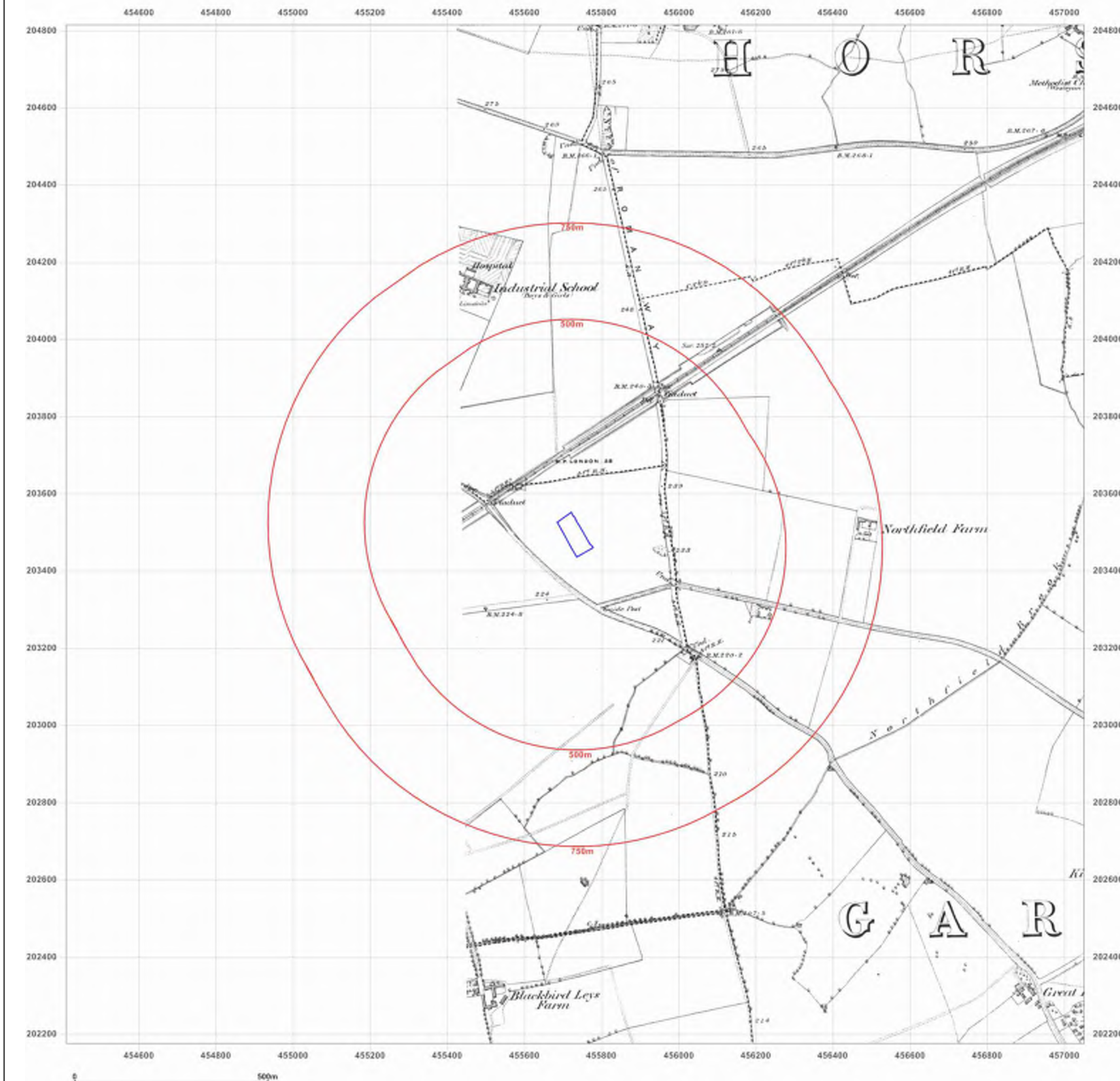


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**Map Name:** County Series

**Map date:** 1897-1900

**Scale:** 1:10,560

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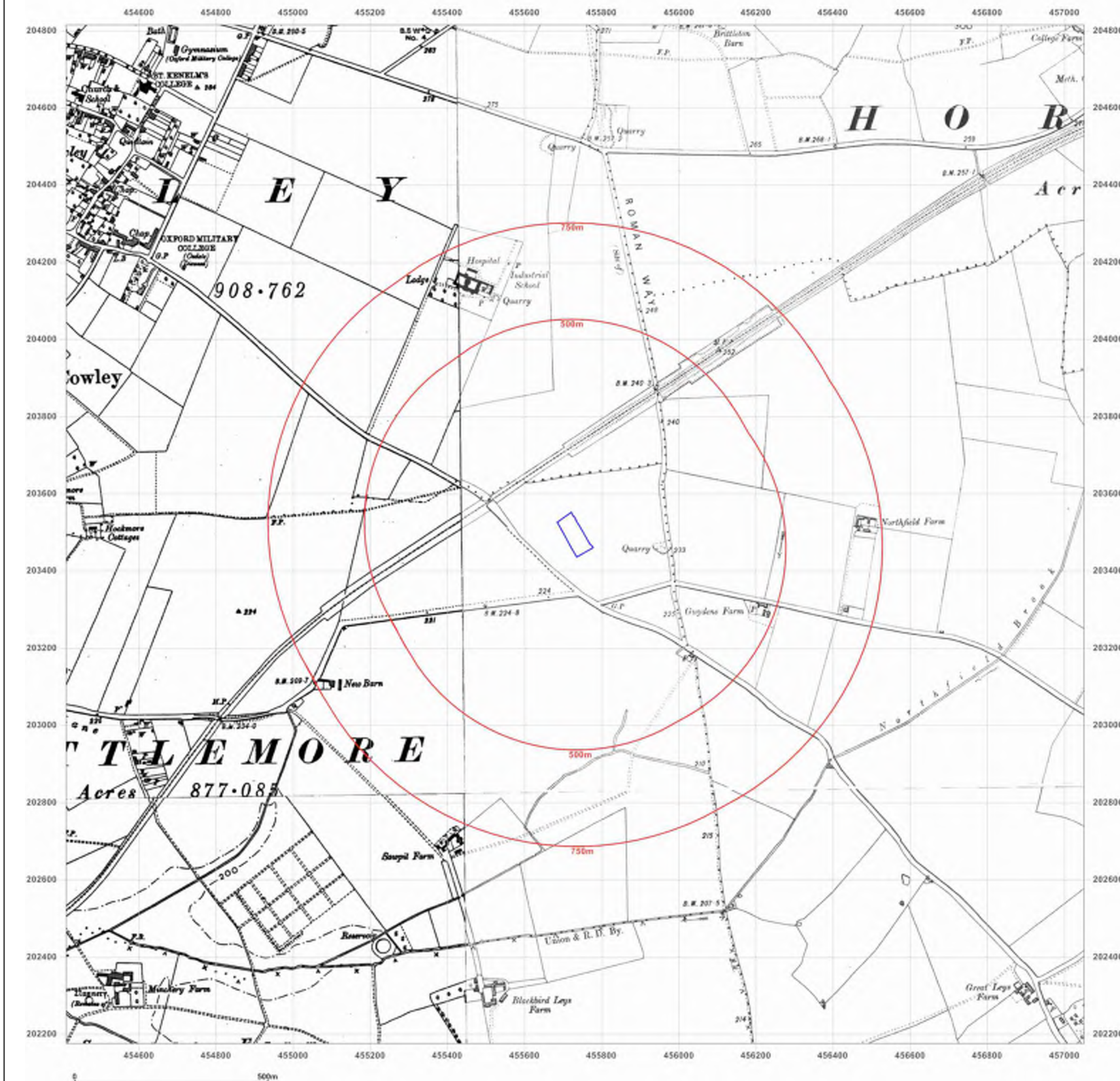


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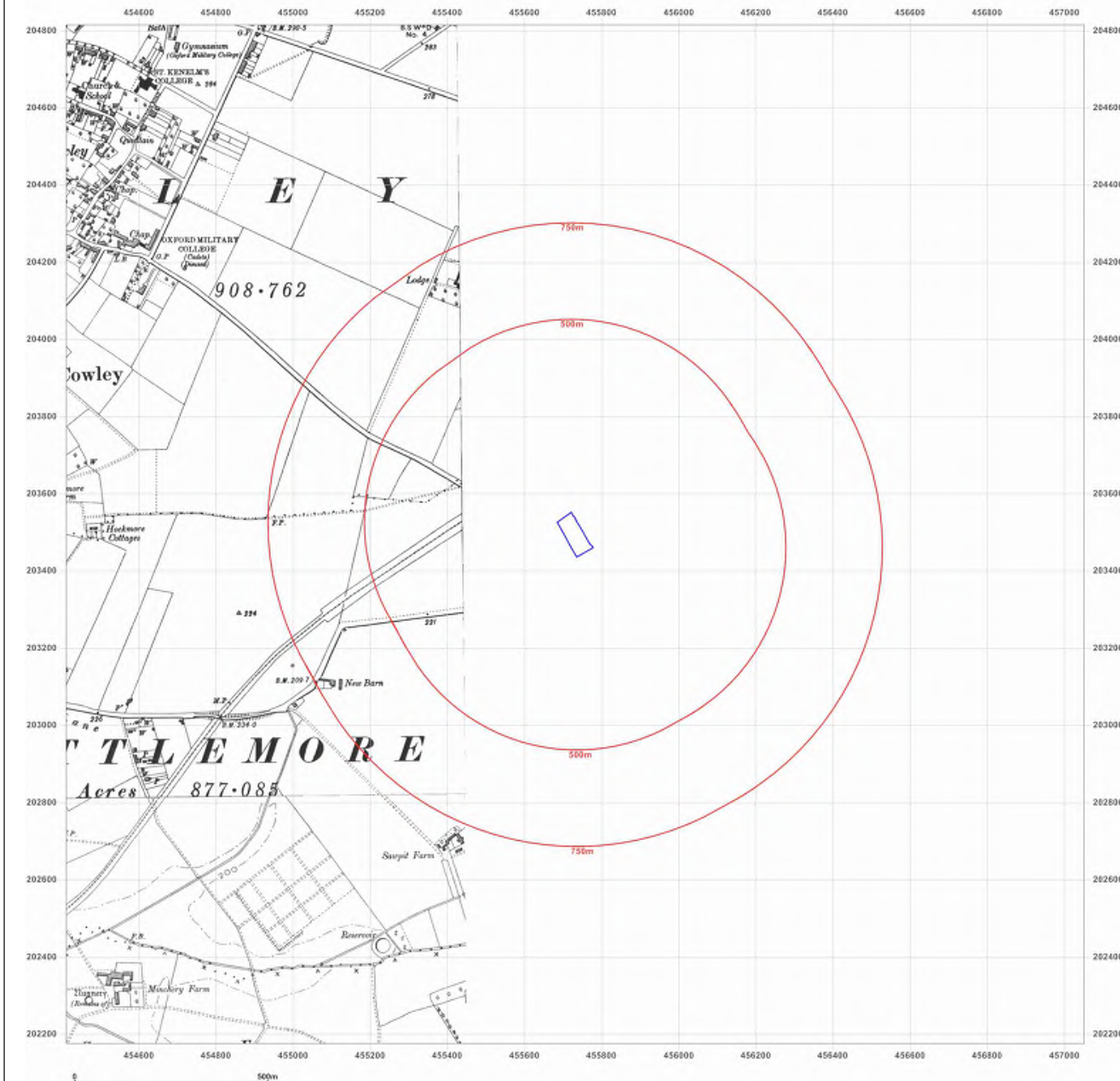


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**Map Name:** County Series

**Map date:** 1910-1914

**Scale:** 1:10,560

**Printed at:** 1:10,560



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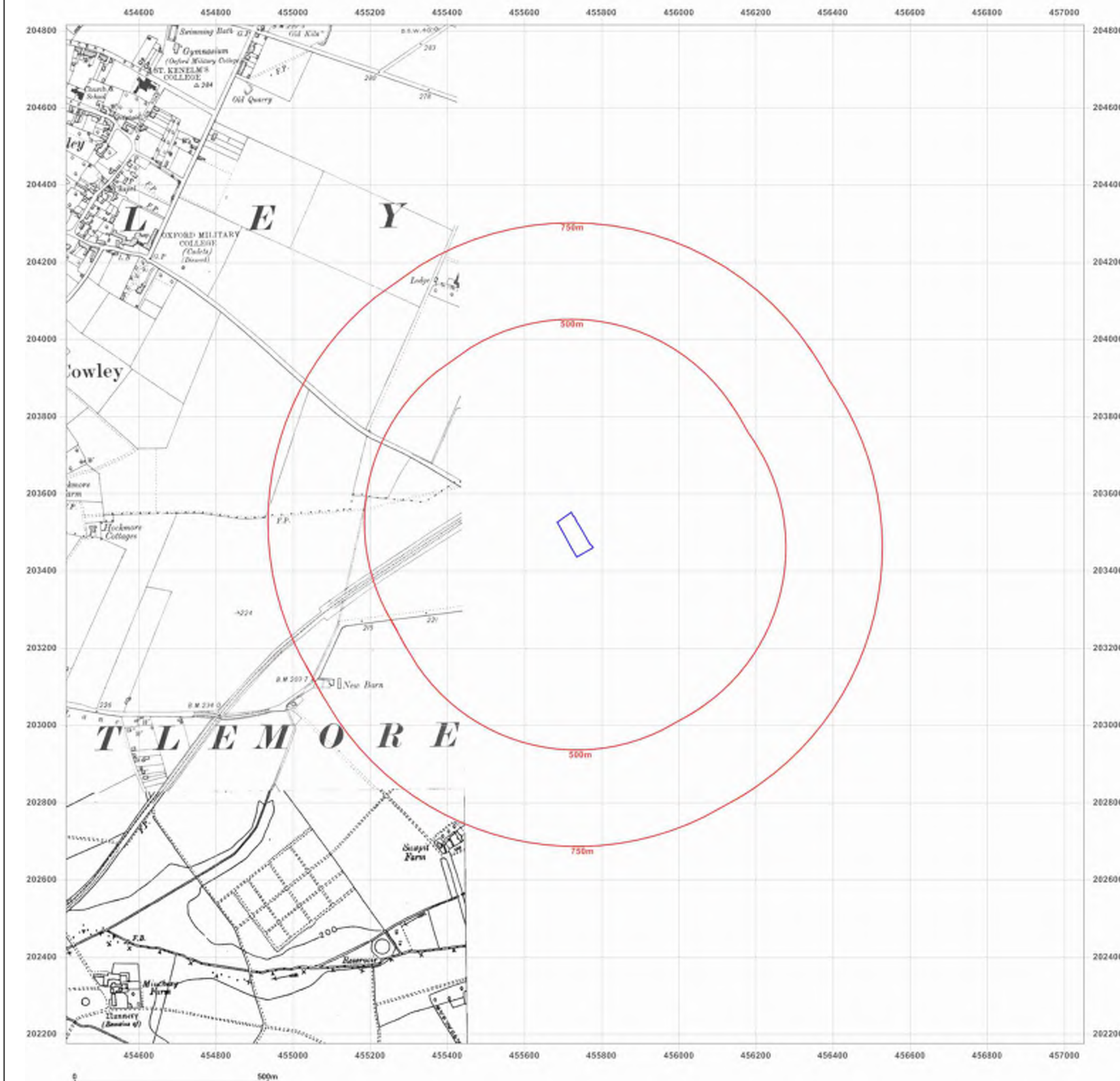


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

**Map date:** 1914-1919

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1878  
Revised 1910  
Edition 1914  
Copyright N/A  
Levelled 1911

Surveyed 1874  
Revised 1914  
Edition 1914  
Copyright N/A  
Levelled N/A

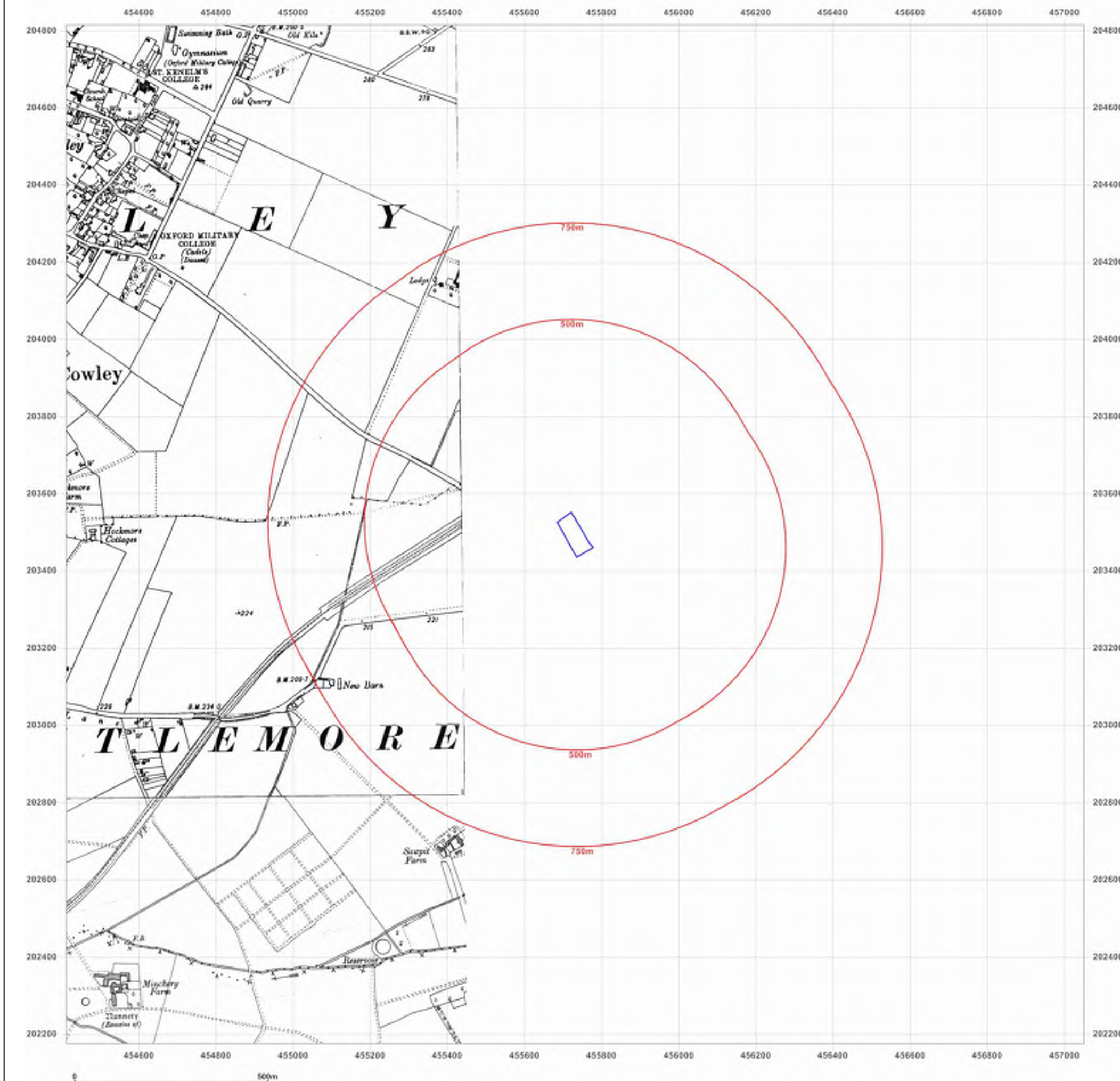


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

**Map date:** 1922

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1874  
Revised N/A  
Edition 1922  
Copyright N/A  
Levelled 1919

Surveyed 1879  
Revised 1922  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed N/A  
Revised 1918  
Edition 1922  
Copyright N/A  
Levelled 1911

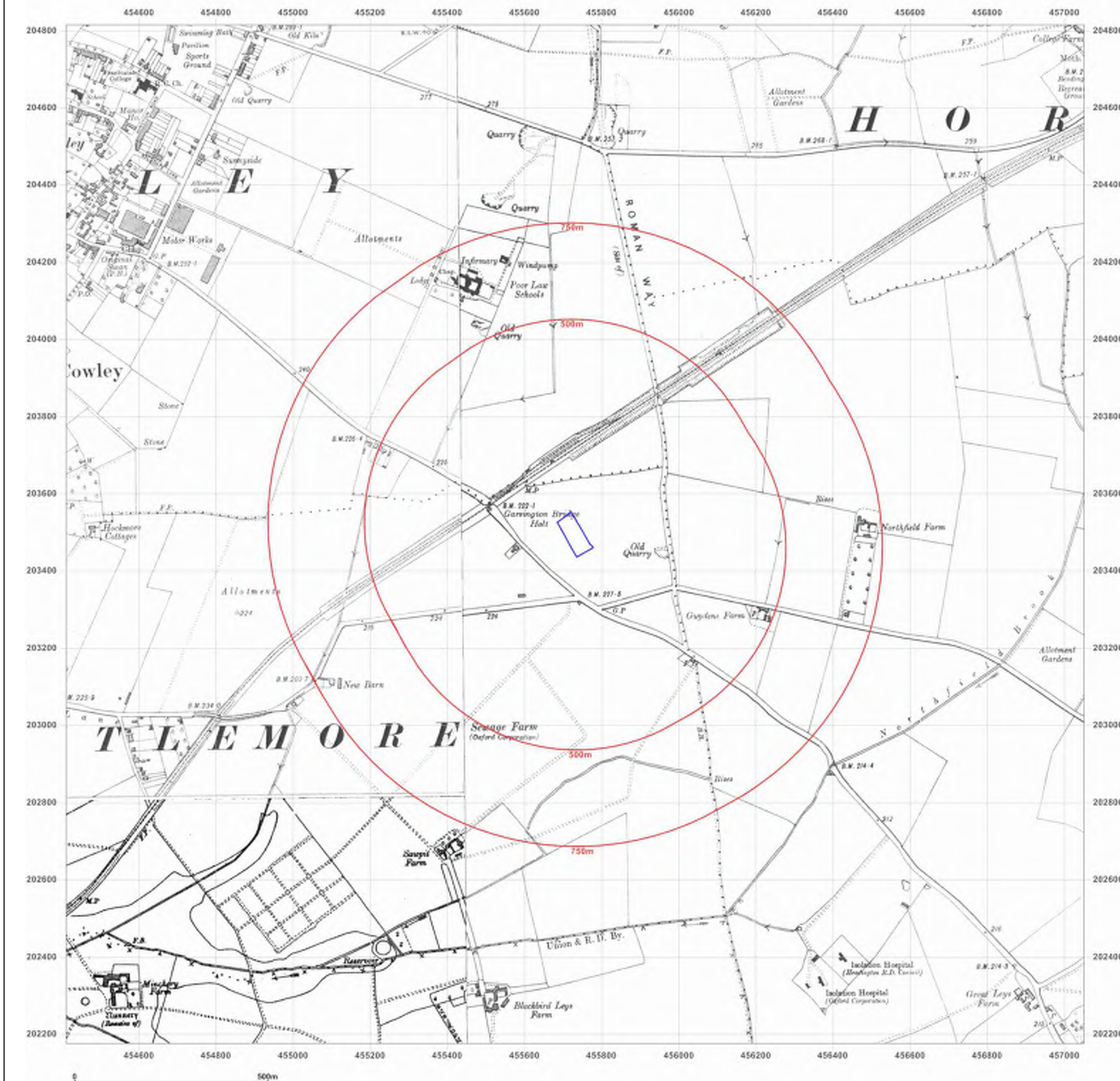


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

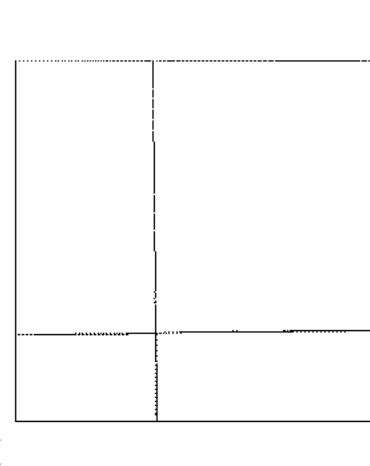
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**Map date:** 1922

**Scale:** 1:10,560

**Printed at:** 1:10,560



<p>Surveyed 1874 Revised 1922 Edition N/A Copyright N/A Levelled N/A</p>		<p>Surveyed 1879 Revised 1922 Edition 1922 Copyright N/A Levelled N/A</p>
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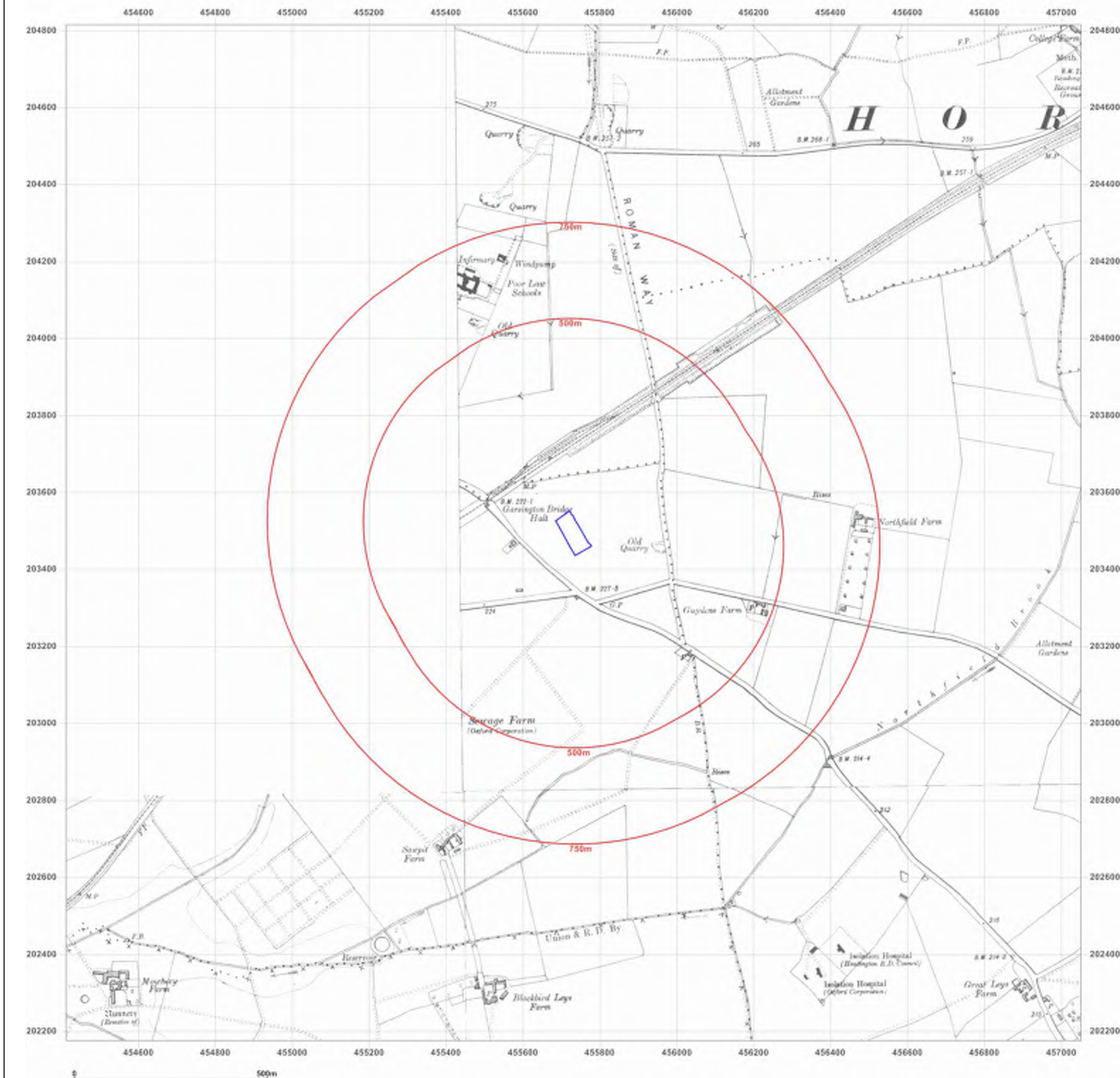


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** County Series

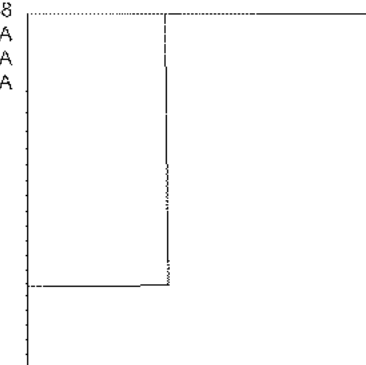
**Map date:** 1938

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1874  
Revised 1938  
Edition N/A  
Copyright N/A  
Levelled N/A

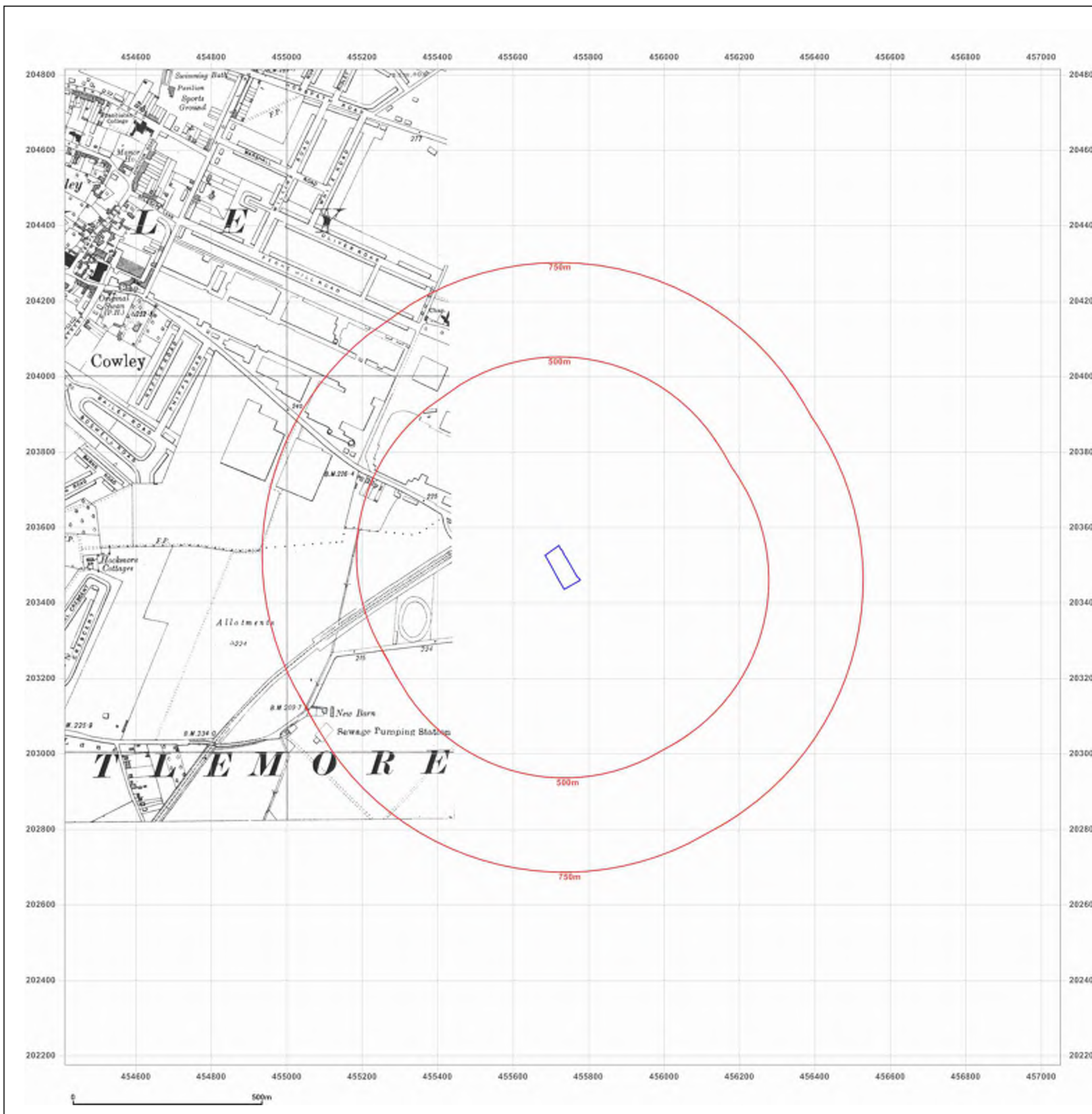


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** Provisional

**Map date:** 1966

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1957  
Revised 1966  
Edition N/A  
Copyright 1961  
Levelled N/A

Surveyed N/A  
Revised 1966  
Edition N/A  
Copyright 1960  
Levelled N/A

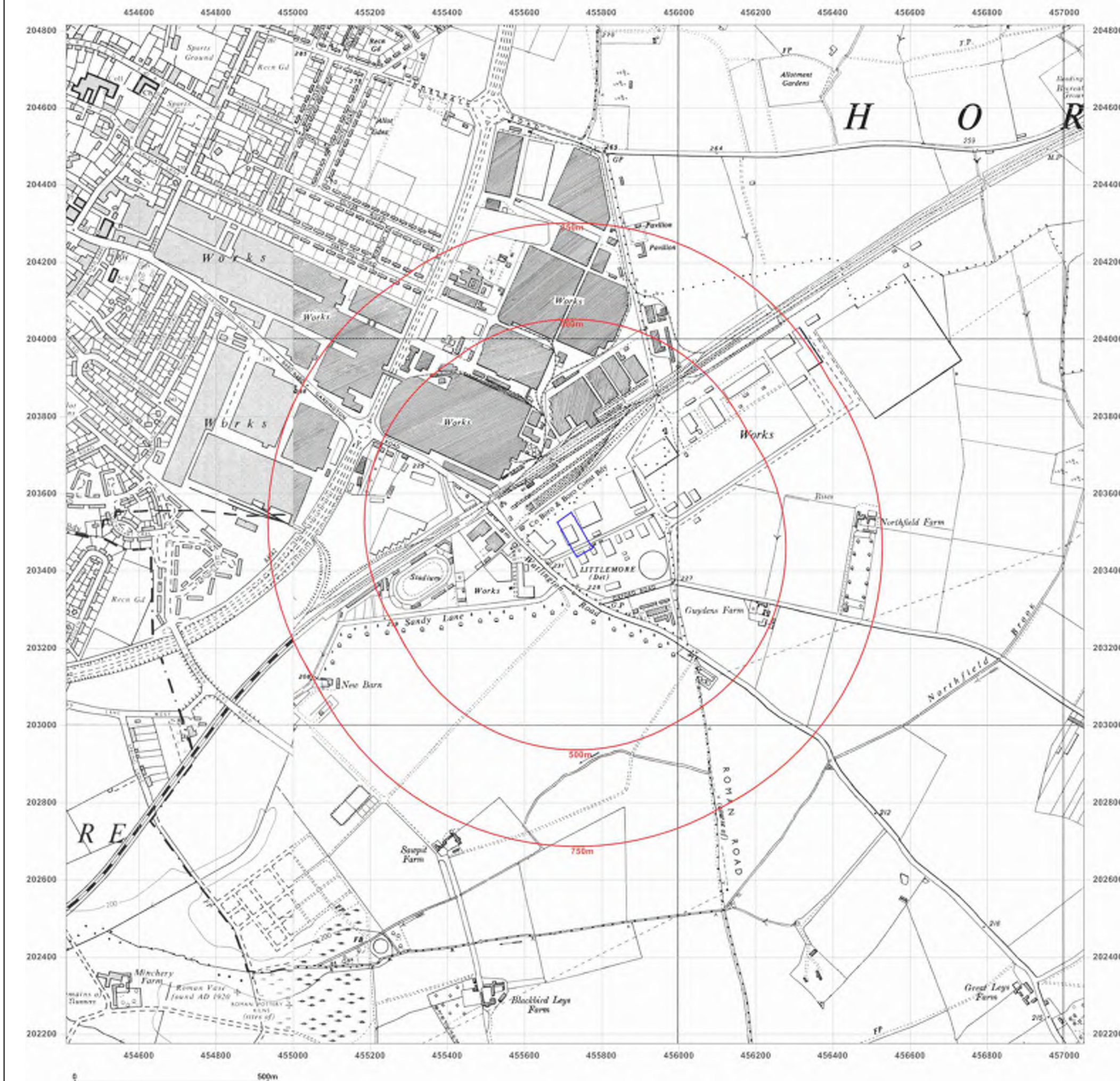


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 1975-1976

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1974  
Revised 1975  
Edition N/A  
Copyright 1976  
Levelled 1971

Surveyed 1973  
Revised 1975  
Edition N/A  
Copyright 1975  
Levelled 1973

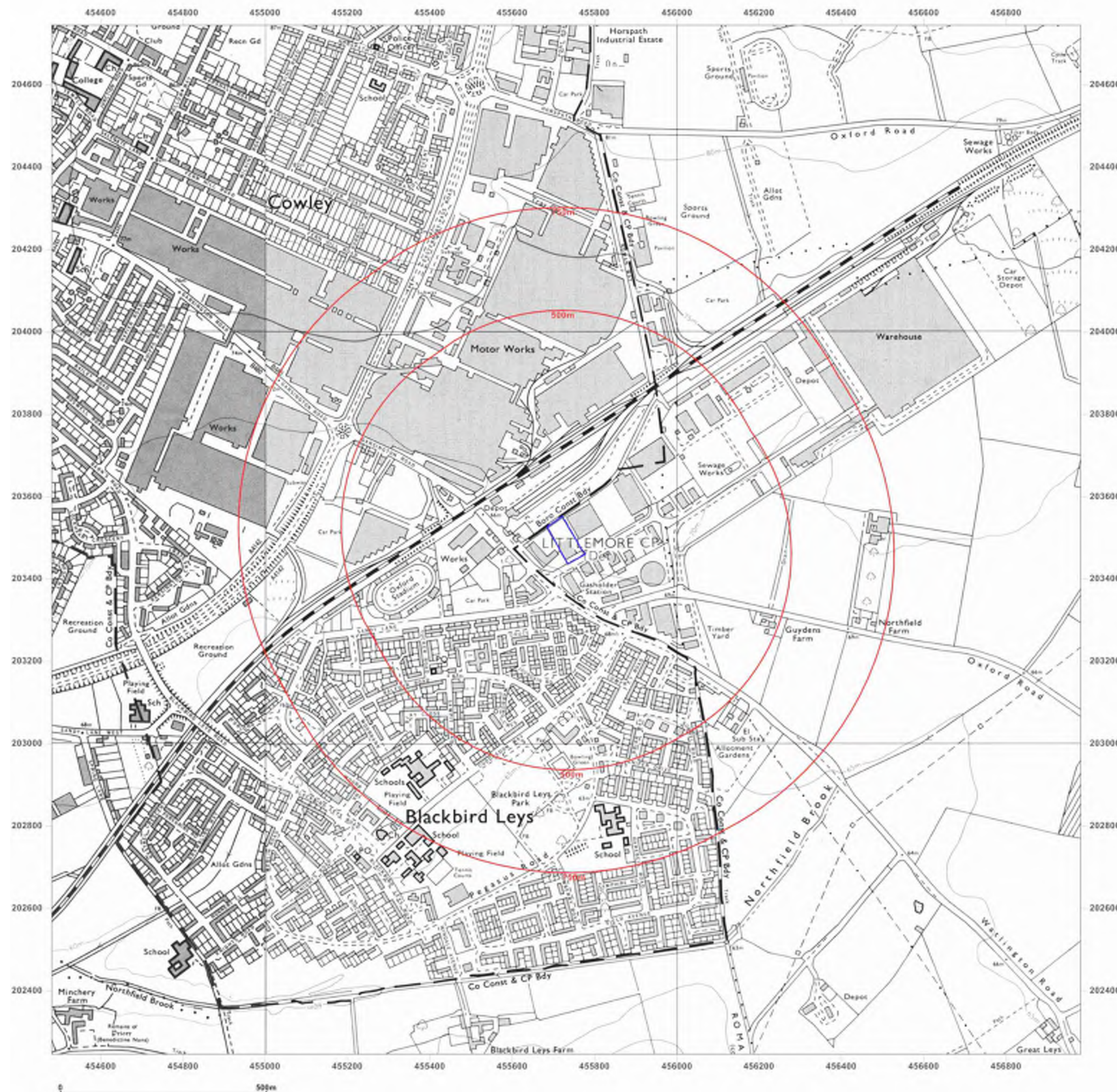


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

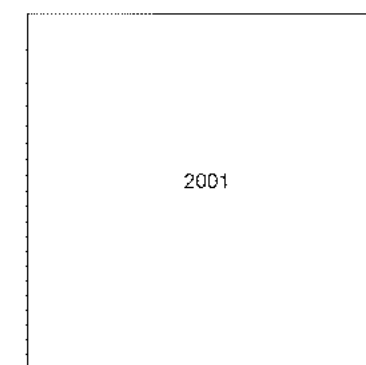
Client Ref: WIC\_House  
Report Ref: GS-7283933  
Grid Ref: 455731, 203494

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

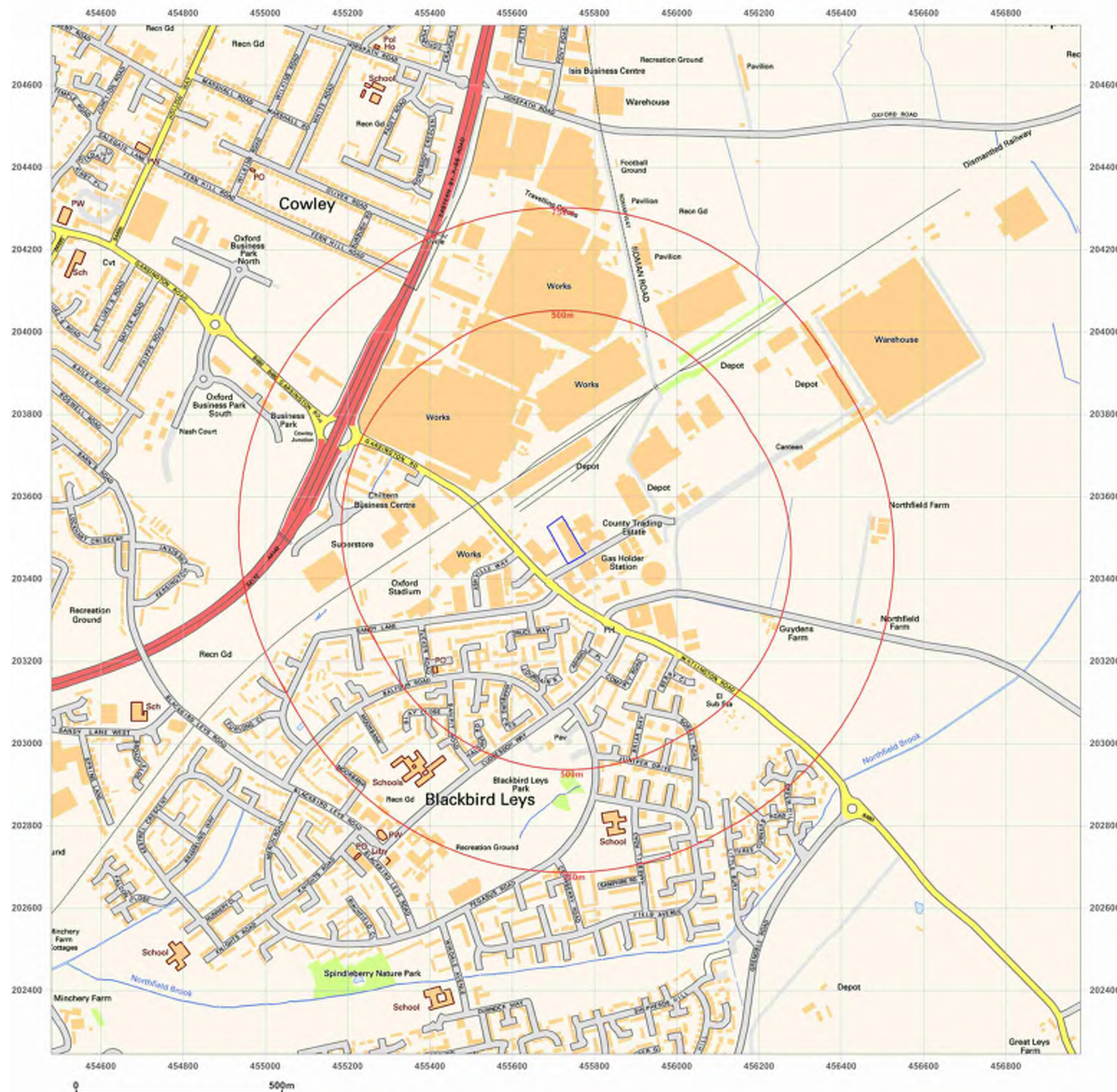


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

Client Ref: WIC\_House  
Report Ref: GS-7283933  
Grid Ref: 455731, 203494

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

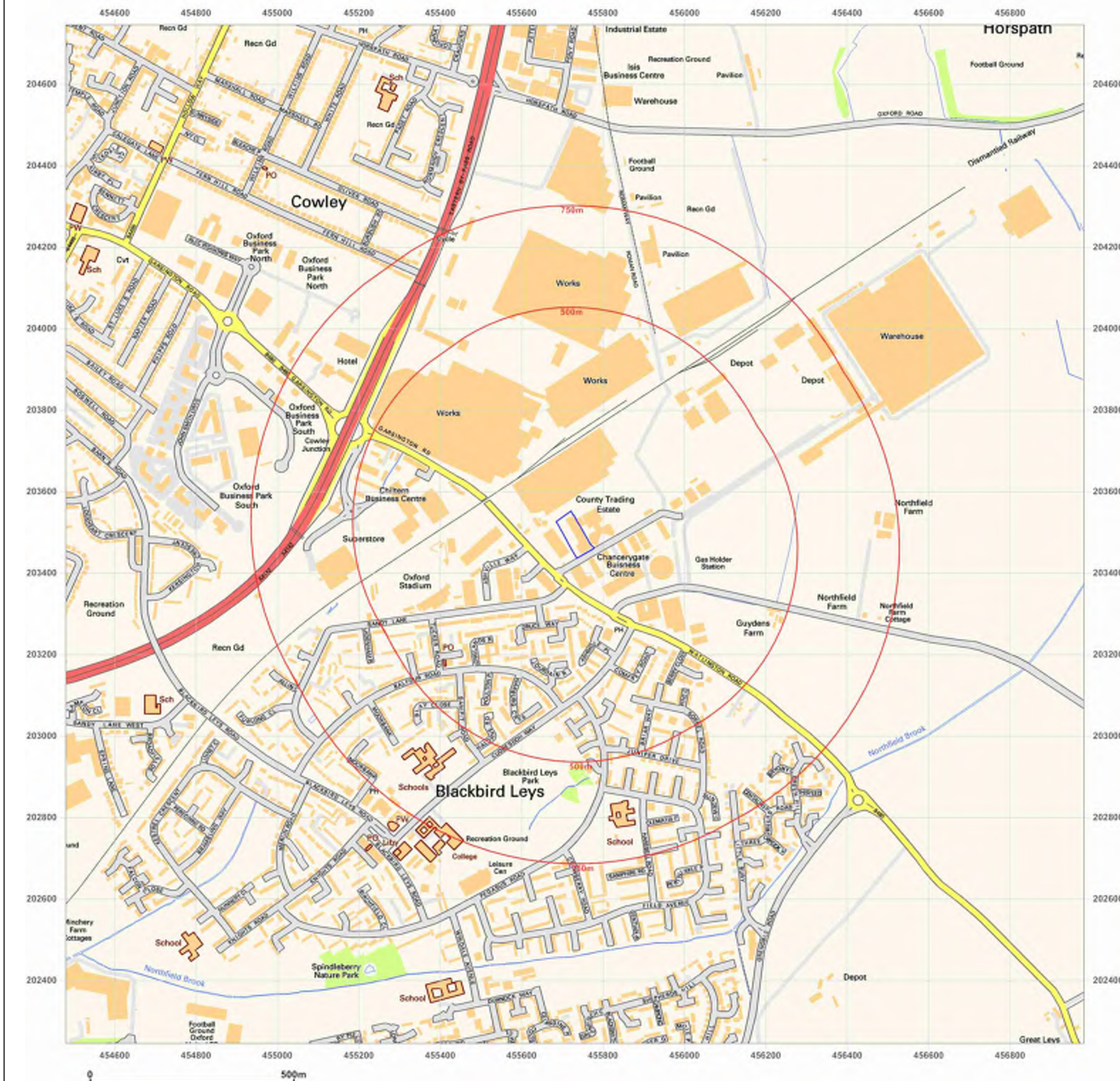


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#### Site Details:

UNIT B, BISHOPS MEWS,  
TRANSPORT WAY, OXFORD,  
OX4 6HD

**Client Ref:** WIC\_House  
**Report Ref:** GS-7283933  
**Grid Ref:** 455731, 203494

**Map Name:** National Grid

**Map date:** 2020

**Scale:** 1:10,000

**Printed at:** 1:10,000



2020

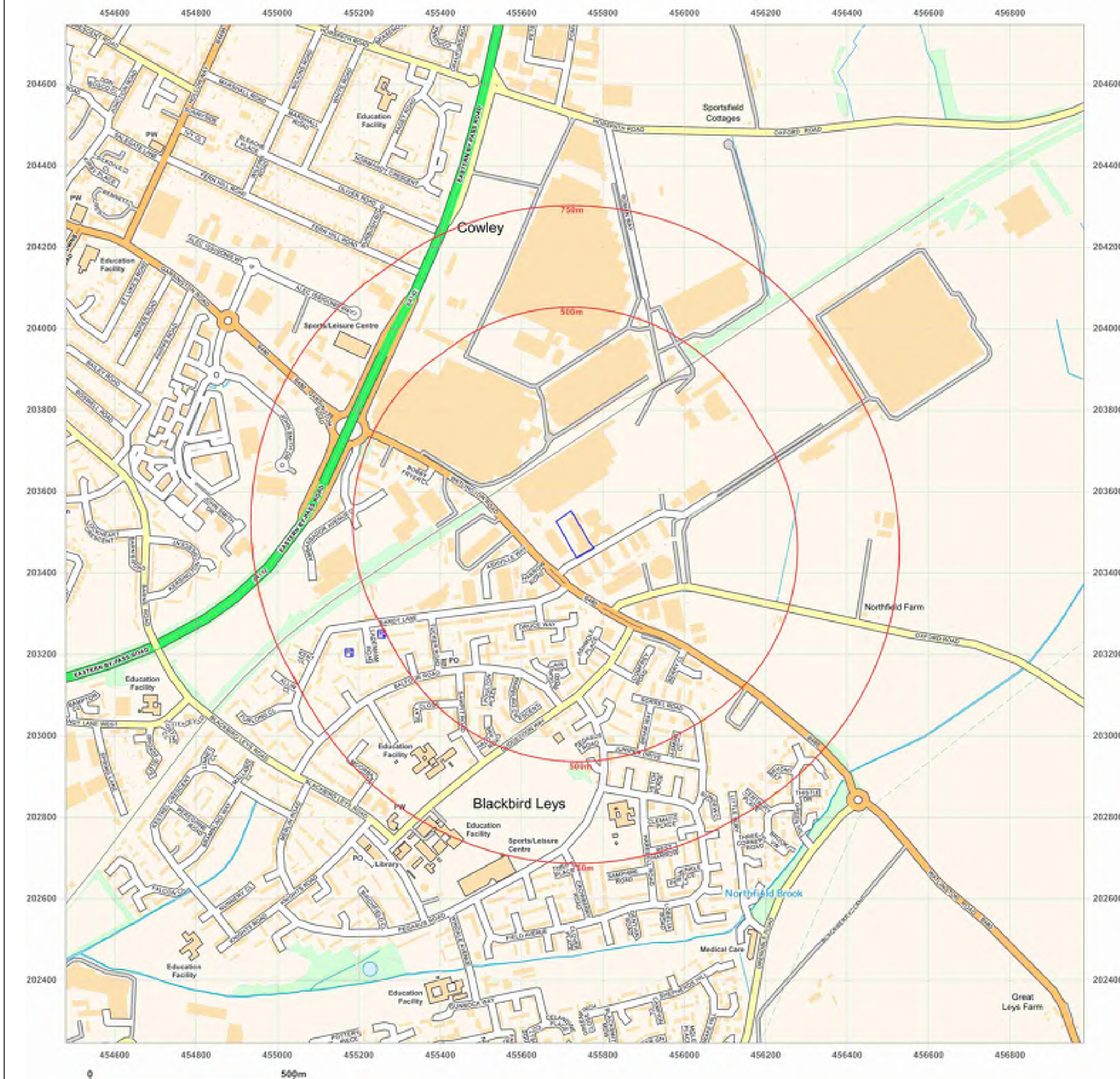


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## **Appendix E      Archive BGS Borehole Records**



 <b>IGES</b> Talisman House, 11 Talisman Square, KENILWORTH, CV8 1JB. e-mail: info@iges.co.uk Tel: 01926 851113 Fax: 01926 851384		Job No. <b>7387</b>	Site : Dyer Works, Watlington Road, Oxford Client : Berkeley Homes (Oxford) Ltd Engineer :	<b>TRIAL PIT LOG</b> <b>TP 8</b> Sheet 1 of 1					
Method <b>JCB 3CX</b>		Date <b>12/06/01</b>		Ground Slope <b>Flat</b>	Logged By <b>MAS</b>	Scale <b>1:25</b>			
Length <b>3.00</b>		Breadth <b>0.75</b>		Depth <b>2.00</b>		Ground Level m. R.L.			
Depth m.	SOIL SAMPLES/TESTS Type Strength		Water Level	LL/PL %	M/C %	Ease of Dig	Depth m.	Description of Strata	Legend
0.50	D					VH	0.20 0.30	Tarmac. Light brown sandy GRAVEL of limestone. (MADE GROUND) Brown becoming yellow-brown locally orange-brown fine to medium SAND. (CORALLIAN FORMATION, BECKLEY SAND MEMBER)	
						E	2.00		
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 <sup>2</sup> ) P = HAND PENETROMETER SHEAR STRENGTH GROUNDWATER : X = ENTRY Y = STANDING LEVEL		
STABILITY OF PIT WALLS : 1/ Collapsing at 2.0m.									
GENERAL REMARKS : 1/ Groundwater not encountered. 2/ Backfilled with arisings on completion.									

# BOREHOLE LOG

LOCATION S.E. 591. NORTHFIELD BROOK, OXFORD.

CARRIED OUT FOR The Oxford City Engineer.

BOREHOLE No. 5.

DIAMETER: 6in.

GROUND LEVEL :

DATE: 10th March, 1961.

SP505E 183  
5600 0339




DESCRIPTION OF STRATA	Sample	LEGEND	DEPTH	THICK- NESS
Dark brown TOPSOIL.	1		G.L.	1'0"
Brown clayey fine to medium SAND trace of gravel.	2		1'0"	1'6"
	3		2'6"	
	4			
MODERATELY COMPACT light brown fine to medium SAND and thin SANDSTONE LAYERS, COMPACT at the base.	7			10'6"
	5			penetrated.
	6			
			13'0"	
			END OF BOREHOLE.	

## Note:

Little GROUND WATER seeped into this borehole at 11ft.6in. below G.L. but not sufficient to collect a sample.

5547

0344 SP50SE 215

 <b>IGES</b>		Talisman House, 11 Talisman Square, KENILWORTH, CV8 1JB. e-mail: info@iges.co.uk Tel: 01926 851113 Fax: 01926 851394		Job No. <b>7387</b>	Site : Dyer Works, Watlington Road, Oxford Client : Berkeley Homes (Oxford) Ltd Engineer :		<b>TRIAL PIT LOG</b> TP <b>7</b> Sheet 1 of 1		
Method <b>JCB 3CX</b>		Date <b>12/06/01</b>		Ground Slope <b>Flat</b>		Logged By <b>NAS</b>		Scale <b>1:25</b>	
Length <b>3.00</b>		Breadth <b>0.75</b>		Depth <b>0.60</b>		Ground Level <b>m. R.L.</b>			
Depth m.	<b>SOIL SAMPLES/TESTS</b> Type Strength		Water Level	LL/PL %	M/C %	Ease of Dig	Depth m.	Description of Strata Legend	
0.05							0.05	Tarmac. Grey and brown, ashey, slightly silty, very gravelly fine to coarse SAND with fragments of metal. Gravel is subangular fine to coarse flint, brick, concrete and stone. (MADE GROUND)	
0.20	D					M	0.35	Orange-brown fine to medium SAND. (CORALLIAN FORMATION, BECKLEY SAND MEMBER)	
0.60	D					E	0.60		
GROUNDWATER DETAILS :							KEY		
STABILITY OF PIT WALLS :							EASE OF DIG : E = EASY DIGGING M = MODERATE DIGGING D = DIFFICULT DIGGING VH = VERY HARD DIGGING		
GENERAL REMARKS : 1/ Two electric cables encountered across pit at 0.6m. Unable to move pit. 2/ Groundwater not encountered. 3/ Backfilled with arisings on completion.							SAMPLES : B = BULK D = JAR W = WATER STRENGTH : V = HAND VANE SHEAR STRENGTH (kN/m <sup>2</sup> ) P = HAND PENETROMETER SHEAR STRENGTH GROUNDWATER : ∇ = ENTRY X = STANDING LEVEL		