



Phase I
Geo-Environmental Site Assessment

Land at Pearce's Farm, Easthampstead Road, Wokingham, RG40 3BN

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Executive Summary	
Site Address	Land at Pearce's Farm, Easthampstead Road, Wokingham, RG40 3BN
National Grid Reference	482846, 167450
Site Area	7.07 ha
Current Site Use	The site comprises part of Pearce's Farm, with an equestrian menage, stabling and associated outbuildings. The remainder of the site comprises open fields, segregated into paddocks by fencing. Two (2no.) ponds are situated on the site.
Site History	Historically the site comprised open land (assumed agricultural) with three (3no.) different waterbodies situated on site, one (1no.) of which has now been infilled. The southern extent of the site has historically contained several small structures, associated with Pearce's Farm which has been situated immediately south of the site.
Geology & Hydrogeology	BGS mapping indicates that the site is underlain by River Terrace Deposits (sand and gravel) within the central-eastern extent of the site only. This is a Secondary A Aquifer with medium vulnerability. The site is entirely underlain with bedrock deposits of the London Clay Formation (clay, silt and sand) which is classified as unproductive strata. The site is not located within a Source Protection Zone (SPZ) and there are no active or historical water abstraction licenses within 250m of the site. Where the River Terrace Deposits are mapped on-site, the risk of groundwater flooding is designated as low. Where there is an absence of superficial deposits, and the site is underlain directly by the London Clay Formation, the risk of groundwater flooding is negligible.
Hydrology & Flooding	The River Emm Brook is located 182m south at its closest point. This is noted as having chemical and ecological ratings of 'fail' and 'moderate' respectively, with an overall rating of 'moderate' measured in 2019 by the Environment Agency. The Groundsure Report confirmed that the site is not at risk of river and coastal flooding and is not located within an Environment Agency Flood Zone. The majority of the site is at a negligible risk from surface water flooding. A small section of the eastern boundary line and southwest boundary are designated as being at risk from having a 1 in 30 year return period surface water flood event, at a depth between 0.3 and 1.0m.
Landfill Sites & Ground Gases	None identified on site or within a 250m radius of the site.
Radon	The site lies within an area where less than 1% of the properties are above the Action Level. At these levels BRE publication BR211 indicates that no special radon protective measures are required in the construction of new extensions or dwellings.
Conceptual Site Model	
The Conceptual Site Model has identified the presence of a series of potentially active pollution linkages associated with the previous recorded use of the site and surrounding areas which are considered to have the potential to present a risk to identified receptors at the site based on the proposed development.	
Recommendations	
Environmental	
It is recommended an intrusive site investigation should be undertaken focussing on the location of the historic Made Ground on site, as well as the potential off-site sources to investigate the potential pollution linkages identified by the conceptual site model and determine the potential risks posed to future site users.	
The site investigation should include chemical testing of soil samples for a suite of determinants representative	

of the potential sources identified within the CSM.

Upon return of chemical testing results a Tier 1 Risk Assessment should be undertaken to determine whether the encountered soils have the potential to present a significant risk to the identified receptors. This would enable mitigation measures to be formulated, if required.

It is recommended that an asbestos survey is undertaken in accordance with the Control of Asbestos Regulations (2012) prior to the commencement of any refurbishment or demolition works.

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1 INTRODUCTION

1.1 Background

Omnia have been commissioned by Nicholas King Homes to undertake a Phase I site assessment at the site of Land at Pearce's Farm, Easthampstead Road, Wokingham, RG40 3BN in order to assist with the pre-planning stage of this redevelopment which forms part of a wider site boundary as denoted within the site location plan is presented as Figure 1.0 within Appendix III. The subject site boundary assessed within this report is shown as the NKH site boundary denoted within Figure 1.1 and presented in Appendix III.

1.2 Proposed Development

A planning application has not yet been submitted to Wokingham Borough Council. However, it is understood that the development will include residential housing with associated infrastructure including private gardens, parking and roadways. It should be noted that Pearce's Farm, which is not included within the redevelopment red line boundary, contains several listed buildings, and as part of the proposed redevelopment these structures have a 20m no-development buffer.

The outline proposed site masterplan is presented as Figure 2.0 (Appendix III).

1.3 Objectives

The objectives of the Phase I Geo-Environmental Site Assessment are to:

- Undertake a site walkover and inspection, including interviews with site representatives if available;
- Review historical plans, site investigations, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available in order to complete a Desk Study in line with the Environment Agency (EA) document *Land Contamination Risk Management (LCRM)*;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and,
- Provide a factual and interpretative report relating to the site and provide recommendations on any potential development issues with consideration of residential and environmental receptors.

1.4 Sources of Information

Background information was sought from the following sources:

- Groundsure Environmental Database Search (GS-9306750);
- Historical Ordnance Survey Mapping (1871–2023);
- The British Geological Survey (BGS) map for the site (Windsor, Sheet 269, Solid and Drift Edition at a scale of 1: 50,000, 1999);
- Environment Agency flood designations, aquifer designations and groundwater source

protection zones (<https://magic.defra.gov.uk/MagicMap.aspx>) [Accessed: 2023/01/16];

- Zetica UXO Risk Maps (<https://zeticauxo.com/downloads-and-resources/risk-maps>); [Accessed: 2023/01/16]; and,
- British Standard BS10175:2011+A2:2017 – Investigation of Potentially Contaminated Sites – Code of Practice.

1.5 Limitations

The limitations of this report are presented in Appendix I.

1.6 Confidentiality

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

2 SITE SETTING

2.1 Site Details

Table 2-1 Site Details

Site Address	Land at Pearce's Farm, Easthampstead Road, Wokingham, RG40 3BN
National Grid Reference	482846, 167450
Site Area	7.07 ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location plan is presented as Figure 1.0 (Appendix III).

2.2 Current Site Use

2.2.1 Site Description

The area of investigation is located approximately 2.0 Km southeast of central Wokingham and was irregularly shaped, covering an area of approximately 7.0ha. There were three (3no.) access routes into the site from the south, which all were off Easthampstead Road to the south.

Field 1 was situated within the western extent of the site, and Field 2 the eastern extent (Figure 3.0, Appendix III).

Field 1

Field 1 was accessed from Easthampstead Road to the south through a black metal gate which had a key padlock. The access route comprised a concrete-built bridge which was located over an existing drainage ditch along the northern side of Easthampstead Road. The concrete bridge appeared to be in good visual condition.

Field 1 comprised two (2no.) open grassed fields, which were evenly bisected by wooden fencing.

The topography of Field 1 was sloped slightly from north (uphill) to south (downhill), and the boundaries of the southern, western and northern boundaries consisted of metal square fencing with hedgerows and deciduous mature trees.

Pearce's Farm

Some of Pearce's Farm is not included within the site boundary, however it has all been included within the site walkover description. Access into the land and internal areas of Pearce's Farm was not permitted, only access to the yard was allowed at the time of the site walkover. The yard was made up of flint gravel and was used as car parking.

A concrete track ran up the western extent leading to an equestrian menage and stabling. A farmhouse building was situated east of the Manège on site (Figure 3.0, Appendix III). The remainder of Pearce's Farm consisted of six (6no.) buildings between one and two storeys. From the exterior of the buildings, it was presumed that these were configured as residential dwellings with associated garages and outbuildings, however a detailed inspection was not undertaken.

The western buildings were comprised of brick built Tudor style structures, with clay roof tiling, and eastern buildings were wood cladded with clay tile roofing. All buildings at the time of the site walkover were in good visual condition.

East of the buildings was the garden of the property which contained two (2no.) pens constructed of Heras fencing and mesh fabric rooves in which chickens and geese were held. The garden was accessed from the north of the yard.

Boundaries comprised metal or wooden fencing with dense hedgerows and mature deciduous trees beyond. The topography was flat, with a slight downwards gradient from north to south towards the road was observed.

Field 2

Field 2 was accessed off Easthampstead Road through a metal 5-bar gate, which was secured by a bike chain and padlock. Additionally, at the time of the site walkover two concrete blocks measuring 1.00x0.50x1.50m were positioned in front of the gateway. The field was grass-laid and along the southern boundary of the site was wet underfoot, with multiple puddles of pooled water at the surface.

All four (4no.) boundaries of Field 2 consisted of metal fencing, with hedgerows and multiple mature deciduous trees beyond. The topography of the field was relatively flat with a gentle downwards slope from northeast to southwest observed.

An annotated site location plan showing observations from the walk-over survey is presented as Figure 3.0 (Appendix III). Relevant photographs from the site walk-over survey are located in Appendix IV.

2.2.2 Hazardous Materials Storage

No hazardous materials storage was noted within the site walkover.

2.2.3 Potential Asbestos Containing Material (PACM)

The exact ages of the buildings are unknown but are identified on historic mapping dated between 1871 and 1965. Therefore, the buildings are considered to pre-date 2000 and as such are considered to have the potential to contain Asbestos Containing Materials (ACMs) within the building fabric. It is therefore recommended that an asbestos survey is undertaken in accordance with the Control of Asbestos Regulations (2012) prior to the commencement of any refurbishment or demolition works.

2.2.4 Waste Storage

No waste storage was noted within the site walkover.

2.2.5 Tree Species

At the time of the site walkover multiple mature deciduous trees were present surrounding the boundaries of the site. These were noted to be approximately 8.00m tall.

2.2.6 Potential Invasive Species

During the site walkover no obvious signs of potential invasive species were identified. However, it should be noted that the site walkover was conducted during winter months, and it is recommended that a further inspection is undertaken during the growing season.

2.3 Surrounding Area

The site is situated within a predominantly rural location, with sparse houses scattered in the immediate vicinity. The surrounding land uses are summarised in Table 2-2 below:

Table 2-2 Land Use

Direction	Land Use
North	Agricultural fields
East	Holme Green Lane, residential housing and fields beyond
South	Easthampstead Road and Holme Grange School
West	Agricultural fields

3 SITE HISTORY

3.1 Site History

A review of historical land use pertinent to the site and within a 250m radius is summarised in Table 3-1.

Table 3-1 Historical Land Use

Map Edition	Historical Land Use	
	On Site	Off Site
1871 (1:2,500)	The site largely comprises open fields (presumed agricultural use) with mixed deciduous trees spread across the fields. There are two (2no.) waterbodies located on site. The first is situated close to the south-central extent of the site, and the second is located northern extent of the site. A single structure is situated within the south, assumed to be associated with Pearce's Farm located immediately to the south and east.	The surrounding area largely comprises open fields (presumed agricultural) and deciduous trees with few residential dwellings. Pearce's Farm is situated adjacent to the south and east of the site, and appears to contain seven (7no.) structures with associated yard space and fields. A lake is situated approximately 50m southwest of the site, with an associated boat house. A Well is mapped approximately 50m south of the site. Wood's Farm situated 190m northwest.
1898 (1:10,560) 1899 (1:2,500)	The waterbody located within the northern extent is no longer depicted on mapping and assumed to be infilled. The structure located within the south is no longer on mapping. Deciduous trees no longer depicted on mapping.	Greenhouses (assumed to be associated with Pearce's Farm) situated from 20m south. An assumed tank is situated approximately 70m south. Due to its circular shape, it is considered likely that this is an above ground water tank. Holme Grange (development broadly comprising one large structure) from 130m south.
1909-1910 (1:10,560) 1911-1912 (1:2,500)	No significant changes.	No significant changes.
1932 (1:10,560) 1933 (1:2,500) 1938 (1:10,560)	No significant changes.	Minor increased development (assumed residential and commercial) to the south.

Map Edition	Historical Land Use	
	On Site	Off Site
1961 (1:10,560) 1965 (1:2,500)	Pearce's cottage is situated within the south of the site. Waterbody in the south is labelled as pond.	Sutton Cottages depicted 20m southeast
1975 (1:10,000)	No significant changes.	No significant changes.
1980 (1:10,000) 1988 (1:10,000)	No significant changes.	No significant changes.
1990 (1:2,500) 1990-1993 (1:2,500)	Structure adjacent to Pearce's Cottage no longer depicted on mapping.	Greenhouses no longer depicted on mapping.
2001 (1:10,000)	Additional structure within the western field on site. Waterbody situated within the northern extent of the site.	No significant changes.
2010 (1:10,000)	No significant changes.	No significant changes.
2023 (1:10,000)	Pond adjacent to Pearce's cottage no longer depicted on mapping and assumed infilled.	No significant changes.

A selection of historical maps are presented in Appendix V.

3.2 Historical Tank Database

The Groundsure Report identified four (4no.) records of historical tanks within 250m of the study site. These relate to two (2no.) separate tanks detailed below.

- 72-73m south – Unspecified Tank (1932-1961) – *it is assumed this is the tank previously identified within historical mapping. As discussed in Section 3.1, due to it's circular nature and being within the middle of an agricultural field, it is considered that this tank is an above ground water tank; and,*
- 132m southwest – Unspecified Tank (1980-1988).

Due to the distance from site and the expected groundwater flow to the southwest, the two (2no.) tanks are not considered to have the potential to impact the subject site and have therefore not been considered further.

3.3 Historical Energy Features Database

The Groundsure Report did not identify any historical energy features within a 250m radius of the subject site.

3.4 Historic Garages and Petrol Stations

The Groundsure Report did not identify any historical petrol stations, nor any garages, within a 250m radius of the site.

3.5 Historic Industrial Land Uses

The Groundsure Report identified four (4no.) records of historical industrial land uses within 250m of the study site. Upon further review these relate to the two (2no.) previously identified unspecified tanks within Section 3.2.

As previously discussed, due to the distance from site and the expected groundwater flow to the southwest, the two (2no.) tanks are not considered to have the potential to impact the subject site and have therefore not been considered further.

3.6 Planning History

A review of the online planning portal of Wokingham Borough Council identified eight (8no.) planning applications attributed to the site postcode. These all relate to repairs to the buildings at Pearce Farm. Planning was refused in 2009, for the proposal of *"Listed building application for conversion of part of loft to en-suite for master bedroom"* on grounds of the listed building.

Within the surrounding area numerous applications relate to the erection of signs, or extensions. No pertinent planning applications associated with the development of the site were identified within the planning history search.

3.7 Unexploded Ordnance Risk Assessment

A review of publicly available information (provided by Zetica UXO) shows the site as having a 'low risk' associated with bombing density and bomb risk.

The site is consequently considered **Low Risk** with regards to unexploded ordnance.

4 ENVIRONMENTAL SETTING

4.1 Geology and Hydrogeology

British Geological Survey Map (Windsor, Sheet 269, Solid and Drift Edition at a scale of 1: 50,000, 1999;) indicates that the site is underlain by the following geological sequence:

Table 4-1 Geology

Geological Unit	Formation Name	Description	Aquifer Classification
Superficial	River Terrace Deposits (Within the central-eastern extent only)	Sand & Gravel	Secondary A
Bedrock	London Clay Formation (site-wide)	Clay, Silt and Sand	Unproductive Strata

The Groundsure report records no data for Artificial and Made Ground on the proposed site. However, there is a record of artificial ground 58m west for worked ground. It is considered that this relates to the waterbody situated there, as previously identified within Section 3.1.

The closest available record of a historical borehole is situated 147m west (Ref: 432365) at Birchins Farm. The borehole log encountered Topsoil (to approximately 0.30m bgl) overlying CLAY to the base of the borehole (approximately 3.85m bgl). Depth to water was not recorded.

Review of the environmental database indicates that the site is not located within a groundwater Source Protection Zone. There are no active or historical water abstractions located within 250m of the site. The closest groundwater abstraction is historical and is located 1201m south for spray irrigation. There are no active or historical potable water abstractions are located within 250m of the site.

Groundwater vulnerability data indicates that the site is underlain by a Secondary Superficial Aquifer with medium vulnerability, overlying an unproductive bedrock aquifer.

Based on local topography and the location of surface watercourses it is considered that shallow groundwater, if present, will follow local topography and flow in a south-westerly direction towards the Emm Brook.

4.1.1 Groundwater Flooding

The Groundsure report indicates that the site is at a low to negligible risk of groundwater flooding. Where the River Terrace Deposits are mapped (within the eastern extent), the risk is considered low. The remainder of the site is designated as being at a negligible risk.

4.2 Hydrology and Flooding

The Groundsure report identifies a number of inland watercourses to the south of the site (between 182m and 238m south). These are designated as inland rivers, not influenced by normal tidal action and are associated with the Emm Brook. A separate record is included within the Groundsure report, for an unnamed inland river 246m northwest. It is considered this is related to drainage pathways situated between fields.

The site is also located within a Water Framework Directive (WFD) surface water body catchment area for the Emm Brook River. The Emm Brook was noted as having chemical and ecological ratings of 'fail' and 'moderate' respectively, with an overall rating of 'moderate' measured in 2019 by the Environment Agency.

No surface water abstraction licences were identified on-site or within a 250m radius.

The Groundsure Report confirmed that the site is not at risk of river and coastal flooding, and is not located within an Environment Agency Flood Zone.

The majority of the site is at a negligible risk from surface water flooding. A small section of the eastern boundary line and southwest boundary are designated as being at risk from having a 1 in 30 year return period surface water flood event, at a depth between 0.3 and 1.0m.

4.3 Geotechnical Data

Geotechnical Data presented within the Groundsure Report identifies the following potential ground hazards which are summarised in Table 4-2 below:

Table 4-2 Geotechnical Data

Hazard	Designation
Shrink-Swell Clay	Low – Ground conditions predominantly medium plasticity.
Landslides	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.
Ground Dissolution	Negligible – Soluble rocks are either not thought to be present within the ground or not prone to dissolution.
Compressible Ground	Negligible – Compressible strata are not thought to occur.
Collapsible Deposits	Very Low – Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Running Sand	Very low – Running sand conditions are unlikely.

4.4 Mining and Ground Workings

The site is not located within an area that is affected by coal mining and therefore no Coal Authority mining report was obtained for the purposes of this report. The Groundsure report identified one (1no.) BritPit (abbreviation of British Pits) record 319m north as detailed below.

- 319m north – Buckhurst Farm Gravel Pit – Commodity Sand and Gravel (Ceased).

There are no active records of mining within 500m of the site however eight (8no.) records exist for historic surface ground workings within 250m of the study site. Records relate to a pond 62-66m west between 1898 and 1988. This is attributed to the pond as previously identified on Historical Mapping within Section 3.1.

4.5 Radon Risk Potential

The site lies within an area where less than 1% of the properties are above the Action Level. At these levels BRE publication BR211 indicates that no special radon protective measures are required in the

construction of new extensions or dwellings.

4.6 Current Industrial Land Uses

The Groundsure Report identified two (2no.) current industrial land uses within a 250m radius of the subject site. These are Home Park Game Hatcheries (181m southwest) and South England Pastries Ltd (227m northwest).

After further review of the two (2no.) businesses and given the distance from site and anticipated groundwater flow to the southwest, these are not considered to have the potential to impact the subject site and have therefore not been considered further.

4.7 Sensitive Land Uses

The Groundsure report indicates that the site is located within a currently defined Nitrate Vulnerable Zone (NVZ) associated with the Emm Brook.

The Groundsure report also identified that the site is located within four (4no.) SSSI Impact Risk Zones.

4.7.1 Sites of Special Scientific Interest (SSSI) Impact Risk Zones

The Groundsure report identified that the site is located within four (4no.) SSSI Impact Risk Zones associated with the Emm Brook and Heath Lake (1898m south). However, none of these SSSI Impact Risk Zones require consultation for the proposed development comprising residential units and gardens.

4.7.2 Nitrate Vulnerable Zone (NVZ)

The site lies within the Emm Brook Nitrate Vulnerable Zone for Surface Water. However, this is specific for farming and agricultural nitrate pollution, and therefore does not require consideration for a proposed residential development.

4.8 Site Sensitivity Assessment

Based on the information presented in the sections above, the site is considered as being located within a 'Low-Moderate' sensitivity setting due to the following reasons:

- Secondary A Aquifer with medium vulnerability located within the northern extent of the site;
- Underlying bedrock is classified as Unproductive Strata;
- Very minor historic and current industrial land use on site and in the local vicinity;
- The Emm Brook is situated 186m south of the site;
- Site is within a Nitrate Vulnerable Zone (NVZ);
- Negligible risk of surface water flooding across majority of the site; and,
- Negligible to low risk of groundwater flooding across the site.

5 CONSULTATIONS

5.1 Contaminated Land Officer

Contact was made with Wokingham Borough Council via email in January 2023 regarding whether the council were aware of any environmental issues pertaining to the site.

At the time of writing a response has yet to be received and should any environmentally pertinent information be received then it will be issued as an addendum to this report.

5.2 Landfill and Waste Treatment Sites

The Groundsure Report identified no records of historic or active landfill sites, nor any historic or active waste treatment sites within 250m of the subject site.

5.3 Potentially Infilled Land

The Groundsure report identified no areas of infilled land within 250m of the site. However, a review of Section 3.1 reveals that a former pond on site situated within the northern extent was no longer depicted on mapping in 1898, suggesting it was infilled.

From current aerial mapping, the historical ground working identified in Section 4.4 (pond located 62-66m southwest of the site) is still configured as a pond and so has not been infilled.

5.4 Regulatory Database

The following information has been obtained from a commercially available environmental database. The summary table (Table 5-1) only includes records not otherwise detailed in the report. Where more than two entries have been identified, the Table summarises the closest two entries to the site.

Table 5-1 Summary of Groundsure Data

	0-249m	250-500m	Details
Sites Determined as Contaminated Land	0	0	N/A
Control of Major Accident Hazards (COMAH)	0	0	N/A
Regulated Explosive Sites	0	0	N/A
Hazardous substance storage/usage	0	0	N/A
Historical licensed Industrial Activities (IPC)	0	0	N/A
Licensed Industrial Activities (Part A(1))	0	0	N/A
Licensed Pollutant Release (Part A(2)/B)	0	0	N/A
Radioactive Substance Authorisations	0	0	N/A
Licensed discharges to controlled waters	5	6	53m southwest – Staff Bungalow, Easthampstead Road Sewage discharging onto Plateau Gravels over London Clay Issued - 13/05/1988 Revoked – 01/10/1996

	0-249m	250-500m	Details
			93m west – The White Horse Public House Sewage discharging into tributary of the Emm Brook Issued – 06/08/1981 No revocation date noted so assumed to still be active.
Pollutant release to surface water (Red List)	0	0	N/A
Pollutant Release to public sewer	0	0	N/A
List 1 Dangerous Substances	0	0	N/A
List 2 Dangerous Substances	0	0	N/A
Pollution Incidents (EA/NRW)	2	1	158m northwest – 04/05/2003 Pollutant not identified No impact to water, land or air. 242m northwest – 25/07/2002 Pollutant – Diesel Minor impact to water No impact to land or air.
Pollution Inventory Substances	0	0	N/A
Pollution Inventory Waste Transfers	0	0	N/A
Pollution Inventory Radioactive Waste	0	0	N/A

6 CONCEPTUAL SITE MODEL (CSM)

6.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), Omnia Environmental Consulting have developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area. A residential end use has been adopted given the proposed site development.

6.1.1 On-site Potential Sources

- Limited Made Ground associated with historical development and reconfiguration on the site;
- Historical and current agricultural use of the site; and,
- Infilled pond within the northern extent of the site (infilled c.1898).

6.1.2 Off-site Potential Sources

- From immediately adjacent to the south - Pearce's Farm (1871-Present day); and,
- 20m south - Historical greenhouses (1898-1993).

6.1.3 Potential Pathways

- Inhalation and ingestion of impacted soils and dusts;
- Dermal contact with impacted soils;
- Inhalation of fibres;
- Inhalation of vapours;
- Vertical and lateral migration; and,
- Migration of ground gas into confined spaces.

6.1.4 Potential Receptors

- Future Site Users.
- Controlled Waters
 - Groundwater in underlying Superficial Secondary Aquifer; and,
 - Surface Water in the Emm Brook.

Construction workers are not considered to be a plausible receptor due to management of their exposure through the use of suitable PPE and hygienic working practices as required under HSE/CDM regulations. Furthermore, the length of any exposure is considered to be very short in comparison to the criteria for which the adopted end use has been derived.

An Initial Conceptual Site Model has been prepared for the site and is presented overleaf within Table 6-1.

Table 6-1 Initial Conceptual Site Model

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
On-Site Potential Sources							
Made Ground associated with historical development and reconfiguration on the site.	Metals (As, B, Cd, Cr, Pb, Hg, Se, Ni, Zn)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	Potentially Active – Further investigation required.
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Polycyclic Aromatic Hydrocarbons (PAH)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Total Petroleum Hydrocarbons (TPH)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	Ground Gas (CO ₂ and CH ₄)	Migration into Confined Spaces	Future Site Users	Low	Severe	Moderate	Inactive – Due to the minimal development that has occurred over the years on the site, it is considered that the Made Ground on site will be very limited in thickness and unlikely to be of a sufficient thickness to present a plausible ground gas generation source.
Historical and current agricultural use of the site	Herbicides and Pesticides	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	Potentially Active – Further investigation required.
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
Infilled pond within the northern extent of the site (infilled c.1898)	Metals (As, B, Cd, Cr, Pb, Hg, Se, Ni, Zn)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	Potentially Active – Further investigation required.
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Polycyclic Aromatic Hydrocarbons (PAH)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
	Total Petroleum Hydrocarbons (TPH)	Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Ingestion of Soils	Future Site Users	Moderate	Moderate	Moderate	
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	Ground Gas (CO ₂ and CH ₄)	Migration into Confined Spaces	Future Site Users	Low	Severe	Moderate	Inactive – Due to the small size of the former pond and the date it was likely infilled (circa 1898), it is considered that ground gas generation will have ceased. This source is therefore not considered to have the potential to pose a significant risk to human health via ground gas.
Off-Site Potential Sources							
Immediately south - Pearce's Farm (1871-Present day)	Herbicides and Pesticides	Lateral Migration (Soil Leaching)	Future Site Users	Low	Moderate	Low/Moderate	Potentially Active – Further investigation required.
	Metals (As, B, Cd, Cr, Pb, Hg, Se, Ni, Zn)	Lateral Migration (Airborne Dust)	Future Site Users	Very Low	Moderate	Low	
	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration (Airborne Dust; Soil Leaching)	Future Site Users	Very Low	Moderate	Low	
	Total Petroleum Hydrocarbons (TPH)	Lateral Migration (Groundwater Flow)	Future Site Users	Low	Moderate	Low/Moderate	
20m south - Historical greenhouses (1898-1993).	Metals (Pb)	Lateral Migration (Airborne Dust)	Future Site Users	Very Low	Moderate	Low	Potentially Active – Further investigation required.
	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration (Groundwater Flow)	Future Site Users	Very Low	Moderate	Low	
	Total Petroleum Hydrocarbons (TPH)	Lateral Migration (Groundwater Flow)	Future Site Users	Low	Moderate	Low/Moderate	

7 CONCLUSIONS AND RECOMMENDATIONS

Conceptual Site Model

The Conceptual Site Model has identified the presence of a series of potentially active pollution linkages associated with the previous recorded use of the site and surrounding areas which are considered to have the potential to present a risk to identified receptors at the site based on the proposed development.

Recommendations

Environmental

It is recommended an intrusive site investigation should be undertaken focussing on the location of the historic Made Ground on site, as well as the potential off-site sources to investigate the potential pollution linkages identified by the conceptual site model and determine the potential risks posed to future site users.

The site investigation should include chemical testing of soil samples for a suite of determinants representative of the potential sources identified within the CSM.

Upon return of chemical testing results a Tier 1 Risk Assessment should be undertaken to determine whether the encountered soils have the potential to present a significant risk to the identified receptors. This would enable mitigation measures to be formulated, if required.

It is recommended that an asbestos survey is undertaken in accordance with the Control of Asbestos Regulations (2012) prior to the commencement of any refurbishment or demolition works.

APPENDIX I - LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Omnia and the Client as indicated in Section 1.2.
 2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.
 3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
 4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
 5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
 6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
 7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
 8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
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 10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.
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APPENDIX II – GLOSSARY

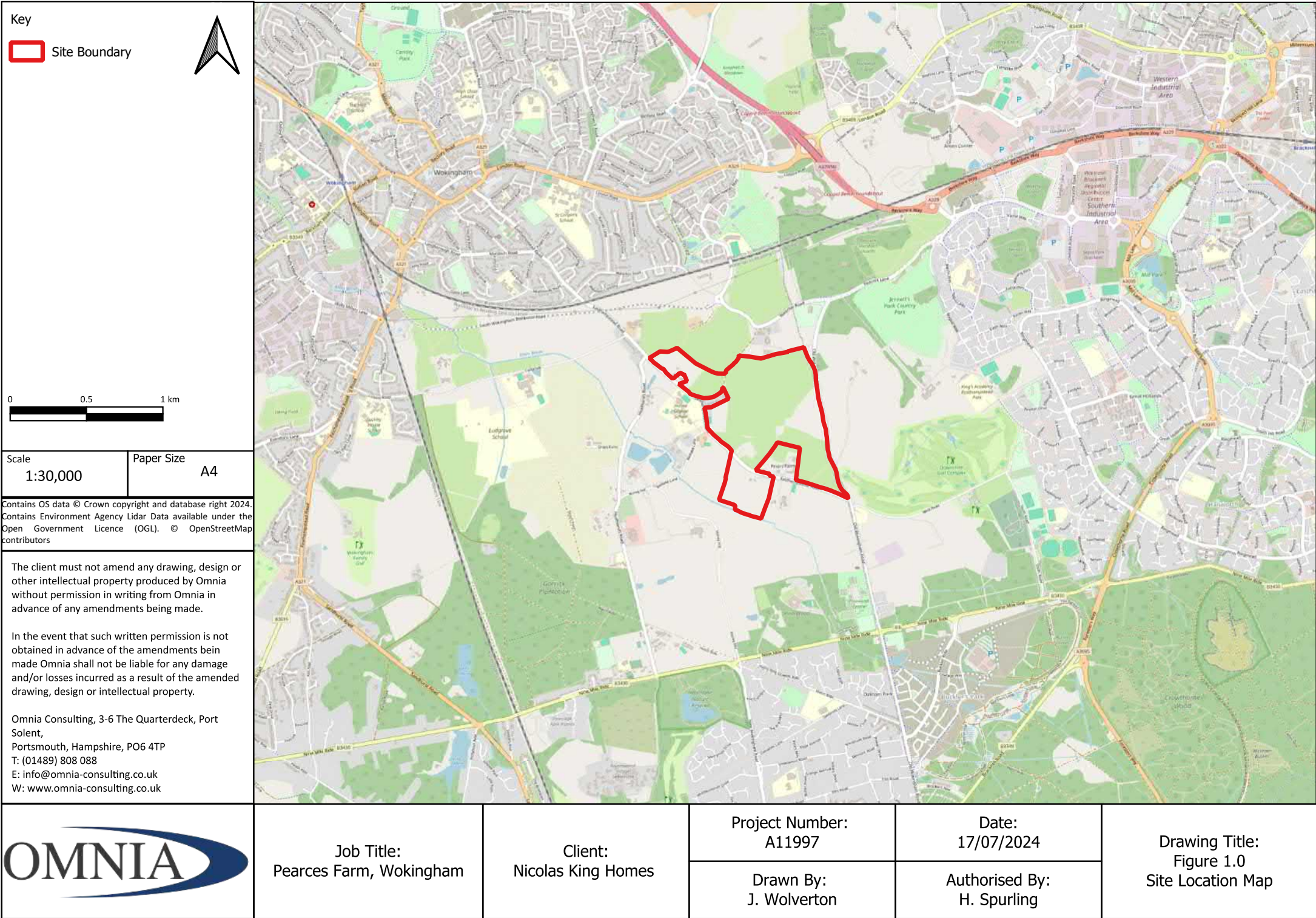
AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (Chlorinated Solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (Petrol, Diesel, Kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo-Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCS	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

M	Metres
KM	Kilometres
%	Percent
%V/V	Percent Volume in Air
MB	Milli Bars (Atmospheric Pressure)
L/HR	Litres Per Hour
µG/L	Micrograms Per Litre (Parts Per Billion)
PPB	Parts Per Billion
MG/KG	Milligrams Per Kilogram (Parts Per Million)
PPM	Parts Per Million
MG/M ³	Milligram Per Metre Cubed
M BGL	Metres Below Ground Level
M BCL	Metres Below Cover Level

MAOD	Metres Above Ordnance Datum (Sea Level)
KN/M ²	Kilo Newtons Per Metre Squared
µM	Micrometre

APPENDIX III - DRAWINGS

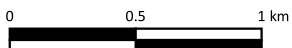


Key

— Site Boundary (NKH Site)

— Site Boundary (Lightwood Site)

 Site Boundary (Lightwood Site)



Scale
1:30,000

Paper Size	A4
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Job Title:
Pearces Farm, Wokingham

Client:
Nicolas King Homes

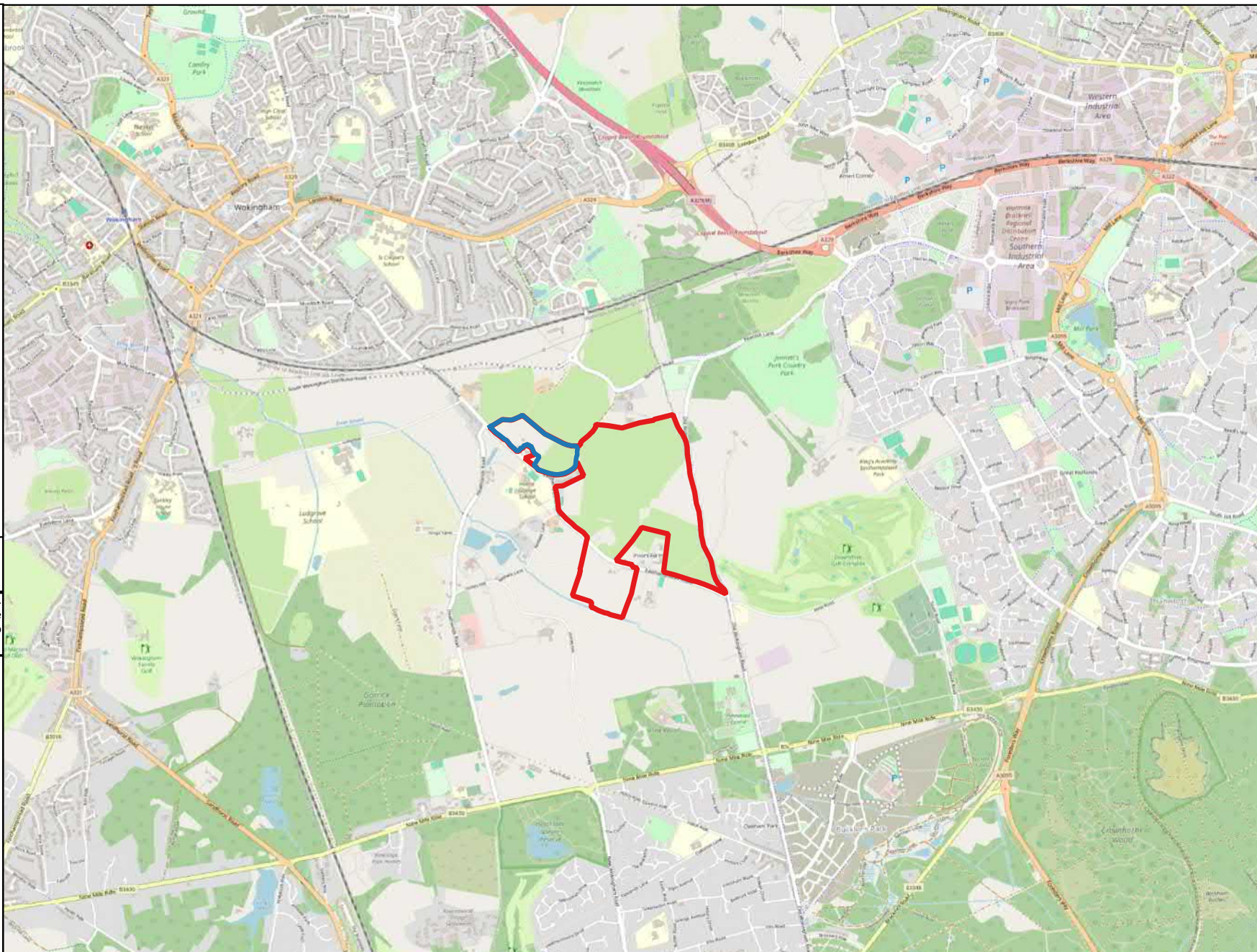
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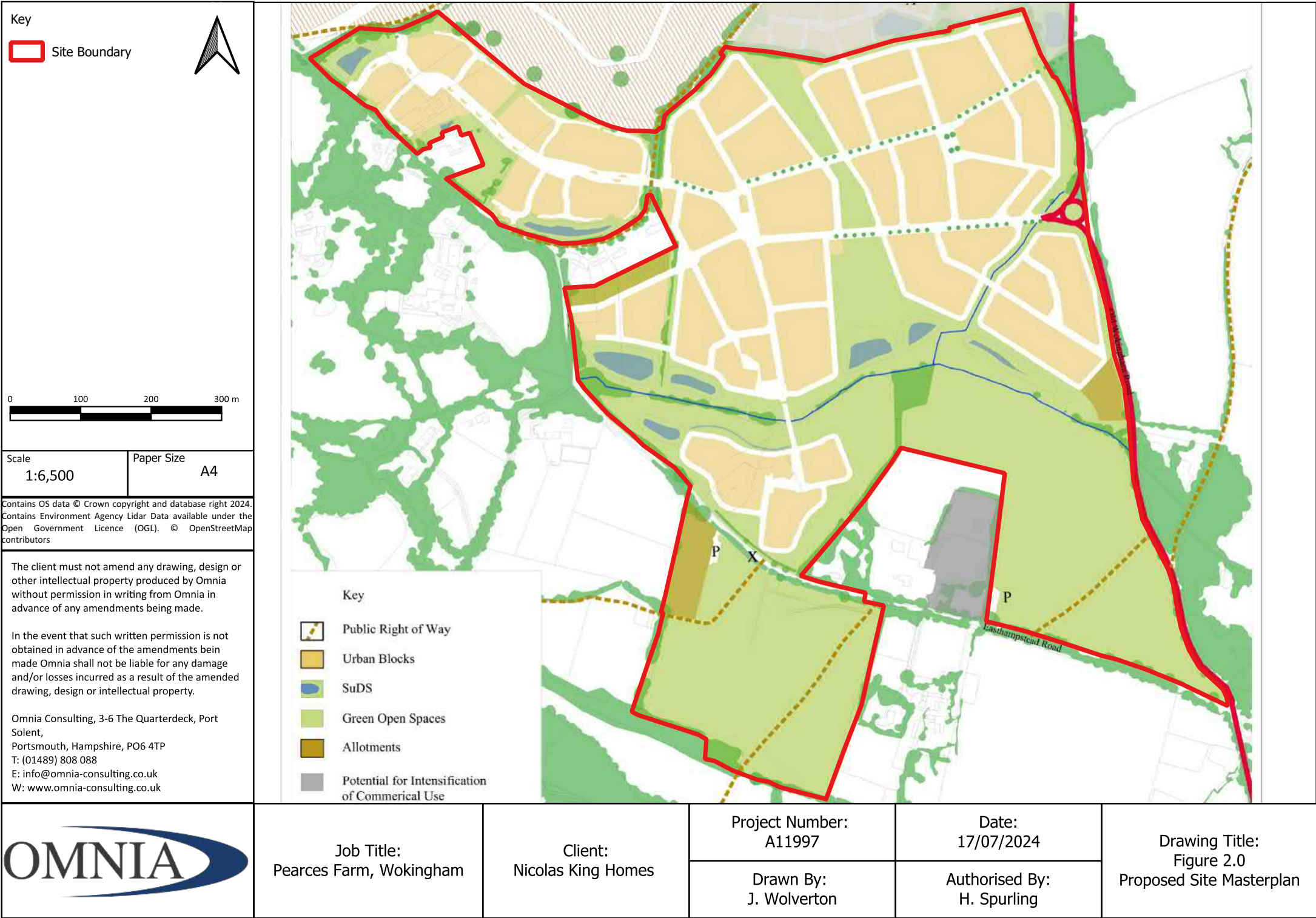
Drawn By:
J. Wolverton

Date:
17/07/2024

Authorised By:
H. Spurling

Drawing Title:
Figure 1.1
Site Location Map





Key

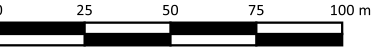
Site Boundary

Field 1

Field 2

Menage

Stabling



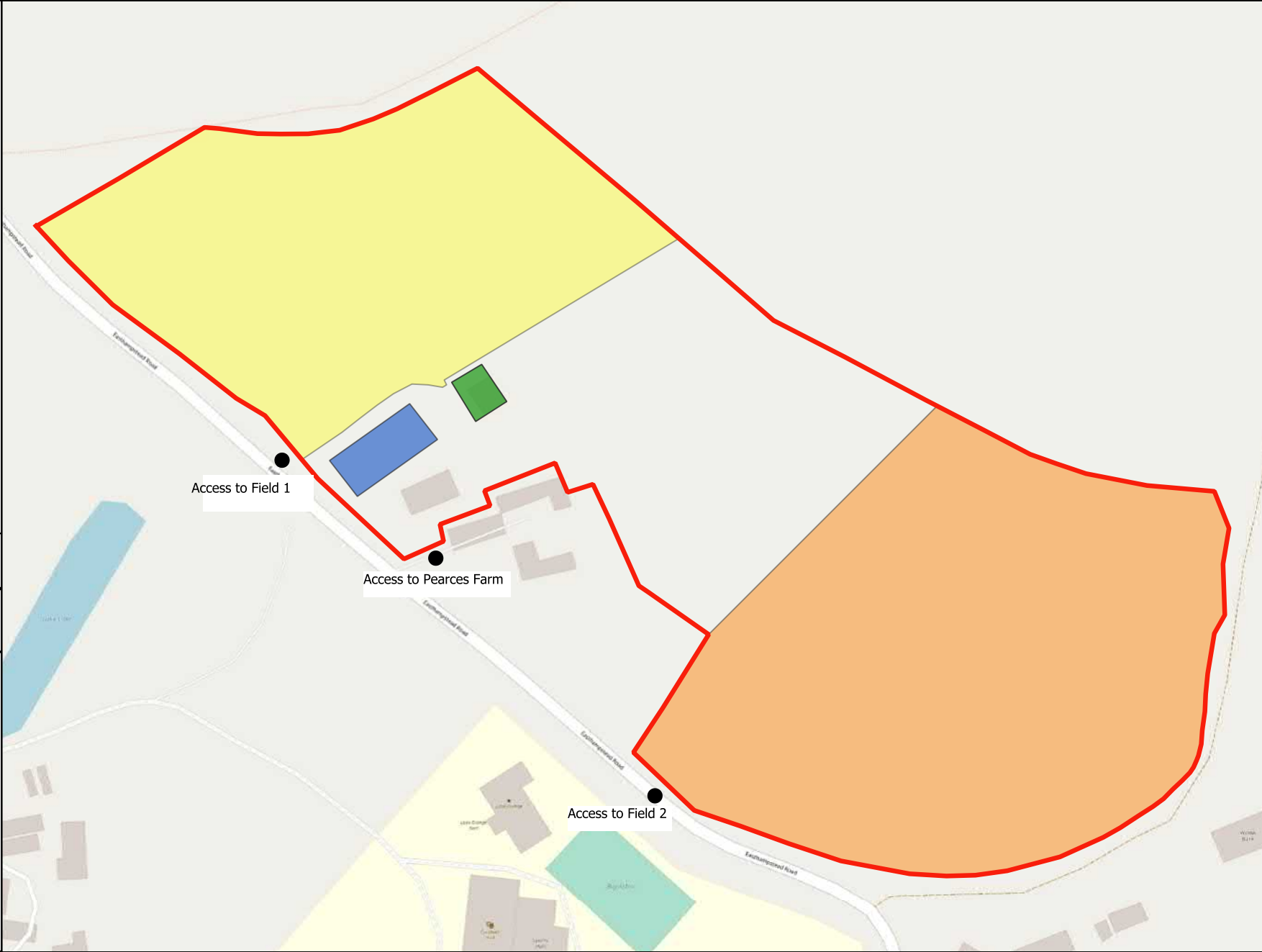
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Job Title: Pearce's Farm, South Wokingham	Client: Nicolas King Homes	Project Number: A11997	Date: 20/01/2023	Drawing Title: Figure 3.0 Site Walkover Plan
		Drawn By: H. Spurling	Authorised By: L. Burnett	

APPENDIX IV - PHOTOGRAPHS



Photograph 1 – View of Field 2 facing north



Photograph 2 – View of Field 2 facing west



Photograph 3 – Overview of Pearce's Farm facing west

APPENDIX V - HISTORICAL MAPS

Site Details:

PEARCES FARM,
EASTHAMPSTEAD ROAD,
WOKINGHAM WITHOUT,
WOKINGHAM, RG40 3BN

Client Ref: A11997_PO-001884
Report Ref: GS-9306749
Grid Ref: 482825, 167440

Map Name: County Series

Map date: 1898

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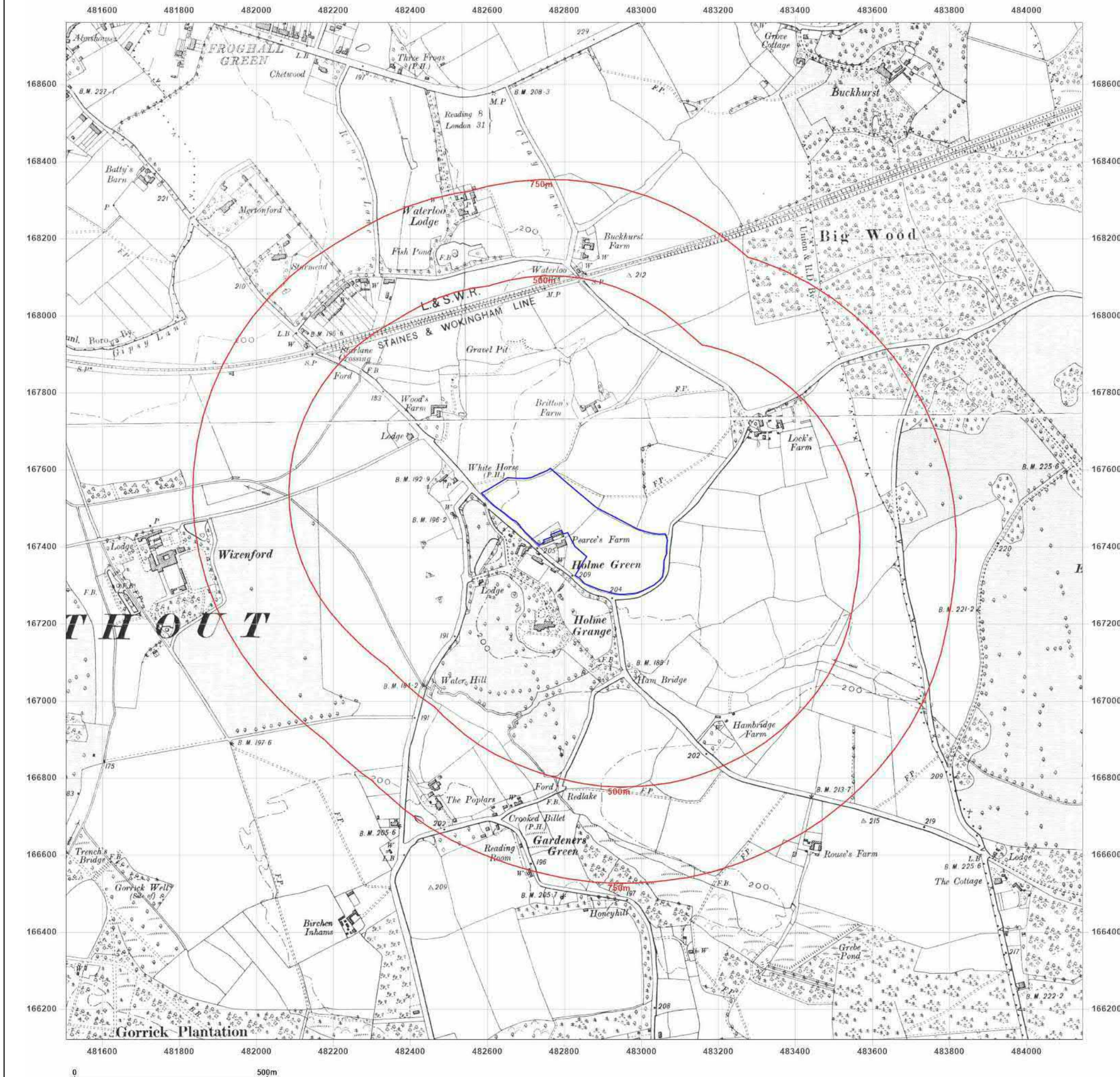


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Map Name: County Series

Map date: 1909-1910

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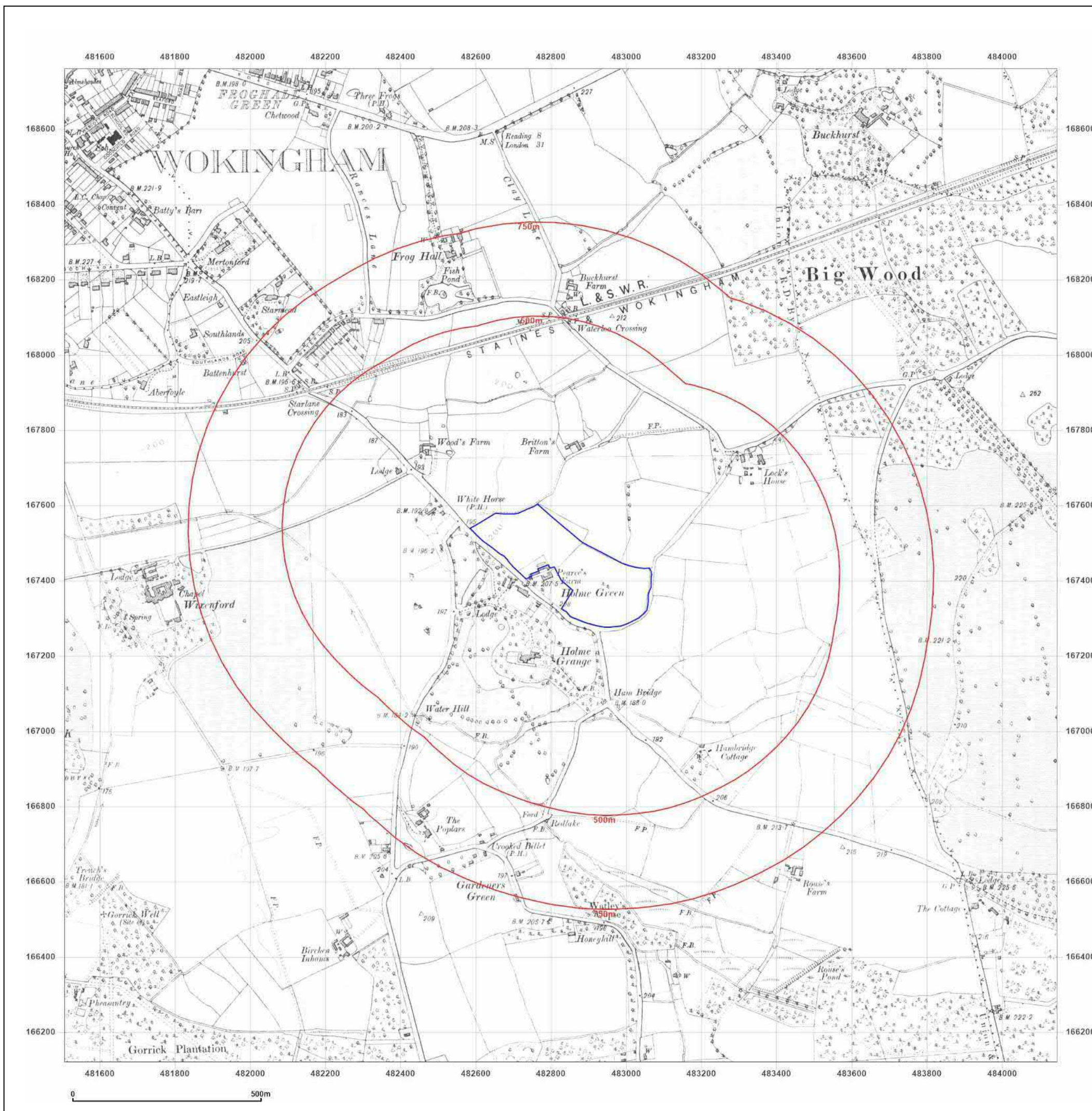


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Map Name: County Series

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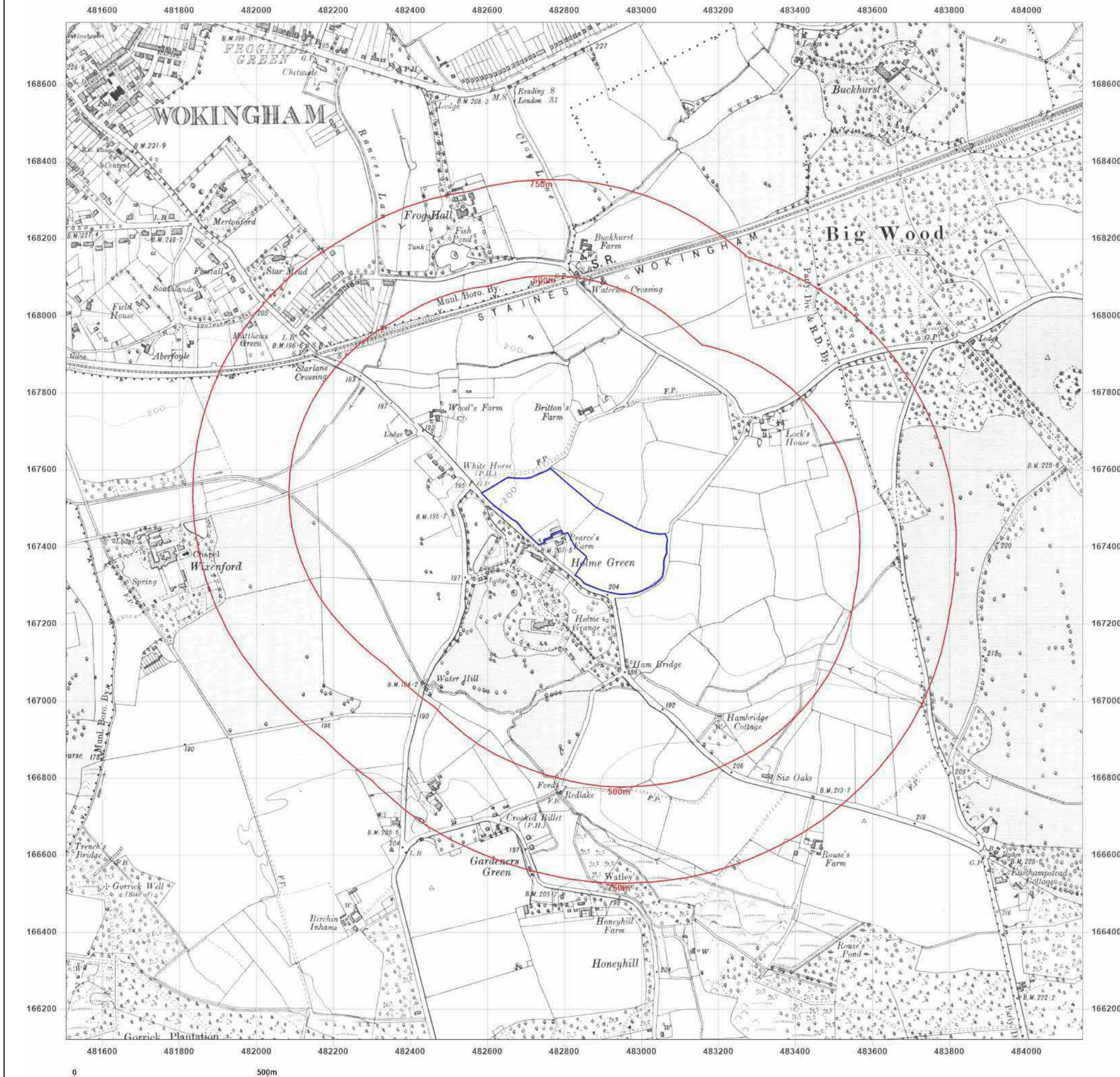


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Revised 1956
Edition N/A
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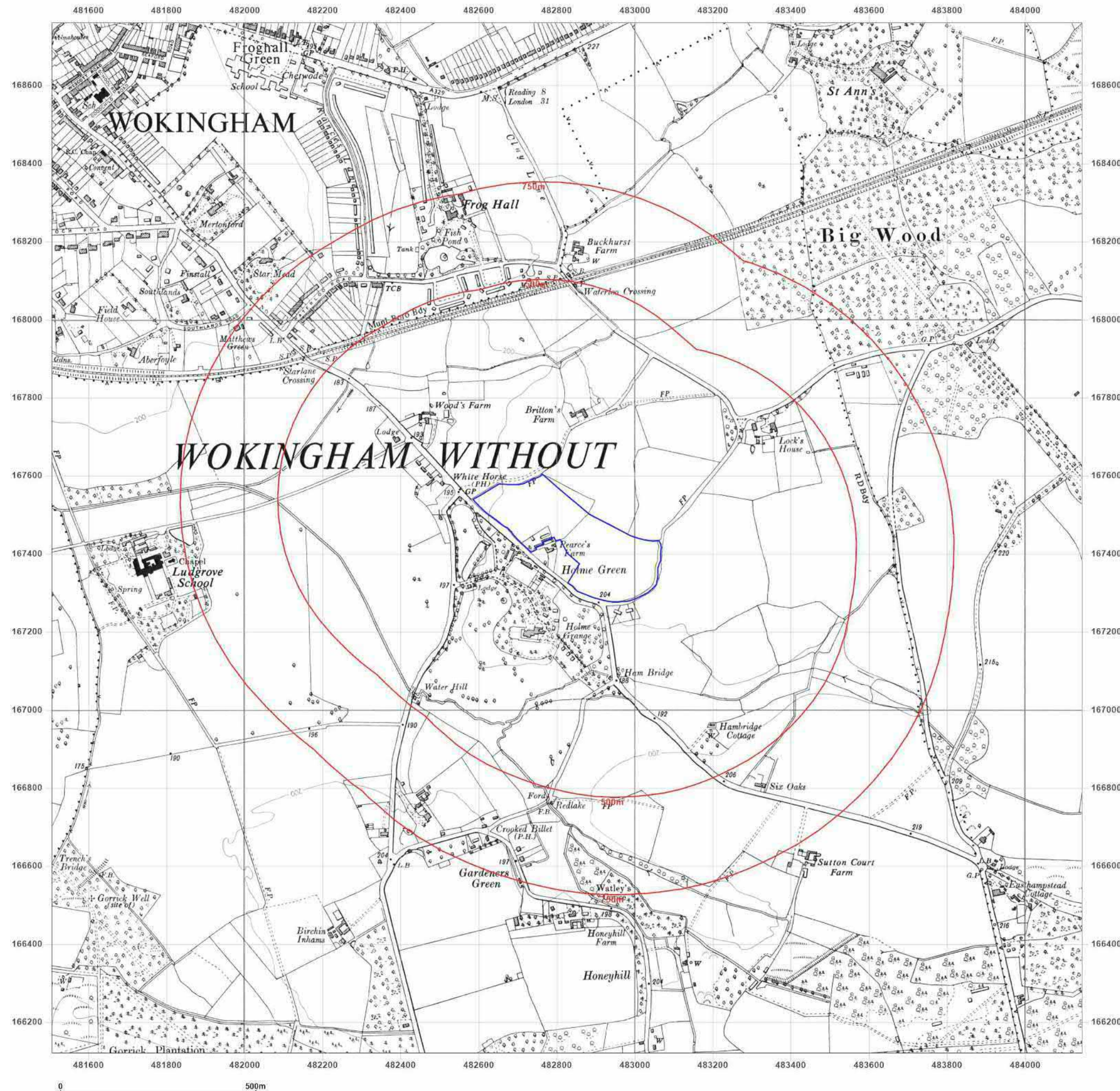


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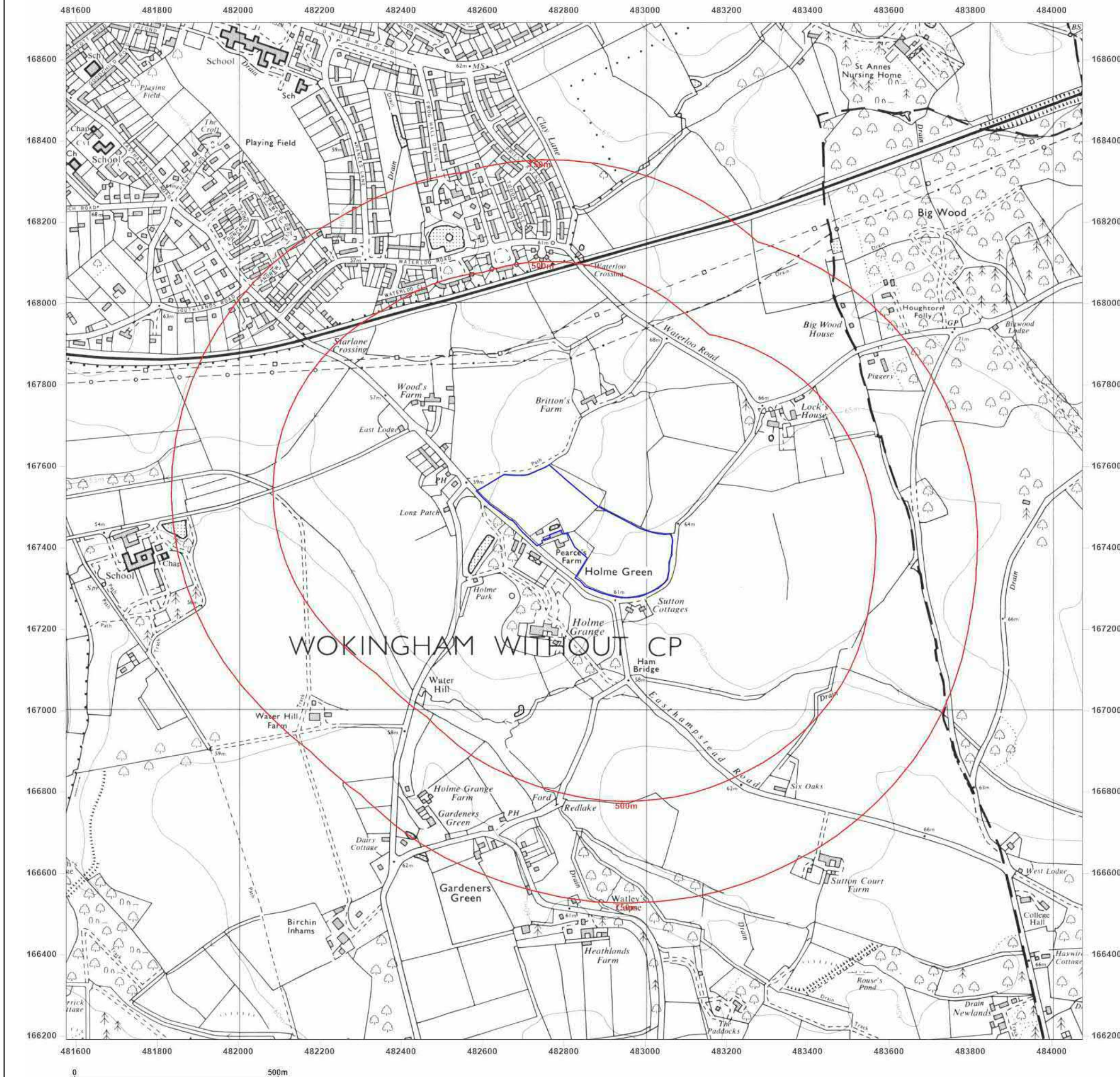


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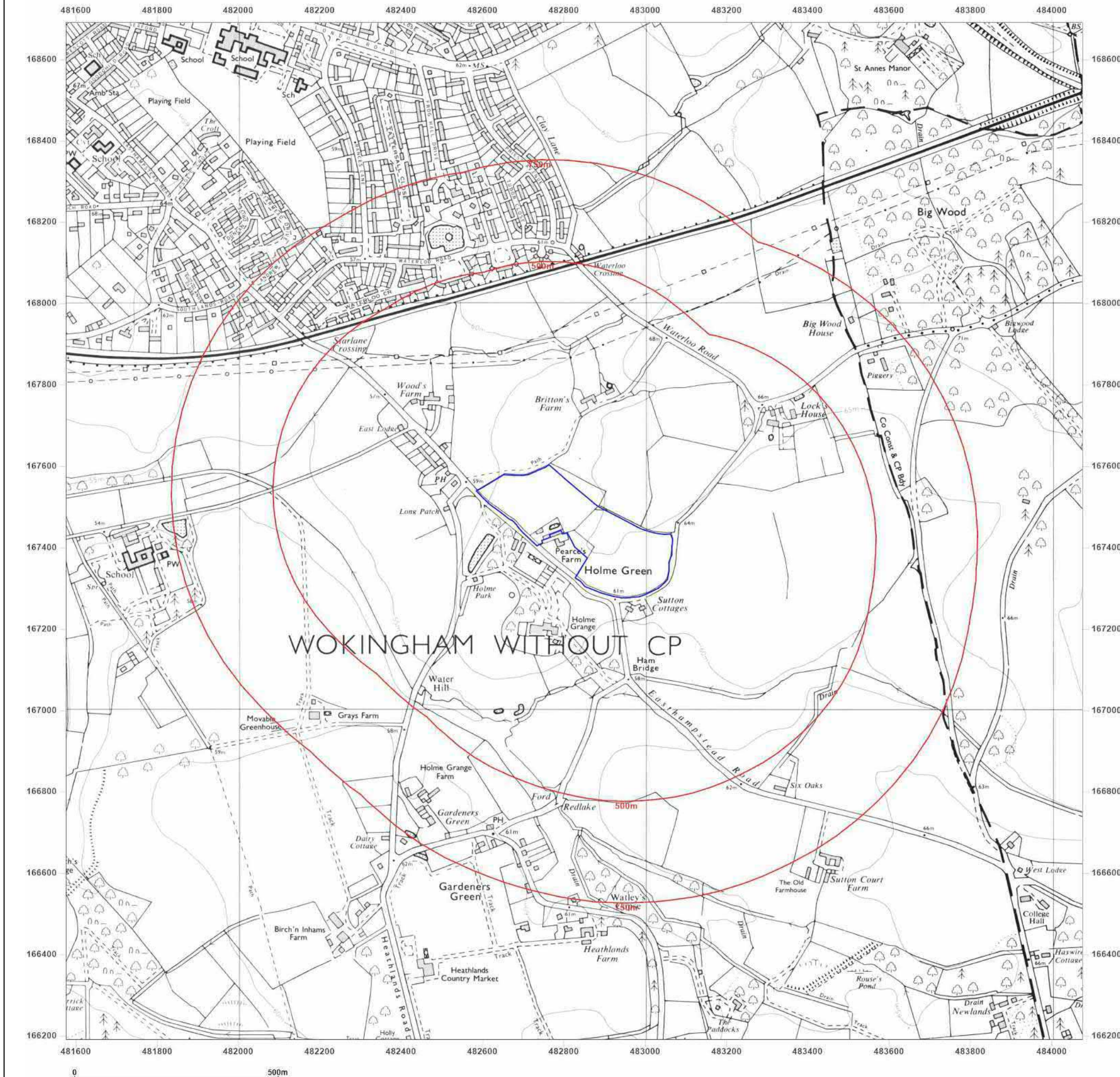


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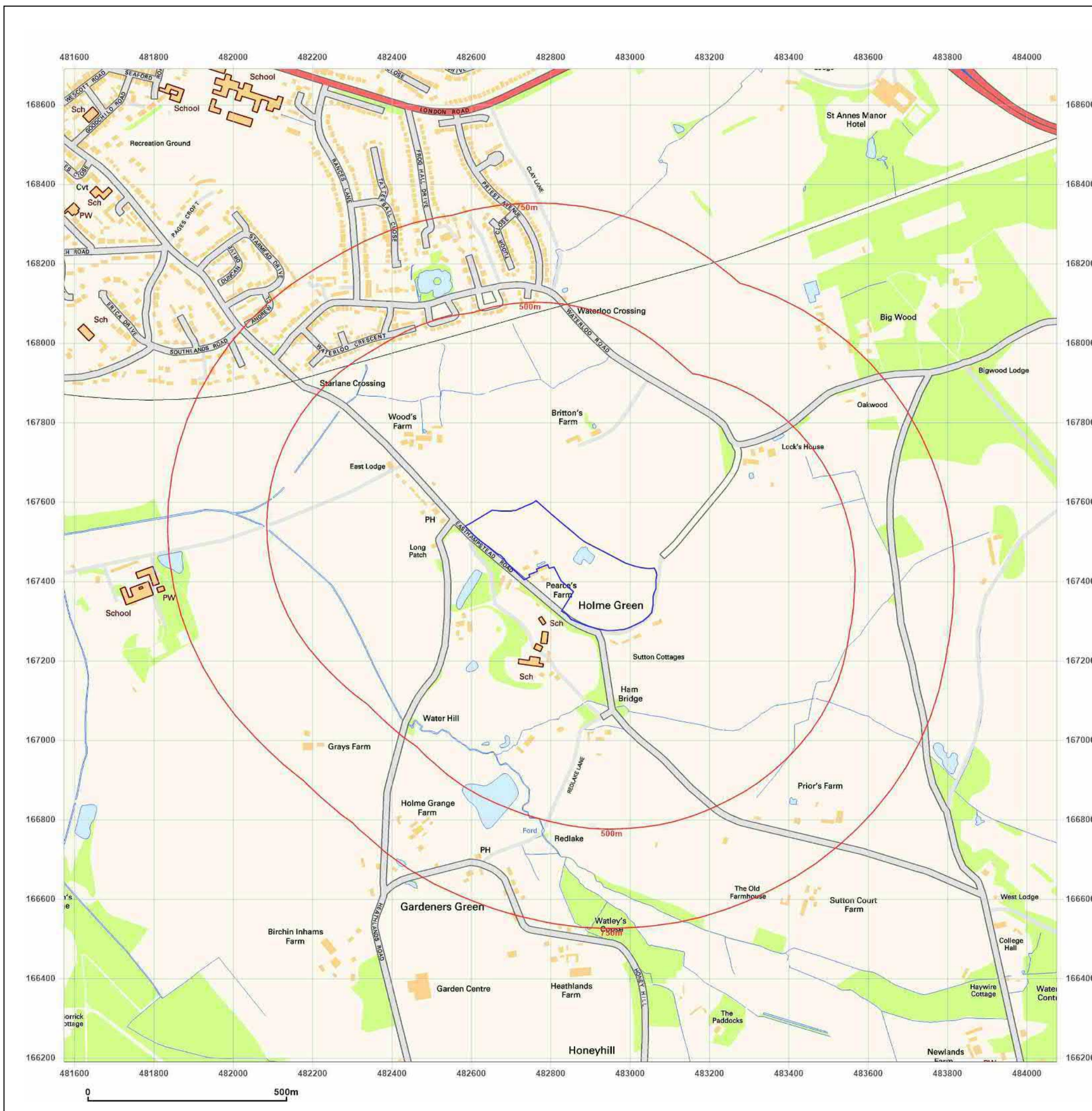


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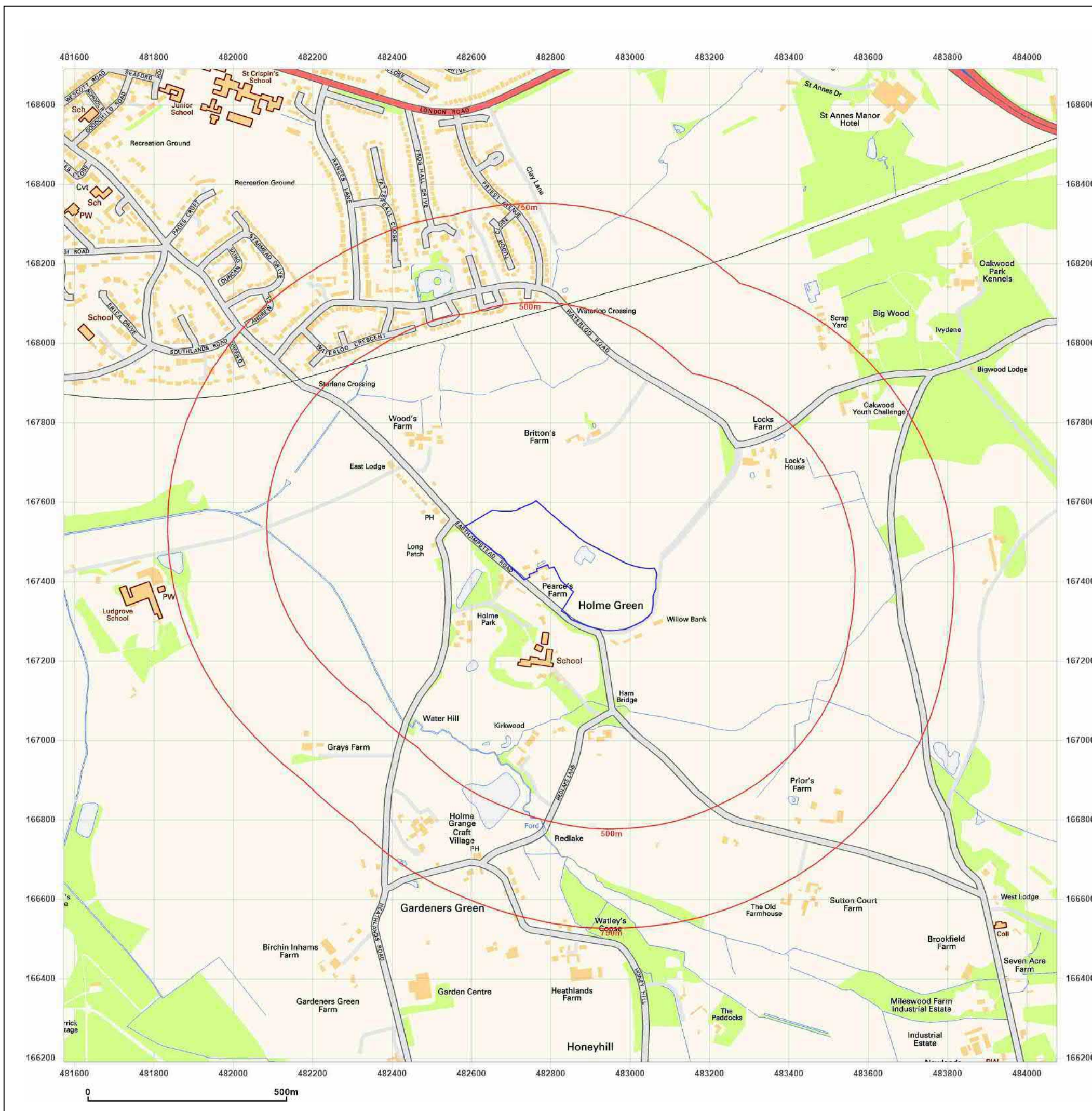


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