Hayes Park

Phase 1 Environmental Report

May 2023

Avison Young

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Phase 1 Environmental Report

Hayes Park, Hayes End Road, Hayes, UB4 8FE

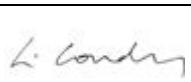
Shall Do Hayes Developments Limited

June 2023

Preface

Property Address:	Hayes Park, Hayes End Road, Hayes, UB4 8FE
NGR:	E: 508885 N: 182435
Property Use:	Office refurbishment for future residential end use
Site Area:	Approximately 3.73 Hectares
Tenure:	Freehold
Date of Inspection:	16 January 2023
Inspection Conditions:	Overcast with showers (heavy rain in preceding days)
Access Restrictions:	All relevant areas of the site were inspected excluding locked plant rooms and the roofs
Lead Surveyor:	Helen Bayliss DD: 0121 609 8872 Email: helen.bayliss@avisonyoung.com
Instruction Number:	01C202251

Report Control:

Status:		**Date:**
Rev 00		June 2023
Prepared By:		Helen Bayliss BSc CSci MIEnvSc Associate Director
Checked and Authorised By:		Gareth Condy BSc MSc PIEMA Director
For and on behalf of Avison Young (UK) Limited		
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Appendices

1. Scope of Instruction and Brief

Objectives

1.1 This report has been prepared in support of the detailed planning and listed building consent application being submitted by Shall Do Hayes Developments Ltd ('the Applicant') to the London Borough of Hillingdon ('the Council') for the proposed residential conversion of two listed buildings at Hayes Park, Hayes End Road, Hayes, UB4 8FE ('the site').

1.2 The proposed development comprises the change of use of the existing buildings to provide 124 new homes (Use Class C3), together with internal and external works to the buildings, landscaping, car and cycle parking, and other associated works.

1.3 Therefore, the primary objectives of our report are to identify those environmental issues which have the potential to affect site use or may lead to regulatory intervention and to provide comment on the suitability of the site from an environmental perspective.

1.4 The proposed ground floor layouts of the North and South Buildings are provided in **Appendix I**.

Background Data Sources

1.5 The findings of this report are based upon information provided to us, files viewed on site and database information obtained from regulatory and statutory bodies (the Environment Agency, Local Authority, etc) as contained within the Groundsure Insight Report (Ref. GS-JFY-G2P-IFG-XJO and GS-5L4-YDP-RA9-XC7).

1.6 The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed in the report and which Avison Young assumes to be reliable, but has not been independently confirmed. Therefore, Avison Young cannot and does not guarantee the authenticity or reliability of third party information it has relied upon.

Report Preparation

1.8 This report is based on and prepared in general accordance with current best practice guidance documents concerning the assessment of potentially contaminated land including; British Standard (BS) 10175:2011+A2:2017: Investigation of Potentially Contaminated Sites, Environment Agency (2004): Model Procedures for the Management of Contaminated Land (CLR 11), Environment Agency Land Contamination: Risk Management Guidance, DEFRA (2012): Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance, the National Planning Policy Framework and the Royal Institution of Chartered Surveyors (RICS) Environmental Risks and Global Real Estate 1st Edition, November 2018.

2. Site Location

Item	Description	
Site Location	The property is situated in Hayes, London Borough of Hillingdon, approximately 500m north of A4020 Uxbridge Road and 2km south of the A40 western Avenue. It can be accessed from either Mead House Lane / Hayes End Road from the south west or Park Lane from the east. Site location and layout plans are provided below.	
Surrounding Land Uses	North	Offices and multistorey car park with agricultural land beyond
	East	Parkland and woodland with residential properties beyond
	South	Recreational land with residential properties beyond
	West	Residential property of Home Farm with agricultural land beyond

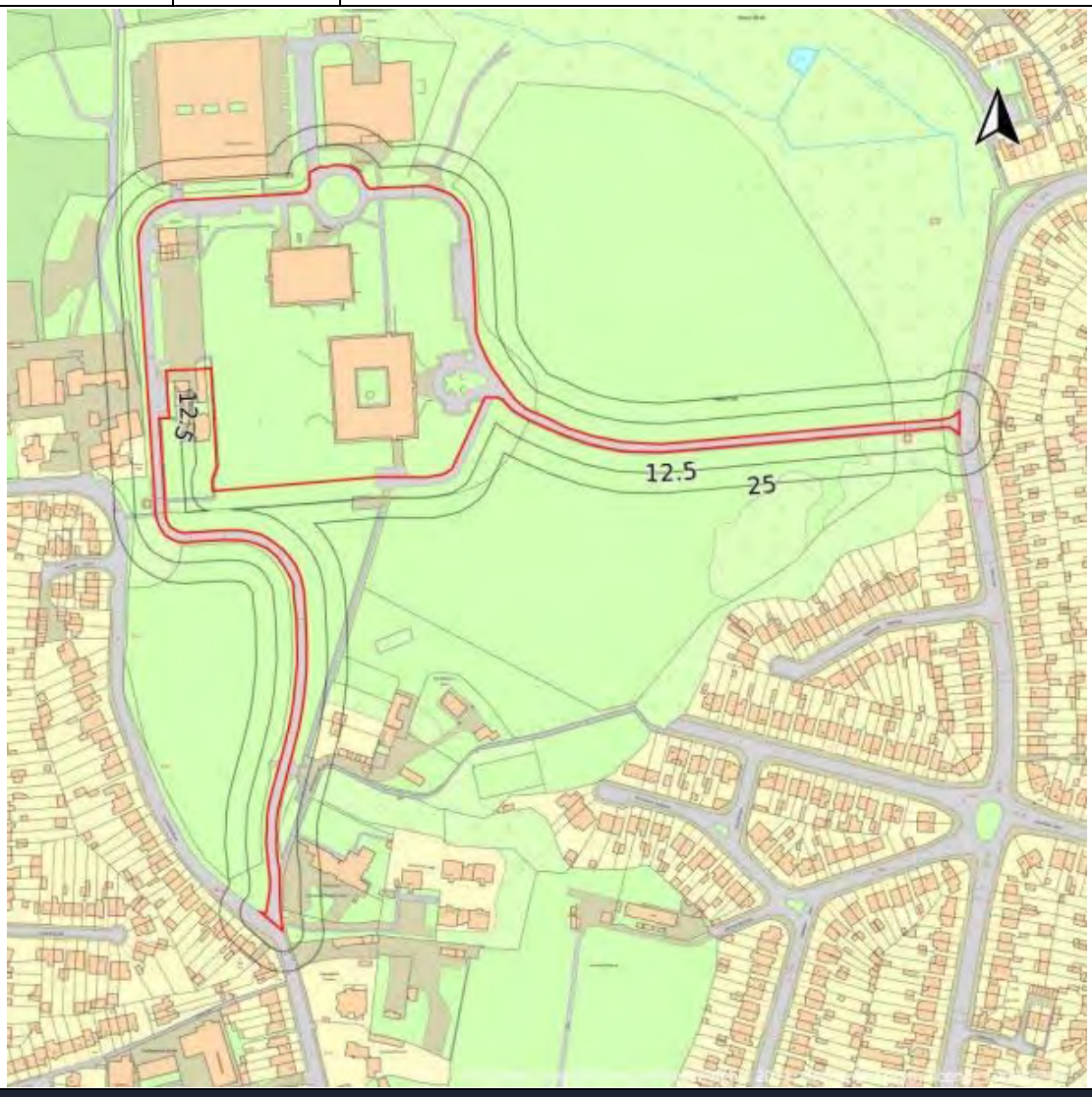

Figure 1: Site Location Plan (boundaries shown are indicative only)

3. Site Description

3.1 The following site layout plan and table provides a summary of the site's layout, usage and condition.

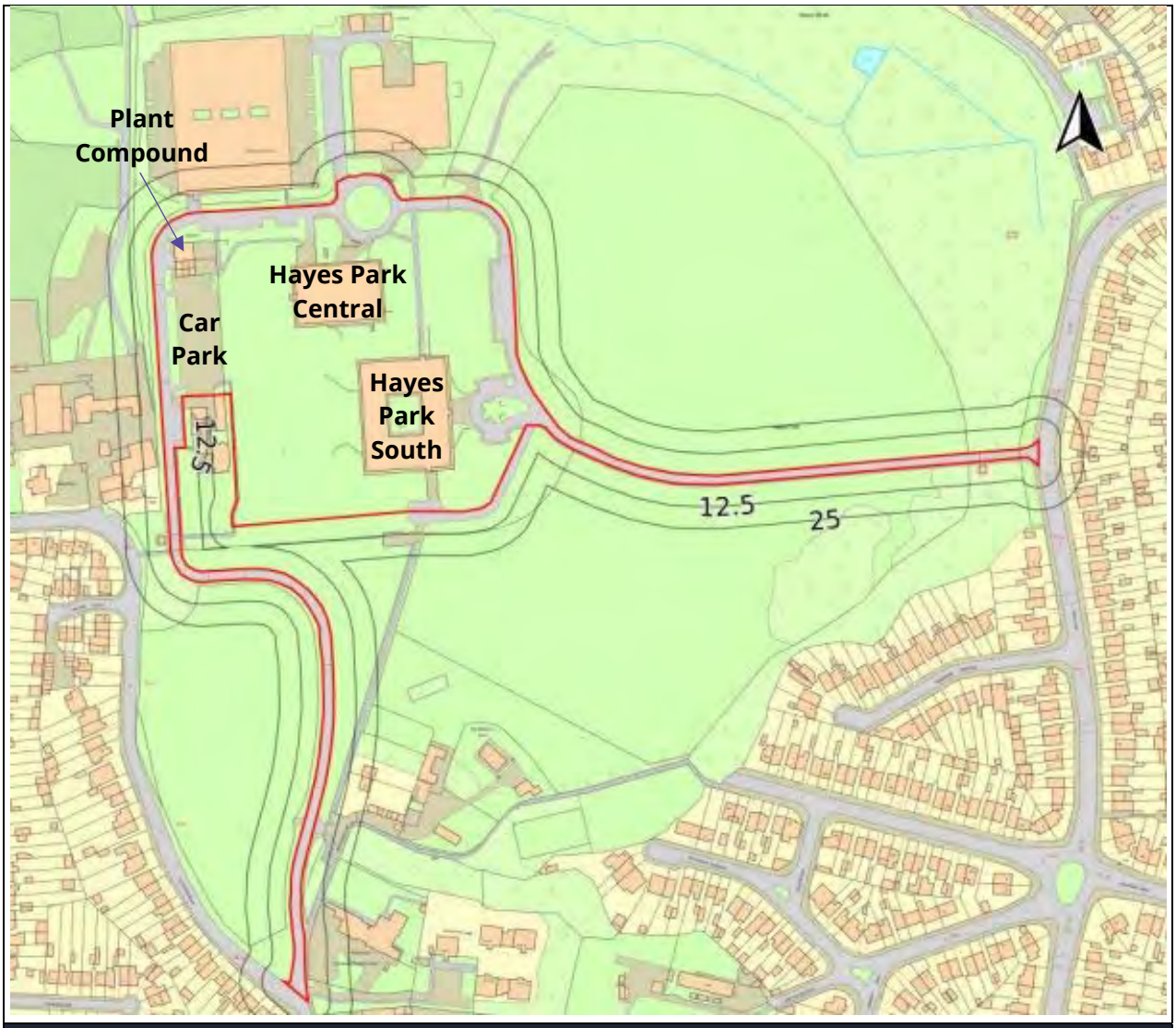

Figure 2: Site Layout Plan (boundaries shown are indicative only)

Item	Description
General Description	The site is situated within Hayes Park and comprises of 2no. 1960s office buildings designed by the Architect Gordon Bunshaft to form Heinz's UK headquarters and research facility. In November 1995, the buildings were Grade II* Listed as the only British example of Gordon Bunshaft's work and as an example of an early headquarters complex on a greenfield site. Historic England records indicate that the permission to build was granted on the condition that 10 acres of the 65-acre site were developed, with only 1.5 acres to be covered with buildings. These two buildings are the subject of this report, although the land to the north has been subject to further development since the 1960s.

Item	Description
General Description	The buildings are arranged over three-storeys and are formed of external reinforced pre-cast concrete columns with a granite aggregate finish. The remainder of the frame is cast in-situ and the walls are fully glazed. Both buildings are rectangular in plan view, with Hayes Park South having a central open courtyard. A pool was originally present within the courtyard, but this is now infilled. The ground floors of both buildings were sunk into the ground to overcome a two-storey height restriction imposed on the site. The buildings have flat roofs, which house plant and equipment and partial basements are also present beneath both buildings which again house plant and equipment. A tunnel is also understood to have originally connected the two buildings; now blocked off. Hayes Park Central originally housed the Heinz UK's research laboratories but has more recently been occupied by Fujitsu. The building is currently divided into reception, canteen, kitchen and catering stores, post room, comms rooms, testing and development labs on the ground floor, and open plan office space, partitioned offices and welfare facilities to the first and second floors. Two central stairwells and two passenger lifts provide access between the floors. The eastern stairwell also provides access to a basement, where flooding was noted. This was potentially from the ingress of surface water through grated ground floor openings providing ventilation and as a result of rising groundwater. Hayes Park South formed Heinz's UK headquarters and comprised reception, canteen and kitchens, open plan offices and meeting rooms on the ground floor, and open plan office space, partitioned offices and welfare facilities to the first and second floors. Each floor is centred around an open courtyard of pavers, gravel and a vegetated flower bed. Two brick compounds are located in the north west site corner, which house further plant and equipment to serve the two buildings and the main electricity substation. The north compound is understood to serve Hayes Park Central with the southern compound understood to serve Hayes Park South. Externally, the remainder of the site is predominantly laid to grass, tarmacadam roadways, car parking spaces and a larger car park in the west of the site. The northern and eastern site boundaries are unmarked and open out on to the remainder of Hayes Park. The southern boundary is secured by iron railings, whilst the western site boundary is secured by a combination of chain link fencing and hedgerows.
Underground Railway Infrastructure	The Groundsure Insight Report does not identify any historic or current underground railway infrastructure within 250m of the site.

Item	Description
Site Services	We understand that the property is served with power, drainage and communication infrastructure. The condition or capacity of these services is not known and they are assumed for the purpose of this report to be in good order. The following infrastructure was observed on site: • An electricity substation is situated in the brick compound located in the north west corner of the site and is the property of SSE Power Distribution. Electrical switchgear is located in the basements of both buildings. Given the age of the property, there is potential for Polychlorinated Biphenyls (PCBs) to have been / be present on site; • The office buildings benefit from a gas supply, with the boilers located in the basements of both buildings. The incoming gas supply is located to the south east of Hayes Park South; • A back-up generator is located in the brick compound located in the north west site corner, which is served by a below ground fuel tank and above ground day tank. Further details regarding the fuel storage are provided below. There was no evidence of previous spills or leaks to the concrete hardstandings; • Air handling and ventilation equipment are located in the basements of both buildings. Air conditioning cassettes were also noted to serve the buildings located within the basements and on the roofs. Chillers are located within the brick compound in the north west site corner. As part of the building conversion a record of the refrigerants on site should be made to ensure equipment is decommissioned appropriately or if being reused, is compliant with the current guidelines; • A redundant pump for the former pool within the courtyard of Hayes Park South remains present in the basement; • Water tanks are present in the basement of both offices; • Sump pumps are understood to be present in the basements to manage the ingress of groundwater; • An Inergen fire suppression system was noted in the basement of Hayes Park Central; and • Passenger lifts serve both offices and the lift motors are integral to the lift shaft and were unable to be viewed during the site walkover.

Item	Description
Existing Site Drainage	We have been provided with an External Services Layout drawing (ref: 0710430-HLEA-XX-XX-EX-UE-050090 / October 2022 / Rev P1), which indicates the route of the main foul and surface water drains serving the site. The foul drainage is indicated to be routed around the northern and eastern perimeters of both the buildings. It is assumed that the foul drainage connects to the local public sewer network. Surface water drainage is also routed to the north and east of both buildings with an additional drainage run trending west to east between the two buildings. It is again assumed that the surface water drainage connects to the local public sewer network. No evidence of soakaways or oil / water interceptors were noted. Surface water from hardstandings was noted to be collected by channel drains or left to run off to adjacent grassed landscaping or strips of gravel. The grass landscaping to the west of the Hayes Park South was noted to be waterlogged, however, antecedent weather conditions comprised of a prolonged period of very heavy rainfall, which is likely to account for this observation. We have not been provided with any private drainage drawings that indicate the presence of drainage within the buildings. However, drainage was noted to be present within both building basements. The car park in the west of the site is served by a number of gully pots and drainage channels. No oil/water interceptor was noted at this location.
Underground/ Above Ground Tanks	From our site inspection, there are both above and below ground fuel tanks present on the site. There is a diesel supplied back-up generator located in the compound in the north west site corner. This is served by an above ground single skinned rectangular daily service 1,000 litre fuel tank, with a 4 hour capacity. No evidence of spillage was noted around this tank. Additional bulk fuel storage for the back-up generator is understood to comprise: • above ground metal tank located in the southern brick compound which holds up to 10,000 litres of diesel; • a twin skinned 15,000 litre cylindrical bulk diesel fuel storage tank situated below ground. This information has been taken from records held in the basement plant room of the Hayes Park Central although the location of the below ground diesel tank has not been identified on site. A planning application was approved in May 2001, which included the installation of a below ground tank for Hayes Park Central which we assume relates to this tank; The tank fill point is situated in a cabinet on the southern elevation of the compound, which allows filling from a road tanker. The fill point is connected to the bulk tank(s) and generator by a fuel line that runs along the top of the compound walls. No evidence of staining or spills were noted around the fill point or along the above ground route of the fuel line. Site records indicated that there is a fuel transfer pump to automatically replenish the day tank from the bulk tank(s).

Item	Description
Chemical & Materials Storage	From our site inspection, there are no significant quantities of chemicals used or stored on site. A number of cleaners cupboards were present throughout the buildings and no specific issues relating to spillages of cleaning materials were noted.
Waste Management Practices	In general, waste streams appeared to be adequately managed and the general level of housekeeping across the site was to an acceptable standard.
Environmental Regulatory Controls	From the activities observed on site, we do not believe there is a requirement for the occupiers of the property to hold an exemption, permit or licence under the Environmental Permitting (England and Wales) Regulations 2016, the Water Resources (Abstraction and Impounding) Regulations 2006 or the Water Resources Act 1991. The Petroleum (Consolidation) Regulations 2014 require that where greater than 30 litres of petroleum is stored, this needs to be registered with the Petroleum Enforcement Authority and where greater than 275 litres is stored a licence is also required. No petroleum was stored on site.
Non-Native Invasive Plants	From an inspection of accessible areas on site, non-native invasive plants such as Japanese Knotweed, Giant Hogweed and Himalayan Balsam were not suspected to be present on site. It is understood that an ecological survey has been completed, which has confirmed the absence of these non-native plant species.
Environmental Observations	No significant evidence of ground contamination or hazardous processes were noted.

3.2 A selection of site photographs taken on 16 January 2023 is presented below.

Photo 1: Access road and northern and eastern elevations of Hayes Park Central

Photo 2: Grass landscaping and southern elevation of Hayes Park Central

Photo 3: Grass landscaping and western elevation of Hayes Park Central

Photo 4: Reception and lift lobby of Hayes Park Central

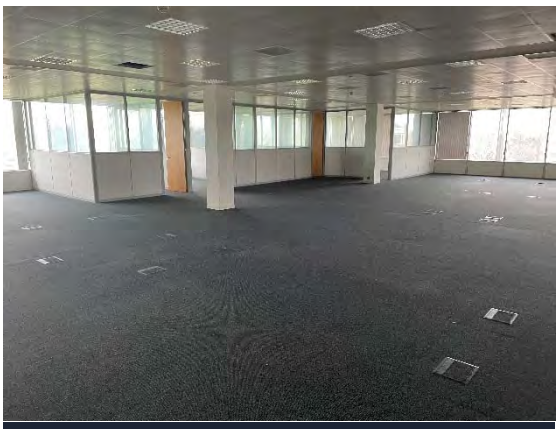

Photo 5: View of office space on second floor Hayes Park Central

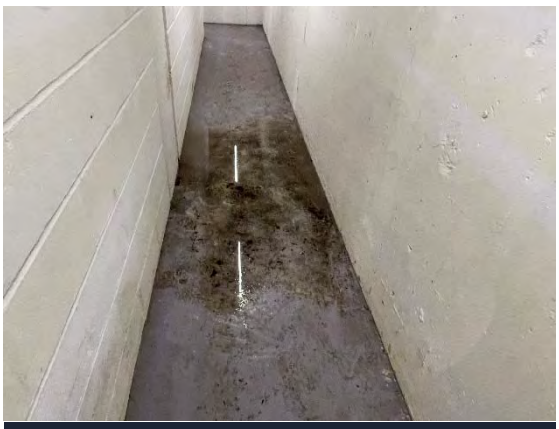

Photo 6: Flooding to basement corridor of Hayes Park Central

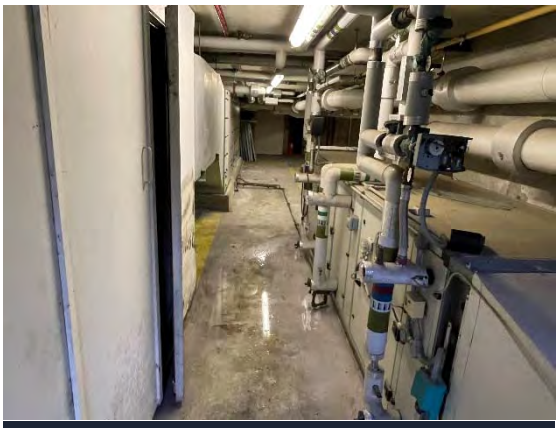

Photo 7: View of basement (plant room) to basement of Hayes Park Central and localised flooding

Photo 8: View of basement (plant room) of Hayes Park Central and localised flooding

Photo 9: Access, car parking and eastern elevation of Hayes Park South

Photo 10: Grass landscaping and southern elevation of Hayes Park South

Photo 11: Grass landscaping, seating area and western elevation of Hayes Park South

Photo 12: Grass landscaping and northern elevation of Hayes Park South

Photo 13: Central courtyard of Hayes Park South

Photo 14: View of open plan office space on second floor of Hayes Park South

Photo 15: View of basement (plant room) of Hayes Park South

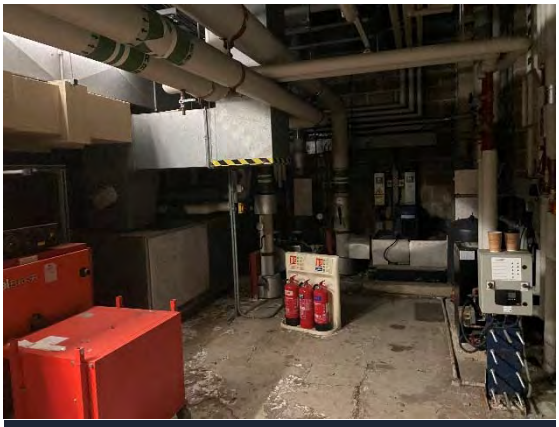

Photo 16: View of basement (plant room) of Hayes Park South

Photo 17: Compounds for plant and equipment in north west site corner

Photo 18: Back up generator with 1,000 litre daily service fuel tank

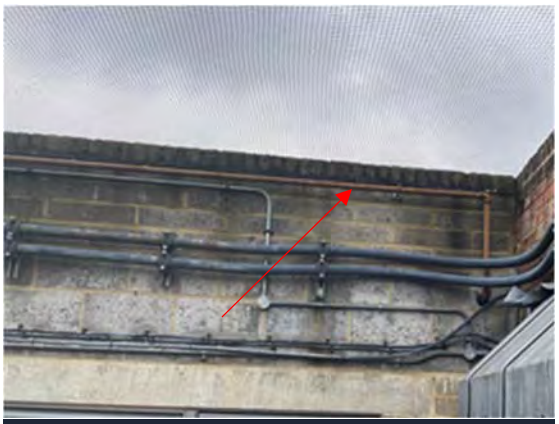

Photo 19: Tank fuel line routed along top of compound

Photo 20: Tank fill point for diesel bulk storage tanks

Photo 21: Car parking in the west of the site

Photo 22: Car parking in the west of the site

Photo 23: Grass landscaping and view looking north along western site boundary

Photo 24: Car parking in north east of site

Photo 25: View of access road in south east site corner

Photo 26: View of gas housing in south east site corner

4. Asbestos Containing Materials

4.1 The Control of Asbestos Regulations 2012 came into effect in April 2012. These repeal earlier asbestos legislation, including; the Asbestos Regulations 2006, the Control of Asbestos at Work Regulations 2002, Asbestos Licensing Regulations 1983 and the Asbestos (Prohibition) Regulations 1992 (as amended).

4.2 Owners, occupiers, managers and/or those who have responsibilities for premises have a legal duty to either manage the risk of asbestos or a duty to co-operate with whoever manages that risk. The responsible party has to identify the existence of asbestos containing materials, record their location and condition, set out a plan to manage the risk from the material and take the necessary steps to put this plan into action.

4.3 An appropriately licensed asbestos contractor should remove asbestos material that is likely to be disturbed and cannot be easily protected. Reviews of this plan will have to be undertaken on an on-going basis. Details as to the location and condition of the materials must be provided to anyone who is liable to work on or disturb it.

Asbestos Survey

4.4 Asbestos surveys were undertaken in 1998 ahead of the office refurbishment. These surveys confirmed the presence of amosite and chrysotile within the fabric of the buildings in the form of pipework insulation, within ducting and associated panels, flue pipes, panels to sinks within ladies toilets, vertical firebreak partition panels, packing materials, cement panels, workbenches, fume cabinets, woven cloth insulation, rope insulation, and debris within ceiling voids, beneath cable trays, within ducting, on walls, by waste pipes and within pipe flanges.

4.5 An Asbestos Management Survey (formerly known as a Type 2 Survey) was completed by National Britannia Limited in August 2008. This indicated fragments of insulating board containing amosite in the soffit above the suspended ceiling of the second floor of Hayes Park South. No other asbestos containing materials were identified and it is assumed the previously identified materials were stripped out as part of the refurbishment. However, no records are present on site to confirm this.

4.6 An asbestos management information check sheet was also held on site for the period between May 2014 and September 2020, which stated ‘All ok’ with reference to the annual asbestos risk assessment checks.

4.7 Given the information reviewed above and due to the age of the buildings, asbestos containing materials are likely to remain and a full Pre-demolition / Refurbishment Asbestos Survey will be required ahead of any building conversion.

5. Historical Development

5.1 In order to ascertain the historical land uses on site, Avison Young has purchased historical mapping from Groundsure, at scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560. We have also reviewed the site's planning history where information for the site is available.

Date	Description
1866 to 1960	The site is shown to have been occupied by Hayes Park, a Private Lunatic Asylum, which is later understood to have become a nursing home. The buildings were situated centrally within the site boundaries and from various accounts are understood to have comprised a 2-storey mansion with a central porticoed doorway that served up to 20 patients. A water well is annotated to the north west of the mansion on the 1895 map. Access tracks and paths connected it to the wider grounds with woodland and a walled garden located in the north east site corner and beyond. The grounds (parkland) of Hayes Park were extensive (over 60 acres) and extended off site to the north, east and south. A series of large ponds were present from approximately 170m south east of the site and the route of the present day eastern access road crosses one of these former ponds. Home Farm comprising residential and agricultural buildings and land is located to the north west and west of the site. The residential buildings of Home Farm remain present day. Agricultural outbuildings are shown on the site of the present day western car park and a small pond is immediately beyond the western boundary. No significant changes to the site's surroundings occur until the late 1930s / 1940s, when Hayes expands and housing estates are constructed from 100m south west and 300m south east of the site.
1964 to 1965	During the intervening period, the mansion has been demolished to make way for two new office buildings designed by the Architect Gordon Bunshaft for Heinz UK to form their new UK Headquarters and Research Centre. The northern building was developed as research laboratories, whilst the southern building formed administrative offices. Agricultural outbuildings remain in the far west of the site at this time but the ponds to the south east have been infilled.
1975 to 2001	From the late 1970s, the agricultural outbuildings in the west of the site are no longer present. The remainder of the site is relatively unchanged although it is understood that Heinz UK sold the site in the 1990s, which led to some internal building refurbishment works being undertaken. Off site, Field House was constructed to the north. From 2000, Heinz UK leased back the southern building and Fujitsu occupied the northern building.
2003 to present	No significant changes are identified on the available mapping for the subject site. However, it is understood from planning records that further refurbishment works were undertaken to the buildings. Off site, Field House to the north was demolished and a new office building a multi-storey car park constructed. An additional area of car parking was also created to the immediate west of the subject site.

5.2 Selected extracts of the historical maps are provided in **Appendix II**.

Planning Records

5.3 We have also reviewed the London Borough of Hillingdon Council planning portal to ascertain the material changes in land use, where information for the site is available, this is summarised below:

Application Ref	Description	Date/Status
12853/K/85/1501	H.J. Heinz Co. Ltd - Office development (No online documentation available)	Approved Dec 1986
12853/L/87/2219	H.J. Heinz Co. Ltd - Erection of a temporary building for use as additional offices until the end of 1991 (No online documentation available)	Approved Feb 1988
12853/N/88/1529	H.J. Heinz Co. Ltd - Change of use of food research building to any use within Class B1 without complying with Appeal Decision (No online documentation available)	Refused Nov 1988
44241/90/0121	H.J. Heinz Co. Ltd - Refurbishment/extension of existing headquarters building, construction of a new access road, erection of a new replacement school north of Mellow Lane East and provision of area over which public will have recreational access (No online documentation available)	Withdrawn Jan 1990
12853/P/91/0150	H.J. Heinz Co. Ltd - Refurbishment and expansion to existing offices (involving demolition of redundant offices in car park areas) and erection of a single deck car park (No online documentation available)	Withdrawn Apr 1992
12853/X/96/1670	H.J. Heinz Co. Ltd - External and internal alterations to administration and research buildings and demolition of a former market garden wall. No contaminated land planning conditions were applied.	Approved Aug 1998
12853/W/96/1667	H.J. Heinz Co. Ltd - Refurbishment of existing administration and research buildings for office use, the erection of a new office building and decked car park (involving the demolition of Field House and garden walls), realignment of internal road and provision of car parking and landscaping to individual buildings. No contaminated land planning conditions were applied.	Approved Aug 1998

Application Ref	Description	Date/Status
12853/APP/2000/675	Hayes Park - Creation of new vehicular access to Hayes Park from proposed roundabout on Hayes End Road, closure of existing access from Hayes End Road and associated landscaping, signage and lighting. No contaminated land planning conditions were applied.	Approved Jul 2001
12853/APP/2000/1904	Hayes Park - Internal partition works and installation of 10 condenser units and a kitchen extract pipe (No online documentation available)	Approved Sept 2000
12853/APP/2001/384	Hayes Park - Internal fitting out, roof mounted vents and below ground fuel tank (No online documentation available)	Approved May 2001
12853/APP/2001/382	Hayes Park - Installation of roof mounted extract fans and external vent (No online documentation available)	Approved May 2001
12853/APP/2002/367	Hayes Park - Installation of low-rise turnstile type security barriers to existing reception area (No online documentation available)	Approved Sept 2002
12853/APP/2010/277	H.J. Heinz Co. Ltd - Internal alterations to existing staircases and alterations to front entrance (south building). No contaminated land planning conditions were applied.	Approved Apr 2010
12853/APP/2010/2186	H.J. Heinz Co. Ltd - Internal alterations to include overpanel to doors, new access door, replacement fire door and replacement skirting to the reception area. No contaminated land planning conditions were applied.	Approved Nov 2010
12853/APP/2020/2980	Internal office refurbishment of Hayes Park Central and South Buildings including removal of the non-original partitions, re-instatement of the South Building's reflecting pool and refurbished entrances. External elevation and roof refurbishment of both buildings including cleaning and repair works, replacement of non-original glazed double doors and other works to the South building's glazed curtain wall system. No contaminated land planning conditions were applied.	Approved Feb 2021

5.4 The above is provided as a summary of the available information. Planning portals do not always have all the documentation uploaded and records only go back a certain number of years. No direct enquiries with the Local Planning Authority have been made. Your solicitors or planning advisor should confirm if there are any outstanding planning conditions or breaches to planning control.

Potential for Historical Contamination

5.5 In summary, given that the majority of the site has been the site of a former mansion (residential property) and then the existing offices and research centre, we consider the potential for significant ground contamination to be low. Some limited contamination may be present in the far west of the site associated with former agricultural outbuildings.

5.6 The potential source-pathway-receptor linkages to potential historical contamination are assessed in the Preliminary Risk Assessment in Section 12.

Unexploded Ordnance (UXO)

5.7 From a review of the Zetica Risk Maps, the site is located in an area where there is a low to moderate risk of unexploded ordnance (UXO).

5.8 A review of the Bomb Sight website (accessed on 20 January 2023), which provides a World War II bomb census, indicates that a high explosive bomb was recorded to the south west of the Hayes Park South towards Hayes End Road.

5.9 As such, prior to any intrusive investigation and redevelopment of the site, it would be necessary to undertake a Detailed UXO Risk Assessment.

6. Geological Setting

6.1 From a review of the British Geological Survey (BGS) Solid & Drift Sheet 255, Beaconsfield at a scale of 1:50,000 and Sheet TQ08SE at a scale of 1:10,000 contained within the Groundsure Insight Report together with the online GeoIndex, the following geological succession has been identified at the site.

Strata	Description	Approx. Thickness
Made Ground	Artificial deposits are mapped beneath the eastern access road, which is associated with an infilled pond. Whilst artificial deposits are not mapped across the remainder of the site, given the development at the site to include excavation of basement and landscaping works, some Made Ground deposits (reworked natural materials) are anticipated to be present.	<3m
Boyn Hill Gravel Member of the Maidenhead Formation	Sand and gravel with possible lenses of silt, clay or peat. Gravel characterised by flint, quartz and chert. Not present beneath eastern access road.	<10m with an average of 5m
London Clay Formation	Blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay.	<25m
Lambeth Group	Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate.	<40m

Structural Geology

6.2 The BGS map does not indicate the presence of any geological faults within 1km of the site.

Ground Stability Hazards

6.3 The Groundsure Insight Report indicated that the underlying geological conditions have been classified as follows:

Potential Geological Hazard	Risk Rating
Collapsible Ground Stability	Very Low
Compressible Ground Stability	Negligible
Ground Dissolution Stability	Negligible

Potential Geological Hazard	Risk Rating
Landslide Ground Stability	Very Low
Running Sand Ground Stability	Very Low
Shrinking or Swelling Clay Ground Stability	Low

6.4 The Groundsure Insight Report does not identify the presence of any natural cavities on site or within 500m of the property.

Mineral Extraction

6.5 According to the British Geological Survey, no evidence of surface mineral extraction or man-made cavities have been identified on the property or within 250m.

Mining

6.6 The property is not located within an area that is affected by coal mining.

Radon

6.7 The property is in a lower probability radon area as less than 1% of homes are above the Residential Action Level of 200Bq/m^3. No radon protective measures would be necessary in the construction of new dwellings or extensions.

Previous Site Investigations

6.8 A site investigation report was prepared for Hayes Park Investment Co Limited by Soil Consultants Limited dated 18 November 1998 and referenced 2600/SCW. A copy of this report was held on site as part of the Health and Safety File. The investigation was completed to help facilitate the construction of the offices and multi-storey car park to the north of the subject site and the refurbishment of the offices, which form the subject of this report. 11no. boreholes were advanced to depths of between 4.5m and 30m below ground level (bgl). Boreholes BHJ and BHK were located to the north and south of the subject site and relevant information from these two borehole locations is summarised:

- Boreholes BHJ and BHK initially encountered grass over topsoil, with a thin layer of brick rubble and ash to 0.3m bgl. Made Ground described a soft to firm and firm brown or green grey slightly sandy clay with little gravel and fragments of brick with occasional fine rootlets encountered. This is considered to be a combination of demolition material from the former mansion and reworked natural materials from the Maidenhead Formation.

- The Maidenhead Formation in its natural form appears to be absent as a result of the development and change in site levels.

- The London Clay Formation was confirmed to a depth of 25m bgl in both boreholes BHJ and BHK. This comprised firm becoming stiff fissured brown and, at depth, grey clay with occasional sand sized selenite crystals. Blue grey glazing was present along fissures and occasional decaying rootlets were present to approximately 4m bgl. Accumulations of selenite were present at depth together with pyrite nodules. Bands of claystone were present throughout along with occasional partings of fine sand in the unweathered strata at depth.

- The depth to the Lambeth Group was not confirmed beneath the subject site but in a single borehole to the north of the site it was confirmed to be present at approximately 29.7m bgl as very stiff red and blue grey mottled clay.

- Groundwater was not encountered in either of boreholes BHJ and BHK on site during drilling. Elsewhere on site groundwater was encountered at shallow depth within the Made Ground and from isolated claystone horizons within the London Clay Formation. Therefore, there is potential for groundwater to be present at shallow depth beneath the site.

- Sulphate analysis of the soil was completed at relatively shallow depth and then at 21m bgl, which recorded an average pH of 7.5 and sulphate concentrations between 0.21 and 0.27 g/l (2:1 extract). This is equivalent of a design sulphate class of DS-1 and an ACEC of AC-1 assuming mobile groundwater is present.

- Excavations were reported to be possible via conventional hydraulic plant and should remain stable for short periods of time but temporary support may be required at depth or where site personnel are required to enter. An appropriate batter should be used due to the fissured nature of the clay. Groundwater may ingress to the base of excavations and this should be prevented where possible to avoid the degradation of the exposed clay surface.

- A summary of in-situ and laboratory geotechnical test completed in 1998 from Borehole BHJ and BHK are summarised below for information purposes only:

Borehole	Standard Penetration Tests						
	Depth	Blows per 75mm penetration					
BHJ	3.2 6.2 9.3	2 5 3	2 5 4	4 6 6	3 6 5	4 7 9	5 8 11

Borehole	Standard Penetration Tests						
	Depth	Blows per 75mm penetration					
	12.4	3	4	6	5	7	7
	15.4	4	4	7	6	7	9
	18.5	3	4	5	7	7	8
	21.6	4	4	7	7	8	10
	24.5	5	5	8	8	8	10
BHK	2.6	1	1	3	2	3	5
	5.7	2	3	4	5	6	7
	8.2	25	25	Claystone			
	9,5	3	3	5	7	6	7
	12.4	3	4	6	6	7	9
	15.4	3	3	5	7	9	9
	18.5	4	5	7	9	8	9
	21.6	5	5	8	9	8	9
	24.5	4	5	7	8	9	9

Borehole	Triaxial Compression Test						
	Depth	Test Type	Lateral Pressure (kN/m^2)	Compress Strength (kN/m^2)	Bulk Density (mg/m^3)	Moisture Content (%)	Cohesion (kN/m^2)
BHJ	2.7	38U	50	159	1.95	26	86
			100	178	1.95	27	
			200	177	1.96	26	
	5.7		50	270	1.96	26	138
			100	275	1.95	28	
			200	280	1.96	27	
	8.8		100	286	1.93	28	152
			200	311	1.93	28	
			300	317	1.92	27	
	11.9		200	299	1.92	28	156
			300	320	1.92	28	
			450	314	1.93	27	
	14.5		200	465	1.97	25	230
			300	452	1,97	25	
			450	462	1.96	25	
	18.0		200	498	1.96	26	254
			300	520	1.95	25	
			450	506	1.97	26	
	21.0		450	531	1.97	28	268
			600	534	1.98	27	

Borehole	Triaxial Compression Test						
	Depth	Test Type	Lateral Pressure (kN/m^2)	Compress Strength (kN/m^2)	Bulk Density (mg/m^3)	Moisture Content (%)	Cohesion (kN/m^2)
			750	543	1.96	25	
	24.0		450 600 750	631 632 610	2.0 2.0 2.0	26 26 27	312

Borehole	Triaxial Compression Test						
	Depth	Test Type	Lateral Pressure (kN/m^2)	Compress Strength (kN/m^2)	Bulk Density (mg/m^3)	Moisture Content (%)	Cohesion (kN/m^2)
BHK	2.1	38U	50 100 200	128 141 140	1.95 1.94 1.95	29 29 29	68
	5.2		50 100 200	221 230 230	1.94 1.95 1.95	28 28 28	114
	9.0		100 200 300	242 268 263	1.99 1.97 1.98	24 27 27	129
	11.9		200 300 450	299 325 315	1.96 1.95 1.96	27 28 27	157
	14.9		200 300 450	299 328 337	1.96 1.96 1.95	26 26 26	161
	18.0		200 300 450	481 507 458	1.97 1.96 1.96	25 25 24	241
	21.1		450 600 750	545 578 562	1.97 1.96 1.97	26 26 26	281
	24.0		450 600 750	621 646 660	1.97 1.98 1.96	26 26 26	321

Borehole	Atterberg Limits						
	Depth	Sample Description	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plastic Index (%)	Percent Passing 425 mic
BHJ	2.7	Fissured brown clay	26	69	25	44	>90
	21.1	Fissured grey clay	27	75	25	50	>90
BHK	5.2	Fissured brown clay	28	73	27	46	>90
	21.1	Fissured grey clay	26	72	25	47	>90

British Geological Survey Online Borehole Records

6.11 We have undertaken a search of the British Geological Survey online database for historical borehole records. There are no boreholes located on site or in the near vicinity of the site that provide additional information.

7. Hydrogeology

Aquifer Designation

7.1 According to the Groundsure Insight Report, the following aquifer designations are assigned to the geological units beneath the site.

Geological Unit	Aquifer Designation
Boyn Hill Gravel Member of the Maidenhead Formation	Secondary A Aquifer with permeable layers capable of supporting water supplies and base flow to rivers on a local scale.
London Clay Formation	Unproductive Strata with low permeability and have negligible significance for water supply or for the supply of base flow to streams and rivers.

7.2 Regional groundwater flow is considered to be to the south / south east towards the River Thames. The Water Framework Classification for groundwater in the Lower Thames Gravels Water Body is recorded as having a poor quantitative rating in 2019 and a good chemical rating leading to an overall poor water quality rating.

7.3 The Environment Agency's Groundwater Vulnerability maps show the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties of the local area.

7.4 The site is shown to be located in an area where the superficial deposits have a medium groundwater vulnerability, which means that groundwater resources have some natural protection and there is a medium pollution risk should spillages occur at the surface. Good practice pollution prevention measures should be used so that activities do not cause groundwater pollution.

7.5 The underlying bedrock deposits are unproductive strata and will reduce the vertical migration of any surface pollutants due to the low permeability of the deposits and will protect any aquifers that may be present beneath.

Groundwater Source Protection Zone

7.6 The site is not located within a Groundwater Source Protection Zone.

Groundwater Abstractions

7.7 The Groundsure Insight Report does not identify any current or historic groundwater abstractions authorised by the Environment Agency on site or within 250m of the main property. The historical mapping has identified a former water well on site, which was associated with the previous mansion building. No further details relating to this historical abstraction are available from the Environment Agency, British Geological Survey or London Borough of Hillingdon Council.

8. Hydrology and Flood Risk

Hydrology

8.1 The closest surface watercourse is an unnamed stream located approximately 100m north east of the site, which appears to be a tributary of the Yeading Brook. The Yeading Brook flows from north to south approximately 1.25km east of the subject site. It converges with the River Crane approximately 3.5km south east of the site, which ultimately discharges to the River Thames at a location 10km to the south east.

8.2 The Yeading Brook is indicated to have moderate ecological quality in 2019, with the chemical quality recorded as failing. The reasons for not achieving good status are due to urbanisation, misconnections and sewage discharges.

Culverted Watercourses

8.3 We are unaware of any culverted watercourses being present at the property. Should further clarification on this point be required, it would be necessary to undertake a review of the site's drainage plans, which may lead to an intrusive drainage survey being required.

Surface Water Abstractions

8.4 The Groundsure Insight Report does not identify any surface water abstractions authorised by the Environment Agency on site or within 250m of the property.

Flood Risk

8.5 The Environment Agency's Flood Map for Planning and Flood Risk Maps indicate the following information for the site:

Flood Zone	Fluvial and Coastal Flood Risk Rating
Flood Zone 1	The Environment Agency risk rating at this location means that the site is at 'very low' risk of flooding with an annual probability of river or sea flooding of less than 1 in 1,000. This takes into account the effect of any flood defences that may be in this area. However, whilst flood defences reduce the risk they do not completely stop the chance of flooding and they can overtop or fail.

8.6 The Groundsure Insight Report does not indicate any records of historical flood events reported by the Environment Agency within a 250m radius of the site, since records began in 1946.

8.7 The Environment Agency Surface Water Flood Maps indicate that the majority of the site is at 'very low' risk of surface water flooding, with an annual chance of flooding of less than 1 in 1,000. The topographically lower areas around the buildings are indicated to have a higher risk of surface water flooding with up to an annual chance of flooding of greater than 1 in 30. These areas were noted to benefit from gravel trenches and conventional drainage. The ground west of the Hayes Park South was noted to be waterlogged but this followed a period of prolonged heavy rainfall.

8.8 There is also a 1 in 30 chance of surface water flooding along the eastern access road where it meets with Park Lane. However, should surface water flooding occur, access and egress into the site is still possible via Hayes End Road to the south west, where there is a lower risk of flooding with a 1 in 100 to 1 in 1,000 chance of flooding each year. It is important to note that surface water flooding can be difficult to predict, much more so than river or sea flooding, as it is hard to forecast exactly where or how much rain will fall in any storm.

8.9 From a review of the Groundwater Flooding data contained in the Groundsure Insight Report simulated by Ambiental Risk Analytics and based on the anticipated geological conditions of the site, there is a low risk of groundwater flooding. This is based on a 1 in 100 year return period using the 5m Digital Terrain Model for topographical surface levels. Based on the previous ground investigation data with the potential for groundwater to be present within the Made Ground and claystone lenses within the London Clay Formation, groundwater flooding within basements is feasible.

8.10 The basements were noted to contain standing water and this may be related to rising groundwater together with surface water ingress at a number of open grated sections that allow ventilation to the basement. A maximum depth of 10cm water was noted during the site walkover, however, this did not appear to be impacting upon the plant and equipment contained within the basement. Sump pumps are also understood to be installed to help control groundwater levels.

Flood Risk Limitations

8.11 It is important to note that the above comments are based on the available desk top flood risk information for Main Rivers and flooding can also occur from smaller ordinary watercourses that are not mapped by the regulatory bodies.

8.12 Flooding can also occur through other mechanisms such as insufficient drainage capacity and breach of water storage infrastructure, such as reservoirs. For the avoidance of doubt, these forms of flooding have not been specifically assessed as they fall outside of the scope of this Environmental Report. This report does not constitute a Flood Risk Assessment.

9. Regulatory Database Entries

9.1 We have reviewed the Groundsure Insight Report to assess if there are any relevant entries that may impact the property. These entries are summarised below:

Discharge Consents

9.2 The Groundsure Insight Report does not identify any licensed surface water discharge consents authorised by the Environment Agency on site or within 250m of the property.

Environmental Permits (EA Installations, LAIPPC, LAPPC)

9.3 The Groundsure Insight Report does not identify any of the above environmental permits on site or within 250m of the property.

Pollution Incidents

9.4 From a review of Environment Agency substantiated pollution incidents contained within the Groundsure Insight Report, there are no incidents recorded on site or in the immediate vicinity of the site that are likely to have any significant impact.

Waste Management Sites

9.5 The Groundsure Insight Report does not identify any historical or operational landfills on site, or within 250m of the property.

9.6 Furthermore, there are no operational waste treatment or transfer facilities located within a 250m radius of the site.

Hazardous Substances (COMAH etc)

9.7 Industrial operations that involve the storage and use of significant quantities of hazardous substances are regulated by the Local Authority, the Environment Agency and Health and Safety Executive. The Groundsure Insight Report does not identify any authorisations/consents on site or within 1km of the property.

Sensitive Land Uses

9.8 The Groundsure Insight Report has not identified any environmentally sensitive sites within 500m.

9.9 The Groundsure Insight Report indicates that the site is situated within an area of Green Belt and that the buildings on site are Grade II* Listed. A Tree Preservation Order exists for the site, but the site is not located within a Conservation Area. The woodland to the immediate north east of the site is recorded as a Priority Habitat, which is of principal importance under the Natural Environmental and Rural Communities Act (2006) Section 41 and any future development will need to take consideration of this.

9.10 The site also lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone and consultation with Natural England may be required for certain types of development. In this instance, consultation for residential development is not considered to be likely.

10. Environmental Sensitivity

10.1 The environmental sensitivity of the site has been assessed using the information in the above sections and is summarised in the following table.

Attribute	Environmental Sensitivity		
	Low	Medium	High
Aquifer designation	☐	☒	☐
Permeability of aquifer	☐	☒	☐
Groundwater abstractions	☒	☐	☐
Groundwater Source Protection Zones	☒	☐	☐
Sensitivity of receiving waters	☐	☒	☐
Surface water abstractions	☒	☐	☐
Proximity to human occupation	☐	☒	☐
Presence of Site of Special Scientific Interest	☒	☐	☐
Presence of Areas of Outstanding Natural Beauty	☒	☐	☐
Presence of Local and National Nature Reserves	☒	☐	☐
Presence of RAMSAR sites	☒	☐	☐
Presence of Special Protection Areas	☒	☐	☐

10.2 On consideration of the hydrology, geology, hydrogeology and ecological receptors, the site and its surrounding area is considered to be of 'low to medium' environmental sensitivity. This means that there is limited potential for contaminants to significantly leach and migrate due to the permeability of the soils, however, the local environment may be sensitive to the effects of contaminants in the soil and groundwater should they be present.

11. Regulatory Enquiries

London Borough of Hillingdon Council

11.1 The relevant planning applications detailing the main development of the existing site are summarised in Section 5.0. A review of available information for these applications indicates that no specific contaminated land planning conditions were applied. With regards to flooding and drainage planning conditions were applied to control surface water to the site and prevent pollution to the local watercourses.

11.2 In addition to these applications, there are a number of additional planning applications covering the felling and pollarding of mature trees under the site's Tree Preservation Order (TPO 24) together with those for minor works which include provision of cycle storage and outdoor seating, installation of signage and flag poles, erection of CCTV cameras, installation of fencing and installation of satellite dishes.

11.3 We have made regulatory enquiries to Mr Simon Snape, Senior Land Contamination Officer at London Borough of Hillingdon Council (Ref. LBH1674209254800) regarding environmental issues that may impact the future development of the property.

11.4 In summary, the Council has confirmed the following details:

- The Council has searched mapping records from the 1800's which show the land on which the property is situated was part of Frogmore Farm. Part of the property was once occupied by a building which is annotated on mapping as "Hayes Park (Private Lunatic Asylum)". The Council's land contamination records do not show any evidence of other past contaminative uses at the site prior to the current development;
- In accordance with the Council's Contaminated Land Inspection Strategy, it is considered that the land at the property is suitable for its current use, and based on available details, the site has not been prioritised for inspection under Part 2A of the Environmental Protection Act (1990);
- The Council's land contamination records do not contain any site-specific details of land condition at the property;
- GIS and historic mapping shows evidence of a pond located a short distance from the south west corner of the former mansion. The Council noted that it is possible that the pond may have been

infilled or became dry sometime prior to construction of the current building. This feature has not been observed on the historic mapping available to Avison Young;

- The Council has no records of landfill, waste management sites or regulated premises (Pollution Prevention and Control Authorisations) at the property. Furthermore, the Council does not hold any records of pollution incidents at the property; and
- The Council searched GIS / OS mapping (Epoch_2_1888-1915) shows evidence of two locations identified as "historical water" which may be water boreholes. There are no other specific records of private abstraction wells/water supplies on site.

11.5 Where relevant, copies of the regulatory responses are provided in **Appendix III**.

12. Preliminary Risk Assessment

12.1 In order to assess the risks associated with the presence of ground contamination, the linkages between the sources and potential receptors need to be established and evaluated. This is in accordance with Part 2A of the Environmental Protection Act (EPA) 1990, which provides a statutory definition of Contaminated Land.

12.2 To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present in, on or under the land such that:

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

12.3 This regime does not take into account future uses which could need a specific grant of planning permission. To ensure a site is suitable for its new use and to prevent unacceptable risk from pollution, the implications of contamination for a new development are considered by the local planning authority.

Risk Exposure

12.3 In consideration of the above regulatory regime and available information, the overall risk with respect to issues identified on the site has been assessed qualitatively as low, moderate or high. A risk exposure matrix for plausible pollutant linkages for the proposed development is provided on the following pages.

12.4 This assessment is based on the provision of a total of 124 new homes within the Hayes Park South and Hayes Park Central buildings.

- Hayes Park South – the conversion of this three storey Grade II* Listed building to provide 75 new homes.
- Hayes Park Central - the conversion of this three storey Grade II* Listed building to provide 49 new homes.

12.5 Various works to the buildings will be undertaken to enable the change of use to residential, notably including the creation of balconies, cut outs at ground level to create terraces, and a large central cut out to Hayes Park Central. Landscaping works across the site will be completed including the provision of a new playground, a new square and extensive communal grassed areas surrounding the buildings. Car and cycle parking for future residents of the site will also be provided. The proposed development will utilise the existing controlled site access points and existing internal roads. Proposed ground floor layouts are provided in **Appendix I**.

Potential Contamination	Pathways	Receptors	Risk Evaluation of Pollutant Linkage
Historical contaminants – <u>*On site -*</u> *Infilled pond (east of site beneath access road only)* *Potential for infilled water well* *Former agricultural building (west of site) may have contained asbestos and been used for the storage of oils and fuels* *Made Ground comprising reworked natural materials and construction materials* *Storage and use of chemicals as part of former laboratory facility within buildings* *Asbestos* <u>*Off site –*</u> *Home Farm – agricultural use with potential for storage of fuel, slurry, etc.* *Asbestos*	Direct contact / ingestion of contaminated soil	Site Workers / Site Visitors / Residents	**Low -** The site is understood to have been occupied by a mansion (residential) from the 1800s to the 1960s, when it was developed within the existing offices. Agricultural buildings were present in the far west. Limited Made Ground is present, predominantly comprising of reworked natural strata with limited construction materials included in the near surface layer. Former agricultural buildings have been developed as the main car park since the 1970s and this area will not be disturbed by the redevelopment. Therefore, the risk of exposure to contamination for the existing office development and the proposed development is considered low.
		Construction Workers	**Low -** Construction workers are unlikely to be exposed to significant contamination in soil during any future ground works. Localised areas of Made Ground are present, comprising predominantly of reworked natural materials and / or inert construction materials. Appropriate Personal Protective Equipment and working practices will be necessary.
	Inhalation of ground gases / dust / fibres	Site Workers / Site Visitors / Residents	**Low -** Made Ground is predominantly reworked natural materials and is therefore unlikely to generate ground gas. Infilled pond beneath eastern access road is greater than 250m away from existing buildings. No other significant sources of ground gas have been identified on or off site. Exposure is considered low. **Moderate -** Asbestos containing materials are suspected to remain within the fabric of the buildings and these should be removed as part of the conversion / refurbishment works.
		Construction Workers	**Low -** Made Ground is predominantly reworked natural materials and is therefore unlikely to generate ground gas. Infilled pond beneath eastern access road is greater than 250m away from existing buildings and no works are proposed in this part of the site. No other significant sources of ground gas have been identified on or off site. **Moderate -** Asbestos containing materials are suspected to remain within the fabric of the buildings and refurbishment / pre-demolition surveys will be required prior to any works to control the risk to construction workers during redevelopment. Potential for asbestos in soils associated with former agricultural buildings in the west of the site, however, this area will not be redeveloped as part of this scheme.

Potential Contamination	Pathways	Receptors	Risk Evaluation of Pollutant Linkage
Current contaminants – <u>*On site -*</u> *Above and below ground fuel tanks associated with backup generator – diesel. No evidence of leaks or spills.* *Electricity sub station – potential for PCBs* *Plant and equipment – potential for oils, lubricants, refrigerants* *Asbestos within fabric of buildings* *Infilled pond within courtyard of Hayes Park South* *Minor oil and fuel spillages associated with car parking* <u>*Off site –*</u> *No significant sources identified*	Permeation of contamination through water supply pipes	Site Workers / Site Visitors / Residents	**Low -** Any new water supply pipes laid should take account of the encountered ground conditions. No significant sources of contamination have been identified and consultation with the Water Company should be undertaken to confirm their requirements.
	Direct contact with contaminated soils	Buildings and Services	**Low -** No significant sources of contamination have been identified that are likely to cause the deterioration of concrete.
	Plant uptake from soil	Landscaped areas	**Low -** No evidence of vegetation die back noted.
	Ingestion of site grown fruit and vegetable	Site Workers / Site Visitors / Residents	**Low -** Significant contamination is not anticipated on site. Future development proposals will need to ensure a clean cover layer is provided to any areas to be used for growing fruit or vegetables or private sections of garden that may be provided as part of the redevelopment.
	Leaching to groundwater	Secondary A Aquifer over Unproductive Strata	**Low -** No significant sources of contamination noted, and the presence of sandy silty clays will limit potential for any significant vertical or horizontal contamination migration to groundwater.
	Migration in groundwater	Water Abstractions	**Low -** No active groundwater abstractions have been identified locally to the site, although a historic water well was present on site and depending on its presence / condition, it may still present a vertical migration pathway to any soil and groundwater contaminants on site.
	Migration in groundwater to watercourse	Brook 100m north east	**Low -** Unlikely given absence of significant sources of contamination and presence of lower permeability sandy silty clays.
	Surface water runoff		**Low -** No significant storage of chemicals remain on site and would have previously been located within the building.
	Surface water runoff to adjacent land	Off-site property	**Low -** No significant sources of contamination noted, therefore, runoff of contamination onto third party land is unlikely.
	Migration in groundwater to adjacent land		**Low -** Site and adjacent property have not had a contaminative history and presence of lower permeability sandy silty clays will limit any migration in groundwater to adjacent.

13. Conclusion and Recommendations

13.1 The Avison Young Environmental Services Team has completed a Phase 1 Environmental Report for the subject property.

13.2 In conclusion, based on our assessment of historical map sources and background data, together with our site inspection, we consider that the site represents a **Low Environmental Risk** from an environmental perspective for the future residential conversation of the existing buildings. No visual evidence of significant ground contamination and/or hazardous processes were noted on site.

13.3 Diesel storage associated with the back-up generator remains on site and there is no evidence of leaks or spills on site. Integrity testing of the fuel lines and tank(s) should be completed to confirm that no leakages, particularly below ground, have occurred. If this system is to become redundant for the proposed development, it should be fully decommissioned and made safe. Should any leaks or spills become apparent during either integrity testing or decommissioning, localised remediation may be required.

13.4 It is understood that ecological surveys have been completed to support the planning application. No evidence of Japanese Knotweed or other invasive plant species were noted, however, this can only be confirmed by a specialist survey.

13.5 Asbestos containing materials are considered likely to remain within the fabric of the buildings. As such, we recommend that intrusive Pre-Demolition or Refurbishment Asbestos Survey are undertaken prior to any significant modification or refurbishment is undertaken in order to ensure compliance with the Control of Asbestos Regulations 2012.

13.6 There is potential for asbestos in soils associated with former agricultural buildings previously located in the west of the site. This area currently forms the main car park and is covered by tarmacadam hardstandings, which limits any potential pathways to existing or future site users. Contractors undertaking any future earth works in this area should be informed of the potential risks and undertake watching brief so that if encountered they can be safely removed.

13.7 A pool was originally present within the courtyard of Hayes Park South and this was infilled during a previous building refurbishment. The details of the infilling works are unknown and localised investigations should be undertaken to confirm the nature and competency of the materials prior to any alterations in this part of the building.

13.8 A water well was previously present on site. If any evidence of this is found it should be decommissioned or made safe.

13.9 The site is located in Flood Zone 1 and is at very low risk of fluvial flooding. There are localised areas mapped around the perimeter of the buildings which are at greater risk of surface water flooding. All surface water drainage should be well maintained to ensure that rainfall can be conveyed away from the buildings during heavy and prolonged rainfall.

13.10 There is a low risk of groundwater flooding and water was noted in the basement which may have been as a result of groundwater ingress as well as surface water flowing in through ventilation grates. Sump pumps are present in the basement and these should be regularly maintained to ensure that groundwater levels in the basement are controlled. As the site is greater than 1ha, a Flood Risk Assessment should be completed to support the planning application.

13.11 The trees on site are protected by a Tree Preservation Order and as such any topping, lopping, uprooting, damage or felling of trees will require advance consent from the Local Planning Authority in order to comply with Town and Country Planning (Tree Preservation) (England) Regulations 2012.

13.12 It will be necessary to undertake localised ground investigation and provide appropriate clean cover layers, should any private garden areas, allotments / orchards be created as part of the residential conversion of the property.

13.13 A Detailed UXO Risk Assessment should be completed prior to any intrusive works.

13.14 Prior to any significant site wide redevelopment, an intrusive ground investigation would be required to fully determine the ground conditions.

13.15 Definitions and Reservations are provided in **Appendix IV**.

Appendix I
Proposed Layout

General Notes

No implied licence exists. This drawing should not be used to calculate areas for the purposes of valuation.
Do not scale this drawing for construction purposes. All dimensions to be checked on site by the contractor and such dimensions to be their responsibility.
All work must comply with relevant British Standards and Building Regulations requirements. Drawing errors and omissions to be reported to the architect.

Notes

For the purpose of this application, the existing building has been modeled in 3D, taken from 2D survey information provided by CSL Surveys (Stevenage) LTD and a structural model, designed by Whitby Wood. Due to the complexities of an existing building, the 3D model may not accurately reflect all of the details of drawings required for the planning submission and design work stage. Please refer to the detailed drawings for the setting-out.

Residential Typologies

- 1B1P
- 1B2P
- 2B3P
- 2B4P
- 3B5P
- 3B6P
- 4B
- 5B
- 6B

Other residential uses

- Plant / cycle store / bin store
- Communal room
- Proposed amenity - garden
- Proposed amenity - balcony
- Proposed indicative sloped/stepped ground floor light wells
- Existing basement/tunnel location
- Existing HPC lower ground location
- Proposed amenity - garden

0 5m
@ 1:100

Key Plan

Studio Egret West
3 Brewhouse Yard
London, EC1V 4JQ
hello@egretwest.com
+44 (0) 20 7549 1730

For Planning

Project No.	0419
Project Name	Hayes Park
Drawing Title	Proposed Level 00 -HPC
Client	Shall Do Hayes Developments Limited
Scale @A0	1 : 100
Date	01/05/2023
Drawn by	PJ
Checked by	CS

Rev	Date	Reason	Chk
P1	01/05/23	For Planning	SEW

Drawing Number	Rev
0419-SEW-HC-00-DR-A-000111	P1

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Residential Typologies

- 1B1P
- 1B2P
- 2B3P
- 2B4P
- 3B5P
- 3B6P
- 4B
- 5B
- 6B

Other residential uses

- Plant / cycle store / bin store
- Communal room
- Proposed amenity - garden
- Proposed amenity - balcony
- Proposed indicative sloped/stepped ground floor light wells
- Existing basement/tunnel location
- Existing HPC lower ground location
- Proposed amenity - garden

1:100

Key Plan

Studio Egret West
3 Brewhouse Yard
London, EC1V 4JQ
hello@egretwest.com
+44 (0) 20 7549 1730

For Planning

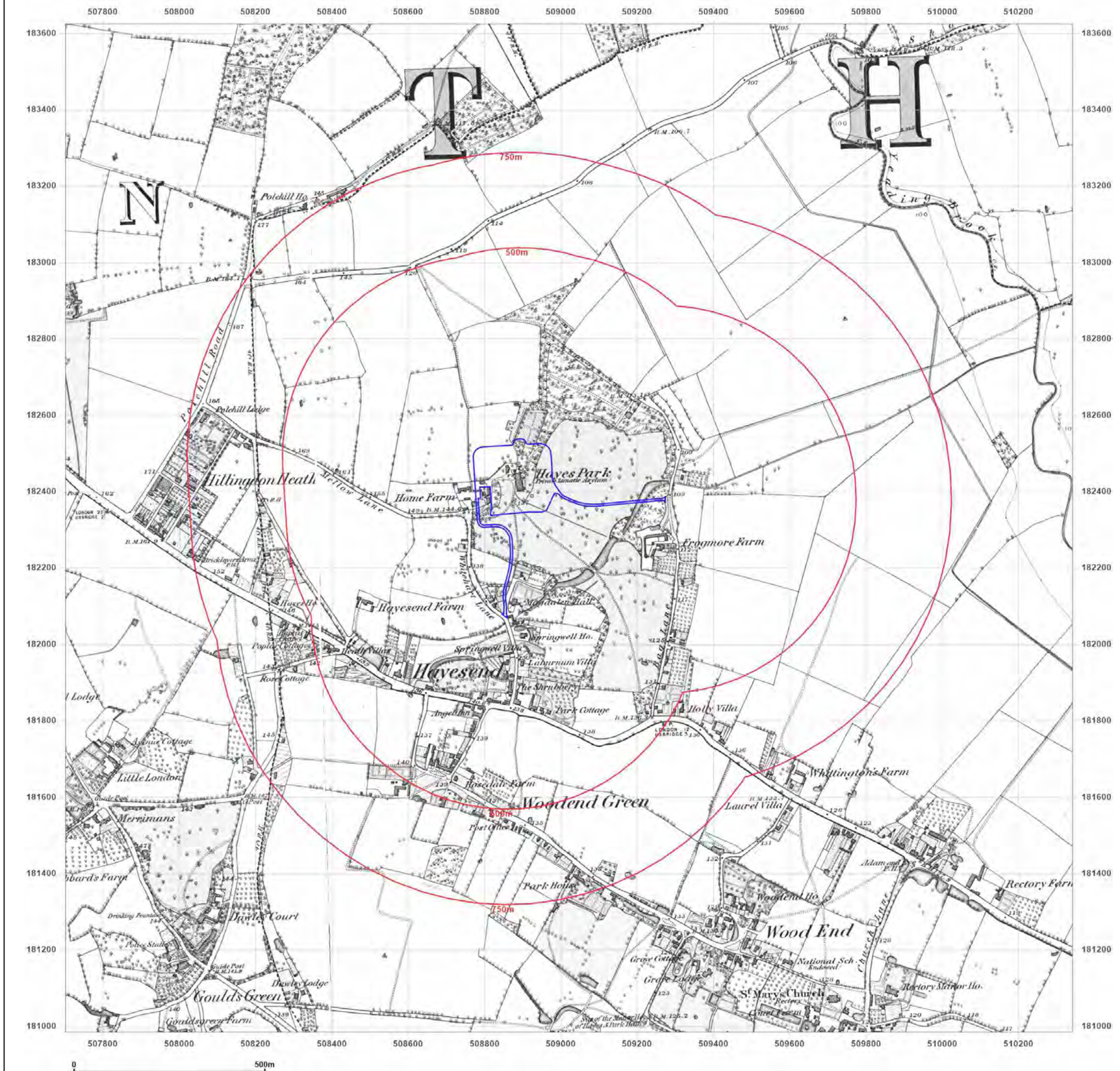
Project No.	0419
Project Name	Hayes Park
Drawing Title	Proposed Level 00 -HPS
Client	Shall Do Hayes Developments Limited
Scale @A0	1 : 100
Date	01/05/2023
Drawn by	CS
Checked by	GN

Rev	Date	Reason	Chk
P1	05/05/23	For Planning	SEW

Drawing Number	Rev
0419-SEW-HS-00-DR-A-00116	P1

Appendix II

Historical Maps



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1868**

Scale: 1:10,560

Printed at: 1:10,560

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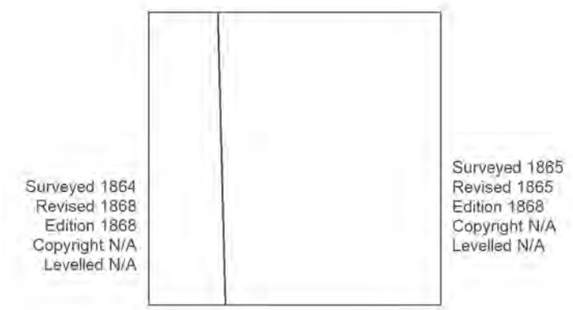
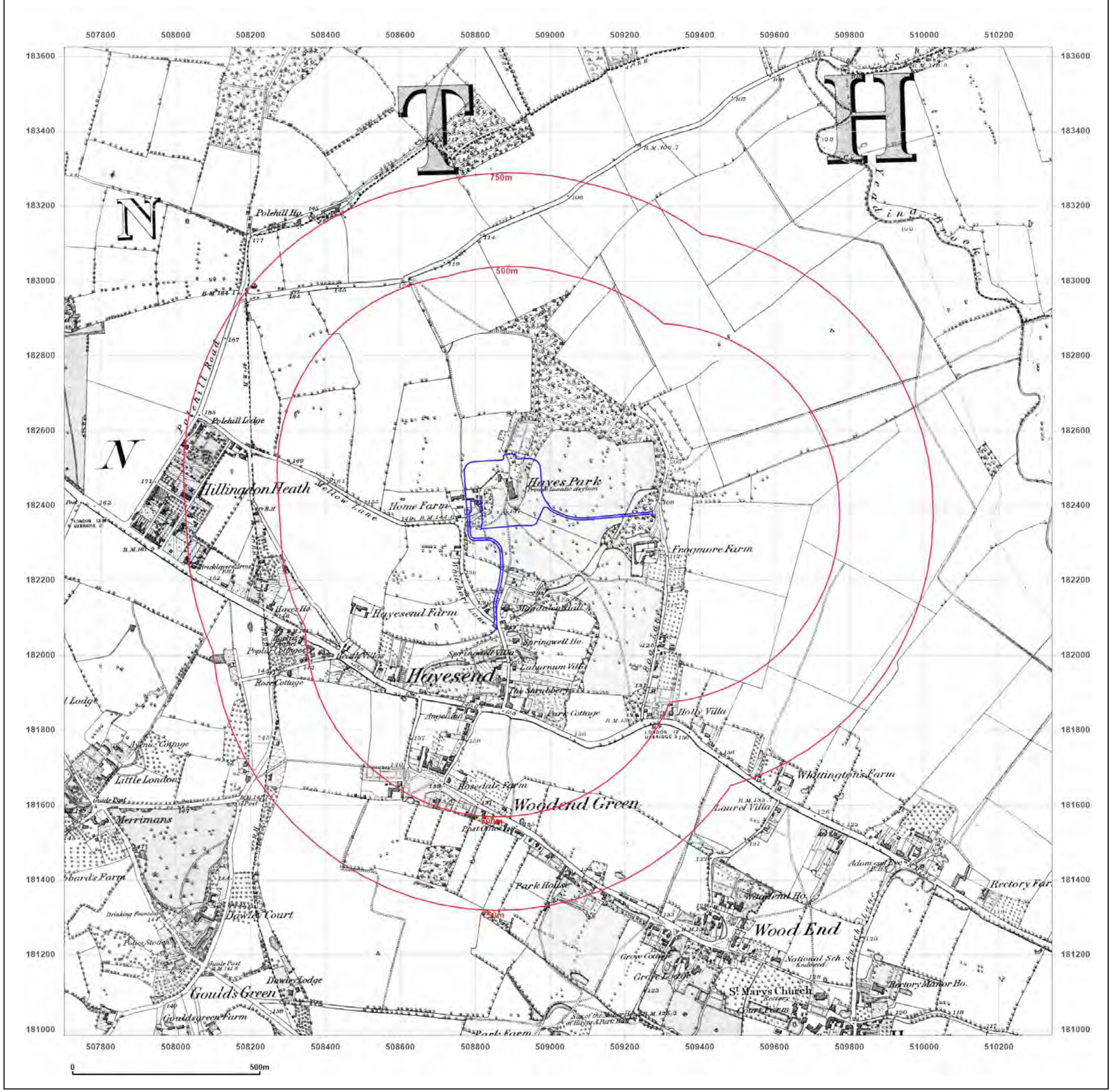


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1881**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1875
Revised N/A
Edition 1881
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition 1881
Copyright N/A
Levelled N/A

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Production date: 13 June 2023

Map legend available at:
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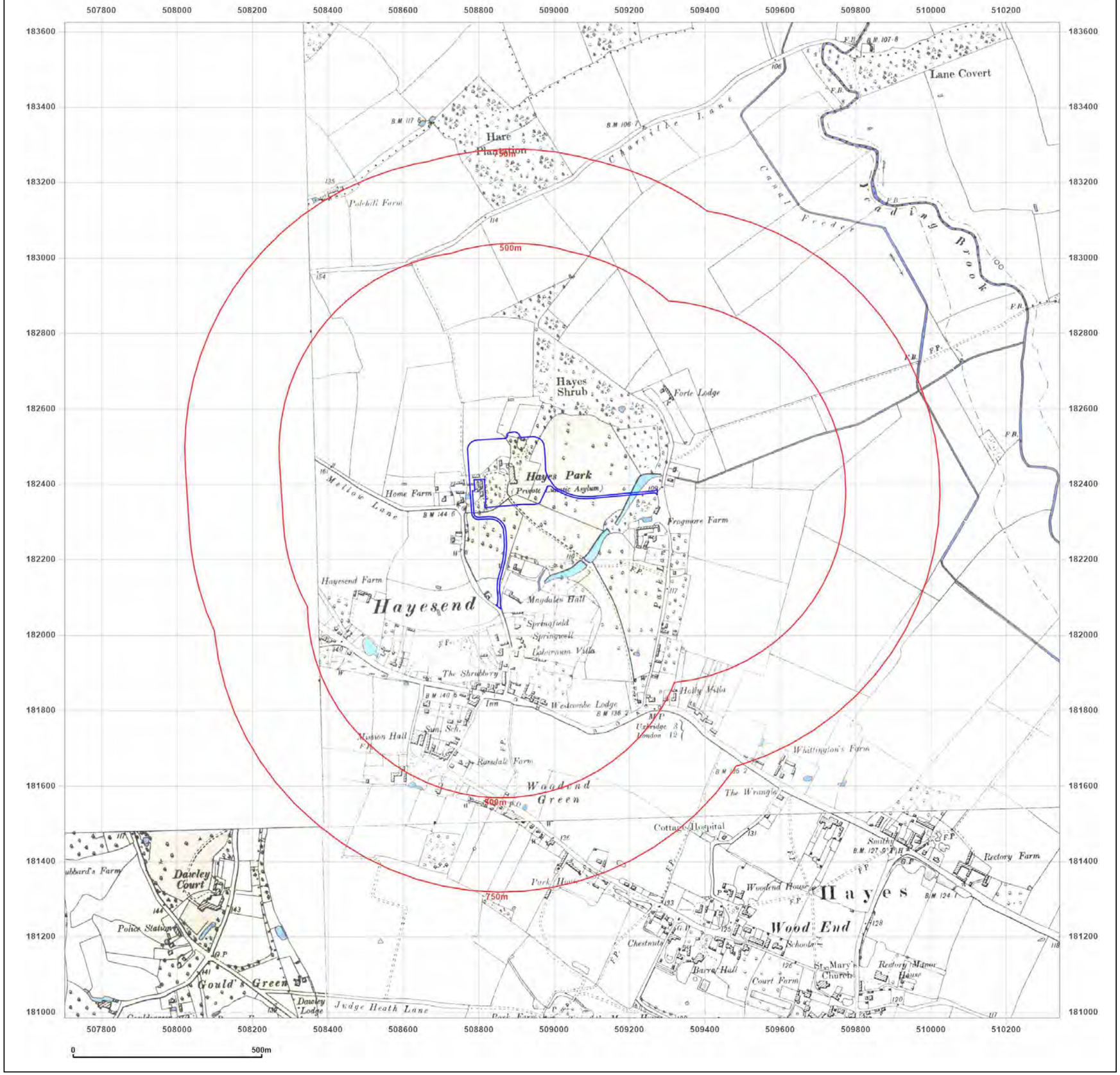

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1894**

Scale: 1:10,560

Printed at: 1:10,560

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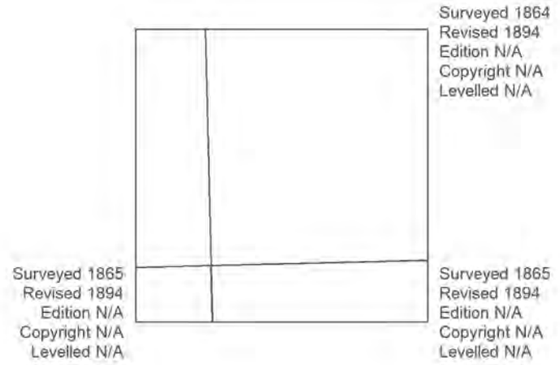
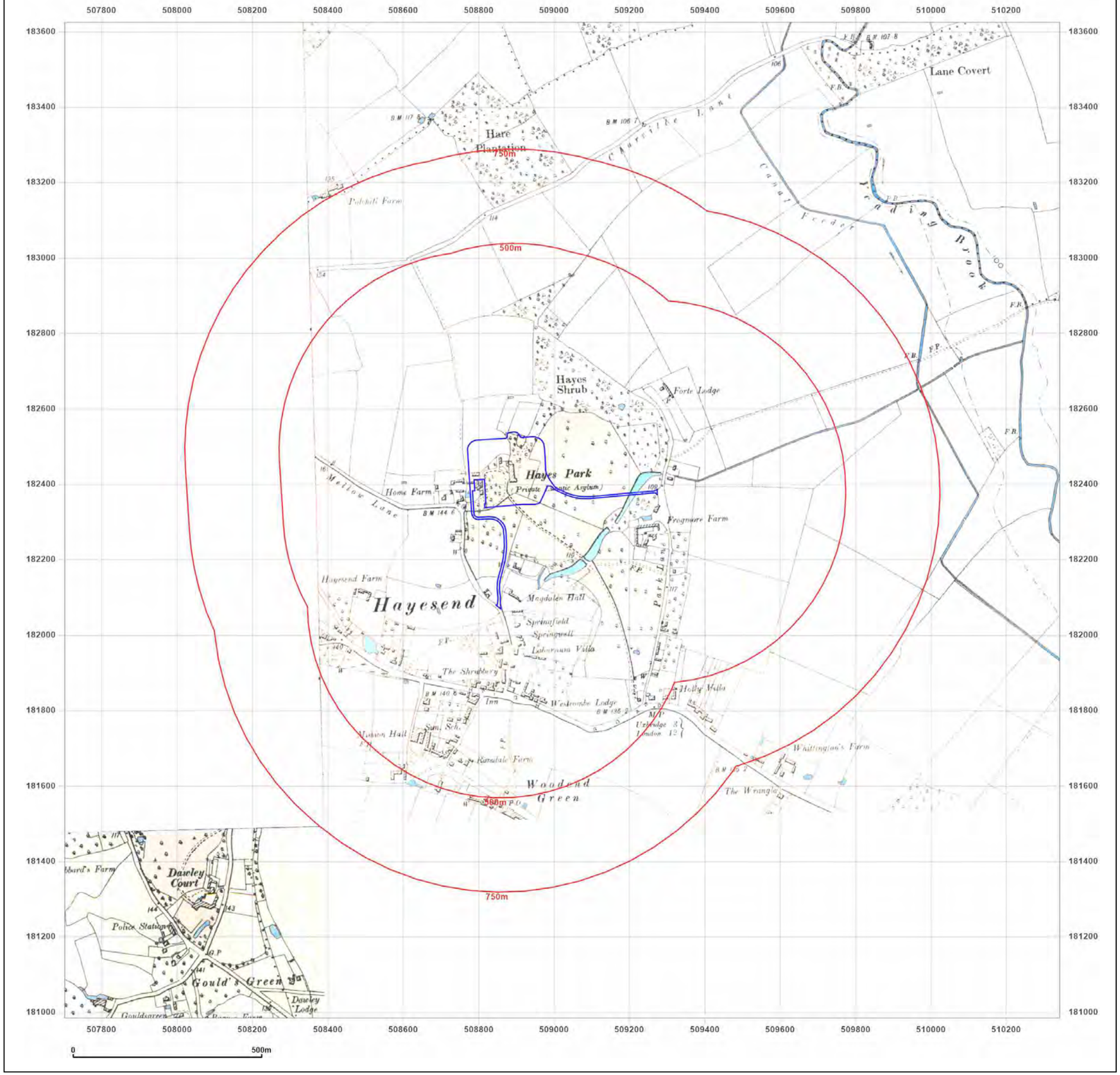


Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1897**

Scale: 1:10,560

Printed at: 1:10,560

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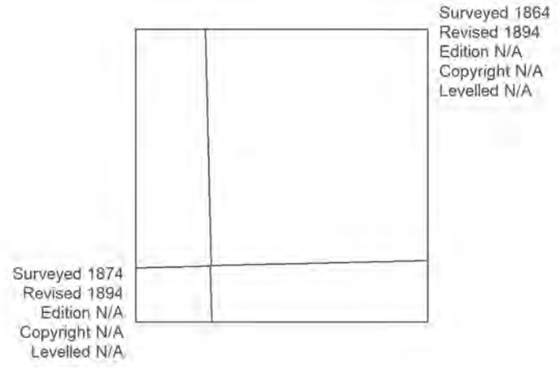
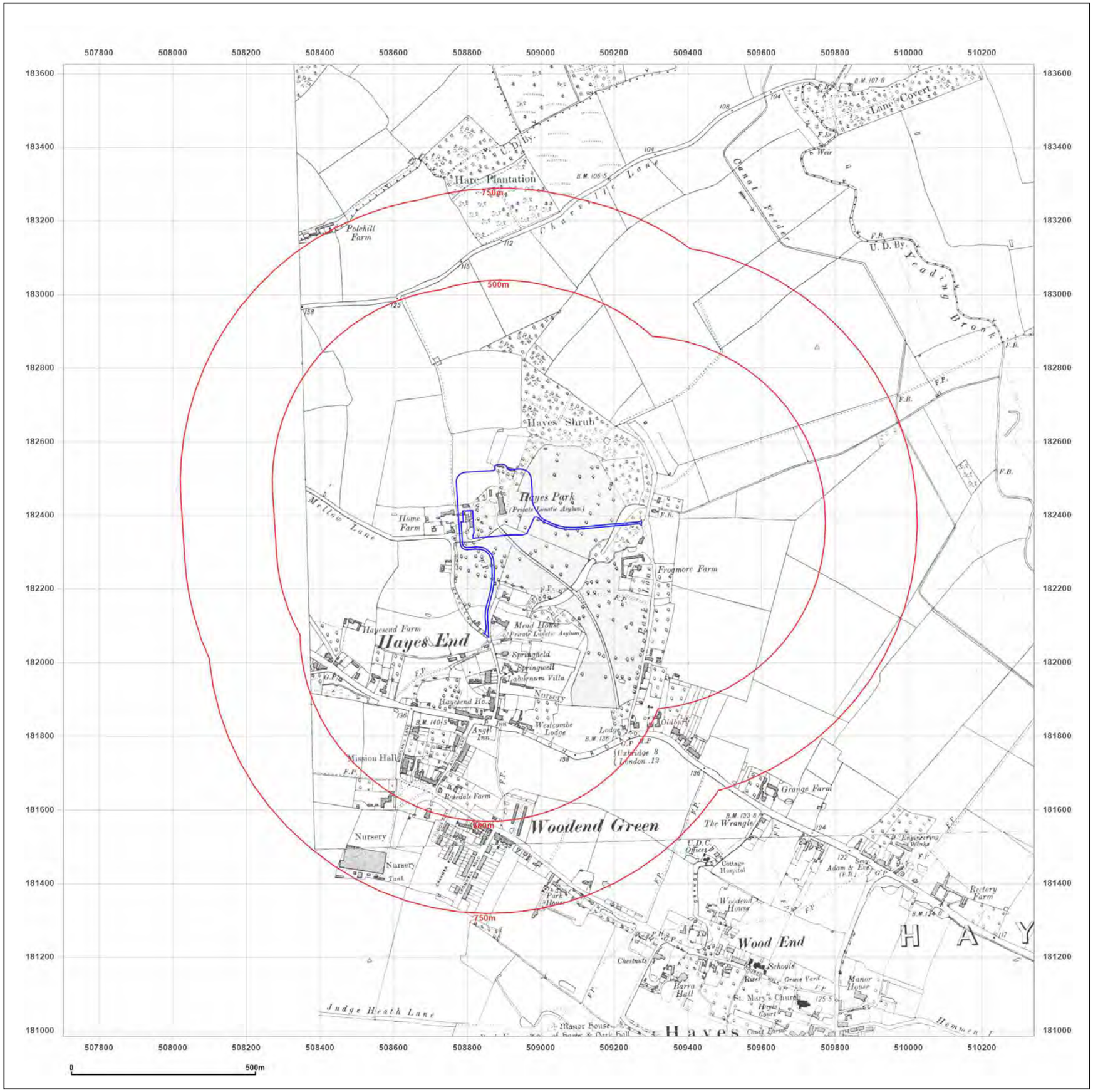


Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1913**

Scale: 1:10,560

Printed at: 1:10,560

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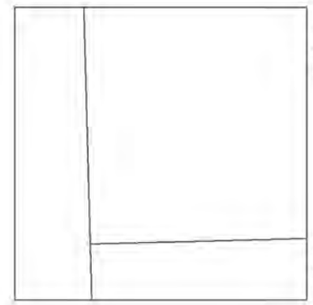

Powered by

Produced by
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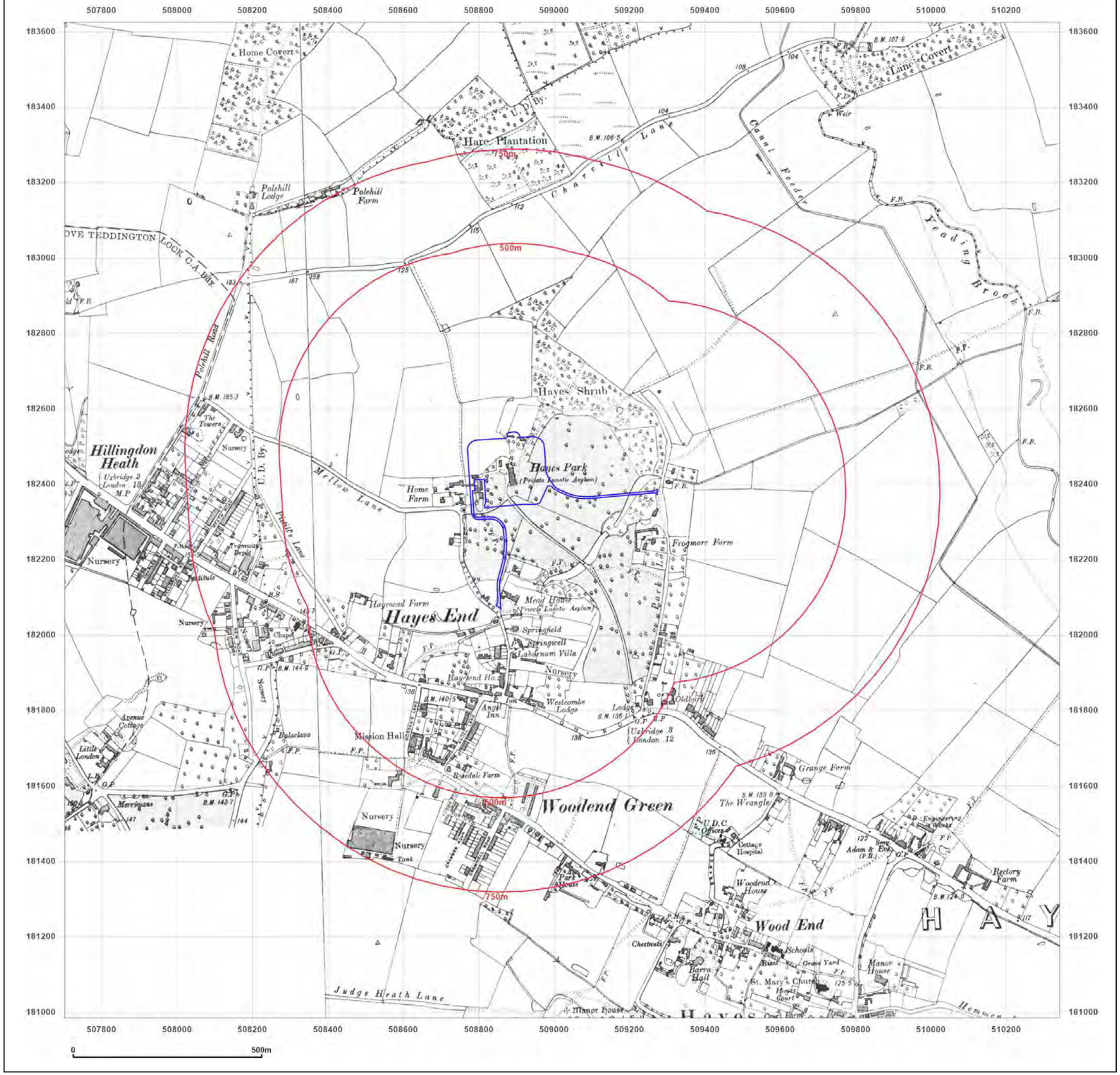
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series

Map date: **1920**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1864
Revised 1913
Edition 1920
Copyright N/A
Levelled 1913

Surveyed 1865
Revised 1913
Edition 1920
Copyright N/A
Levelled 1912

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W: www.groundsure.com

Production date: 13 June 2023

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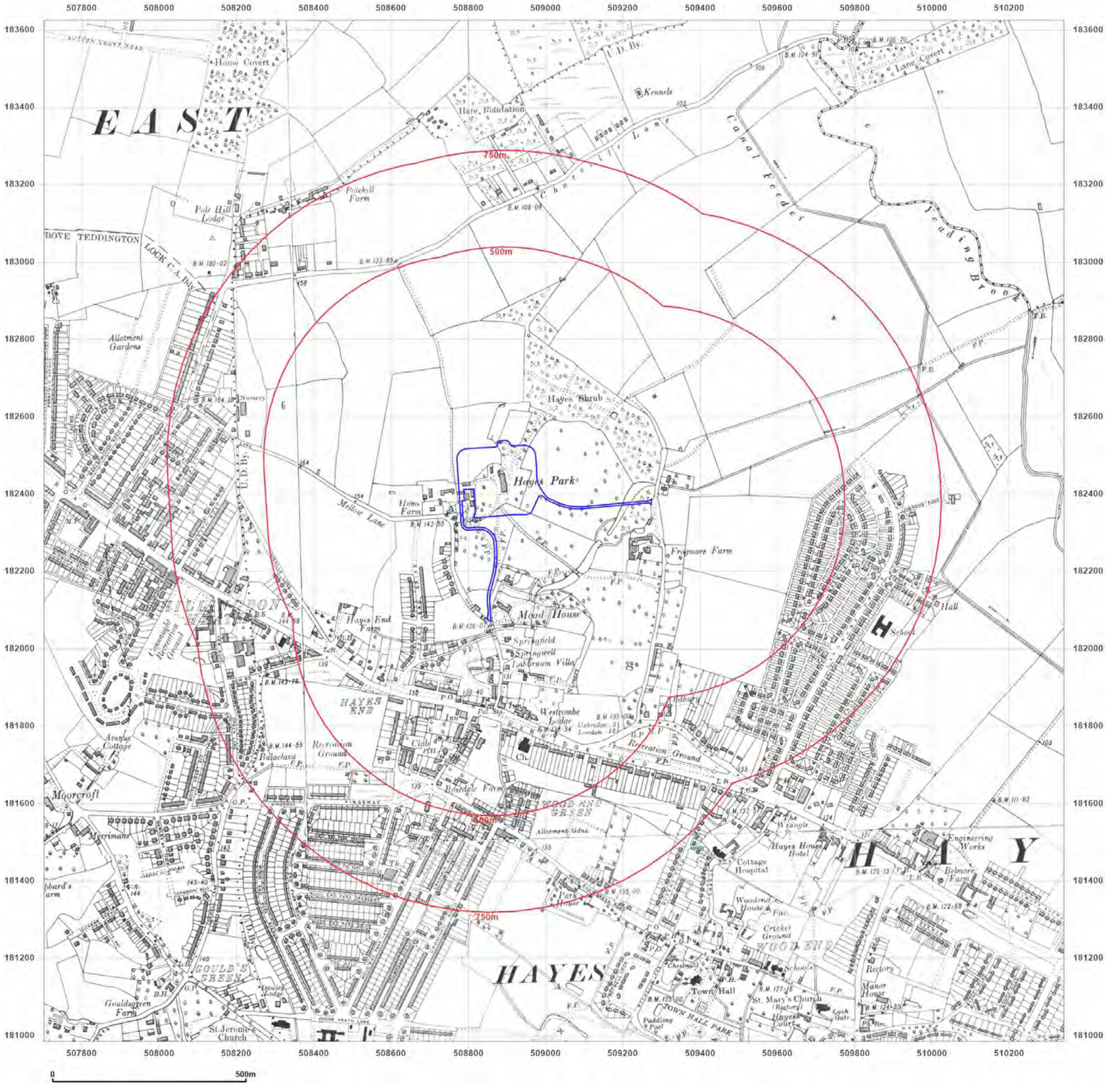
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series
Map date: **1935**
Scale: 1:10,560
Printed at: 1:10,560

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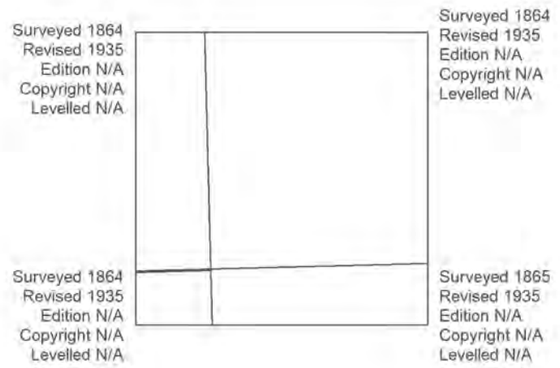

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Groundsure Insights
T: 08444 159000
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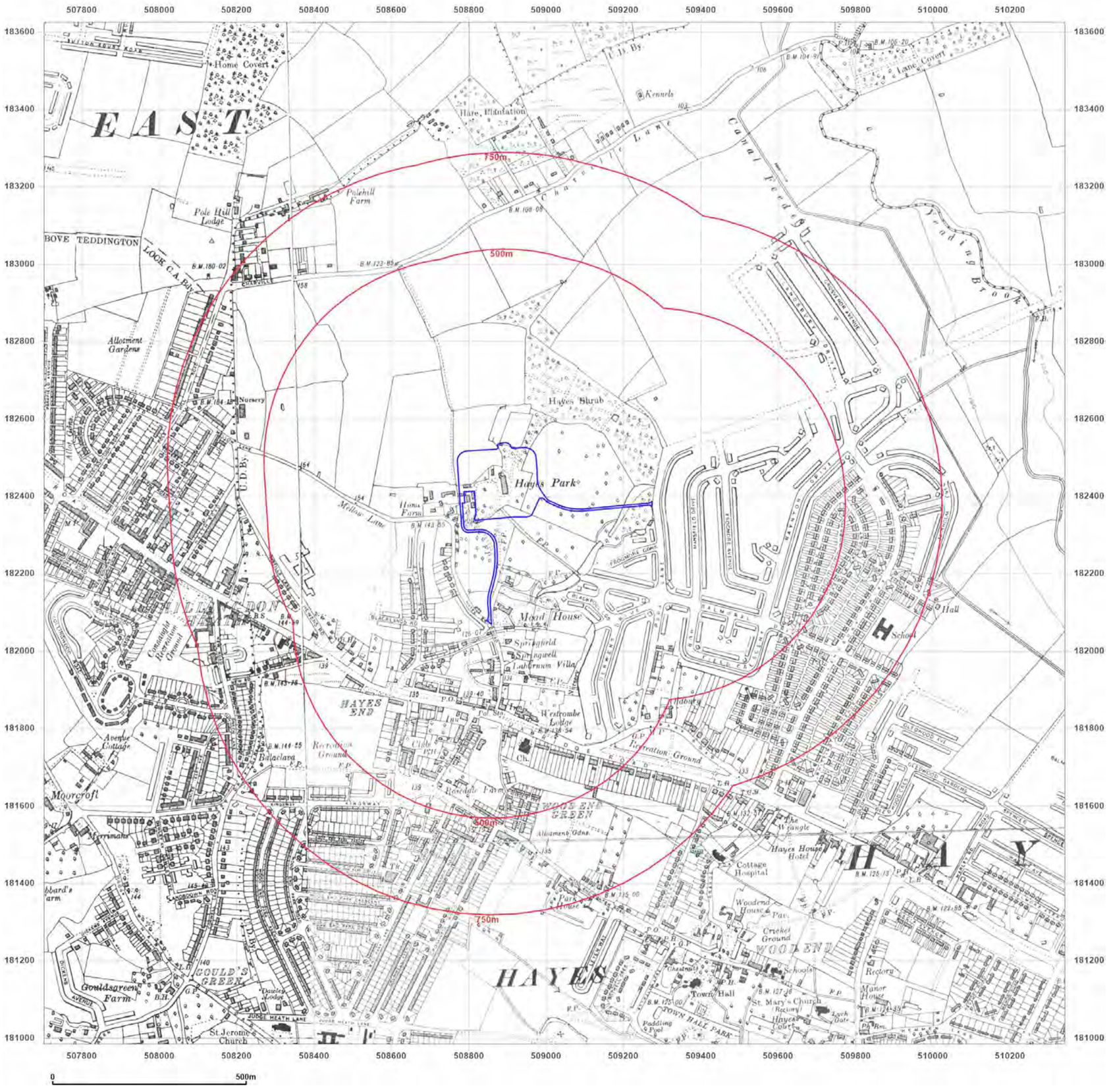
W: www.groundsure.com

Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series
Map date: **1938**
Scale: 1:10,560
Printed at: 1:10,560

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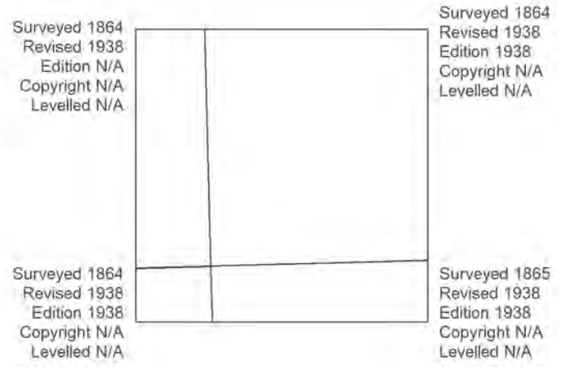

Powered by OS

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Production date: 13 June 2023

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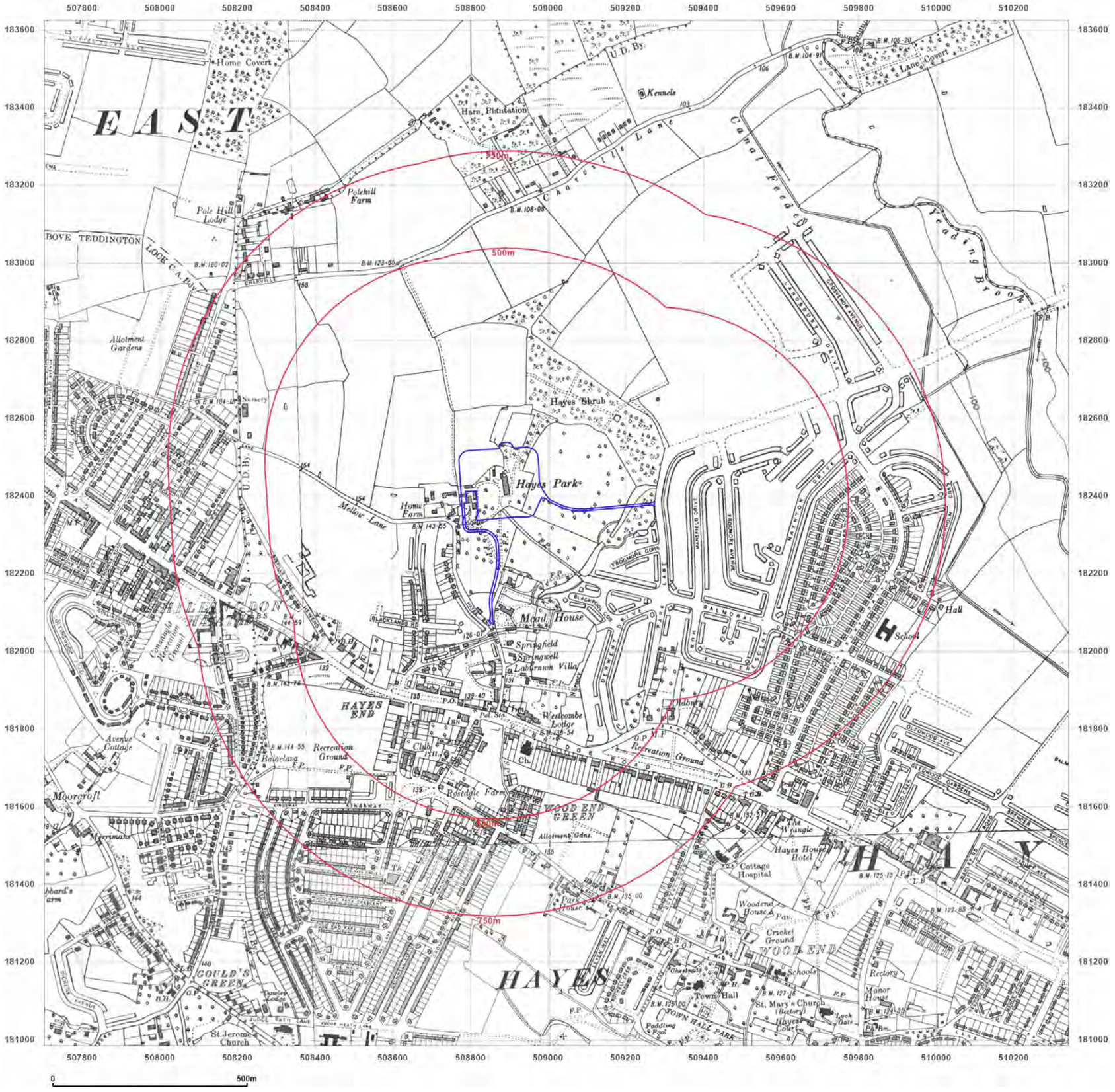

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: County Series
Map date: **1938**
Scale: 1:10,560
Printed at: 1:10,560

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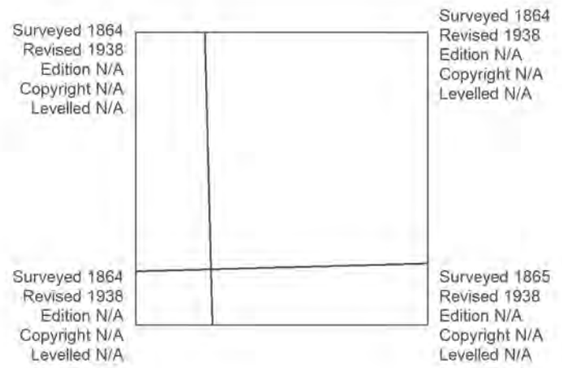

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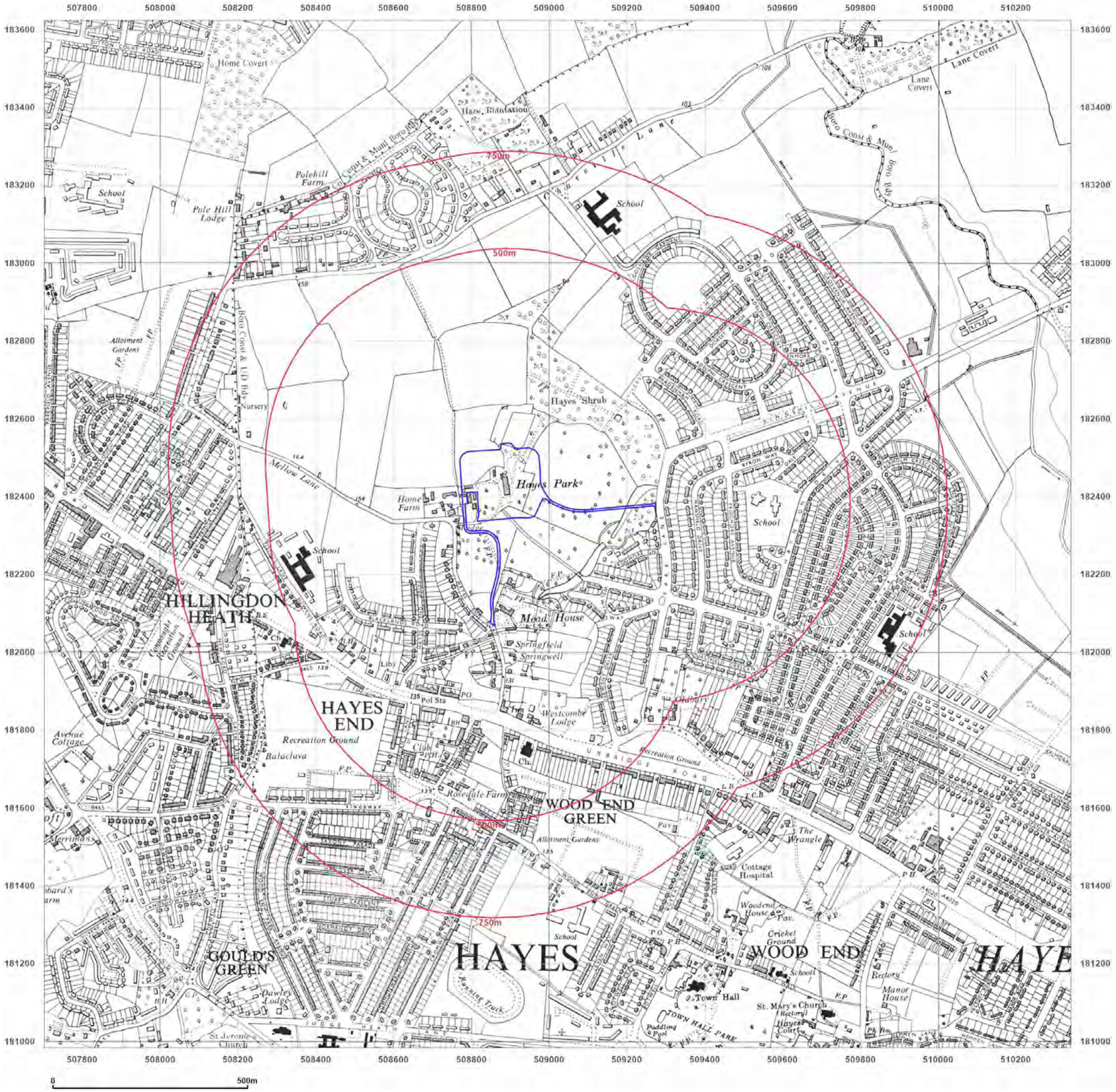
Production date: 13 June 2023

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



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: Provisional
Map date: **1960**
Scale: 1:10,560
Printed at: 1:10,560

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

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

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: Provisional

Map date: **1966-1970**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed N/A
Revised 1970
Edition N/A
Copyright 1970
Levelled N/A

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

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: National Grid

Map date: **1973-1975**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1975
Revised 1975
Edition N/A
Copyright 1976
Levelled 1972

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

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: National Grid

Map date: **1990-1994**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1988
Revised 1989
Edition N/A
Copyright 1990
Levelled 1972

Surveyed 1983
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

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W: www.groundsure.com

Production date: 13 June 2023

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

Recent site history - 1999 aerial photograph

Capture Date: 29/08/1999

Site Area: 3.77ha

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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W: www.groundsure.com

Production date: 13 June 2023

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

Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

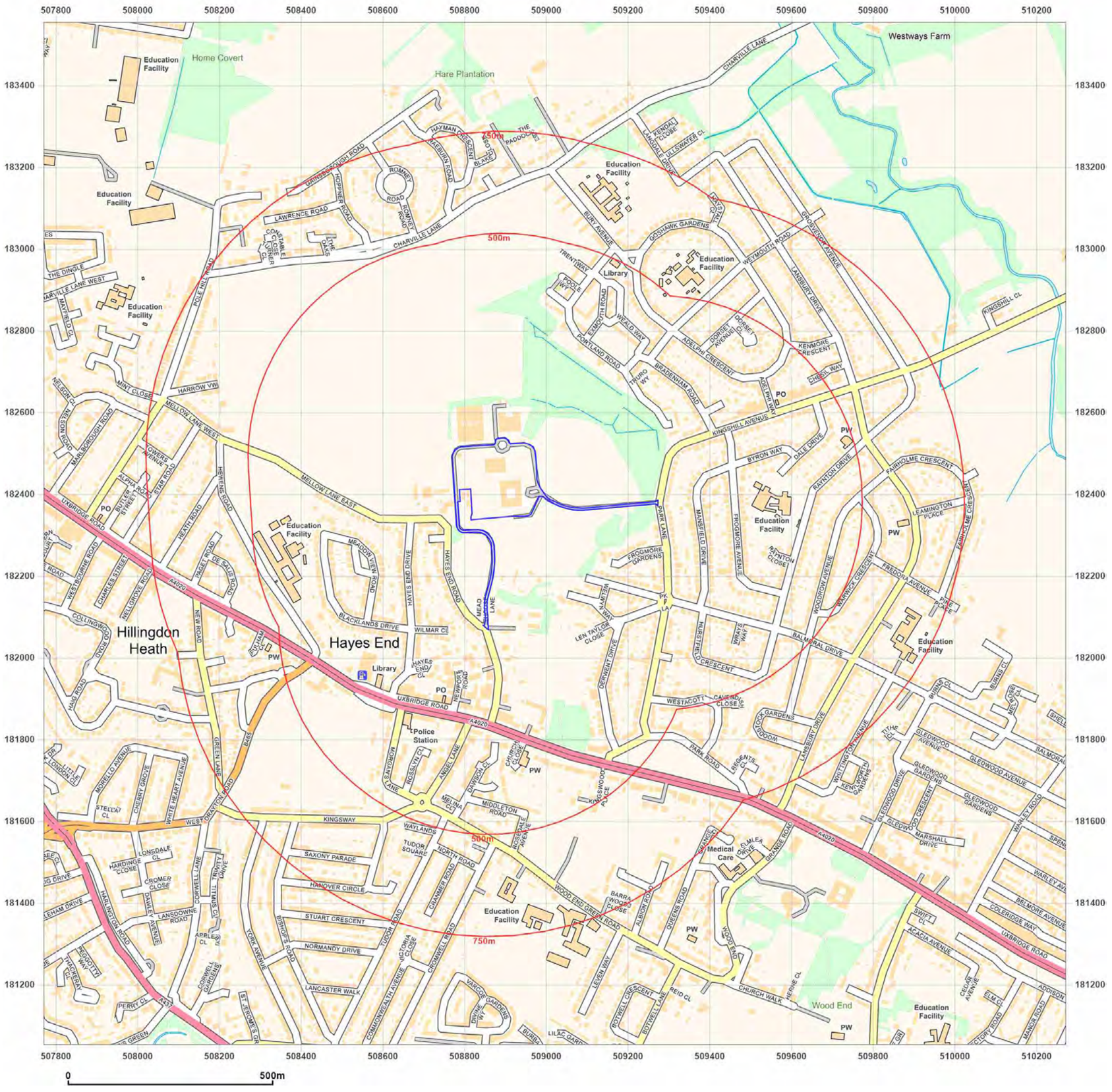
Production date: 13 June 2023

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

Recent site history - 2013 aerial photograph

Capture Date: 20/04/2013

Site Area: 3.77ha



Groundsure INSIGHTS

Site Details:

HAYES PARK CENTRAL
BUILDING, HAYES END ROAD,
HAYES, UB4 8FE

Client Ref: 01C202251
Report Ref: GS-5L4-YDP-RA9-XC7
Grid Ref: 509021, 182304

Map Name: National Grid
Map date: **2023**
Scale: 1:10,000
Printed at: 1:10,000

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Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 13 June 2023

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

Recent aerial photograph

Capture Date: 13/06/2021

Site Area: 3.77ha

Appendix III

Supporting Information

Bayliss, Helen (Avison Young - UK)

From: Contaminated Land <contaminatedland@hillingdon.gov.uk>
Sent: 20 January 2023 14:54
To: Bayliss, Helen (Avison Young - UK)
Subject: FW: A contaminated land enquiry form LBH1674209254800 has been submitted
Attachments: LBH1674209254800.pdf; Site Plan.JPG

Follow Up Flag: Follow up
Flag Status: Completed

CAUTION: External Sender

Ref: Hayes Park, Hayes End Road, Hayes, Hillingdon, UB4 8FE (the property)

Good afternoon

Thank you for your completing our online contaminated land enquiry form with your questions concerning the above mentioned property.

I have conducted a search of records concerning contaminated land / land affected by contamination and I now provide the following responses (given in **bold typeface**) to your questions (shown in *italics*):

1. Does the Council hold any records of past contaminative land uses on site or is it likely to be determined as Contaminated Land under Part 2A of the Environmental Protection Act?

The searched mapping records from 1800's show the land on which the property is situated was part of Frogmore Farm. Part of the western side of the property was once occupied by a building which is annotated on mapping as "Hayes Park (*Private Lunatic Asylum*)". The Council's land contamination records do not show any evidence of other past contaminative uses at the site prior to the current development. However, in accordance with the Council's Contaminated Land Inspection Strategy, it is considered land at the property is suitable for its current use, and based on available details the site has not been prioritised for inspection under Part 2A of the Environmental Protection Act (1990).

2. Does the Council hold any previous ground investigation reports, monitoring records, remediation or any relevant documentations for land contamination issues at the property and were all planning conditions relating to contaminated land/site investigation/remediation discharged for the current development?

The Council's land contamination records do not contain any site specific details of land condition at the property.

3. Does the Council hold any records of landfill, waste management sites or regulated premises (Pollution Prevention and Control Authorisations) at the property?

GIS and historic mapping shows evidence of a pond located a short distance from the Southwest corner of the central building at the property. (it is possible the pond may have been infilled or became dry sometime prior to construction of the current building). The Council have no records of landfill, waste management sites or regulated premises (Pollution Prevention and Control Authorisations) at the property.

4. Does the Council hold any records of pollution incidents occurring at the property or that may affect the property?

The Council does not hold any records of pollution incidents at the property (the Environment Agency may have records of any such reported incidents)

5. Does the Council hold any records of private abstraction wells/water supplies on site?

The searched GIS / OS mapping (Epoch_2_1888-1915) shows evidence of two locations identified as "historical water" which may be water boreholes. There are no other specific records of private abstraction wells/water supplies on site (the Environment Agency may have more detailed records)

6. Does the Council hold any information relating to surface water flooding or drainage information on site?

For information concerning surface water flooding or drainage information on site please refer to the London Borough of Hillingdon Council website at the following links:

https://www.hillingdon.gov.uk/flooding
https://www.hillingdon.gov.uk/suds
Rivers and Watercourses (arcgis.com)

I trust the above information will be suitable for your requirements.
Regards

Simon Snape
Senior Land Contamination Officer
Planning Specialists Team
Hillingdon Council
Tel: 01895 556000 (contact centre)
Tel: 07930 282914 (mobile)
(email): ssnape@hillingdon.gov.uk

HILLINGDON
LONDON

From: donotreply_onlineforms@hillingdon.gov.uk <donotreply_onlineforms@hillingdon.gov.uk>
Sent: 20 January 2023 10:08
To: Contaminated Land <contaminatedland@hillingdon.gov.uk>
Subject: A contaminated land enquiry form LBH1674209254800 has been submitted

The form is in the attached PDF. Thanks.

Appendix IV
Definitions and Reservations

Environmental Definitions

1. Environmental Reports

Any reference to environmental reports should be taken to mean one or all of the following types of report:

Phase 1

This is a desk-based study (supported by a site inspection if agreed) of past and present uses of the site, geological and hydrogeological conditions, regulatory review and qualitative risk assessment.

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties.

The opinions given in the report have been dictated by the finite data on which it is based and is relevant only to the purpose for which the report was commissioned.

The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions.

Should additional information become available which may affect the opinions expressed in this report, Avison Young reserves the right to review such information and, if warranted, to modify the opinions accordingly.

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

Phase 2

This is an intrusive phase of works involving the drilling of boreholes/trial pits and the testing of soil, groundwater and soil gas samples for environmental and geotechnical purposes.

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environmental risks together with engineering and development implications. If costs have been included in relation to site remediation these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site can only provide a general indication of site conditions.

The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes.

There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out.

It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The scope of the investigation was selected based on the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

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

Avison Young accepts no liability what so ever for the content or conduct of the Environmental Consultant/Engineer of Sub Consultants/ Contractors appointed on behalf of the client by us.

2. Geology and Mining

2.1. Ground Conditions

Ground conditions consider the underlying geology, the presence of mining or quarrying, geological faults and the potential for contaminated land.

2.2. Superficial Deposits

Superficial deposits are the youngest geological deposits that rest on older deposits or rocks referred to as bedrock. They generally comprise unconsolidated sediments such as gravels, sand, silt and clay. They may be present as relatively thin discontinuous patches or larger spreads.

2.3. Bedrock Geology

The bedrock geology (sometimes referred to as solid geology) is the term used for the main units of rocks that have formed the Earth over millions of years. They may be present at the surface or concealed beneath younger superficial deposits. Bedrock is classified as either igneous, metamorphic or sedimentary.

2.4. Geological Fault

A fracture in the rock along which movement takes place.

Environmental Definitions

2.5. **Underground Workings**

Areas where coal or other minerals and rock has been mined, or is currently being mined under the surface. Historic mining may have been undertaken from bell pits, pillar and stall workings or longwall techniques.

2.6. **Mine Entries**

Refers to a mineshaft or adit which provides an opening to gain access to underground workings.

2.7. **Brine Compensation District**

Formed by the Cheshire Brine Pumping (Compensation for Subsidence) Act 1952 as a District within which a person can serve a notice on the Brine Board if they think their property has suffered damage resulting from subsidence caused by extraction of brine.

3. Hydrogeology and Hydrology

3.1. **Controlled Water**

Section 104 of the Water Resources Act 1991 defines Controlled Waters as all inland freshwaters, i.e. rivers, watercourses, lakes and ponds (other than public sewers or sewers or drains which drain into a public sewer), groundwater, coastal waters (extending landward from the limit of the highest tide or freshwater limit) and relevant territorial waters (extending seaward for three miles from the baseline from which the breadth of the territorial sea is measured).

3.2. **Groundwater**

Groundwater is all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

3.3. **Surface Water**

Any inland freshwaters, coastal waters or relevant territorial waters i.e. water that is above the surface of the ground.

3.4. **Tributary**

A stream or river that flows into a larger stream or river.

3.5. **Confluence**

The point at which two rivers or streams join together.

3.6. **Catchment**

The total area from which rainfall flows into a river or stream.

3.7. **Discharge Consents**

For England, discharge consents to Controlled Waters (surface water and groundwater) are authorised by the Environment Agency under the Environmental Permitting (England and Wales) Regulations 2010. In considering whether or not to grant consents the Environment Agency takes account of whether the point source discharges into the water environment has the potential to cause pollution relevant to quality standards and whether it will affect the appropriate uses of the water. These consents do not apply to discharges to sewers, since the sewerage undertaker regulates these.

Discharges for sewage effluent are exempt where they are 5m3/day or less to surface water or 2m3/day to ground. Exempt discharges are not required to be reported and as such they are not considered within our assessments.

3.8. **Water Abstractions**

The Environment Agency has a duty under the Water Resources Acts 1963 and 1991 to take action, when necessary, in order to conserve, re-distribute, or increase water resources in England, and to secure its proper use. They may also draw up provisions for determining acceptable flows or minimum volumes for inland waters. Those wishing to abstract water above a specified quantity must apply to the Agency for Abstraction Licences and adhere to the conditions that apply. Premises abstracting less than 20m3 water per day from watercourses and the ground can do so without the need of a licence and as such these locations are not recorded.

These records are held under Scottish legislation to protect the public water supply. These records therefore relate only to public water supplies.

3.9. **Water Industry Act Referrals**

The Environment Agency is given powers to regulate some discharges to public sewers or certain dangerous substances under the Water Industry Act 1991.

3.10. **Aquifer Designations**

An aquifer is a geological unit containing sufficient saturated permeable rock that will yield water. The following aquifer designations are consistent with the Water Framework Directive and reflect their importance in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

<u>Unproductive Strata</u>

Defined as rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

Environmental Definitions

Principal Aquifer

Defined as rock layers or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary Aquifers

These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types ('A' and 'B').

Secondary 'A' Aquifers

Defined as rock layers or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary 'B' Aquifers

Defined as predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Undifferentiated

The Secondary Undifferentiated classification is assigned in cases where it has not been possible to attribute either category Secondary A or Secondary B to a rock type.

3.11. **Groundwater Source Protection Zones**

The Environment Agency has defined Source Protection Zones (SPZ) for 2000 groundwater sources such as wells, boreholes and springs used for public water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. There are three main zones:

Inner Zone (Zone 1) – defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50m;

Outer Zone (Zone 2) – defined as a 400 day travel time from a point below the water table. The previous methodology gave an option to define SPZ2 as the minimum recharge area required to support 25% of the protected yield;

Total Catchment (Zone 3) – defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final source catchment protection zone can be defined as the whole aquifer recharge area where the ratio of the groundwater abstraction to aquifer recharge is >0.75.

In the past, the Environment Agency has also applied a fourth zone of special interest:

Special Interest (Zone 4) – this represents a surface water catchment which drains into the aquifer feeding the groundwater supply.

3.12. **Groundwater Vulnerability**

The pollution hazard of an activity will be greater in certain hydrological, geological and soil situations than in others. Superficial aquifers are the most vulnerable to pollution due to their shallow water table and little or no protective cover. Bedrock aquifers can be equally vulnerable where drift deposits are absent and where the unsaturated zone is thin or fractured.

Activities in areas of unproductive strata do not represent a risk to groundwater resources and therefore are not assigned a groundwater vulnerability.

High

These are high priority groundwater resources that have very limited natural protection. This results in a high overall pollution risk to groundwater from surface activities. Operations or activities in these areas are likely to require additional measures over and above good practice pollution prevention requirements to ensure that groundwater isn't impacted.

Medium-high

These are high priority groundwater resources that have limited natural protection. This results in a medium-high overall pollution risk to

groundwater from surface activities. Activities in these areas may require additional measures over and above good practice to ensure they do not cause groundwater pollution.

Medium

These are medium priority groundwater resources that have some natural protection resulting in a moderate overall groundwater risk. Activities in these areas should as a minimum follow good practice to ensure they do not cause groundwater pollution.

Medium-low

These are lower priority groundwater resources that have some natural protection resulting in a moderate to low overall groundwater pollution risk. Activities in these areas should follow good practice to ensure they do not cause groundwater pollution.

Low

These are low priority groundwater resources that have a high degree of natural protection. This reduces their overall risk of pollution from surface activities. However, activities in these areas may be a risk to surface water due to increased run-off from lower permeability soils and near-surface deposits. Activities in these areas should be adequately managed to ensure they do not cause either surface or groundwater pollution.

Further information relating to groundwater vulnerability is provided in the Environment Agency report (Ref: SC040016/R) 'New groundwater vulnerability mapping methodology in England and Wales'.

3.13. **Soil Leaching**

The potential for soil leaching considers a range of soil properties such as moisture content, soil clay content and carbon content. There are three soil leaching classes:

High (H)

Soils of high leaching potential with little ability to attenuate diffuse soil pollutants and in which non-adsorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or groundwater. Three subclasses are recognised:

H1 – soils that readily transmit liquid discharges because they are either shallow or susceptible to rapid flow;

H2 – deep, permeable, coarse-textured soils that readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential;

H3 – coarse-textured or moderately shallows soils that rapidly transmit non-adsorbed pollutants and liquid discharges, but which have some ability to attenuate adsorbed pollutants because of their clay or organic matter.

Intermediate (I)

Soils of intermediate leaching potential that have a moderate ability to attenuate diffuse source pollutants or in which it is possible that some non-adsorbed diffuse source pollutants and liquid discharges could penetrate the soil layer. Two subclasses are recognised:

I1 – soils that can potentially transmit a wide range of pollutants;

I2 – Soils that can potentially transmit a wide range of pollutants and liquid discharges but are unlikely to transmit absorbed pollutants.

Low (L)

Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal or they have a significant ability to attenuate diffuse source pollutants.

4. Flood Risk

4.1. National Planning Policy Framework (Flooding)

This relates to the National Planning Policy Framework and the associated Technical Guidance.

4.2. Floodplain

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

4.3. Flood Zones

Flood Zone 1

The area where flooding from rivers or sea is very unlikely as defined by the Environment Agency. There is less than 0.1% (1 in 1000) chance of flooding occurring each year.

Flood Zone 2

The area of medium probability of flooding as defined by the Environment Agency – a flood with an annual chance of occurring of between 1% (1 in 100) to 0.1% (1 in 1000) for river flooding and 0.5% (1 in 200) to 1% (1 in 1000) for coastal flooding.

Flood Zone 3A

The area of high probability of flooding as defined by the Environment Agency – a flood with an annual chance of occurring of 1% (1 in 100) or greater for river flooding and 0.5% (1 in 200) or greater for coastal flooding.

Flood Zone 3B

The boundary between 3a and 3b is a planning decision made by the Local Authority. This information is usually in the strategic flood risk assessment. This area is a functional floodplain as defined by the Environment Agency. It is an area which is designed to flood – a flood return period of 1 in 20 or less.

4.4. Flood Return Period

A return period is an estimate of the likelihood of an event occurring. Flood return periods are commonly expressed as either a ratio or a percentage, for example, a 1% or 1 in 100 year event, means there is a 1% (1 in 100) chance of flooding occurring each year.

Environmental Definitions

4.5. **Pluvial (Surface Water) Flooding**

Pluvial flooding results from rainfall running over ground before entering a watercourse or sewer. It is usually associated with high intensity rainfall events (typically greater than 30mm per hour) but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting) or otherwise has low permeability.

4.6. **Groundwater Flooding**

Groundwater flooding is defined as the emergence of groundwater at the surface, rising up from the underlying rocks and tends to after long periods of sustained rainfall.

4.7. **Flood Risk Rating**

Low – The site is at little or no risk of flooding from any sources.

Low to Moderate – It is possible that flooding could arise and the presence of features such as watercourses, canals, flood defences or flood storage areas in the locality may suggest that the site could be at risk of flooding. Flood resilient materials may be required in the construction of properties.

Moderate - Information from existing datasets suggests that there are certain features which may present a risk of flooding to the site and its occupants. Appropriate measures to manage flood risk may be required in addition to the use of water resistant materials in the construction of properties.

Moderate to High - Information from existing datasets suggests that there are certain features which may present a significant risk to the site and its occupants. Flood defences may be required to reduce the risk of flooding and flood storage areas may be required.

High – There is a risk to life and property. This means that existing datasets reveal significant flood risk issues which will need to be addressed.

4.8. **Flood Resistance**

Flood resistance refers to products that may be permanent or temporary and are designed to stop water entering a property through existing openings (doors, windows, vents and pipes). Permanent measures do not need to be deployed, whilst temporary measures need to installed before flood water arrives.

4.9. **Flood Resilience**

Flood resilience measures are designed to reduce the amount of damage to a property when water enters a building. They will enable the clean-up to take place more easily without the need for major refurbishment.

4.10. **Flood Defence**

Infrastructure used to protect an area against floods such as floodwalls and embankments. They are designed to a specific standard of protection (design standard).

4.11. **Standard of Protection**

The flood event return period above which significant damage and possible failure of the flood defences could occur.

4.12. **Flood Storage**

A temporary area that stores excess runoff or river flow, which are often ponds or reservoirs.

5. Drainage

5.1. **Attenuation**

The storing of water to reduce the peak discharge of water.

5.2. **Below Ground Attenuation Storage**

Large below ground voided spaces used to temporarily store surface water runoff before infiltration, controlled release to the public sewer network or re-use. The storage structure can be formed by a tank, oversized pipework or geocellular modular crates.

5.3. **Brownfield Site**

A site that has been previously developed as either residential, commercial or industrial use.

5.4. **CCTV Survey**

A survey of inaccessible below ground drainage assets by controlled closed-circuit television, which is operated remotely.

5.5. **Culvert**

A tunnel (pipe or box-shaped) carrying a stream or open drain under a road, railway or land.

5.6. **Design for Exceedance**

Designing a system to manage effectively events that exceed (bigger or rarer than) the drainage systems required level of service so that they do not impact upon life or property.

5.7. **Design Life**

The period of time during which a component or product is expected by its designers to work within it specified parameters.

Environmental Definitions

5.8. **Detention Basins**

During a rainfall event, surface water runoff drains to a landscaped depression with an outlet that restricts flow, so that the basin fills and provides attenuation. Basins are generally designed to be vegetated dry features, except during and immediately following the rainfall event. Runoff is treated filtered as it flows across the vegetation in the base of the basin.

5.9. **Exceedance Flow**

Surface water flows during rainfall events bigger or rarer than the design standard of the drainage system.

5.10. **Filter Strips**

Runoff from an impermeable area is allowed to flow across a grassed of planted area to promote sedimentation and filtration.

5.11. **Filter Drains**

Runoff is temporarily stored below the surface in a shallow trench filled with stone / gravel and provides attenuation, conveyance and treatment.

5.12. **Flow Control Device**

A device used to limit the flow rate on surface water from the outlet of drainage or SuDS component. This is usually limited to meet a required discharge rate.

5.13. **Freeboard**

The height above the designed water level in a pond or infiltration basin or the distance between the base of a soakaway and the resting groundwater level.

5.14. **Greenfield**

Land that has never been developed and has only been used for agricultural or recreational use.

5.15. **Greenfield Run-off**

The rate of surface water run-off from a site before development.

5.16. **Green Roofs**

A planted soil layer constructed on the roof of a building to create a living roof. Water is stored in the soil layer and absorbed by the vegetation.

5.17. **Infiltration Systems**

These systems collect and store runoff allowing it to infiltrate into the ground. Pollution risk to underlying groundwater can be reduced by the overlying vegetation or unsaturated soils.

5.18. **Peak Discharge Rate**

The highest rate of flow of water from a given rainfall event.

5.19. **Pervious Pavements**

Surface water runoff is allowed to soak through structural paving i.e. the gaps between block paving or porous paving where water filters through the block itself. Water can be stored in the sub-base of the pavement/roadway and potentially allowed to infiltrate to the ground or passed forward to a carrier drain.

5.20. **Ponds and Wetlands**

Features that have a permanent pool of water that can be used to provide attenuation. The outfall has a controlled discharge and the water levels increase following rainfall events. Ponds and wetlands also enhance the treatment of rainwater and promote biodiversity.

5.21. **Rainwater Harvesting Systems**

Rainwater is collected from the roof of a building or other paved impermeable surfaces in an over ground or underground tank, which then allows the water to be reused either for landscape irrigation or for flushing or toilets. Some treatment may be required depending on the reuse of the water.

5.22. **Return Period (Drainage)**

An estimate of the likelihood of a particular event occurring. A 100 year storm refers to the storm that occurs on average once every hundred years. In other word, its annual probability of exceedance is 1% (or 1 in 100 years).

5.23. **Sewer Flooding**

Flooding caused by a blockage or overflowing in a sewer or urban drainage system.

5.24. **Surface Water Runoff**

The flow of water from rainfall over the ground surface.

5.25. **Sustainable Drainage Systems (SuDS)**

Sustainable Drainage Systems are designed to manage and use rainwater close to where it falls on the surface incorporating vegetation to improve water quality, amenity and biodiversity. They can take the form of both above and below ground features and most SUDS schemes use a combination of components to achieve the overall design objectives.

5.26. **Swales**

A grassed channel used to convey and treat surface water runoff at the surface. They can be designed to infiltrate water to the ground or lined so that water is passed forward to other SuDS features. Swales can be designed to be wet or dry features.

Environmental Definitions

6. Environmental Regulatory Information

6.1. Pollution Incidents

The Environment Agency and Natural Resource Wales have a duty to investigate pollution incidents reported to them by members of the public, emergency services, local authorities, government departments, other regulators, industry, and agency staff. Substantiated incidents are held on a public register of information and relate to specific events that fall within their responsibility given that they may have an environmental and/or operational impact.

Examples may include reports that may affect land, air, and water, fish kills, illegal abstraction, low river flows, speeding vessels, and flooding. Public register information is provided by regional offices.

Incidents are graded from category 1 (Major Incident) to category 4 (No Impact). An impact category must be assigned for each affected environmental media; air, land, and water. An impact level is assigned to a particular incident but is determined by the maximum severity affecting one of the three media.

6.2. Landfill

Sites accepting waste were not required to be licensed until the introduction of the Control of Pollution Act 1974 and landfilling prior to this is often unrecorded unless captured through planning records or on historic plans.

Information on landfill sites relates to open and closed site and is captured from a number of sources within the Landmark Envirocheck Report to include:

- A survey of active landfill sites conducted on behalf of the Department of Environment in 1973, which over 3,000 sites accepting waste prior to the Control of Pollution Act 1974, and would therefore not have been subject to any strict regulation or monitoring;
- Information sourced from individual Local Authorities that were able to provide information on sites operating prior to the introduction of the Control of Pollution Act 1974;
- Information from the British Geological Survey which includes outline plans, site descriptions, waste types and tipping histories;
- Consents for landfill sites issued by the Environment Agency under Section 64 of the Environmental Protection Act 1990 (Part 2), prescribed by Regulation 10 of SI No.1056 the Waste Management Licensing Regulations 1994 and the Environmental Permitting (England Wales) Regulations 2010; and
- Information sourced from consents that were issued by the Environment Agency and the Scottish Environment Protection Agency, under the Control of Pollution Act 1974 and Section 36 of the Environmental Protection Act 1990.

6.3. Environmental Permitting

The Environmental Permitting (England and Wales) Regulations 2010 (as amended) (EPR 2010) have been introduced over a number of years so that they now encompass licences that were previously held under the several sets of legislation. The Landmark Envirocheck Report provides information on open and closed sites under each of the following pieces of legislation:

- Integrated Pollution Controls (IPC) held under the former Environment Protection (Prescribed Processes and Substances) Regulations 1991;
- Records of Local Authority Integrated Pollution Prevention and Control (LAIPPC) and Integrated Pollution Prevention and Control (IPPC) were previously maintained under the Pollution Prevention and Control Act 1999, originally set up under the Environmental Protection Act 1990. LAIPPC continue to be regulated by the Local Authority and are referred to as PartA2 Installations and Part B Installations, whilst the IPPC continue to be regulated the Environment Agency and are referred to as Part A1 Installations.
- Registered Waste Transfer, Treatment and Disposal Sites were previously recorded under the Control of Pollution Act (COPA) 1974, Section 36 of the Environmental Protection Act (EPA) 1990 and the Environmental Permitting (England and Wales) Regulations 2007.
- All waste activities now fall within EPR 2010 under a number of waste exemptions, standard rules environmental permits and bespoke environmental permits.

6.4. Waste Exemptions

Waste exemptions allow the use, storage, disposal and treatment of specific wastes that only create a low risk of pollution, when the quantities of waste are limited and stored in a specific manner.

6.5. Standard Rules Environmental Permits

Standard Rules environmental permits allow low to medium risk waste storage, transfer and treatment activities to occur at specific locations and are issued where the Environment Agency does not need to make a site specific decision about whether the regulated activity can take place at a specific location.

Environmental Definitions

6.6. Bespoke Environmental Permits

A Bespoke Environmental Permit is required where there are no exemptions or Standard Rules Environmental Permits available for the proposed activity. The Environment Agency makes a site specific assessment about the proposed regulated activity in relation to its environment to ensure waste and emissions do not have a detrimental effect.

7. Land Designations

7.1. Areas of Outstanding Natural Beauty (AONB)

The National Parks and Access to the Countryside Act 1949 as amended by the Countryside Act 1968, Wildlife and Countryside Act 1981 and Environment Act 1995, allowed for the designation of Areas of Outstanding Natural Beauty (AONB). The equivalent designations for Scotland are National Scenic Areas.

AONBs are landscapes of national conservation importance for their distinctive character and natural beauty. They are generally smaller than National Parks, and are owned by individuals e.g. farmers. Some are adjacent to National Parks and many include areas of Heritage Coast. Planning law protects development within them.

7.2. Sites of Special Scientific Interest

Sites of Special Scientific Interest (SSSI) have been designated under the Wildlife and Countryside Act 1981 Section 28 to protect areas of important flora, fauna, geological and/or physiographical features. They provide the basis for other national and international designations. Parties notified include site owner(s) and occupier(s), local planning authorities, water and sewerage companies, and the appropriate Secretary of State. The Land Registry also records these as local land changes.

The appropriate party must be consulted on developments, or notified of potentially damaging operations, which may affect an SSSI.

Most SSSIs are privately owned or managed. Others are owned or managed by public bodies such as the Forestry Commission, Ministry of Defence and the Crown Estate, or by the voluntary conservation movement. Some SSSIs are also designated as Special Protection Areas and Ramsar Sites.

7.3. RAMSAR Sites

Under the Convention on Wetlands of International Importance especially as Waterfowl Habitat, the Government is committed to designate 'Wetlands of International Importance'. The Convention was adopted in Ramsar, Iran in 1971 and ratified by the UK Government in 1976.

The purpose is to stem progressive encroachment on and loss of wetlands now and in the future. Aims include the conservation, management and wise use of migratory wildfowl stocks and to promote the conservation of wetlands.

Wetlands are areas of peat land, fen, marsh or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water.

7.4. Local Nature Reserves

These reserves are areas created by Local Authorities in conjunction with their appropriate national authority in the interest of conservation, amenity value and public enjoyment of the countryside. Some, but not all Local Nature Reserves (LNRs) are also designated SSSIs. They are controlled by bylaws.

7.5. National Nature Reserves

These reserves have been designated under the Wildlife and Countryside Act 1981 or the National Parks and Access to the Countryside Act 1949, Section 19, as areas of high national or international importance for nature conservation. They are designated by Natural England, Scottish Natural Heritage and the Countryside Council for Wales.

National Nature Reserves are Sites of Special Scientific Interest, and may have coastal frontage or be offshore islands.

7.6. Special Areas of Conservation

Special Areas of Conservation are lands designated under the ECC Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/43/EEC), commonly known as the Habitats and Species Directive. These sites are to be afforded absolute protection subject to 'imperative reasons of overriding public interest, including those of a social or economic nature.

7.7. Special Protection Areas

Special Protection Areas are classified under Article 4 of the EC Directive on the Conservation of Wild Birds 1979, commonly known as the Wild Birds Directive.

The purpose of Special Protection Areas is to safeguard the habitats of migratory and certain particularly threatened bird species. Together with Special Areas of Conservation, they constitute 'Natura 2000' areas for protection.

Environmental Definitions

8. Hazardous Substances

8.1. Asbestos Containing Materials (ACM's)

Includes any of the following materials; crocidolite, amosite, chrysotile, fibrous actinolite, fibrous anthophyllite, fibrous tremolite and any mixture containing any of these materials.

8.2. Asbestos Surveys

Any reference to asbestos surveys is given the same meaning as that given in HSE Guidance Document HSG 264 entitled 'Asbestos: The Survey Guide'.

8.3. Control of Major Accident Hazard Sites

The Health and Safety Executive in conjunction with the Environment Agency and the Scottish Environment Protection Agency keeps records of those sites, which manufacture or store dangerous toxic or flammable chemicals (including petrochemicals, pharmaceuticals and agrochemicals) and explosives in excess of threshold quantities specified in the Control of Major Accident Hazards (COMAH) Regulations 2015. Sites are divided into upper and lower tier sites based on the type and quantities of substances being stored or manufactured.

The COMAH Regulations require emergency plans to be kept up to date and regularly tested.

8.4. Planning Hazardous Substance Consents

This data is collected, collated and geo-coded by Landmark. The records relate to consents granted under the Planning (Hazardous Substances) Act 1990 as amended, for England and Wales and the Planning (Hazardous Substances) (Scotland) Act 1997, in Scotland.

The regulations require a consent to be granted by the Local Authority for sites where the storage of certain hazardous substances is above the specified or controlled quantity.

9. Non-Native Invasive Plants

The Wildlife and Countryside Act 1981 (as amended) is the principal legislation which regulates the release of non-native species. Section 14(2) prohibits the release of certain invasive non-native plants into the wild in Great Britain; it is an offence under Section 14(2) to "plant or otherwise cause to grow in the wild" any plants listed on Part II of Schedule 9. The most common plant species found on brownfield and urban sites include Japanese Knotweed, Giant Hogweed and Himalayan Balsam.

Japanese Knotweed

Japanese knotweed is a strong-growing, clump-forming perennial, with tall, dense stems. Stem growth is renewed each year from the existing crown of the rhizomes which grows underground. Japanese Knotweed is a particular problem as not only does is out compete native species, it also has the potential to damage buildings, pavements, roads, etc.

Himalayan Balsam

This is an non-native invasive terrestrial plant species that has spread to most parts of UK, particularly along the banks of watercourse and in damp woodland. Individual plants reach 2m in height and its rapid growth shades out most of our native species.

Giant Hogweed

Giant Hogweed is part of the same family as Cow Parsley and Hogweed, but is significantly larger in size extending up to 4m in height. The sap of Giant Hogweed contains toxic chemicals known as furanocoumarins, which when contact with the skin, and in the presence of sunlight cause a condition called phyto-photodermatitis (reddening of the skin, burns and blistering).

10. Environmental Risk Assessment

10.1. Contamination

This is taken to mean specifically, the presence of toxic, noxious or polluting substances in, on or under land.

10.2. Contaminated Land

Any reference to contaminated land should be construed in the statutory sense.

Land is defined as being contaminated land under Section 78 of the Environmental Protection Act 1990 where any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:

Significant harm is being caused or there is a significant possibility of such harm being caused; or

Significant pollution of controlled waters is being, or is likely to be caused.

10.3. Conceptual Site Model (CSM)

The conceptual site model is the initial phase of the environmental risk assessment process which identifies the all potential sources of contamination, the receptors capable of being harmed and the pathways capable of exposing a receptor to the contaminant source. Only where there are complete source-pathway-receptor linkages is there considered to be a potential risk.

Environmental Definitions

10.4. **Environmental Risk**

Any reference to environmental risk shall be taken to mean:

High Risk

Those properties where environmental risks have been identified that will affect land value, business interruption, lead to regulatory intervention and/or result in material financial expenditure by the client in the short term.

Moderate Risk

Those properties where environmental risks have been identified that have the potential to affect land value, lead to regulatory intervention and/or result in material financial expenditure by the client in the medium to long term.

Low Risk

Those properties where no environmental risks have been identified that have the potential to affect land value, lead to regulatory intervention and/or result in material financial expenditure by the client.

Environmental Reservations

Composite Panels and Insurance

We will not test any panels within the property to see whether there are any polystyrene insulated composite panels. The presence of such panels may result in the property being uninsurable, which would have an adverse impact on value.

Enquiries

Where necessary, any enquiries (verbal and written) undertaken by Avison Young of local authorities and statutory undertakers are made in respect of environmental issues. Local searches are not undertaken and no responsibility is accepted for any inaccurate information provided.

Environmental Liability

Any reference to environmental liability should be taken to mean a combination of the following types of liabilities:

Actual Liabilities

These are known present obligations of the business arising from past or future events, the settlement of which will require future expenditure.

These will include costs associated with regulatory compliance e.g. known monitoring, decommissioning requirements, fines, damages, and surrender provisions imposed by statute and /or contract.

Latent and Contingent Liabilities

These are unknown obligations arising from past or future events that exist, but where the outcome will only be known following the occurrence or non-occurrence of future events that are outside the control of the business.

These might include, unknown costs associated with site remediation, decommissioning and the possibility of unforeseen future events such as a pollution incident.

Ground Conditions

Any discussion of ground conditions in this report have been based on a review of existing documentary information prepared by British Geological Survey, the Coal Authority and/or other parties. Avison Young accepts no responsibility for the accuracy or completeness of information prepared by third parties.

Information

All information supplied by the Client, the Client's staff and professional advisers, local authorities, other statutory bodies, investigation agencies and other stated sources is accepted as being correct unless otherwise specified.

Legal issues

Any interpretation of leases and other legal documents and legal assumptions is given in our capacity as Property Consultants (including Chartered Surveyors and Chartered Town Planners) and must be verified by a suitability qualified lawyer if it is to be relied upon. No responsibility or liability is accepted for the true interpretation of the legal position of the client or other parties.

Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted by Avison Young for the effects of any future changes to such guidelines and legislation.

Plans

Any plans supplied are for identification purposes only unless otherwise stated. The Report assumes site boundaries are as indicated to us. The reproduction of Ordnance Survey sheets has been sanctioned by the Controller of Her Majesty's Stationery Office, Crown Copyright reserved.

Property Condition

Our inspection of a property does not constitute a structural survey. When preparing our report we have regard to apparent defects and wants of repair and take into account the age of the property. We do not however carry out a detailed search for defects which is undertaken as part of the structural survey neither do we necessarily set out the various defects when making the report. We do not inspect woodwork or other parts of the structure which are covered, unexposed or inaccessible. We do not arrange for any investigation to be carried out to determine whether or not high alumina cement concrete or calcium chloride additive or any other deleterious materials or permanent woodwool shuttering or composite panelling has been used in the construction.

Unless so instructed we do not arrange for any investigations to be carried out to determine whether or not any deleterious or hazardous material or techniques have been used in the construction of the property or has since been incorporated and the services are not tested.

We are therefore unable to report that the property is free from defect in these respects.

For reporting purposes we assume unless otherwise stated that the property (including associated plant and machinery, fixtures and fittings) is in serviceable order and will remain so for the foreseeable future. It will be assumed that the building(s) is/are in good repair, except for defects specifically noted.

Environmental Reservations

Services Installations

Unless otherwise instructed, we do not inspect or test any of the water, mechanical, heating, electrical or drainage installations. Where appropriate we will make recommendations in relation to the execution of specialist tests to establish the condition. The implementation of such work would normally involve an additional fee.

Site Areas

Site areas are normally computed from plans or the Ordnance Survey and not from a physical site survey. They are approximate unless otherwise indicated.

Tenure

Title Deeds and Leases are not inspected (unless specifically stated) and, unless we are informed to the contrary, it is assumed that a property is free of any onerous covenants, easements, other restrictions or liabilities including mortgages, grants and capital allowances that may affect the value.

Warranties

The client warrants and represents that, to the best of its knowledge, information and belief, the information supplied by and on its behalf to Avison Young is true and accurate and that it will advise and instruct its third party advisers to advise Avison Young in the event that it and/they receive notice that any such information is either misleading or inaccurate.

Contact Details

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