44 & 46 Hampstead Lane
London N6 4LL

Basement Impact Assessment Report

Harrison Varma

February 2022

J21167A
Rev 1

Report prepared by



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EXECUTIVE SUMMARY

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

BRIEF

This report describes the findings of a pre-planning geotechnical assessment conducted by Geotechnical and Environmental Associates (GEA) on the instructions of Harrison Varma. The purpose of the work has been to determine the history of the site, to assess the potential for contamination, and to review any possible impact of the proposed redevelopment on the local soil and groundwater regime. The proposed redevelopment of the site comprises demolition of the existing buildings and subsequent construction of a new apartment building of up to four storeys plus a lower ground and basement level. The basement will extend to a depth of around 7. 0 m.

The report also includes information required to comply with the London Borough of Camden Planning Guidance, CPG Basements, with regard to the provision of a Basement Impact Assessment (BIA). Although the site lies outside the London Borough of Camden, the Camden procedure for assessing the effects of basements has been adopted as it is widely known and is considered to provide a robust approach to the issues of concern.

DESK STUDY FINDINGS

The site was developed with the existing houses at some time between 1915 and 1936, prior to which it comprised an area of scattered woodland, and has since undergone few significant changes to its layout.

On the basis of the desk study findings, the contamination risk has been assessed as low.

GROUND CONDITIONS

Below a variable thickness of made ground, the Bagshot Formation was encountered overlying the Claygate Member, which was proved to the maximum depth of the investigation, of 8.0 m (106.3 m OD to 105.5 m OD).

The made ground extended to depths of between 0.50 m (110.5 m OD) and 2.0 m (111.5 m OD) and generally comprised dark brown, grey or greenish grey silty sandy clay with variable amounts of gravel, brick, concrete, ash and charcoal fragments. The Bagshot Formation generally comprised firm pale orange-brown mottled grey and orange-brown sandy to very sandy clay which extended to depths of between 1.5 m (109.4 m OD) and 4.9 m (109.4 m OD). The underlying Claygate Member initially comprised a mixture of medium dense pale orange-brown to greenish grey clayey sand and firm becoming stiff pale orange-brown mottled grey and orange-brown sandy to very sandy clay, which was proved to depths of 6.0 m (107.5 m OD) and 6.9 m (107.4 m OD). Below this, the Claygate Member comprised medium dense becoming dense pale orange-brown, brown or greenish grey clayey sand, which was encountered to the full depth of the investigation, of 8.0 m (106.3 m OD to 105.5 m OD).

GEA has previously completed a ground investigation on the adjoining site to the east, which found these upper layers of the Claygate Member to extend to depths of 11.20 m (103.05 m OD) and 10.90 m (103.48 m OD). Stiff grey silty clay with layers of clayey silt and clayey sand was then encountered to depths of between 20.70 m (93.55 m OD) and 19.55 m (94.83 m OD). Medium dense grey slightly clayey silt of the London Clay was then proved to the full depth of the investigation of 25.00 m (89.25 m OD).

Groundwater was encountered during drilling at depths of between 3.6 m (107.4 m OD) and 7.0 m (107.3 m OD) and has previously been measured at depths of between 4.32 m (107.83 m OD) and 6.60 m (107.65 m OD) in standpipes installed on the adjoining site of No 42 Hampstead Lane, immediately to the east. Subsequent monitoring of the standpipes installed during this investigation has recorded groundwater at depths of between 2.50 m (108.50 m OD) and 6.80 m (107.50 m OD).

BASEMENT IMPACT ASSESSMENT

A number of potential impacts have been identified as a result of the screening exercise, but all of these impacts can be mitigated by appropriate design and standard construction practice. The proposed development is unlikely to result in any specific groundwater or land stability issues and a requirement for a flood risk assessment has not been identified.

1.0 INTRODUCTION

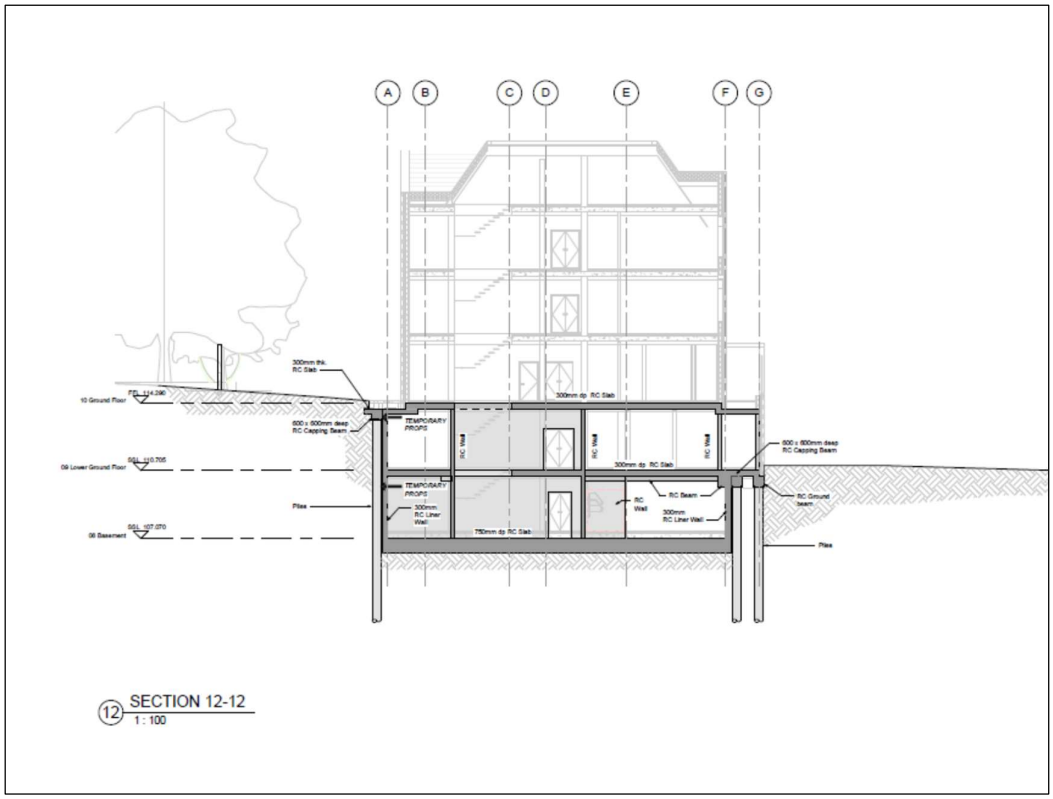
Geotechnical and Environmental Associates (GEA) has been commissioned by Harrison Varma to carry out a Basement Impact Assessment (BIA), for Nos 44 and 46 Hampstead Lane, London N6 4LL.

The site lies in the London Borough of Haringey while the boundary with Camden borough lies on the south side of Hampstead Lane. Although the site lies outside the London Borough of Camden, the Camden procedure for assessing the effects of basements has been adopted as it is now widely known and is considered to provide a robust approach to the issues of concern.

A pre-planning report (ref J21167, dated June 2021) has previously been prepared by GEA for the site and has been used to form the basis of this report. GEA has also previously undertaken an investigation for the adjoining property of No 42 Hampstead Lane, immediately to the east of the site (report ref J14154-Rep Issue 6, dated September 2019), and information from this investigation has been used to assist with the assessment of this site.

1.1 Proposed Development

Following demolition of the existing buildings it is proposed to construct a new apartment building of up to four storeys plus a lower ground and basement level. It is expected that the new lower ground floor and basement construction will be supported by a bored pile wall and will extend to a depth between 3.6 m and 7.2 m below existing ground level, as shown on the section below.



This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.

1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows:

- to check the history of the site and surrounding area, particularly with respect to any previous or present potentially contaminative uses;
- to check records of data on groundwater, surface water and other publicly available environmental data;
- to provide an assessment of the risk of encountering unexploded ordnance (UXO) beneath the site;
- to provide an assessment of the impact of the proposed development on groundwater, surface water and land stability in support of a planning application;
- to provide an indication of the degree of soil contamination present; and
- to assess the risk that any such contamination may pose to the proposed development, its users or the wider environment.

1.3 Scope of Work

In order to meet the above objectives, a desk study was carried out, followed by a ground investigation. The desk study comprised:

- a review of readily available geological and hydrogeological maps;
- a review of publicly available environmental data sourced from the Envirocheck database;
- a review of historical Ordnance Survey (OS) maps supplied by Envirocheck;
- commissioning of a Preliminary UXO Risk Assessment by 1st Line Defence, a specialist in the field;
- a walkover survey of the site; and
- a review of records from previous nearby investigations conducted by GEA.

In the light of this desk study an intrusive ground investigation was carried out which comprised, in summary, the following activities:

- two boreholes advanced to a depth of 8.00 m by means of an open-drive percussive sampler;
- two additional boreholes, advanced to refusal at depths of 3.4 m and 4.1 m within the existing rear gardens, using hand-held window sampling equipment;
- standard penetration tests (SPTs) carried out at regular intervals within the opendrive boreholes to provide quantitative data on the strength of the soils;

- installation of a groundwater monitoring standpipes to depths of between 6.5 m and 7.0 m in the opendrive boreholes and to a depth of 3.2 m within one of the window sampler boreholes;
- testing of selected soil samples for contamination purposes;
- a ground movement and building damage assessment; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

This report includes a contaminated land assessment which has been undertaken by a suitably qualified and competent professional in accordance with the methodology presented by the Environment Agency in their Land contamination risk assessment (LCRM) published 8 October 2020. This involves identifying, making decisions on, and taking appropriate action to deal with, land contamination in a way that is consistent with government policies and legislation within the United Kingdom. Risk management is divided into three stages; Risk Assessment, Options Appraisal and Remediation, and each stage comprises three tiers. The Risk Assessment stage includes preliminary risk assessment (PRA), generic quantitative risk assessment (GQRA) and detailed quantitative risk assessment (DQRA); this report includes a PRA and GQRA.

The exploratory methods adopted in this investigation have been selected on the basis of the constraints of the site including but not limited to access and space limitations, together with any budgetary or timing constraints. Where it has not been possible to reasonably use an EC7 compliant investigation technique a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent, where applicable, and relevant published information.

1.3.1 Basement Impact Assessment (BIA)

The work carried out also includes information required for a Hydrological and Hydrogeological Assessment and Land Stability Assessment (also referred to as Slope Stability Assessment), which form part of the BIA procedure specified in the London Borough of Camden (LBC) Planning Guidance: Basements[1] and their Guidance for Subterranean Development[2] prepared by Arup. Although the site lies outside the London Borough of Camden, the Camden procedure for assessing the effects of basements has been adopted as it is now widely known and is considered to provide a robust approach to the issues of concern. The aim of this work is to provide information on the groundwater conditions specific to this site and land stability, in particular to assess whether the development will affect the stability of neighbouring properties and whether any identified impacts can be appropriately mitigated.

1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside the stated scope of the research. Any comments made on the basis of information obtained from third parties are given in good faith on the assumption that the information is accurate. No independent validation of third-party information has been made by GEA.

1 London Borough of Camden Planning Guidance (2018) *Basements*
2 Ove Arup & Partners (2010) *Camden geological, hydrogeological and hydrological study. Guidance for Subterranean Development.* For London Borough of Camden November 2010

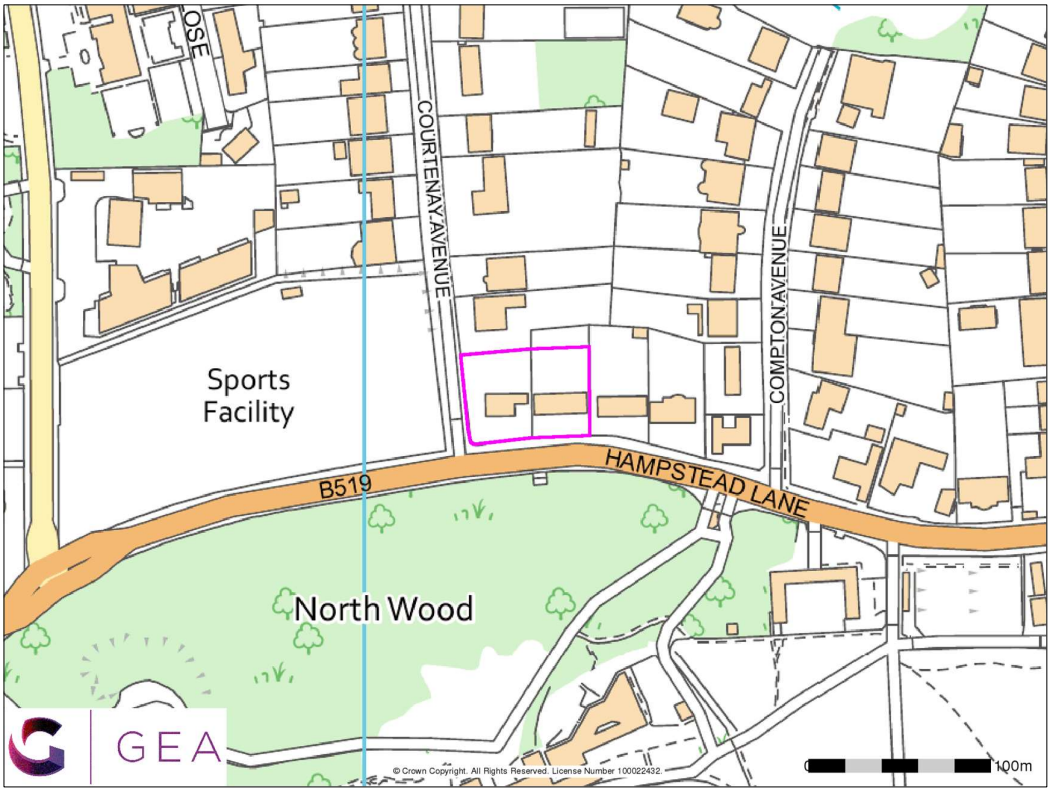
2.0 THE SITE

2.1 Site Description

The site is located in a residential area in the London Borough of Haringey, roughly 1.2 km southwest of Highgate London Underground Station. It is roughly rectangular in shape, measuring approximately 47 m north-south and 65 m east-west and fronts onto Hampstead Lane to the south. It is bordered by No 1 Courtenay Avenue to the north, Courtenay Avenue to the west and No 42 Hampstead Lane to the east. The site may be additionally located by the National Grid Reference 527095, 187640 and is shown on the map extract overleaf.

The site is currently occupied by No 46 Hampstead Lane in the west and No 44 in the east. Both properties include tarmac driveways to the front, with limited soft landscaping, with laburnum, magnolia and bay trees in the south of No 46, and two silver birch and a cypress tree hedge in the south of No 44. Within the rear gardens, tree species include sycamore, cypress, oak and plum, of which, four trees are to be removed from the central part of the site as part of the proposal. Mature London plane trees are present in the footpath on Hampstead Lane, adjacent to the site. Landscaped gardens with lawns and mature trees are present on the northern side of each house. A swimming pool is also located in the rear garden of No 44, along with a tarmac covered tennis court in the far northeast, although the tennis court does not fall within the proposed development footprint.

The topography of the site generally falls towards the north, from a level of 115 m OD at the southern boundary with Hampstead Lane, to 110 m OD at the northern boundary, over a horizontal distance of almost 50 m. The front driveways slope gently down to the houses which have a ground floor level of around 114 m OD and the change in slope at the rear is accommodated by a series of terraces at the rear of each house.



2.1.1 Nearby Basements

Planning permission has recently been granted (HGY/2019/2944) for the demolition of the adjoining property of No 42 Hampstead Lane, to the east of the site, and construction of a new three-storey house with a lower ground floor level and a single level basement beneath the entire footprint of the building, which is to include a swimming pool.

At the time of the investigation, this property was noted to be vacant with evidence that the interior and exterior had been partially stripped out, but that construction of the proposed basement was yet to start.

2.2 Site History

The site history has been researched by reference to historical Ordnance Survey (OS) maps sourced from the Envirocheck database.

The earliest map studied, dated 1864, shows the site to be undeveloped with scattered trees, located to the south of Bishop's Wood. Hampstead Lane bounded the site to the south and North Hill and North Wood were noted to the south of the site. Kenwood House is shown 150 m to the south of the site on the map dated 1870 and there were a number of glasshouses, associated with Kenwood, 180 m to the southeast.

The site was developed with the existing houses at some time between 1915 and 1936, along with Courtenay Avenue immediately to the west and Compton Avenue 100 m to the east. Other detached houses had also been developed in the area to the north of Hampstead Lane during this time and a sports ground had been developed on the western side of Courtenay Avenue. The map indicates that some cutting and filling had occurred on the sports ground site to create a level playing field. The 1952 map shows No 46 to be labelled as "The Garth" and No 44, as "Lydbrook".

At some time between 1953 and 1975 an electrical substation was constructed on the southern side of Hampstead Lane, opposite the site. in open fields. The land immediately to the north, at No 1 Courtenay Avenue was first developed with "Longwood" between 1991 and 1995. The site layout and surrounding area underwent very few changes throughout the 20th Century.

2.3 Other Information

A search of public registers and databases has been made via the Envirocheck database and a summary of the results of this search is included in the Appendix. More detailed information relating to the search can be provided on request.

The desk study research has indicated that there are no registered landfills, historic landfills, registered waste transfer sites or waste management facilities within 1 km of the site. There are also no areas of potentially infilled land within 500 m.

No pollution incidents to controlled waters are recorded within 250 m of the site, and no local authority pollution prevention and controls are recorded within 1 km of the site. There are no contemporary trades listed within 250 m of the site.

The site is located in an area where less than 1% of homes are affected by radon emissions; therefore, no radon protective measures will be necessary.

Information on Urban Soil Chemistry provided by the BGS also indicates that background concentrations for lead in the vicinity of the site are likely to range between 300 mg/kg and 600 mg/kg. Therefore, whilst relatively high concentrations of lead may be encountered within any near surface soils present on the site, a significant proportion of the measured concentration is likely to be the result of residual airborne sources, and this will need to be taken account of in any subsequent risk assessment.

The site is not located within a nitrate vulnerable zone. Hampstead Heath Woods, located roughly 15 m to the south are recorded as a Site of Special Scientific Interest, and Ken Wood, located 450 m to the south, is recorded as Ancient and Semi Natural Woodland.

2.4 Preliminary UXO Risk Assessment

A Preliminary UXO Risk Assessment has been completed by 1st Line Defence (report ref EP13625-00, dated June 2021), and the report is included in the appendix. The risk assessment has been carried out in accordance with the guidelines provided by CIRIA[3], which state that the likelihood of encountering and detonating UXO below a site should be assessed along with establishing the consequences that may arise. The first phase comprises a preliminary risk assessment, which should be undertaken at an early stage of the development planning. If such an assessment identifies a high level of risk, then a detailed risk assessment should be carried out by a UXO specialist, which will identify an appropriate course of action with regard to risk mitigation.

The report indicates that, during World War II (WWII), the site was located within the Municipal Borough of Hornsey, which sustained an overall high density of bombing. However, the site does not appear to have been directly affected by bombing and is not labelled as suffering any damage on available damage mapping. As such, no significant risk of encountering unexploded ordnance has therefore been identified for the site and, in accordance with the recommendations of the report, no further action is recommended.

2.5 Geology

The British Geological Survey (BGS) map of the area indicates that the site is underlain by the dense fine sands of the Bagshot Formation, which overlie the sandy silty clays of the Claygate Member which is underlain by the London Clay Formation. The basal boundary of the Bagshot Formation correlates to an elevation on the 25k OS map at approximately 108 m OD in this area.

The previous investigation carried out by GEA on the adjoining site of No 42 Hampstead Lane, immediately to the east, encountered a moderate thickness of made ground over the Bagshot Formation, underlain by the Claygate Member which was in turn overlying the London Clay which extended to the maximum depth of the investigation, of 25.00 m. The made ground extended to depths of between 0.50 m and 0.90 m. The Bagshot Formation generally comprised firm becoming stiff orange-brown mottled brown and grey silty sandy silty clay and extended to depths of between 2.20 m (109.95 m OD) and 4.50 m (109.75 m OD). The Claygate Member initially comprised medium dense brown mottled orange-brown slightly clayey silty fine sand with occasional layers of sandy clay extending to depths of 11.20 m (103.05 m OD) and 10.90 m (103.48 m OD). Stiff grey silty clay with layers of clayey silt and clayey sand was then encountered and extended to depths of 20.70 m (93.55 m OD) and 19.55 m (94.83 m OD). The London Clay Formation generally comprised medium dense grey slightly clayey silt and extended to the full depth of the investigation, of 25.00 m (89.25 m OD).

3 CIRIA C681 (2009) *Unexploded ordnance (UXO) A guide for the construction industry*

A borehole drilled by the BGS on Hampstead Lane, generally referred to as the Hampstead Heath borehole, to a depth of 66.74 m (61.97 m OD), about 800 m to the southwest of the site at National Grid Reference 526455, 186890, found the Bagshot Formation to extend to a level of 109.71 m OD and penetrated the full thickness of the Claygate Member. This borehole found the Claygate Member to extend to a level of 93.71 m OD and in the lower 5 m to 10 m of the Claygate Member, it encountered yellowish brown silt interbedded with occasional sand and clay with varying quantities of silt, sand and clay. A band of limestone was encountered between 97.06 m OD and 96.76 m OD. The London Clay comprised an initial layer of clayey slightly sandy silt with occasional layers of silty clay extending to a depth of 42.92 m (85.82 m OD) which is underlain by layers of fissured grey clay, silty clay and clayey silt and extended to the base of the borehole, at a depth of 66.74 m (61.97 m OD).

A deeper BGS borehole, located approximately 250 m to the west, indicates that the London Clay in the area is likely to extend to a depth of approximately 110 m to 115 m, below which the Lambeth Group, Thanet Sand and White Chalk are expected to be present.

2.6 Surface Water and Groundwater Conditions

The Bagshot Formation and the Claygate Member are classified as Secondary A Aquifers, which refers to permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers, as defined by the Environment Agency (EA). The London Clay is classified as an Unproductive Stratum, which refers to rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Groundwater is likely to be present within the Bagshot Beds and the Claygate Member, and other investigations carried out around the area of Hampstead Heath indicate that spring lines are present at the interface of the Bagshot Beds and the Claygate Member, and to a much lesser extent at a lower level at the boundary between the Claygate Member and the underlying essentially impermeable London Clay. These springs have been the source of a number of London's "lost" rivers, notably the Fleet, Westbourne and Tyburn, which all rose on Hampstead Heath, to the south of the current site, at the base of the Bagshot Beds.

The nearest surface water feature to the site is located 196 m to the northeast which appears to be a small headwater stream located within Highgate Golf Course which flows south-north for a short distance before flowing underground and re-emerging roughly 220 m north where it then flows to the northwest disappearing below ground level until it is assumed it joins with a pond and series of streams just north of Courtenay Avenue. The site is not within an area at risk from flooding as defined by the EA.

Historically[4], a tributary to the Fleet, one of London's "lost" rivers, originated approximately 300 m to the south of the site, flowing through the Highgate Pond chain, and flowed in a south to south-easterly direction through Camden Town before issuing into the River Thames approximately 7.80 km to the south-southeast of the site, near Blackfriars Bridge. Additionally, the sources for a number of the other "Lost Rivers of London" were located within 500 m of the site, including the Tyburn and the Westbourne to the south and the Brent to the northwest, generally at the interface between the Bagshot Formation and the underlying Claygate Member. The Tyburn and the Westbourne then flowed in a generally southerly direction before issuing into the River Thames. Hampstead Lane roughly runs along the top of the ridge formed of Bagshot Beds which forms a watershed between these lost rivers, which flow generally southwards, and

[4] Nicholas Barton and Stephen Myers (2016) *London's Lost Rivers. Revised Edition.* Historical Publications Ltd

streams on the northern side of the ridge, where the site is located, which flowed in a generally northerly direction.

Groundwater within the permeable horizons of both the Bagshot Formation and the Claygate Member is likely to flow in a generally northerly direction, following topographic contours. Any groundwater flow within the underlying London Clay will be at a very slow rate, due to its negligible permeability. The permeability will be predominantly secondary, through fissures in the clay. Published data indicates the horizontal permeability of the London Clay to generally range between 1 x 10^{-11} m/s and 1 x 10^{-9} m/s. Vertical permeability within the Claygate is also likely to be slow in view of the presence of layers of clay, but horizontal permeability is likely to be one or two orders of magnitude higher. The Bagshot Formation is likely to have a permeability of about 1 x 10^{-5} m/s to 1 x 10^{-6} m/s.

During the GEA site investigation at No 42, groundwater was initially encountered within the sand layers of the Claygate Member at depths of between 4.00 m (108.17 m OD) and 8.80 m (105.58 m OD), below which inflows of groundwater were regularly encountered to the full depth of the investigation, of 25.00 m (89.25 m OD). Groundwater was subsequently measured at depths of between 4.32 m (107.83 m OD) and 6.60 m (107.65 m OD) within the standpipes installed in a selection of the boreholes.

The site is largely covered by the existing building and hardstanding in the south and therefore infiltration of rainwater into the ground beneath the site is limited to the area of soft landscaping forming the rear and front gardens, and runoff would generally be downslope, towards the rear garden in the north.

2.7 Preliminary Risk Assessment

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. As part of the new regime local authorities are required to carry out inspections of their area to identify sites that may be contaminated. The determination of contaminated sites is based on a "suitable for use" approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of establishing one or more "pollution linkages"; a pollution linkage requires a source of contamination, a sensitive target or receptor that is at risk from the contamination and a pathway by which the contamination can travel from the source to the target.

A risk assessment should be carried out for consideration by the Local Planning Authority (LPA) before the planning application is determined. Where unacceptable risks are identified proposals will need to be made to address these risks as part of the development process. The guidance recognises the benefits of a phased approach, and the desk study is the first phase in the process of investigating and identifying contamination to assist in the determination of a planning application.

2.7.1 Source

The desk study research has indicated that the site has only been occupied by the existing detached house throughout its developed history. On this basis the site is not deemed to have had a contaminative history. In addition, no contaminative historical uses have been identified in the surrounding area.

There are no historical or existing landfill sites within 1 km of the site and on this basis no potential sources of soil gas have been identified.

2.7.2 Receptor

Following the redevelopment, residential end users will represent high sensitivity receptors. Buried services are likely to come into contact with any contaminants present within the soils through which they pass, and site workers are likely to come into direct contact with any contaminants present in the soil and through inhalation of vapours during basement excavation and construction. Being underlain by a secondary aquifer, groundwater is also a potential receptor.

The adjacent SSSI, Hampstead Heath, to the south and neighbouring houses would be sensitive nearby receptors.

2.7.3 Pathway

The Bagshot Beds could allow the migration of contaminated groundwater through the shallow soils to surrounding sites. Within the site, end users will be largely isolated from direct contact with any contaminants present within the made ground by the presence of the buildings and the extent of the hardstanding. However, in proposed areas of soft landscaping potential contaminant exposure pathways exist with respect to end users. Buried services may be exposed to any contaminants present within the soil through direct contact and site workers will come into contact with the soils during construction works. There is thus considered to be a low potential for a contaminant pathway to be present between any potential contaminant source and a target for the particular contaminant.

2.7.4 Preliminary Risk Appraisal

In accordance with the guidelines provided by CIRIA[5], the following table summarises possible pollution linkages for the site.

SOURCE	RECEPTOR	PATHWAY	PROBABILITY	CONSEQUENCE
Contamination within near surface soils resulting from past use of the site or adjacent sites	End users	Ingestion of contaminated soil or dust, through skin contact or inhalation	Unlikely	Medium
	Vegetation	Uptake via soil through roots	Unlikely	Mild
	Groundwater	Percolation and leaching of surface run-off	Unlikely	Medium
	Site workers	Ingestion of contaminated soil or dust, through skin contact or inhalation	Low likelihood	Mild
	Buried services	Direct contact	Low likelihood	Mild
	Adjacent sites	Surface water flow or drain runs dust	Unlikely	Medium

This method of risk evaluation involves classification of the magnitude of the potential consequence (severity) and probability (likelihood) of the risk. The method by which these factors are classified is detailed in the Appendix. On the basis of the consequence and probability the site can be attributed a level of risk, ranging from very low to very high and the procedure for making this assessment is shown in the Appendix, together with a description of each level of assessed risk and the actions that may be required to mitigate the risk.

5 Rudland, DJ, Lancefield, RM and Mayell, PN (2001) *Contaminated land risk assessment. A guide to good practice. CIRIA C552*

On this basis of the above it is considered that there is a LOW RISK of there being a significant contaminant linkage at this site which would result in any requirement for any remediation work. It would be prudent to carry out chemical analyses on samples of the near surface soil to assess the presence of soil contamination before the excavation of the basement, for purpose of waste disposal classification.

Furthermore, there is not considered to be a significant potential for hazardous soil gas to be present on or migrating towards the site: there should thus be no need to consider landfill gas exclusion systems.

3.0 BASEMENT SCREENING ASSESSMENT

The Camden guidance suggests that any development proposal that includes a subterranean basement should be screened to determine whether or not a full Basement Impact Assessment (BIA) is required. A number of screening tools are included in the Arup document and for the purposes of this report reference has been made to Appendices E1, E2 and E3 which include a series of questions within screening flowcharts for surface flow and flooding, subterranean (groundwater) flow and land stability.

The flowchart questions and responses to these questions are tabulated below.

3.1 Subterranean (Groundwater) Flow Screening Assessment

Reference has been made to Appendix E of the Arup document, which includes six questions within a subterranean (groundwater) flow screening flowchart. Responses to the questions are tabulated below.

Question	Response for 44 & 46 Hampstead Lane
1a. Is the site located directly above an aquifer?	*Yes the site is located above a Secondary 'A' Aquifer as designated by the EA.*
1b. Will the proposed basement extend beneath the water table surface?	*Possibly. The FFL of the basement is proposed to be at a level of 107.07 m OD, with formation level at 106.3 m OD and stairwells and lift shafts slightly deeper. Groundwater has been measured at a level of 107.8 m OD and 107.6 m OD on an adjacent site and is therefore expected to be close to the deepest part of the excavation.*
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No. The site is not located within 100 m of a known spring line.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	*Yes. The amount of hard surfaced areas is likely to increase as a result of the development.* However, there will be no surface expression of the basement development, which will be entirely beneath the proposed new building.
5. As part of the site drainage, will more surface water (e.g., rainfall and run-off) than at present be discharged to the ground (e.g., via soakaways and/or SUDS)?	*Possibly*. The Claygate Member is not usually considered suitable for the use of soakaways due to its variable nature, although particularly sandy soils were encountered on the adjacent site. The incorporation of soakaways would improve recharge of the ground, but testing should be carried out to see if this is viable. Or provision will need to be made for surface water drainage through the existing infrastructure.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	No. There are no local ponds or spring lines.

The above assessment has identified the following potential issues that need to be assessed:

Q1a The site is located directly above an aquifer.

Q1b The proposed basement may extend below the groundwater table.

Q4 The proportion of hard-surfaced / paved areas is likely to increase.

3.2 Stability Screening Assessment

Reference has been made to Appendix E of the Arup document, which includes 14 questions within a slope stability screening flowchart. Responses to the questions are tabulated below.

Question	Response for 44 &46 Hampstead Lane
1. Does the existing site include slopes, natural or manmade, greater than 7°?	No. The overall existing slope angle has been estimated to be 6 degrees.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	No. Significant slope re-profiling is not understood to form part of the proposed works.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No.
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	*Yes. Reference to Figure 16 in the Arup study indicates that the immediate area surrounding the site includes slope angles in excess of 10°. With lower slope angles extending to the north*
5. Is the London Clay the shallowest stratum at the site?	No.
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	*Yes. Although the majority of the existing trees on site are to be retained, it is understood that some small trees in the rear garden are to be felled.*
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	No.
8. Is the site within 100 m of a watercourse or potential spring line?	No.
9. Is the site within an area of previously worked ground?	No.
10. Is the site within an aquifer?	*Yes. the site is located above a Secondary 'A' Aquifer as designated by the EA*
11. Is the site within 50 m of Hampstead Heath ponds?	No.
12. Is the site within 5 m of a highway or pedestrian right of way?	*Yes. The site fronts onto Hampstead Lane to the south and Courtenay Avenue to the west, although the proposed building line will be >5 m from the carriageway.*
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	*Yes. The development will increase the foundation depths relative to the neighbouring properties to a relatively significant extent.*
14. Is the site over (or within the exclusion zone of) any tunnels, e.g., railway lines?	No. A search of publicly available maps has not indicated tunnels under the site.

The above assessment has identified the following potential issues that need to be assessed:

Q4 The development is located within a wider hillside setting where the general slope angle is greater than 7°.

Q6 The proposed works will locally extend into tree protection zones, and some small trees are to be felled.

Q10 The site is underlain by a Secondary 'A' Aquifer.

Q12 The site is within 5 m of a public highway.

Q13 The proposed basement will significantly increase the differential depth of foundations to neighbouring properties.

3.3 Surface Flow and Flooding Screening Assessment

Reference has been made to Appendix E of the Arup document, which includes six questions within a surface flow and flooding screening flowchart. Responses to the questions are tabulated below.

Question	Response for 44 &46 Hampstead Lane
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No. Figure 14 of Arup report confirms that the site is not located within this catchment area.
2. As part of the proposed site drainage, will surface water flows (e.g., volume of rainfall and peak run-off) be materially changed from the existing route?	No. Any additional surface water from the increase hardstanding/roof area will be attenuated and discharged into the Thames Water sewers to ensure the surface water flow regime will be unchanged. The basement will be beneath the footprint of the new building, and the 1m distance between the roof of the basement and ground surface as recommended by section 3.2 of the CPG Basements 2018 does not apply across these areas.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	*Yes. The proposals will have a larger footprint than existing; thus, the development will result in an increase in the extent of hard surfacing/roof areas.* However, there will be no surface expression of the basement development, which will be entirely beneath the proposed new building.
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	No. Any additional surface water from the increase hardstanding/roof area will be attenuated and discharged into the Thames Water sewers to ensure the surface water flow regime will be unchanged. The basement will be beneath the footprint of the new building, and the 1m distance between the roof of the basement and ground surface as recommended by section 3.2 of the CPG Basements 2018 does not apply across these areas.
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No. The proposed basement is very unlikely to result in any changes to the quality of surface water being received by adjacent properties or downstream watercourses as the surface water drainage regime will be unchanged and the land uses will remain the same.
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of nearby surface water feature?	No The findings of this BIA together with the Haringey SFRA and Environment Agency online flood maps show that the site has a very low flooding risk from surface water. There is a very low risk from sewers, and reservoirs (and other artificial sources), and fluvial/tidal watercourses. It is possible that the basement will be constructed within perched groundwater and the recommendations outlined in

Question	Response for 44 &46 Hampstead Lane
	the BIA with regards to waterproofing and tanking of the basement will reduce the risk to acceptable levels. In accordance with paragraph 6.16 of the CPG a positive pumped device and non-return valve will be installed in the basement in order to further protect the site from sewer flooding.

The above assessment has identified the following potential issues that need to be assessed:

Q3 Proportion of hardstanding and paved areas will increase.

4.0 BASEMENT SCOPING and SITE INVESTIGATION

The purpose of scoping is to assess in more detail the factors to be investigated in the impact assessment. Potential impacts are assessed for each of the identified potential impact factors.

4.1 Potential Impacts

The following potential impacts have been identified.

Screening Issue	Potential Impact
The site is located above an aquifer	The site is entirely underlain by the Bagshot Formation, over the Claygate Member, both of which are classified as Secondary 'A' Aquifers. They have the potential of being able to support local water supplies as well as forming an important source of base flow for local rivers. There is the potential for the hydrogeological setting to be affected by a basement development.
The proposed basement may extend below the water table.	It is possible the basement excavation could extend below the water table. Should this happen, the basement structure is capable of diverting groundwater flow such that groundwater level is affected on both the up slope and down slope side of the basement structure. This in turn has the potential to affect the local hydrogeology and any adjacent structures.
Increase in proportion of hard-standing and paved areas	The sealing of the ground surface to rainfall, by increasing the building area, would result in decreased recharge to the underlying ground
The development is located within a wider hillside setting where the general slope angle is greater than 7°.	Local instability within the site and adjoining sites may occur
Some trees will be removed as a result of the proposal	If foundations of nearby buildings are within the zone of influence of the removed trees some damage could result. Excavation within a tree root protection zone may damage the tree resulting in loss of valued tree asset and changes to groundwater uptake and availability and ultimately damage to nearby buildings. However, the expected ground conditions should not be susceptible to shrink/swell
The proposed works may extend into tree protection zones	
The proposed basement will significantly increase the differential depth of the foundations to neighbouring properties	The depth of the proposed excavation is significant and could pose a risk to adjacent structures from ground movements associated with the basement excavation.
The site is within 5 m of a public highway; it fronts onto Hampstead Lane to the south and Courtenay Avenue to the west	Excavation for a basement may result in damage to the road, pathway or any underground services buried in trenches beneath the road or pathway.

4.2 Exploratory Work

In order to meet the objectives described in Section 1.2, two boreholes were drilled using an opendrive sampling rig, to a depth of 8.0 m (106.3 m OD to 105.5 m OD). The boreholes were supplemented by two hand-held window sampler boreholes, extended to refusal at depths of 3.4 m (107.5 m OD) and 4.1 m (106.9 m OD) within the existing rear gardens.

During boring, disturbed and undisturbed samples were obtained from the boreholes for subsequent laboratory examination and testing. Standard Penetration Tests (SPTs) were carried out at regular intervals to provide additional quantitative data on the strength of soils encountered.

Groundwater monitoring standpipes were installed within the opendrive boreholes to depths of 6.5 m (107.0 m OD) and 7.0 m (107.3 m OD), with an additional standpipe installed to a depth of 3.2 m (107.8 m OD) within one of the window sampler boreholes on the rear part of the site. Monitoring will be undertaken in due course, with the results included in an updated version of this report.

A selection of the samples recovered from the boreholes was submitted to an analytical laboratory for a programme of contamination testing. Geotechnical testing did not form part of the brief for this investigation.

All of the above work was carried out under the supervision of a geotechnical engineer from GEA.

The borehole records are appended, together with a site plan indicating the exploratory positions. The Ordnance Datum levels shown on the borehole records have been interpolated from a 'Land Survey' drawing (ref: 27085A-1, dated November 2020).

4.3 Sampling Strategy

The boreholes were positioned on site by GEA, in accessible areas whilst avoiding areas of buried services.

Four samples of the made ground have been sent for chemical analyses. The analytical suite of testing was selected to identify hydrocarbon contamination resulting from the former use of the site and a range of typical industrial contaminants for the purposes of general coverage.

For this investigation the analytical suite for the soil included a range of metals, speciation of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols. The contamination analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. A summary of the MCERTs accreditation and test methods are included with the attached results and further details are available upon request.

The contamination analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. Details of the MCERTs accreditation and test methods are included in the Appendix together with the analytical results.

5.0 GROUND CONDITIONS

The investigation has generally confirmed the expected ground conditions in that, below a variable thickness of made ground, the Bagshot Formation was encountered over the Claygate Member, which extended to the maximum depth of the investigation, of 8.0 m (106.3 m OD to 105.5 m OD).

The precise location of the boundary between the lower part of the Bagshot Formation and the underlying Claygate Member is often difficult to define due to its gradational contact, and the close similarities in composition and geotechnical properties of each stratum. The boundaries have therefore been placed on the attached borehole records as described below, but part of what is described as Claygate Member may in fact comprise the Bagshot Formation, and vice versa.

5.1 Made Ground

The made ground extended to depths of between 0.50 m (110.5 m OD) and 2.0 m (111.5 m OD) and generally comprised dark brown, grey or greenish grey silty sandy clay with variable amounts of gravel, brick, concrete, ash and charcoal fragments.

Apart from the presence of fragments of extraneous material noted above, no visual or olfactory evidence of contamination was observed during the fieldwork. However, four samples of the made ground have been analysed for a range of contaminants as a precautionary measure and the results are detailed within Section 5.5.

5.2 Bagshot Formation

The Bagshot Formation generally comprised firm pale orange-brown mottled grey and orange-brown sandy to very sandy clay which extended to depths of between 1.5 m (109.4 m OD) and 4.9 m (109.4 m OD).

5.3 Claygate Member

The Claygate Member initially comprised a mixture of medium dense pale orange-brown to greenish grey clayey sand and firm becoming stiff pale orange-brown mottled grey and orange-brown sandy to very sandy clay, which was proved to the base of the window sampler boreholes, at depths of 3.4 m (107.5 m OD) and 4.1 m (106.9 m OD), but was proved to depths of 6.0 m (107.5 m OD) and 6.9 m (107.4 m OD) in the opendrive sampler boreholes.

Below the initial layers, the Claygate Member comprised medium dense becoming dense pale orange-brown, brown or greenish grey clayey sand, which was proved to the full depth of the investigation, of 8.00 m (106.30 m OD to 105.50 m OD). This material was found on the adjacent site to extend to 11.20 m (103.05 m OD) and 10.90 m (103.48 m OD) and below which stiff grey silty clay with layers of clayey silt and clayey sand was encountered to a depth of between 20.70 m (93.55 m OD) and 19.55 m (94.83 m OD).

Medium dense grey slightly clayey silt of the London Clay was then proved to the full depth of the investigation of 25.00 m (89.25 m OD).

5.4 Groundwater

Groundwater was encountered during drilling at depths of between 3.6 m (107.4 m OD) and 7.0 m (107.3 m OD) and has previously been measured at depths of between 4.32 m (107.83 m OD) and 6.60 m (107.65 m OD) in standpipes installed on the adjoining site of No 42 Hampstead Lane, immediately to the east.

Three groundwater monitoring standpipes were installed to depths of between 3.2 m (107.8 m OD) and 7.0 m (107.3 m OD) and have been monitored on a single occasion to date, after a period of approximately seven weeks, where groundwater was recorded at depths of 6.80 m (107.50 m OD), 2.50 m (108.5 m OD) and 4.95 m (108.55 m OD) in Borehole Nos 1, 2 and 4, respectively.

5.5 Soil Contamination

The table below sets out the values measured within the four samples of the made ground analysed; all concentrations are in mg/kg unless otherwise stated.

Determinant	BH1 0.50 m	BH2 0.30 m	BH3 0.30 m	BH4 0.40 m
pH	8.2	6.2	7.2	7.2
Arsenic	16	10	15	16
Cadmium	<0.2	<0.2	<0.2	<0.2
Chromium	31	23	37	35
Chromium (hexavalent)	<4	<4	<4	<4
Lead	**420**	130	**230**	**460**
Mercury	0.6	<0.3	0.9	<0.3
Selenium	<1.0	<1.0	<1.0	<1.0
Copper	55	23	40	66
Nickel	21	10	17	22
Zinc	150	72	120	290
Total Cyanide	<1	<1	<1	<1
Total Phenols	<1	<1	<1	<1
Total PAH	50	7.37	12.7	13.3
Benzo(a)pyrene	3.7	0.7	1.3	1.4
Naphthalene	0.7	<0.05	<0.05	<0.05
TPH	170	<10	19	69
Total Organic Carbon %	1.7	2.8	2.9	2.5
Asbestos in soil	Not Detected	Not Detected	Not Detected	Not Detected

Note: Figure in bold indicates concentration in excess of risk-based soil guideline values, as discussed in Part 2 of this report

5.5.1 Generic Quantitative Risk Assessment

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. Contaminants of concern are those that have values in excess of generic human health risk-based guideline values, which are either the CLEA[6] Soil Guideline Values where available, the Suitable 4 Use Values[7] (S4UL) produced by LQM/CIEH calculated using the CLEA UK Version 1.07[8] software, or the DEFRA Category 4 Screening values[9], assuming a residential end use with plant uptake. The key generic assumptions for this end use are as follows:

- that groundwater will not be a critical risk receptor;
- that the critical receptor for human health will be young female children aged zero to six years old;
- that the exposure duration will be six years;
- that the critical exposure pathways will be direct soil and indoor dust ingestion, consumption of indoor produce, consumption of soil adhering to home grown produce, skin contact with soils and dust, and inhalation of dust and vapours; and
- that the building type equates to a two-storey terraced house.

It is considered that these assumptions are acceptable for this generic assessment of this site, albeit extremely conservative, as the development does not introduce any new pathways and is likely to result in the removal of the made ground beneath the site through excavation of the proposed basement.

The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix.

Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where concentrations are measured in excess of these generic screening values there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include;

- additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;
- site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or
- soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.

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6 *Updated Technical Background to the CLEA Model (Science Report SC050021/SR3) Jan 2009* and Soil Guideline Value reports for specific contaminants; all DEFRA and Environment Agency.

7 *The LQM/CIEH S4Uls for Human Health Risk Assessment* S4UL3065 November 2014

8 Contaminated Land Exposure Assessment (CL|EA) Software Version 1.06 Environment Agency 2009

9 CL:AIRE (2013) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Final Project Report SP1010 and DEFRA (2014) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Policy Companion Document SP1010

When comparing the results from the contamination testing to those in the Soil Guideline Values and Generic Guideline Values, the contamination testing has generally revealed relatively low concentrations of each of the contaminants tested, although elevated concentrations of lead have been identified in three of the samples analysed.

This assessment is based upon the potential for risk to human health, which at this site is considered to be the critical risk receptor.

All samples have been found to be free from asbestos fibres.

The results are discussed in detail in Section 2 of this report.

6.0 GROUND MOVEMENT ASSESSMENT

6.1 Construction Sequence

In order to assess the ground movements arising from the proposed development, the construction needs to be broken down into the key stages at which ground movements may be most onerous rather than merely considering the completed building in the long term.

It is currently understood that a contiguous bored pile wall will be installed to support the proposed lower ground floor and basement construction. The following sequence of operations has been derived to enable analysis of the ground movements around the basement, both during and after construction, and is based on information provided by the structural engineer.

Essentially the sequence may be considered as two groups of activities, the first comprising the short-term temporary works, whilst the second represents the construction of the permanent works.

The detail of the support provided to adjacent walls is beyond the scope of this report and the structural engineer will be best placed to agree the methodology with the chosen contractor(s) once appointed.

6.1.1 Temporary Support to Piled Wall

Following the installation of the bored pile wall and associated capping beams, temporary props will be installed, and the basement excavation will proceed.

The detail of section sizes and spacings will be finalised by the contractor but it is anticipated that the general philosophy adopted will be for diagonal braces to be used across the corners or returns of the basement walls whilst props will be positioned at regular intervals along the long walls of the basement.

Where horizontal restraint cannot be provided by other parts of the piled wall the prop forces can be provided by so-called ‘flying shores’ where the reaction to horizontal forces is provided by pile caps, gravity blocks or basement thickenings in the centre of the excavation.

It is anticipated that steel temporary props will be used with strut forces spread along the wall by steel waling beams fixed to the piles. Although the detail of the propping is to be finalised there is the option to use hydraulic ‘active’ props where the propping force is applied prior to excavation in order to minimise movement at critical locations.

6.1.2 Permanent Works

When the final excavation depths have been reached the permanent works will be formed which, from the information provided, are understood to comprise reinforced concrete walls with a drained cavity lining discharging to a sump pit.

Reinforced concrete will be used for the proposed basement floor slab.

It is anticipated that the floor slabs, which will act as permanent props, will be constructed lowest level first and when each floor has achieved adequate strength, the temporary props will be removed, and the subsequent walls and floors cast until the structure is complete.

6.2 Basis of Assessment

An assessment of ground movements within and surrounding the excavation has been undertaken using the X-Disp and P-Disp computer programs licensed from the OASYS suite of geotechnical modelling software from Arup. These programs are commonly used within the ground engineering industry and are considered to be appropriate tools for this analysis.

The X-Disp program has been used to predict ground movements likely to arise from the construction of the proposed basement. This includes the settlement of the ground (vertical movement) and the lateral movement of soil behind the proposed retaining walls (horizontal movement).

The analysis of potential ground movements within the excavation, as a result of unloading of the underlying soils, has been carried out using the Oasys P-Disp software package and is based on the assumption that the soils behave elastically, which provides a reasonable approximation of soil behaviour at small strains.

For the purpose of these analyses, the corners have been defined by x and y coordinates, with the x-direction parallel with the orientation of the boundaries with the orientation of Hampstead Lane (approx. east-west), whilst the y-direction is parallel with the orientation of Courtenay Avenue (approx. north-south). Vertical movement is in the z-direction.

For this movement analysis, the basement has been modelled as a polygon, approximately 54.0 m by 20.0 m in maximum extent, which will extend to a depth of about 7.0 m below the upper, or southern, part of the site.

In order to calculate ground movements as a result of pile installation, a minimum embedment of approximately two-thirds of the retained height has been adopted for the purpose of stability, giving a pile length of approximately 12.0 m for proposed bored piled wall.

It is understood that propping will be provided during the construction of the basement and in the permanent condition, such that the walls can be considered to be stiff for the purpose of the ground movement modelling.

Samples of the output movement contour plots are included within the appendix and the full outputs of all the analyses can be provided on request.

6.3 Ground Movements Surrounding the Basement

6.3.1 Model Used

For the X-Disp analysis, the soil movement relationships used for the embedded retaining walls are the default values within CIRIA report C760[10], which were derived from a number of historic case studies.

Installation of piled retaining walls:

Table 6.1 of CIRIA C760 gives the normalised horizontal movement for a contiguous wall of 0.04% of the installed pile length. However, there is some doubt as to the applicability of these movement curves to a relatively small project where smaller diameter piles are proposed. In this respect, recent papers by Ball & Langdon *et al*[11,12], consider a number of contiguous bored pile walls in central London, which represent, in scale and currency of data, a closer representation to this site, and where measured wall installation movements normalised to between 0.006 % and 0.012 % of pile length. The papers then suggest that, subject to careful control of installation, a normalised relationship of 0.02 %, i.e., half of the C760 movements, could be appropriate for a contiguous wall within a range of ground conditions, whilst remaining relatively conservative.

Based on the fact that piles installed into clay soils typically exhibit smaller movements than those on which the above paper is based, and that the proposed wall is constructed in a hit and miss sequence and similar controls on pile installation are maintained, it follows that there is no reason why a similar relationship cannot be adopted for this site.

An amended ground movement curve for the 'installation of a contiguous pile wall in stiff clay', with a normalised relationship of 0.02% has therefore been adopted to represent the effects of the installation of the piled walls that will form the proposed basement structure.

Excavation Phase:

The ground movement curves for 'excavations in front of a stiff wall in stiff clay' have been adopted for the subsequent excavation phase.

6.3.2 Results

The movements predicted by X-Disp are summarised in the table below; the results are presented below and in subsequent tables to the degree of accuracy required to allow predicted variations in ground movements around the structure to be illustrated, but may not reflect the anticipated accuracy of the predictions.

Phase of Works	Maximum Movements due to Wall Deflection (mm)	
	Vertical Settlement	Horizontal Movement
Contiguous bored pile wall installation	< 3	< 3
Combined movements from installation and subsequent excavation behind contiguous bored pile wall	6 to 7	12 to 13

10 Gaba, A, Hardy, S, Powrie, W, Doughty, L and Selemetas, D (2017) *Embedded retaining walls – guidance for economic design* CIRIA Report C760

11 Ball, R, Langdon, N, and Creighton, M (2014) *Prediction of party wall movements using CIRIA report C580.* Ground Engineering Sep 2014, pp 25-29

12 Langdon, N, Ball, R, and Giles, D (2021) *Ground movement prediction for a piled basement: A case study from Garlickhythe, City of London, UK.* Ground Engineering July 2021 pp 26-33

The analysis has indicated that the maximum vertical and horizontal settlements that will result from the piled retaining wall installation are less than 3 mm, while the movements arising from the combined wall installation and excavation phases are likely to range between 6 mm to 7 mm of vertical settlement and 12 mm to 13 mm of horizontal movement.

The estimated movements are considered to represent a worst-case scenario, particularly as the movements resulting from basement excavation will be minimised due to control of the propping in the temporary works and a regime of monitoring.

6.4 Movements within the Excavation (Heave / Settlement)

6.4.1 Model Used

The analysis of potential ground movements, as a result of unloading of the underlying soils and the loads applied through the underpinning, has been carried out using the Oasys P-Disp software package and is based on the assumption that the soils behave elastically, which provides a reasonable approximation to soil behaviour at small strains.

At this site unloading of the underlying soils will take place as a result of the basement excavation and the reduction in vertical stress will cause heave to take place. Undrained soil parameters have been used to estimate the potential short-term movements, which include the "immediate" or elastic movements because of the basement excavation. Drained parameters have been used to provide an estimate of the total movement, from which the post-construction or long-term movements can be calculated.

The elastic analysis requires values of soil stiffness at various levels to calculate displacements. Values of stiffness for the soils at this site are readily available from published data[13] and a well-established method has been used to provide estimated values. This relates values of E_u and E', the undrained and drained stiffness respectively, to values of undrained cohesion, indicating stiffness values of 600 x Cu for the Bagshot Beds / Claygate Member and 750 Cu for the underlying London Clay, with a ratio of E' to Eu of 0.75. A relationship of 2000 x SPT 'N' has been used to obtain values of Young's modulus for any granular soils.

The excavation of up to 7.0 m of soil to form the proposed basement will result in a net unloading of around 130 kN/m^2.

The soil parameters used in this analysis are tabulated below, which have been estimated from the findings of the investigation of the site, the previous investigations on the adjoining and nearby sites, and assumed parameters interpreted from archive boreholes on the BGS database. Depths are given relative to ground level (approx. 114 m OD) on the upper, southern, part of the site.

Stratum	Depth Range (m)	Undrained Cohesion (KPa)	Eu (KPa)	E' (KPa)
Made Ground	GL to 1.0 (varies)	-	10,000	10,000
Bagshot Beds	1.0 to 5.0	50 to 70	30,000 to 42,000	22,500 to 31,500
Claygate Member (upper sandy layers)	5.0 to 11.0	-	-	40,000

[13] Burland JB, Standing, JR, and Jardine, FM (2001) *Building response to tunnelling, case studies from construction of the Jubilee Line Extension* CIRIA Special Publication 200

Claygate Member (clay)	11.0 to 20.0	75 to 125	45,000 to 75,000	33,750 to 56,250
London Clay	20.0 to 50.0	125 to 350	93,750 to 262,500	70,313 to 196,875

On the basis of nearby BGS records, a rigid boundary for the analysis has been set within the London Clay at a depth of about 50 m below existing ground level, at which depth the soils are considered as being essentially incompressible, whilst an increase in cohesion of 7.5 kN/m^2 for each metre of depth has been adopted to provide a conservative estimate of the likely strength profile within the London Clay.

6.4.2 Results

An assessment of ground movements within the basement excavation has been undertaken by GEA using the P-Disp computer program licensed from the OASYS suite of programmes from Arup.

The predicted movements are summarised in the table below.

Location	Movement (mm)*		
	Short-term Heave / Settlement (excavation Phase)	Long-term Heave / Settlement (post construction)	Total Heave / Settlement
Centre of excavations	-26 to -28	-18	-44 to -46
Edge of excavations	-12 to -14	-8	-20 to -22

**A positive number denotes settlement, whilst a negative number denotes heave.*

The P-Disp analysis indicates that, by the time the basement construction is complete, up to 28 mm to 28 mm of heave is likely to have taken place at the centre of the proposed excavation, reducing to around 12 mm to 14 mm at the edge of the excavations.

In the long term, following completion of the basement construction, a further 18 mm of heave is estimated as a result of long-term swelling of the underlying clay soils.

It is important to bear in mind that the results of the P-Disp analysis, which is based on an unrestrained excavation, do not take account of the mitigating effect of the existing structures, the stiffness of the proposed floor slabs and the contiguous pile walls, which in reality will combine to restrict potential heave movements within the basement excavation. The movements predicted by the model at or just beyond the site boundaries are unlikely to be fully realised and should not therefore have a detrimental impact upon any nearby structures.

In order to mitigate the effects of heave on the new building, the basement could be designed to transmit heave forces into the wall piles or onto tension piles within the basement. If a compressible material is used beneath the slab, it will need to be designed to be able to resist the potential uplift forces generated by the ground movements. In this respect, potential heave pressures are typically taken to equate to around 50 % of the total unloading pressure, assuming a linear relationship between heave movement and the pressure applied to the underside of the slab, which in this case is taken to be inflexible. However, if there is some flexibility in the slab, this value would reduce as the slab deflects and it would be reasonable to assume that the heave pressure would reduce to around 35 % of the unloading pressure.

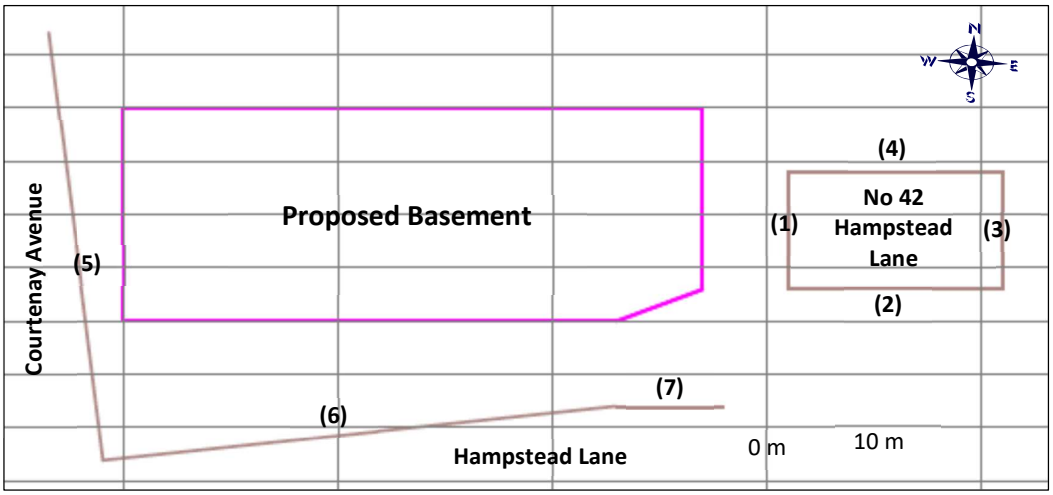
6.5 Building Damage Assessment

In addition to the assessment of the likely movements that will result from the proposed development, some of the neighbouring structures have been set as sensitive structures, requiring Building Damage Assessments, on the basis of the classification given in Table 6.4 of C760, as follows.

- No 42 Hampstead Lane, located to the east of the site, which at present is yet to be redeveloped and does not therefore have an existing basement;
- The boundary with Courtenay Avenue, located to the west of the site; and
- The boundary with Hampstead Lane, located to the south of the site.

All other nearby structures have been found to be at sufficient distance as not to be affected by the proposed development and have not therefore been included within the analysis.

The location of each of the buildings or sensitive structures is detailed on the plan below.



The sensitive structures outlined above have been modelled as lines in the analysis and are the lines along which the damage assessment has been undertaken. These lines are expected to be sensitive at their foundation level, which for the adjoining property to the east, have been conservatively assumed to be at a depth of 1.0 m below existing ground floor level on the basis of the findings of the previous investigation and the fact that this property is yet to be developed.

The heights of neighbouring buildings have been estimated from information provided by the consulting engineers and obtained from a search of planning records.

6.5.1 Damage to Neighbouring Structures

The combined movements resulting from piling and excavation of the proposed basement, calculated using the X-Disp modelling software, have been used to carry out an assessment of the likely damage to adjacent properties and the results are summarised in the table overleaf.

Sensitive Structure	Structure References	Max Tensile Strain %	Category of Damage*
No 42 Hampstead Lane	1	<0.01	Category 0: Negligible
	2	0.04	Category 0: Negligible
	3	Less than the limit of sensitivity	
	4	0.05	Category 1: Very Slight
Boundary with Courtenay Avenue	5	0.02	Category 0: Negligible
Boundary with Hampstead Lane	6	0.02	Category 0: Negligible
	7	0.02	Category 0: Negligible

**From Table 6.4 of C760: Classification of visible damage to walls.*

The building damage reports for sensitive structures highlighted in the above table predict that the damage to the adjoining and nearby structures would generally be Category 0 (Negligible), with a limited area of Category 1 (Very Slight) damage to the existing rear elevation of No 42 Hampstead Lane.

The results discussed above are based on individual building lines, or walls, that have been further divided up into a series of 1.0 m segments that can move independently of one another. In reality, this is unlikely to be the case as the walls will behave as single stiff elements that are also joined continuously with the rest of the structure.

The results therefore provide a conservative estimate of the behaviour of each of the sensitive structures and overestimate the degree of damage, although they provide a useful indication of the most critical structures within the adjoining properties.

6.5.2 Monitoring of Ground Movements

The predictions of ground movement based on the ground movement analysis should be checked by monitoring of adjacent properties and structures. Condition surveys of the above existing structures should be carried out before and after the proposed works.

The precise monitoring strategy will be developed at a later stage and it will be subject to discussions and agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed predefined trigger levels. Both contingency measures and trigger levels will need to be developed within a future monitoring specification for the works.

6.6 Ground Movement Assessment Conclusions

The analysis has concluded that the predicted damage to the neighbouring properties from the construction of the basement retaining walls and excavation would be generally ‘Negligible’ to ‘Very Slight’.

On this basis, the damage that has been predicted to occur as a result of the construction the proposed basement falls within the acceptable limits; although careful construction and monitoring will be required to ensure that no excessive movements occur that would lead to damage in excess of these limits.

The separate phases of work, including pile installation and excavation of the proposed basement, will in practice be separated by a number of weeks, during which time construction of permanent supports, basement slab and retaining wall curing will take place. This will provide an opportunity for the ground movements during and immediately after retaining wall

construction to be measured and the data acquired can be fed back into the design and compared with the predicted values. Such a comparison will allow the ground model to be reviewed and the predicted wall movements to be reassessed prior to the main excavation taking place so that propping arrangements can be adjusted if required.

7.0 BASEMENT IMPACT ASSESSMENT

The groundwater flow screening identified three potential impacts, the slope stability screening identified six potential impacts and the surface flow and flooding screening identified a single potential impact.

Knowledge of the site conditions and proposed development has been used below to review the potential impacts identified by the screening, to assess the likelihood of them occurring and the scope for reasonable engineering mitigation.

7.1 Subterranean (Groundwater) Flow Risk Assessment

The three potential impacts identified are discussed below.

The site is located above a Secondary 'A' Aquifer as designated by the EA. and the proposed basement will extend beneath the water table

The site is underlain by the dense fine silty sand of the Bagshot Formation and Claygate Member strata, which are designated as Secondary Aquifer. The proposed basement formation level will be approximately 107 m OD, with groundwater encountered at a level of about 108.5 m OD to 107.5 m OD, such that lowest parts of the proposed basement excavation will extend below the observed water table.

The granular soils of the upper Claygate Member are expected to extend to a depth of around 11.0 m (approx. 103 m OD) below the proposed basement structure. Additionally, a distance of approximately 4 m of open ground is present between the proposed new building and the adjacent house to the east, with no other immediate foundations to the south, west or north. Therefore, groundwater would be able to continue to flow around and below the proposed basement structure, through the granular horizons in the Claygate Member, maintaining the general groundwater flow regime across the site and to down gradient water features.

The proposed development is likely to result in an increased area of hardstanding

The proposed development is likely to result in an increase in the amount of hard-standing and paved areas, but this will have little effect as the near surface deposits typically comprise low permeability clay and are unlikely to be able to accept any significant recharge in any case.

7.2 Land Stability Risk Assessment

The potential stability impacts identified are discussed below:

The site is located within a wider hillside setting where the general slope angle is locally greater than 7°

The basement is to extend to a depth of about 7 m and is to be excavated from a level area. As the land is already sensibly level, it is considered unlikely that any engineering measures will be required other to ensure that the stability of the slope is maintained.

The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties

As development of the adjoining site to the east is yet to commence, the proposed basement will extend to a significant depth relative to the existing foundations of the present structure and will need to be designed to ensure the stability of the site and any potentially sensitive structures that are in close proximity to the site. These solutions could include, preventing excavation within a zone that would lead to instability or constructing retaining walls using methods designed to minimise movements.

The investigation has not highlighted any issues that give rise to concerns regarding the effectiveness of these normal engineering solutions at this particular site and the results of the Ground Movement Analysis and building damage assessment have indicated that the movements arising on adjacent structures, as a result of the development, can be maintained within tolerable limits by careful control of movements.

Some trees will be felled as part of the proposals and the excavation may encroach on root protection zones

Two cypress trees, a small oak and a plum tree, all located towards the centre of the site, will be felled as part of the development and work is also likely to be carried out within the root protection zone of trees on the eastern and western boundaries. The trees on Hampstead Lane will be unaffected.

The basement will be advanced to a depth of about 7 m and as a result the removal of the tree roots and trees in the middle of the site, and any associated swelling of the clay will have very little effect on the development, or the neighbours.

The area of the building is located on a flat portion of the site and therefore the removal of tree root systems should not affect the stability of the ground on the site.

Location of public highway

The basement excavation will generally be in excess of 5.0 m from the pathways and highways to the west and south of the site, with the exception of the south-wester corner of the proposed basement, which will be within 5.0 m of the existing boundary with Courtenay Avenue. However, the proposed development will include retaining walls that will be designed to maintain the stability of the surrounding ground, thus protecting the adjacent road and associated infrastructure beyond.

In addition, there is nothing unusual or exceptional in the proposed development or the findings of the investigation that give rise to any concerns with regard to stability over and above any development of this nature.

7.3 Surface Flow and Flooding Risk Assessment

The proposed development is likely to result in an increased area of hardstanding

The proposed development has a larger footprint than the existing building, although additional changes to the external landscaping, including the removal of an outdoor pool in the northeast, will offset a proportion of the increased building area.

The existing pattern of run-off will remain the same to adjacent sites as the new structure is orientated the same as the existing. However, the control of surface water flows across the site should be considered as part of the proposed drainage strategy and it would be prudent for any

external paving to be constructed using permeable paving to allow for continued infiltration of surface water into the sub-soil within these areas.

8.0 CONTAMINATED LAND ASSESSMENT

8.1 Site Specific Risk Assessment

The desk study research has indicated that the site has not had a potentially contaminative history, having been occupied by the existing houses throughout its developed history. However, the chemical analyses have highlighted the presence of elevated concentrations of lead within three of the four samples of made ground tested. These concentrations could pose a potentially unacceptable risk to human health through direct contact, accidental ingestion or inhalation of soil or soil derived dust.

The exact source of the contamination is unknown. However, the made ground was noted as containing variable amounts of extraneous material, and it is therefore possible that a fragment of such material was present within the samples tested, accounting for the elevated concentration. Information on Urban Soil Chemistry provided by the BGS also indicates that background concentrations for lead in the vicinity of the site vary between 300 g/kg and 600 mg/kg, such that the measured concentrations are likely to be the result of residual airborne sources, rather than being specific to the site.

Lead compounds are relatively immobile and unlikely to be in a soluble form and are considered to be non-volatile or of a low volatility. The contamination does not therefore present a significant vapour risk or a significant risk of leaching and migration within any perched groundwater within the made ground.

Furthermore, the nature of the proposed development will mean that any potentially contaminated soils encountered within the proposed excavations will be removed from site, whilst end users will be effectively isolated from any potential contamination by the extent of the existing and proposed structures and areas of external hardstanding, further eliminating any potential risk. However, in accordance with standard construction practice, a safe programme of working should be identified to protect workers handling any soil.

8.8.1 Protection of Site Workers

As with any site a programme of working should be identified to protect workers handling any soil. The method of site working should be in accordance with guidelines set out by HSE[14] and CIRIA[15] and the requirements of the Local Authority Environmental Health Officer.

A watching brief should be maintained during the site works and if any suspicious soil is encountered, it should be inspected by a suitably qualified engineer and further testing carried out if required.

8.2 Waste Disposal

Under the European Waste Directive, waste is classified as being either Hazardous or Non-Hazardous and landfills receiving waste are classified as accepting hazardous or non-hazardous wastes or the non-hazardous sub-category of inert waste in accordance with the Waste

14 HSE (1992) HS(G)66 *Protection of workers and the general public during the development of contaminated land* HMSO

15 CIRIA (1996) A *guide for safe working on contaminated sites* Report 132, Construction Industry Research and Information Association

Directive. Waste classification is a staged process and this investigation represents the preliminary sampling exercise of that process. Once the extent and location of the waste that is to be removed has been defined, further sampling and testing may be necessary. The results from this ground investigation should be used to help define the sampling plan for such further testing, which could include WAC leaching tests where the totals analysis indicates the soil to be a hazardous waste or inert waste from a contaminated site. It should however be noted that the Environment Agency guidance WM3[16] states that landfill WAC analysis, specifically leaching test results, must not be used for waste classification purposes.

Any spoil arising from excavations or landscaping works, which is not to be re-used in accordance with the CL:AIRE[17] guidance, will need to be disposed of to a licensed tip. Waste going to landfill is subject to landfill tax at either the standard rate of £96.70 per tonne (about £180 per m^3) or at the lower rate of £3.10 per tonne (roughly £5.75 per m^3). However, the classifications for tax purposes and disposal purposes differ and currently all made ground and topsoil is taxable at the 'standard' rate and only naturally occurring soil and stones, which are accurately described as such in terms of the 2011 Order, would qualify for the 'lower rate' of landfill tax.

Based upon on the technical guidance provided by the EA it is considered likely that the soils encountered during this ground investigation, as represented by the chemical analyses carried out, would be generally classified as follows.

Soil Type	Waste Classification (Waste Code)	WAC Testing Required Prior to Landfill Disposal?	Current applicable rate of Landfill Tax
Made ground	Non-hazardous (17 05 04)	Not Applicable	£96.70/tonne (Standard rate)
Natural Soils	Should be Inert (17 05 04)	Should not be required but confirm with receiving landfill	£3.10 / tonne (Reduced rate for uncontaminated naturally occurring rocks and soils)

Under the requirements of the European Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment, but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The Environment Agency has issued a position paper[18] which states that in certain circumstances, segregation at source may be considered as pre-treatment and thus excavated material may not have to be treated prior to landfilling if the soils can be segregated onsite prior to excavation by sufficiently characterising the soils in-situ prior to excavation.

The above opinion with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill once the soils to be discarded have been identified.

The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material but may require further testing.

16 Environment Agency 2015. *Guidance on the classification and assessment of waste.* Technical Guidance WM3 First Edition
17 CL:AIRE March 2011. *The Definition of Waste: Development Industry Code of Practice* Version 2
18 Environment Agency 23 Oct 2007 Regulatory *Position Statement Treating non-hazardous waste for landfill - Enforcing the new requirement.*

9.0 CONCLUSIONS

Consideration is being given to the proposed redevelopment of the site through the demolition of the existing houses and the subsequent construction of a new apartment building of four storeys plus a lower ground floor level and basement, extending to a depth of around 7 m. Formation level for the proposed basement is likely to be close to the Bagshot Formation / Claygate Member boundary.

9.1 Construction Considerations

It is understood that it is proposed to construct the basement using contiguous bored piles, combined with reinforced concrete lining walls, and a ground bearing floor slab. Whilst contiguous bored piles are likely to prove suitable, consideration may need to be given to the use of a secant bored pile wall, if significant groundwater inflows are encountered. If secant piles are to be included in the design, it is recommended that the BIA is reviewed to assess the impact on hydrogeology.

9.2 Contamination Risk Assessment

On this basis of the desk study research, it is considered that there is a LOW RISK of there being a significant contaminant linkage at this site. However, the chemical analyses have highlighted the presence of elevated concentrations of lead within three of the four samples of made ground tested, albeit within background concentrations for lead in the vicinity of the site.

As the development will result in the removal of any potentially contaminated soils and end users will be effectively isolated from direct contact with any remaining soils by the building and areas of external hardstanding, a requirement for remediation work is not envisaged. However, as with any development site, a watching brief should be maintained during the groundworks and a programme of safe working should be implemented to protect workers handling any soil.

9.3 Basement Impact Assessment

A Basement Impact Assessment has been carried out following the information and guidance published by the London Borough of Camden. A number of potential impacts were identified as a result of the screening exercise. It has been concluded that all potential impacts can be mitigated by appropriate design and standard construction practice.

Formation level for the proposed basement is likely to be close to the Bagshot Formation-Claygate Member boundary and the excavation may extend below the water table, although this will need to be confirmed through a continued groundwater monitoring.

Standard safe working practices and measures that will be adopted to construct the basement mean that the proposed development is unlikely to result in any specific groundwater or land or slope stability issues.

The surface water and flooding screening has not identified the requirement for a flood risk assessment to be undertaken.

10.0 OUTSTANDING RISKS AND ISSUES

This section of the report aims to highlight areas where further work is required as a result of limitations on the scope of this investigation, or where issues have been identified by this investigation that warrant further consideration. The scope of risks and issues discussed in this section is by no means exhaustive but covers the main areas where additional work may be required.

The ground is a heterogeneous natural material and variations will inevitably arise between the locations at which it is investigated. This report provides an assessment of the ground conditions based on the discrete points at which the ground was sampled, but the ground conditions should be subject to review as the work proceeds to ensure that any variations from the Ground Model are properly assessed by a suitably qualified person.

As discussed throughout the report, groundwater is likely to be encountered towards the base of the proposed basement excavations, although groundwater monitoring should be continued, and trial excavations should be considered to assess the extent of any perched groundwater inflows within the proposed basement excavations.

The investigation has not identified the presence of any significant contamination and as the majority of the made ground will be removed from this site through the excavation of the proposed basement, remedial measures should not be required. However, as with any site there is a potential for further areas of contamination to be present within the made ground beneath parts of the site not covered by the investigation it is recommended that a watching brief is maintained during any groundworks for the proposed new foundations and that if any suspicious soils are encountered that they are inspected by a geo-environmental engineer and further assessment may be required.

These areas of doubt should be drawn to the attention of prospective contractors and further investigation will be required or sufficient contingency should be provided to cover the outstanding risk.

APPENDIX

Envirocheck Report and Extracts

Historical Maps

Preliminary UXO Report

Risk Assessment Description

Risk Assessment Classification

Proposed Development Plans

Site Plan

Borehole Records

Contamination Test Results (soil)

Generic Risk-Based Screening Values

X-DISP ANALYSIS

Movement Plots – Wall Installation

Movement Plots – Wall Installation and Excavation

P-DISP ANALYSIS

Short Term Movement Contour Plots

Total Movement Contour Plots

DAMAGE CATEGORY OUTPUTS

Tabular Output

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
280107221_1_1

Customer Reference:
J21167

National Grid Reference:
527090, 187640

Slice:
A

Site Area (Ha):
0.34

Search Buffer (m):
1000

Site Details:

44 - 46 Hampstead Lane
LONDON
N6 4LL

Client Details:

Mr S Branch
GEA Ltd
Widbury Barn
Widbury Hill
Ware
Herts
SG12 7QE

GEA

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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes		Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1				1
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 1		Yes		
Pollution Incidents to Controlled Waters	pg 1			2	7
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 3				1
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 3	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 3	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 3		3	33	127

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage		1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 22				2
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 23	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry					
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry	pg 23		Yes	Yes	Yes
BGS Urban Soil Chemistry Averages	pg 26	Yes			
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 26	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 26	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 26	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 27		Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 28			2	5
Fuel Station Entries					
Points of Interest - Commercial Services	pg 28			1	
Points of Interest - Education and Health	pg 28				4
Points of Interest - Manufacturing and Production	pg 29			3	5
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Gas Pipelines					
Underground Electrical Cables	pg 30				8

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
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Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 32		1		
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (N)	0	1	527090 187644
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (S)	368	1	527100 187250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	411	1	527300 187250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (SE)	413	1	527500 187450
1	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: WTW/WATER COLLECTION/TREATMENT/SUPPLY Location: Bishops Wood Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0030 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A18SE (N)	655	2	527300 188300
	Nearest Surface Water Feature	A13NE (NE)	231	-	527260 187856
2	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: 7 White Lodge Close Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 1st September 1989 Incident Reference: N1890461 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	340	2	527000 188000
3	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: White Lodge Close Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 16th January 1990 Incident Reference: N1900017 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	439	2	527000 188100
4	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: HAMPSTEAD Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 10th August 1990 Incident Reference: N1900464 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SE (N)	631	2	527100 188300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: White Lodge Close, HIGHGATE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 16th May 1996 Incident Reference: N1960262 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	638	2	527000 188300
6	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Regents Canal, Camden Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 20th February 1997 Incident Reference: THN11997031084 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	646	2	527300 187000
7	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Turners Wood, HAMPSTEAD Authority: Environment Agency, Thames Region Pollutant: Storm Sewage Note: Not Supplied Incident Date: 12th November 1997 Incident Reference: THN11997030884 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	694	2	526400 187400
8	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Highgate View Road Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 19th May 1992 Incident Reference: N1920289 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	753	2	527800 188000
9	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Turners Wood, HAMPSTEAD Authority: Environment Agency, Thames Region Pollutant: Storm Sewage Note: Confirmed incident Incident Date: 17th May 1999 Incident Reference: THNE1999043091 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m	A12SW (W)	757	2	526300 187600
10	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: FINCHLEY Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 28th October 1993 Incident Reference: NE930729 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	758	2	527800 187280

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Substantiated Pollution Incident Register** Authority: Environment Agency - Thames Region, North East Area Incident Date: 17th September 2020 Incident Reference: 1849089 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A9NW (SE)	751	2	527580 187025
	Groundwater Vulnerability Map Combined Classification: Secondary Bedrock Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Mixed Dilution: 300-550 mm/year Baseflow Index: >70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A13NE (N)	0	3	527090 187644
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (N)	0	3	527090 187644
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	231	4	527260 187856
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	232	4	527249 187864
14	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	235	4	527244 187870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	254	4	527238 187896
16	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	287	4	527227 187936
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	305	4	527222 187958
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 52.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	307	4	527222 187960
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 175.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	317	4	527179 187981
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	359	4	527259 187288
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 152.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	359	4	527270 187294
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 54.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	368	4	527470 187497
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	381	4	527030 188045

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	396	4	527290 187262
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	414	4	527301 187247
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 68.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (NE)	424	4	527377 188010
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	429	4	527034 188094
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	429	4	527045 188094
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 42.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	429	4	527536 187506
30	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 13.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	438	4	527536 187474
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	445	4	526955 187184
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	445	4	527032 188109

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 51.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	446	4	527032 188110
34	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 132.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	451	4	527130 187170
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 87.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	458	4	526999 187163
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	469	4	527227 187163
37	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 87.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	469	4	527227 187163
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 59.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	471	4	527086 187146
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	471	4	527086 187146
40	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 48.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	473	4	527096 187144
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	477	4	527313 187183

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 93.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	485	4	527336 187185
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	486	4	527012 188149
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	486	4	527012 188149
45	**OS Water Network Lines** Watercourse Form: Marsh Watercourse Length: 23.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	487	4	527216 187143
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 137.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	488	4	527028 187130
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	499	4	527012 188162
48	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 27.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	513	4	527003 188175
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NW (SE)	513	4	527443 187220
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 255.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NW (S)	515	4	527078 187102

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**OS Water Network Lines** Watercourse Form: Marsh Watercourse Length: 51.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NW (SE)	518	4	527428 187202
52	**OS Water Network Lines** Watercourse Form: Marsh Watercourse Length: 53.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (SE)	523	4	527414 187186
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 21.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	538	4	526991 188199
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 97.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SE (W)	550	4	526510 187580
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	555	4	526976 188214
56	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 109.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Number 6 Pond Catchment Name: Thames Primacy: 1	A9NW (SE)	566	4	527463 187169
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	577	4	527225 188237
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 64.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	592	4	526959 188249
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	599	4	527246 188255

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	604	4	527247 188260
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 39.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	612	4	527268 188264
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	636	4	527302 188279
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 80.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	649	4	526919 188300
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NE (NW)	651	4	526455 187921
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NE (NW)	663	4	526448 187935
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 191.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (SE)	664	4	527738 187371
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NE (NW)	668	4	526445 187939
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 60.4 Watercourse Level: Underground Permanent: True Watercourse Name: Highgate Ponds Catchment Name: Thames Primacy: 1	A9NW (SE)	673	4	527543 187095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	680	4	527210 188343
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	689	4	527212 188353
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 156.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	699	4	526381 187448
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 35.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	703	4	526354 187590
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	713	4	526865 188353
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	718	4	527220 188381
75	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 137.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Highgate Ponds Catchment Name: Thames Primacy: 1	A9NW (SE)	732	4	527571 187041
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	737	4	527773 187274
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 174.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	738	4	526321 187583

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	738	4	527774 187273
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	743	4	527775 187264
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	743	4	527775 187264
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	744	4	527773 187258
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 47.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NW (SE)	745	4	527751 187219
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NE (SE)	745	4	527773 187255
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 312.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9NW (SE)	747	4	527740 187199
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 46.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	754	4	526799 188374
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 35.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	755	4	527179 188422

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	758	4	526841 188393
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 532.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	759	4	526840 188392
89	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	763	4	526342 187940
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	763	4	526344 187943
91	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 62.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	763	4	526344 187943
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	767	4	526319 187887
93	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 87.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	768	4	526319 187888
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 89.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	773	4	527210 188437
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	774	4	527216 188437

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	777	4	527228 188439
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	778	4	527231 188439
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	796	4	527089 188464
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 77.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	796	4	526309 187946
100	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 513.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8SE (S)	798	4	527089 186819
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 126.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	803	4	526255 187750
102	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	814	4	526287 187937
103	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 2.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	814	4	526287 187938
104	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 1.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	814	4	526288 187941

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
105	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 0.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	814	4	526287 187937
106	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 1.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	815	4	526287 187940
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A12NW (W)	816	4	526286 187941
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	826	4	526358 188110
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	831	4	527103 188499
110	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	837	4	526279 187314
111	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 55.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	837	4	526279 187314
112	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 16.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	838	4	526274 187323
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	840	4	527098 188508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	844	4	526266 187331
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	844	4	526334 188106
116	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	847	4	527095 188516
117	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 62.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	848	4	526336 188115
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	849	4	527189 188516
119	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	851	4	527189 188517
120	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	851	4	527092 188520
121	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 30.2 Watercourse Level: Underground Permanent: True Watercourse Name: Highgate Ponds Catchment Name: Thames Primacy: 1	A9SW (SE)	865	4	527636 186924
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 110.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	872	4	527290 188526

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
123	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 51.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	878	4	526222 187351
124	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 68.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	892	4	526163 187625
125	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 139.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	892	4	526204 187937
126	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 62.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	893	4	526291 188129
127	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 43.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Highgate Ponds Catchment Name: Thames Primacy: 1	A9SW (SE)	895	4	527652 186899
128	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	906	4	527181 188574
129	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	917	4	527534 186801
130	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	918	4	526176 187367
131	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	925	4	527546 186799

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
132	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 59.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	925	4	526166 187376
133	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 103.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	927	4	526130 187731
134	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	929	4	527185 188596
135	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	929	4	527185 188596
136	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	930	4	527187 188597
137	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 44.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	930	4	527109 188599
138	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	931	4	527189 188598
139	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	933	4	527185 188600
140	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 36.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	934	4	527702 186888

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
141	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 35.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	934	4	527186 188601
142	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	935	4	527560 186794
143	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 36.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	935	4	526157 187930
144	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	936	4	527199 188602
145	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 169.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	939	4	527396 188568
146	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 70.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Highgate Ponds Catchment Name: Thames Primacy: 1	A9SW (SE)	939	4	527679 186864
147	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	939	4	527201 188605
148	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	940	4	527370 188576
149	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 172.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	941	4	527369 188577

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
150	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	942	4	527153 188610
151	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 61.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NE (N)	942	4	527154 188610
152	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 39.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	942	4	527151 188610
153	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	943	4	527572 186791
154	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	947	4	526132 187423
155	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	947	4	526230 188131
156	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	949	4	527208 188614
157	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	952	4	527210 188618
158	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 13.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	956	4	526121 187431

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
159	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 102.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	960	4	526095 187630
160	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 5.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	964	4	527121 188633
161	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	964	4	526112 187439
162	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 98.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A9SW (SE)	965	4	527609 186787
163	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8SW (S)	968	4	526816 186679
164	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 15.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	968	4	526106 187443
165	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12NW (W)	969	4	526121 187926
166	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 20.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A18NE (N)	970	4	527120 188639
167	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 87.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	972	4	526203 188134

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
168	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 164.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8SW (S)	975	4	526832 186669
169	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8SW (S)	976	4	526820 186671
170	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	977	4	526096 187454
171	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 32.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A12SW (W)	981	4	526091 187463
172	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A23SE (N)	989	4	527112 188657
173	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 141.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A11SE (W)	992	4	526075 187491
174	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A23SE (N)	999	4	527108 188667

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: London Borough of Haringey - Has supplied landfill data		0	5	527090 187644
	Local Authority Landfill Coverage Name: London Borough of Camden - Has no landfill data to supply		19	6	527097 187600
	Local Authority Landfill Coverage Name: London Borough of Barnet - Has supplied landfill data		111	7	526952 187709
175	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1896	A14NW (E)	513	9	527618 187807
176	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1876	A14NE (E)	934	9	528057 187685

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Bracklesham Group And Barton Group (Undifferentiated)	A13NE (N)	0	1	527090 187644
	BGS Estimated Soil Chemistry No data available				
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527238, 187609 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 19.50 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 85.10 mg/kg Lead Measured Concentration: 395.80 mg/kg Nickel Measured Concentration: 44.00 mg/kg	A13SE (E)	115	1	527238 187609
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526822, 187735 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.90 mg/kg Cadmium Measured Concentration: 0.80 mg/kg Chromium Measured Concentration: 76.10 mg/kg Lead Measured Concentration: 305.30 mg/kg Nickel Measured Concentration: 23.30 mg/kg	A13NW (W)	242	1	526822 187735
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527233, 187207 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 12.20 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 101.50 mg/kg Lead Measured Concentration: 188.80 mg/kg Nickel Measured Concentration: 13.10 mg/kg	A8NE (S)	428	1	527233 187207
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526862, 187134 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 9.90 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 103.50 mg/kg Lead Measured Concentration: 174.50 mg/kg Nickel Measured Concentration: 11.50 mg/kg	A8NW (SW)	522	1	526862 187134

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526877, 188187 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.40 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 76.80 mg/kg Lead Measured Concentration: 260.10 mg/kg Nickel Measured Concentration: 31.10 mg/kg	A18SW (N)	551	1	526877 188187
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527100, 188303 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 16.90 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 64.60 mg/kg Lead Measured Concentration: 206.30 mg/kg Nickel Measured Concentration: 23.50 mg/kg	A18SE (N)	634	1	527100 188303
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527639, 187232 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 13.40 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 110.70 mg/kg Lead Measured Concentration: 147.10 mg/kg Nickel Measured Concentration: 13.80 mg/kg	A9NW (SE)	646	1	527639 187232
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527819, 187616 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 12.50 mg/kg Cadmium Measured Concentration: 0.40 mg/kg Chromium Measured Concentration: 94.70 mg/kg Lead Measured Concentration: 201.10 mg/kg Nickel Measured Concentration: 14.10 mg/kg	A14SE (E)	696	1	527819 187616
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526771, 186829 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 23.40 mg/kg Cadmium Measured Concentration: 0.80 mg/kg Chromium Measured Concentration: 74.50 mg/kg Lead Measured Concentration: 586.60 mg/kg Nickel Measured Concentration: 44.00 mg/kg	A8SW (S)	839	1	526771 186829

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527690, 188310 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 22.40 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 130.80 mg/kg Lead Measured Concentration: 300.50 mg/kg Nickel Measured Concentration: 29.00 mg/kg	A19SW (NE)	855	1	527690 188310
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526248, 187271 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 13.90 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 118.10 mg/kg Lead Measured Concentration: 288.50 mg/kg Nickel Measured Concentration: 12.90 mg/kg	A7NW (SW)	882	1	526248 187271
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 527271, 186735 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 13.50 mg/kg Cadmium Measured Concentration: 0.40 mg/kg Chromium Measured Concentration: 104.50 mg/kg Lead Measured Concentration: 217.30 mg/kg Nickel Measured Concentration: 12.30 mg/kg	A8SE (S)	898	1	527271 186735
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526716, 186777 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 18.90 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 130.80 mg/kg Lead Measured Concentration: 223.30 mg/kg Nickel Measured Concentration: 10.00 mg/kg	A7SE (SW)	907	1	526716 186777
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526109, 187594 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 14.60 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 115.00 mg/kg Lead Measured Concentration: 297.00 mg/kg Nickel Measured Concentration: 16.20 mg/kg	A12SW (W)	947	1	526109 187594

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 526301, 188270 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.60 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 71.30 mg/kg Lead Measured Concentration: 194.30 mg/kg Nickel Measured Concentration: 33.80 mg/kg	A17SW (NW)	966	1	526301 188270
	BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: London Count Id: 7209 Arsenic Minimum Concentration: 1.00 mg/kg Arsenic Average Concentration: 17.00 mg/kg Arsenic Maximum Concentration: 161.00 mg/kg Cadmium Minimum Concentration: 0.10 mg/kg Cadmium Average Concentration: 0.90 mg/kg Cadmium Maximum Concentration: 165.20 mg/kg Chromium Minimum Concentration: 13.00 mg/kg Chromium Average Concentration: 79.00 mg/kg Chromium Maximum Concentration: 2094.00 mg/kg Lead Minimum Concentration: 11.00 mg/kg Lead Average Concentration: 280.00 mg/kg Lead Maximum Concentration: 10000.00 mg/kg Nickel Minimum Concentration: 2.00 mg/kg Nickel Average Concentration: 28.00 mg/kg Nickel Maximum Concentration: 506.00 mg/kg	A13NE (N)	0	1	527090 187644
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	197	1	527106 187423
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	64	1	527083 187732
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	64	1	527083 187732
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	527090 187644

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
177	**Contemporary Trade Directory Entries** Name: Simply For You Location: 8, Stormont Road, London, N6 4NL Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	372	-	527493 187708
178	**Contemporary Trade Directory Entries** Name: Ravtex (Uk) Ltd Location: 8, White Lodge Close, London, N2 0BL Classification: Packaging Materials Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	457	-	526987 188117
179	**Contemporary Trade Directory Entries** Name: Athlone House Location: Hampstead Lane, London, N6 4RX Classification: Hospitals **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	681	-	527795 187509
180	**Contemporary Trade Directory Entries** Name: London Female & Male Fertility Centre Location: 17, View Road, London, N6 4DJ Classification: Hospitals **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	784	-	527824 188021
180	**Contemporary Trade Directory Entries** Name: Highgate Hospital Location: 17, View Road, London, N6 4DJ Classification: Hospitals **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	784	-	527824 188021
181	**Contemporary Trade Directory Entries** Name: Electric Express Location: 16, Herons Lea, Sheldon Avenue, London, N6 4NB Classification: Electronic Component Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	940	-	527754 188366
182	**Contemporary Trade Directory Entries** Name: Cuddle Pie Ltd Location: 4, Rowan Walk, London, N2 0QJ Classification: Children & Babywear - Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	972	-	526459 188433
183	**Points of Interest - Commercial Services** Name: Lyras Maritime Ltd Location: 17 Sheldon Avenue, London, N6 4JS Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NE (NE)	315	8	527385 187845
184	**Points of Interest - Education and Health** Name: Highgate Hospital Location: 17 View Road, London, N6 4DJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A19SE (NE)	770	8	527809 188020
184	**Points of Interest - Education and Health** Name: London Female & Male Fertility Centre Location: 17 View Road, London, N6 4DJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A19SE (NE)	784	8	527824 188021
184	**Points of Interest - Education and Health** Name: Highgate Hospital Location: 17 View Road, London, N6 4DJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A19SE (NE)	784	8	527824 188021
184	**Points of Interest - Education and Health** Name: Highgate Private Hospital Location: 17 View Road, London, N6 4DJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A19SE (NE)	784	8	527824 188021

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
185	**Points of Interest - Manufacturing and Production** Name: Tank Location: N6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A18SE (NE)	469	8	527339 188086
185	**Points of Interest - Manufacturing and Production** Name: Tank Location: N6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A18SE (NE)	472	8	527340 188089
185	**Points of Interest - Manufacturing and Production** Name: Tanks Location: N6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	477	8	527348 188090
186	**Points of Interest - Manufacturing and Production** Name: Shaft Location: N2 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	746	8	527319 188389
187	**Points of Interest - Manufacturing and Production** Name: Tank Location: N2 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A17SE (NW)	870	8	526435 188277
188	**Points of Interest - Manufacturing and Production** Name: Tank Location: N2 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A18NW (N)	905	8	526870 188551
189	**Points of Interest - Manufacturing and Production** Name: Ltro Ltd Location: 11 Lytton Close, London, N2 0RH Category: Extractive Industries Class Code: Oil and Gas Extraction, Refinery and Product Manufacture Positional Accuracy: Positioned to address or location	A17NE (NW)	973	8	526544 188493
190	**Points of Interest - Manufacturing and Production** Name: Tank Location: N2 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A17SW (NW)	995	8	526214 188198
191	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	409	8	527046 188074
191	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	410	8	527041 188075
191	**Points of Interest - Public Infrastructure** Name: Weir Location: N2 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	459	8	527028 188123
192	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	475	8	527307 187183

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
192	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	476	8	527312 187184
193	**Points of Interest - Public Infrastructure** Name: Weir Location: NW3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (S)	480	8	527089 187137
194	**Points of Interest - Public Infrastructure** Name: Weir Location: N2 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	488	8	527016 188151
194	**Points of Interest - Public Infrastructure** Name: Weir Location: N2 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	489	8	527020 188152
194	**Points of Interest - Public Infrastructure** Name: Weir Location: N2 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	570	8	526960 188227
194	**Points of Interest - Public Infrastructure** Name: Weir Location: N2 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	571	8	526963 188228
195	**Points of Interest - Public Infrastructure** Name: Sluice Location: NW3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (S)	488	8	527214 187142
195	**Points of Interest - Public Infrastructure** Name: Sluice Location: NW3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (S)	488	8	527209 187141
196	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	668	8	527536 187095
196	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	671	8	527540 187095
197	**Points of Interest - Public Infrastructure** Name: Sluice Location: N6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	860	8	527642 186935
198	**Underground Electrical Cables** Unique Feature Identifier: 10006132 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A7NE (SW)	640	9	526569 187205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
199	**Underground Electrical Cables** Unique Feature Identifier: 10005920 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A7NE (SW)	641	9	526568 187205
200	**Underground Electrical Cables** Unique Feature Identifier: 10006133 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A12SW (W)	823	9	526277 187361
201	**Underground Electrical Cables** Unique Feature Identifier: 10005935 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A12SW (W)	824	9	526277 187360
202	**Underground Electrical Cables** Unique Feature Identifier: 10006071 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A7SE (SW)	843	9	526524 186966
203	**Underground Electrical Cables** Unique Feature Identifier: 10005914 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A7SE (SW)	843	9	526523 186966
204	**Underground Electrical Cables** Unique Feature Identifier: 10005961 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A12SW (W)	941	9	526116 187583
205	**Underground Electrical Cables** Unique Feature Identifier: 10005744 Cable Status: Electrically Decommissioned Cable Type: Alternating Current Record Last Updated: 27th October 2017	A12SW (W)	941	9	526116 187583

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
206	**Ancient Woodland** Name: Ken Wood Reference: 1495724 Area(m²): 94873.71 Type: Ancient and Semi-Natural Woodland	A8NW (S)	449	10	527056 187167
207	**Ancient Woodland** Name: Not Supplied Reference: 1495650 Area(m²): 26918.71 Type: Ancient and Semi-Natural Woodland	A12SE (W)	650	10	526424 187480
208	**Ancient Woodland** Name: Bishops Wood Reference: 1495665 Area(m²): 146178.39 Type: Ancient and Semi-Natural Woodland	A7NE (SW)	651	10	526579 187178
209	**Sites of Special Scientific Interest** Name: Hampstead Heath Woods Multiple Areas: Y Total Area (m2): 161715.26 Source: Natural England Reference: 1003451 Designation Details: Site Of Special Scientific Interest Designation Date: 18th April 1990 Date Type: Notified	A13SE (S)	17	10	527093 187603

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
5	**London Borough of Haringey - Planning Department** Civic Centre, 639 High Road, Tottenham, London, N17 8BD	Website: www.haringey.gov.uk
6	**London Borough of Camden** Town Hall, Judd Street, London, WC1H 9JE	Telephone: 020 7974 4444 Fax: 020 7974 6866 Email: info@camden.gov.uk Website: www.camden.gov.uk
7	**London Borough of Barnet - Land Charges** The Town Hall, The Burroughs, Hendon, LONDON, NW4 4BQ	Telephone: 0208 3592482 Fax: 0208 3592493 Website: www.barnet.gov.uk
8	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9966 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk
10	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LOFT	Lowestoft Formation	Diamicton	Not Supplied - Anglian
	DHGR	Dollis Hill Gravel Member	Sand and Gravel	Not Supplied - Cromerian
	STGR	Stanmore Gravel Formation	Sand and Gravel	Not Supplied - Pleistocene

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	BGS	Bagshot Formation	Sand	Not Supplied - Ypresian
	CLGB	Claygate Member	Clay, Silt and Sand	Not Supplied - Ypresian
	LC	London Clay Formation	Clay, Silt and Sand	Not Supplied - Ypresian

GEA

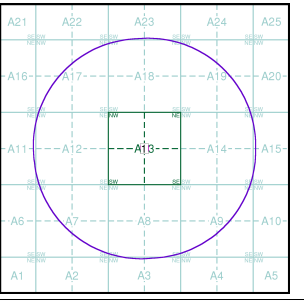
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**256**
Map Name:	**North London**
Map Date:	**2006**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A

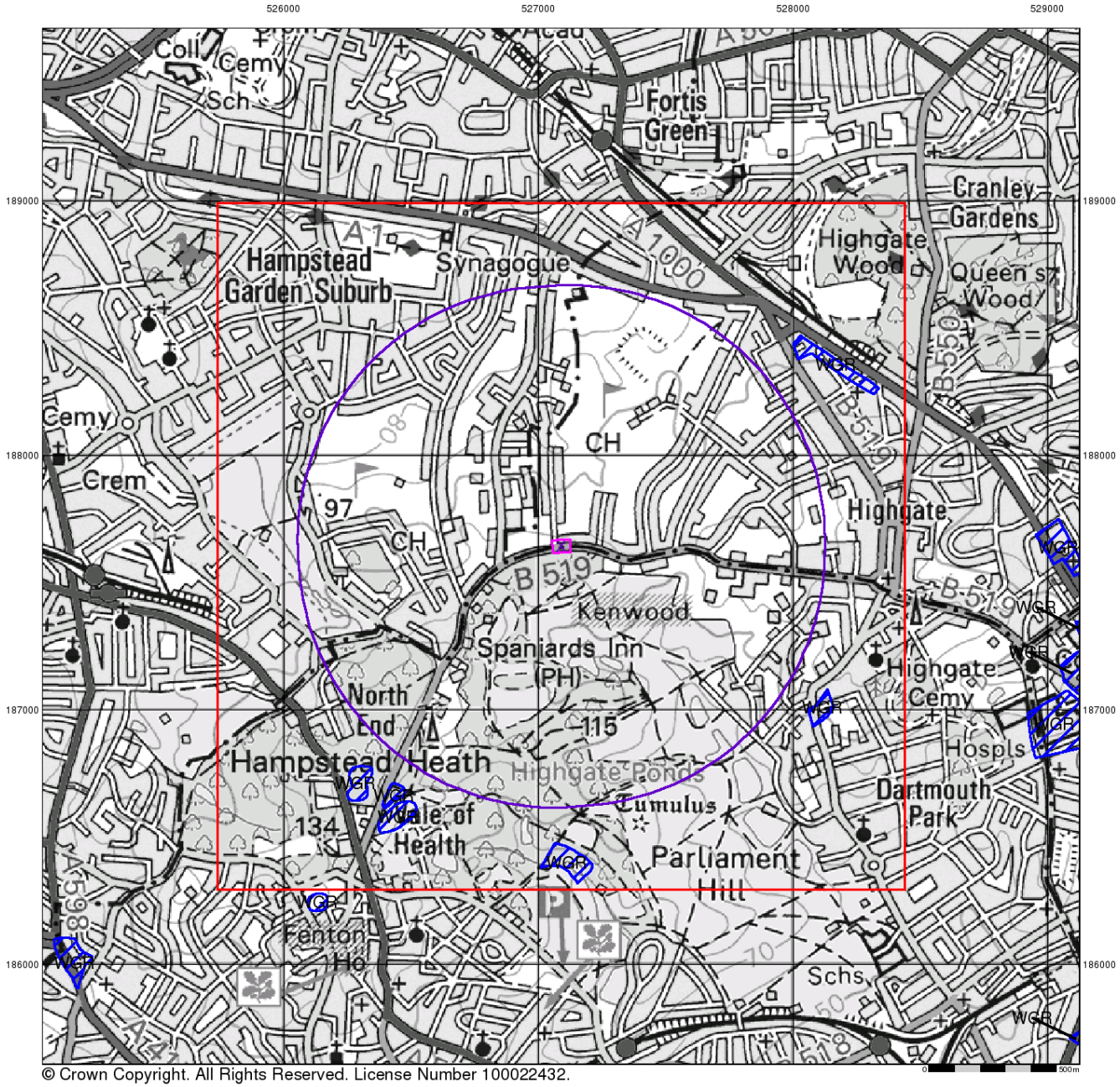


Order Details:

Order Number:	280107221_1_1
Customer Reference:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details:

44 - 46 Hampstead Lane, LONDON, N6 4LL



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Artificial Ground and Landslip

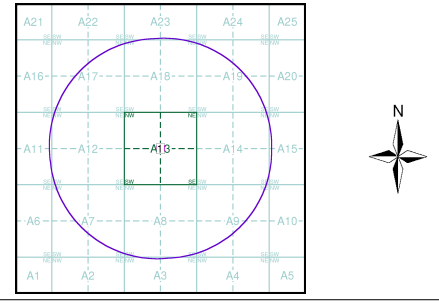
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



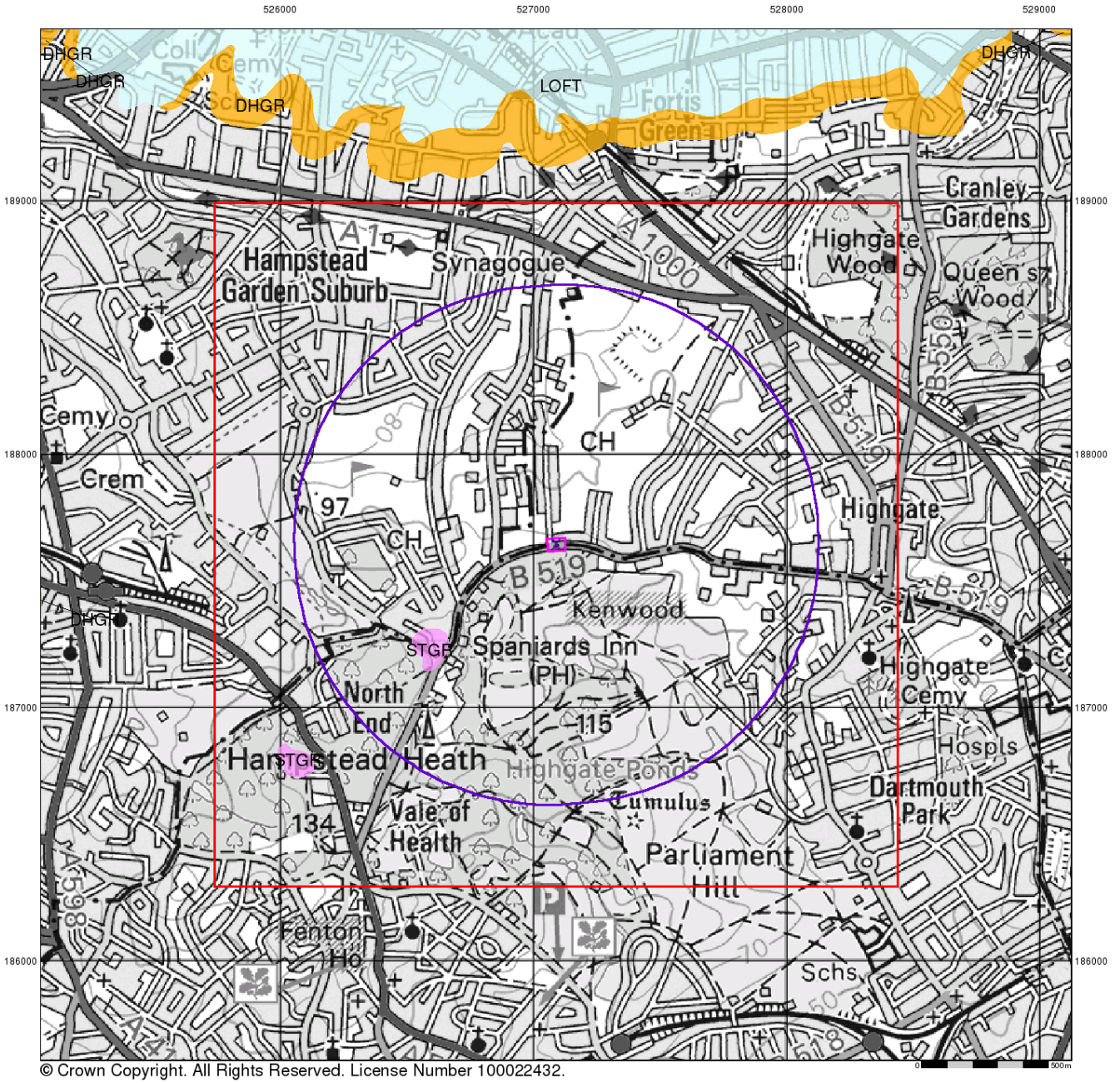
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National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

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Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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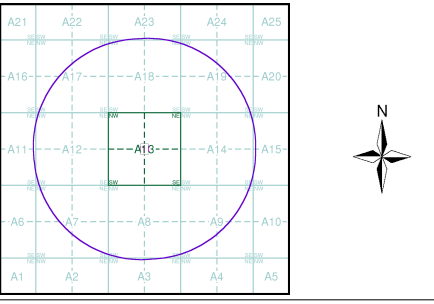
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



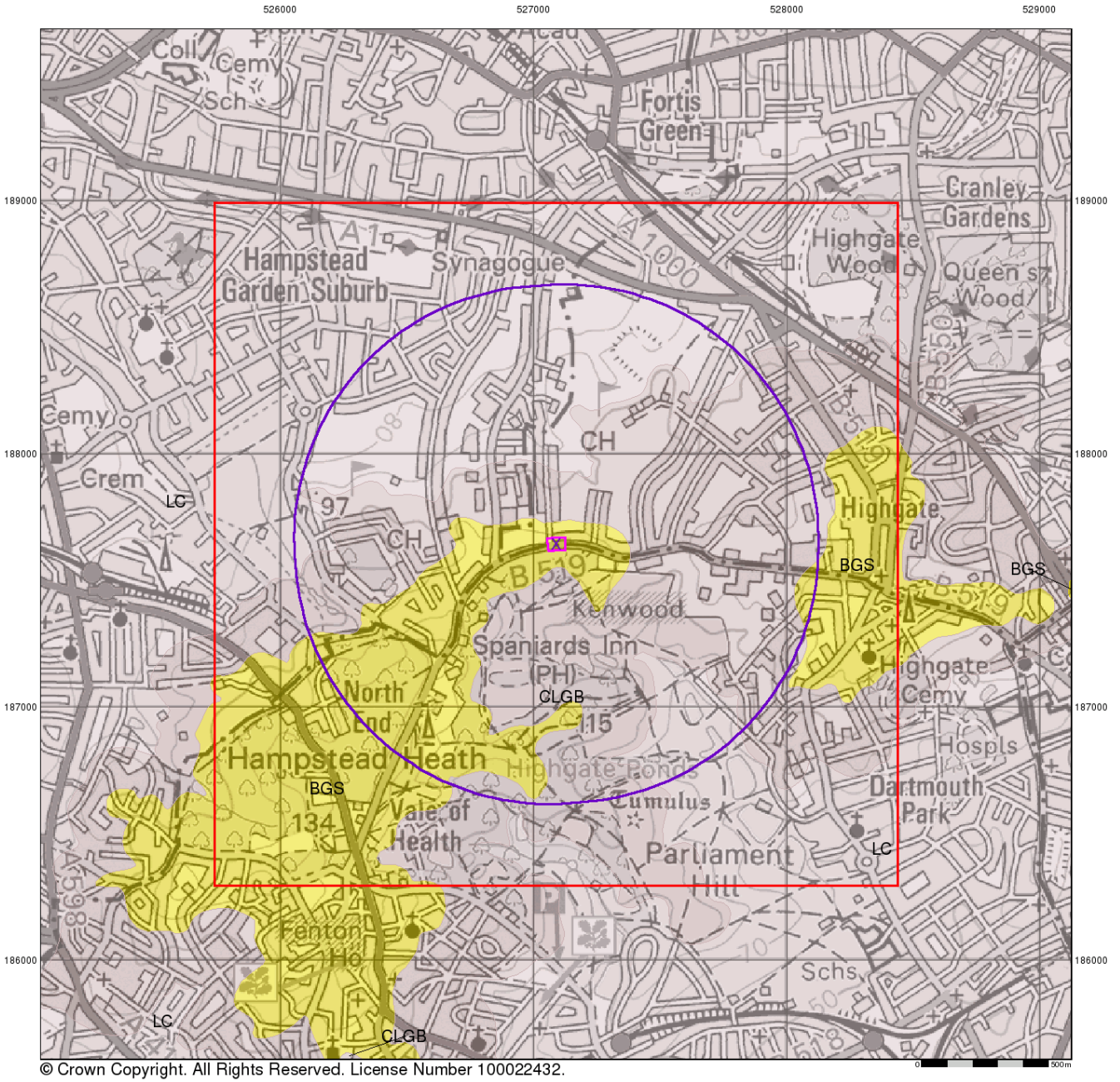
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Customer Reference:	J21167
National Grid Reference:	527090, 187640
Slice:	A
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Bedrock and Faults

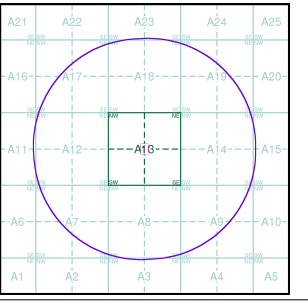
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



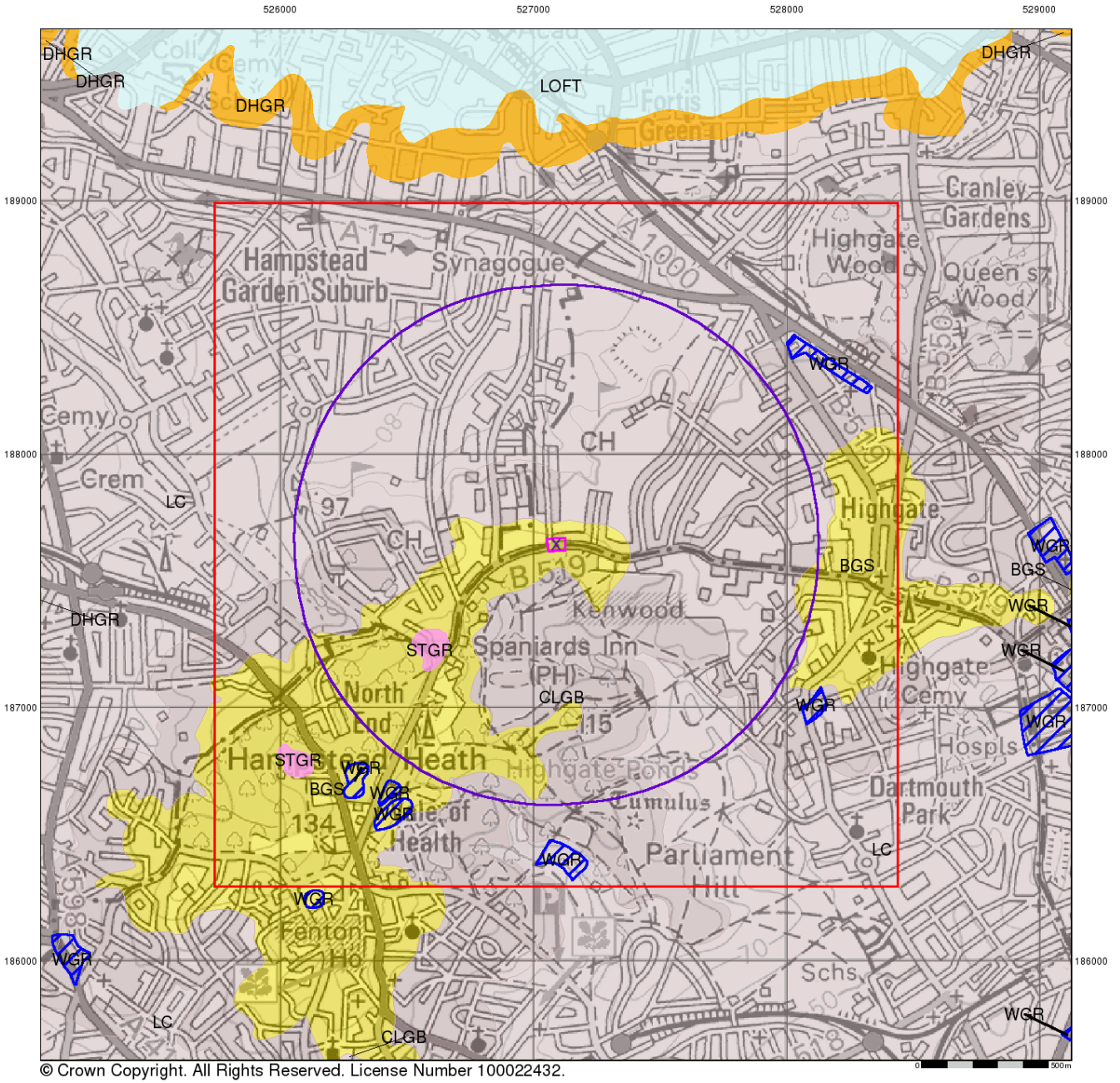
Order Details:

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Customer Reference:	J21167
National Grid Reference:	527090, 187640
Slice:	A
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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

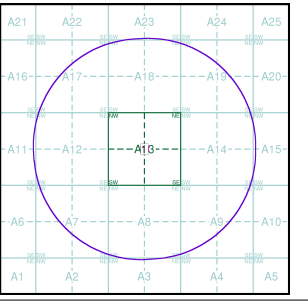
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A

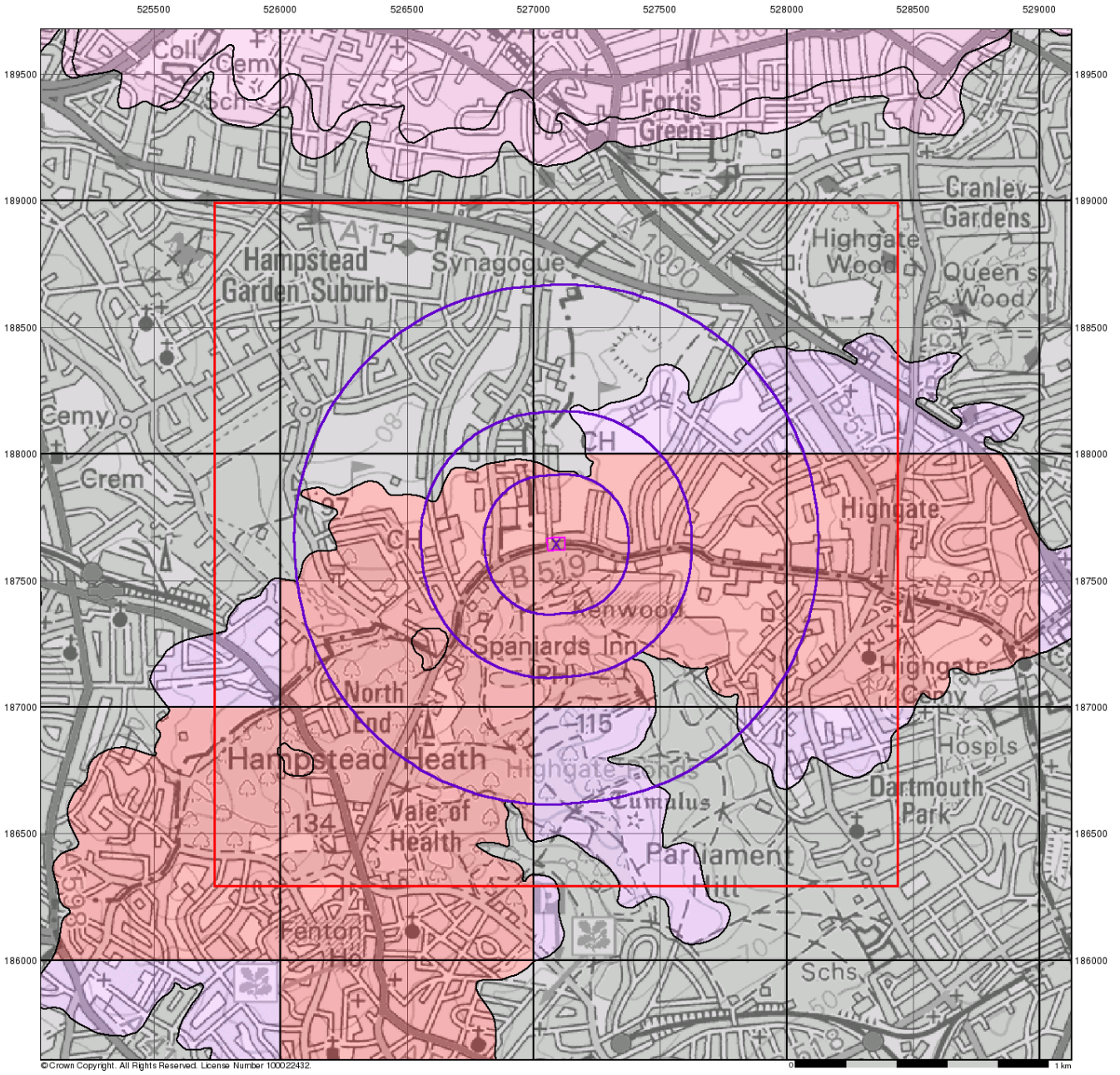


Order Details:

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Customer Reference:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details:

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Groundwater Vulnerability

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

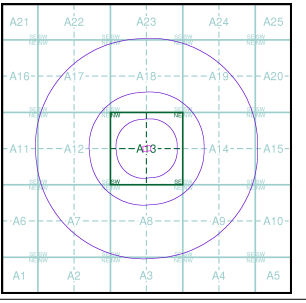
Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

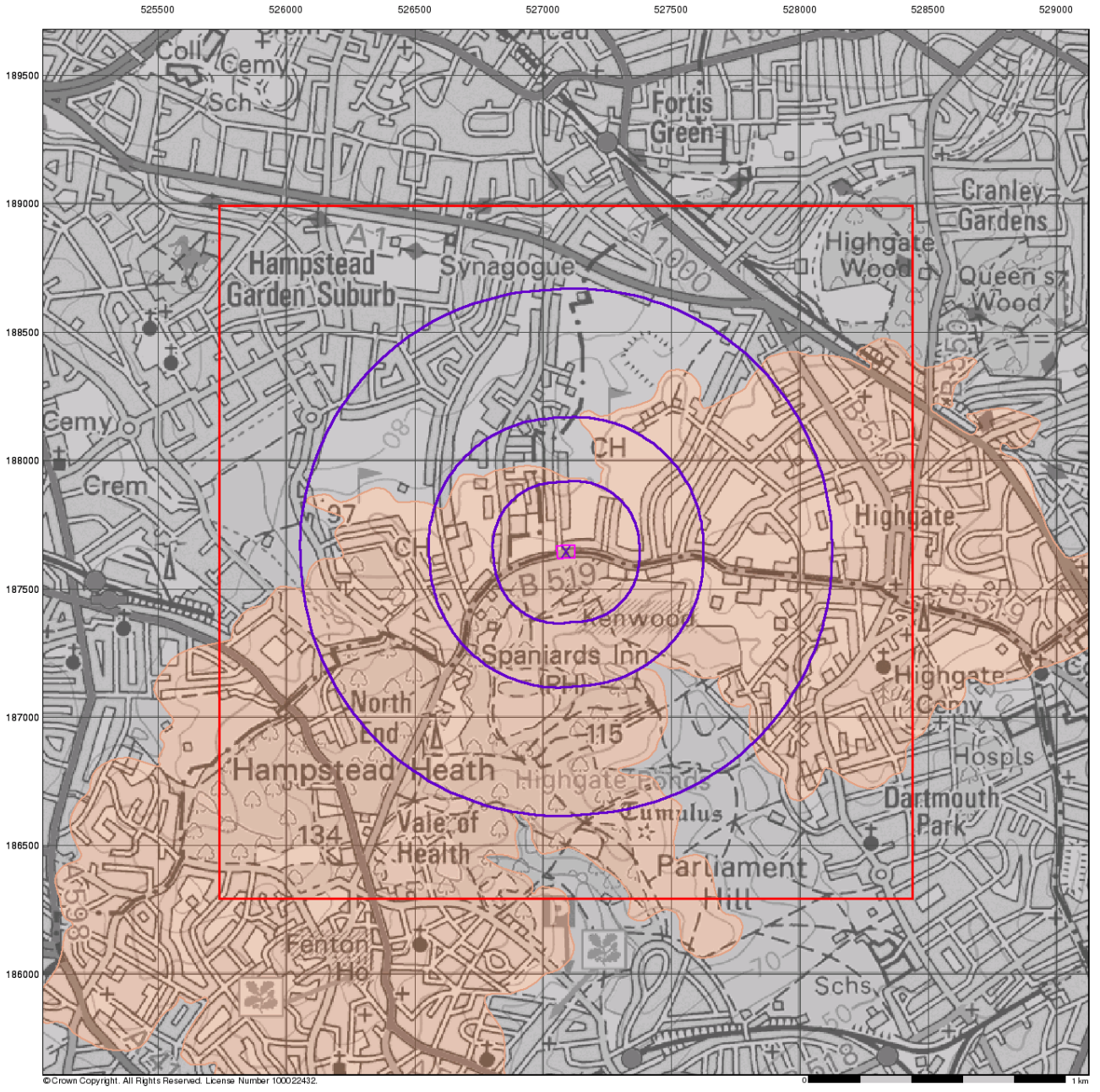
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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GEA

Bedrock Aquifer Designation

General

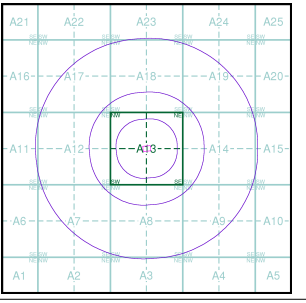
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A

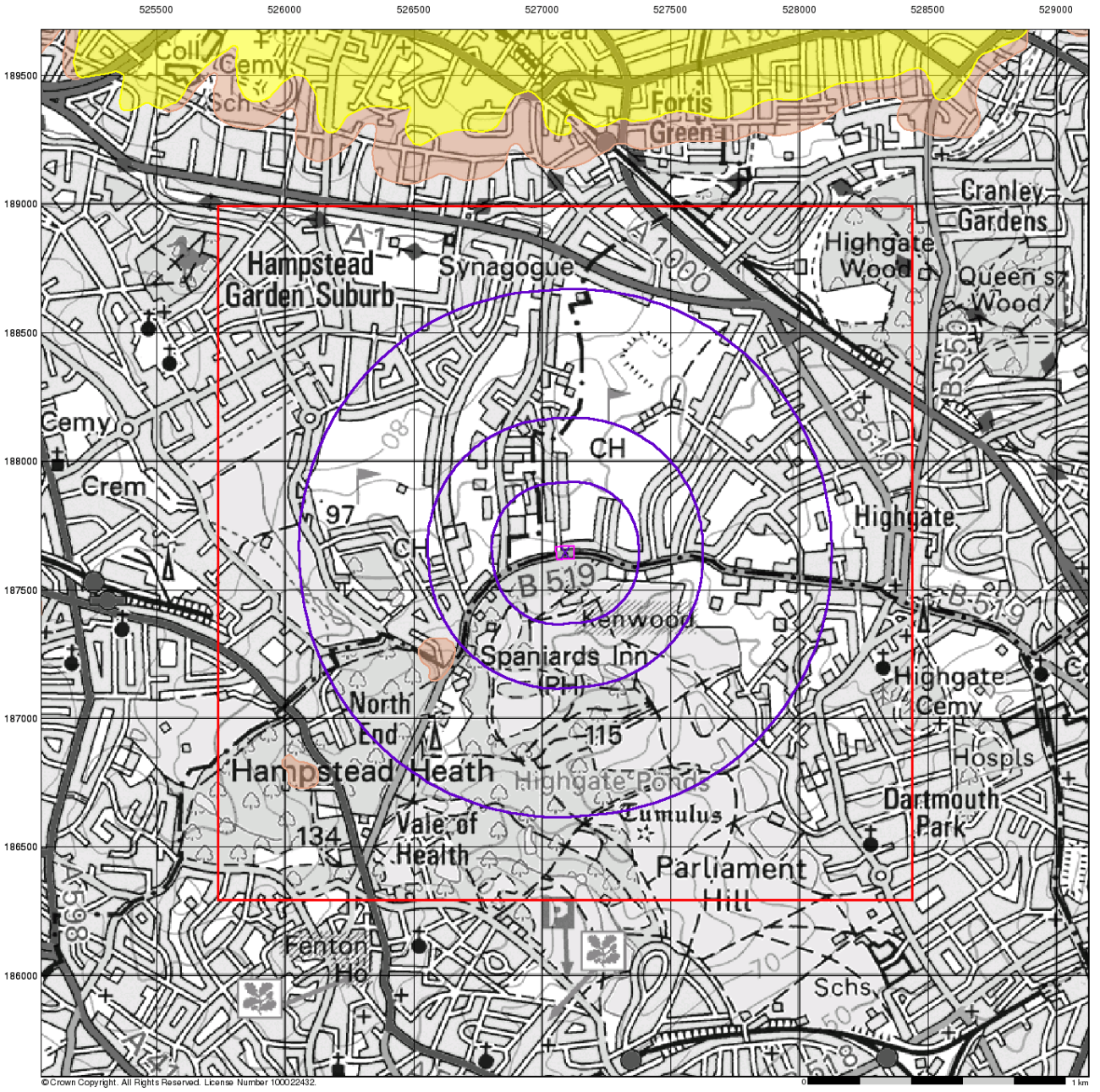


Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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GEA

Superficial Aquifer Designation

General

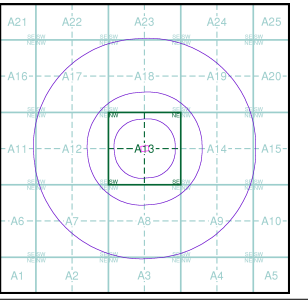
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A

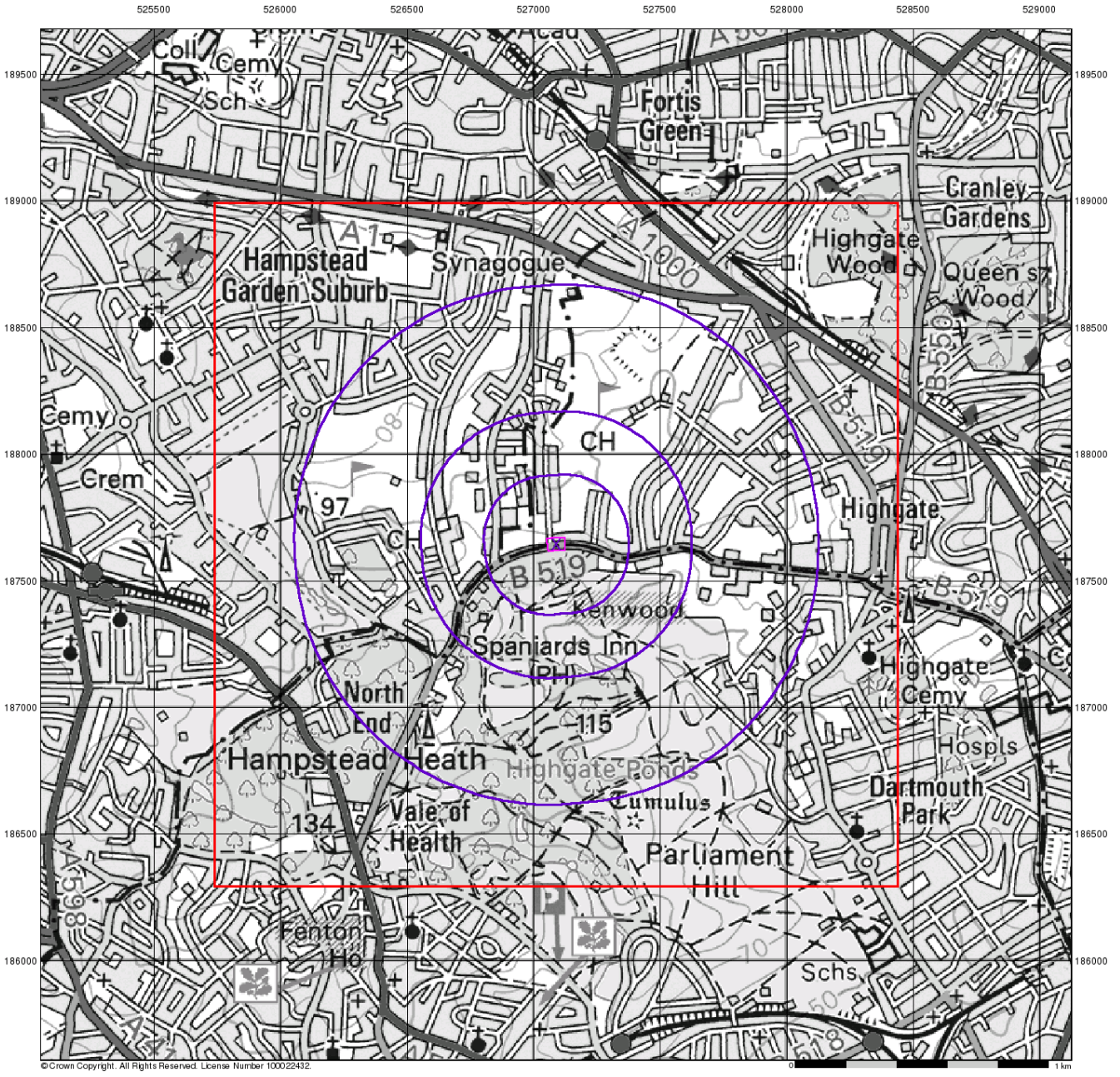


Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

44 - 46 Hampstead Lane, LONDON, N6 4LL



GEA

Source Protection Zones

General

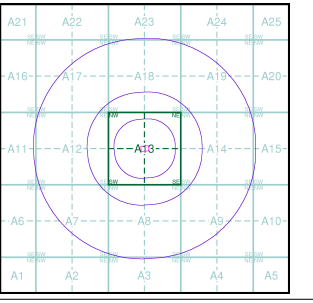
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



Order Details

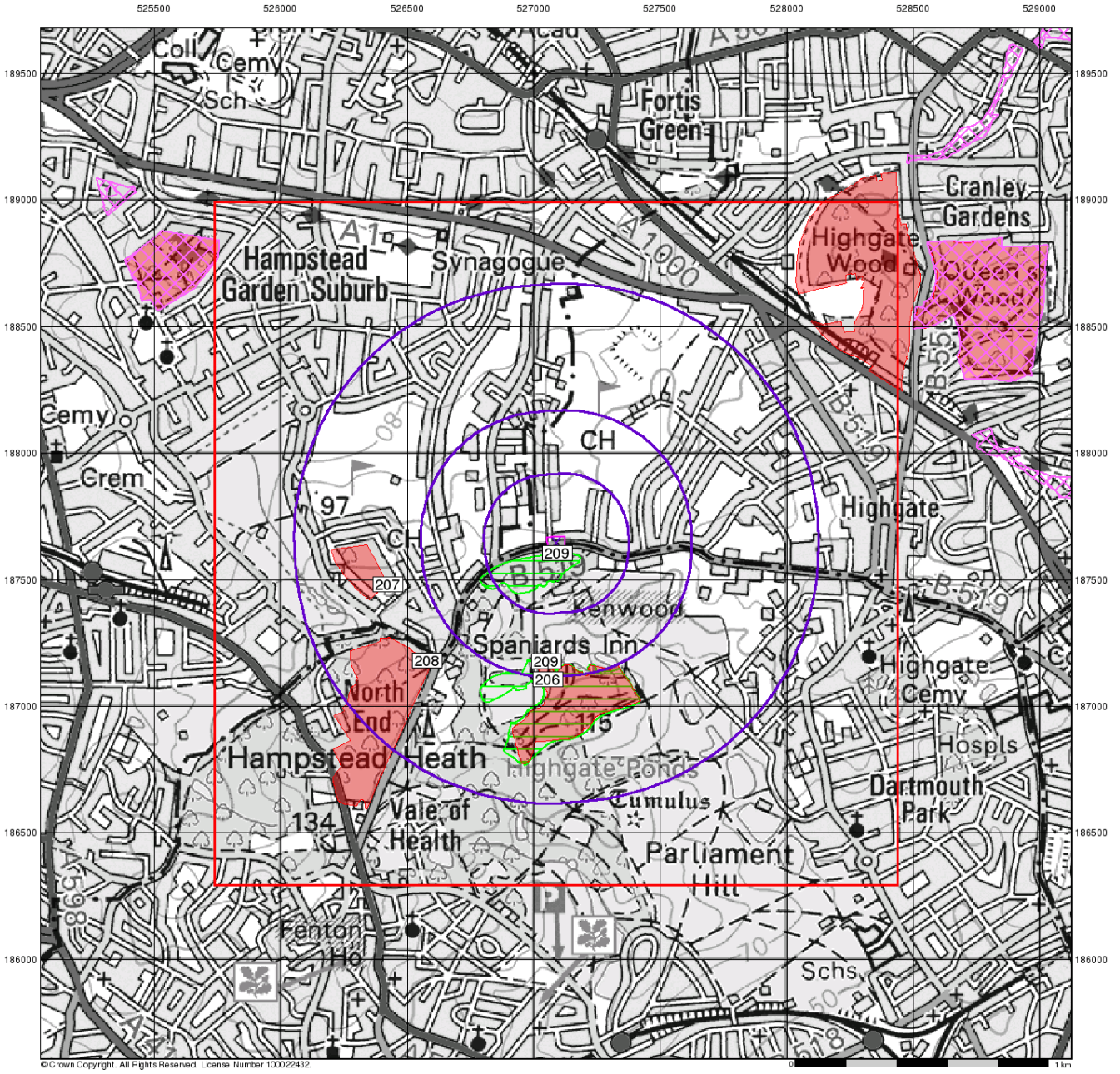
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

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Sensitive Land Uses

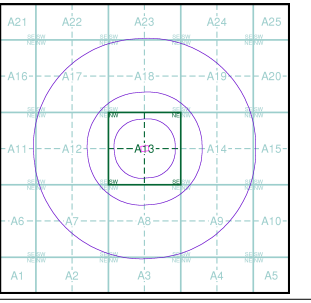
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A

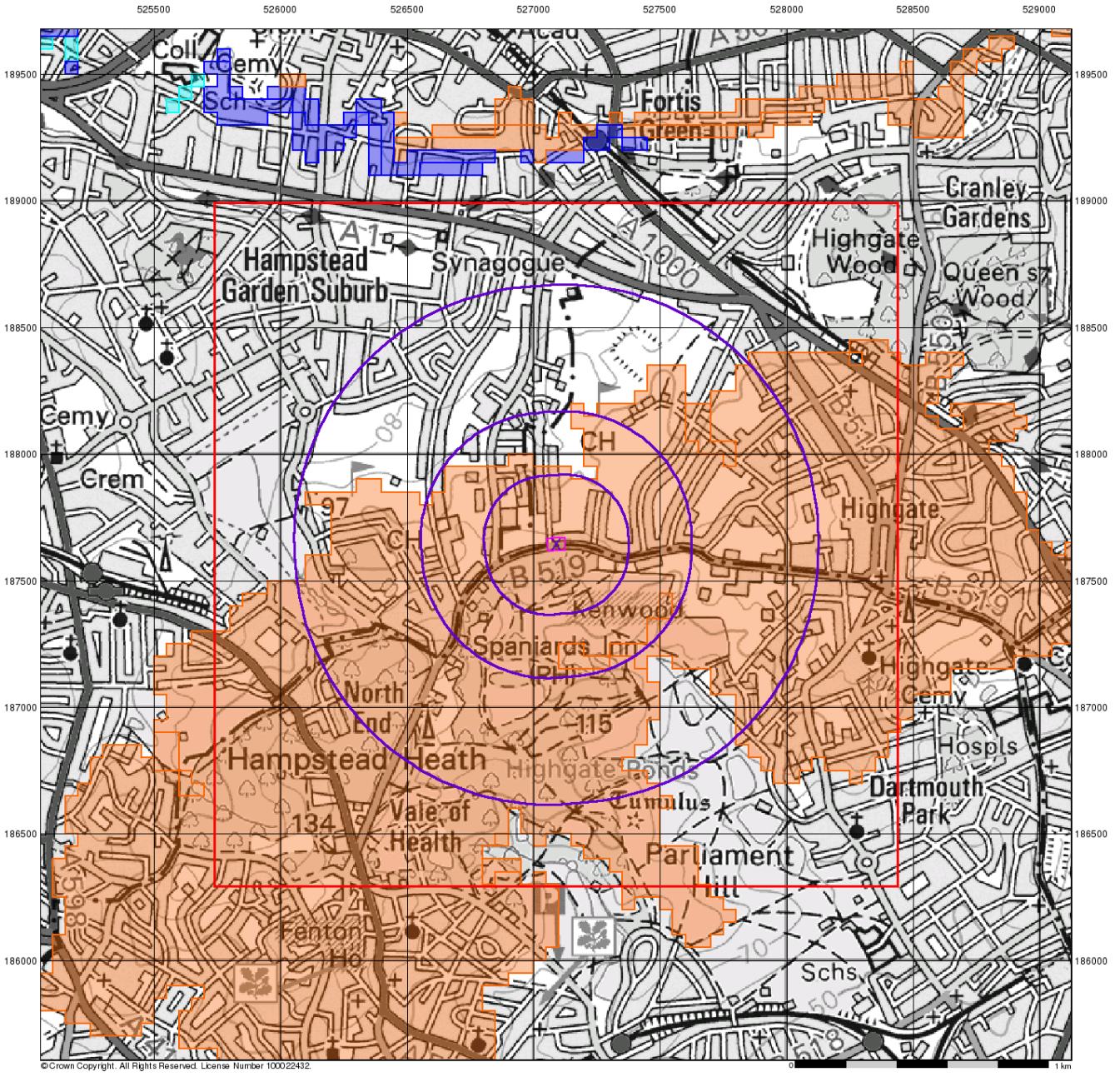


Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

44 - 46 Hampstead Lane, LONDON, N6 4LL



GEA

BGS Flood GFS Data

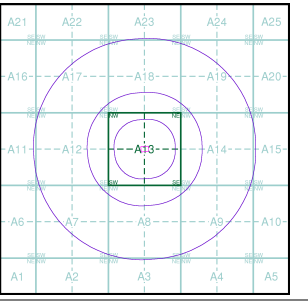
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



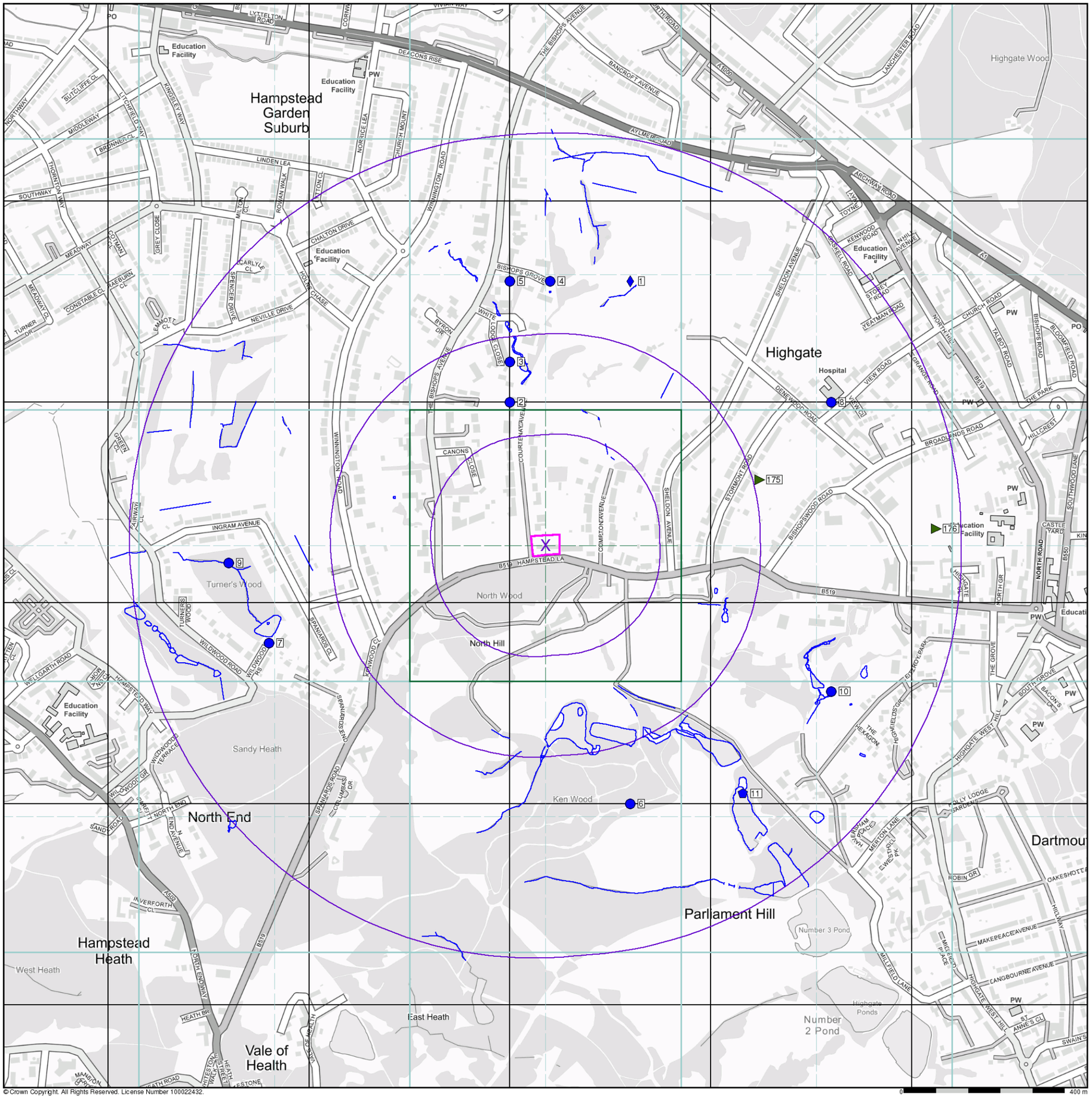
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

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0 400 m

GEA

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

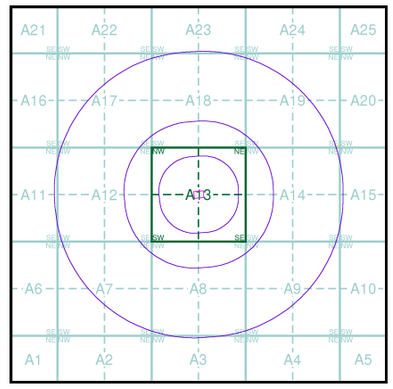
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details

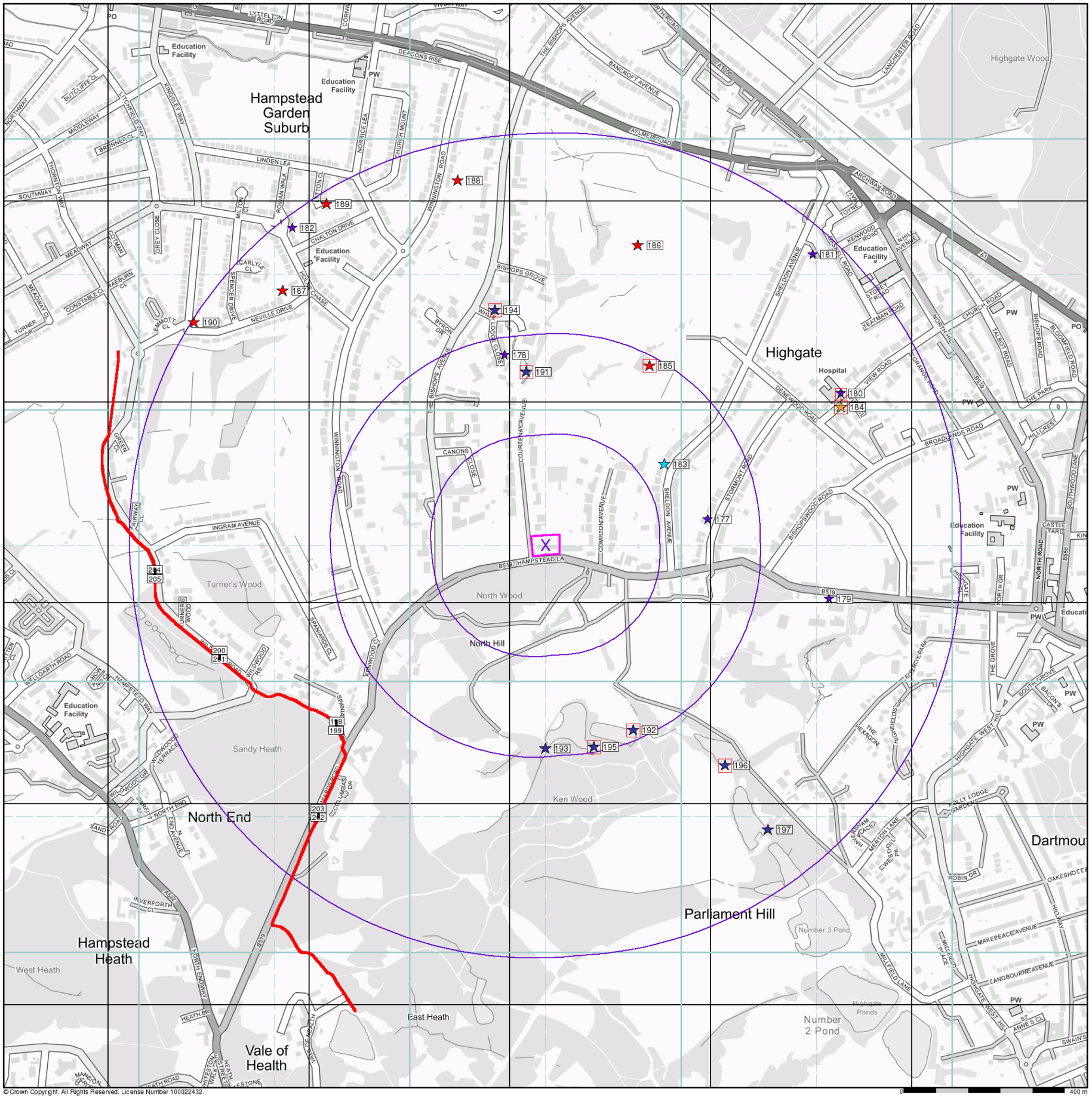
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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Industrial Land Use Map

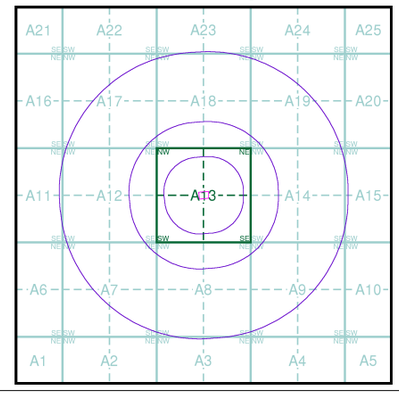
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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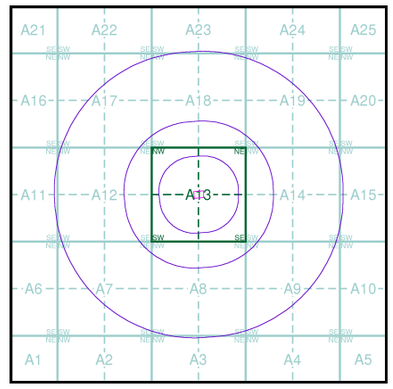
General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



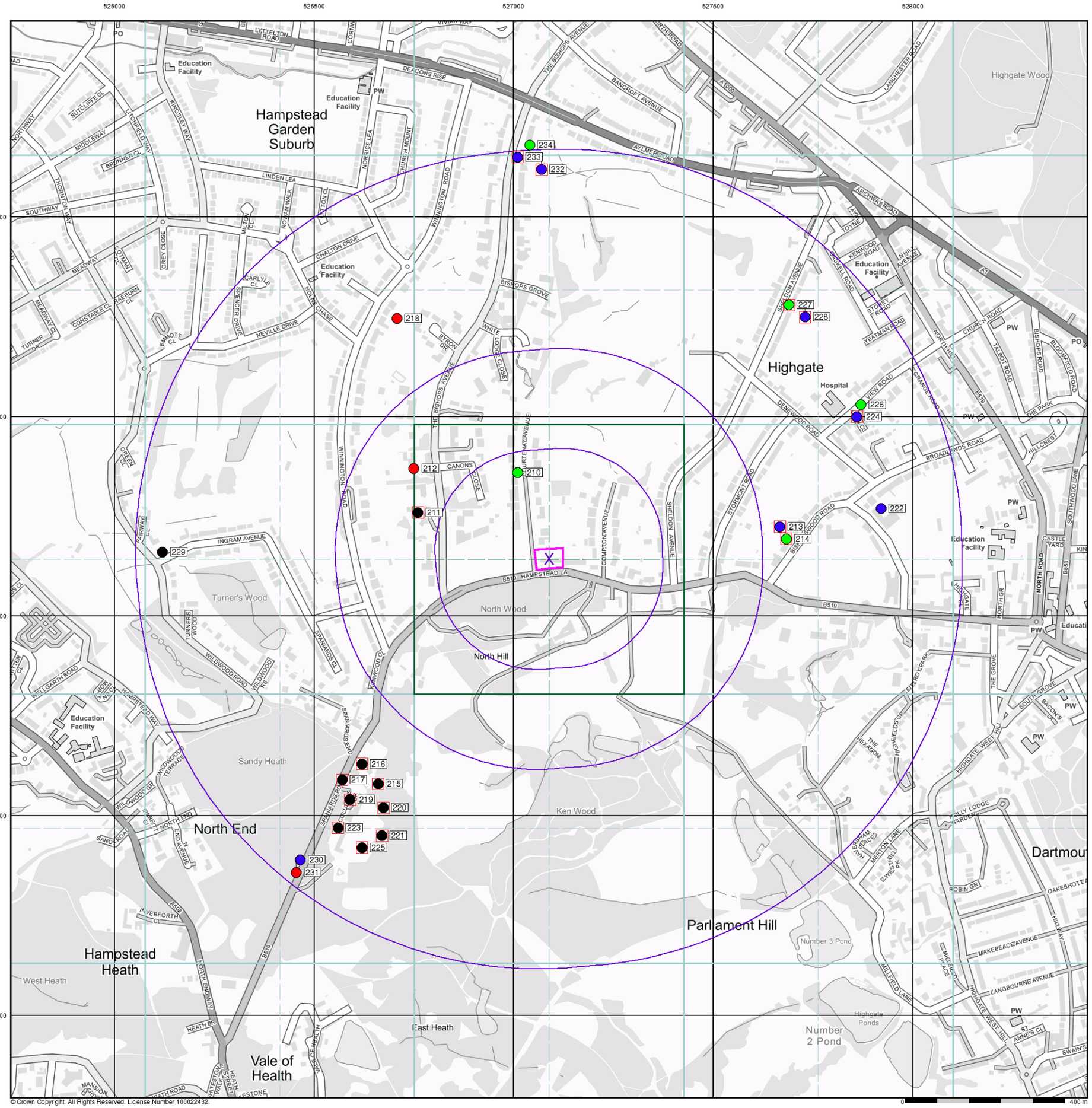
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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GEA

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

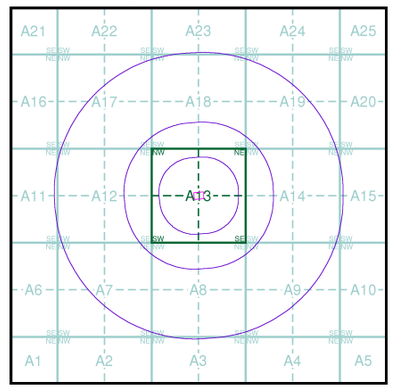
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

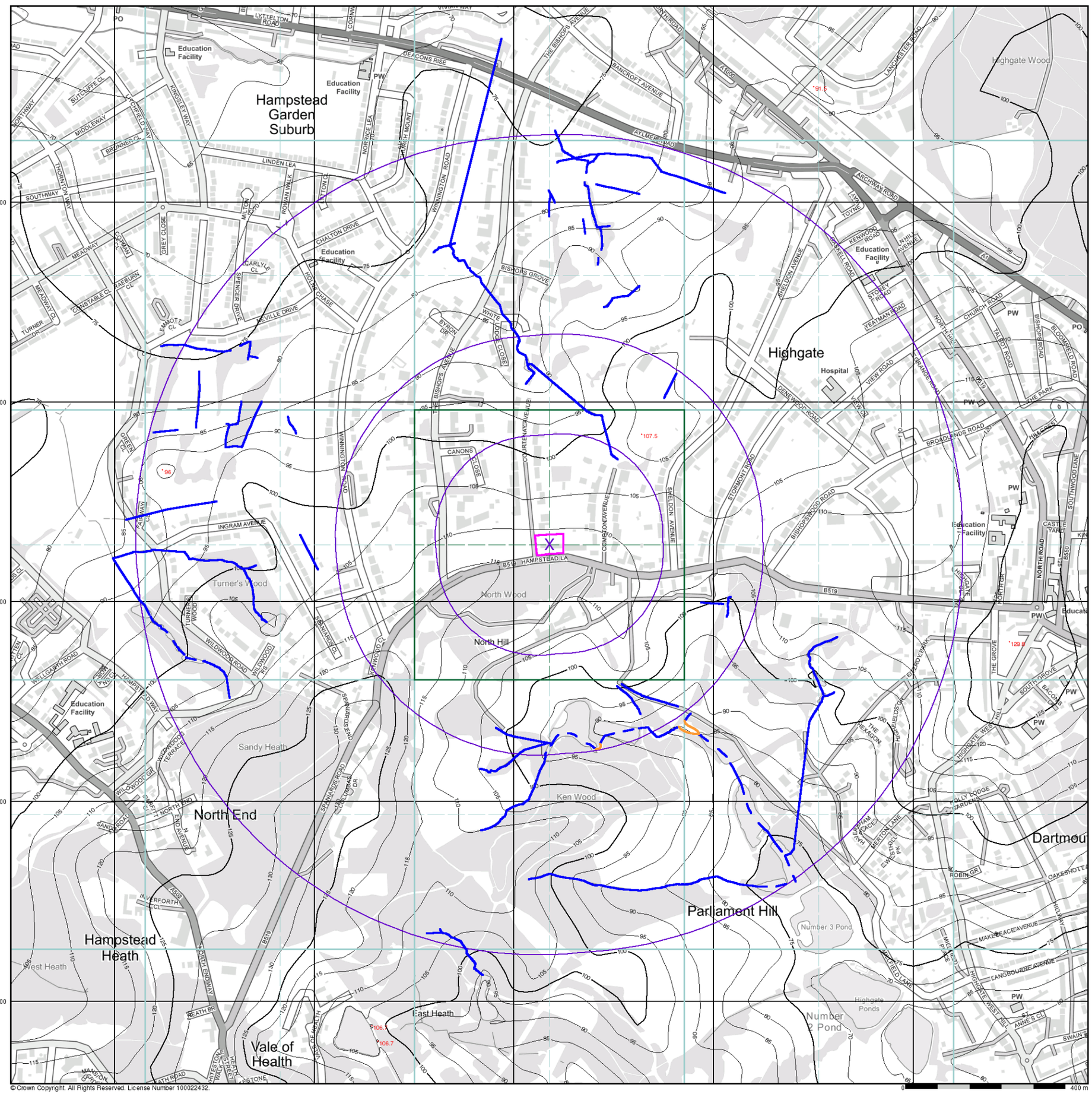
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

Standard Contour 105 100 95

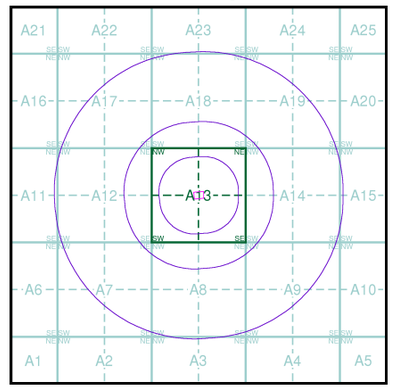
Master Contour

Spot Height *167.3

MLW Mean Low Water

MHW Mean High Water

OS Water Network Map - Slice A



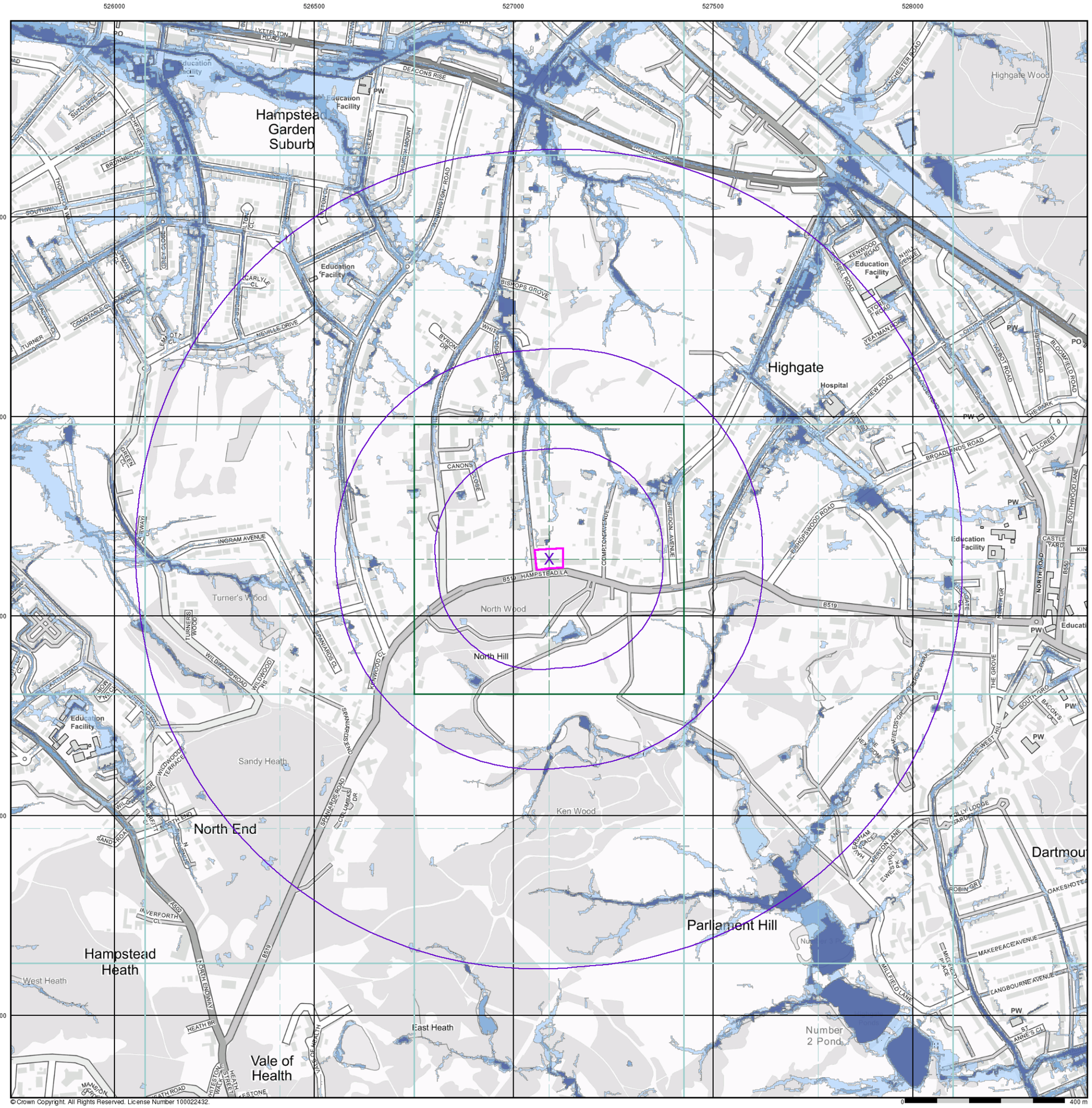
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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0 400 m

GEA

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Risk of Flooding from Surface Water

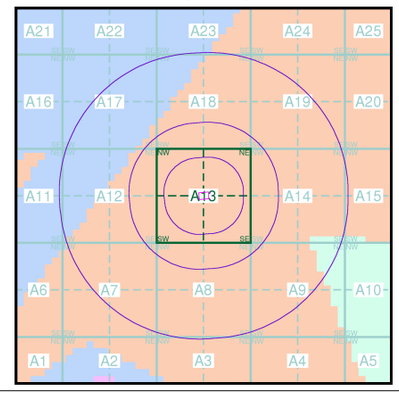
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

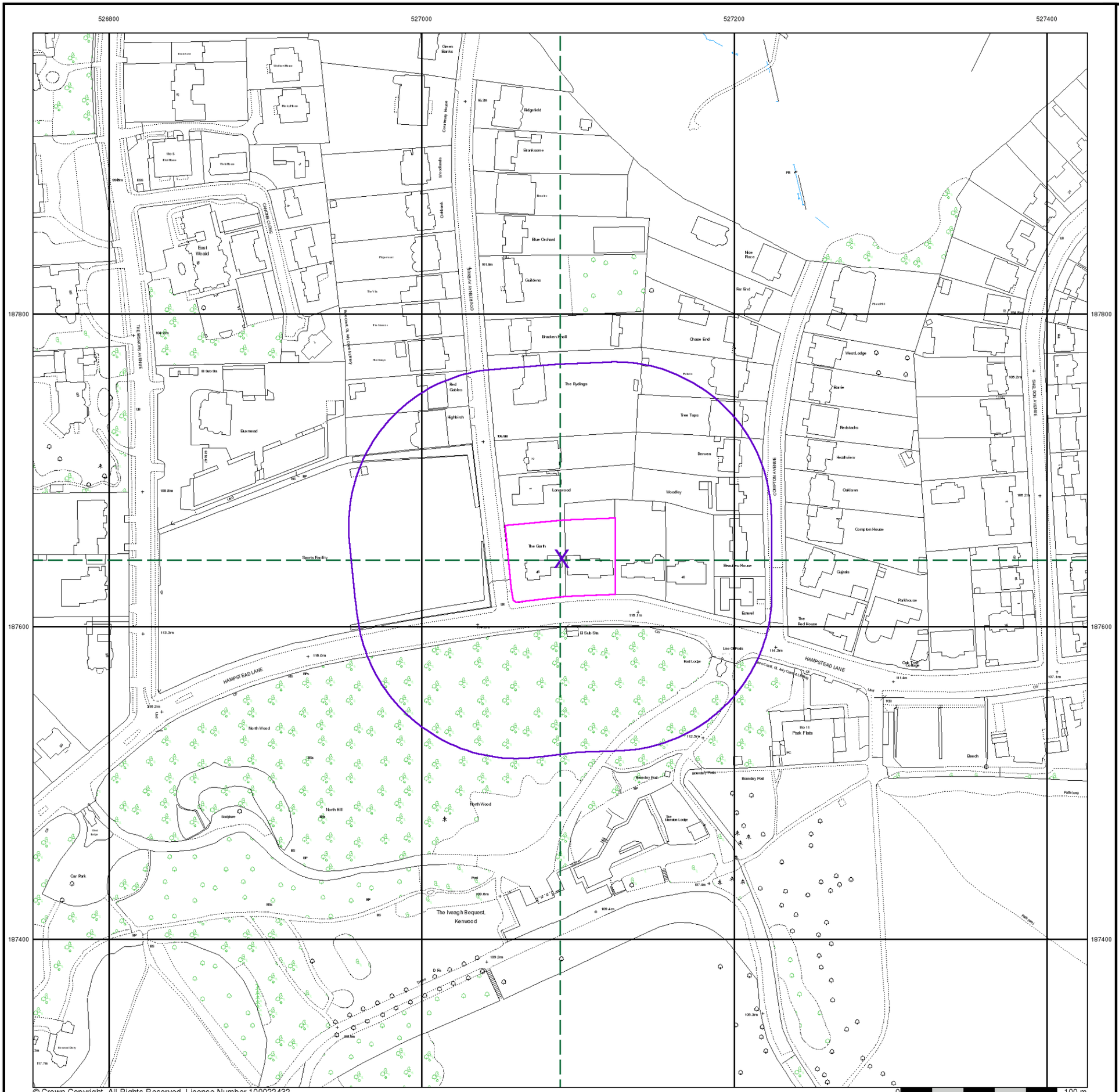
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

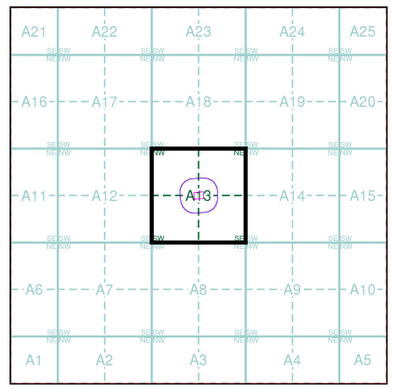
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Plot Buffer (m):	100

Site Details

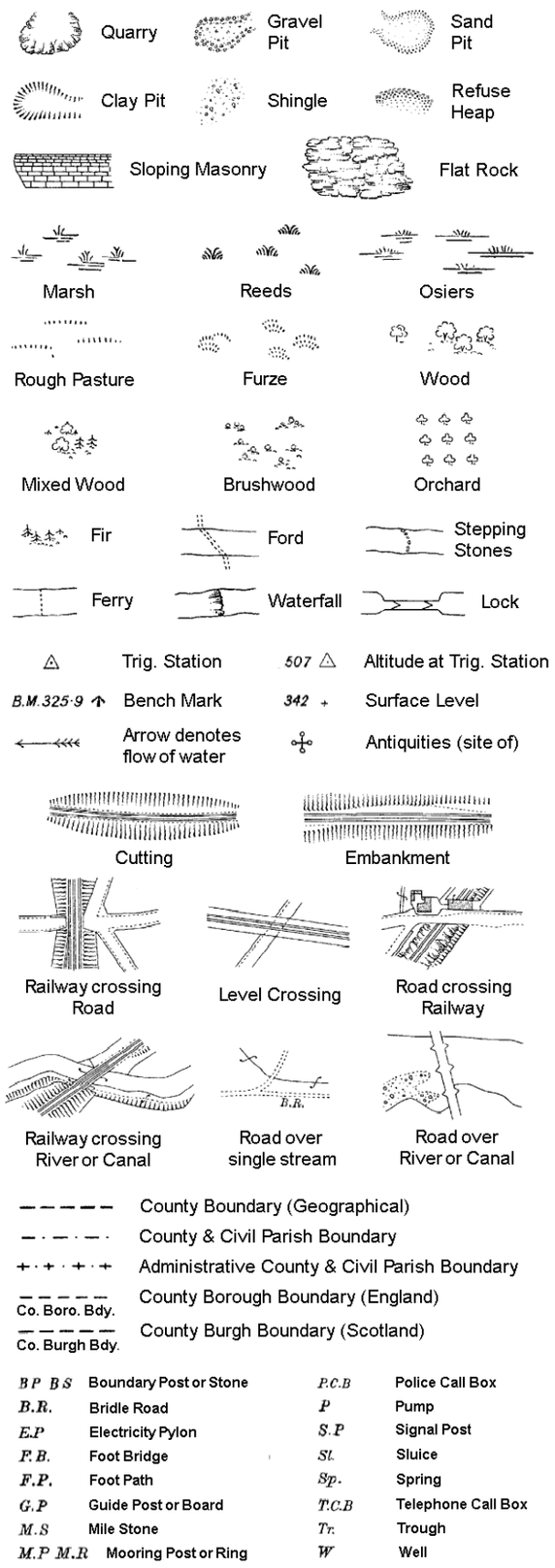
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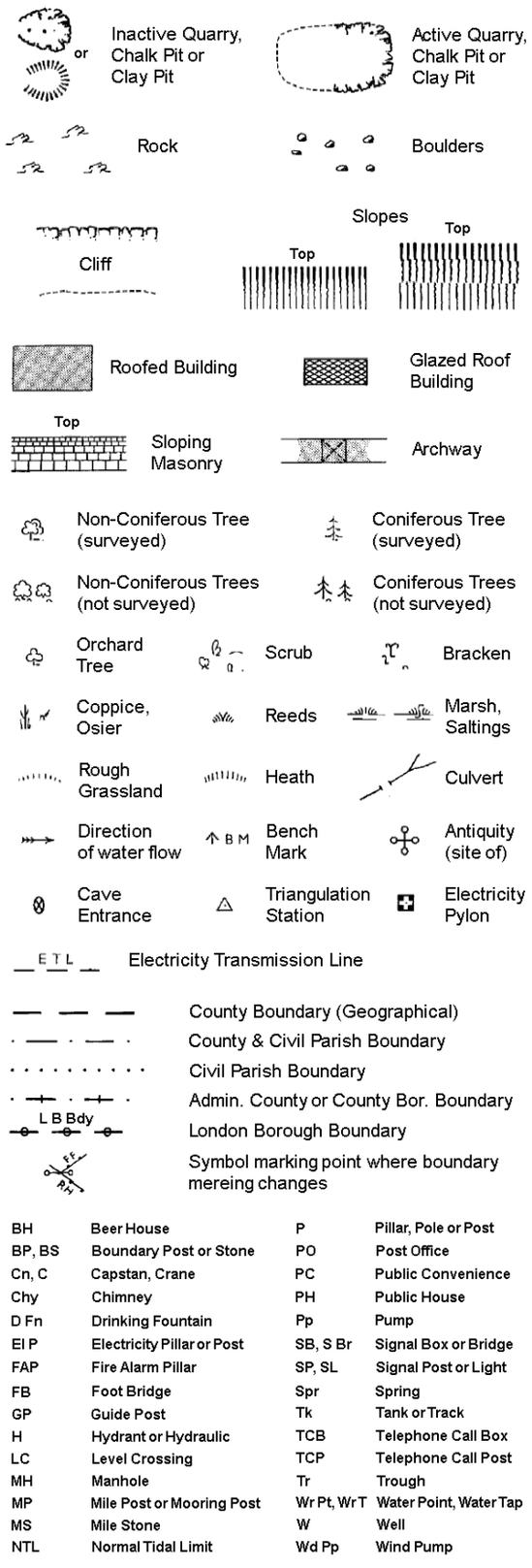
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



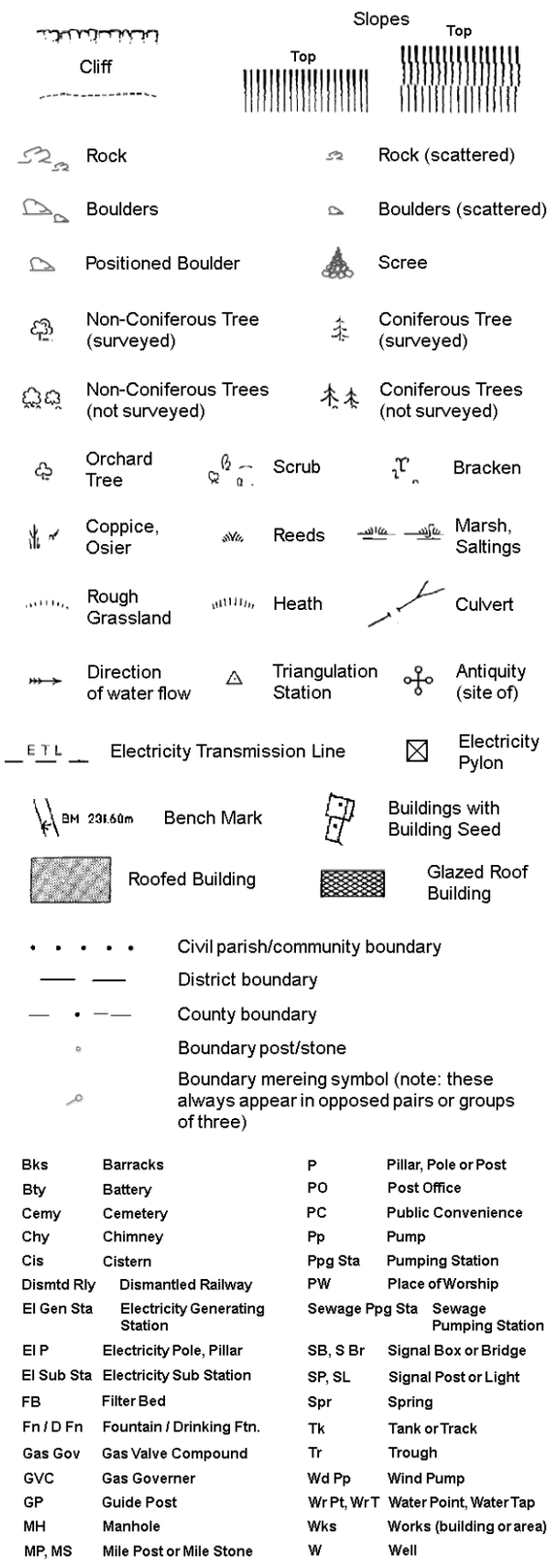
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



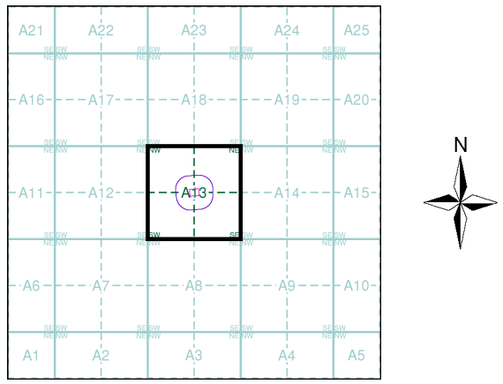
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:2,500	1864	2
Middlesex	1:2,500	1864	3
Middlesex	1:2,500	1866	4
London	1:2,500	1870	5
London	1:2,500	1896	6
London	1:2,500	1915	7
London	1:2,500	1936	8
Historical Aerial Photography	1:1,250	1949	9
Ordnance Survey Plan	1:1,250	1952	10
Additional SIMs	1:1,250	1952	11
Ordnance Survey Plan	1:2,500	1953	12
Additional SIMs	1:2,500	1953	13
Ordnance Survey Plan	1:1,250	1970 - 1975	14
Large-Scale National Grid Data	1:1,250	1991	15
Large-Scale National Grid Data	1:1,250	1995	16
Historical Aerial Photography	1:2,500	1999	17

Historical Map - Segment A13



Order Details

Order Number: 280107221_1_1
Customer Ref: J21167
National Grid Reference: 527090, 187640
Slice: A
Site Area (Ha): 0.34
Search Buffer (m): 100

Site Details

44 - 46 Hampstead Lane, LONDON, N6 4LL

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Pylon
Glasshouse
Electricity Transmission Line
Sloping Masonry
Pylon
Pole
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

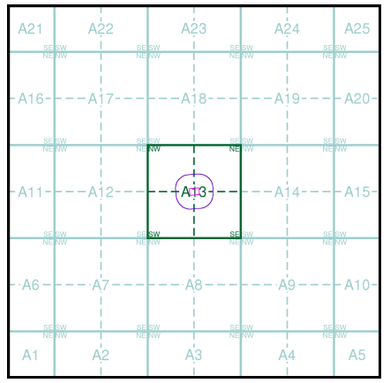
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

GEA

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1873	3
Middlesex	1:10,560	1879	4
London	1:10,560	1896	5
Essex	1:10,560	1920	6
London	1:10,560	1920	7
Middlesex	1:10,560	1936	8
Middlesex	1:10,560	1938	9
Essex	1:10,560	1938	10
Historical Aerial Photography	1:10,560	1950	11
Ordnance Survey Plan	1:10,000	1951	12
Ordnance Survey Plan	1:10,000	1958	13
Ordnance Survey Plan	1:10,000	1968	14
Ordnance Survey Plan	1:10,000	1976	15
London	1:25,000	1985	16
Ordnance Survey Plan	1:10,000	1996	17
10K Raster Mapping	1:10,000	1999	18
10K Raster Mapping	1:10,000	2006	19
VectorMap Local	1:10,000	2021	20

Historical Map - Slice A



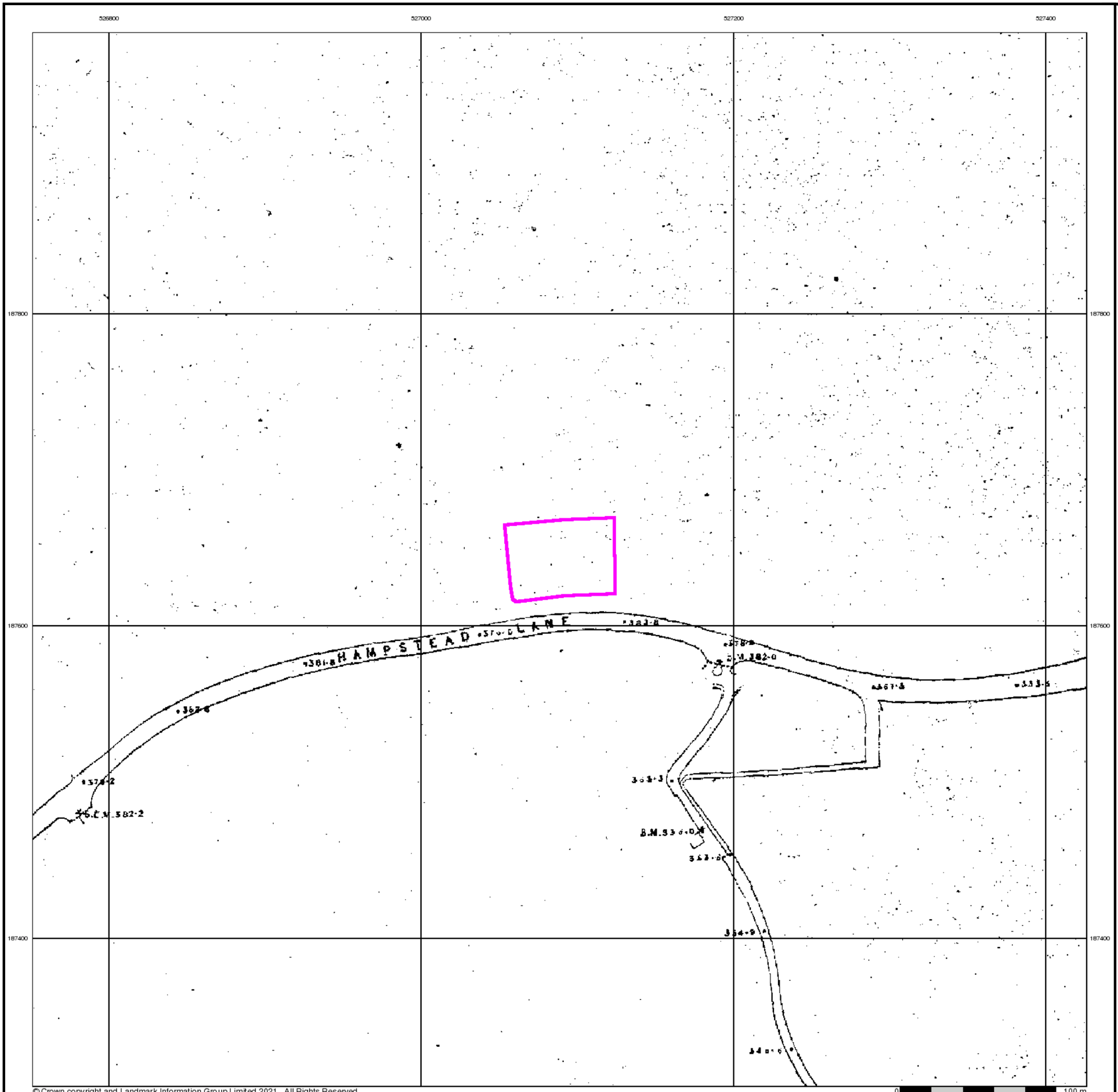
Order Details

Order Number: 280107221_1_1
Customer Ref: J21167
National Grid Reference: 527090, 187640
Slice: A
Site Area (Ha): 0.34
Search Buffer (m): 1000

Site Details

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London

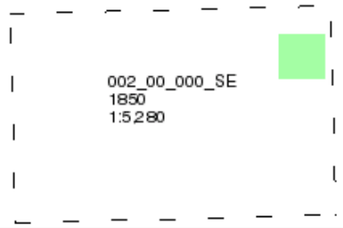
Published 1850

Source map scale - 1:5,280

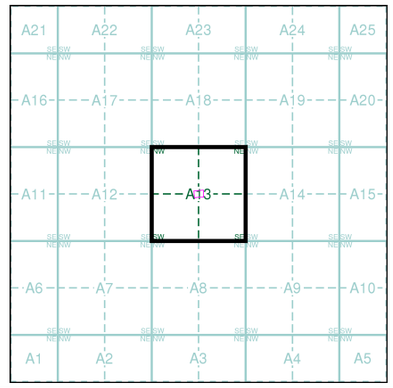
The historical town plans shown derive from Ordnance Survey mapping from the early to mid 1850s. The 1:2640 scale was introduced in the early 1850s, to survey districts covered by the Local Boards of Health and for a map of the Osborne Estate of Queen Victoria. The general style is similar to that of the early 1:2500s published shortly afterwards.
1:5280 scale was surveyed shortly afterwards in the mid 1850s as general purpose mapping with a standard of content similar to the more contemporary 1:10.560 mapping. The scale was also used for a reduction of the 1:1056 'skeleton survey' of London that was undertaken between 1848 and 1850.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



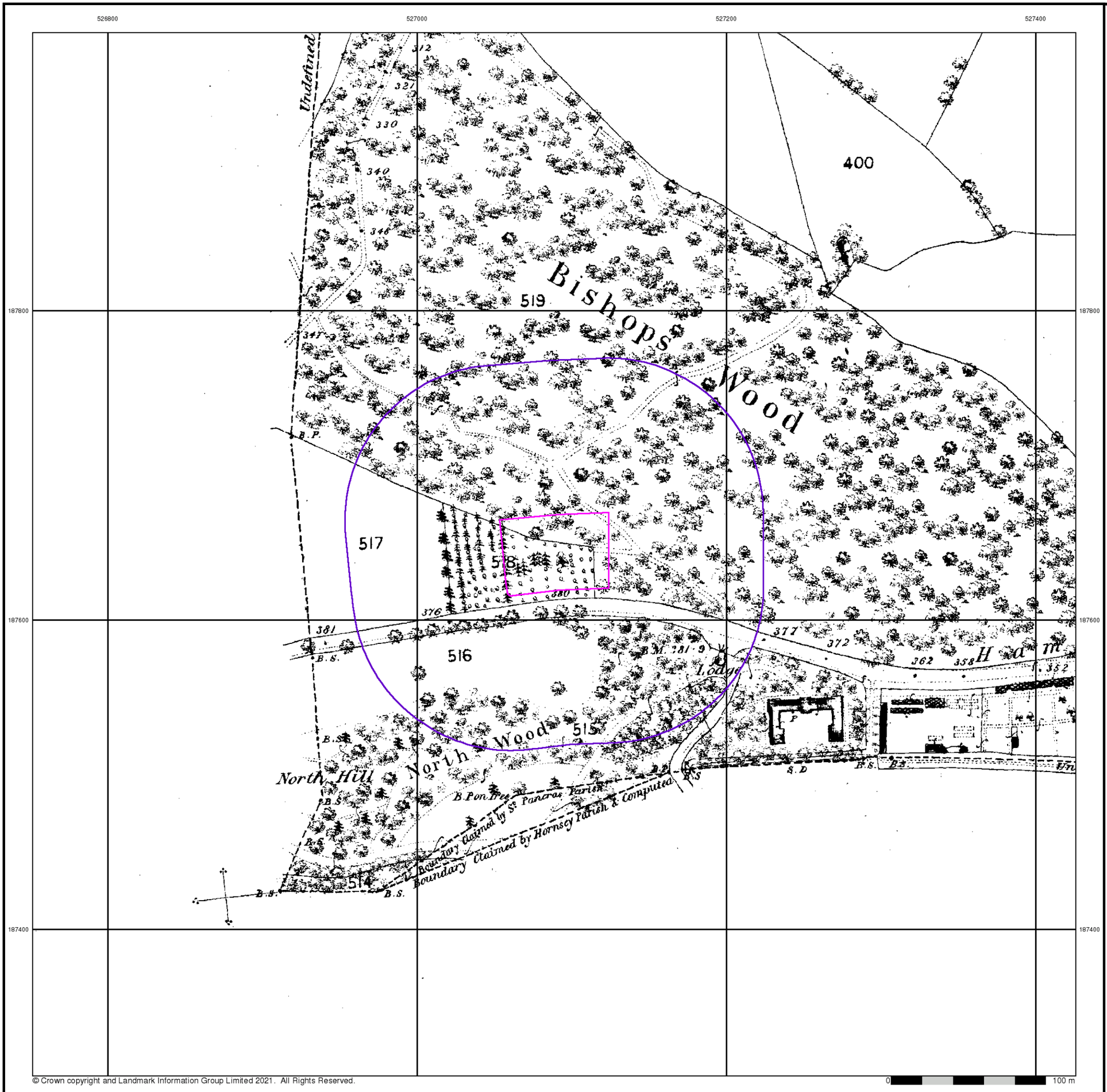
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
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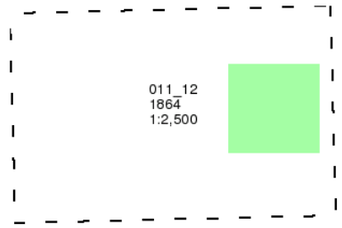
Middlesex

Published 1864

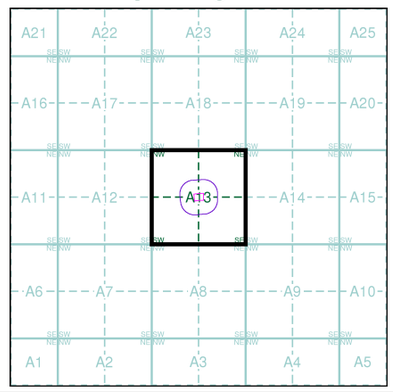
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



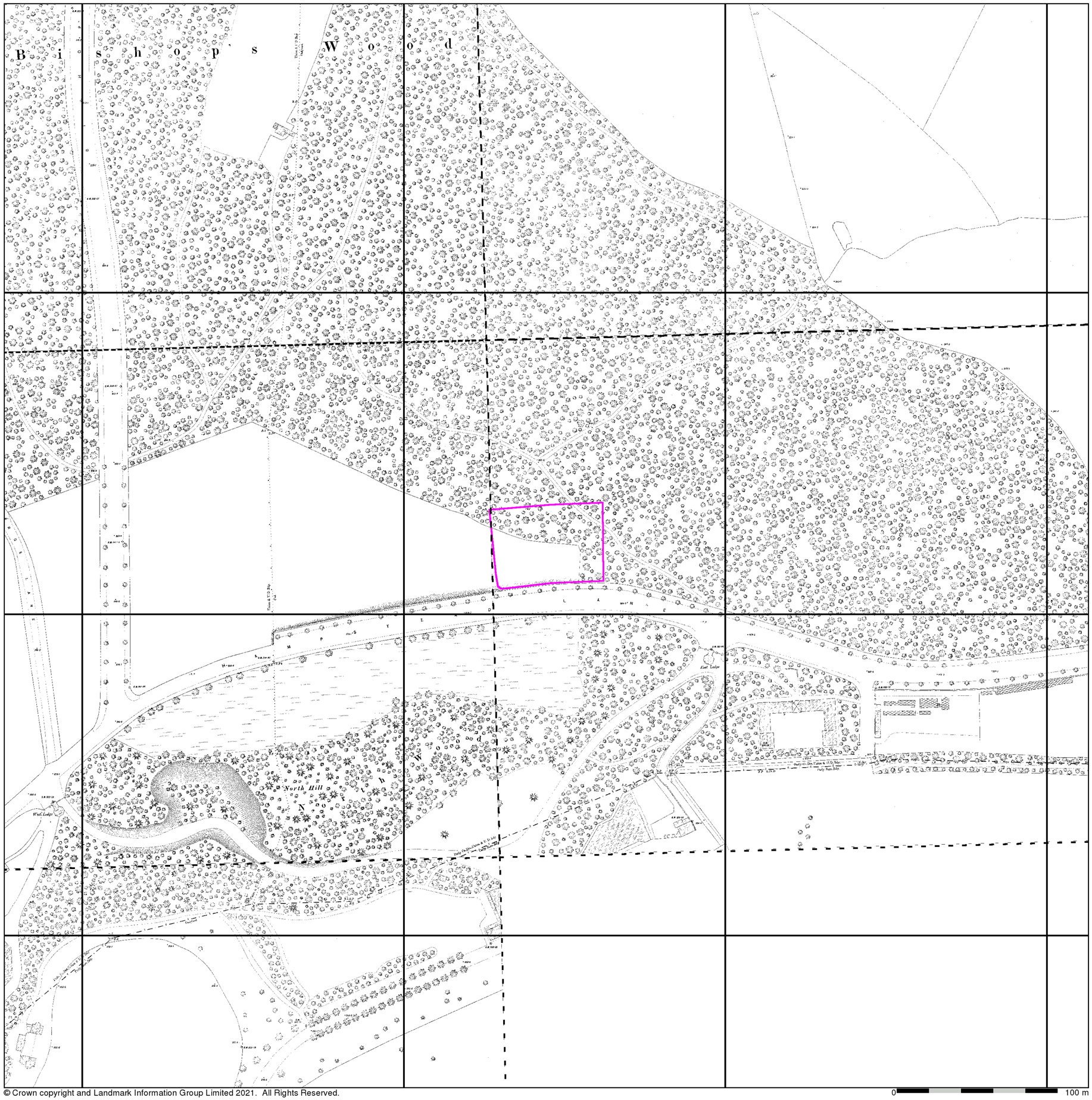
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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Middlesex

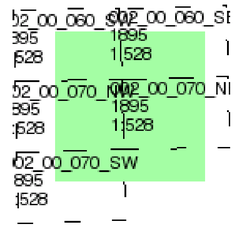
Published 1895

Source map scale - 1:528

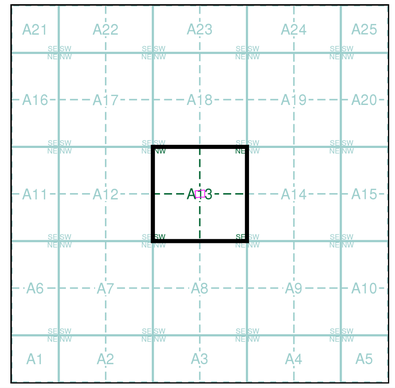
The 1:528 scale Ordnance Survey mapping was adopted in 1850 as an alternative to the 1:1056 scale, that had been deemed to be inadequate for sanitary planning, which had come very much to the fore following the passing of the Public Health Act of 1948. Around 29 towns in England and Wales were surveyed at this scale, the bulk of which were undertaken between 1850 and 1855. These were predominantly towns that were outside the areas being surveyed at 1:10,560 or 1:2500 scale. As well as showing the details characteristic of the later 1:500 plans, they show features of sanitary interest such as privies, taps, cow houses, cess pits, brew and bake houses and cart sheds and stables.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

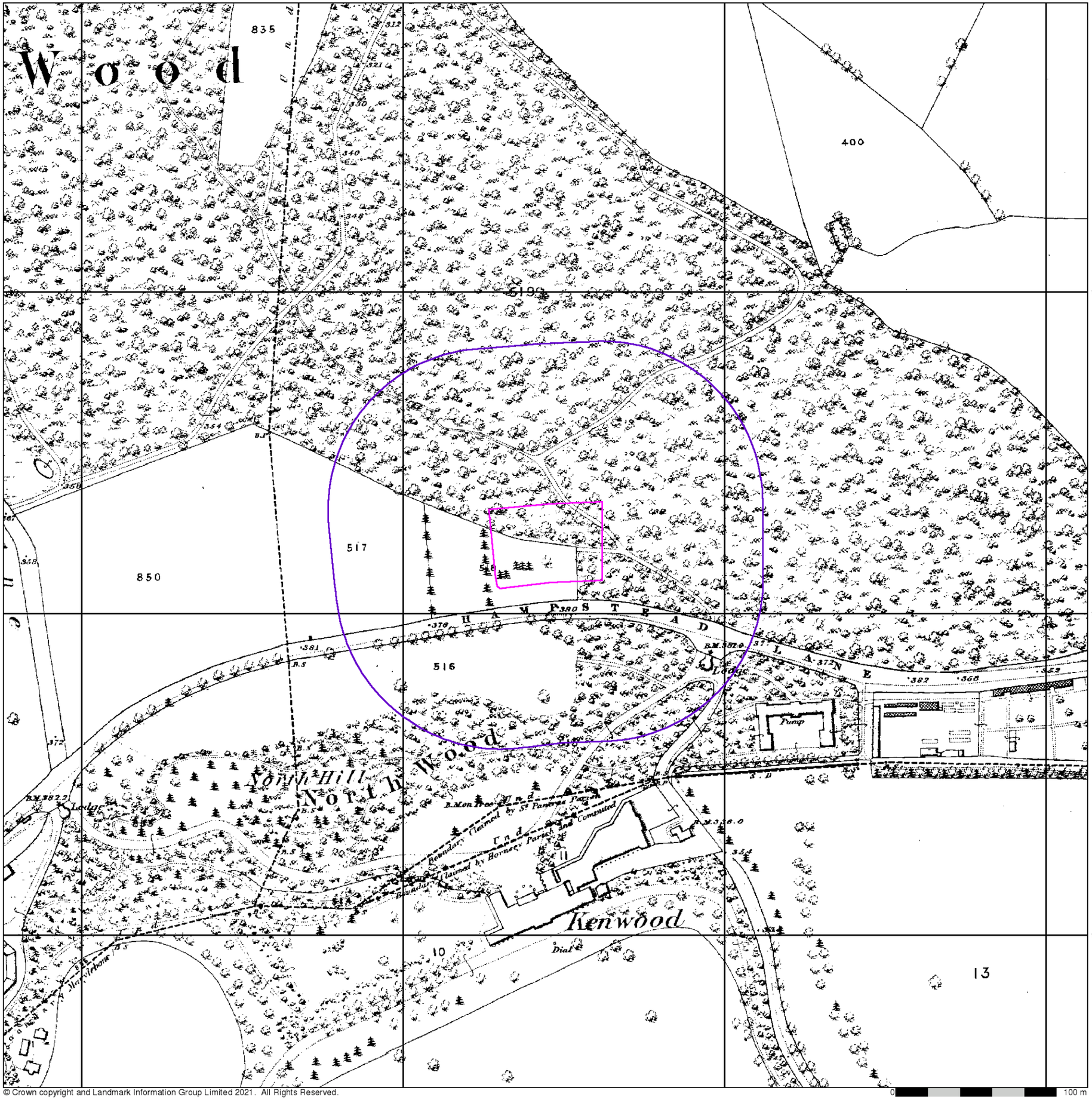
Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	0

Site Details

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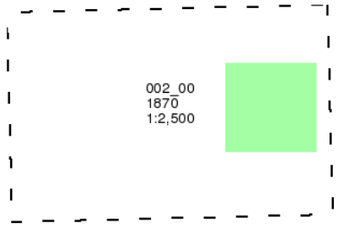
London

Published 1870

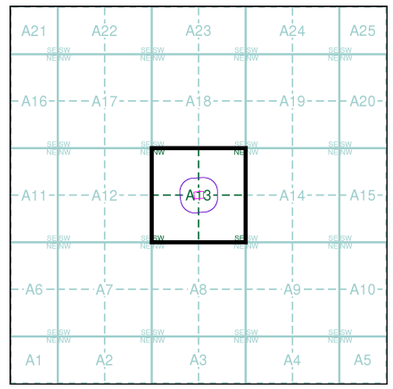
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



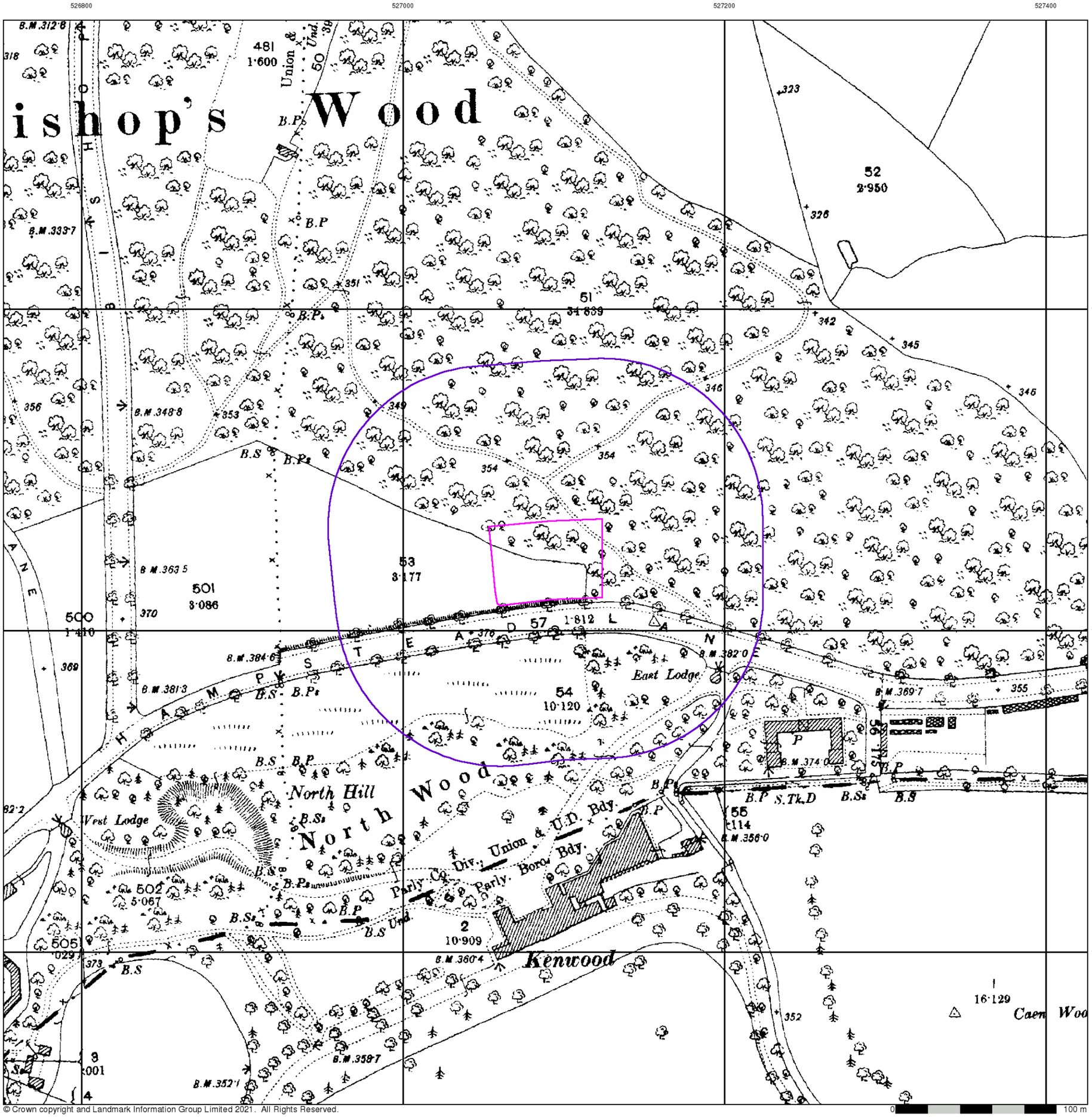
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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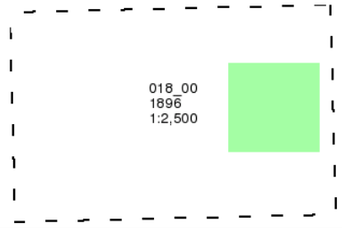
London

Published 1896

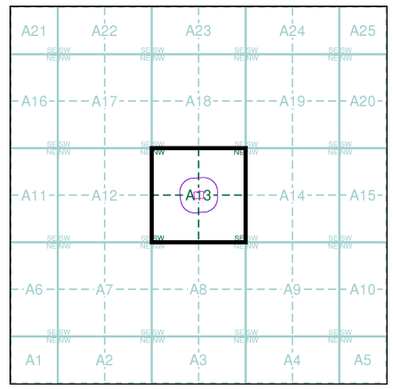
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



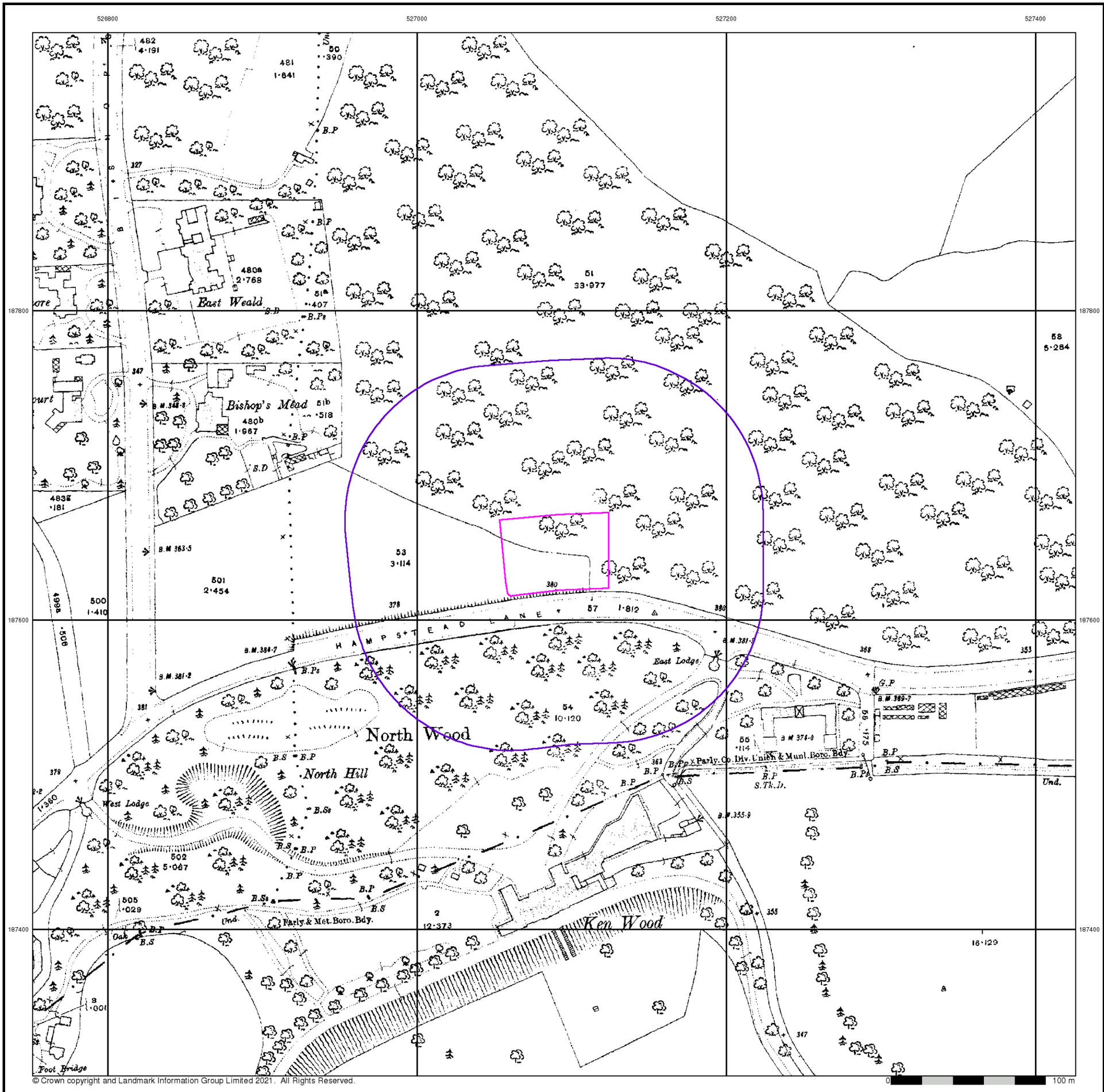
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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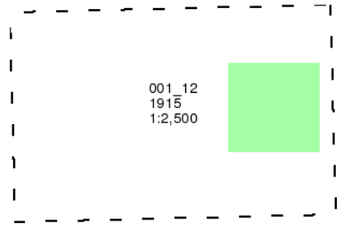
London

Published 1915

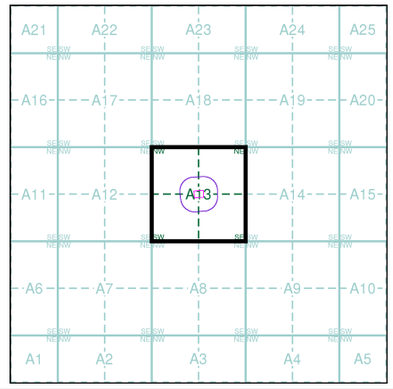
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



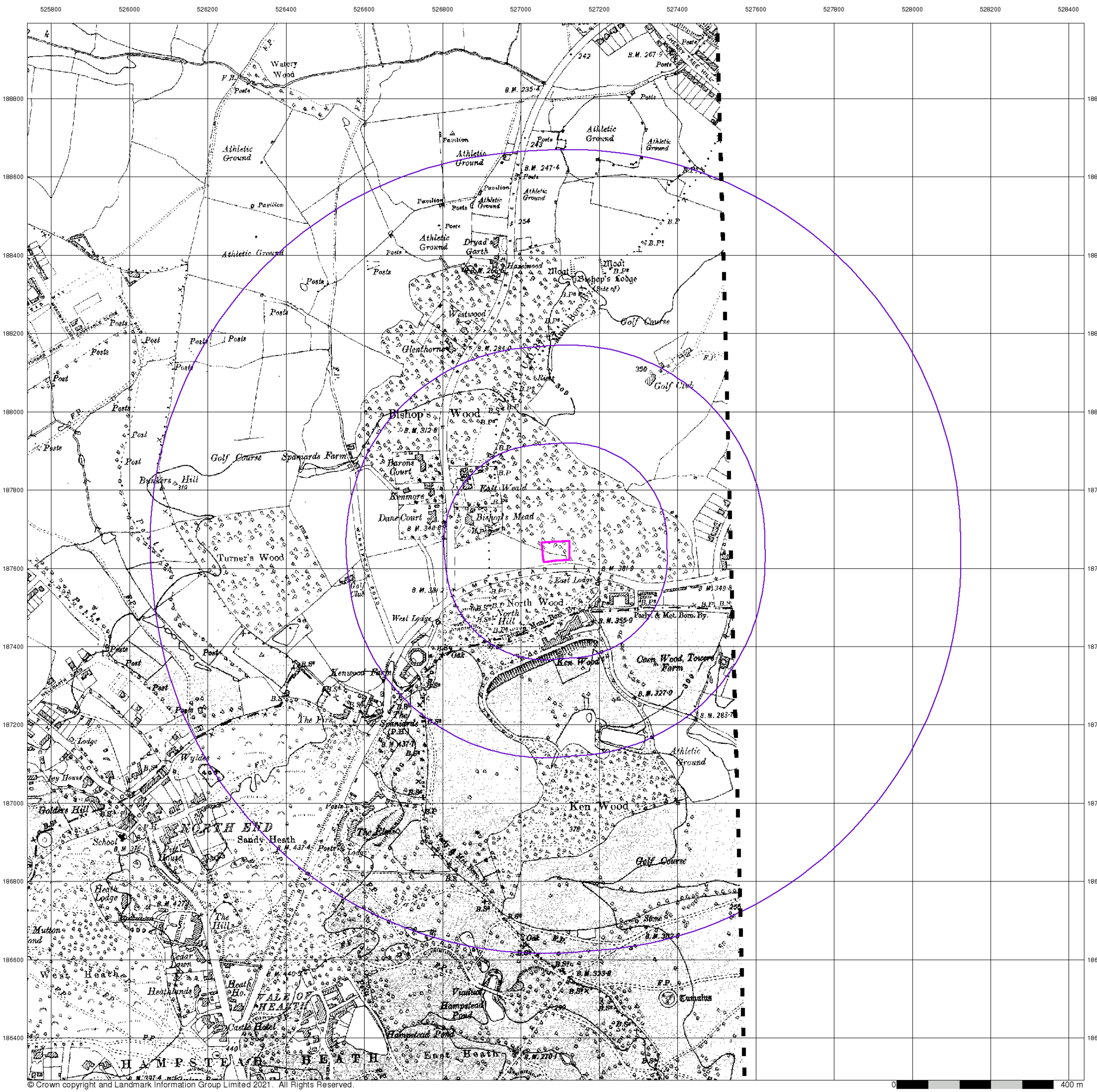
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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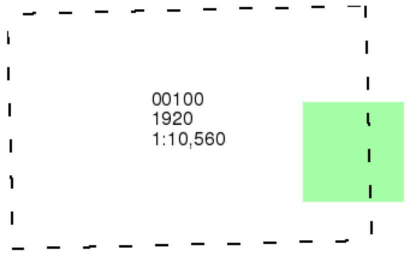
London

Published 1920

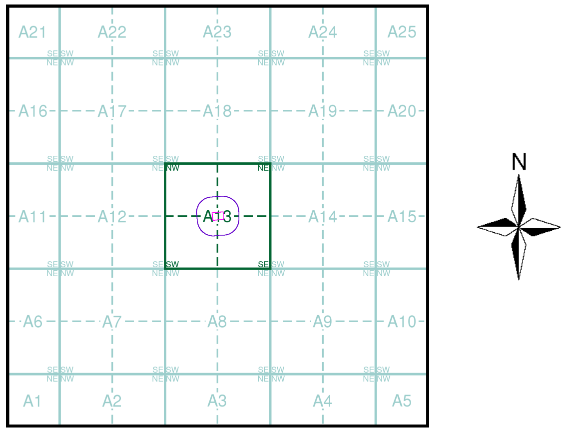
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

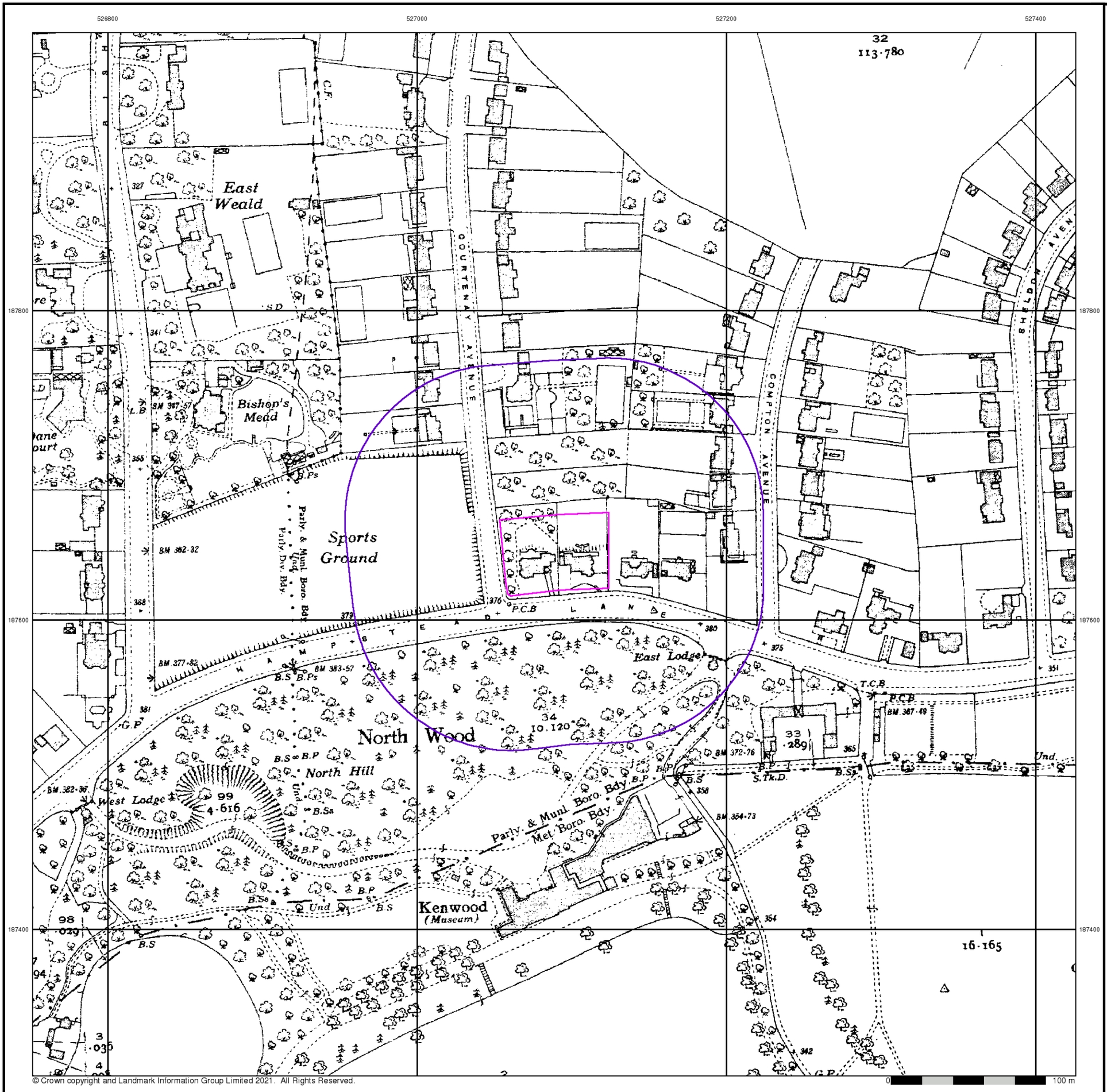


Order Details

Order Number: 280107221_1_1
Customer Ref: J21167
National Grid Reference: 527090, 187640
Slice: A
Site Area (Ha): 0.34
Search Buffer (m): 1000

Site Details

44 - 46 Hampstead Lane, LONDON, N6 4LL



GEA

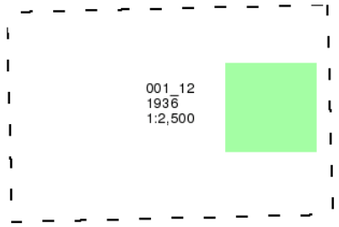
London

Published 1936

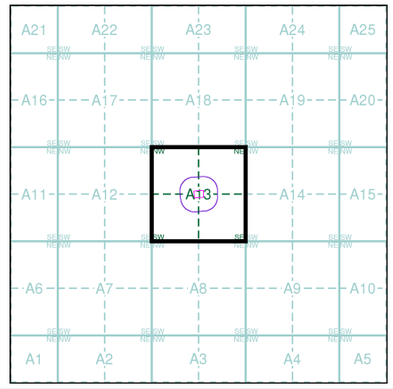
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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GEA

London

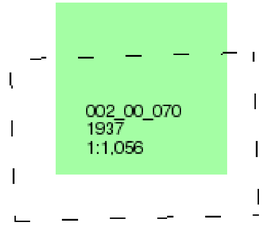
Published 1937

Source map scale - 1:1,056

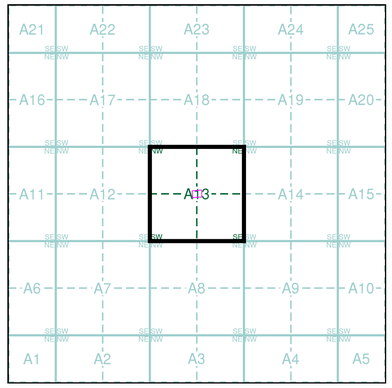
The 1:1056 scale of Ordnance Survey mapping was adopted from Ireland in 1848 and was used to survey towns with a population of over 4000, plus county towns of lesser population, in those counties mapped at the six-inch scale in 1841-55. The scale was the largest scale at which London was mapped by the Ordnance Survey and a 'skeleton' survey of the capital, showing little more than streets, street names, frontages and altitudes, was undertaken between 1848 and 1850. The majority of the 1:1056 surveys were later replaced by 1:500 surveys; although almost all the remainder were revised at this scale, sometimes more than once before 1895. The type of detail shown on the 1:1056 scale is broadly similar to that on 1:500; the apparent omission of minor details such as sewer access points and street lights may be as much a reflection of the generally earlier date of these plans, as of the specification of the map.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	0

Site Details

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Historical Aerial Photography

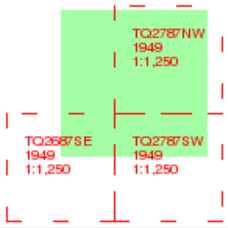
Published 1949

Source map scale - 1:1,250

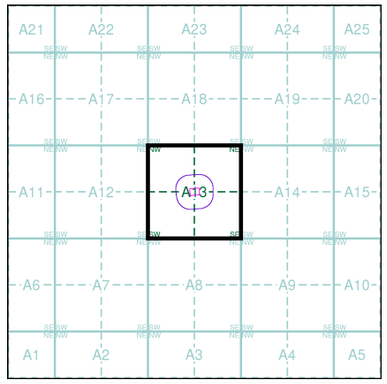
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

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Map Name(s) and Date(s)



Historical Aerial Photography - Segment A13



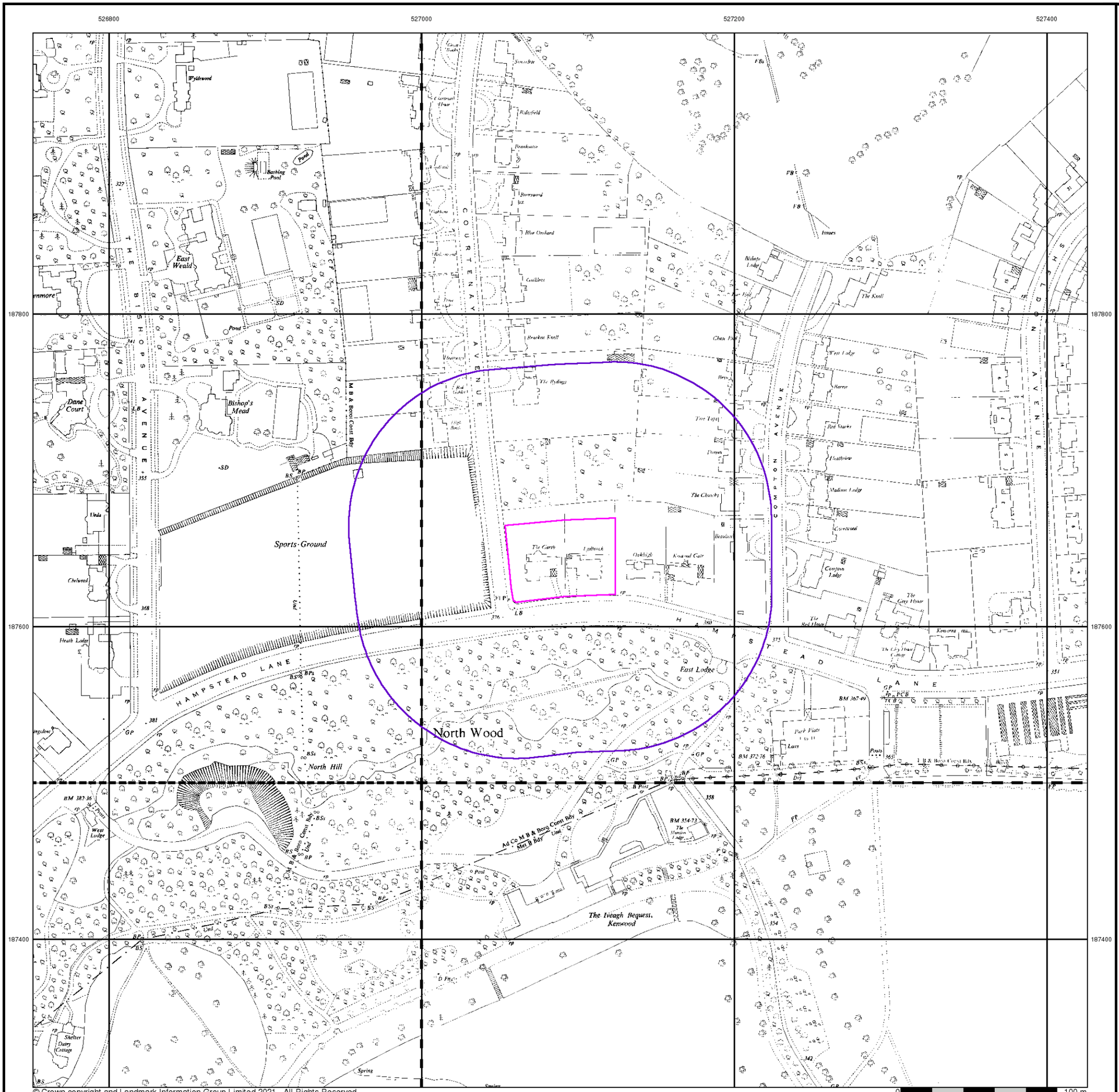
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

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Ordnance Survey Plan

Published 1952

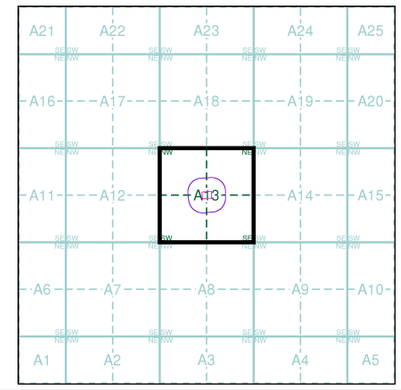
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

TQ2687NE 1952 1:1,250	TQ2787NW 1952 1:1,250
TQ2687SE 1952 1:1,250	TQ2787SW 1952 1:1,250

Historical Map - Segment A13



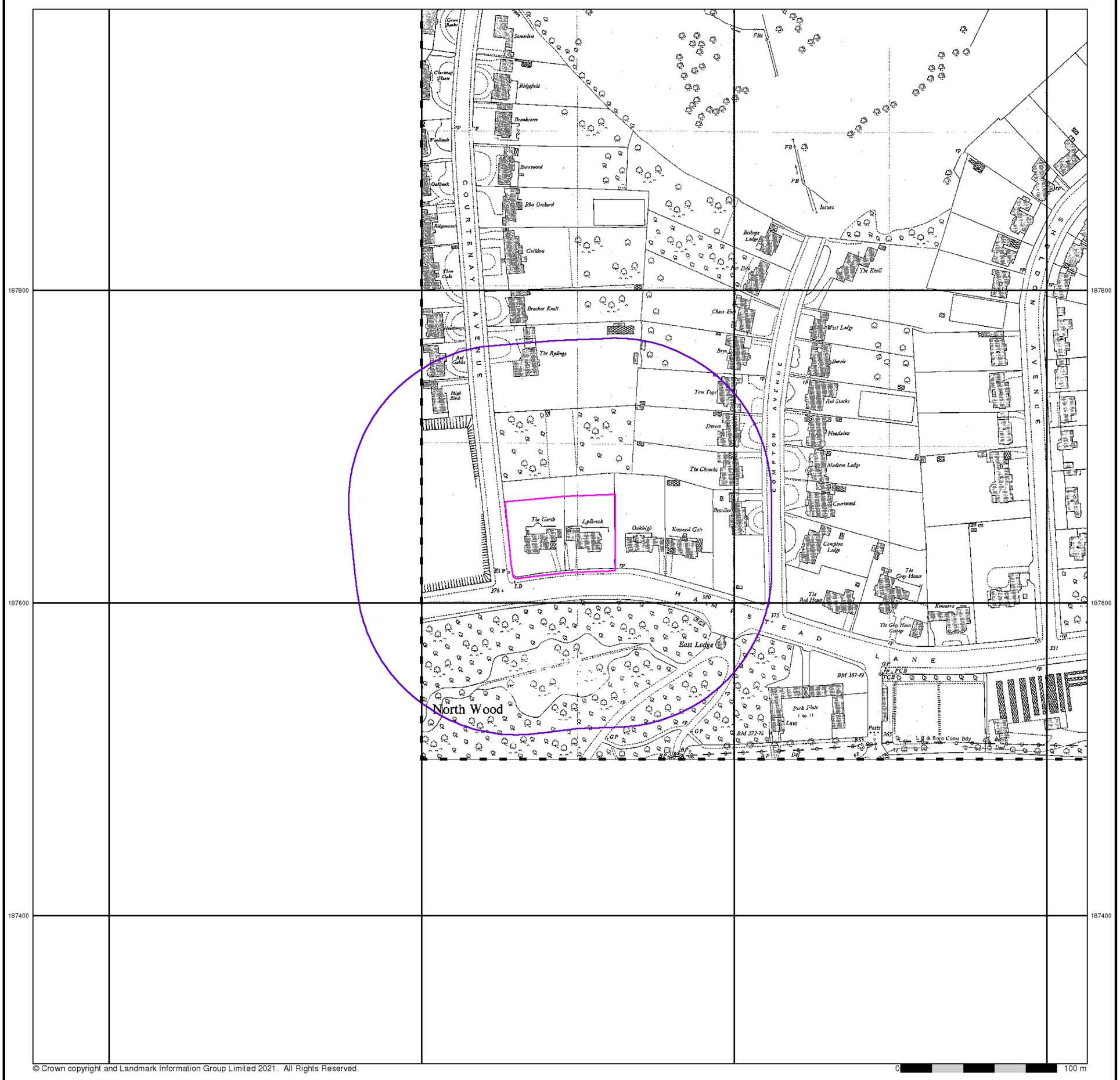
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

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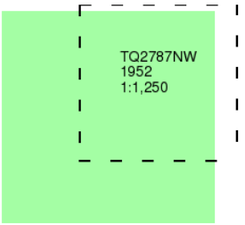
Additional SIMs

Published 1952

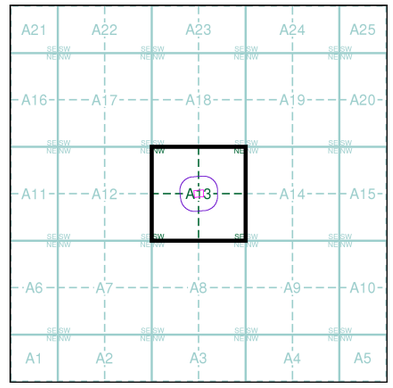
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



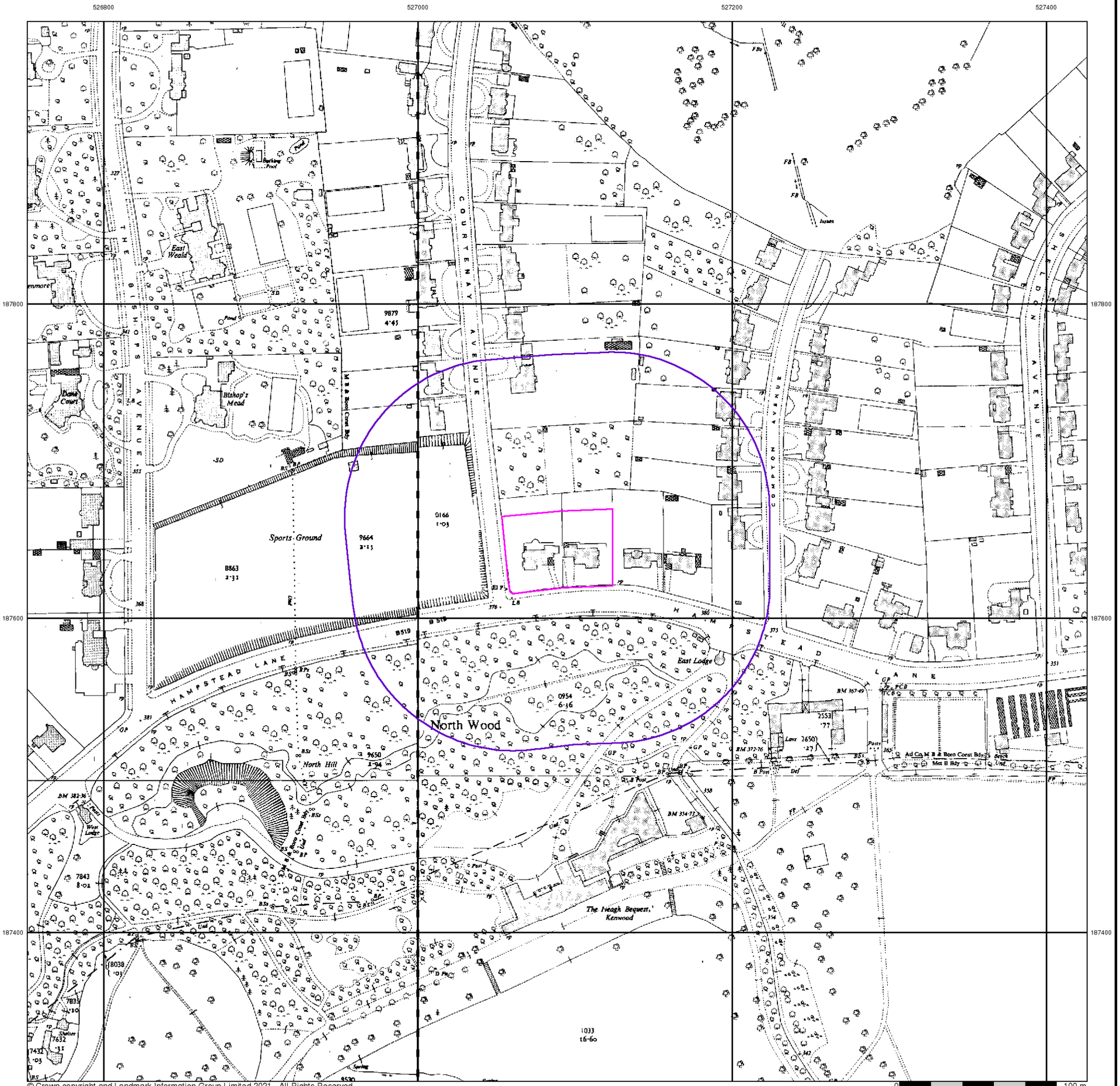
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

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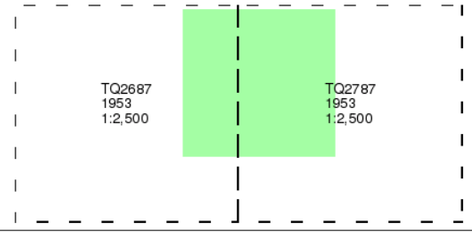
Ordnance Survey Plan

Published 1953

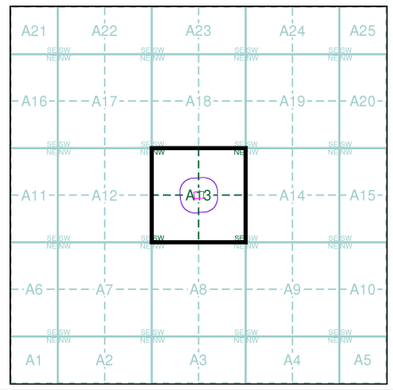
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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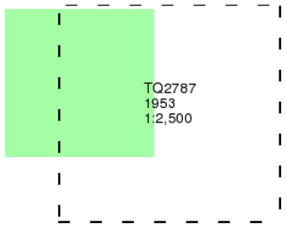
Additional SIMs

Published 1953

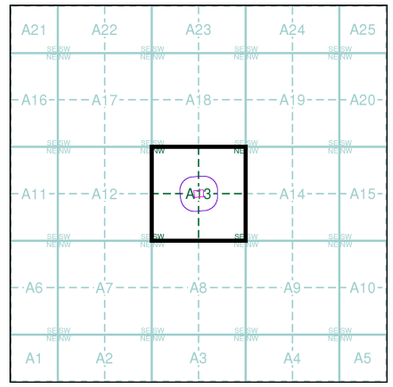
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



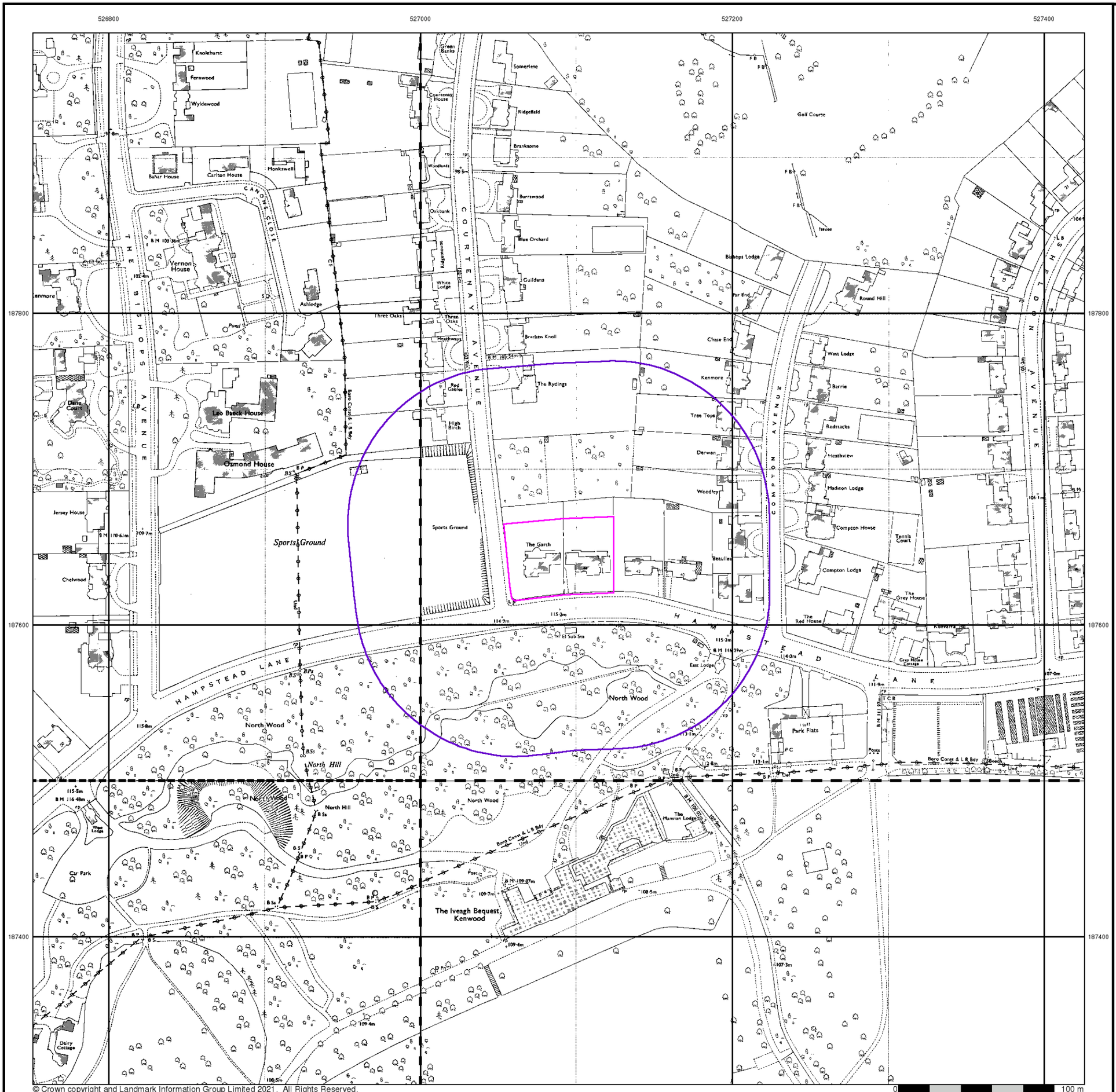
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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Ordnance Survey Plan

Published 1970 - 1975

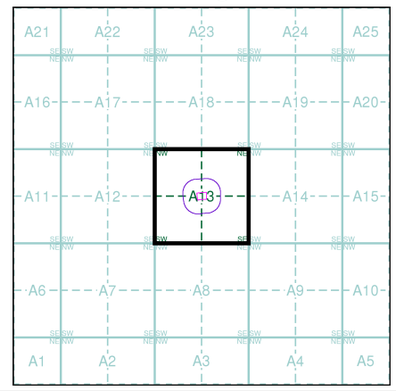
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

TQ2687NE 1970 1:1,250	TQ2787NW 1975 1:1,250
TQ2687SE 1974 1:1,250	TQ2787SW 1975 1:1,250

Historical Map - Segment A13

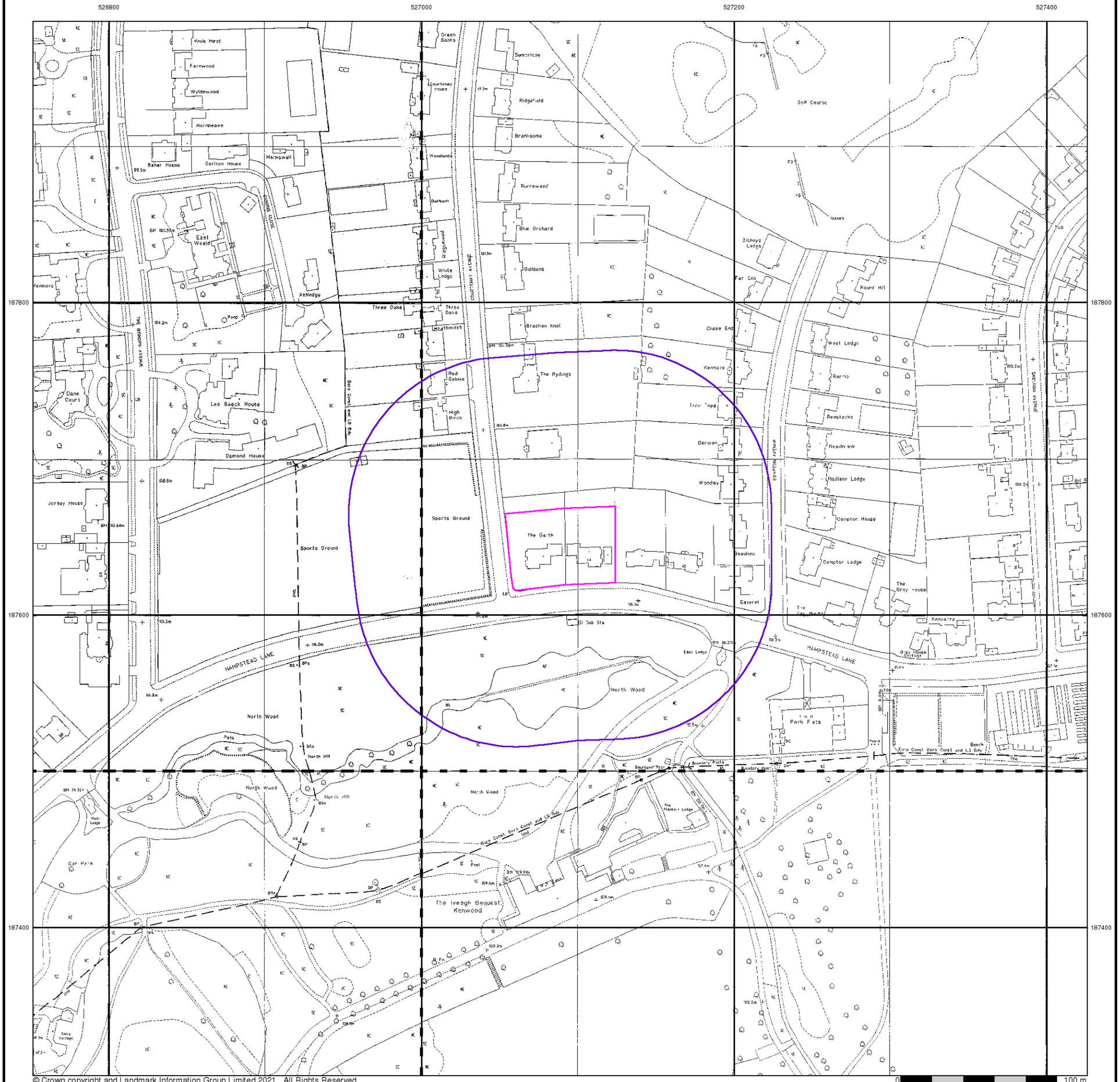


Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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Large-Scale National Grid Data

Published 1991

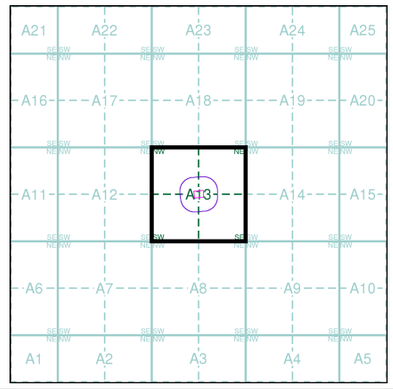
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

TQ2687NE 1991 1:1,250	TQ2787NW 1991 1:1,250
TQ2687SE 1991 1:1,250	TQ2787SW 1991 1:1,250

Historical Map - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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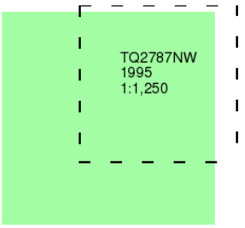
Large-Scale National Grid Data

Published 1995

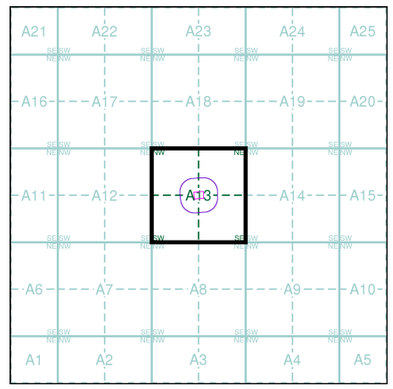
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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0 400 m

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10k Raster Mapping

Published 1999

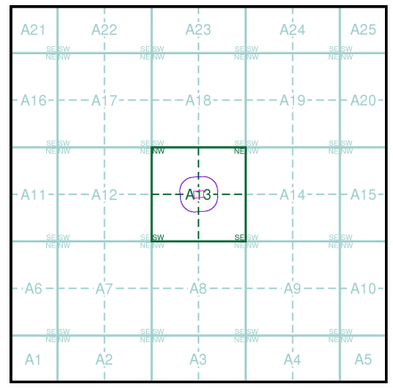
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TQ28NE
1999
1:10,000

Historical Map - Slice A



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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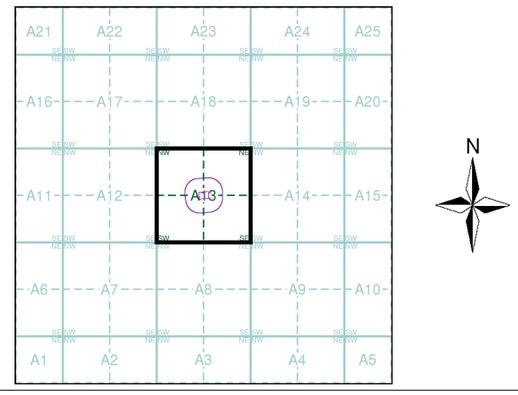


Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



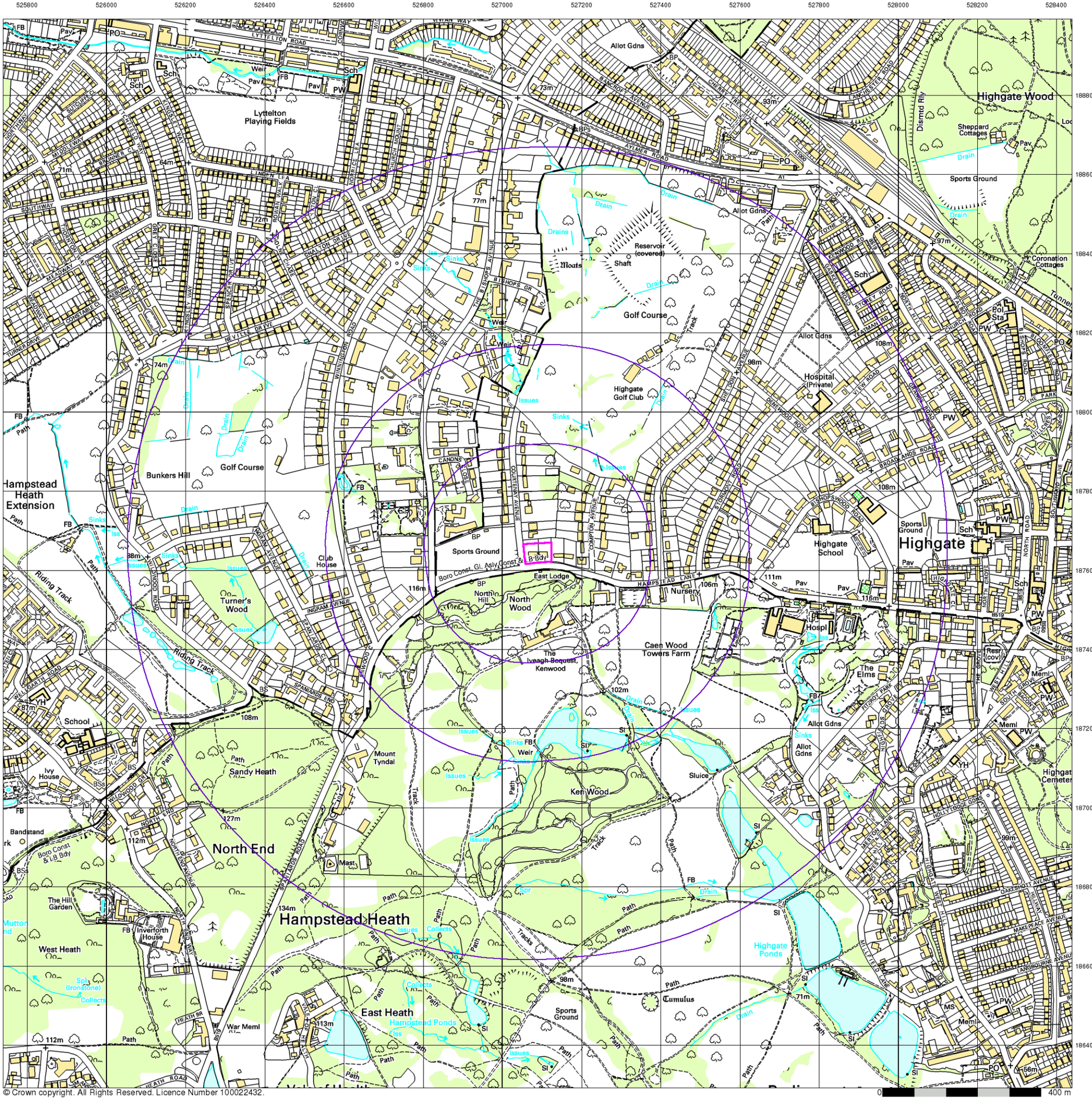
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	100

Site Details

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10k Raster Mapping

Published 2006

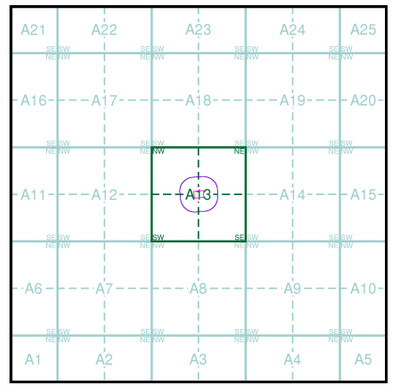
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TQ28NE
2006
1:10,000

Historical Map - Slice A



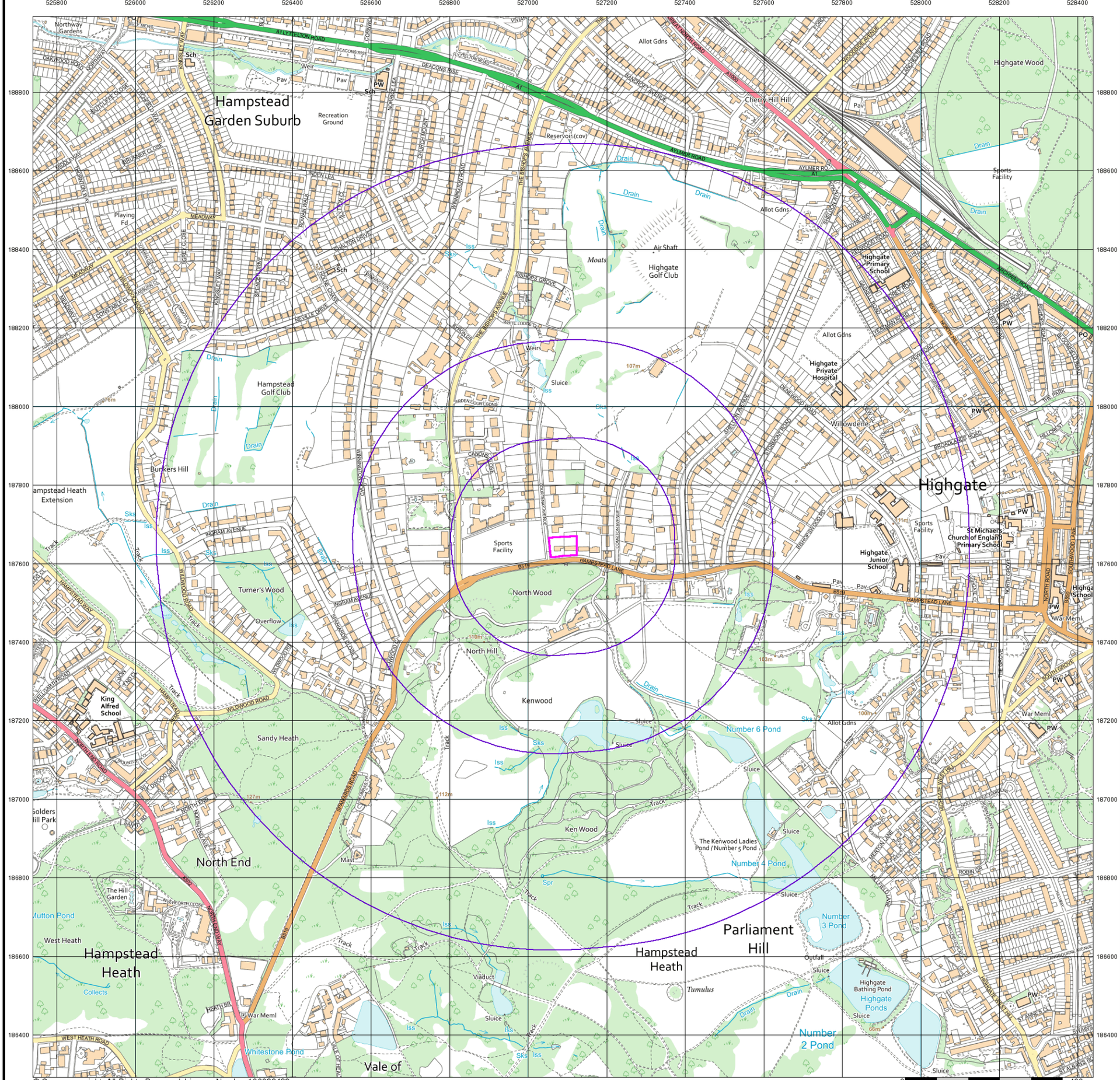
Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

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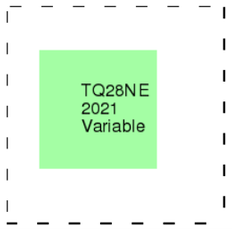
VectorMap Local

Published 2021

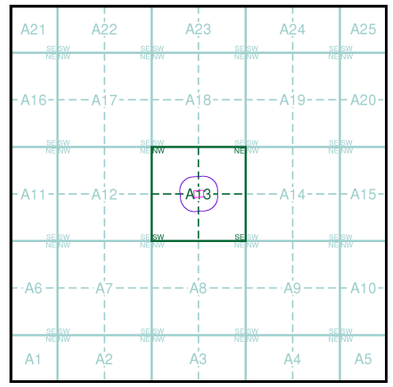
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	280107221_1_1
Customer Ref:	J21167
National Grid Reference:	527090, 187640
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

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1st Line Defence Limited
Unit 3, Maple Park, Essex Road, Hoddesdon,
Herts, EN11 0EX
Tel: +44 (0)1992 245 020
E-mail: info@1stlinedefence.co.uk
Company No: 7717863
VAT No: 128 8833 79

www.1stlinedefence.co.uk

Preliminary UXO Risk Assessment

Client	GEA Ltd.
Project	44 and 46 Hampstead Lane, London
Site Address	44 and 46 Hampstead Lane, London, N6 4LL
Report Reference	EP13625-00
Date	11/06/21
Originator	AJS

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the 44 and 46 Hampstead Lane site in London. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

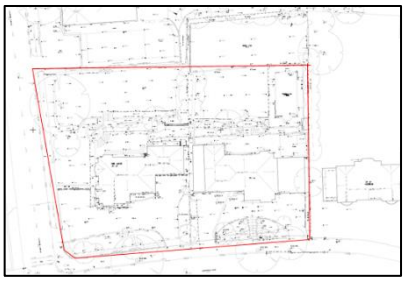
This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.

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Risk Assessment Considerations	
Site location and description/current use	The site is located along Hampstead Lane, in the London Borough of Haringey.  Recent aerial imagery indicates that the site is occupied by two large detached properties, along with associated garden areas and a swimming pool in the east. Further residential structures, tennis courts and vegetation border the site to the north and east. Hampstead Lane is located adjacent to the southern section of the site, with Courtney Avenue to the west. The site is approximately centred on the OS grid reference: **TQ 27104 87639**.
Are there any indicators of current/historical military activity on/close to the site?	Low-resolution WWII-era aerial imagery shows ground disturbances within a sports field to the west of the site, across Courtney Avenue, which depict physical characteristics typical of war-era Allied features. No specific information on the exact nature or usage of these features, nor whether the do indeed relate to Allied activity, can be found, although such areas were often requisitioned for the use of buildings defensive emplacement or undertaking training. Despite this, given the sites separation from this area by Courtney Avenue and the residential nature of the site, the proximity of this area is not anticipated to pose a significant risk to the site itself. Although the closest recorded Heavy Anti-Aircraft (HAA) battery was situated approximately 1.4km north-west of the site, these projectiles can have a range of over 15km. The conditions in which unexploded anti-aircraft ordnance may have fallen unrecorded within the proposed site are analogous to that of German aerial delivered ordnance.
What was the pre- and post-WWII history of the site?	Pre-WWII OS mapping dated 1937 indicates that the site comprised two large detached structures and associated garden areas. Bordering the site to the north are open areas of land and vegetation. To the east of the site are residential housing structures. To the south of the site lies *Hampstead Lane,* and west of the site is *Courtney Road*. Post-WWII OS mapping dated 1952 indicates no significant change to the site boundary or the surrounding area. Properties on site are now labelled as *The Garth* and *Lydbrook.* Courtney Road is now recorded as *Courtney Avenue.*
Was the area subject to bombing during WWII?	During WWII, the site was located within the Municipal Borough of Hornsey. According to official Home Office statistics, Hornsey sustained an overall high density of bombing, with an average of 123.6 items of ordnance recorded per 1,000 acres of land. This consisted of 292 high explosive (HE) bombs, nine parachute mines, 28 oil bombs, five phosphorus bombs, 17 V-1 pilotless aircraft bombs, and four V2 long range rocket bombs, accumulating in 376 incidents across 2,265 acres of land. London bomb census mapping does not record any bomb strikes on or bordering the site boundary. The nearest recorded incidents comprise an incendiary bomb shower to the west of the site across Courtney Avenue, and a HE bomb strike approximately 70m east of the site, at the junction of Hampstead Lane and Compton Avenue. A local Hornsey bomb plot map also does not record any incidents on or adjacent the

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	boundary, though several additional high explosive bombs are noted further north-east and west of the site.
Is there any evidence of bomb damage on/close to the site?	Middlesex County Council (MCC) war damage mapping does not attribute any serious bomb damage to structures within the site boundary or its surrounding vicinity. This is supported by low-resolution WWII-era aerial imagery, available on this occasion, which indicates the buildings on site survived the war structurally intact.
To what degree would the site have been subject to access?	Access to the site is anticipated to have been frequent during WWII, given the residential nature of the site. However, it should be noted that the discovery of UXO in the rear gardens of properties would generally rely on the vigilance of individual residents.
To what degree has the site been developed post-WWII?	Structures on site have undergone minor alterations/extensions, and a pool has been built in the eastern section post-WWII.
What is the nature and extent of the intrusive works proposed?	The nature and extent of works proposed was not available at the time of writing.

Summary and Conclusions

During WWII, the site was located within the Municipal Borough of Hornsey. According to official Home Office statistics, Hornsey sustained an overall high density of bombing, with an average of 123.6 items of ordnance recorded per 1,000. Despite this, London bomb census mapping does not record any bomb strikes on or bordering the site boundary. The nearest recorded incidents comprise an incendiary bomb shower to the west of the site across Courtney Avenue, and a HE bomb strike approximately 70m east of the site. A local Hornsey bomb plot map also does not record any incidents on or adjacent the boundary, though several incidents are noted in the vicinity.
No positive evidence of bomb damage could be found within the site location. MCC war damage mapping does not attribute any serious bomb damage to structures within the site boundary or its surrounding vicinity. This is supported by low-resolution WWII-era aerial imagery, which indicates the properties on site survived the war structurally intact. As such, access to the site is anticipated to have been frequent throughout WWII, given the residential nature of the site. Frequent access may increase the likelihood of UXO indicators being seen and reported, although it should be noted that the discovery of UXO in the rear gardens of properties would generally rely on the vigilance of individual residents.

Recommendations

Given the findings of this preliminary report, the risk from UXO on site is not considered to be significantly elevated above the background level for London. It is therefore recommended that **no further research** be undertaken for this site. Whilst it would be possible to conduct a Detailed UXO Risk Assessment, to analyse additional local bombing records, it is not thought likely that the acquisition of such records would significantly alter the findings of this report

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

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It should be noted that although the risk from unexploded ordnance on this site has been assessed as low/minimal, this does not mean there is 'no' risk of encountering UXO. This preliminary report has been undertaken with due diligence, and all reasonable care has been taken to access and analyse relevant historical information. By necessity, when dealing historical evidence, and when making assessments of UXO risk, various assumptions have to be made which we have discussed and justified within this report. Our reports take a common-sense and practical approach to the assessment of UXO risk, and we strive to be reasonable and pragmatic in our conclusions. As referenced, it would be possible to undertake further research into this site, but based on the evidence to hand, this is not deemed strictly necessary, and no reasonably justifiable requirement for proactive on-site mitigation has been identified.

It should however be stressed that if any suspect items are encountered during the proposed works, 1st Line Defence should be contacted for advice/assistance, and to re-assess the risk as necessary. Furthermore, we would recommend that ground personnel are always made aware of the potential for encountering UXO, what to look out for and what to do in the unlikely event that a suspect item is encountered, and that a UXO Risk Management Plan is put together for the proposed works. We would be happy to provide a template and guidance for this – contact us on 01992 245020. Should the scope of works change or additional works be proposed, 1st Line Defence should be contacted to re-evaluate the risk.

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Classification of Consequence

Classification	Definition	Examples
Severe	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings / property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular of Contaminated Land, DETR, 2000). Damage to sensitive buildings / structures / services or the environment.	Pollution of non-classified groundwater Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

Classification of Probability

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

From Rudland, DJ, Lancefield, RM and Mayell, PN (2001) *Contaminated land risk assessment. A guide to good practice.* CIRIA Pub C552

Risk Assessment Matrix

		Consequence			
		Severe	***Medium***	***Mild***	***Minor***
Probability	***High likelihood***	**Very high risk**	**High risk**	**Moderate risk**	Moderate / low risk
	Likely	**High risk**	**Moderate risk**	Moderate / low risk	Low risk
	Low likelihood	**Moderate risk**	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	Very low risk	Very low risk

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

From Rudland, DJ, Lancefield, RM and Mayell, PN (2001) *Contaminated land risk assessment. A guide to good practice.* CIRIA Pub C552

No. 1
Courtenay Avenue

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

L K J H G F E D C B A

5/05 12/06 16/07

C/04

300mm thick RC Liner Wall
300mm thick RC Liner Wall
300mm thick RC Liner Wall
450mm thick RC Liner Wall
300mm thick RC Liner Wall

750 mm thick
RC Raft Slab

MH
MH
MH

Lift
Stair
2
Lift

RC Wall
RC Wall
RC Wall
RC Wall

Stair
1
Lift

Car
Lift 1
Car
Lift 2

Sump
Pit
Sump
Pit

No. 42
Hampstead Lane

C/04

5/05 12/06 16/07

0m 2m 4m 6m 8m 10m

SCALE 1:100 @ A1

0 100mm WHEN PLOTTED @ 1:1 FOR A1 100 50mm WHEN PLOTTED @ 1:2 FOR A3 200

NOTES

1. This drawing shall be read in conjunction with Wolff Architects Planning Drawings.
2. Structural layouts are based of the Wolff Architects Revit Model:- **1627-AR-Hampstead Lane (07.06.2021)**
3. Do not scale any dimensions. All dimensions are in millimetres and to be checked on site.

Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

PLANNING

Architect
WOLFF ARCHITECTS

Project Title
44 - 46 HAMPSTEAD LANE
LONDON N6 4LL

Drawing Title
BASEMENT
GENERAL ARRANGEMENT

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web www.maengineers.com

Drawn		Checked	
SH	JUNE 2021	JMcS	JUNE 2021

Scale	Size
1 : 100	A1
1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	01	P1

No. 1
Courtenay Avenue

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

L K J H G F E D C B A

RC Ground Beam
300 mm thick RC Slab
RC Ground Beam
RC Ground Beam
Stair 3
RC Ground Beam
RC Ground Beam
300 mm thick RC Slab
RC Ground Beam

RC Beam
RC Beam
RC Beam
RC Beam
RC Beam
RC Beam
RC Beam
Stair 4
RC Liner Wall

300 mm thick RC Slab
RC Beam
RC Beam
RC Beam
RC Beam
300mm thick RC Retaining Wall
Lift
RC Wall
Stair 2
Lift
RC Wall
Stair 1
Lift
RC Wall
Car Lift 1
RC Wall
Car Lift 2
450mm thick RC Liner Wall
300mm thick RC Liner Wall

No. 42
Hampstead Lane

Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

PLANNING

Architect
WOLFF ARCHITECTS

Project Title
44 - 46 HAMPSTEAD LANE
LONDON N6 4LL

Drawing Title
LOWER GROUND FLOOR
GENERAL ARRANGEMENT

NOTES

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0m 2m 4m 6m 8m 10m

SCALE 1:100 @ A1

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Scale	Size
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1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	02	P1

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No. 1
Courtenay Avenue

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

L K J H G F E D C B A

300 mm thick RC Slab

Stair 3

300 mm thick RC Slab

Stair 4

300mm thick RC Retaining Wall

Opening to Lower Ground Level

300 mm thick RC Slab

RC Beam

Lift

Stair 2

Lift

RC Beam

RC Beam RC Beam RC Beam RC Beam RC Beam RC Beam

Lift

Stair 1

Car Lift 1

Car Lift 2

5/05

12/06

16/07

C/04

No. 42
Hampstead Lane

HAMPSTEAD LANE

0m 2m 4m 6m 8m 10m

SCALE 1:100 @ A1

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Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

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WOLFF ARCHITECTS

Project Title
44 - 46 HAMPSTEAD LANE
LONDON N6 4LL

Drawing Title
GROUND FLOOR
GENERAL ARRANGEMENT

NOTES

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SH	JUNE 2021	JMcS	JUNE 2021

Scale	Size
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1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	03	P1



C SECTION C-C
1 : 100

Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

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Project Title
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LONDON N6 4LL

Drawing Title
SECTION C-C

NOTES

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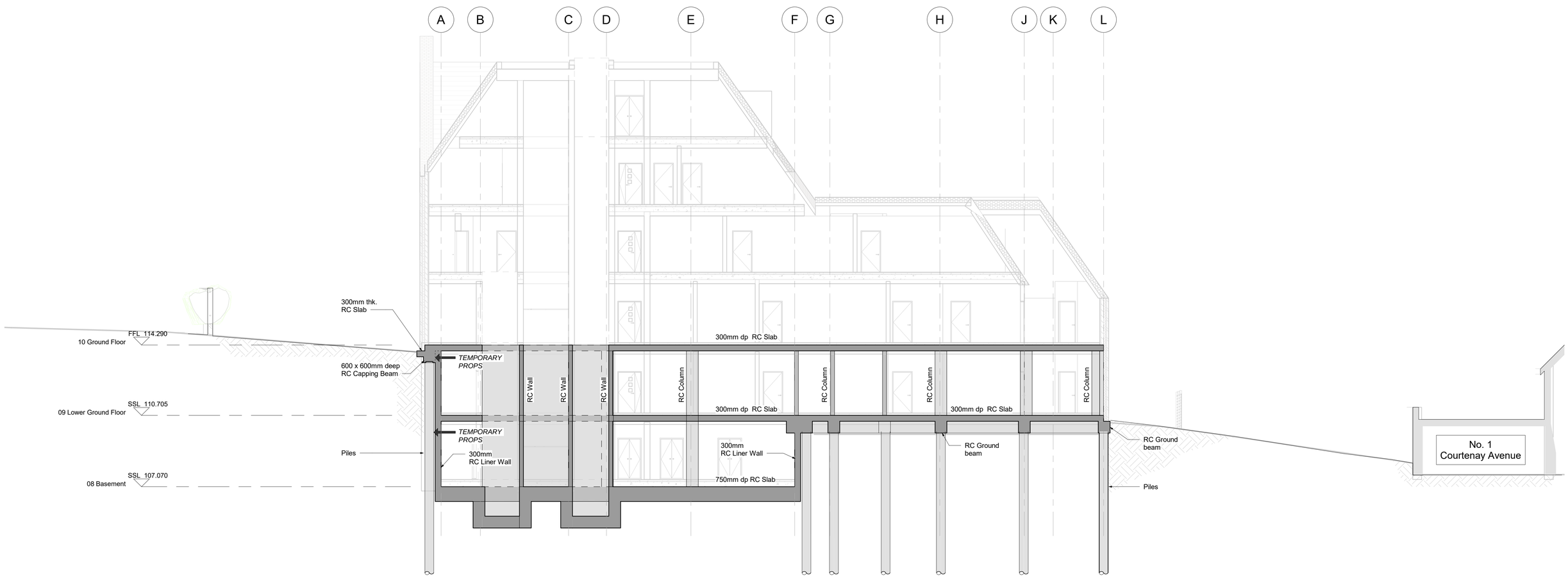
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Scale	Size
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1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	04	P1

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5 SECTION 5-5
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Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

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Architect
WOLFF ARCHITECTS

Project Title
44 - 46 HAMPSTEAD LANE
LONDON N6 4LL

Drawing Title
SECTION 5-5

NOTES

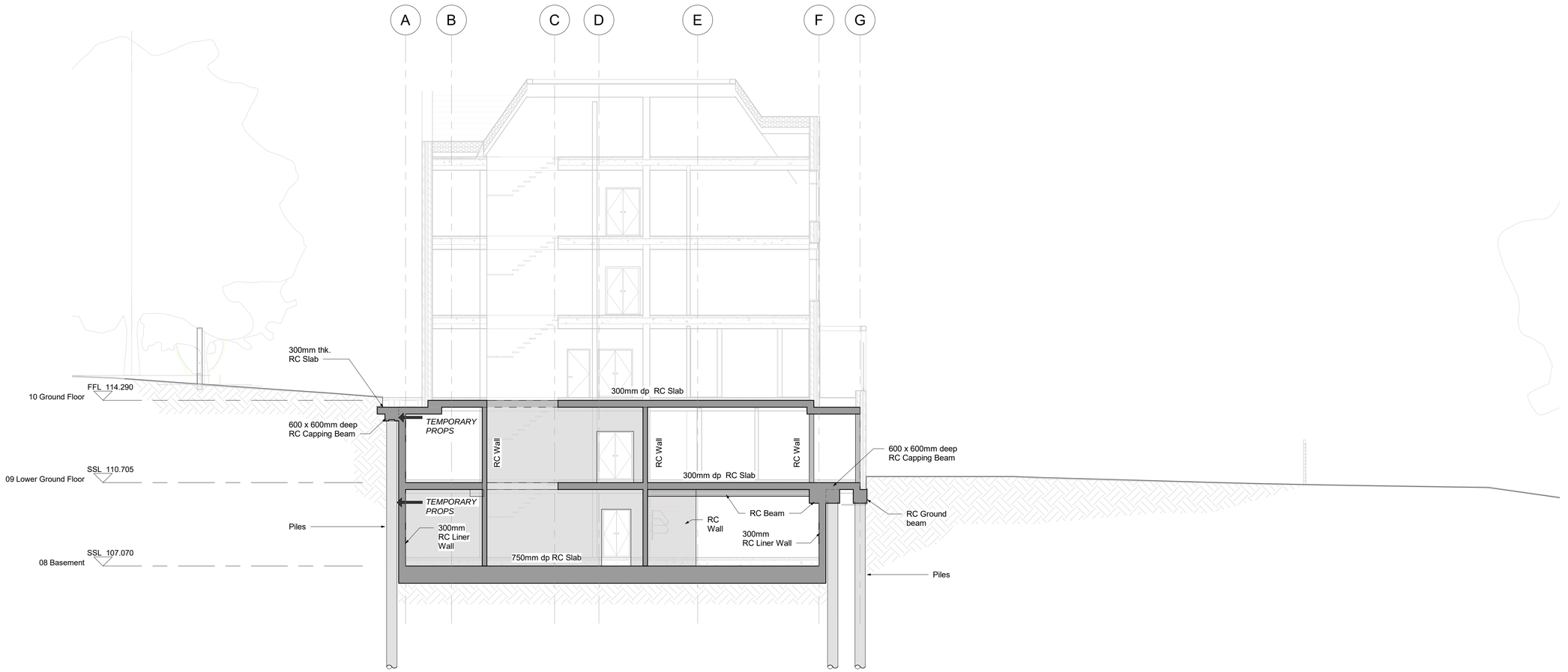
1. This drawing shall be read in conjunction with Wolff Architects Planning Drawings.
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Scale	Size
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1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	05	P1



12 SECTION 12-12

1 : 100

Rev.	Date	Description	By
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Architect
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Project Title
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LONDON N6 4LL

Drawing Title
SECTION 12-12

NOTES

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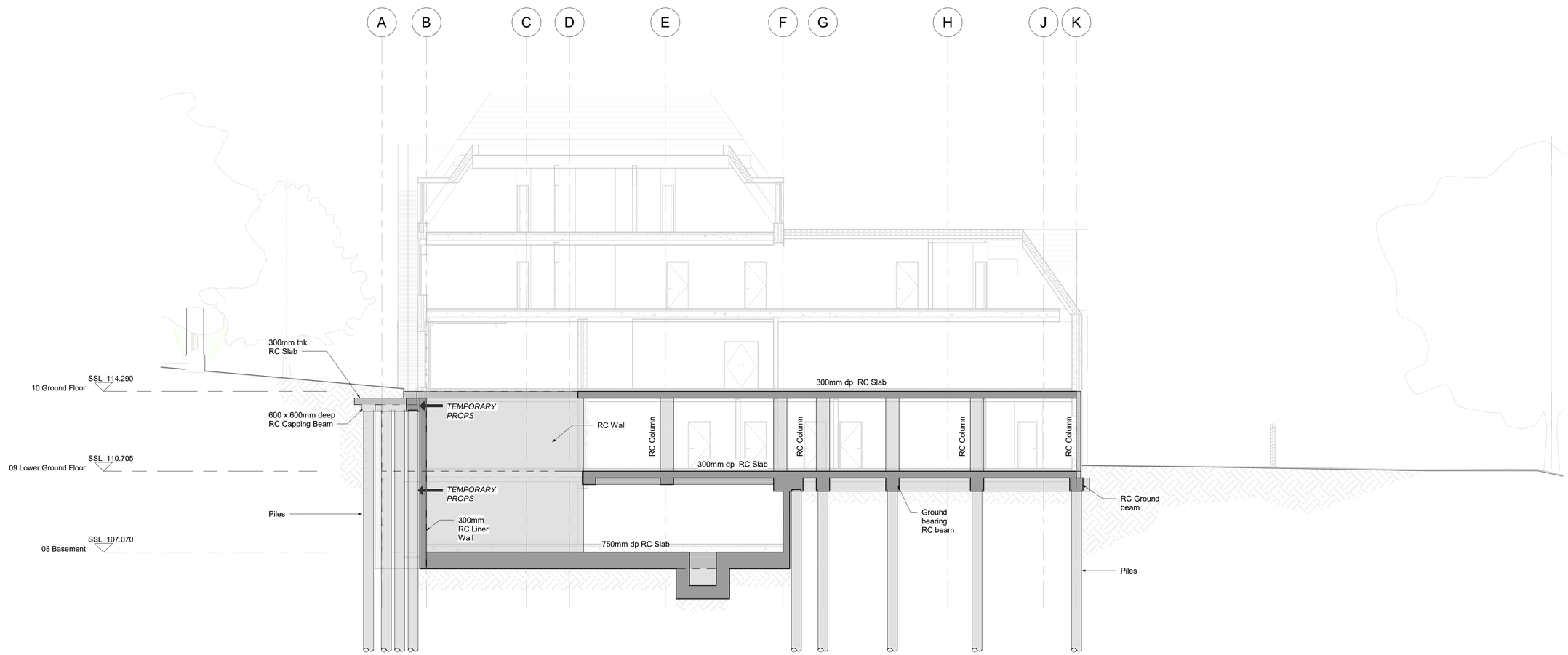
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Scale	Size
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Project No.	Drawing No.	Rev.
P5104	06	P1

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16 SECTION 16-16
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Rev.	Date	Description	By
P1	16.06.2021	ISSUED FOR PLANNING APPLICATION	SH

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WOLFF ARCHITECTS

Project Title
44 - 46 HAMPSTEAD LANE
LONDON N6 4LL

Drawing Title
SECTION 16-16

NOTES

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Scale	Size
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1 : 200	A3

Project No.	Drawing No.	Rev.
P5104	07	P1

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GEA

Geotechnical & Environmental Associates

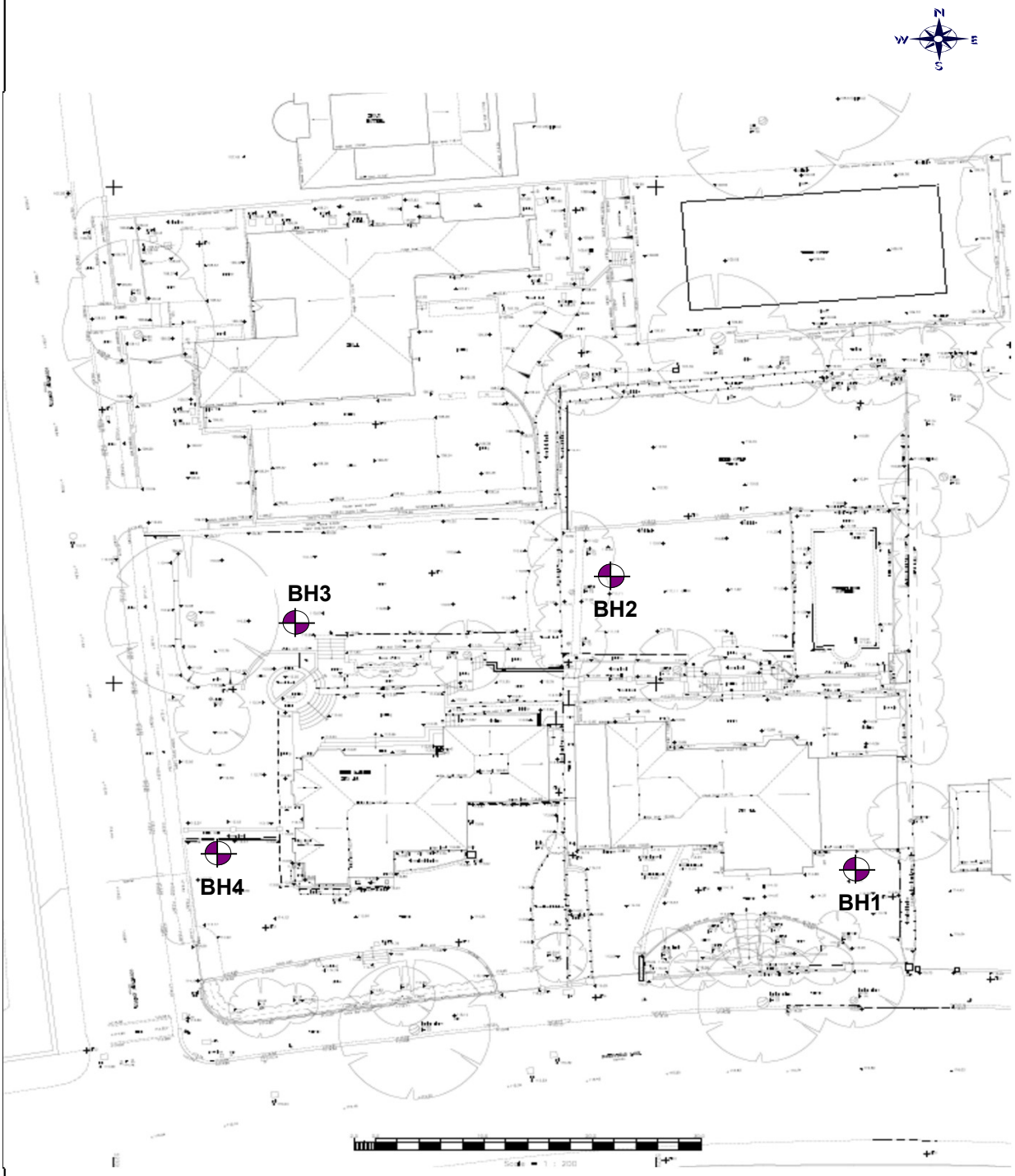
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Site Plan

Site	44-46 Hampstead Lane, London N6 4LL
Client	Harrison Varma
Engineer	Michael Alexander Consulting Engineers

Job Number J21167A

Sheet 1 / 1



GEA

Geotechnical & Environmental Associates
Widbury Barn | Widbury Hill | Ware | SG12 7QE

Site
44-46 Hampstead Lane, London, N6 4LL

Number
BH1

Excavation Method
Opendrive lined percussive sampler

Dimensions

Ground Level (mOD)
114.30

Client
Harrison Varma

Job Number
J21167A

Location
527127 E 187632 N

Dates
16/12/2021

Engineer
Michael Alexander Consulting Engineers

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				114.25	0.05	Tarmac		
					(0.45)	Made Ground (tarmac rubble with gravel, brick and concrete)		
0.50-1.00	D1			113.80	0.50			
					(0.40)	Made Ground (dark grey to greenish grey sandy clay with gravel, brick, ash, charcoal and staone fragments)		
				113.40	0.90			
1.00-1.45	SPT		1,2/2,2,2,2		(0.25)	Made Ground (dark greenish grey sandy clay with occasional brick fragments)		
				113.15	1.15			
1.40	D2				(0.45)	Initially grey becoming brownish grey clayey SAND		
				112.70	1.60	Firm pale orange-brown mottled grey and orange-brown very sandy CLAY		
2.00-2.45	SPT		2,3/4,4,4,4					
2.00	D3							
3.00-3.45	SPT		2,2/2,2,3,4					
3.00	D4				(3.30)			
4.00-4.45	SPT		3,2/2,4,4,4					
				109.40	4.90	Medium dense pale orange-brown very clayey SAND		
5.00-5.45	SPT		2,4/4,3,4,4		(0.30)			
5.00	D5			109.10	5.20	Firm pale orange-brown sandy to very sandy CLAY		
6.00-6.45	SPT		3,3/3,3,4,4		(1.70)			
6.00	D6							
				107.40	6.90	Medium dense pale orange-brown clayey SAND		▽1
7.00	D7		Water strike(1) at 7.00m.					
7.00-7.45	SPT		4,4/4,5,6,5		(1.10)			
				106.30	8.00	Complete at 8.00m		

Remarks
Starter pit excvated to 1.0 m
Borehole collapsed back to 7.0 m on completion
Groundwater monitoring standpipe installed to 7.0 m; refer to spearate sheet for details

Scale (approx)
1:50

Logged By
MP

Figure No.
J21167A.BH1

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GEA

Geotechnical & Environmental Associates
Widbury Barn | Widbury Hill | Ware | SG12 7QE

Site	Number
44-46 Hampstead Lane, London, N6 4LL	BH2

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Opendrive lined percussive sampler		111.00	Harrison Varma	J21167A
	Location	**Dates**	**Engineer**	**Sheet**
	527096 E 187662 N	16/12/2021	Michael Alexander Consulting Engineers	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	D1			110.50	(0.50) 0.50	Made Ground (brown silty sandy clay with occasional gravel, rootlets and rare brick)		
0.70	D2					Firm pale orange-brown mottled grey and orange-brown sandy to very sandy CLAY with rootlets		
1.50	D3			109.00	(1.50) 2.00			
3.00	D4		Water strike(1) at 3.60m.	106.90	(2.10) 4.10	Firm pale orange-brown sandy to very sandy CLAY; becoming stiff at 4.0 m		▽1
						Terminated at 4.10m		

Remarks
Starter pit excvated to 1.0 m
Borehole terminated due to refusal at 4.1 m; collapsed back to 3.2 m
Groundwater monitoring standpipe installed to 3.2 m; refer to spearate sheet for details

Scale (approx)	Logged By
1:50	MP

Figure No. J21167A.BH1

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Widbury Barn | Widbury Hill | Ware | SG12 7QE

Site
44-46 Hampstead Lane, London, N6 4LL

Number
BH3

Excavation Method
Drive-in Windowless Sampler

Dimensions

Ground Level (mOD)
110.90

Client
Harrison Varma

Job Number
J21167A

Location
527066 E 187658 N

Dates
16/12/2021

Engineer
Michael Alexander Consulting Engineers

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	D1				(0.60)	Made Ground (dark brown silty sandy clay with occasional gravel, rootlets and brick)		
0.70	D2			110.30	0.60	Firm pale orange-brown mottled grey and orange-brown sandy CLAY with occasional rootlets		
1.50	D3			109.40	(0.90) 1.50	Firm pale orange-brown mottled grey and orange-brown sandy CLAY with rounded to sub-rounded flint gravel		
3.00	D4			107.50	(1.90) 3.40	Terminated at 3.40m		

Remarks
Starter pit excvated to 1.0 m
Groundwater not encountered
Borehole terminated due to refual at 3.4 m

Scale (approx)
1:50

Logged By
MP

Figure No.
J21167A.BH1

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Site	Number
44-46 Hampstead Lane, London, N6 4LL	BH4

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Opendrive lined percussive sampler		113.50	Harrison Varma	J21167A
	Location	**Dates**	**Engineer**	**Sheet**
	527058 E 187634 N	16/12/2021	Michael Alexander Consulting Engineers	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	Made Ground (brown silty sandy clay with gravel, rootlets and brick)		
0.40	D1			112.80	0.70			
					(1.30)	Made Ground (brown to reddish brown / purple sandy clay with gravel, brick and ash)		
1.00-1.45	SPT		1,2/2,2,2,2					
1.50	D2							
2.00-2.45	SPT		1,0/0,1,0,0	111.50	2.00			
					(0.25)	Firm pale brown mottled grey sandy CLAY with occasional sub-rounded flint gravel		
				111.25	2.25			
2.50	D3				(0.65)	Firm dark grey becoming grey mottled pale brown sandy CLAY		
				110.60	2.90			
3.00-3.45	SPT		2,2/3,3,2,3			Firm pale brown mottled grey becoming greenish grey and brown sandy CLAY		
3.50	D4				(1.30)			
4.00-4.45	SPT		2,2/3,2,3,3					
				109.30	4.20			
4.40	D5				(0.40)	Pale greenish grey clayey SAND		
				108.90	4.60			
4.80	D6				(0.40)	Pale brown mottled grey and orange-brown clayey SAND		
5.00-5.45	SPT		3,3/3,3,3,3	108.50	5.00			
					(1.00)	Firm pale orange-brown mottled grey sandy CLAY		
			Water strike(1) at 6.00m.	107.50	6.00			▽1
6.00-6.45	SPT		3,3/4,3,3,3			Medium dense becoming dense pale brown and greenish grey clayey SAND		
6.50	D7							
6.50	D8							
6.80-7.25	SPT		4,6/6,8,9,10		(2.00)			
7.50	D9							
				105.50	8.00			
						Complete at 8.00m		

Remarks
Starter pit excvated to 1.0 m
Sampler refused at 6.8 m - re-run to 8.08 with smaller diamter tube
Borehole collapsed back to 6.5 m on completion
Groundwater monitoring standpipe installed to 6.5 m; refer to spearate sheet for details

Scale (approx)	Logged By
1:50	MP

Figure No. J21167A.BH1

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Site
44-46 Hampstead Lane, London, N6 4LL

Borehole Number
BH1

Installation Type
Standpipe

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 80 mm

Client
Harrison Varma

Job Number
J21167A

Location
527127 E 187632 N

Ground Level (mOD)
114.30

Engineer
Michael Alexander Consulting Engineers

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			112.30	2.00	Bentonite Seal
	▽1		107.30	7.00	Slotted Standpipe
			106.30	8.00	General Backfill

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	
16/12/21		7.00							

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Slotted Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	
01/02/22		6.80	107.50	

Remarks

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Site
44-46 Hampstead Lane, London, N6 4LL

Borehole Number
BH2

Installation Type
Standpipe

Dimensions
Internal Diameter of Tube [A] = 19 mm
Diameter of Filter Zone = 60 mm

Client
Harrison Varma

Job Number
J21167A

Location
527096 E 187662 N

Ground Level (mOD)
111.00

Engineer
Michael Alexander Consulting Engineers

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			110.00	1.00	Bentonite Seal
			107.80	3.20	Slotted Standpipe
	▽1		106.90	4.10	General Backfill

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
16/12/21		3.60							

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Slotted Standpipe

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks
01/02/22		2.50	108.50	

Remarks

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GEA
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Widbury Barn | Widbury Hill | Ware | SG12 7QE

Site
44-46 Hampstead Lane, London, N6 4LL

Borehole Number
BH4

Installation Type
Standpipe

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 80 mm

Client
Harrison Varma

Job Number
J21167A

Location
527058 E 187634 N

Ground Level (mOD)
113.50

Engineer
Michael Alexander Consulting Engineers

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			112.50	1.00	Bentonite Seal
	▽1				Slotted Standpipe
			107.00	6.50	General Backfill
			105.50	8.00	

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
16/12/21		6.00							

Groundwater Observations During Drilling

Date	Start of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Slotted Standpipe

Date	Instrument [A] Time	Depth (m)	Level (mOD)	Remarks
01/02/22		4.95	108.55	

Remarks

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Analytical Report Number : 21-29755

Project / Site name:	44-46 Hampstead Lane, London N6	**Samples received on:**	17/12/2021
Your job number:	J21167A	**Samples instructed on/ Analysis started on:**	17/12/2021
Your order number:		**Analysis completed by:**	04/01/2022
Report Issue Number:	1	**Report issued on:**	04/01/2022
Samples Analysed:	4 soil samples		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-29755
Project / Site name: 44-46 Hampstead Lane, London N6

Lab Sample Number				2120206	2120207	2120208	2120209
Sample Reference				BH1	BH2	BH3	BH4
Sample Number				0.50	0.30	0.30	0.40
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/12/2021	16/12/2021	16/12/2021	16/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	14	17	17
Total mass of sample received	kg	0.001	NONE	0.60	0.60	0.60	0.60
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	8.2	6.2	7.2	7.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	870	380	480	590
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.29	0.0069	0.013	0.019
Sulphide	mg/kg	1	MCERTS	130	2.3	1.3	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	24	7.8	7.1	8.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	2.8	2.9	2.5
Total Phenols							
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	0.68	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.32	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.99	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	1.6	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	8.5	0.60	0.95	0.91
Anthracene	mg/kg	0.05	MCERTS	1.9	< 0.05	0.22	0.23
Fluoranthene	mg/kg	0.05	MCERTS	8.3	1.4	2.3	2.3
Pyrene	mg/kg	0.05	MCERTS	7.2	1.2	2.0	2.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.2	0.89	1.3	1.3
Chrysene	mg/kg	0.05	MCERTS	2.7	0.60	1.1	1.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.9	0.62	1.0	1.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.5	0.51	0.94	0.76
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.7	0.73	1.3	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.8	0.36	0.68	0.76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.46	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	0.48	0.85	0.93
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	50.0	7.37	12.7	13.3
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	10	15	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	23	37	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	55	23	40	66
Lead (aqua regia extractable)	mg/kg	1	MCERTS	420	130	230	460
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	0.9	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	10	17	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	72	120	290

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-29755
Project / Site name: 44-46 Hampstead Lane, London N6

Lab Sample Number				2120206	2120207	2120208	2120209
Sample Reference				BH1	BH2	BH3	BH4
Sample Number				0.50	0.30	0.30	0.40
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/12/2021	16/12/2021	16/12/2021	16/12/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Petroleum Hydrocarbons							
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	170	< 10	19	69
TPH (C8 - C10) HS_1D_TOTAL	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 - C16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	10	< 4.0	< 4.0	< 4.0
TPH (C16 - C21) EH_CU_1D_TOTAL	mg/kg	1	MCERTS	30	< 1.0	5.2	12
TPH (C21 - C35) EH_CU_1D_TOTAL	mg/kg	1	MCERTS	87	< 1.0	14	42
TPH Total C8 - C35 EH_CU+HS_1D_TOTAL	mg/kg	10	MCERTS	130	< 10	19	55

U/S = Unsuitable Sample I/S = Insufficient Sample

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 21-29755
Project / Site name: 44-46 Hampstead Lane, London N6

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2120206	BH1	0.5	None Supplied	Brown loam and clay with vegetation and gravel
2120207	BH2	0.3	None Supplied	Brown loam and clay with vegetation and gravel
2120208	BH3	0.3	None Supplied	Brown loam and clay with vegetation and gravel
2120209	BH4	0.4	None Supplied	Brown loam and clay with vegetation and gravel

Analytical Report Number : 21-29755
Project / Site name: 44-46 Hampstead Lane, London N6

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 21-29755
Project / Site name: 44-46 Hampstead Lane, London N6

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

GEA

Widbury Barn
Widbury Hill
Ware
SG12 7QE

Generic Risk-Based Soil Screening Values

Site	44-46 Hampstead Lane, London N6 4LL
Client	Harrison Varma
Engineer	Michael Alexander Consulting Engineers

Job Number J21167A

Sheet 1 / 2

Proposed End Use Residential with plant uptake

Soil Organic Matter content % 6.0

Contaminant	Screening Value mg/kg	Data Source
Metals		
Arsenic	37	C4SL
Cadmium	26	C4SL
Chromium (III)	910	S4UL
Chromium (VI)	21	C4SL
Copper	2,400	S4UL
Lead	200	C4SL
Elemental Mercury	1.2	S4UL
Inorganic Mercury	40	S4UL
Nickel	180	S4UL
Selenium	350	SGV
Zinc	3,700	S4UL
Anions		
Soluble Sulphate	500 mg/l	Structures
Sulphide	50	Structures
Chloride	400	Structures
Others		
Organic Carbon (%)	6	Methanogenic potential
Total Cyanide	140	WRAS
Total Mono Phenols	420	SGV
PAH		
Naphthalene	13.00	S4UL
Acenaphthylene	920	S4UL
Acenaphthene	1,100	S4UL
Fluorene	860	S4UL
Phenanthrene	440	S4UL
Anthracene	11,000	S4UL
Fluoranthene	890	S4UL
Pyrene	2,000	S4UL
Benzo(a)anthracene	13.0	S4UL
Chrysene	27	S4UL
Benzo(b)fluoranthene	3.7	S4UL
Benzo(k)fluoranthene	100.0	S4UL
Benzo(a)pyrene	5.00	C4SL
Indeno(1 2 3 cd)pyrene	41.0	S4UL
Dibenz(a h)anthracene	0.30	S4UL
Benzo (g h i)perylene	350	S4UL
Total PAH Screen	**71.4**	B(a)P / 0.15

Contaminant	Screening Value mg/kg	Data Source
Hydrocarbons		
Banded TPH (8-10)	292	Calc1
Banded TPH (10-12)	585	Calc1
Banded TPH (12-16)	1000	Calc1
Banded TPH (16-21)	1431	Calc1
Banded TPH (21-35)	2615	Calc1
Benzene	0.87	C4SL
Toluene	610	SGV
Ethyl Benzene	350	SGV
Xylene	230	SGV
Aliphatic C5-C6	160	S4UL
Aliphatic C6-C8	530	S4UL
Aliphatic C8-C10	150	S4UL
Aliphatic C10-C12	760	S4UL
Aliphatic C12-C16	4300	S4UL
Aliphatic C16-C35	110,000	S4UL
Aromatic C6-C7	See Benzene	S4UL
Aromatic C7-C8	See Toluene	S4UL
Aromatic C8-C10	190	S4UL
Aromatic C10-C12	380	S4UL
Aromatic C12-C16	650	S4UL
Aromatic C16-C21	930	S4UL
Aromatic C21-C35	1700	S4UL
PRO (C_5 –C_{10})	1641	Calc2
DRO (C_{12} –C_{28})	115,880	Calc2
Lube Oil (C_{28} –C_{44})	111,700	Calc2
TPH	**500**	Trigger to consider speciated testing
Chlorinated Solvents		
1,1,1 trichloroethane (TCA)	39	S4UL
tetrachloroethane (PCA)	6.4	S4UL
tetrachloroethene (PCE)	0.9	S4UL
trichloroethene (TCE)	0.075	S4UL
1,2-dichloroethane (DCA)	0.019	S4UL
vinyl chloride (Chloroethene)	0.0014	S4UL
tetrachloromethane (Carbon tetra	0.13	S4UL
trichloromethane (Chloroform)	3.4	S4UL

Notes

Concentrations measured below these screening values may be considered to represent 'uncontaminated conditions' which pose a 'LOW' risk to human health. Concentrations measured in excess of these values indicate a potential risk which require further, site specific risk assessment.

C4SL - Defra Category 4 Screening value based on Low Level of Toxicological Risk

SGV - Soil Guideline Value, derived from the CLEA model and published by Environment Agency 2009 - where not superseded by C4SL

S4UL - LQM/CIEH Suitable for use Level (2015) based on 'minimal' level of risk

Calc1 - sum of thresholds for Ali & Aro fractions - assuming a 35% Aro:65% Ali ratio as is commonly encountered in the soil

Calc2 - sum of nearest available carbon range specified including BTEX for PRO fraction

Total PAH based on B(a)P / 0.15 - GEA experience indicates that Benzo(a) pyrene rarely exceeds 15% of the total PAH concentration

Geotechnical & Environmental Associates

Widbury Barn
Widbury Hill
Ware
SG12 7QE

Generic Risk-Based Soil Screening Values

Site	44-46 Hampstead Lane, London N6 4LL
Client	Harrison Varma
Engineer	Michael Alexander Consulting Engineers

Job Number J21167A

Sheet 2 / 2

Proposed End Use **Residential with plant uptake**

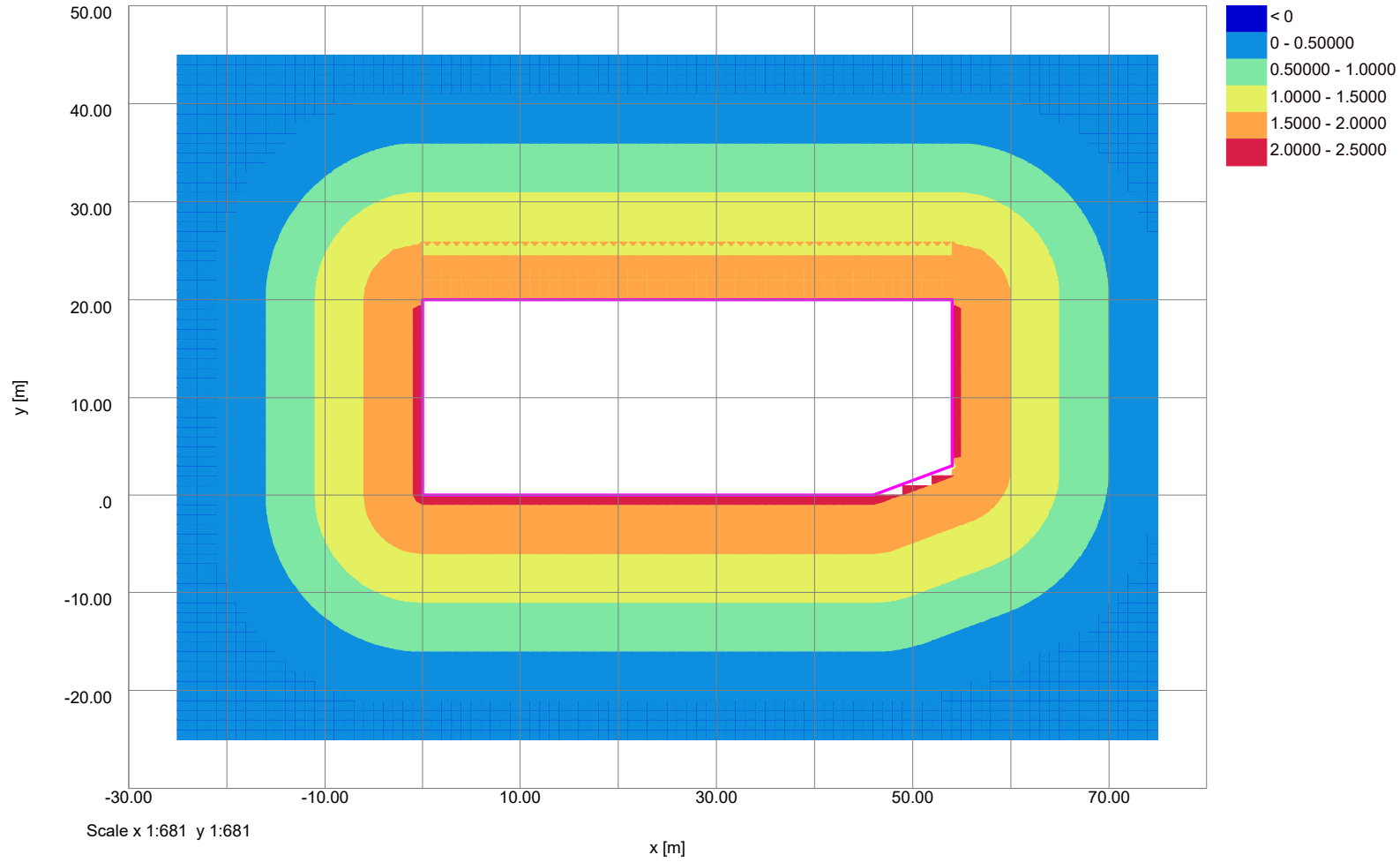
The key generic assumptions for this end use are as follows;

- ❑ that groundwater will not be a critical risk receptor;
- ❑ that the critical receptor for human health will be a young female aged 0 to 6 years old;
- ❑ that the exposure duration will be six years;
- ❑ that the building type equates to a terraced house.
- ❑ that the critical exposure pathways will be direct soil and indoor dust ingestion, consumption of home grown produce, consumption of soil adhering to home grown produce, skin contact with soils and dust, and inhalation of dust and vapours

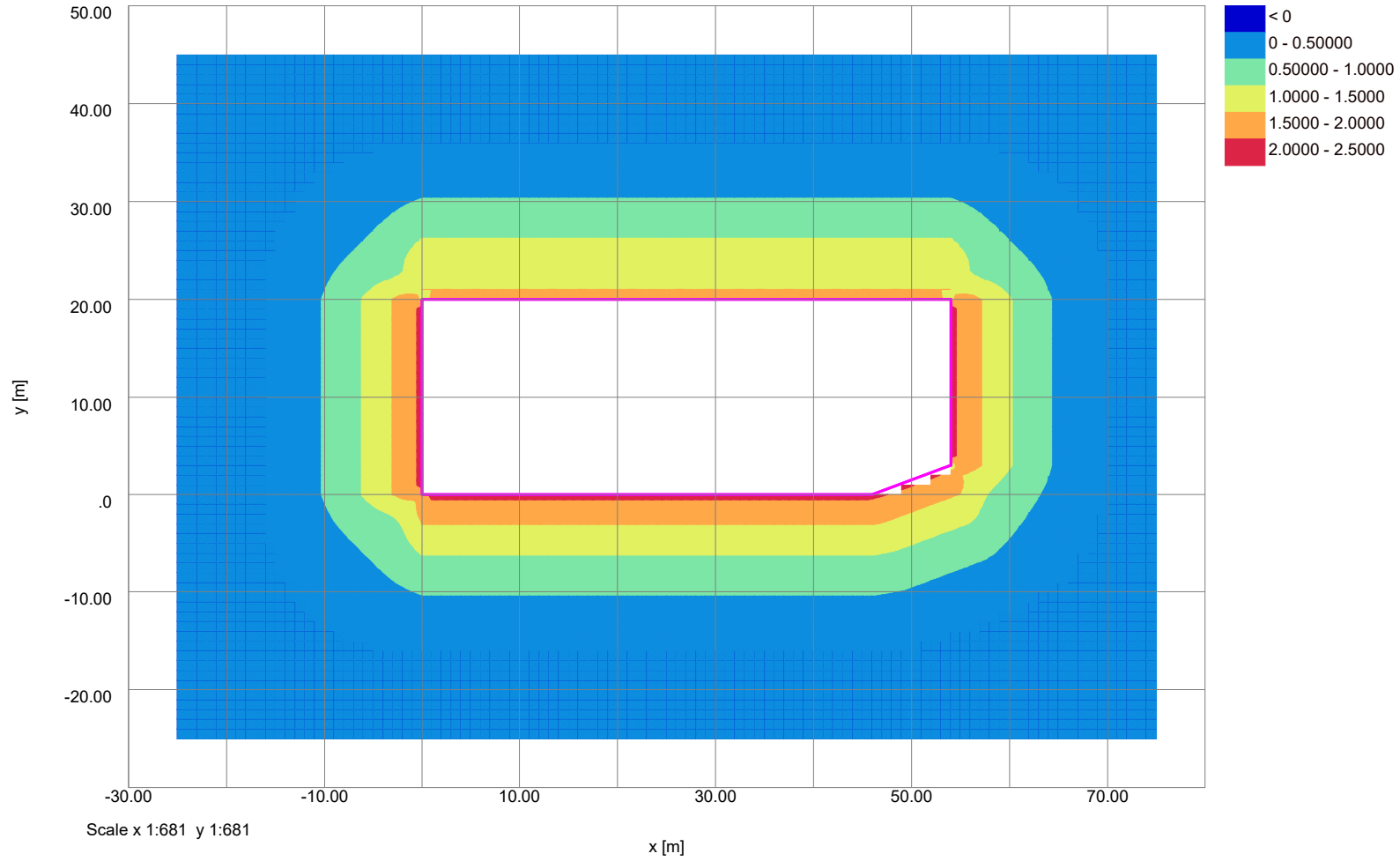
Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where concentrations are measured in excess of the generic screening value there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include:

- ❑ additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;
- ❑ site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or
- ❑ soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.

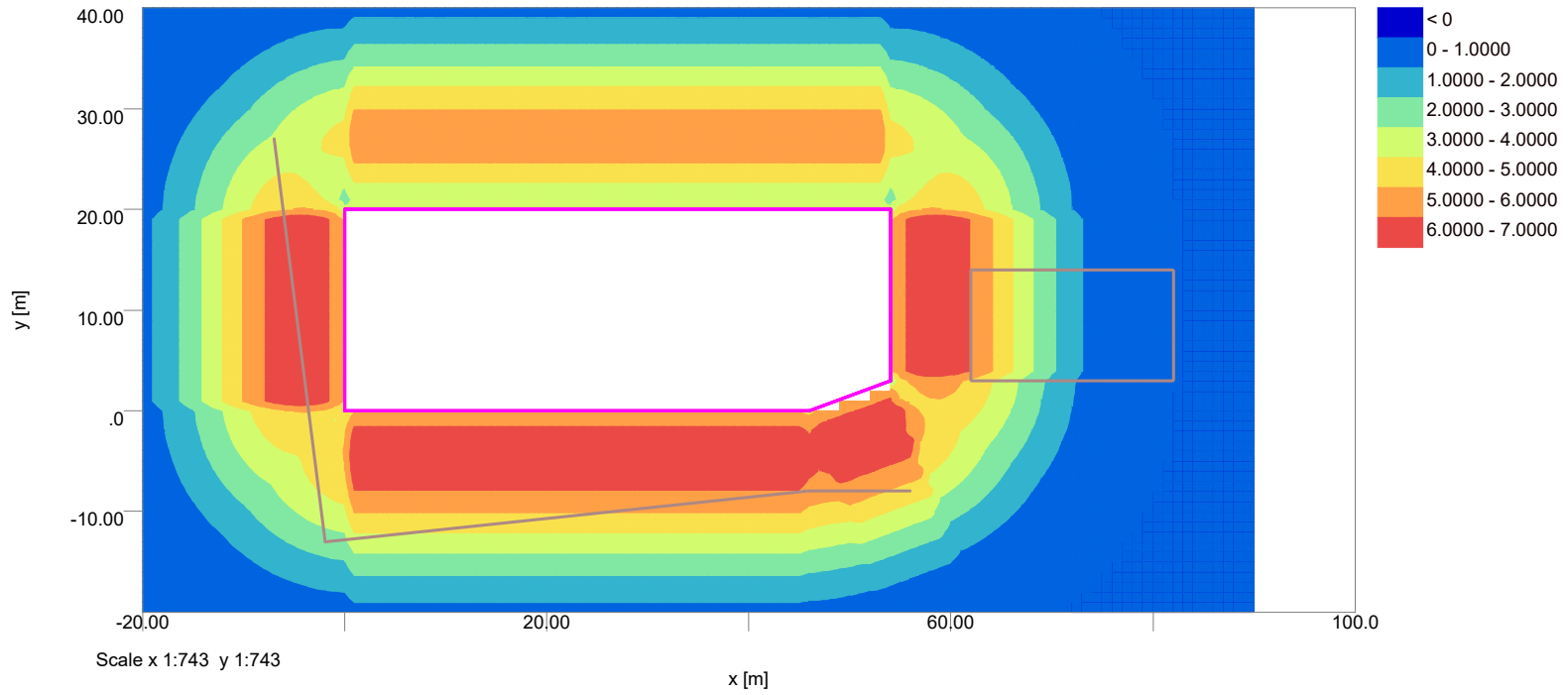
Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 0.5mm)



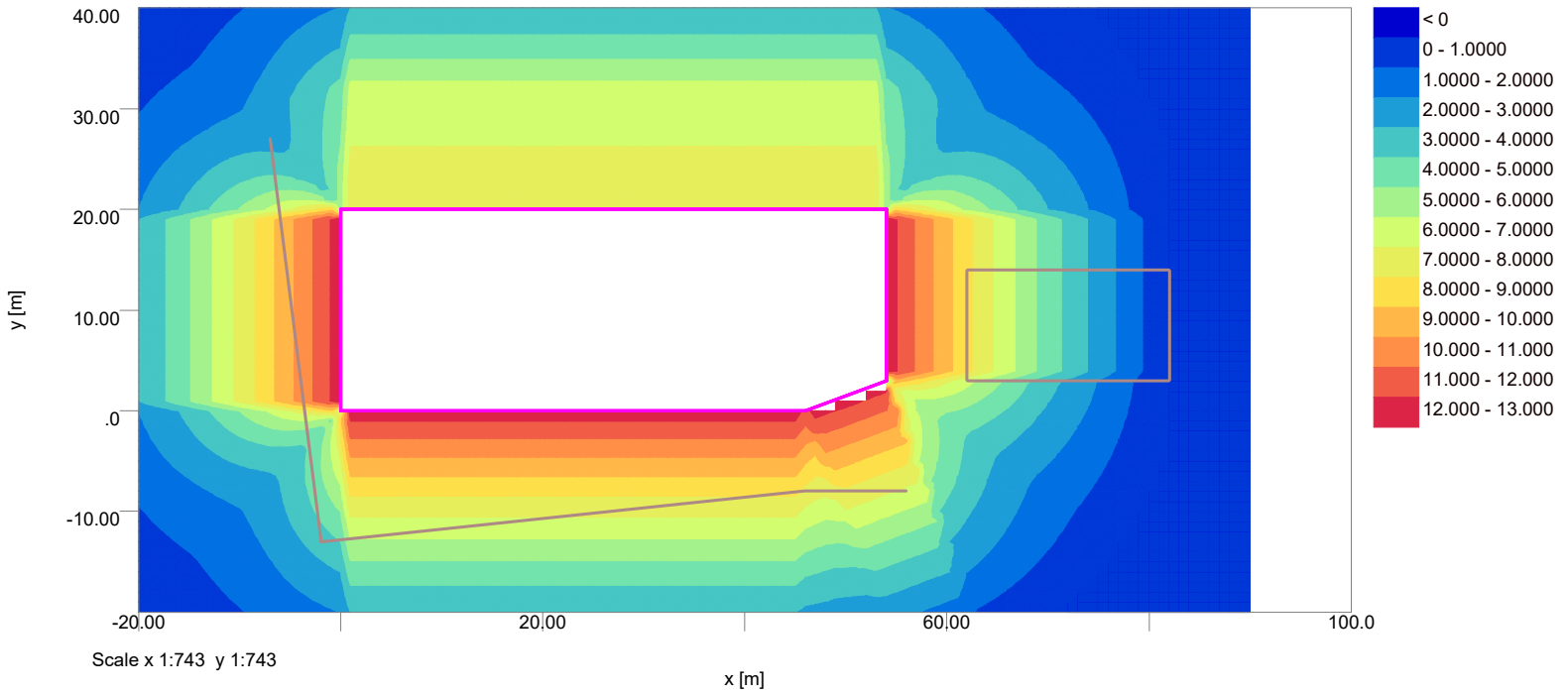
Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 0.5mm

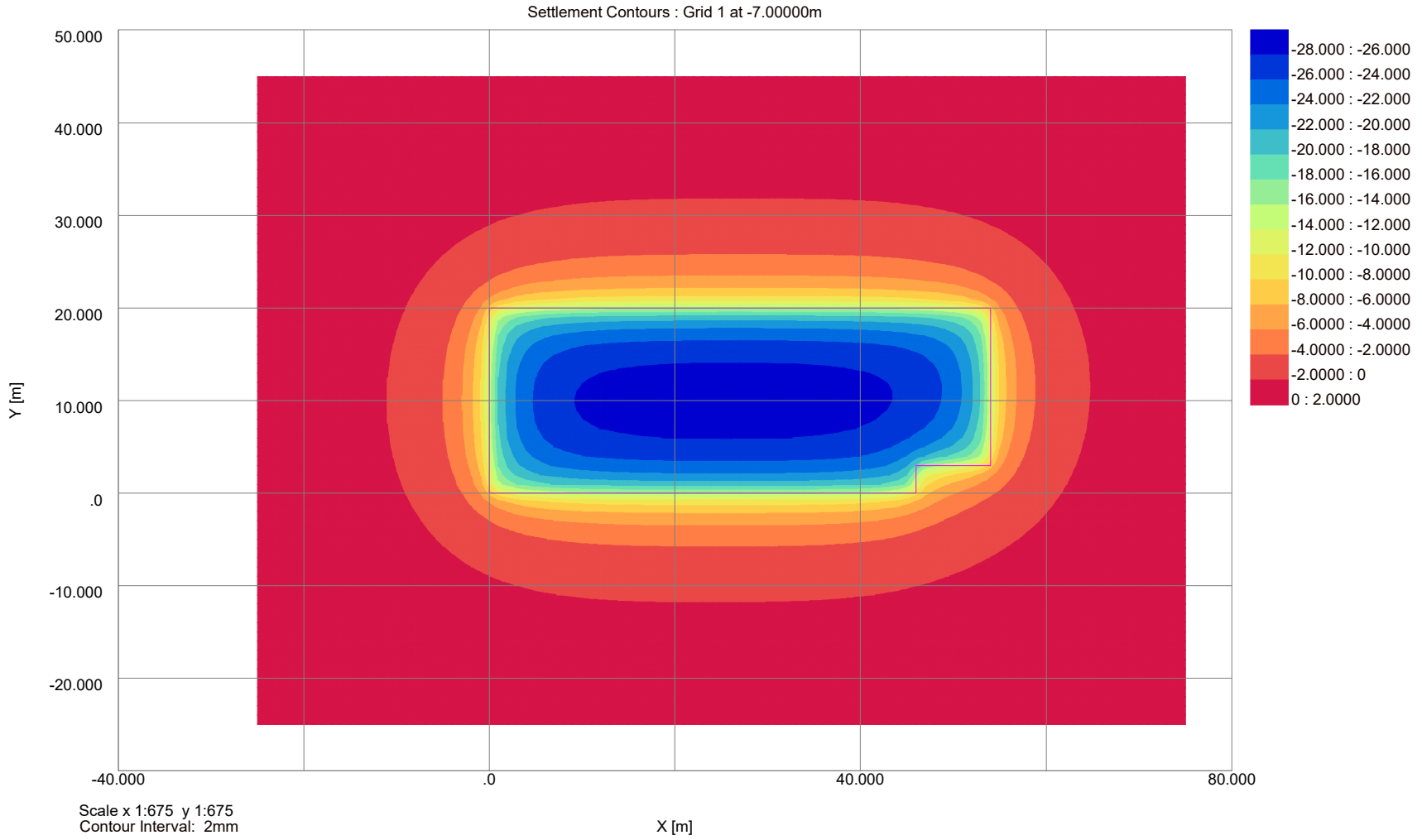


Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm




Settlement Contours : Grid 1 at -7.00000m
50.000
40.000
30.000
20.000
10.000
.0
-10.000
-20.000
Y [m]
-40.000
.0
40.000
80.000
X [m]
-28.000 : -26.000
-26.000 : -24.000
-24.000 : -22.000
-22.000 : -20.000
-20.000 : -18.000
-18.000 : -16.000
-16.000 : -14.000
-14.000 : -12.000
-12.000 : -10.000
-10.000 : -8.0000
-8.0000 : -6.0000
-6.0000 : -4.0000
-4.0000 : -2.0000
-2.0000 : 0
0 : 2.0000
Scale x 1:675 y 1:675
Contour Interval: 2mm

Oasys

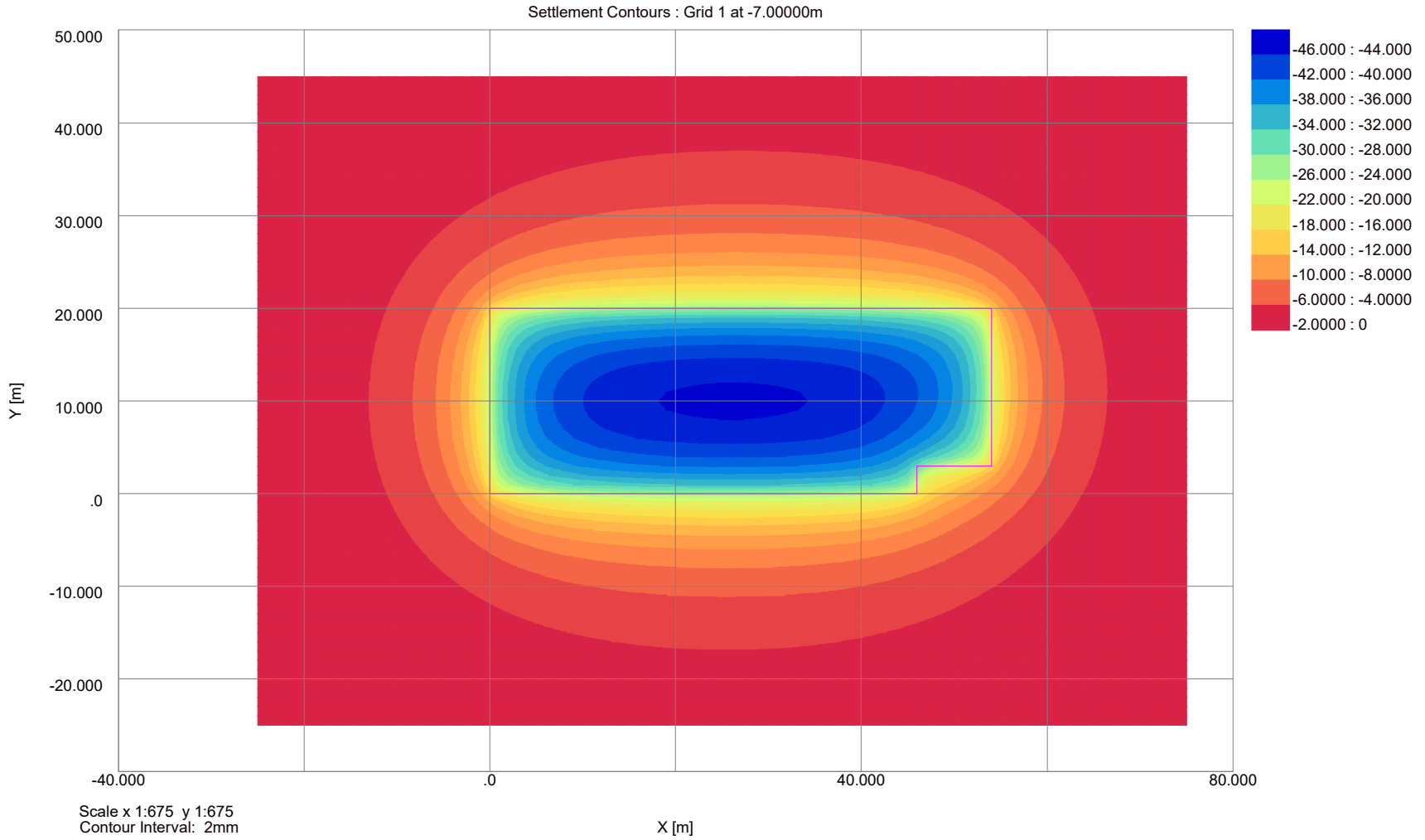
GEOTECHNICAL AND ENVIRONMENTALASSOCIATES LTD

44-46 Hampstead Lane, N6
Ground Movement Assessment
Total movements within basment excavation

Job No.	Sheet No.	Rev.
J21167A		

Drg. Ref.

Made by MP | Date | Checked



Specific Building Damage Results - Detail

Stage: Ref.	Stage: Name	Specific Building: Ref.	Specific Building: Name	Sub-building Name	Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature [m]	Damage Category
0	Base Model	1	No 42 Hampstead Lane	Near Elevation	0.0	1	0.0	10.899	None	0.0	0.0	35.763E-9	0.0	0.0	-	0 (Negligible)
		2	No 42 Hampstead Lane	Frontage	0.0	1	0.0	4.1485	None	0.0011481	0.038732	0.039433	-399.56E-6	404.43E-6	25957.	0 (Negligible)
						2	4.1485	12.766	None	0.0058816	0.030402	0.038549	-370.87E-6	404.43E-6	13005.	0 (Negligible)
		3	No 42 Hampstead Lane	Far Elevation	0.0	All vertical displacements are less than the limit sensitivity.										
		4	No 42 Hampstead Lane	Rear Elevation	0.0	1	1.9900	0.46733	None	0.0	0.037500	0.037500	-374.86E-6	-42.828E-6	174940.	0 (Negligible)
						2	2.4573	13.294	None	0.0075689	0.039853	0.050506	-466.28E-6	-508.39E-6	11714.	1 (Very Slight)
						3	15.751	4.1485	None	0.0015402	0.048280	0.049222	-494.96E-6	-508.39E-6	19351.	0 (Negligible)
		5	Boundary with Courtenay Avenue	Boundary Wall	0.0	1	0.0	3.3427	None	334.40E-6	-0.0098260	0.0019684	162.55E-6	-263.70E-6	82638.	0 (Negligible)
						2	3.3427	4.1030	None	0.012243	-0.017861	0.0050835	-341.05E-6	-0.0016774	2834.0	0 (Negligible)
						3	7.4457	19.399	Sagging	0.0058263	648.93E-6	0.0041095	362.97E-6	-0.0016774	2160.7	0 (Negligible)
						4	26.845	4.8519	None	0.010583	-0.090381	0.018240	0.0012430	0.0016323	2841.3	0 (Negligible)
						5	31.697	8.6143	None	0.0049382	-0.0011464	0.0045377	530.10E-6	329.80E-6	13511.	0 (Negligible)
		6	Boundary with Hampstead lane	Boudnary Wall	0.0	1	0.0	1.6311	None	0.021614	-0.0035692	0.019599	108.75E-6	-0.0010376	721.54	0 (Negligible)
						2	1.6311	2.3821	None	0.013021	0.0017010	0.019196	-81.059E-6	-0.0010376	3809.3	0 (Negligible)
						3	4.0131	4.2784	None	1.5828E-6	503.83E-6	506.22E-6	-5.0538E-6	-52.950E-6	17.558E+6	0 (Negligible)
						4	8.2915	39.868	None	168.11E-6	520.94E-6	571.02E-6	-5.3850E-6	-52.950E-6	1.4120E+6	0 (Negligible)
		7	Boundary with Hampstead lane	Boudnary Wall	0.0	1	0.0	3.1542	None	0.0029254	-0.083530	0.016738	899.15E-6	-189.54E-6	9936.5	0 (Negligible)
						2	3.1542	6.8458	None	0.0038281	0.0035945	0.0086290	132.24E-6	-189.54E-6	8053.9	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.



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