ST ALBANS SCHOOL

Hallam Land

PART OF HENRY BOOT

WOOLLAM PARK

North St Albans

GEOENVIRONMENTAL PHASE 1 DESK STUDY

NOVEMBER 2024

BROOKBANKS

Woollam Park

Geo-Environmental Phase I Desk Study

Hallam Land Management Limited, St Albans School and St Albans School Woollam Trust

Document Control Sheet

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1 Introduction

1.1 Brookbanks is appointed by Hallam Land Management Limited, St Albans School and St Albans School Woollam Trust to complete a Phase One Geo-Environmental Desk Study for a proposed redevelopment at Woollam Park.

1.2 The objective of the study is to research the likely geotechnical and chemical characteristics of the soil and ground water environment.

Background Information

1.3 The Site lies to the north of St. Albans, in Hertfordshire. The Site is bound in the northeast by Old Albanian Rugby Football Club, the northeast by agricultural fields. The east is bound by the railway line, the south by existing St. Albans development and the west by residential development and Harpenden Road.

1.4 The site location and boundary is shown indicatively on **Figure 1-1**.

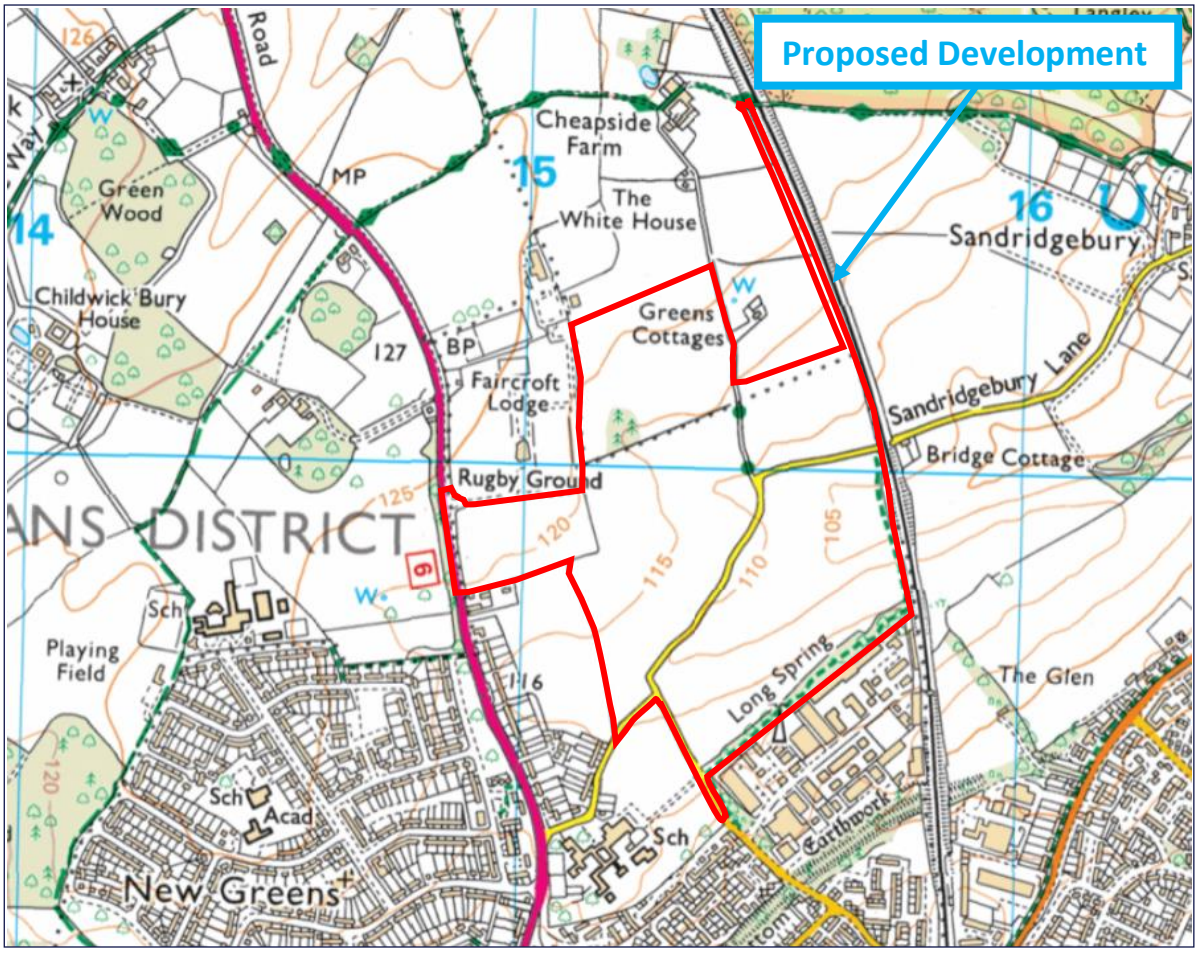


Figure 1-1: Site Location (Bing Maps, 2024)

Development Criteria

1.5 Planning permission will be sought for the following development:

"(1) Relocation and replacement of existing playing fields and erection of pavilion annex; and

(2) Construction of up to 1000 new homes (Use Class C3) to include a mix of market housing, affordable housing, age restricted specialist accommodation for the elderly, adult disability service units; a care home (Use Class C2); a local centre (Use Classes E and F); a primary school (Use Class F); the laying out of green infrastructure including habitat creation; drainage infrastructure; earthworks; pedestrian and cycle routes; new means of access and alterations to existing accesses."

1.6 The application is submitted as a "hybrid" application. Part (1) is submitted as a full application. Part (2) is submitted as an outline application with approval of means of access sought at the present time, and all other reserved matters to be approved at a later date.

Sources of Information

1.7 The following bodies were consulted during the study:

- Environmental Matters - The Environment Agency

1.8 The following information has been gathered during the study:

- Environmental Search - Landmark Envirocheck Reports, May, 2024
- Published Geology - British Geological Survey
- UXO Pre-desk Study Assessment - Zetica UXO, May 2024
- The BGS Lexicon of Named Rock Units - British Geological Survey

2 Development Site History

Historical Site Uses

2.1 In appraising the site history, published Ordnance Survey maps have been reviewed dating from 1883 up to Present Day. A selection of large scale maps used in this report, are contained within **Appendix A**.

2.2 Inspection of the Ordnance Survey maps has revealed that between 1883, the Site has largely remained undeveloped, with the exception of the Sandridgebury Lane, which runs across the centre, south and east of the Site.

2.3 The surrounding area is shown to include a few potentially contaminative land uses. Since 1883, a railway line has been shown to bound the east of the Site.

2.4 **Table 2-1** presents the historical activities described above, and those found within the surrounding area.

Site Use / Activity	Date First Shown	Date Last Shown	Approximate Distance (m)	Direction
Sandridgebury Lane	1883	Still Present	Onsite	Centre / South /East
Railway Line	1883	Still Present	Bounds	East
Works / Factories / Depots	1976	Still Present	10	South East
Bernards Heath / Townsend New Greens Expansion	1939	Still Present	50	South
Works	1951	Still Present	350	South East
Marshalswick Expansion	1938	Still Present	400	East
Depot	1976	Still Present	500	South East
Works	1939	2006	550	South East
Works	1899	1976	850	South
Brickfield / Limekiln	1883	1925	900	South
Old Clay Pits	1899	1976	925	South

Table 2-1: On-site and Off-site Historical Site Uses

2.5 The following potentially significant contaminative land uses are on or within close proximity of the site and will be further assessed within Section 9: **Agricultural, Roads (Sandridgebury Lane), Railway Line, Works and Depots** and **Old Clay Pits/Limekiln**.

Recent & Current Site Usage

2.6 The Site is currently shown to be in agricultural use, with Sandridgebury Lane running across the Site.

3 National Planning Policy

National Planning Policy Framework

3.1 The National Planning Policy Framework (NPPF) was published in 2012 and revised in December 2024 and outlines the Government's environmental, economic and social policies for England. The NPPF sets out a presumption in favour of sustainable development which should be delivered with three main dimensions: economic; social and environmental. The NPPF aims to enable local people and their councils to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

3.2 Policies and objectives which are of particular relevance to ground conditions and contamination include:

3.3 Paragraph 196 which states "*Planning policies and decisions should ensure that*:

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

3.4 Paragraph 197 which states "*Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner*".

Planning Practice Guidance

3.5 Planning Practice Guidance by the Department for Communities and Local Government, identifies that contamination is most likely to arise in former industrial locations; however, may also occur in other locations as a result of the contamination being moved from its original source. Therefore, as part of any planning application, a geo-environmental appraisal should be carried out to ascertain the level of risk posed by the Proposed Development and surrounding land uses past and present.

3.6 In terms of specifics, the guidance defers matters to the part 11A of the Environmental Protection Act guidance discussed above.

Department for Environment, Food and Rural Affairs (DEFRA): Environmental Protection Act 1990: Part 11A – Contaminated Land Statutory Guidance

3.7 Guidance has been published by DEFRA, the Environmental Protection Act 1990: Part 2A promotes the 'suitable for use' approach which focuses on the risks caused by land contamination. This approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the Proposed Development. Risks therefore need to be assessed on a site-by-site basis.

Other relevant policy, legislation or guidance

3.8 The following industry standard guidance documents are used as part of this document:

- Planning Practice Guidance (PPG) (Department for Housing, Communities and Local Government (now the Department for Levelling Up, Housing and Communities), 2014)
- Land affected by contamination (2014, updated 2019);
- Land stability (2014, updated 2019); and
- Natural Environment (2016, updated 2019).

  PPG1: General Guidance to the Prevention of Pollution (Environment Agency, 2013) – although now withdrawn, the guidance is still relevant for informing assessment.

  PPG6: Working at Construction and Demolition Sites (Environment Agency, 2012); - although now withdrawn, the guidance is still relevant for informing assessment.

  Construction Industry Research and Information Association (CIRIA) C552 Contaminated Land Risk Assessment, A Guide to Good Practice, (CIRIA, 2001);

  CIRIA SP156 - Control of Water Pollution from Construction Sites (CIRIA, 2002);
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, (CIRIA, 2007); and Land Contamination: Risk Management Guidance (LCRM: Environment Agency, October 2020).

  Department for Environment, Food and Rural Affairs (DEFRA): Environmental Protection Act 1990: Part 2A- Contaminated Land Statutory Guidance; and
- Technical Guide to the National Planning Policy Framework (2012).

4 Ground Conditions

Geology

4.1 With reference to the British Geological Survey (BGS) map, the Site is shown to be underlain by chalk of the Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated).

4.2 In regards to the Superficial Deposits, the majority of the north of the Site is shown to be overlain by clay, silt, sand and gravel of the Clay-with-flints Formation. The majority of the southern part of the Site is overlain by the Kesgrave Catchment Subgroup, comprising of sand and gravel. The Kesgrave Catchment Subgroup is also identified as outcrops in the centre and north of the Site.

4.3 The combined Site geology is further illustrated in **Figure 4-1.**

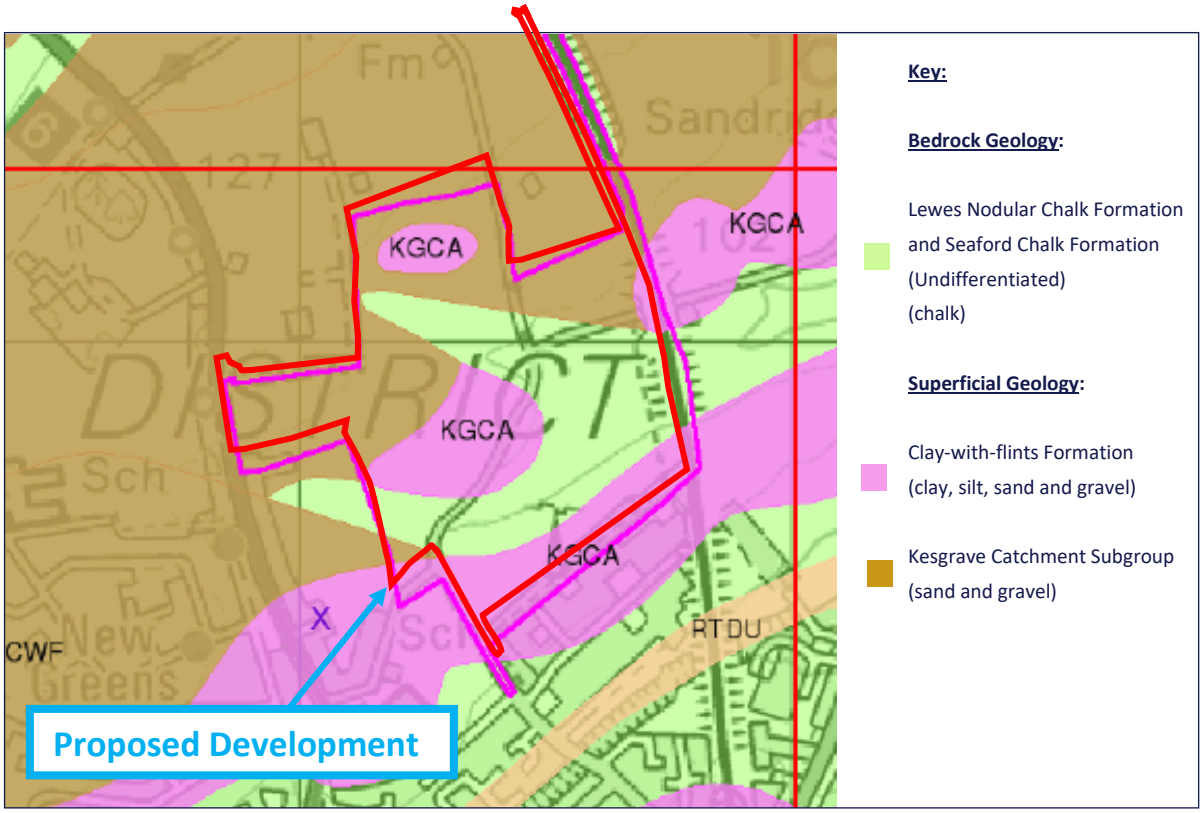


Figure 4-1: BGS Combined Published Geology

4.4 A summary of the Site geology is provided in **Table 4-1**.

Stratum	Area Covered	Estimated Thickness of Strata (from BGS Lexicon	Typical Description (from BGS Lexicon Data)
Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated)	Entire Site	Not Recorded	*"Chalk with subsidiary calcareous mudstone and flint"*
Clay-with-flints Formation	Within the north of the Site	Up to about 10m, but very variable where let down into dissolution pipes in the Chalk Pipes and hollows may be 1 to 50 m in diameter.	*"A residual deposit formed from the dissolution, decalcification and cryoturbation of bedrock strata of the Chalk Group and Palaeogene formations and, in the extreme west of the outcrop, the Upper Greensand Formation. It is unbedded and heterogenous. The dominant lithology is orange-brown and red-brown sandy clay with abundant nodules and rounded pebbles of flint. Angular flints are derived from the Chalk, and rounded flints, sand and clay from Palaeogene formations. There is commonly a discontinuous basal layer up to 10 cm thick, with dark brown to black matrix, stiff, waxy and fissured, with relatively fresh flint nodules stained black or dark green with manganese or glauconite. The deposit locally includes bodies of yellow fine- to medium- grained sand, reddish brown clayey silt, and sandy clay with beds of well-rounded flint pebbles, derived from Palaeogene formations. In the extreme west of the outcrop, in Devon, the deposit locally comprises sand and clayey sand containing angular, shattered blocks of chert. This is derived wholly from the Upper Greensand Formation, in areas where the Chalk Group has been removed by erosion."*
Kesgrave Catchment Subgroup	Within the south of the Site, and outcrops in the north and centre of the Site	About 21.3m aggregate thickness with individual terrace aggradations typically 5-12m thick.	*"Mainly gravels characterised by quartz and quartzite from the Triassic, Carboniferous and Devonian rocks of the West Midlands, Welsh Borderland and possibly south-western Pennines, and by felsic volcanic rocks from northern Wales. The members comprise bodies of cross-bedded and massive, moderately sorted sand and gravel. The upper part of the gravels which dominate the subgroup are commonly affected by pedogenesis."*

Table 4-1: Summary of onsite Geology (BGS Lexicon of Named Units)

4.5 BGS records include the following ratings for a number of potential ground stability hazards on or within 250m of the Site boundary:

- Collapsible ground stability: Very Low*
- Compressible ground: No Hazard*
- Ground Dissolution: Very Low* / Low / Moderate*
- Landslide: No Hazard* / Very Low*
- Running Sand: No Hazard* / Very Low
- Shrinking & Swelling Clay: No Hazard* / Low*

*stability hazard reported on Site

Mining

4.6 The Site is not reported to be in an area affected by **Coal Mining**.

4.7 The Site is reported to be in an area affected by **Mining Instability**, with the mining evidence from Conclusive Rock Mining.

4.8 There are twenty-five **Man-Made Mining Cavities**, situated within 1,000m of the Site boundary. These are further detailed below in **Table 4-2:**

Cavity Type	Easting / Northing	Commodity	Distance (m)	Direction
Multiple Chalkwells	515300 / 210700	Chalk	137	South East
Clay Pit	515220 / 208560	Chalk	754	South
Clay Pit	515210 / 208500	Chalk	815	South
Clay Pit	515420 / 208470	Chalk	816	South
Historical Brick Field – Potential Chalk Mining	515150 / 208500	Chalk	833	South
Old Brick Works, Possible Chalk Mining	514800 / 208700	Chalk	856	South
Clay Pit	515150 / 208470	Chalk	861	South
Shaft	515150 / 208470	Chalk	861	South
Bell Put Collapse	515450 / 208420	Chalk	866	South
Clay Pit	515420 / 208410	Chalk	876	South
Old Brick Works, Possible Chalk Mining	515350 / 208410	Chalk	879	South
Historical Brick Field/Exensive Clay Pits - Potential Chalk Mining	515400 / 208400	Chalk	896	South
Historical Brick Field – Potential Chalk Mining	515150 / 208440	Chalk	889	South
Brick and Tile Works – Potential Chalk Mining	515500 / 208400	Chalk	889	South East
Historical Brick Field – Potential Chalk Mining	515100 / 208450	Chalk	897	South
Lime Kiln	515430 / 208370	Chalk	916	South
Brick Kiln	515430 / 208370	Chalk	916	South
Shaft	515080 / 208430	Chalk	923	South
Shaft	515110 / 208410	Chalk	931	South
Clay Pit	515270 / 208360	Chalk	939	South
Brick Filed	515110 / 208390	Chalk	950	South
Multiple Chalkwells	516200 / 210500	Chalk	967	South
Brick Kiln	515110 / 208370	Chalk	968	South
Lime Kiln	515110 / 208370	Chalk	968	South
Historical Lime Kiln – Potential Chalk Mining	515400 / 208300	Chalk	986	South

Table 4-2: Man-Made Mining Cavities (within 1,000m from the Site Boundary)

4.9 There are ten **Natural Cavities** located within 1,000m of the Site boundary and these are provided in **Table 4-3**.

Cavity Type	Easting / Northing	Distance (m)	Direction
Solution Pipe x 6	515262 / 210986	Onsite	North East
Sinkhole x 5, Solution Pipe x 5	515200 / 209200	236	South East
Solution Pipe	515950 / 209100	551	East
Solution Pipe x 3	515900 / 208870	630	South East
Solution Widened Joint or Fissure x 1	515450 / 208440	846	South
Solution Pipe	515470 / 208430	857	South East
Solution Pipe	515450 / 208420	866	South
Solution Widened Joint or Fissure x 1	515440 / 208420	866	South
Solution Pipe	515460 / 208410	877	South

Table 4-3: Natural Cavities (within 1,000m from the Site Boundary)

4.10 The Site is shown to be within a Rare **Non Coal Mining Area of Great Britain**.

4.11 There are fifteen **BGS Recorded Mineral Sites** recorded within 1,000m of the Site boundary, and these are detailed below in **Table 4-4**.

Recorded Mineral Site Name	Status	Commodity	Distance (m)	Direction
Cheapside Farm Chalkwell	Ceased	Chalk	209	South East
Langley Wood Chalk Pit	Ceased	Chalk	588	West
Pismire Wood Chalk Pit	Ceased	Chalk	705	North
Bernard Heath Brick Field	Ceased	Common Clay and Shale	849	South
Bernard Heath Brick Field	Ceased	Common Clay and Shale	857	South
Bernard Heath Brick Field Shaft	Ceased	Chalk	862	South
Well Wood Chalk Pit	Ceased	Chalk	892	North East
Bernard Heath Brick Field	Ceased	Common Clay and Shale	897	South
Bernard Heath Brick Field	Ceased	Common Clay and Shale	918	South
Bernard Heath Brick Field Shaft	Ceased	Chalk	918	South
Sandridge Road Brick & Tile Works	Ceased	Common Clay and Shale	924	South East
Bernard Heath Brick Field Shaft	Ceased	Chalk	929	South
Bernard Heath Brick Field	Ceased	Common Clay and Shale	940	South
Bernard Heath Brick Field	Ceased	Common Clay and Shale	957	South
Bernard Heath Pit	Ceased	Sand and Gravel	986	South

Table 4-4: BGS Recorded Mineral Sites

Radon

4.12 The Site is shown to reside in areas of Intermediate Probability Radon Areas (where 1-3% of homes are estimated to be above the action level and Lower Probability Radon Areas (where less than 1% of homes are estimated to be at or above the action level).

4.13 It is reported that no radon protection measures are necessary for the construction of new developments within the Site.

Estimated Soil Chemistry

4.14 The Envirocheck report provides the following estimated soil chemistry* on Site, whereby the soil is described as 'rural'.

Potentially Harmful Elements	BGS Estimated Soil Chemistry Concentration (mg/kg)
Arsenic	<15 - 25
Cadmium	< 1.8
Chromium	60 – 90
Lead	<100
Nickel	15 – 45

Table 4-5: Estimated Soil Chemistry

** The British Geological Survey (BGS) Estimated Soil Chemistry dataset provides modelled estimates of ambient background concentrations of Potentially Harmful Elements (PHE) in topsoil: Arsenic (As), Cadmium (Cd), Chromium (Cr), Nickel (Ni) and Lead (Pb). The data has been created by combining high resolution geochemical data (from the BGS G-BASE and Imperial College Wolfson geochemical survey database) and the soil parent material maps derived from the BGS DiGMapGB geological data and covers the whole of Great Britain (excluding London).*

4.15 If required at the detailed design stage, confirmation of the existing site specific soil chemistry can be established via a Phase II ground investigation.

5 Hydrogeology

Bedrock and Superficial Aquifer Designations

5.1 The underlying bedrock geology is shown to form a Principal Aquifers across the Site. This is illustrated below in **Figure 5-1**:

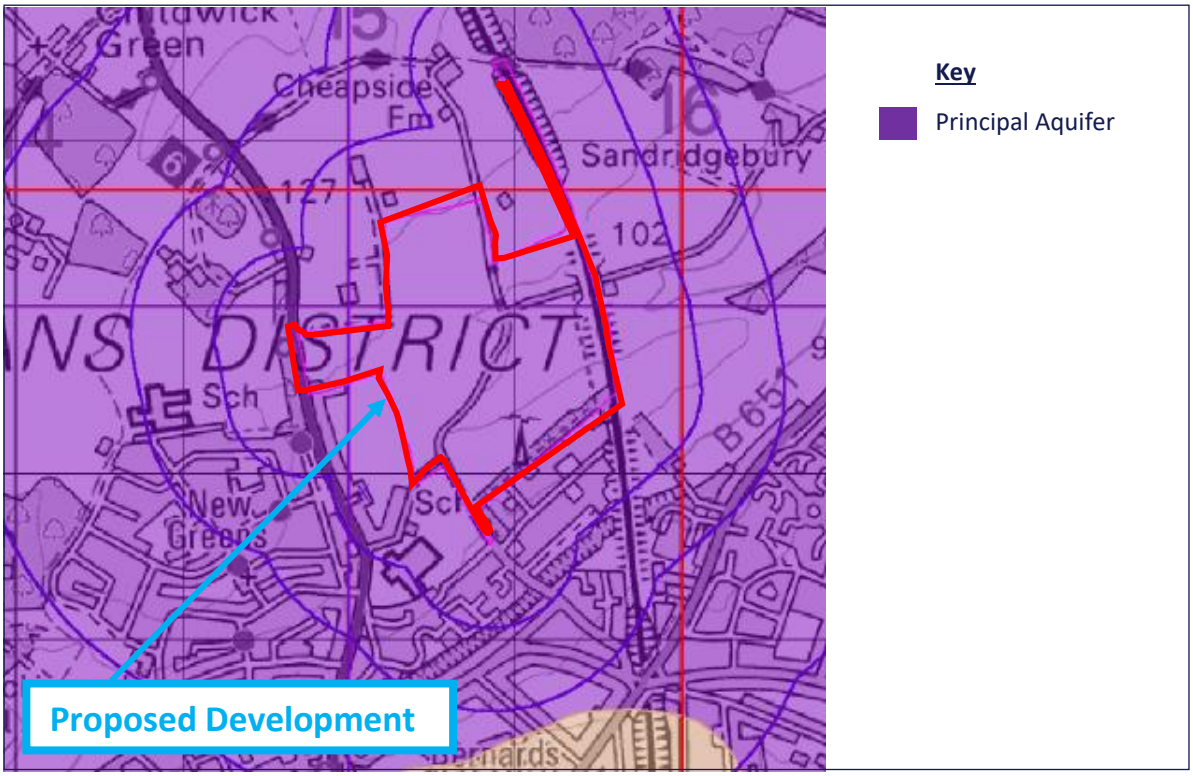


Figure 5-1: BGS Bedrock Geology Aquifer Designation

5.2 The superficial deposits of the Clay-with-flints Formation in the north of the Site, are shown to form Unproductive Strata, with the outcrops of the Kesgrave Catchment Subgroup, forming Secondary A Aquifers, as illustrated in **Figure 5-2**.

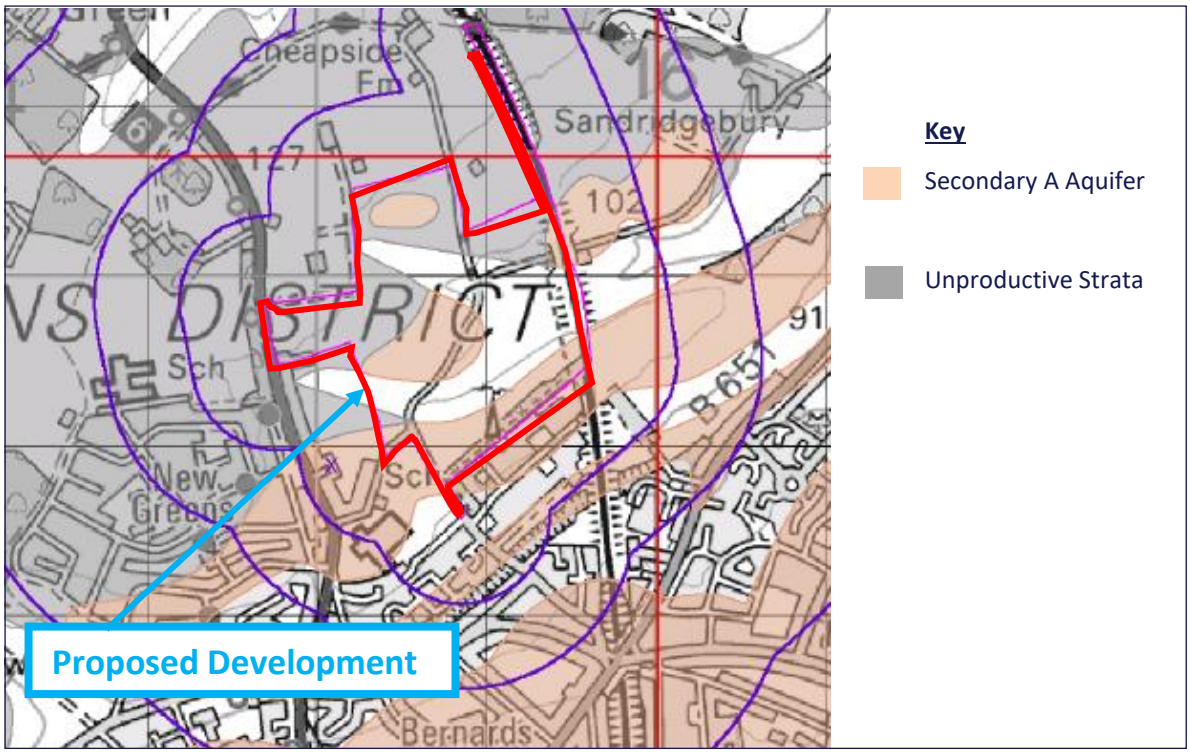


Figure 5-2: BGS Superficial Designation

5.3 The EA provides the following definitions for Secondary Aquifers and Unproductive Strata:

Principal Aquifer *– These are layers of rock or drift deposits that have a high intergranular and/or fracture permeability, where they usually provide a high level of water storage.*

Secondary Aquifers *- These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:*

Secondary A *- permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers."*

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

Secondary Undifferentiated *- has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.*

Unproductive: *These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow."*

Groundwater Vulnerability

5.4 The EA Groundwater Vulnerability Zones (GVZ) Map, includes 5 risk categories (High, Medium – High, Medium, Medium – Low and Low). The map summarises the overall risk to groundwater, considering groundwater vulnerability, the types of aquifer present (superficial and/or bedrock) and their designation status.

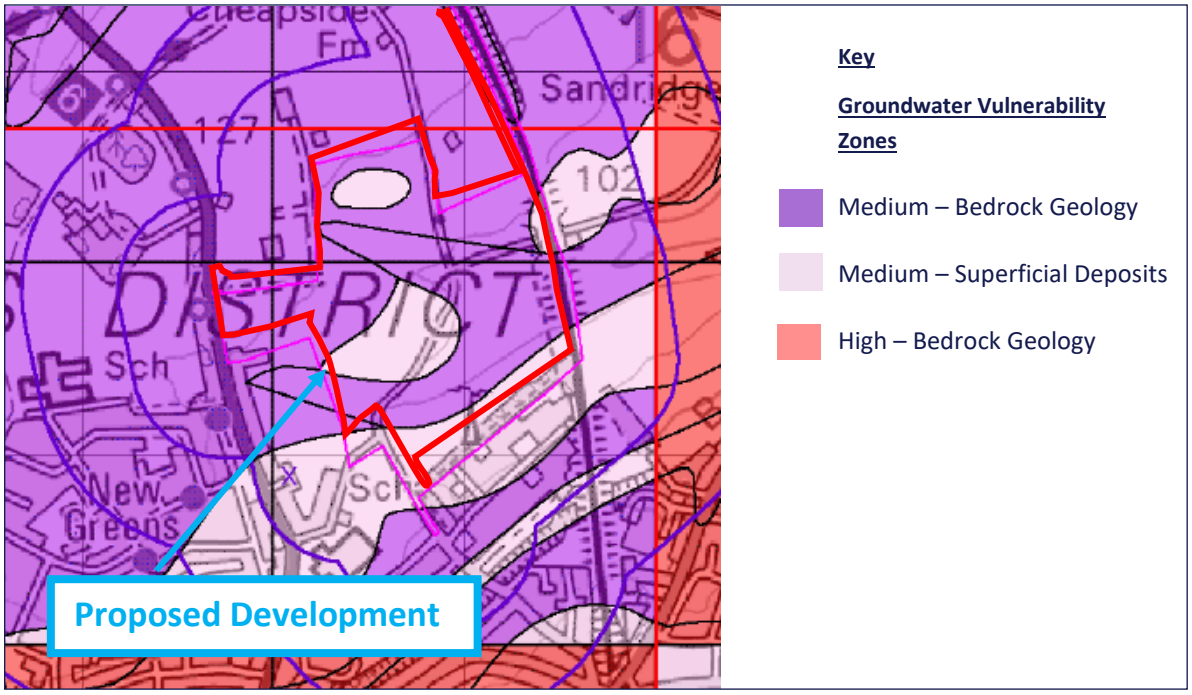


Figure 5-3: The EA's Groundwater Vulnerability Zones Map

5.5 **Figure 5-3** is an extract of their simplified GVZ map, in which the indicative risk on Site is shown to comprise of a 'Medium GVZ.

5.6 The EA supplies the following definitions for the five GVZs:

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

Medium-high *– These are high priority groundwater resources that have limited natural protection. This results in a medium-high overall pollution risk to groundwater from surface activities. Activities in these areas may require additional measures over and above good practice to ensure they do not cause groundwater pollution.*

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

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

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

Groundwater Abstractions

5.7 There is one **Groundwater Abstraction** permit recorded within 1,000m of the Site boundary and this is further detailed in **Table 5-1**.

Operator - Location	Abstraction Type	Permit Start Date	Permit End Date	Distance (m)	Direction
Cheapside (1991) Ltd – Well at Cheapside Farm, St. Albans	General Farming and Domestic	October 1991	Not Supplied	236	South

Table 5-1: Groundwater Abstractions (between 0 – 1,000m of the Site boundary)

Source Protection Zones

5.8 There are three **Source Protection Zones** within 1,000m of the Site boundary and these are further detailed below:

- Zone III (Total Catchment), where the total area needed to support the drainage from the protected groundwater sources, situated onsite.
- Zone II (Outer Protection Zone), where either 25% of the source area or a 400 day travel time, whichever is greater is situated approximately 219m south of the Site.
- Zone I (Inner Protection Zone), where travel time is of 50 days or less to the area of the groundwater source, situated approximately 796m south of the Site.

6 Hydrology

Flooding

6.1 The Environment Agency (EA) mapping on **Figure 6-1** shows that the entire Site lies within Flood Zone 1; being an area of Low Probability of flooding and outside both the 1 in 100 (1% AEP) and 1 in 1,000 (0.1% AEP) year flood events.

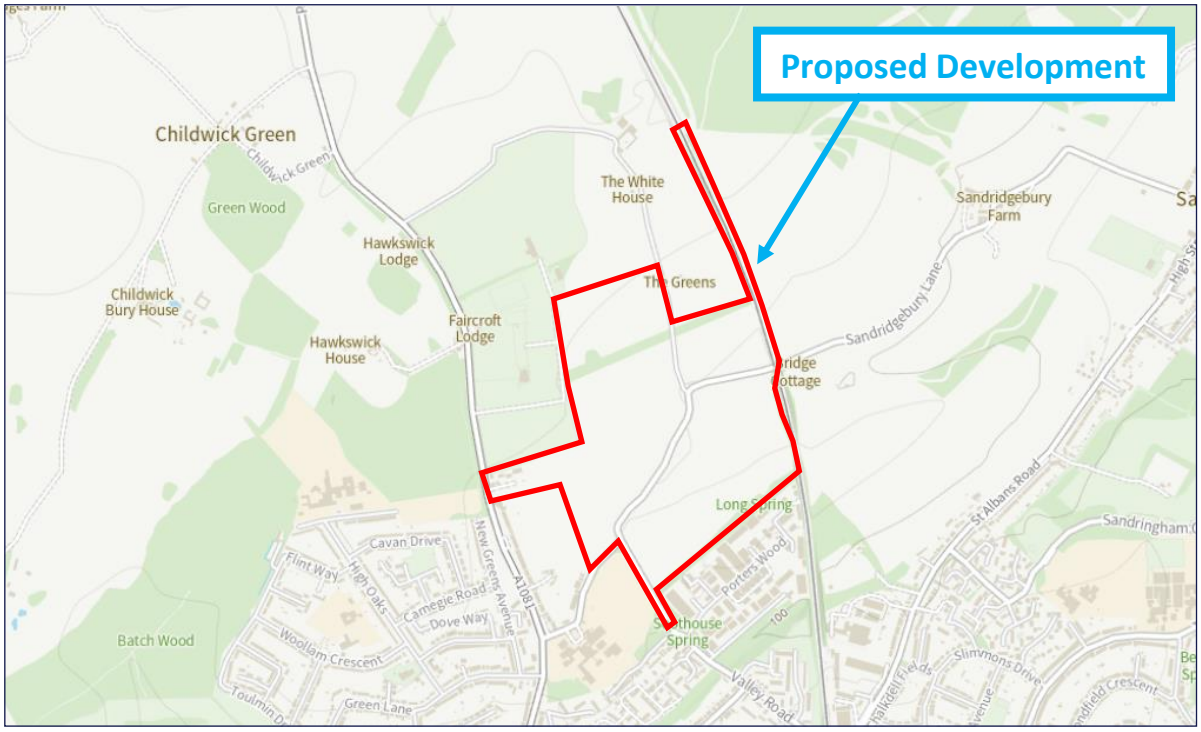


Figure 6-1: EA Flood Zone Plan showing 1 in 100 & 1 in 1,000 year floodplains (Gov.Uk website)

6.2 Overland flow mechanisms result from the inability of unpaved ground to infiltrate rainfall or due to inadequacies of drainage systems in paved areas to accommodate flow directed to gullies, drainage downpipes or similar. In minor cases, local ponding may occur. In more extreme events, flows accumulate and may be conveyed across land following the topography.

6.3 The mapping on **Figure 6-2** illustrates areas of very low to high risk from surface water flooding.

6.4 Initial investigations suggest that the risk of overland flow relates primarily to the topography of the site; low areas of the site naturally store water limiting the surface runoff in concentrated areas.

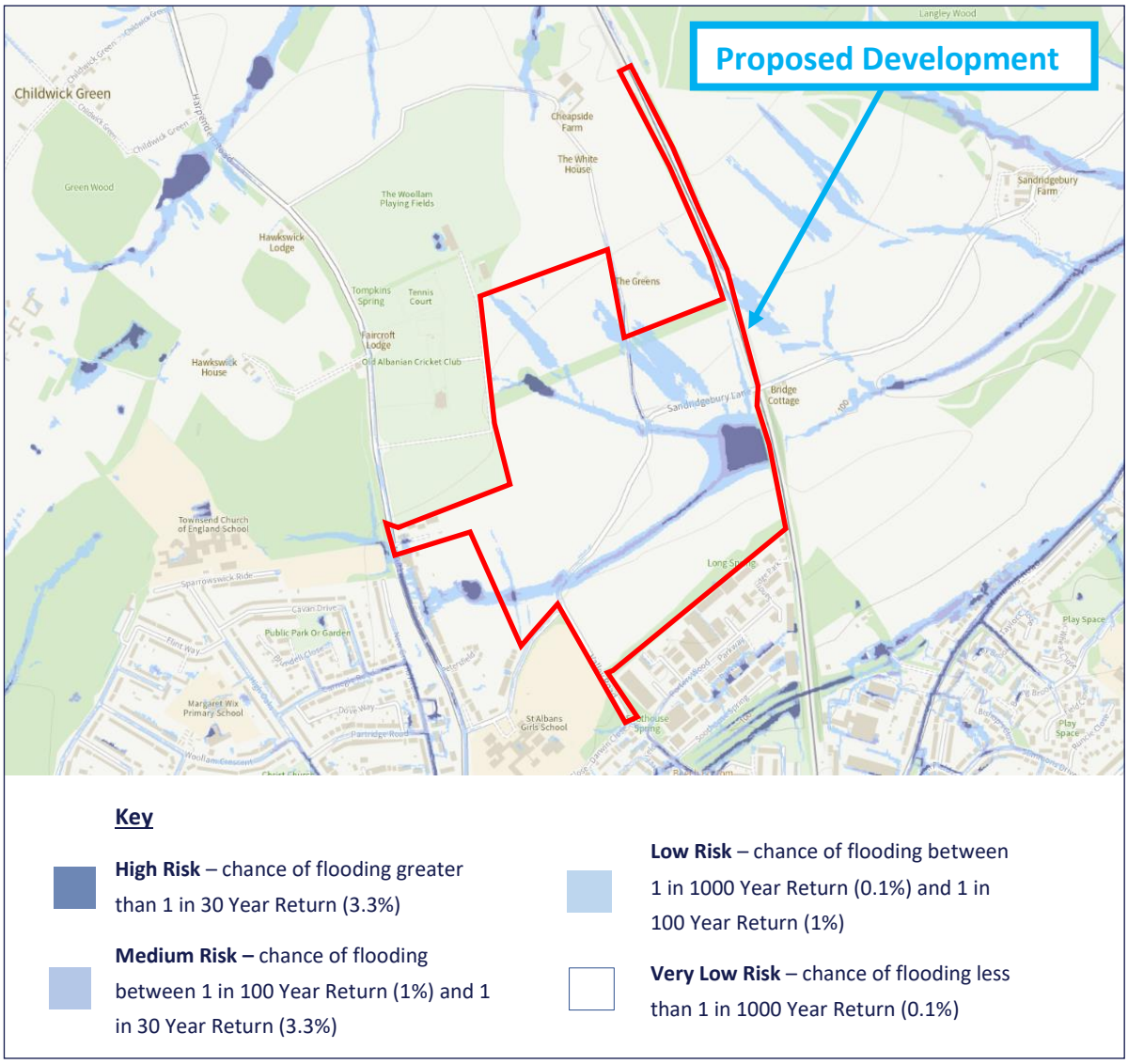


Figure 6-2: EA Long Term Flood Risk Maps – Flood risk from Surface Water (Gov.Uk website)

Discharge Consents

6.5 There is one **Discharge Consent**, reported within 1,000m of the proposed site and this is further detailed in **Table 6-1**.

Operator – Location	Status	Effective Date	Receiving Water	Discharge Type	Distance (m)	Direction
Mr N. Reid – Childwick Lodge, Harpenden Road	Transferred from Water Act 1989	02/10/89	Land / Soakaway	Sewage Discharges – Final/Treated Effluent – Not Water Company	829	West

Table 6-1: New and Existing Discharge Consents (between 0 – 1,000m of the Site boundary)

Water Quality

6.6 The Environment Agency monitor 40,000km of rivers across England. To help protect these areas each stretch of river was monitored between 1990 and 2009 and given a river quality grade. The General Quality Assessment (GQA) scheme was based upon the chemical quality of the water and graded from A to E, with A representing a river with very good water quality and E, a river with very poor water quality.

6.7 The Envirocheck has not reported the any **River Quality Data** with 1,000m of the Site boundary.

6.8 There is no **River Quality Biology Sampling Points** and no **River Quality Chemistry Sampling Points** within 1,000m of the Site boundary.

Surface Water Abstraction

6.9 There are no **Surface Water Abstraction** permits recorded within 1,000m of the Site boundary.

7 Potential Contaminative Uses & Statutory Registers

7.1 There is one **Pollution Incident to Controlled Waters** recorded within 1,000m of the Site boundary and this is further detailed in **Table 7-1**:

Property Type - Location	Incident Date	Pollutant	Incident Severity	Receiving Water	Distance (m)	Direction
Not Given – Spalding District	01/06/1992	Unknown	Category 2 – Significant Incident	Freshwater Stream / River	889	North

Table 7-1: Pollution Incidents to Controlled Waters

7.2 Nine **Local Authority Pollution Prevention and Controls** has been identified within 1,000m of the Site, and these are further detailed in **Table 7-2**.

Name - Location	Status	Description	Distance (m)	Direction
Gj Gaywood Limited – Unit B, Caxton Centre, Porters Wood	Permitted	Mobile Screening and Crushing Processes	83	East
Gj Gaywood Limited – Unit B, Caxton Centre, Porters Wood	Permitted	Mobile Screening and Crushing Processes	83	East
Kane Haulage – Construction House, Porters Wood, Valley Road Industrial Estate	Permitted	Mobile Screening and Crushing Processes	93	East
Kane Haulage – Construction House, Porters Wood, Valley Road Industrial Estate	Permitted	Mobile Screening and Crushing Processes	93	East
Star St Albans – 150 Harpenden Road	Permitted	Petrol Filling Station	96	North West
Fastlane Paint & Body Ltd – Soothouse Spring	Permitted	Respraying of Road Vehicles	111	East
Harpenden Auto Services – 1 Sandridgebury Lane, Sandridge	Authorised	Waste Oil Burners (less than 0.4MW net rated thermal input)	145	South East
Shell King William – 2 Beech Road	Permitted	Petrol Filling Station	538	South East
Tcs Petrol Station – 2 Beech Road	Authorised	Petrol Filling Station	538	South East

Table 7-2: Local Authority Pollution Prevention and Controls

7.3 None of the following have been recorded within 1,000m of the Site boundary:

- Contaminated Land Register Entries and Notices
- Enforcement and Prohibition Notices
- Integrated Pollution Controls
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Integrated Pollution Prevention and Control
- Prosecutions Relating to Authorised Processes
- Prosecutions Relating to Controlled Waters
- Registered Radioactive Substances
- Substantiated Pollution Incident Register
- Water Industry Act Referrals

Hazardous Substances

7.4 There are no records of the following on or within a 1,000m radius of the Site boundary:

- Control of Major Accident Hazards Sites (COMAH)
- Explosive Sites
- Notification of Installations Handling Hazardous Substances (NIHHS)
- Planning Hazardous Substance Consents
- Planning Hazardous Substance Enforcements

7.5 There are one hundred and forty Contemporary Trade Directory Entries recorded within 1,000m of the Site boundary. Twenty-nine of these are situated within 100m of the Site boundary. These are further detailed in **Table 7-3**:

Name – Location	Classification	Status	Direction
Construction Plastics – Unit 4, The Caxton Centre, Porters Wood	**Builders Merchants**	**12**	**East**
W K D Distribution Ltd – Unit 3, The Caxton Centre, Porters Wood	Distribution Services	13	East
Ogier Electronics Ltd – Unit 12-13 Sandridge Park, Porters Wood	**Electronic Equipment – Manufacturers & Assemblers**	**16**	**East**
Exchange Communications (UK) Ltd – Unit 8, Sandridge Park, Porters Wood	Telecommunications Equipment & Systems	17	East
Fresh Time – Unit 2, St Albans Enterprise Centre, Long Spring, Porters Wood	Laundries & Launderettes	21	East
Kenburn Waste Management Ltd - Kenburn House, Porters Wood	**Waste Processing Machinery**	**26**	**East**
Nagra Kudelski (Gb) Ltd – Unit 3U, St Albans Enterprise Centre, Long Spring, PortersWood	Sound Equipment Systems Manufacturers	28	East
Piper Toughened Glass – 5 Spring Valley Business Centre, Porters Wood	**Glass Products – Manufacturers**	**32**	**East**

Westhouse Transport – 5 Spring Valley Business Centre, Porters Wood	Freight Forwarders	33	East
Fleetwoodgoldcowyard Ambec – 5 Spring Valley Business Centre, Porters Wood	Conveyors & Conveyor Belts	33	East
West House Transport Ltd - 5 Spring Valley Business Centre, Porters Wood	Distribution Services	33	East
Major Products Ltd – Unit 4, St Albans Enterprise Centre, Long Spring, Porters Wood	Electronic Engineers	33	East
U F E – Unit 10 St Albans Enterprise Centre, Long Spring	**Plastics – Machinery & Equipment Manufacturers**	**37**	**East**
Victoria Fine Art – St Long Spring, Porters Wood	Picture & Picture Frame Renovating & Restoring	37	East
Coo Confort Ltd – St Albans Enterprise Centre, Long Spring, Porters Wood	Air Conditioning Equipment & Systems	43	East
Zund Plotting Systems – Unit 1 Spring Valley Business Centre, Porters Wood	Cutting Tools & Machinery	51	East
Zund Plotting Systems – 1 Spring Valley Business Centre, Porters Wood	Cutting Tools & Machinery	51	East
Multi Image – Unit 1a, Spring Valley Business Centre, Porters Wood	Printers	57	East
Imprss – Long Spring, 7 Porters Wood	Printers	64	East
Icon Digital Print - Long Spring, 7 Porters Wood	Printers	64	East
Ikon Digital Print - Long Spring, 7 Porters Wood	Printers	64	East
Alan Electrical Ltd – Unit 10, The Caxton Centre, Porters Wood	**Electrical Engineers**	**64**	**East**
Manson Group Ltd – Reynolds House, Porters Wood	Printers	76	East
Kane Group Ltd – Construction House, Soothouse Spring, Porters Wood	Sand, Gravel & Other Aggregates	94	East
Kane Haulage - Construction House, Soothouse Spring, Porters Wood	Road Haulage Services	95	East
Texaco – 150 Harpenden Road	Petrol Filling Stations	96	North West
Texaco – 150 Harpenden Road	Petrol Filling Stations	96	North West
Texaco – 150 Harpenden Road	Petrol Filling Stations	96	North West
Kinder-Janes Engineers Ltd – Porters Wood	Pumps – Sales, Servicing & Repairs	99	East

Table 7-3: Contemporary Trade Directory Entries found within 100m of the Site Boundary

*Bold denotes Active

7.6 The remaining sixty-one Contemporary Trade Directories are situated between 101m and 500m from the Site boundary. These are further provided in **Table 7-4**:

Active	Inactive
Blinds, Awnings & Canopies	Printers
Car Body Repairs	Washing Machines – Servicing & Repairs (x2)
Road Haulage Services (x2)	Car Body Repairs (x3)
Domestic Appliances – Servicing, Repairs & Parts (x2)	Car Dealers (x2)
Freight Forwarders	Vending Machine Manufacturers
Electronic Engineers	Garage Services (x8)
Gate Manufacturers - Automated	Energy Efficient Products and Services
Garage Services (x2)	Paper & Cardboard Products & Packaging – Manufacturers
Ceramic Manufacturers, Supplies & Services	Telecommunications Equipment & Systems
Coating Specialists	Carpet, Curtain & Upholstery Cleaners (x2)
Builders' Merchants	Clothing & Fabrics – Manufactuers
Window Frames - Sales & Service	Manufacturers
Ironing & Home Laundry Services	Air Conditioning & Refrigeration Contractors
Homefurnishings - Manufacturers	Road Haulage Services (x2)
Air Conditioning & Refrigeration Contractors	Electrical Engineers
	Cleaning Services - Domestic
	Builders' Merchants
	Breakdown and Recovery
	Car Dealers - Used
	Boilers - Servicing, Replacements & Repairs
	Commercial Cleaning Services (x2)
	Distribution Services
	Domestic Appliances - Servicing, Repairs & Parts
	Laundries & Launderettes
	Homefurnishings - Manufacturers
	Photographic Equipment & Supplies - Wholesale
	Mot Testing Centres (x2)
	Bus & Coach Operators & Stations

Table 7-4: Contemporary Trade Directory Entries found between 101 and 500m

7.7 A further fifty Contemporary Trade Directories are situated between 501m and 1,000m from the Site boundary.

7.8 There are two **Fuel Station Entry** recorded within 1,000m of the Site boundary. The first entry name is St. Albans Service Station, located at 150 Harpenden Road, St. Albans approximately 96m north-west of the Site for an Open Petrol Station. The second entry name is Mfg King William, located at 2 Beech Road Valley Road, Marshalswick, St. Albans approximately 538m south-east of the Site for an Open Petrol Station.

Waste

7.9 The Site is located within the **Local Authority Landfill Coverage** of Hertfordshire County Council and St. Albans District Council, who have both supplied landfill data.

7.10 Two **Licensed Waste Management Facilities (Location)** are recorded within 1,000m of the Site boundary. The first is to Hertfordshire County Council at St. Albans H W R C, Sandridge Road, located 533m east of the Site. The Site is categorised as a Household Waste Amenity Site, with a current license status of Transferred (in September 2019). It was issued in February 1977. The second is to Veolia E S (UK) Limited, at Sandridge Gate Business Centre, Ronsons Way, located 540m east of the Site. The Site is categorised as a Household, Commercial and Industrial Transfer Station, with a current licence not supplied. It was issued on August 1994, with a last modification of February 2013.

7.11 One **Local Authority Recorded Landfill Site** is recorded approximately 237m east of the Site at Porters Wood. The last reported status was unknown, with no details of the type of waste or date of closure.

7.12 There are three **Potentially Infilled Land (Water)** and six **Potentially Infilled Land (Non-Water)** recorded within 1,000m of the Site Boundary, and these are further detailed in **Table 7-5**:

Use	Date of Mapping	Distance (m)	Direction
Unknown Filled Ground (Pit, quarry, etc)	1985	647	South
Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	1960	726	South
Unknown Filled Ground (Pit, quarry, etc)	1985	749	South
Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	1925	787	South
Unknown Filled Ground (Pit, quarry, etc)	1985	807	South
Unknown Filled Ground (Pit, quarry, etc)	1985	808	South
Unknown Filled Ground (Pit, quarry, etc)	1985	824	South
Unknown Filled Ground (Pit, quarry, etc)	1985	831	South East
Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	1960	918	North West

Table 7-5: Potentially Infilled Land (Water) and (Non-Water)

7.13 There are three **Registered Waste Transfer Sites** are recorded within 1,000m of the Site Boundary, and these are further detailed in **Table 7-6**:

License Holder – Location	Site Category	Max Input Rate	Status	Distance (m)	Direction
Hertfordshire C.C. Waste Management Un. - County Hall, Pegs Lane	Civic Amenity	Very Small (less than 10,000 tonnes per year)	Operational	525	East
Herts C.C. - St Albans H.W.S, Sandridge Road	Civic Amenity	Undefined	Superseded	525	East
M.R.S. St Albans Ltd - Central Depot, St Albans Road, Sandridge	Transfer	Very Small (less than 10,000 tonnes per year)	Operational	537	East

Table 7-6: Registered Waste Transfer Sites

7.14 There are no provided reports of the following within 1,000m of the Site boundary:

- BGS Recorded Landfill Sites
- Historical Landfill Site
- Integrated Pollution Control Registered Waste Sites
- Licensed Waste Management Facility (Landfill Boundary)
- Registered Landfill Sites
- Registered Waste Treatment or Disposal Sites

Unexploded Ordnance (UXO)

7.15 The Zetica Regional Unexploded Bomb Risk Map for the Site has outlined the proposed development is potentially located within a Low Bomb Risk area affected by UXO activity, as illustrated in **Figure 7-1**.

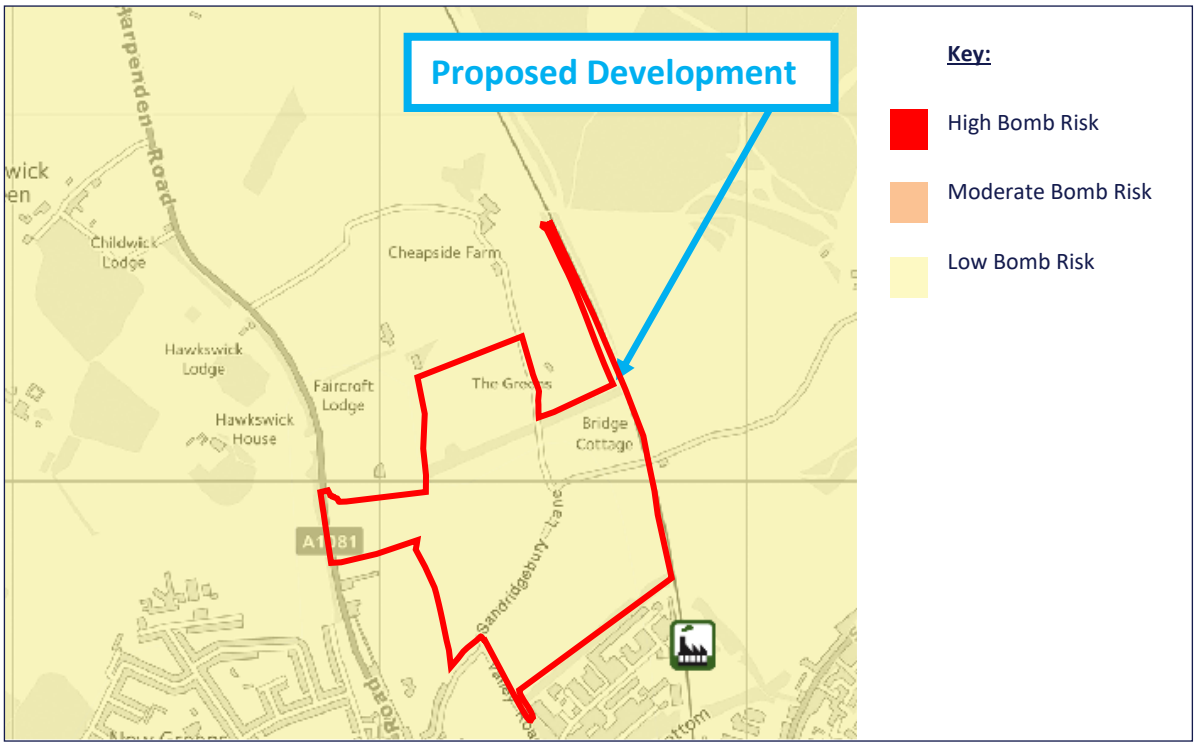


Figure 7-1: Zetica Regional Unexploded Bomb Risk Assessment Map for the Site

7.16 This risk map is specifically related to the chance of unrecorded, unexploded "dropped" ordnance from WW2.

7.17 While the risk from "dropped" ordnance shows a low Risk, a 'Pre-Desk Study Assessment' (PDSA) Bomb Search has been requested from Zetica UXO, in which the risk of encountered items of UXO from all potential sources not just dropped ordnance has been undertaken to understand the risk during intrusive works on site. **Table 7-7** below provides the PDSA response:

Threat Source	Details
Pre-WWI Military Activity on or Affecting the Site	None Identified
WWI Military Activity on or Affecting the Site	None Identified
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: - Transport Infrastructure and Public Utilities - Military Barracks, Camps, Depots and Training Areas
WWI Bombing	None Identified on the Site
Interwar Military Activity on or Affecting the Site	None Identified
WWII Military Activity on or Affecting the Site	None Identified
WWII Strategic Targets (within 5km of Site)	The Following strategic targets were located in the vicinity of the Site: - Transport infrastructure and Public Utilities - Industries important to the war effort, including Aircraft Manufacturing - Royal Air Force (RAF) Sandridge and Hatfield Aerodrome - Anti-invasion defences
WWII Bombing Decoys (within 5km of Site)	None
WWII Bombing	During WWII the Site was located on the boundary between the Rural District (RD) of St. Albans and the Municipal Borough (MB) of St. Albans . St. Albans RD officially recorded 427No. High Explosive (HE) bombs with a bombing density of 13.4 bombs per 405 hectares (ha). St. Albans MB officially recorded 56No. HE bombs with a bombing density of 11.0 bombs per 405ha. No readily available records have been found to indicate that the Site was bombed.
Post – WWII Military Activity on or Affecting the Site	None Identified

Table 7-7: Zetica PDSA for Site.

7.18 Zetica UXO have confirmed that although a Detailed Desk Study is always prudent, it is not considered essential to be undertaken.

8 Environmental Setting

8.1 There are seven **Ancient Woodlands** recorded within 1,000m of the Site boundary and these are detailed below in **Table 8-1**:

Name	Type	Area (m^2)	Distance (m)	Direction
Not Supplied	Ancient and Semi-Natural Woodland	4,526.89	Onsite	East
Not Supplied	Ancient and Semi-Natural Woodland	16,139	Onsite	East
Green Wood	Ancient and Semi-Natural Woodland	34,429.62	512	North West
Pudlers/Well Woods	Ancient and Semi-Natural Woodland	62,360.59	634	North East
Langley Wood	Ancient and Semi-Natural Woodland	45,151.69	646	North East
Green Wood	Plantation on Ancient Woodland	69,009.37	730	North West
Batch Wood	Ancient and Semi-Natural Woodland	129,218.31	755	West

Table 8-1: Ancient Woodlands

8.2 One **Area of Adopted Green Belt** is recorded within 1,000m of the Site boundary. This is the St. Albans District Local Plan Review, and is adopted from the 30th November 1994 and is shown to be onsite.

8.3 There are two identified **Nitrate Vulnerable Zones (NVZ)** within 1,000m of the Site boundary. The Hatfield NVZ is situated onsite is designated for groundwater and Colne and Guc (From Confluence with Chess to Ash) also located onsite, and designated for surface water.

8.4 None of the following are reported within 1,000m of the Site boundary:

- Areas of Adopted Greenbelt
- Areas of Unadopted Greenbelt
- Areas of Outstanding Natural Beauty
- Environmentally Sensitive Areas
- Forest Parks
- Local Nature Reserve
- Marine Nature Reserves
- National Nature Reserves
- National Parks
- Nitrate Sensitive Areas
- Ramsar Sites
- Site of Special Scientific Interest
- Special Areas of Conservation
- Special Protection Area
- World Heritage Sites

9 Site Conceptual Model

9.1 Guidance has been published by the Department of the Environment, Transport and the Regions (DETR Circular 02/2000) 'Environmental Protection Act 1990: Part 11A – Contaminated Land (20th March 2000) which promotes the 'suitable for use approach'. This has since been replaced by the DEFRA: Contaminated Land Statutory Guidance (April 2012). The DEFRA note 'The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore need to be assessed on a site-by-site basis.

9.2 The "suitable for use" approach consists of three elements:

- Ensuring that land is suitable for its current use - in other words, identifying land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise ("remediating" the land): the new contaminated land regime provides general machinery to achieve same.
- Ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given) for the development and, where necessary to avoid unacceptable risk to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes.
- Limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactorily assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby risking distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

9.3 Also addressed within the DEFRA guidance is the issue of 'contaminated land'. 'Before the Local Authority can make the judgement that any land appears to be Contaminated Land on the basis that Significant Harm is being caused, or that there is a Significant Possibility of such harm being caused, the authority must therefore identify a Significant Pollutant Linkage.

9.4 This means that each of the following has been identified:

- A Contaminant Source
- A Pathway
- A Receptor

and that:

- The Contaminant is causing Significant Harm to that Receptor.

Or

- There is a Significant Possibility of such harm being caused by the Contaminant to the Receptor.

9.5 Where any of the three elements of the Source-Pathway-Receptor (SPR) are not present, there is no risk and therefore land cannot be classified as statutory 'contaminated land'.

9.6 In terms of controlled waters, DEFRA: Contaminated Land Statutory Guidance (April 2012) notes the following:

"A.35 Section 78A (9) defines the pollution of controlled waters as: 'The entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter'.

A.36 Before determining that pollution of controlled waters is being, or is likely to be, caused, the local authority should be satisfied that a substance is continuing to enter controlled waters or is likely to enter controlled waters. For this purpose, the local authority should regard something as being "likely" when they judge it more likely than not to occur.

A.37 Land should not be designated as contaminated land where:

(a) A substance is already present in controlled waters;

(b) Entry into controlled waters of that substance from land has ceased; and

(c) It is not likely that further entry will take place.

A.38 Substances should be regarded as having entered controlled waters where:

(a) They are dissolved or suspended in those waters; or

(b) If they are immiscible with water they have direct contact with those waters on or beneath the surface of the water.

A.39 The term "continuing to enter" should be taken to mean any entry additional to any which has already occurred."

9.7 In 2004 the Environment Agency published the 'Model Procedures for the Management of Land Contamination', CLR11, which provides the technical framework for applying a risk management process, based on the 'suitable for use' approach, when dealing with land affected by contamination.

9.8 In 2008, to enable the practical application of good practice of the EA's Model Procedures CLR11, R&D Publication 66 'Guidance for the Safe Development of Housing on Land Affected by Contamination' was published by the National House Builders Council (NHBC), the EA and the Chartered Institute of Environmental Health. Whilst written to be relevant to housing development it is also applicable to other forms of development where sites are land affected by contamination. The guidance describes in detail the process and activities involved for the identification and assessment of hazards for a Phase 1 assessment.

9.9 At Phase 1 stage, it is necessary to develop an initial conceptual site model to understand the possible relationships between contaminants, pathways and receptors. If a hazardous source, via an exposure pathway to a potential receptor can be established then there is a 'pollutant linkage', which is preliminarily risk assessed using parameters summarised in **Table 9-1,** below. At this stage, the conceptual model is prepared without site specific soils, groundwater or gas testing and as such, the findings should be treated only as first and general indications of possible SPR linkages.

9.10 The primary potential sources of contamination are shown below:

Agricultural Use	-	Soil and Water Contamination
Sandridgebury Lane	-	Soil and Water Contamination
Railway Line	-	Soil and Water Contamination
Works and **Depots**	-	Soil and Water Contamination
Old Clay Pits / Limekiln	-	Soil and Water Contamination

9.11 The potential receptors at the site are:

- End users / site occupiers
- Adjacent users / occupiers
- Controlled waters
- Flora and fauna
- Buildings & construction materials

9.12 The potential pathways at the site are primarily:

- Direct ingestion of soil / water / fruit or vegetable
- Inhalation of dust / vapours
- Direct skin contact with the ground / water
- Regression of plant growth due to phytotoxic contamination
- Vertical and lateral migration of contamination

9.13 While limited information is available at this stage methodology has been developed to help identify the potential contamination risk and linkages. The severity of damaging effects and the likelihood of any linkage have been considered.

9.14 Given the potential consequence and likelihood, a risk rating is given, based on the following matrix:

		Consequence			
Probability (Likelihood)		Severe	Moderate	Mild	Minor
	Highly Likely	Very High	High	Medium	Low
	Likely	High	Medium	Medium/Low	Low
	Possible	Medium	Medium/Low	Low	Very Low
	Unlikely	Medium/Low	Low	Very Low	Very Low

Table 9-1: Risk Ratings

9.15 The risk ratings are described as follows:

Very High: There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action.

High: Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remediation action.

Medium: It is possible that without appropriate remediation action harm could arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.

Low: It is possible that harm could arise to a designated receptor from an identified hazard. It is likely that, at worst if any harm was realised any effects would be mild.

Very Low: The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

9.16 A summary of the potential SPR linkages on site and within close proximity of the site are shown in **Table 9-2**. **Agricultural, Roads (Sandridgebury Lane), Railway Line, Works and Depots** and **Old Clay Pits/Limekiln**.

Source	Pathway	Receptor	Risk Rating	Potential Mitigation
Contaminated soils **On-site:** Agricultural Sandridgebury Lane **Off-site:** Agricultural Railway Line Works and Depots Old Clay Pits/Limekiln	Direct Ingestion & contact (1)	Site workers & occupiers	Medium	-
	Inhalation of dust (2)		Medium	-
	Direct skin contact (3)		Medium	-
	Vertical & lateral migration (4)	Controlled waters	Medium	-
	Direct uptake (5)	Flora	Medium	-
	Direct contact (6)	Building materials	Low	-
Contaminated groundwater **On-site:** Agricultural Sandridgebury Lane **Off-site:** Agricultural Railway Line Works and Depots Old Clay Pits/Limekiln	Direct Ingestion & contact (7)	Site workers & occupiers	Medium	-
	Direct skin contact (8)		Medium	-
	Vertical & lateral migration (9)	Controlled waters	Medium	-
	Direct uptake (10)	Flora	Medium	-
	Direct contact (11)	Building materials	Low	
Elevated gas **On-site:** None **Off-site:** None	Vertical & Lateral Mitigation (12)	Site workers & occupiers	Low	-
		Adjacent occupiers	Low	-

Table 9-2: Site SPR Summary

9.17 The following paragraphs outline the comments from the pathways identified in **Table 9-2** above.

9.18 **(1) Direct Ingestion & Contact -** Historically developed Site, with the exception of Sandridgebury Lane running across the Site, which may have used heavy metals, oils and fuels. Agricultural use to the north may have included the use of pesticides and fertilizers which may pose minor potential contamination. An assessment of the soils may be required at the detailed design stage.

9.19 **(2) Inhalation of Dust** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site, which may have used heavy metals, oils and fuels. Agricultural use to the north may have included the use of pesticides and fertilizers which may pose minor potential contamination. An assessment of the soils may be required at the detailed design stage.

9.20 **(3) Direct Skin Contact** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site, which may have used heavy metals, oils and fuels. Agricultural use to the north may have included the use of pesticides and fertilizers which may pose minor potential contamination. An assessment of the soils may be required at the detailed design stage.

9.21 **(4) Vertical and Lateral Migration** - The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.22 **(5) Direct Uptake** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site.

9.23 **(6) Direct Contact** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site. Agricultural use to the north may have included the use of pesticides and fertilizers which may pose minor potential contamination. An assessment of the soils may be required at the detailed design stage.

9.24 **(7) Direct Ingestion & Contact** - The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.25 **(8) Direct Skin Contact** - The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.26 **(9) Vertical & Lateral Migration** -- The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.27 **(10) Direct Uptake** - The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.28 **(11) Direct Contact** - The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to

detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.29 **(12) Vertical and Lateral Migration: (Site Workers & Occupiers)** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site. The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

9.30 **(12) Vertical and Lateral Migration: (Adjacent Occupiers)** - Historically developed Site, with the exception of Sandridgebury Lane running across the Site. The bedrock geology for the Site is situated on an Principal Aquifer. Groundwater flow into site is therefore possible however none of the surrounding off-site sources have the potential to detrimentally affect the proposed site. An assessment of the soils may be required at the detailed design stage.

10 Discussion & Summary

Discussion

10.1 A review of readily available Site environmental data, including historical mapping and statutory registers and consultation with appropriate authorities has identified the following:

On-Site and Offsite

10.2 The Site, to the north, still comprises **Agricultural Land** which may include the following typical contaminants: Nitrogen, potassium and phosphorous contained within fertilisers; chemicals from pesticides and herbicides; coliform and non-coliform bacteria from livestock waste and manure application; and hydrocarbons from oil and fuel leakages from machinery. Taking into consideration the existing underlying geology and groundwater vulnerability, this feature generally provides a ***low-Medium*** rating for risk. However, this may vary depending on persistence of the chemicals used and further assessment of the Site's soils may be required at the detailed design stage to establish baseline ground conditions.

On-Site

10.3 Potential contaminants from leakages and spillages from vehicles on **Sandridgebury Lane**, may include heavy metals, oils, fuels and Polycyclic Aromatic Hydrocarbons. Further assessment of the Site's soils will be required at the detailed design stage to establish baseline conditions. The risk rating is considered to be ***low***, with this considered to be a minor road and ditches which would intercept any potential contaminated runoff.

Off-Site

10.4 An existing **Railway Line** is shown to bound the Site to the east since 1883. Potential contaminants may include degreasing solvents, PCBs from engines and electrical equipment, heavy metals, oils, fuels, waste ash and clinker. Due to the proximity of the Railway line to the Site, and the underlying ground conditions, it is considered to be a ***medium*** rating for risk.

10.5 **Works** and **Depots** are shown within proximity of the Site. Potential contaminants may include: diesel fuels, solvents, oils, coal tars, phenols, sulphates, cyanides, ammoniacal liquor, heavy metals, hydrocarbons including TPH and PAH's and plastics, oils and lubricants. Further assessment of the site's soils will be required at the detailed design stage to establish baseline conditions. It should be considered that these are a ***low-moderate*** *risk,* given that most of the works are situated more than 250m from the Site and a railway line separating the Site from the existing works/depot.

10.6 The historical mapping has identified an **Old Clay Pit** and **Limekiln** approximately 900m and 925m south of the Site respectively. Potential contaminants may have included: metals, acids, highly corrosive mineralised waters, metal sulphides and hazardous / non-hazardous chemicals. Further assessment of the site's soils will be required at the detailed design stage to establish baseline conditions. However, due to the long period of time of inactivity, it has been assessed that these provide a ***low*** risk rating.

Summary

10.7 It is concluded from the review of the historical mapping, geological data, hydrological data, sensitive land uses, industrial land uses, waste and hazardous substances that the existing land uses shown on Site may have had potential contaminative uses. However, with the Site being a redevelopment, the disposal of any risks will be monitored and assessed, meaning that this will not be prohibitive to the planned development.

10.8 The underlying ground conditions are considered to be sensitive, with the Site situated on a bedrock Principal Aquifer.

10.9 The overall contaminative risk at the site is considered to be Low-Moderate, due to the limited potential contamination risks.

10.10 In order to confirm the baseline ground conditions, it is recommended that a Phase II ground investigation is carried out across the Site. It is considered that this Survey could be conditioned at the Reserved Matters Stage of the planning process as it usual for sites of this nature.

11 Limitations

11.1 The benefits of this report are provided solely to Hallam Land Management Limited, St Albans School and St Albans School Woollam Trust. The conclusions and recommendations contained herein are limited to those given the general availability of background information and the planned usage of the Site. Brookbanks do not confer any third party rights for the information contained in the report.

11.2 All distances referred to in this report are measured from the boundary of the planned development Site unless otherwise advised.

11.3 Third party information has been used in the preparation of this report, which Brookbanks, by necessity assume is correct at the time of writing.

Appendix A – Historical Map Index – Ordnance Survey

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
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
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

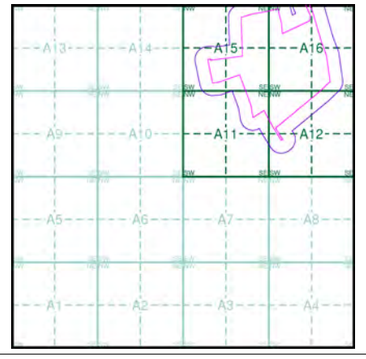
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community 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

Brookbanks Consulting

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hertfordshire	1:10,560	1883	2
Hertfordshire	1:10,560	1899	3
Hertfordshire	1:10,560	1925	4
Hertfordshire	1:10,560	1939	5
Historical Aerial Photography	1:10,560	1947	6
Historical Aerial Photography	1:10,560	1947	7
Hertfordshire	1:10,560	1951	8
Ordnance Survey Plan	1:10,000	1960	9
Ordnance Survey Plan	1:10,000	1965	10
Ordnance Survey Plan	1:10,000	1976 - 1978	11
Ordnance Survey Plan	1:10,000	1981 - 1985	12
Ordnance Survey Plan	1:10,000	1992 - 1993	13
10K Raster Mapping	1:10,000	1999	14
10K Raster Mapping	1:10,000	2006	15
VectorMap Local	1:10,000	2024	16

Historical Map - Slice A



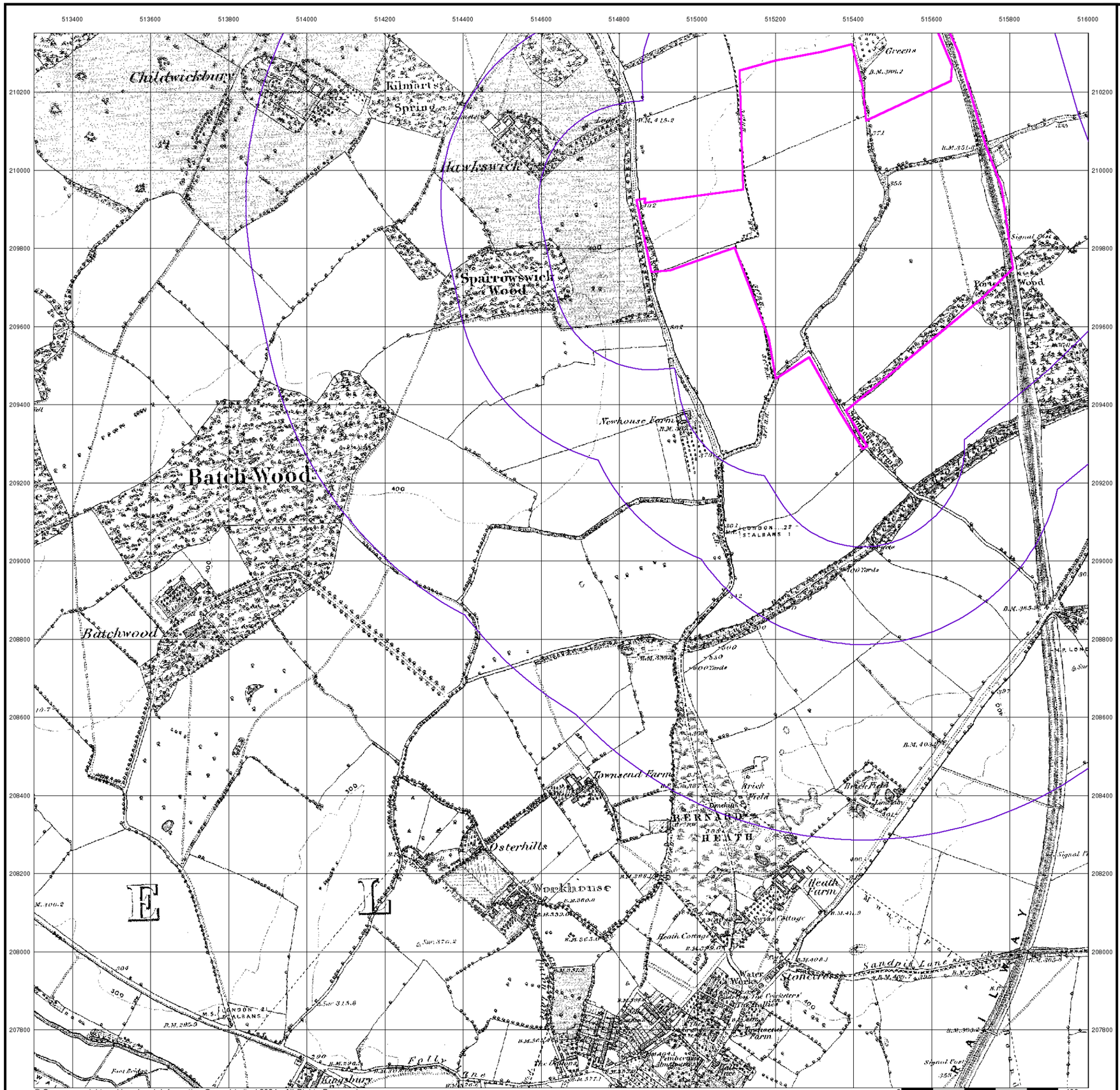
Order Details

Order Number: 345196291_1_1
Customer Ref: PO01119
National Grid Reference: 515040, 209440
Slice: A
Site Area (Ha): 51.71
Search Buffer (m): 1000

Site Details

St Albans

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



Brookbanks Consulting

Hertfordshire

Published 1883

Source map scale - 1:10,560

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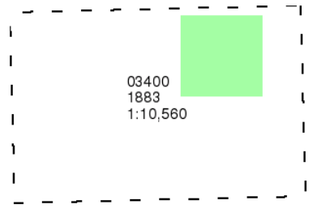
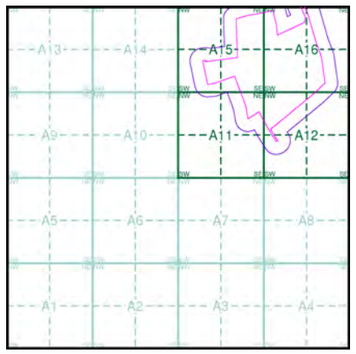
Map Name(s) and Date(s)



Historical Map - Slice A



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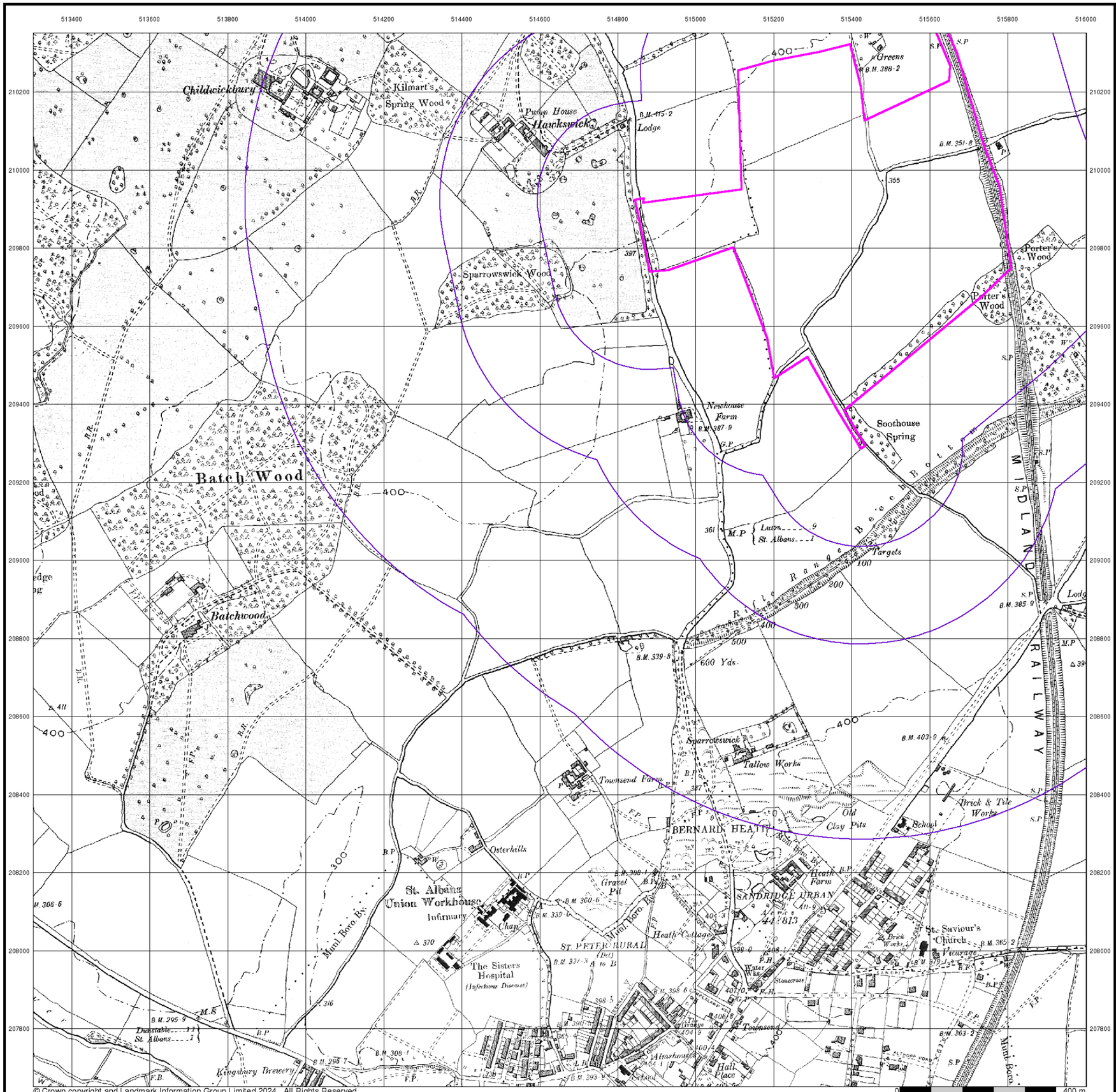

Brookbanks Consulting

Hertfordshire

Published 1899

Source map scale - 1:10,560

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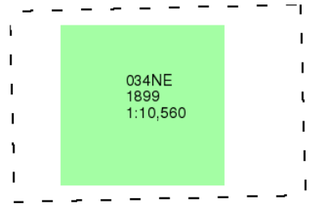
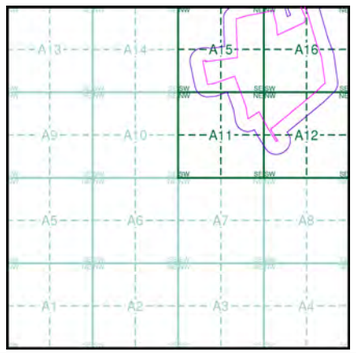


Historical Map - Slice A



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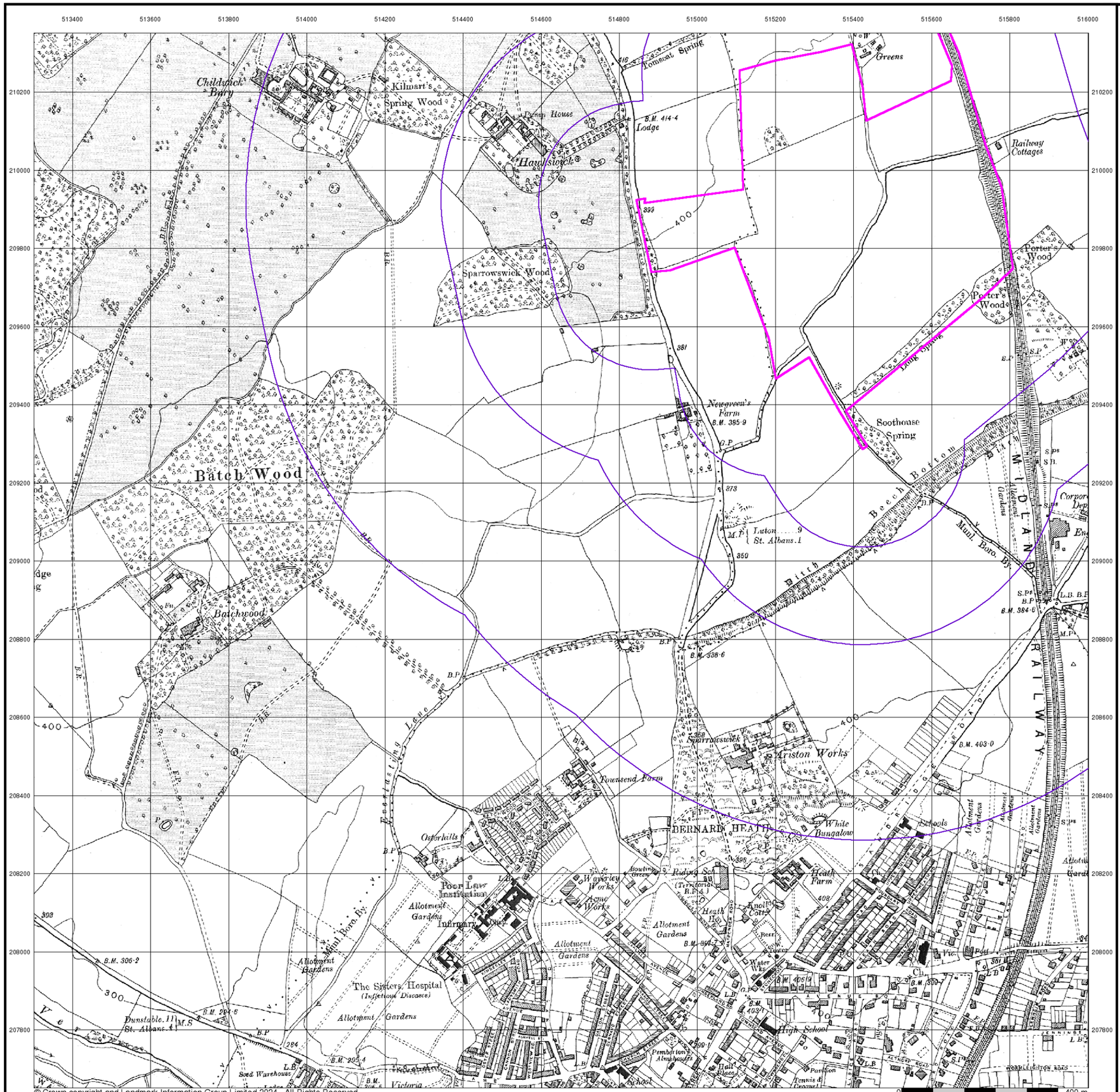

Brookbanks Consulting

Hertfordshire

Published 1925

Source map scale - 1:10,560

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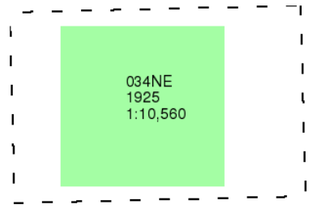
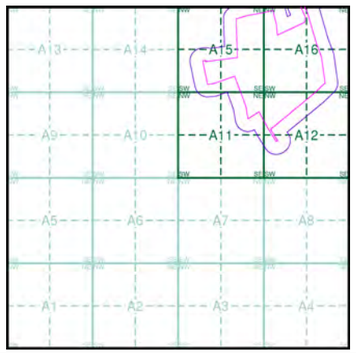
Map Name(s) and Date(s)



Historical Map - Slice A



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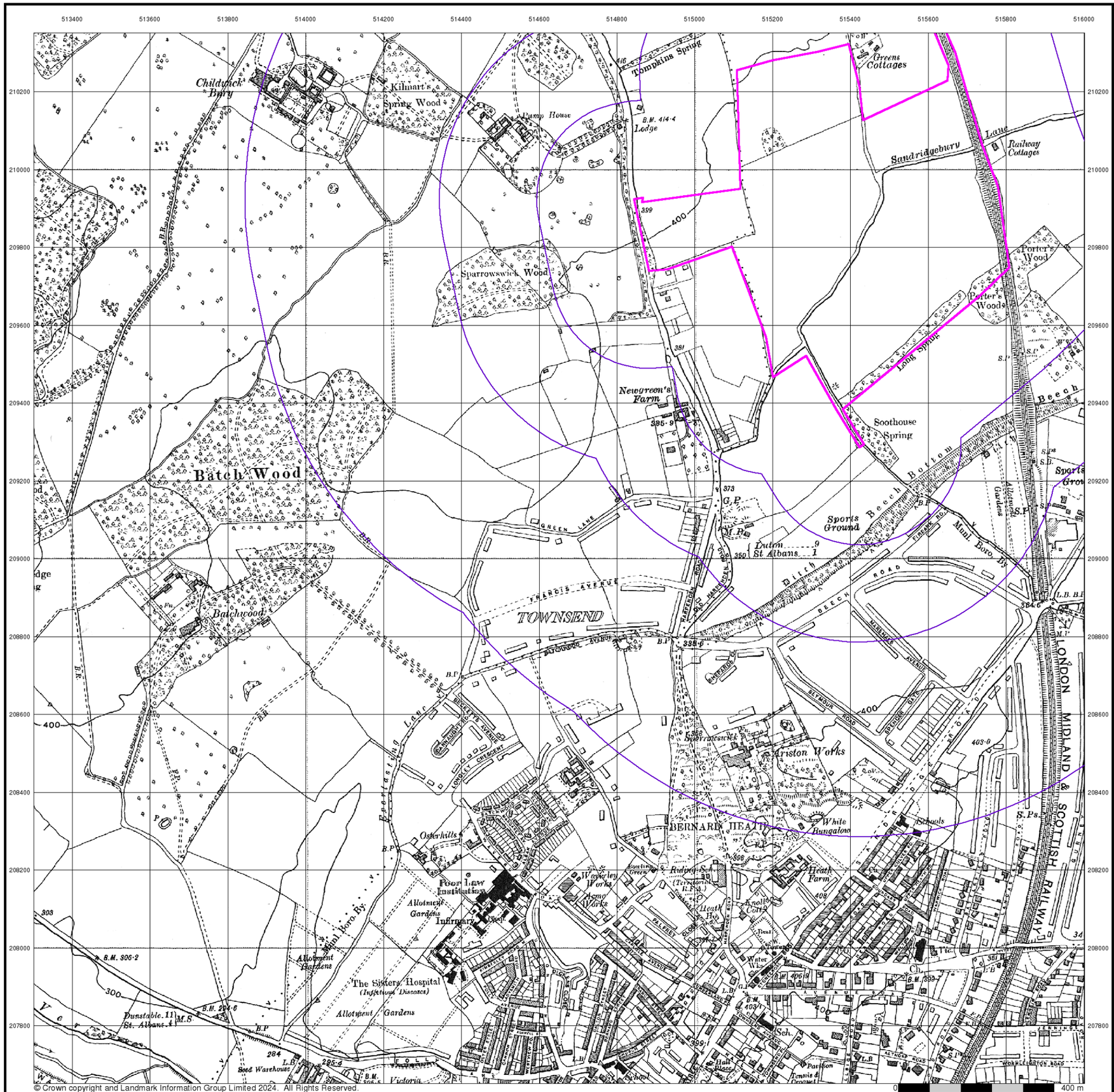

Brookbanks Consulting

Hertfordshire

Published 1939

Source map scale - 1:10,560

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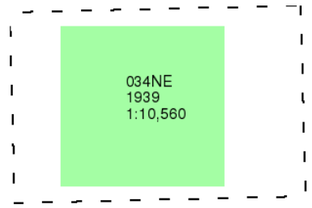
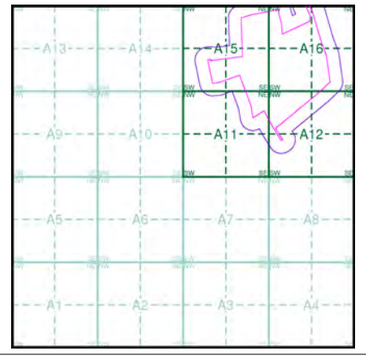


Historical Map - Slice A



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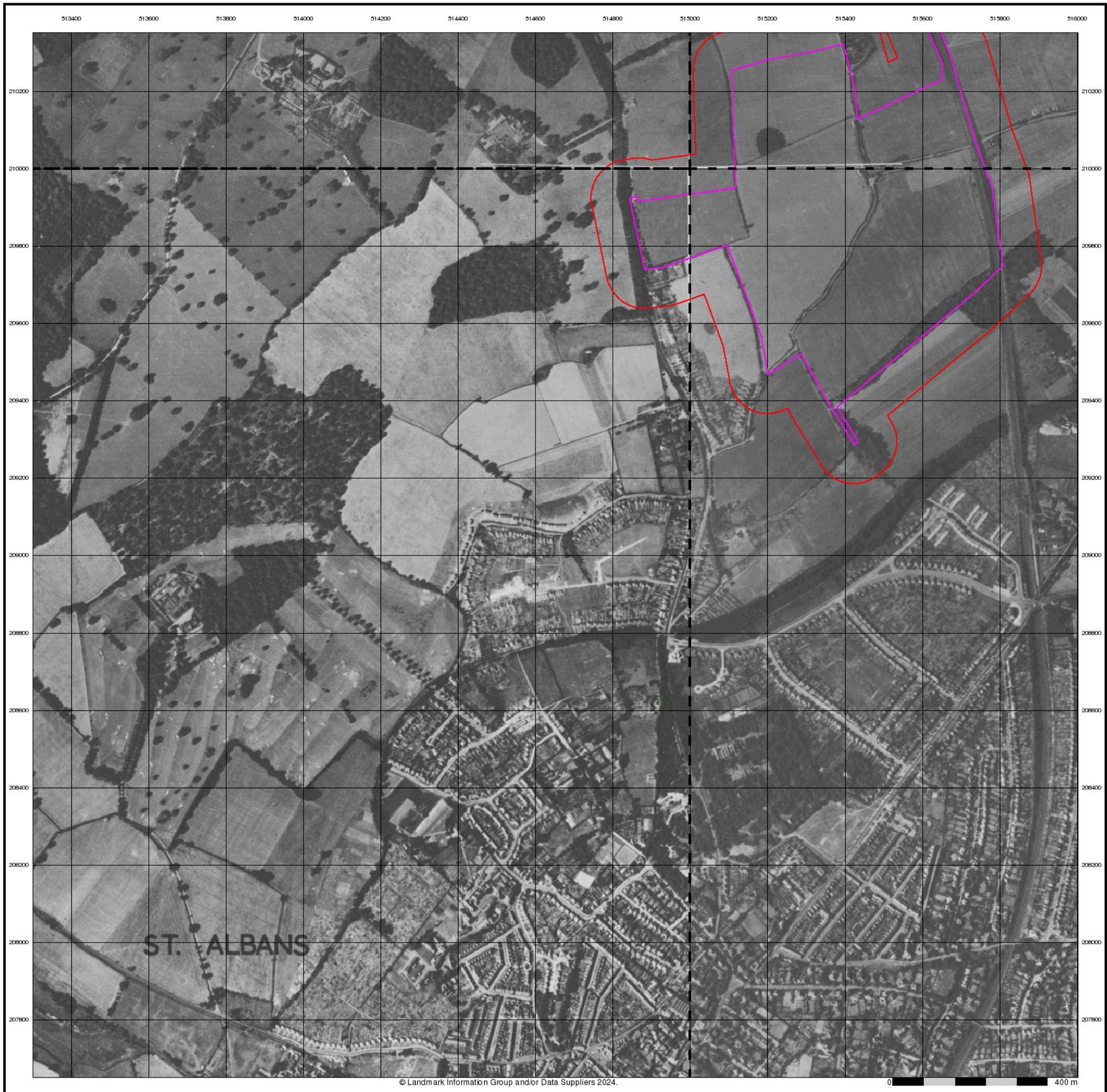


Brookbanks Consulting

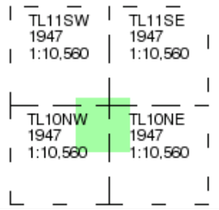
Historical Aerial Photography

Published 1947

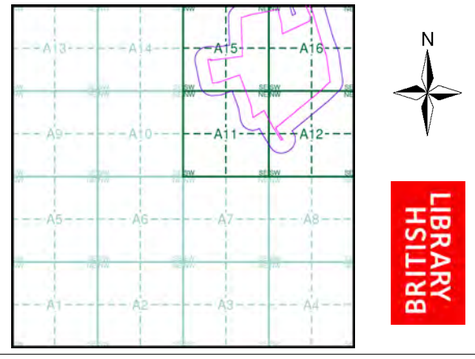
Source map scale - 1:10,560

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.

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



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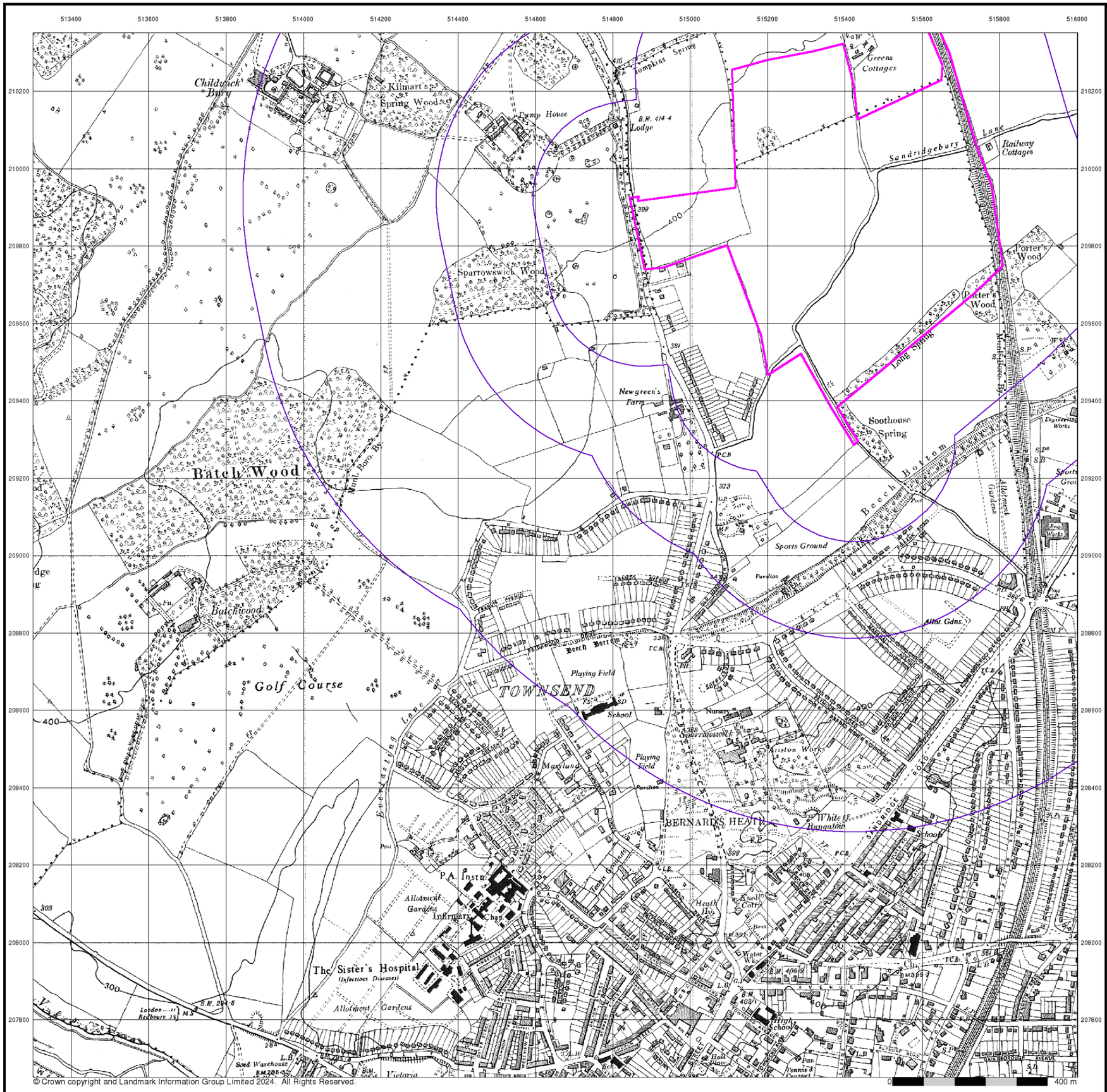

Brookbanks Consulting

Hertfordshire

Published 1951

Source map scale - 1:10,560

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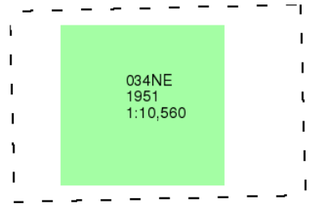
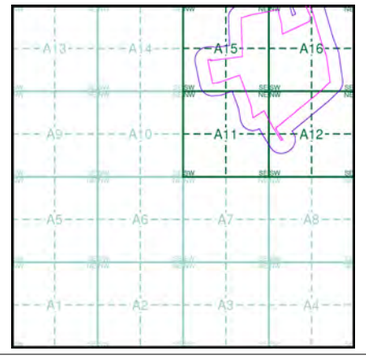


Historical Map - Slice A



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