

# Phase I Desk Study Report

Title	Phase I Desk Study Report	
Client	Tarmac Trading Limited	
Location	High Street, Colney Heath, St. Albans	
Project number	21-0570	
BIM reference	CHSA-BSP-ZZ-XX-RP-C-P02-Phase_1_Desk_Study_Report	
Date	27 JAN 2022	

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# **Authorisation Sheet & Revisions Record**

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# 1.0 INTRODUCTION

#### 1.1 Introduction

BSP Consulting has been appointed by the Client, Tarmac, to undertake a Phase I Desk Study on a plot of land off High Street, Colney Heath near St. Albans. A site location plan (Figure No. 21-0570/01) is included in Appendix A.

# 1.2 **Project Understanding**

We understand that the Client requires the completion of a Phase I Desk Study report to support a planning application for the development of the site with low-rise residential properties with private gardens. The draft proposed layout of the site is presented on the plan in Appendix B of this report.

The foregoing understanding has formed the basis of our assessment. Where the proposed site end-use is not consistent with our current understanding, it would be necessary to review our assessment to ensure it continues to apply.

# 1.3 Objectives

The scope of works detailed herein have been designed to ascertain the key geotechnical and environmental issues pertaining to the proposed development.

# 1.4 Scope of Works

Based on the defined objectives of the works (detailed in Section 1.3), the scope of the Phase I Desk Study included the following:

- A site walkover.
- Review of available historical and contemporary Ordnance Survey publications relating to the site.
- Review of the sites geology, hydrogeology and groundwater vulnerability.
- Review of the sites coal mining status.
- Review of the sites radon status.
- Commission of a full detailed Landmark Envirocheck Report relating to the site.
- Commission of Landmark geological mapping data relating to the site.
- Production of a preliminary Conceptual Site Model (pCSM).

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# 1.5 Limitations

The conclusions and recommendations made in this report are limited to those that can be made based on the findings of the investigation. Where comments are made based on information obtained from third parties, BSP Consulting assumes that all third-party information is true and correct.

No independent action has been undertaken to validate the findings of third party information, unless specifically stated.

The Phase I Desk Study undertaken herein comprises entirely of non-intrusive works and provides a strategic overview of the site from a geotechnical and environmental perspective and attempts to identify any potential abnormal issues with regards to the proposals for redevelopment of the site.

This report has been prepared in accordance with our understanding of current good practice. However, new information or legislation, or changes to good practice may necessitate revision of the report after the date of its issue.

BSP Consulting has prepared this report for the sole use and reliance of the Client, Tarmac, in accordance with our standard Conditions and Limitations (a copy of which is included as Appendix H). This report may not be relied upon by any third party without the explicit written agreement of BSP Consulting.

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# 2.0 SITE DESCRIPTION & HISTORY

#### 2.1 Site Description

The site comprises a plot of land to the northeast of High Street. The site may be located centred around approximate Ordnance Survey National Grid Reference 520200E 206120N and extends to an approximate area of 1.77 hectares.

A site visit was undertaken on 20th September 2021.

At the time of our site walkover, the main body of the site comprised an undeveloped agricultural field. A recently harvested crop was present at the surface across the field. A small shed-type structure was present in the southwest corner of the field surrounded by overgrown vegetation.

The western extremity of the site comprised a macadam surfaced access track off High Street. The track provided access to Colney Heath Football Club, which was present to the immediate north of the site. The track continued along the northern perimeter of the site (to the south of the Football Club) and provided access to some private fishing ponds to the northeast of the site. A public footpath extended from the end of the track and cut across the northeastern corner of the site and continued in a northeasterly direction away from the site.

The southern boundary of the site was defined by a hedgerow. A hedgerow with trees and a dry drainage ditch ran parallel with the access track along the northern site boundary. A metal gate provided access into the field in the northwestern area of the site.

Undeveloped agricultural fields were present to the immediate east and southeast of the site. Residential properties were present to the immediate west and southwest of the site.

An Annotated Site Plan (Figure No. 21-0570/02) is included as Appendix C of this report, which shows the main features of the site and immediate surrounds. General views of the site are included on the plan in Appendix D of this report (Figure No. 21-0570/03).

An aerial photograph of the site, obtained from the Landmark Analysis tool commissioned as part of our works, is presented in Figure 1 below, with the current OS mapping plan for the site and surrounding area presented in Figure 2.

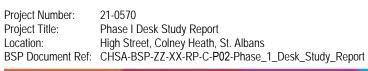




Figure 1: Aerial photograph of the site (2021 image)



Figure 2: Current OS Mastermap Plan



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# 2.2 Site History

Available historical and contemporary Ordnance Survey publications (detailed in Appendix E) were reviewed to obtain historical information for the site.

We would note that the boundary marked on the historical sheets within the Envirocheck Report appears to 'shift' on several of the maps due to scaling inaccuracies between maps of differing dates. This is a function of Envirocheck transposition algorithms.

The key findings of the historical search are summarised in Table 1.

**Table 1: Historical Publication Data** 

Date	Features on Site	Features off Site
1880s	The site comprises part of an undeveloped field.	<ul> <li>Undeveloped fields surround the majority of the site.</li> <li>A path runs parallel with the southern site boundary and continues in a northeasterly direction away from the site.</li> <li>Residential properties and a school are present to the south of the site.</li> <li>A watercourse (River Colne) is present approximately 200m to the south of the site.</li> </ul>
1890s	The site remains essentially unchanged.	The surrounding area remains essentially unchanged.
1900s & 1910s	No maps available for viewing.	No maps available for viewing.
1920s	The site remains essentially unchanged.	<ul> <li>Allotments are present to the immediate southeast of the site.</li> <li>A suspected gravel pit is indicated to be present approximately 80m to the west of the site.</li> <li>The majority of the field boundaries to the immediate north of the site are no longer present. The area to the north of the site is now shown as a very large field.</li> </ul>
1930s	The site remains essentially unchanged.	<ul> <li>Several gravel pits are now indicated to be present from approximately 100m to the west of the site.</li> <li>A gravel pit is also indicated to be present the northwest of the site.</li> </ul>
1940s	The aerial photograph of 1947 shows the site to comprise an agricultural field.	The aerial photograph of 1947 shows ponds and suspected gravel pits to the immediate north of the site.
1950s	No maps available for viewing.	No maps available for viewing.
1960s	The site remains essentially unchanged, although a footpath is indicated to run parallel with the northern site boundary.	<ul> <li>A 'Recreation Ground' is present to the northwest of the site.</li> <li>Disused gravel pits are present to the north of the site.</li> <li>The gravel pits to the west of the site are no longer present (presumed infilled).</li> </ul>

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Date	Features on Site	Features off Site
1970s	The site remains essentially unchanged.	<ul> <li>Some of the ponds and pits to the north of the site appear to have been infilled.</li> <li>By the late 1970s, development has taken place in the area of the former gravel pits to the west of the site and a school has been constructed to the northwest of the site.</li> <li>The recreation ground is now labelled as a 'Sports Ground'.</li> </ul>
1980s	No maps available for viewing.	•
1990s	The site remains essentially unchanged.	The surrounding area remains essentially unchanged.
2000	The aerial photograph of 2000 shows the site to comprise an agricultural field	The aerial photograph of 2000 shows the presence of ponds to the north of the site and a sports ground and school to the northwest of the site.
2006 & 2021	The site remains essentially unchanged.	The surrounding area remains essentially unchanged.

# 2.3 Aerial Photography & Historical Map Overlays

As part of the commissioned Landmark Report, the use of the Landmark Envirocheck Analysis tool was purchased to provide site specific aerial photographic imagery, and to provide the ability to undertake limited historical map overlay manipulation. Figures 3 to 6 show overlays of the historical map publications from 1899, 1938, 1960 and 1975 respectively, as shown on current aerial imagery.

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# Figure 3: Overlay of 1899 Historical Map with Aerial Photograph of the Site (2021 image)

The site comprises an undeveloped field.

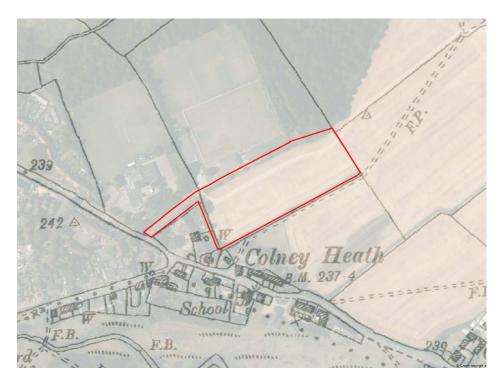


Figure 4: Overlay of 1938 Historical Map with Aerial Photograph of the Site (2021 image)

Several gravel pits are present to the west of the site. A gravel pit is also indicated to be present to the northwest of the site.



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# Figure 5: Overlay of 1960 Historical Map with Aerial Photograph of the Site (2021 image)

A recreation ground is present to the northwest of the site. Disused gravel pits are present to the north of the site. The gravel pits to the west of the site are no longer present (presumed infilled).

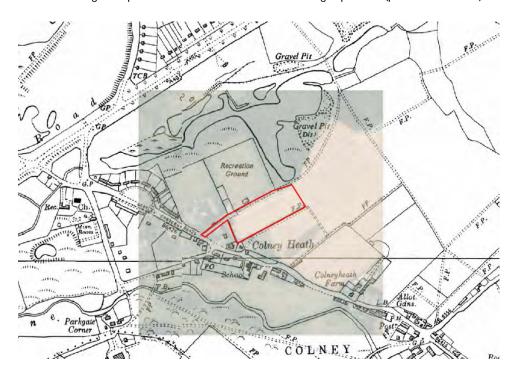


Figure 6: Overlay of 1975 Historical Map with Aerial Photograph of the Site (2021 image)

Some of the ponds and pits to the north of the site appear to have been infilled. A school has been constructed to the northwest of the site. The recreation ground is now labelled as a Sports Ground.



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# 3.0 GEOLOGY & ENVIROMENTAL SETTING

# 3.1 Geological References

The following geological publications were referred to:

- Landmark geological map sheets (included in Appendix F).
- The BGS online interactive map viewer and Lexicon of Named Rock Units.
- The Coal Authority online interactive map viewer.
- Environment Agency website: www.environment-agency.gov.uk.

# 3.2 Geology

The site is indicated to be underlain by superficial drift deposits of the Lowestoft Formation, which generally comprises gravelly clay with inclusions of sand and silt (i.e. glacial till). The gravel component is predominantly chalk and flint. It should be noted that drift deposits comprising till have the potential to alter rapidly in character and geotechnical properties both laterally and vertically over relatively short distances.

The bedrock underlying the site is indicated to comprise the Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated), which generally comprise nodular chalks with interbedded marls.

#### 3.3 Faults

No faults are indicated to be present within the boundary of the site or within the immediate vicinity of the site.

# 3.4 Man-Made Deposits

The geological publications do not show the presence of any man-made deposits (i.e. Made Ground, Worked Ground or Landscaped Ground) beneath the site. However, based on a review of historical maps, suspected infilled former gravel pits are present in the vicinity of the site.

# 3.5 Coal Mining Report

The site is not indicated to lie within a coal mining reporting area.

# 3.6 Landmark Envirocheck Report

A Landmark Envirocheck Report was commissioned to assist in ascertaining the environmental setting of the site.

The full Envirocheck Report is presented in Appendix G and has revealed the following key relevant information (details are only listed where they are within potential influencing distance of the site).

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# 3.6.1 Agency & Hydrological

# **Aquifer Status**

The aquifer designation maps are presented in Appendix G and are based on geological mapping provided to Landmark by the British Geological Survey. Different aquifer classifications may be applied to superficial (drift) deposits (typically forming shallow perched groundwater units where present) and bedrock aquifers (which may contain regional groundwater units). Possible aquifer designations comprise Principal Aquifers, Secondary (A, B or Undifferentiated) Aquifers and Unproductive Strata.

The superficial deposits underlying the site are classified as 'Secondary Undifferentiated Aquifer - Undifferentiated'. The underlying bedrock is designated as a 'Principal Aquifer'.

The Environment Agency describe a Secondary Undifferentiated Aquifer as '...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'.

The Environment Agency describe a Principal Aquifer as 'layers of rock or drift deposits that have high intergranular and/or fracture permeability – meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale'.

#### Source Protection Zones

The site is shown to lie within a Source Protection Zone II (Outer Protection Zone) and a Source Protection Zone III (Total Catchment), as designated by the Environment Agency. SPZs relate to the protection of groundwater resources principally for public drinking water supply.

#### Flood Risk Status

The site is not shown to lie within an area at risk of flooding, although the area to the immediate northeast is shown to lie within an area of extreme flooding from rivers or sea without defences. This report does not constitute a formal flood risk assessment.

#### Surface Water

No surface water features are identified on the site. The nearest surface water features to the site comprise ponds to the immediate northeast of the site. The River Colne is present approximately 200m to the south of the site.

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#### Pollution Incidents to Controlled Waters

The Envirocheck Report includes details of three entries within 200m of the site. These entries were classified as Category 3 – Minor Incidents. A fourth entry was classified as a Category 4 – Significant Incident, although the entry was located 218m to the northeast of the site.

#### **Discharge Consents & Groundwater Abstractions**

There are no entries listed within 250m of the site.

#### Groundwater Vulnerability - Soluble Rock Risk

The site is classed as a 'Significant Risk – Problems Unlikely'.

#### 3.6.2 Waste

There are five Historical Landfill Sites, two Local Authority Recorded Landfill Sites and one Registered Landfill Site located within 250m of the site. The locations of these landfill sites appear to correlate to the locations of former gravel pits as shown on the historical maps. The types of waste deposited at the landfills are recorded as 'Industrial Waste', 'Inert Waste', 'Similar Inert' and 'Non-Hazardous Waste Rubble & Spoil'.

There are three Potentially Infilled Land (Non-Water) entries located within a 250m radius of the site, which relate to 'Unknown Filled Ground (Pit, quarry etc)'. The locations of these infilled features appear to correlate to the locations of former gravel pits as shown on the historical maps.

#### 3.6.3 Hazardous Substances

There are no sites associated with hazardous substances (i.e. sites dealing with explosives etc.) identified on the site, or within a 250m radius of the site, in the Landmark Envirocheck Report.

#### 3.6.4 Geological Issues

#### **BGS Soil Chemistry**

The BGS has prepared estimated soil concentration maps for several metals (including Arsenic, Lead, Nickel, Chromium and Cadmium), which are extrapolated from records available for use within their assessments.

Whilst potentially useful for the inference of Natural Metal Enrichment (NME) of the natural soils in a general locale, the data should not be used to inform any detailed decisions with regards to the chemistry of a particular site as it does not allow for anthropogenic effects.

Estimates of the soil chemistry at the site indicate anticipated concentrations of Arsenic of <15mg/kg, Cadmium of <1.8mg/kg, Chromium of 60-90mg/kg, Lead of 100-200mg/kg and Nickel of 15-30mg/kg.

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Based on the information supplied within the Envirocheck report, the site is not shown to be located within an area where Natural Metal Enrichment of the underlying natural soils is likely to be present. However, this is only applicable to the specific determinands listed above.

#### **BGS** Recorded Mineral Sites

There are three entries listed within 250m of the site. The entries relate to the former opencast extraction of sand and gravel.

# **Ground Stability Hazards**

No significant ground stability hazards have been identified that relate to the site (including from compressible, collapsible, running sand, ground dissolution, landslide and shrinking or swelling clay ground stability hazards).

#### Radon

The Landmark Envirocheck Report identifies that the site lies within a lower probability Radon area and no Radon protective measures are necessary in the construction of new dwellings or extensions.

# **BGS Borehole Records**

There are no relevant BGS borehole records on the site, or in the immediate vicinity of the site in the Landmark Envirocheck Report.

#### 3.6.5 Industrial Lane Use

#### Contemporary Trade Directory Entries, Commercial Services, Manufacturing & Production

There are no entries identified at the site or in close proximity to the site.

#### 3.6.6 Sensitive Lane Use

#### Areas of Adopted Green Belt

The site is indicated to lie within an Adopted Green Belt as defined by St Albans City & District Council.

# Nitrate Vulnerable Zones

The site and surrounding area are identified as being within a Nitrate Vulnerable Zone. In our experience the majority of this area of the country is defined as a Nitrate Vulnerable Zone and this classification is considered not to present a potential risk to the development of the site.

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#### 3.7 Land Use Assessment

As part of the land use assessment, reference has been made to the 'Desk Reference Guide to potentially Contaminative Land Uses' produced by Mr P Syms and published jointly by the ISVA (The professional Society for Valuers and Auctioneers) in association with The Royal Institution of Chartered Surveyors (RICS) and the Chartered Institute of Environmental Health (CIEH).

We have also made reference to the Department for Environment, Food and Rural Affairs and the Environment Agency Contaminated Land Report CLR8 'Potential Contaminants for the Assessment of Land' (March 2002). Although now formally withdrawn, this document identifies key contaminants which may potentially be present at a site as a result of a given historical land use and is considered useful as a desk based ready reference guide.

#### 3.7.1 On Site Assessment

At the time of our site walkover, the main body of the site comprised an undeveloped agricultural field. A small shed-type structure was present in the southwest corner of the field. The western extremity of the site comprised an access track off High Street. The track provided access to Colney Heath Football Club to the immediate north. The track continued along the northern perimeter of the site and provided access to some private fishing ponds to the northeast of the site. A public footpath extended from the end of the track and cut across the northeastern corner of the site and continued in a northeasterly direction away from the site.

Historically, the site has comprised a field since the earliest viewed historical maps of the 1880s.

The Phase I Desk Study information has not identified any potentially contaminative former industrial land use at the site.

Based on the information obtained from our desk study enquiries, our walkover of the site and experience of similar sites, potential general soil contamination that may be present could include:

- Metals and metalloids associated with any potential localised Made Ground beneath the site.
- Pesticides associated with the agricultural use of the site.
- Polycyclic Aromatic Hydrocarbons (PAHs) from any ashy inclusions and/or carbonaceous inclusions in the near surface soils.

#### 3.7.2 Off Site Assessment

With regards to potential sources of chemical contamination, based on the findings of the Phase I Desk Study enquiries, there are no significant potentially contaminative land uses known to be present within close proximity to the site.

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Based on the information obtained from the desk study, the following sources of potentially hazardous ground gas (i.e. carbon dioxide and methane) have been identified:

- Man-made deposits associated with numerous infilled former gravel pits.
- Man-made deposits associated with several historical landfill sites.

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#### 4.0 PRELIMINARY CONCEPTUAL SITE MODEL

#### 4.1 General

The DEFRA publication 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance' (dated April 2012) states the following with regards to the production of a Conceptual Site Model (CSM) for a site:

'The process of risk assessment involves understanding the risks presented by land, and the associated uncertainties. In practice, this understanding is usually developed and communicated in the form of a "conceptual model". The development of a CSM is typically undertaken in an iterative process, reflecting the changes in understanding as more detailed site information becomes available.

In developing a CSM, and specifically in the context of land contamination, consideration needs to be given to three essential elements; which form the basis of any risk present. The statutory guidance sections 3.8 and 3.9 (April 2012) states the following:

- (a) 'A "contaminant" is a substance which is in, on or under the land and which has the potential to cause significant harm to a relevant receptor, or to cause significant pollution of controlled waters.
- (b) A "receptor" is something that could be adversely affected by a contaminant, for example a person, an organism, and ecosystem, property, or controlled waters...
- (c) A "pathway" is a route by which a receptor is or might be affected by a contaminant.

The term "contaminant linkage" means the relationship between a contaminant, a pathway and a receptor.' For a contaminant linkage to be plausible, all three elements need to be present.

In undertaking a risk assessment and deriving a CSM for the purposes of the redevelopment of a site (i.e. planning and development control) reference has been made to both the Model Procedures for the Management of Land Contamination, as well as the National Planning Policy Framework (NPPF, dated February 2019).

The preliminary CSM should identify the hazards (source of potential contamination) and should set out the potential pollutant linkages with a view to identifying the nature and magnitude of the potential risks to receptors.

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In order to undertake the foregoing assessment, consideration is required with respect to the probability or likelihood of the linkage occurring and the severity and significance of the potential consequences; taking account the nature of the pollutant linkage and the potential severity of the hazard and the sensitivity of the receptor within the context of the proposed land use (in consideration of the planning regime).

Consideration of consequence/severity, probability/likelihood and risk has been based on the following guidance documentation:

- CIRIA C552 'Contaminated Land Risk Assessment, A Guide to Good Practice', 2001.
- EA R&D publication 66 'Guidance for the Safe Development of Housing on Land Affected by Contamination', 2008.

# 4.2 Classification of Consequences

In order to apply a consequence classification to a particular potential pollutant linkage, it is first necessary to define the terminology used within the classification system. The following terminology and definitions detailed in Table 2 have been adopted within our assessment, based on the guidance referenced in Section 4.1.

**Table 2: Classification of Consequences** 

Classification	Definition
Severe	<ul> <li>Acute risks to human health.</li> <li>Short-term risk of pollution of controlled waters or significant impact on controlled waters; e.g. large-scale pollution or very high levels of contamination.</li> <li>Catastrophic damage to buildings or property (such as building explosion causing collapse).</li> <li>Ecological system effects – immediate risks of major damage which is likely to result in irreversible substantial adverse changes in the functioning of the ecosystem or harm to a species of special interest that endangers the long-term maintenance of the population.</li> </ul>
Medium	<ul> <li>Chronic risks to human health.</li> <li>Pollution of sensitive water resources (such as leaching of contaminants into controlled waters) causing a significant effect on water quality.</li> <li>Ecological system effects – Immediate risks of significant damage which may result in substantial adverse changes to the ecosystems functioning or harm to a species of special interest that may endanger the long-term maintenance of the population.</li> <li>Significant damage to buildings, structures and services (for example foundation damage or rendering the building unsuitable for habitation).</li> </ul>
Mild	<ul> <li>Non-permanent health effects to human health (i.e. exposure is unlikely to lead to 'significant harm' in the context of Part 2A of the Environmental Protection Act 1990.</li> <li>Pollution of controlled waters or non-sensitive water resources (for example non-classified groundwater) that results in a short-lived effect to water quality or a marginal effect on amenity value, agriculture or commerce.</li> <li>Minor damage to buildings, structures and services.</li> </ul>

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	<ul> <li>Ecological system effects – Minor or short-term damage which is unlikely to result in substantial adverse changes to the ecosystems functioning or harm to a species of special interest.</li> <li>Substantial damage to non-sensitive environments (such as arable farmland for example).</li> </ul>
Minor	<ul> <li>No measurable effects on human health including non-permanent health effects to human health that are easily preventable by appropriate use of PPE/RPE.</li> <li>Minor pollution of controlled waters including non-sensitive water resources with no discernible effects on water quality or ecosystems.</li> <li>Minor damage to non-sensitive environments (including arable farmland for example).</li> <li>Easily repairable effects of damage to buildings, structures, services or the environment (for example discolouration of concrete, loss of plants in a landscaping scheme etc.).</li> </ul>

# 4.3 Classification of Probability

Once the possibility of a pollutant linkage has been established (noting that probability classification does not apply when there is no possibility of a linkage being present), the probability should be classified in accordance with Table 3.

Table 3: Classification of Probability

Classification	Definition	Likelihood
High Likelihood	There is a pollutant linkage and an event is highly likely to occur in the short-term, and is almost inevitable over the long-term OR there is evidence at the receptor of harm or pollution occurring.	>95% likelihood of Consequence Occurring
Likely  There is a pollutant linkage and it is probable that an event will occur. It is not inevitable, but possible in the short-term and likely over the long-term.		50 – 95% likelihood of Consequence Occurring
Low Likelihood  There is a pollutant linkage and circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place, and less likely in the short-term.		5 – 49% Likelihood of Consequence Occurring
Unlikely	There is a pollutant linkage and it is improbable that an event would occur even in the very long-term.	<5% likelihood of Consequence Occurring

# 4.4 Classification of Risk

In order to establish the relevant risk term applicable to the identified pollutant linkage, one of the risk phrases identified within Table 4 must be adopted, with the definitions of each risk term detailed within Table 5.

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Location: High Street, Colney Heath, St. Albans

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Table 4: Risk Classification Matrix (Based on C552 CIRIA, 2001)

		Consequence of Risk			
		Severe	Medium	Mild	Minor
	High Likelihood	Very High	High	Moderate	Moderate/Low
Probability (Likelihood)	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Negligible
	Unlikely	Moderate/Low	Low	Negligible	Negligible or No Potential Risk

Table 5: Risk Classification Definitions (Based on C552 CIRIA, 2001); Modified by BSP

Very High	There is a high probability that severe harm will 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	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	It is possible that harm could arise to a designated receptor from an identified hazard. However, there is a low likelihood that such harm would be severe, or if any harm were to occur it is more likely that the harm would be 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.
Moderate/Low	It is possible that harm could arise to a receptor. However, a combination of likelihood and consequence results in a risk that is above low but is not of sufficient concern to be classified as moderate. It can be driven by cases where there is an acute risk which carries a severe consequence, but where the exposure is unlikely. Such harm would at worse normally be mild. The risk is unlikely to present a substantial liability. Some limited further investigation may be required to clarify the risk and any associated liability. If subsequent remediation works are necessary, they are likely to be limited in extent.
Low	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.
Negligible	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is unlikely to be any worse than mild. No liability would be associated with such risks.
No Potential Risk	There is no potential risk or liability where no pollutant linkage has been established.

# 4.5 Contaminant [C] – Pathway [P] – Receptor [R] Considerations

The following CPR assessment has been undertaken based on the assumption that it is proposed to develop the site with low-rise residential properties with private gardens.

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# 4.6 Consideration of Potential Sources of Contamination [C]

Based on the findings of our works, the potential key sources of contamination at the site that would require consideration for the derivation of an initial CSM would be the following:

Table 6: Summary of Potential Contaminant Sources

Areas of Potential Concern (APCs)	Associated Contaminants
Potential Localised Made Ground & Near Surface Soils	<ul><li>Metals or metalloids</li><li>Pesticides</li><li>PAHs</li></ul>
Off-Site Man-Made Deposits (infilled former pits & landfill sites)	Ground gases (including methane & carbon dioxide)

# 4.7 Consideration of Potential Pathways [P]

The potential pathways at the site are primarily:

- Direct ingestion of soil (either directly or as soil particles attached to produce).
- Inhalation of fugitive dust and vapours.
- Direct skin contact with the ground.
- Direct ground contact with construction materials (including supply pipes).
- Vertical and lateral migration of contamination.
- Vertical and lateral migration of potentially hazardous ground gases/vapours.

#### 4.8 Consideration of Potential Pathways [P]

The potential receptors at the site are:

- The final end users (residents typically long term (chronic) exposure) and site visitors (typically short term (acute) exposure).
- Neighbouring properties (off-site receptors).
- Controlled Waters (i.e. the underlying groundwater, the underlying Principal Aquifer and nearby surface waters).
- Buildings and construction materials (including buried utilities).

In preparing the CSM, it has been assumed that construction personnel involved with the development of the site (typically short term (acute) exposure) will adopt all necessary personal protective equipment (PPE and RPE etc) and conform to health and safety requirements of their site-specific Risk Assessment and Method Statements (RAMS). Site workers have therefore not been included within the foregoing, as the adoption of these appropriate mitigation measures will result in an overall low risk of exposure to the C-P-R linkages identified.

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#### Preliminary Risk Assessment / Conceptual Site Model 4.9

Our preliminary conceptual model of possible pollutant linkages, applicable to the proposed site usage and based on our current understanding, is summarised in Table 7.

Table 7: Preliminary Risk Assessment Summary Table – Desk Study

Areas of Potential Concern [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
Potential Localised Made Ground & Near Surface Soils	Direct contact, ingestion or inhalation of fugitive dust	End users	Unlikely	Medium	Low	No Made Ground is indicated to be present on the site.  No potentially significant historical contaminative land uses have been identified at the site.  End-users are likely to come into contact with the in-situ soils as private gardens are proposed for the site.  Further consideration of this potential linkage should be provided during the course of the Phase II Exploratory Investigation works.
	Vertical and lateral migration	Neighbouring properties	Unlikely	Medium	Low	No Made Ground is indicated to be present on the site.  No potentially significant historical contaminative land uses have been identified at the site.  No sources of potentially mobile contamination (i.e. hydrocarbons) have been identified.  Further consideration of this potential linkage should be provided during the course of the Phase II Exploratory Investigation works.
	Leaching of Contaminants through unsaturated zone	Controlled Waters	Unlikely	Medium	Low	The bedrock beneath the site is classed as a Principal Aquifer and the site lies within designated Source Protection Zones II & III.  Surface water bodies are present in close proximity to the site. Any groundwater beneath the site may be regarded as being potentially susceptible to contamination.  No Made Ground is indicated to be present on the site.  No potentially significant historical contaminative land uses have been identified at the site.

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Location: High Street, Colney Heath, St. Albans
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Areas of Potential Concern [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
Potential Localised Made Ground & Near Surface Soils	Leaching of Contaminants through unsaturated zone	Controlled Waters	Unlikely	Medium	Low	No sources of potentially mobile contamination (i.e. hydrocarbons) have been identified. Further consideration of this potential linkage should be provided during the course of the Phase II Exploratory Investigation works.
	Direct contact or contact with vapours	Plastic buildings products (i.e. water supply pipes and buried concrete)	Unlikely	Medium	Low	No Made Ground is indicated to be present on the site.  No potentially significant historical contaminative land uses have been identified at the site.  No sources of potentially mobile contamination (i.e. hydrocarbons) have been identified.  The soils beneath the site are considered unlikely to contain elevated levels of contaminants that may affect plastic building products.  Further consideration of this potential linkage should be provided during the course of the Phase II Exploratory Investigation works.
Off-Site Man-Made Deposits (infilled former pits & landfill sites)	Vertical and lateral migration of ground gases to indoor air	End users of new buildings (asphyxiation) or new buildings (damage via explosion)	Low Likelihood	Severe	Moderate	Man-made deposits associated with infilled former pits and landfill sites are present in the vicinity of the site, which may represent potential sources of hazardous ground gases. Further consideration of this potential linkage (including a programme of ground gas monitoring) should be provided during the course of the Phase II Exploratory Investigation works.

The foregoing preliminary conceptual model highlights the potential plausible pollutant linkages that may relate to the site and would therefore require addressing by appropriate Phase II Exploratory Works. The information contained within the conceptual model should be confirmed and revised upon completion of an appropriate intrusive investigation.

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#### 5.0 CONCLUSIONS AND RECOMMENDATIONS

# 5.1 Site Summary

 At the time of our site walkover, the main body of the site comprised an undeveloped agricultural field. A small shed-type structure was present in the southwest corner of the field. The western extremity of the site comprised an access track off High Street. The track continued along the northern perimeter of the site and provided access to some private fishing ponds to the northeast of the site.

- A public footpath extended from the end of the track and cut across the northeastern corner of the site and continued in a northeasterly direction away from the site.
- Historically, the site has comprised a field since the earliest viewed historical maps of the 1880s.
- The geological publications indicate that the site is underlain by superficial drift deposits of the Lowestoft Formation overlying undifferentiated chalk bedrock.

#### 5.2 Geotechnical Assessment

It is understood that it is proposed to develop the site for a low-rise residential end-use.

The foundation solution for the proposed development will depend on the results of intrusive investigation works. These works should determine the potential presence and nature of any potential localised manmade deposits (i.e. Made Ground, for example) and provide an assessment of the depth to, and strength of, the Natural Strata beneath the site.

The site is indicated to be underlain by drift deposits of the Lowestoft Formation, which may be suitable to support traditional foundations.

An appropriate scope of geotechnical tests should also be included within a suitable Phase II investigation for the purposes of designing foundations (including plasticity index analysis and/or particle size distribution analysis, water soluble sulphate/pH etc.).

# 5.3 **Building Near Trees**

Foundation designs may need to be locally adjusted when building near existing, recently removed or proposed trees and hedgerows. Appropriate geotechnical soils testing should be undertaken as part of Phase II works, to assist in detailed foundation design.

#### 5.4 Gas Precautions

.At this stage based on the findings of the Phase I Desk Study works, a programme of ground gas monitoring (i.e. for carbon dioxide and methane) should be undertaken to confirm the ground gas regime.

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Based on the Landmark Envirocheck report, no radon associated precautions are required at the site.

# 5.5 **Coal Mining**

No coal mining precautions, or associated investigation works are required at the site.

#### 5.6 Water

The results of the intrusive investigation will assist in establishing the groundwater regime beneath the site.

# 5.7 Asbestos Survey

It is recommended that an asbestos survey of the existing shed-type structure is undertaken by a suitably qualified person prior to its anticipated removal as part of development works.

#### 5.8 Sources of Contamination

The Phase I Desk Study has identified the following key contaminants that may potentially be present at the site:

- Metals and metalloids associated with any potential localised Made Ground beneath the site.
- Pesticides associated with the agricultural use of the site.
- Polycyclic Aromatic Hydrocarbons (PAHs) from any ashy inclusions and/or carbonaceous inclusions in the near surface soils.
- Potentially hazardous ground gases (i.e. carbon dioxide and methane) associated with infilled former gravel pits and historical landfill sites.

The foregoing potential contaminants should form the basis of an assessment for human health and controlled waters as part of a suitable scope of Phase II Exploratory Investigation works at the site.

# 5.9 Statutory Consultation

We would recommend that a copy of this Phase I Desk Study report is issued (by the Client) to the Local Planning Authority for review and comment as part of the planning application process.

Any comments made by the Local Authority, or their appointed consultees, should be incorporated into the Phase II Exploratory Investigation to ensure that the intrusive investigation is acceptable to all parties.

Project Title: Phase I Desk Study Report

Location: High Street, Colney Heath, St. Albans

BSP Document Ref: CHSA-BSP-ZZ-XX-RP-C-P02-Phase\_1\_Desk\_Study\_Report



# 5.10 Recommended Phase II Exploratory Investigation Works

Proposed Phase II Exploratory Works should be sufficient to investigate the possible issues raised in the Phase I Desk Study and should be undertaken in general accordance with current industry good practice.

Based on our current understanding (conceptual site model) it is recommended that Phase II works comprise the following as an initial stage of investigation:

- A programme of exploratory holes across the site to provide an initial inspection of the near surface ground conditions for geotechnical and environmental purposes (anticipated to comprise trial pits and window sample boreholes).
- Appropriate geotechnical and environmental soil analyses.
- A programme of ground gas monitoring.
- Revision of the Conceptual Site Model.

# 5.11 Closing Comment

Based on the evidence of the findings of the Phase I desk study enquiries and following the implementation of any necessary remedial measures, the site is considered likely to be suitable for the proposed end-use from a geotechnical and environmental perspective.



# Appendix A

Site Location Plan

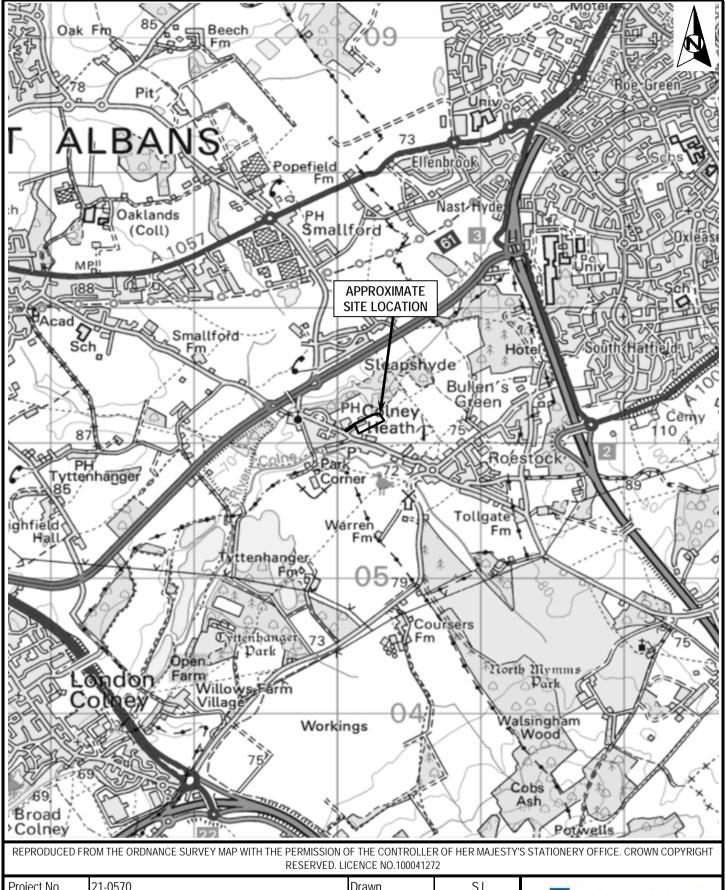


		Figure No.	21-0570/01
Title	Site Location Plan	Rev.	
		Date Drawn	27/09/2021
	Colney Heath, St. Albans	Scale	NTS
Project	High Street	Approved	PK
Client	Tarmac	Checked	PK
Project No.	21-0570	Drawn	SJ





# Appendix B

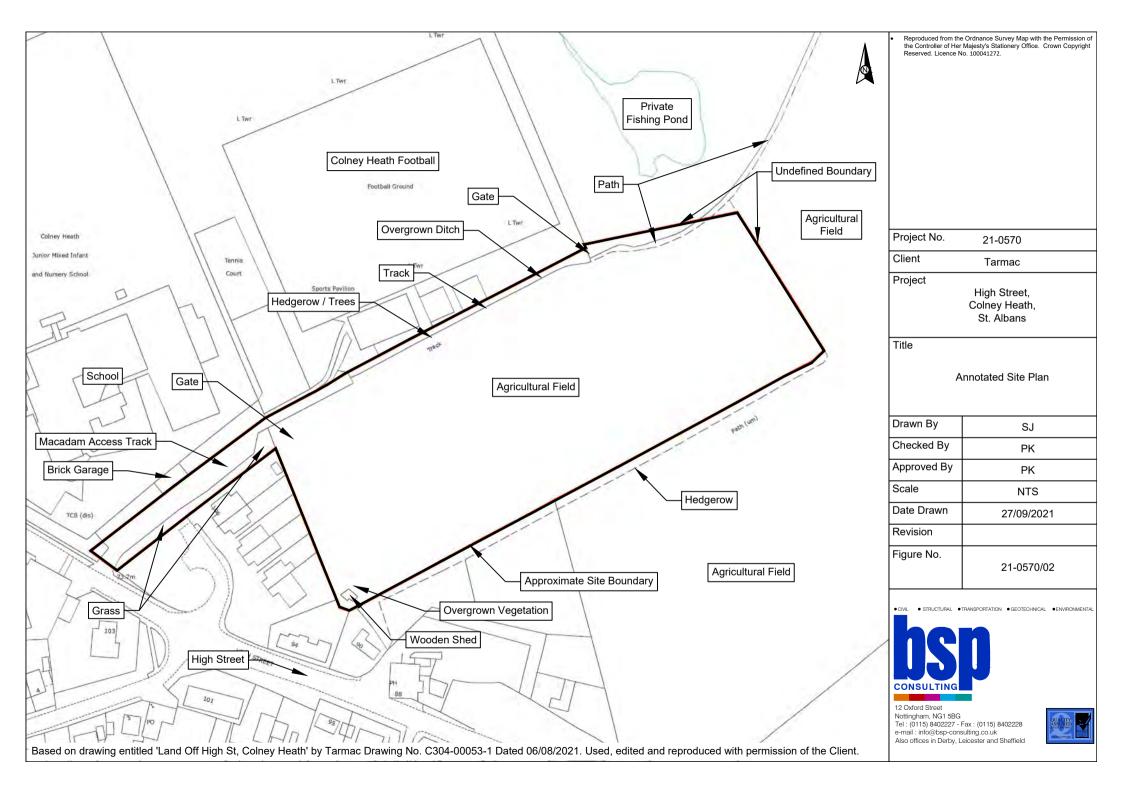
Proposed Site Layout





# Appendix C

Annotated Site Plan





# Appendix D

Site Plan Showing General Site Views



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Project No. 21-0570

Client Tarmac

Project

High Street,
Colney Heath,
St. Albans

Title

Site Plan Showing General Site Views

Drawn By	SJ		
Checked By	PK		
Approved By	PK		
Scale	NTS		
Date Drawn	27/09/2021		
Revision			
Figure No.	21-0570/03		



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Also offices in Derby, Leicester and Sheffield



Project Number: 21-0570
Project Title: Phase I Desk Study Report
Location: High Street, Colney Heath, St. Albans
BSP Document Ref: CHSA-BSP-ZZ-XX-RP-C-P02-Phase\_1\_Desk\_Study\_Report

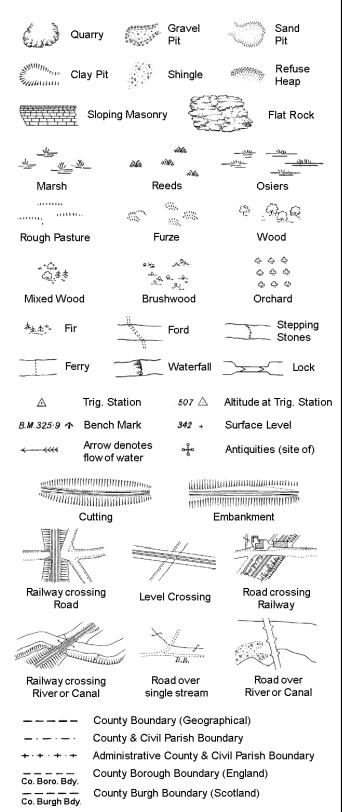


## Appendix E

Historical Plans

## **Historical Mapping Legends**

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



B.R.

E.P

F.B.

M.S

Bridle Road

Foot Bridge

Mile Stone

M.P.M.R. Mooring Post or Ring

Electricity Pylor

Police Call Box

Telephone Call Box

LC

MP

MS

NTL

Level Crossing

Normal Tidal Limit

Mile Post or Mooring Post

Manhole

Signal Post

Pump

Sluice

Spring

Trough

Well

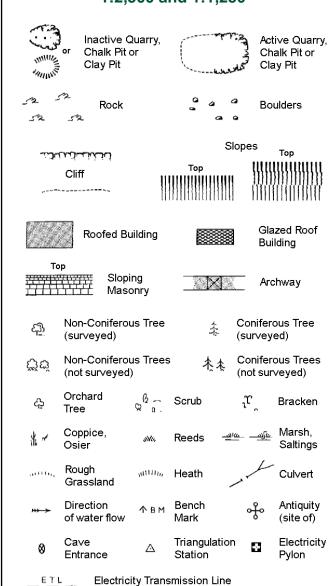
S.P

Sl.

 $T_T$ 

T.C.B

#### Ordnance Survey Plan, Additional SIMs and Large-Scale National Grid Data 1:2,500 and **Supply of Unpublished Survey Information** 1:2,500 and 1:1,250



			-		_	
			Civil Parish Boundary			
	L B Bdy		Admin. County or County Bor. Boundary			
			London Borough Boundary Symbol marking point where boundary mereing changes			
	вн	Beer House		Р	Pillar, Pole or Post	
	BP, BS	Boundary Po	ost or Stone	PO	Post Office	
	Cn, C	Capstan, Cra	ine	PC	Public Convenience	
	Chy	Chimney		PH	Public House	
	D Fn	Drinking Fou	ıntain	Pp	Pump	
	EIP	Electricity Pil	lar or Post	SB, S Br	Signal Box or Bridge	
	FAP	Fire Alarm Pi	llar	SP, SL	Signal Post or Light	
	FB	Foot Bridge		Spr	Spring	
	GP	Guide Post		Tk	Tank or Track	
	Н	Hydrant or H	ydraulic	TCB	Telephone Call Box	

County Boundary (Geographical)

County & Civil Parish Boundary

TCP

Wd Pp

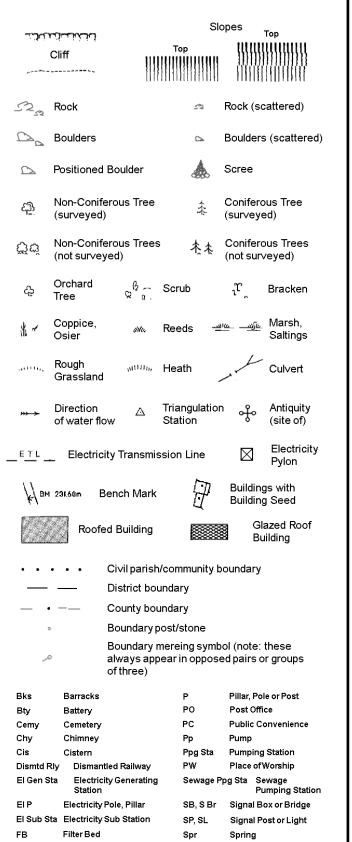
Telephone Call Post

Water Point, Water Tap

Trough

Wind Pump

## 1:1,250



Fn/DFn

Fountain / Drinking Ftn.

Gas Valve Compound

Mile Post or Mile Stone

Gas Governer

**Guide Post** 

Manhole

Tank or Track

Trough

Wind Pump

Wr Pt. Wr T Water Point, Water Tap

Works (building or area)

Tr

Wd Pp

Wks

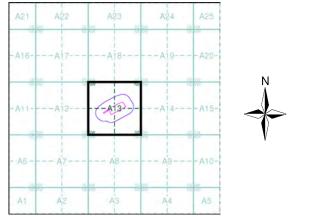
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#### **Historical Mapping & Photography included:**

Mapping Type	Scale	Date	Pg
Hertfordshire	1:2,500	1879 - 1880	2
Hertfordshire	1:2,500	1898	3
Hertfordshire	1:2,500	1924	4
Hertfordshire	1:2,500	1937	5
Ordnance Survey Plan	1:2,500	1971	6
Supply of Unpublished Survey Information	1:2,500	1973 - 1976	7
Additional SIMs	1:2,500	1979	8
Large-Scale National Grid Data	1:2,500	1992 - 1993	9
Large-Scale National Grid Data	1:2,500	1993 - 1994	10
Historical Aerial Photography	1:2,500	2000	11

## **Historical Map - Segment A13**



#### **Order Details**

284830996\_1\_1 Order Number: D41161 **Customer Ref:** National Grid Reference: 520200, 206120 Slice: Α

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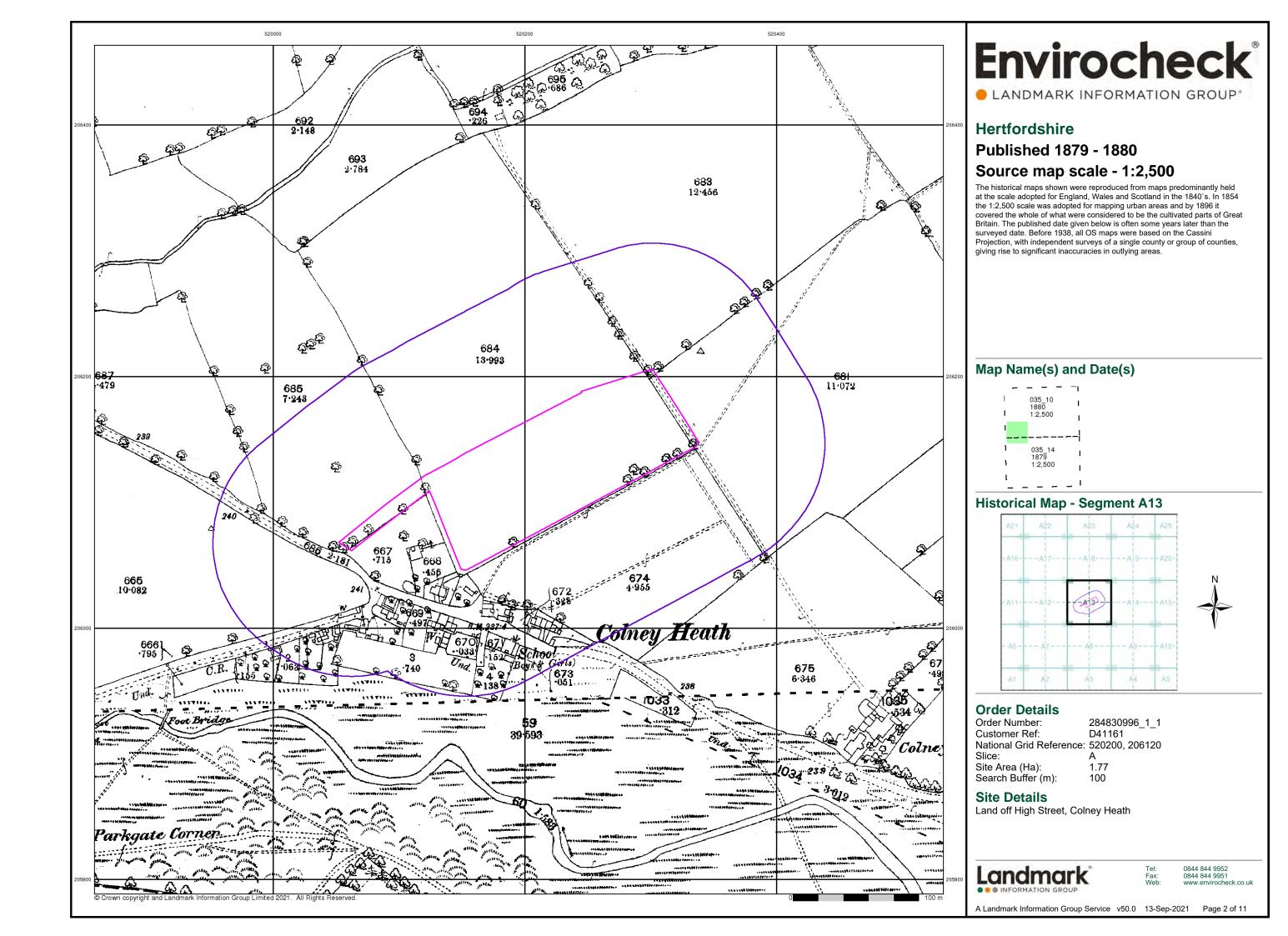
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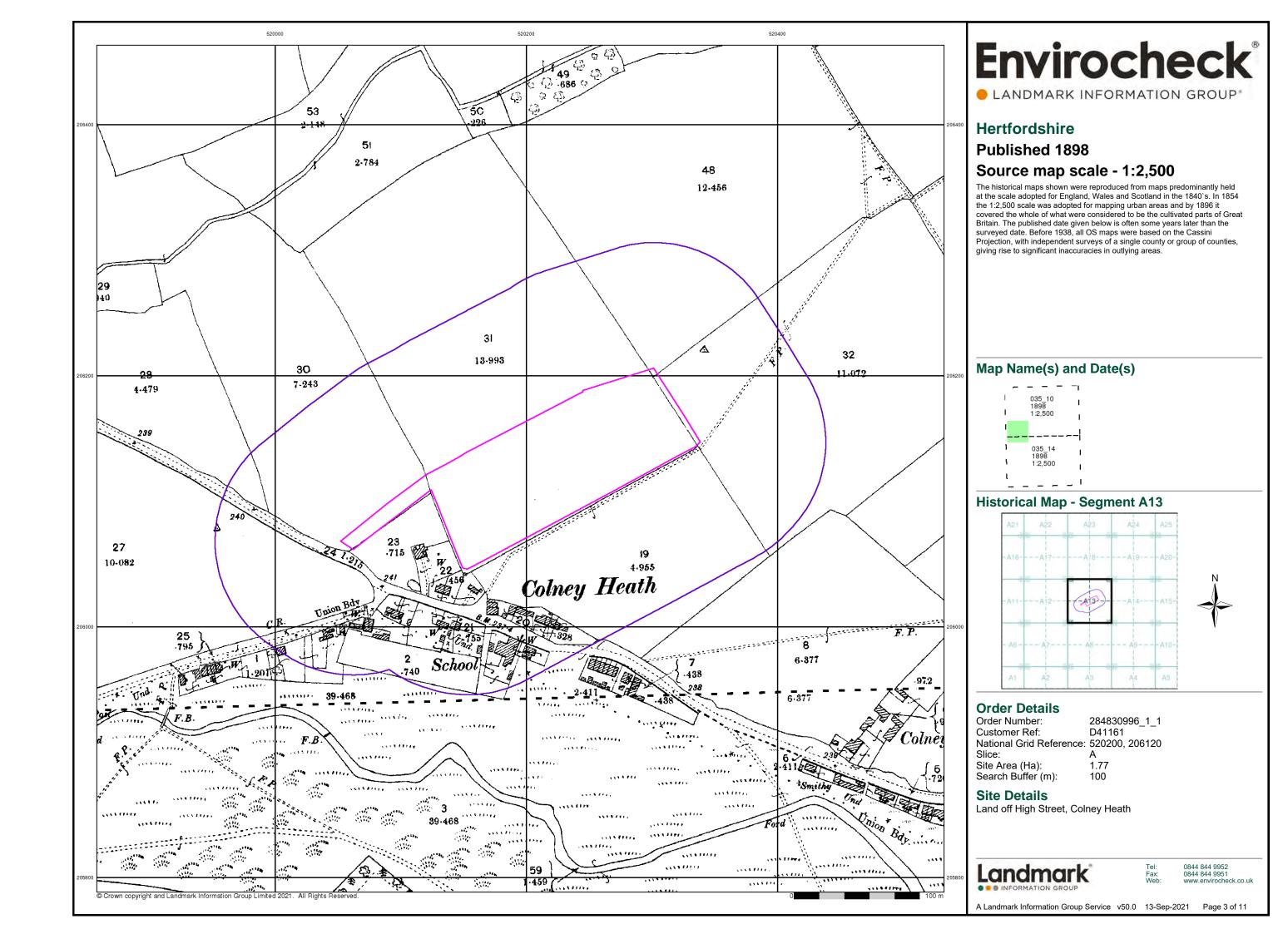
Land off High Street, Colney Heath

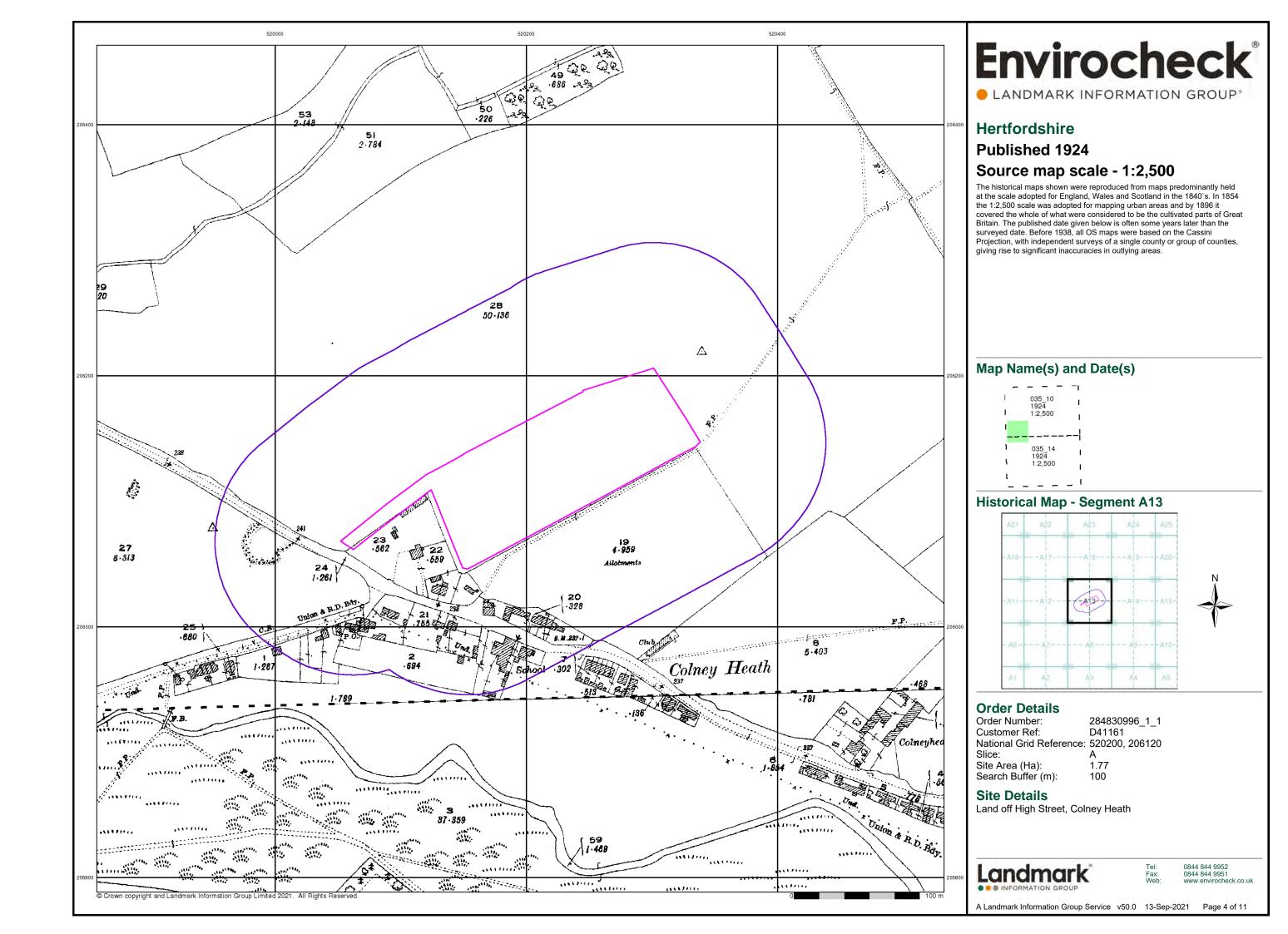


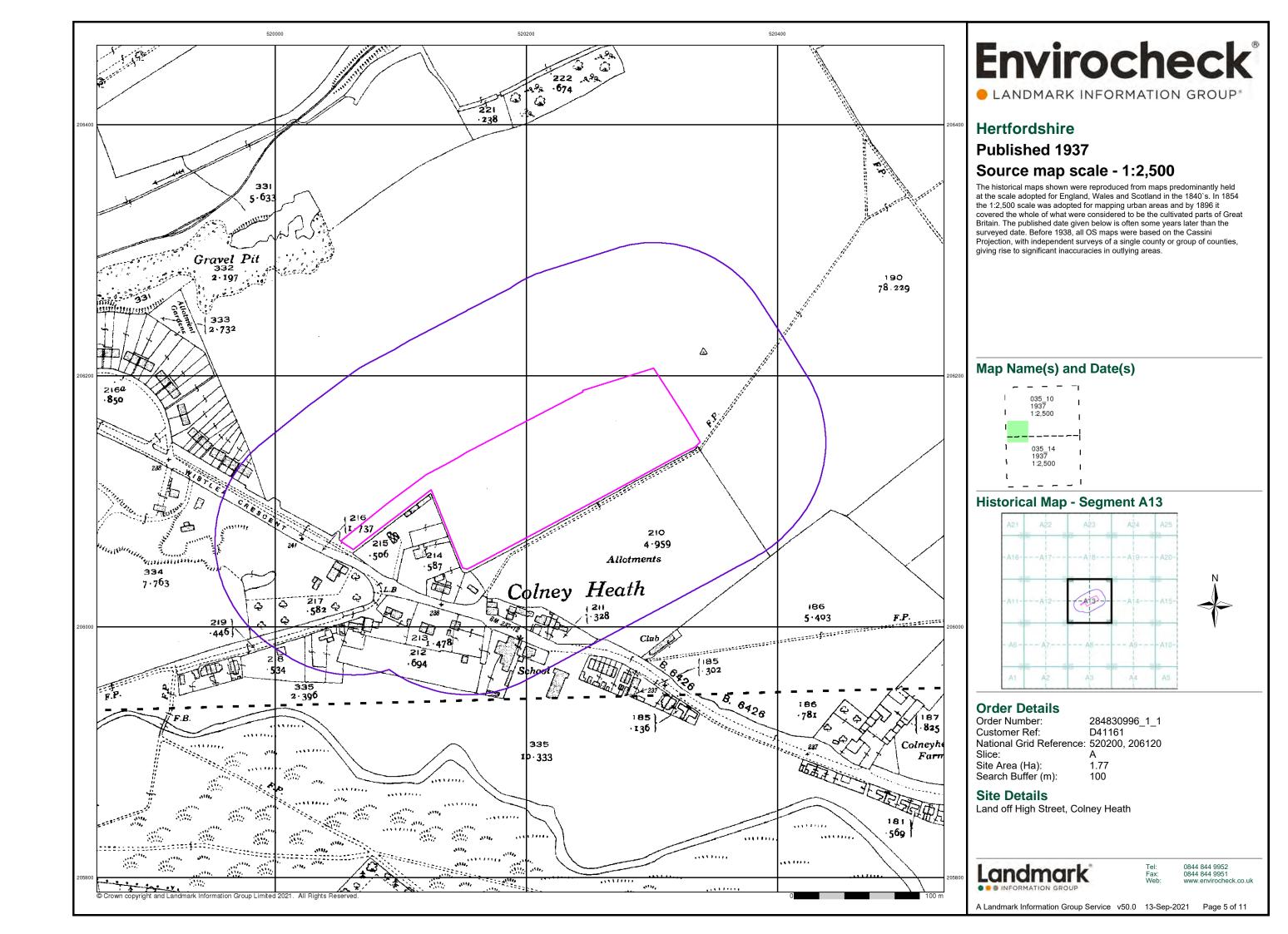
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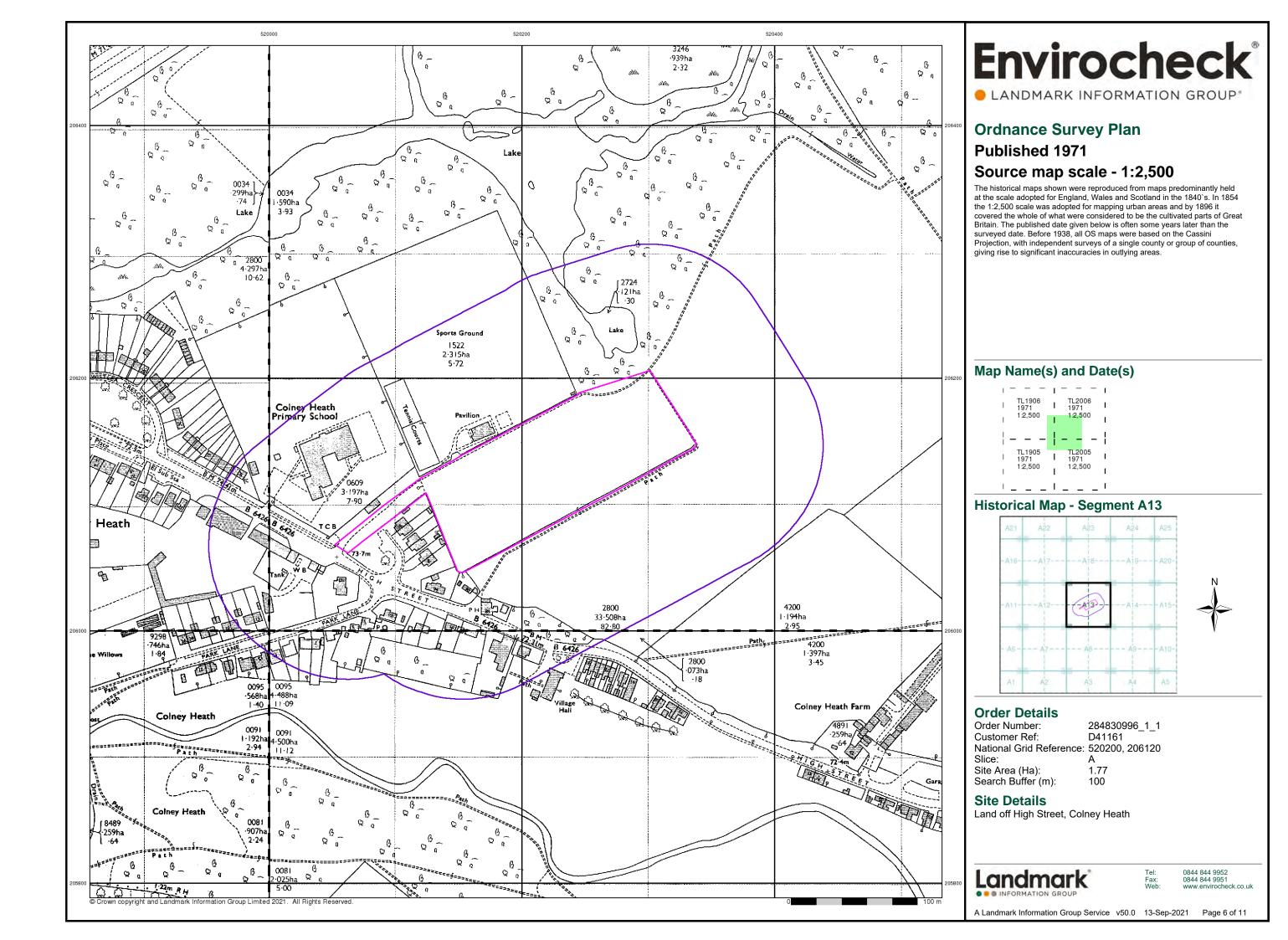
A Landmark Information Group Service v50.0 13-Sep-2021 Page 1 of 11

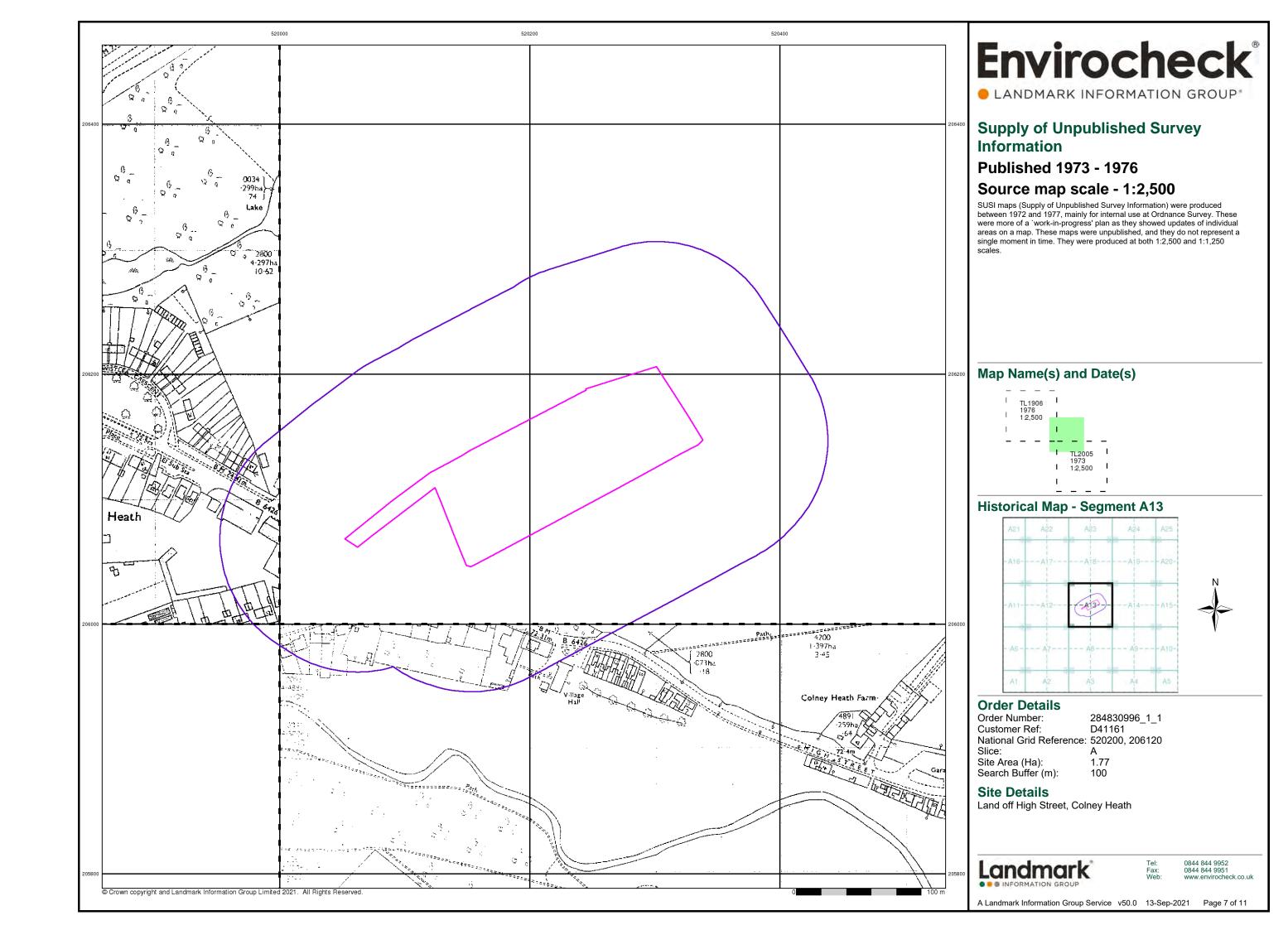


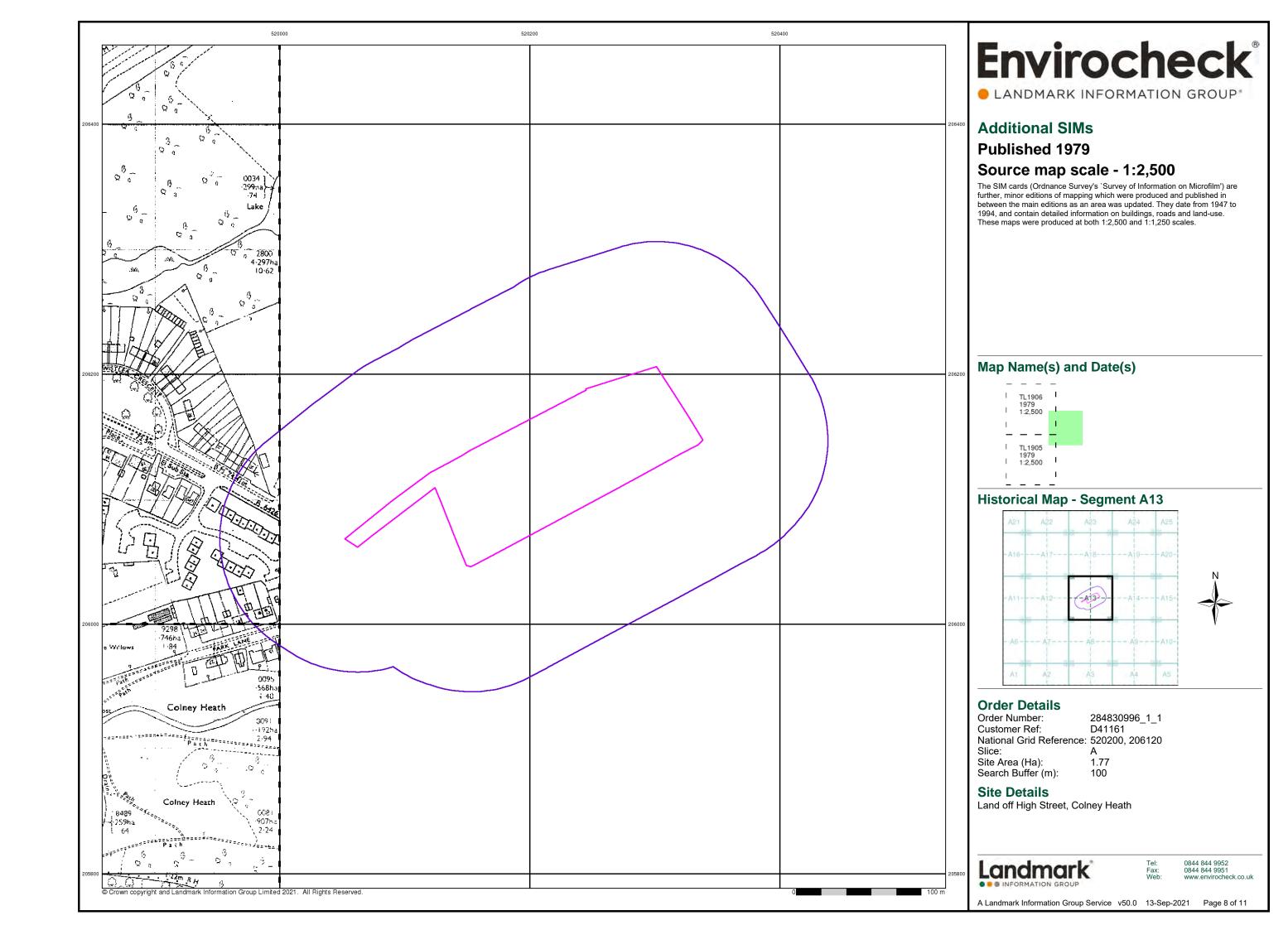


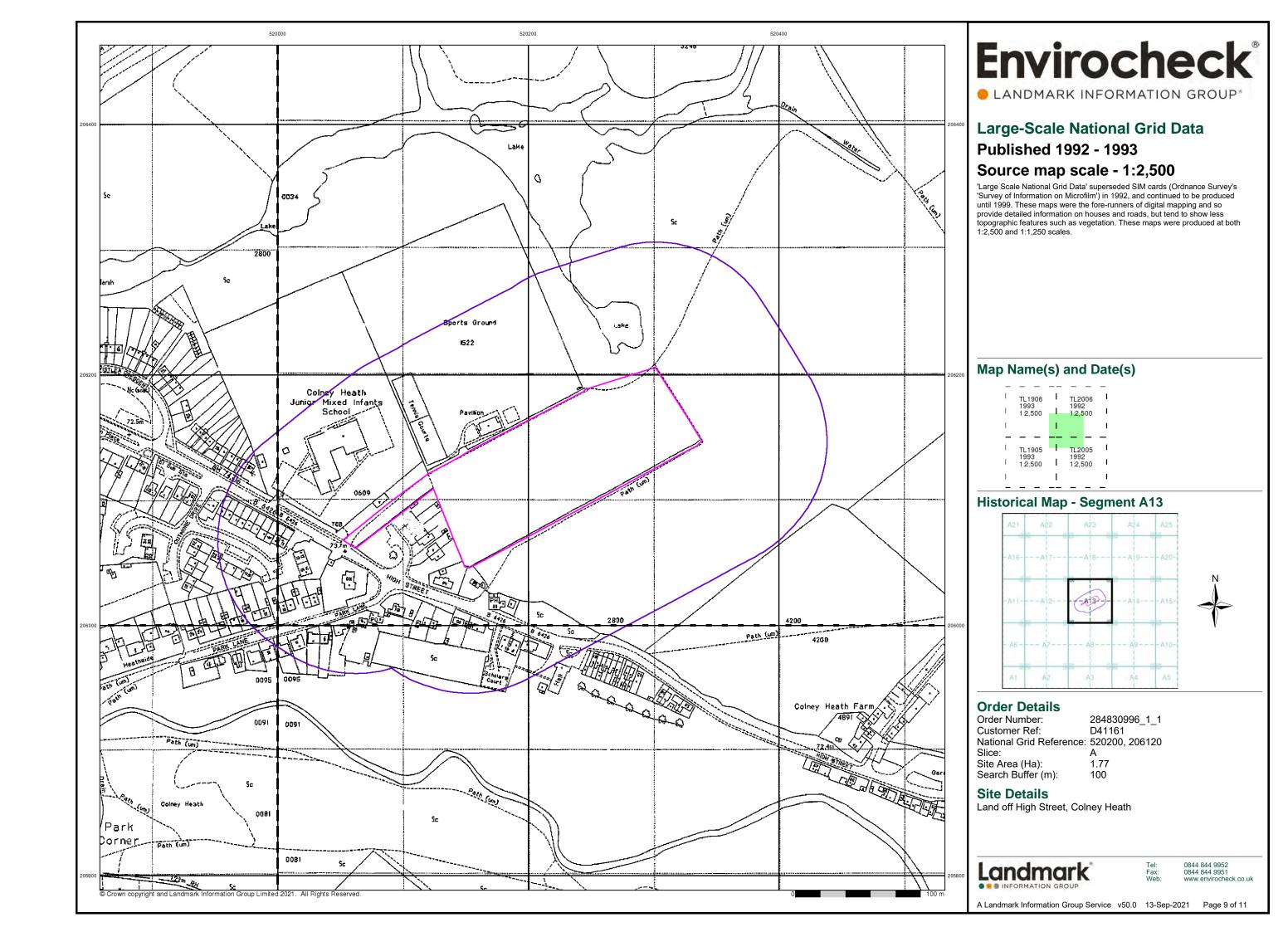


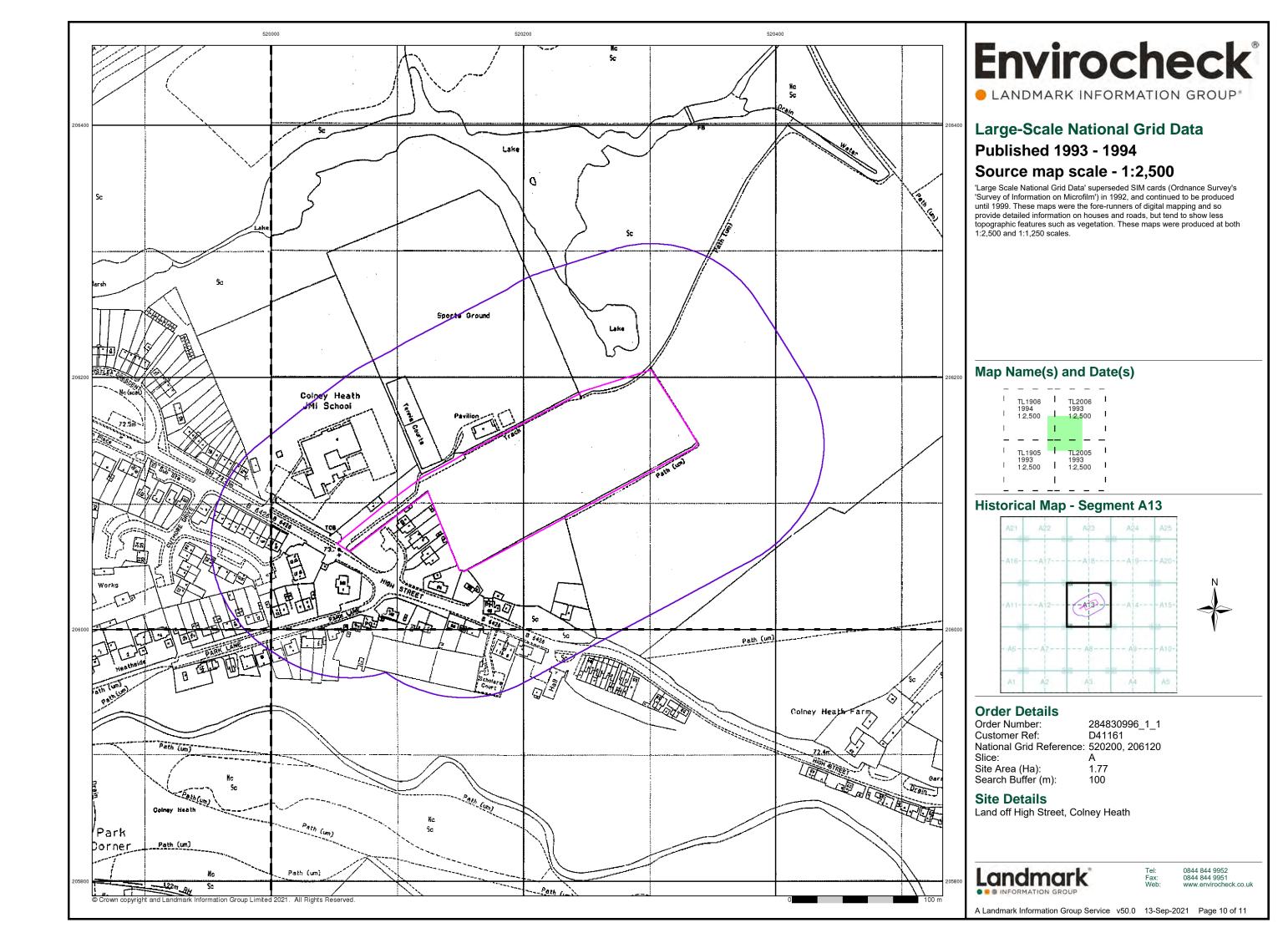


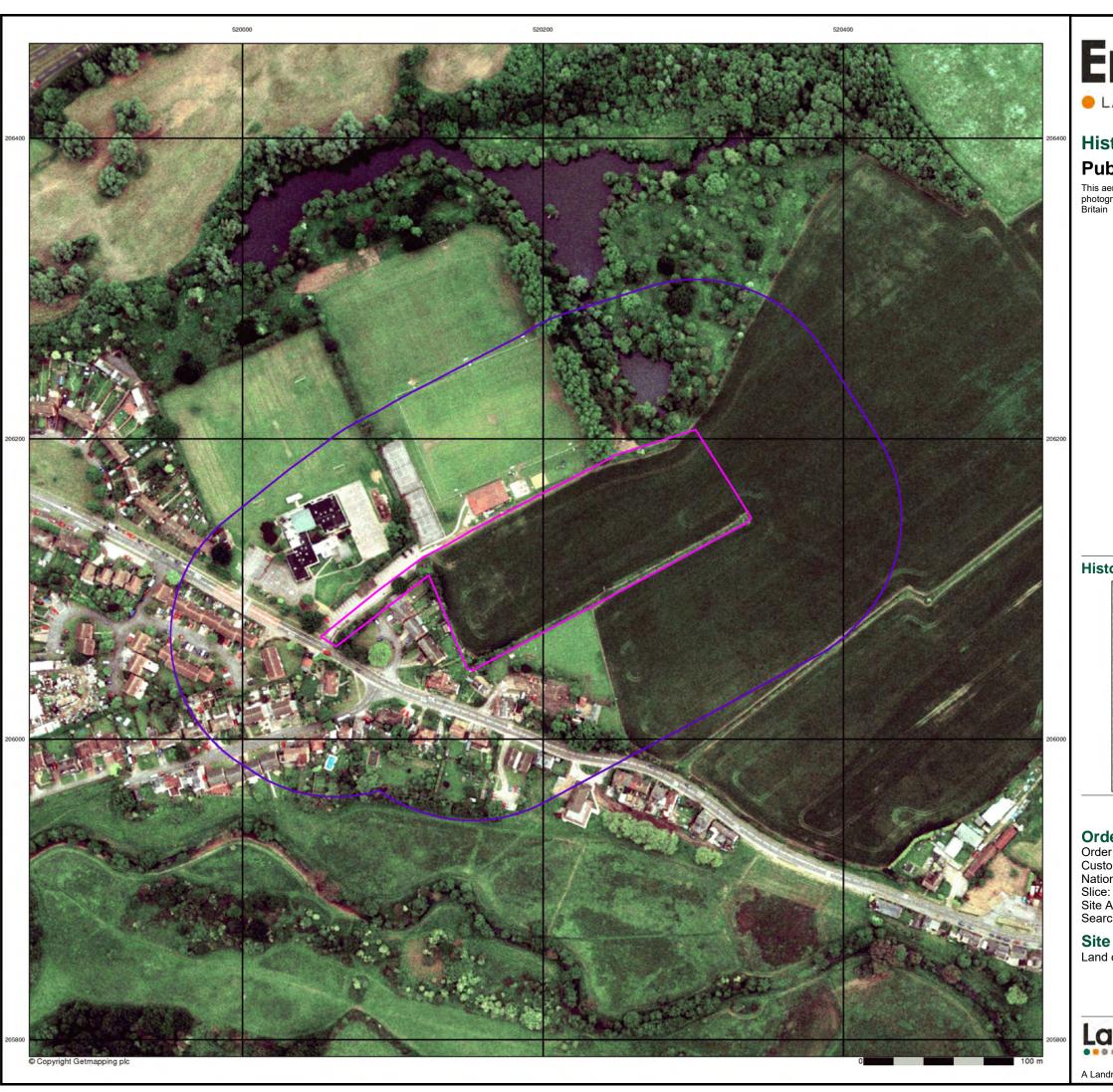










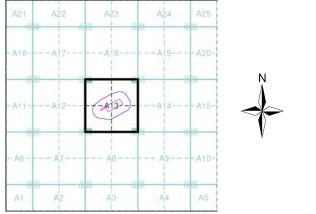


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## **Historical Aerial Photography** Published 2000

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: 284830996\_1\_1
Customer Ref: D41161
National Grid Reference: 520200, 206120

Site Area (Ha): Search Buffer (m):

#### **Site Details**

Land off High Street, Colney Heath

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0844 844 9952 0844 844 9951 www.envirocheck.co.uk

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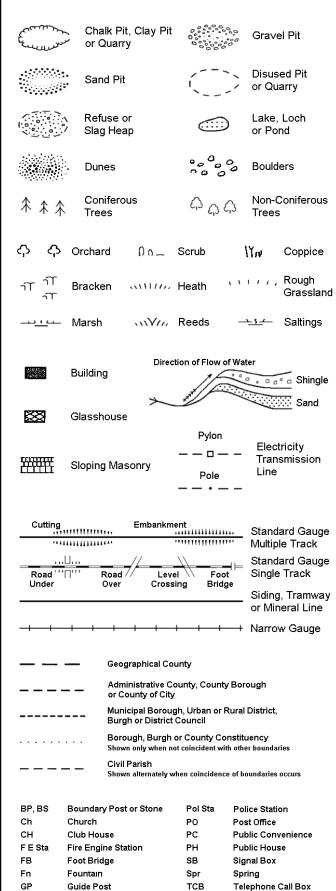
## **Historical Mapping Legends**

### Other Gravel Orchard Mixed Wood Deciduous Brushwood Furze Rough Pasture Arrow denotes Trigonometrical flow of water Station Site of Antiquities Bench Mark Pump, Guide Post, Well, Spring, Signal Post **Boundary Post** ·285 Surface Level Sketched Instrumental Contour Contour Fenced Main Roads Minor Roads Un-Fenced Sunken Road Raised Road Railway over Road over Ri∨er Railway Railway over Level Crossing Road Road over Road over Road over County Boundary (Geographical) County & Civil Parish Boundary Administrative County & Civil Parish Boundary County Borough Boundary (England) Co. Boro. Bdy. County Burgh Boundary (Scotland) Co. Burgh Bdy. Rural District Boundary RD. Bdy.

Civil Parish Boundary

**Ordnance Survey County Series 1:10,560** 

## Ordnance Survey Plan 1:10,000



Mile Post

TCP

Telephone Call Post

### 1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle	Mud	Mud
Sand	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
۵ <sup>۵</sup> **	Area of wooded vegetation	۵ <sup>۵</sup>	Non-coniferous trees
۵ ۵	Non-coniferous trees (scattered)	**	Coniferous trees
* *	Coniferous trees (scattered)	Ö̈	Positioned tree
ፉ	Orchard	* *	Coppice or Osiers
wīti,	Rough Grassland	www.	Heath
On_	Scrub	7 <u>√</u> /۲	Marsh, Salt Marsh or Reeds
5	Water feature	<b>← ←</b>	Flow arrows
MHW(S)	Mean high water (springs)	MLW(S)	Mean low water (springs)
	Telephone line (where shown)	<b></b>	Electricity transmission line (with poles)
← BM 123.45 m	Bench mark (where shown)	Δ	Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)	$\boxtimes$	Pylon, flare stac or lighting tower
•‡•	Site of (antiquity)		Glasshouse
	General Building		Important

Building

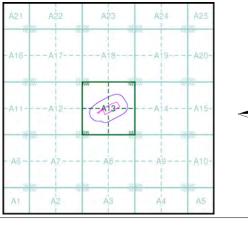
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### **Historical Mapping & Photography included:**

Mapping Type	Scale	Date	Pg
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Hertfordshire	1:10,560	1899	3
Hertfordshire	1:10,560	1925	4
Hertfordshire	1:10,560	1937	5
Hertfordshire	1:10,560	1938	6
Hertfordshire	1:10,560	1938	7
Historical Aerial Photography	1:10,560	1947	8
Historical Aerial Photography	1:10,560	1947	9
Ordnance Survey Plan	1:10,000	1960	10
Ordnance Survey Plan	1:10,000	1964 - 1965	11
Ordnance Survey Plan	1:10,000	1971 - 1978	12
Ordnance Survey Plan	1:10,000	1975	13
Ordnance Survey Plan	1:10,000	1984 - 1985	14
Ordnance Survey Plan	1:10,000	1990	15
10K Raster Mapping	1:10,000	1999	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2021	18

## **Historical Map - Slice A**



#### **Order Details**

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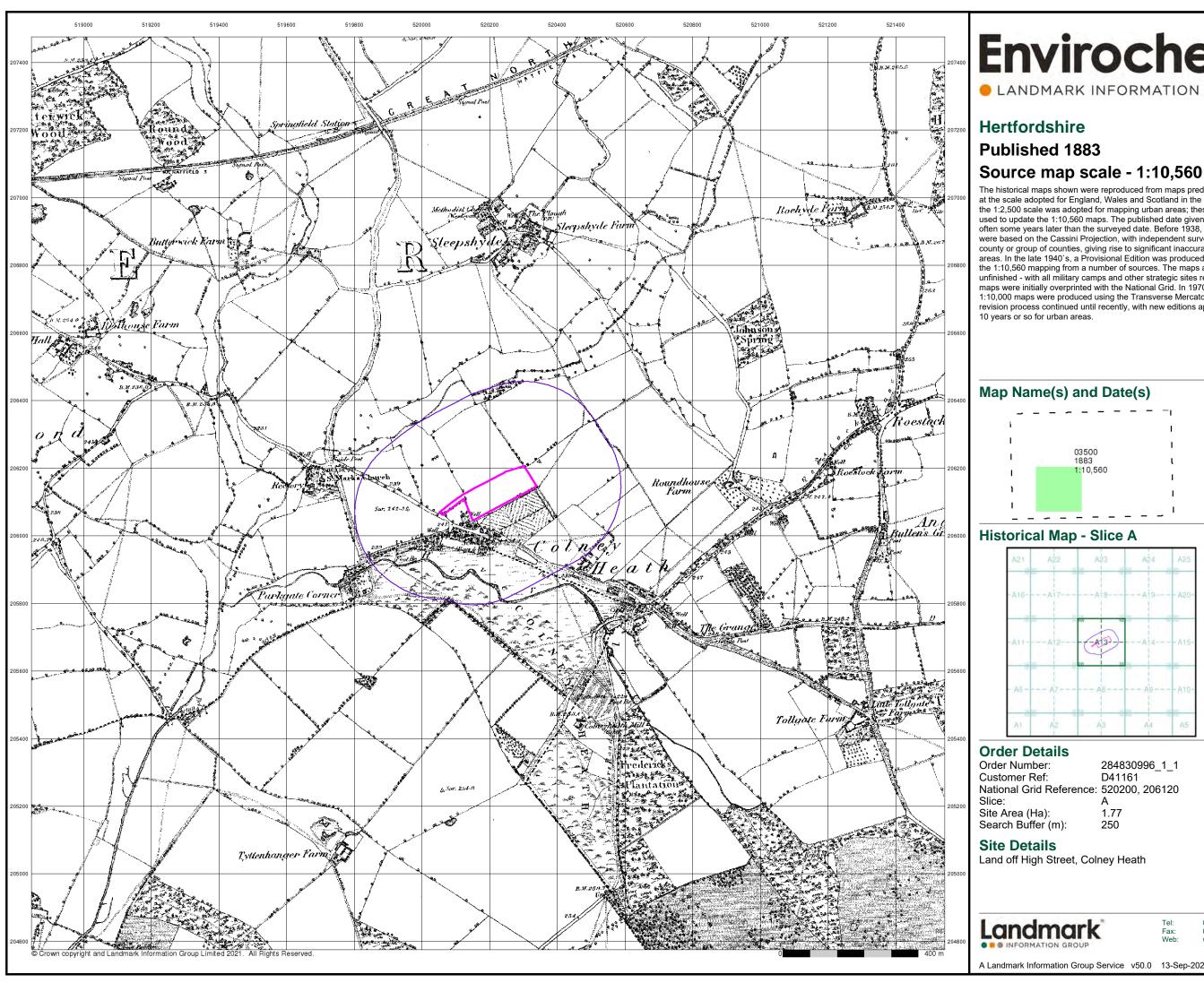
**Site Details** 

Land off High Street, Colney Heath



0844 844 9952

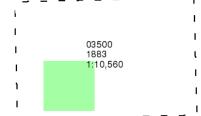
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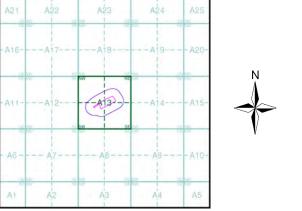


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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. 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

### Map Name(s) and Date(s)



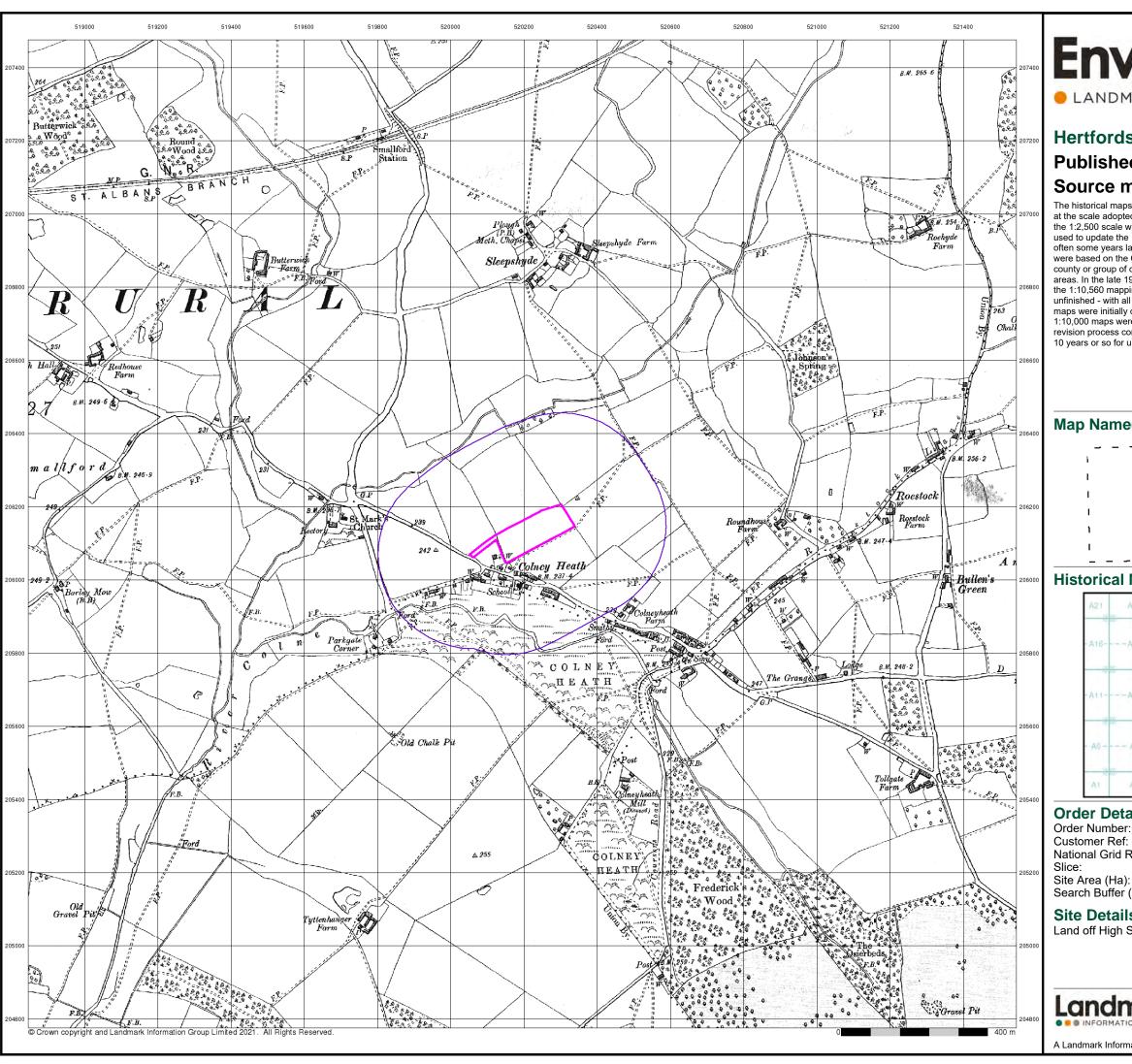


284830996\_1\_1 D41161 National Grid Reference: 520200, 206120

250

0844 844 9952

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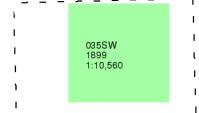
LANDMARK INFORMATION GROUP\*

#### Hertfordshire

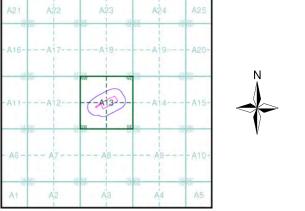
## **Published 1899** Source map scale - 1:10,560

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: 284830996\_1\_1 **Customer Ref:** D41161 National Grid Reference: 520200, 206120

Search Buffer (m): 250

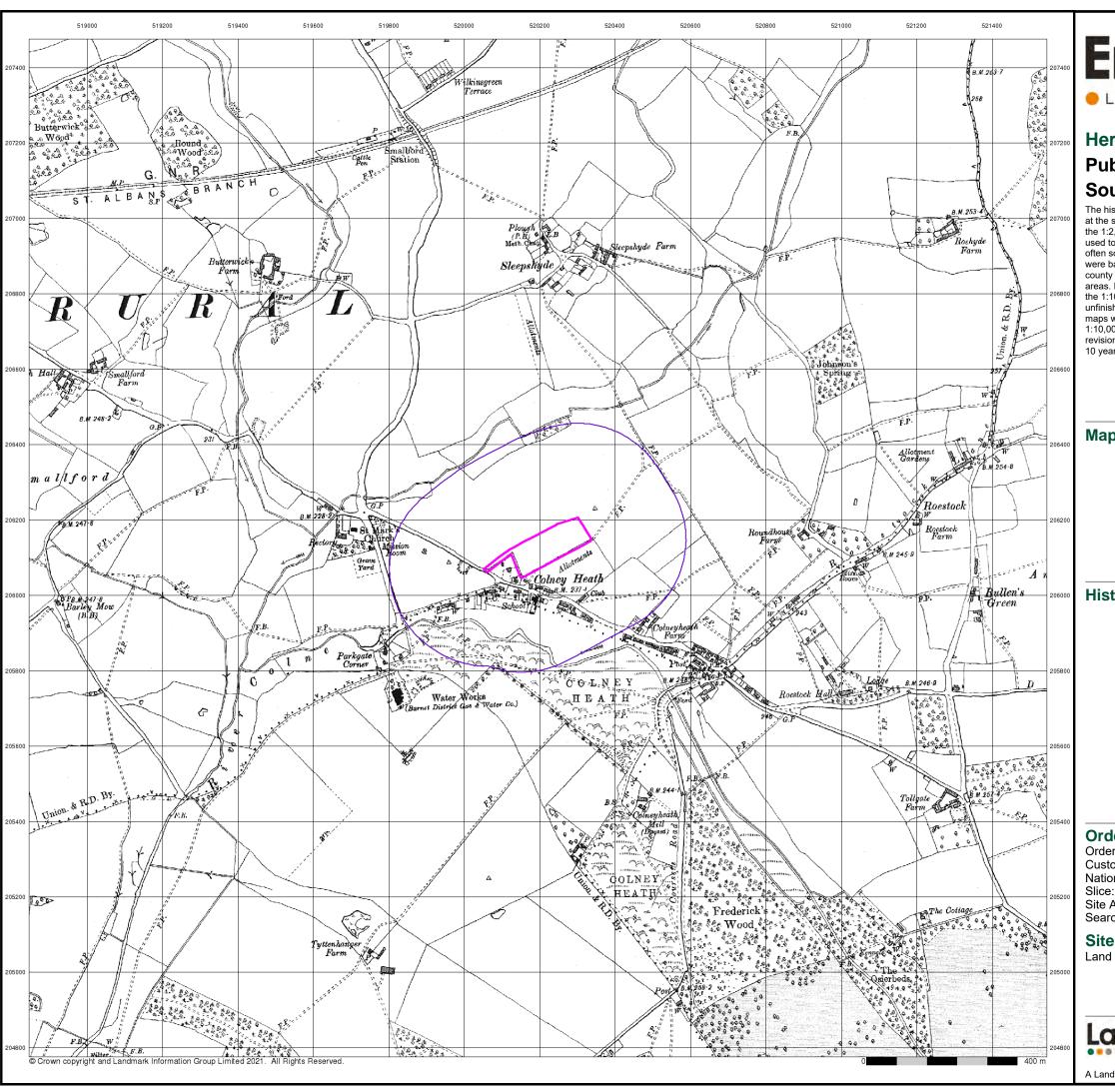
#### **Site Details**

Land off High Street, Colney Heath



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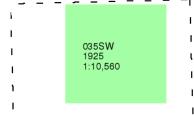
LANDMARK INFORMATION GROUP\*

#### Hertfordshire

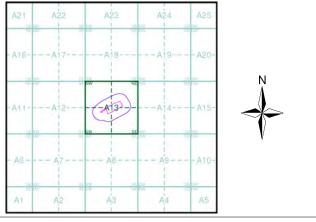
## Published 1925 Source map scale - 1:10,560

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 arreas; 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: 284830996\_1\_1
Customer Ref: D41161
National Grid Reference: 520200, 206120
Slice: A

Site Area (Ha): A 1.77

Site Area (Ha): 1.77 Search Buffer (m): 250

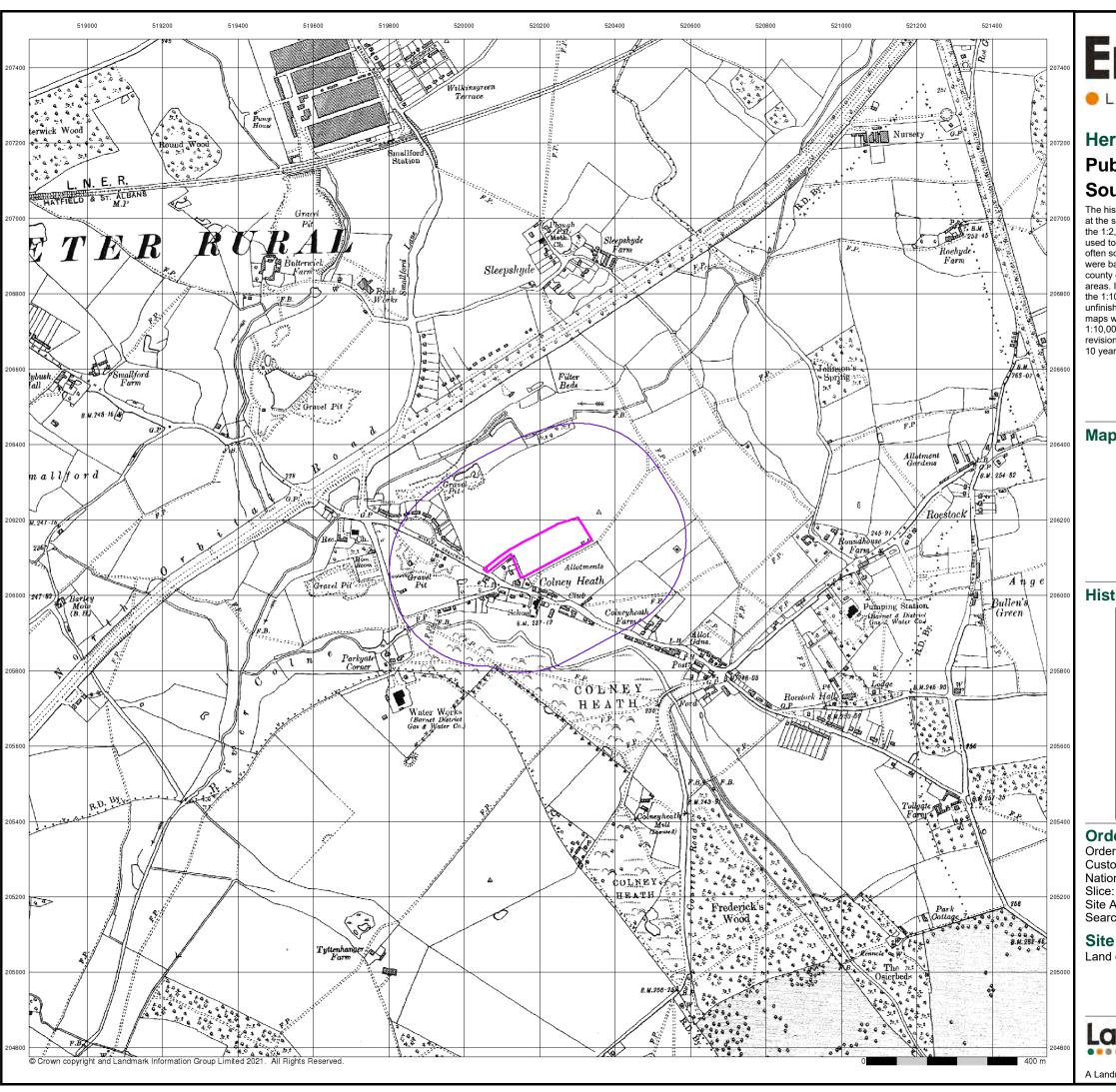
#### **Site Details**

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#### Hertfordshire

## **Published 1937**

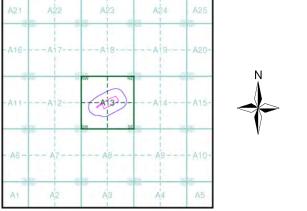
## Source map scale - 1:10,560

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: 284830996\_1\_1 **Customer Ref:** D41161 National Grid Reference: 520200, 206120

Site Area (Ha): Search Buffer (m): 250

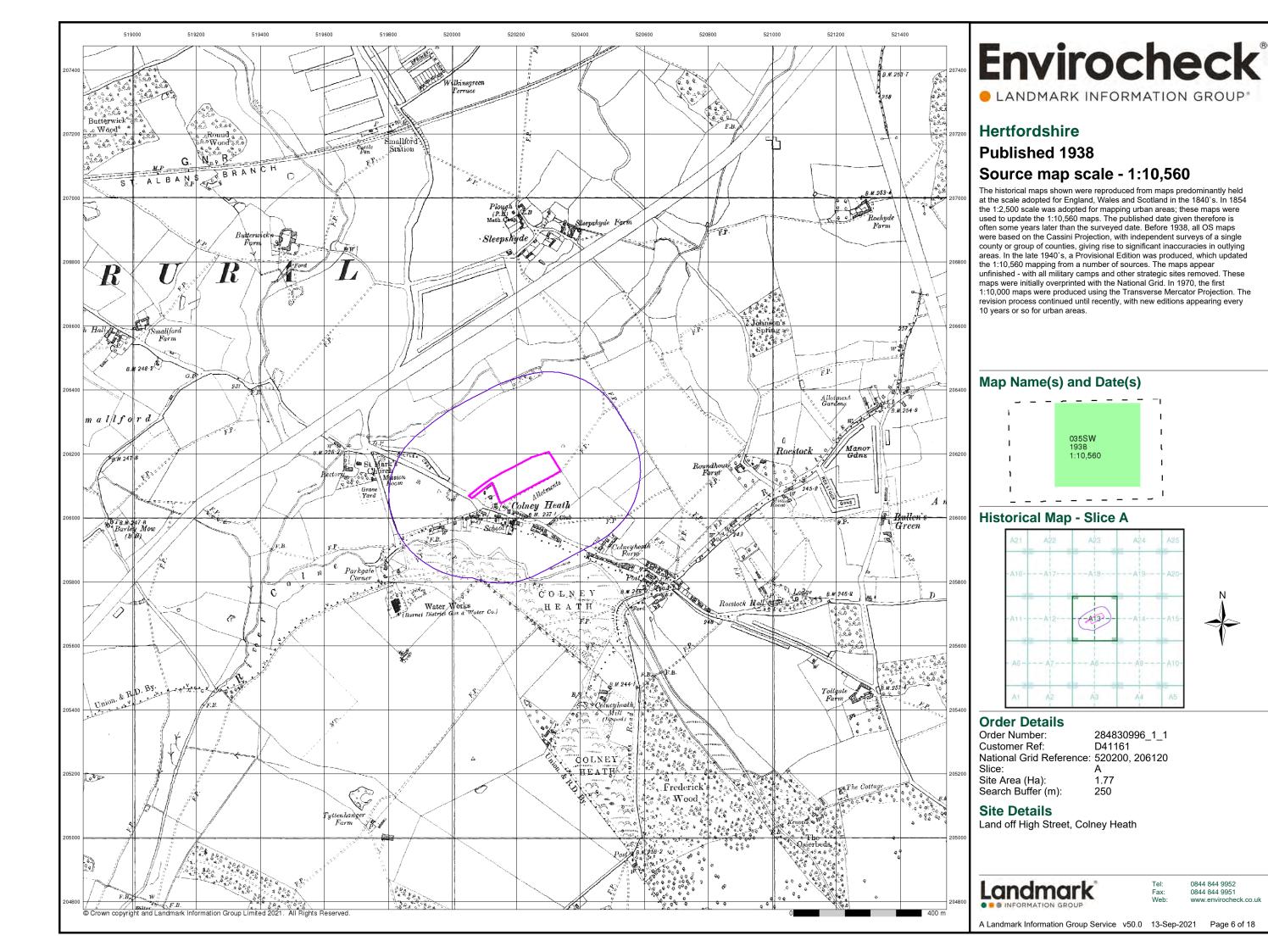
#### **Site Details**

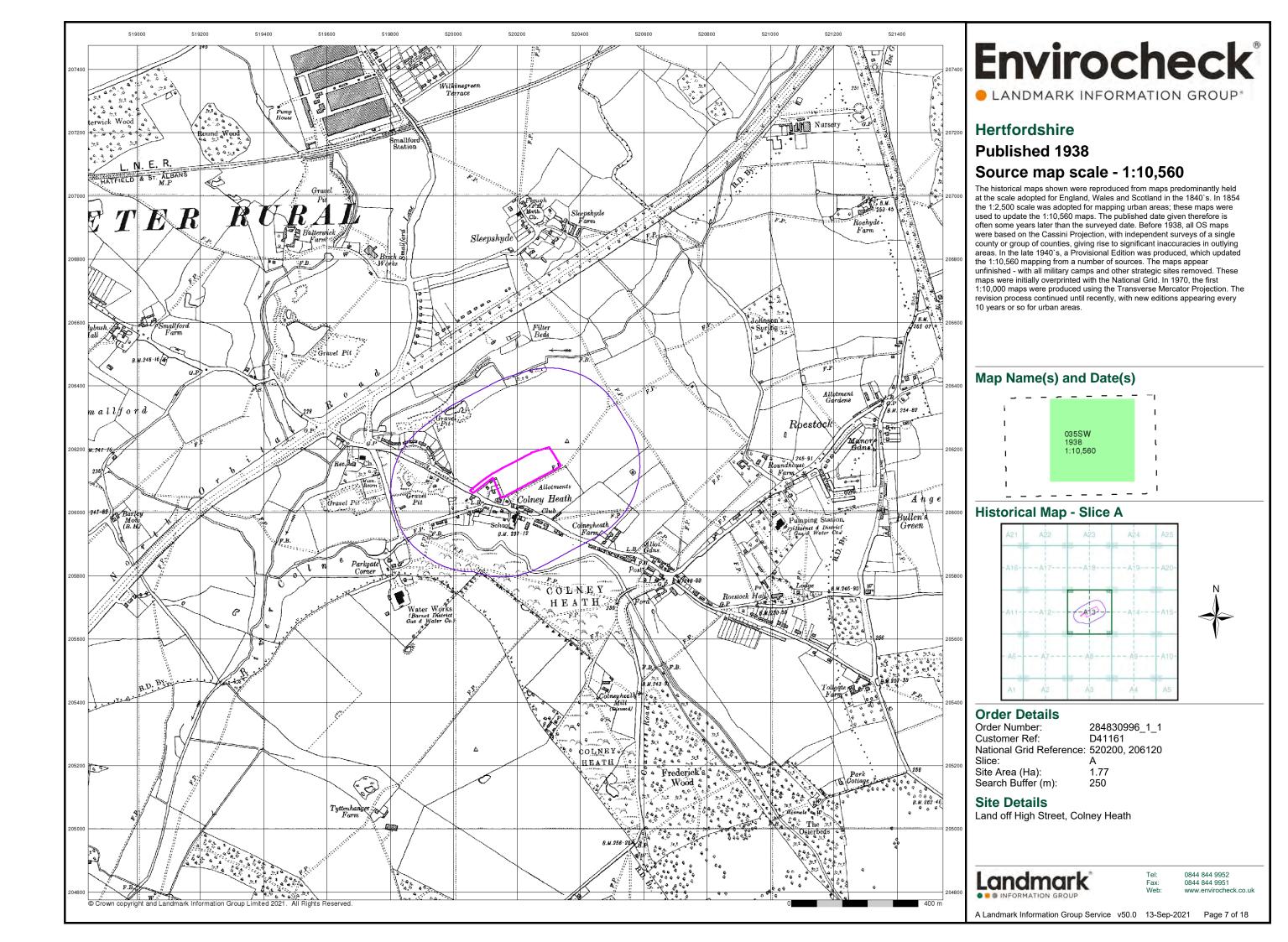
Land off High Street, Colney Heath

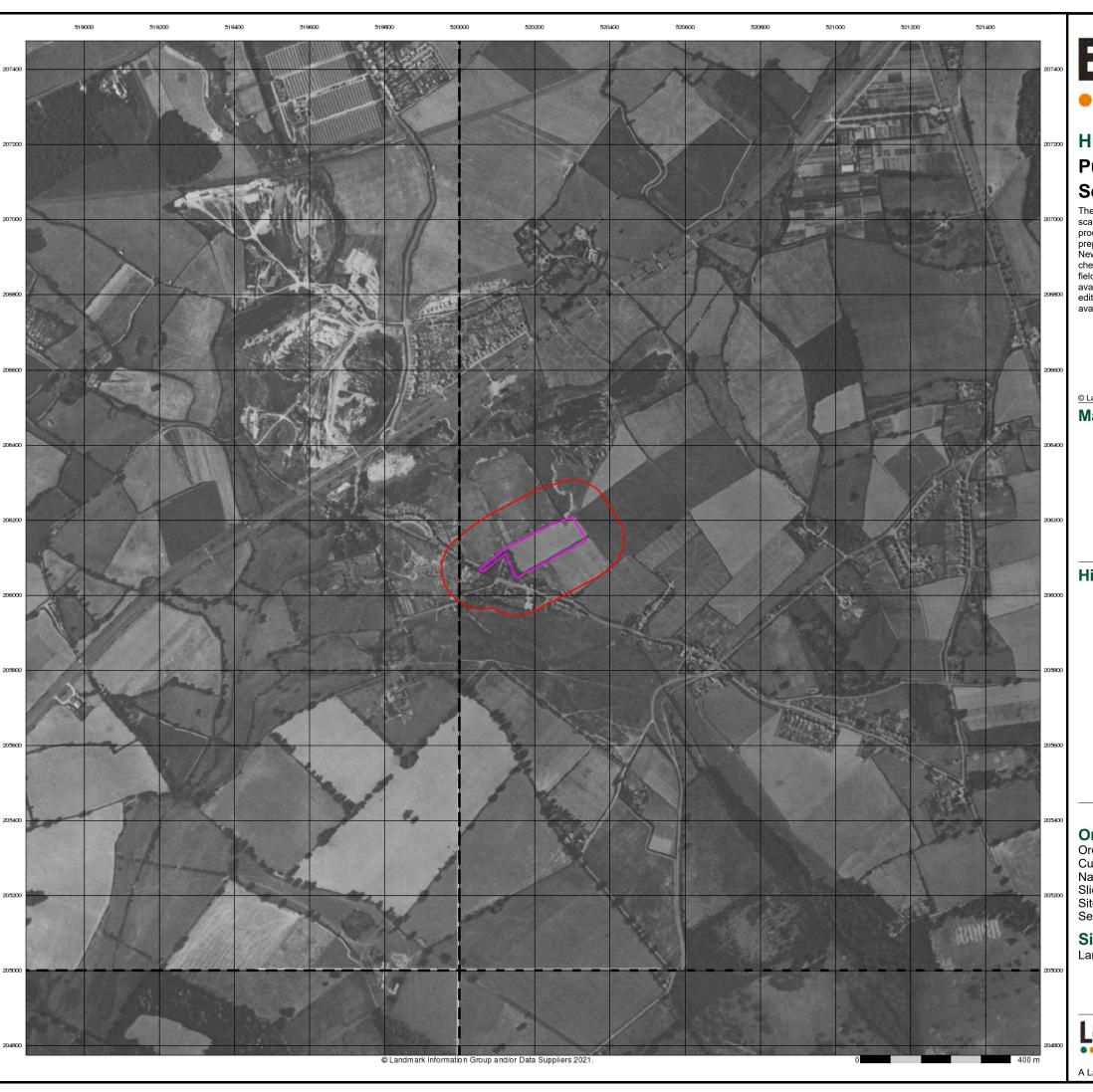


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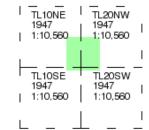
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## **Historical Aerial Photography Published 1947** Source map scale - 1:10,560

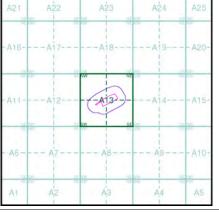
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending produced between 1944 and 1951 as an Interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was rechecked 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 - Slice A**





#### **Order Details**

Order Number: 284830996\_1\_1 Customer Ref: D41161 National Grid Reference: 520200, 206120

Slice:

Site Area (Ha): Search Buffer (m): 250

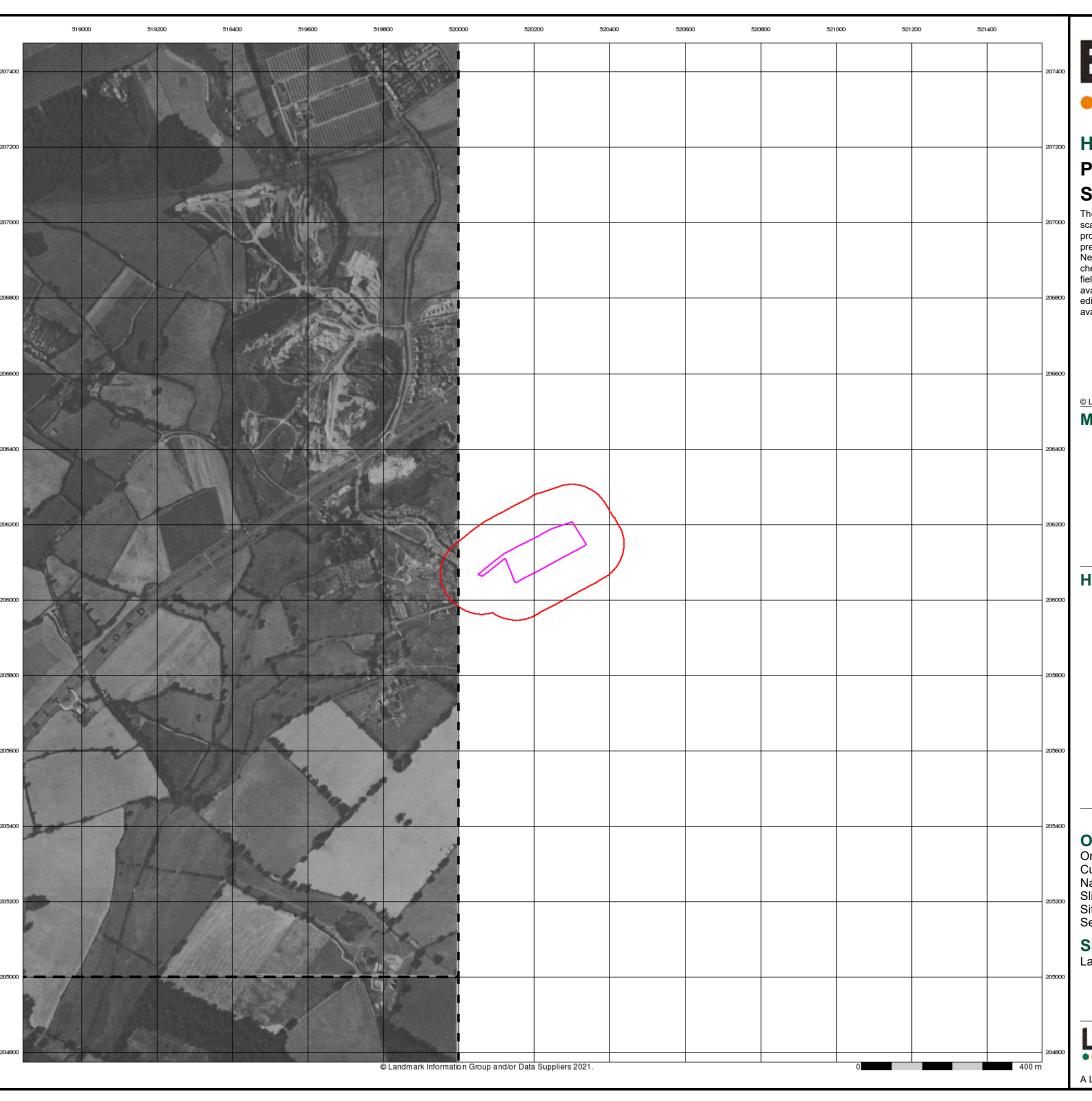
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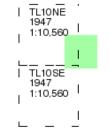
## **Historical Aerial Photography Published 1947**

## Source map scale - 1:10,560

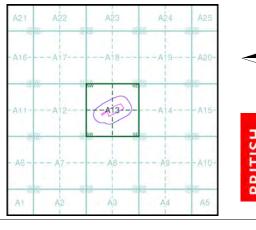
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending produced between 1944 and 1951 as an Interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was rechecked 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 - Slice A**





Order Number: 284830996\_1\_1 Customer Ref: D41161

National Grid Reference: 520200, 206120 Slice:

Site Area (Ha): Search Buffer (m): 250

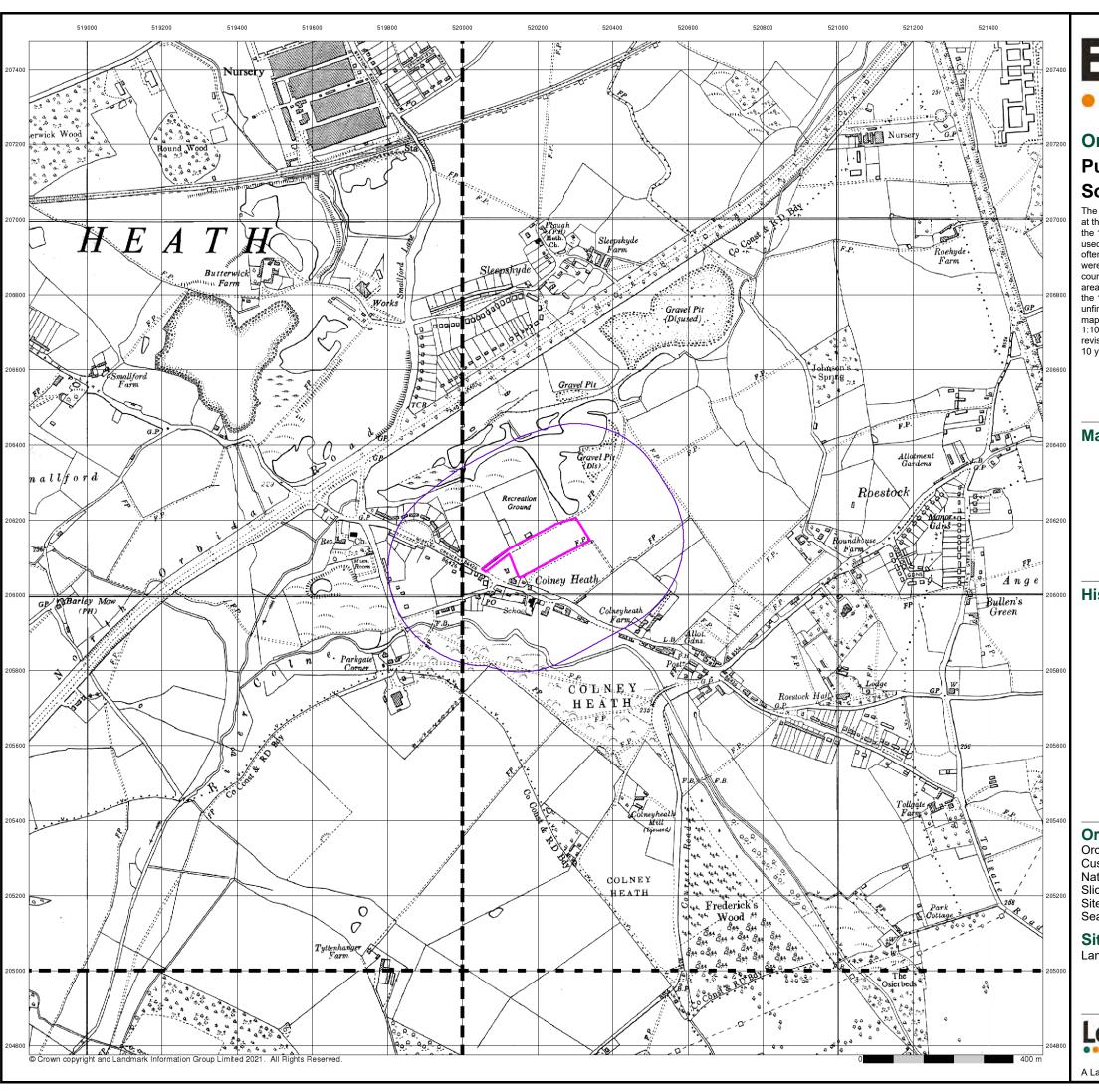
#### **Site Details**

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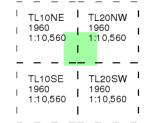


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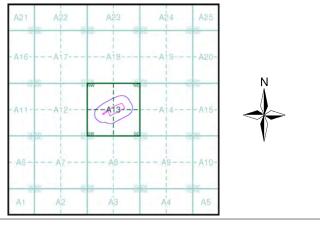
# Ordnance Survey Plan Published 1960 Source map scale - 1:10,000

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: 284830996\_1\_1
Customer Ref: D41161
National Grid Reference: 520200, 206120
Slice: A

Site Area (Ha):

Site Area (Ha): 1.77 Search Buffer (m): 250

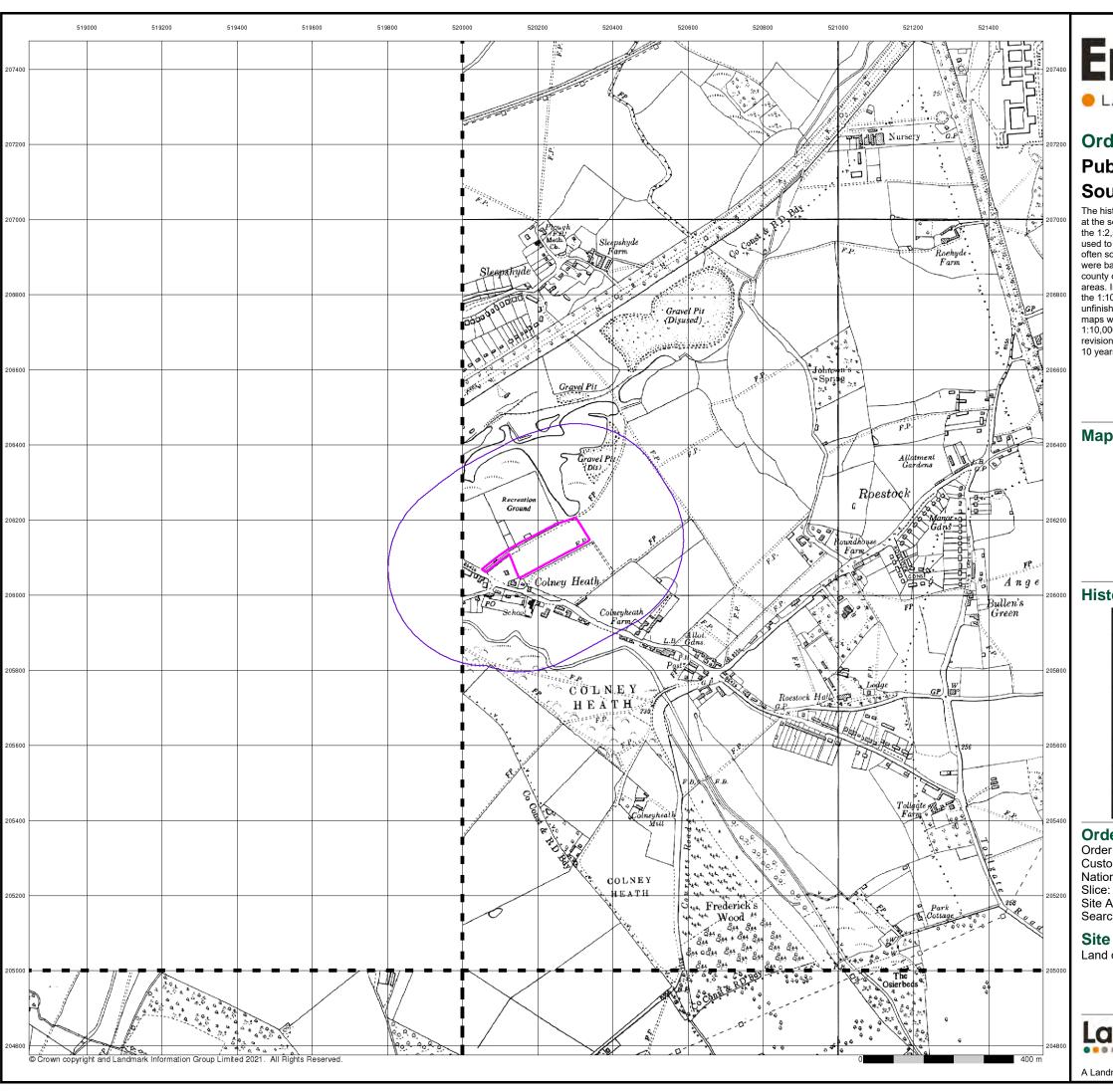
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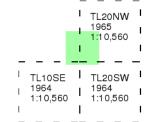


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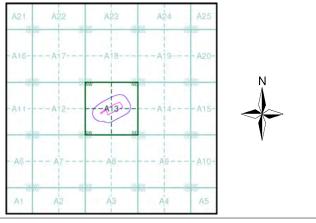
## **Ordnance Survey Plan** Published 1964 - 1965 Source map scale - 1:10,000

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: 284830996\_1\_1 **Customer Ref:** D41161 National Grid Reference: 520200, 206120

Site Area (Ha): Search Buffer (m): 250

#### **Site Details**

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