

Intended for
Lincoln MGT

Date
March 2020

Project Number
1620004716

STATION HILL, READING NORTH SITE – PHASE 2 ENABLING WORKS PHASE I ENVIRONMENTAL SITE ASSESSMENT

**STATION HILL, READING NORTH SITE – PHASE 2
ENABLING WORKS
PHASE I ENVIRONMENTAL SITE ASSESSMENT**

Project No. **1620004716**
Issue No. **01**
Date **25th March 2020**
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Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
01	25/03/2020	FR	LW	LW	Draft Issue

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EXECUTIVE SUMMARY

Ramboll UK Limited (Ramboll) was instructed by Lincoln MGT to undertake a Phase I Environmental Assessment of Station Hill North Site – Phase 2 Enabling Works (the site) with regard to potential land contamination in respect to the proposed enabling works. The objectives of the review were to assess the potential for soil or groundwater contamination, both at and in the vicinity of the site, and assess its significance in terms of the proposed enabling works.

The site is currently unoccupied, surfaced in asphalt and secured by wooden hoarding. No potentially contaminating activities were identified at the time of Ramboll's site inspection in 2018.

The site has been in industrial and commercial use since the late 1800s. Activities have included a pit of unknown use, possible residential housing and more recently of commercial, retail and office use.

Historically, the surrounds have been predominantly in commercial and industrial use from the late 1800s until present day. Historic industry in the surrounds has included a railway station and associated railway tracks, coal yards, warehouses, a rifle factory, a brewery, a veterinary infirmary, a bus station and garages. From the mid-1970s the surrounds were predominantly in commercial use.

The site is considered by Ramboll to be located in an area of low-moderate sensitivity with regard to groundwater resources. The site is underlain by a Secondary A aquifer relating to the Taplow Gravel Member which is underlain by a Principal aquifer relating to the Upper Chalk formation. However, the site is not located within a groundwater source protection zone, nor are there any groundwater abstractions for public potable water supply within 2km of the site.

The site is considered by Ramboll to be located within a low sensitivity setting with regard to surface water resources as the nearest surface water feature is an inland river located 125m north of the site which confluent with the River Thames, located approximately 1km north of the site at its nearest point. There are no surface water abstractions for public water supply within 2km of the site.

According to the EA the site lies in a Flood Zone 1 (low probability) of flooding.

A ground investigation was undertaken by Waterman Ltd in September 2014 across the wider Station Hill site. Within the footprint of the Phase 2 Enabling Works area, the investigation comprised the drilling of six windowless sample boreholes to a maximum depth of 5.0m below ground level (bgl), the installation of one borehole for gas and groundwater monitoring, and the excavation of one trial pit. Chemical testing of soil and groundwater samples did not identify significant contamination at the site. Isolated exceedances of lead (one sample) and asbestos (two samples) was identified in the soils, and ammoniacal nitrogen was identified in the groundwater.

The proposed enabling works will comprise the excavation of up to 2.5m of Made Ground on the site (comprising 1.5m of crushed demolition materials and the remainder, pre-existing made ground) and the stockpiling of the material outside of the Phase 2 enabling works site area on the adjacent North Site. Although some data for the chemical composition of the material is available from the Waterman 2014 report, a watching brief will be undertaken during the excavation works and the ground that remains in-situ and additional environmental testing of the material and the resultant in-situ ground conditions will be undertaken. Appropriate materials management (e.g. dust mitigation) and compliance with waste regulation will be required of the appointed contractor. There are no proposed development plans per se for the site for this planning application.

Based on the available information, Ramboll considers the site to be of **low risk** in terms of the potential for significant soil or groundwater contamination to be present at the site (given the site history and based on the data available to date). Further, the proposed Enabling Works is not development and will not introduce any new viable receptors. Overall the proposed enabling works are not considered to represent a significant risk to sensitive receptors and no investigation, other than the watching brief and sampling during the excavation/enabling works, is proposed.

1. INTRODUCTION

1.1 Background

This report presents the objectives, scope, findings and conclusions of a Phase I Environmental Site Assessment undertaken at Station Hill North Site – Phase 2 (the “site”). The review was undertaken in connection with the proposed enabling works at the site.

This report was prepared by Ramboll UK Limited (“Ramboll”) on behalf of Lincoln MGT (the “client”).

This assessment has been undertaken in relation to the proposed enabling works that are the subject of a planning application. The enabling works form part of the wider Station Hill development, but given the application relates only to the enabling works, Ramboll notes that there is no development per se, taking place within the Phase 2 area that would introduce new receptors to the site.

1.2 Objectives

The main objective of the review was to assess the potential for soil or groundwater contamination, both at and in the vicinity of the site, and its likely environmental implications to the client in the context of the proposed enabling works at the site.

1.3 Scope of Works

The scope of the Phase I Environmental Site Assessment has included the following:

- examination of historic, recent and current Ordnance Survey plans to identify activities which might have led to contamination of soil or groundwater (for example, from manufacturing processes, from storage activities or waste disposal practices) both on the subject site and on adjacent sites;
- examination of published records and plans on the shallow and deep geology and hydrogeology of the site to assess the vulnerability and sensitivity of groundwater and surface water resources to contamination, if present, and the possible direction of movement off site, if mobile;
- search of a proprietary database of environmental permits, records and incidents at the site and surrounding area;
- a site inspection that was undertaken in September 2018 which covered the wider North site but included the Phase 2 Enabling Works defined area; and
- review of adjacent site investigation data generated by Ramboll and available third-party site investigation data that falls within the subject area.

1.3.1 Scope of Works Notable Exceptions and Restrictions

No sampling or analysis of soils, waters or other materials has been carried out as part of the Phase I Environmental Site Assessment.

1.4 General Limitations and Reliance

This report has been prepared by Ramboll exclusively for the intended use by the client and is subject to the appointment between Ramboll and the client defining, among others, the purpose, the scope and the terms and conditions for the services. No other warranty, expressed or implied, is made as to the professional advice included in this report or in respect of any matters outside the agreed scope of the services or the purpose for which the report and the associated agreed scope were intended or any other services provided by Ramboll.

In preparation of the report and performance of any other services, Ramboll has relied upon publicly available information, information provided by the client and information provided by third parties. Accordingly, the conclusions in this report are valid only to the extent that the information provided to Ramboll was accurate, complete and available to Ramboll within the reporting schedule.

Ramboll's services are not intended as legal advice, nor an exhaustive review of site conditions and/or compliance. This report and accompanying documents are initial and intended solely for the use and benefit of the client for this purpose only and may not be used by or disclosed to, in whole or in part, any other person without the express written consent of Ramboll. Ramboll neither owes nor accepts any duty to any third party, unless formally agreed by Ramboll through that party entering into, at Ramboll's sole discretion, a written reliance agreement.

Unless otherwise stated in this report, the scope of services, assessment and conclusions made assume that the site will continue to be used for its current purpose and end-use without significant changes either on-site or off-site.

Ramboll's scope of services for this assignment did not include collecting samples of any environmental media. Ramboll cannot rule out the existence of conditions, including, but not limited to, contamination not identified and defined by the data and information available to and/or obtained by Ramboll. Specifically, this assessment must not be considered as an asbestos survey (whether in built structures, waste, soils, etc.), even though the subject of asbestos-containing materials may have been discussed in the report.

2. SITE SETTING

The following information was derived from a site visit undertaken on 20th September 2018 by Fiona Rea of Ramboll UK Limited (Ramboll). The purpose of the site visit was to assess whether there is potential for contamination from current and recent activities.

Figures showing the location of the site, site boundary and key features on site are presented in Appendix 1. Photographs taken during the site visit are presented in Appendix 2.

2.1 Site Setting

The site is approximately 0.21 hectare in size and is located near Reading Town Centre, immediate south of Reading Train Station, at an approximate National Grid Reference 471370, 173710. Access to the site is via the northern site boundary on Station Hill Approach.

The site is relatively level at an approximate elevation of 40m Above Ordnance Datum (AOD). The surrounds slope gently downhill to the west of the site and a difference in ground elevation of approximately 1 to 2m is present between the site and the adjacent NCP car park to the south of the site.

Adjacent and surrounding land uses are detailed in Table 2.1 below.

Table 2.1: Adjacent and Surrounding Land Uses

Direction	Distance	Occupant	Activities	Notes
North	Adjacent	Station Hill Approach beyond which lies Reading Railway Station (~50m)	Access road following by railway station	Currently in use
East	Adjacent	Public open space and Thames Tower	Public open space and commercial office uses	Currently in use
South	Adjacent	NCP Car Park	Multi-storey car park	Currently in use, will undergo future redevelopment
West	Adjacent	Station Hill – North Site redevelopment site	Open space, currently in use for stockpiling of material	Will undergo future redevelopment

2.2 Site Layout and Activities

At the time of the 2018 walkover the site was intended as a public open space, comprising with a temporary single-storey café and outdoor seating area.

The open space comprised asphalt hardstanding which made up approximately 75% of the total site area. A café was located in the eastern extent of the site and comprised temporary shipping containers converted for use with outdoor seating located at the front (west), this made up approximately 20% of the total site area. Raised planters were located along the southern site boundary and comprised approximately 5% of the total site area.

Between 2018 and present day, the café and open space was closed and wooden hoarding erected to secure the area.

2.3 Storage of Chemicals and Hazardous Substances

No underground storage tanks (USTs), or evidence of USTs, such as fill points, pumps gauges, signage, marking, markings or concrete scarring was observed by Ramboll during the site inspection.

No aboveground storage tanks (ASTs), or evidence of such, was observed by Ramboll during the site inspection. No other uses considered to have a contamination potential were observed at the site during the site inspection.

2.4 Waste Storage and Disposal

At the time of the 2018 site inspection wastes generated on-site predominantly comprised domestic waste, packaging and paper. However, as the café was closed at the time of writing this report there was now no waste generated or stored on-site.

2.5 Deleterious Materials

2.5.1 Asbestos Containing Materials (ACM)

The café on site was located in a refurbished temporary shipping container and therefore it is highly unlikely that there would have been ACMs present in this structure. The café is proposed to be relocated to the north-western end of the site.

No materials labelled as containing asbestos were identified during the site visit.

2.5.2 Polychlorinated Biphenyls (PCB)

No potential PCB-containing equipment was identified during the site visit.

3. HISTORICAL & REGULATORY INFORMATION

3.1 Map History

Ramboll has undertaken a review of historical mapping and aerial imagery (where available) obtained from a proprietary environmental database which is summarised below. Selected historical maps are presented in Appendix 3.

3.1.1 The Site

Historical mapping dated 1879 showed the site to be undeveloped with an embankment located along its northern boundary. By 1899 a feature with the appearance of a pit was apparent in the western extent but which extended off site to the far west and south (later maps shows an embankment around the entire northern boundary of the north site suggesting the pit may have been the start of releveling works in the area).

Between 1899 and 1912 the pit in the western extent was no longer apparent. Three small buildings were located in the, broadly, centre east of the site.

Between 1931 and 1957 the site area appeared to be undeveloped. By historical mapping dated 1969, the entire site had been developed into a row of terraced shaped buildings. A public house was noted on the row of terraced buildings by 1986.

Between 1995 and 1999 the building on site were redeveloped. At the time of the Waterman (2014)¹ site walkover, the site was occupied by a three-storey building with two lower levels of car parking at this time. The three floors provided a single level of retail accommodation along Station Hill approach to the north, and two levels of office space above.

By mapping dated 2018, all buildings and structures on site had been demolished and the site was cleared.

3.1.2 The Surrounding Area

The earliest available historical record dated 1879 showed the surrounds to be developed predominantly for commercial and residential use. Commercial uses included railway lines with an associated Goods Station located approximately 55m to the north, a rifle factory located approximately 50m to the north-west, a brewery located approximately 150m to the west, a veterinary infirmary located 120m to the south-west, and royal horse and carriage respiratory infirmary located approximately 100m to the south-west.

By 1912 the surrounds to the south of the site was showed as a circular pit which extended into the site. The Goods Station to the north had been renamed as Great Western Railway Works, which remained in place until at least 1991 when it was redeveloped into a sorting office; and a terminal building was located approximately 100m to the west of the site, which was noted to be in use as a car park by the late 1960s.

No significant changes occurred in the surrounds between 1912 and 1957, by 1957 two garages were located approximately 10m south and 110m south-east of the site; and warehouses and factories were noted between 50m and 90m to the west of the site. By historical mapping dated 1969 a warehouse and depository, and associated coal yard, was noted approximately 90m south of the site. These buildings were later developed into Friars shopping centre by 1974.

By the late 1970s a multi-storey car park was noted directly to the south of the site which remains in place at present day, and two buildings had been developed directly west of the site one of which was noted as a ballroom with a bus station at ground floor level.

¹ Waterman (2014) Geo-Environmental and Geotechnical Assessment Station Hill, Reading EED122350-110

No significant changes occurred in the surrounds between the 1970s and the most recent historical mapping dated 2018. Between 2018 and 2020 the buildings to the south and west of the site, associated with the Station Hill Reading development site, were gradually demolished.

3.2 Environmental Database Records

The information presented in Table 3.1 has been obtained from a review of a proprietary environmental database procured by Ramboll relating to the site and surrounding land.

Table 3.1: Summary of Key Environmental Database Information

Data Type	On site	Within 250m	Within 500m	Within 1km	Details of nearest relevant record within 250m of the site
Contaminated Land Register entries	0	0	0	1	None
Prosecutions or enforcement actions	0	0	0	0	None
Pollution incidents	1	5	45	121	A spillage of unknown oils occurred in April 1993 on site and was classified as a Category 3 – minor incident. This is assumed to be associated with the bus station site adjacent west.
Former landfill sites	0	0	0	2	None
Current landfill sites	0	0	0	0	None
Registered Waste Sites	0	0	0	2	None
Part A(1) Environmental Permits	0	0	0	1	None
Part A(2) Environmental Permits	0	0	0	0	None
Part B Environmental Permits	0	0	2	12	None
Control of Major Accident Hazards Sites (COMAH)	0	0	0	1	None
Fuel Stations	0	0	1	8	None
Contemporary trade directory entries	0	53	95	288	Active entries within 150m: - Everest Jewellery: jewellery manufacturers and repairers, 66m SW. - Railair Reading: bus and coach operators and stations, 83m NE. - Clean Move Ltd: Cleaning Services – domestic, 137m NW. - Superma: dry cleaners, 112m S.
Registered Radioactive Substances	0	0	0	0	Information on certain radioactive substance authorisations is not publicly accessible
EA discharge consents	0	2	14	24	None currently active
Radon affected area	N	N/A	N/A	N/A	

The LinesearchbeforeUdig database, which lists pipelines distributing crude oil and refined hydrocarbon products owned and/or operated by a number of UK pipeline operators indicates that there are no records of underground oil or refined hydrocarbon product pipelines on the site or within 250m.

3.3 Historical Potential for Ground Contamination

3.3.1 The Site

Historical mapping that the site has had limited uses being partly occupied by a feature with the appearance of a pit (extending off-site to the west and south-west) until 1899 and then not developed again until the late 1960s when the site was occupied by a building with the appearance of residential terracing and a public house. At the time of the Waterman 2014 site walk over, the site was developed as a three-storey building with two floors of underground carparking below. The buildings were no longer apparent by 2018.

3.3.2 The Surrounding Area

Historically, the surrounds have been of commercial and industrial use predominantly since the late 1800s. Surrounding uses have included a bus station and railway station in the immediate surrounds and further afield, coal yards, rifle factory, railway station, factories, warehouses, garages and car parks.

4. ENVIRONMENTAL SETTING

4.1 Introduction

Desk-based research of the local geology, hydrogeology and hydrology was carried out to establish the potential for migration of contamination onto or away from the site, and to assess the sensitivity and vulnerability of the site's setting with respect to surface water, groundwater and ecological resources.

Information was obtained from a number of sources, including:

- examination of published geological maps produced by the British Geological Survey (BGS) and associated sheet memoirs (where available);
- review of publicly available BGS borehole logs for the site or near vicinity;
- a proprietary environmental database procured by Ramboll;
- Regulatory Authority websites including the Environment Agency (EA); and
- review of third party site investigation information.

4.2 Geology and Hydrogeology

According to BGS 1:50,000 mapping of the area, available BGS borehole logs, and information obtained from the recent Ramboll Ground Investigation² of the wider site, together with site investigation coverage provided by Waterman³, the site geology can be summarised as:

- concrete hard surfacing to an average thickness of 0.35m;
- made ground of sandy clay or sand with flint, brick and concrete, ash, ceramic and glass to an average thickness of 1.5m; over
- alluvium to an average thickness of 1.8m; over
- River Terrace Deposits to an unproven depth of beyond 5m below ground level (bgl).

Ramboll understands that approximately 1.5m of demolition material (crushed concrete and brick) is present at the site. This material is understood to have originated from the demolition of the former buildings on site which were demolished between 2015 and 2018. Beneath this 'overburden' Made Ground is present and found to predominantly comprise sandy gravel with fragments of flint, brick, concrete and occasional shards of glass, ceramic tiles and slate. Further discussion of the ground conditions is provided in Section 5.

A summary of ground conditions encountered over the wider North site is provided, for context, in Table 4.1

Table 4.1: Summary of Geology and Hydrogeology in wider North Site area

Formation	Description	Thickness (average)	EA Aquifer Designation	Hydrogeological Significance
Made Ground	Demolition crush material up to 1.5m thick, underlain by slightly sandy gravel of brick, concrete and sandstone.	3.3m (surrounding area)	Not classified	Variable permeability formation with potential to support small or localised abstractions.
Alluvium	Stiff silty clay	1.25m	Secondary A	Permeable formations with potential to support localised abstractions.

² Ramboll (2019) Station Hill North Site, Ground Investigation Report, Ref. SHR-RAM-NB-XX-RP-G-000022

³ Waterman (2014) Geo-Environmental and Geotechnical Assessment Station Hill, Reading EED122350-110

Formation	Description	Thickness (average)	EA Aquifer Designation	Hydrogeological Significance
Taplow Gravel Formation	Clayey gravelly sand or sandy gravel of flint and chalk	2.65m	Secondary A	Permeable formations with potential to support localised abstractions.
Upper Chalk (Structureless)	Chalk	9.26m	Principal	Highly permeable, with significant water storage. Able to support large abstractions.
Upper Chalk (Structured)	Chalk	>21.2m (unproven)	Principal	Highly permeable, with significant water storage. Able to support large abstractions.

The EA currently classifies groundwater at the site (the Berkshire Downs Chalk groundwater body) as being of 'poor' chemical quality and of 'poor' quantitative status under the Water Framework Directive classification scheme.

According to EA information provided by a commercial environmental regulatory database provider, there are 10 licensed groundwater abstractions within a 2km radius of the site. Of these, six are within 1km, as detailed in Table 4.2.

Table 4.2: Licensed Groundwater Abstractions within 2km of the Site

Licence Holder	Distance from Site	Abstraction source	Purpose of Abstraction
Primark Stores Ltd	622m W	Not specified	Retail: drinking, cooking sanitary, washing (small garden)
Manrose Manufacturing Ltd	483m NW	Not specified	Commercial/Industrial/Public Services: Drinking, cooking, sanitary, washing (small garden)
Hillier Group of Companies	711m W	Not specified	Metal: Process water
Berendsen UK Ltd	747m NE	Not specified	Industrial; commercial and public services: laundry use
British Road Services Ltd	789m NW	Not specified	Vehicle Washing
Hillier Group of Companies	932m W	Not specified	Metal: Process Water

The site is not situated within an EA designated groundwater Source Protection Zone. The closest Source Protection Zone (SPZ) is located approximately 350m west of the site and relates to a SPZ Zone III.

Groundwater was encountered by the Waterman (2014) investigations at levels between +36.07 mAOD (above ordnance datum) and +36.44 mAOD across the wider Station Hill site (broadly 5m below ground level). Additionally, Ramboll investigations outside of the Phase 2 Enabling Works site boundary identified groundwater generally in the region of +36.2 mAOD.

Based on groundwater elevations and in continuity with topography and nearby surface-water bodies (refer to Section 4.2), groundwater was inferred to flow in a broadly east or north-easterly direction. The groundwater may however be within the zone of influence of the above listed groundwater abstractions. No groundwater strikes were reported within the exploratory locations falling within the site boundary. Later groundwater monitoring in WS20, (located in the far eastern end of the site) recorded groundwater at an elevation of +36.44m AOD(approximately 4.5m below ground level). .

4.3 Hydrology

The nearest identified surface water body is an inland river located 125m north of the site which confluent with the River Thames, approximately 1km north of the site at its nearest point. The River Thames is not tidally influenced at this point in its reach. The EA currently classifies the River Thames as being part of the Thames Wallingford to Caversham navigation and being of 'moderate' ecological quality and 'good' chemical quality under the Water Framework Directive classification scheme. The inland river is not classified by the Environment Agency.

According to an independent, third party environmental database, there are five licensed surface water abstractions within a 2km radius of the site, as detailed in Table 4.3.

Table 4.3: Licensed Surface Water Abstractions within 2km of the Site

Licence Holder	Distance from Site	Abstraction source	Purpose of Abstraction
Oracle Shopping Centre Ltd	476m S	Not supplied	Amenity: Lake and pond throughflow
Reading Borough Council	649m N	Not supplied	Environmental: non-remedial river/wetland support: transfer between sources
Reading Borough Council	649m N	Not supplied	Environmental: non-remedial river/wetland support: lake and pond
The Reading Sustainability Centre	715m NE	Not supplied	Other environmental improvements: transfer between sources
Birse Construction Ltd	1.177km S	Not supplied	Industrial processing (miscellaneous)

According to the EA fluvial and tidal flood map for planning, the site is located in Flood Zone 1 (Low Probability). This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1% in any year). The closest area of land recorded as having an elevated risk of flooding is located approximately 220m south-west of the site.

According to the EA Flood Map for Surface Water which presents the theoretical potential for flooding from pluvial sources (i.e. flooding caused by rainwater exceeding capacity of drainage systems), the majority of the site is located in an area of Very Low flooding probability. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of pluvial flooding (<0.1% in any year).

An area classified as having a high risk of flooding probability is located along the southern site boundary. This zone comprises land assessed as having a 1 in 30 or greater annual probability of pluvial flooding (>3.3% in any year).

Surface water drainage networks are typically designed to accommodate only a 1 in 30 (3.3%) annual probability rainfall event. Older drainage networks may have a lower capacity, especially if they have not been maintained adequately. Although not true of every situation, surface water flooding is typically relatively shallow and would be expected to subside following the storm event assuming drainage assets are maintained in an appropriate condition.

4.4 Ecology

The site is located in a Nitrate Vulnerable Zone relating to the Thames Wallingford to Caversham navigation.

There are no other statutory designated ecologically sensitive sites located within 2km of the site.

5. PREVIOUS REPORTS

The following reports have been provided to Ramboll for review:

- Waterman Energy, Environment and Design Ltd, September 2014: Geo-Environmental and Geotechnical Assessment, Station Hill, Reading (Ref EED12350-110-R-3.1.1-RM).

This report summarises the findings of a geo-environmental and geotechnical ground investigation undertaken by Waterman Energy, Environment and Design Ltd (Waterman) on behalf of Sackville Developments (Reading) across the entire Station Hill North Site, for the purposes of assisting in discharging planning conditions relating to the investigation and remediation of contaminated land and to provide a geotechnical assessment of the ground conditions for foundations. The geotechnical aspects of the Waterman (2014) report have not been reviewed.

The environmental aspects of the Waterman ground investigation relating to the Phase 2 enabling works site area only are discussed herein.

The scope of works that falls within the Phase 2 Enabling Works site boundary comprised:

- the drilling of six windowless sample boreholes (WS14, WS15, WS16, WS18, WS19 and WS20) to a maximum depth of 5.0m bgl (below ground level) (and extract of the Waterman exploratory plan is provided as Figure 3);
- the excavation of one trial pit (TP7) to a maximum depth of 1.3 m bgl; and
- the installation of one windowless sample borehole (WS20, located at the far eastern end of the site) for the purposes of gas and groundwater monitoring.

Ground Conditions

The ground conditions encountered at the site comprised the following strata:

- concrete hardstanding at an average thickness of 0.35m;
- made Ground comprising sandy CLAY or gravelly SAND with frequent flint, brick and concrete with occasional ashy material, ceramic, slate and rare glass, encountered at an average thickness of 1.5m; underlain by,
- alluvium comprising greenish grey silty CLAY at an average thickness of 1.8m; underlain by,
- river terrace deposits comprising orange-brown sand and gravel, encountered at depths between 3.0m and 4.3m bgl to >5.0 m bgl (depth unproven).

No visual or olfactory evidence of contamination was noted in any of the exploratory locations undertaken within the boundary of the Phase 2 Enabling Works footprint.

Chemical Analysis

Chemical analysis of soil samples was undertaken and tested for a range of contaminants including heavy metals, inorganics, total petroleum hydrocarbons (TPHs), polycyclic aromatic hydrocarbons (PAHs), BTEX compounds, phenols, volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs).

The results were screened against commercial end use screening criteria. Only lead and asbestos was recorded above the screening criteria. Lead was recorded at a concentration of 1,250 mg/kg in WS19 (0.5-1.2m) and asbestos was recorded in WS14 and WS19. Subsequent asbestos quantification identified chrysotile free fibres and chrysotile type cement at concentrations of <0.001% w/w (weight by weight) and 0.12% w/w in WS14 and WS19 respectively.

All other analytical results were reported to fall below the screening criteria.

Gas and Groundwater Monitoring

One groundwater sample was obtained from WS20 (located at the far eastern end of the site) and was tested for a range of contaminants similar to that of the soil analytical suite. Comparison of results against the GAC for controlled waters showed that only ammoniacal nitrogen was recorded above the screening criteria.

Six rounds of ground gas monitoring undertaken recorded a maximum methane concentration of 0.2% by volume; a maximum carbon dioxide concentration of 4.3% by volume; a minimum oxygen concentration of 17.6% by volume and a maximum flow rate of 0.1l/hr.

Waterman's Conclusions

Waterman concluded that no significant or widespread contamination of soils or groundwater was identified at the site (which included the Phase 2 Enabling Works area). Isolated exceedances of asbestos and lead were encountered within the Made Ground deposits.

Waterman concluded that in the context of the overall proposed development the presence of contaminants in soil was not considered to pose a significant risk to end users as the development will predominantly comprise buildings and hardstanding.

No specific remedial measures were recommended for the Phase 2 enabling works site area.

6. PROPOSED ENABLING WORKS AND CONCEPTUAL SITE MODEL

6.1 Introduction

This Phase I Environmental review is required in connection with the proposed enabling works at Phase 2. Ramboll understands that no development per se will occur on site in relation to this specific planning application and works will relate solely to the removal of overburden, the relocation of the cafe and the construction of a retaining wall. Specifically, and relevant to ground conditions, proposed works include:

- The excavation of overburden which is known to be located across the site. The overburden comprises approximately 1.5m of demolition crush which resulted from the demolition of the previous buildings on site, and approximately 1m of material which will result from the break-out of previous foundations on site.
- The stockpiling of the material on the adjacent Station Hill North site, which is directly adjacent to the west. The Station Hill North site forms part of the large development site, and therefore this is not considered to be movement of material “off-site”.

In the UK, ground contamination is assessed by identifying whether a pollutant linkage is present (or potentially present) between a contaminant, a pathway and a receptor in the form of a Conceptual Site Model (CSM). The CSM takes into account the known information from the application site, surroundings and the environmental setting and is a simplified representation of the possible environmental conditions at and in the vicinity of the application site, and is used to initially identify potential sources, potentially sensitive receptors, pathways, and pollutant linkages.

The information provided in the preliminary CSM is based on the findings of the Phase 1 assessment of this report.

6.2 Potential Sources of Contamination

The potential sources of contamination identified from the desk study are summarised in Table 6.1 below.

Table 6.1: Potential Sources of Contamination

	On-site	Off-site
Current	Demolition crush located on site at a known thickness of approximately 1.5m. Further underlain by former foundations, underlain by Made Ground comprising sandy gravel, of a known thickness of approximately 1.5m. Localised lead and asbestos concentrations (Waterman, 2014).	Made Ground used in construction of current buildings.
Historic	Previous use of the site - a pit of unknown use but which may have been indication of the start of later releveling of the site in the late 1800s, residential/office development and a temporary events area/cafe. Limited potential contaminants associated with such uses.	Generally, the surrounds have been predominantly of industrial and commercial use since the mid-1800s. Surrounding uses included a goods station with associated railway lines, later becoming Reading railway station, coal yards, a rifle factory, a brewery, a railway terminus, multiple garages, warehouses, factories, builders yards and a bus station.

	On-site	Off-site
		Potential contaminants from the above sources includes oils and fuels, metals, and chemicals.

6.3 Receptors

The identified potential receptors are summarised in Table 6.2.

Table 6.2: Potential Receptors to Contamination

Receptor	Location	Rationale	Receptor Present
Humans	On-Site	The site is currently unoccupied. No habitable development is proposed as part of this planning application. The café is a self-contained, shipping style container which will be located in the north-west of the site, away from the overburden excavation works.	No
	Off-Site	The application site is located within a predominantly commercial setting.	Yes
Water Environment	On-Site	Groundwater is anticipated to be present in the alluvium and/or Taplow Gravel Member. The Taplow Gravel Member is classified as a Secondary A Aquifer and considered to be a sensitive receptor; therefore the potential exists for shallow groundwater beneath the application site.	Yes
		At depth, the Chalk is classified by the EA as a Principal Aquifer and therefore has the ability to support a high level of water storage.	Yes
	Off-Site	Shallow groundwater at the site within the Alluvium and the Taplow Gravel Member and is expected to be in continuity with the wider shallow aquifer. Deep groundwater beneath the site is likely to be in continuity with the wider Chalk aquifer. There are 10 licensed groundwater abstractions situated within a 2 km radius of the application site, however none of these are for public water supply. Surface Water: The nearest surface water course is an inland river located 125m north of the site which joins to the River Thames located approximately 1km north of the site at its nearest point. No sensitive surface water abstractions are located within 2 km of the application site.	Yes No No
Ecological Receptors	On-Site	There are no statutory ecological sites located on site.	No
	Off-Site	There are no ecologically sensitive zones located within 2km of the site.	No
Built Environment	On-Site	The application site is not proposed to undergo future redevelopment.	No

6.4 Potential Pathways

The identified potential pathways for contamination are summarised in Table 6.3 below.

Table 6.3: Potential Pathways for Contamination

Pathway	Discussion	Pathway present
Direct Physical Contact, Ingestion and Inhalation	Direct contact: ingestion, dust and particulate inhalation pathways may be relevant during material movements to the off-site stockpile. Good construction and materials management methodologies will be employed to prevent dust migration. The stockpiled material will not be returned to the Phase 2 Enabling Works site. There is a potential pathway between contamination in soil and construction workers however this will be addressed by health and safety requirements.	No
Contaminant volatilisation into indoor and outdoor air.	No buildings are proposed as part of this application. Materials observed in 2014 are not considered to have significant vapour potential and laboratory data confirms this. Gas monitoring was undertaken in the eastern end of the site and reported acceptable gas levels.	No
Migration from soils to groundwater via leaching.	Overburden material is proposed to be relocated to a stockpile off-site. Materials, once stockpiled, will be managed to prevent the escape of liquid run-off and leaching potential. Ground contamination data from Waterman (2014) did not identify significant contamination that would be considered to represent a potential risk to groundwater from leaching. A watching brief (of both the excavated overburden and the remaining in-situ soils) will be implemented during the excavation works proposed as part of these Enabling Works.	No
Migration within groundwater vertically and laterally to deeper groundwater, and to surface watercourses.	Vertical and lateral migration of contaminants (if present) to the shallow groundwater is considered possible. No significant contaminant concentrations were identified from the Waterman 2014 investigation. However, materials, once stockpiled, will be managed to prevent the escape of liquid run-off and leaching potential.	Yes No
Migration of potentially hazardous ground gases to indoor air.	No buildings are proposed as part of this application.	No
Building materials (chemical attack)	No proposed buildings on site.	No

6.5 Summary of Preliminary Conceptual Site Model

On the basis of the information presented above and not least because the proposed enabling works do not entail any development works, there are no concluded to be no plausible complete source – pathway – receptor linkages present on site.

No plausible receptors will be introduced or impacted by the proposed works. The ground conditions (based on field observations from the Waterman 2014 investigation and the accompanying laboratory data) were not considered to be significant in this context (therefore no significant sources) and where two results were identified (one lead result and one asbestos result) these were highly localised.

6.6 Environmental Management During Works

Notwithstanding the above findings of the conceptual site model, the following activities are proposed as part of the Phase 2 Enabling Works:

- Implementation of a ground contamination watching brief (for unforeseen conditions) during the overburden excavation works.
- The representative sampling and laboratory testing of the stockpile of material for contamination parameters.
- Representative sampling of the residual soils that remain in-situ after the overburden has been relocated.
- The subsequent removal of the stockpile after testing. Waste disposal should be undertaken in accordance with current legislative requirements and the responsibility of this will lie with the contractor.
- The implementation of appropriate dust suppression and control measures during soil movements. The responsibility of this will lie with the contractor and should be implemented as part of its Construction Environmental Management Plan (CEMP). Appropriate compliance with UK materials regulations will also be the responsibility of the contractor.

7. CONCLUSIONS

The site is currently unoccupied and was most recently in use as a café and public open space.

Historically, the site has been subject to some levelling in the late 1800s and then some presumed residential or commercial development in the late 1960s. Ramboll understands that these buildings were demolished between 2014 and 2018, and the resultant crushed materials were placed across the site at an approximate thickness of 1.5m.

Historically, the surrounding land has been occupied by commercial and industrial use since the 1800s. Industry present in the surrounds has included railway stations and associated railway tracks, coal yards, warehouses, a rifle factory, a brewery, a veterinary infirmary, garages and a bus station. From the mid-1970s the surrounds were predominantly for commercial use.

A previous ground investigation undertaken by Waterman Ltd in 2014 identified localised concentrations of lead in one location, and asbestos in two locations. Groundwater analysis identified ammoniacal nitrogen above the GAC for controlled waters. Overall no widespread soil or groundwater contamination was encountered at the site.

The proposed enabling works will comprise the excavation of 2.5m of Made Ground on the site, which comprises demolition crush underlain by previous foundations and pre-existing made ground. The materials will be stockpiled on the wider North Site, outside of the Phase 2 Enabling Works boundary. Since the works do not comprise development and relate only, in terms of ground contamination management, to the relocation of materials to a stockpile there are no identified long term sensitive receptors to the activities. The conceptual site model has not identified any plausible pollutant linkages. Appropriate materials management and compliance with regulatory requirements will be the responsibility of the contractor but will include the appropriate permitting or otherwise for moving and storing the materials and managing potential short term issues whilst the materials are in storage such as dust control and surface water run-off. Notwithstanding, an environmental watching brief will be undertaken during the materials excavation to observe the composition of the overburden and the underlying ground conditions made visible by the works. Environmental sampling and testing of the material and selected soil samples collected from soils that remain in-situ.

Based on the available information, Ramboll considers the site to be of **low contamination risk** and no investigation, other than the watching brief and sampling during the excavation/enabling works, is proposed.

APPENDIX 1 FIGURES

Figure 1: Site Location

Figure 2: Site Boundary and Layout

Figure 3: Waterman 2014 Investigation Location

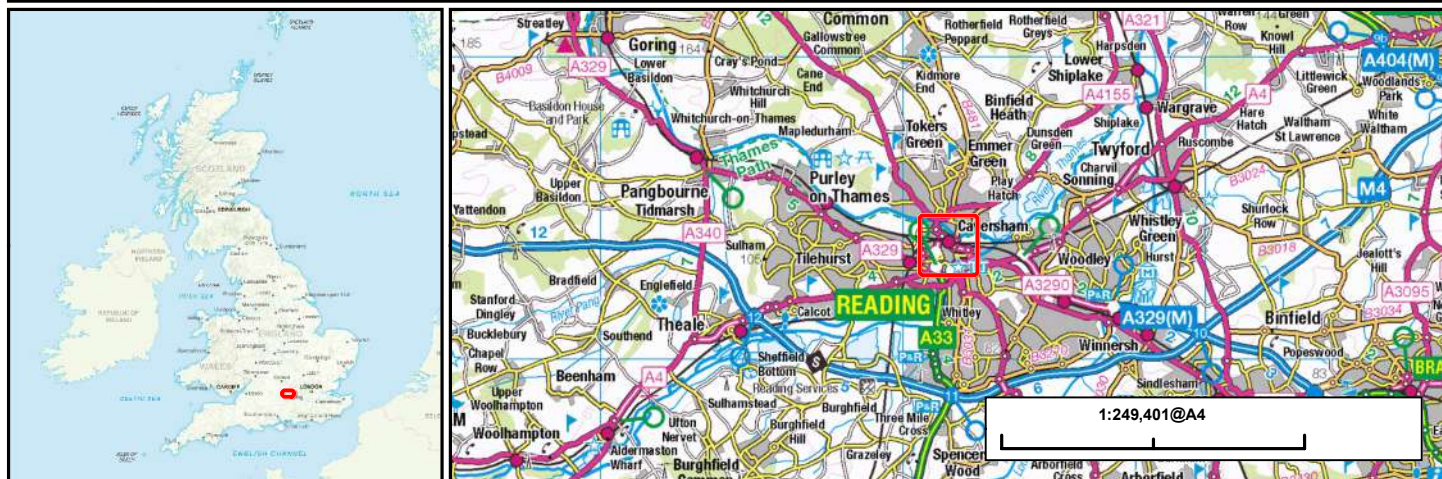
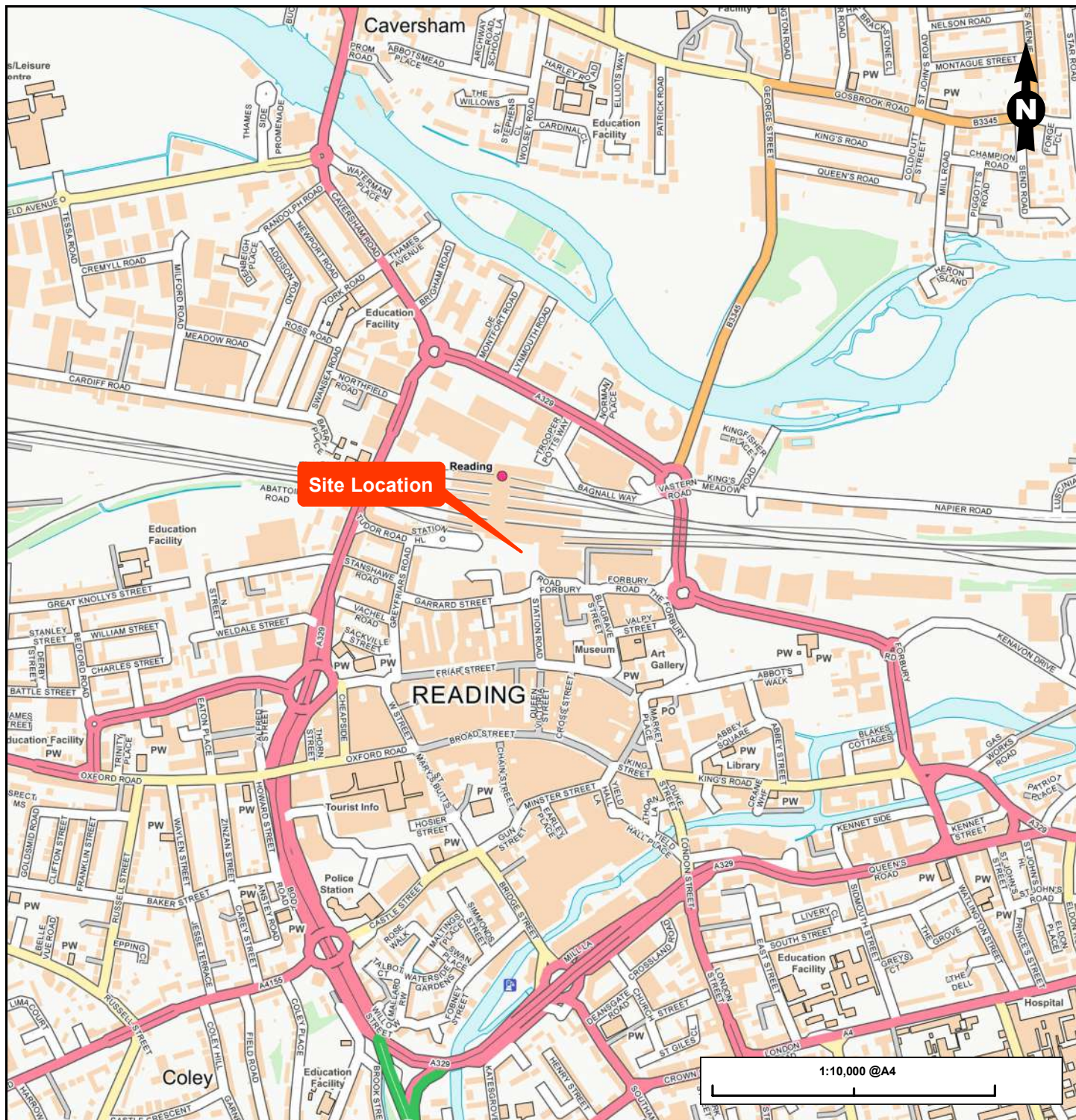
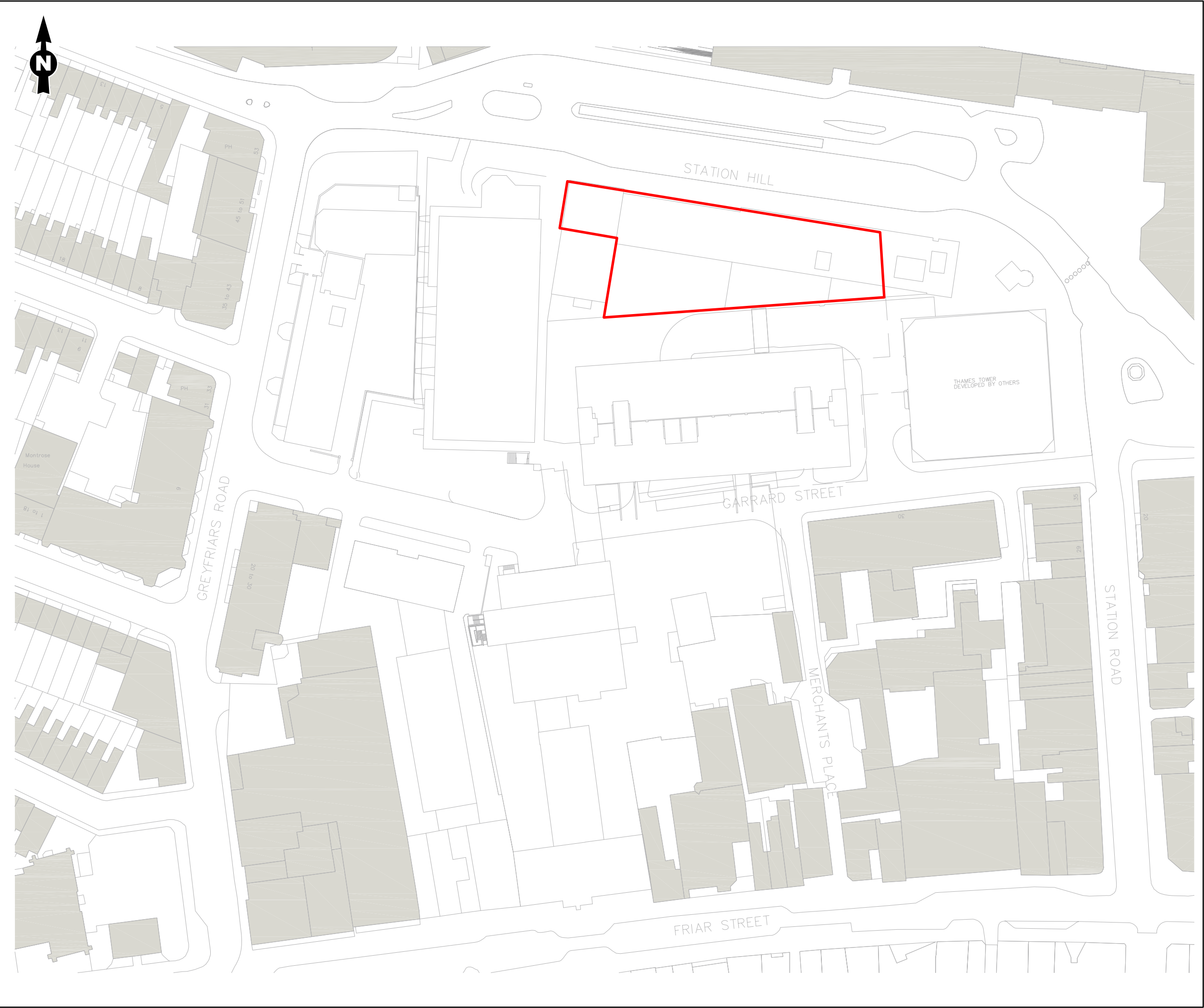


Figure Title	Project Name		
Figure 1: Site Location			
Project Number		Prepared By	BVK
1620004716			



Legend
 Site Boundary

Figure Title
Figure 2: Site Layout Plan

Project Name
**Station Hill Reading, North Site –
Phase 2 Enabling Works , Reading,
RG1 1PT**

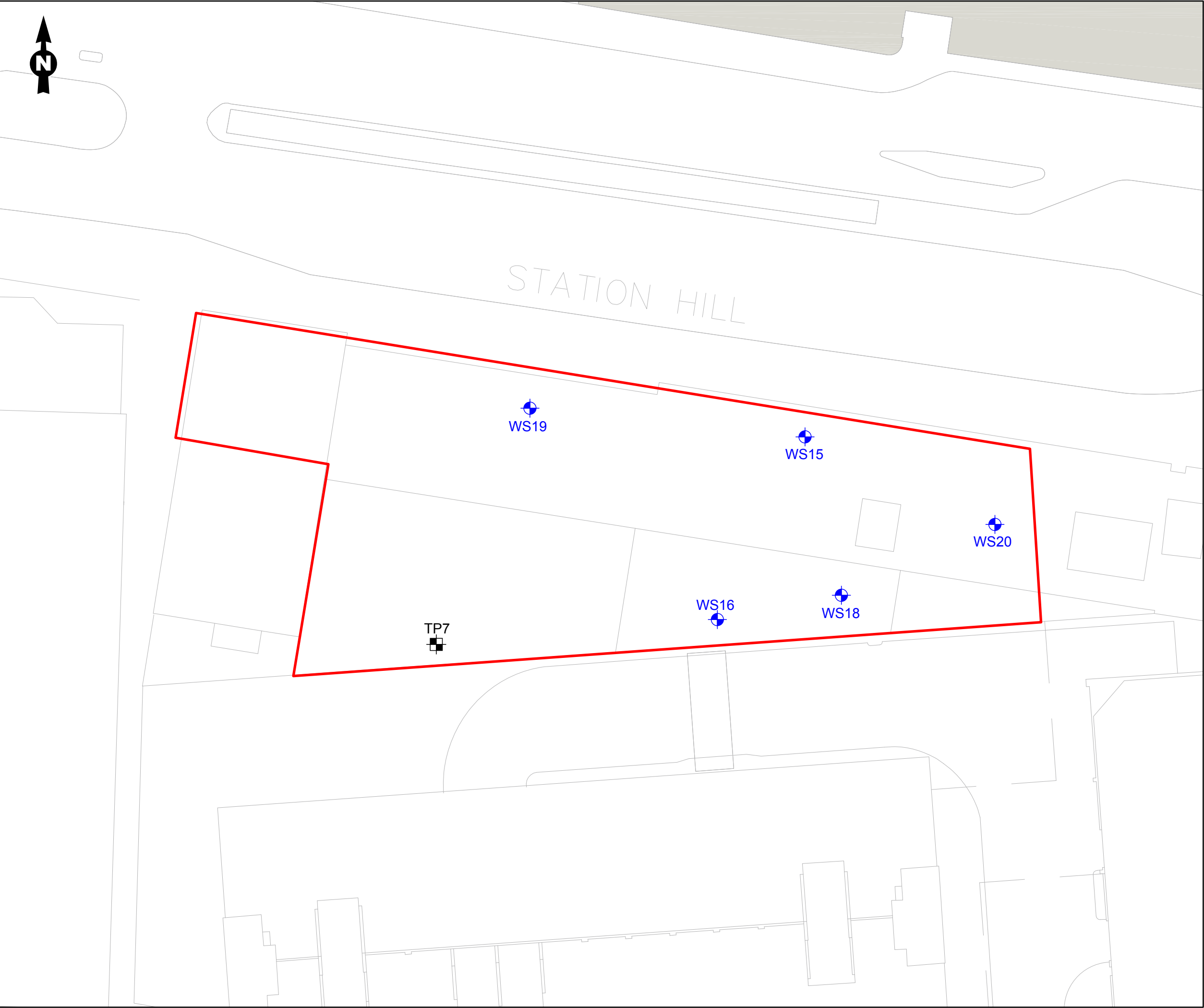
Project Number 1620004716	Figure No. 2
-------------------------------------	------------------------

Date March 2020	Prepared By BVK
---------------------------	---------------------------

Scale 1:750 @ A3	Issue 1
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Client
Lincoln MGT





- Legend**
-  Site Boundary
 -  Window Sample Location
 -  Trial Pit Location

Figure Title
Figure 3: Sample Location Plan

Project Name
Station Hill Reading, North Site –
Phase 2 Enabling Works , Reading,
RG1 1PT

Project Number	Figure No.
1620004716	3

Date	Prepared By
March 2020	BVK

Scale	Issue
1:250 @ A3	2

Client
Lincoln MGT



APPENDIX 2 PHOTOGRAPHIC LOG



Photo 1.

View of Phase 2 enabling works site area (facing north-east), comprising a café located in the eastern extent of the site and public open space which is now closed for public access.



Photo 2.

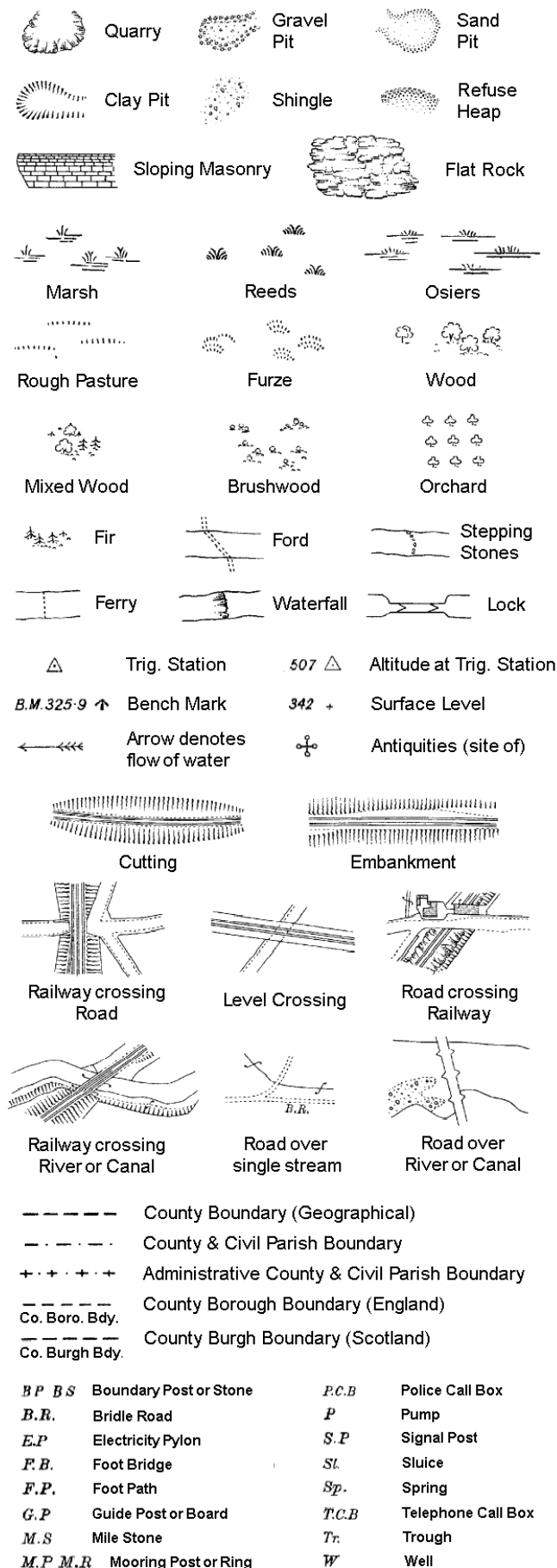
View of phase 2 enabling works area (facing south-west) prior to closure.

Title: Photographic Log	Client: Lincoln MGT
Site: Station Hill North Site – Phase 2 Enabling Works	Date: 25/03/2020

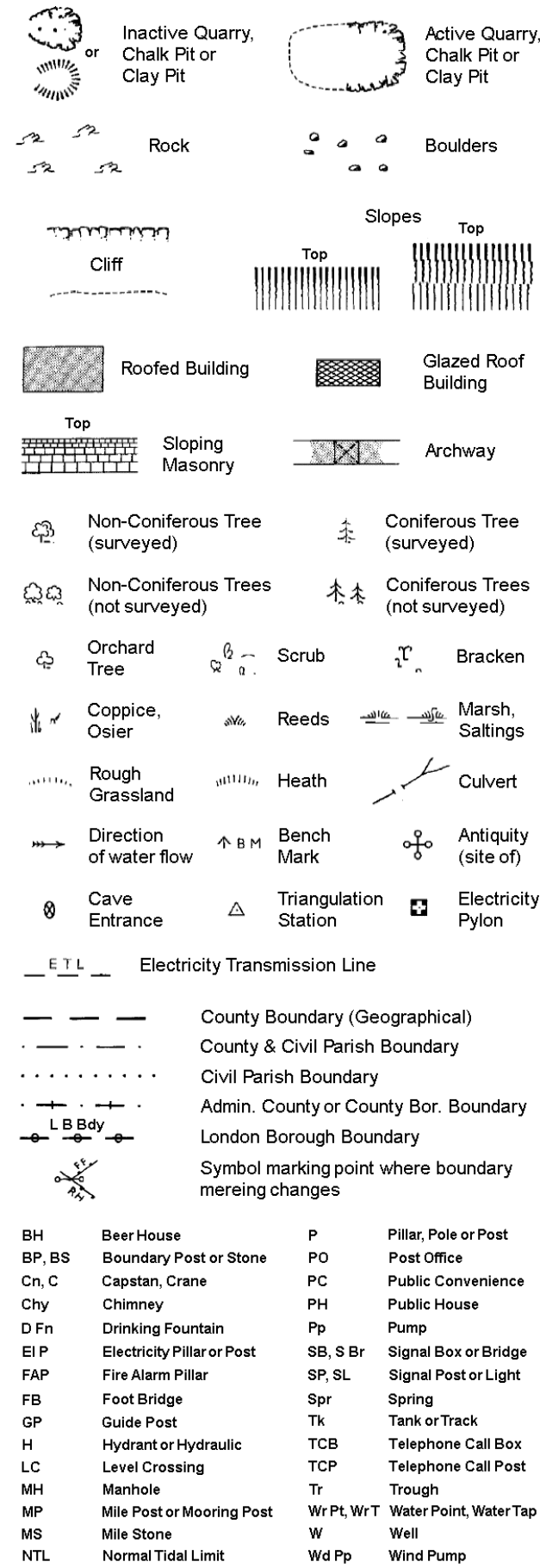
APPENDIX 3 SELECTED HISTORICAL MAPS

Historical Mapping Legends

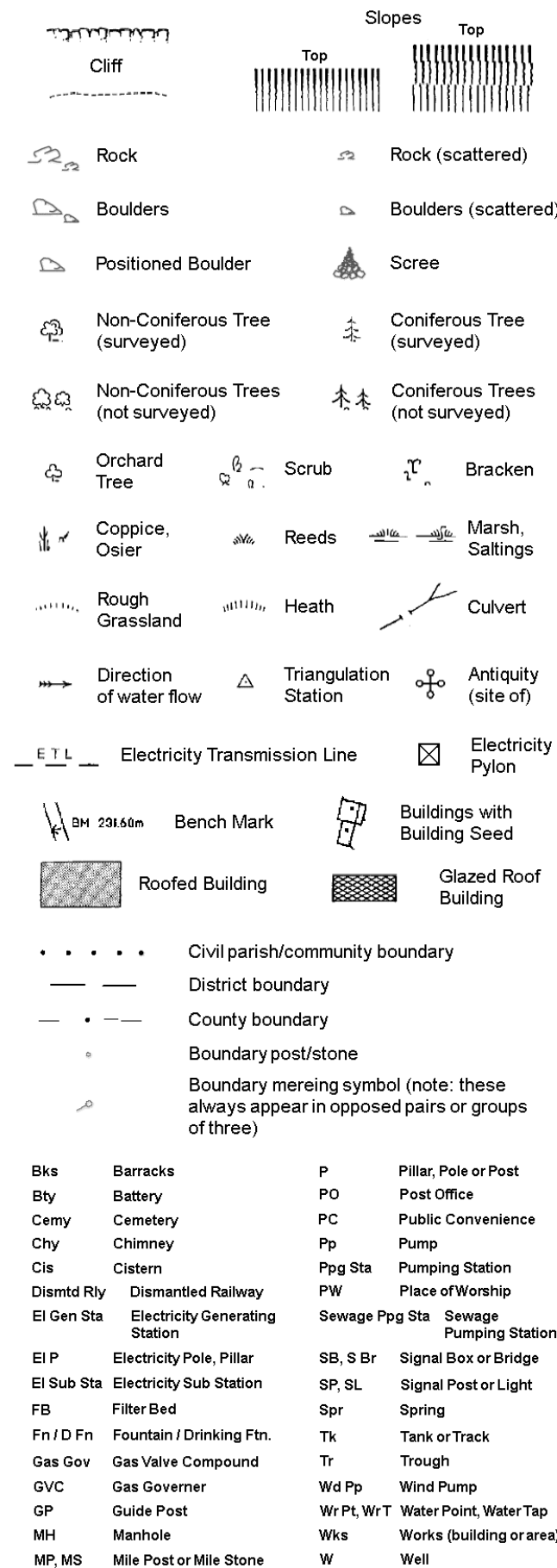
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



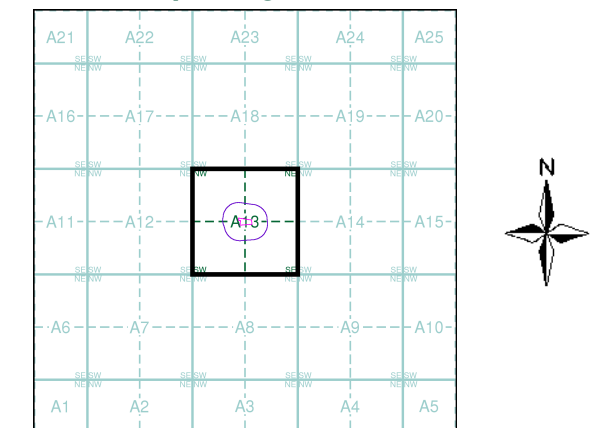
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Berkshire	1:2,500	1879	2
Oxfordshire	1:2,500	1881	3
Oxfordshire	1:2,500	1899	4
Berkshire	1:2,500	1899	5
Berkshire	1:2,500	1912 - 1913	6
Berkshire	1:2,500	1931 - 1932	7
Ordnance Survey Plan	1:1,250	1957	8
Ordnance Survey Plan	1:2,500	1957	9
Ordnance Survey Plan	1:1,250	1962 - 1972	10
Ordnance Survey Plan	1:1,250	1968 - 1984	11
Supply of Unpublished Survey Information	1:1,250	1973 - 1974	12
Additional SIMs	1:1,250	1979 - 1989	13
Ordnance Survey Plan	1:1,250	1980 - 1988	14
Additional SIMs	1:1,250	1986 - 1991	15
Additional SIMs	1:1,250	1988	16
Large-Scale National Grid Data	1:1,250	1993	17
Additional SIMs	1:1,250	1993	18
Large-Scale National Grid Data	1:1,250	1994	19
Large-Scale National Grid Data	1:1,250	1996	20
Historical Aerial Photography	1:2,500	1999	21

Historical Map - Segment A13



Order Details

Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

The Biscuit Tin, Station Hill, READING, RG1 1PT



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



Berkshire

Published 1879

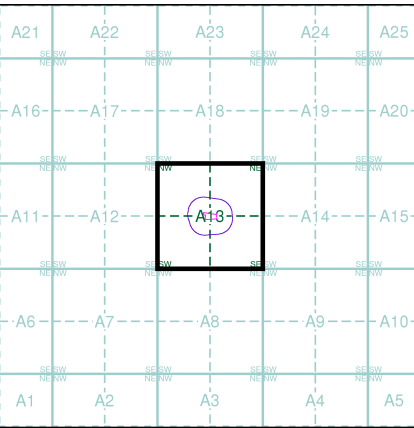
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

029 15
1879
1:2,500
037 03
1879
1:2,500

Historical Map - Segment A13



Order Details

Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

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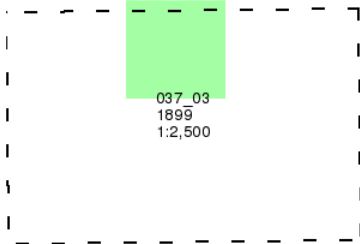
Berkshire

Published 1899

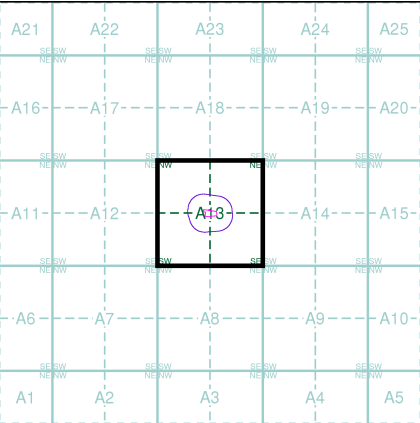
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:

239584551_1_1

Customer Ref:

1620004716

National Grid Reference:

471400, 173770

Slice:

A

Site Area (Ha):

0.28

Search Buffer (m):

100

Site Details

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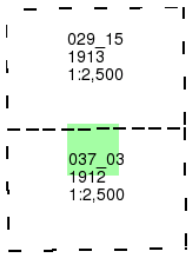
Berkshire

Published 1912 - 1913

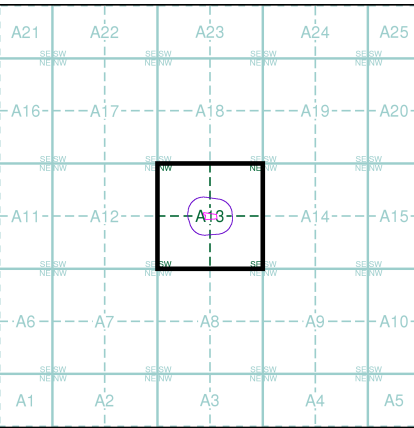
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

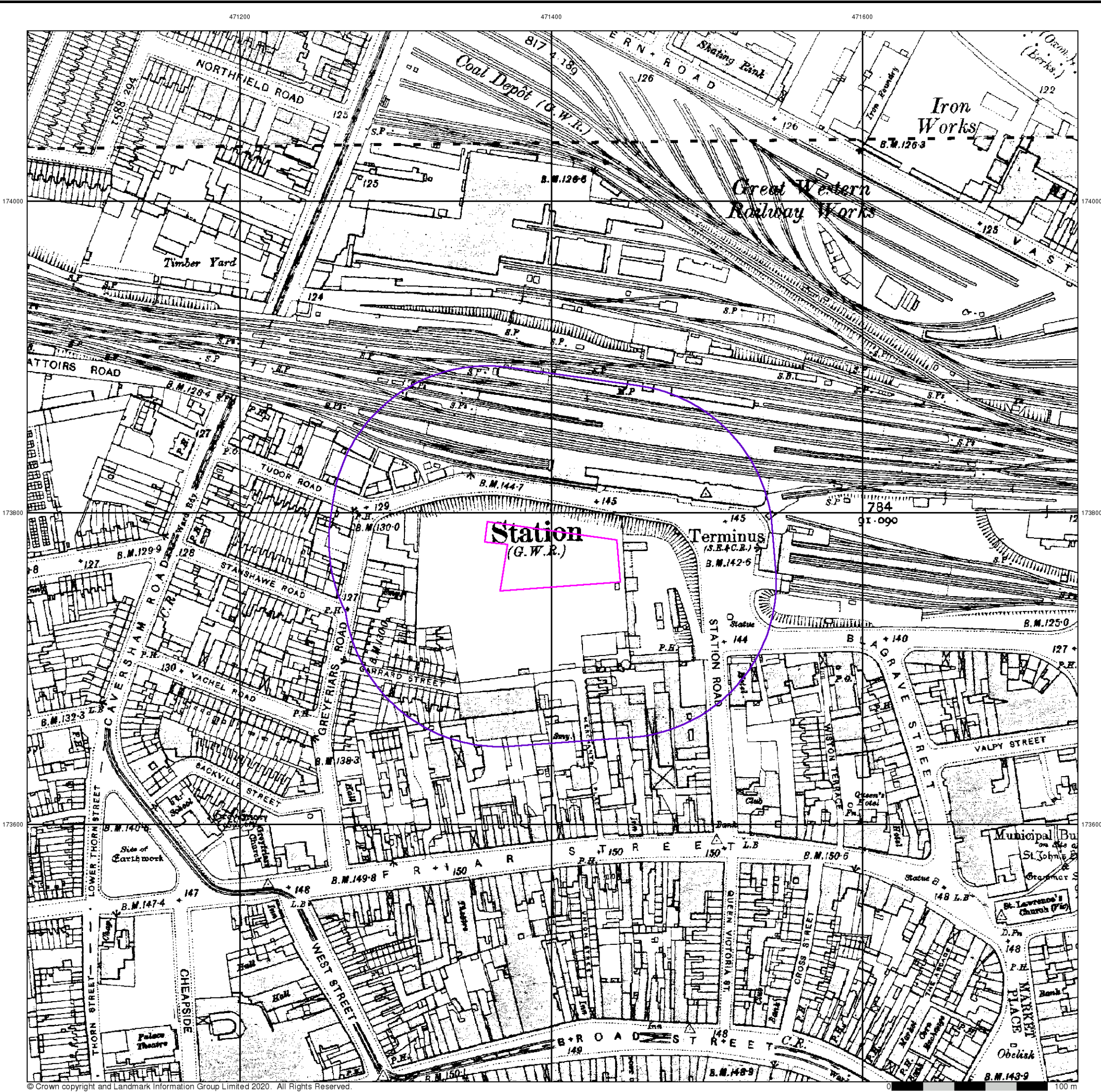
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National Grid Reference: 471400, 173770
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Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

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Berkshire

Published 1931 - 1932

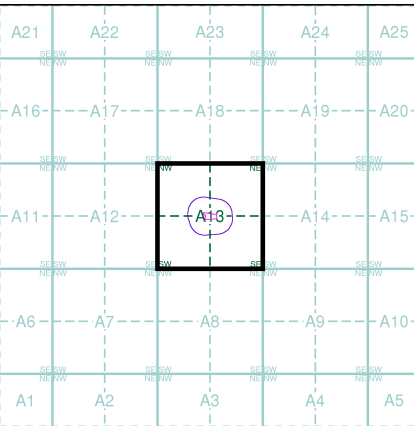
Source map scale - 1:2,500

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Map Name(s) and Date(s)

029 15
1932
1:2,500
037 03
1931
1:2,500

Historical Map - Segment A13



Order Details

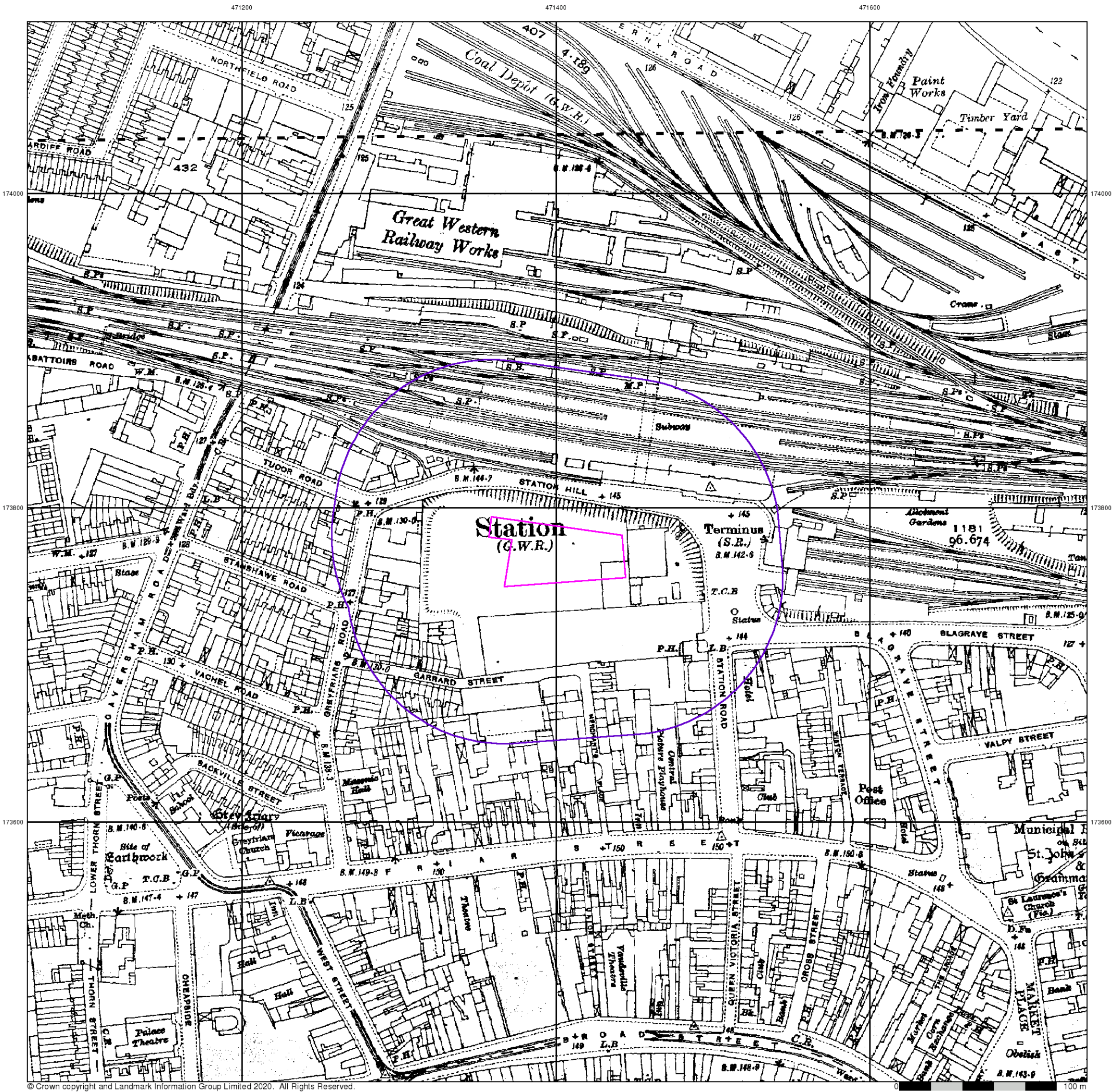
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Customer Ref: 1620004716
National Grid Reference: 471400, 173770
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Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

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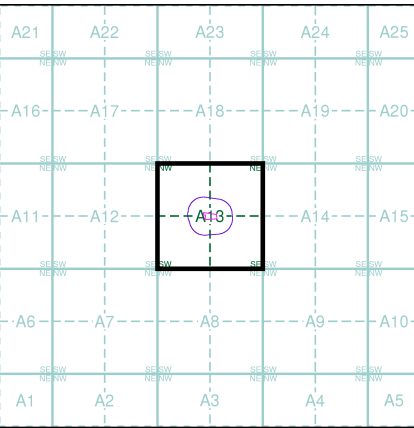
Ordinance Survey Plan
Published 1957
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

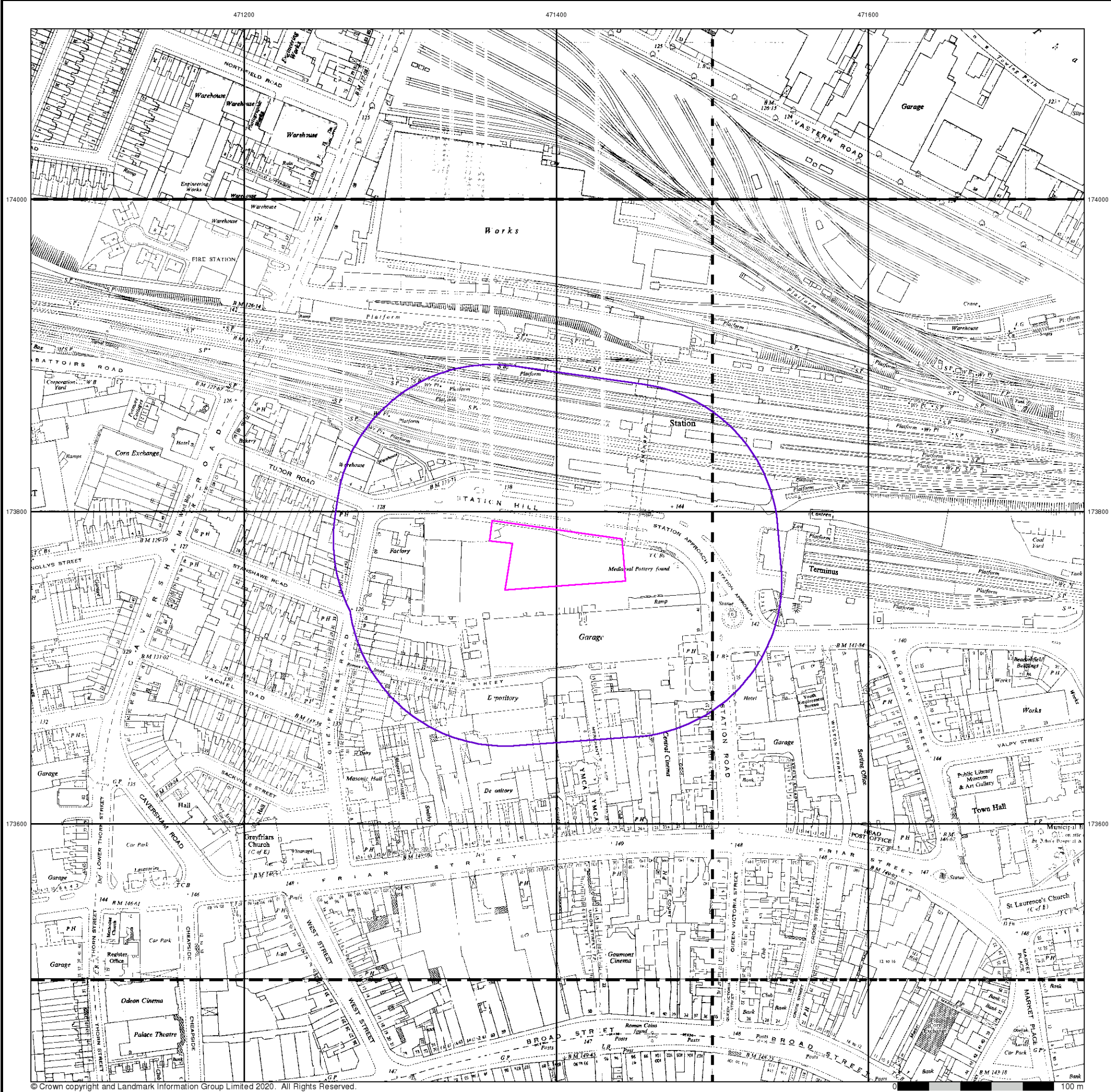
U7174SV	U7174SE
957	957
1:1,250	1:1,250
U7173NV	U7173NE
957	957
1:1,250	1:1,250
U7173SV	U7173SE
957	957
1:1,250	1:1,250

Historical Map - Segment A13



Order Details
Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details
The Biscuit Tin, Station Hill, READING, RG1 1PT





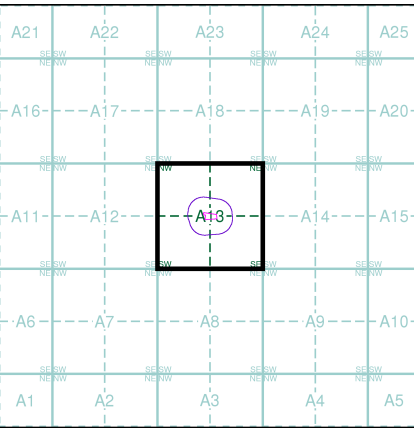
Ordnance Survey Plan
Published 1962 - 1972
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

U7174SV	U7174SE
971	972
1:1,250	1:1,250
U7173NV	U7173NE
962	962
1:1,250	1:1,250
U7173SV	U7173SE
962	962
1:1,250	1:1,250

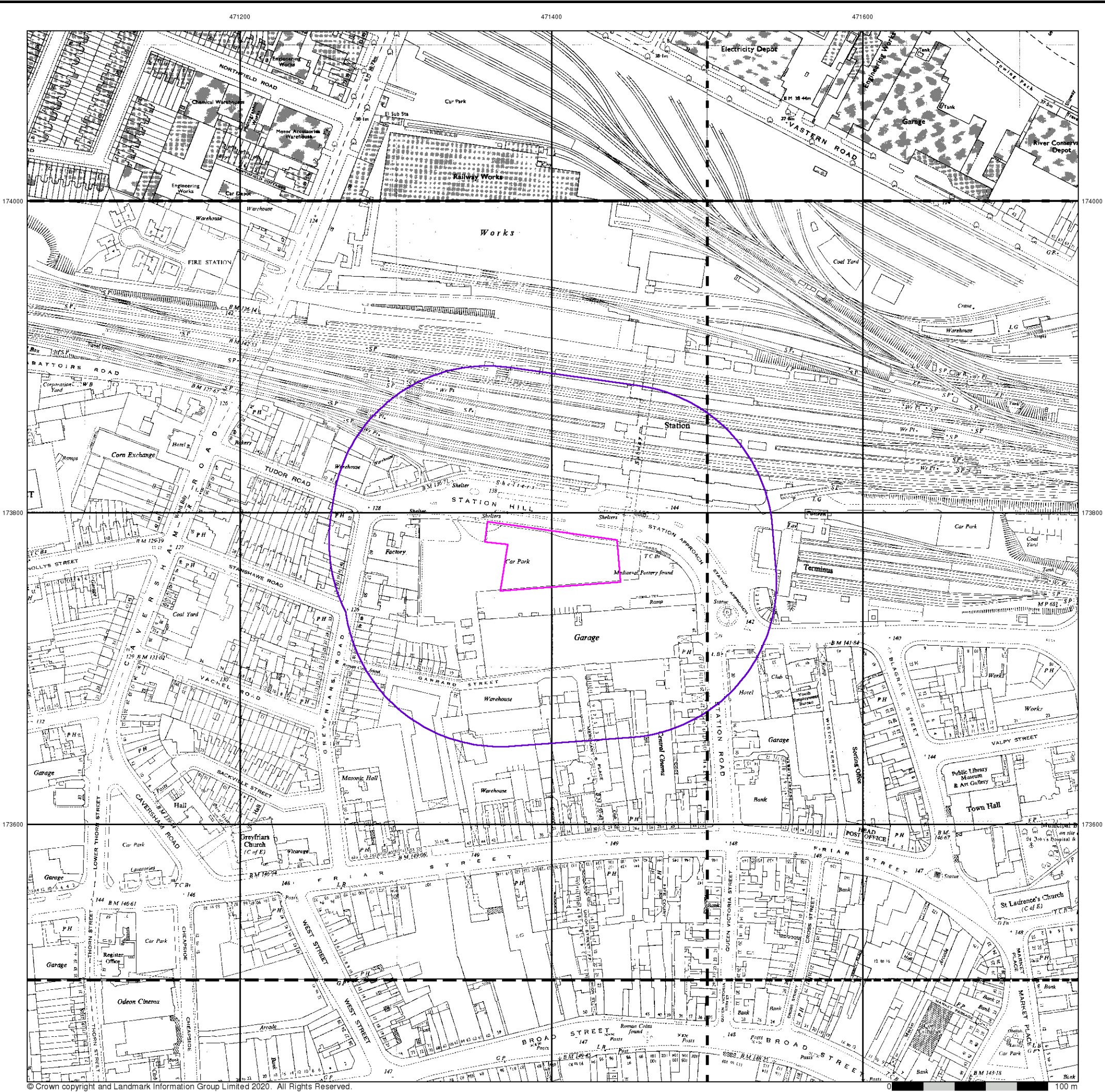
Historical Map - Segment A13



Order Details
Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details
The Biscuit Tin, Station Hill, READING, RG1 1PT

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





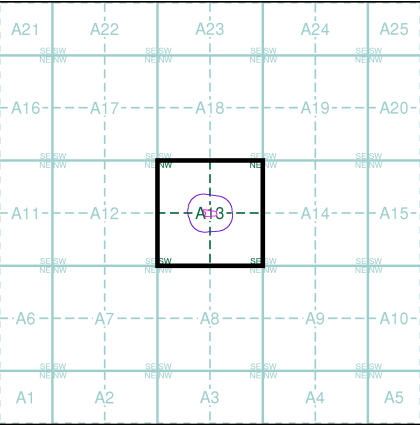
Ordnance Survey Plan
Published 1968 - 1984
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

U7174SW	984	1:1,250
U7173NW	971	1:1,250
U7173SW	968	1:1,250

Historical Map - Segment A13



Order Details
Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details
The Biscuit Tin, Station Hill, READING, RG1 1PT

Landmark
INFORMATION GROUP
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Supply of Unpublished Survey Information

Published 1973 - 1974

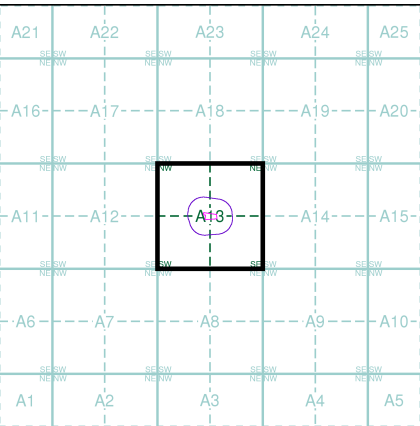
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SU7173NW
1974
1:1,250
SU7173SW
1973
1:1,250

Historical Map - Segment A13



Order Details

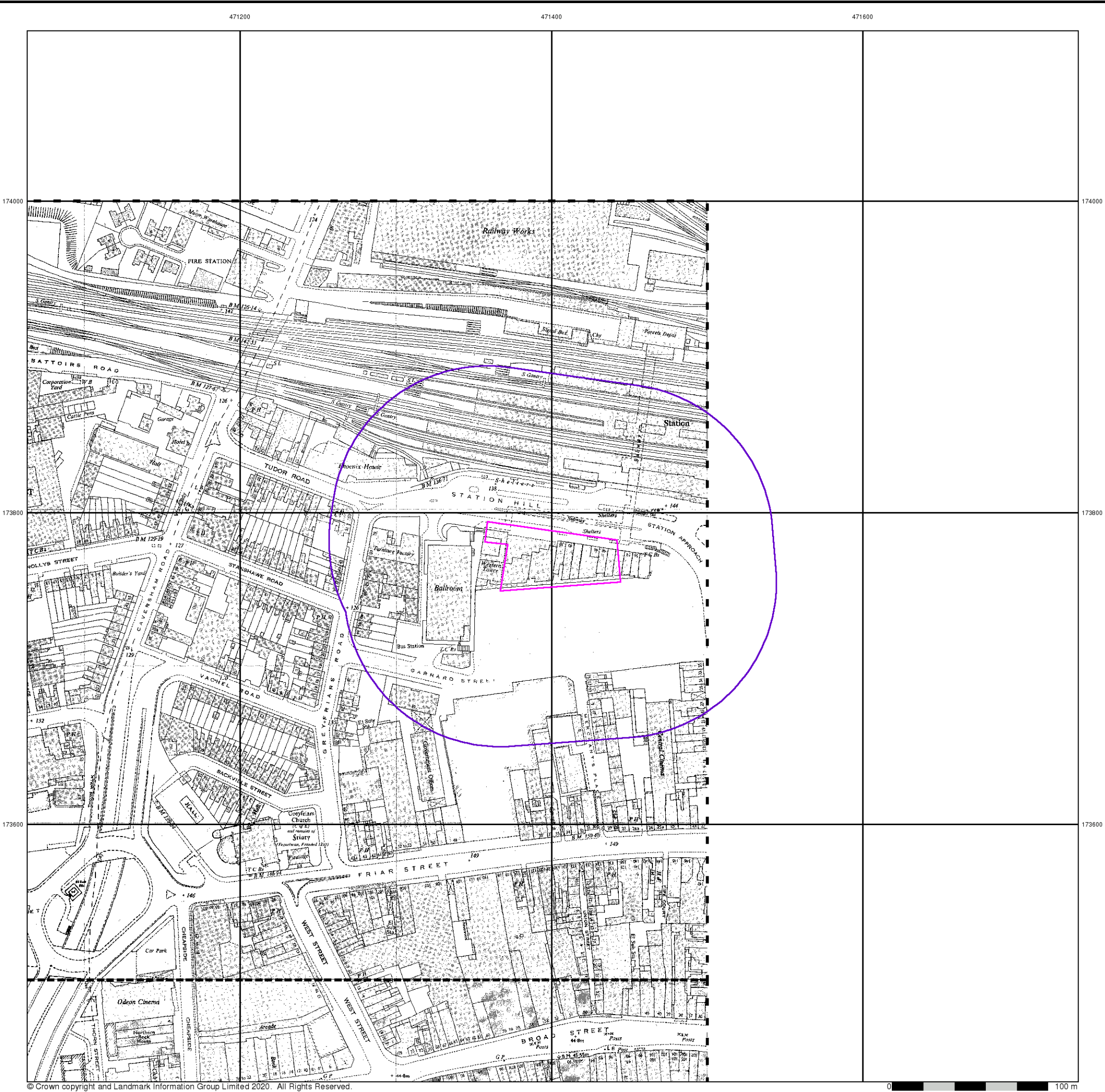
Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

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Additional SIMs

Published 1979 - 1989

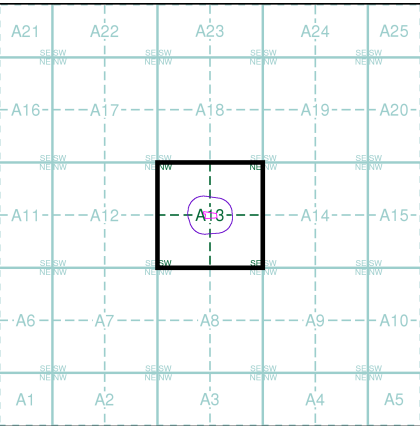
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

BU7174SV	BU7174SE
1984	1989
1:1,250	1:1,250
BU7173NV	BU7173NE
1979	1979
1:1,250	1:1,250
BU7173SV	BU7173SE
1988	1979
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

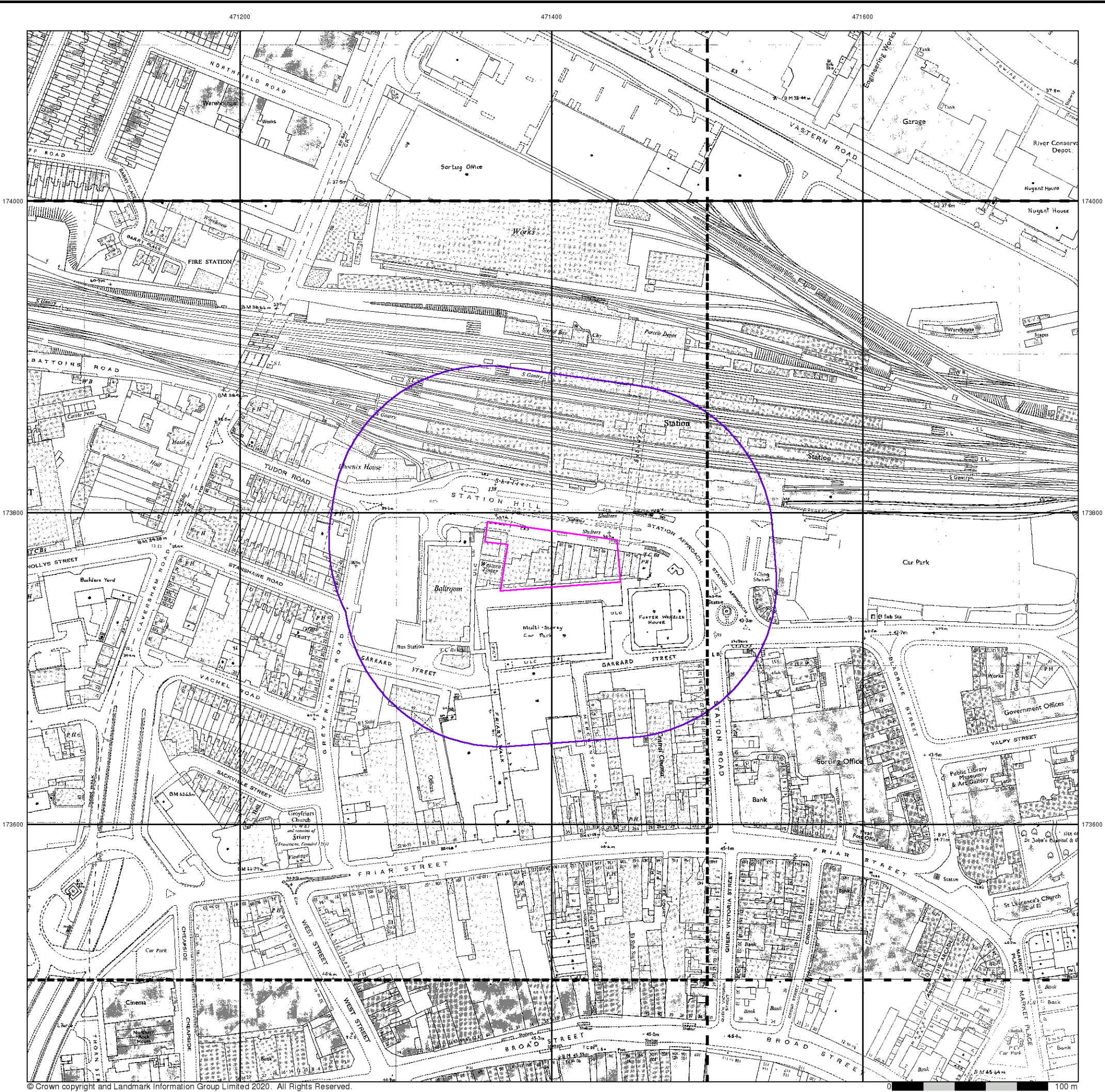
Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

The Biscuit Tin, Station Hill, READING, RG1 1PT



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Fax: 0844 844 9951
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Ordnance Survey Plan

Published 1980 - 1988

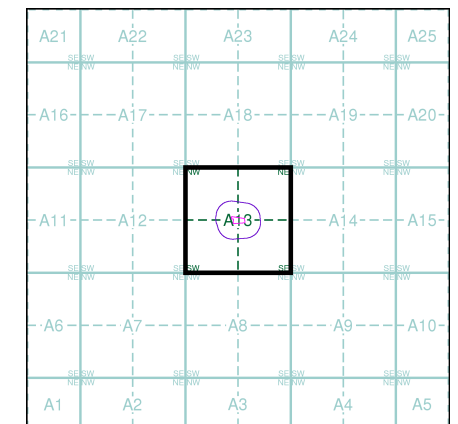
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

SU7173NW 1986 1:1,250	SU7173NE 1986 1:1,250
SU7173SW 1980 1:1,250	SU7173SE 1988 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 239584551_1_1
Customer Ref: 1620004716
National Grid Reference: 471400, 173770
Slice: A
Site Area (Ha): 0.28
Search Buffer (m): 100

Site Details

The Biscuit Tin, Station Hill, READING, RG1 1PT

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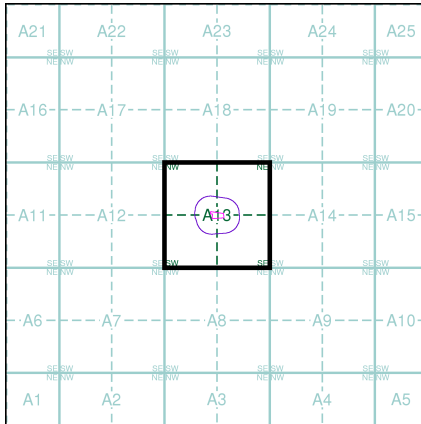
Additional SIMs
Published 1986 - 1991
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

SU7173NW	SU7173NE
1986	1986
1:1,250	1:1,250
	SU7173SE
	1991
	1:1,250

Historical Map - Segment A13



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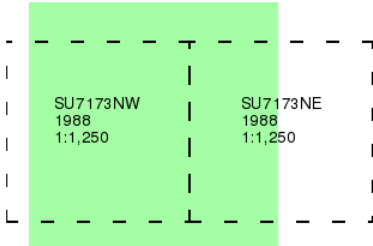




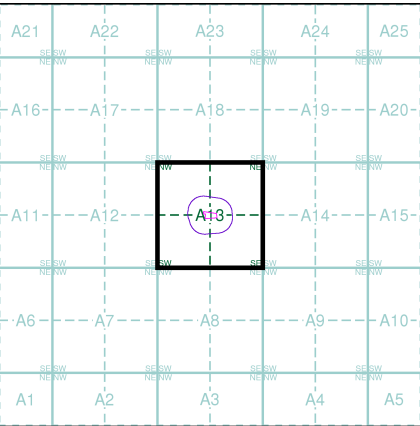
Additional SIMs
Published 1988
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



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Large-Scale National Grid Data

Published 1993

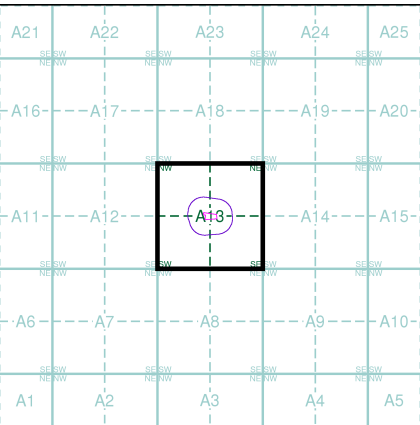
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

BU7174SW	BU7174SE
993	993
1:1,250	1:1,250
BU7173NW	BU7173NE
993	993
1:1,250	1:1,250
BU7173SW	BU7173SE
993	993
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

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National Grid Reference: 471400, 173770
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Site Area (Ha): 0.28
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Site Details

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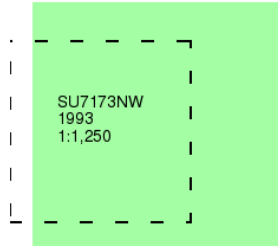
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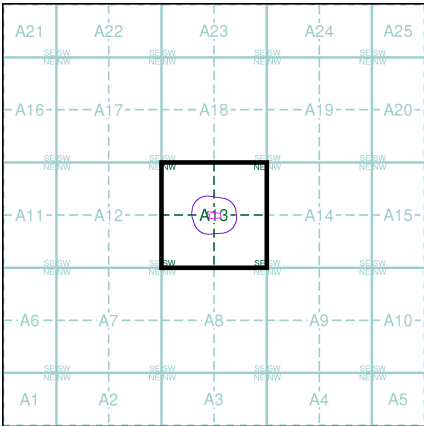
Additional SIMs
Published 1993
Source map scale - 1:1,250

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Map Name(s) and Date(s)

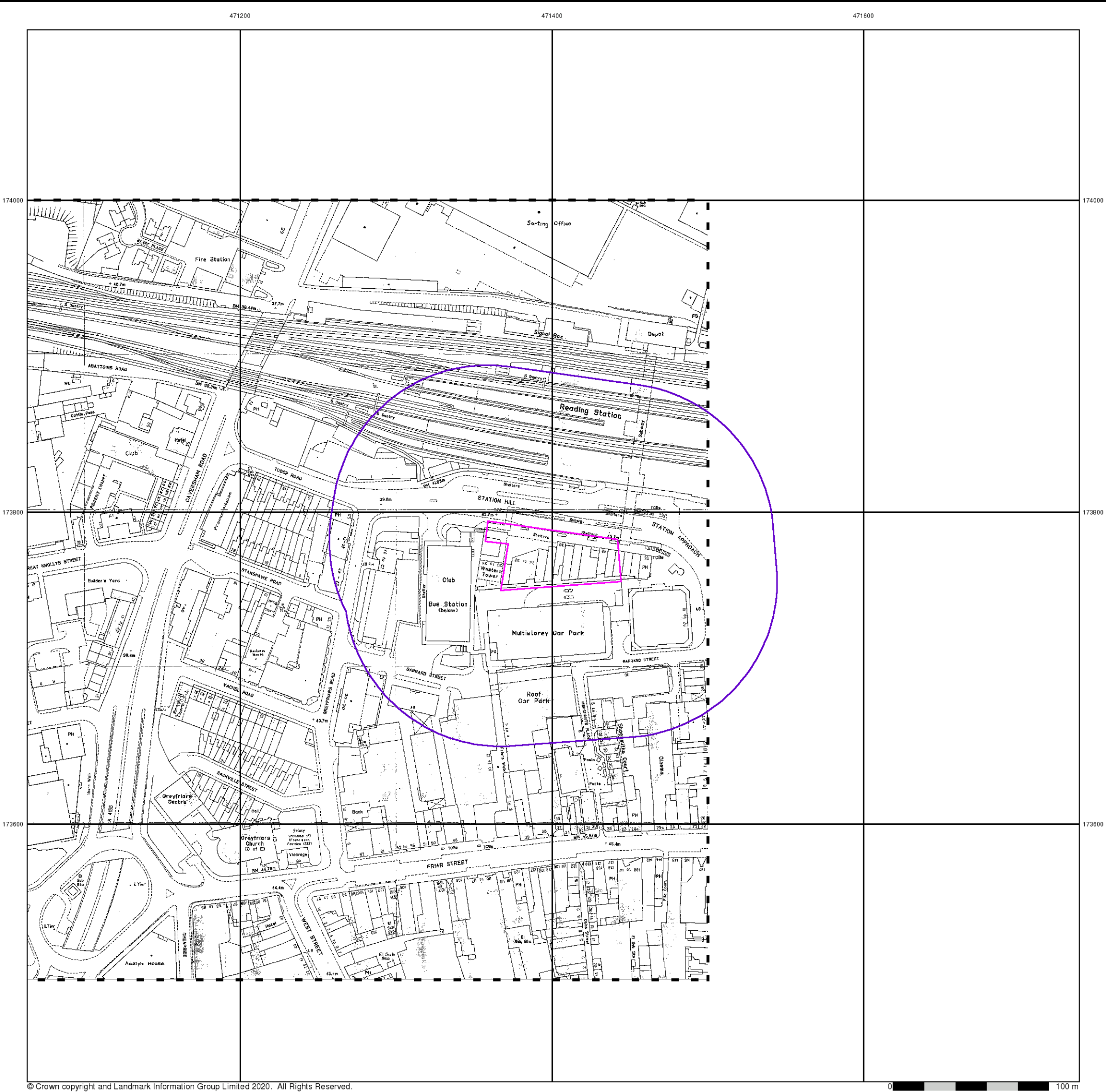


Historical Map - Segment A13



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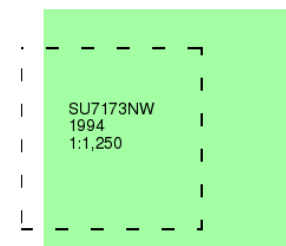
Large-Scale National Grid Data

Published 1994

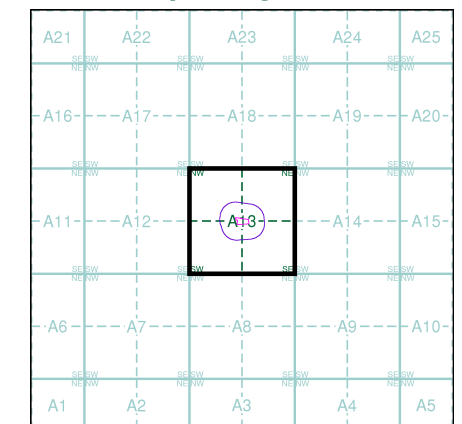
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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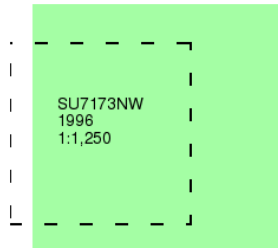
Large-Scale National Grid Data

Published 1996

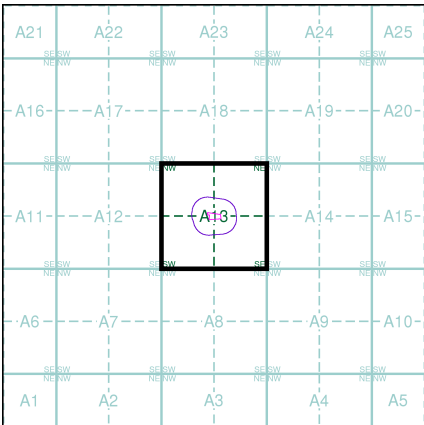
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

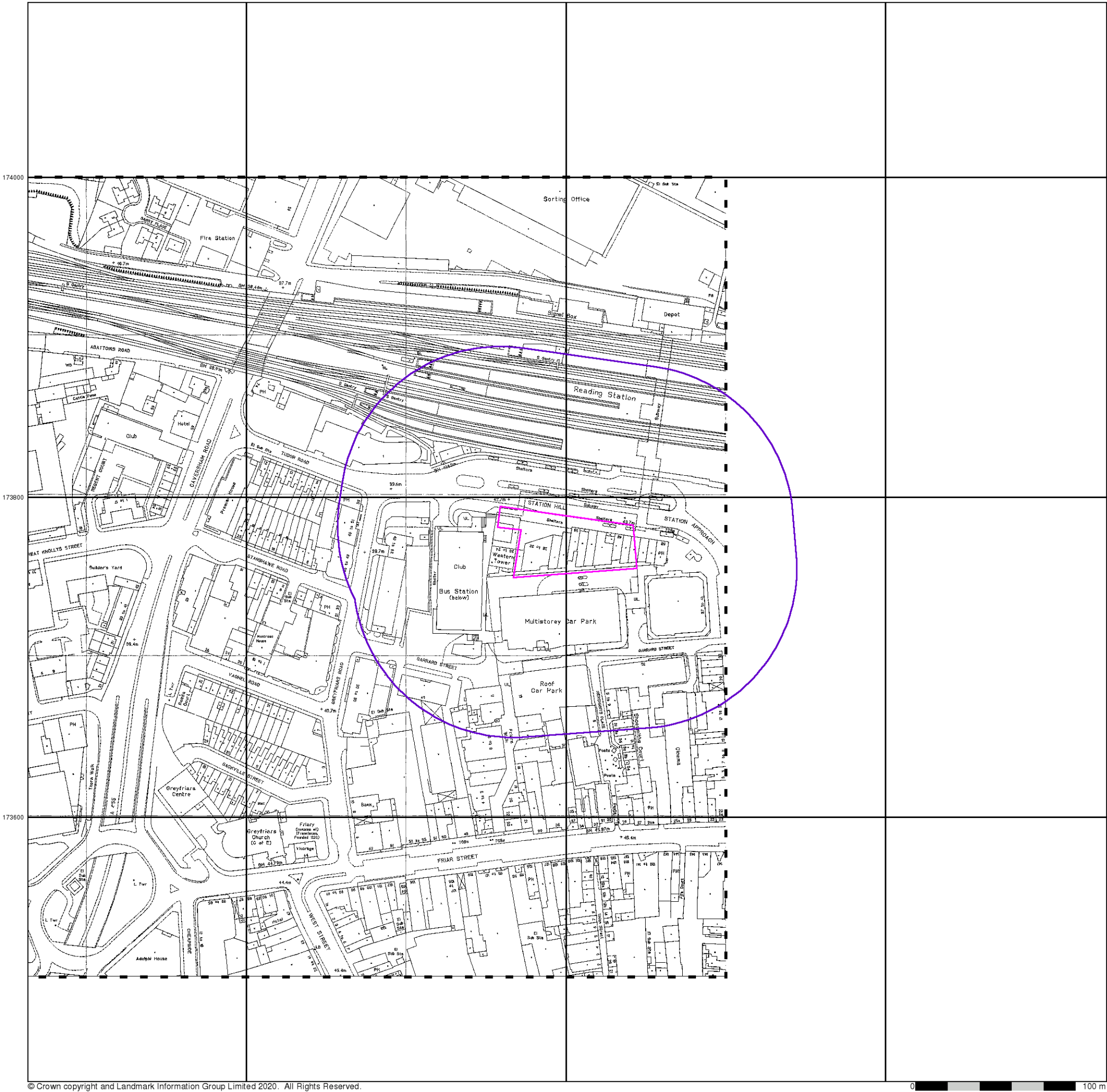
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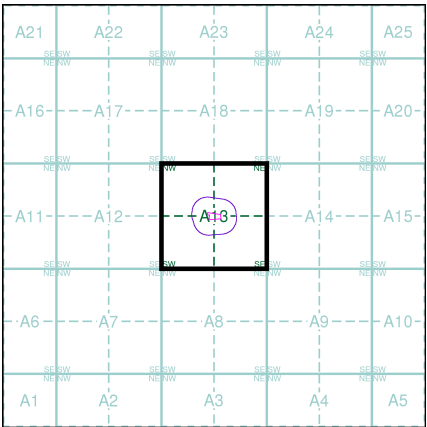


Historical Aerial Photography

Published 1999

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

Historical Aerial Photography - Segment A13



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