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Phase 1

Environmental Assessment Report

Land adjacent to 10 Spring Bridge Road, Manchester,

M16 8PL

Date: 24th January 2023

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Document Verification

Site Address	Land adjacent to 10 Spring Bridge Road, Manchester, M16 8PL		
Report Title	Phase 1 Environmental Site Assessment Report		
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Prepared by	Angel Arantegui	**Signature**	
Checked by	Tom Craig	**Signature**	

Executive Summary

The preliminary environmental site assessment indicates that the site can be classified as low risk in terms of contamination and the risks to the identified receptors (e.g., human health, controlled waters, buildings) following redevelopment is considered to be low.

During site preparation works, if any unexpected visual or olfactory evidence of contamination is encountered, it is recommended that the material is removed and stockpiled on site and advice is sought from a suitably qualified person (Environmental Consultant) on how to deal with the material. Testing of the material will be necessary to identify whether it is suitable for re-use on site or if it will have to be taken off-site for disposal.

In addition, to ensure that they do not come into contact with contaminated soils and groundwater, it is recommended that workers wear appropriate personal protective equipment (PPE) and that suitable Health and Safety procedures be adopted to ensure that ingestion of contaminated soils and groundwater is avoided (e.g., by washing hands prior to eating, drinking and smoking.

Disclaimer

This report has been prepared by EnviroSolution Ltd who has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant experienced in preparing reports of a similar scope.

However, to the extent that the report is based on or relies upon information contained in records, reports or other materials provided to EnviroSolution Ltd, which have not been independently produced or verified, EnviroSolution Ltd, gives no warranty, representation or assurance as to the accuracy or completeness of such information.

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1 Introduction

1.1 Background

EnviroSolution Ltd was commissioned to undertake a Phase 1 Environmental Site Assessment at a site located at Land adjacent to 10 Spring Bridge Road, Manchester, M16 8PL. This report was commissioned to provide information on the potential contamination status of the site.

1.2 Objectives

The objective of the preliminary environmental site assessment was:

1. To provide a summary of the environmental setting and historical land use of the site and immediate surrounding area.
2. To obtain information on the ground conditions present beneath the site.
3. To develop a conceptual site model and complete a generic quantitative risk assessment to identify any environmental risks and liabilities associated with ground conditions at the site.

1.3 Scope of Work

To achieve the objectives, the following scope of work was completed:

1. A desk-based study of the site comprising a review of available environmental information for the site such as geological and hydrogeological data and historical land use information.
2. A site walkover.
3. Assessment of potential hazards and constraints during construction and longer term.

This work has been devised to generally comply with the relevant principles and requirements of the following legalisation and guidance:

- Part IIA of the Environmental Protection Act, 1990 and Section 57 of the Environmental Act 1995;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, February 2019);
- BS10175: 2011 +A2:2017 “Investigation of Potentially Contaminated Sites- Code of Practice”; and
- Environment Agency (2020) Land Contamination Risk Management Report LCRM “How to assess and manage the risks from land contamination”.

1.4 Information Sources

Historical Ordnance Survey maps have been obtained from historical records, ranging from 1848 to 2023. These maps provide high quality information on historical site use.

The British Geological Survey Geoindex database has been used to provide information on geo-environmental aspects of the site and the immediate surrounding area such as geological, hydrogeological and hydrological data.

The Environment Agency website (www.gov.uk/government/organisations/environment-agency) and Magic website (www.magic.gov.uk) was also used to obtain environmental information.

Industry Profiles produced by the Department of the Environment were utilised to obtain information on processes, materials and wastes associated with potential contaminative land uses near the site.

Readily available information sources have been used to produce this desk-based study. Additional information may be requested by the Local Planning Authority (e.g. local authority environmental information request).

2 The Site

2.1 Site Location

The site is located at Land adjacent to 10 Spring Bridge Road, Manchester, M16 8PL. The British National Grid Reference for the approximate site centre is GR: 383535, 394592.

The site location is shown on **Figure 1** in **Appendix A**.

2.2 Site Description

The site description has been prepared following a walkover survey conducted by EnviroSolution Ltd on the 20th of January 2023. The site photographs are included in **Appendix B.**

The site is a regular in shape with and covers an approximate area of 400 square metres.

The site is located along Spring Bridge Road and is between residential properties. The site is currently unoccupied and has fencing and walls around the boundary and surface all cleared to the natural soil. The site can be accessed via a gated entrance along Spring Bridge Road.

The site is flat and lies at an approximate mean elevation of 34m aOD. The site is bounded by residential properties north and south of the site. The site is bounded by a landscaped area west and residential properties east of the site.

Land use in the surrounding area is predominantly residential.

No petrol filling stations have been identified within a 250m radius of the site.

The existing site plan is shown on **Figure 2** which is included in **Appendix A**.

2.3 Development Proposals

The future development plans are the erection of single storey dwellinghouse with associated car parking, amenity space and other works.

The proposed development plan is shown on **Figure 3** which is included in **Appendix A.**

2.4 Site History

The development site and surrounding area has been reviewed with reference to historical Ordnance Survey (OS) maps. The history of the site and immediate surrounding area is summarised in Table 1. Copies of the historical OS maps are included in **Appendix C**. A search buffer of 250m has been used.

Table 1 - Historic Mapping Review

Date	Scale	On Site	Off Site
1848	1:10,560	The site is occupied by agricultural fields.	The surrounding area is agricultural fields.
1894	1:2,500	No significant changes.	The surrounding area has been developed with residential developments. Pond 150m northwest. Nursery 150m southwest.
1894-96	1:10,560	No significant changes.	The surrounding area has been developed with residential developments. Pond 150m northwest. Nursery 160m southwest.
1907	1:2,500	No significant changes.	No significant changes.
1908-09	1:10,560	No significant changes.	Nursery appears to be removed.
1923	1:10,560	No significant changes.	Athletic Ground 10m east. Shelter 250m northwest.
1932-34	1:10,560	No significant changes.	No significant changes.
1933	1:2,500	No significant changes.	Tennis Ground 80m northeast. Athletic Ground 60m east.
1938	1:10,560	No significant changes.	No significant changes.
1950	1:1,250	Small outbuilding built in the north-western corner of the site.	Further residential developments. Allotment Gardens 130m southwest. Presbytery 200m southwest.
1951	1:2,500	No significant changes.	No significant changes.

Date	Scale	On Site	Off Site
1953-73	1:1,250	No significant changes.	Allotment and Nursery appears to be removed.
1955-56	1:10,000	No significant changes.	No significant changes.
1964	1:2,500	No significant changes.	No significant changes.
1966	1:10,000	No significant changes.	No significant changes.
1971-73	1:1,250	No significant changes.	No significant changes.
1980-81	1:10,000	No significant changes.	No significant changes.
1983-85	1:1,250	No significant changes.	Further residential developments.
1985-89	1:10,000	No significant changes.	No significant changes.
1992	1:1,250	No significant changes.	Further residential developments. Electric Sub-Station 200m northwest, 200m south and 200m southeast.
1999	1:10,000	No significant changes.	Business Park building 200m east.
2023	1:10,000	Outbuilding appears to have been demolished.	No significant changes.

*According to the site walkover photos and Google maps, the small outbuilding in the northwest corner of the site appears demolished and cleared from 2021.

3 Environmental Setting

3.1 Geology

Geological maps of the area indicate that the site is directly underlain by superficial Till deposits (diamicton), deposited during the Quaternary period. Diamicton generally consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape.

The underlying bedrock is the Wilmslow Sandstone Formation from the Sherwood Sandstone Group, deposited during the Triassic Period. The formation comprises red-brown to brick-red, fine- to medium-grained, generally pebble-free, cross-bedded sandstones, with sporadic siltstones.

There are no records of geological faults located within a 1km radius of the site.

A borehole log (Ref: SJ89SW416) was obtained from BGS online records 380m northeast of the site. The borehole penetrates approximately 4.26m bgl and shows approximately 0.91m of dark brown Topsoil and 3.35m of stiff brown/grey stony sandy (Boulder) Clay. The clay will act as an impermeable barrier to the chalk layer.

A copy of the geological maps is included in **Appendix D.** A copy of the BGS borehole log is included in **Appendix E**.

3.2 Radon

The site lies within the lowest band of radon potential where it is estimated that less than 1% of the properties are above the action level (low probability). Radon protective measures are not deemed necessary for the development.

3.3 Coal Mining Activity

The site does not fall within a Coal Mining Reporting Area described as having minable coal deposits and does not lie within a 'Development High Risk Area' for coal mining, as defined by the Coal Authority. As such, it is considered that there are no coal mining related hazards which could affect the site.

3.4 Hydrogeology

The superficial Till deposits (Diamicton) are designated as a Secondary (undifferentiated) Aquifer, defined as; has been assigned in cases where it has not been possible to attribute either category A or B to a rock type due to the variable characteristics of the rock type.

The underlying Sherwood Sandstone Group is designated as Principal Aquifer, defined 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.

The site is not located within a Source Protection Zone. A Zone III Total Catchment Source Protection Zone is located 642m northeast of the site.

There are no groundwater abstraction licences located within a 1km radius of the site.

A copy of the hydrogeological maps is included in **Appendix F**.

3.5 Hydrology

There are no records of significant surface water features (rivers, lakes and reservoirs) located within a 1km radius of the site.

A pond located 150m northwest of the site.

3.6 Flood Risk

The site lies within a Flood Zone 1 (low probability), land assessed as having less than a 1 in 1,000 annual probability of river flooding (0.01%) in any year (low risk). The completion of a detailed Flood Risk Assessment is not deemed necessary for this site.

A copy of the flood risk map is included in **Appendix G**.

3.7 Waste Management Facilities

There are no records of historical or currently authorised landfill sites located within a 1km radius of the site.

There are no records of sites operating under an environmental permit for waste operations within a 1km radius of the site.

3.8 Environmental Permits, Incidents and Registers

There is a single record of a site located within a 1km radius of the development site operating under an environmental permit for discharges to water and groundwater.

Table 2 - Environmental permit for discharges to water and groundwater

Permit Holder Name	Site Name	Site Type	Distance
UNITED UTILITIES WATER LIMITED	MAULDETH ROAD WEST CSO (28043)	Storm Tank/CSO on Sewerage Network (water company)	1000m S

There is a single. record of a pollution incident recorded by the Environment Agency having occurred within a 1km radius of the site. The incident occurred 760m northwest from the site with a pollutant of petrol (an oil and fuel pollutant type).

There are no records of development sites operating under an environmental installation permit within a 1km radius of the site.

3.9 Designated Environmentally Sensitive Sites

Records of designated environmentally sensitive sites located within a 1km radius of the site are summarised in Table 3 and shown on plans included in **Appendix H**.

Table 3 – Environmental Designations Summary

Features	Distance	Comments
Community Forests (England)	On Site	The site lies the Community Forests (England).

4 Preliminary Conceptual Site Model

4.1 Introduction

To assess the environmental risks present, a preliminary conceptual model has been developed for the site. This model has been developed using best practice guidelines in conjunction with the current assessment framework considering the development proposals. This preliminary conceptual model is based on the gathered desk-based information (e.g., historical OS data and data sourced from the EA, Geoindex and Magic databases).

The conceptual site model is a representation of the hypothesised relationships between sources, pathways and receptors which allows the identification of potential pollutant linkages and whether these linkages have the potential to comprise significant harm and/or pollution of controlled waters in relation to the site. This model comprises three elements:

Source – the key pollutant hazards associated with the site

Receptor – the key targets at risk from the sources

Pathway – the means by which the contaminant can cause harm to the receptor

If all three elements are present, then a potential pollutant linkage exists, and this may require further assessment.

4.2 Potential Contamination Sources

The site has remained undeveloped until the 1950s when a small outbuilding was constructed on site forming the garden space of an adjacent property. The walkover survey shows that the outbuilding has been demolished and the site has been cleared to the natural soil.

A number of off-site land uses have been identified in the surrounding area (i.e., within a 250m radius) that have the potential to contaminate the shallow soils at the site. The land uses and their associated contaminants are summarised in Table 4 below:

Land Use	**Potential Contaminants**
Allotment/Nursery	Heavy metals, polyaromatic hydrocarbons (PAHs), nitrates.
Electric Sub-Station	Polychlorinated biphenyls (PCBs)

It is considered that the above land uses can be discounted as potential sources of contamination to the site due to the distance from the site (>130m) and the presence of impermeable superficial clays which will act as an impermeable barrier, preventing the

migration of any contaminants to the site. Additionally, the electrical substations were built during the 1990s. Therefore, the risk of polychlorinated biphenyls can be discounted.

4.3 Receptors

The potential receptors considered to be at risk from soil and groundwater contamination associated with the site are summarised in Table 5 below:

Table 5 - Receptor Description

Receptor	Details
Human (On Site)	- Construction workers - Future site users - Site visitors
Human (Off Site)	- Adjacent site users
Controlled Waters	- Secondary (undifferentiated) Aquifer - Principal Aquifer - Pond
Building/ construction materials	- Foundations - Buried services
Environmental Receptors	- Sites of Special Scientific Interests (England) - Nitrate Vulnerable Zones (England)

4.4 Pathways

The potential exposure pathways linking contamination with the receptors identified above are summarised in Table 6 below:

Table 6 - Exposure Pathways Summary

Receptor	Details of Exposure Pathway
Human (on-site)	- Direct ingestion of contaminated soil/groundwater - Dermal contact with soil/groundwater - Inhalation of gases and vapours
Human (off-site)	- Inhalation of fibres and particulates - Inhalation of migrating gases and vapours
Controlled waters	- Vertical and lateral migration of dissolved phase contaminants via preferential pathways to groundwater aquifers - Direct surface water run-off to surface water features
Building/construction	- Buried materials/services - Contact with contaminated soil and/or groundwater

4.5 Potential Pollution Linkages

4.5.1 Human Health

The future development plans are the erection of single storey dwellinghouse with associated car parking, amenity space and other works. This is considered to be a sensitive end use.

The presence of buildings and hardstanding would eliminate the risk of exposure, via the dermal contact and ingestion pathways to future site users to any ground contamination that may remain following development.

There could be a potential risk of exposure to any ground contamination that remains following redevelopment in any areas of soft landscaping (i.e., gardens), to future site users, via all possible exposure pathways.

Any ground gases (i.e., methane and carbon dioxide) and vapours that are present within the soils beneath the site could potentially ingress into future buildings through preferential pathways (e.g., service entry points). Therefore, there would be a risk of exposure via inhalation to future site users.

There is the potential for construction workers and adjacent land users to be exposed to soil and groundwater contamination during site redevelopment. However, the use of appropriate PPE and the adoption of suitable Health and Safety methods will help to reduce the risks posed to human health during this work.

4.5.2 Controlled Waters

The site is directly underlain by superficial Till Deposits, which are designated as Secondary (undifferentiated) Aquifer. It is considered that the Till deposits will act as an impermeable barrier, preventing the migration of any potential contaminants to controlled water receptors.

The site does not lie within a Source Protection Zone and there are no ground water abstraction licences located within 1km radius of the site.

The pond is located 150m northwest. The potential for the migration of pollutants via direct surface water run-off is deemed low due to the low permeability of the superficial deposits.

Overall, the risk to controlled waters is deemed to be low.

4.5.3 Building/Construction Materials/Buried Services

The presence of any soil and groundwater contaminants beneath the site could potentially impact on construction materials for future new developments, such as below ground structures and services. Concrete foundations are particularly sensitive to aggressive ground conditions, i.e., sulphate attack.

If ground gases and vapour are present in the soil beneath the site, then there would be the potential risk of ingress into new properties which could present a risk of explosion.

4.6 Environmental Designations

The proposed development is not considered to pose a risk to the identified environmental designations.

4.7 Preliminary Hazard Assessment

A preliminary hazard assessment is presented in Table 7. The preliminary hazard assessment is a qualitative assessment of the risks posed by each potential pollutant linkage described above and is used to identify the requirement for additional work (e.g., intrusive ground investigation).

Table 7 – Preliminary Hazard Assessment

Source	Pathway	Receptor	Likelihood	Effect	Risk	Assessment
Contaminated soil	Ingestion (via soil dust), inhalation (via soil dust and vapours), ingestion through dirty hands, dermal contact with soil/water.	Future site users Adjacent site users Construction workers	1	3	Low	No on-site source potential identified. Impermeable superficial deposits will limit the migration of off-site contaminants to the site.
Contaminated soil groundwater	Direct contact	Buildings/ services	1	3	Low	No on-site contamination sources potential identified.
Contaminated groundwater	Downward or lateral migration Surface water run-off	Secondary (undifferentiated) Aquifer Principal Aquifer Pond	1	3	Low	Impermeable superficial deposits will act as an impermeable barrier, preventing migration of any potential contaminants at the surface to the aquifer receptors. There are no sensitive groundwater abstractions located nearby.
Ground gas/ vapours Radon	Inhalation, ingress into buildings	Buildings / services Future site users Adjacent site users Construction workers	1	4	Low	No significant ground gas source identified. Site lies within a low probability area for radon.

Using Risk Matrix (Table 8) Degree of Risk (R) = Likelihood (L) x Effect (E)

Table 8 - Risk Matrix, Degree of Risk (R) = Likelihood (L) x Effect (E)

Likelihood	Description	Probability	Effect (E)	Description
5	Almost certain	>70%		
4	Probable	50-70%	4	Severe
3	Likely	30-50%	3	Medium
2	Unlikely	10-30%	2	Mild
1	Negligible	<10%	1	Minor
Risk (R)	**Risk Level**	**Action**		
1-5	Low	None required		
6-10	Moderate	Further assessment via Phase 2 intrusive ground investigation.		
>10	High	Further assessment via Phase 2 intrusive ground investigation.		

5 Conclusions and Recommendations

The preliminary environmental site assessment indicates that the site can be classified as low risk in terms of contamination and the risks to the identified receptors (e.g., human health, controlled waters, buildings) following redevelopment is considered to be low.

During site preparation works, if any unexpected visual or olfactory evidence of contamination is encountered, it is recommended that the material is removed and stockpiled on site and advise is sought from a suitably qualified person (Environmental Consultant) on how to deal with the material. Testing of the material will be necessary to identify whether it is suitable for re-use on site or if it will have to be taken off-site for disposal.

In addition, to ensure that they do not come into contact with contaminated soils and groundwater, it is recommended that workers wear appropriate personal protective equipment (PPE) and that suitable Health and Safety procedures be adopted to ensure that ingestion of contaminated soils and groundwater is avoided (e.g., by washing hands prior to eating, drinking and smoking.

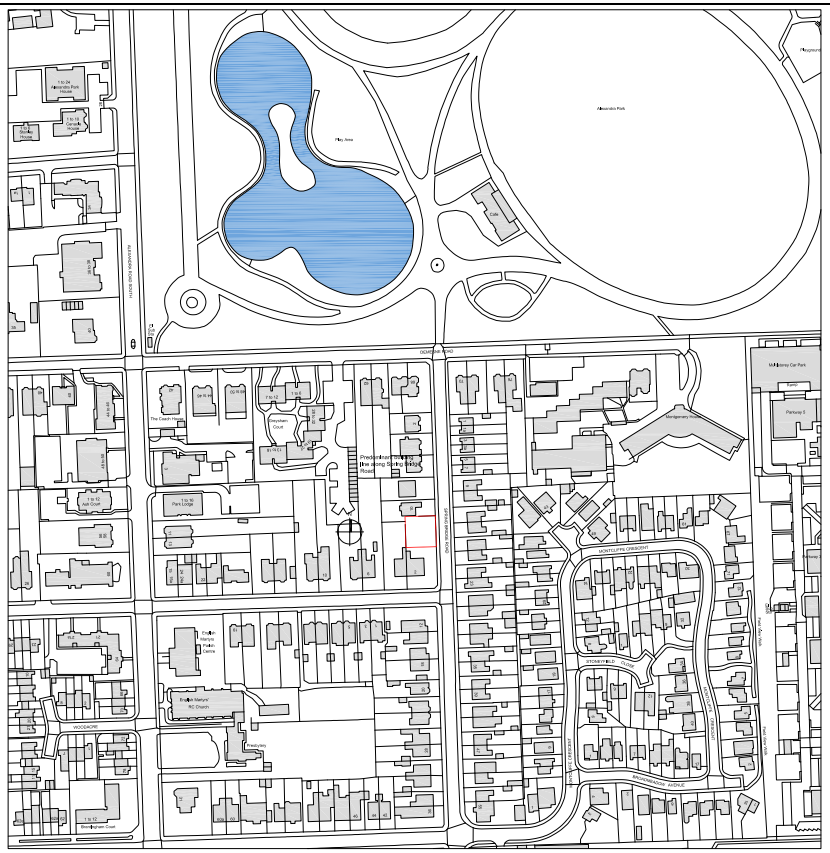
APPENDICES

Appendix A – Site Location and Site Plan



enviro | solution	**Site Location Map**

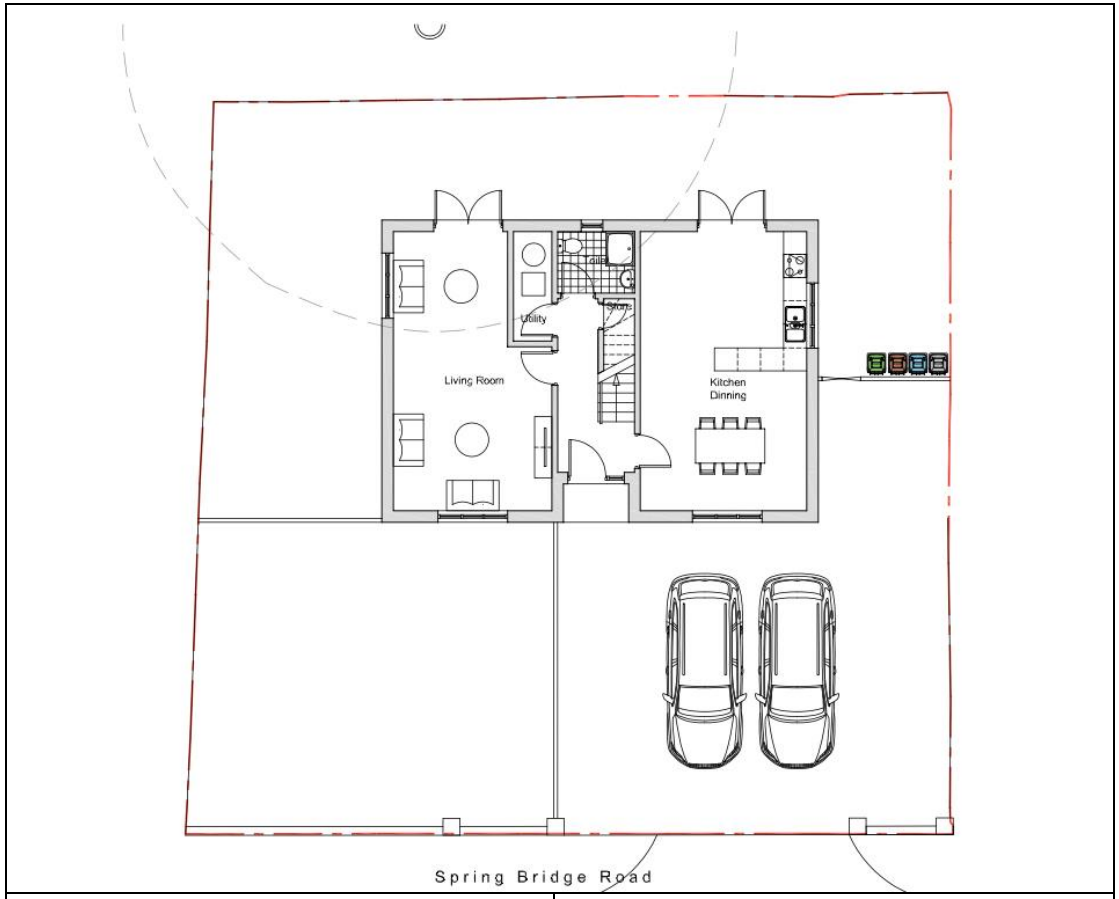
Figure 1



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Existing Site Plan

Figure 2



enviro | solution	**Proposed Development Plan**

Figure 3

Appendix B – Site Photographs



enviro | solution	**View along the western boundary, looking north.**



enviro | solution	**View of the gated entrance, viewing east along the northern west boundary.**



enviro | solution	**View of the gated entrance, viewing east along the northern west boundary.**



enviro | solution	**View of the gated entrance, viewing east along Spring Bridge Road.**



enviro | solution	**View along the north boundary, looking east along Spring Bridge Road.**



enviro | solution	**View along the northern boundary, looking at the eastern boundary corner, viewing southeast.**



enviro | solution

View of the east boundary corner, viewing southeast.



enviro | solution	**View of the east boundary, viewing south.**



enviro | solution	**View of the southern eastern border, looking west.**



enviro | solution	**View of the southern border, looking west.**



enviro | solution	**View of the southern western border, looking northwest**



enviro | solution	**View of the southern western corner, looking northwest**



enviro | solution

View of the southern eastern corner, looking west.



enviro | solution

View along the southern border, looking northwest.



enviro | solution

View of the southern western corner, looking northwest



enviro | solution	**View along the southern boundary line, looking south.**



enviro | solution	**View of the north east corner, looking east.**



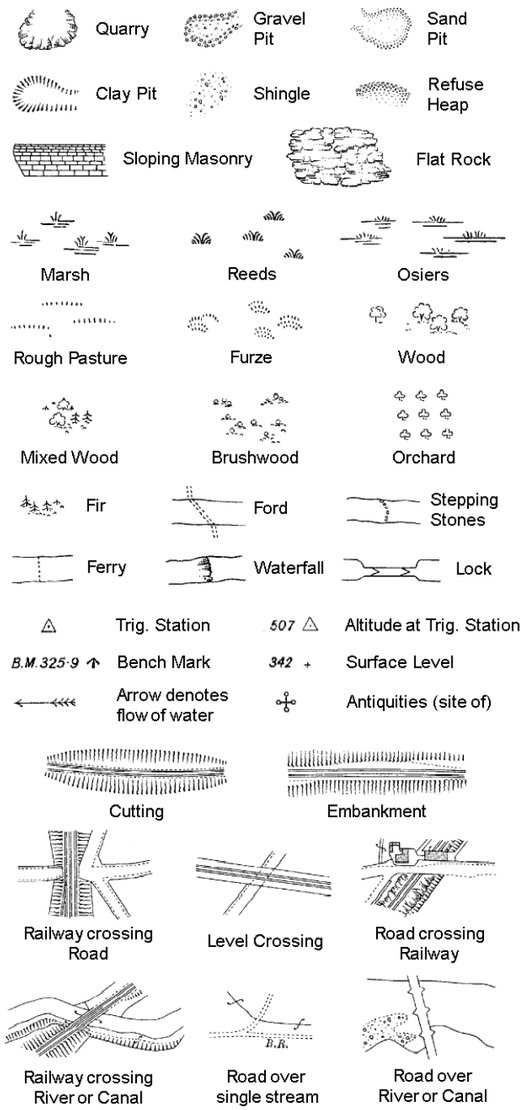
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View of the north boundary line, looking east.

Appendix C – Historic Maps

Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

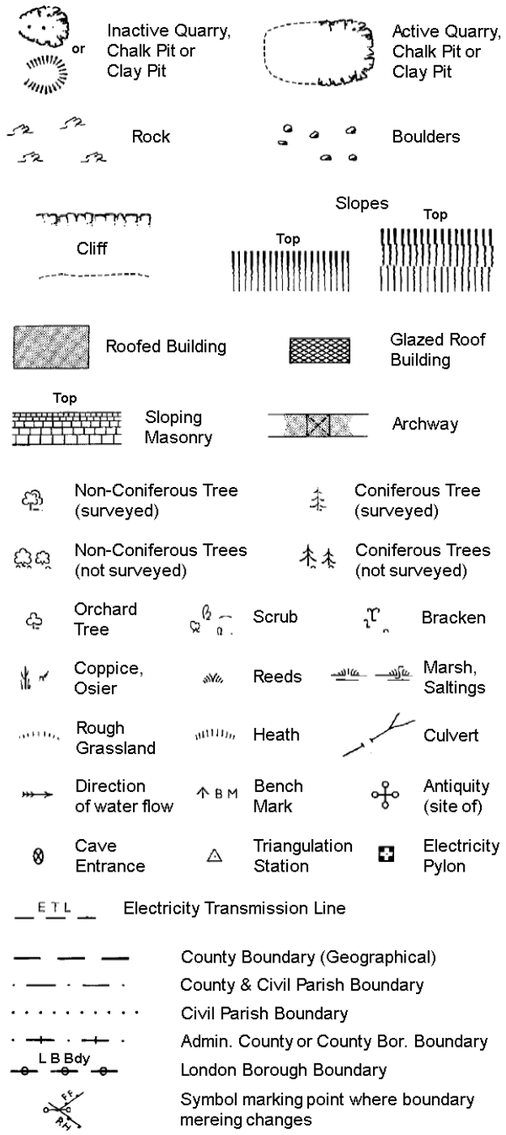
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

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

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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

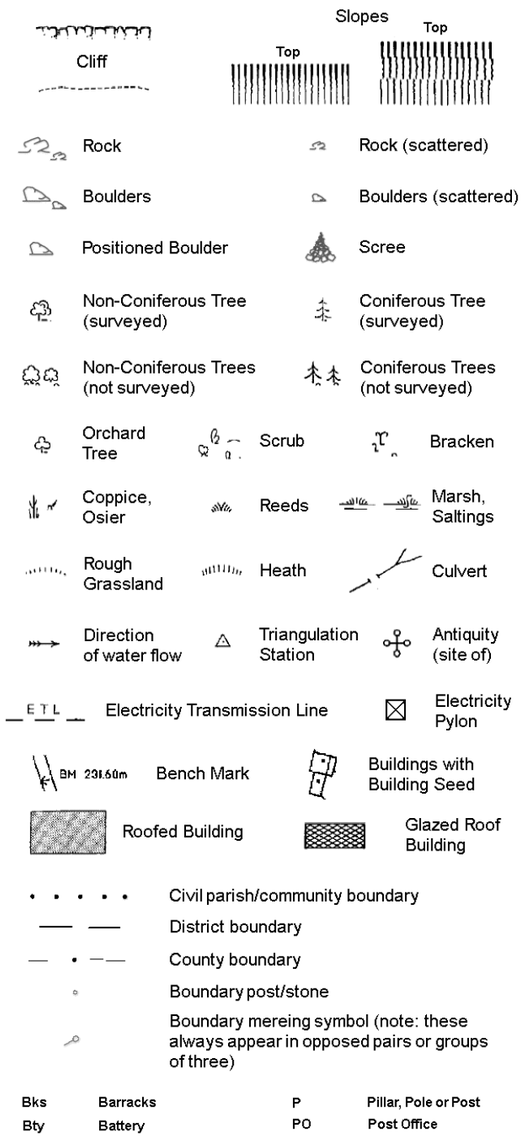
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

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

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



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

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

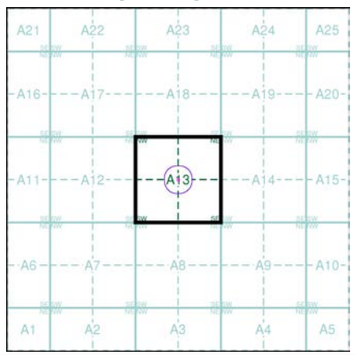
Envirocheck®

LANDMARK INFORMATION GROUP®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1894	2
Lancashire And Furness	1:2,500	1907	3
Lancashire And Furness	1:2,500	1933	4
Ordnance Survey Plan	1:1,250	1950	5
Ordnance Survey Plan	1:2,500	1951	6
Ordnance Survey Plan	1:1,250	1953 - 1973	7
Ordnance Survey Plan	1:2,500	1964	8
Ordnance Survey Plan	1:1,250	1971 - 1973	9
Additional SIMs	1:1,250	1983 - 1985	10
Additional SIMs	1:1,250	1988	11
Large-Scale National Grid Data	1:1,250	1992	12
Additional SIMs	1:1,250	1992	13
Large-Scale National Grid Data	1:1,250	1995	14
Large-Scale National Grid Data	1:1,250	1996	15

Historical Map - Segment A13



Order Details

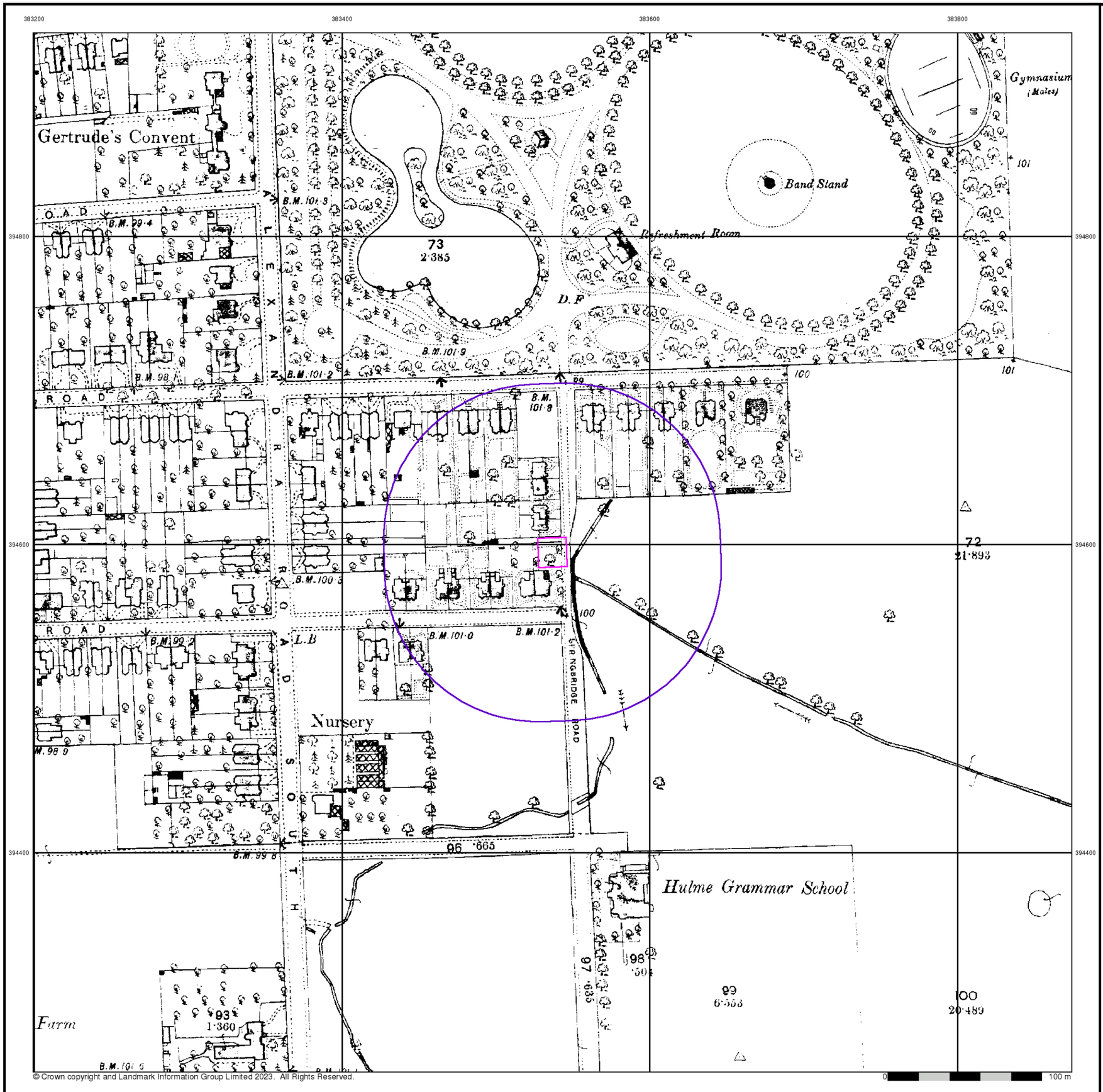
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Search Buffer (m):	100

Site Details

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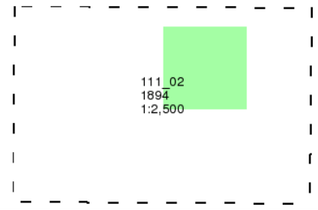
Lancashire And Furness

Published 1894

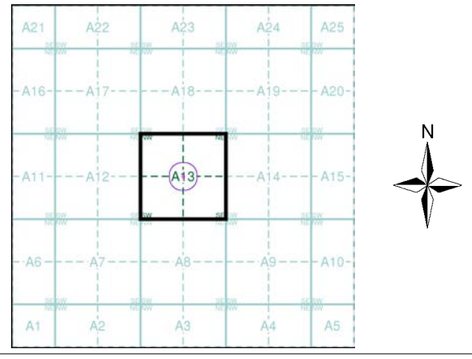
Source map scale - 1:2,500

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



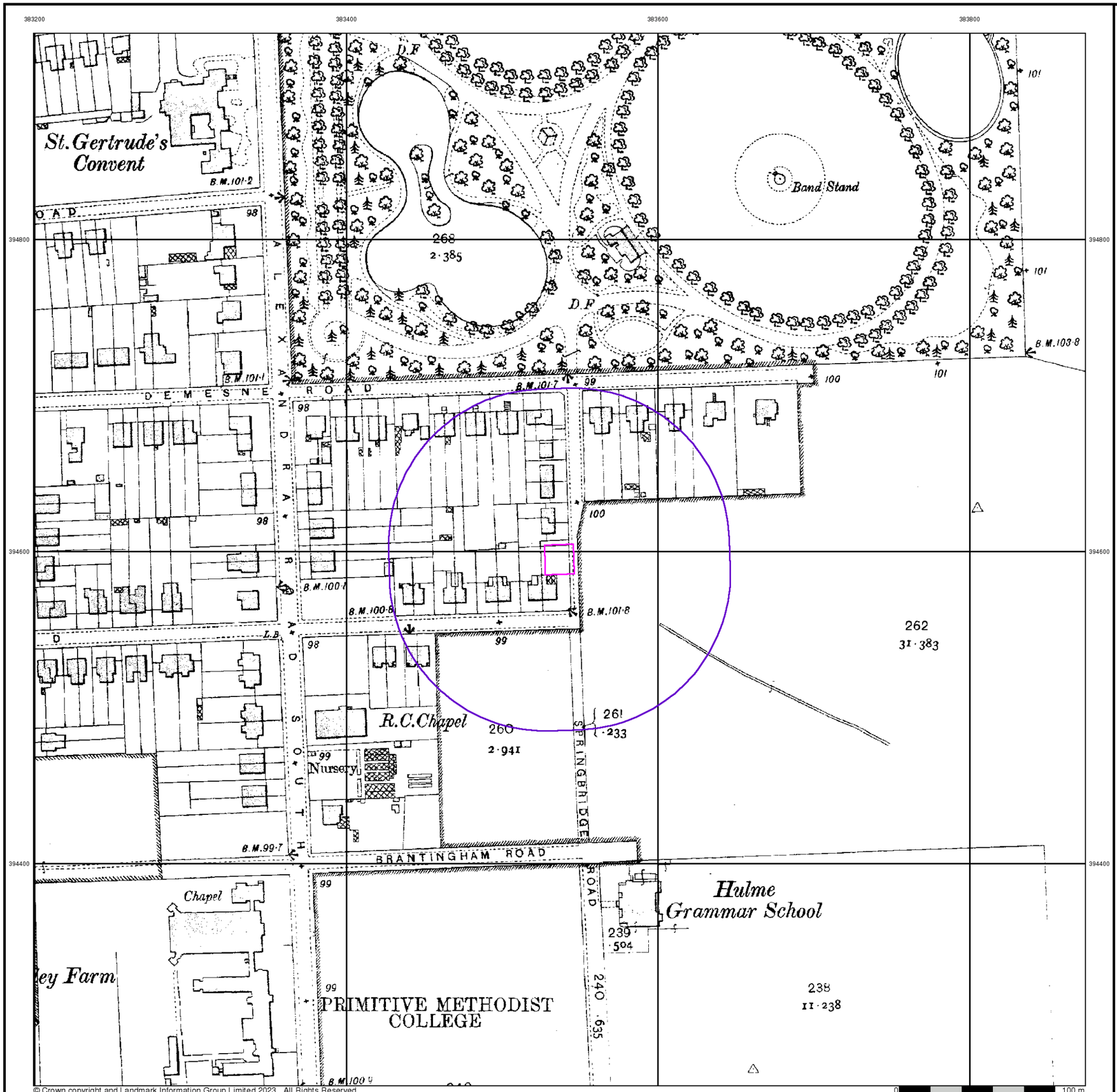
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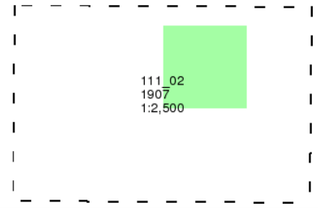
Lancashire And Furness

Published 1907

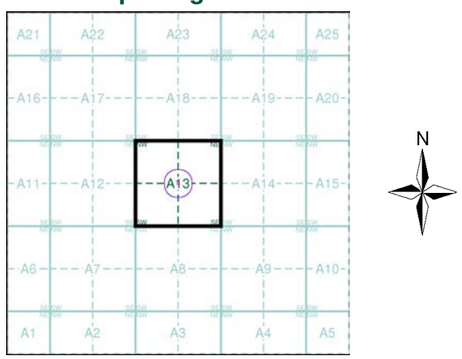
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



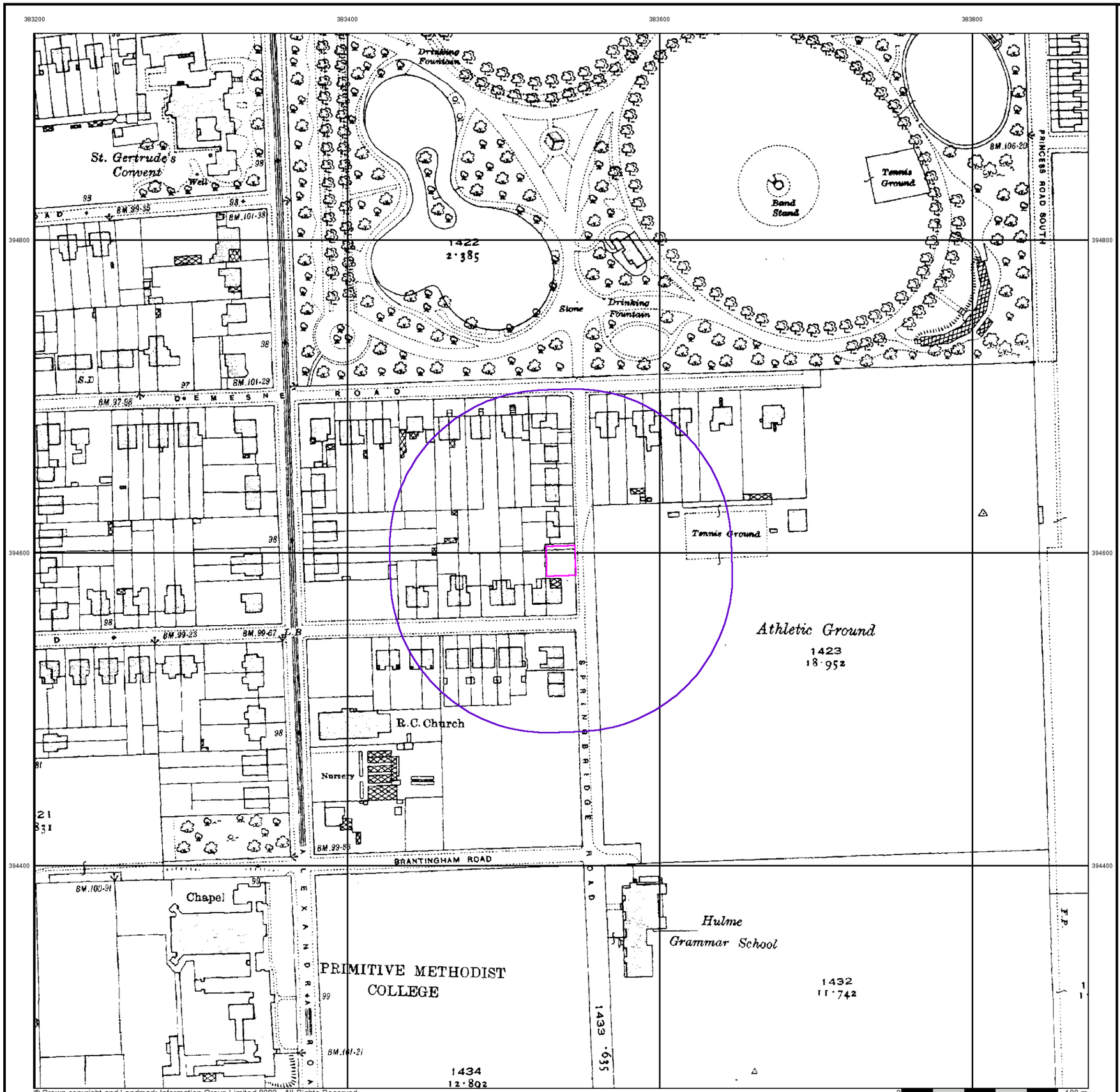
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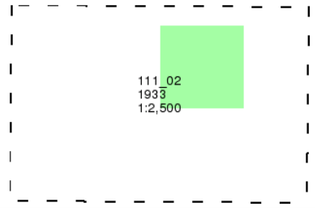
Lancashire And Furness

Published 1933

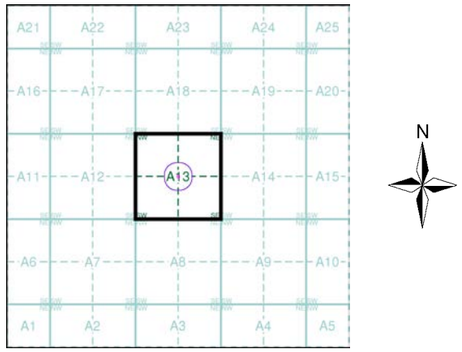
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

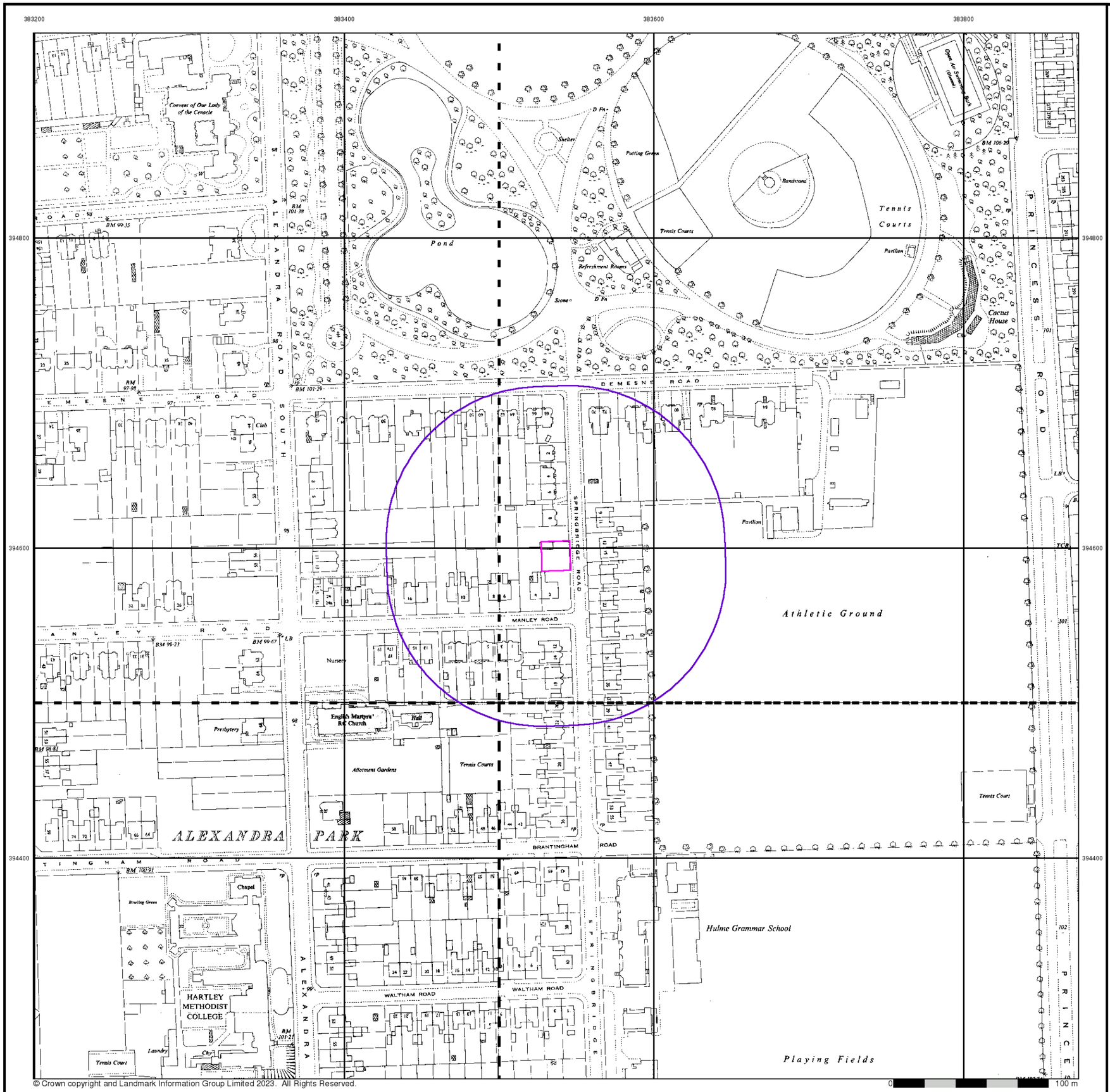
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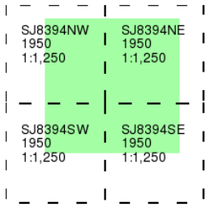
Ordnance Survey Plan

Published 1950

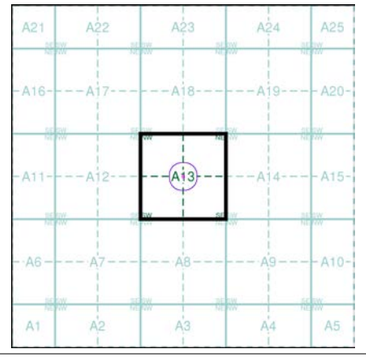
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

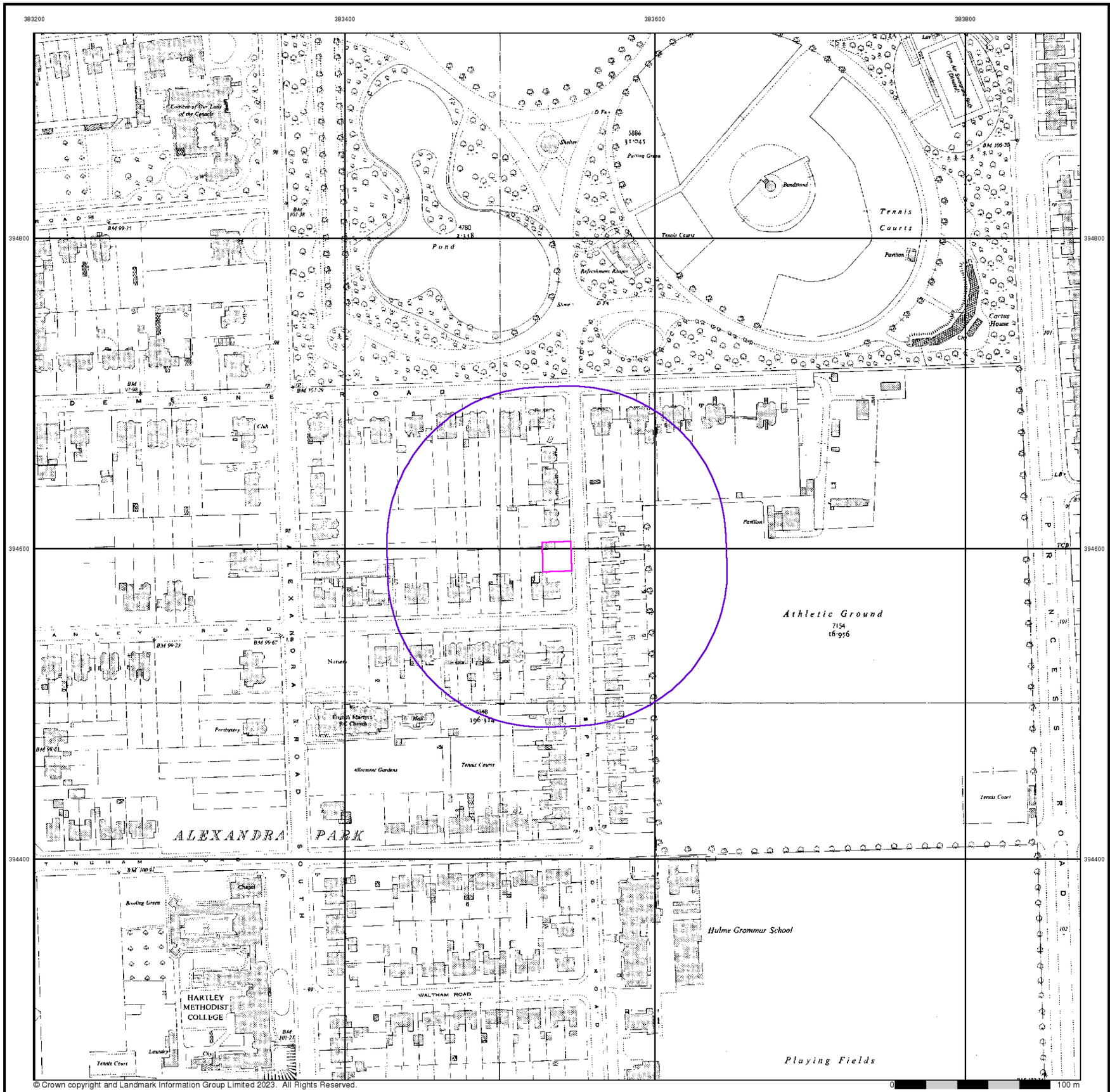
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Ordnance Survey Plan

Published 1951

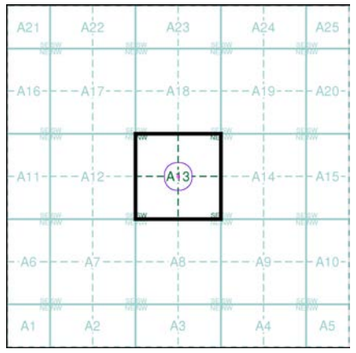
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

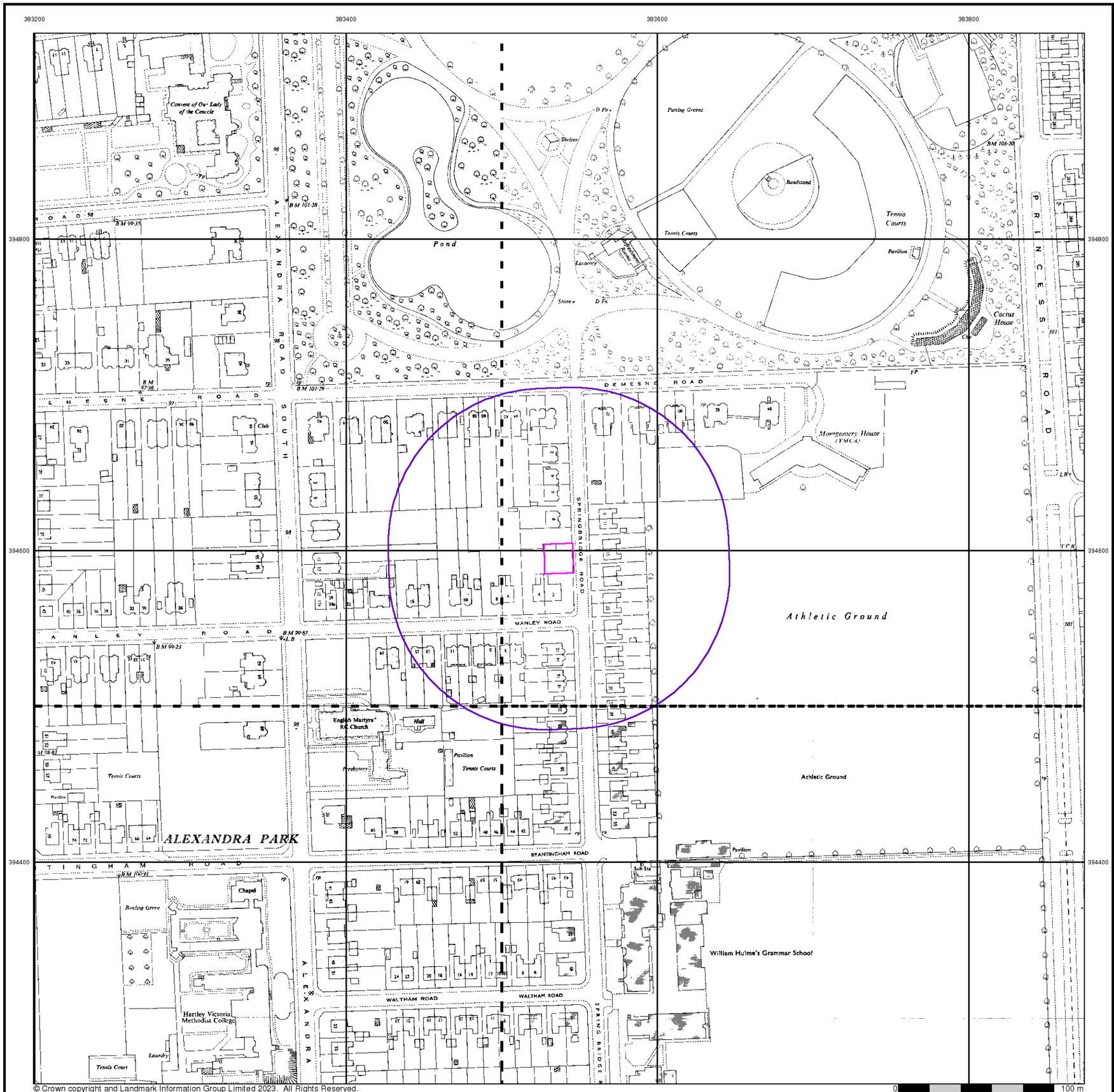
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Ordnance Survey Plan

Published 1953 - 1973

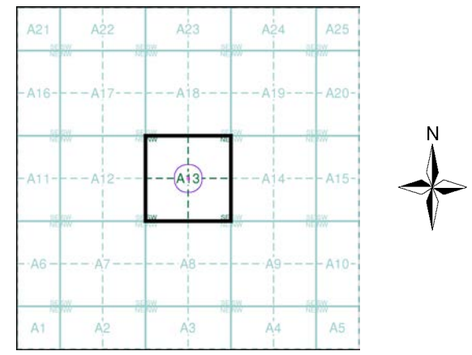
Source map scale - 1:1,250

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)

SJ8394NW 1954 1:1,250	SJ8394NE 1953 1:1,250
SJ8394SW 1956 1:1,250	SJ8394SE 1973 1:1,250

Historical Map - Segment A13



Order Details

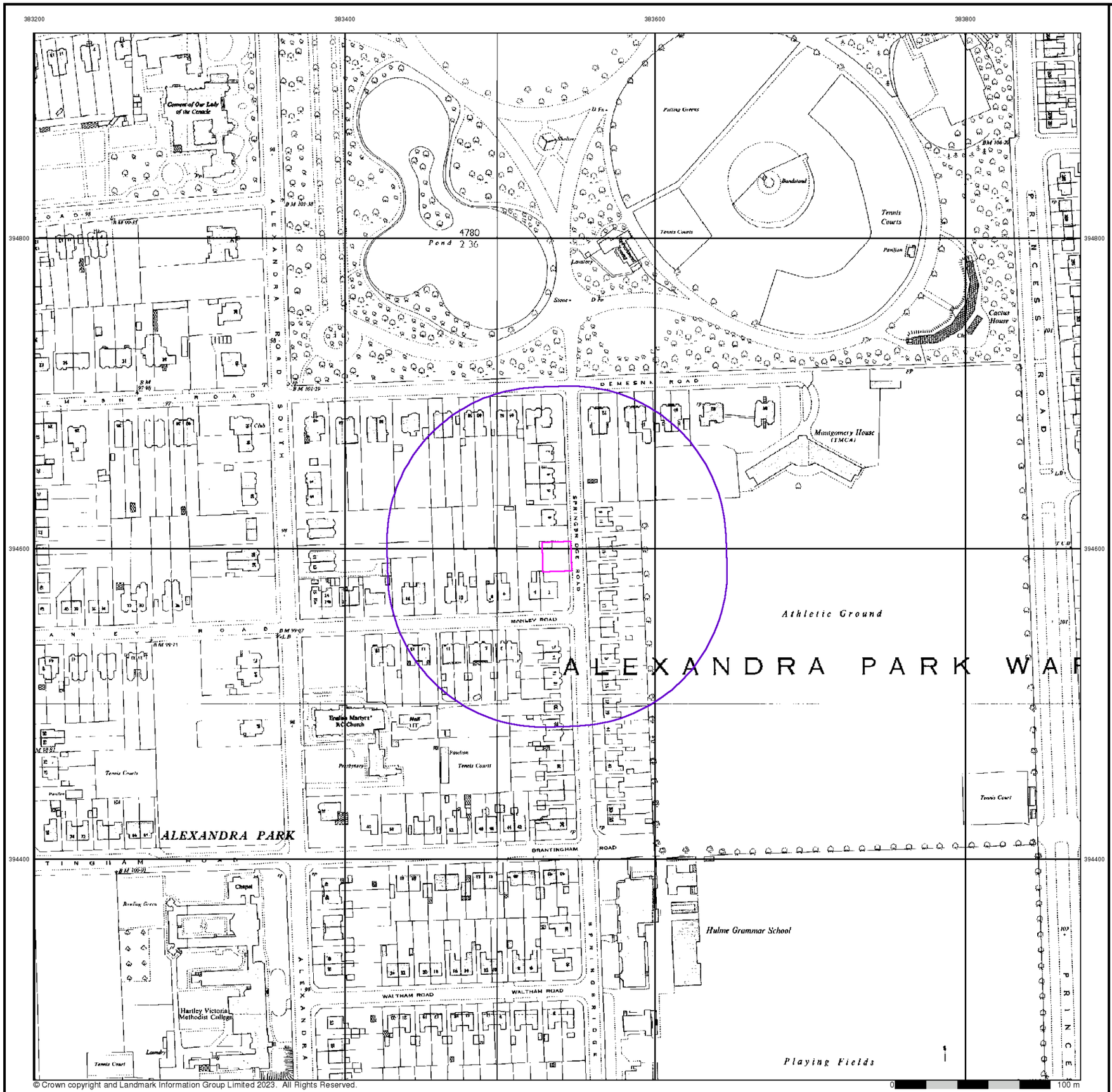
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Ordnance Survey Plan

Published 1964

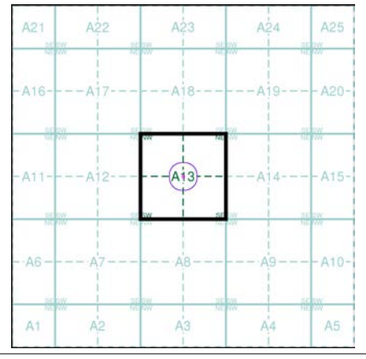
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

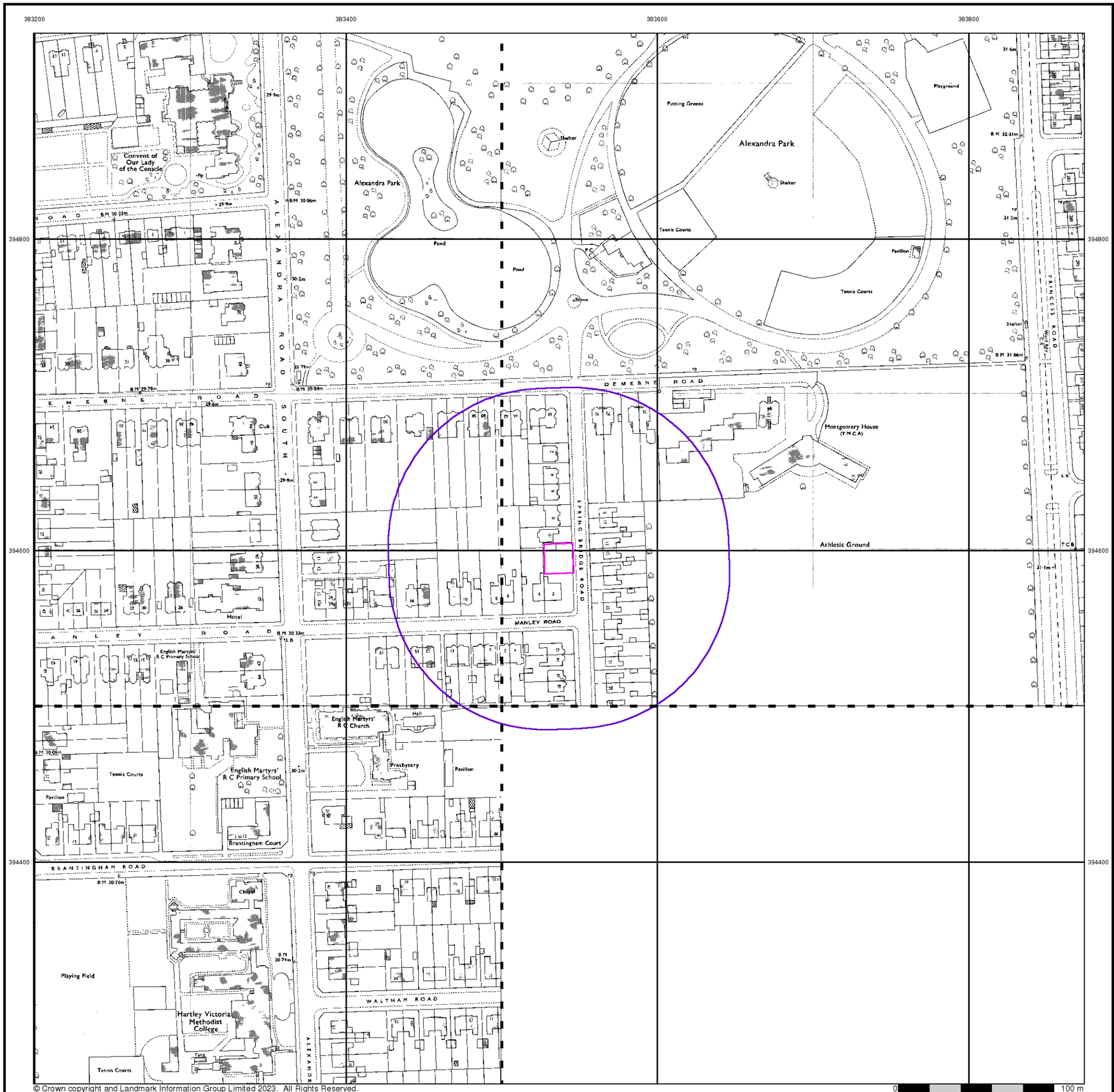
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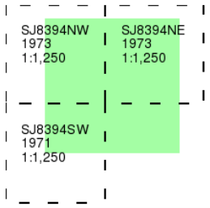
Ordnance Survey Plan

Published 1971 - 1973

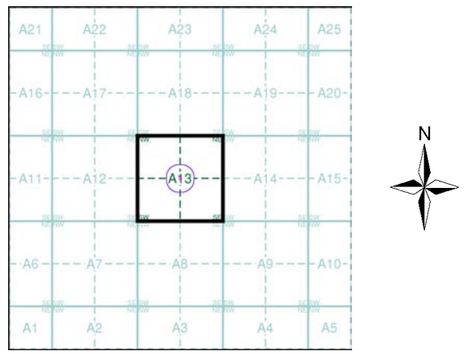
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Map Name(s) and Date(s)



Historical Map - Segment A13

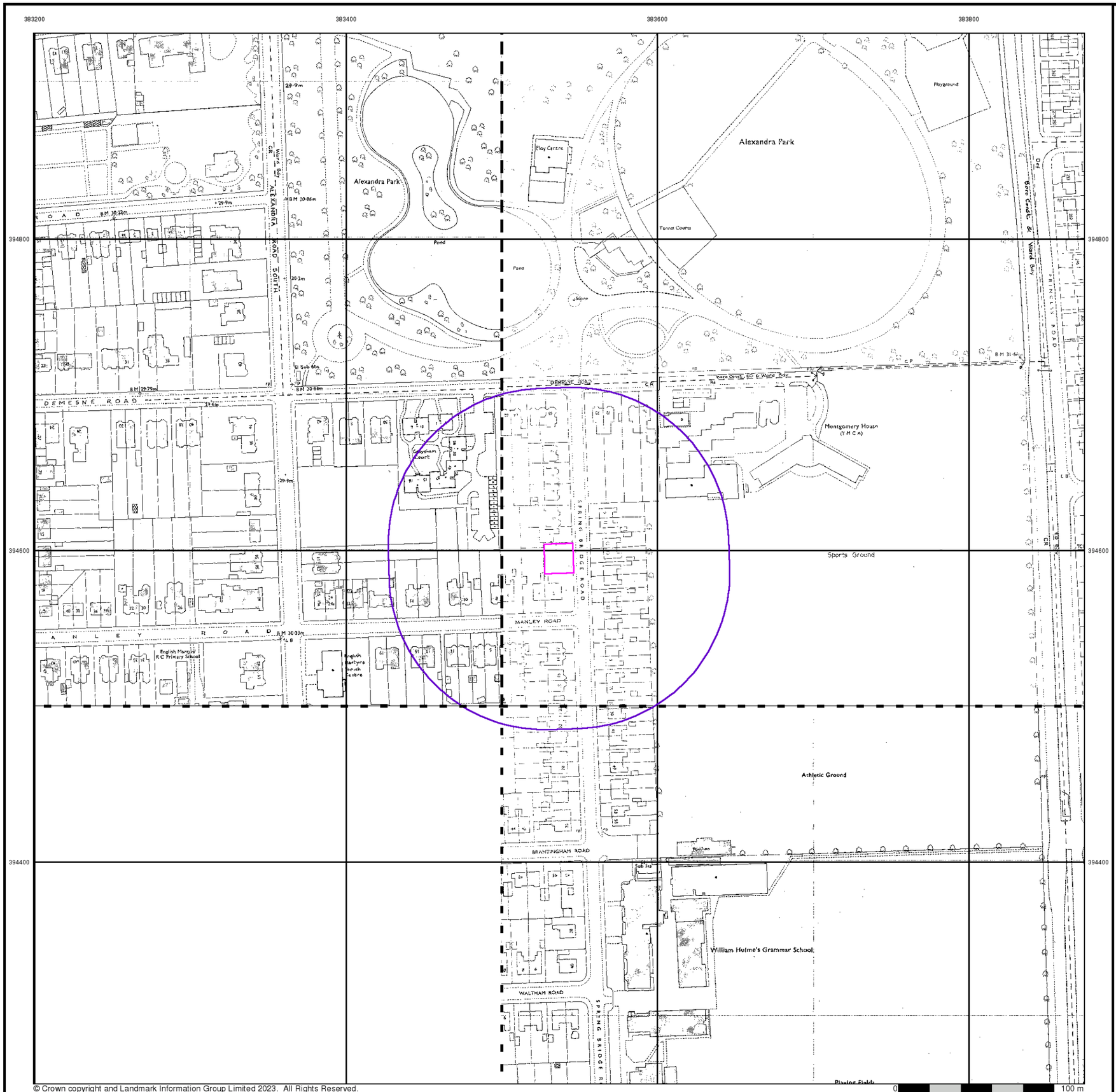


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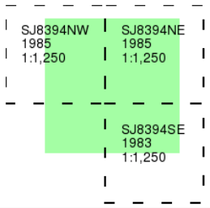
Additional SIMs

Published 1983 - 1985

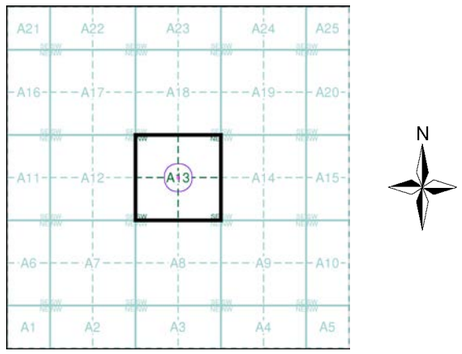
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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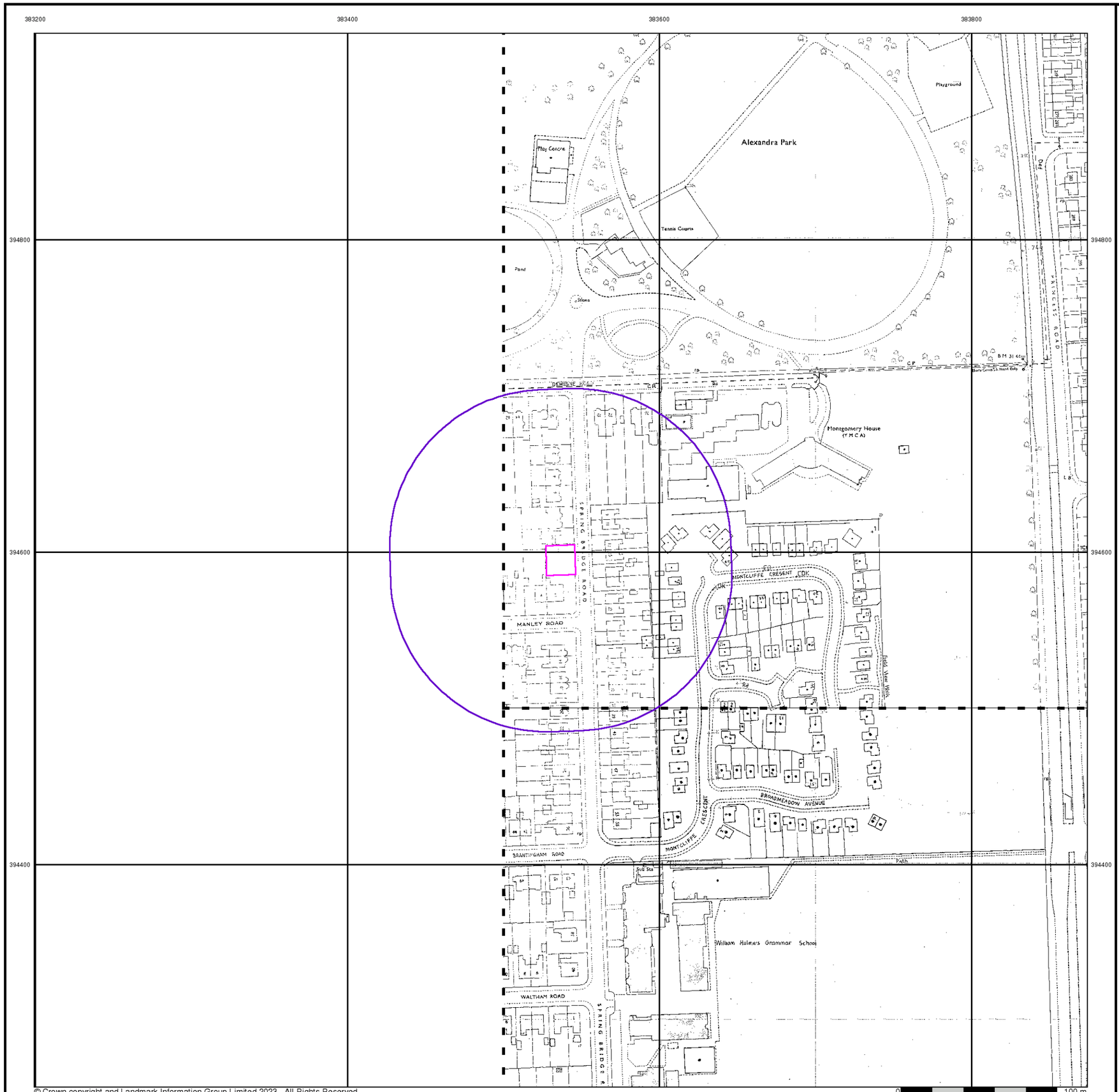
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Additional SIMs

Published 1988

Source map scale - 1:1,250

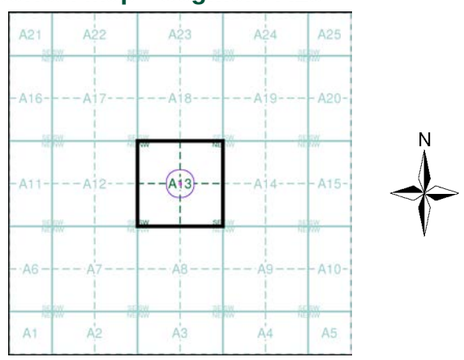
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Map Name(s) and Date(s)

SJ8394NE
1988
1:1,250

SJ8394SE
1988
1:1,250

Historical Map - Segment A13



Order Details

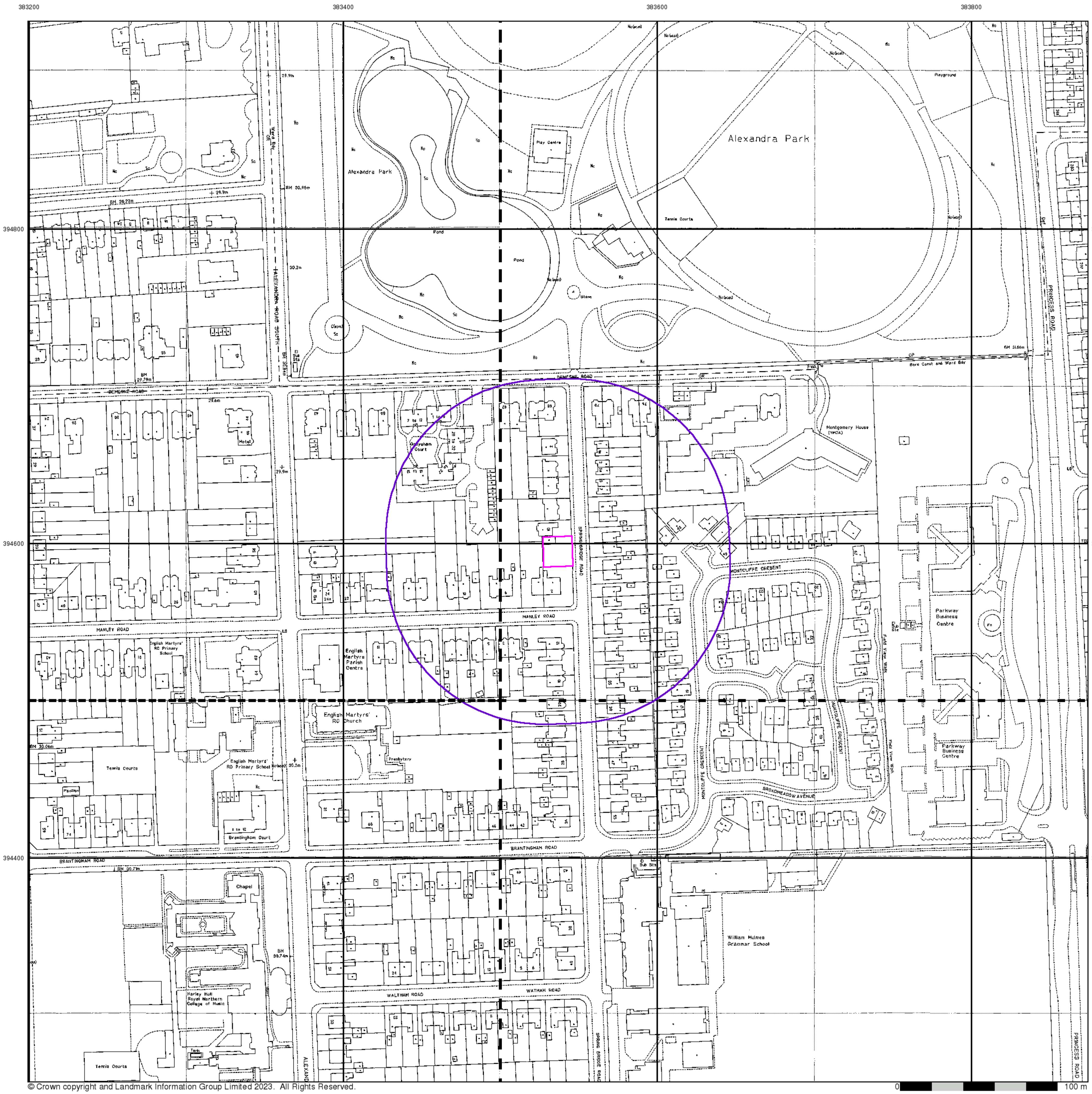
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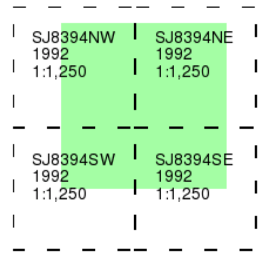
Large-Scale National Grid Data

Published 1992

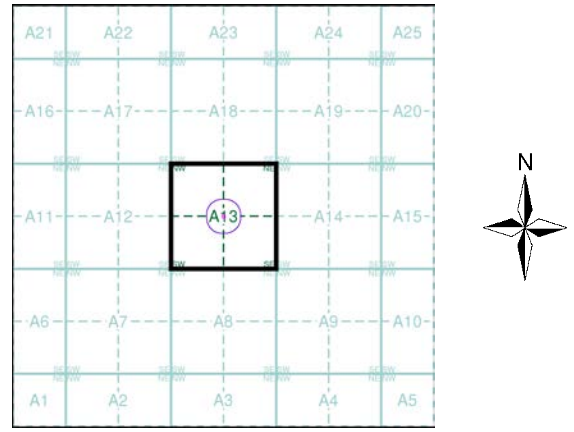
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

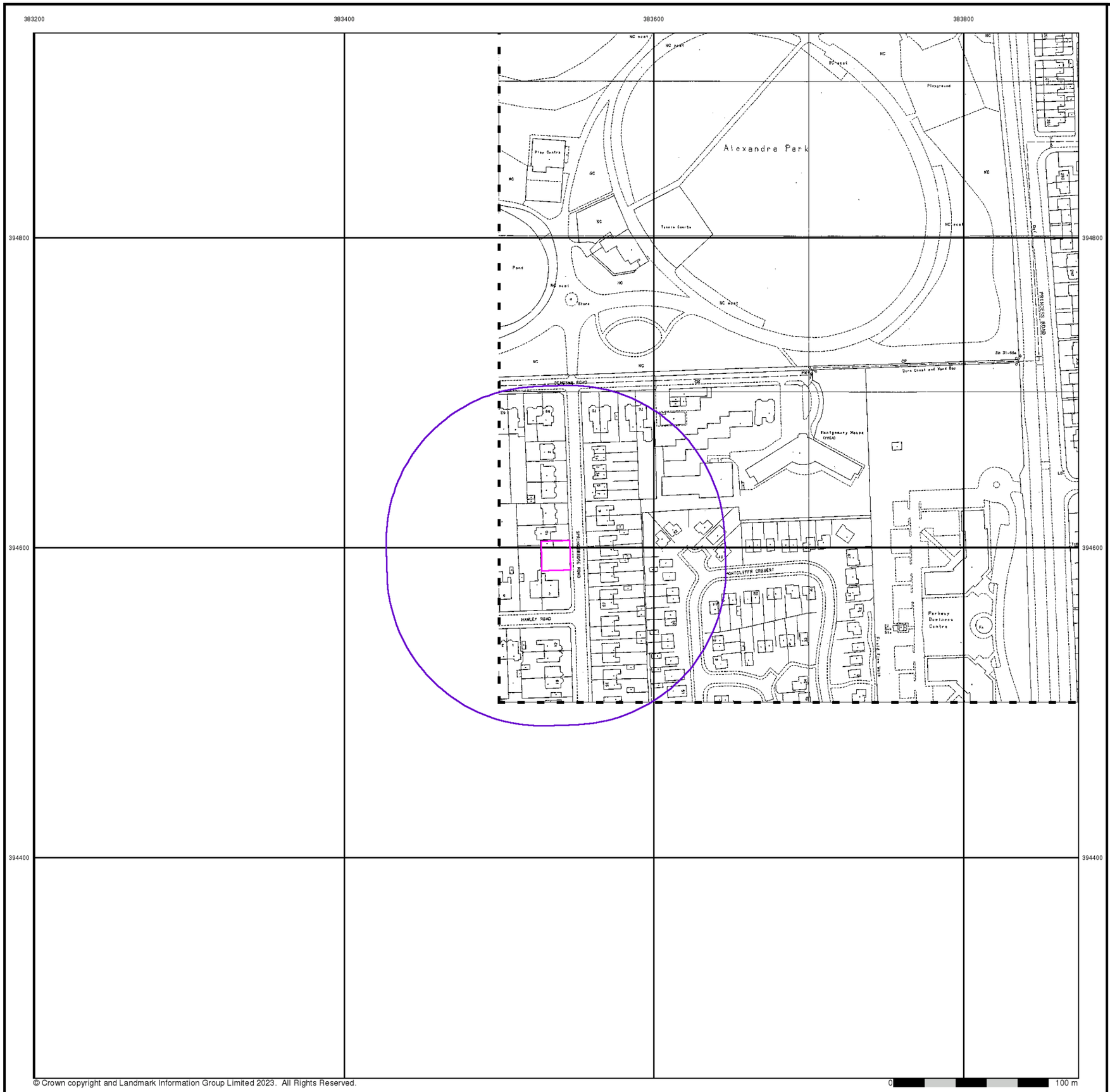
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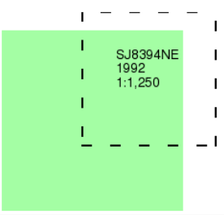
Additional SIMs

Published 1992

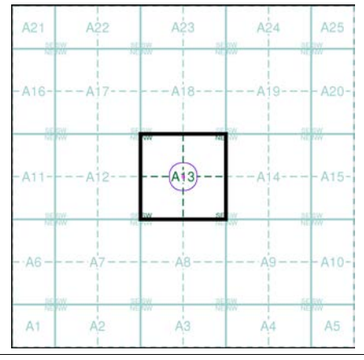
Source map scale - 1:1,250

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

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

1:10,000 Raster Mapping

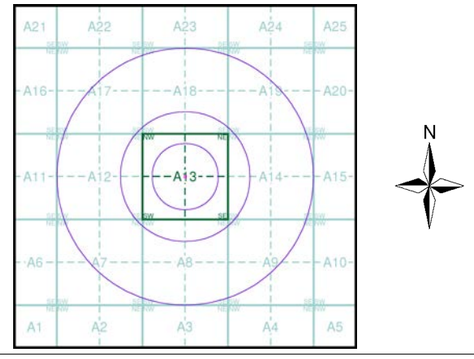
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1848	2
Cheshire	1:10,560	1882	3
Lancashire And Furness	1:10,560	1894 - 1896	4
Cheshire	1:10,560	1899	5
Lancashire And Furness	1:10,560	1908 - 1909	6
Cheshire	1:10,560	1911	7
Lancashire And Furness	1:10,560	1923	8
Lancashire And Furness	1:10,560	1932 - 1934	9
Cheshire	1:10,560	1938	10
Lancashire And Furness	1:10,560	1938	11
Ordnance Survey Plan	1:10,000	1955 - 1956	12
Ordnance Survey Plan	1:10,000	1966	13
Ordnance Survey Plan	1:10,000	1972	14
Ordnance Survey Plan	1:10,000	1980 - 1981	15
Ordnance Survey Plan	1:10,000	1985 - 1989	16
Ordnance Survey Plan	1:10,000	1989	17
Ordnance Survey Plan	1:10,000	1994	18
10K Raster Mapping	1:10,000	1999	19
Street View	Variable		20

Historical Map - Slice A



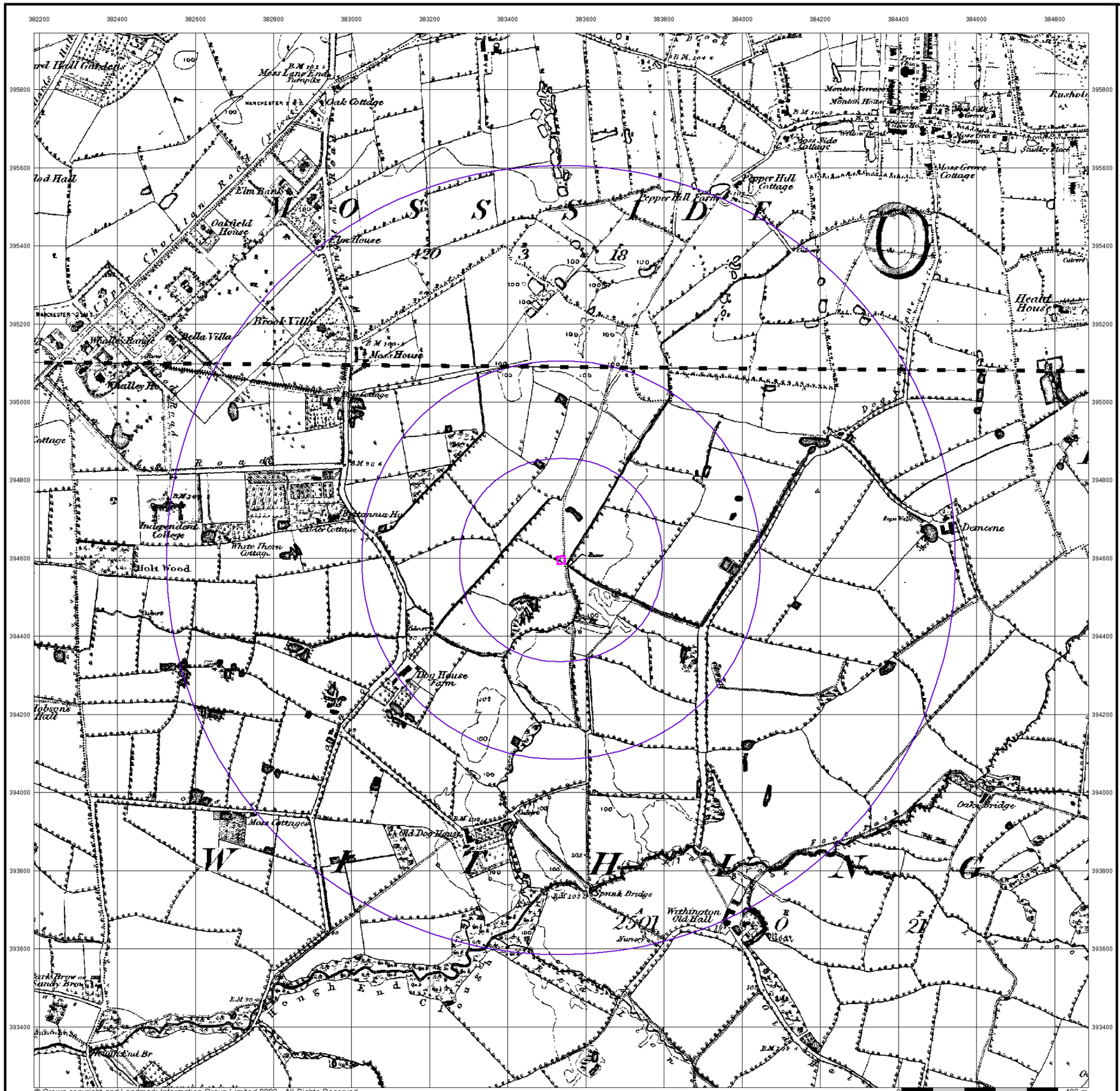
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National Grid Reference:	383540, 394590
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Site Area (Ha):	0.04
Search Buffer (m):	1000

Site Details

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Lancashire And Furness

Published 1848

Source map scale - 1:10,560

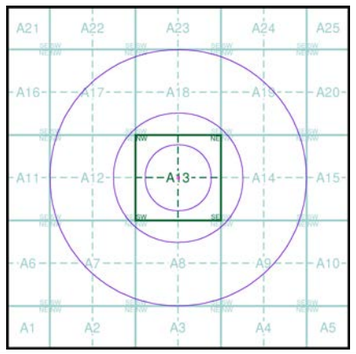
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Map Name(s) and Date(s)

10400
1848
1:10,560

11100
1848
1:10,560

Historical Map - Slice A



Order Details

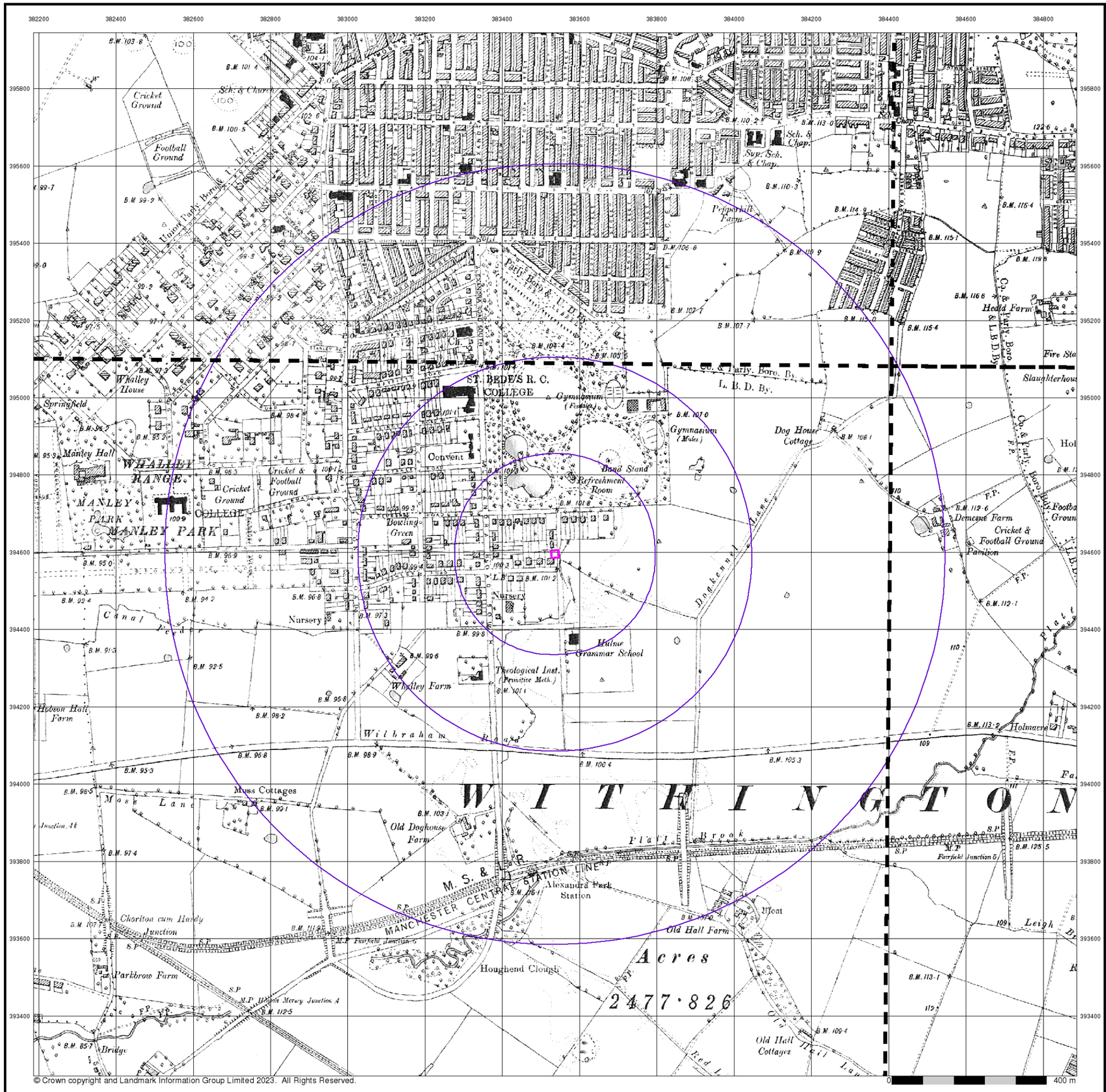
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National Grid Reference:	383540, 394590
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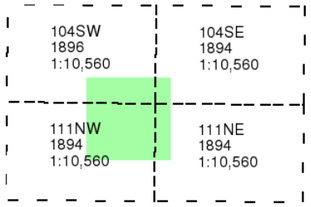
Lancashire And Furness

Published 1894 - 1896

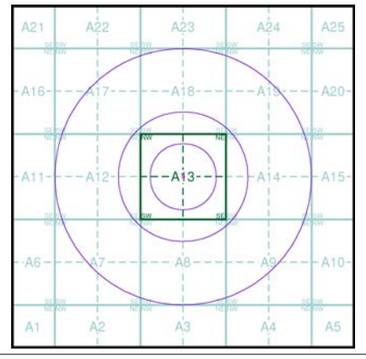
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

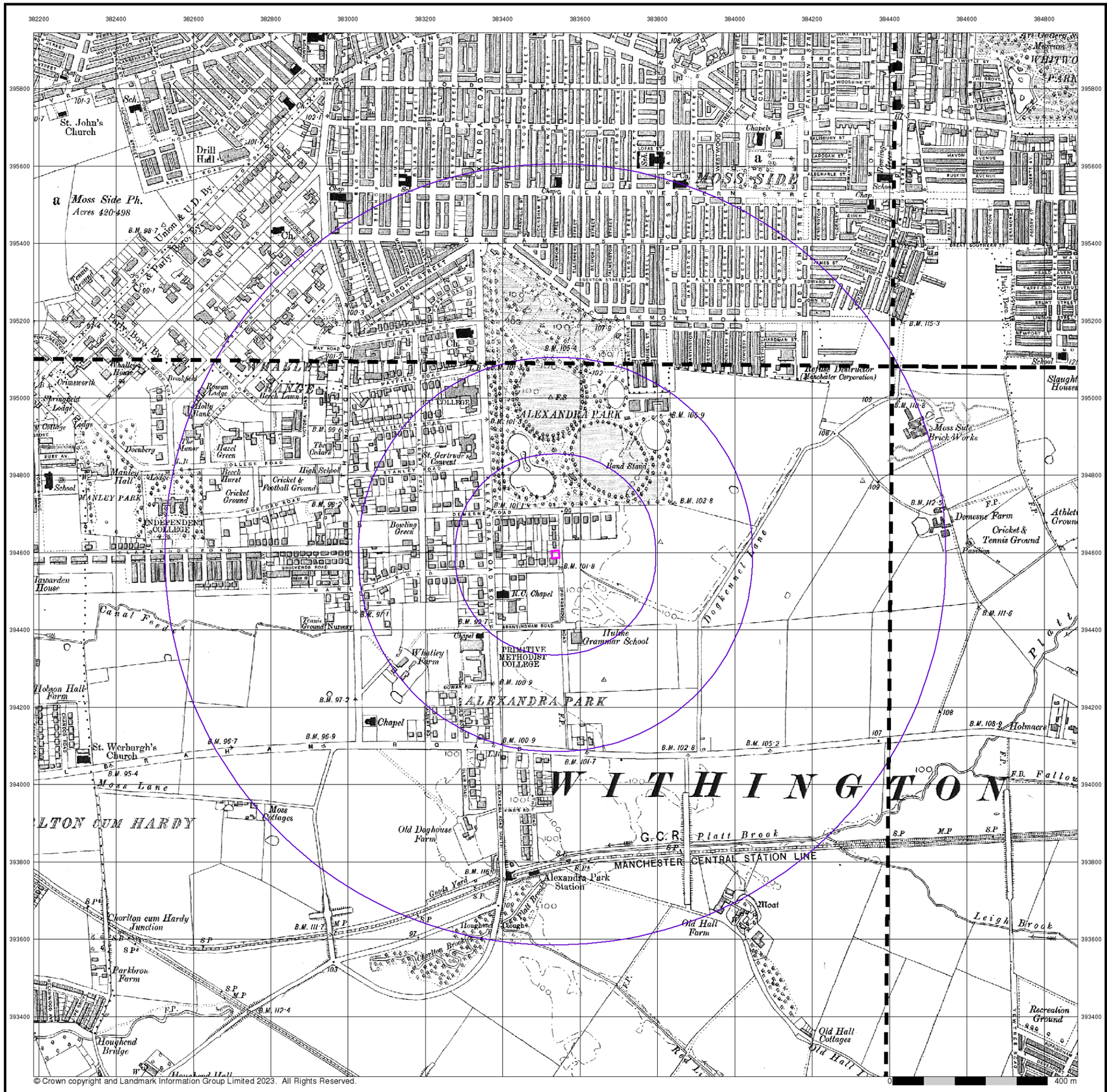
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Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
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Site Area (Ha):	0.04
Search Buffer (m):	1000

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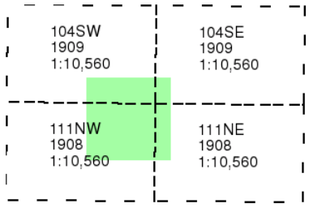
Lancashire And Furness

Published 1908 - 1909

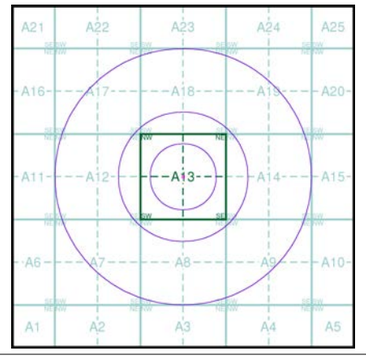
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

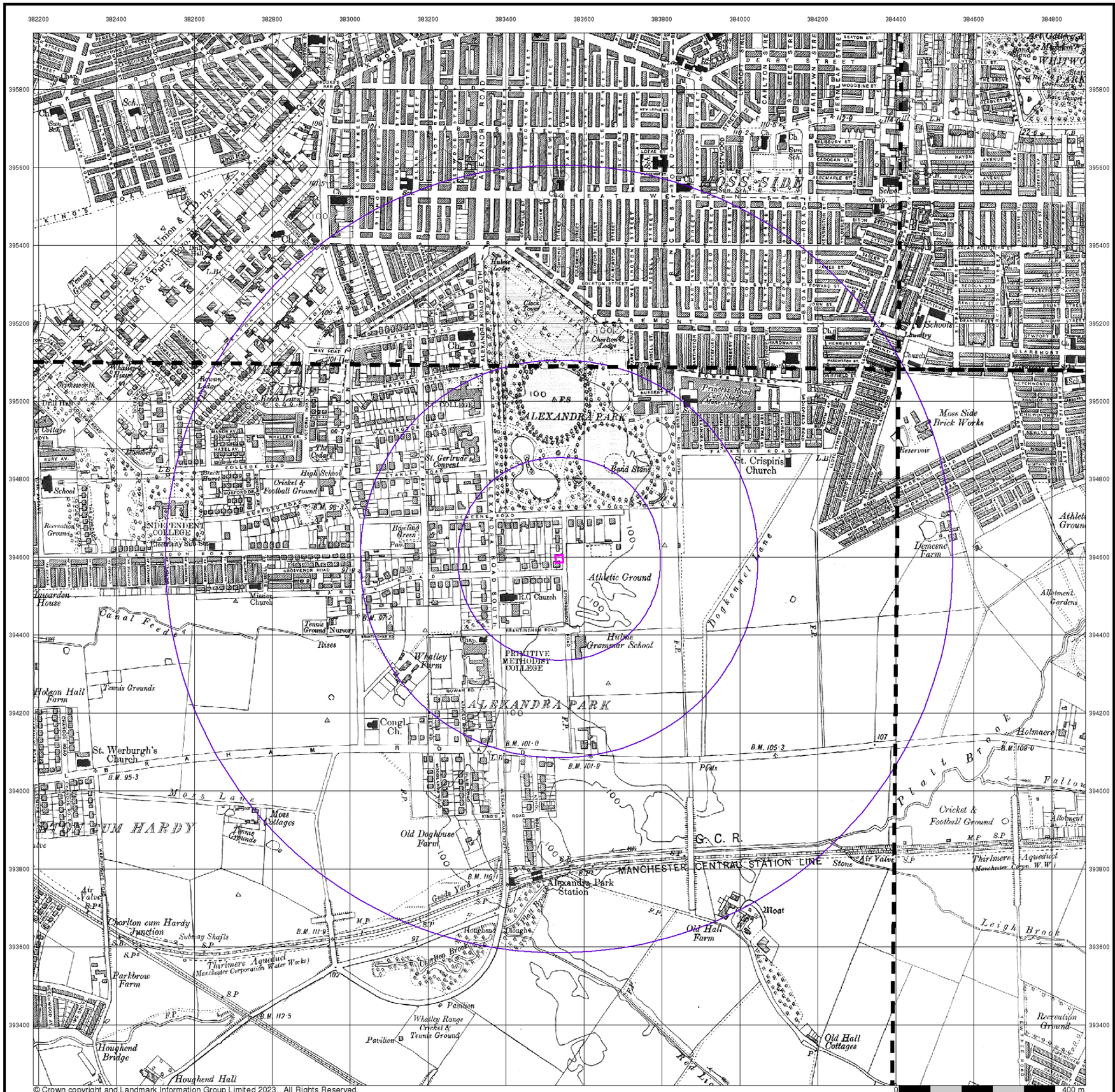
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National Grid Reference:	383540, 394590
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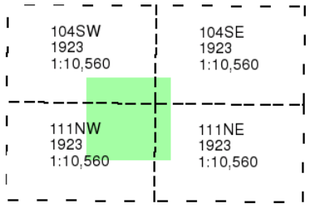
Lancashire And Furness

Published 1923

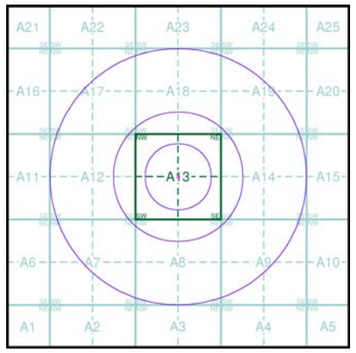
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
Search Buffer (m):	1000

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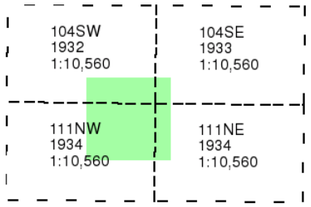
Lancashire And Furness

Published 1932 - 1934

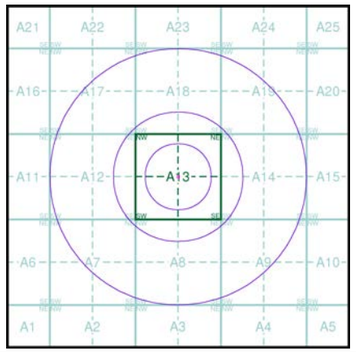
Source map scale - 1:10,560

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:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
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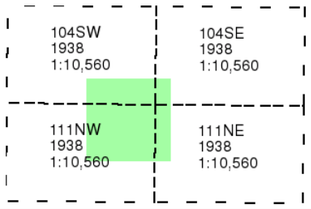
Lancashire And Furness

Published 1938

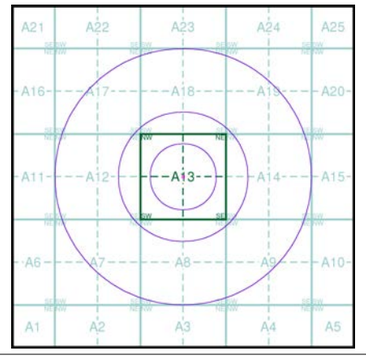
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

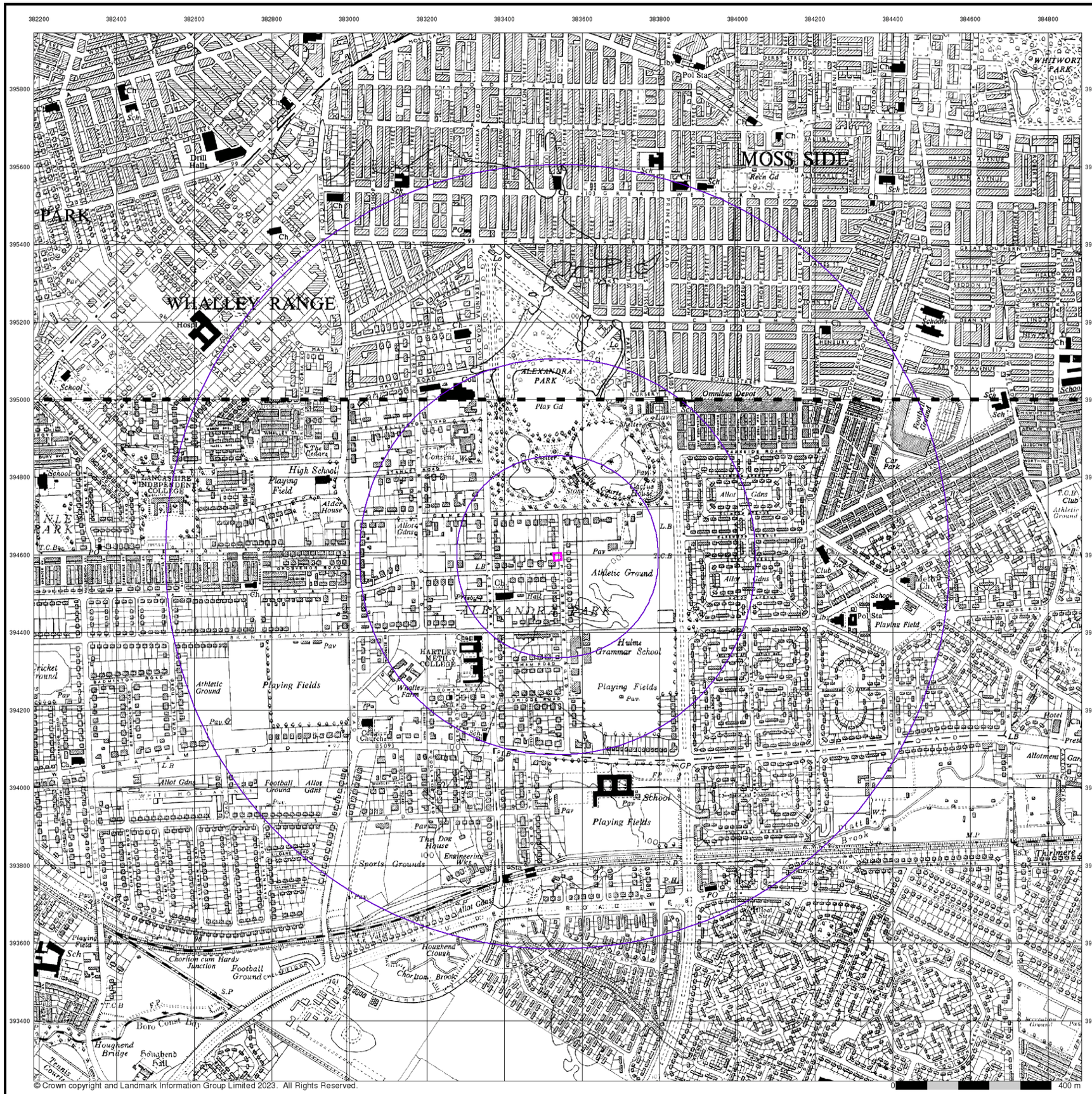
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Site Area (Ha):	0.04
Search Buffer (m):	1000

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Ordnance Survey Plan

Published 1955 - 1956

Source map scale - 1:10,000

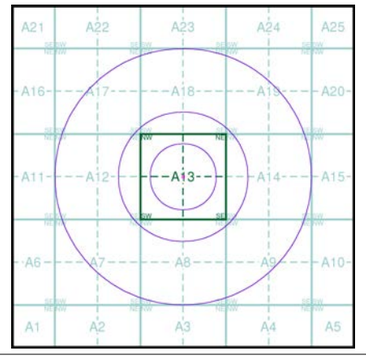
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Map Name(s) and Date(s)

SJ89NW
1956
1:10,560

SJ89SW
1955
1:10,560

Historical Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
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Site Details

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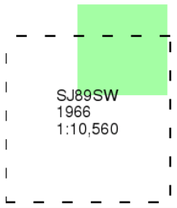
Ordnance Survey Plan

Published 1966

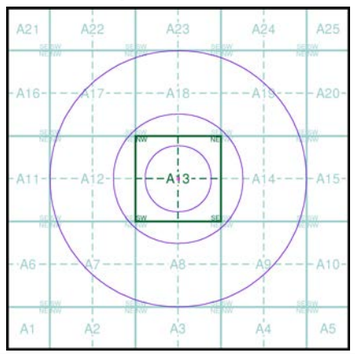
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
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Ordnance Survey Plan

Published 1980 - 1981

Source map scale - 1:10,000

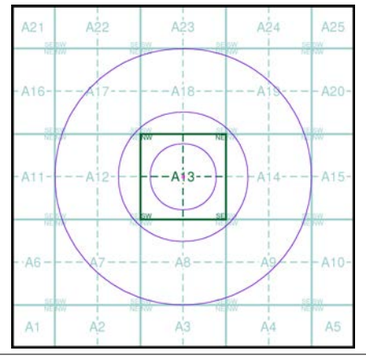
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Map Name(s) and Date(s)

SJ89NW
1980
1:10,000

SJ89SW
1981
1:10,000

Historical Map - Slice A



Order Details

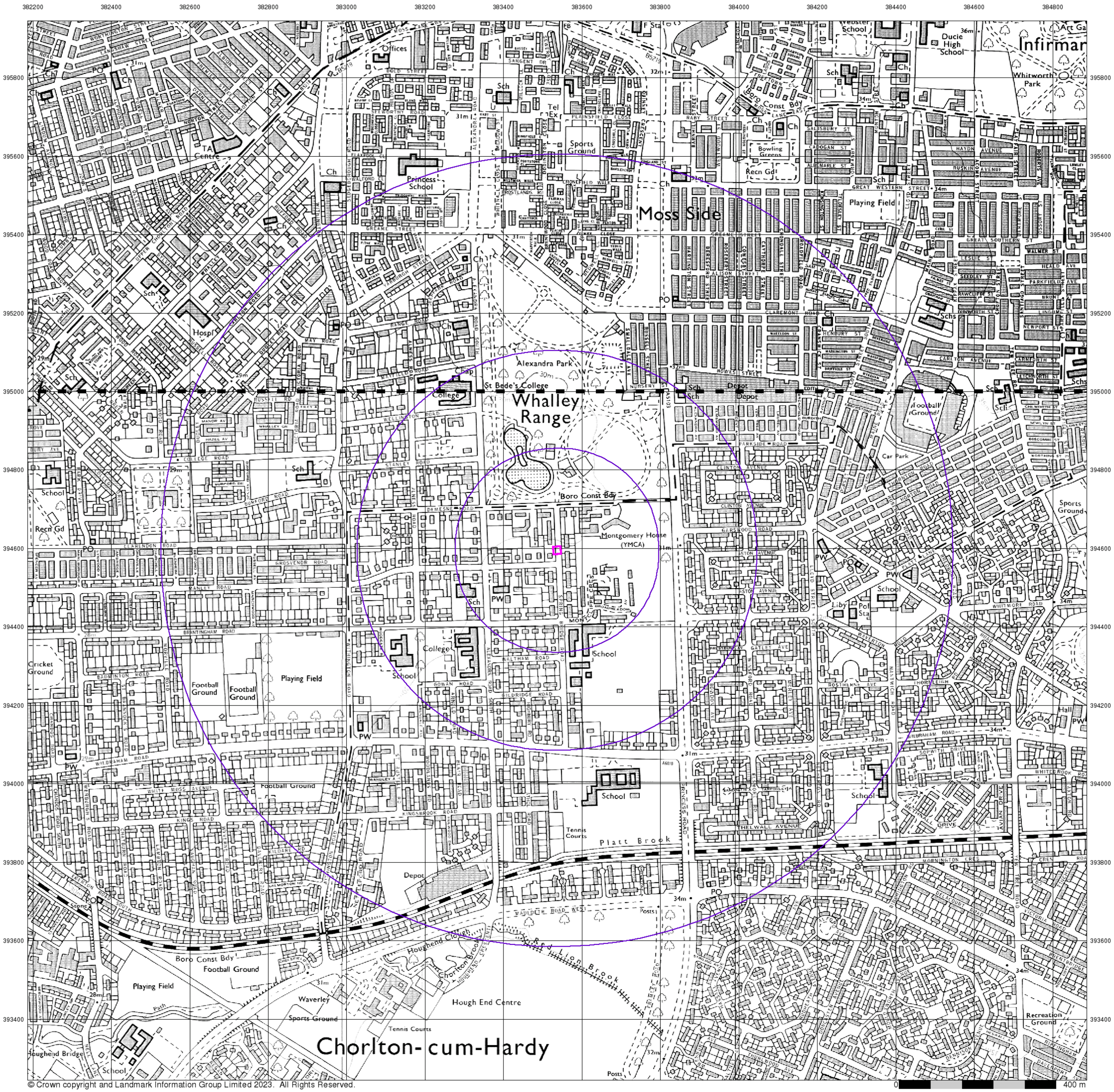
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National Grid Reference:	383540, 394590
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Search Buffer (m):	1000

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Ordnance Survey Plan

Published 1985 - 1989

Source map scale - 1:10,000

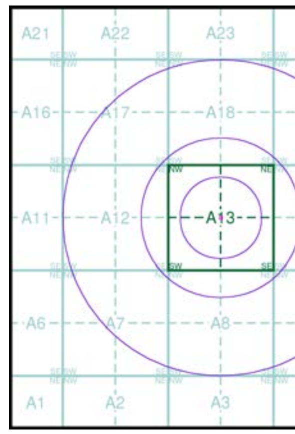
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some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

SJ89NW
1985
1:10,000

SJ89SW
1989
1:10,000

Historical Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
Search Buffer (m):	1000

Site Details

, 10, Springbridge Road, Manchester, M16 8PL

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
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10k Raster Mapping

Published 1999

Source map scale - 1:10,000

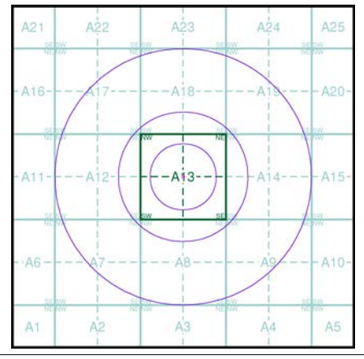
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks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

Map Name(s) and Date(s)

SJ89NW 1999 1:10,000

SJ89SW 1999 1:10,000

Historical Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
Search Buffer (m):	1000

Site Details

, 10, Springbridge Road, Manchester, M16 8PL

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0 400 m

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Street View

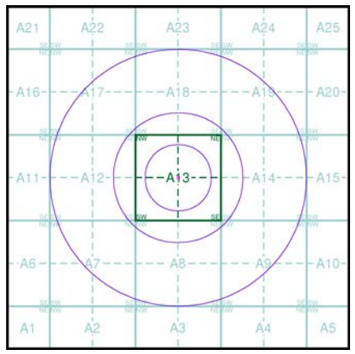
Published 2023

Source map scale - 1:10,000

Street View is a street-level map for the whole of Great Britain produced by the Ordnance Survey. These maps are provided at a nominal scale of 1:10,000

Map Name(s) and Date(s)

Street View Map - Slice A



Order Details

Order Number:	305943280_1_1
Customer Ref:	ES170123b
National Grid Reference:	383540, 394590
Slice:	A
Site Area (Ha):	0.04
Search Buffer (m):	1000

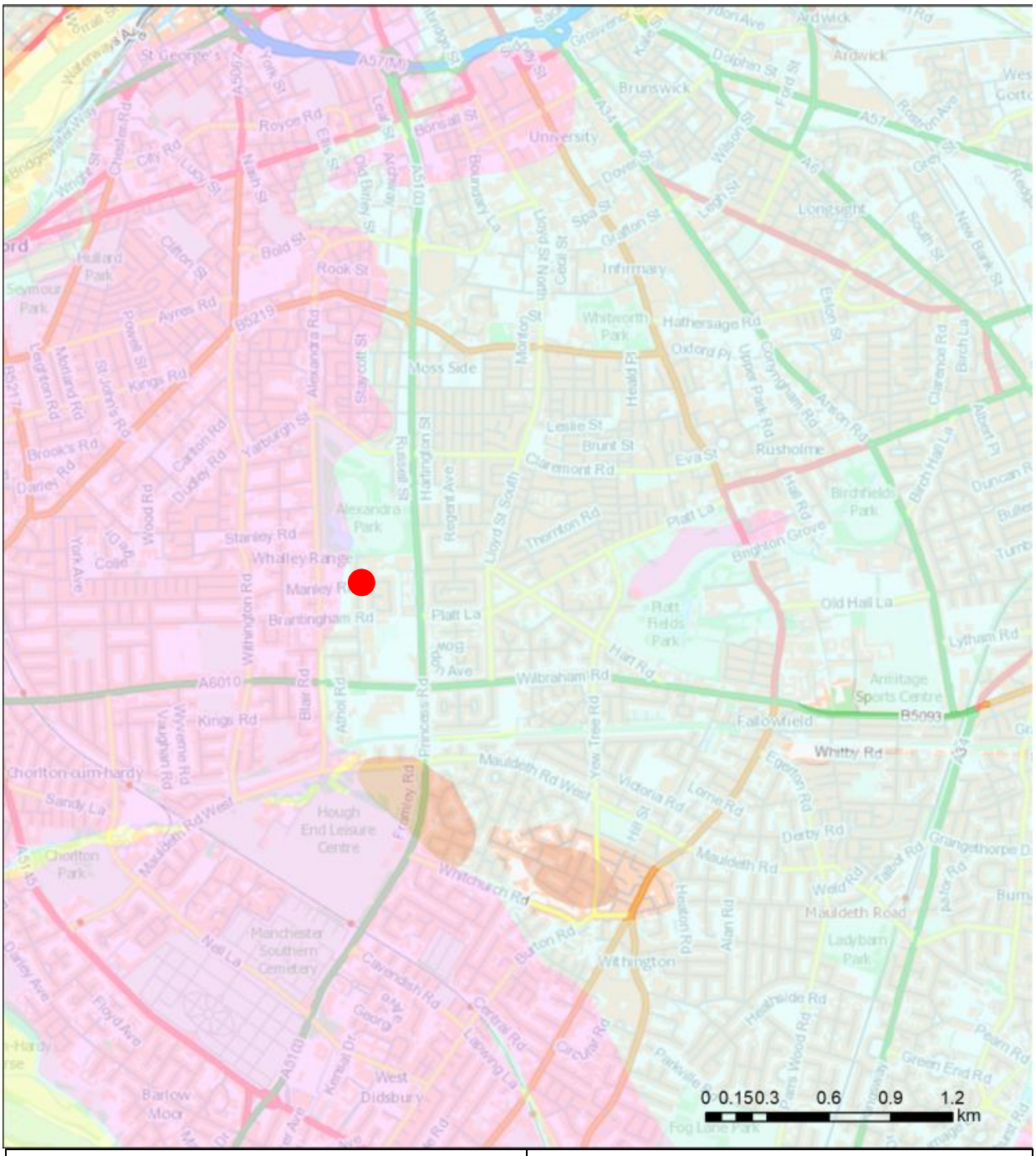
Site Details

, 10, Springbridge Road, Manchester, M16 8PL

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Appendix D – Geological Maps



enviro | solution	**Superficial Geology**

Superficial deposits 1:50,000 scale

- GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL
- TILL, DEVENSIAN - DIAMICTON
- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
- RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL
- SHIRDLEY HILL SAND FORMATION - SAND
- PEAT - PEAT

enviro | solution	**Superficial Geology Key**



enviro | solution	**Bedrock Geology**

Bedrock geology 1:50,000 scale

- GREAT MINE LIMESTONE - LIMESTONE
- WILMSLOW SANDSTONE FORMATION - SANDSTONE
- ETRURIA FORMATION - SANDSTONE AND MUDSTONE
- HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE
- TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE
- PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE
- CHESTER FORMATION - SANDSTONE
- CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)
- COLLYHURST SANDSTONE FORMATION - SANDSTONE
- HELSBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY)
- MANCHESTER MARLS FORMATION - MUDSTONE

Linear features 1:50,000 scale

- Buried_channel_Margin
- Coal_seam_Inf
- Fault_Inf_Crossmark_on_downthrow_side

enviro | solution	**Bedrock Geology Key**

Appendix E – BGS Borehole

SJ89SW

GEO – RESEARCH LTD. B/H No. 22 8383 9482.

CONTRACT: PRINCESS ROAD, PARKSIDE ROAD TO INNER RING ROAD
LOCATION: MANCHESTER ROAD SITE NO.3.

SHEET No. 1 416
No. of sheets 1

CLIENT: MANCHESTER CORPORATION

Ground Level 31.05m
Commenced 25.10.71
Completed 25.10.71

Weather: DRY

Percussion / SPT / Rotary / Cored runs / O/H

CASING: Size 0.150 to. 1.820 Size to.

STRATUM. (Scale: 20mm to 1 metre) 1. Thickness	Depth 2. m	Sample No.	Blow Count (N) LL/PL/PI	Legend 5	M.C % Core Rec. % 6.	Type of Test 7.	Grading % Passing Sieve 8 Results of any other Tests: mm 75 / mm 40 / μm 600 / μm 210 / μm 150 / μm 75	TRIAXIAL TEST: Bulk Density Kg/m³	Dev. Stress kN/m²	Lat. U.C.T. Pres. Siren. kN/m² kN/m² Shear/∠° kN/m²	WATER REMARKS 10.
Dark brown TOPSOIL (iii) 0.91	0.91										
Stiff brown/grey stony sandy CLAY with pebbles (Boulder Clay) (i)	0.99	D1 U1	24.14.10. (CL) (45)		17.8 12.3 12.7 11.0	TAQ		1930 1900 1890	221 393 737	100 200 400	
	1.67	B1			21.5					225/0° 0/29°	
	2.28	D2			19.4	SO3S	0.001				
	2.43	U2	37.15.22. (CI) (50)		17.5 18.7 18.3	TAQ		2130 2100 2110	297 344 307	100 200 400 158/0°	
	3.35	D3			11.7						
3.35	3.81 4.26	U3	(75)		12.3 12.9	TAQ		2220 2170	415 336	100 200 188/0°	Water Table Not Established
			BOREHOLE COMPLETE								

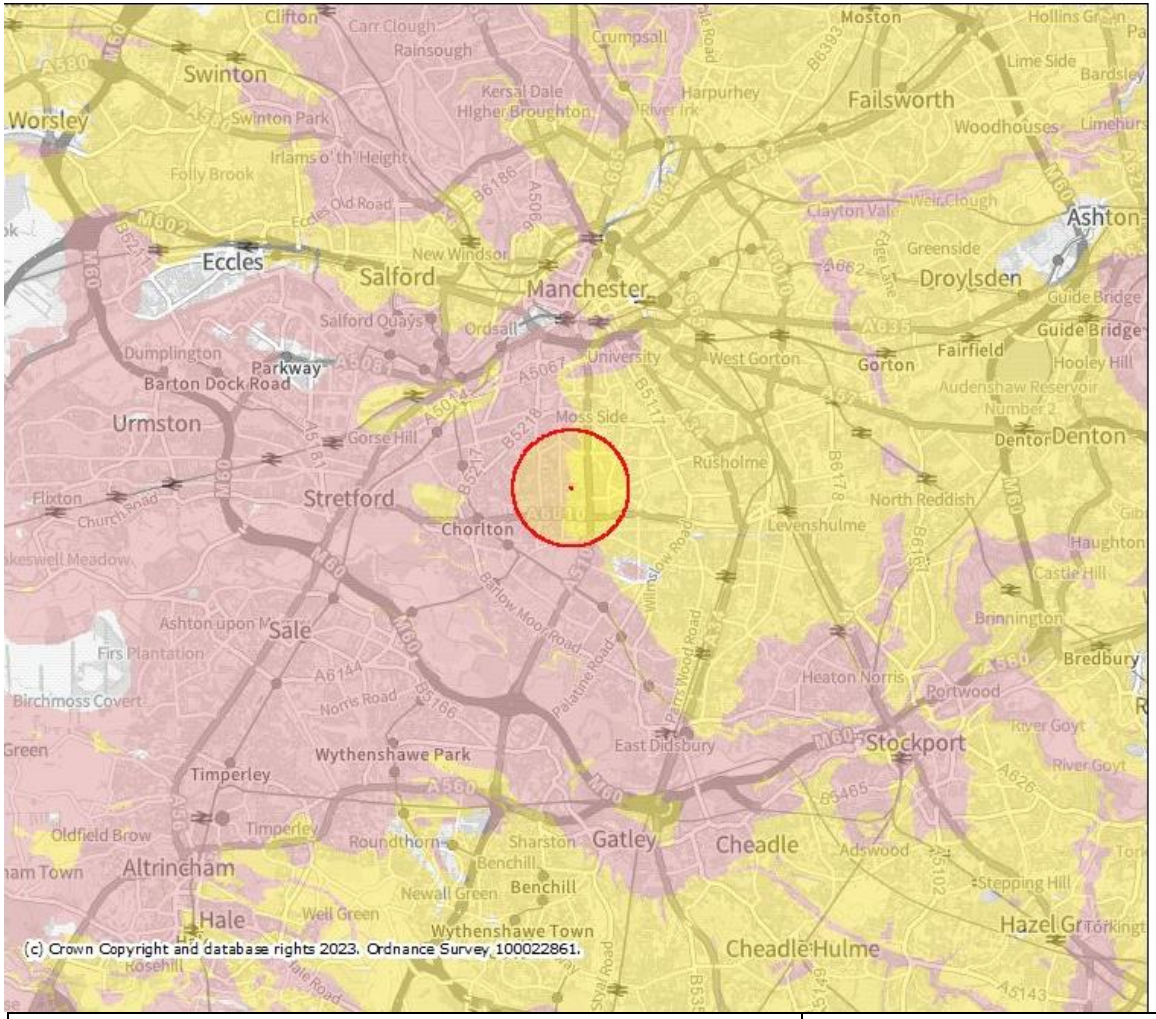
REMARKS:

Sample	Depth m	M.C. % D.W.	S.G.	C. B. R. Air Voids	Type	TOP 0.1	TOP 0.2	BOTTOM 0.1	BOTTOM 0.2	Value	COMPACTION B.S. 1377 No.	Max. Dry Density	Optm. M.C.
U1	0.99		2.65	17%	Dynamic	6	8	5	6				

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British Geological Survey

Appendix F – Hydrogeological Maps



Legend

Aquifer Designation Map (Superficial Drift) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

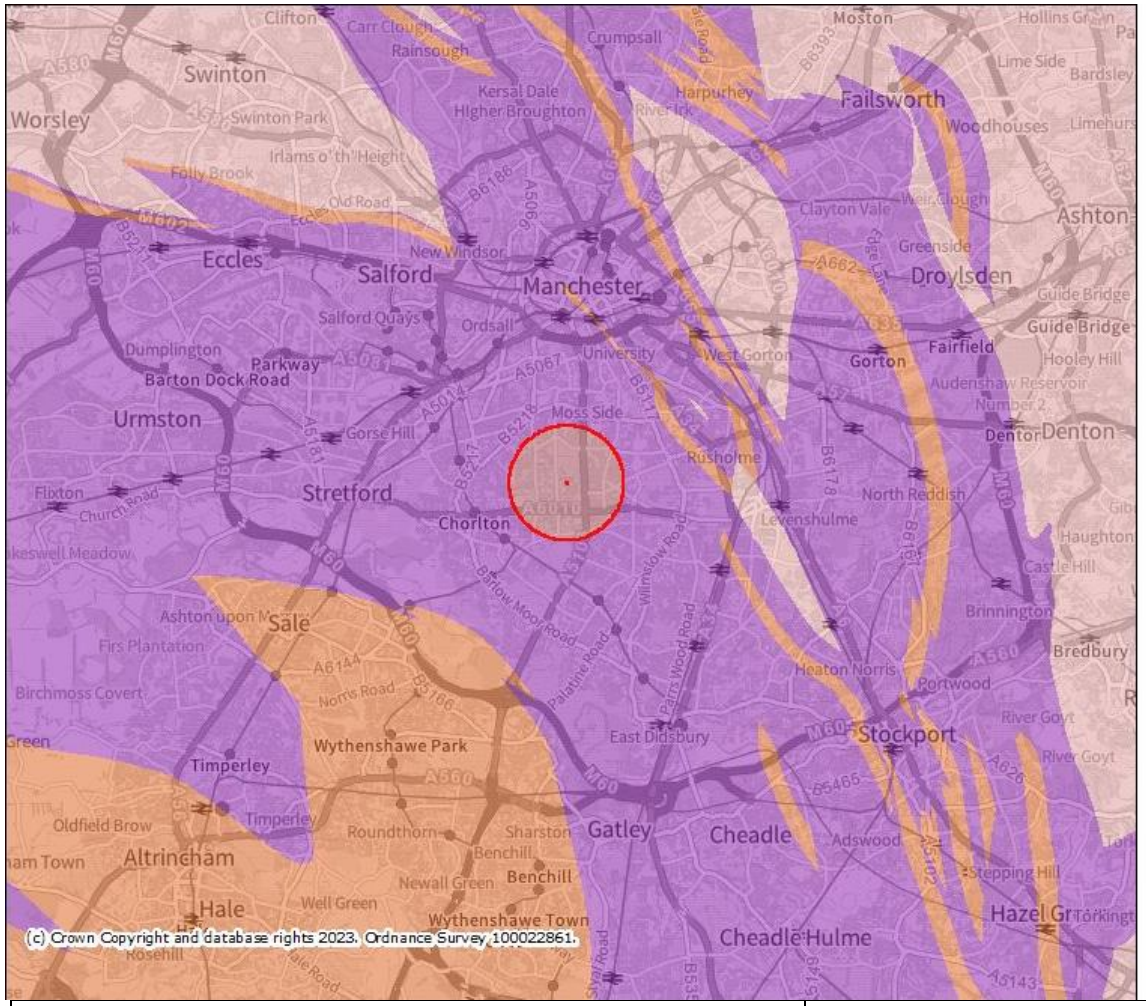
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xmin = 358200
ymin = 381400
xmax = 409000
ymax = 407100

0 2 4
km

Map produced by MAGIC on 16 January, 2023.
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enviro | solution

Superficial Aquifer



Legend

Aquifer Designation Map (Bedrock) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unproductive

Projection = OSGB36
xmin = 358200
ymin = 381400
xmax = 409000
ymax = 407100

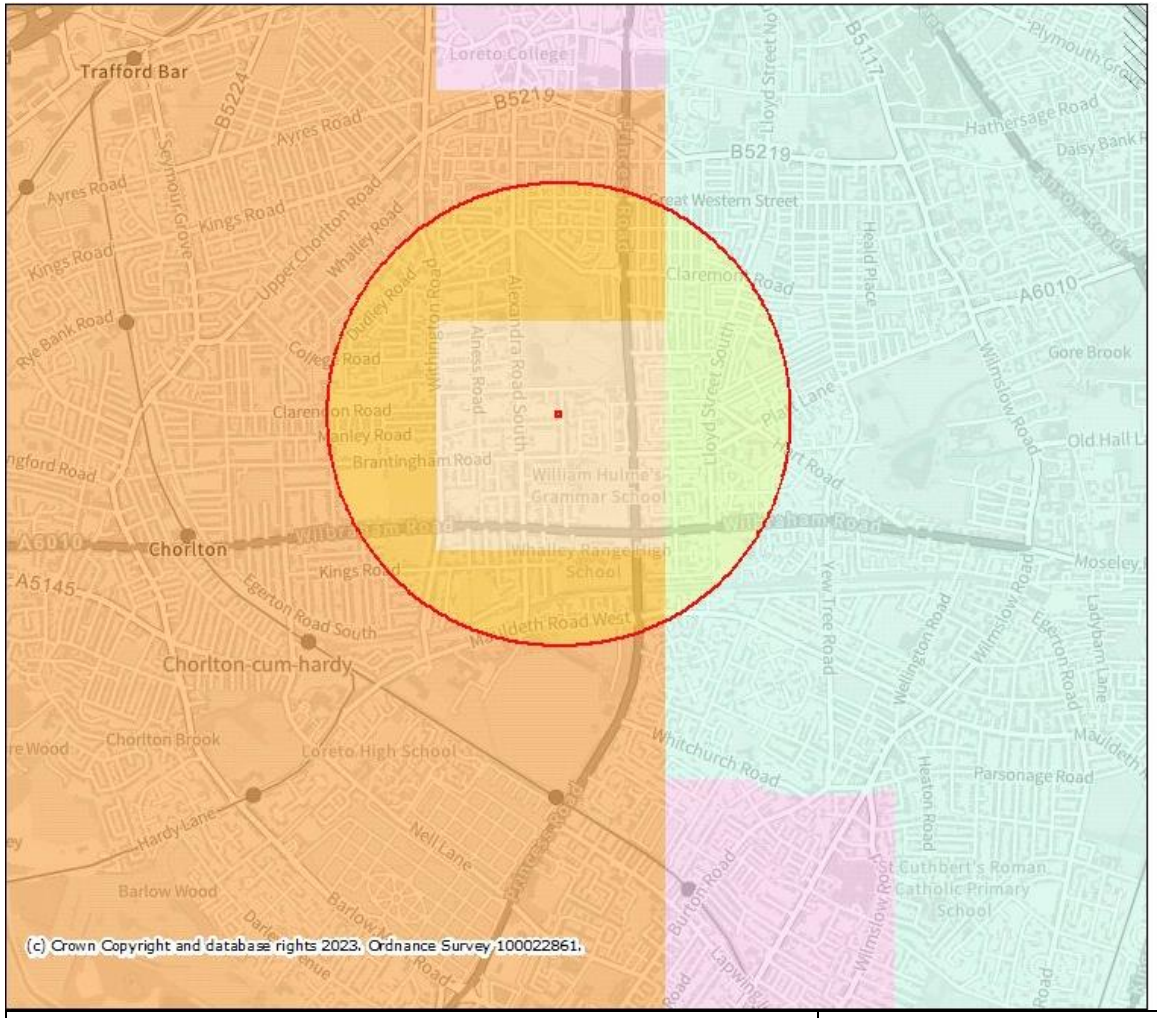
0 2 4
km

Map produced by MAGIC on 16 January, 2023.

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enviro | solution

Bedrock Aquifer



Legend

Groundwater Vulnerability Map (England)

- Local Information
- Soluble Rock Risk
- High
- Medium - High
- Medium
- Medium - Low
- Low
- Unproductive

Projection = OSGB36
xmin = 377300
ymin = 391000
xmax = 390000
ymax = 397400

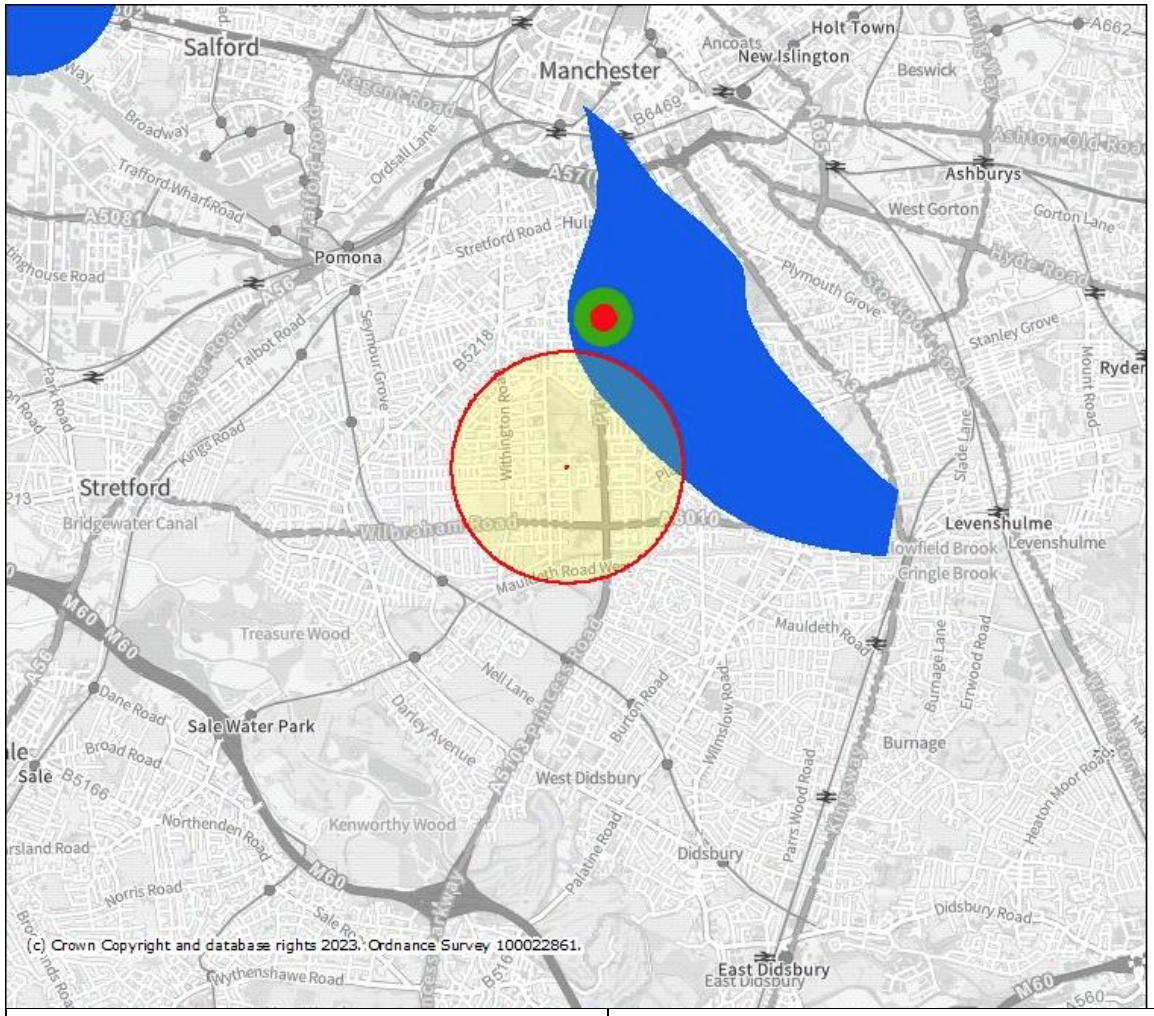
0 0.5 1
km

Map produced by MAGIC on 16 January, 2023.

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Groundwater Vulnerability



Legend

Source Protection Zones merged (England)

- Zone I - Inner Protection Zone
- Zone I - Subsurface Activity
- Zone II - Outer Protection Zone
- Zone II - Subsurface Activity
- Zone III - Total Catchment
- Zone III - Subsurface Activity
- Zone of Special Interest

Projection = OSGB36
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ymin = 387800
xmax = 396300
ymax = 400700

0 1 2
km

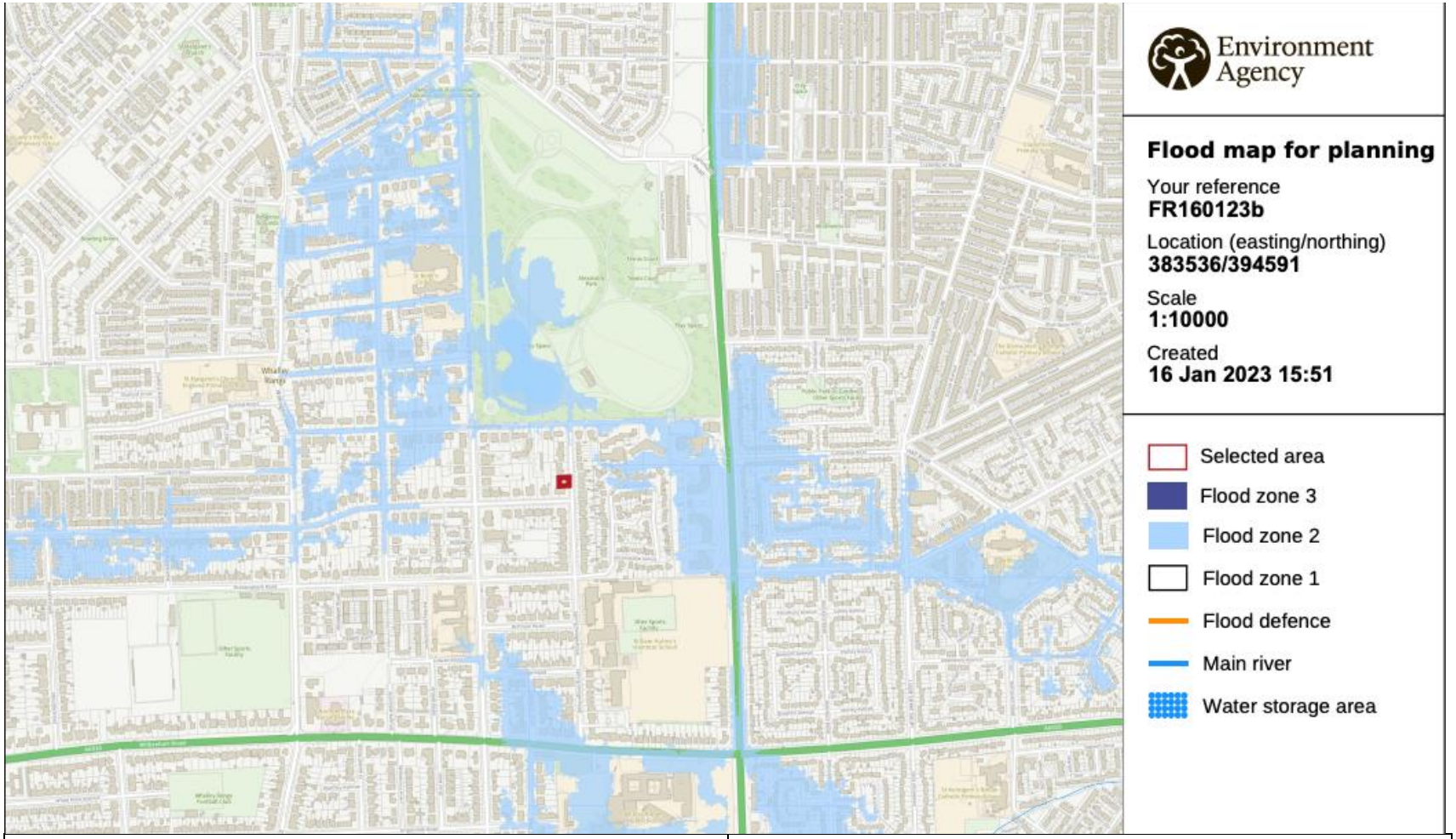
Map produced by MAGIC on 16 January, 2023.

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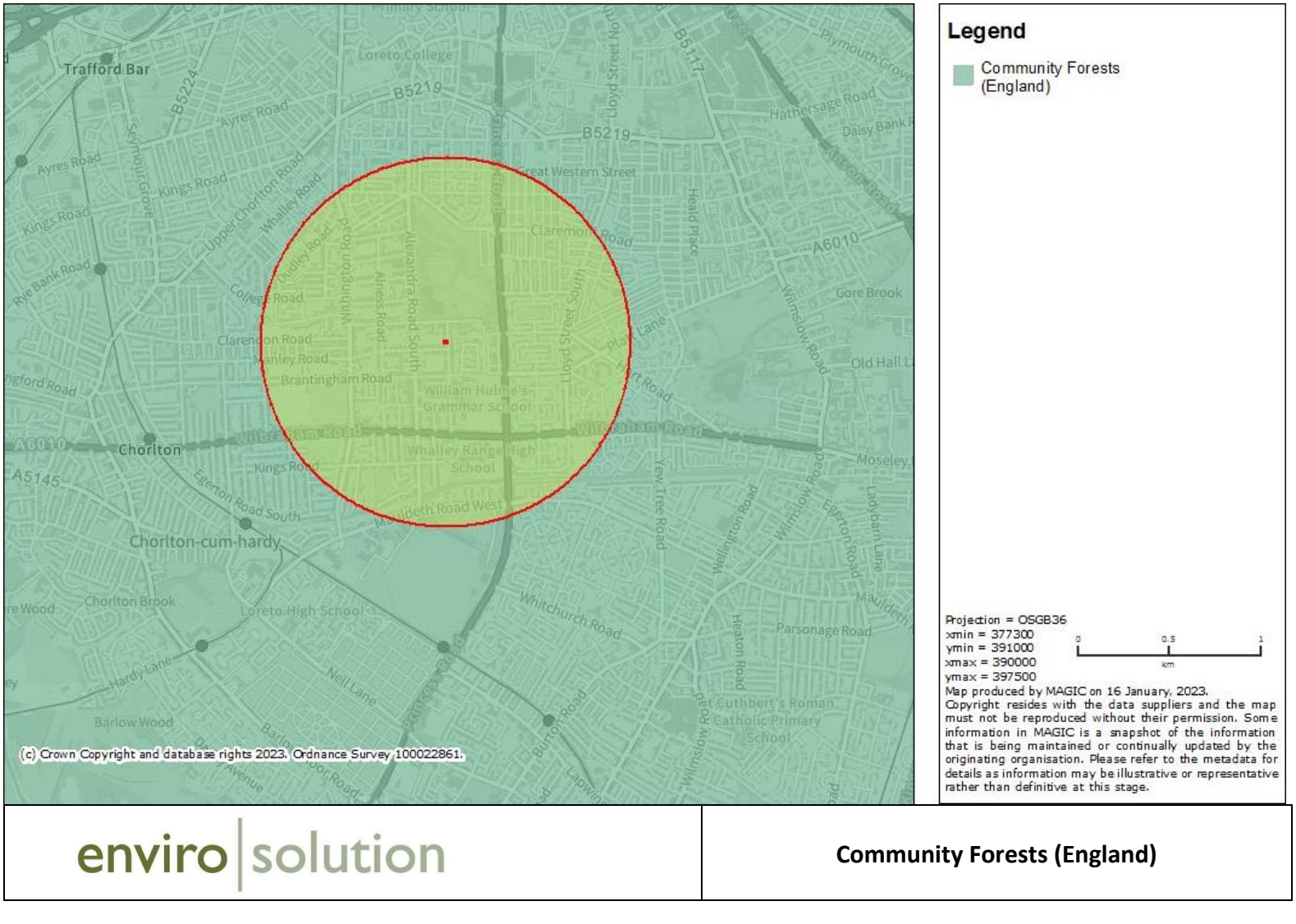
Source Protection Zones (merged)
642.3m NE

Appendix G – Flood Risk Map



enviro | solution	**Flood Risk Map**

Appendix H – Environmental Designations



enviro | solution	**Community Forests (England)**