



CONTAMINATED LAND RISK ASSESSMENT

Phase 1 Desk Study Report

Site Address

66 The Street
Rustington
Littlehampton
BN16 3NR

Client

Envision Contracting Ltd

Report Reference

PH1-2019-000050

Prepared by

STM Environmental Consultants Ltd

Date

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CONSULTING GEO-ENVIRONMENTAL ENGINEERS AND SCIENTISTS

Phase 1 Contaminated Land Desk Studies, Geo-Environmental Site Investigations, Environmental Due Diligence, Flood Risk Assessments, Surface Water Management Strategies (SuDS), Ecology, Noise and Air Quality Assessments, Environmental Management Systems, GIS & Data Management Systems

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2 DOCUMENT CONTROL



CONTAMINATED LAND RISK ASSESSMENT Phase 1 Desk Study Report



Site Address:	66 The Street Rustington Littlehampton BN16 3NR
Prepared for:	Envision Contracting Ltd
STM Reference:	PH1-2019-000050
Site Coordinates:	505042, 102343
Version No:	1.0
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Report Author:	Lara Griffin (BSc) Geo-Environmental Consultant
Draft Report Checked by:	Kelley Swana (BSc, MSc) Geo-Environmental Consultant
Final Report Authorised by:	Simon Makoni (BSc, MSc) Director

3 DISCLAIMER

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STM Environmental Consultants Ltd has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant when undertaking works of this nature. However, STM Environmental Consultants Ltd gives no warranty, representation or assurance as to the accuracy or completeness of any information, assessments or evaluations presented within this report. Furthermore, STM Environmental accepts no liability whatsoever for any loss or damage arising from the interpretation or use of the information contained within this report.

It is noted that some of the findings presented in this report are based on information obtained from third parties (i.e. Environmental Search Report). Whilst we assume that all information is representative of the site and of present conditions, we can offer no guarantee as to its validity regarding the short term or long-term history of the Site.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

It should be noted that this report has been produced for environmental purposes only. It should not in any way be construed to be or used to replace a geotechnical survey, structural survey, asbestos survey, buried services survey, unexploded ordnance survey or Invasive Plant Survey.

4 EXECUTIVE SUMMARY

SECTION	SUMMARY
Site Location And Size	The site is located at 66 The Street, Rustington, Littlehampton, BN16 3NR and is centred at national grid reference 505042, 102343. The site has an area of approximately 0.04 ha.
Current Use	The site is currently under light industrial use.
Proposed Development	The development proposal is for the changes of use to residential flats. It is understood that there are no proposals to include soft landscaping in the development.
Site History	Examination of Ordnance Survey historic maps revealed that the site comprised 3no. unspecified buildings from c. 1876 until c. 1931 when 1no. of the buildings was demolished. In c. 1958, 1no. building on the site was extended and the site was labelled as a Works. In c. 1965, the smaller building was labelled as a Works while the other building was labelled as no. 66 Printing Works. Another small unspecified building was developed on the site in c. 1989. The surrounding area has been developed since c. 1876 with mixed residential and commercial use.
Geology	The bedrock geology beneath the site consists of Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated) while superficial deposits of River Terrace Deposits (Undifferentiated) comprising sand, silt and clay were identified.
Topography	The site is at an elevation of approximately 8.0 mAOD (above Ordnance Datum).
Hydrogeology	The site is underlain by Secondary A and Principal Aquifers.
Hydrology	There are no surface water bodies located within 250m of the site.
Contamination Assessment	On site PCLUs have included a Works and Printing Works while off site PCLUs include Builder's Yard, Nursery and Grave Yard. A conceptual site risk model was developed and a qualitative risk assessment carried out. Potentially significant potential pollutant linkages were identified in respect of:  Human Health – i.e. future occupiers and construction workers  Groundwater receptors – Secondary A and Principal Aquifers  Property receptors – i.e. Buildings & services
Recommendations	Given that potentially significant potential pollutant linkages were identified, it is recommended that an intrusive site investigation is undertaken with the objective of determining the presence and extent of any soil contamination at the site.
This table is intended as a summary of the desk study findings and should be read in conjunction with the main report.	

5 INTRODUCTION

STM Environmental Consultants Ltd (STM) were commissioned by Envision Contracting Ltd (Client) to undertake a Phase 1 Contaminated Land Risk Assessment (CLRA) at a site located at 66 The Street, Rustington, Littlehampton, BN16 3NR.

The study is required to support an application for the change of use to residential flats.

6 RISK ASSESSMENT

6.1 Legislative Context

6.1.1 Part IIA

Part IIA of the Environmental Protection Act 1990, which came into force in England in April 2000, introduced a new statutory regime for the identification and remediation of contaminated land in the United Kingdom.

The legislation considers risks from contaminated land to human beings, controlled waters (surface and ground water), protected ecological systems and property. Under the legislation "contaminated land" is defined as:

"Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that: -

(a) Significant harm is being caused or there is significant possibility of such harm being caused: or

(b) Pollution of controlled waters is being caused, or is likely to be, caused."

In order for land to be considered contaminated, there must be a contaminant, a receptor and a pathway (via which the contaminant can reach the receptor) present at the site. When these three components are identified at a site, a *pollutant linkage* is said to exist.

Pollutant Linkage = Contaminant → Pathway → Receptor

In order for a local authority to determine that a site is contaminated land, it must be satisfied that the pollutant linkage is a *significant pollutant linkage* and that the land in question is causing, or that there is a significant possibility that it will cause significant harm (SPOSH) to humans, habitats, buildings or livestock and crops if remedial work is not carried out.

6.1.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the government's policy on dealing with land contamination through the planning process. It states that planning policies and decisions should ensure that:

-  the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;
-  after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

- adequate site investigation information, prepared by a competent person, is presented.

6.1.3 Environmental Damage Regulations

The Environmental Damage (Protections and Remediation) Regulations 2015 transpose the provisions of the EU Environmental Liability Directive into law in England and Wales.

The Regulations require action in response to the most significant cases of environmental damage. They cover specific types of:

- damage to species and habitats;
- damage to water; or
- risks to human health from contamination of land.

The Regulations apply to both imminent threats and actual cases of damage. Where these arise, those responsible must take immediate action to prevent damage occurring or remediate damage where it does occur.

The Regulations are based on the polluter pays principle 'requiring those responsible to meet the cost of preventive and remedial measures.

6.2 Objectives

This Desk Study has been written so as to provide an initial overview of the nature and extent of contamination hazards that may exist at the site. It has been undertaken in accordance with the specifications outlined in the British Standard BS 10175:2011+A2:2017 Code of Practice for the Investigation of potentially contaminated sites and the Environment Agency Document, CLR11 Model Procedures for the Management of Land Contamination.

The main objectives of the study were to:

- Enable a conceptual site risk model to be constructed;
- Provide sufficient information for a preliminary qualitative risk assessment to be undertaken;
- Inform the need for and scope of any intrusive investigations that may be required.

6.3 Summary of Research Undertaken

Details of information sources researched in order to compile this desk study are given below.

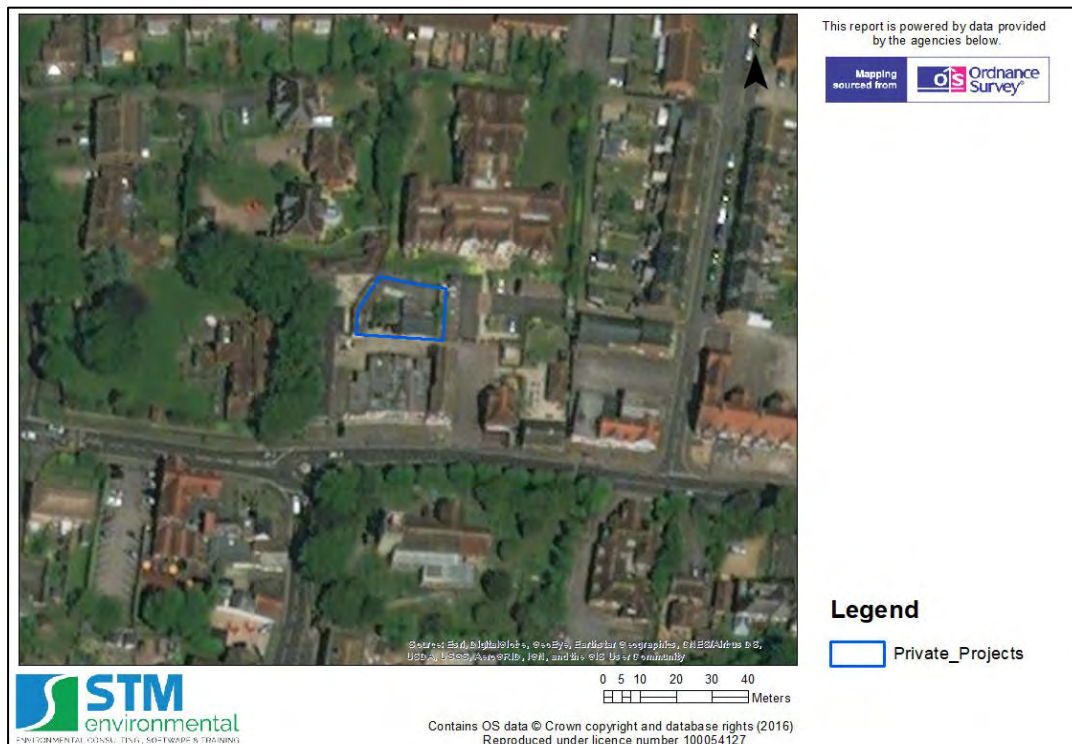
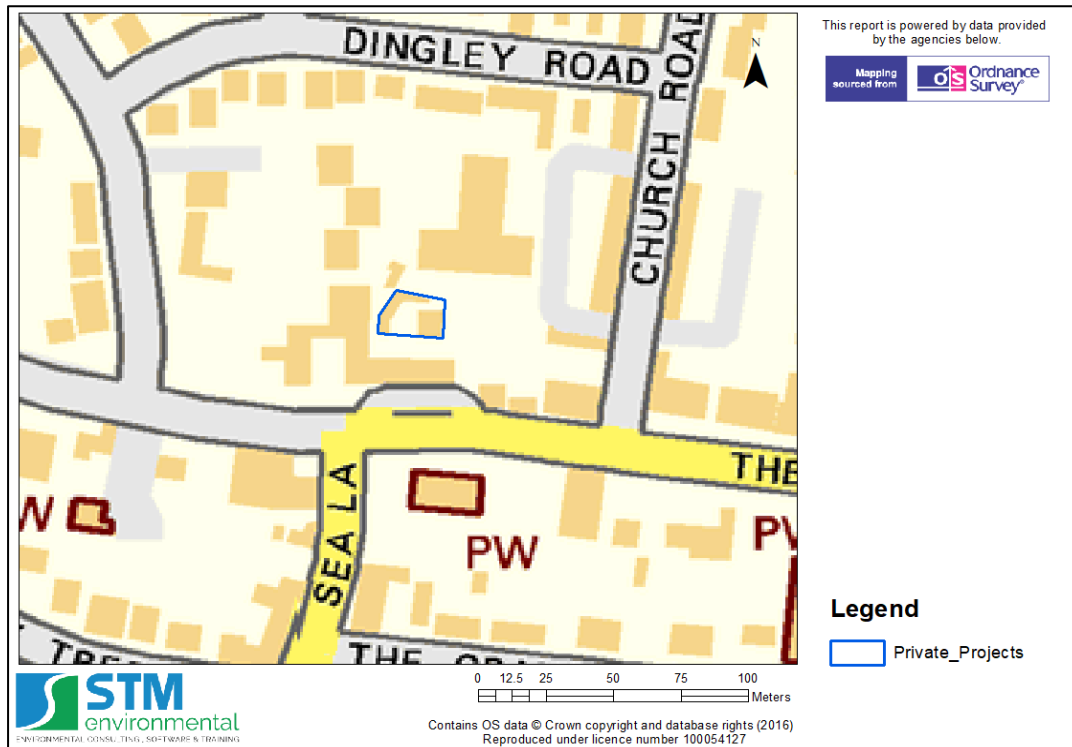
- Environment Agency Open Data (GIS)
- English Nature Open Data (GIS)
- English Heritage Open Data (GIS)
- British Geological Survey GeoIndex Web Map Service
- Coal Authority Open Data and Web Map Service.
- Historical Ordnance Survey Maps
- Local Authority Planning Application Portal
- Groundsure Enviro Insight Report & Historical Maps

7 SITE DESCRIPTION

7.1 Site Location and Size

The site is located at 66 The Street, Rustington, Littlehampton, BN16 3NR at grid reference is 505042, 102343. The site has an area of approximately 0.04 ha.

The site lies within the jurisdiction of Arun District Council in terms of the planning process.



7.2 Site Current Use

The site is currently under light industrial use.

7.3 Surrounding Land Uses

A description of current land uses surrounding the boundaries of the site is given below in Table 1 below.

Table 1: Summary of surrounding land uses

Boundary	Land Use Description
Northern	Residential Dwellings
Eastern	Car Park
Southern	Commercial High Street
Western	Commercial/ Residential Dwellings

7.4 Proposed Development

The development proposal is for the change of use to residential flats. It is understood that there are no proposals to include soft landscaping in the development.

The proposed development plans are contained in [Appendix 1](#).

8 SITE HISTORY

8.1 Analysis of Historical Ordnance Survey Mapping

Historical maps published by the Ordnance Survey dating back to the late 1800's were reviewed in order to ascertain any previous industrial use at the site. The Groundsure Historical Maps are presented in [Appendix 2](#). A summary of the historic map analysis is provided in Table 2.

Table 2: Summary of historical land use identified from historical maps

Map Year & Scale	POTENTIALLY CONTAMINATIVE LAND USES	
	On Site	Off Site
1876 1:10,560	The site appears to be developed, however, it is unclear.	The immediate surrounding area is developed with open undeveloped land further than this. Grave Yard 37m S.
1878 1:2,500	The site comprises 3no. unspecified buildings.	No significant changes.
1896 1:10,560	No significant changes.	No significant changes.

Table 2: Summary of historical land use identified from historical maps

Map Year & Scale	POTENTIALLY CONTAMINATIVE LAND USES	
	On Site	Off Site
1898 1:2,500	No significant changes.	No significant changes.
1910 1:10,560	No significant changes.	Residential development to the E.
1911-12 1:2,500	No significant changes.	No significant changes.
1931-32 1:2,500 1:10,560	No significant changes.	Further development in all directions.
1938-43 1:2,500 1:10,560	1no. unspecified building has been demolished and 1no. unspecified building has been partially demolished.	Sussex Nurseries 32m N.
1957 1:10,560	No significant changes.	No significant changes.
1958 1:2,500	1no. building on the site has been extended and labelled as no. 66. The site has also been labelled as a Works.	Builder's Yard adjacent N and Garage 65m SW.
1959 1:1,250	No significant changes.	No significant changes.
1965-70 1:1,250	Smaller building labelled as a Works while the other building labelled as a Printing Works.	Electrical Substation 32m SE.
1974-79 1:1,250 1:10,000	No significant changes.	Sussex Nurseries 32m N redeveloped as residential dwellings.
1978-83 1:1,250 1:10,000	Partial mapping only.	No significant changes.
1989-94 1:1,250 1:10,000	1no. unspecified building has been extended and now runs along the northern and western boundaries;	No significant changes.

Table 2: Summary of historical land use identified from historical maps

Map Year & Scale	POTENTIALLY CONTAMINATIVE LAND USES	
	On Site	Off Site
2002 1:10,000	No significant changes.	No significant changes.
2010 1:10,000	No significant changes.	No significant changes.
2014 1:10,000	No significant changes.	No significant changes.
Current Use	The site is currently under light industrial use.	The surrounding areas comprises a commercial high street with residential areas.

9 ENVIRONMENTAL CHARACTERISTICS

A variety of Environmental datasets provided by the Environment Agency, British Geological Society, English Heritage and English Nature and others were screened in order to assess the environmental sensitivity of the site. The Groundsure Environmental Screen Report is presented in [Appendix 3](#). The results are summarised below.

9.1 Geology

9.1.1 Published Geology

According to the BGS Geoindex, the site is located on bedrock of Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated). The superficial deposits are River Terrace Deposits (Undifferentiated) comprising sand, silt and clay.

9.1.2 Unpublished Geology

BGS borehole records for the immediate surrounding area were reviewed in order to obtain further information on the ground conditions beneath the site. No boreholes were identified within 100m of the site and therefore, no relevant information was identified.

9.2 Hydrogeology

The Environment Agency classifies the superficial deposits as a Secondary A Aquifer. The bedrock is classified as a Principal Aquifer. There are no groundwater Source Protection Zones onsite or within 250m of the site.

9.3 Water Abstractions

No Water Abstractions were identified within 500m of the site.

9.4 Hydrology

No surface water bodies were identified within 250m of the site.

9.5 Flood Risk

The site is not located within a Flood Zone.

9.6 Topography

According to [Elevation Finder](#), the general site level is at 8.0 mAOD.

9.7 Designated Ecological Protection Zones

No ecological protection zones (e.g. SSSI, Ramsar, SPA or SAC) were identified onsite or within 250m of the proposed development.

9.8 Designated Protected Buildings and Monuments

No listed buildings or scheduled ancient monuments were identified onsite or within 50m of the proposed development.

9.9 IPC Processes

No IPC processes were identified onsite or within 50m of the site.

9.10 Dangerous Substance and Radioactive Substance Registrations

No List 1 or List 2 Dangerous Substance Registrations were identified onsite or within 50m of the site. No Radioactive Substance Registrations were identified onsite or within 50m of the site.

9.11 Pollution Incidents

No pollution incidents were identified onsite or within 50m of the site.

9.12 Waste Disposal Activities (Landfills)

A search of Environment Agency Historic and Authorised landfill datasets did not identify any evidence of historic authorised or non-authorised landfills on or within 250m of the site.

9.13 Coal Mining

A search of the BGS Areas potentially affected by coal mining dataset indicates that the site is not located in an area potentially affected by coal mining.

9.14 Radon

A search of the BGS Radon dataset indicates that the property lies in an area with between 1 – 3% chance of being affected by naturally occurring radon gas. Therefore, it is possible that it is in area affected by Radon. However, no radon protective measures are considered necessary for the site in accordance with publication BR211 by the Building Research Establishment.

9.15 Asbestos within Buildings

It is possible that Asbestos may exist within the buildings on the site and that an Asbestos survey may be required in line with The Control of Asbestos Regulations 2012. This is outside the scope of this assessment.

10 RELEVANT PLANNING HISTORY

Arun District Council's online planning portal was searched in an effort to identify any relevant planning applications.

10.1 Planning Applications for the Site

Table 3 below provides a summary of the previously submitted planning applications identified for the site.

Table 3: Summary of planning applications at the site

Application Reference	Description of Proposal	Status
R/298/87	Marley enterprise building for printing workshop - partial demolition of existing buildings and parking at front	Approve Conditionally

11 SITE WALKOVER

A site walkover was not undertaken as part of the initial scope of works. Photographs of the site which have been provided by the client are presented in [Appendix 4](#).

12 PRELIMINARY CONCEPTUAL RISK MODEL (CRM)

A conceptual site risk model (CRM) aims to summarise all the potential pollutant linkages or risk that may be associated with a site. It considers the potential pollution sources, receptors and pathways by which receptors can be impacted.

12.1 Potential Sources

Potentially contaminative land uses (PCLUs) of concern were identified based on their proximity to the site and whether they had the potential to generate significant quantities of ground gases, vapours and/or mobile volatile contamination (i.e. high pollution migration potential).

Any PCLUs within a 50m radius of the site as well as any PCLUs with high pollution migration potential within 250m of the site were considered to be of concern and were included within the assessment.

A summary is provided in Table 4 below.

Table 4: Summary of potential contamination sources, period of operation and distance from site.

Site Name	Industrial Profile	Approx. Year Use Established	Approx. Year Use Ended	Direction	Approx. Distance from Site (m)
Works	Unspecified: Factory or Works	c. 1958	Unknown	Onsite	0
Printing Works	Printing and Bookbinding Works	c. 1965	Unknown	Onsite	0
Builder's Yard	Builder's Yard	c. 1958	Unknown	N	Adjacent
Sussex Nurseries	Plant Nursery	c. 1938	c. 1974	N	32
Grave Yard	Cemetery	c. 1876	Current (2019)	S	37

Typical contaminants associated with the above PCLUs are:

-  Acids & Alkalis
-  Asbestos
-  Chlorinated & Non-Chlorinated Solvents
-  Fuels & Fuel Oils
-  Heavy Metals
-  Landfill Gases: Methane & Carbon Dioxide
-  Organic & Inorganic Compounds
-  Pesticides
-  Polychlorinated Biphenyls
-  Polycyclic Aromatic Hydrocarbons
-  Total Petroleum Hydrocarbons

Please note, this list is not exhaustive of all contaminants that may be present on or off site.

12.2 Potential Receptors

The potential receptors include human, water, ecological and infrastructure receptors.

12.2.1 Potential Human Health receptors

Potential human health receptors include construction workers and future occupants or users of the site and the proposed development.

12.2.2 Potential Groundwater Receptors

Potential groundwater receptors include the Principal and Secondary A Aquifers.

12.2.3 Potential Surface Water Receptors

There are no potential surface water receptors in the vicinity of the site.

12.2.4 Potential Ecological Receptors

There are no potential ecological receptors in the vicinity of the site.

12.2.5 Potential Property Receptors

Potential property receptors include the proposed development as well as neighbouring properties and associated services.

12.3 Potential Pathways

12.3.1 Potential Pathways for Human Receptors

The main pathways via which on and off-site human receptors are likely to come into contact with, or be affected by any contamination present on the site can be summarised as follows:

-  Dermal contact with contaminated soil (i.e. absorption through the skin) – through garden activities such as children playing, gardening etc.
-  Ingestion of contaminated soil (either directly or via soil adhering to vegetables grown on the site)
-  Inhalation of contaminated soil, fugitive dust and vapours.
-  Explosion of landfill gases leading to death/injury

12.3.2 Potential Pathways for Groundwater Receptors

The principal means by which contaminants can reach the groundwater is by leaching (i.e. downward movement through the soil pores with percolating and infiltrating water).

12.3.3 Potential Pathways for Surface Water Receptors

Routes by which contaminants from the site could reach surface water include via overland run-off, drainage and groundwater entering nearby rivers as base flow.

12.3.4 Potential Pathways for Ecological Receptors

The exposure pathways for terrestrial ecological receptors will be similar to those for humans. Pathways for aquatic receptors are via uptake of contaminated sediments and water.

12.3.5 Potential Pathways for Property Receptors

Pathways by which property receptors are exposed to potential contaminants include ground gas and vapour migration through the unsaturated zone and absorption of water containing dissolved contaminants (i.e. as in the case of sulphate attack).

12.4 Potential Pollutant Linkages

The Potential Pollutant Linkages (PPLs) were identified as part of the CRM. These were concerned with the following:

-  Risk of direct contact with and inhalation of contaminants to on-site human health receptors (PPL1a)
-  Risk of injury/death of on-site human health receptors as a result of explosion due to accumulation of ground gas from on and off-site sources in confined spaces within on-site dwellings. (PPL1b)
-  Risk of direct contact with and inhalation of contaminants to off-site human health receptors as a result of on-site contaminants migrating off-site (PPL2a)
-  Risk of injury/death to off-site human health receptors as a result of explosion due to migration of on-site ground gas and subsequent accumulation in confined spaces in off-site buildings. (PPL2b)

-  Risk of derogation of groundwater quality resulting from the migration of on-site contaminants into the underlying aquifer (PPL3)
-  Risk of derogation of surface water quality resulting from the migration and entry of on-site contaminants into the surface water receptor (PPL4)
-  Risk of damage to buildings and services from on-site contaminants (PPL5a)
-  Risk of damage to property as a result of explosion due to accumulation of ground gas from on and off-site sources in confined spaces within buildings (PPL5b).

13 QUALITATIVE RISK ASSESSMENT

For land to be considered 'contaminated land' under Part IIA, the potential contamination source must be causing or have the significant possibility of causing harm to designated receptors. It is therefore necessary to focus on pollutant linkages that have the potential to be significant (i.e. those that are most likely to lead to a determination).

The identified PPLs were therefore individually qualitatively assessed using a basic risk assessment methodology which considers "Likelihood" and "Severity" to assess the magnitude of the potential risk. The methodology is summarised in [Appendix 5](#).

Table 5 below summarises the conceptual site risk model (CRM) including the identified PPLs and the results of the qualitative risk assessment.

Table 5: Conceptual Site Risk Model - Potential Sources, Pathways and Receptors identified on the site.

Source/ Potential Contaminants	Potential Contaminants Associated with Site Use as a Works and Printing Works, Adjacent Uses as a Builder’s Yard and Offsite Land Use as a Nursery and Grave Yard : i.e. Acids & Alkalis, Asbestos, Chlorinated & Non-Chlorinated Solvents, Fuels & Fuel Oils, Heavy Metals, Landfill Gases: Methane & Carbon Dioxide, Organic & Inorganic Compounds, Pesticides, Polychlorinated Biphenyls, Polycyclic Aromatic Hydrocarbons and Total Petroleum Hydrocarbons.							
	On and Off-Site Contaminants		On Site Contaminants		On Site Contaminants		On and Off-Site Contaminants	
Potential Pathways	• Ingestion of soils, garden vegetables and dust • Ingestion of contaminated drinking water • Dermal absorption • Inhalation of dusts and vapours indoors and outdoors • Migration of ground gases and vapours into properties				Leaching in the unsaturated zone and diffusion in the saturated zone	• Overland run-off • Drainage channels • Base flow	• Migration of ground gases and vapours through the unsaturated zone • Attack on water supply service pipes	
Potential Receptors	ON SITE HUMANS Future occupiers, visitors, construction workers		OFF SITE HUMANS Residents, visitors		GROUNDWATER Secondary A & Principal Aquifer	SURFACE WATER None	ON SITE PROPERTY Buildings and services	
Potential Hazards	• Adverse health effects • Injury/Death	Explosion/ Fire - Buildup of Methane/ VOCs in confined spaces	• Adverse health effects • Injury/ Death	Explosion/ Methane build up in confined spaces	Derogation of groundwater quality	• Derogation of surface water quality • Ecological impacts	Damage to property and services	Explosion/ Fire - Buildup of Methane/ VOCs in confined spaces
Plausible?	Yes	Yes	Yes	No	Yes	No	Yes	Yes
PPL ID	PPL1a	PPL1b	PPL2a	PPL2b	PPL3	PPL4	PPL5a	PPL5b
SEVERITY	Major (4)	Major (4)	Major (4)	Major (4)	Moderate (3)	Moderate (3)	Moderate (3)	Moderate (3)
LIKELIHOOD	Possible (3)	Possible (3)	Remote (2)	Remote (2)	Remote (2)	Improbable (1)	Possible (3)	Possible (3)
RISK	Moderate (12)	Moderate (12)	Low to Moderate (8)	Low to Moderate (8)	Low to Moderate (6)	Very Low (3)	Moderate (9)	Moderate (9)
POTENTIALLY SIGNIFICANT?	YES	YES	YES	YES	YES	NO	YES	YES

13.1 Assessment of Potential Significance of Potential Pollutant Linkages

13.1.1 Potential Risks to On-Site Human Health

PPL1a was considered to have the potential to be significant. Due to the site's previous use as a Works and Printing Works and as the proposal is to introduce residential dwellings, it is possible that human health receptors (i.e. construction workers and future occupiers of the dwellings) could be exposed to any potential contamination during groundworks and after completion.

PPL1b was considered to have the potential to be significant as potential sources of explosive ground gases and/or vapours (i.e. Works & Printing Works) were identified on the site.

13.1.2 Potential Risks to Off-Site Human Health

PPL2a was considered to have the potential to be significant. If mobile contaminants (i.e. VOCs, petroleum hydrocarbons) are present in the sub-surface they could impact upon the residential properties that are located adjacent to the site.

PPL2b was considered to have the potential to be significant as potential sources of explosive ground gases and/or vapours (i.e. Works & Printing Works) were identified on the site.

13.1.3 Potential Risks to Groundwater Receptors

PPL3 was considered to have the potential to be significant as the underlying aquifers are classified as a Secondary A and Principal Aquifers.

13.1.4 Potential Risks to Surface Water Receptors

PPL4 was considered unlikely to have the potential to be significant as no surface water bodies were identified within 250m of the site.

13.1.5 Potential Risks to Property Receptors

PPL5a was considered to have the potential to be significant. If contaminated, the soil may contain aggressive chemicals (i.e. Sulphates) that can attack building materials and services.

PPL5b was considered to have the potential to be significant as potential sources of explosive ground gases and/or vapours (i.e. Works & Printing Works) were identified on the site.

14 CONCLUSIONS

This Phase 1 Desk Study was carried out to support an application for the change of use to residential flats.

A review of historical maps and planning records suggests that the site and immediate adjacent land have been subject to previous potentially contaminative land uses (PCLUs). On site PCLUs have included a Works and Printing Works while off site PCLUs include Builder's Yard, Nursery and Grave Yard.

A conceptual site risk model was developed and a qualitative risk assessment undertaken. The conclusions of the risk assessment are presented in Table 6 below.

Table 6: Summary of qualitative risk assessment

Potential Receptor	Pathway/Hazard	PSPPLs	Risk
On-Site Human Health	Direct Contact/ Inhalation Explosion	Yes	Moderate
Off-Site Human Health	Explosion	Yes	Low to Moderate
Groundwater	Leaching	Yes	Low to Moderate
Surface Water	-	No	Low
Property	Damage to Services/ Explosion	Yes	Moderate

15 RECOMMENDATIONS

Given that potentially significant potential pollutant linkages (PSPPLs) were identified, it is recommended that an intrusive site investigation is undertaken with the objective of determining the presence and extent of any soil contamination at the site.

15.1 Watching Brief and Discovery Strategy

It is recommended that a “watching brief” is kept at all times during the development. Should any unexpected contamination be encountered then the discovery strategy outlined below should be followed.

- Works should be halted if any suspicious ground conditions are identified by groundworkers;
- The Contractor should assess the need for any immediate health and safety or environmental management control measures. If control measures are considered to be required, they should be implemented;
- The Contractor should notify the Client's Environmental Consultant and the Local Planning Authority;
- The Environmental Consultant should attend the site to record the extent of 'contamination' and if necessary, to collect samples;
- If remedial action is considered necessary then the proposed works should be agreed with the Local Planning Authority prior to implementation;
- Once remediation is complete, the Environmental Consultant should collate evidence of work carried out for inclusion in a Remediation Verification Report which should be submitted to the Local Planning Authority.

15.2 Health and Safety

All site works should be carried out in accordance with Health and Safety Executive regulations and guidelines, the Contractor's Construction Health and Safety Plan and the Construction (Design and Management) Regulations 2015.

Precautions should be taken to minimise exposure of site workers during ground works through the implementation of site safety. Such precautions should include, but not be limited to:

- Provision of appropriate Personal Protective Equipment (PPE);
- Availability of site welfare;
- Good personal hygiene, washing and changing procedures;
- Daily safety briefings.

15.3 Services

The local Statutory Water Undertaker should be contacted in the event that new services are proposed as part of the redevelopment in order to determine their specification for the type of pipework which should be used on this site.

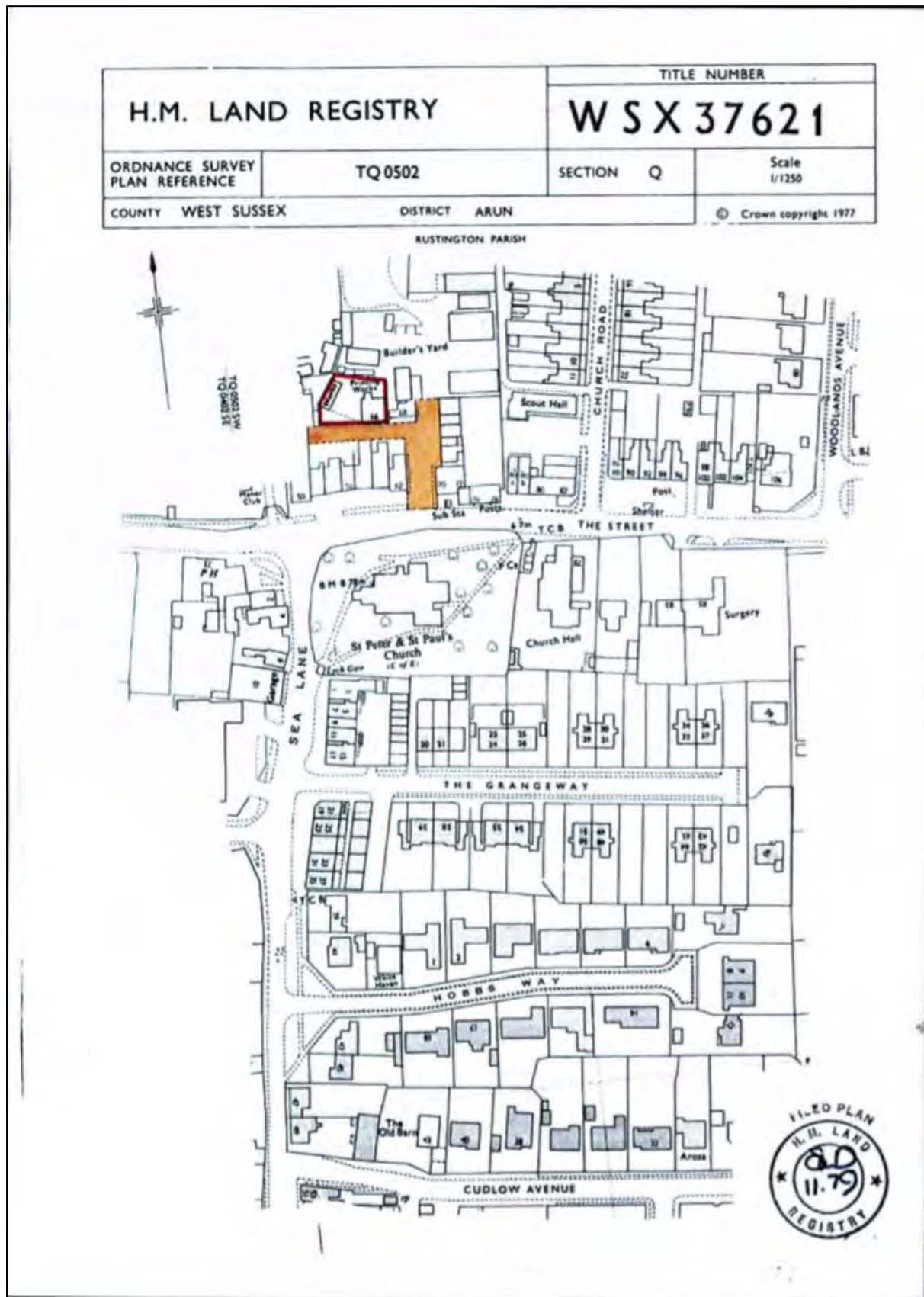
It is recommended that all services, and in particular potable water, should be supplied using materials that are resistant to attack and degradation to chemical attack.

Further information can be found within the published guidance for the '*Selection of Water Supply Pipes to be used in Brownfield Sites*', issued in January 2011 by the UK Water Industry Research.

16 INFORMATION GAPS AND UNCERTAINTIES

Assumptions have been made regarding the nature and scale of the activities that took place on the site and the types of potential contaminants that may have resulted. These assumptions will need to be reviewed along with the Conceptual Site Model should further information come to light.

17 APPENDIX 1 – PROPOSED DEVELOPMENT PLANS



- Site: 66 The Street, Rustington, Littlehampton, BN16 3NR
- Report Reference: PH1-2019-000050
- Date: June 19



1A Fairlight Road
Eastbourne
BN22 7NY

t: 01323 325354
t: 01932 506111
e: ashley@staac.co.uk
e: support@staac.co.uk

NOTES:

This drawing is to be read in conjunction with all relevant Architects and Engineers drawings
Only figured dimensions are to be used for construction
All dimensions are to be verified on site prior to work commencing

No.	Description	Date
Client: Chico & Mash		
Address: 66 The St, Rustington, Littlehampton BN16 3NR		

Project:

Drawing title: Existing Plans

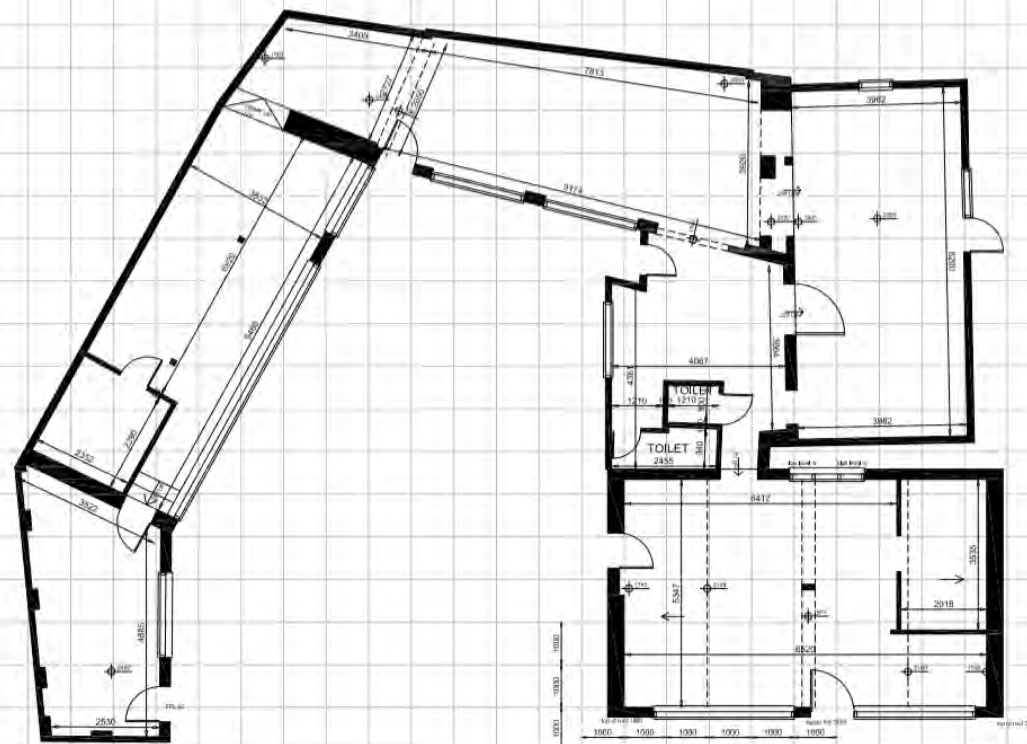
Project No 19048

Date 29-05-19

Drawn by IA

Drawing No E01

Scale 1:100@A3



GROUND FLOOR PLAN





1A Fairlight Road
Eastbourne
BN22 7NY

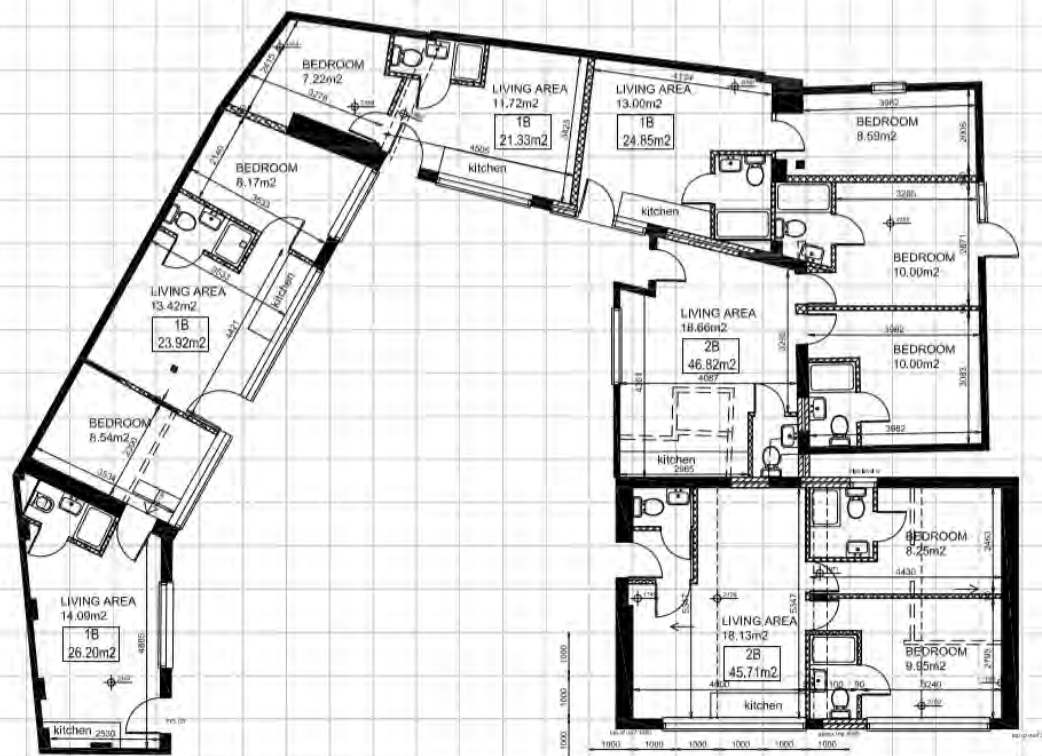
t: 01323 325354
t: 01932 506111
e: ashley@staac.co.uk
e: support@staac.co.uk

NOTES:

This drawing is to be read in conjunction with
all relevant Architects and Engineers drawings
Only figured dimensions are to be used for
construction
All dimensions are to be verified on site prior
to work commencing

No.	Description	Date
Client: Envision		
Address: 66 The St, Rustington, Littlehampton BN16 3NR		
Project: Proposed Conversion		

Drawing title:	Proposed Plans
Project No	19048
Date	10-06-19
Drawn by	IA
Drawing No	P01
Scale	1:100@A3



18 APPENDIX 2 – HISTORICAL MAPS

Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1878

Scale: 1:2,500

Printed at: 1:2,500



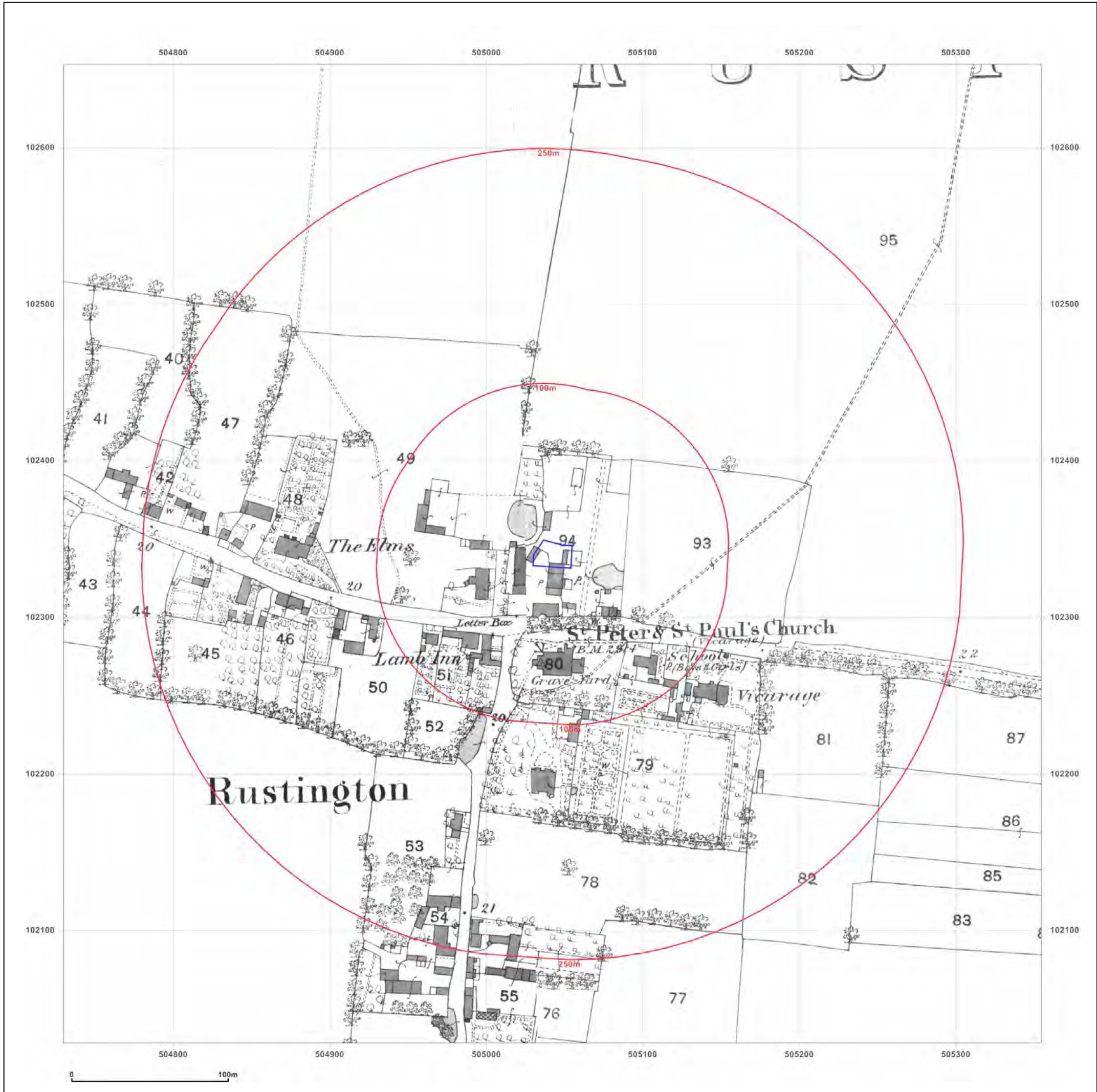
Surveyed 1878
Revised 1878
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 12 June 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
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Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

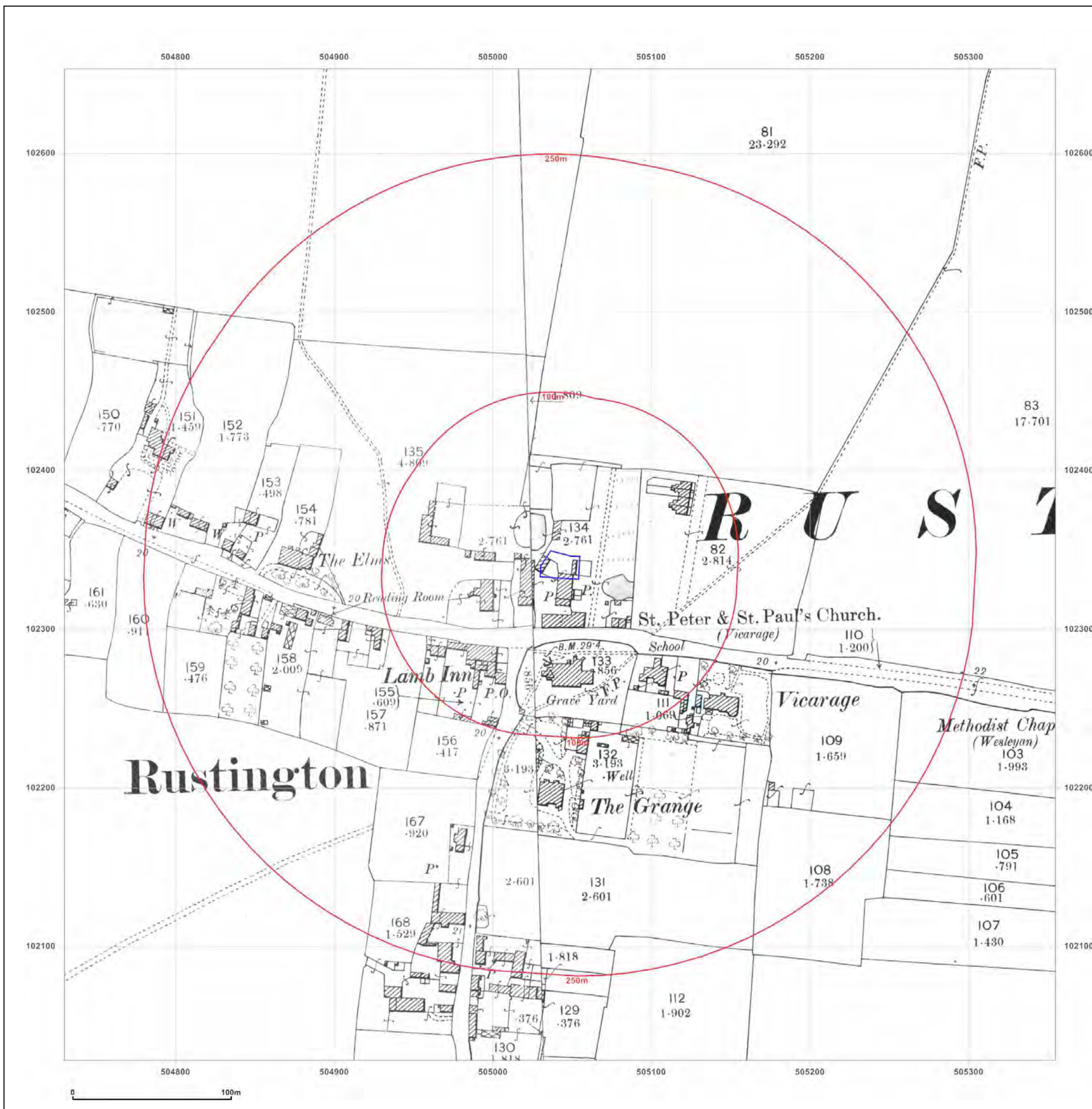


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505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1911-1912

Scale: 1:2,500

Printed at: 1:2.500



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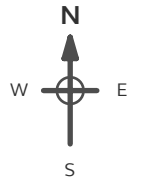
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Site Details:
505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series
Map date: 1932
Scale: 1:2,500
Printed at: 1:2,500



Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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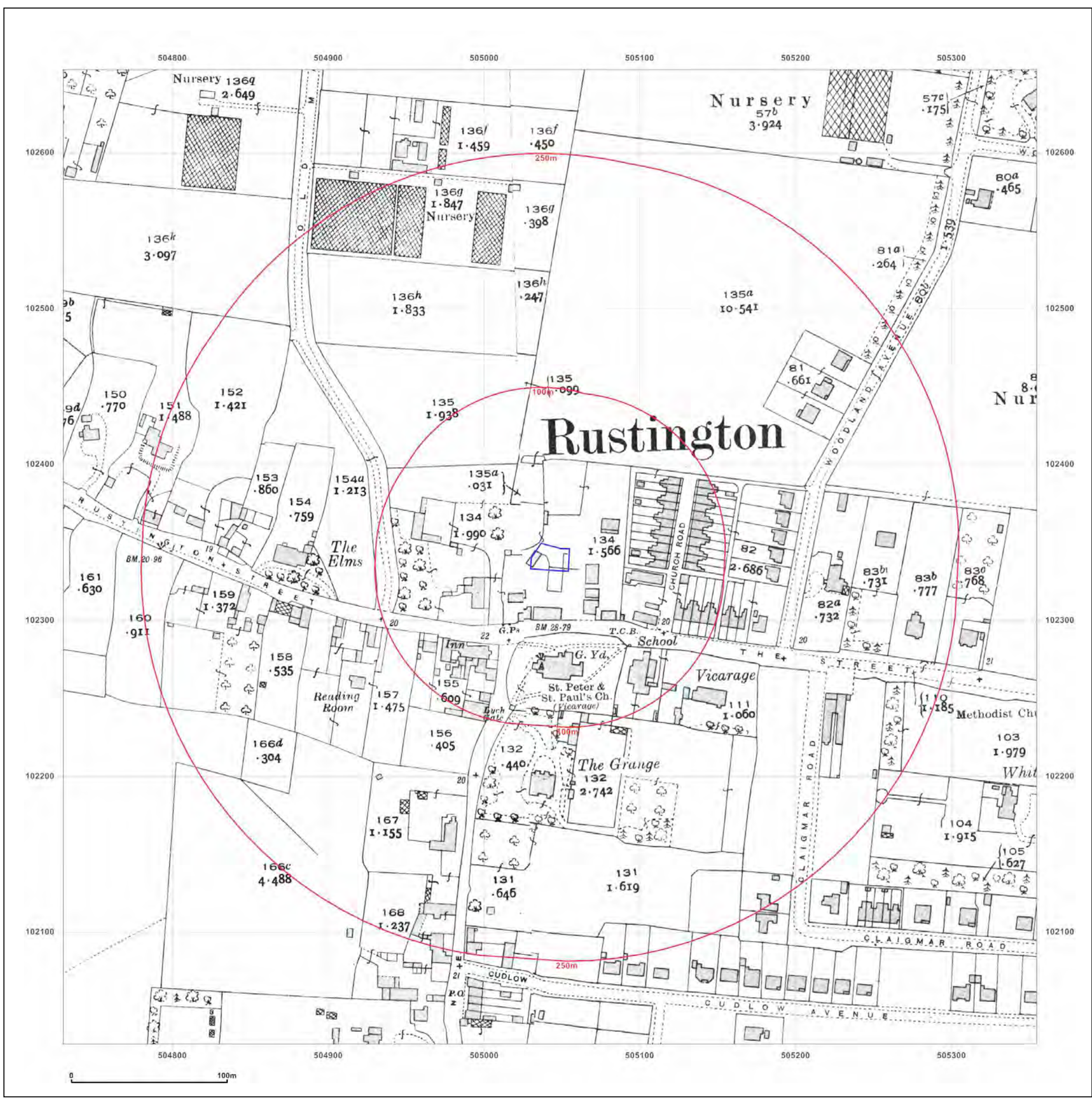


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102339.8270736415

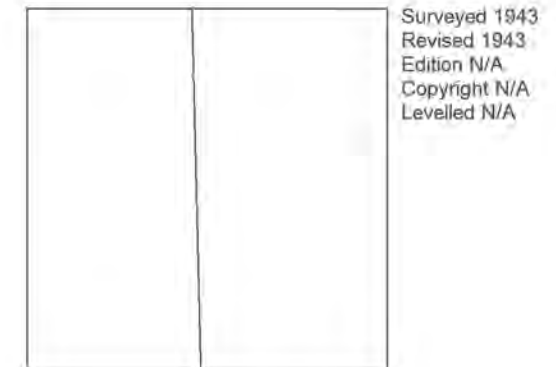
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Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1943

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1943
Revised 1943
Edition N/A
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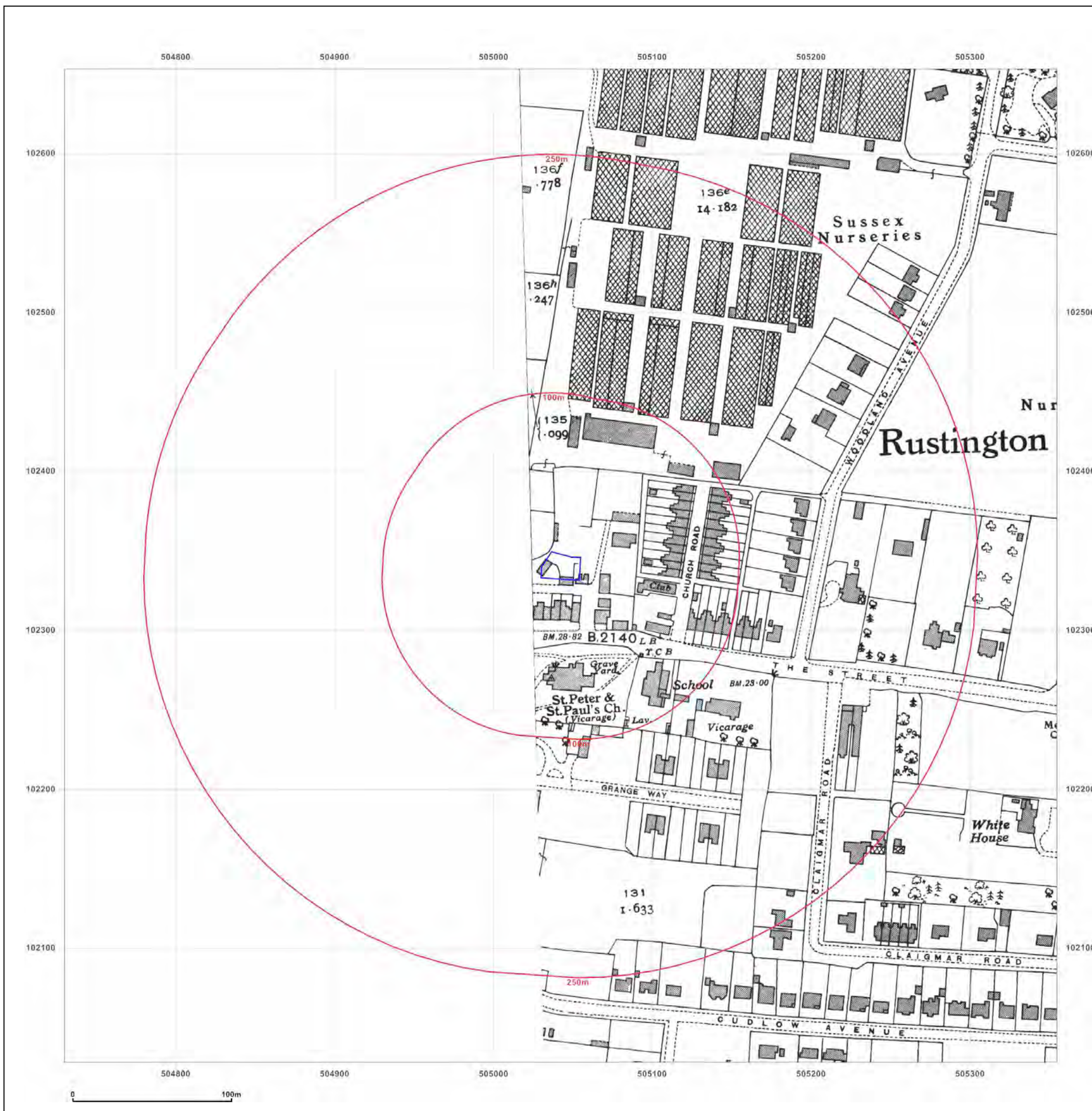


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Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1958

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
Revised 1958
Edition 1960
Copyright 1960
Levelled 1950

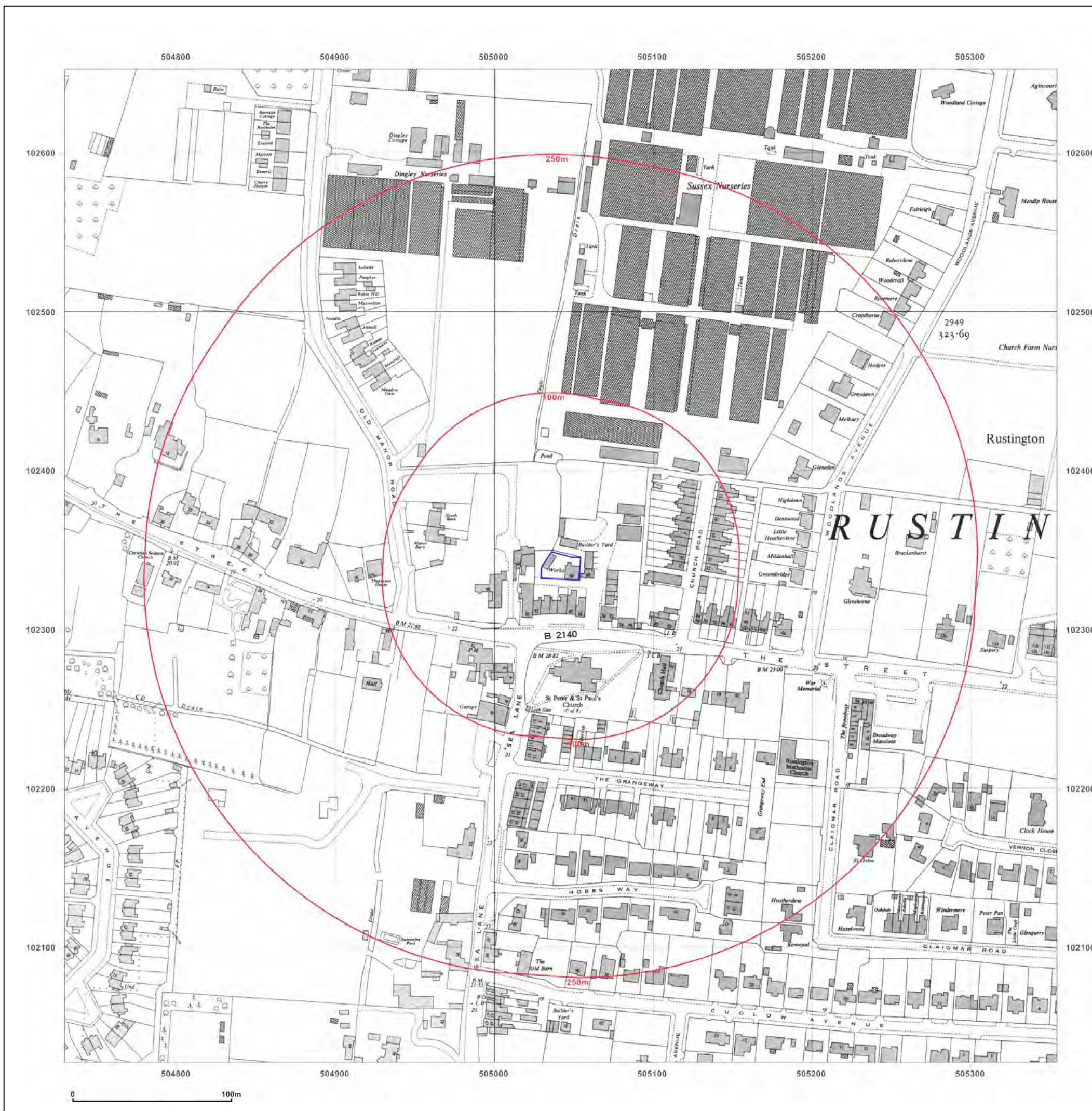


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Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1959

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1950

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1950

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Revised 1958
Edition N/A
Copyright 1959
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Surveyed 1958
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Copyright 1959
Levelled 1950

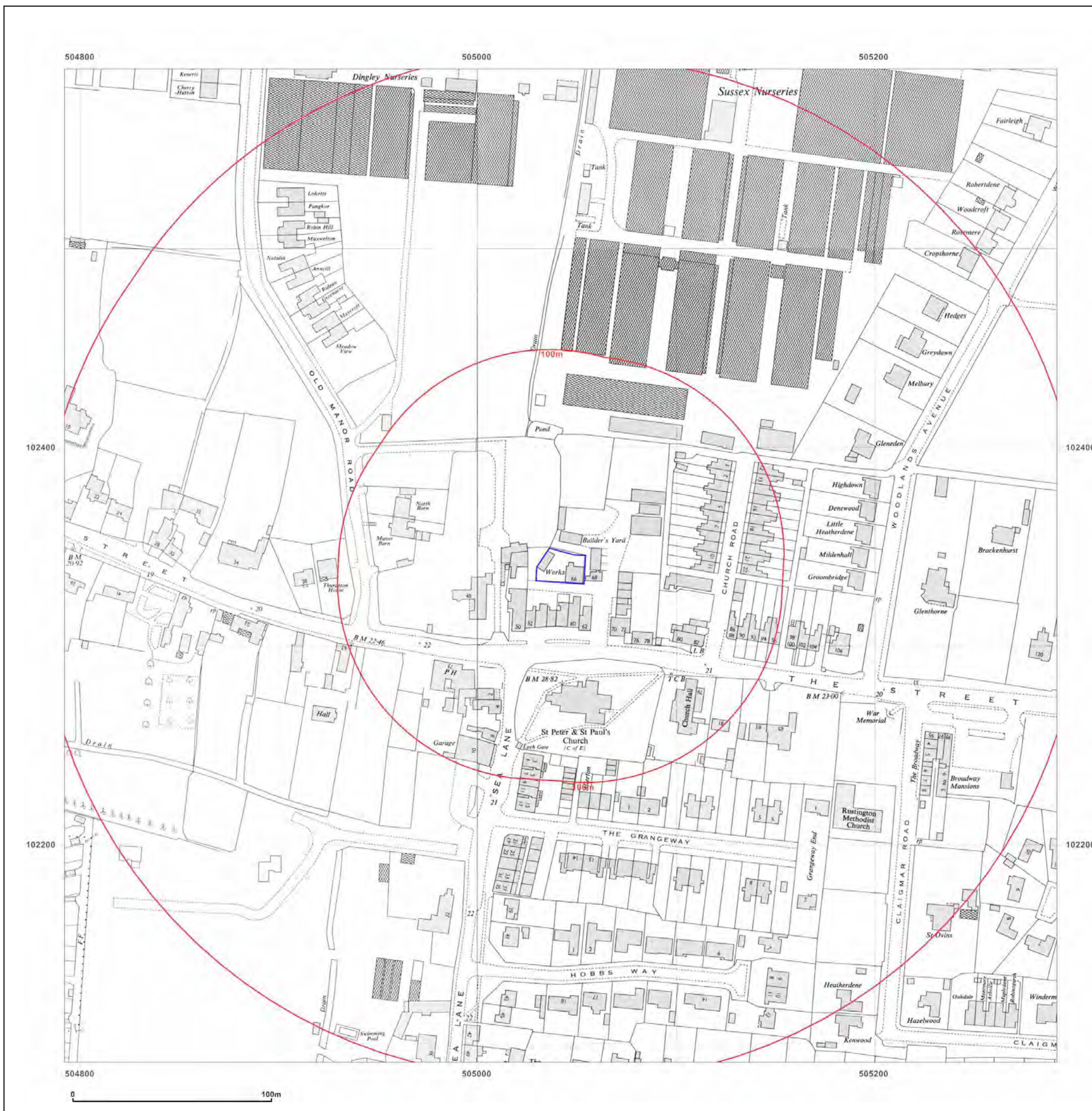


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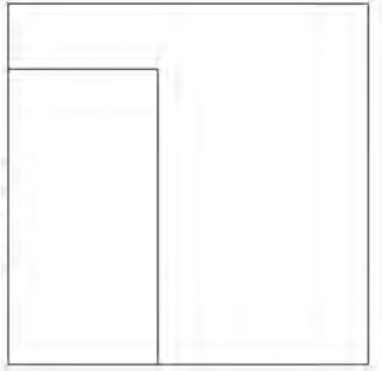
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102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid
Map date: 1966
Scale: 1:1,250
Printed at: 1:2,000



Surveyed 1958
Revised 1965
Edition N/A
Copyright 1966
Levelled 1959

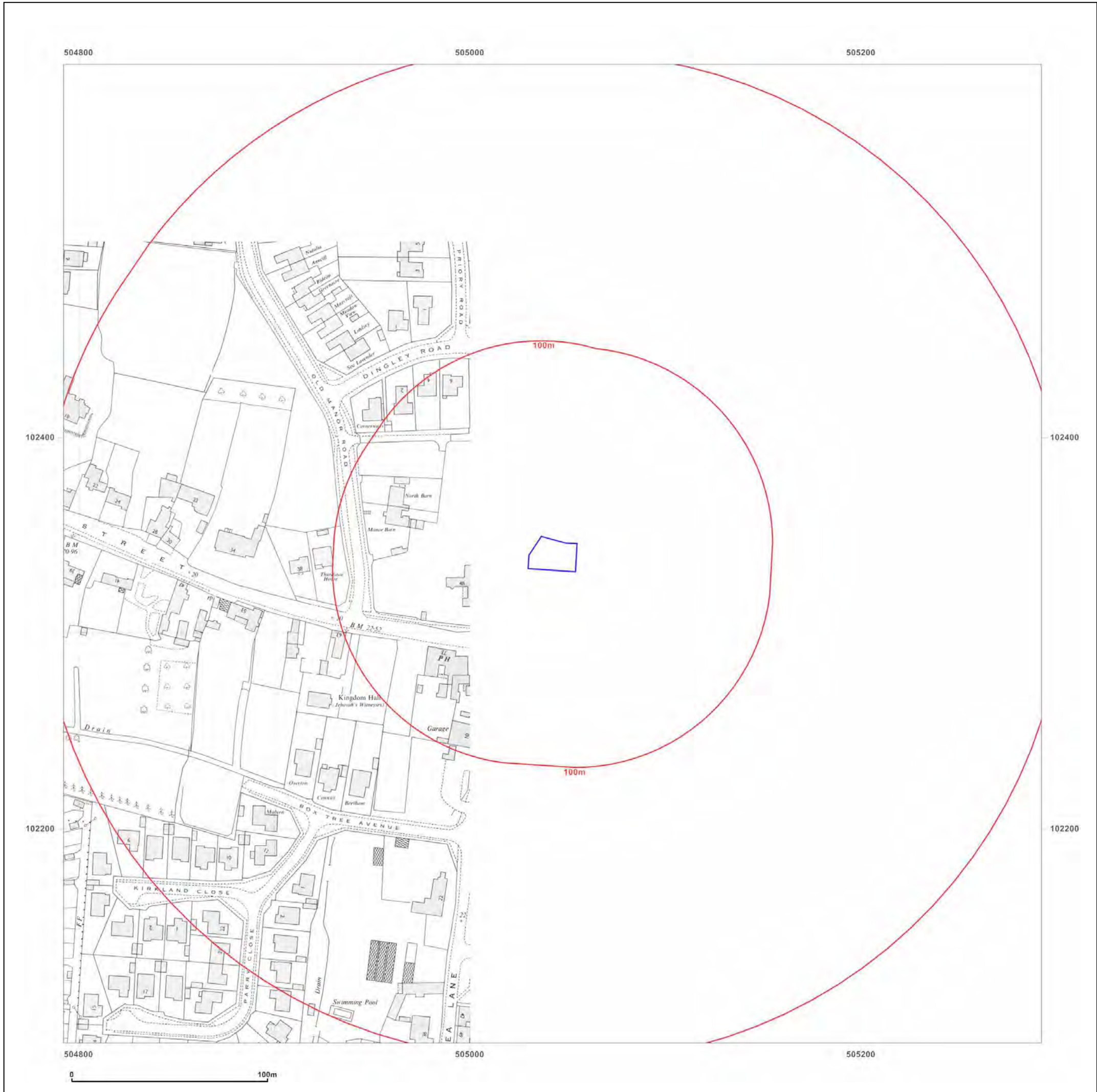


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Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1965-1970

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1969
Edition N/A
Copyright 1970
Levelled 1966

Surveyed 1958
Revised 1966
Edition N/A
Copyright 1967
Levelled 1959

Surveyed N/A
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Copyright N/A
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Surveyed 1958
Revised 1969
Edition N/A
Copyright 1970
Levelled 1966

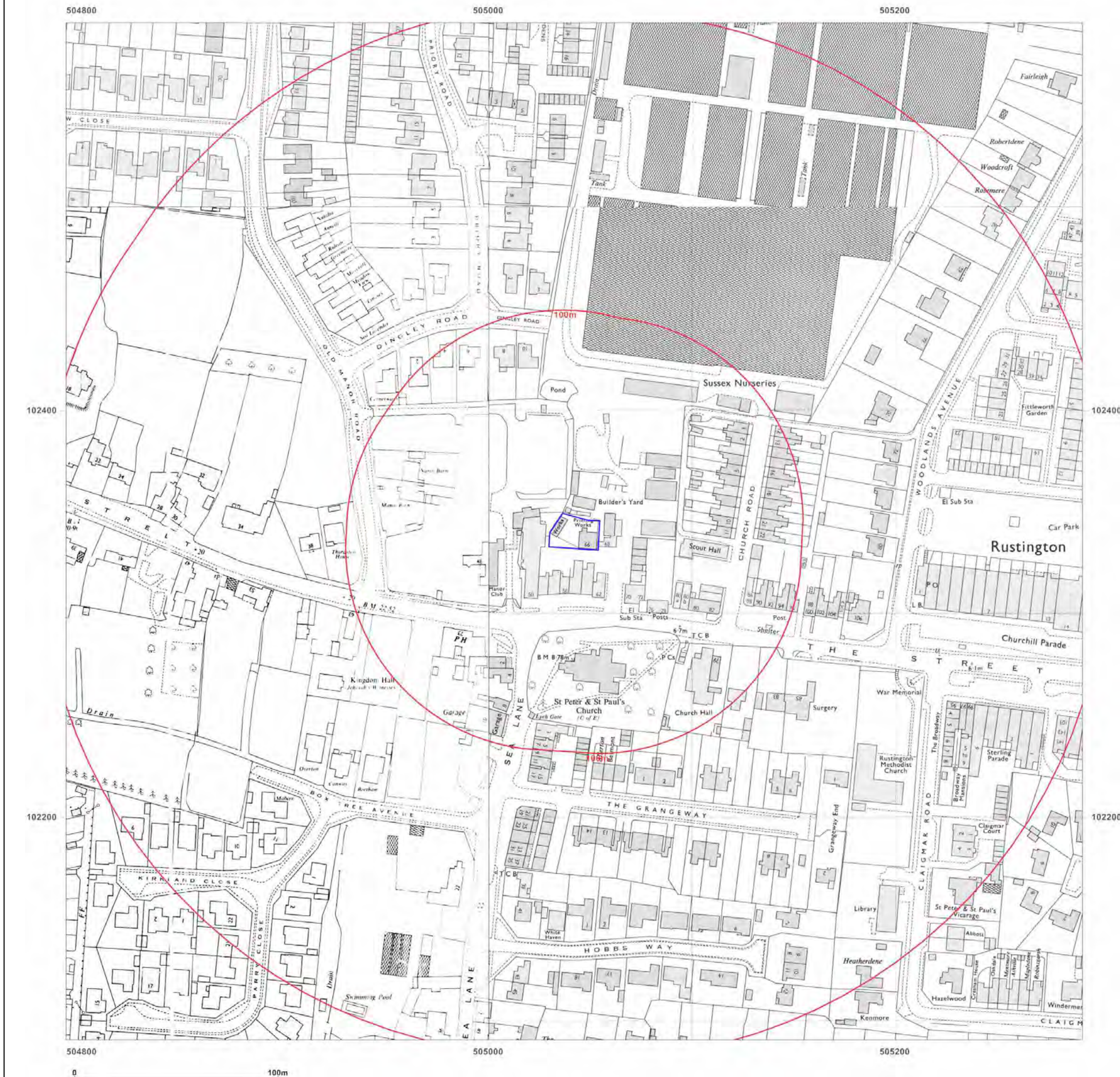


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Site Details:

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102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1977-1980

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1978
Edition N/A
Copyright 1980
Levelled 1966

Surveyed 1966
Revised 1980
Edition N/A
Copyright 1980
Levelled 1966

Surveyed N/A
Revised N/A
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Levelled N/A

Surveyed 1979
Revised 1979
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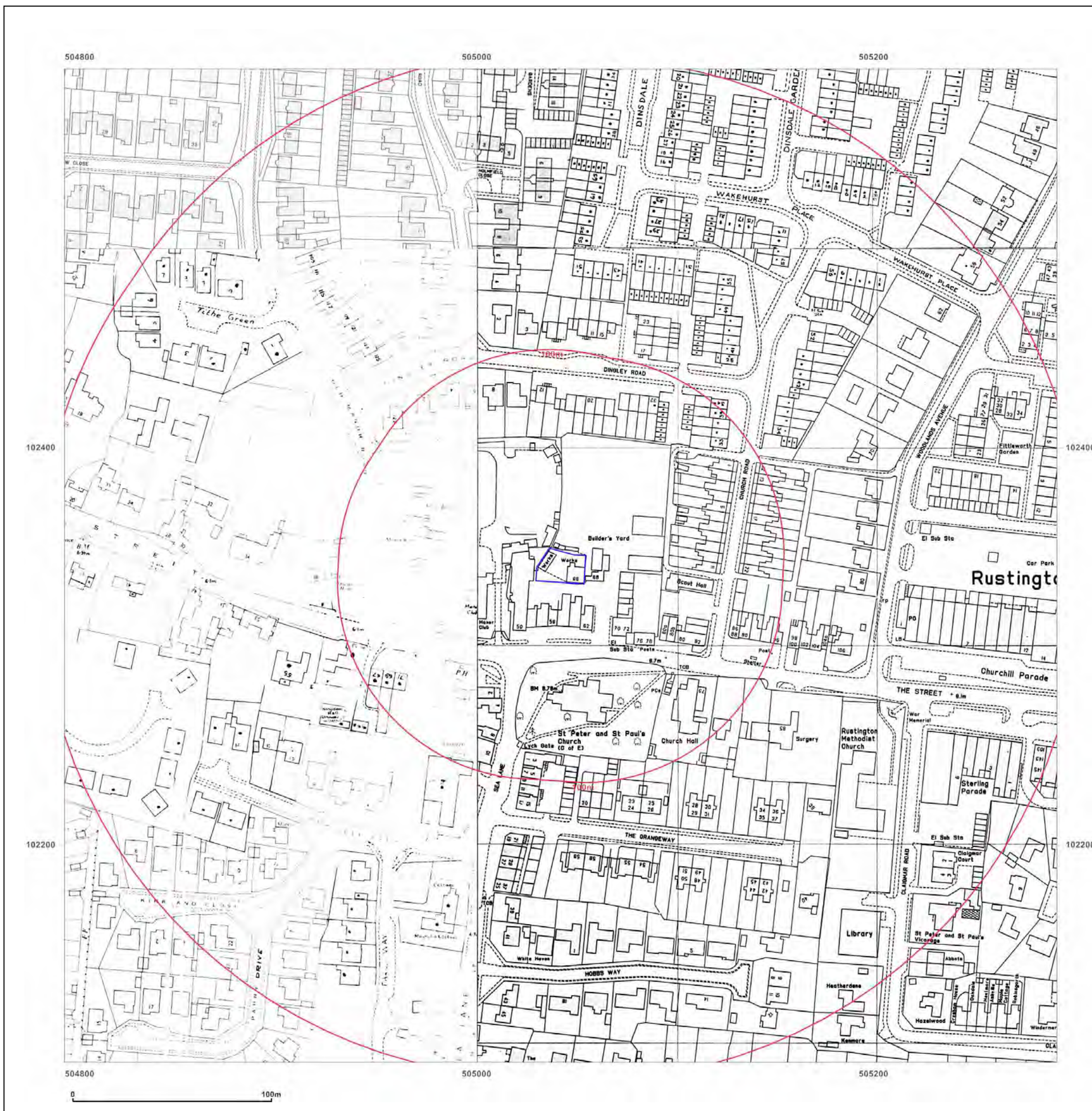


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Site Details:

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102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1978-1983

Scale: 1:1,250

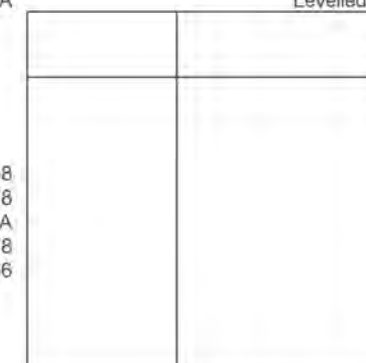
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Surveyed N/A
Revised N/A
Edition N/A
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Surveyed 1958
Revised 1981
Edition N/A
Copyright 1983
Levelled 1966

Surveyed 1958
Revised 1978
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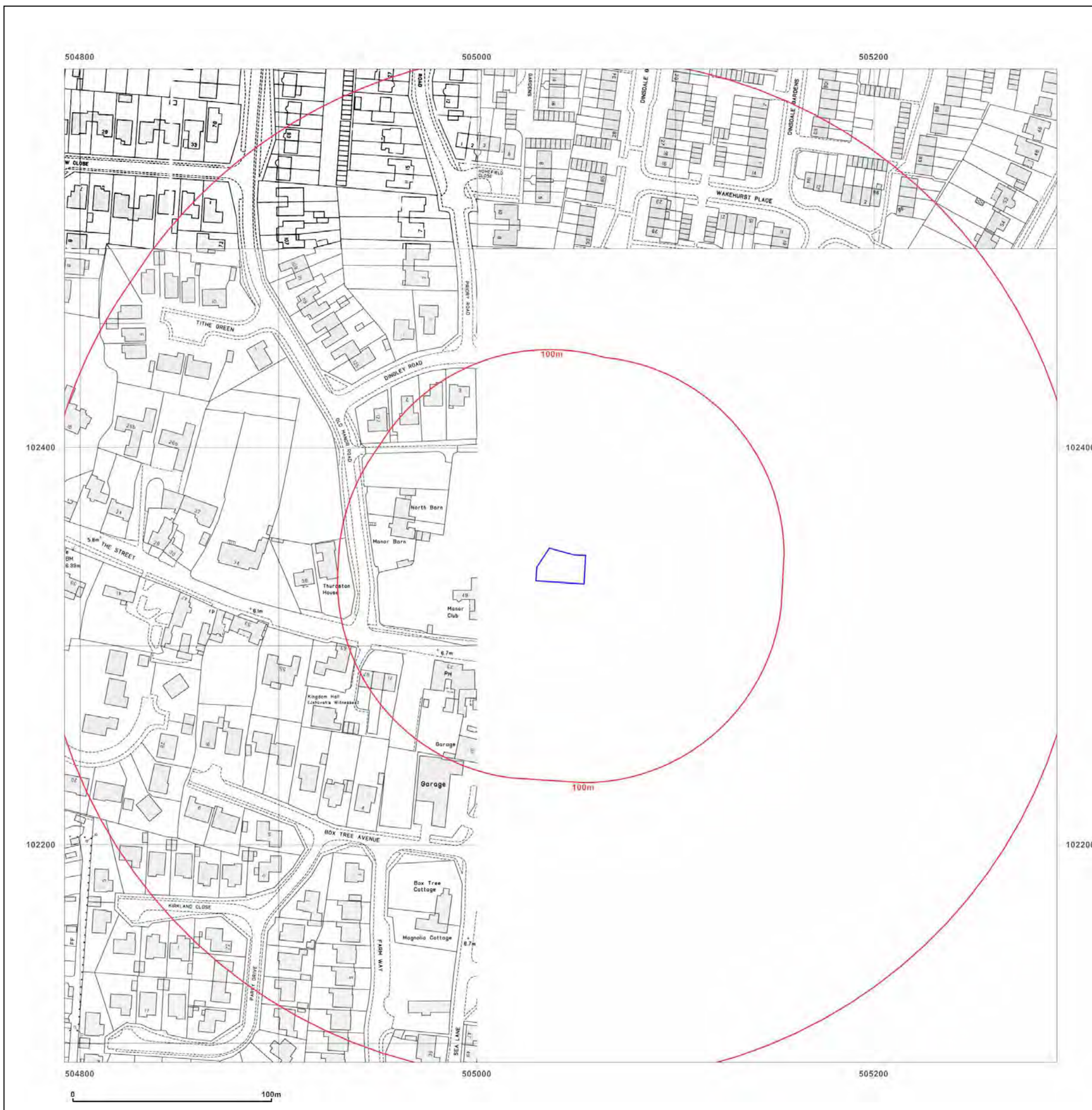


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Site Details:

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102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: National Grid

Map date: 1989-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1966
Revised 1989
Edition N/A
Copyright 1989
Levelled 1966

Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1966
Revised 1989
Edition N/A
Copyright 1989
Levelled 1966

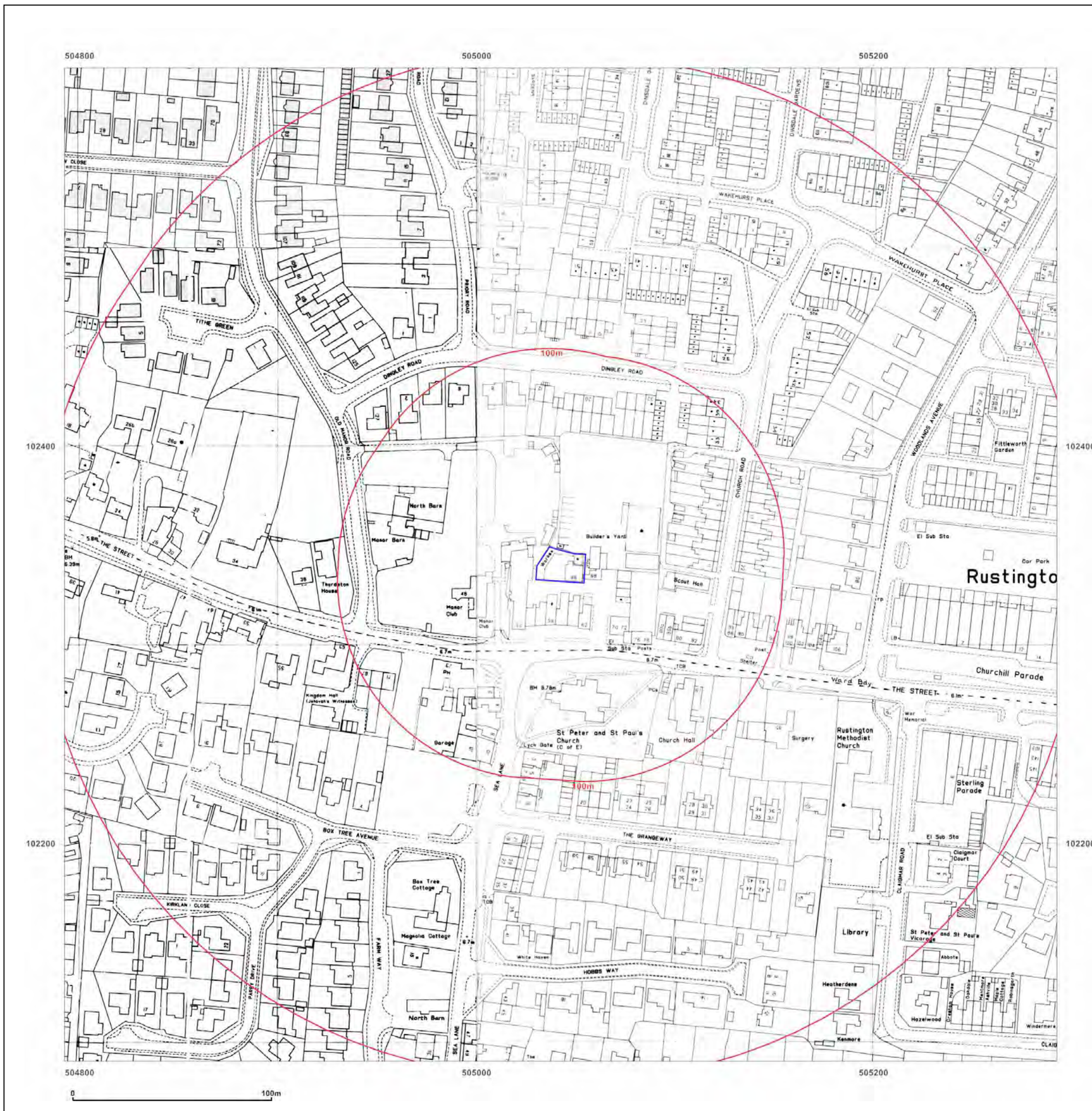


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Site Details:

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Map Name: National Grid

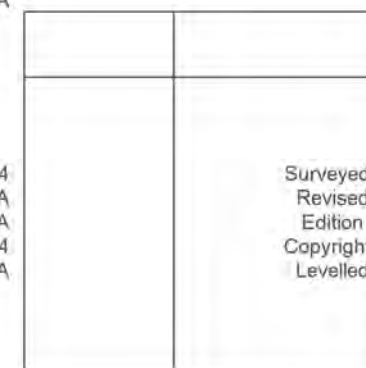
Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



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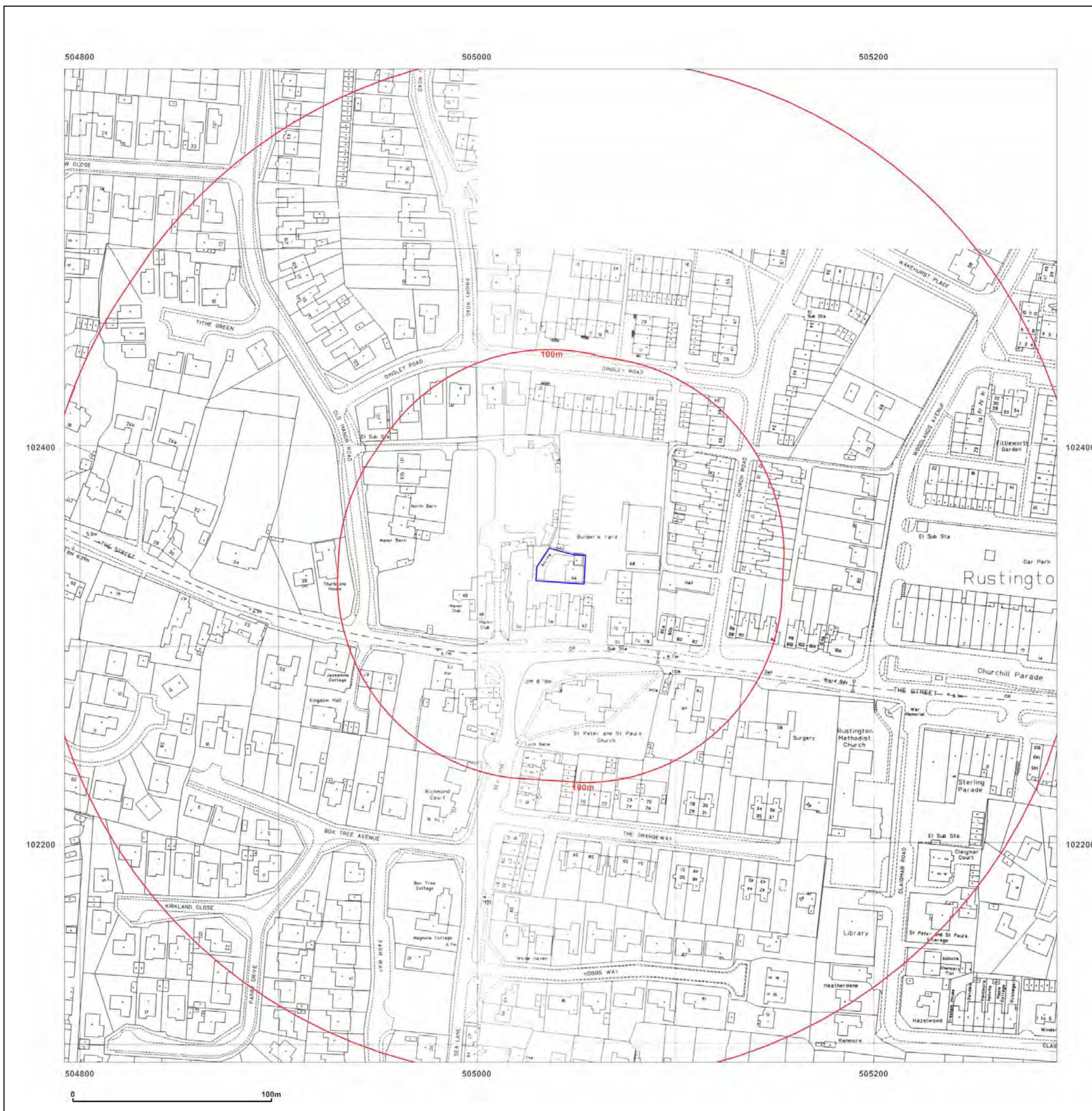


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505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1876

Scale: 1:10,560

Printed at: 1:10,560



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Edition N/A
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Site Details:

505042.6107691341,
102339.8270736415

Client Ref: PH1-2019-000050
Report Ref: GS-6094551
Grid Ref: 505042, 102341

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1876
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
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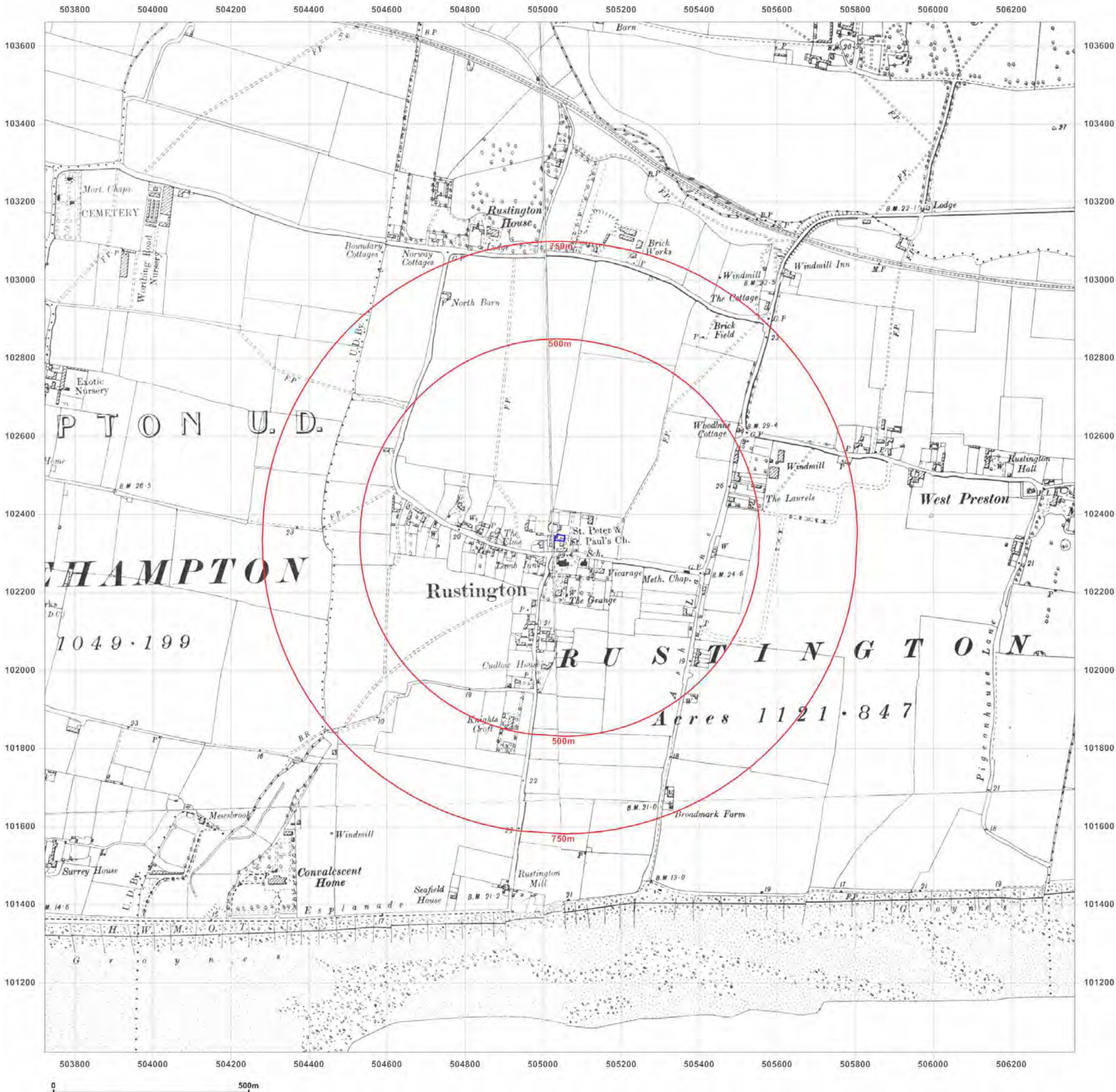


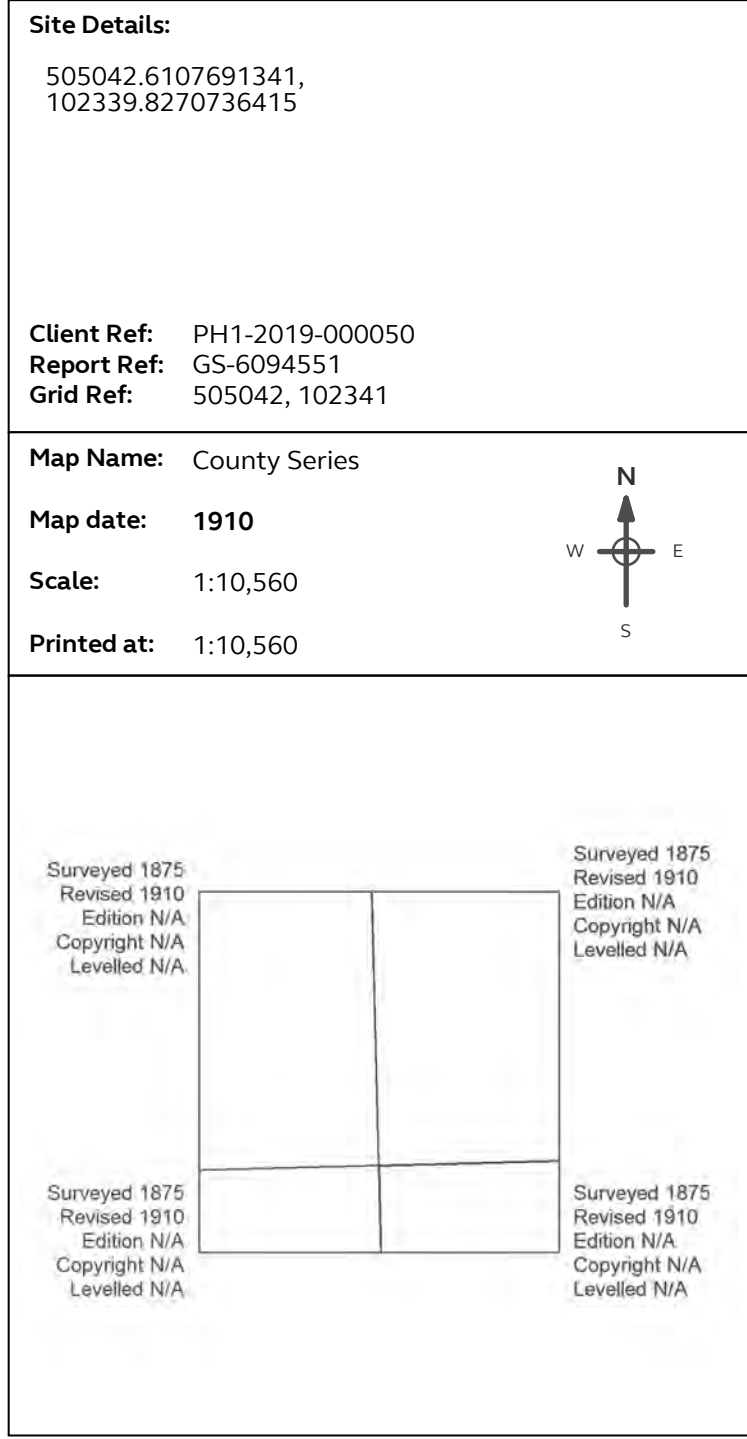
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