



PHASE I SITE APPRAISAL 1 DARWIN CLOSE, READING for THE WHITE PARTNERSHIP

SEPTEMBER 2017

Phase I Site Appraisal
1 Darwin Close, Reading
for
The White Partnership

B17041-L	Phase I Site Appraisal, 1 Darwin Close, Reading.
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Revision	Date of issue	Comments	Prepared by	Checked by
0		1st issue	HA	CRS

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1.0 Introduction

1.1 Commission

- 1.1.1 Patrick Parsons (PP) has been appointed by The White Partnership (client) to produce a Phase I Site Appraisal for a proposed residential development at the site known as “1 Darwin Close, Reading”.

1.2 Proposed Development

- 1.2.1 The site is being evaluated for a proposed commercial / industrial development, with a draft layout plan indicating a two-storey commercial / industrial building with associated parking and hardstanding. A draft development plan is included in Appendix A.

1.3 Limitations

- 1.3.1 This report has been prepared for the client and their appointed agents only and should not be relied upon by any third party without the written permission of Patrick Parsons. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors do not owe them any Duty of Care or Skill. It is based on and limited to an assessment of the information and ground conditions identified here. Patrick Parsons is not responsible for ground conditions not revealed during investigations undertaken by third parties and have reviewed the information presented in good faith.

1.4 Aim of Phase I Site Appraisal

- 1.4.1 The client’s specific requirements were to undertake a desk based Phase I Site Appraisal. The principle objectives are as follows:

- Obtain information about the likely soil and groundwater conditions within the area of the site.
- Determine the possible ground related geotechnical and contamination hazards within the site boundaries that may affect the proposed development.
- Provide preliminary development recommendations.
- Provide advice on further works required for the cost-effective reduction of risks to the development and procedures likely to satisfy regulators.

1.5 Information Sources

This Phase I Site Appraisal is based on published geological and environmental information supplemented by an environmental data report.

2.0 Phase I Desk Study

2.1 Site Description

- 2.1.1 The site is located to the east of Darwin Close, 3.2km south of the centre of Reading. The approximate grid reference for the site is SU713704 and nearest postcode is RG2 0TB. A site location plan is presented in Appendix A.
- 2.1.2 The site comprises a rectangular shaped plot of land covering an area of approximately 0.67 acres. The site is currently occupied by a single two-storey commercial / industrial building in use as a commercial dry cleaners with carparking and concrete hardstanding.
- 2.1.3 The site is bounded to the west by Darwin Close, the north by Commercial Road and to the east and south by commercial properties.

2.2 Site History

- 2.2.1 The earliest historical mapping reviewed (1877) shows the site to be undeveloped, occupied by open fields and a single pathway bisecting the site. The site remains generally undeveloped until the 1966 mapping, where the site is shown having a single rectangular building covering approximately one fifth of the site in the north west of the plot which has been demolished by the 1968 mapping. From the 1973 mapping a large rectangular building has been built in the centre of the site and remains unchanged until the most recent record in 2014, this appears to be the building that currently occupies the site. In 1988 an additional building is recorded in the south-eastern corner of the site, this building remains unchanged until 2014. No further development is shown on site.
 - 2.2.2 In the wider vicinity, the site is situated in a predominately undeveloped area from 1877 until the 1936 mapping, where an isolation hospital is shown to occupy land approximately 20m north of the site boundary and a sewage treatment farm is located 105m to the south-west of the site. The neighbouring land remains generally unchanged up until the 1958 mapping where a number of small industrial / commercial works have been constructed within the surrounding land to the southeast of the site. By the 1966 mapping further commercial / industrial works are shown to be present to the south and east and a large filter bed associated with a large sewage treatment works is present 50m to the north-west of the site. By the 1966 mapping the isolation hospital changes use to an engineering works, further changes occur in 1977 when part of this works becomes a motor engineering works. By 1988 this building has been demolished. The surrounding site remains predominately unchanged from 1988 until the recorded mapping in 2010 when the sewage treatment works has been replaced by residential housing. The surrounding area remains generally unchanged between 2010 and the most recent recorded mapping in 2014.
 - 2.2.3 The historical maps reviewed are presented in Appendix B.
- ### 2.3 Geology
- 2.3.1 The bedrock geology is recorded as clay, sand and silt of the London Clay Formation. The site is not recorded to be underlain by Superficial Deposits There is no recorded made ground present on site, however; there are likely to be limited thicknesses associated with the sites historic uses.

2.4 Mining and Quarrying

- 2.4.1 There are no records of historical coal mining activity within 1000m of the site and the site is not recorded to be within a coal mining affected area as designated by the Coal Authority.
- 2.4.2 The site is recorded being within an area potentially affected by shallow chalk mining. This may have a bearing on any future development of the site and should be assessed further. The risk from associated workings however is likely to be low, due to the chalk unit of the Seaford Chalk formation and Newhaven Chalk formation being shown to be approximately 31m below existing ground level in one of the recorded onsite historic boreholes.

2.5 Hydrogeology and Hydrology

- 2.5.1 The bedrock geology of the London Clay Formation is classified as an Unproductive Aquifer.
- 2.5.2 There are three groundwater abstraction licences within 500m of the site. The closest of which is onsite and relates to the current commercial laundry service. The remaining two licenses are located 6m to the west of the site also relating to the laundry service and 388m to the south-west relating to the Madejski Stadium.
- 2.5.3 The site is approximately 128m north east of an Environment Agency Flood Zone 2. The site is recorded as having a very low Risk of Flooding from Rivers and the Sea (RoFRaS) rating. However, the site is located within an area with a potential susceptibility of groundwater flooding.

2.6 Environmental Data

- 2.6.1 There are no historical Environment Agency registered landfill site within 250m of the site.
- 2.6.2 There are 10 registered BGS recorded landfill sites, Local Authority recorded landfill sites, waste management facilities or registered waste transfer, treatment or disposal sites within 250m of the site boundary. The closest of which is 48m to the north-east and is recorded to be a historic landfill site receiving inert waste.
- 2.6.3 There is no record of potentially infilled land within 250m of the site.
- 2.6.4 There are sixty-six records of current potentially contaminative land usage within 250m of the site. There is one record of a current potentially contaminative land usage on site. This relates to an electric sub-station.
- 2.6.5 There are seventy historically recorded potentially contaminative land usage within 250m of the site boundary with four recorded to be on site. The onsite historical uses are not specified and are listed as commercial / industrial uses. The closest off site contaminative usage is the historically recorded sewage works recorded 13m to the north of the site boundary.
- 2.6.6 There are four Local Authority pollution prevention controls recorded within 250m of the site. These relate to the manufacture of soap-based products approximately 227m to the north-east. One of them is currently effective and the other three have been superseded.

- 2.6.7 There are no records of sites handling hazardous or radioactive substances within 250m of the site.
- 2.6.8 There are 4 recorded licensed discharge consents within 250m of the site. The closest is located 136m to the north-west of the site and is related to mining groundwater discharge. The others are 209m to the south-west and two are 211m to the north-west, these are related to sewage treatment works.
- 2.6.9 There are no current or historical petrol and fuel sites recorded within 250m of the site.
- 2.6.10 There are no Environment Agency recorded pollution incidents within 250m of the site.
- 2.6.11 The environmental data report obtained for the site is presented in Appendix C. The report does not highlight any additional significant features other than those discussed in other sections of this report.
- 2.7 Radon
 - 2.7.1 The site is not in an area where radon protections measures are required.

2.8 Contaminants of Concern

- 2.8.1 It is considered that there is the potential for limited extents and thicknesses of made ground to be present at the site associated with its historical use and due to the proximity to the historically recorded sewage treatment works and landfill site, potential contaminants of concern include heavy metals, inorganic compounds including cyanide, polyaromatic hydrocarbons (PAH's), hydrocarbons, volatile and semi-volatile organic compounds, phenols, PCB's and asbestos.

3.0 Phase I Conceptual Model

- 3.1.1 The preceding information has been assessed and a conceptual model produced following current relevant guidance.
- 3.1.2 The site has historically been recorded as open land with limited development, subsequently used for commercial / industrial purposes including its present use as a commercial dry cleaners. The close proximity of the historically recorded sewage treatment works and historic landfill recorded to the north, may have caused additional localised contamination. Therefore, the general risk of soil contamination is considered to be moderate.
- 3.1.3 In terms of human health, the primary receptors are end-users of the proposed development and construction workers. The pathways include direct contact with contaminated soil and soil dust, ingestion of contaminated soil and dust, and the indoor/outdoor inhalation of ground gas and soil vapour. Given the site history and the features noted it is considered that the site poses a low to moderate risk to end users and a low risk to construction workers (due to their shorter expose time).
- 3.1.4 In terms of controlled waters, there is not considered to be a sensitive receptor as the bedrock geology of the site is an Unproductive Aquifer. The primary pathway would be through leaching and groundwater transport. Which will be limited due to reduced infiltration through low permeability residual cohesive soils. Therefore, based on the site setting it is considered that the risk to controlled waters will be low due to the lack of a sensitive receptor and limited pathways.
- 3.1.5 The Phase I conceptual model is illustrated below.

Human Health		
Source	Pathway	Receptor
Made ground. Contaminants of concern include heavy metals, PAH's, hydrocarbons and asbestos.	Indoor and outdoor inhalation of soil vapours, the ingestion of contaminated soil and soil dust and direct contact with contaminated soil and soil dust.	End users of the completed residential development.
Made ground. Contaminants of concern include heavy metals, PAH's, hydrocarbons and asbestos.	Indoor and outdoor inhalation of ground gas and soil vapours, the ingestion of contaminated soil and soil dust and direct contact with contaminated soil and soil dust.	Construction workers.
Ground gas associated with made ground.	Inhalation.	End users of completed residential development.
Controlled Waters		
Made ground. Contaminants of concern include heavy metals, PAH's, hydrocarbons and asbestos.	No pathway identified.	No receptor identified, underlying Unproductive Aquifer

4.0 Preliminary Recommendations

4.1 Contamination and Remediation

4.1.1 The risk of significant contamination being present at the site is considered moderate and as such the risk posed to human health (end users) and controlled waters has been assessed as low to moderate and low respectively. However, a ground investigation will be required to confirm this assessment, the scope of which is outlined in Section 5.

4.1.2 It should be noted that the following comments are based on the findings of this desk study and should be confirmed by intrusive investigation and chemical analysis:

- Localised capping in any areas of soft landscaping may be required if areas of contaminated ground are identified.
- Gas protection measures may be required.

4.2 Geotechnical Considerations

4.2.1 It should be noted that the following comments and recommendations are based on the findings of this desk study, which may not give a true indication of actual engineering properties (i.e. stability, mass structure etc). Prior to development a ground investigation will be required to confirm the initial recommendations outlined below, the scope of which is outlined in Section 5. However, at this stage based on the desk-based information available it is considered:

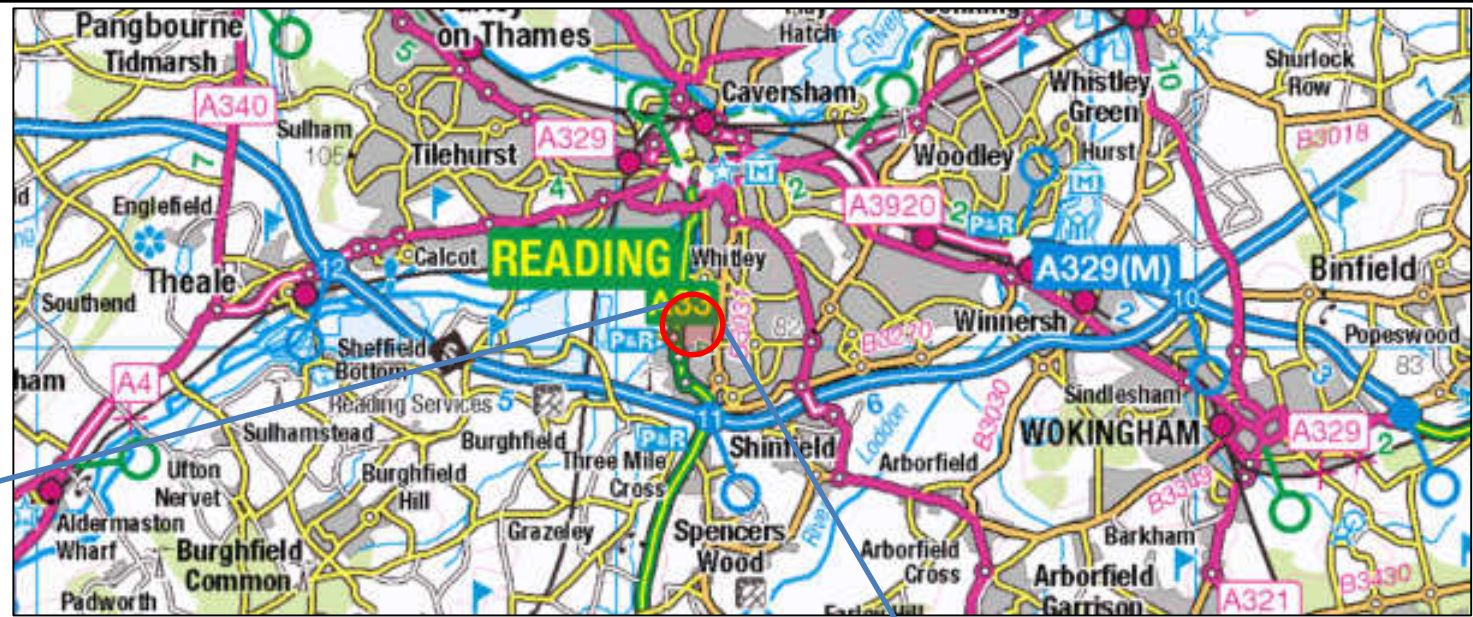
- The ground conditions are likely to comprise residual cohesive soils of the London Clay Formation.
- Limited thicknesses of made ground may be present at the site associated with its historical site uses and surrounding industrial land uses.
- The site may be suitable for the use of traditional trench or pad foundations depending on the required allowable bearing pressures; however, piling may be required if significant thicknesses of made ground or low strength residual soils are encountered.
- Based on the published geology it is considered that the geology at the site will not be suitable for the use of soakaway drainage.

5.0 Further Work and Conclusions

- 5.1 A Phase II ground investigation is recommended to confirm the initial recommendations outlined in this report. This should include:
- A window sampling borehole investigation to confirm ground conditions, collect samples for analysis and install gas and ground water monitoring installations;
 - Chemical analysis of soils followed by risk assessment so that the risk to human health and controlled waters can be determined;
 - Geotechnical and geochemical soils testing of the founding strata to assess strength and suitable grade(s) of buried concrete;
 - Gas and groundwater monitoring so the gas risk can be assessed.
- 5.2 This document should be submitted to the Planning Department of the Local Authority for comment and approval.

Appendix A

Figures



 Approximate Site Boundary

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E. info@patrickparsons.co.uk
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Client: The White Partnership

Project: 1 Darwin Close, Reading

Project No.: B17041L

Title: Site Location Plan

Scales: Not to scale

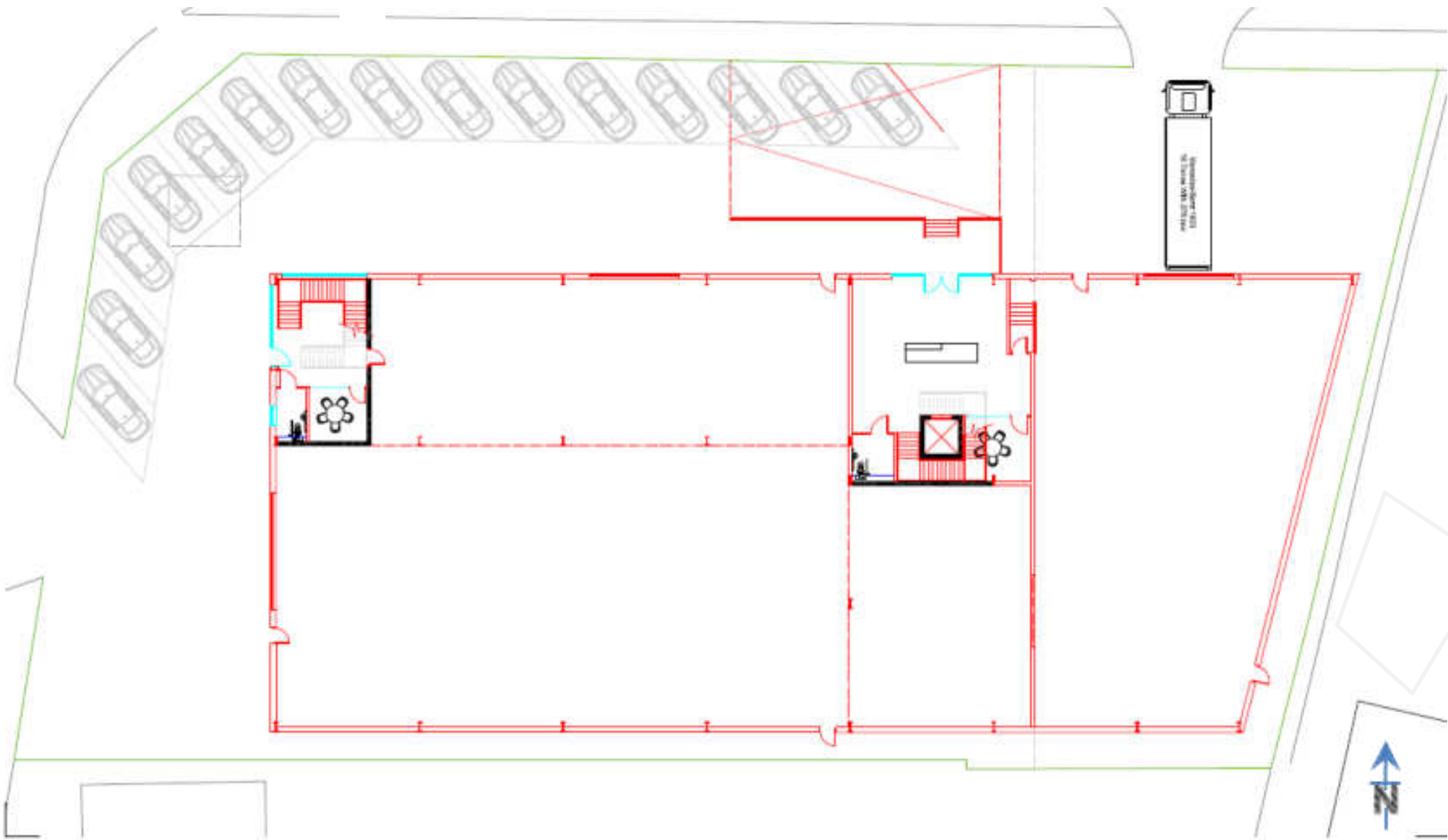
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Design/drawn: AJC

Checked: AJC

Drawing no: B17041L 701

Rev. 0



Proposed Site Development
121 Darwin Close, Reading
RG1 1JD



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W. www.patrikparsons.co.uk

Client: The White Partnership
Project: 1 Darwin Close, Reading

Project No.: B17041L
Title: Proposed Site
Development Layout Plan

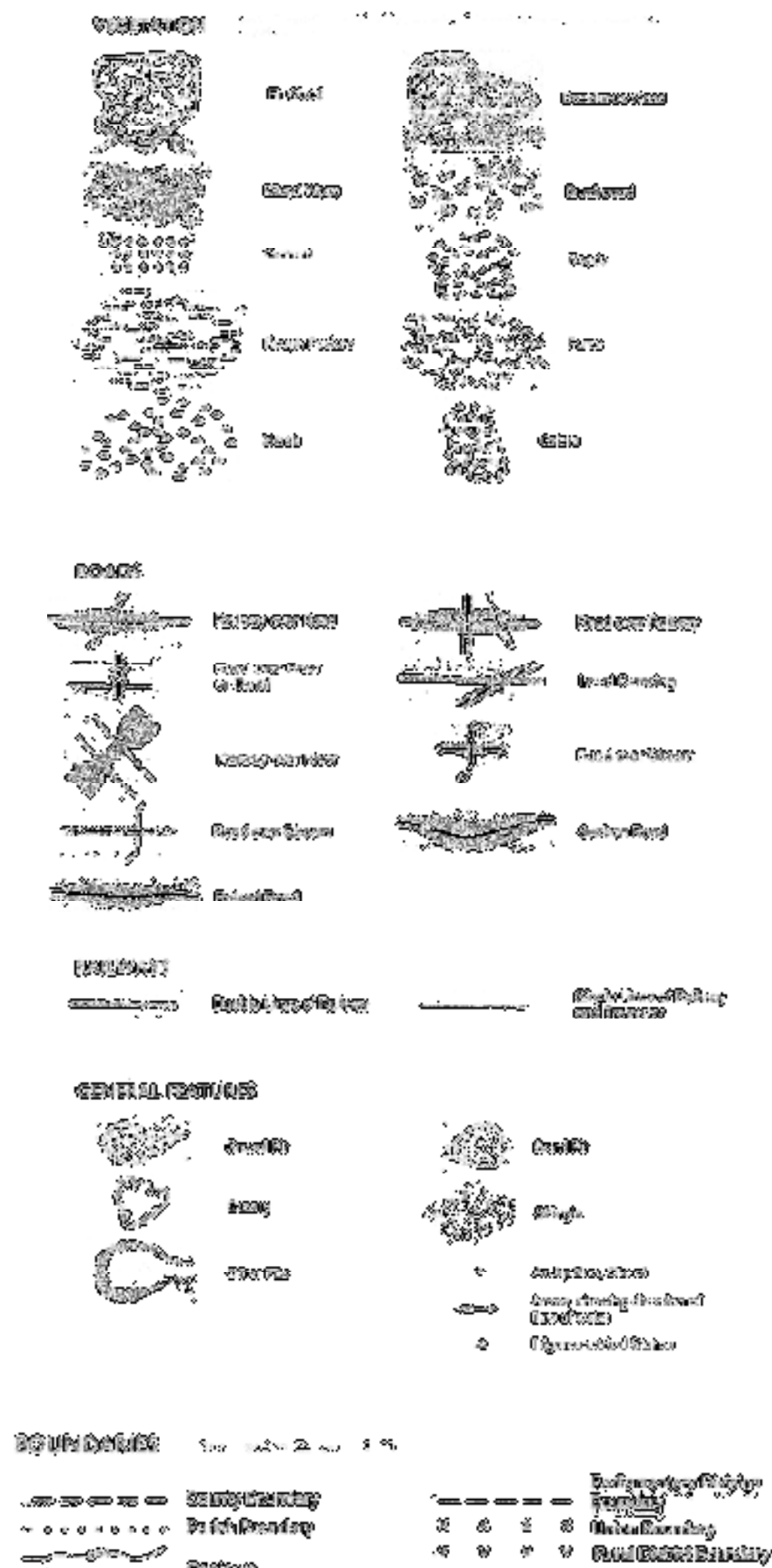
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Rev. 0

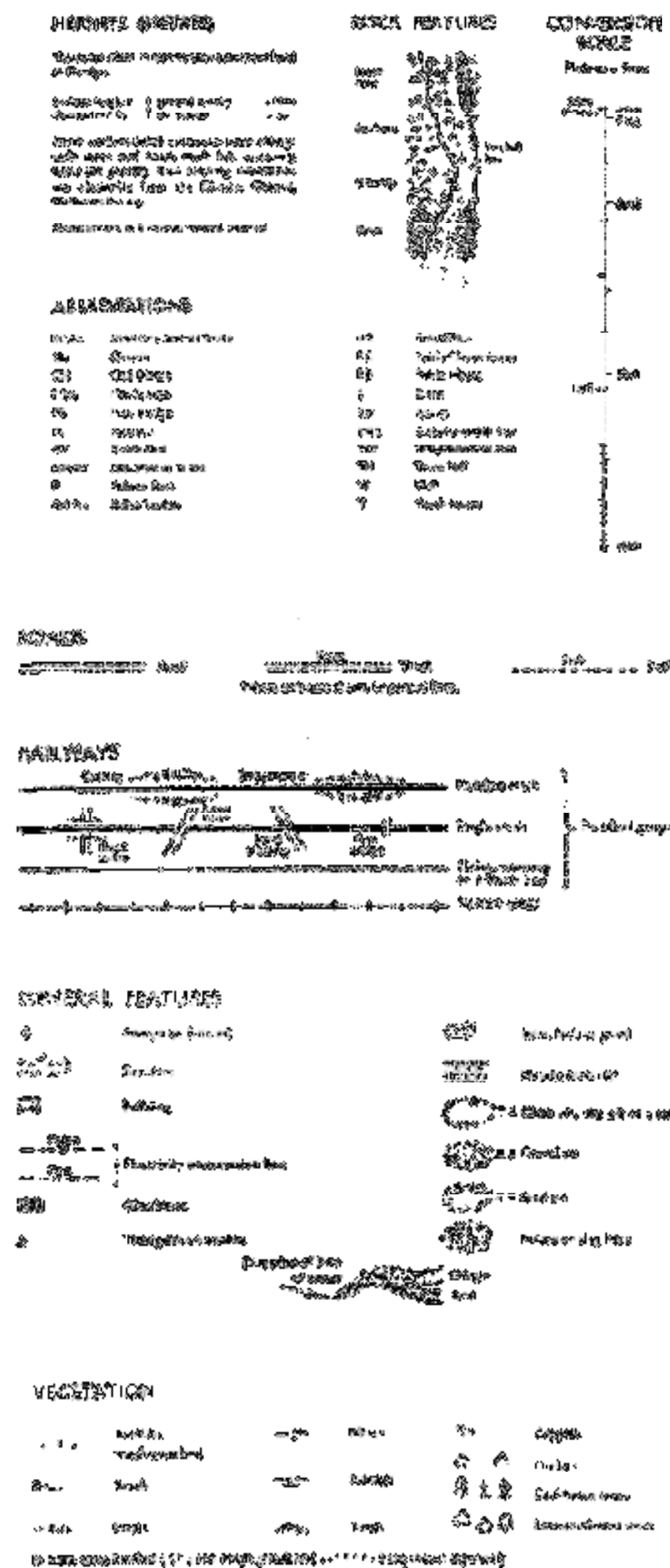
Appendix B

Historical Maps

County Series 1:10,560 scale



National Grid 1:10,000 scale



Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

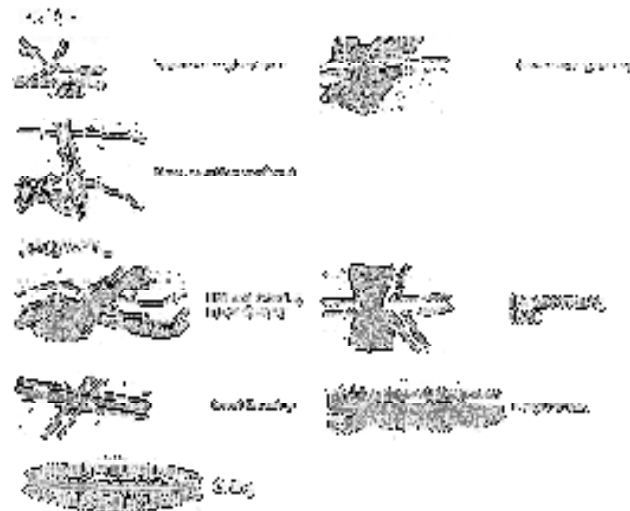
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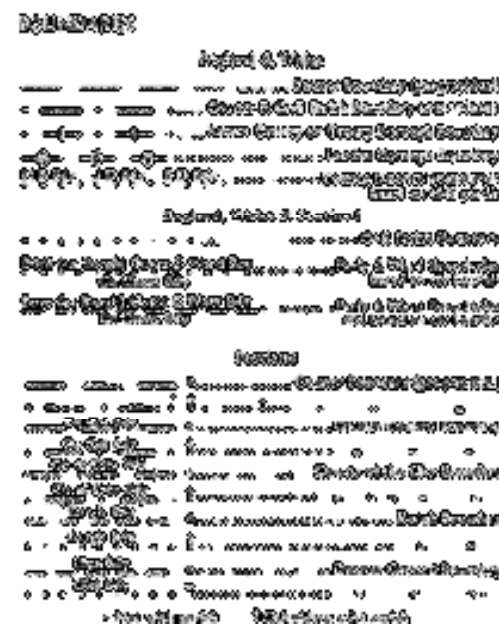
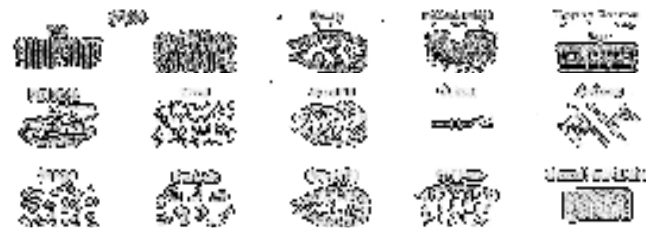
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County Series 1:2,500 scale



National Grid 1:2,500 / 1:1,250 scale



Historical Map Pack Legend

County Series

1:1,250 scale

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County Series &
National Grid

1:2,500 scale

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
Revised 1877
Edition N/A
Copyright N/A
Levelled N/A



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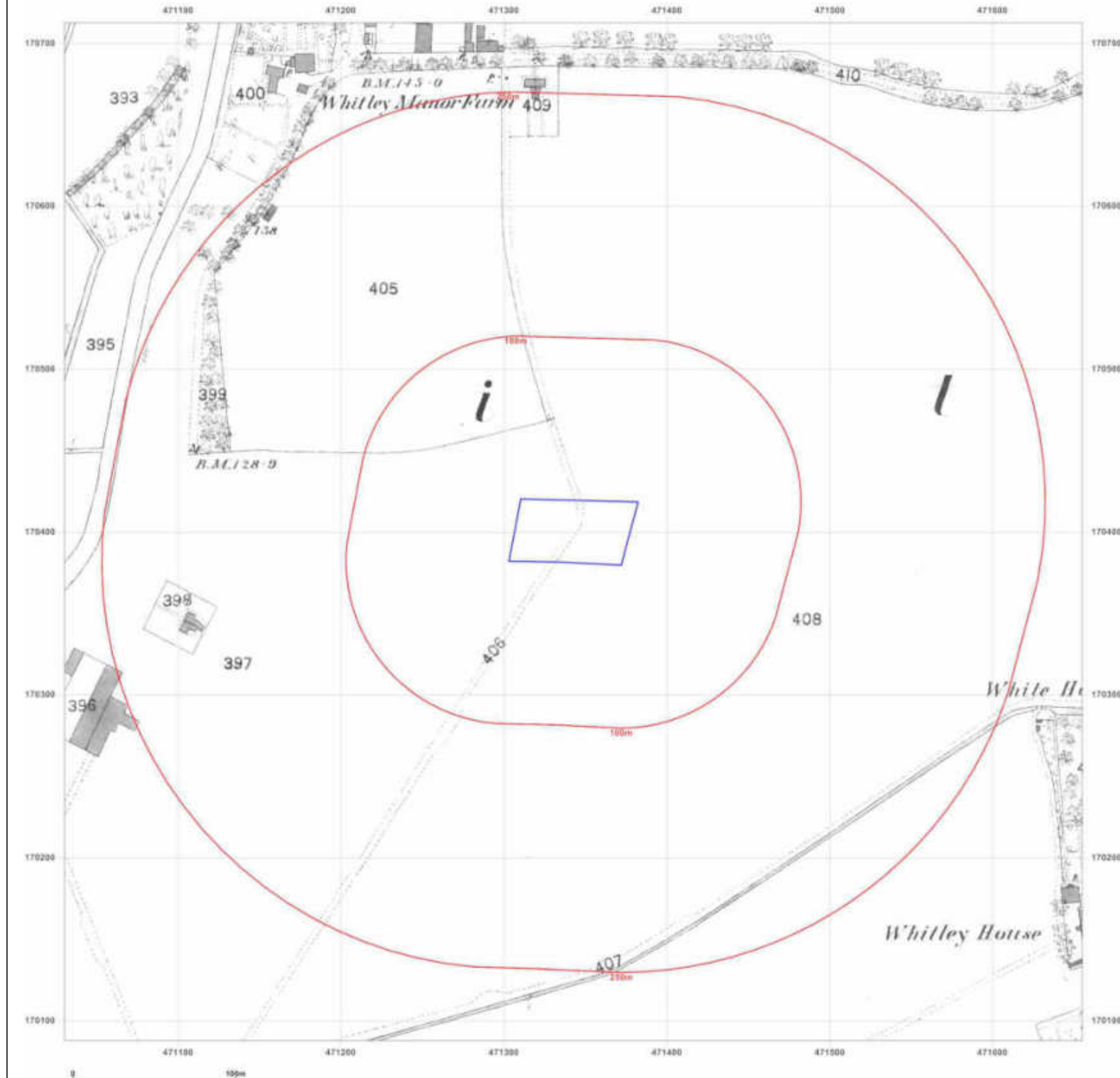


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1899

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1889
 Revised 1899
 Edition N/A
 Copyright N/A
 Levelled N/A



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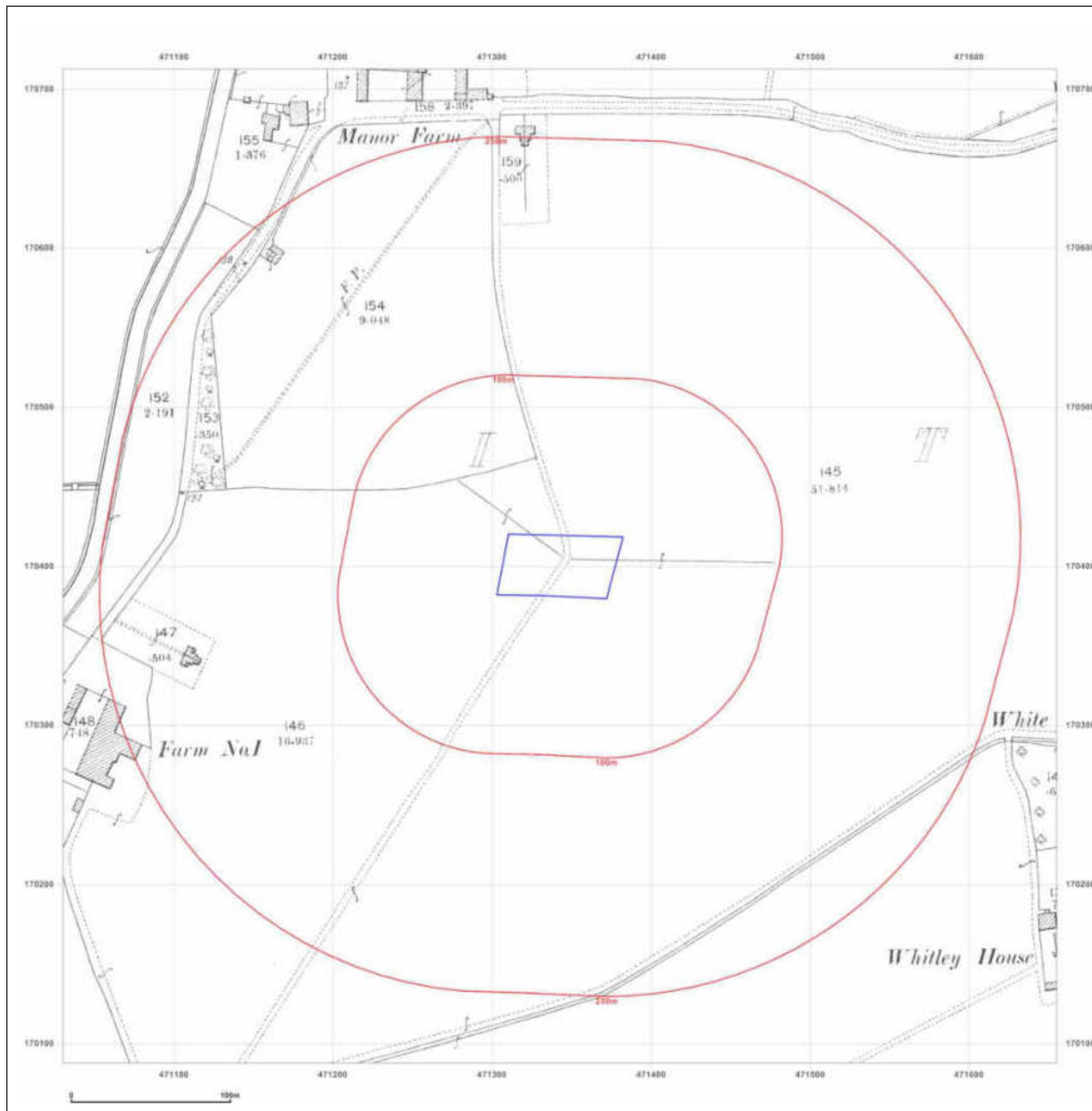


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1911

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1911
Revised 1911
Edition N/A
Copyright N/A
Levelled N/A



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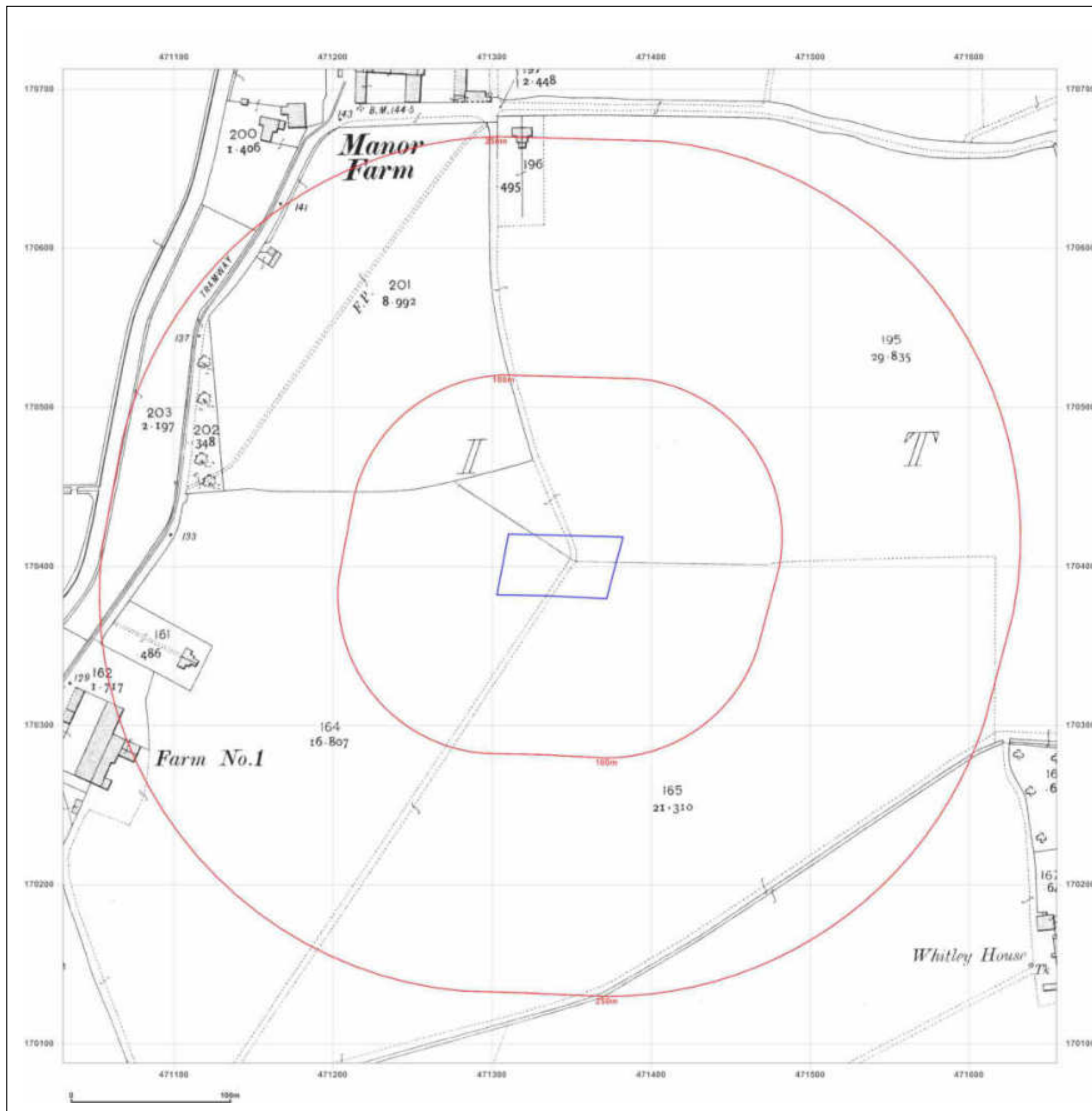


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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1936

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1936
Revised 1936
Edition N/A
Copyright N/A
Levelled N/A



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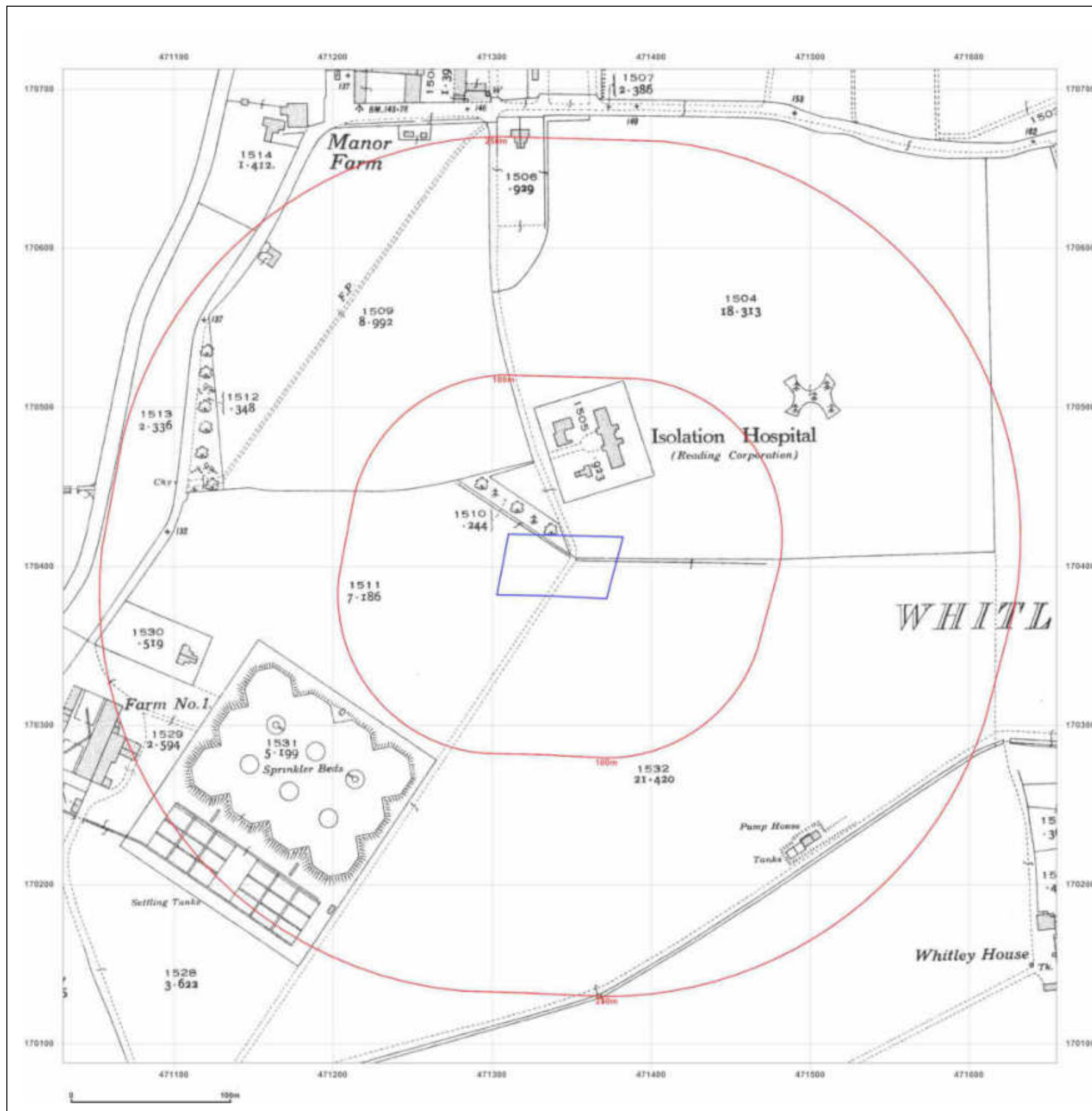


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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1958

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
 Revised 1958
 Edition 1958
 Copyright 1958
 Levelled 1951



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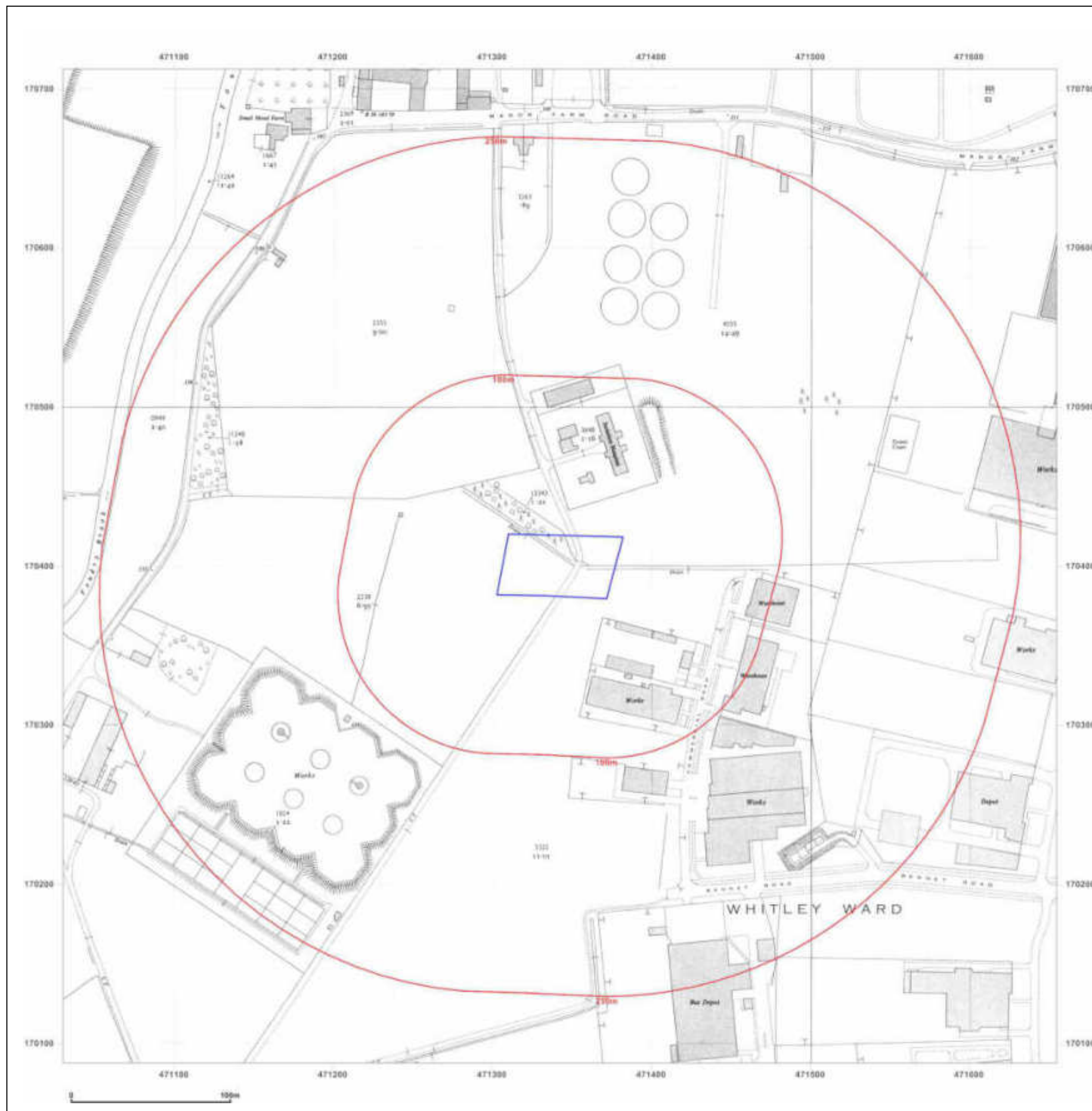


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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1966

Scale: 1:2,500

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Surveyed 1966
 Revised 1966
 Edition N/A
 Copyright 1969
 Levelled 1951



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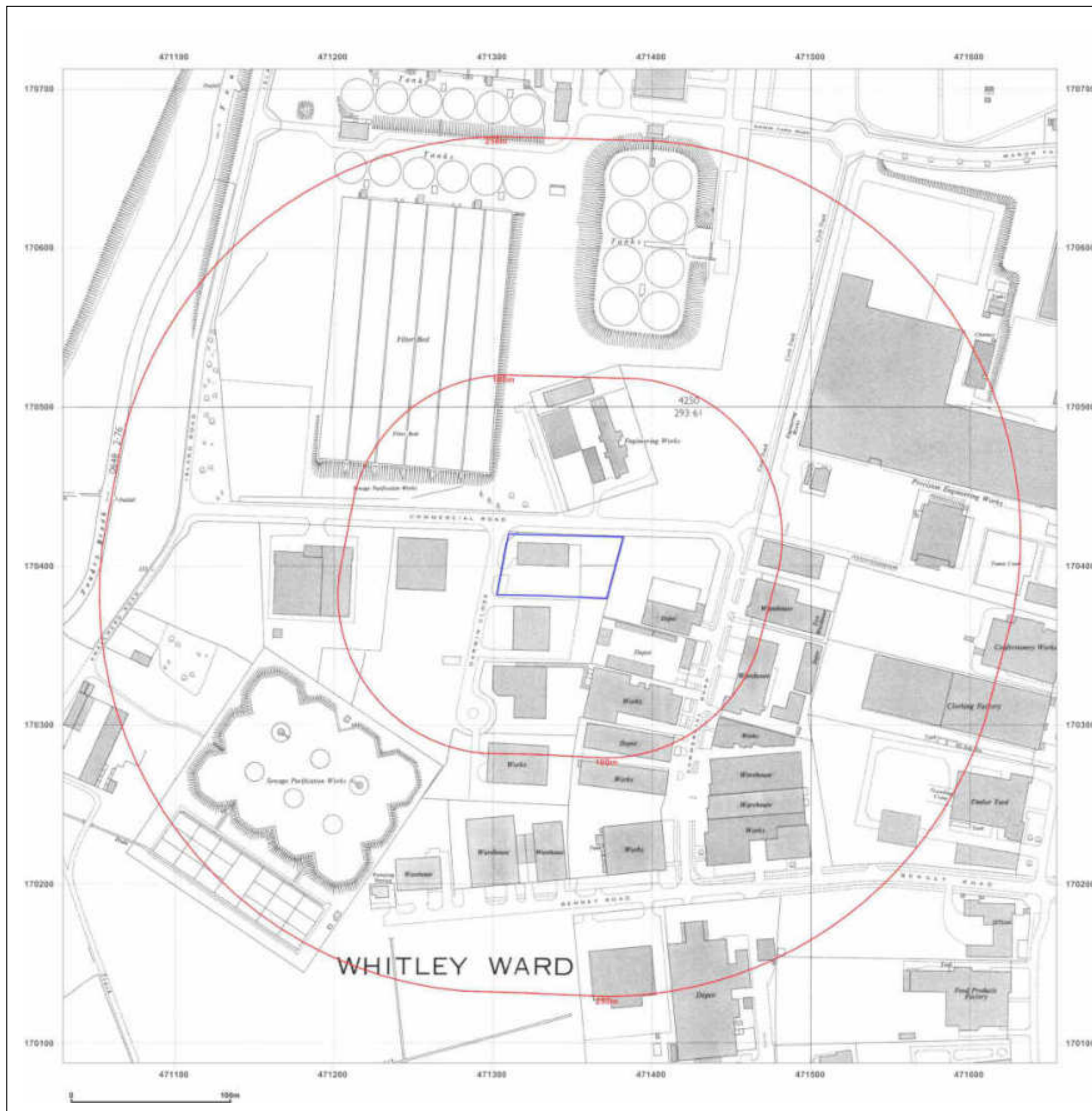


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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
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Map Name: National Grid

Map date: 1965-1968

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
 Revised 1965
 Edition N/A
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Surveyed 1957
 Revised 1965
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 Copyright 1965
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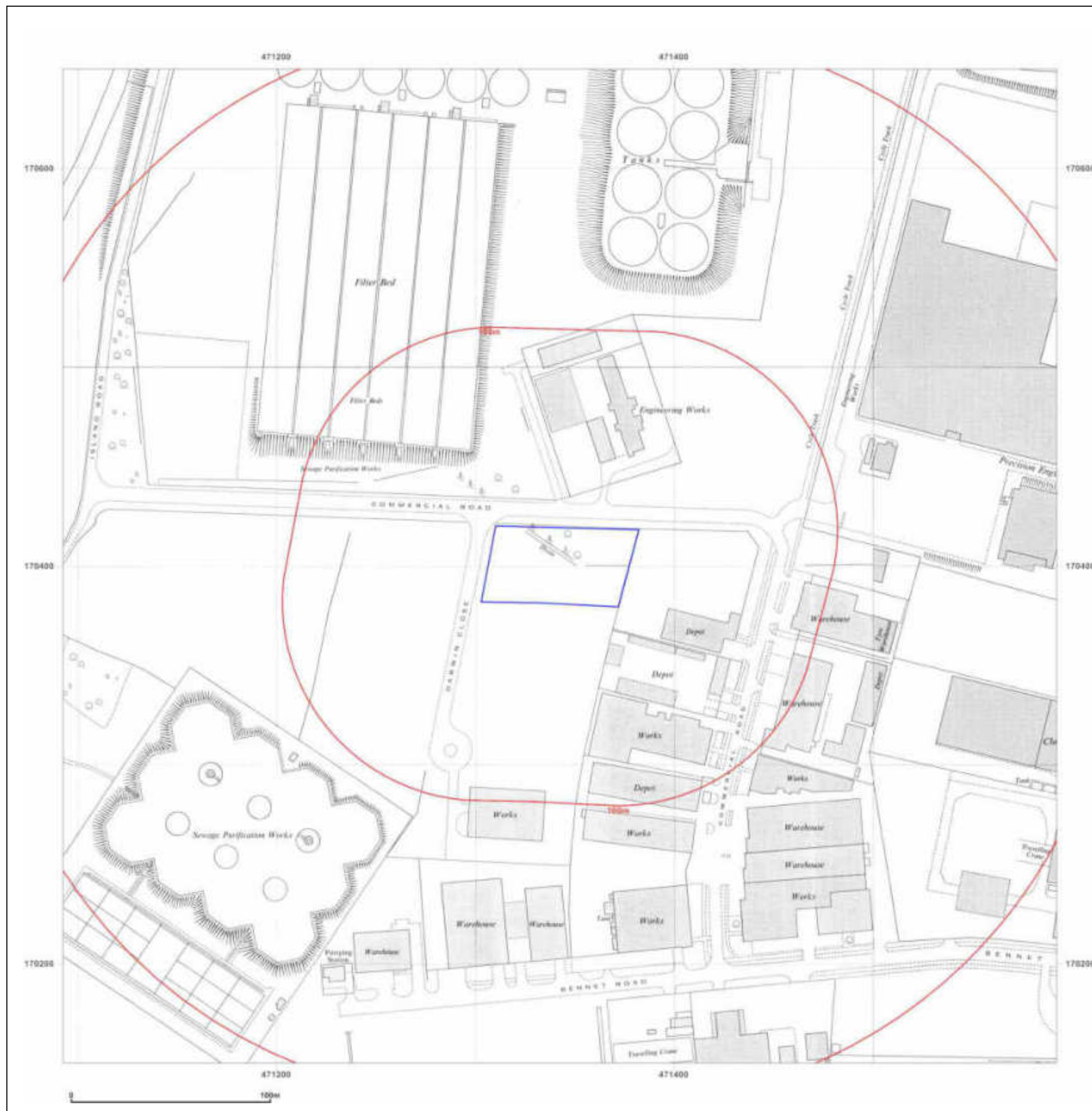


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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1974-1977

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
 Revised 1975
 Edition N/A
 Copyright 1976
 Levelled 1973

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1977
 Levelled 1973

Surveyed 1958
 Revised 1974
 Edition N/A
 Copyright 1974
 Levelled 1973



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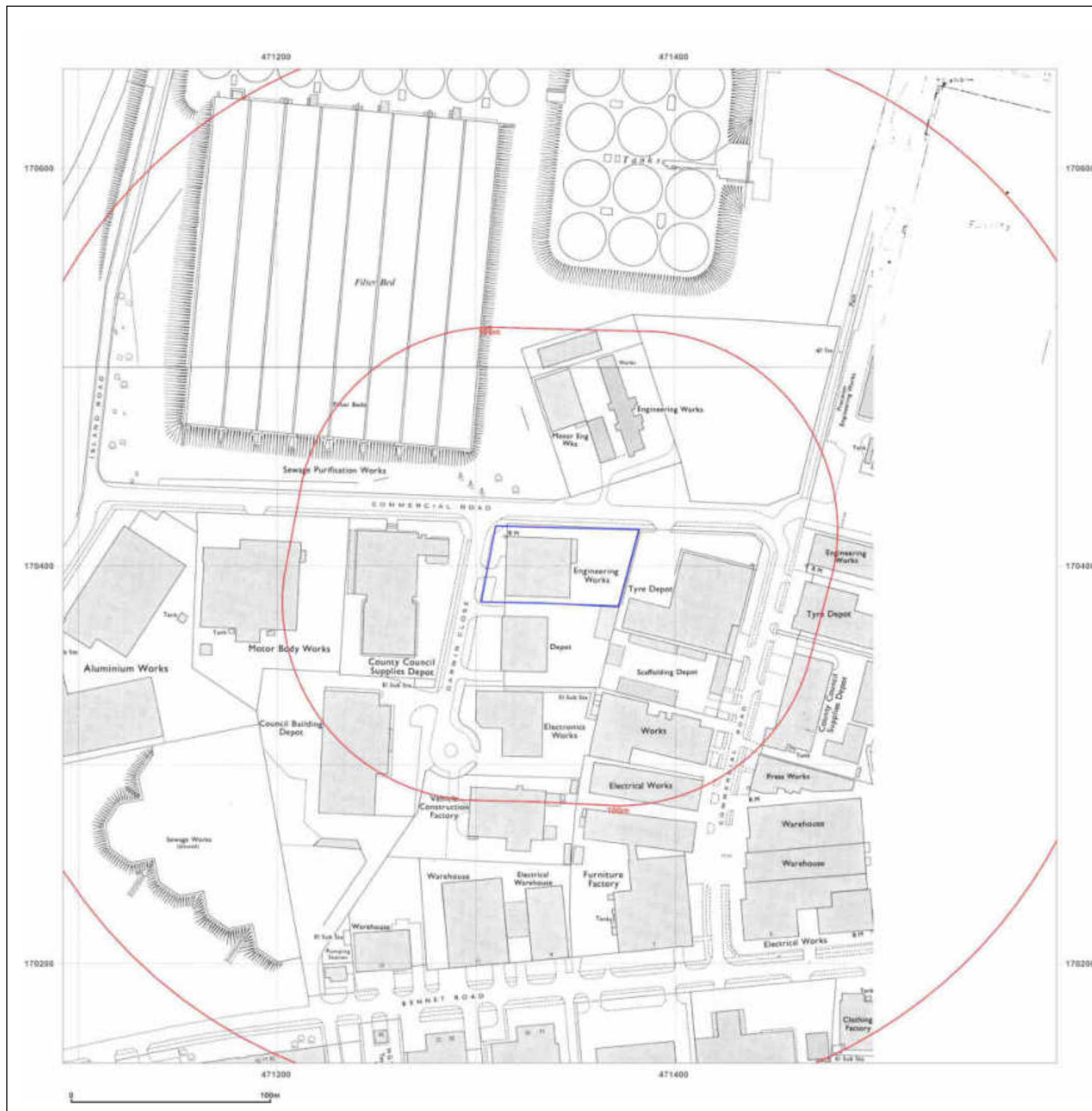


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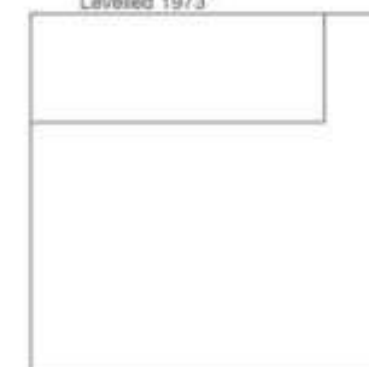
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Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
Copyright 1980
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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1986-1988

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
 Revised 1987
 Edition N/A
 Copyright 1988
 Levelled 1973

Surveyed 1973
 Revised 1987
 Edition N/A
 Copyright 1987
 Levelled 1973

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1986
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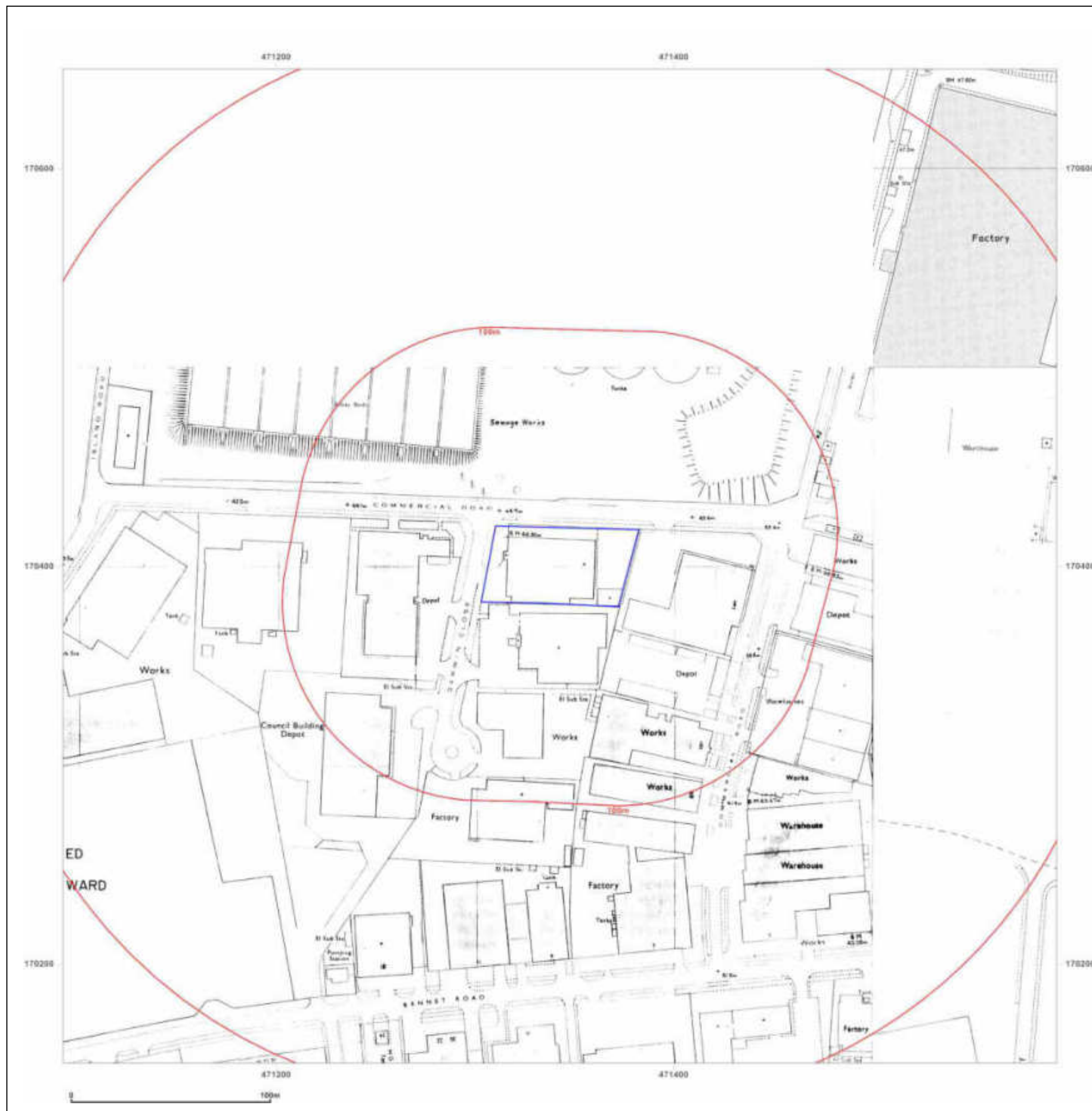


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Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1987-1989

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A Revised N/A Edition N/A Copyright 1987 Levelled 1973	Surveyed 1973 Revised 1989 Edition N/A Copyright 1989 Levelled 1973
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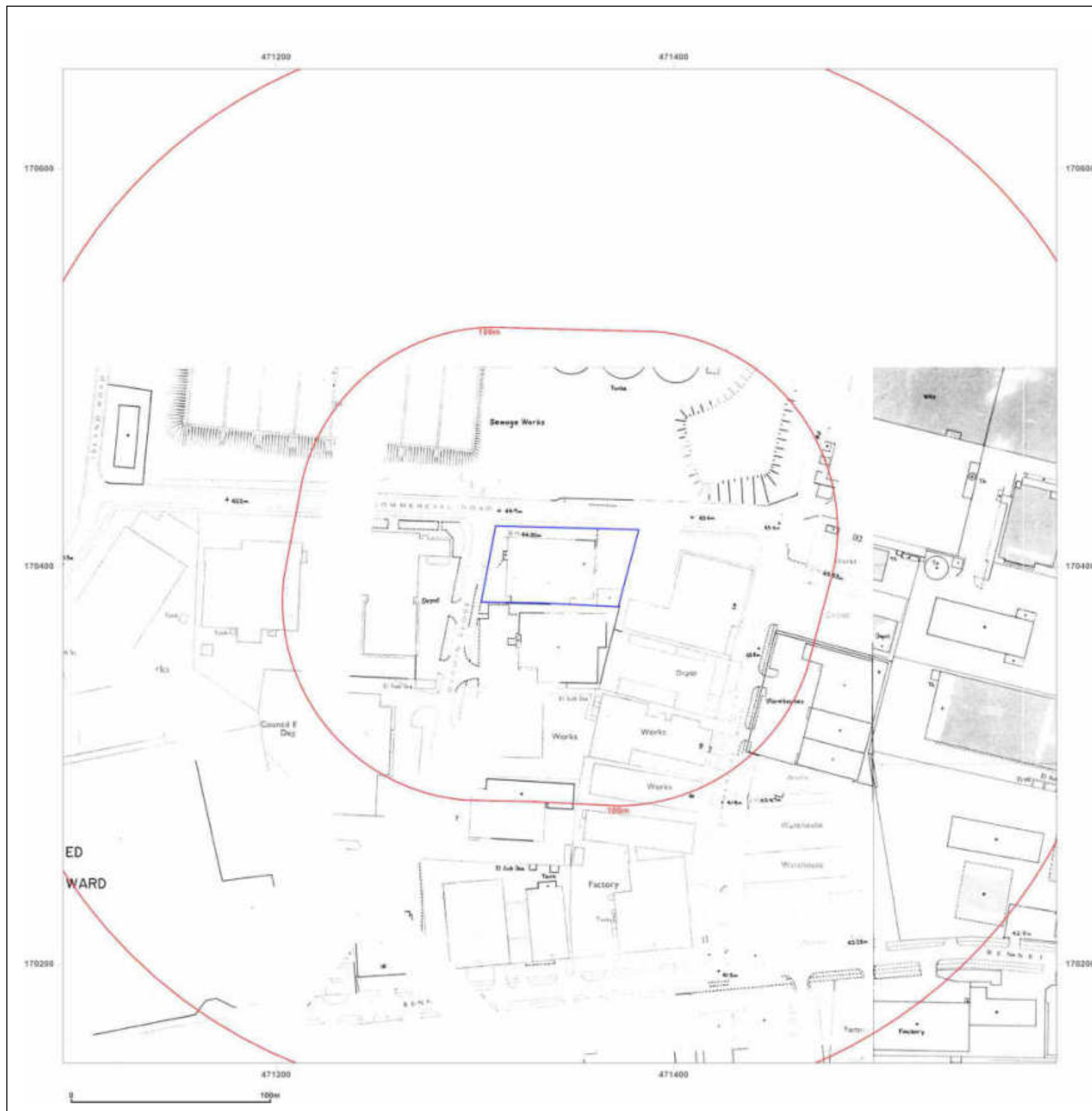


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1993
 Revised 1993
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1993
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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1993-1995

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1973
 Revised 1993
 Edition N/A
 Copyright 1988
 Levelled N/A

Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright 1995
 Levelled N/A



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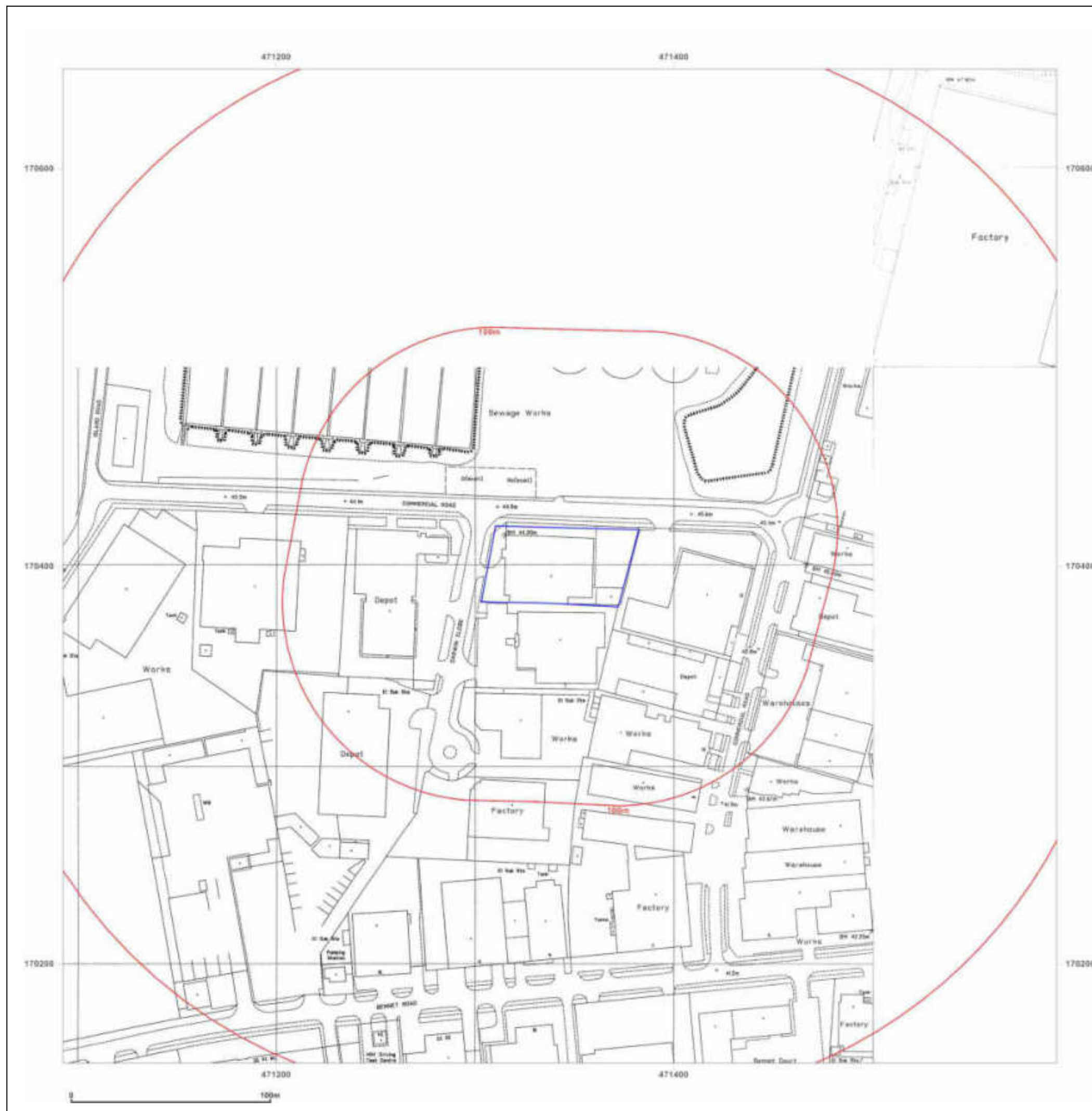


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1898-1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1898
Edition 1900
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



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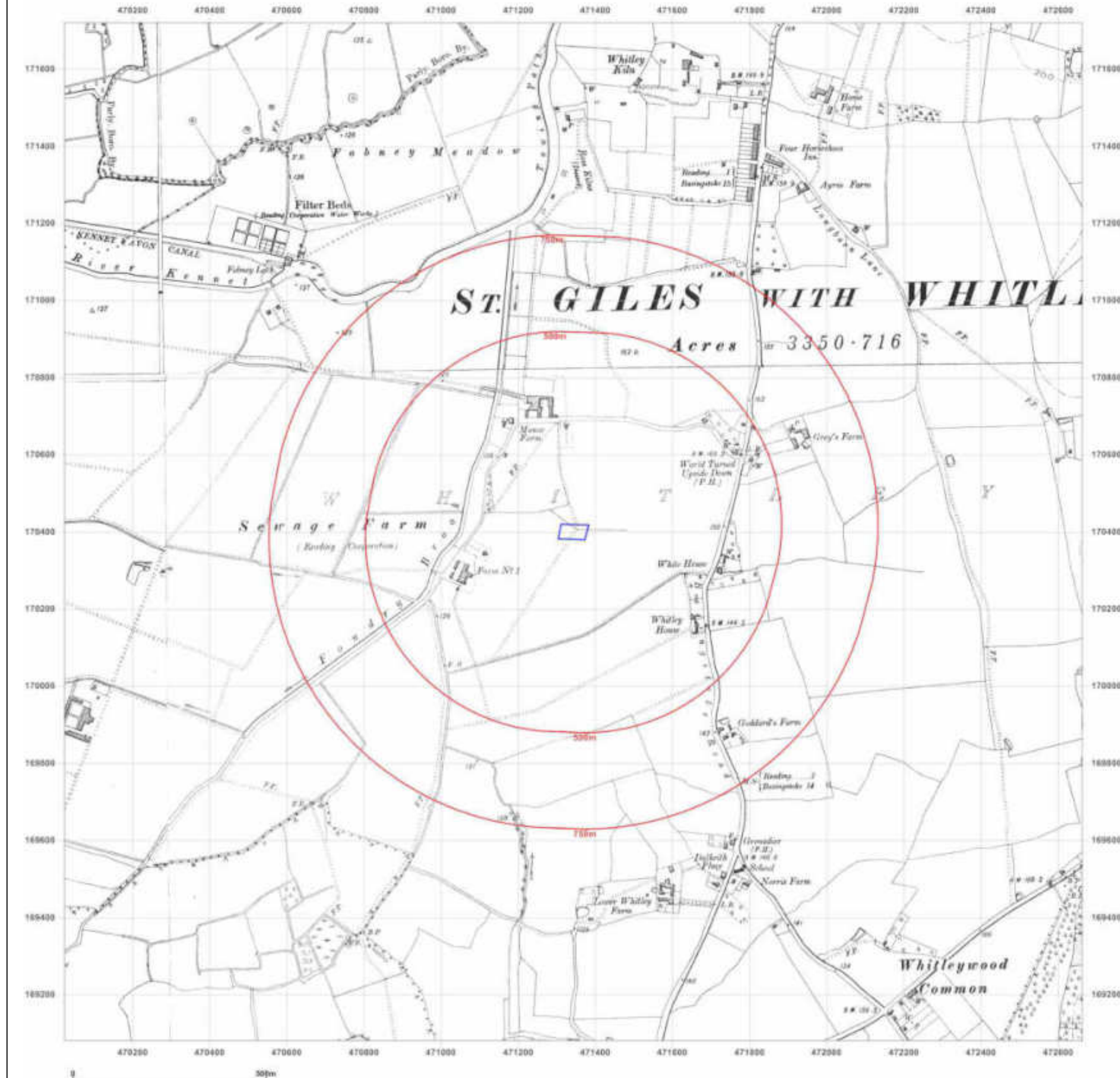


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1910-1913

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1910
Edition 1913
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1913
Edition 1913
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1913
Edition 1913
Copyright N/A
Levelled N/A



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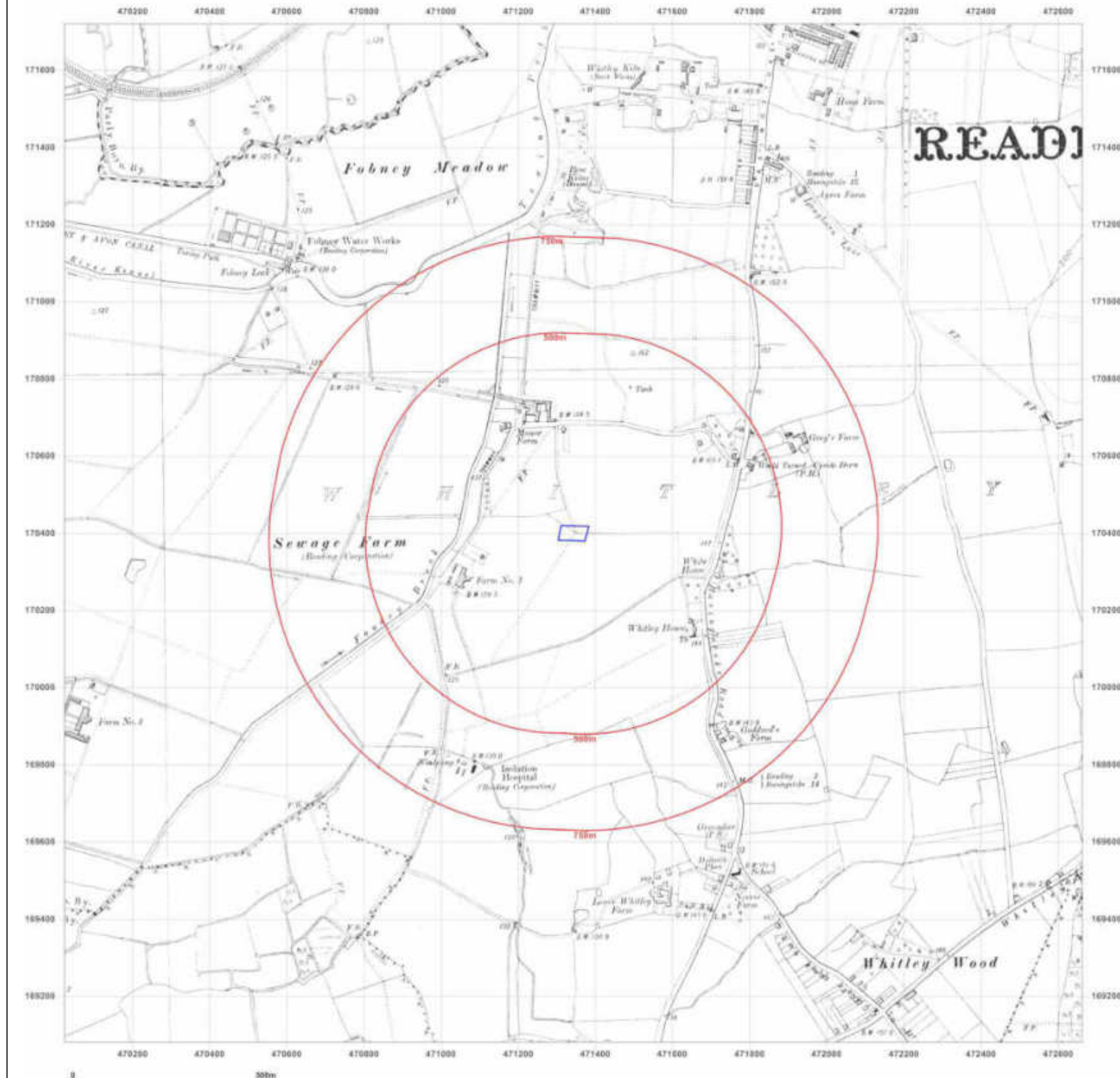


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

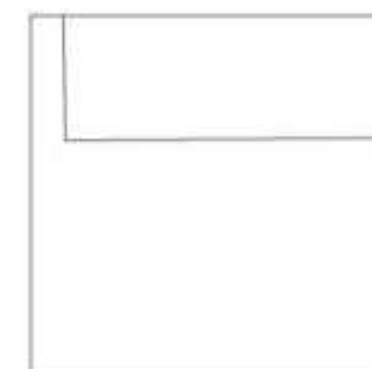
Map date: 1914

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
 Revised 1914
 Edition 1913
 Copyright N/A
 Levelled N/A



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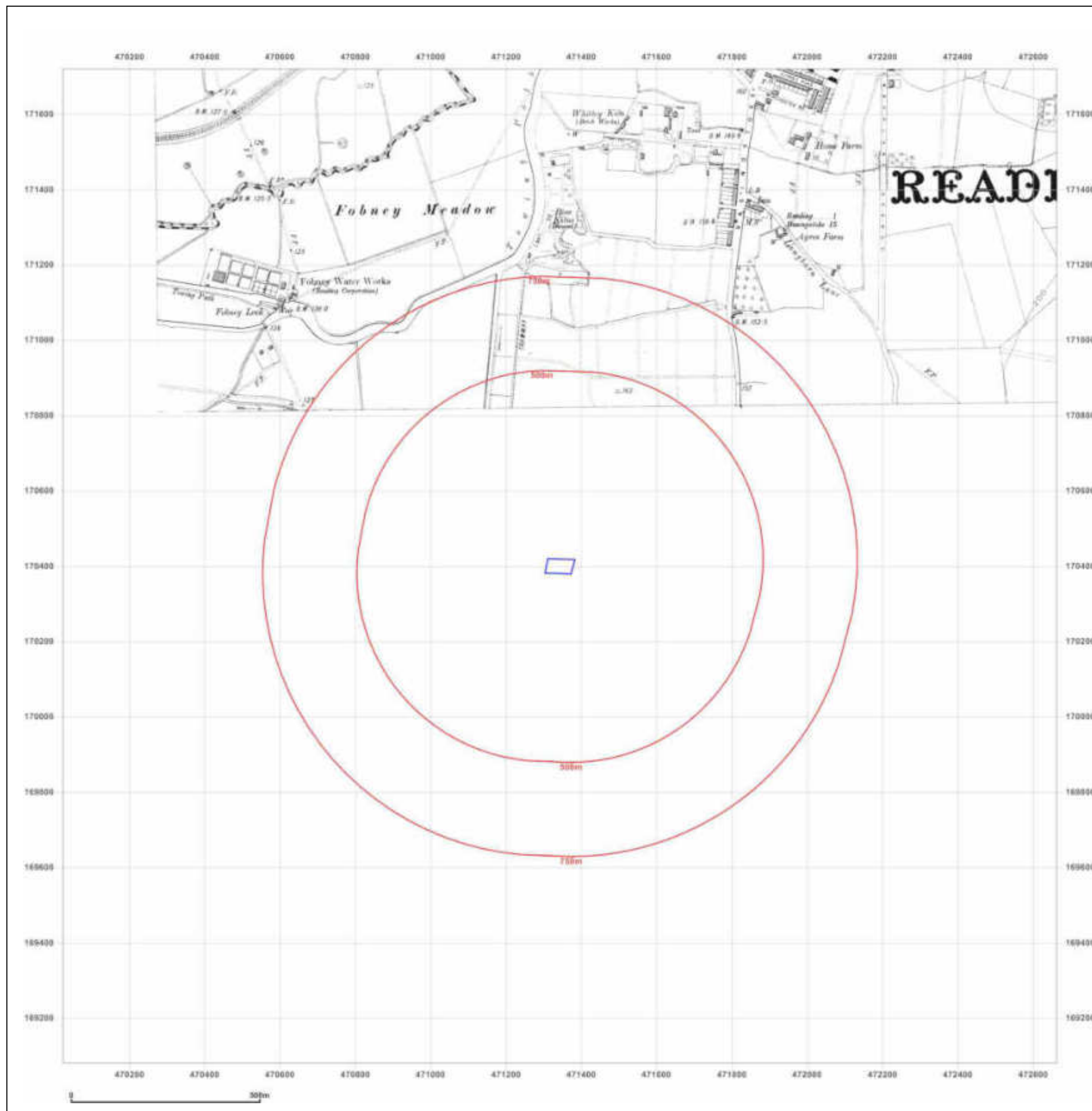


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1932-1933

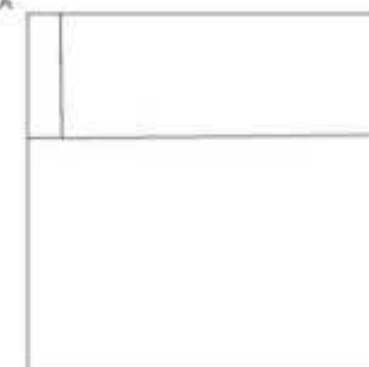
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
 Revised 1932
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1877
 Revised 1933
 Edition N/A
 Copyright N/A
 Levelled N/A



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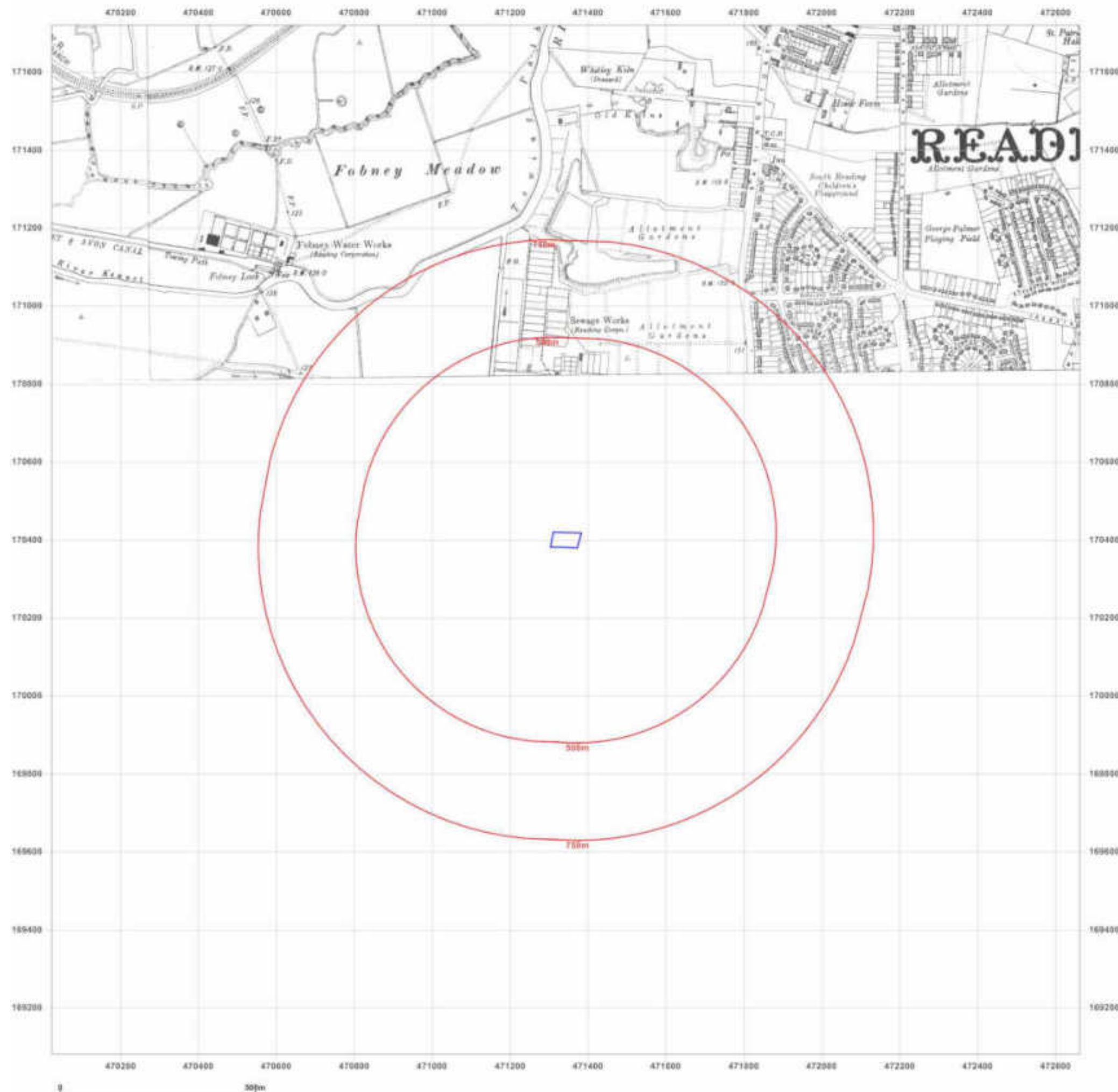


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1877
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



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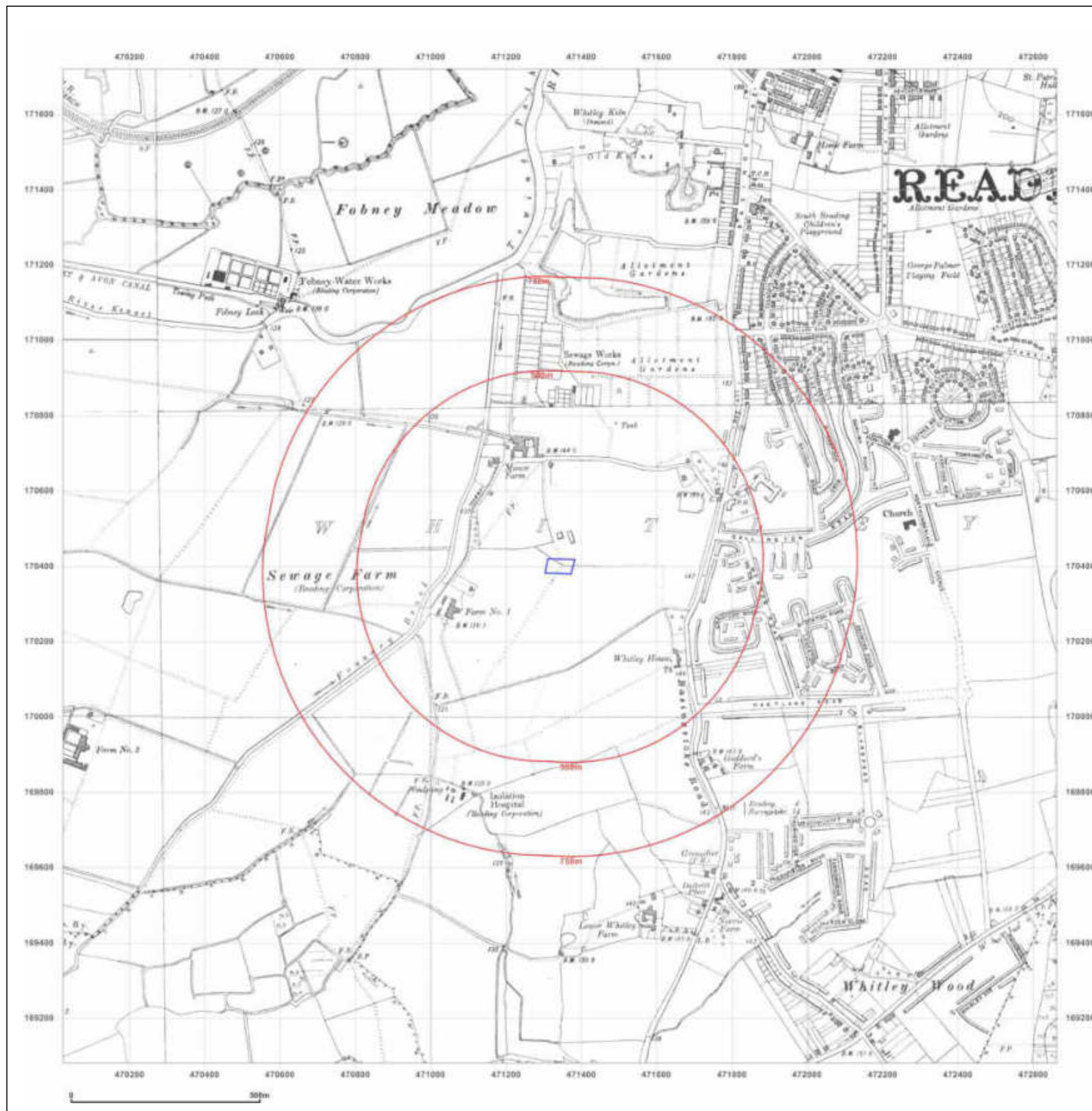


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: Provisional

Map date: 1961

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
 Revised 1961
 Edition N/A
 Copyright 1961
 Levelled N/A



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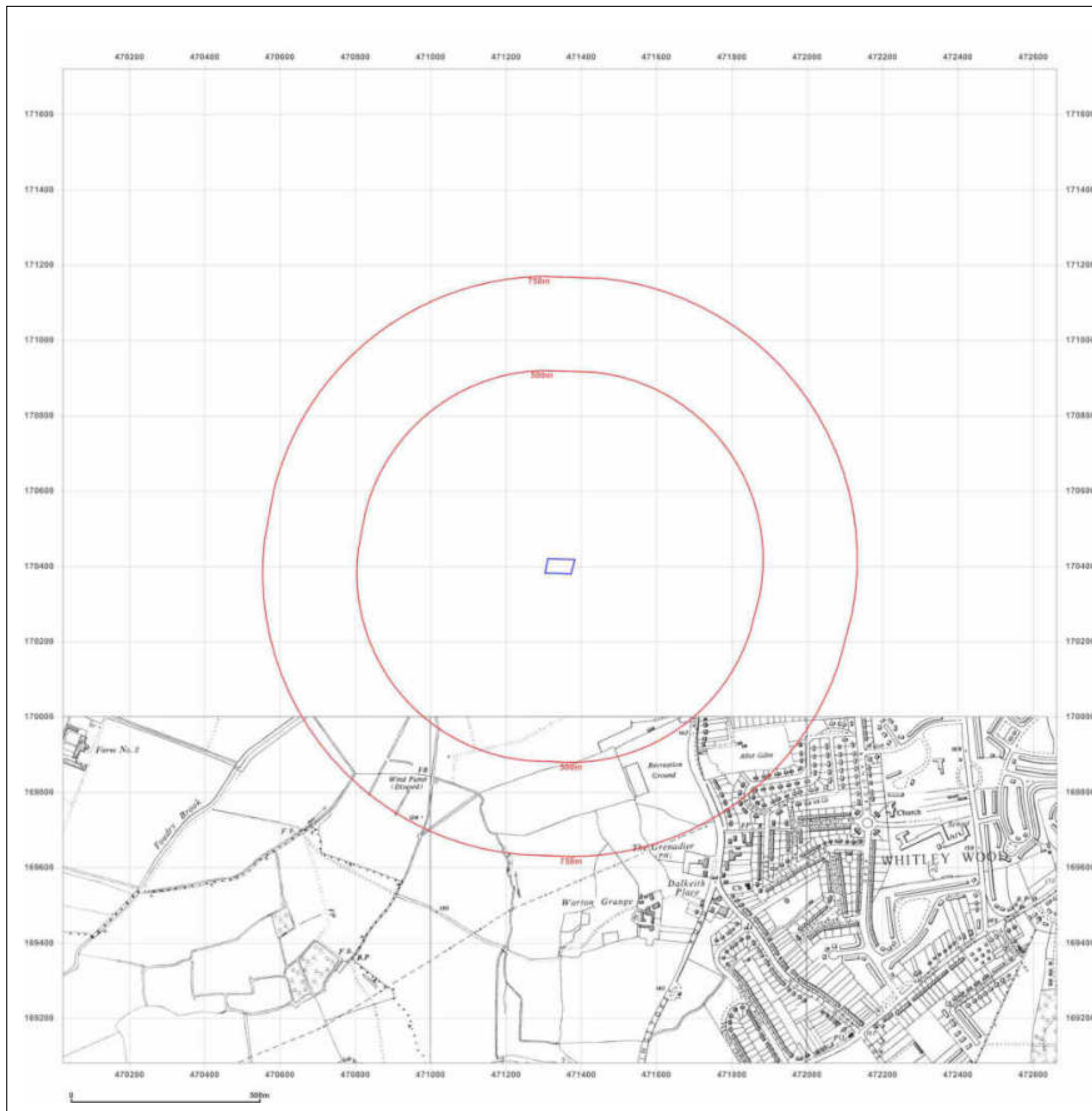


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: Provisional

Map date: 1961-1962

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1959
Revised 1961
Edition N/A
Copyright 1962
Levelled N/A

Surveyed N/A
Revised 1961
Edition N/A
Copyright 1961
Levelled N/A



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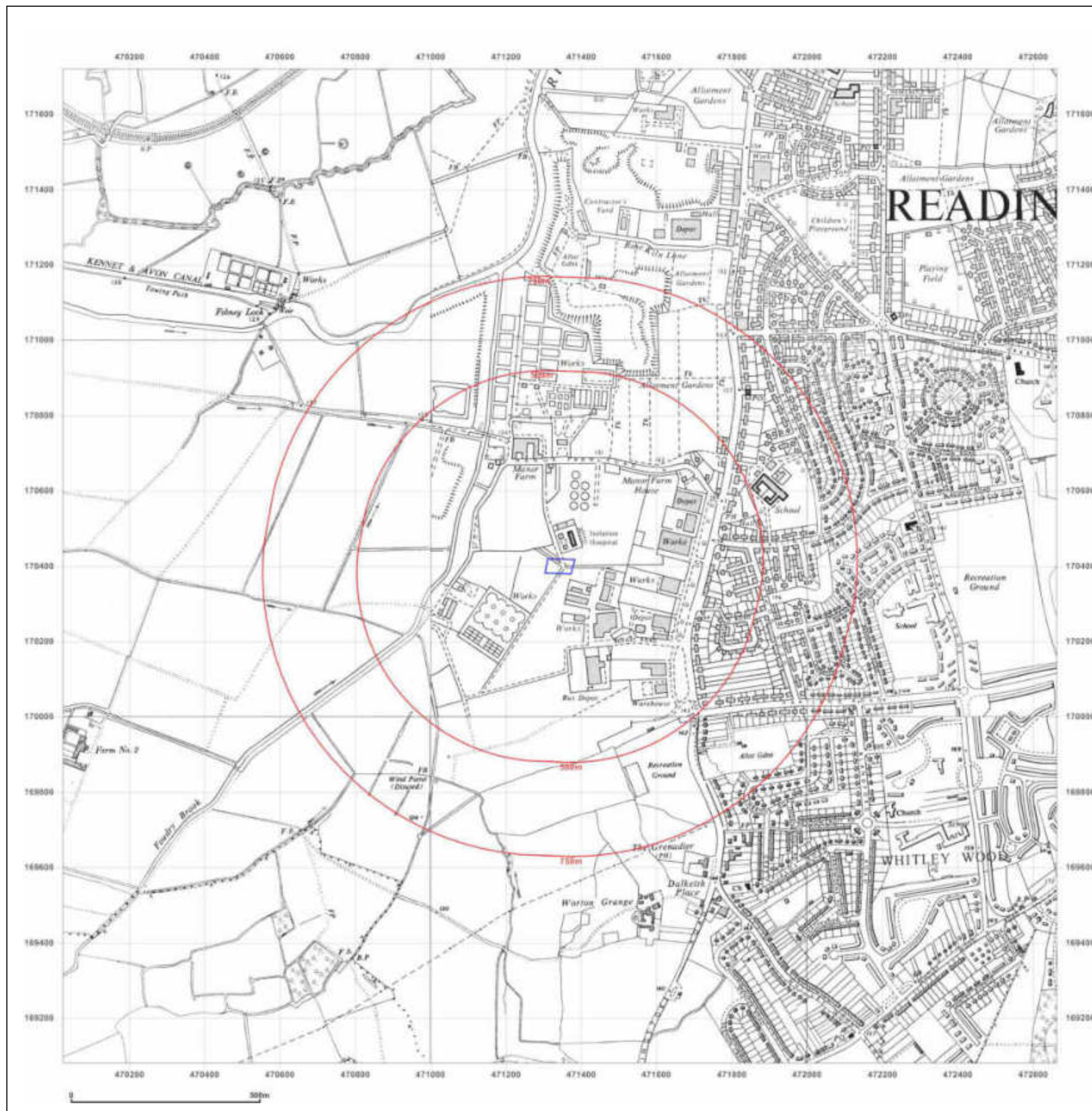


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1969-1973

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1970
 Revised 1973
 Edition N/A
 Copyright 1973
 Levelled N/A

Surveyed 1969
 Revised 1969
 Edition N/A
 Copyright N/A
 Levelled N/A



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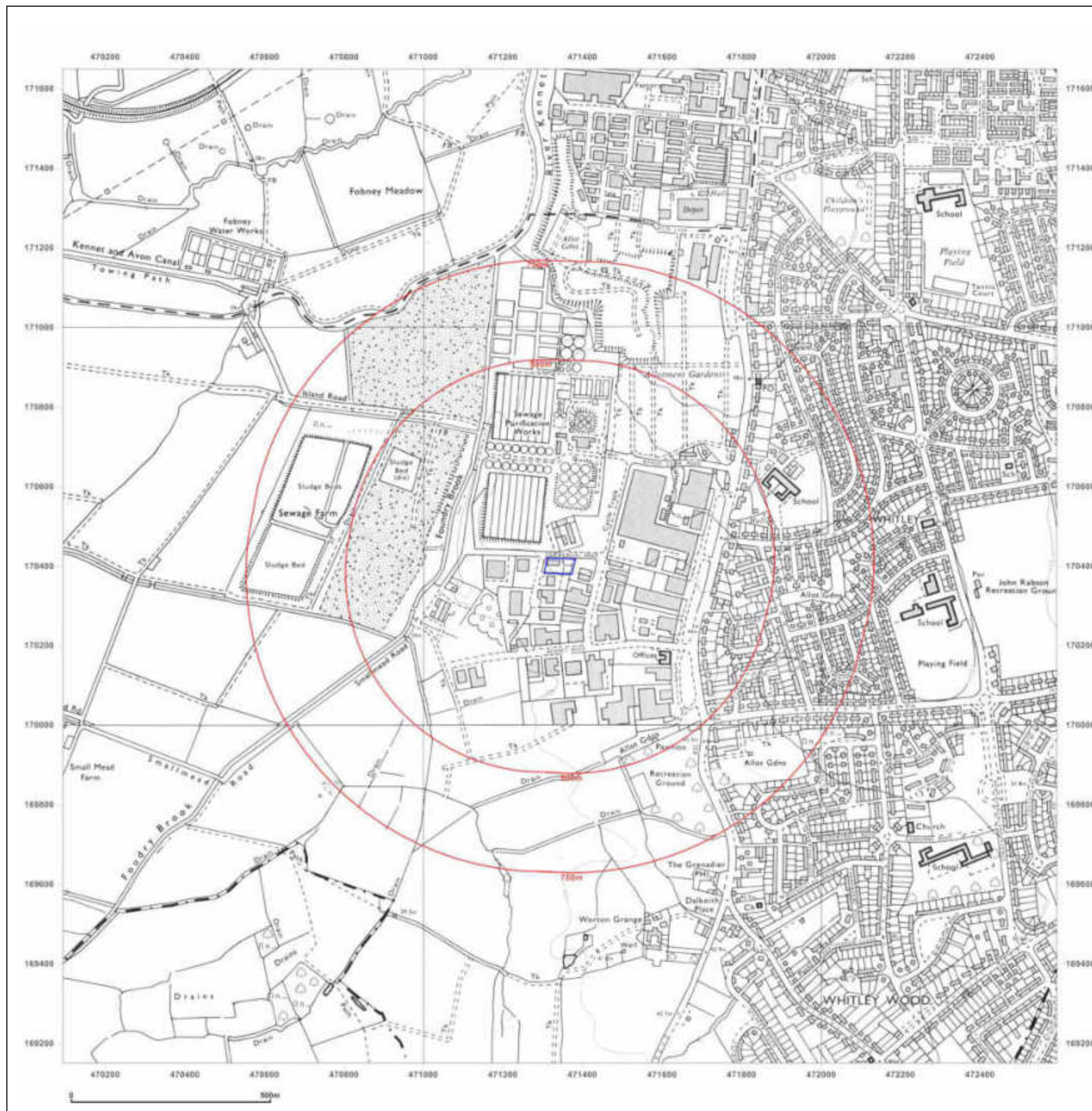


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name:	National Grid
-----------	---------------

Map date: 1976-1979

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1977
Revised 1979
Edition N/A
Copyright 1979
Levelled 1969

Surveyed	1975
Revised	1976
Edition	N/A
Copyright	1976
Levelled	1969



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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1983

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1982
 Revised 1983
 Edition N/A
 Copyright N/A
 Levelled N/A



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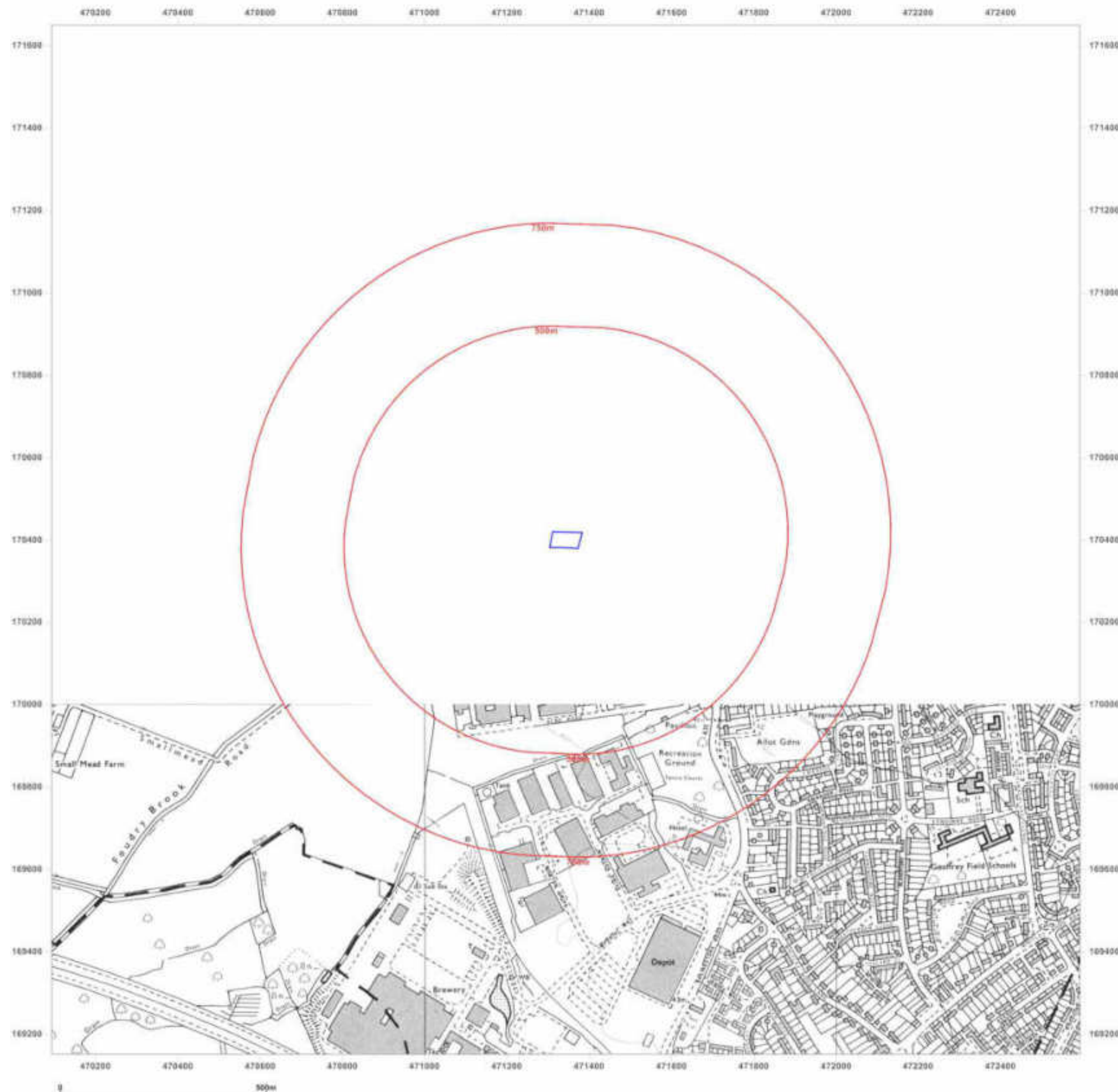


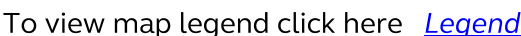
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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 1994

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1987
 Revised 1994
 Edition N/A
 Copyright N/A
 Levelled N/A



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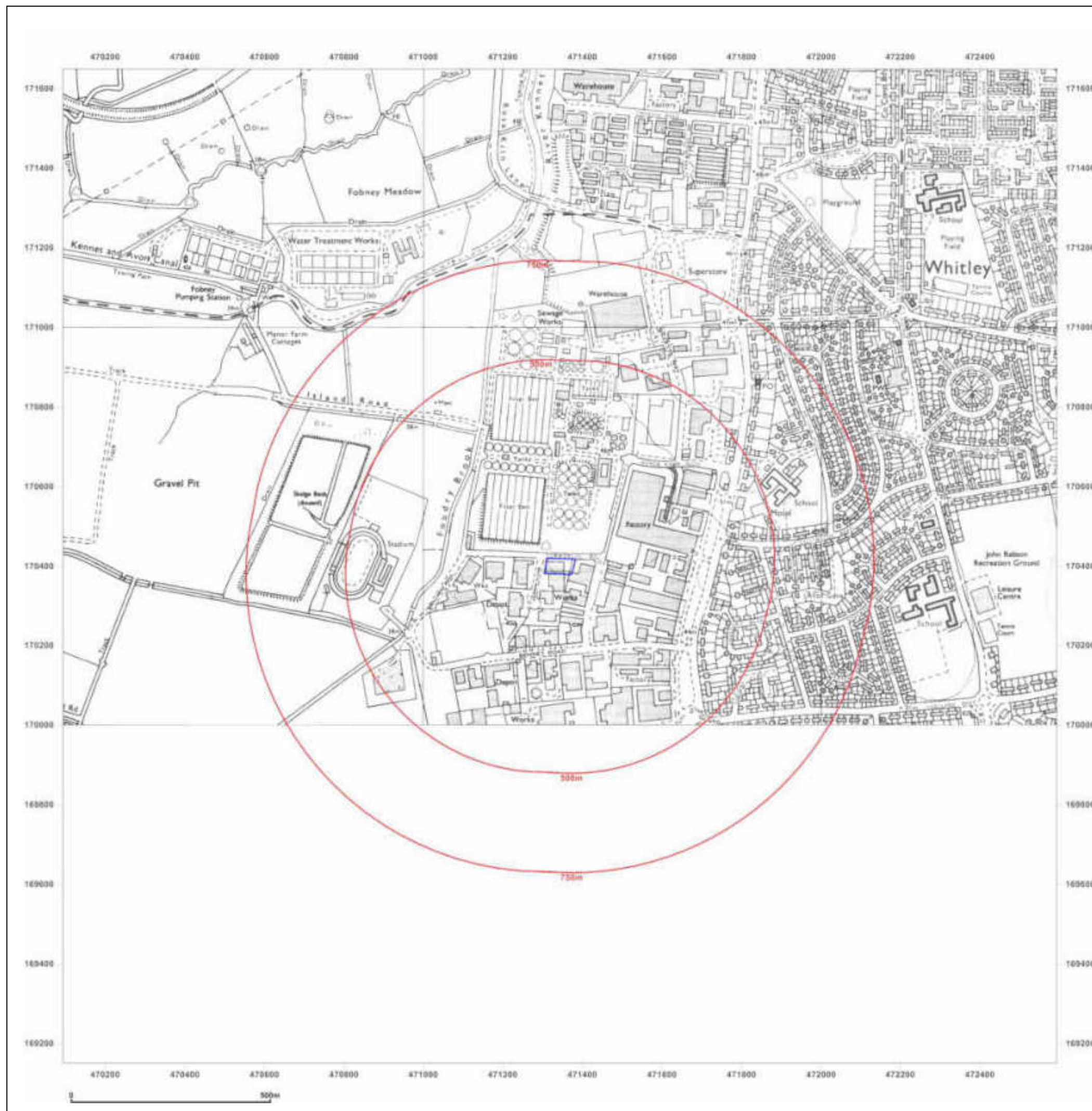


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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

Darwin Close, Reading

Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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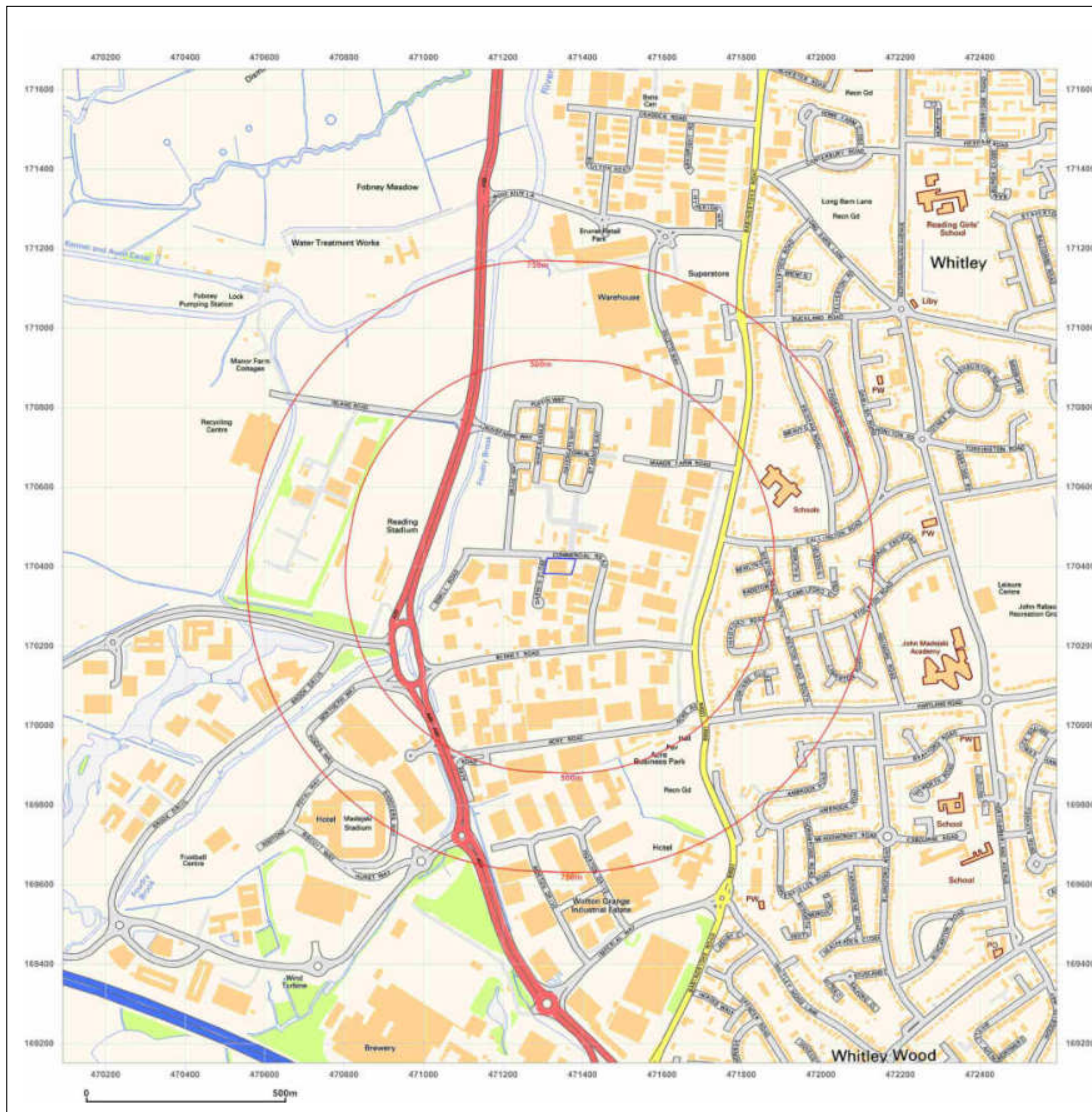


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Site Details:

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Client Ref: EMS_441100_590936
Report Ref: EMS-441100_590936
Grid Ref: 471343, 170400

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



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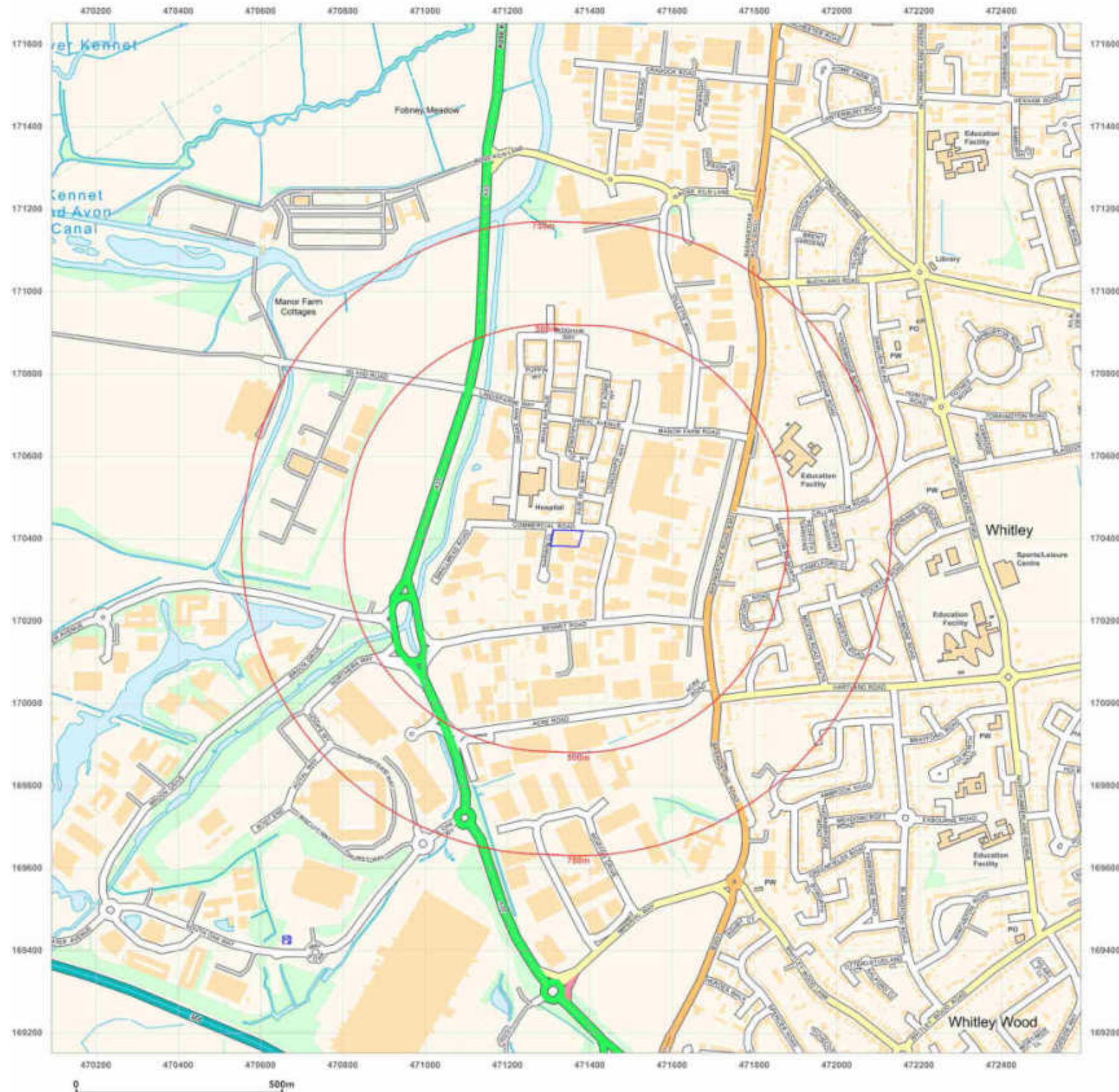


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Appendix C

Environmental Data Report