



Preliminary Environmental Risk Assessment

The Stag Brewery, Mortlake

July 2020

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Executive Summary

Objectives

Update the February 2018 Preliminary Environmental Risk Assessment for ground contamination risks at the proposed residential-led mixed used development of the Stag Brewery, Mortlake, SW14 7ET (the “Site”). This update is based on a revised development proposal.

Site Setting

Current Use	The Stag Brewery ceased operations in late 2015 and decommissioning of brewery infrastructure was undertaken subsequently. Stripping of the Site has since commenced with removal of the majority of brewing equipment and tanks underway at the time of the walkover. A sports field and clubhouse are located in the west.
History	Brewery use since the 15th Century, which expanded to occupy the majority of the eastern half of the Site by 1896 and the whole Site except for the playing fields by 1974. Brewery activities ceased on the Site in December 2015.
Geology	Up to 2.7m Made Ground, then 1.7 – 5.4m of superficial deposits (Alluvium and Kempton Park Gravel Member). Alluvium is sporadically absent across the Site. Beneath this is approximately 73m London Clay Formation, followed by 15 – 20m of Lambeth Group, 5 – 10m Thanet Formation and the Chalk Group at depth.
Controlled Waters	The Alluvium and Kempton Park Gravel Member contain a Secondary A Aquifer, with the London Clay Formation classified as an Unproductive Stratum. The Lambeth Group and Thanet Formation are Secondary A Aquifers. The Chalk Group is a Principal Aquifer.
Consultation	A Groundsure Enviro Insight dataset was commissioned for the Site. Information was also requested from the London Borough of Richmond upon Thames Environmental Health, Building Control and Planning Departments in 2018.

Preliminary Conceptual Model

The following potential pollutant linkages have been identified for the Site:

- Potential exposure of construction workers and the general public during the Works to contaminated soils, groundwater, airborne dust and run-off from stockpiled soils or exposed shallow ground;
- Potential for construction workers to encounter UXO during basement excavation;
- Potential risks to exposed shallow groundwater from introduction of new potential sources of contamination during the Works;
- Potential mobilisation of contamination via historical abstraction wells leading into the Chalk Group Principal Aquifer;
- Potential risks to shallow groundwater and the River Thames due to surface run-off from stockpiled materials via the drainage system discharging to the River Thames, or mobilisation of ground contamination by rainfall infiltration after removal of hardstanding during demolition, and introduction of new sources of contamination during the Works;
- Potential exposure of future occupants and visitors of the proposed redevelopment to residual ground contamination via soft landscaping; and
- Potential exposure of buried structures and services to ground and groundwater contamination, leading to chemical attack.

Conclusions

Given the proposed end use, the overall risk rating for the Site is assessed as **Medium**. The recommendations of this report outline preliminary remedial and mitigation measures that require confirmation through additional works. However, once successfully implemented the risks are anticipated to be **Low**. Therefore the NPPF requirement that on completion the Site can no longer be captured under the Part IIA regime is expected to be met.

Recommendations

The following actions are recommended to address the potentially unacceptable risks identified:

- Further ground investigation should be completed targeting soils and groundwater in the areas where basements are now not proposed as part of development works and residual soils will remain in-situ, to confirm findings of the previous Aecom investigation;
- Geotechnical investigation as part of design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack;
- An environment watching brief should be undertaken throughout ground works, with additional environmental sampling undertaken where visual or olfactory contamination is suspected within the Made Ground or Kempton Park Gravel Member;
- A detailed UXO desk study should be undertaken by a suitably qualified Explosive Ordnance Disposal (EOD) Engineer to assess the risk posed by UXO beneath the Site. The recommendations of this assessment should be followed during construction works;
- A Construction Environmental Management Plan (CEMP) should be developed for the Site, detailing measures to minimise the potential risk to the River Thames and shallow Secondary A aquifer during the demolition and construction works;
- During the Works, appropriate measures for managing materials, chemicals and waste should be utilised. Measures should also be taken to prevent run-off from stockpiled soils reaching the River Thames, and to suppress the generation of dust;
- Following removal of hardstanding across the Site post-demolition, an attempt should be made to locate the historical abstraction wells and decommission them if necessary;
- Construction workers should be provided with and use personal protective equipment (PPE), respiratory protective equipment (RPE) and informed of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater or ground gas / vapours;
- Concrete used in construction, and any new water pipes installed as part of the redevelopment works should be appropriately protected against chemical attack from potential contamination in Made Ground, shallow soils and shallow groundwater underlying the Site; and
- Private gardens at the Development should be planted using an appropriate thickness of imported, certified clean cover material.

1. Introduction

1.1 Objectives

Waterman Infrastructure & Environment Limited (“Waterman”) was instructed by Reselton Properties Limited to prepare an updated Preliminary Environmental Risk Assessment (PERA) for ground contamination at the Former Stag Brewery Site in Mortlake within the London Borough of Richmond Upon Thames (LBRuT).

This document is an update of a previous PERA completed by Waterman in February 2018 (*report reference WIE10667-101-R-3.3.1*) and accounts for the changes to the proposed development design including those made in May 2019). The purpose of this updated PERA is to support further amendments to the proposed development.

1.2 Proposed Development

The redevelopment (hereafter referred to as the ‘Development’) involves demolition of all structures on-Site except the former listed malthouse structure and facades of the former hotel and bottling building. A new mixed use development will be constructed, providing homes (including affordable homes), complementary commercial uses, community facilities, a new secondary school alongside new open and green spaces throughout. Associated highway improvements are also anticipated, which include potential highway works at Chalkers Corner. A large single-level basement will underlie the majority of the eastern part of the Site (east of Ship Lane), with a sub-basement under the cinema building (Building 01). A smaller single-level basement will be constructed in the western part of the Site (west of Ship Lane).

Three planning applications have been submitted in for the development, as follows:

Application A

“Hybrid application to include the demolition of existing buildings to allow for the comprehensive phased redevelopment of the Site:

Planning permission is sought in detail for works to the east side of Ship Lane which comprise:

- Demolition of existing buildings (except The Maltings and the façade of the Bottling Plant and former Hotel), walls, associated structures, site clearance and groundworks;
- Alterations and extensions to existing buildings and erection of buildings varying in height from 3 to 10 storeys plus a single storey basement;
- Residential apartments;
- Flexible use floorspace for:
 - i. Retail, financial and professional services, café/restaurant and drinking establishment uses
 - ii. Offices
 - iii. Non-residential institutions and community use
 - iv. Boathouse
- Hotel / public house with accommodation;
- Cinema;
- Offices;
- New pedestrian, vehicle and cycle accesses and internal routes, and associated highway works;
- Provision of on-site cycle, vehicle and service parking at surface and basement level;

- Provision of public open space, amenity and play space and landscaping;
- Flood defence and towpath works; and
- Installation of plant and energy centres.

Planning permission is sought in outline with all matters reserved for works to the west of Ship Lane which comprise:

- The erection of a single storey basement and buildings varying in height from 3 to 8 storeys
- Residential development
- Provision of on-site cycle, vehicle and service parking
- Provision of public open space, amenity and play space and landscaping
- New pedestrian, vehicle and cycle accesses and internal routes, and associated highway works.”

Applications B and C

No amendments are proposed to the description of development for Applications B and C.

1.3 Regulatory Context

The National Planning Policy Framework (NPPF) 2019 sets out Government planning policy for England and how this is expected to be applied to development. Paragraph 118 of Section 11 – Making effective use of land and paragraphs 170, 178, 179 and 183 of Section 15 – Conserving and enhancing the natural environment of the NPPF relate to contaminated land matters and state the following:

118. Planning policies and decisions should:

c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land;

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

178. Planning policies and decisions should ensure that:

a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

b) 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

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.

179. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

183. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.

In order to assess the contamination status of the Site, with respect to the proposed end use, it is necessary to assess whether the Site could potentially be classified as “Contaminated Land”, as defined in Part IIA of the Environmental Protection Act 1990 and Contaminated Land Statutory Guidance 2012. This is assessed by the identification and assessment of potential pollutant linkages. The linkage between the potential sources and potential receptors identified needs to be established and evaluated.

To fall within this definition, it is necessary that, as a result of the condition of the land, substances may be present in, on or under the land such that:

- a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- b) significant pollution of controlled waters is being caused, or there is significant possibility of such pollution being caused.

It should be noted that DEFRA has advised (Ref. Section 4, DEFRA Contaminated Land Statutory Guidance 2012) Local Authorities that land should not be designated as “Contaminated Land” where:

- a) the relevant substance(s) are already present in controlled waters;
- b) entry into controlled waters of the substance(s) from land has ceased; and
- c) it is not likely that that further entry will take place.

These exclusions do not necessarily preclude regulatory action under the Environmental Permitting (England and Wales) Regulations 2016, which make it a criminal offence to cause or knowingly permit a water discharge of any poisonous, noxious or polluting matter to controlled waters. In England and Wales, under The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009, a works notice may be served by the regulator requiring appropriate investigation and clean-up.

1.4 Constraints

The information contained in this report is based on a review of available historical, geological and hydrogeological sources, consultation with the regulatory authorities, previous ground investigation reports and observations made on-Site during inspections on 14 July 2016 and 17 July 2019.

Waterman has endeavoured to assess all information provided to them during this investigation but makes no guarantees or warranties as to the accuracy or completeness of this information.

The scope of this ground investigation includes an assessment of the presence of asbestos containing materials in the ground at the Site but not within buildings or structures or below ground structures (basements, buried service ducts and the like).



Access was not available to part of the workshop at the eastern section of the Site, due to stripping works in progress at the time of the walkover.

The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the Site.

2. Methodology

This Preliminary Environmental Risk Assessment has been undertaken in general accordance with the Model Procedures for Management of Land Contamination (Contaminated Land Report 11 – Environment Agency, September 2004).

The report includes the following:

- collation of available documentary information;
- a Site reconnaissance;
- hazard identification;
- formulation of a Preliminary Conceptual Model for the Site;
- hazard assessment for the identification of potentially unacceptable risks; and
- recommendations for further action.

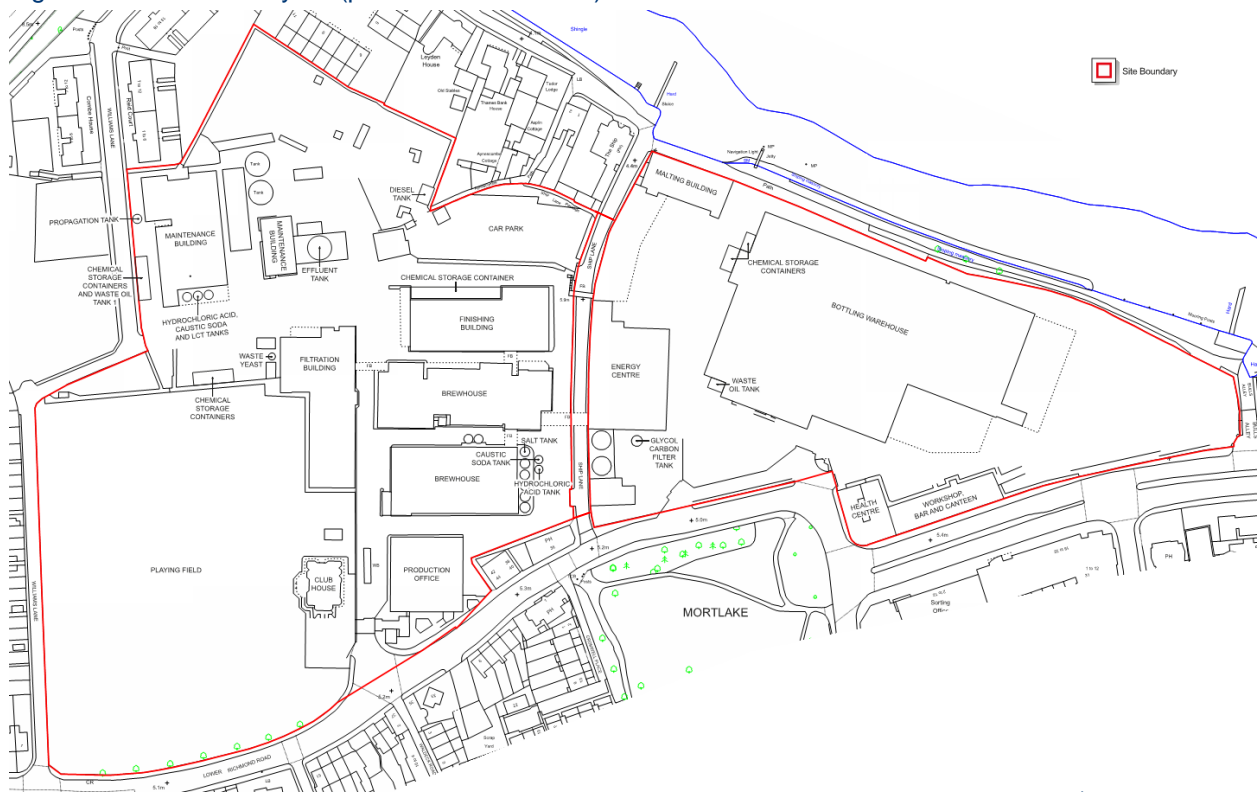
3. Hazard Identification

3.1 Site Description and Reconnaissance

The Site is located at National Grid Reference 520360, 175990, in Mortlake, south-west London. The Site comprises two adjacent land plots bisected by Ship Lane, an 'East Site' and a 'West Site'. The East Site is entirely occupied by brewery buildings, and the West Site is occupied by further brewery buildings in the north and east, and a playing field in the southwest. Thames Water sewers pass beneath the Site, however these have been decommissioned by backfilling at the Site boundary.

At the time of the walkover in July 2019 works to strip out brewery infrastructure from the buildings and external areas such as tanks and electrical cabinets were in progress. Partial demolition of some buildings had been completed to facilitate removal of larger tanks and other equipment.

Figure 1: Site Layout (pre-demolition works)



Source: 2016 Pre-demolition Site Plan

East Site

The East Site is occupied by five main buildings: the Maltings; Bottling Warehouse; hotel/health centre, workshop, bar and canteen; and Energy Centre. These buildings are surrounded by hardstanding. All buildings have been internally stripped out except the power house, where removal of electrical infrastructure was in progress at the time of the walkover.

The Maltings is located at the northwest corner of the Site and is seven storeys with a single storey basement. This building has been internally stripped and is empty, however was not assessed during the walkover due to structural instability.

The centre of the Site is occupied by a large Bottling Warehouse, with a double-height ceiling at the work

floor and a two-storey office integrated along the western side of the building. The warehouse and offices have been completely stripped internally, and all plant and machinery has been removed. A 3,350 litre waste oil tank and pipework was formerly located in the south-west corner of the Site, however this has since been removed. The drainage runs surrounding this former tank remain in place. An outdoor area of the building in the west of the Site under a canopy was in use for general waste storage, with two empty drip trays, pallets of building materials, metal containers and small mobile equipment stored here.

The former hotel/health centre, workshop, bar and canteen are located in a single two-storey building at the southern edge of the Site. This building is internally subdivided into a medical room in the western end, and canteen with food cellar, workshop and a bar to the east. Above the workshop, bar and canteen are a series of meeting rooms. All rooms in these buildings had been or are in the process of being internally stripped out. Access was not available to part of the workshop due to stripping works in progress at the time of the walkover.

The Energy Centre is a three-storey building with rooftop access in the west of the Site. The ground floor contains pipework for ammonia tanks which have been removed, and large boiler tanks which remain in place. Two large water tanks and associated pipework are present at first floor level, along with a series of glycol tanks. An electrical substation and electrical cabinets are located at the second floor and were being stripped out at the time of the walkover. The third floor leads to rooftop access. Four air conditioning units are located at the rooftop, still in place at the time of the walkover. A series of glycerol carbon filter tanks located on the outside of the building to the north were removed during the walkover. A further 4,700 litres glycol carbon filter tank and pipework are located in south-west.

Potentially contaminative activities and features identified during the walkover are detailed in Table 1.

Table 1: Summary of Potentially Contaminative Activities on East Site

Potential Issue	Description	Condition
Above ground Storage Tanks (and fuel lines)	Glycerol carbon filter tank and pipework in south-west corner of the Site, approximately 4,700 litre capacity.	Appeared in good condition with no damage, corrosion or staining. Certified as decommissioned.
	Two glycol tanks and pipework at 2 nd floor within energy centre, estimated capacity 10,500 litre each.	Appeared in good condition with no damage, corrosion or staining. Not known if they were empty.
	Two small glycol tanks in north of the Site, unknown volume	Tanks were undergoing removal at the time of the inspection.
	Former waste oil tank of 3,350 litre capacity	Tank and pipework removed, no evidence for staining to hardstanding
Drainage	Drainage at the East Site is combined. It is not known if there is an interceptor.	Hardstanding appeared to be in good condition, drains were clear with no evidence for overflowing. Drainage around former oil tank appeared clean with no evidence of staining or leaks from this tank.
Hazardous Materials	Two metal chemical storage containers located outside western face of warehouse.	Containers were empty, contained empty spill trays at base.
Solid and Liquid Waste Storage	Waste oil tank formerly present at south-western corner of bottling warehouse, approximately 3,350 litre capacity.	Tank and pipework removed, no staining evident on ground at former location.

West Site

The West Site comprises the seven main buildings surrounded by hardstanding: the Production Office Building (also referred to as POB); two Brewhouses; a Finishing Building; a Filtration Building; and two

Maintenance Buildings (also referred to as packaging and processing buildings). The brewery is adjacent to a sports field in the west of the Site, which has a two-storey clubhouse. Some trees are set in hardstanding at the northern and eastern boundary of the West Site.

The Production Office is a four-storey building with a single-level basement. Two large water tanks are situated within this basement, along with pumping infrastructure and a diesel generator with 800 litre supply tank. The above-ground floors contain meeting rooms, which have been completely stripped internally.

The Brewhouse Buildings and Finishing Building are adjacent three-storey and four-storey blocks in the east of the Site. Stripping out of these buildings was in progress at the time of the walkover, with partial demolition of the brewhouses and finishing building undertaken above ground level to facilitate removal of the large brewery tanks and other infrastructure. A former chemical storage area is located along the north of the finishing building, with six hazardous gas cylinder storage bays. These bays were formerly listed as containing nitrogen, compressed air, helium, hydrogen and acetylene. I

The Filtration Building is a part three, part four storey building in the centre of the Site. The main section of the building is occupied by brewing infrastructure such as tanks and pipework, with an office complex on all floors at the northern end. The ground floor and first floor of the filtration building are disused offices which have been cleared out. At the second floor of the Filtration building is a set of offices and a small laboratory for product testing. At the time of the walkover soft-stripping out process was in progress.

The Maintenance Buildings are located in the northwest corner of the Site. Both are single storey, and are used for storage of pump equipment, parts and tools. Access was not available to the either Maintenance building due to hoarding blocking the entrances. Externally, three former chemical tanks and equipment present in the south of the buildings have been removed. A former large, outdoor effluent tank to the east of the eastern maintenance building has been dismantled, although the base remains in place.

A 6,750 litre mobile diesel storage tank is located in the north of the Site on hardstanding. The current volume of fuel in this tank was not known. No staining or evidence for any leaks from this tank was evident.

Adjacent to the brewery to the west is a large, open playing field, with a two-storey clubhouse at the western boundary. Access was not available to this clubhouse at the time of the walkover.

Potentially contaminative activities and features identified during the walkover are detailed in Table 2.

Table 2: Summary of Potentially Contaminative Activities on West Site

Potential Issue	Description	Condition
Above ground Storage Tanks (and fuel lines)	Diesel tank against northern boundary, estimated capacity 6,750 litres.	Appeared in good condition, certified as decommissioned.
Drainage	Drainage at the West Site is combined. It is not known if there is an interceptor.	Hardstanding appeared to be in good condition, drains were clear with no evidence for overflowing.
Hazardous Materials	6no hazardous gas cylinder storage bays, marked for nitrogen, compressed air, helium, hydrogen and acetylene.	Storage bays were empty.
	Diesel generator and pipework in basement of production offices, supplied by 800 litre diesel tank on raised platform.	Appeared in good condition with no damage, corrosion or staining. Tank certified as decommissioned.

3.1.1 Licences and Consents

The following Pollution, Prevention and Control licenses, discharge consents, licensed waste management facilities and registered radioactive substances are now covered by Environmental Permits;

- Integrated Pollution, Prevention and Controls (IPPC): Environmental Permit for a Part A(1) Activity
- Local Authority IPPC (LA-IPPC): Environmental Permit for a Part A(2) Activity
- Local Authority Pollution, Prevention and Controls (LAPPC): Environmental Permit for a Part B Activity
- Licensed Waste Management Facilities: Environmental Permit for waste activities
- Registered Radioactive Substances: Environmental Permit relating to radioactive substances
- Discharge Consents: Environmental Permit for discharges to groundwater/surface water

The Groundsure Enviro Insight dataset obtained for the Site identified the following licences and consents registered to the property:

- Two Integrated Pollution Prevention and Control applications, registered to The Stag Brewery. The earlier of these were registered in November 2005 and relates to treating of raw materials for food processes (brewing). The later of these applications was for surrender of the permit upon closure of the brewery and was submitted in March 2015. A surrender notice was issued by the EA in June 2016.

A Site Location Plan and Site Layout Plan are presented as Appendix A. A selection of photographs taken during the site inspection is presented as Appendix B.

3.1.2 Site Surroundings

A summary of the current surrounding land uses, including relevant licences and consents, is shown in Table 3.

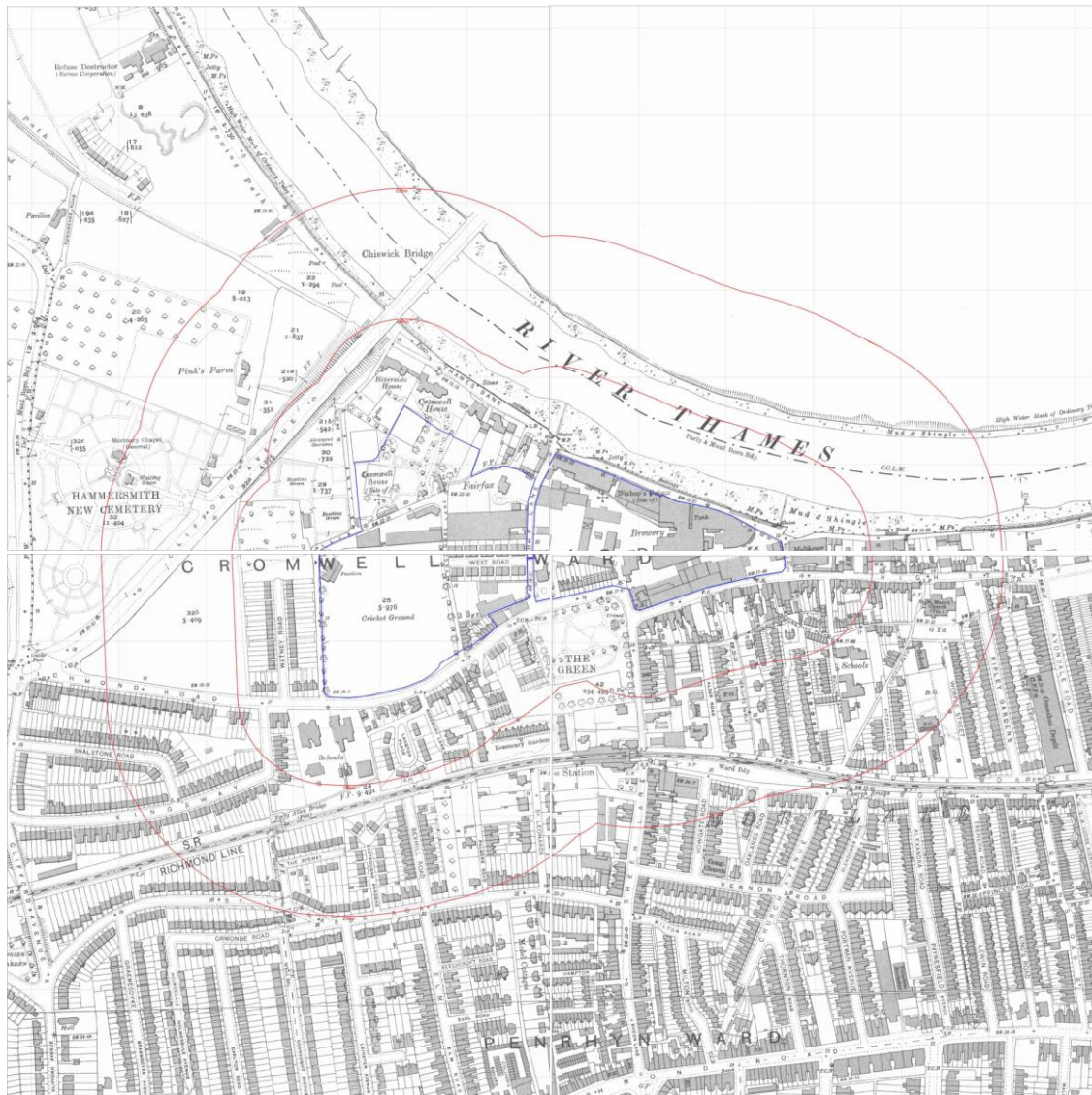
Table 3: Summary of Surrounding Land Uses

Location	Description
North	<p>The River Thames.</p> <p>Four historical landfills, the closest 126m northwest, named Dukes Meadow and accepting waste between 1945 and 1950. The further four landfills are between 233m and 419m north, and where recorded accepted inert and industrial waste. These landfills closed between 1934 and 1935.</p> <p>Single active licensed waste management facility, 467m northwest and managing household, commercial and industrial waste. This site is also a Registered Waste Transfer Site.</p> <p>Single Environmental Permit 241m northwest, registered to a crematorium.</p>
East	<p>Residences.</p> <p>Two Environmental Permits, closest 73m south-east registered to a dry cleaner. Further entry 852m west is also for a dry cleaner.</p>
South	<p>Mortlake High Street, commercial premises and residences.</p> <p>Former scrapyard 16m southeast</p> <p>Four Environmental Permits, the closest 245m south and registered to a petrol filling station. Further entry 498m south for a dry cleaner.</p>
West	<p>Williams Lane, residences.</p> <p>Single Environmental Permit 457m west registered to a petrol filling station.</p>

There are no recorded Environmental Permits relating to handling of Local Authority Pollution Prevention and Controls, radioactive substances or explosives, Control of Major Accident Hazards (COMAH), or Notifications of Installations Handling Hazardous Substances (NIHHS) within 1km of the Site.

3.2 History

Figure 2: Historical Site Use



Source: Groundsure Enviro Insight Report Historical Mapping Data

A review of historical maps obtained from the Groundsure Enviro Insight has been undertaken. Table 4 summarises the relevant information.

Table 4: Site History

Source	Site ^a	Surroundings ^a
Surrey, Middlesex, Maps 1868*, 1870*, 1871*, 1896 (1:2,500)	A brewery occupies the eastern half of the Site. The western half of the Site is playing fields.	Smithy directly adjacent to the Site to the east.
London Map 1895 (1:1,056)		Railway station and railway lines 150m to the south.
Surrey Maps 1873*, 1871-1874 (1:10,560)		Majority of the area surrounding the Site is residential, playing fields and a farm.

Source	Site ^a	Surroundings ^a
London Maps 1896 (1:2,500), 1896, 1898-1899 (1:10,560)	No significant changes.	Coal wharf 100m east. Drainage works 750m northwest.
Insurance Plans (1907) 1:480 Surrey Maps 1913, 1914- 1915*, 1919* (1:2,500), 1920 (1:10,560)	No significant changes.	Bus garage present 300m southeast. Clay works 500m west. Electricity works 350m east. Electricity works 350m east are no longer present. Sewage works adjacent to drainage works 700m northwest.
Surrey Maps 1933, 1938* (1:10,560) Surrey Maps 1934-1935 (1:2,500), 1933 (1:10,560)	Large, unnamed commercial structures have been built in the western half of the Site.	Incinerator 500m northwest Further warehouses have been built 100m-350m east.
OS Plan 1940-1958 (1:10,000) Historical Aerial Photography 1946 (1:1,250)	No significant changes.	Incinerator is now a works .
OS Plans 1952-1953 (1:2,500) OS Plan 1952-1960 (1:1,250) OS Plan 1953-1961, 1968* (1:2,500) Additional SIMs 1952-1953* (1:2,500)	Large commercial structure in the western part of the Site is listed as a garage .	Engine works 20m south Garages 40m and 140m south. The coal wharf 100m east is now a foundry . Corporation depot 420m east. Coal bunker 350m east.
Additional SIMs 1953-1961*, 1952-1977 (1:2,500)	No significant changes.	The smithy , foundry and coal bunker are no longer listed. Electrical substations are listed 60m southeast, 400m southeast, 120m south and 240m south of the Site.
OS Plan 1974*, 1961-1978* (1:1,250) 1962-1966, 1966- 1967*, 1975-1976* (1:10,000) Additional SIMs 1965-1978* (1:1,250)	Structures in the western half of the Site have been demolished or reduced in size. The garage is no longer listed. Six tanks are present in the southern half of the Site.	The corporation depot and works are no longer listed.
Additional SIMs 1978-1988*, 1987*, (1:1,250) London Map 1985 (1:25,000) National Grid Data 1991 (1:1,250)	No significant changes.	The engine works has expanded with additional buildings. The garage 40m south is no longer listed. A scrap yard is present 40m south.
National Grid Data 1991- 1992*, 1991-1994, 1992- 1995* (1:1,250) OS Plan 1992* (1:10,000)	Two large tanks in the northwest corner of the Site, and three smaller tanks in the west of the Site.	Bus depot is no longer present.
Raster mapping 1999, 2006 (1:10,000)	No significant changes	The engine works and scrap yard are no longer listed.

Source	Site ^a	Surroundings ^a
Historic Aerial Photography 1999 1:1,250)		
Vector Map 2016 (1:10,000)		

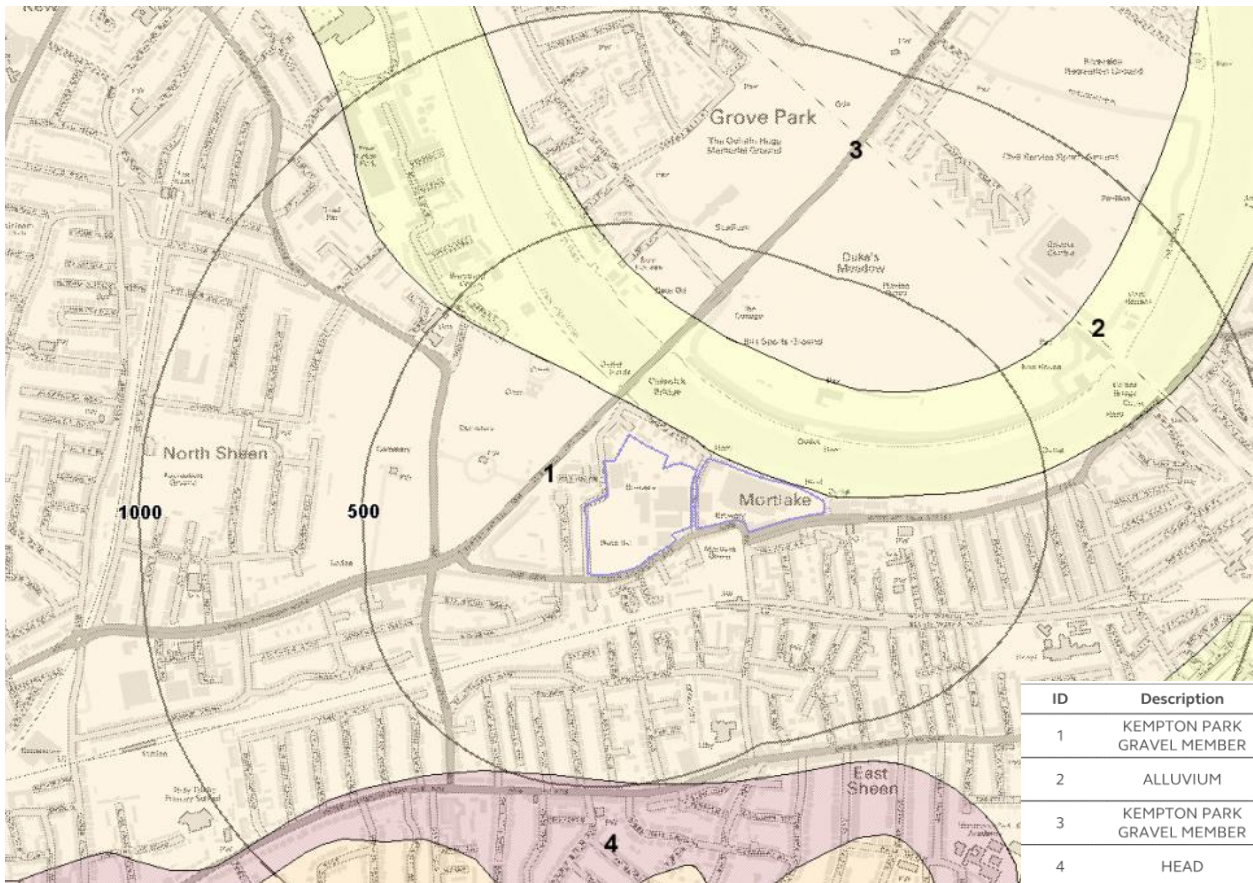
^a potentially contaminative uses are shown in bold italics.

* maps do not have entire coverage of the Site or surrounding area.

3.3 Geology

The geology beneath the Site has been established from previous ground investigations by Dames and Moore (1995), CRA (2003) and Aecom (2015), alongside British Geological Survey 1:50,000 map sheet 270 (South London, Solid and Drift Edition), BGS borehole records TQ27/NW-596 and TQ27/NW-597, and the BGS website (accessed online 21/08/2019). The results are outlined in Figure 3.

Figure 3: Geology



Source: Groundsure Geo Insight Report

A summary of the geology is provided in Table 5.

Table 5: Site Geology

Stratum	Area Covered	Estimated Thickness	Typical Description
Made Ground	Whole Site	0.4 – 2.7	Predominantly coarse sand and gravel, including pieces of brick and minor amounts of black clinker.
Alluvium	Sporadic across Site	0.3 – 1.5	Soft brown grey slightly gravelly clay.
Kempton Park Gravel Member	Whole Site	1.4 – 3.9	Clayey, silty sand with varying gravel content with areas of soft, brown, sandy clay.
London Clay Formation	Whole Site	73	Stiff grey to brown clay, with occasional pockets of silt and sand.
Lambeth Group	Whole Site	15 – 20	Clay, some silty or sandy, with sands and gravels.
Thanet Formation	Whole Site	5 – 10	Fine grained sand that can be clayey and glauconitic. Flints at the base of the formation.
Chalk Group	Whole Site	Not proven	Chalk and flints.

BGS mapping does not indicate Alluvium is present beneath the Site. However, ground investigations found it is sporadically present in some areas at both the eastern and western sections of the Site.

3.3.1 Ground Stability

BGS map data does not identify any structural, geomorphological or geochemical features on or near to the Site. The Groundsure Geo Insight report for the Site records a moderate potential risk of shrinking or swelling clay ground stability hazards at the northern half of the Site, with the remainder of the Site assessed as negligible risk.

The Site is not in an area that could be affected by coal or metalliferous mining activity.

3.3.2 Unexploded Ordnance

There is a risk unexploded bombs, anti-aircraft projectiles and/or incendiary bombs fell unnoticed and unrecorded within the Site boundary. The Preliminary Unexploded Ordnance Risk Assessment (Ref. 501990) for the Site produced by Groundsure (Appendix C), identifies an overall medium risk classification for the Site. Historical records indicate during WWII the LBRuT sustained a high density of bombing and bomb risk maps have identified several high explosive bombs as having fallen on parts of the Site.

3.3.3 Ground Gas and Vapours

Radon

Radon is a colourless and odourless radioactive gas, formed from the decay of naturally occurring uranium within soils and rocks. The radioactive elements formed by the decay of radon may be inhaled, entering the lungs, and potentially leading to localised damage, and lung cancer.

Current Building Regulations, endorsed by Public Health England (PHE) detail that all new buildings or extensions require radon protective measures where the development is in an area of high radon.

Information recovered from the Landmark Report, BGS, and PHE indicate the Site is not in an area of high radon levels. Correspondingly, no radon protective measures are required at the proposed development.

In 2009 the Health Protection Agency ((HPA), now Public Health England) recommended that radon protection measures be built into all new occupied buildings in the UK, whether or not they were situated in radon sensitive area as identified by British Geological Survey (BGS) maps. The Building Regulations Advisory Committee supported the HPA's proposal. However the then Government rejected this recommendation and the current Building Regulations (2013) do not include it.

This approach should be confirmed with the Building Control Officer.

Ground Gas

There are four registered landfills within 500m of the Site. These landfills are all located to the north, and are separated from the Site by the River Thames. This is likely to prevent the migration of ground contamination, ground gas and vapours from these landfills to the Site.

The potential for ground gas has been further assessed according to the Waterman Ground Gas Assessment Tool, with results reproduced in Appendix C. Following assessment, the Site is considered a very low risk for ground gas issues. Based on the sensitivity of the end-use receptor, no further ground gas investigation or assessment is required.

Vapours

Land uses with the potential to result in ground contamination with vapour risks have been identified on-Site, including diesel and waste oil tanks. These tanks were all formerly located in buildings or on hardstanding, reducing the potential for any leaks or spills to reach the underlying soils. All tanks have been decommissioned and are no longer in use, mitigating their potential to cause future contamination before or during redevelopment.

The Groundsure dataset does not record any pollution incidents relating to oils or fuels within 500m of the Site.

Based on the above there is no significant vapour risk to the Site.

3.4 Controlled Waters

3.4.1 Surface Waters

The nearest surface water to the Site is the River Thames, directly adjacent to the north. The Ecological Potential of the River Thames has been assessed as 'Moderate' under the Water Framework Directive.

There are no surface water abstractions within 1km of the Site. The closest is 1.3km northeast, drawing water from the River Thames to supply a lake/pond.

There are five recorded active Environmental Permits for discharges to surface water within a 1km radius of the Site. The closest of these is located 763m northwest, operated by Thames Water for discharge of public sewage overflow to the River Thames. The further four are also for sewage overflows. On-Site sewer records indicate that some areas of the Site currently drain to the Thames Water surface water sewer network, ultimately discharging to the River Thames.

The Environment Agency (EA) records a single pollution incident to surface water from the Site, involving a spill of unknown chemicals at Stag Brewery. The spill was recorded as a Category 3 (minor incident). A further two Category 2 (significant incident) spills are recorded at Ship Lane, which runs between the East Site and the West Site, involving miscellaneous chemicals and unknown chemicals. These spills likely originated from the Site.

The EA provides the following further information relating to these incidents:

- Pollutant Incident 17/04/1996 at Stag Brewery involved a spillage of yeast on-site, which had a minimal impact to the tidal Thames.
- Pollutant Incident 02/07/1994 at Ship Lane was a discharge of brown foaming trade effluent discharged directly to the River Thames from a surface water outfall due to incorrect plumbing. A CCTV survey was undertaken and the situation rectified. A local effect to the tidal Thames was recorded.
- Pollutant Incident 24/05/1989 at Ship Lane was a discharge of contaminated water to the River Thames. The cause was identified as a broken sewer on-Site allowing effluent to enter surface water drainage. The discharge was stopped on discovery and the sewer repaired.

Environmental Incident Reports provided for the Site to Aecom referred to 15 spill incidents during operation of the brewery between 2009 and 2015. These included spills to drainage of brewing substances (wort, beer, grain, yeast and sugar) and mechanical fluids (lubricant, hydraulic oil, oxafoam, diesel and unidentified substances). Whether the spills were cleaned up, or the clean-up methodology used for each spill is not recorded.

Six pollution incidents to surface waters are recorded within 1km of the Site. The closest of these occurred 475m northwest, involved a miscellaneous spill of oils to the River Thames and was a Category 2 (significant incident). The further pollution incidents involved oils, sewage and miscellaneous chemicals, with three classed as Category 3 and two classed as Category 2.

3.4.2 Flood Risk

According to EA indicative flooding data, the north-east of the Site is located within a Zone 2 flood risk area. The remainder of the Site is within a Zone 3a flood risk area, however a flood risk assessment for the Site by Hydro-Logic Services in October 2019 states the Site is not within Flood Zone 3b (functional flood plain).

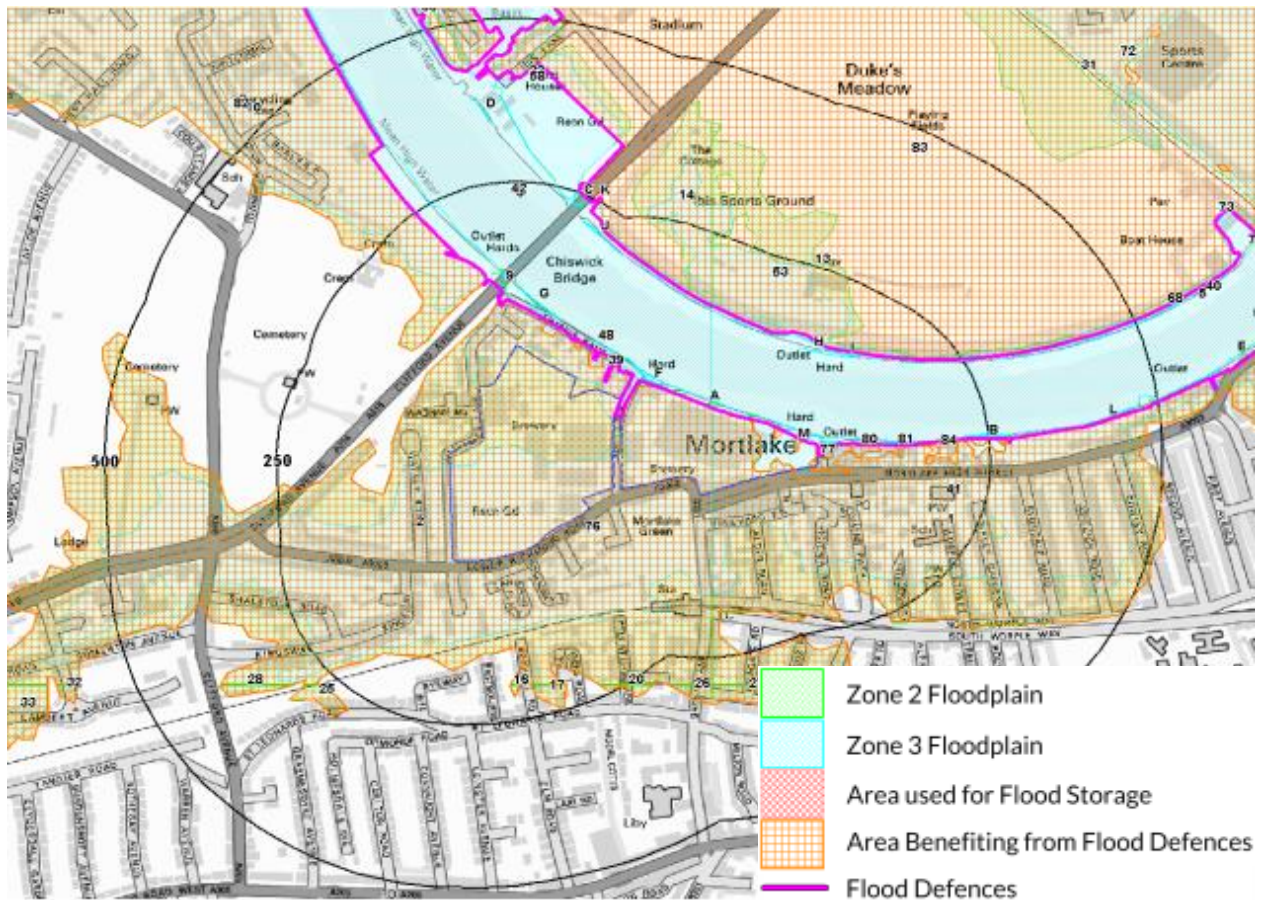
Mapping data indicates the Site is in an area benefitting from flood defences. In consideration of this, the Groundsure dataset reports the risk of flooding from rivers and the sea as low.

BGS data also indicates the Site is in an area at risk of groundwater flooding to surface level.

During a previous walkover of the Site by Waterman in 2016, Ship Lane and the off-site footpath to the north of the brewery were flooded.

The risk of flooding from rivers or seas is shown in Figure 4.

Figure 4: Flood Risk Zones



Source: Groundsure Enviro Insight

3.4.3 Groundwater

According to EA online data, the geological deposits underlying the Site are classified as per Table 6.

Table 6: Summary of Hydrogeological Properties of the Main Geological Strata

Stratum	EA Classification	Hydrogeological Significance
Made Ground	Not classified	Likely to be sufficiently permeable to allow the migration of surface water to underlying strata.
Superficial Deposits (Alluvium and Kempton Park Gravel Member)	Secondary A Aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These strata are likely to be in hydraulic continuity with the adjacent River Thames.
London Clay Formation	Unproductive Stratum	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
Lambeth Group	Secondary A Aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Thanet Formation	Secondary A Aquifer	
Chalk Group	Principal Aquifer	Layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage.

The Site is not located within a groundwater Source Protection Zone. Based on available information, it is anticipated that shallow groundwater in the Alluvium and Kempton Park Gravel Member is in hydraulic continuity with the tidal River Thames directly adjacent to the Site.

There are two recorded historical groundwater abstractions within the Site boundary, references TQ27/NW-596 and TQ27/NW-597. These wells were drilled in 1836, extended to 101m and 121m below ground level in 1858 and abstracted groundwater from the Chalk Group Aquifer. Details of abstraction volumes were not recorded.

A further two groundwater abstractions are recorded within a 1km radius of the Site. The closest of these is located 228m north at Dukes Meadow Golf Club, drawing 8,000 litres of groundwater per year from the Chalk Group aquifer for irrigation of the playing green. The further abstraction is located 663m northeast, also for irrigation purposes at Dukes Meadow Golf Club and drawing a further 5,000 litres per year.

There are no Environmental Permits for discharges to groundwater recorded within 1km of the Site.

3.5 Ecological Systems

The Groundsure dataset identified the non-statutory River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI) for Nature Conservation located adjacent to the north of the Site.

3.6 Consultations

The agencies and individuals which have been contacted and/or their records reviewed during the course of this study are listed in Table 7.

Table 7: List of Parties Consulted During this Study

Organisation	Consultee	Response
London Borough of Richmond upon Thames		
Environmental Health	Simon Makoni	Response received July 2016.
Planning	-	Contacted June 2019, no response was received.
Building Control	-	Contacted June 2019, no response was received.
Environment Agency		
Enquiries Unit	Karen Rigg	Response received 10/09/2016.

3.6.1 Environmental Health

The Environmental Health Department reported they held records of potentially contaminative land uses in proximity to the Site between 1899 and 2016. These included the brewery on-Site alongside electrical substations, foundries, metal recycling centres, petrol filling stations and ordnance works within the surrounding 500m.

LBRuT did not hold records of any contaminated land ground investigations or remediation having taken place at the Site.

3.6.2 Planning Department

A search of the LBRuT's planning portal (accessed online August 2019) identified multiple planning applications for the Site between 1977 and 2019. The majority of these related to tree works such as

pruning and branch clearing. Several applications were for minor changes to building layouts such as extensions, upgrades or erection of display hoardings.

A planning application is recorded for construction of the Bottling Warehouse at the East Site (reference 95/1625/FUL. This application was approved in July 1995, with no conditions relating to contaminated land. Four further applications are recorded for minor variations to this planning permission.

3.6.3 Environment Agency

Information has been requested from the EA with regard to pollution incidents, in their response they identified the following;

- Pollutant Incident 17/04/1996 involved a spillage of yeast on-site, which had a minimal impact to the tidal Thames.
- Pollutant Incident 02/07/1994 was a discharge of brown foaming trade effluent discharged directly to the River Thames from a surface water outfall due to incorrect plumbing. A CCTV survey was undertaken and the situation rectified. A local effect to the tidal Thames was recorded.
- Pollutant Incident 24/05/1989 was a discharge of contaminated water to the River Thames. The cause was identified as a broken sewer on-Site allowing effluent to enter surface water drainage. The discharge was stopped on discovery and the sewer repaired.

4. Previous Environmental Assessments

The following environmental reports were provided with respect to the Site.

Table 8: List of Previous Environmental Assessments and Documents Reviewed

Author	Title	Reference and Date
Aecom	Stag Brewery: Phase 1 Environmental Site Assessment	47074683; July 2015
Aecom	Stag Brewery, Mortlake: Phase 2 Environmental Site Assessment Report	47075502; September 2015
Aecom	Stag Brewery, Mortlake: Groundwater Sampling Point Decommissioning Report	60473952; February 2016
Bale Group	Tank Decommissioning Certificates	December 2015 to January 2016
Waterman	Environmental Risk Assessment: The Former Stag Brewery East Site, Mortlake, London	WIE10667-101-R-4.2.1 RJM; February 2018

Stag Brewery, Mortlake: Phase 1 Environmental Site Assessment, July 2015

This desk study report was undertaken in July 2015. The objective of the report was to identify potential risks, liabilities and constraints to future developments. The study area comprised all brewery buildings on-Site, and the adjacent playing fields. At the time of the survey, the brewery was disused although twelve tanks were still present. These were identified as holding gas oil (x2), waste oil (x2), slat-lube, diesel (x2), hydrochloric acid, brine, caustic soda, and spent KG slurry (x2).

The desk study reviewed environmental, geological, hydrogeological data, and information from a number of previous reports for the Site, listed below:

- Dames & Moore Environmental Assessment (1995);
- CRA Baseline Soil and Groundwater Investigation (2003);
- SPMP Groundwater Monitoring Reports (2003 – 2012) and Review Report (2008);
- The asbestos risk register for the Site, drainage survey, environmental incident reports and periodic environmental inspections undertaken while the Site was in active use were also reviewed.

The Dames & Moore and CRA reports included intrusive ground investigation, with soil and groundwater sampling at a total of eighteen exploratory holes drilled to between 2.5m and 7.9m below ground level (bgl). Six monitoring wells were installed by Dames & Moore, and seven by CRA. CRA also undertook monitoring at four of the Dames & Moore wells during their investigation, bringing the total for their study to eleven.

Geology encountered during the ground investigations comprised Made Ground, then Alluvium which was found to be sporadic across the Site, and not present in many locations. Beneath this was Kempton Park Gravel Member, then London Clay Formation to maximum depth drilled. Groundwater was encountered at between 4 to 5.5m bgl within the Kempton Park Gravel Member. Locally perched groundwater was encountered at 1.2m to 2.6m bgl, due to the presence of underground voids. Groundwater was interpreted to generally flow towards the east / north-east, likely influenced by tidal cycles of the nearby River Thames.

Soil samples from the Made Ground, Alluvium and Kempton Park Gravel Member were analysed as part of both ground investigations for a range of organic and inorganic contaminants including metals, VOCs and SVOCs, and TPH. The Dames & Moore study found no exceedances of Dutch Intervention Values (DIV; applicable as soil guidance values in 1995 but superseded since) were detected. In groundwater, a

single exceedance of chromium and copper above DIV was recorded in one borehole, but this was not considered to be representative of the water body as a whole.

The CRA results showed no exceedances of DIV within soil samples. In groundwater, concentrations of TPH of 51ug/l and 1,114ug/l were recorded in two boreholes, in the vicinity of the fuel oil tanks.

Dames & Moore concluded that, given the lack of evidence of significant soil or groundwater contamination at the Site, the risk to off-Site groundwater receptors was low. The CRA report concurred but noted that a potential pollution pathway existed between the tanks holding caustic soda and acid, and groundwater beneath the Site via downward migration through damaged hardstanding.

Groundwater from these wells was monitored and sampled for laboratory analytical testing on a further three occasions in December 2005, April 2007 and November 2012 as part of a Site Protection & Monitoring Programme (SPMP). Results of this monitoring found that when compared against relevant Environment Quality Standards (EQS), Environmental Standards for Discharge to Surface Waters, Drinking Water Quality Standards (DWS) or WHO guidelines for drinking water some exceedances for metals, hydrocarbons and ammoniacal nitrogen. However, this was not thought to represent widespread groundwater contamination at the Site.

Neither the Dames & Moore nor the CRA study included ground gas or vapour monitoring at the Site.

The Environmental Incident Reports provided for the Site referred to 15 spill incidents during operation of the brewery between 2009 and 2015. These included spills to drainage of brewing substances (wort, beer, grain, yeast and sugar) and mechanical fluids (lubricant, hydraulic oil, oxafoam, diesel and unidentified substances).

The Aecom desk study concluded that sources on-Site were the brewery and chemicals stored for brewing operations, effluent management and historical chemical releases. Identified pathways for potential migration of any contamination were vertical and lateral transport through shallow soils, volatilisation of ground contamination resulting in vapours, and direct contact between ground contamination and human receptors. Potential receptors included construction workers, future Site residents, off-Site residents and controlled waters beneath and adjacent to the Site. The risk posed by potential contamination was assessed as low due to the low levels of contamination identified by past ground investigations. However, the report recommended further ground investigation be done to confirm no localised areas of contamination were present in areas where historically intensive industrial processes were identified.

Stag Brewery, Mortlake: Phase 2 Environmental Site Assessment Report, September 2015

Aecom conducted an intrusive ground investigation between 20 and 28 August 2015. Twenty-eight boreholes were drilled to a maximum depth of 5m bgl to collect soil samples, and three deep boreholes were drilled to between 6m and 7.6m to allow for groundwater sampling.

Exploratory hole locations were distributed across both the eastern and western areas of the Site, and targeted areas where the potential for localised contamination was identified in the earlier Phase 1 report. These included heavy oil storage tanks in three locations around the Site, storage areas in the northwest, the tanker cleaning pad and waste storage areas in the west, the area of a suspected historical drain leak, chemical storage areas in the west and southwest, vehicle maintenance area in the east, electrical substation, slurry tanks and engineering workshop. The remaining locations were chosen to provide general Site coverage. The geology and groundwater depths encountered during the investigation was generally consistent with that described in geology section of this report, although the thickness of Made Ground was found to be greater than that logged by the 2003 CRA study.

In addition to the new exploratory holes, the 13 existing groundwater wells from previous ground investigations were reconditioned via desilting and pumping. Groundwater level monitoring and sampling was then undertaken at all 16 installations.

Soil samples from the Made Ground, Alluvium and Kempton Park Gravel Member were analysed for organic and inorganic contaminants including metals, polyaromatic hydrocarbons (PAH), volatile and semi-volatile organic compounds (VOCs and SVOCs), speciated total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), pH and asbestos. Results were compared against Aecom Generic Assessment Criteria for three end-use scenarios based on the anticipated development layout: residential land with gardens, residential land without gardens and commercial land.

Soil results

Results of soil testing for 37 samples collected found that levels of arsenic exceeded GAC for a residential end-use with or without private gardens in a single location. Levels of lead exceeded GAC for commercial end-use in one location, residential end-use without private gardens in two locations and human health with private gardens in six locations. Three exceedances of coal tar above residential GAC without private gardens were also identified. Asbestos was detected in eight samples across the Site, however this was quantified at levels less than 0.1%.

Soil sampling and testing indicated that overall contamination across the Site did not represent an unacceptable risk to human health, regardless of the end use scenario.

Groundwater results

Groundwater samples from the Kempton Park Gravel Member shallow aquifer were tested for metals, ammoniacal nitrogen, nitrate, phosphate, sulphate, VOCs and SVOCs, TPH and pH. The results were contrasted against UK Drinking Water Standards (DWS), or Environmental Quality Standards (EQS).

During recovery of groundwater samples, no measurable free phase product, oily sheen or staining was observed and no hydrocarbon odours or significantly elevated PID readings were detected. Groundwater results found some elevated levels of metals above DWS and EQS. Three samples contained elevations of TPH, and a single sample contained phenol above EQS. The average ammoniacal nitrogen concentration from groundwater samples marginally exceeded the DWS. However, the measured concentrations were variable and in many cases were only slightly above GAC.

Ground Gas and Vapour Monitoring

Aecom did not undertake any ground gas or vapour monitoring at the installed monitoring wells, as this was not within the scope of their investigation.

The report concluded that soils and groundwater at the Site did not contain contaminant concentrations that represented a significant environmental risk to human health or controlled waters. No environmental improvement works were considered necessary at the Site.

Stag Brewery, Mortlake: Groundwater Sampling Point Decommissioning Report

The sixteen groundwater monitoring wells drilled as part of previous investigations at the Site were decommissioned by Aecom in February 2016, as part of the closure of the brewery on-Site and surrender of Environmental Permits. Works involved filling the entire standpipe and screened section of each well with low permeability backfill (slurry) and securing the metal cover in place at the surface.

The report concluded that the sampling points had been successfully decommissioned and no pathway for any future surface contamination to reach groundwater or subsurface soils via the wells existed.

Bale Group: Tank Decommissioning Certificates

Bale Group undertook tank decommissioning and cleaning works at the Site between 2 December 2015 and 21 January 2016. The following tanks still present at the Site were drained, cleaned, degassed and tested as free of CO₂, H₂S, LEL and pH with a calibrated handheld gas detector:

East Site

- Glycol carbon filter tank in southwest corner of the Site.
- Waste oil tank 2 located outside southwestern corner of the warehouse.

West Site

- Diesel generator tank in Production Office basement.
- Diesel tank against northern boundary.
- Hydrochloric acid tank, bund and pipework at east side of Brewing Building.
- Caustic soda tank, bund and pipework at east side of Brewing Building.
- Effluent tank on raised platform in centre of northern part of the Site
- Waste oil tank 1 located against western boundary wall, approximately 3,350 litres capacity.

Environmental Risk Assessment: The Former Stag Brewery East Site, Mortlake, London, February 2018

Waterman undertook a ground investigation at the section of the Site east of Ship Lane between 3-27 October 2016. The scope included two boreholes drilled to 30m bgl, ten window sampler holes to 5.5m bgl. Monitoring wells were installed in both boreholes and window sampler holes.

Boreholes were located at opposing ends of the Site to provide the widest possible range of geotechnical conditions and variance over the total area. Four window sampler holes were situated targeting potentially contaminative former activities at the brewery, with the remainder located to provide a spread of exploratory holes across the available Site area. Monitoring wells were installed in eight of the window sample holes, and both boreholes to enable ground gas and vapour monitoring, and groundwater monitoring and sampling.

Soil samples were collected from arisings every 0.5m in the Made Ground, and every 1.0m in the natural material. Samples collected were analysed for a range of inorganic and hydrocarbon contaminants including metals, total petroleum hydrocarbons (TPH), polyaromatic hydrocarbons (PAHs) volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Samples of shallow strata were also submitted for Waste Acceptance Criteria testing. Groundwater samples were collected from all monitoring wells, and screened for metals, TPH, PAHs, VOCs and SVOCs.

Soil results

No metal contamination was identified above residential assessment criteria. TPH exceedances were recorded across three sampling locations in the western half of the Site, close to historical tank bases and the decommissioned waste oil tank. Asbestos was not visually identified during the ground investigation works. Following laboratory microscopic analysis and quantification, chrysotile asbestos as fibre bundles was identified in some Made Ground samples.

Groundwater results

Groundwater samples from the Kempton Park Gravel Formation identified iron, nickel and zinc contamination at BH1, in the southwest of the Site. No elevated levels of organic contamination were identified

Ground Gas and Vapour Monitoring

A single preliminary round of ground gas and vapour monitoring was completed at the Site. Based on the highest methane or carbon dioxide concentration recorded of 4% v/v and the peak flow rate of +0.4 l/hr, the Site was classified as very low risk for ground gas issues. Based on soil and groundwater sampling, and follow-up monitoring the Site was not considered at significant risk of vapour ingress.

The report concluded that whilst significant ground contamination was not identified, further investigation in areas of the Site not accessible at the time of the study was needed to confirm the ground conditions.

5. Hazard Assessment and Preliminary Conceptual Model

Contaminants of concern are presented within Table 9. The Preliminary Conceptual Model for the Site is presented in Table 10 and graphically in Figure 3 of Appendix A.

The risk rating included in Table 10 has been assessed qualitatively using the criteria given in Appendix E and the potential receptors identified using the criteria given in Appendix F.

5.1 Contaminants of Concern

Contaminants of concern identified at the Site are summarised in Table 9.

Table 9: Contaminants of Concern

Source	Associated Contaminants
On-Site (current)	
Electrical substations	Metals, PCBs, transformer oils
On-Site (historic)	
Brewery	Diesel, waste oil, lubricant oils, hydrochloric acid, caustic soda, slurry, asbestos
Off-Site (current)	
Garages and petrol filling stations	Metals and metalloids, fuels, TPH, PAH, organic solvents, asbestos
Off-Site (historic)	
Landfill	Clinker, brick, slate, pottery, mortar, wood, chert, concrete, metal, glass, flint, asbestos, ground gas and vapours
Incinerator	Ash and clinker, metals and metalloids, glass, flint, asbestos
Smithy	Metals and metalloids, organic solvents, asbestos
Coal depot	Metals and metalloids, sulphates, sulphides, cyanides
Electricity works and electrical substations	Metals and metalloids, PCBs, bitumen, detergents, organic solvents, TPH, mineral oil, asbestos



Table 10: Preliminary Conceptual Model for the Site

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
Human Health					
Future Site Users	<p>Contamination in Made Ground and shallow soils from on-Site and adjacent off-Site land uses.</p> <p>Contamination in perched groundwater, and the shallow Secondary A Aquifer in the Alluvium and Kempton Park Gravel Member.</p>	<p>Dermal contact and inhalation of dust from contaminated soils.</p> <p>Ingestion of contamination via plant uptake in private gardens.</p>	Low	<p>The brewery has been decommissioned, with all known contamination sources removed. Therefore, it is unlikely that any contamination will arise from the remaining buildings and plant.</p> <p>Historically, ground contamination may have occurred during operation of the brewery or close to the Site from nearby activities such as the coal depot, garages or electrical substations.</p> <p>Previous ground investigations between 1995 and 2015 found some organic and inorganic contamination is present in Made Ground beneath the Site, when compared against relevant assessment criteria.</p> <p>However, in the majority of samples targeted at potential contamination hotspots as part of the Aecom investigation, no significant contamination elevations were identified. Where elevated levels were encountered, it is not thought to represent a significant contamination risk to future Site users in either a residential or commercial end-use scenario.</p> <p>A basement is proposed beneath the eastern Site, with a smaller basement beneath the western section. This will excavate out and remove a significant volume of Made Ground from the Site, lowering the potential for residual contamination to remain beneath the completed development.</p> <p>Additionally, the extent of hardstanding and use of appropriate thicknesses of imported clean topsoil in private gardens and soft landscaping at the completed development will prevent future Site users' exposure to ground contamination.</p> <p>Further ground investigation should be completed targeting soils and groundwater in the areas outside of proposed basements, where residual soils will remain in-situ to confirm findings of the previous Aecom investigation.</p>	Low

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
	Ground gas arising from Made Ground and Alluvium and vapours from hydrocarbon contamination in shallow groundwater.	Accumulation in confined spaces, leading to inhalation.	Low	<p>Geological information for the Site from previous ground investigations indicates approximately 0.7m – 4.2m Made Ground and Alluvium beneath the majority of the Site. Due to this limited thickness present, the time elapsed since the material was emplaced, and considering basement excavation will remove a significant volume of this material, it is not considered likely to represent a ground gas risk to the future development.</p> <p>Previous ground investigations found that soil and groundwater samples did not indicate extensive hydrocarbon contamination in soils, or in groundwater from the Secondary A Aquifer.</p> <p>As the proposed basements will remove most of this Made Ground at the eastern area, and a significant volume from the western area, the risk of vapours arising from residual soils and causing impacts to the completed development is assessed to be low.</p> <p>Groundwater sampling by Aecom in 2015 did not detect visual or olfactory evidence for hydrocarbon contamination. Three samples contained minor elevations of TPH, and a single sample recorded phenol above EQS. However this was not identified as sufficient to represent a vapour source. This should be confirmed by soil and groundwater sampling as part of additional ground investigation outside the proposed basement areas.</p>	Low
Off-Site residents/users	Contamination in Made Ground and shallow soils.	<p>Windborne, potentially contaminated construction dust.</p> <p>Runoff from stockpiled soils.</p>	Medium	<p>A Construction Environmental Monitoring Plan (CEMP) should be prepared for the works, including measures to minimise runoff from stockpiled soils, manage groundwater in excavations and suppress the generation of dust.</p> <p>Construction materials brought on-Site as part of works will be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching off-Site residents.</p>	Low
Construction Workers	Contamination in Made Ground, shallow soils, and shallow groundwater.	<p>Dermal contact and ingestion.</p> <p>Dust inhalation.</p> <p>Ground gas and vapour Accumulation in trenches and confined spaces, leading to inhalation followed by asphyxiation and risk of explosion.</p>	Medium	<p>Construction workers will be provided with personal protective equipment (PPE) and respiratory protective equipment (RPE) where appropriate. Workers should be aware of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater, ground gas, vapours and dust inhalation.</p> <p>Works will be undertaken in accordance with the Control of Asbestos Regulations 2012.</p>	Low

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
Property					
Future on-Site structures	Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact with building foundations and buried services leading to chemical attack.	Medium	Geotechnical investigation as part of design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack. If required, appropriately designed buried concrete and barrier water supply pipes should be used at the development.	Low
	Ground gas and vapours.	Accumulation in confined spaces, leading to risk of explosion.	Low	Identified geology and hydrogeology at the Site, alongside findings of previous ground investigations indicates there is not a significant risk of ground gas or vapours impacting the completed development. Soil and groundwater sampling as part of further ground investigation should confirm this.	Low
Off-Site structures	Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact with building foundations and buried services leading to chemical attack.	Low	No significant contamination elevations were identified in soils and groundwater during previous investigations at the Site. Where elevated levels were encountered, it was not thought to represent a significant contamination risk to off-site structures.	Low
Ecological Receptors					
Soft landscaping	Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact of roots.	Low	All soft landscaping at the completed development should be situated in an appropriate thickness of imported, certified clean cover material. This would prevent plants at the completed development contacting any ground contamination beneath the Site.	Low
River Thames SMI for Nature Conservation	Contamination in Made Ground, shallow soils, and shallow groundwater.	Windborne, potentially contaminated construction dust. Runoff from stockpiled soils.	Medium	A CEMP should be prepared for the demolition and construction works on-Site, detailing measures to minimise the potential risk to the SMI for nature conservation on the opposite bank of the waters from stockpiled soils during below-ground works such as basement excavation. Construction materials brought on-Site as part of works will be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching the River Thames.	Low
Controlled Waters					
The River Thames	Contamination in Made Ground, shallow soils, and	Migration through granular deposits and via sewer	Medium	Previous ground investigations found that soil and groundwater samples did not indicate extensive contamination present beneath the Site. Therefore, the potential for contamination mobilisation is assessed as low.	Low

Receptor	Potential Sources	Pathways	Risk	Justification / Mitigation	Residual Risk
	shallow groundwater.	bedding materials to the River Thames. Runoff from stockpiled soils.		On-Site sewer records indicate that some areas of the Site currently drain to the Thames Water surface water sewer network, ultimately discharging to the River Thames. Measures should be undertaken during demolition and construction works to minimise runoff from stockpiled soils, and prevent contamination reaching the River Thames via Site drainage. This should prevent potentially contaminated material reaching the River Thames.	
	Construction materials stored on-Site as part of development works.	Spills to ground, and the River Thames.	Medium	A CEMP should be prepared for the demolition and construction works on-Site, detailing measures to minimise the potential risk to controlled waters. Construction materials brought on-Site as part of works should be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching the River Thames.	Low
Shallow Secondary A aquifer in the Alluvium and Kempton Park Gravel Member	Contamination in Made Ground and shallow soils.	Remobilisation of contamination by rainfall infiltration following removal of hardstanding during construction works.	Low	The CEMP should include measures to minimise rainwater infiltration to exposed ground, or the potential for construction spills during the demolition and construction works. Rainwater infiltration via soft landscaping and private gardens is possible at the completed Development. However, this is likely to be limited as the majority of the Site will be covered by buildings and hardstanding, and underlain by basements. Previous ground investigations did not identify significant contamination in Made Ground or shallow soils, and there are unlikely to be significant impacts from any mobilisation.	Low
Deep Secondary A aquifers in the Lambeth Group and Thanet Formation Principal Aquifer in the Chalk Group	Contamination in shallow groundwater.	Migration via historical abstraction wells.	Medium	The Site is underlain by about 73m of London Clay Formation, which is considered to present an impermeable barrier against the migration of contaminants to the deep Secondary A and Principal Aquifers. The proposed development will comprise mid-rise buildings, whose foundations will not penetrate this layer. Two redundant historical abstraction wells are recorded on-Site, which could act as a pathway for contamination migration to the Principal Aquifer in the Chalk Group. Before commencing excavation works these should be located and decommissioned.	Low

6. Conclusions

Given the proposed end use the overall risk rating for the Site is assessed as **medium**.

Potential Risks

The following potential pollutant linkages have been identified for the Site:

- Potential exposure of construction workers and the general public during the Works to contaminated soils, groundwater, airborne dust and run-off from stockpiled soils or exposed shallow ground;
- Potential for construction workers to encounter UXO during basement excavation;
- Potential risks to exposed shallow groundwater from introduction of new potential sources of contamination during the Works;
- Potential mobilisation of contamination via historical abstraction wells leading into the Chalk Group Principal Aquifer;
- Potential risks to shallow groundwater and the River Thames due to surface run-off from stockpiled materials via the drainage system discharging to the River Thames, or mobilisation of ground contamination by rainfall infiltration after removal of hardstanding during demolition, and introduction of new sources of contamination during the Works;
- Potential exposure of future occupants and visitors of the proposed redevelopment to residual ground contamination via soft landscaping; and
- Potential exposure of buried structures and services to ground and groundwater contamination, leading to chemical attack.

The recommendations of this report outline preliminary remedial and mitigation measures that require confirmation through additional works. However, once successfully implemented the risks are anticipated to be **low**. Therefore the NPPF requirement that on completion the Site can no longer be captured under the Part IIA regime is expected to be met.

7. Recommendations

The following actions are recommended to address the potentially unacceptable risks identified:

- Further ground investigation should be completed targeting soils and groundwater in the areas where basements are not proposed as part of development works and residual soils will remain in-situ, to confirm findings of the previous Aecom investigation;
- Geotechnical investigation as part of design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack;
- An environment watching brief should be undertaken throughout ground works, with additional environmental sampling undertaken where visual or olfactory contamination is suspected within the Made Ground or Kempton Park Gravel Member;
- A detailed UXO desk study should be undertaken by a suitably qualified Explosive Ordnance Disposal (EOD) Engineer to assess the risk posed by UXO beneath the Site. The recommendations of this assessment should be followed during construction works;
- A Construction Environmental Management Plan (CEMP) should be developed for the Site, detailing measures to minimise the potential risk to the River Thames and shallow Secondary A aquifer during the demolition and construction works;
- During the Works, appropriate measures for managing materials, chemicals and waste should be utilised. Measures should also be taken to prevent run-off from stockpiled soils reaching the River Thames, and to suppress the generation of dust;
- Following removal of hardstanding across the Site post-demolition, an attempt should be made to locate the historical abstraction wells and decommission them if necessary;
- Construction workers should be provided with and use personal protective equipment (PPE), respiratory protective equipment (RPE) and informed of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater or ground gas / vapours;
- Concrete used in construction, and any new water pipes installed as part of the redevelopment works should be appropriately protected against chemical attack from potential contamination in Made Ground, shallow soils and shallow groundwater underlying the Site; and
- Private gardens at the Development should be planted using an appropriate thickness of imported, certified clean cover material.

GLOSSARY

For the purpose of this report, the following terms and definitions apply (see BS 10175:2001).

Accuracy	Level of agreement between true value and observed value.
Conceptual Exposure model	<p>Textual and or schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the basis of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process.</p> <p>Note 1: The conceptual exposure model is initially derived from the information obtained by the preliminary investigation. This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of the field investigation can provide additional data that can be used to further refine the conceptual model.</p>
Contamination	<p>Presence of a substance which is in, on or under land, and which has <u>the potential</u> to cause significant harm or to cause significant pollution of controlled water.</p> <p>Note 1: There is no assumption in this definition that harm results from the presence of the contamination.</p> <p>Note 2: Naturally enhanced concentrations of harmful substances can fall within this definition of contamination.</p> <p>Note 3: Contamination may relate to soils, groundwater or ground gas.</p>
Controlled water	<p>Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three mile limit of territorial waters.</p> <p>Note 1: See Section 104 of The Water Resources Act 1991.</p>
Harm	Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case humans, including property.
Hazard	Inherently dangerous quality of a substance, procedure or event.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
Precision	Level of agreement within a series of measurements of a parameter.
Receptor	Persons, living organisms, ecological systems, controlled water, atmosphere, structures and utilities that could be adversely affected by the contaminant(s).
Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
Soil	<p>Upper layer of the earth's crust composed of mineral parts, organic substance, water, air and living matter.</p> <p>Note 1: In accordance with BS 10175:2001 the term soil has the meaning ascribed to it through general use in civil engineering and includes topsoil and subsoil; deposits such as clays, silt, sand, gravel, cobbles, boulders and organic deposits such as peat; and material of natural or human origin (e.g. fills and deposited wastes). The term embraces all components of soil, including mineral matter, organic matter, soil gas and moisture, and living organisms.</p>
Source	<p>Location from which contamination is, or was, derived.</p> <p>Note 1: This could be the location of the highest soil or groundwater concentration of the contaminant(s).</p>
Uncertainty	Parameter, associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement.



APPENDICES

A. Site Plans

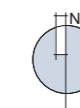
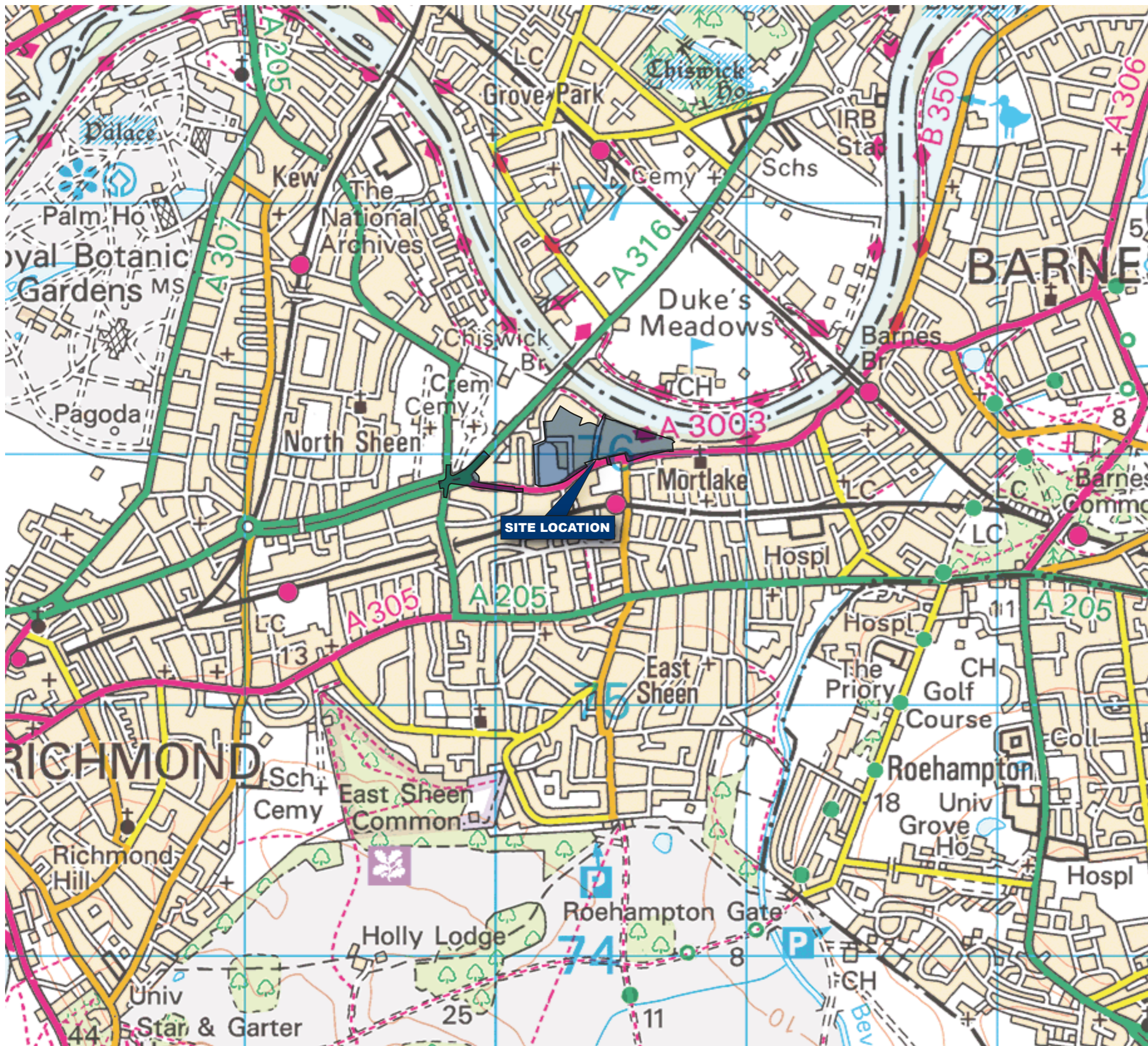
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- **Site Plan**
- **Conceptual Model**

Appendices

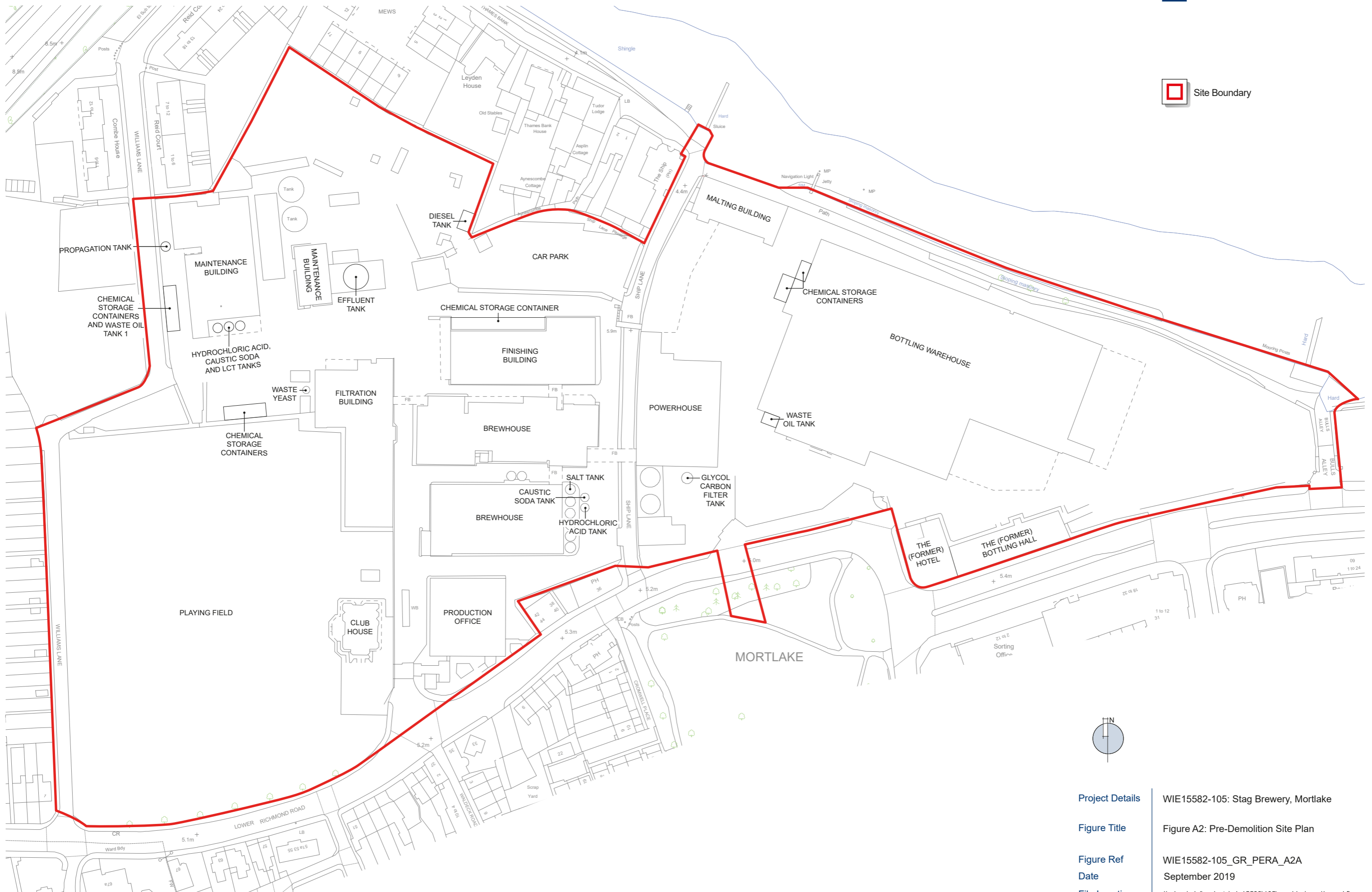
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Document Reference: WIE15582

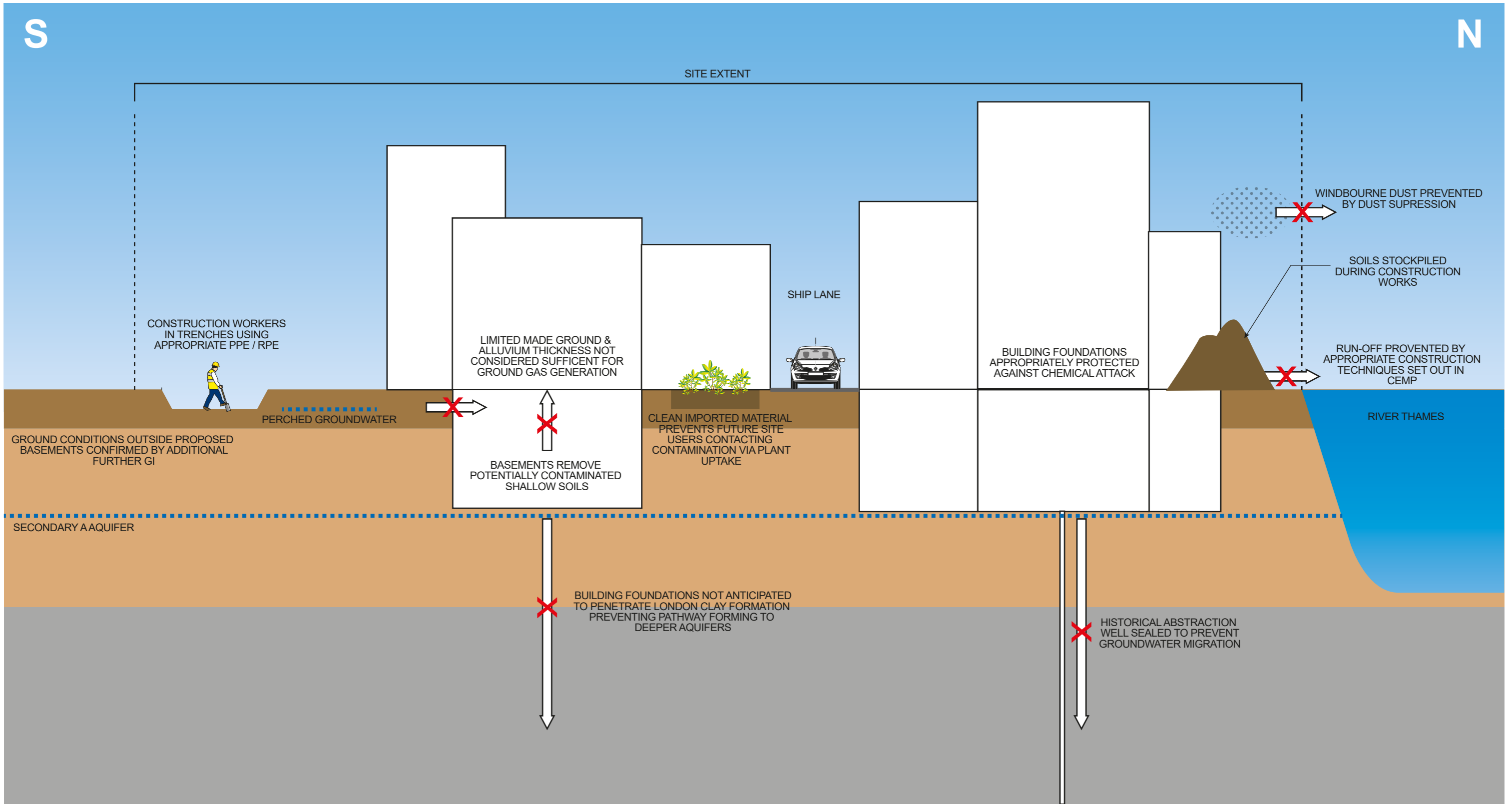
WIE15582-105-R-1.4.3-RJM



Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure A1: Site Location Plan
Figure Ref	WIE15582-105_GR_PERA_A1A
Date	September 2019
File Location	\\s-inc\wiel\projects\wie15582\105\graphics\pera\issued figures



Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure A2: Pre-Demolition Site Plan
Figure Ref	WIE15582-105_GR_PERA_A2A
Date	September 2019
File Location	\\s-incs\wie\projects\wie15582105\graphics\pera\issued figures



- MADE GROUND AND ALLUVIUM
- KEMPTON PARK GRAVEL MEMBER
- LONDON CLAY FORMATION

Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure A3: Conceptual Site Model
Figure Ref	WIE15582-105_GR_PERA_A3A
Date	September 2019
File Location	\\s-inc\wiel\projects\wie15582\105\graphics\pera\issued figures



B. Site Photographs

- **2016 Site Visit (pre-demolition)**
- **2019 Site Visit (during demolition)**

Appendices



Air conditioners at The Power House Roof



The (former) Bottling Hall



Brewery infrastructure in Brewhouse



Brewing vats in Brewhouse



The (former) Hotel cellar used as the staff canteen



Chemical stores at Packaging Warehouse



Condition of tank sumps



Decommissioned diesel tank in Production Office basement

Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure B1: Site Photographs
Figure Ref	WIE15582-105_GR_PERA_B1A
Date	September 2019
File Location	\\s-incs\wie\projects\wie15582\105\graphics\pera\issued figures
	www.watermangroup.com



Site entrance at western area



Interior of eastern area bottling warehouse with stripout completed



Stripout completed at eastern area canteen building



Malting Building retained at eastern Site



Empty chemical storage containers adjacent to bottling warehouse



Waste stored under canopy to east of bottling warehouse



Removal of tanks adjacent to energy centre in progress



Stripout in progress at energy centre

Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure B2: Site Photographs
Figure Ref	WIE15582-105_GR_PERA_B2A
Date	September 2019
File Location	\\s-incs\wie\projects\wie15582\105\graphics\pera\issued figures



Stripout in progress at energy centre



Air conditioners at roof of energy centre



Former tank holders at brewhouse in eastern area



Diesel tank at north of eastern area



Former base for removed effluent tank



Equipment stripped out of maintenance sheds at western area



Further tanks in brewhouse awaiting removal



Emptied chemical storage sheds at brewhouse

Project Details	WIE15582-105: Stag Brewery, Mortlake
Figure Title	Figure B3: Site Photographs
Figure Ref	WIE15582-105_GR_PERA_B3A
Date	September 2019
File Location	\\s-incs\wiel\projects\wie15582105\graphics\pera\issued figures



C. Ground Gas Risk Assessment

Appendices

Preliminary Environmental Risk Assessment

Document Reference: WIE15582

WIE15582-105-R-1.4.3-RJM

Table C.1: Waterman Ground Gas Risk Assessment Tool

Parameter	Select parameter	Assessment score	Impact on ground gas risk to completed development	Reasoning	Supporting guidance and reference
Is there an existing Ground Investigation report for the Site?	Yes	0	Review the GI information if available	An existing ground investigation may include information such as proven geology, groundwater levels and ground gas monitoring which allows for more accurate assessment of the ground gas regime.	
Is the Site within 20m of an area of former coal mining or landfilling?	No	0	Reduces risk	The absence of coal mining or landfills close to the Site removes a significant potential source of ground gas risk.	The Coal Authority: Risk Based Approach to Development Management; Guidance for Developers (2017) [Section 2.2, Page 7] CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: Ground Gas Information Sheet 3 Screening approach for landfill gas migration
Is the Site in an area at risk of radon?	No	0	No impact on risk	The proposed development is unlikely to include any radon protective measures that could also mitigate ground gas risk	Building Research Establishment: BRE 211 Radon - Guidance on protective measures for new buildings [Section 5 Page 6]
Primary soil type assessed	Made Ground with low organic content (i.e. bricks, demolition material, crushed concrete sub-base)	1	No increase in risk	where organic matter is unlikely to comprise a significant component of Made Ground the methane generation potential is relatively low as material such as brick, glass, concrete and demolition waste (except wood) does not putrefy.	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: A pragmatic approach to ground gas risk assessment for the 21st Century (2011) [Page 2]
Secondary soil type assessed (if assessing multiple strata)	Alluvium	1	No increase in risk	Although Alluvium may contain thin bands of peaty material, in general the majority constituent is silts and silty sands with limited potential for putrefaction and methane generation.	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: A pragmatic approach to ground gas risk assessment for the 21st Century (2011) [Page 2]
Thickness of Made Ground (if present on-Site)	Under 5m (with average of less than 3m)	0	Reduces risk	Made Ground of this volume is not likely to have sufficient organic material present to generate significant volumes of methane, unless it has a significantly high organic content. Also Made Ground of this thickness is likely to be accurately characterised by trial pitting alone, which will determine the gas risk.	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3: Page 4]
Period since Made Ground emplaced (if present on-Site)	Not applicable	0	Reduces risk	Absence of Made Ground reduces risk of petrogenic material beneath the Site	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Appendix A, Page 10]
Building type	Construction of new buildings	-3	Reduces risk	Construction of new buildings offers an opportunity to incorporate gas protection measures directly into the structure at the design stage, offering greater flexibility and reliability than retrofitting an existing structure.	CIRIA: C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings (2007) [Table 8.6, Page 90] British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Table 86 Page 90]
Development type	Type B: Residential (flats) or public buildings such as hospitals, schools, leisure centres, hotels etc	1	Increases risk	Developments of this type are more likely to have active ventilation systems, but also more likely to contain sensitive receptors present within the structure for extended periods of time.	British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Section 7, Page 21] CIRIA: C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings (2007) [Table 8.6, Page 90] British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Section 7.2, Page 23]
Ground floor slab construction details	Not known	0	Does not reduce risk	Does not reduce risk	
Development includes a basement?	Yes, no specific ventilation	0	Does not reduce risk	Where no specific air circulation has been designed into the development the potential for ground gas accumulation is increased.	British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Annex A Page 36] CIEH: The Local Authority Guide to Ground Gas (September 2008) [Section 7 Page 101]
If a basement is present, is this structure in contact with groundwater-bearing strata?	Basement in contact with groundwater	-1	Reduces risk	A basement is in contact with groundwater-bearing strata it is likely to be waterproofed, which may provide protection against both dissolved methane in groundwater and in the unsaturated zone. This should be confirmed via as-built plans if available.	EPG: Dissolved methane monitoring for ground gas risk assessment (September 2018) [Page 1]
Presence of off-Site sources with potential pathway to Site?	No	0	Does not increase risk	Where no potential off-Site sources exist, or where there is no direct pathway for these gases to migrate to the Site no risk exists.	

In consideration of the above details the development is considered to be at **Very Low Risk** for ground gas issues.

Based on the sensitivity of the end-use receptor **no further ground gas investigation or assessment required.**

When reviewing previous ground investigation results for a site, it should be noted gas concentrations from the well headspace are not necessarily representative of the ground gas regime due to the potential influences of a variety of factors. Caution should therefore be taken when relying solely on ground gas results from well headspace. Instead, as undertaken throughout contaminated land, a lines of evidence approach should be used whereby the results are interrogated along with the potential sources, proposed development use, geology, and hydrogeology at the site.

D. Consultation Information

- **Groundsure Enviro Insight Report**
- **Groundsure Geo Insight Report**
- **Groundsure Historical Mapping Information**

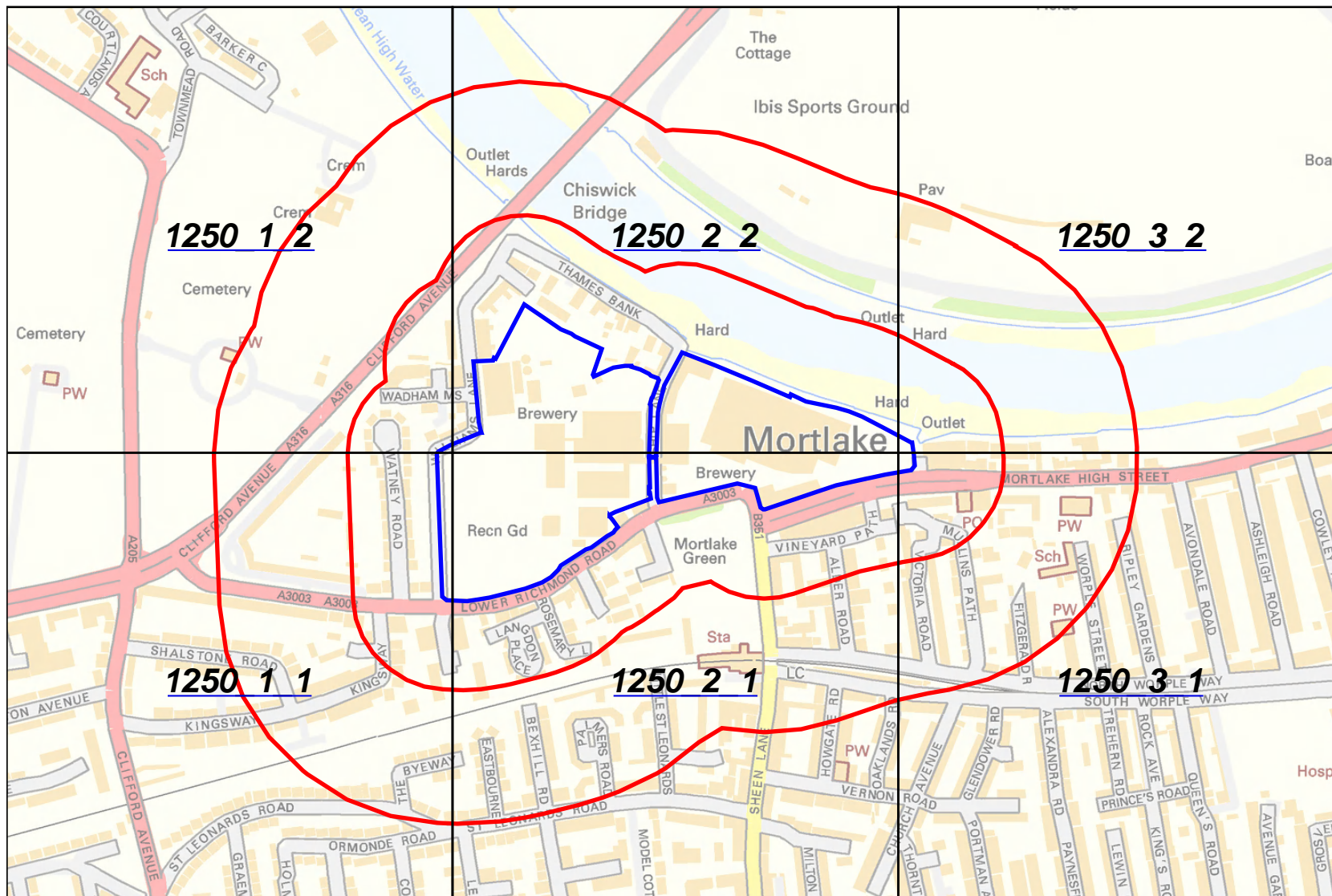
Appendices



Groundsure
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1:1250 Scale Grid Index



Site Details:

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Map Name: 1056 Scale Town Plan

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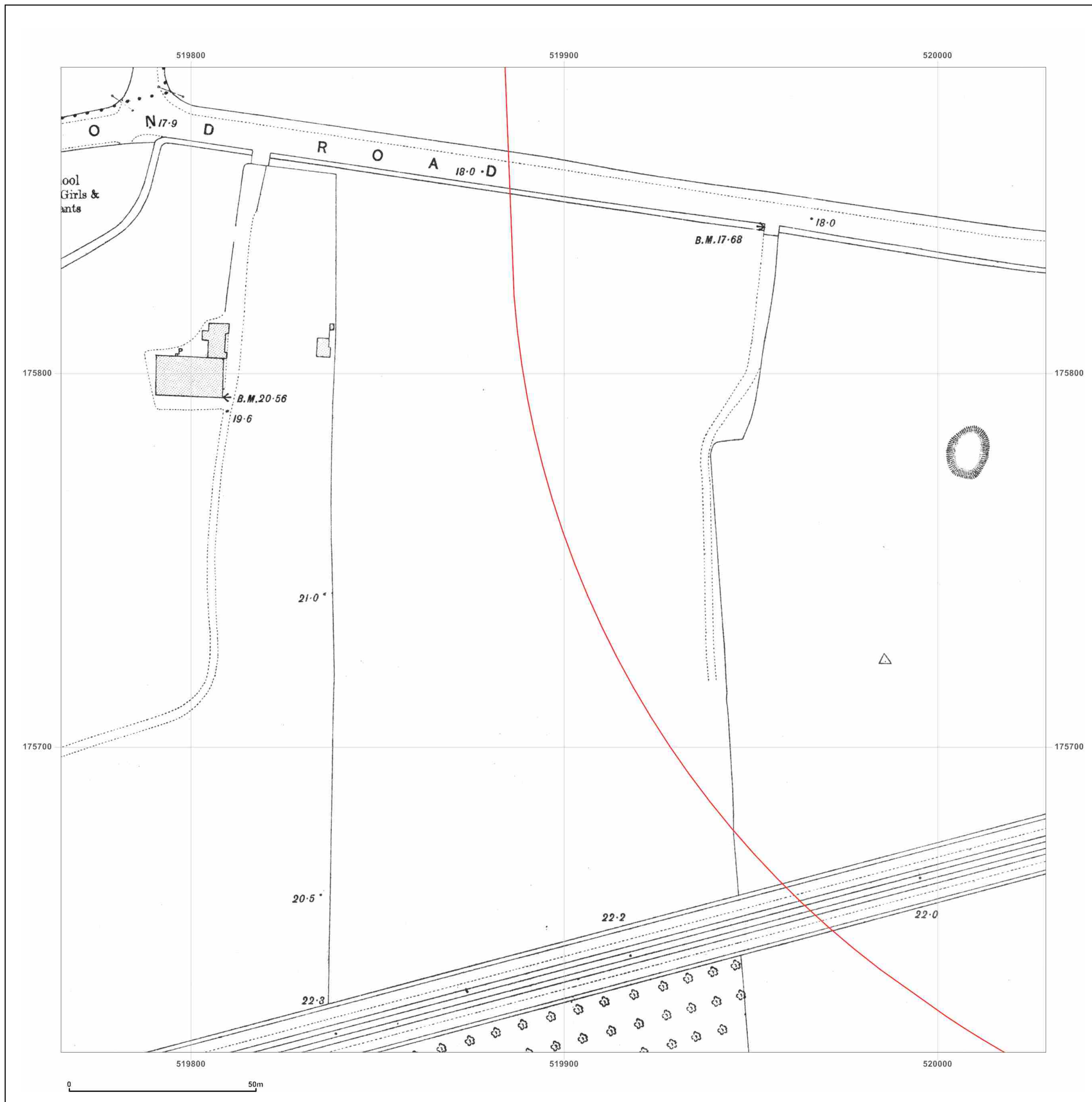
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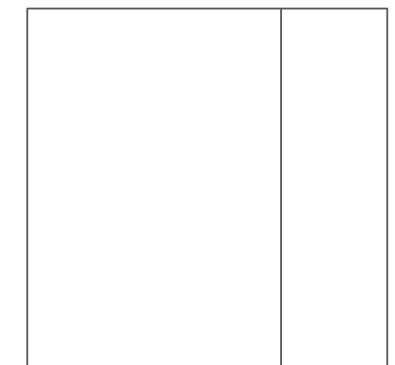
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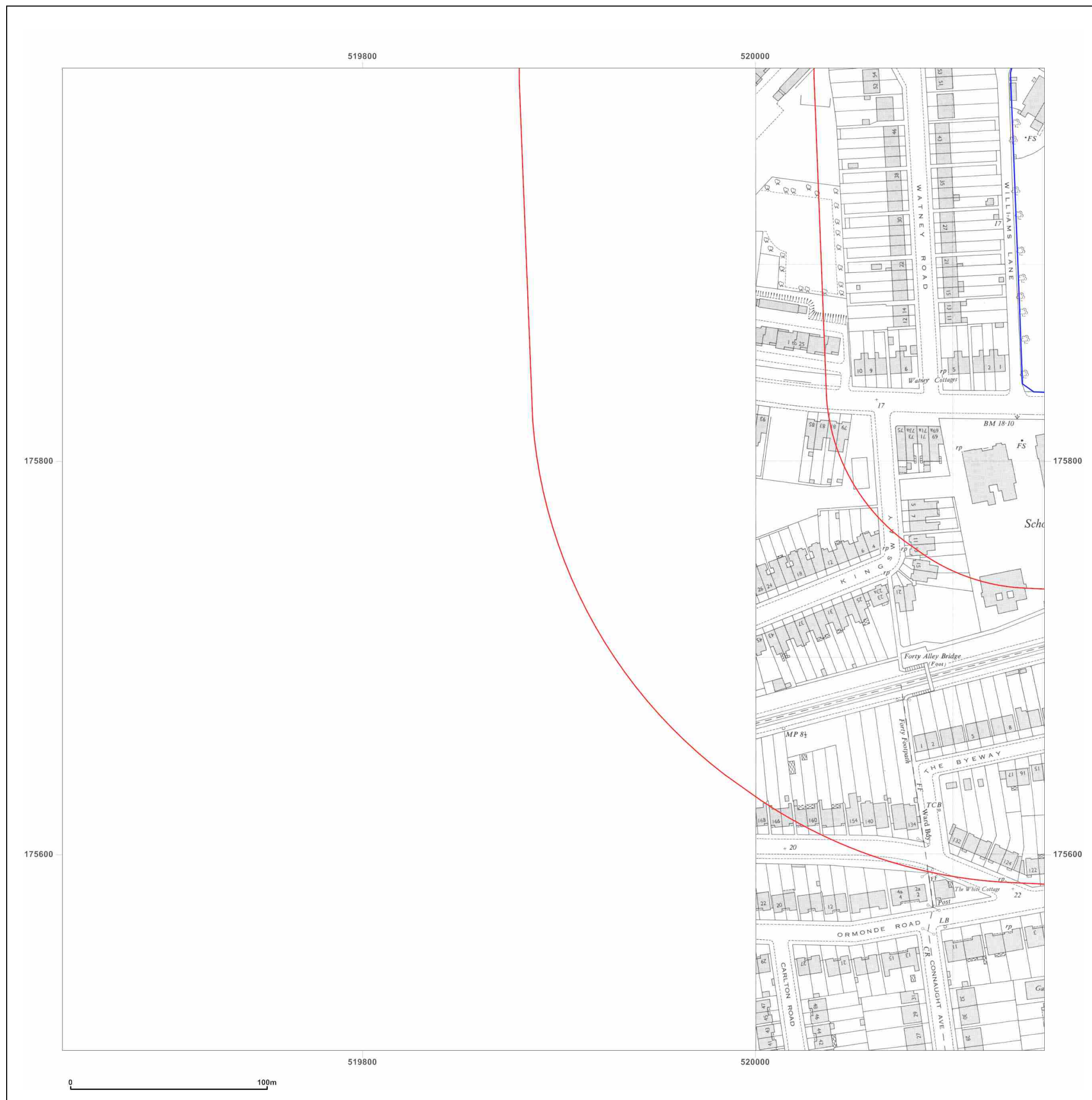
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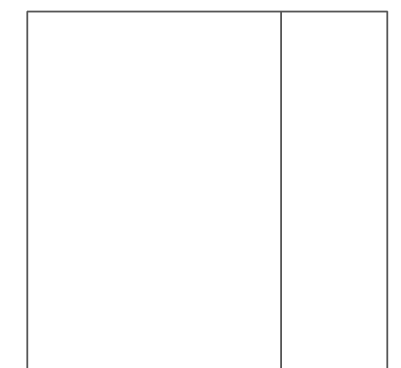
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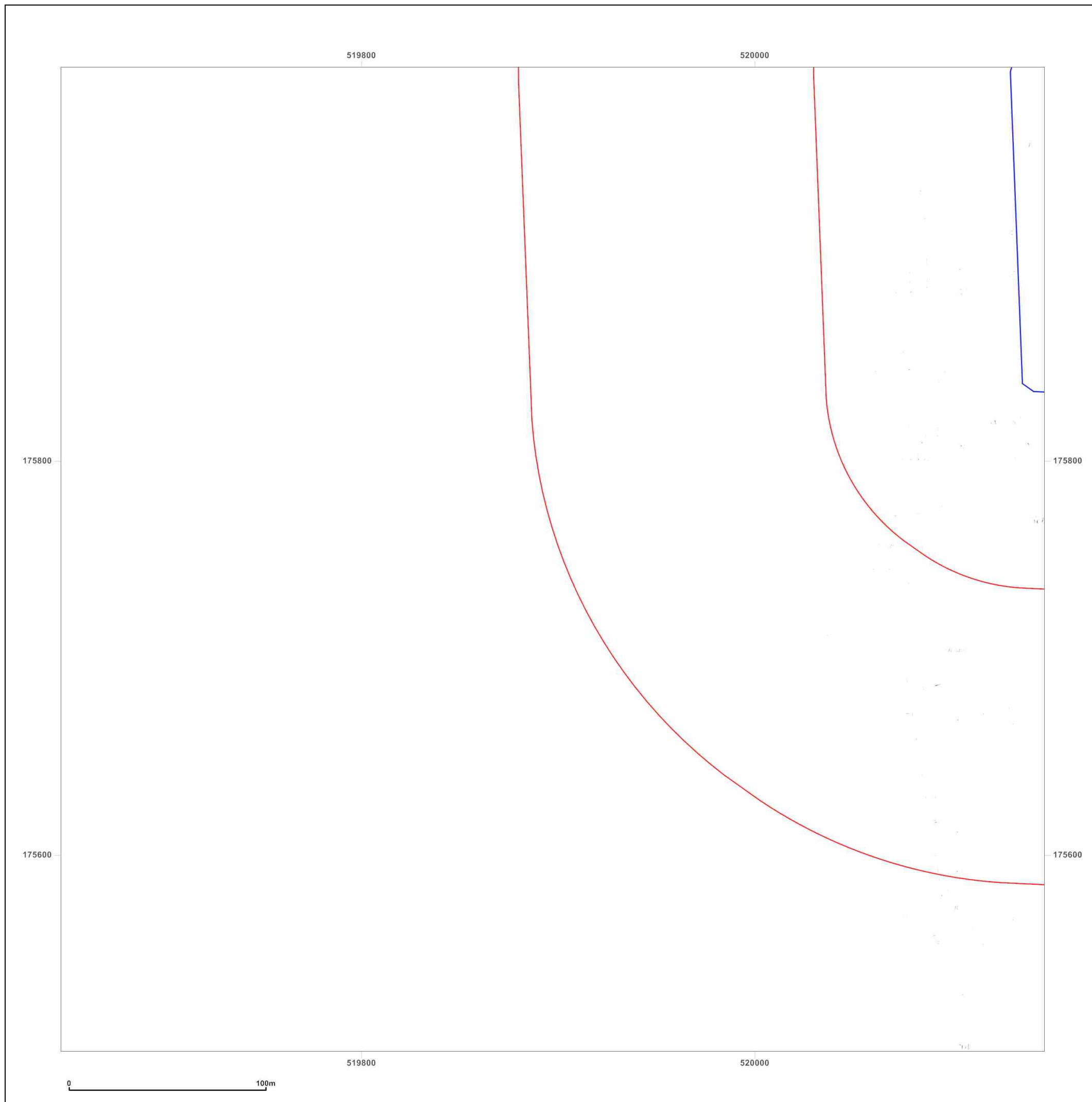
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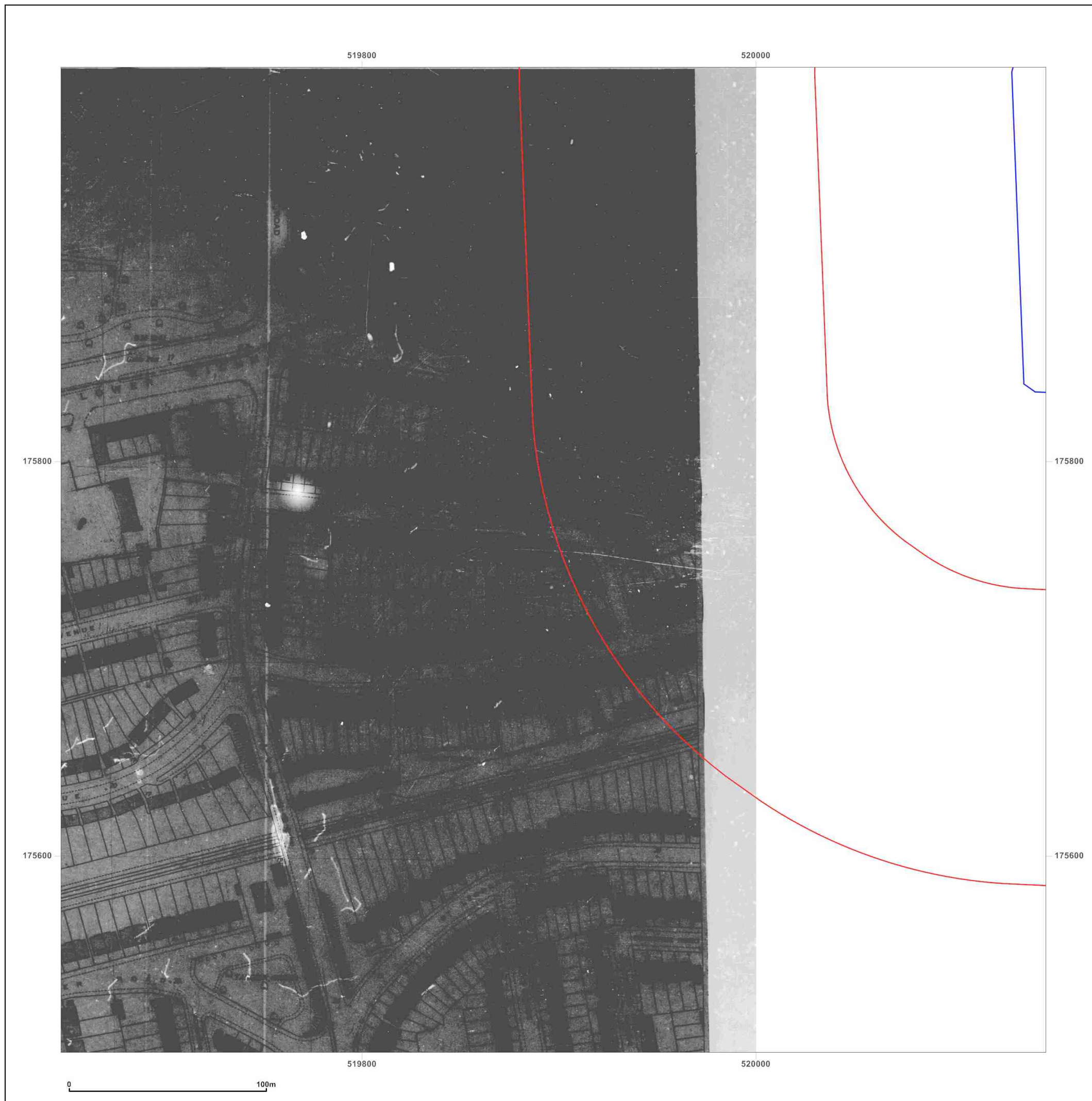
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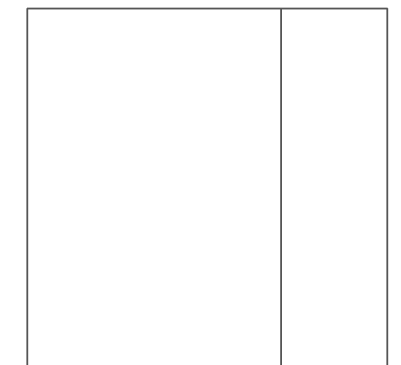
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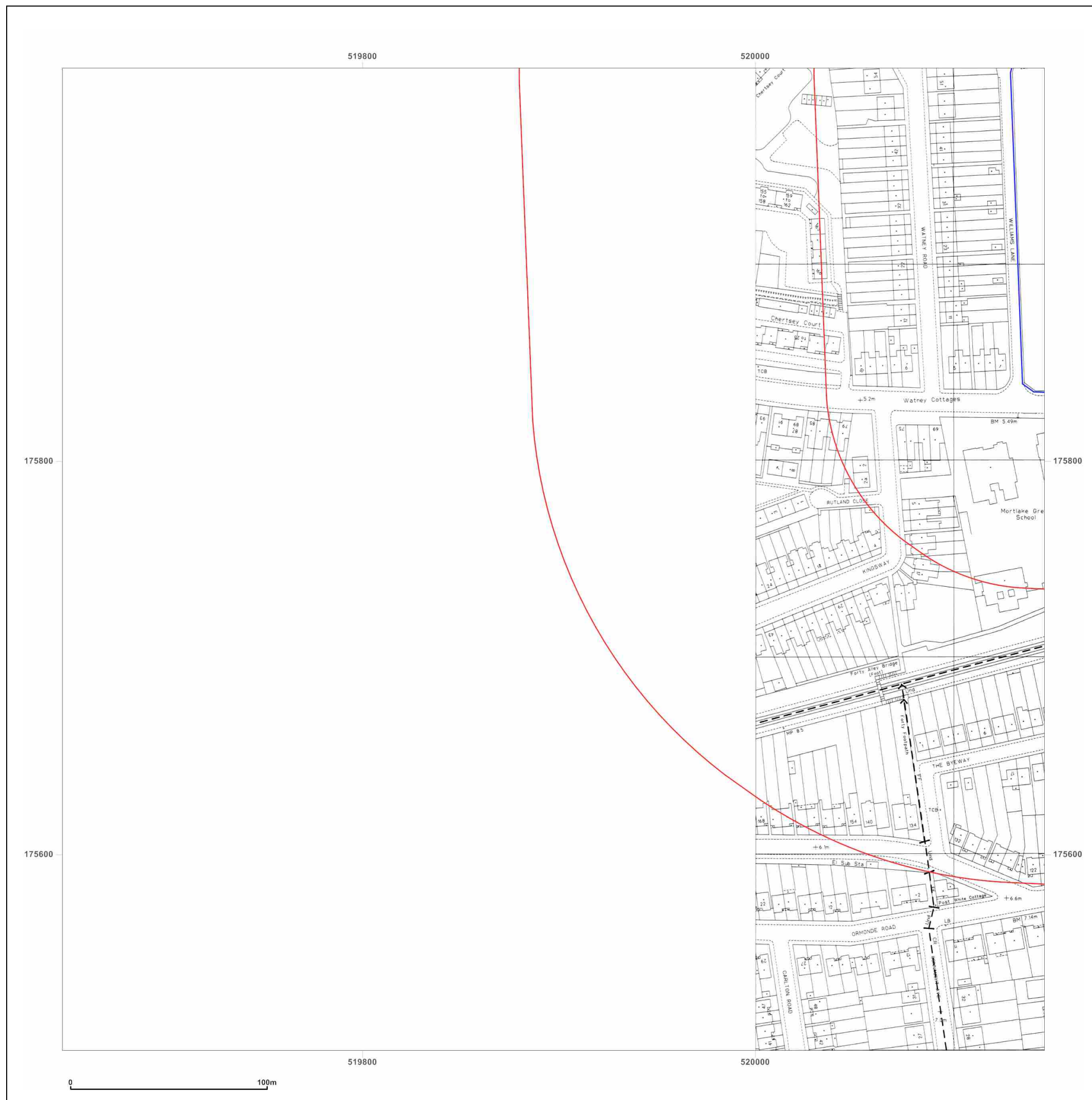
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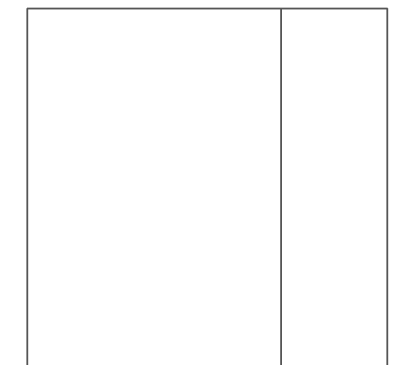
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Report Ref: WTM1-6181570_1250scale_1_1
Grid Ref: 519897, 175750

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A



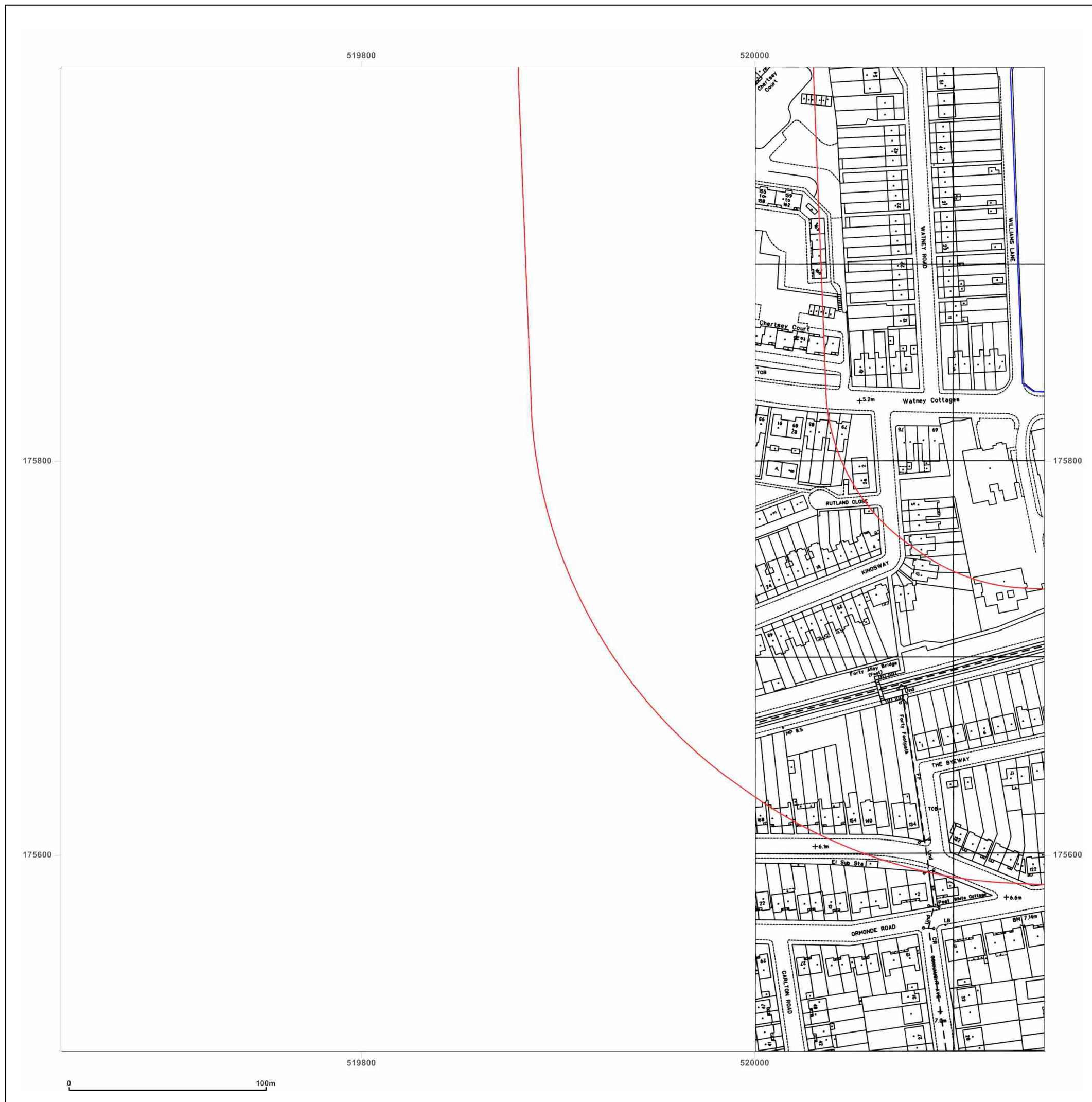
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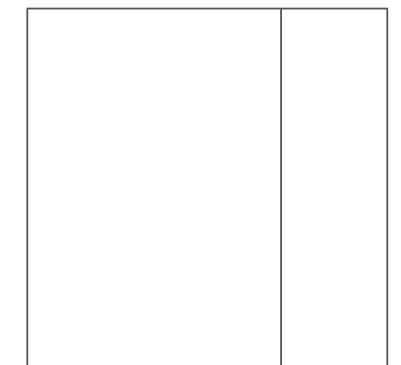
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Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A



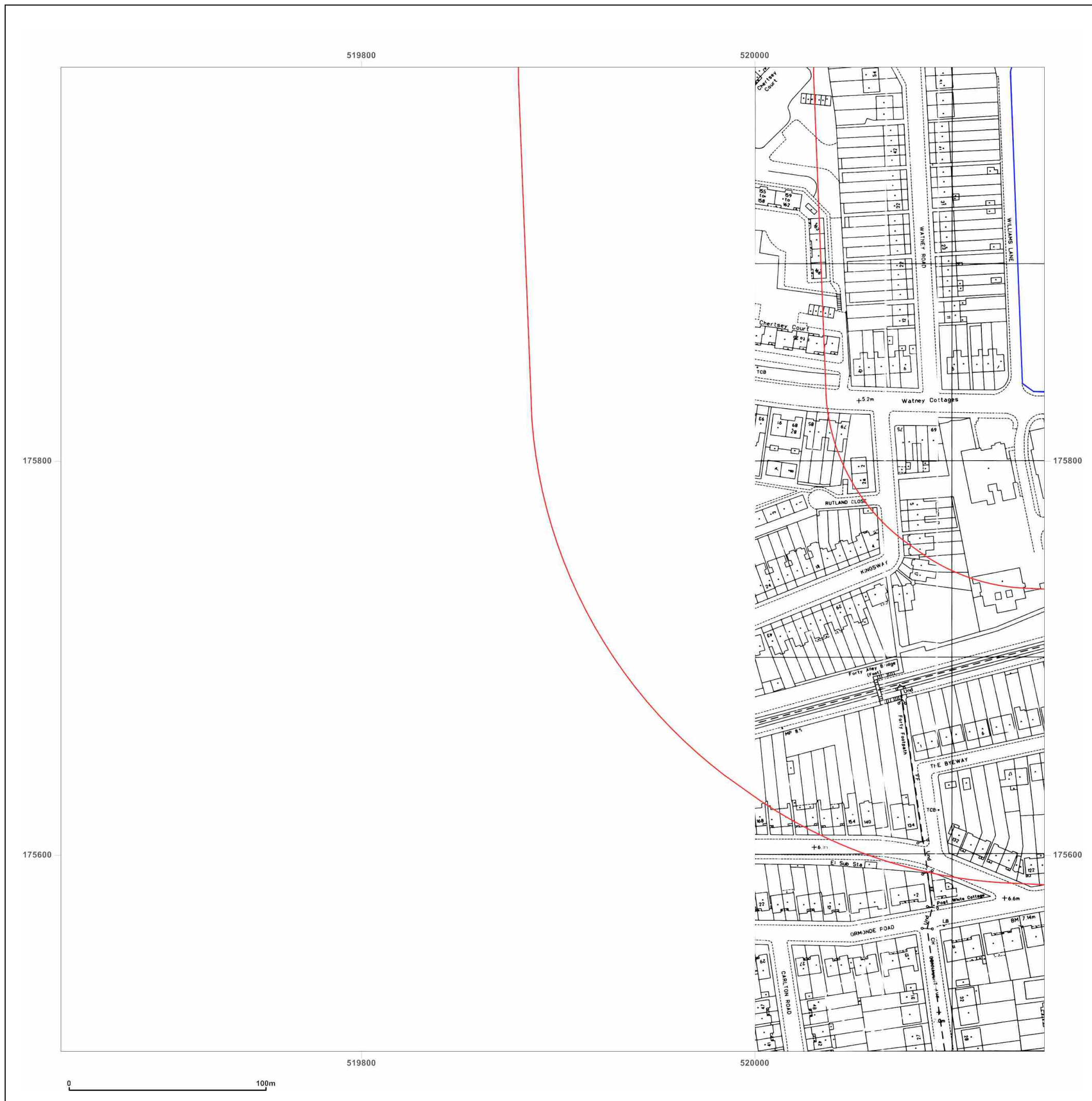
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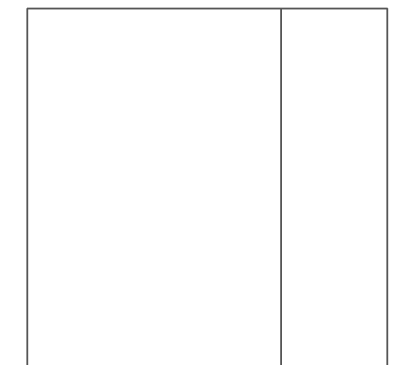
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Grid Ref: 519897, 175750

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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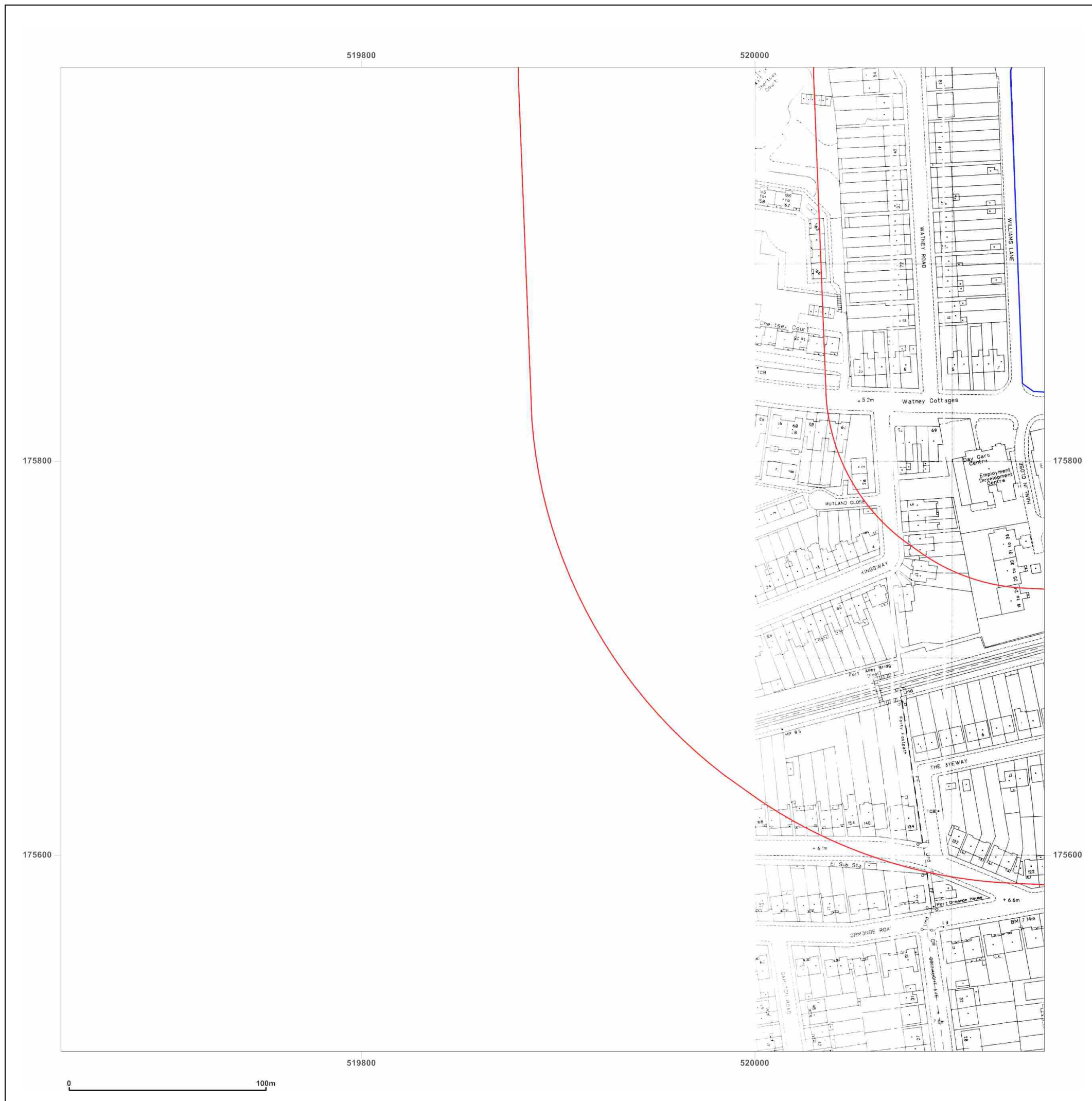
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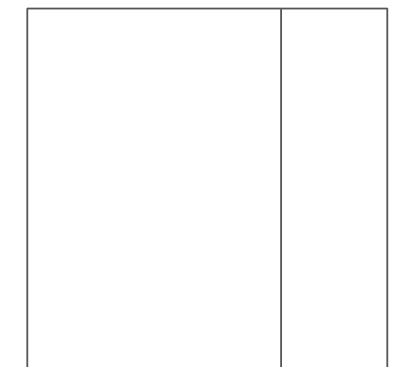
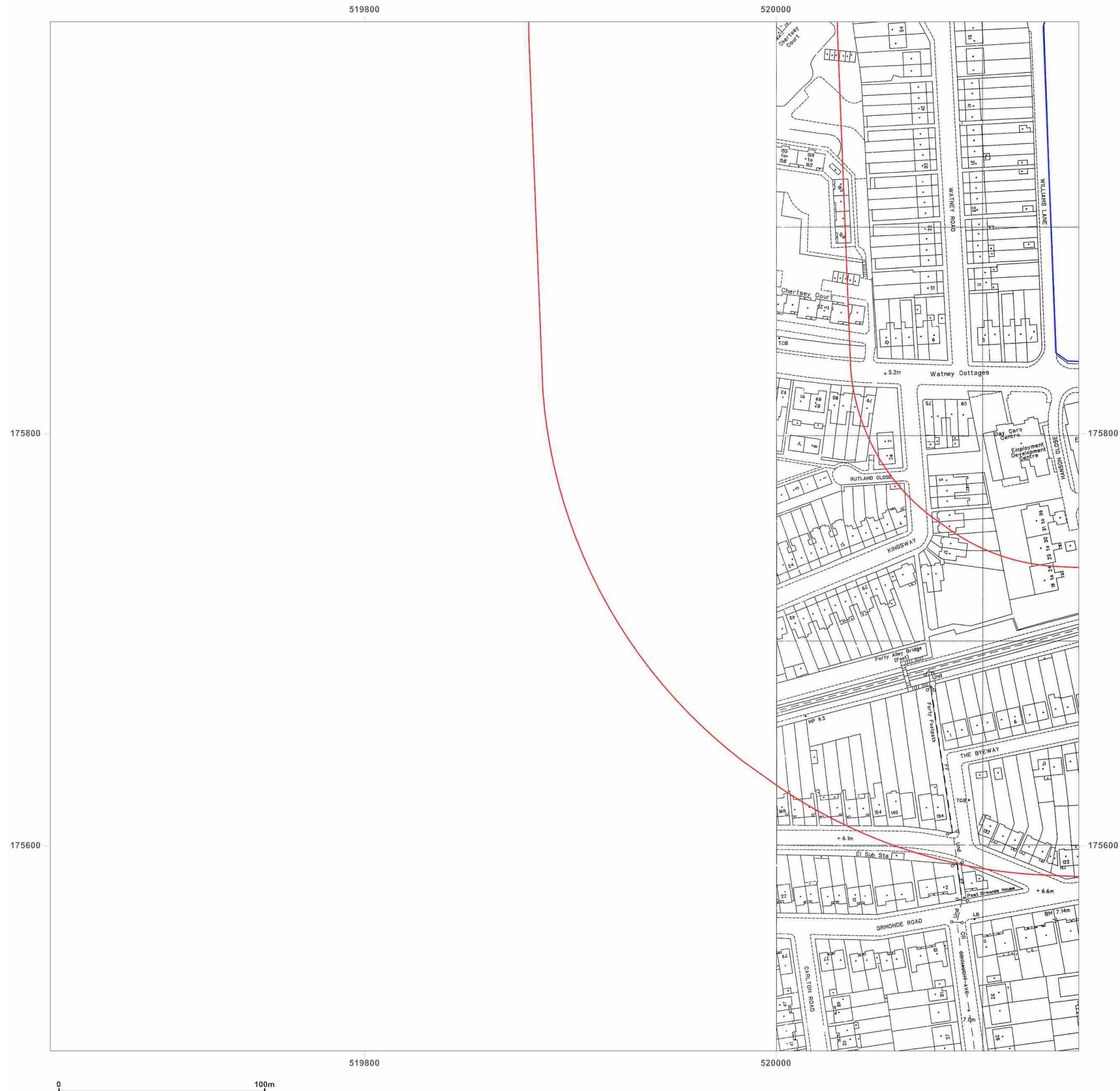
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Grid Ref: 519897, 175750

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: 1056 Scale Town Plan

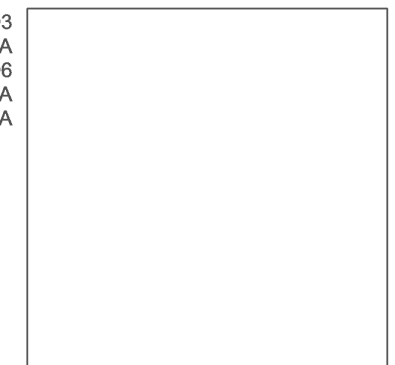
Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1893
Revised N/A
Edition 1896
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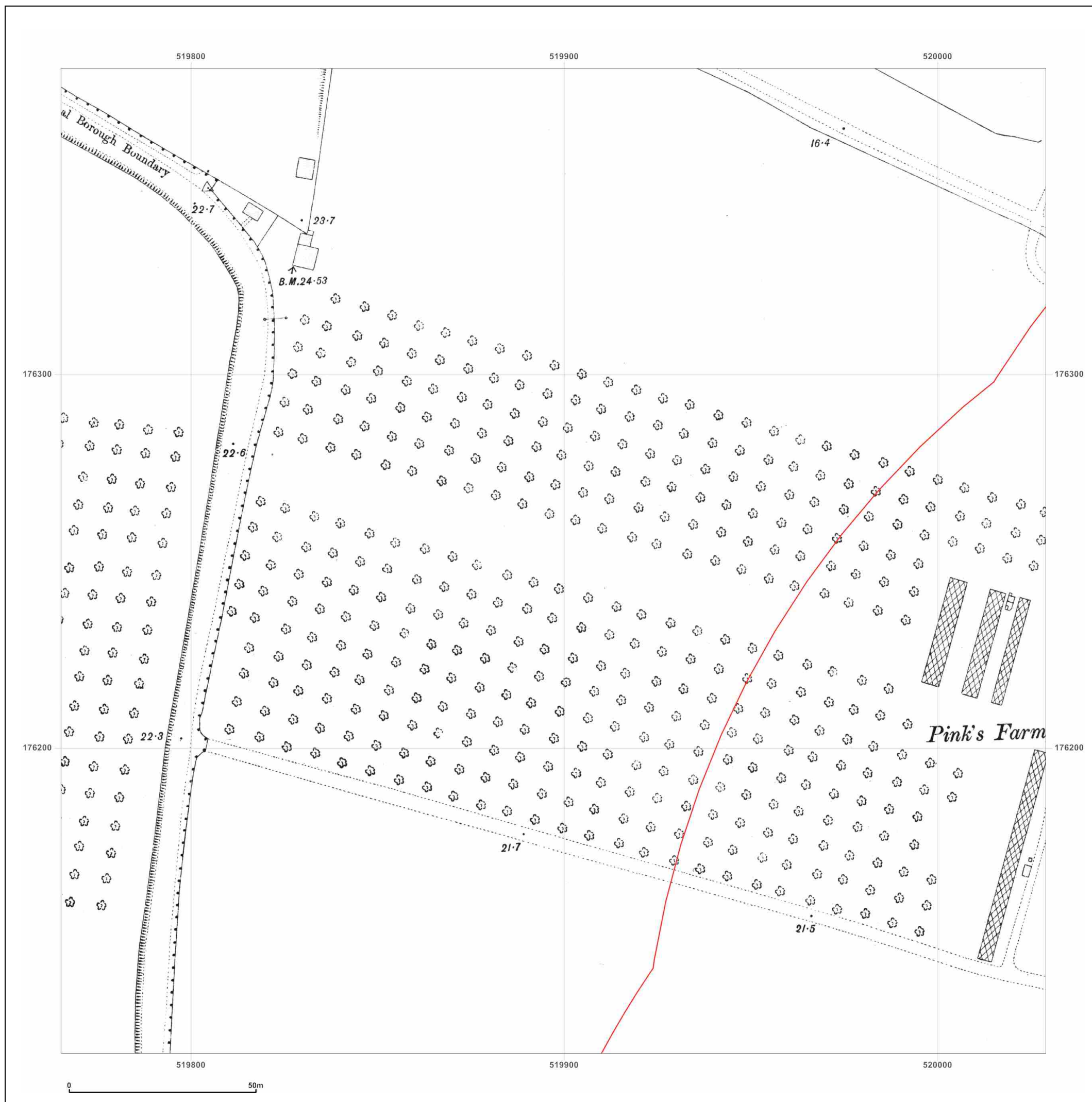
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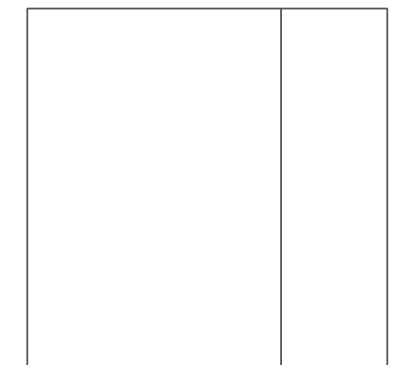
Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



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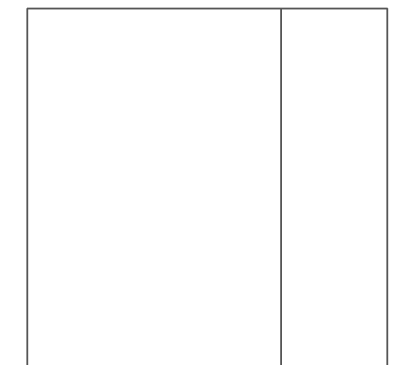
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Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1952

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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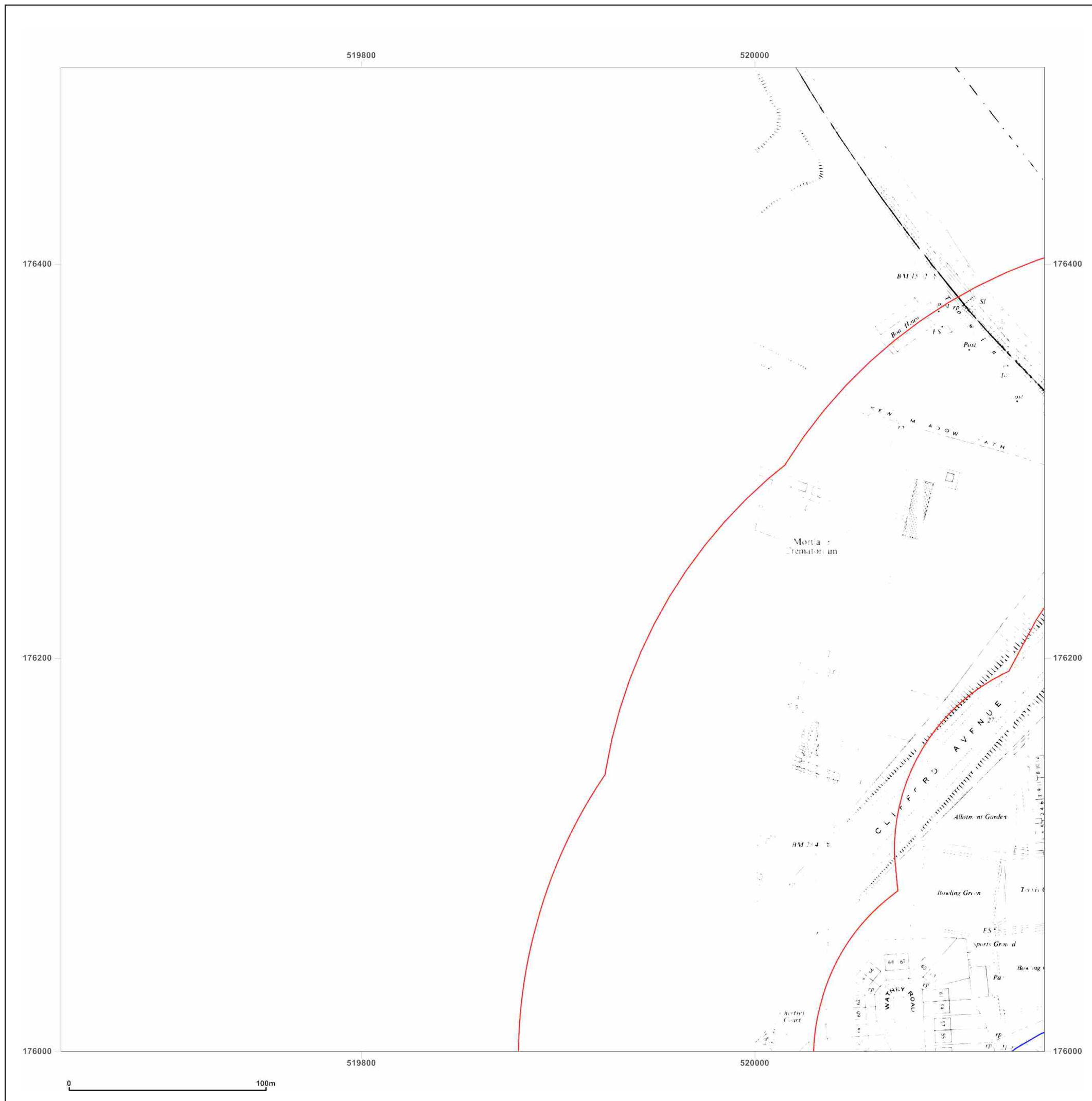
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1960

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Surveyed 1951
Revised 1960
Edition N/A
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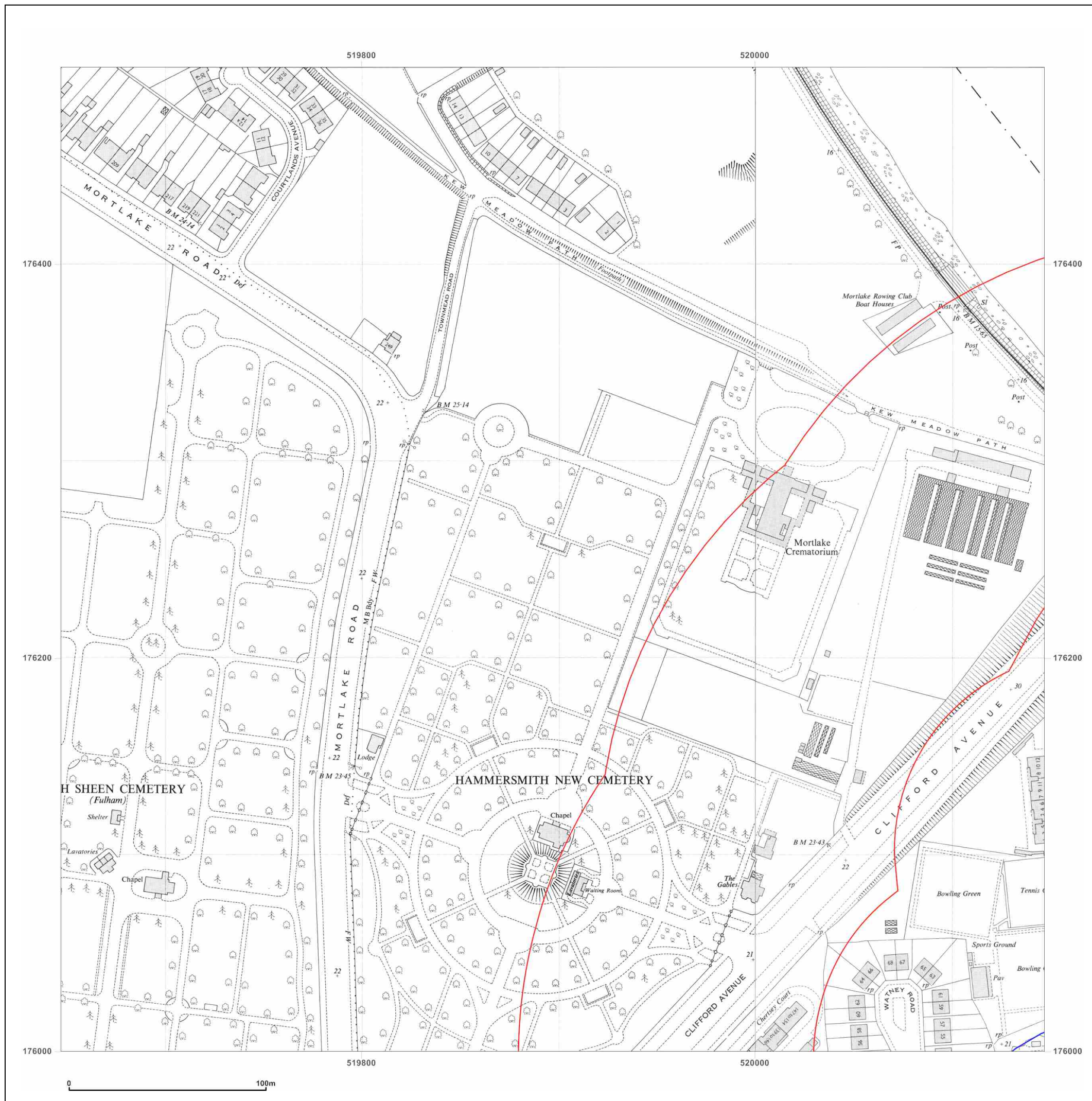
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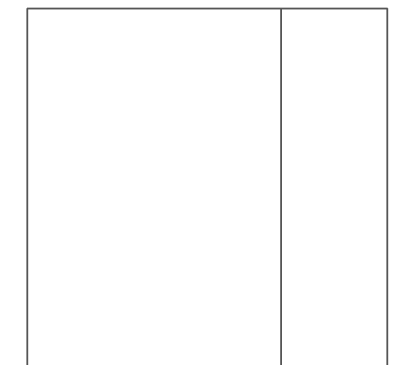
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Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1961

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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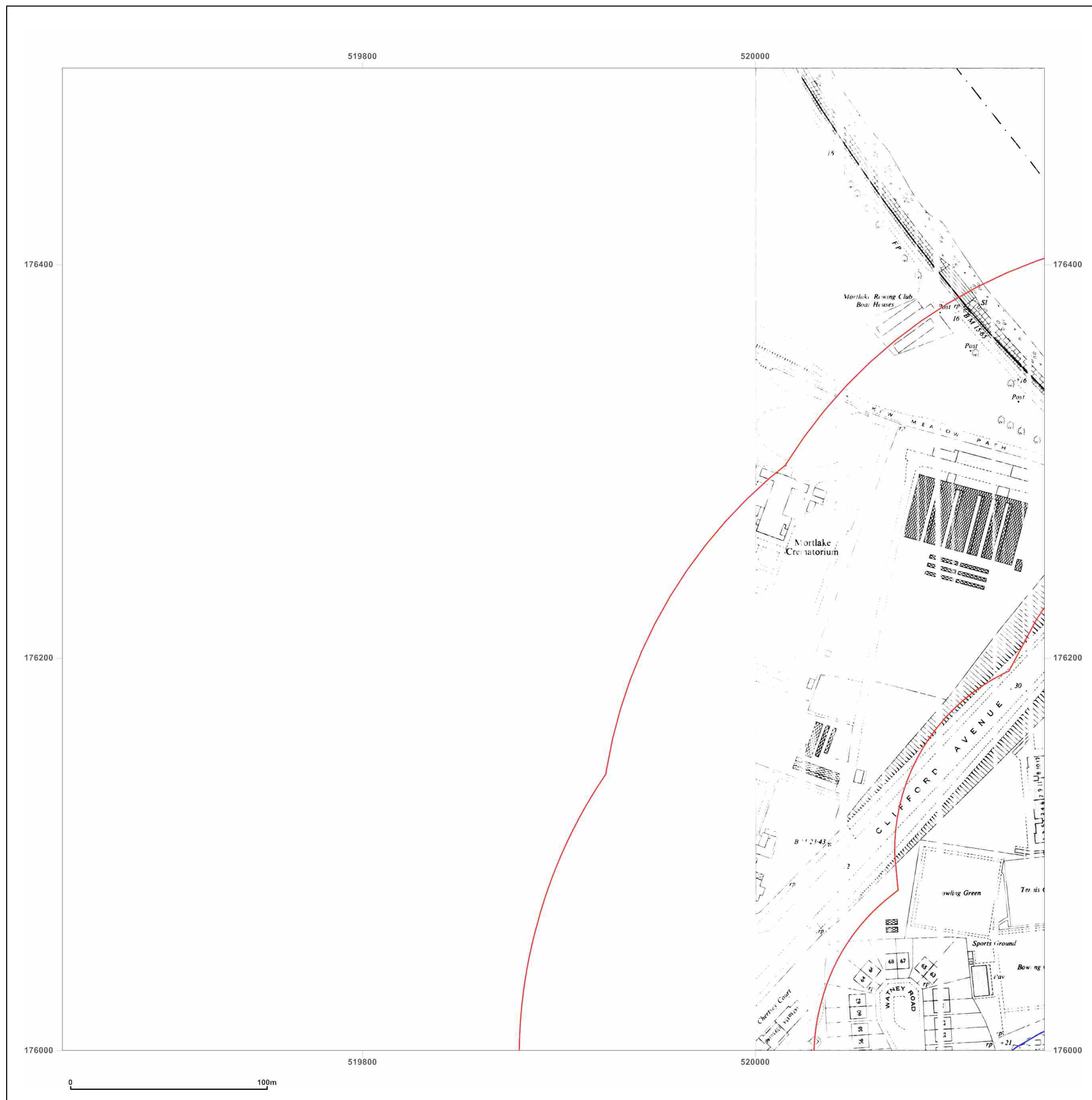
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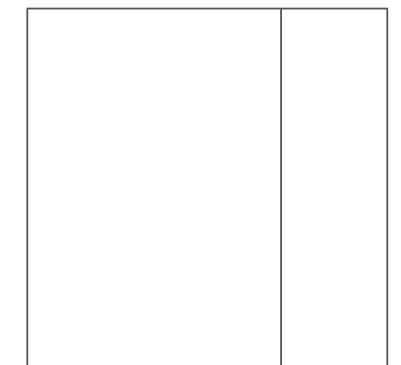
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Map Name: National Grid

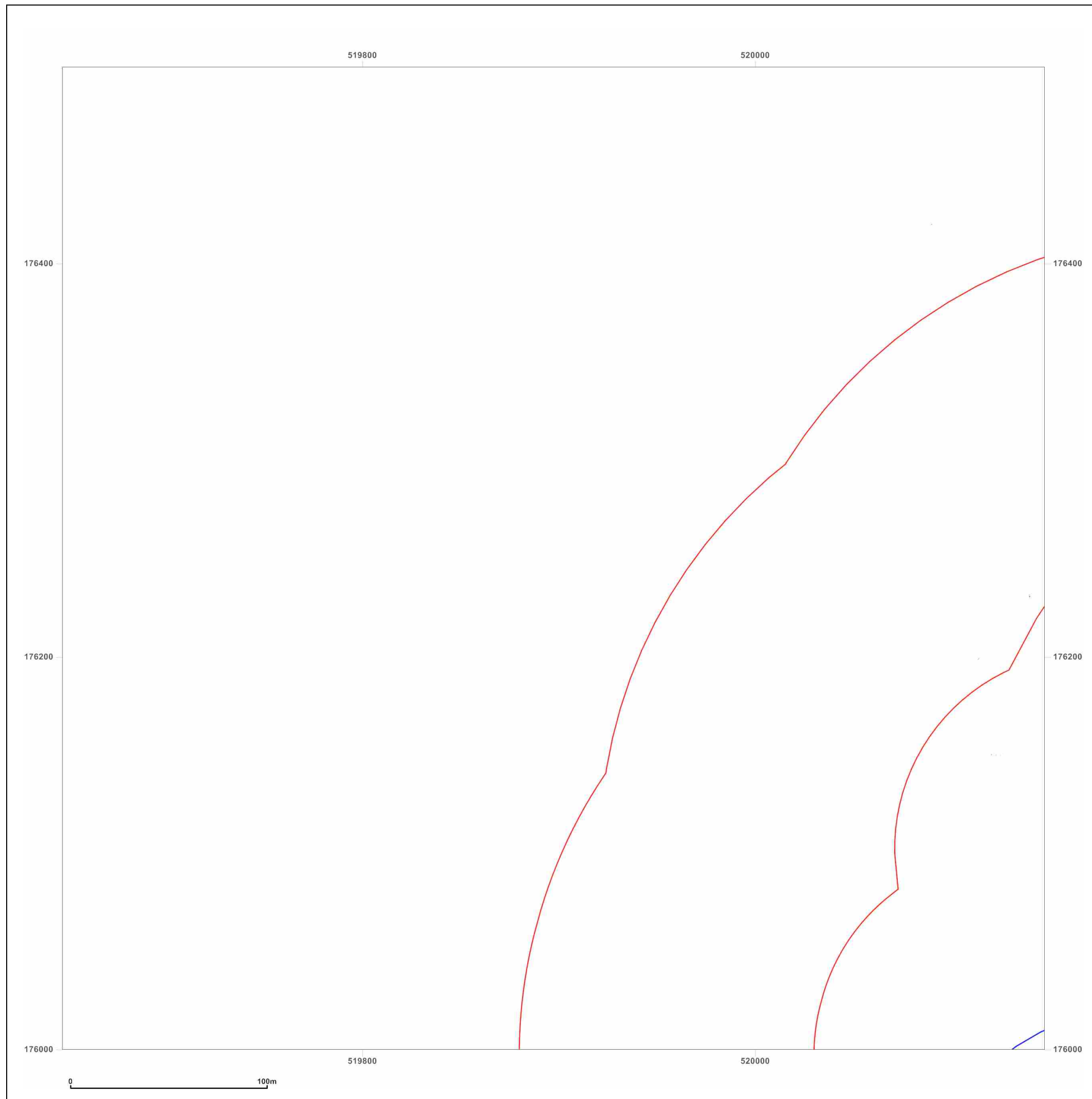
Map date: 1974

Scale: 1:1,250

Printed at: 1:2,000



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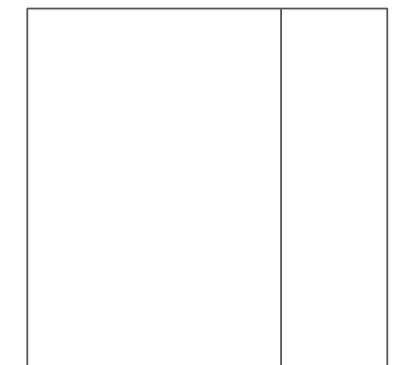
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Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1976

Scale: 1:1,250

Printed at: 1:2,000



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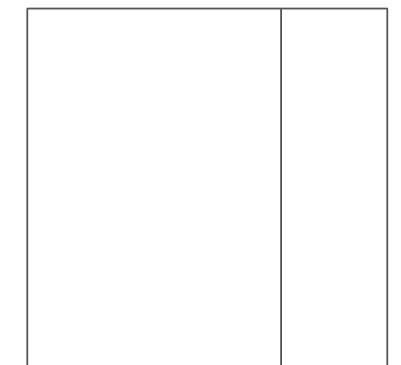
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Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1977

Scale: 1:1,250

Printed at: 1:2,000



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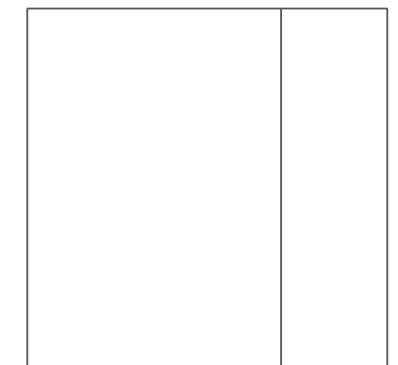
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Map Name: National Grid

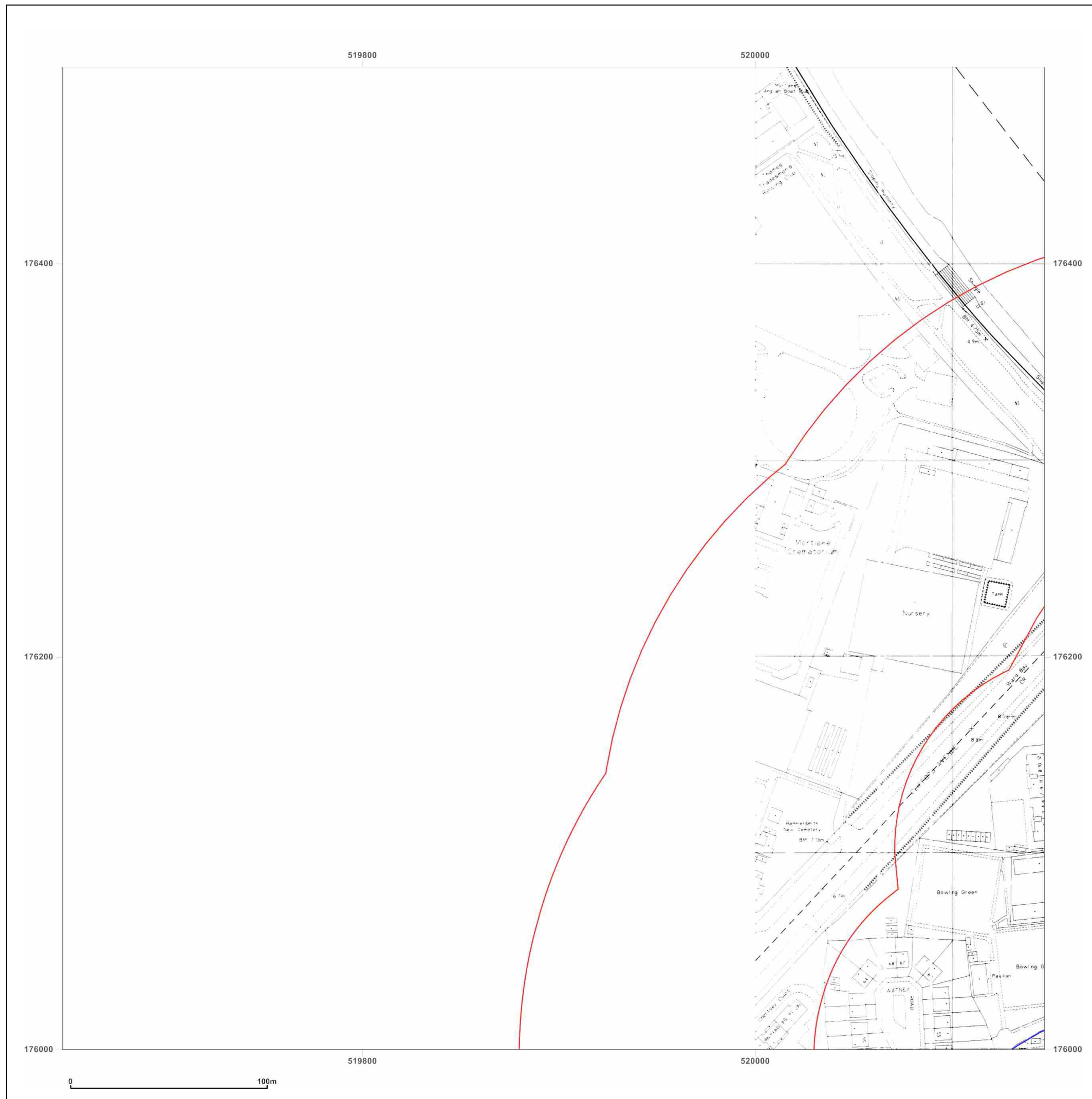
Map date: 1991

Scale: 1:1,250

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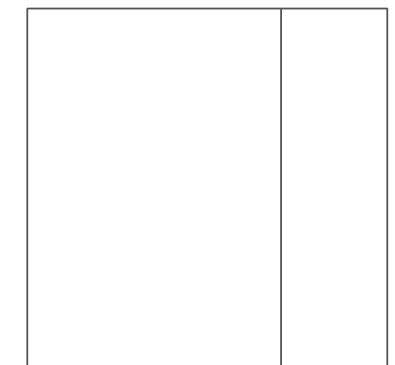
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Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
Revised 1991
Edition N/A
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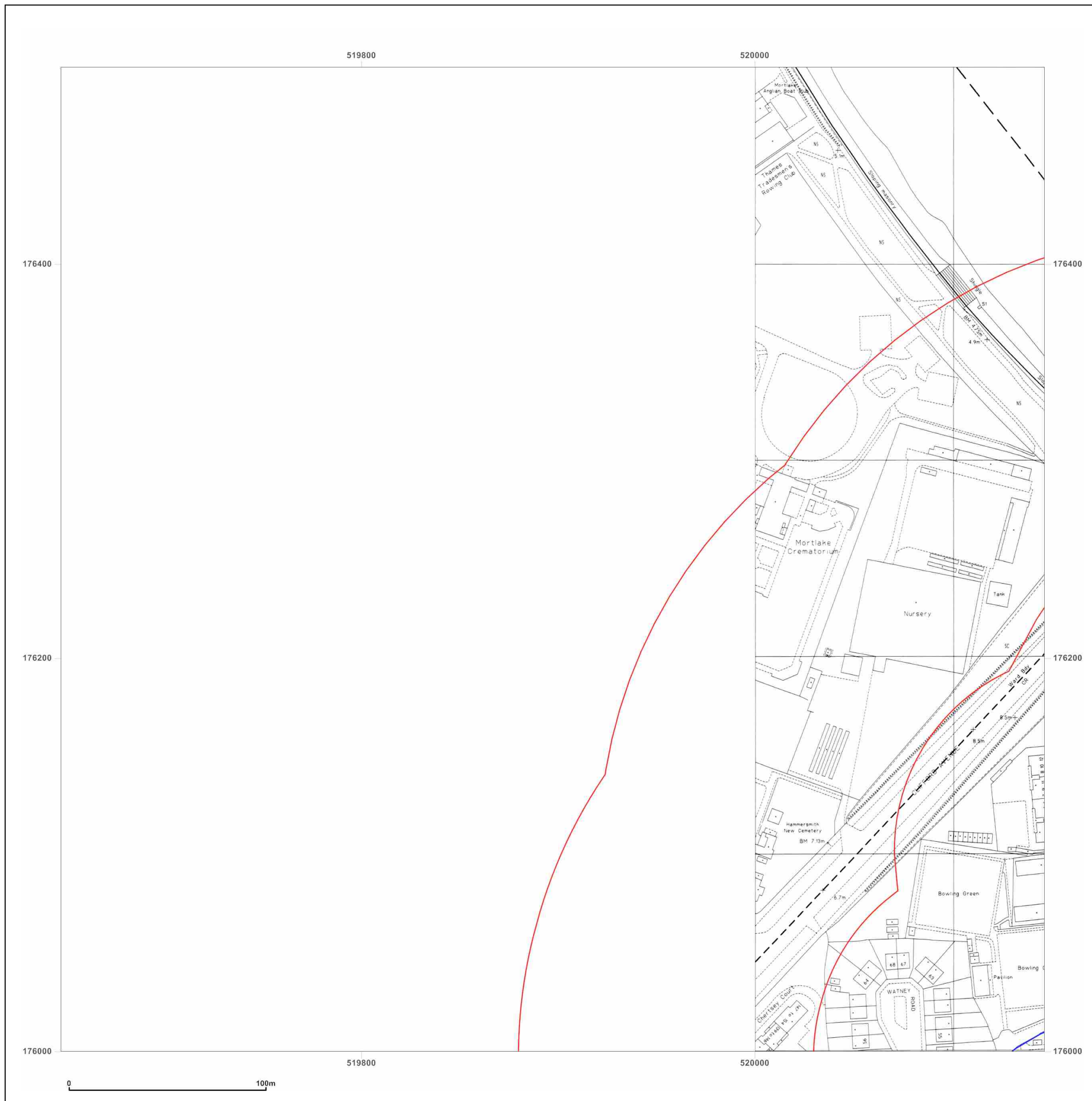
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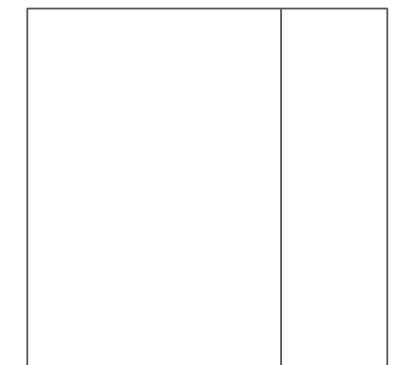
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Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
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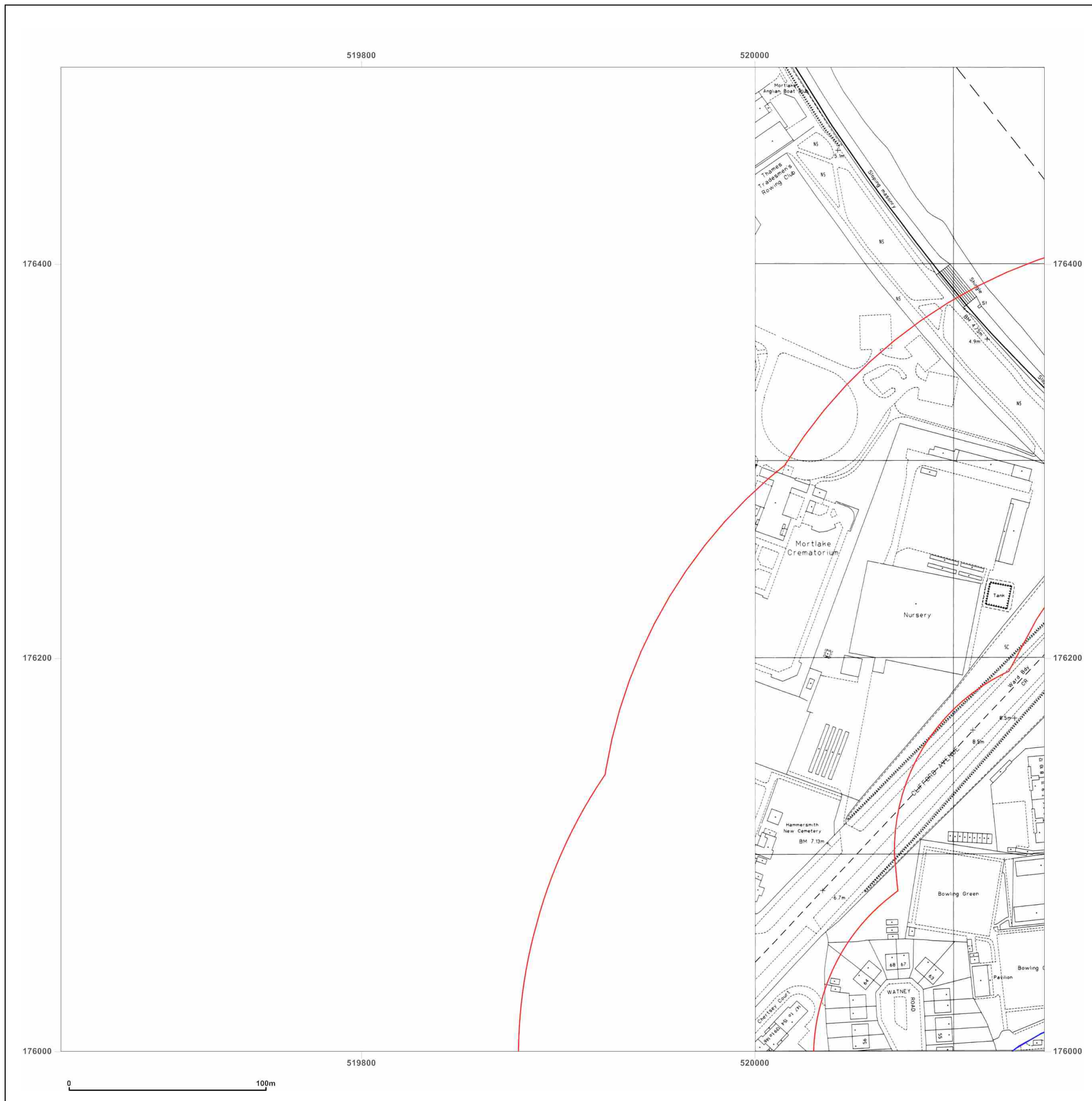
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_1_2
Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
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Revised N/A
Edition N/A
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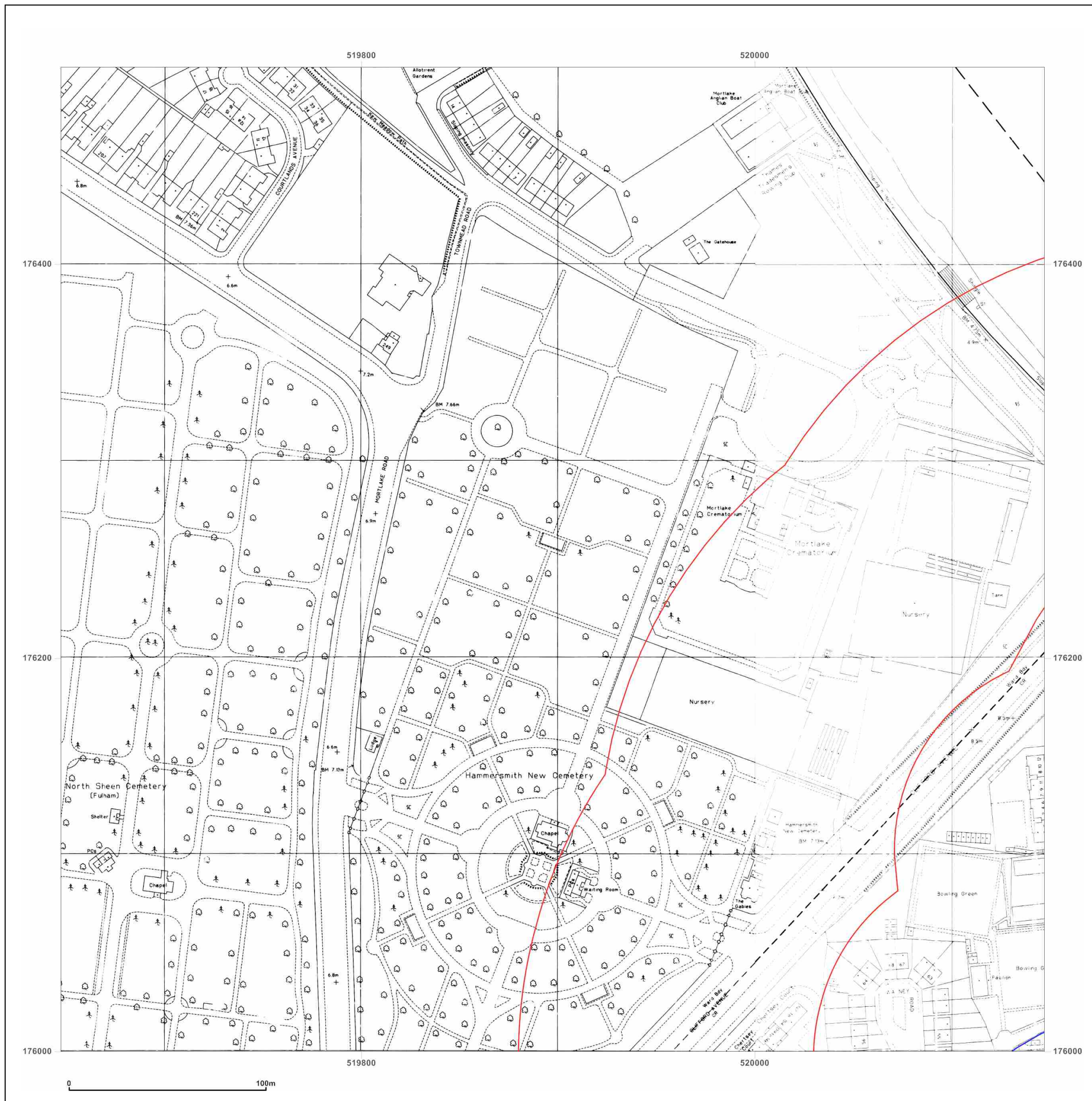
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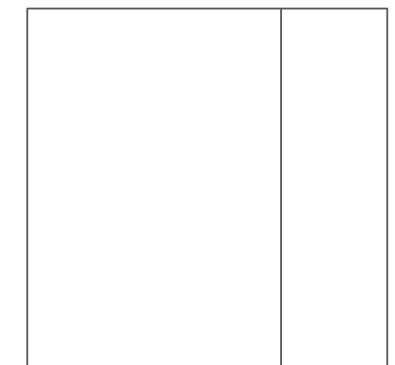
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Grid Ref: 519897, 176250

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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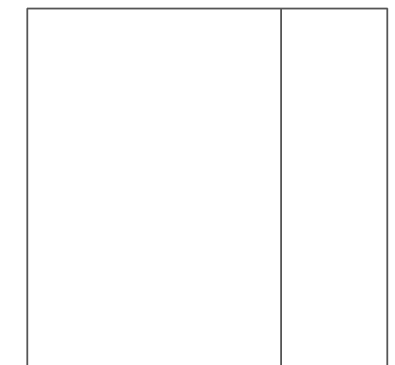
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Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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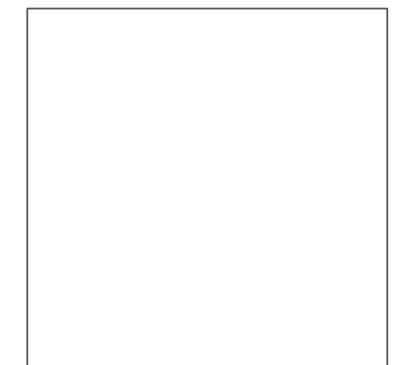
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Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: 1056 Scale Town Plan

Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1952

Scale: 1:1,250

Printed at: 1:2,000



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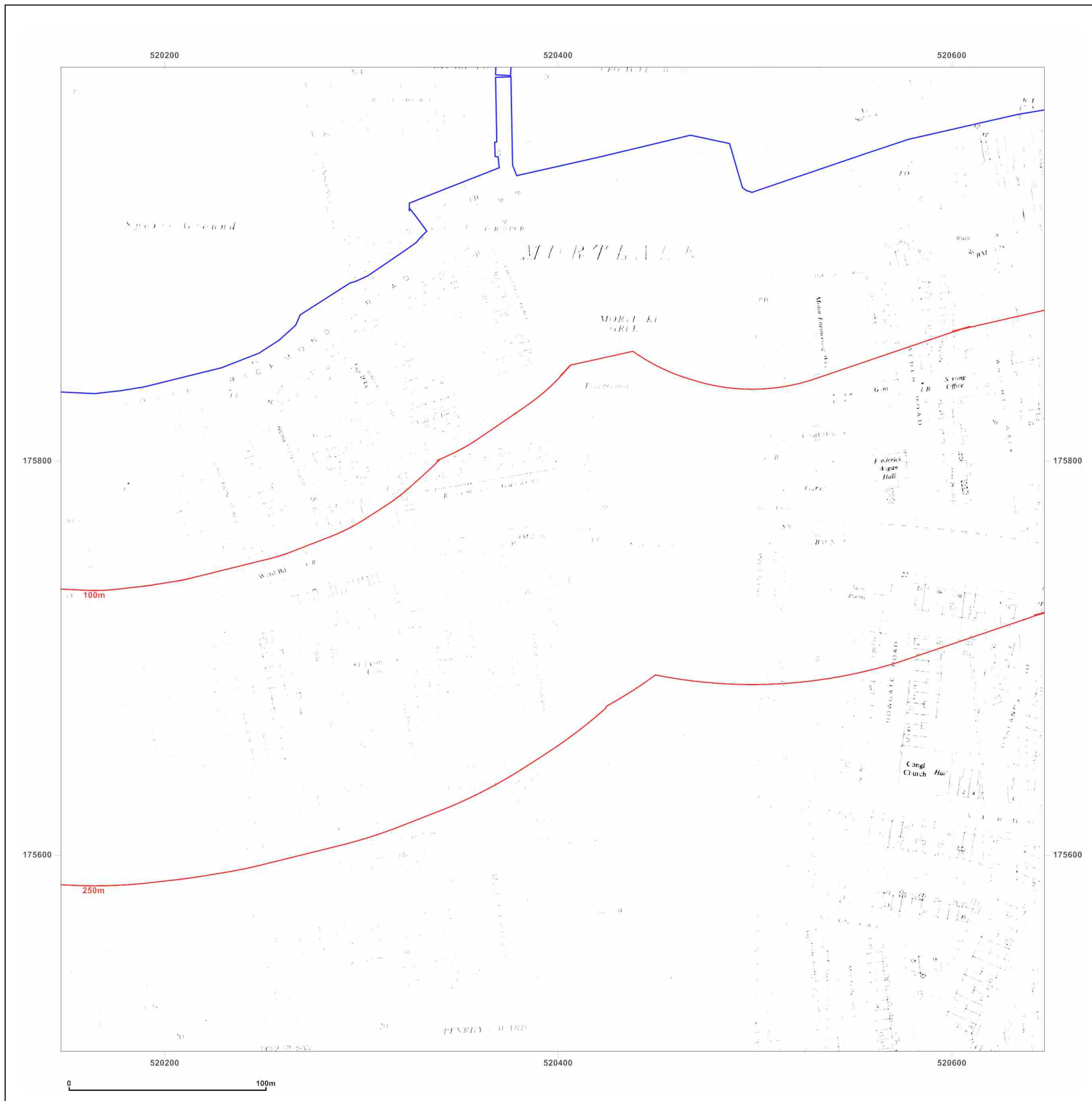
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1965-1968

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed 1967
Revised 1967
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Site Details:

THE STAG BREWERY, LOWER RICHMOND ROAD, MORTLAKE, LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1978-1982

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1978
 Levelled N/A

Surveyed 1973
 Revised 1982
 Edition N/A
 Copyright 1982
 Levelled 1973



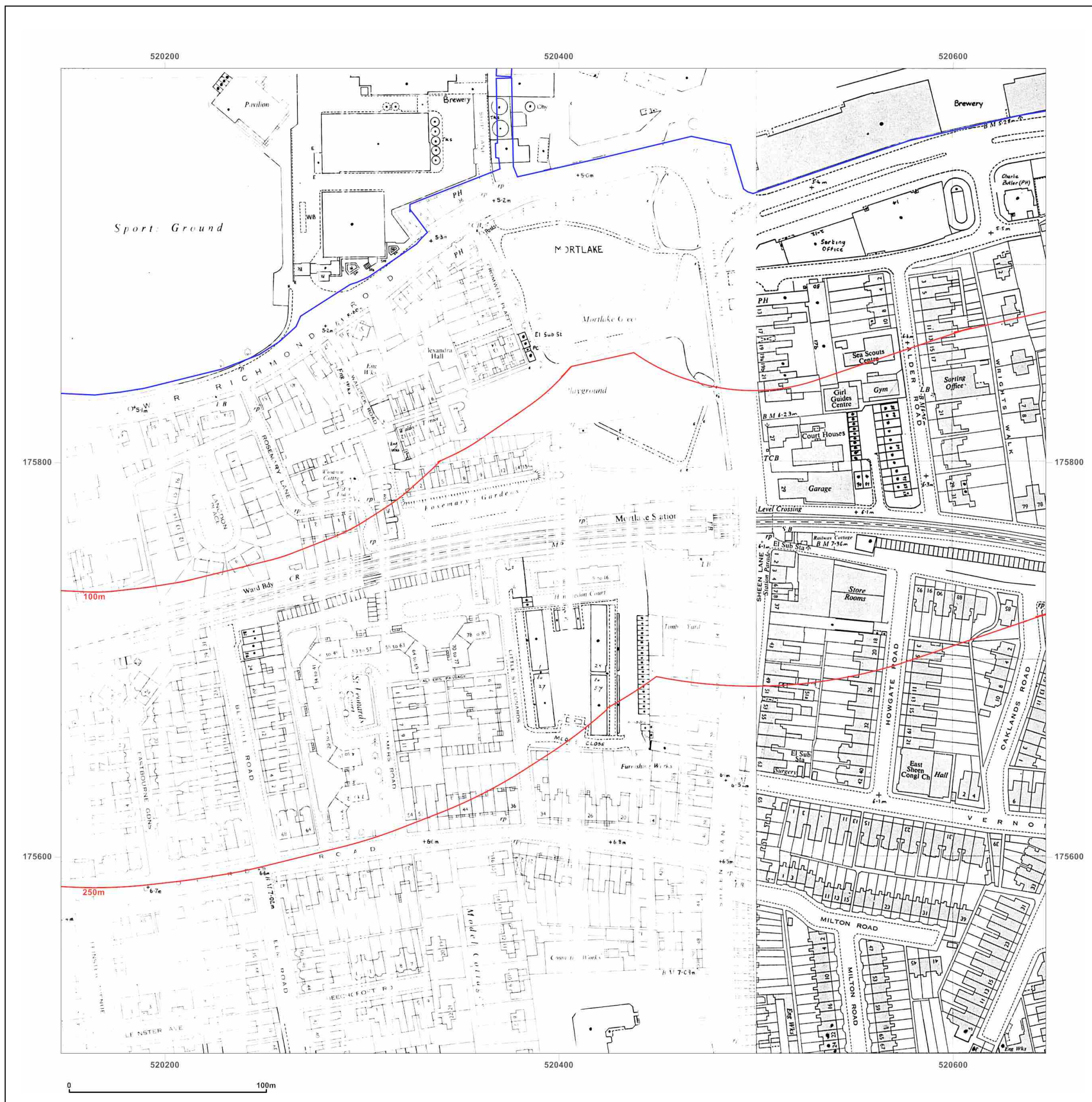
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LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1987-1991

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A



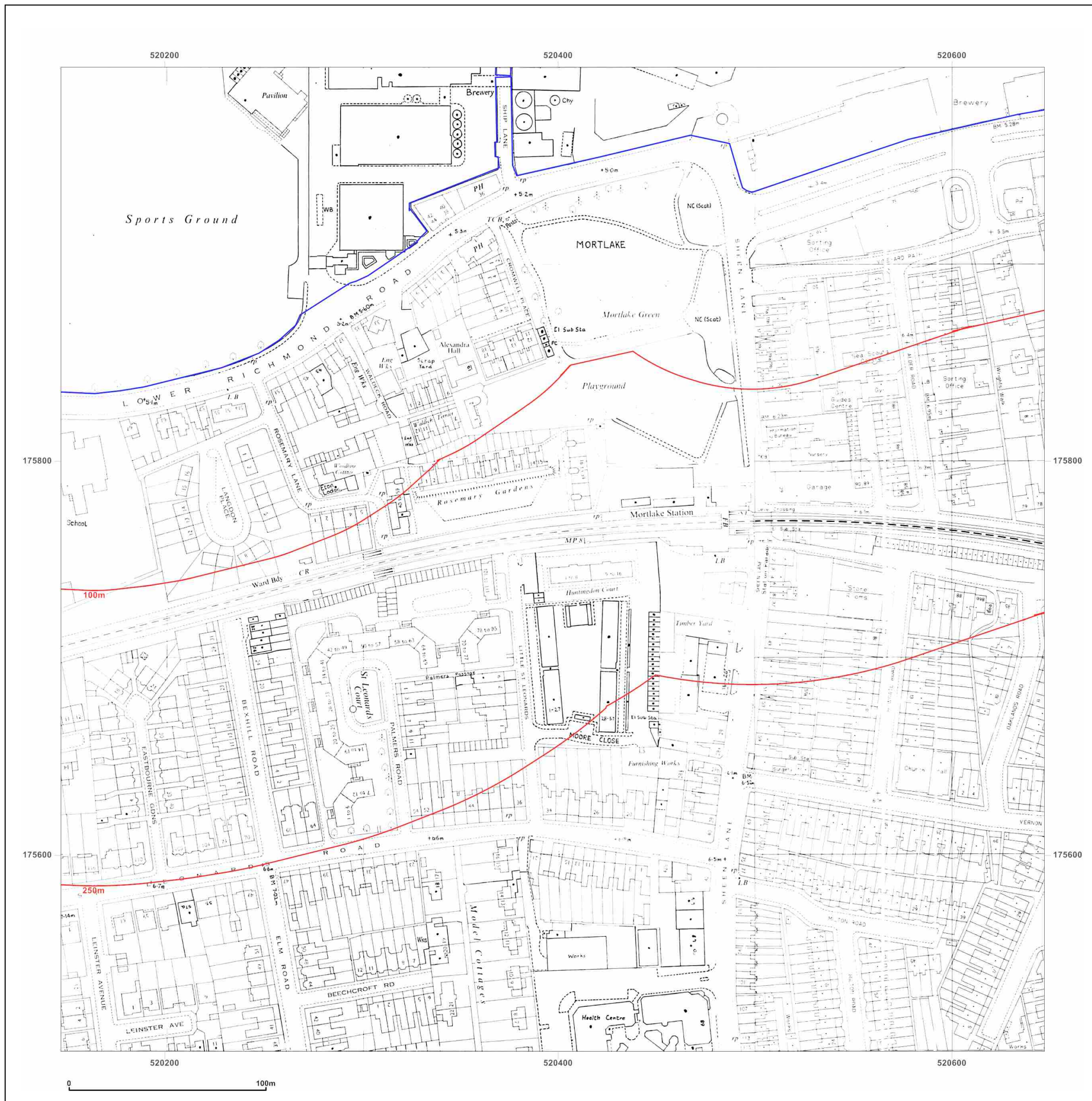
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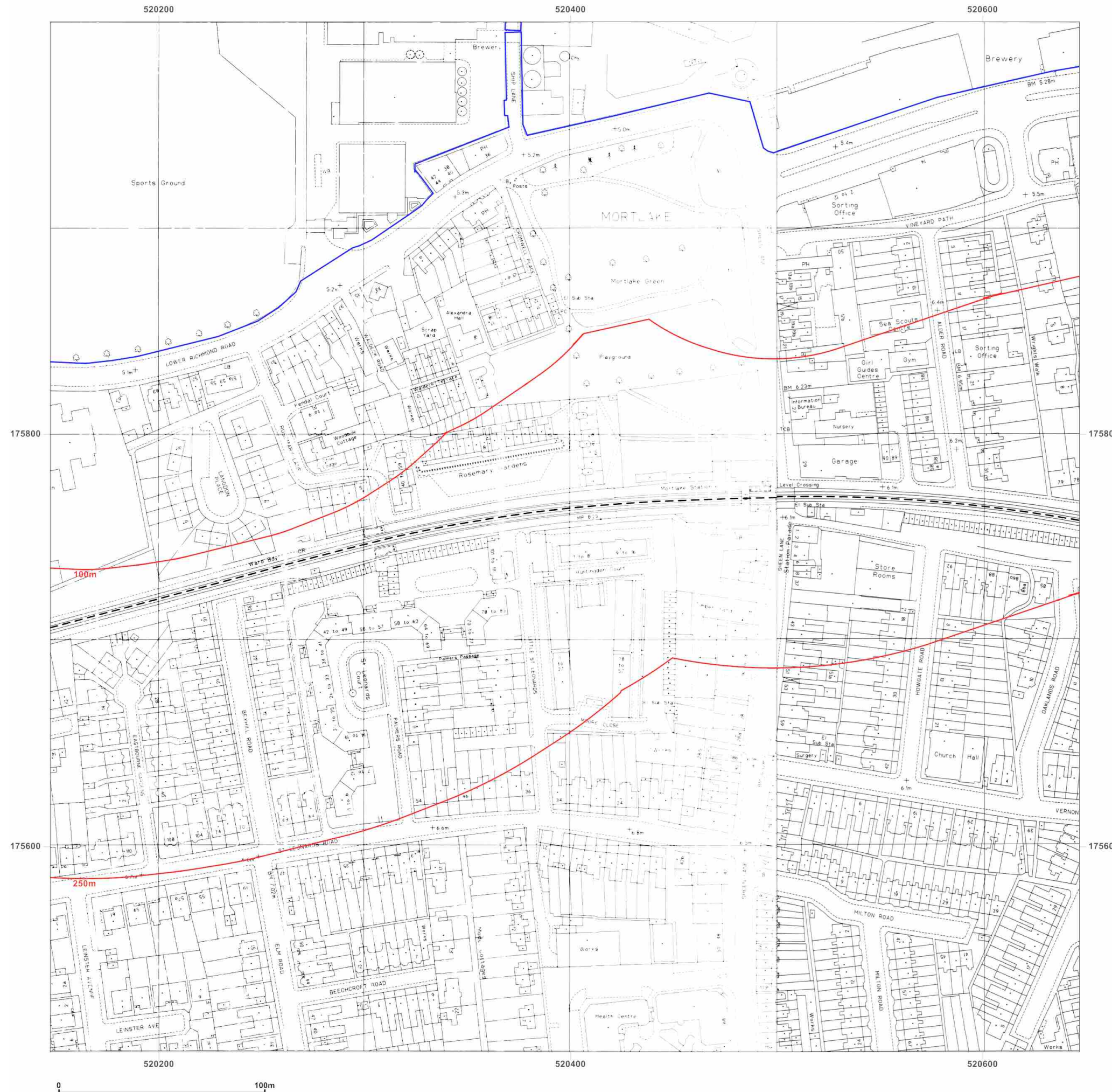
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Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A	Revised 1991
Edition N/A	Edition N/A
Copyright 1991	Copyright 1991
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1991-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
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Surveyed N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1992-1994

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_1
Grid Ref: 520397, 175750

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: 1056 Scale Town Plan

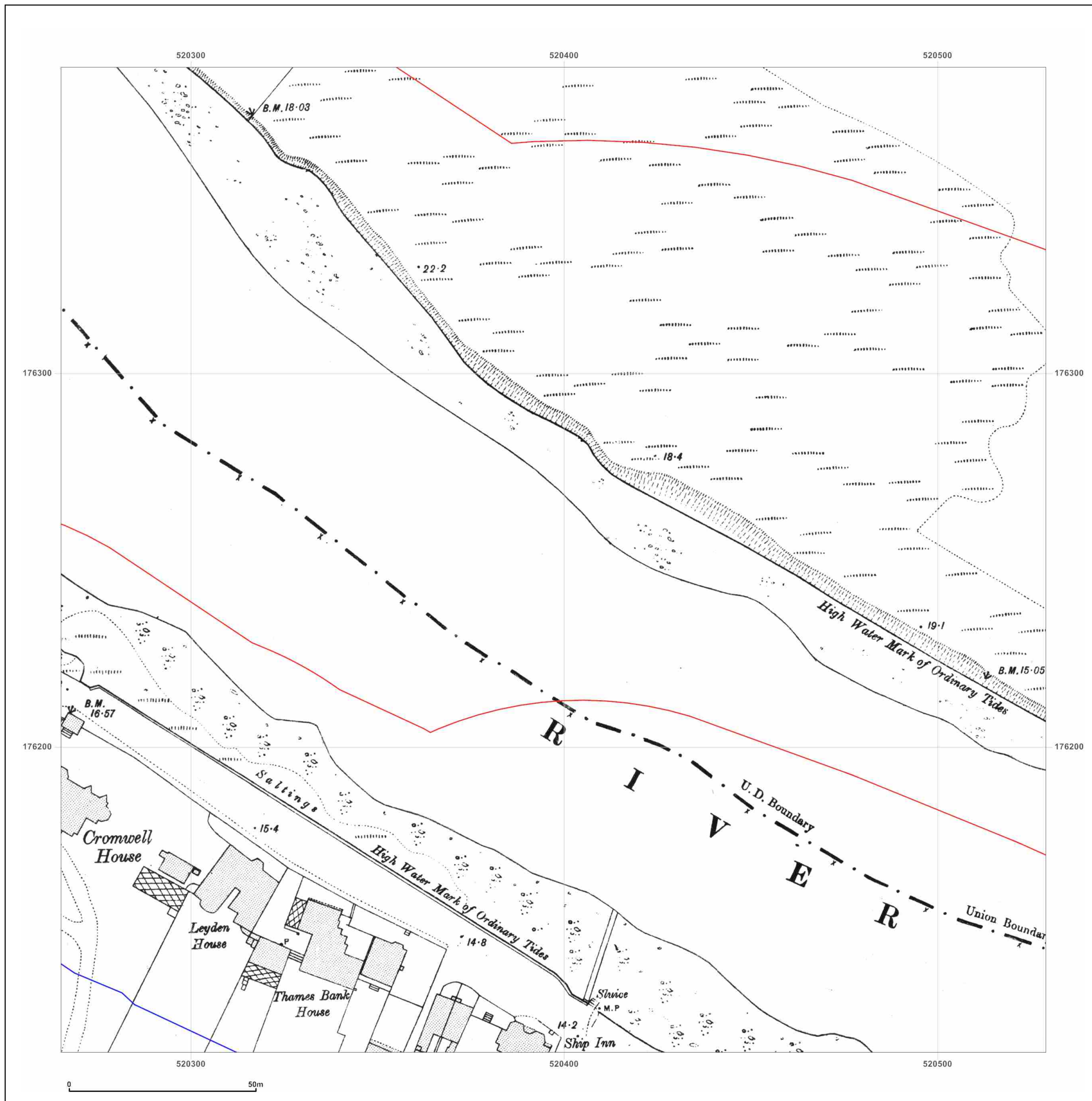
Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1952

Scale: 1:1,250

Printed at: 1:2,000



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



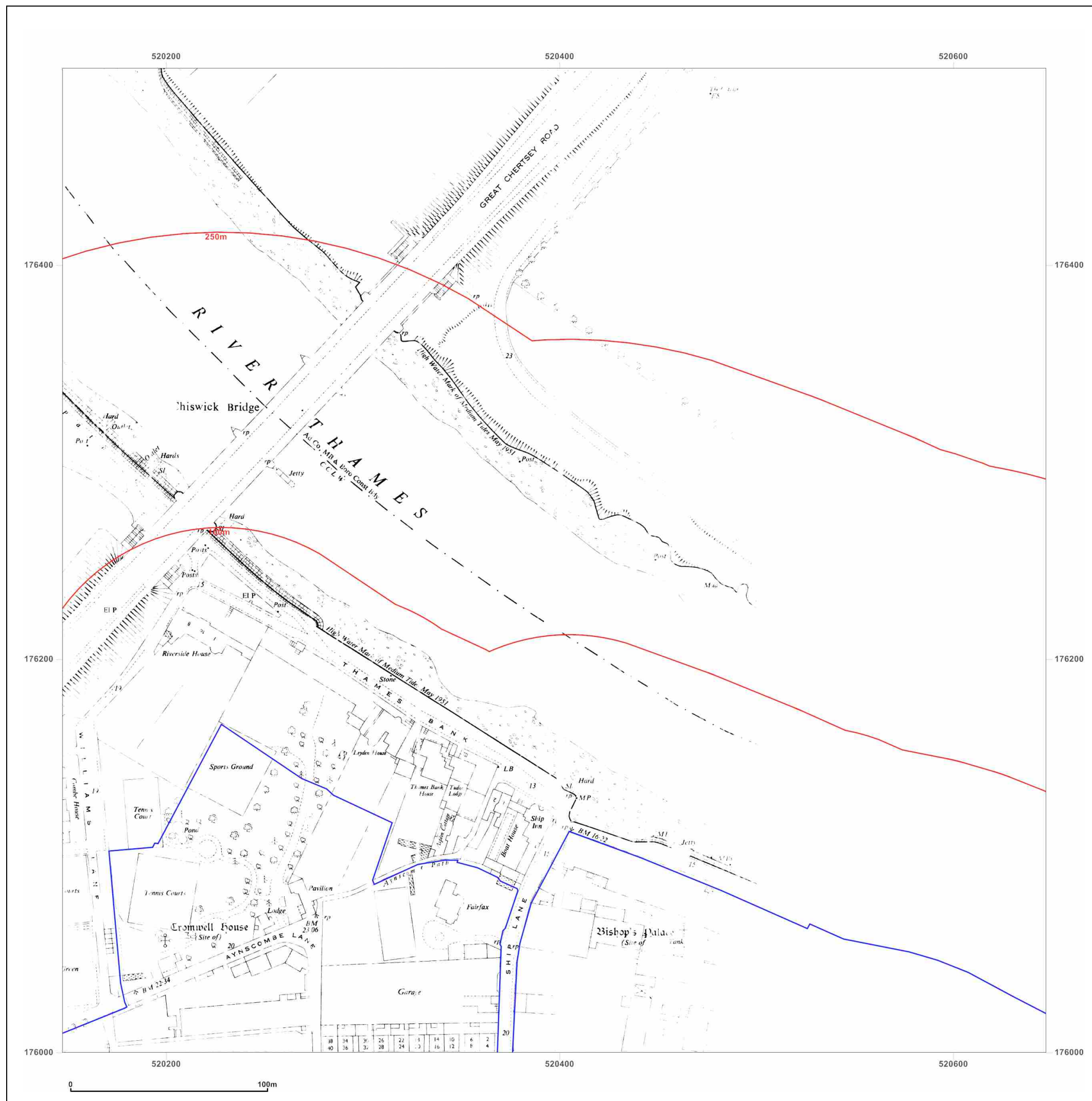
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1960

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
Revised 1960
Edition N/A
Copyright N/A
Levelled N/A



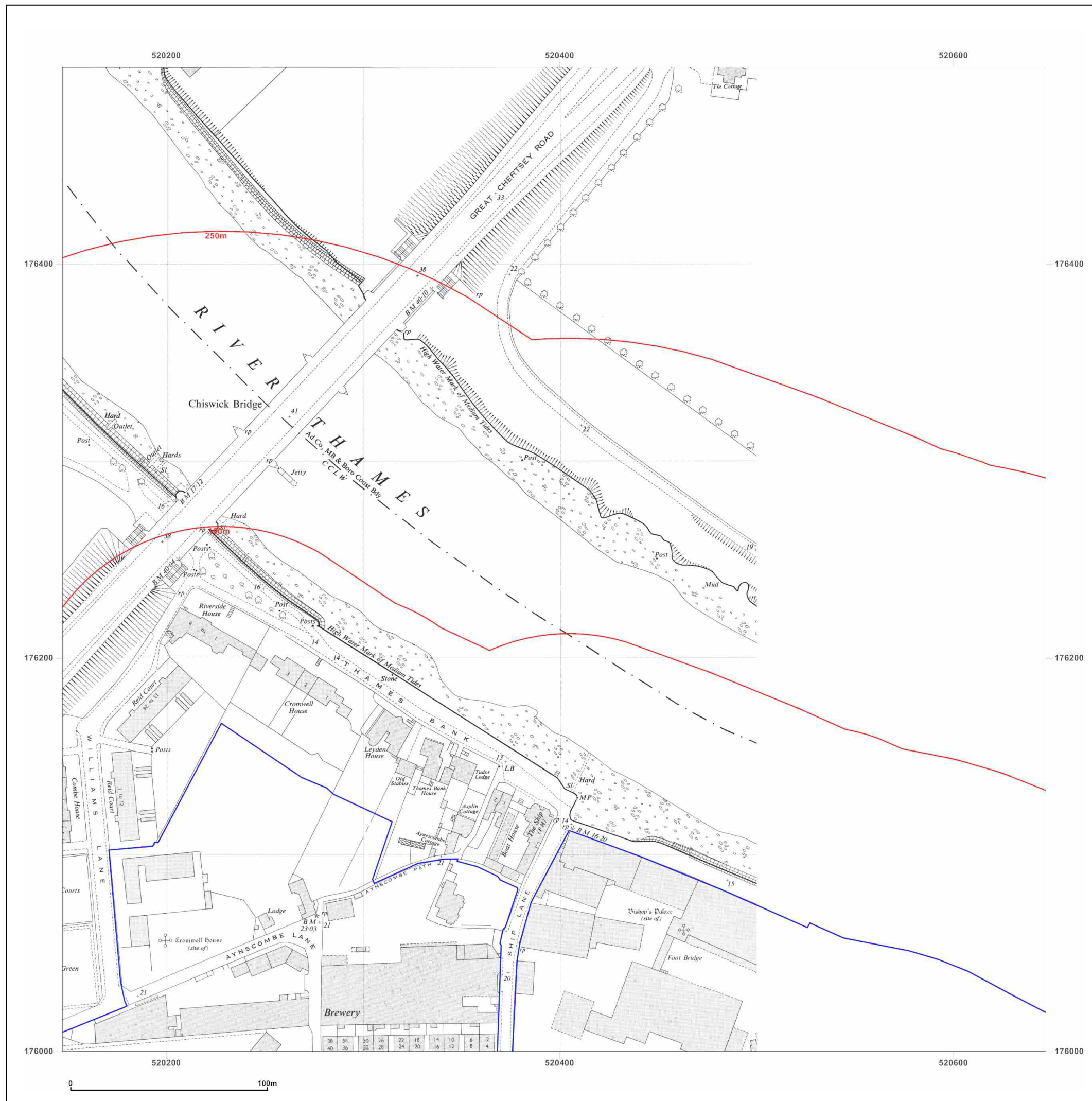
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1961

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
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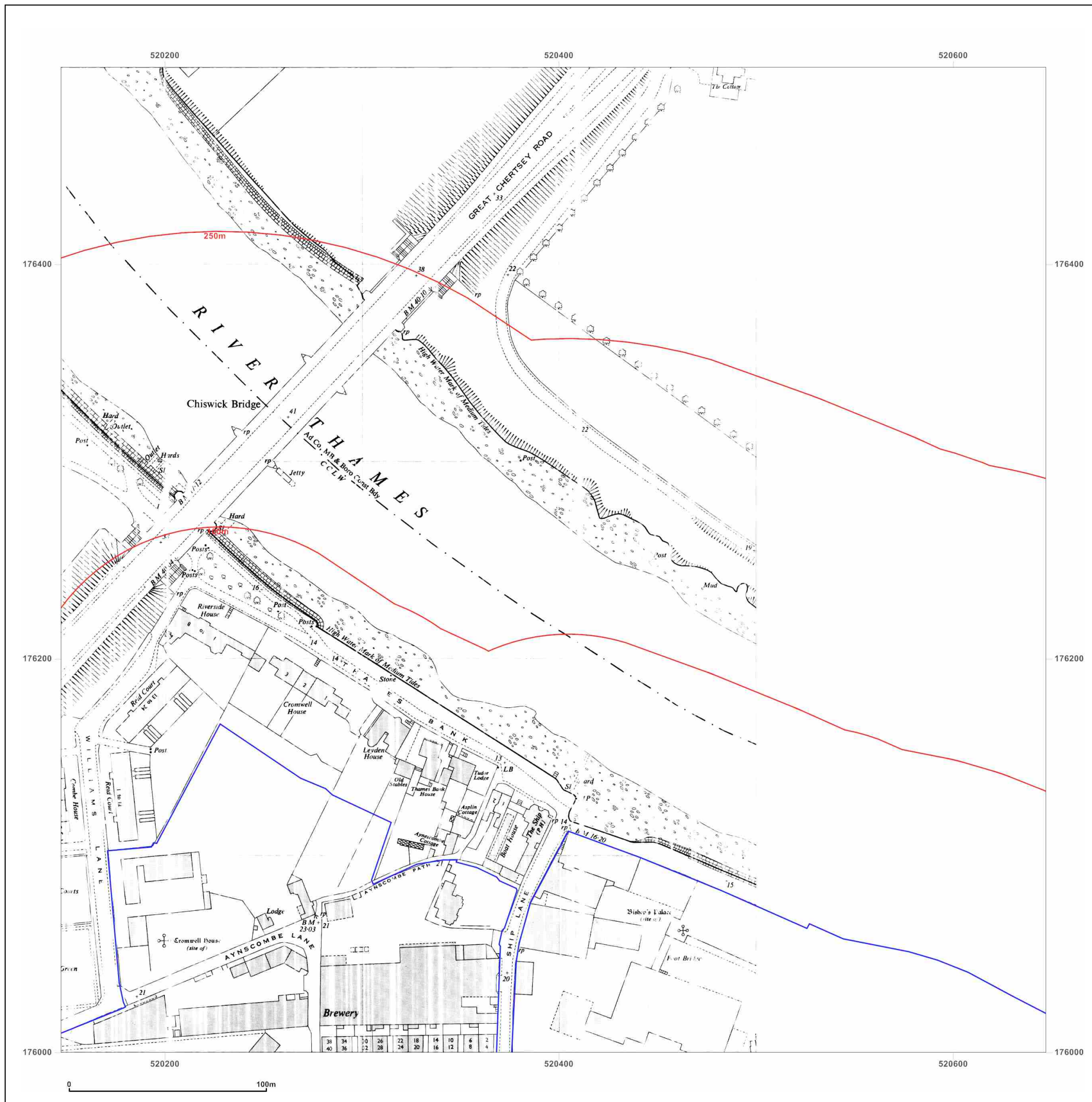
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1973-1974

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed 1951
Revised 1973
Edition N/A
Copyright 1973
Levelled 1954



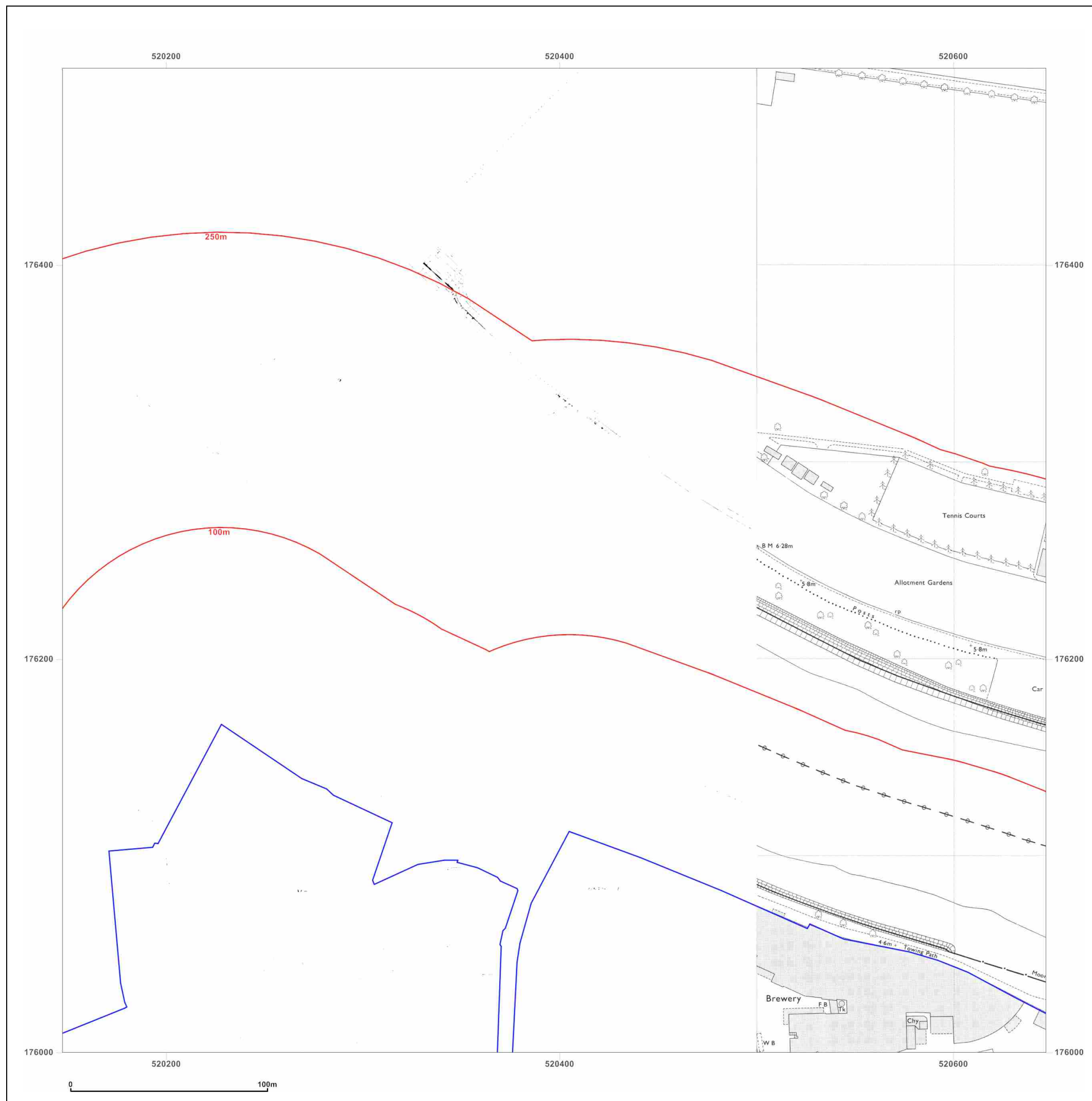
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1976

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
Revised 1976
Edition N/A
Copyright N/A
Levelled N/A



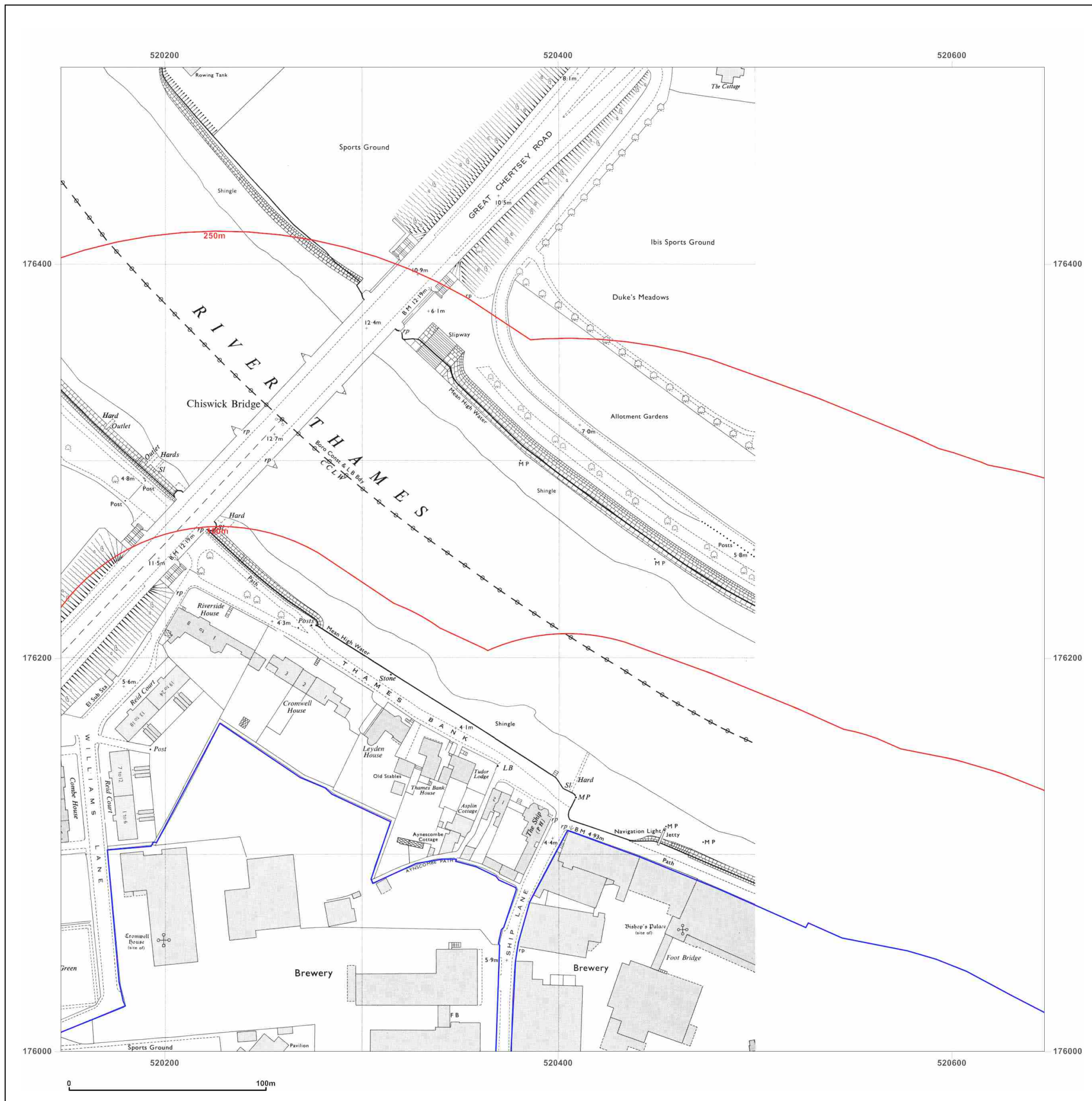
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1977

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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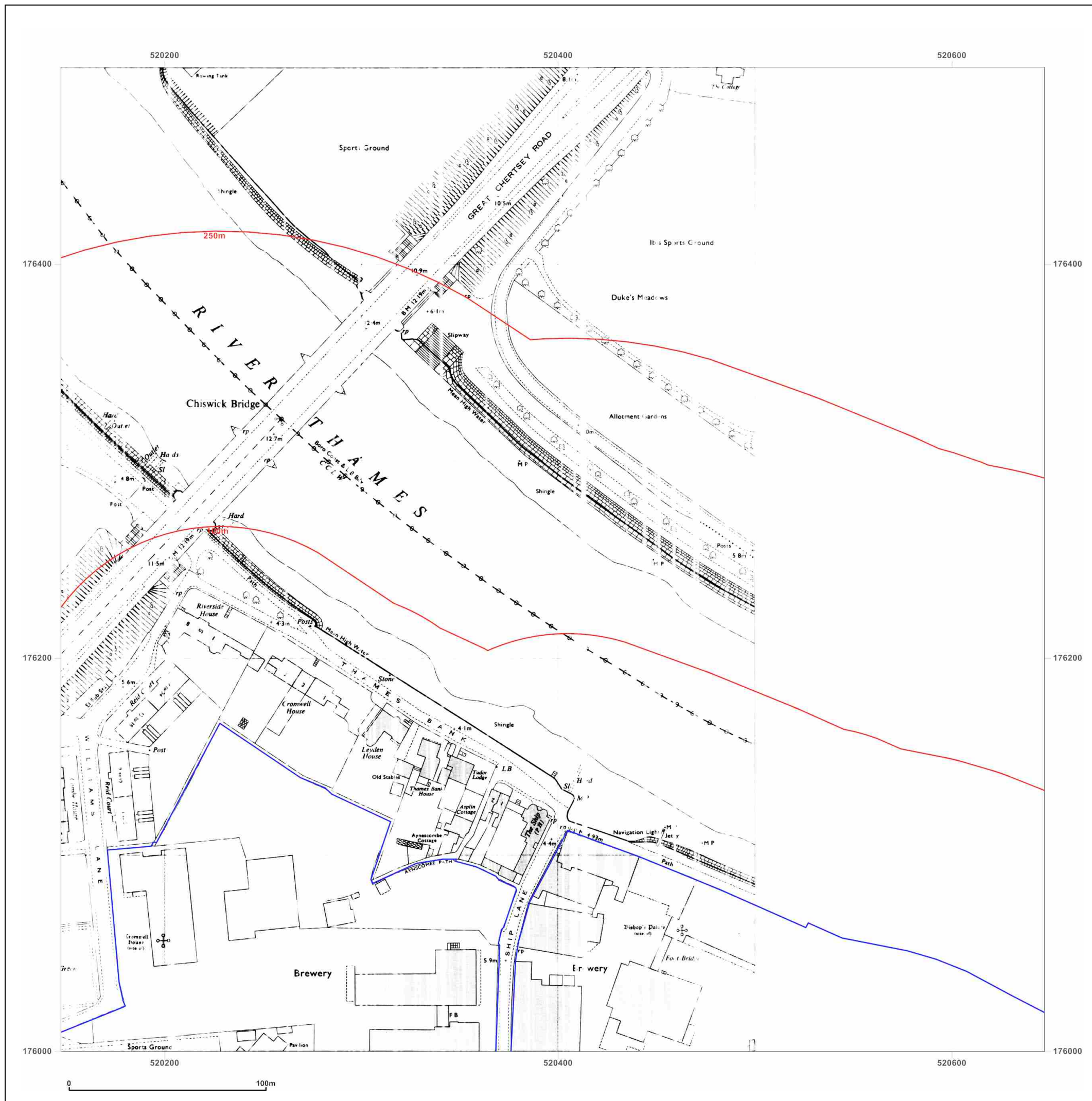
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A



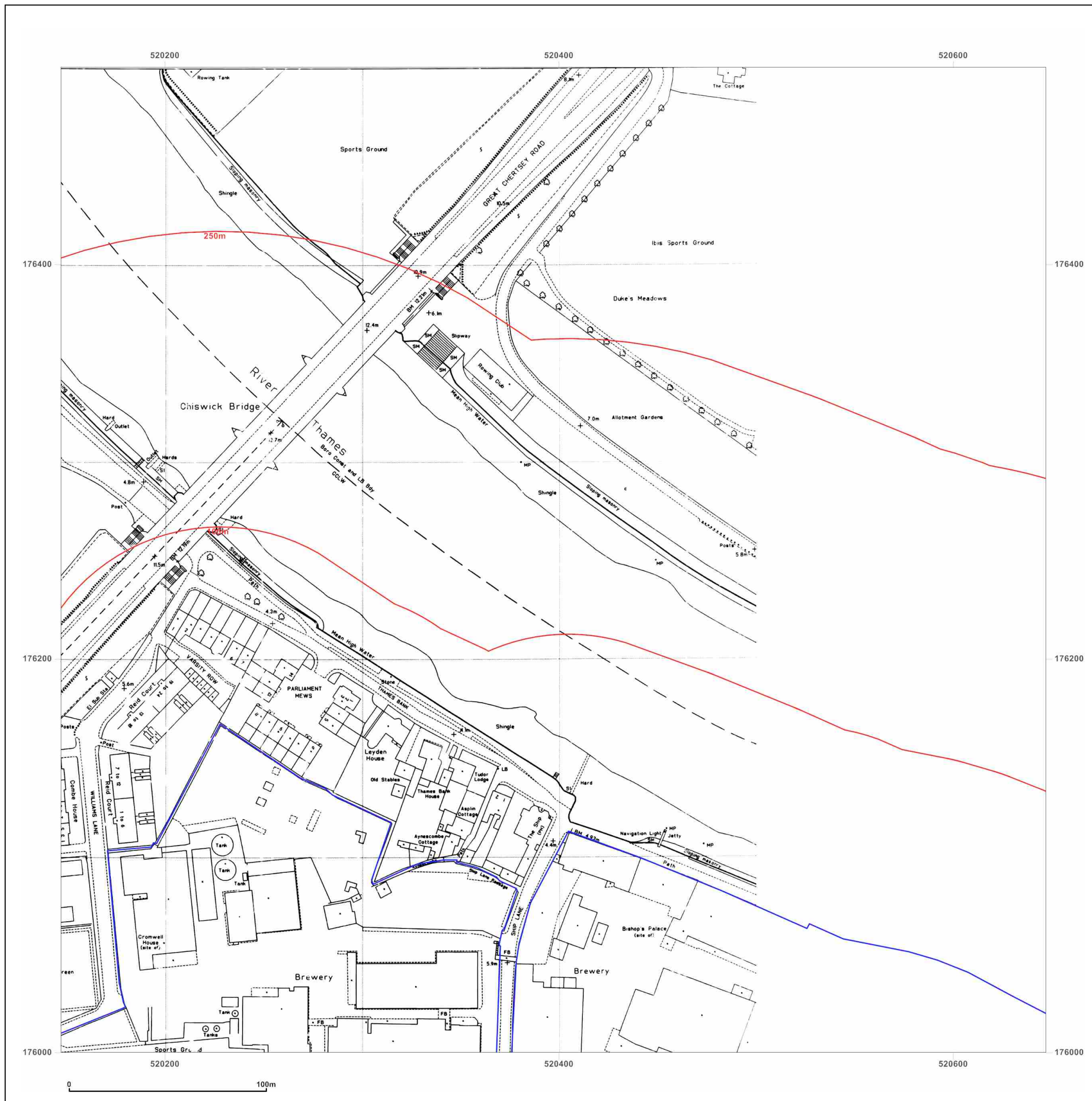
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LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
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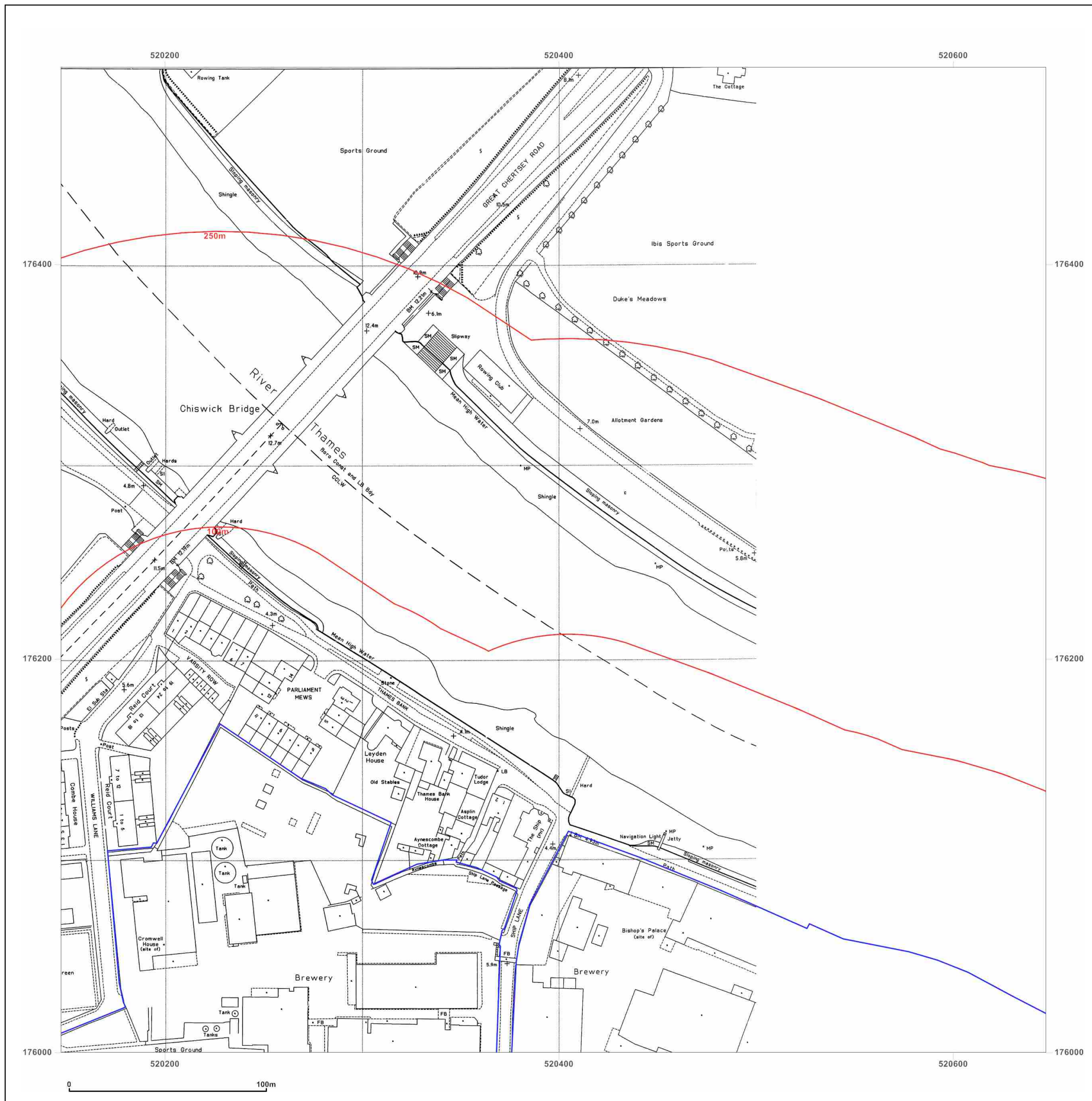
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1991-1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

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



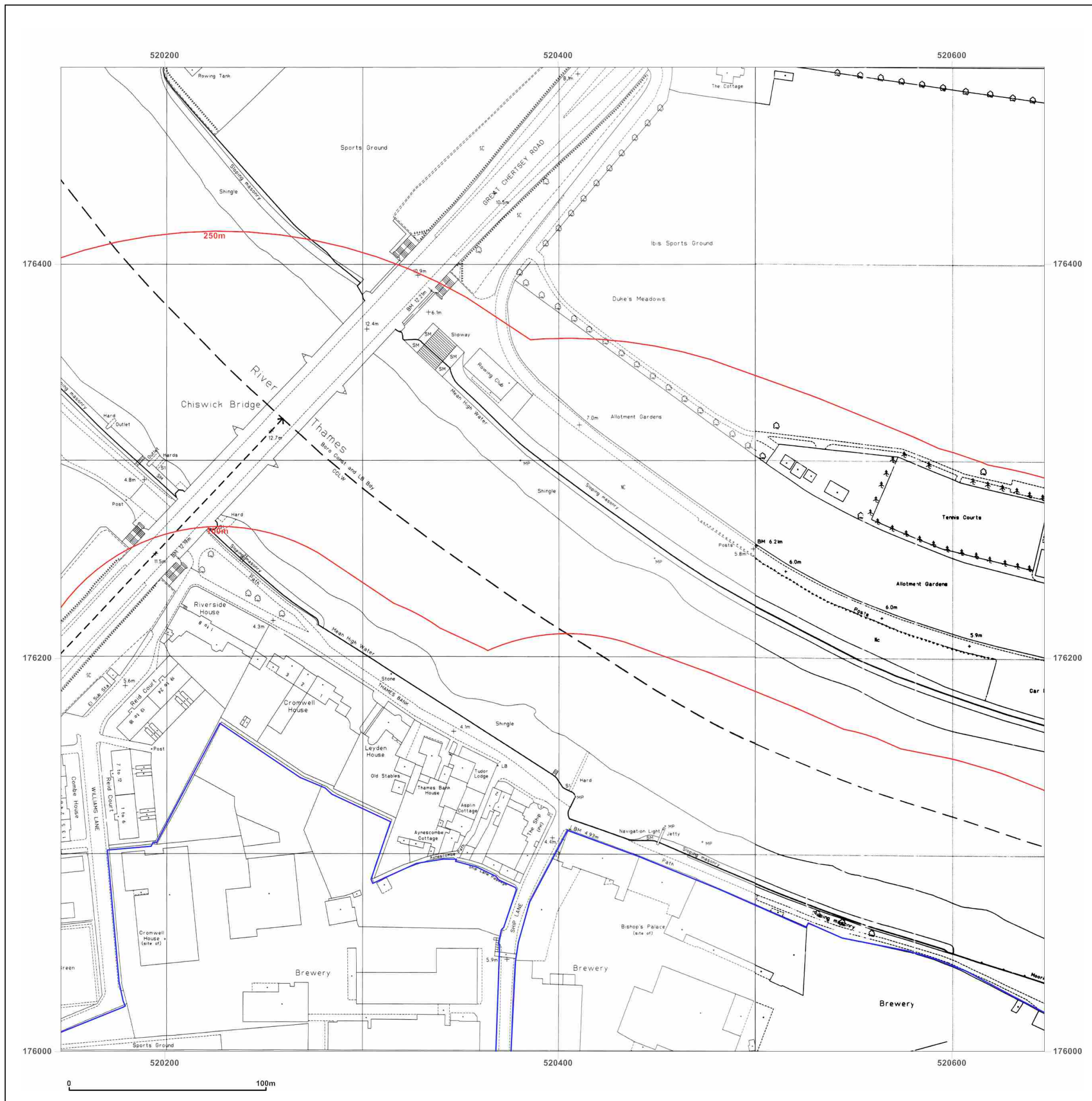
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LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_2_2
Grid Ref: 520397, 176250

Map Name: National Grid

Map date: 1991-1993

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
Copyright 1991
Levelled N/A

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



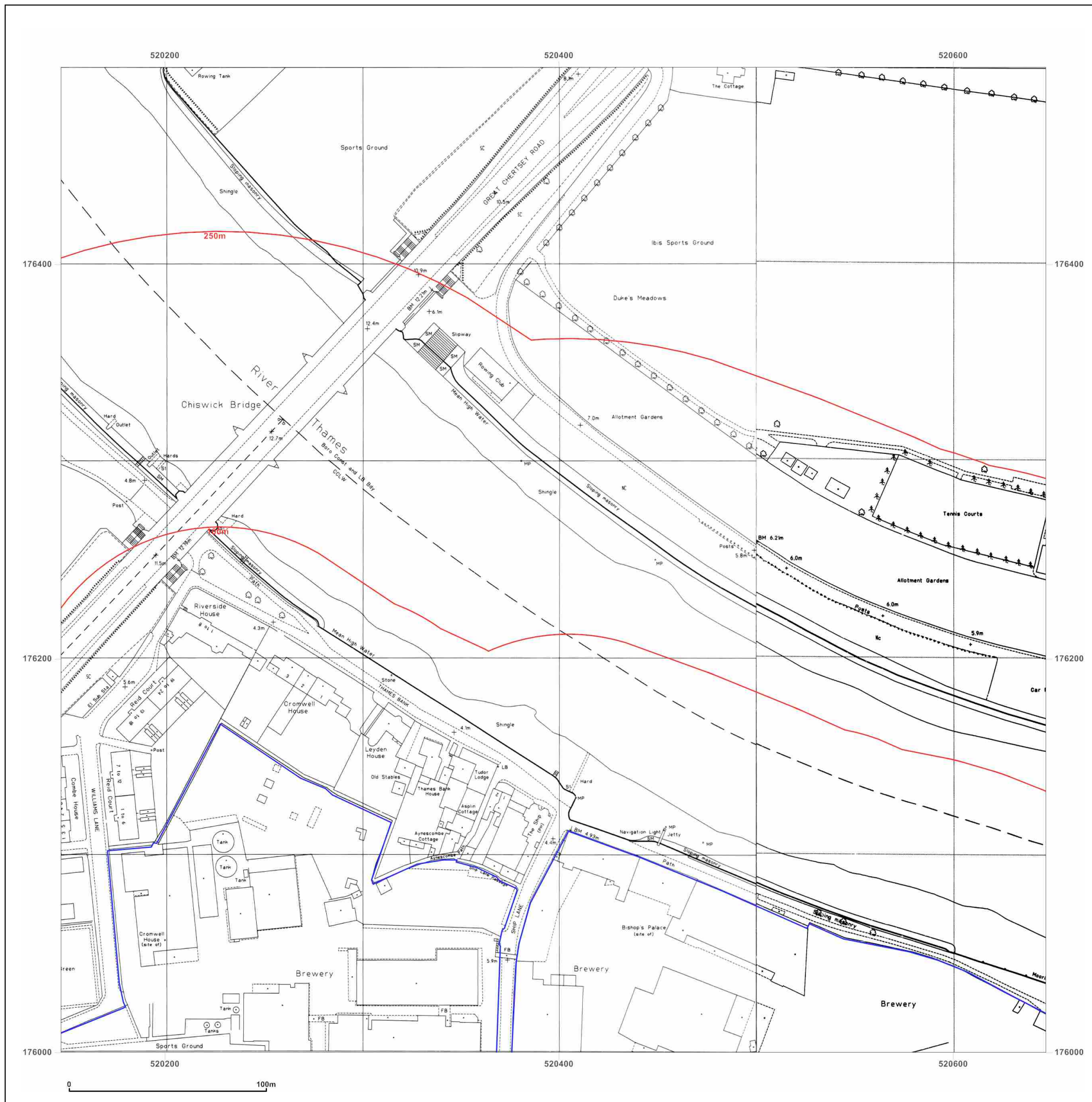
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: 1056 Scale Town Plan

Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1893
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A



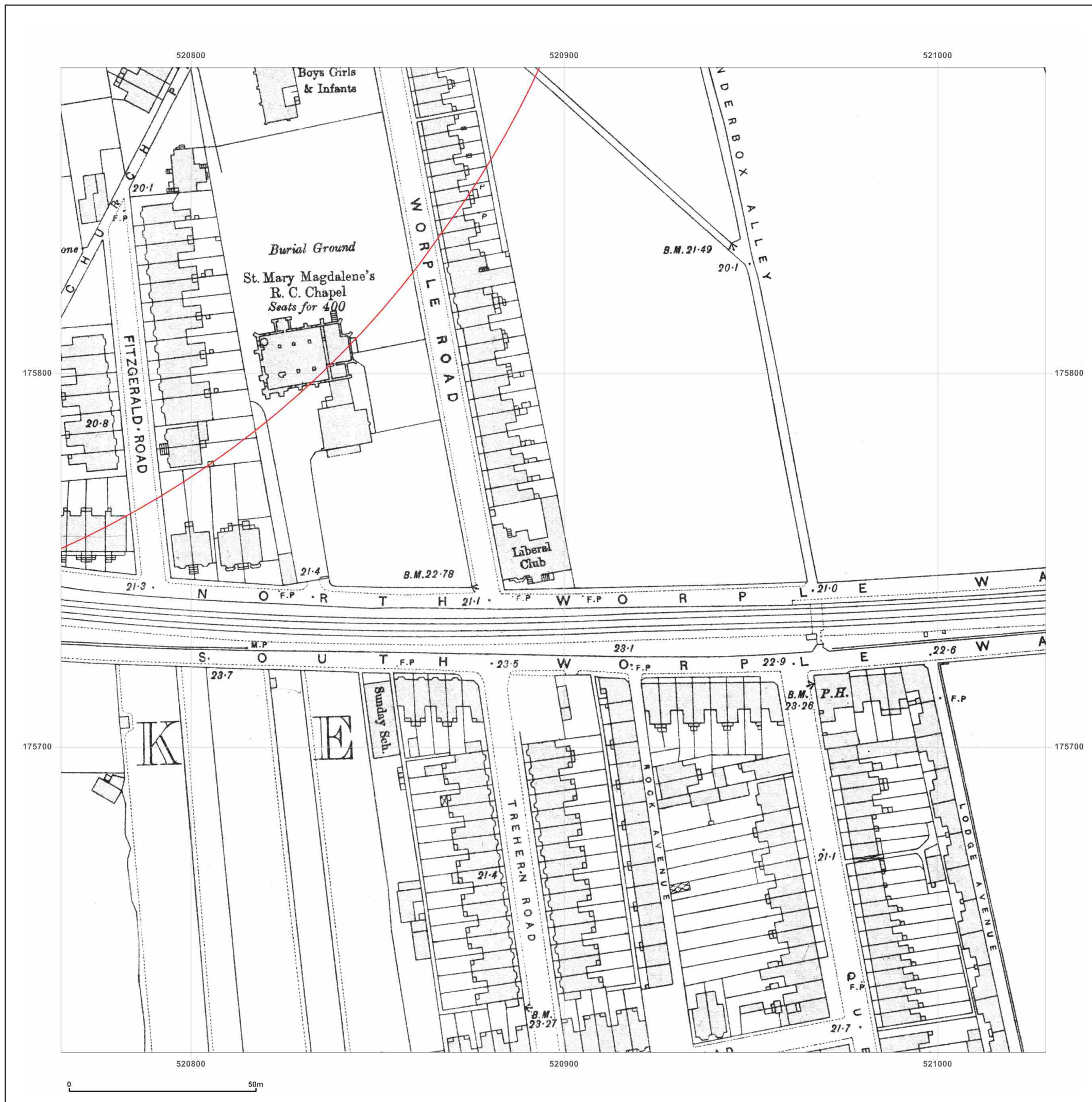
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
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Edition N/A
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Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932



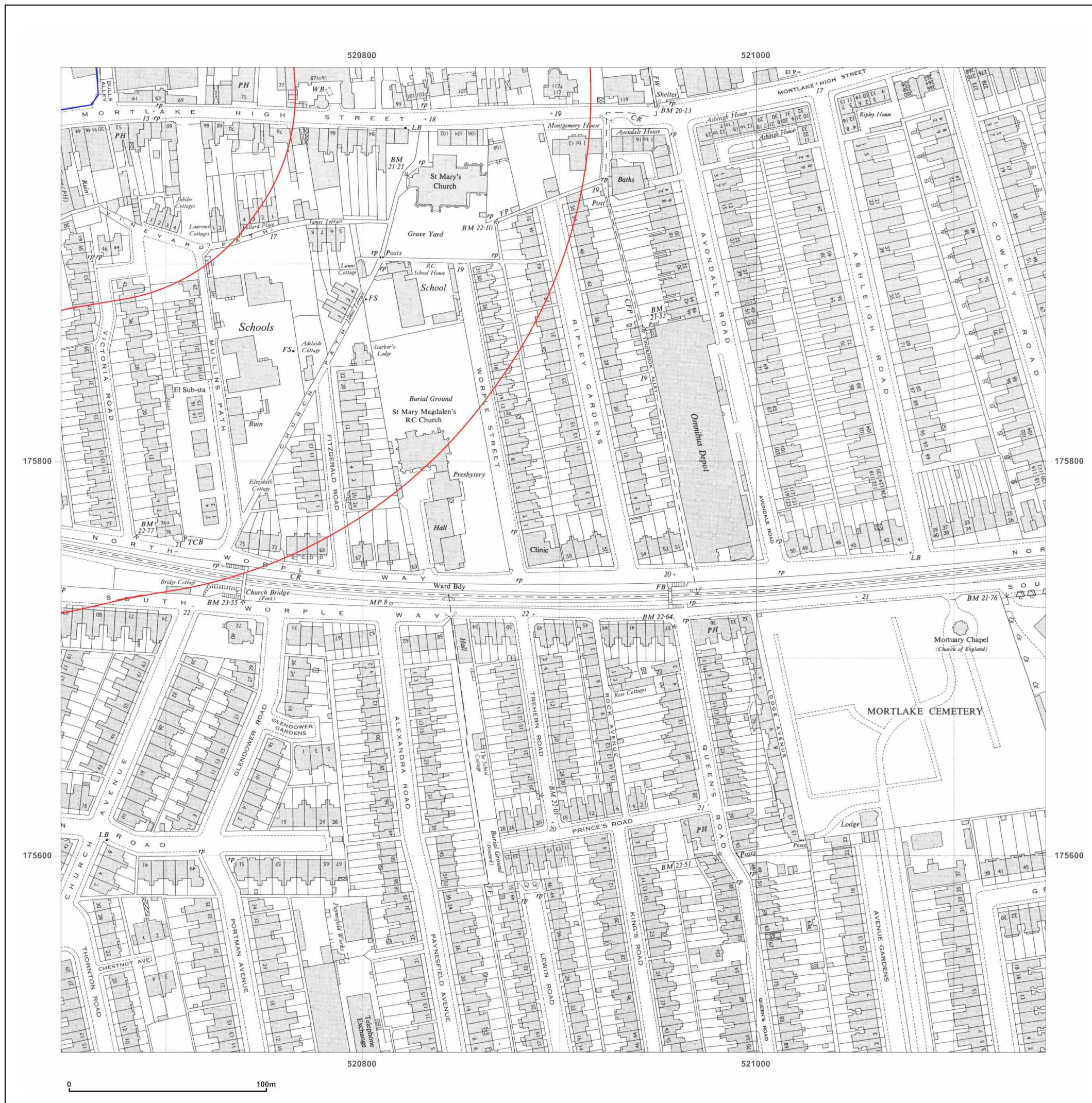
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1952

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition 1952
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Levelled 1932

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Revised N/A
Edition N/A
Copyright N/A
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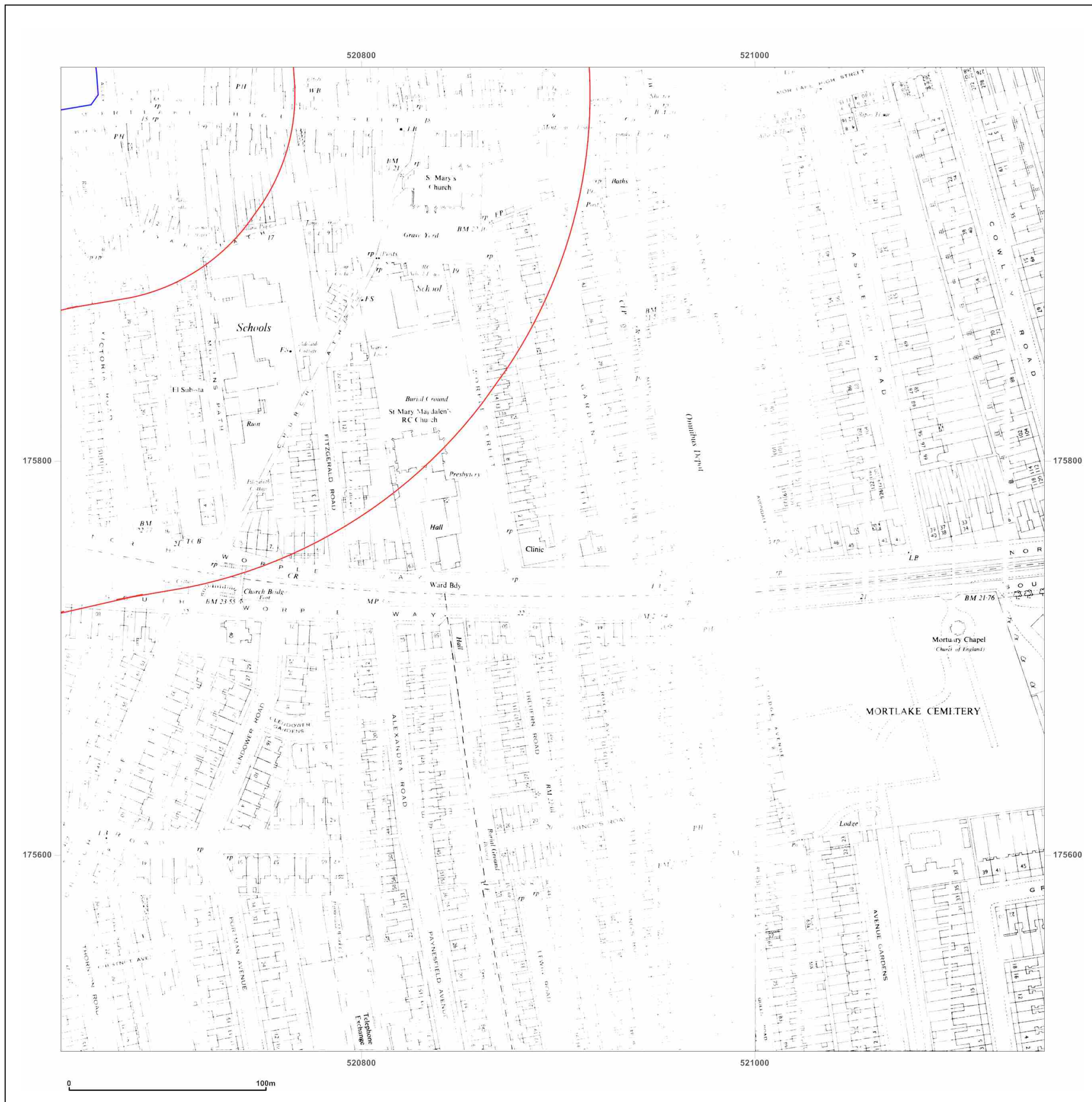
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1966-1968

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1967
Revised 1967
Edition N/A
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Revised 1965
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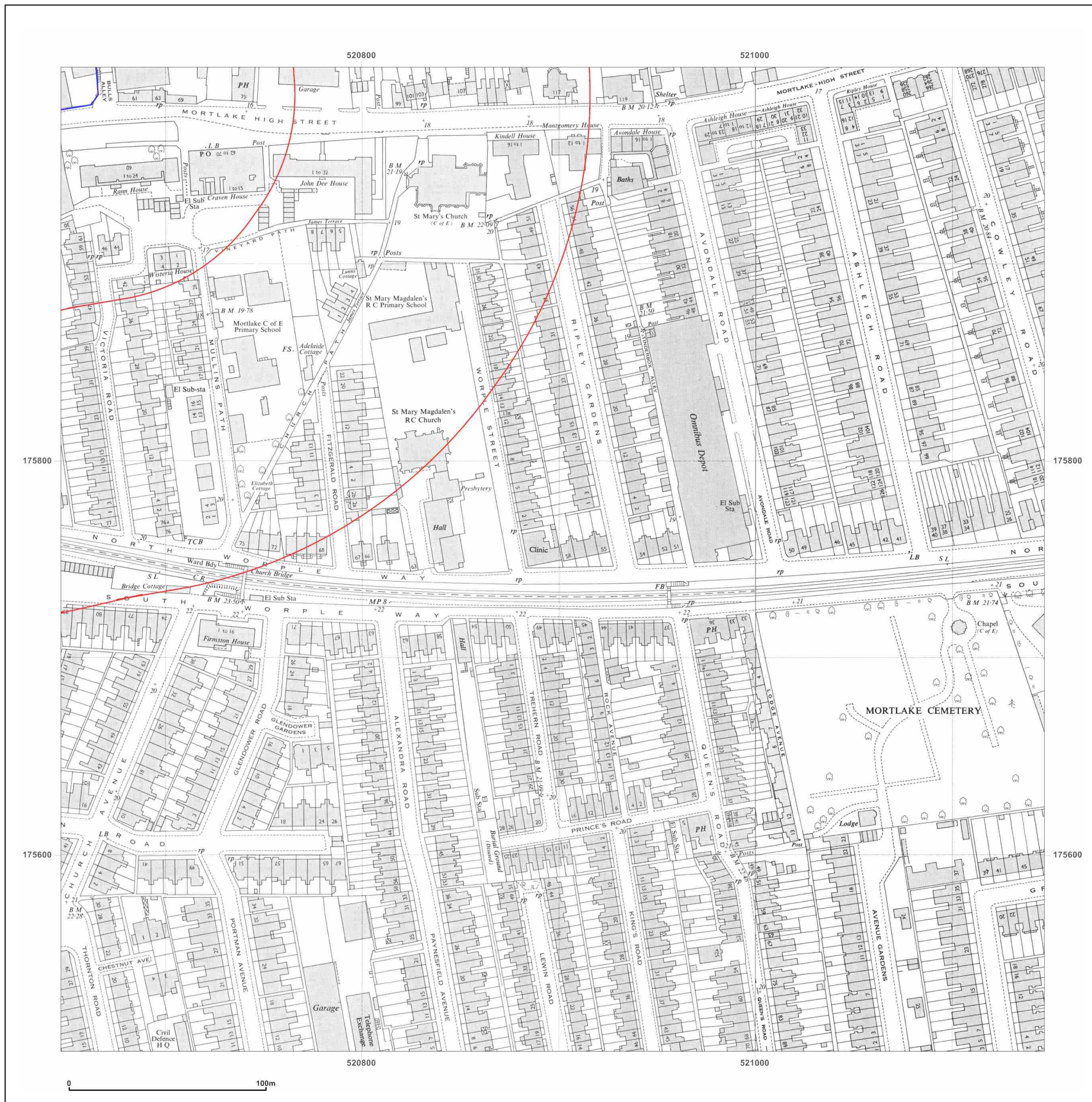
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1982

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1973
Revised 1982
Edition N/A
Copyright 1982
Levelled 1973



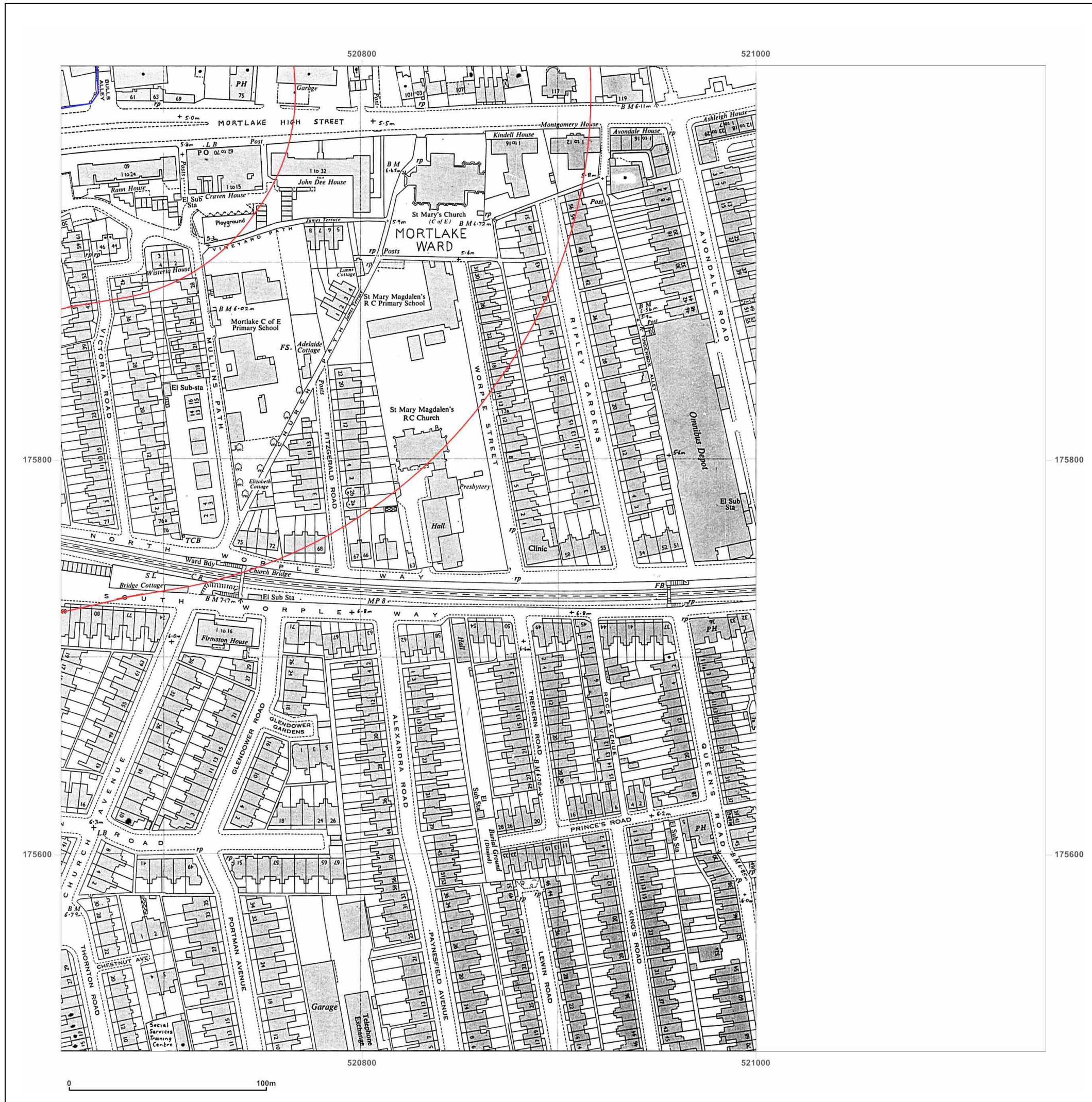
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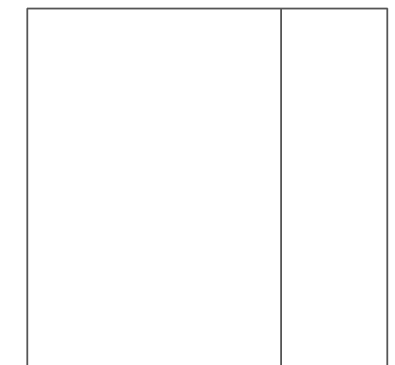
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Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1991

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Printed at: 1:2,000



Surveyed N/A
Revised 1990
Edition N/A
Copyright 1991
Levelled N/A



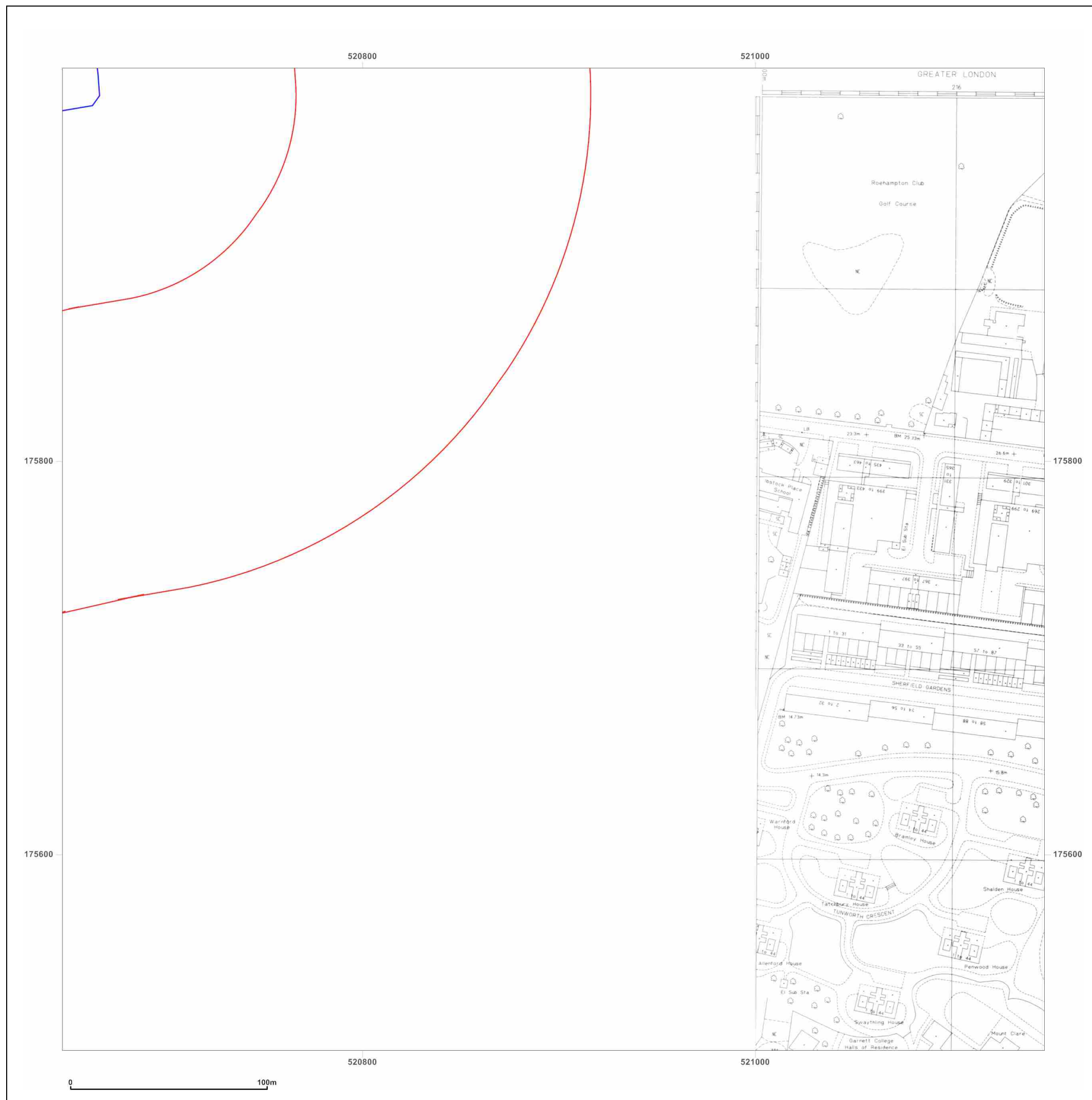
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A



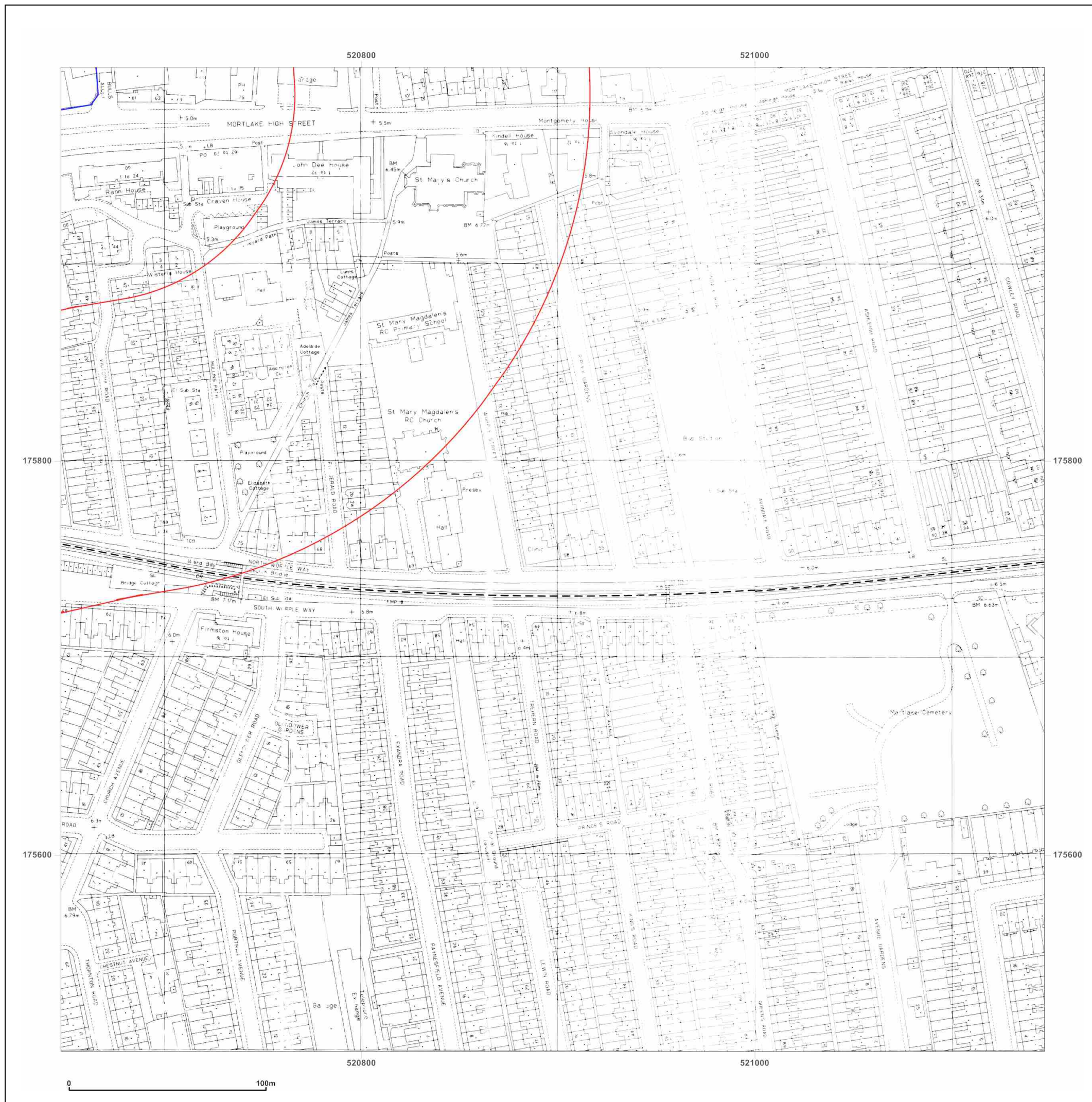
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
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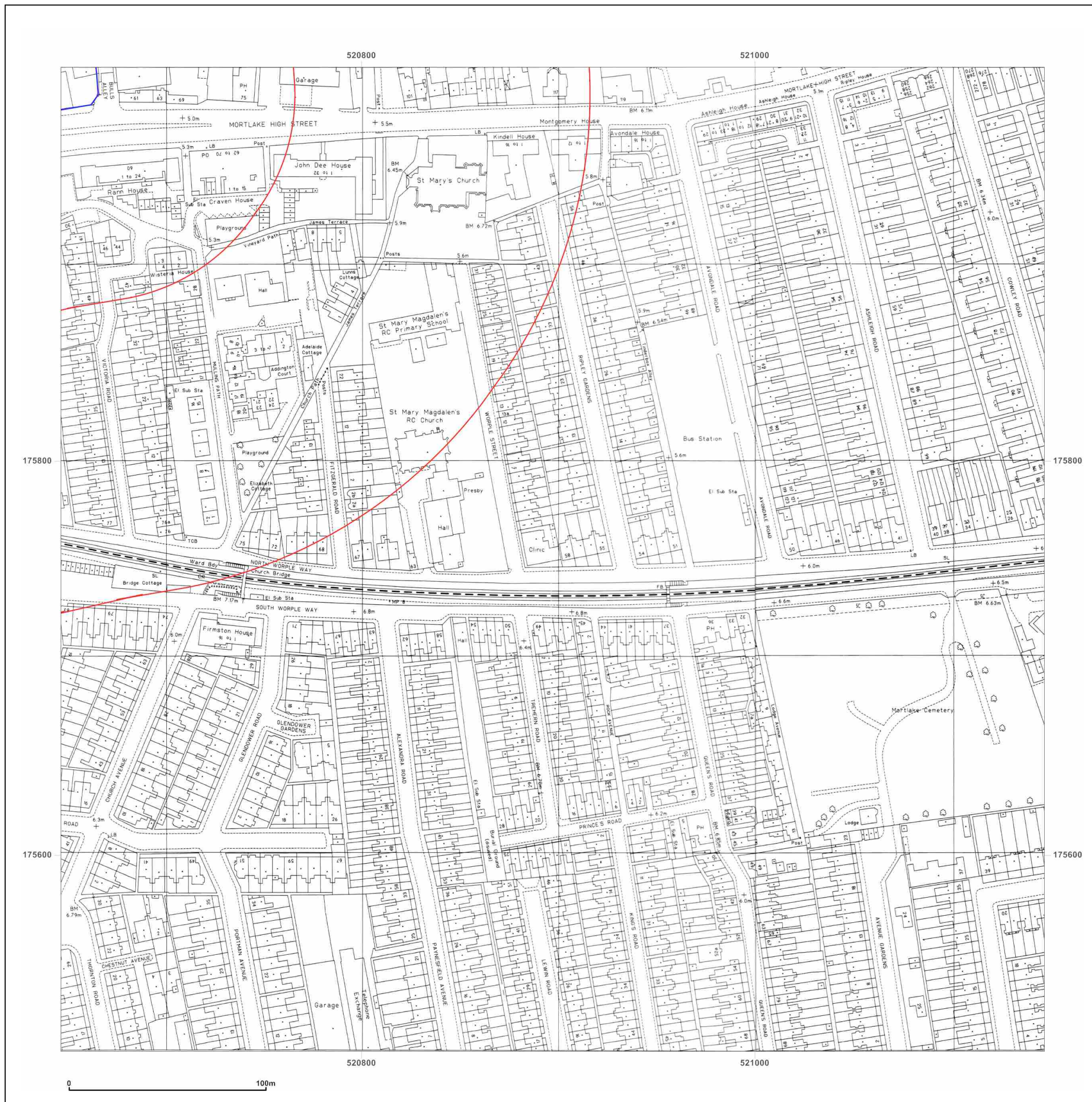
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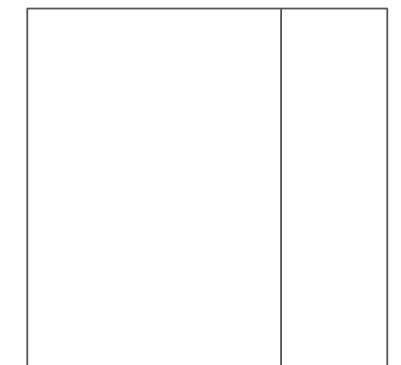
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Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



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Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1993-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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Edition N/A
Copyright 1993
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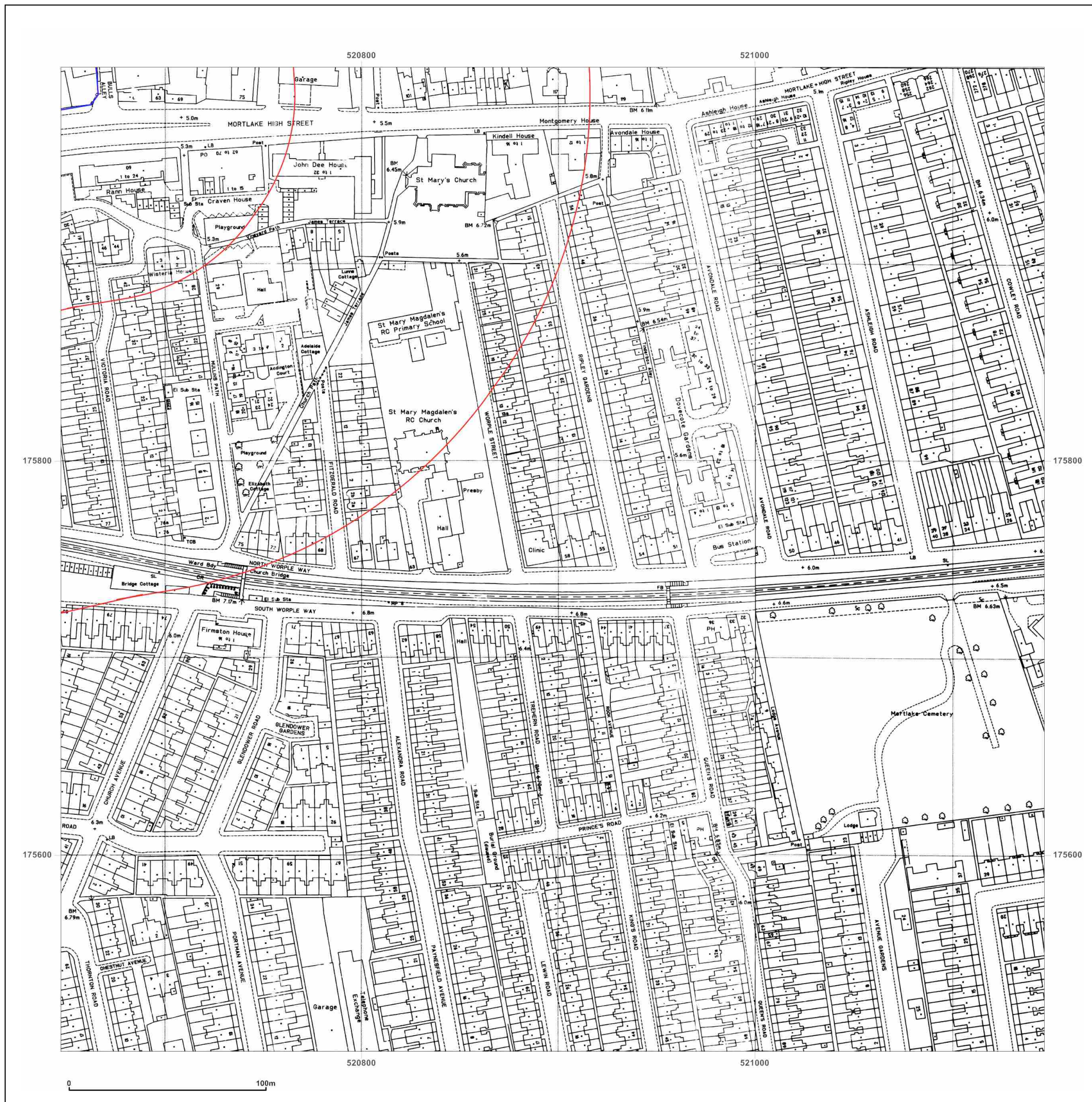
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Report Ref: WTM1-6181570_1250scale_3_1
Grid Ref: 520897, 175750

Map Name: National Grid

Map date: 1993-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1994
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Edition N/A
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Levelled N/A

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



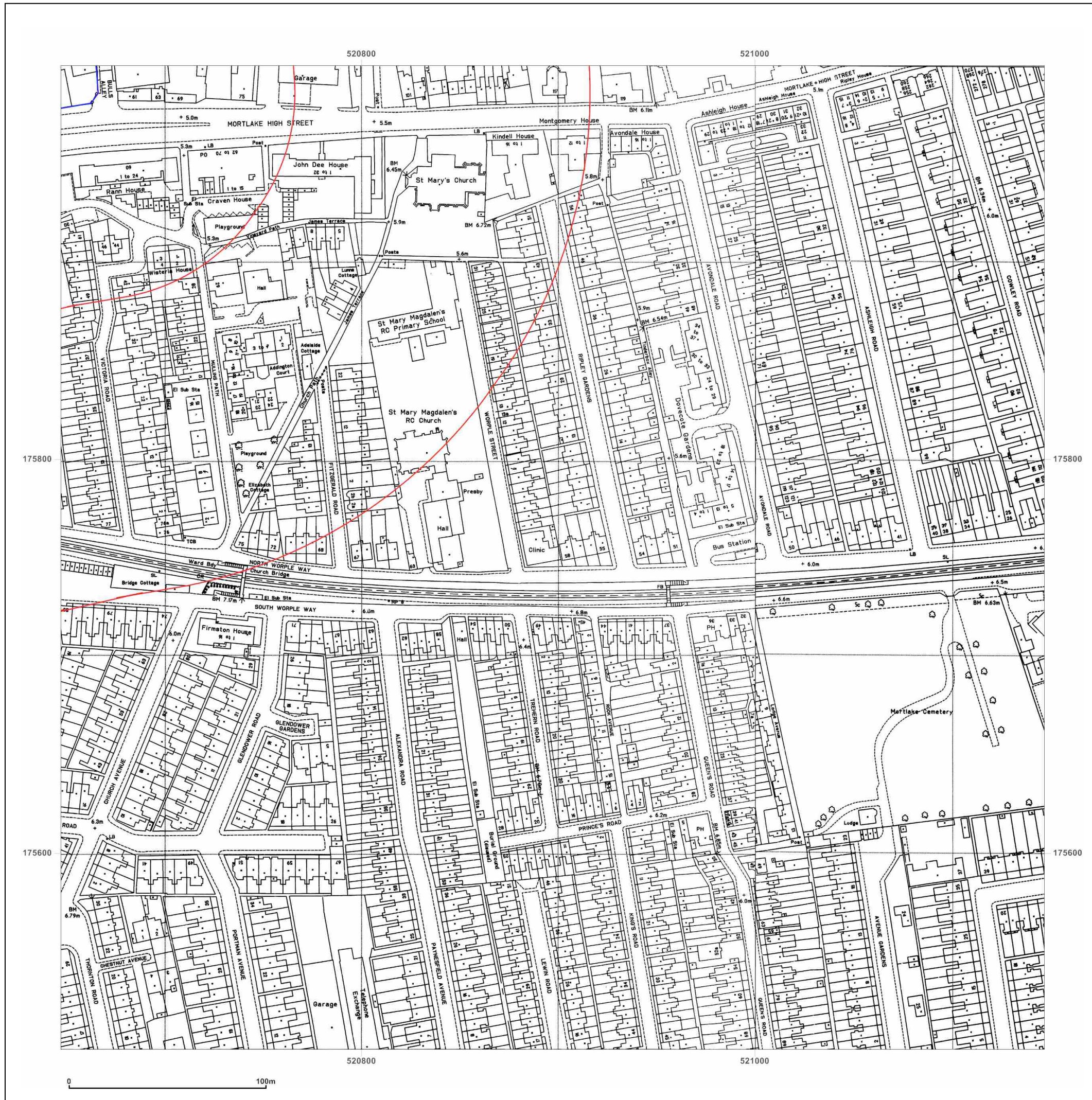
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_2
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Map Name: 1056 Scale Town Plan

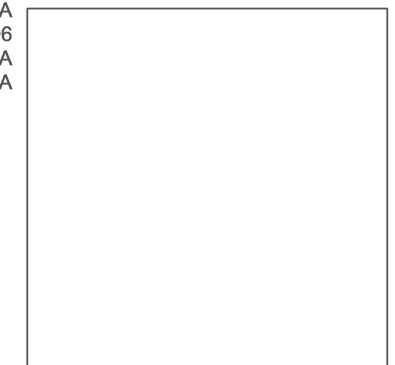
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Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1891
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A



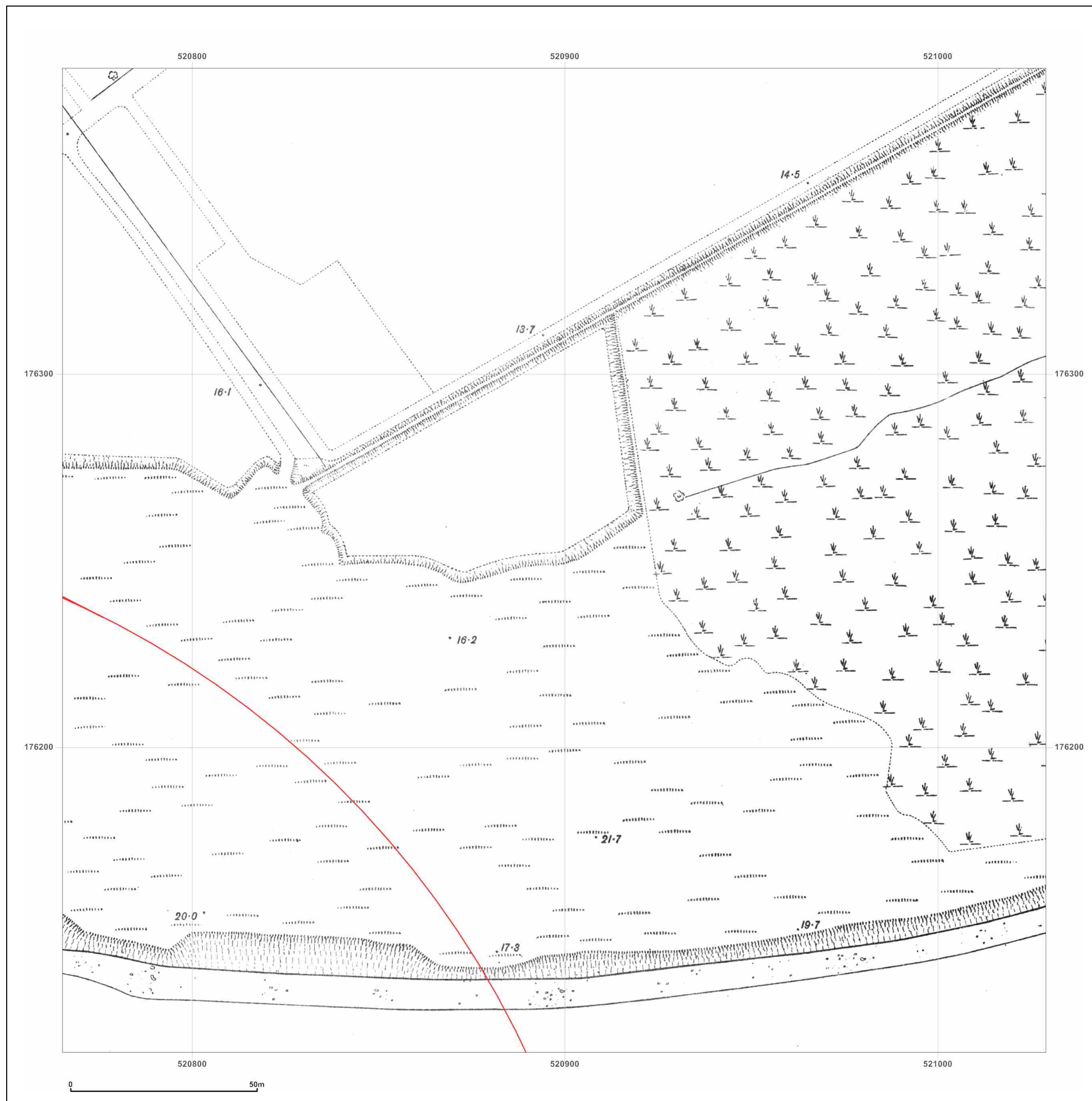
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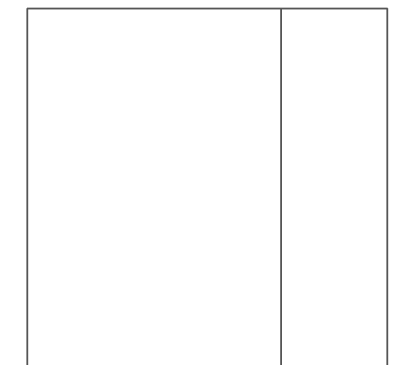
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Grid Ref: 520897, 176250

Map Name: National Grid

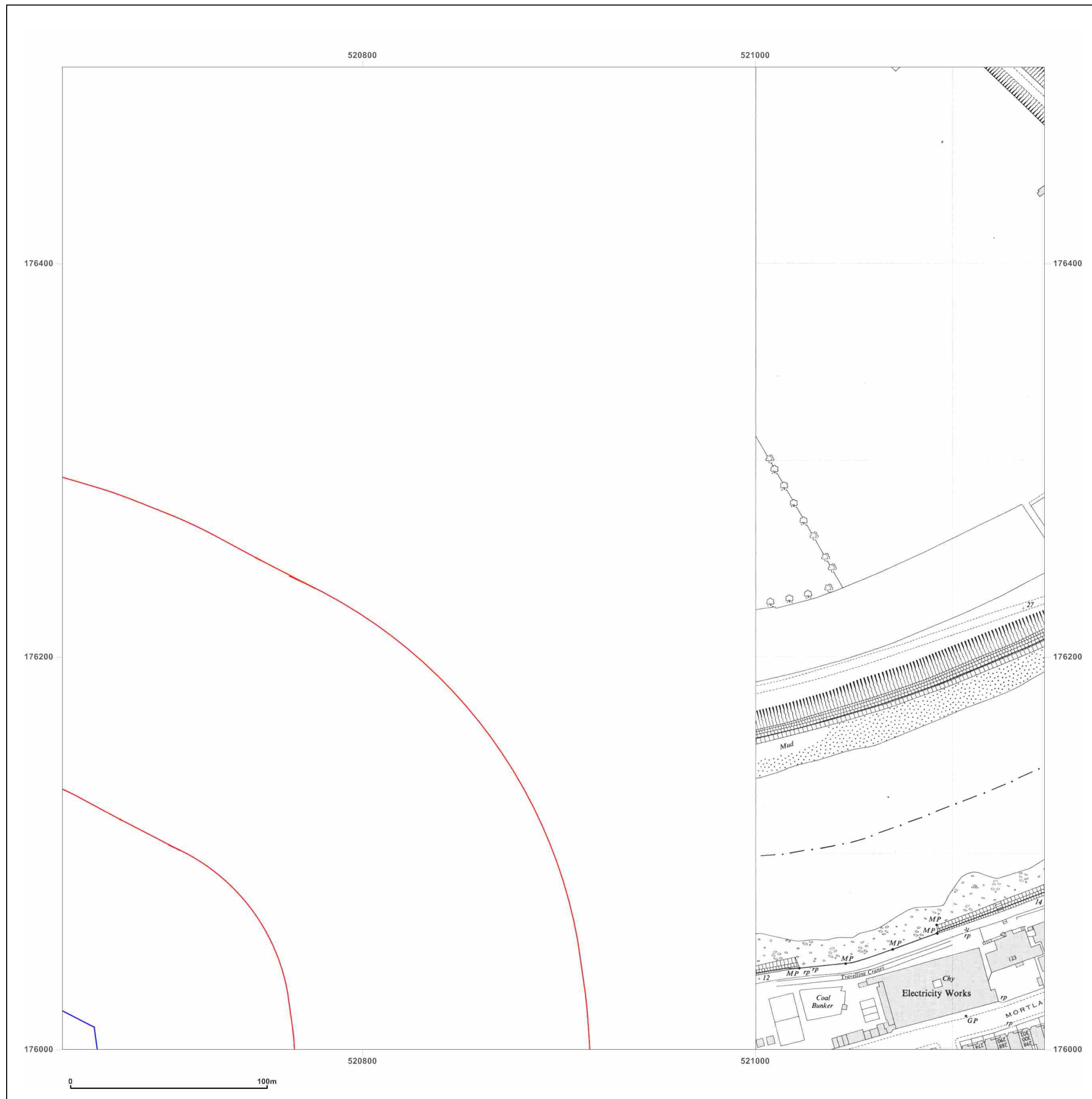
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Scale: 1:1,250

Printed at: 1:2,000



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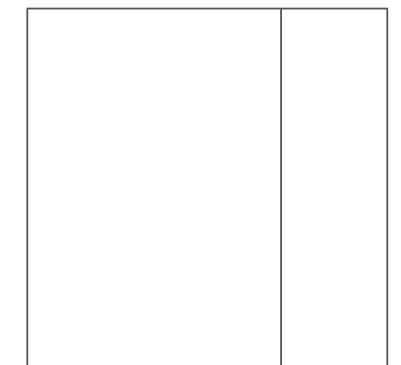
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Grid Ref: 520897, 176250

Map Name: National Grid

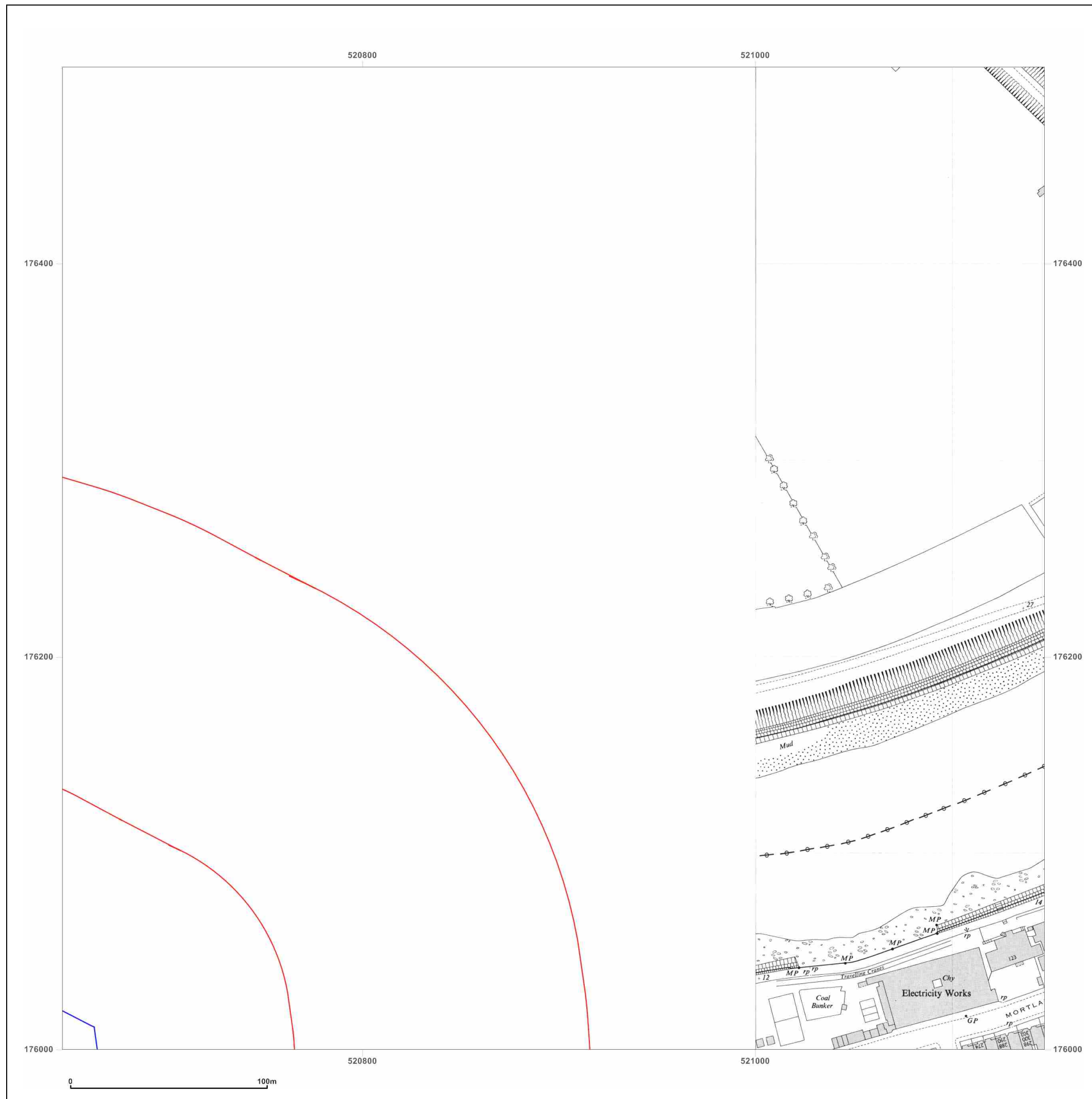
Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



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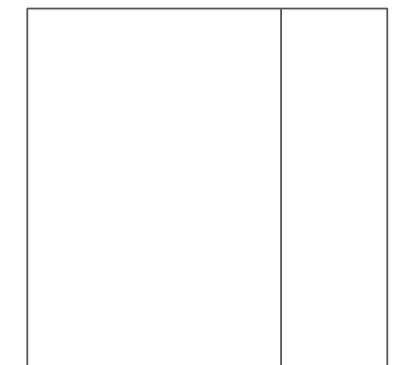
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Map Name: National Grid

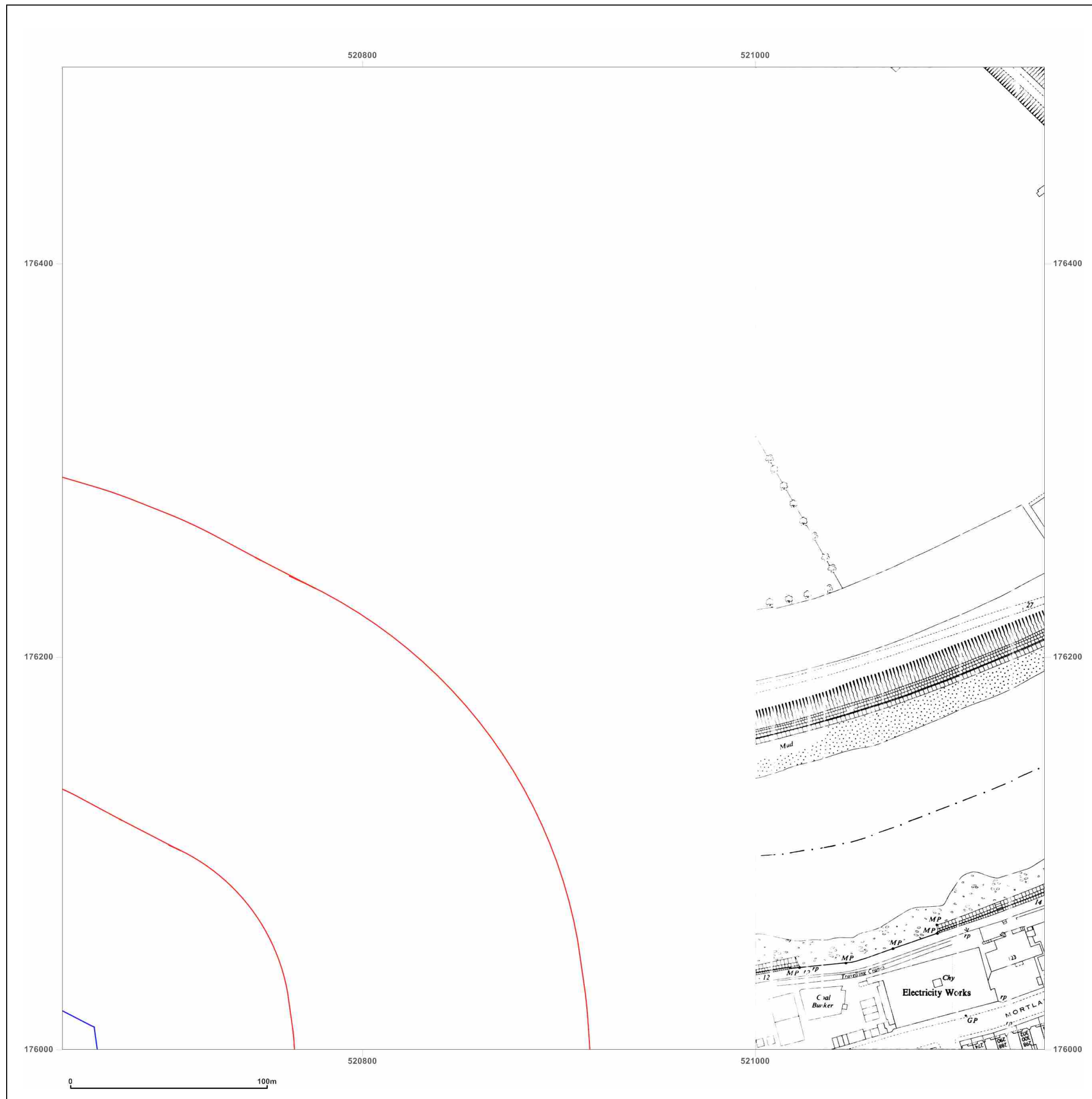
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Scale: 1:1,250

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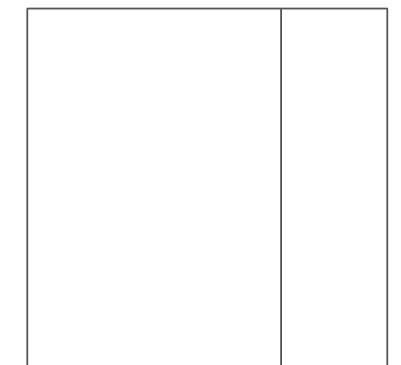
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Map Name: National Grid

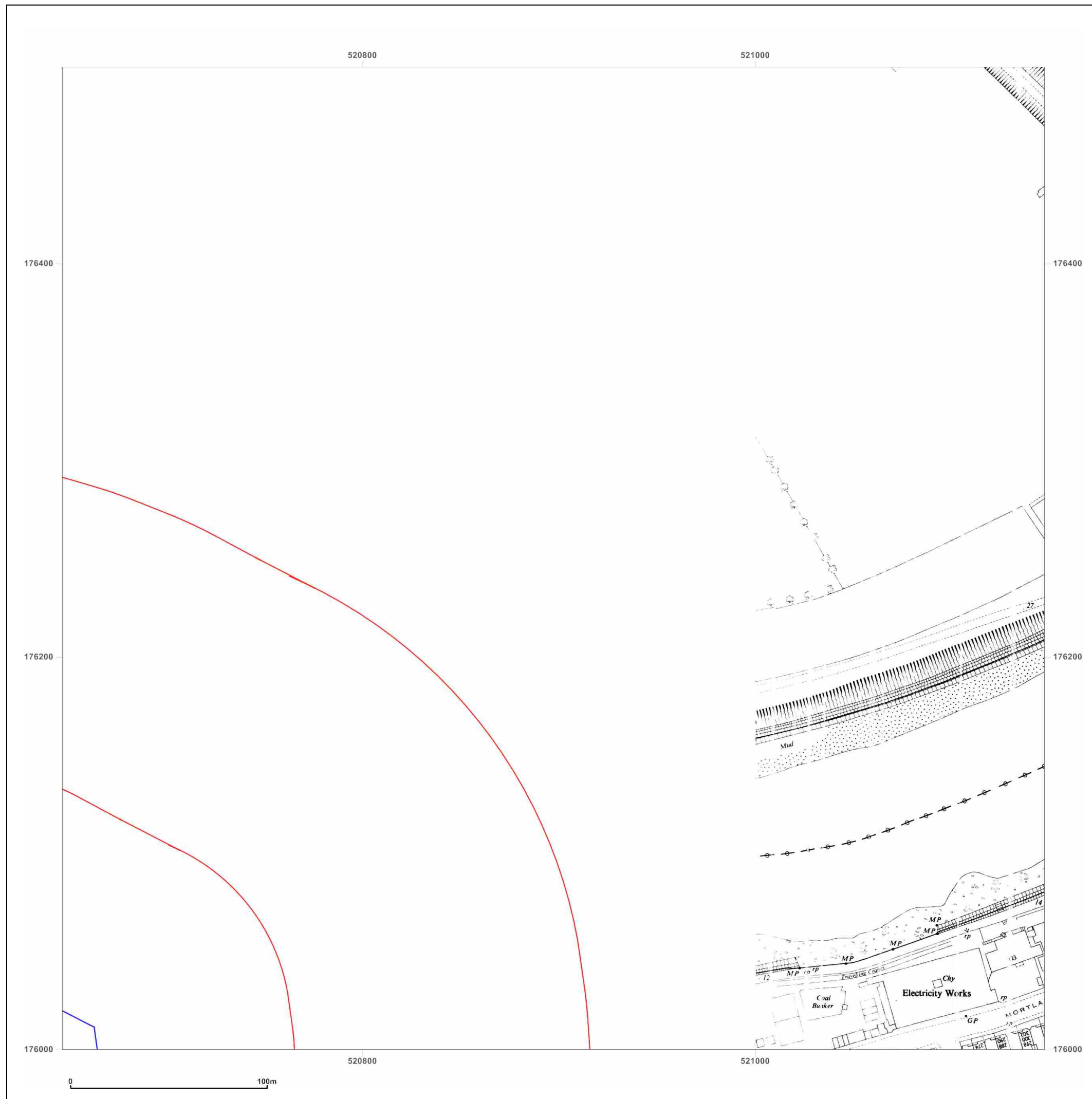
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_2
Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1972-1973

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
Revised 1973
Edition N/A
Copyright 1973
Levelled 1954

Surveyed 1951
Revised 1971
Edition N/A
Copyright 1972
Levelled 1954



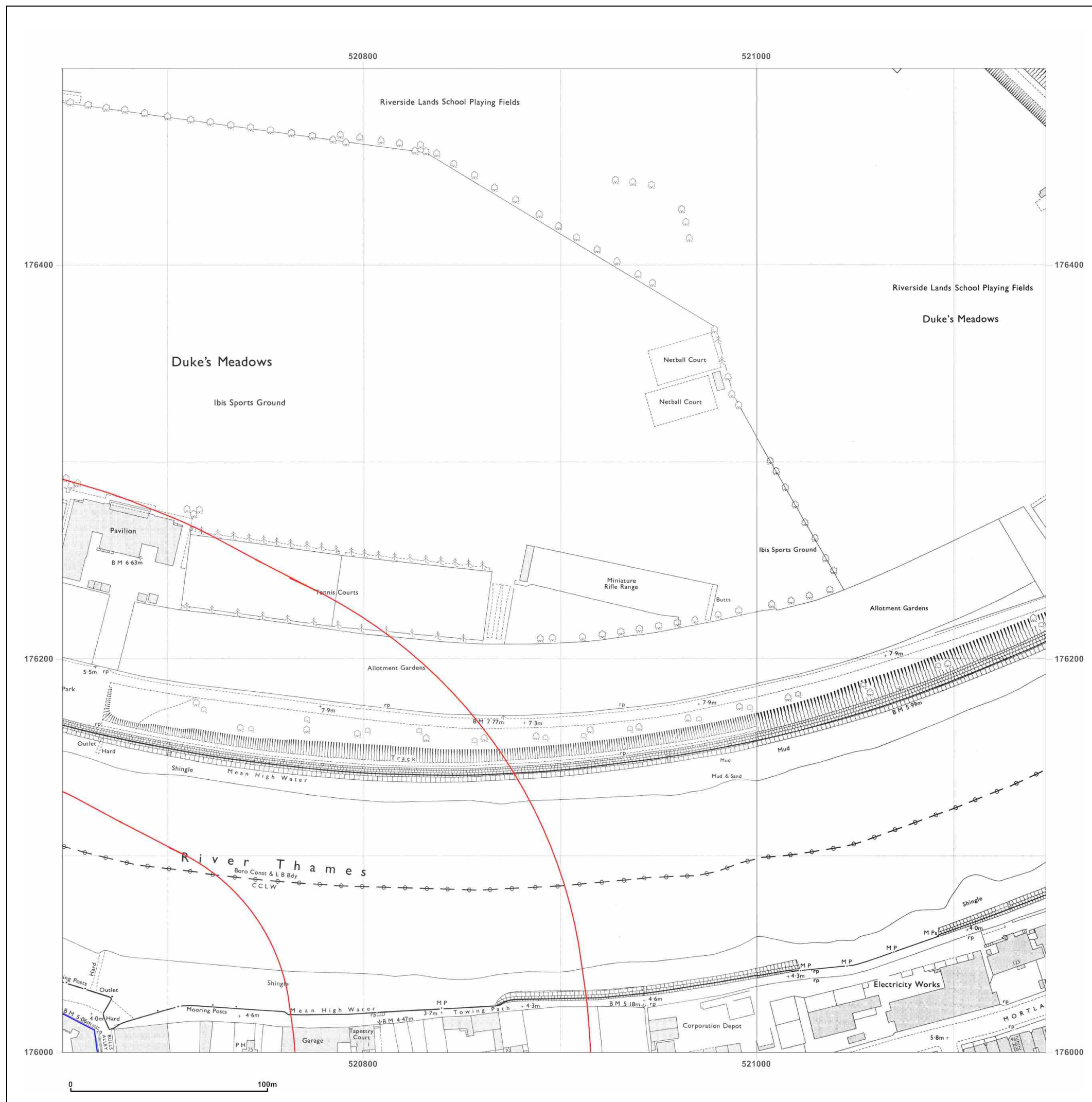
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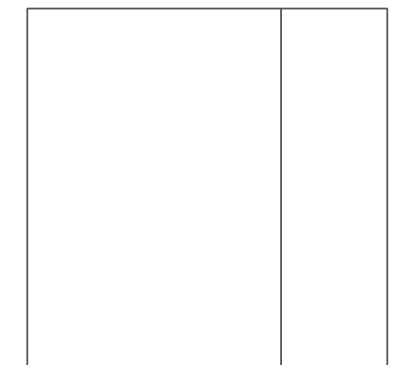
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Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1974

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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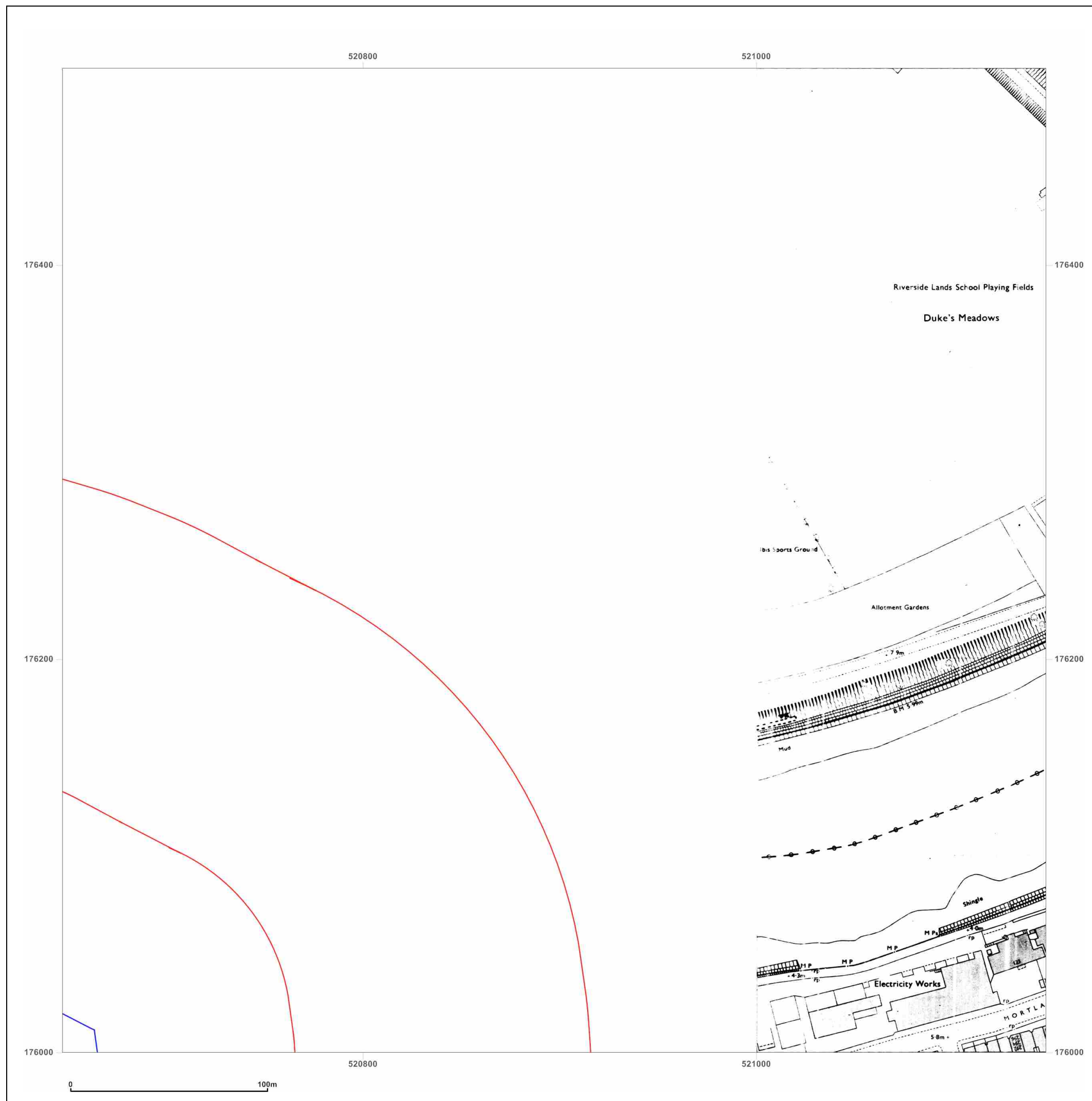
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_2
Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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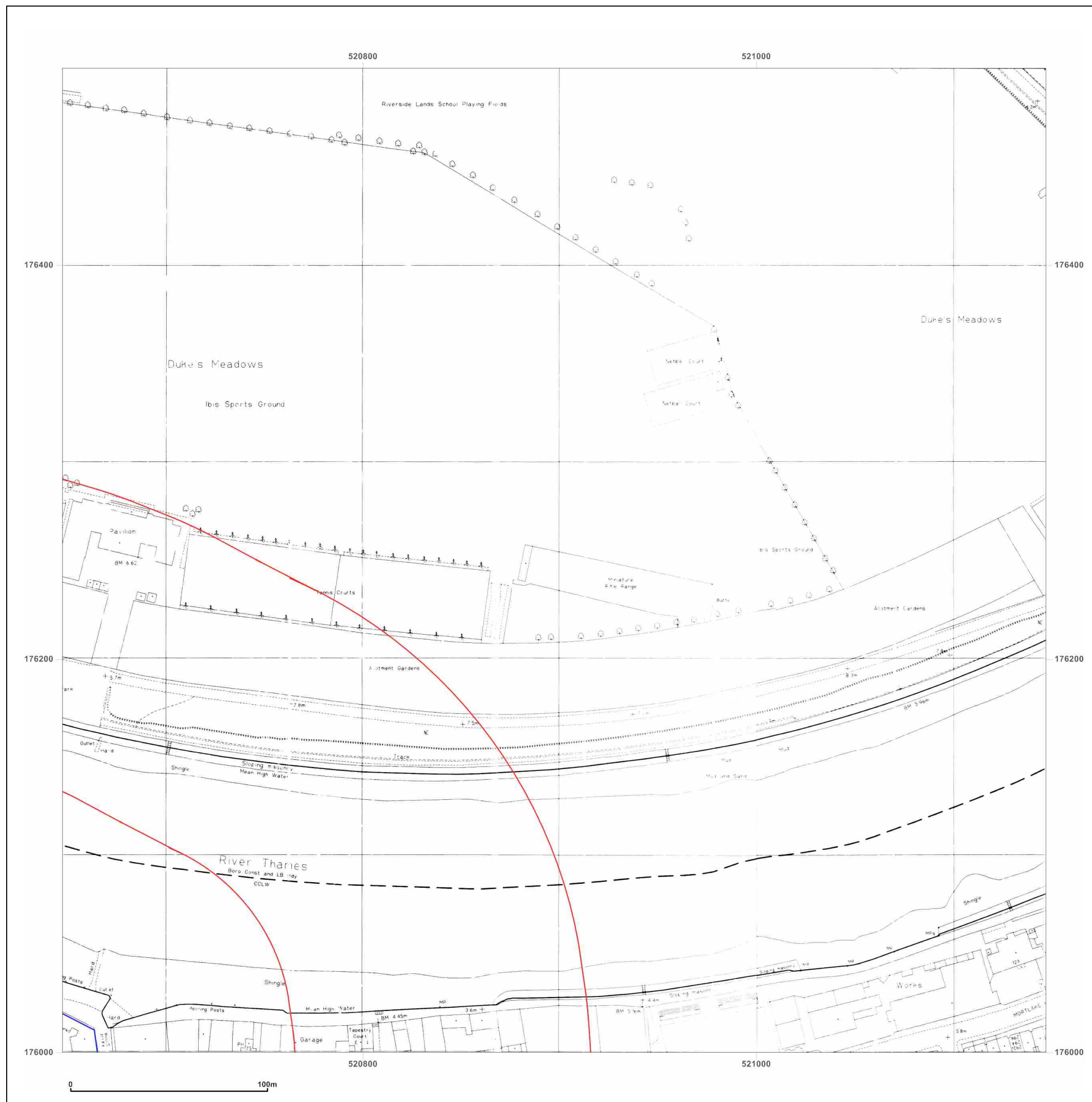
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_2
Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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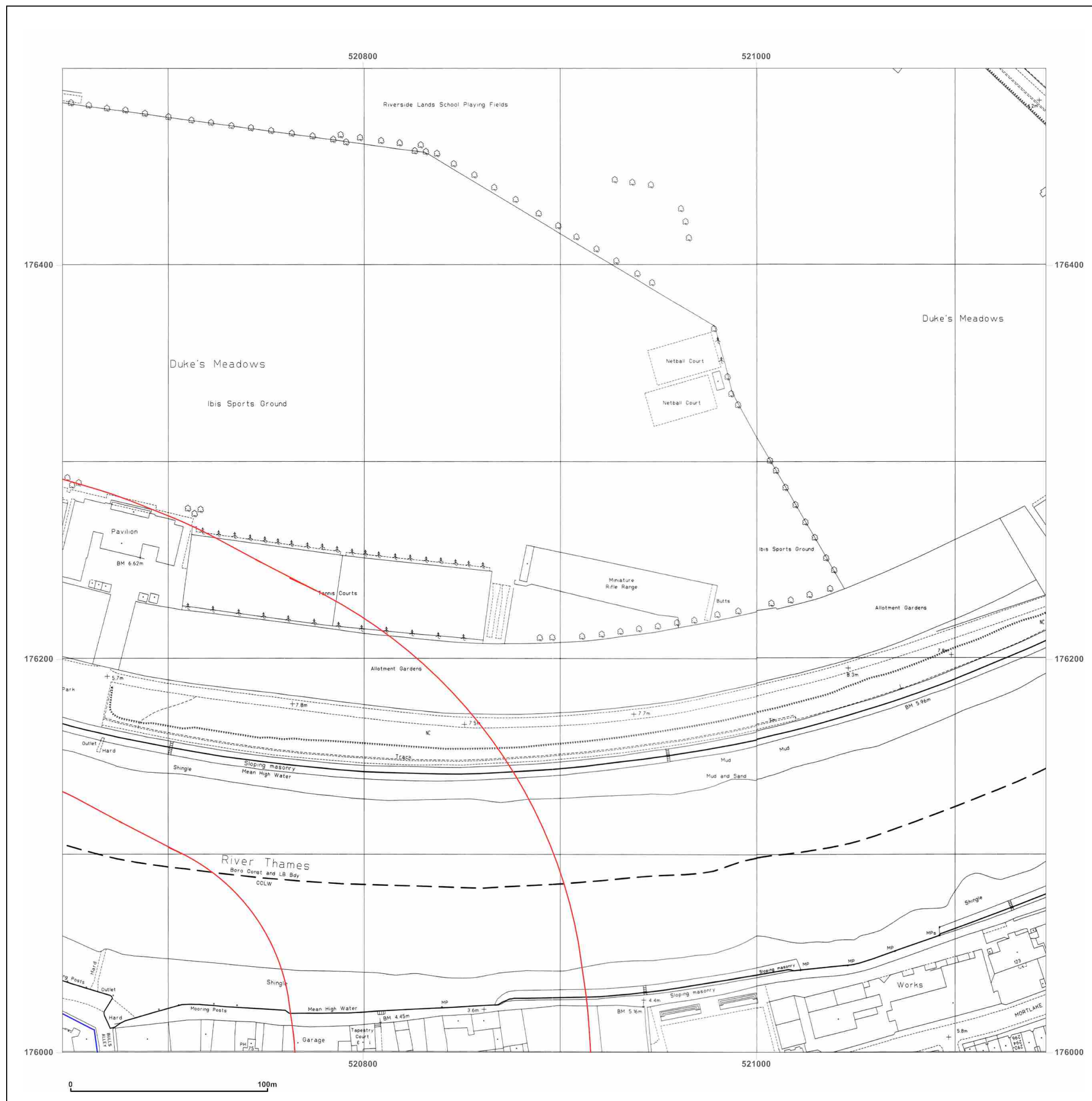
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_1250scale_3_2
Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1992-1993

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
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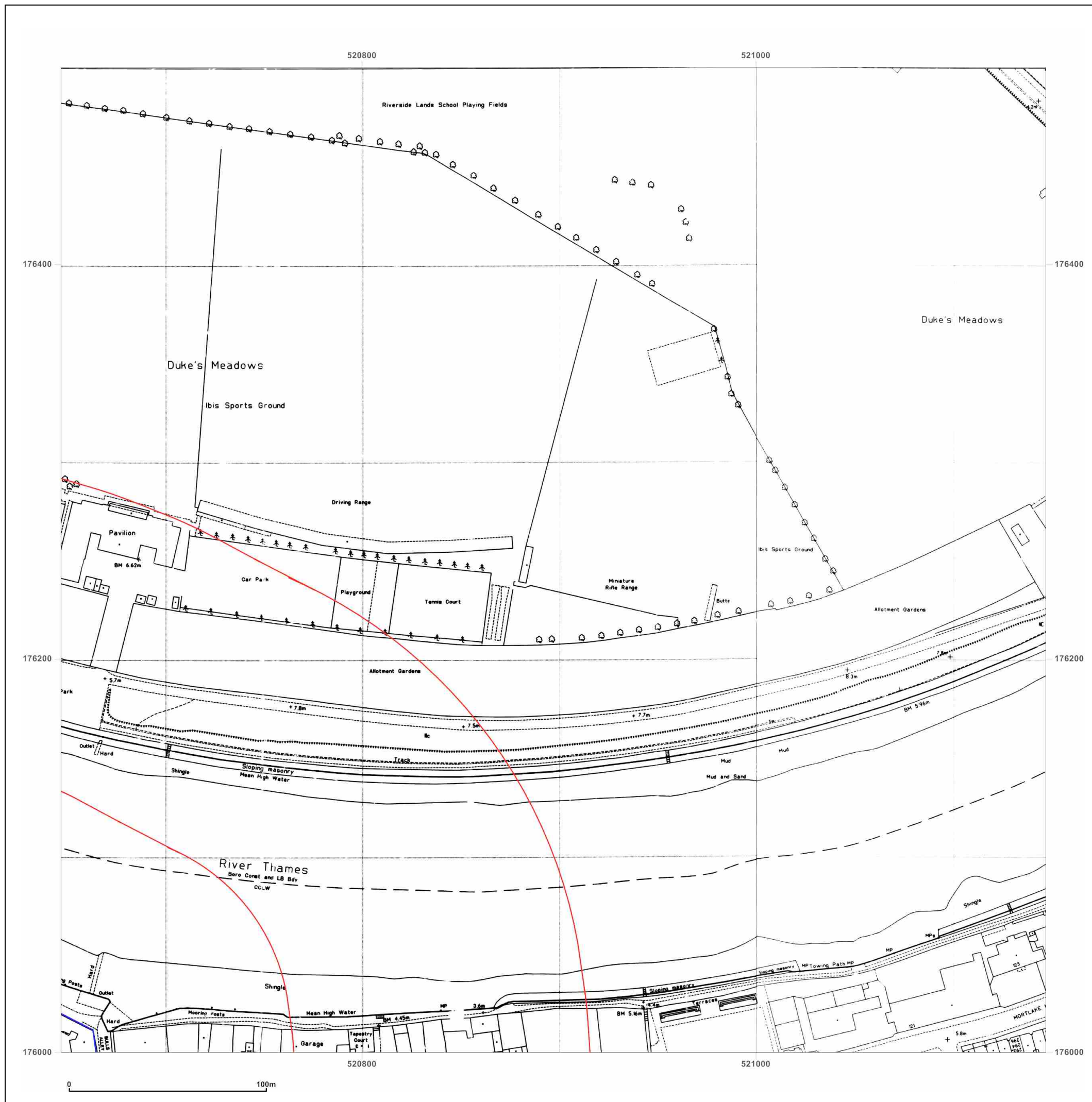
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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Grid Ref: 520897, 176250

Map Name: National Grid

Map date: 1992-1993

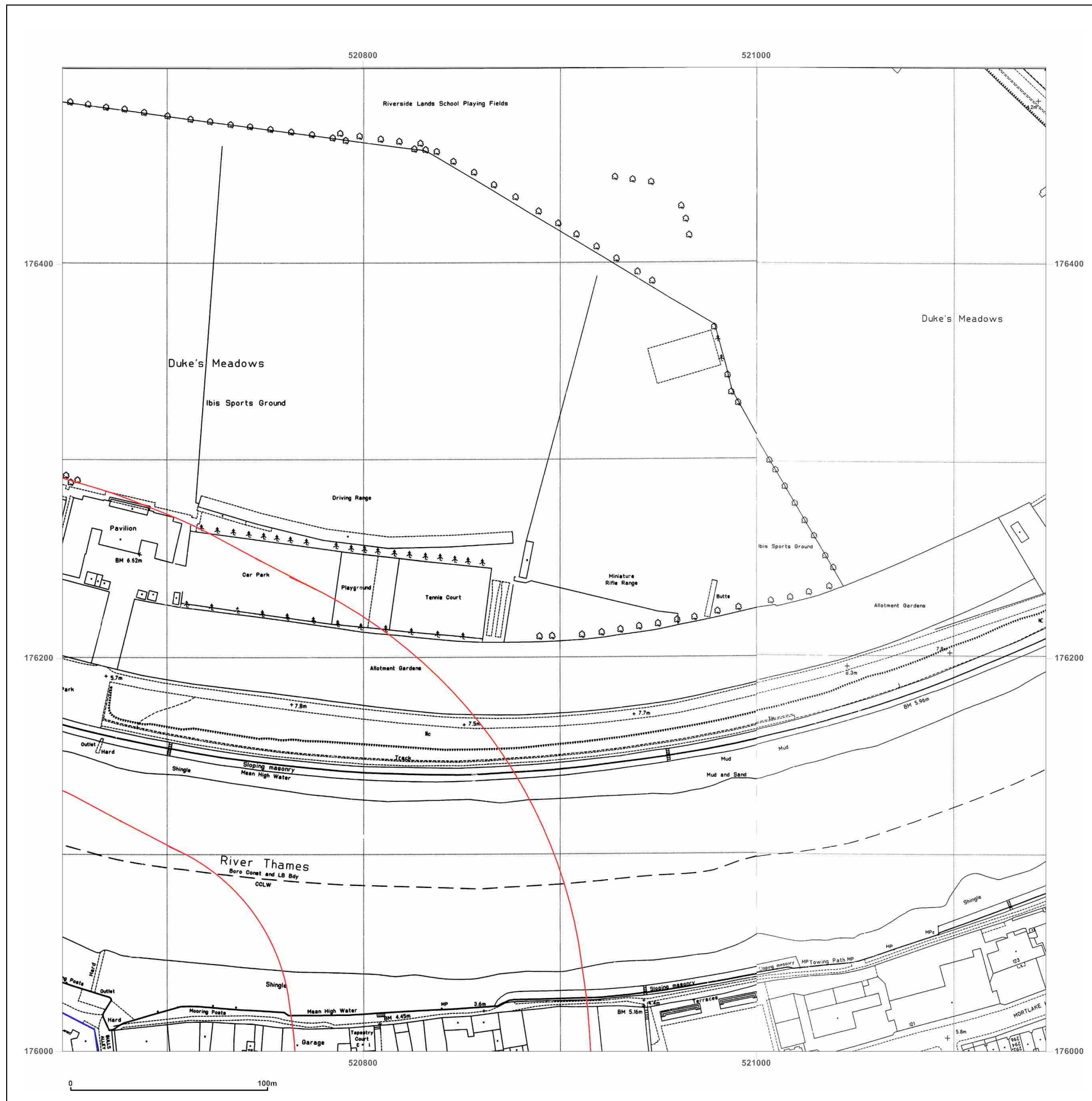
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Revised N/A
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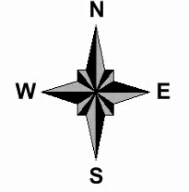
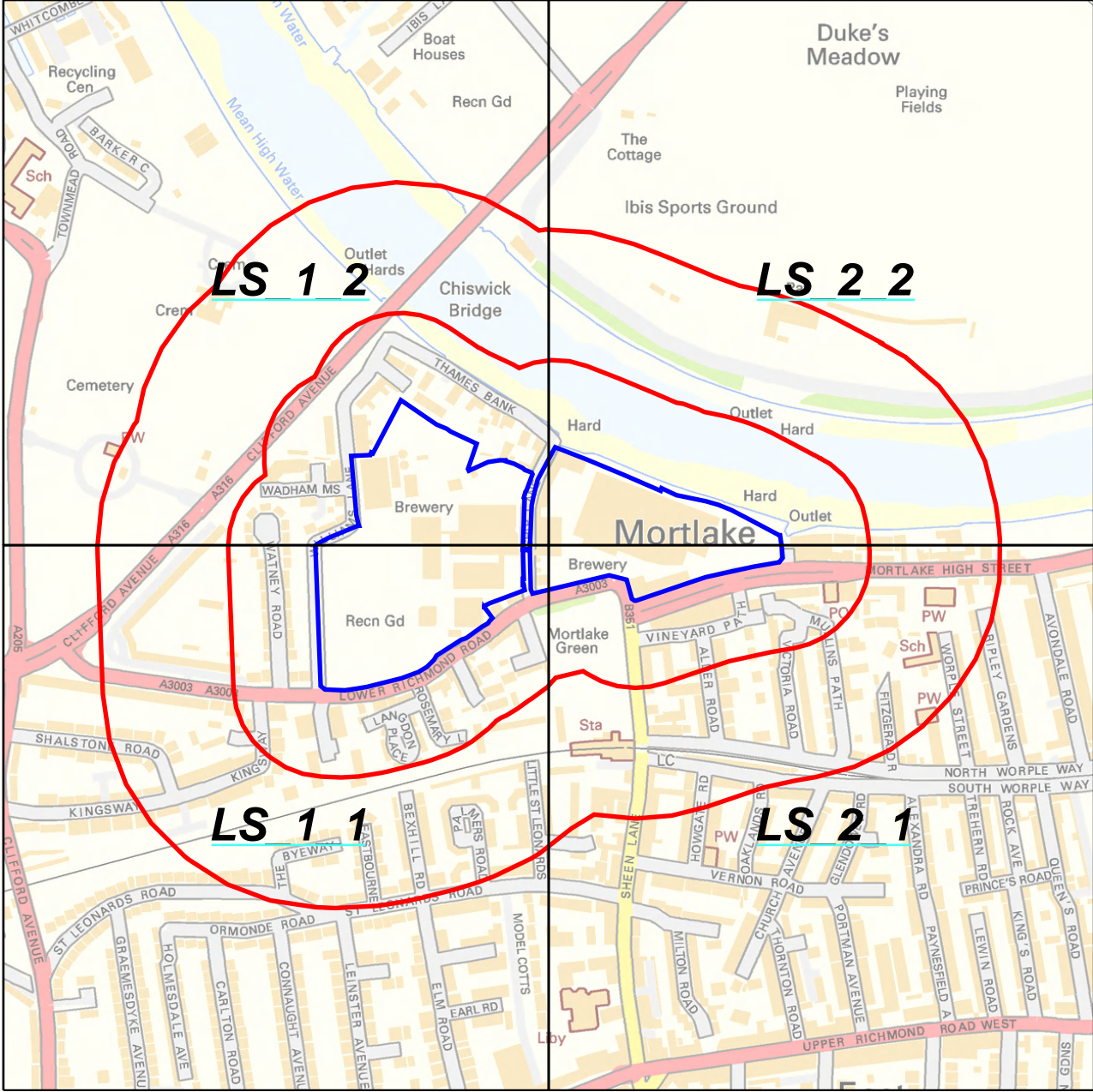


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1:2500 Scale Grid Index



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Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: County Series

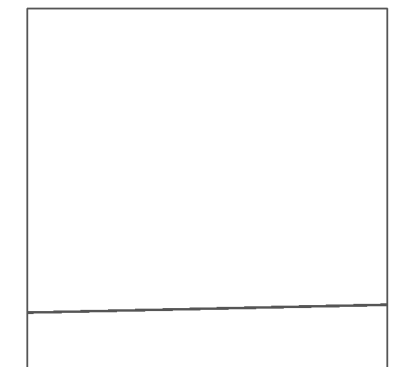
Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



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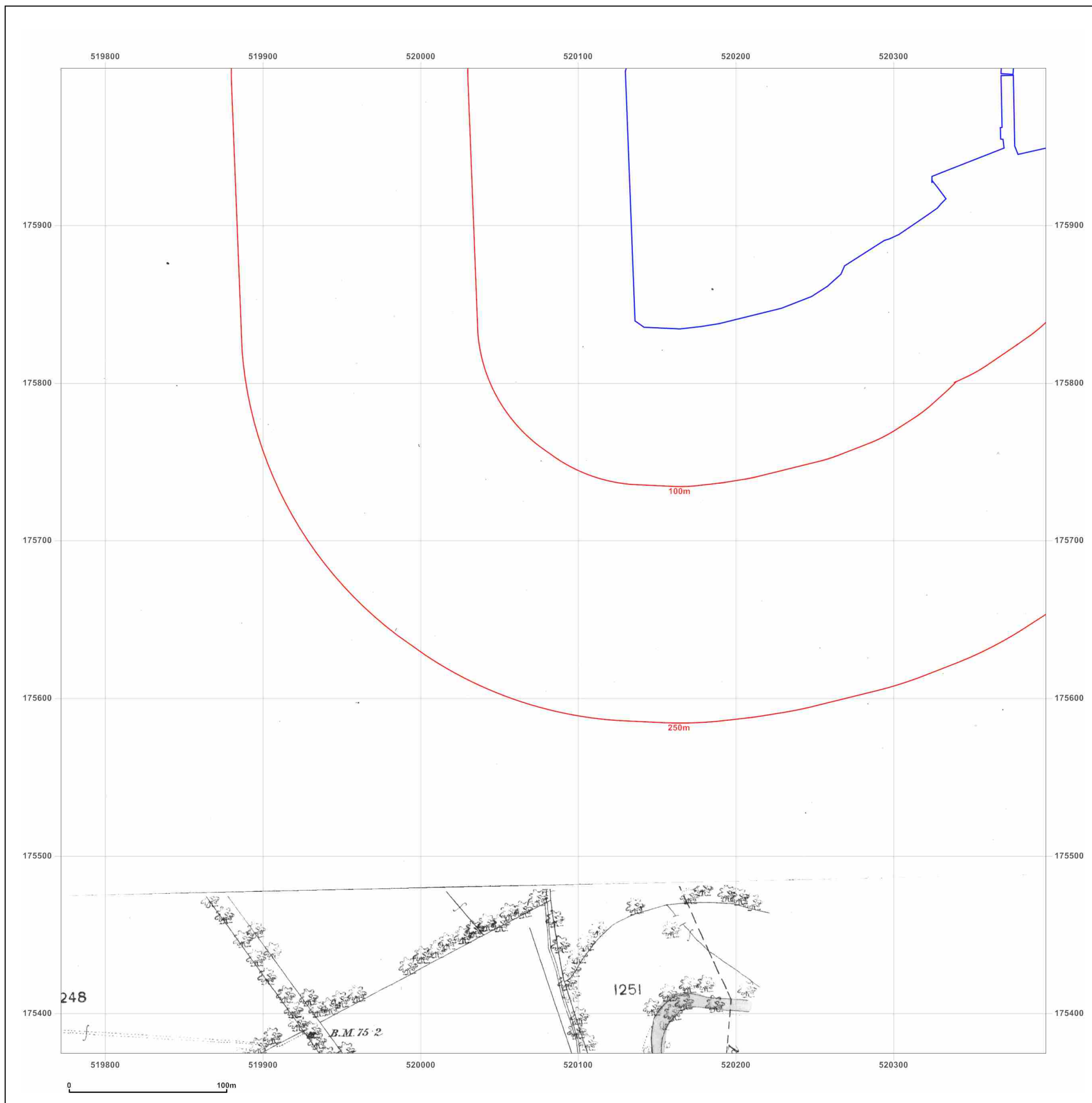
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Report Ref: WTM1-6181570_LS_1_1
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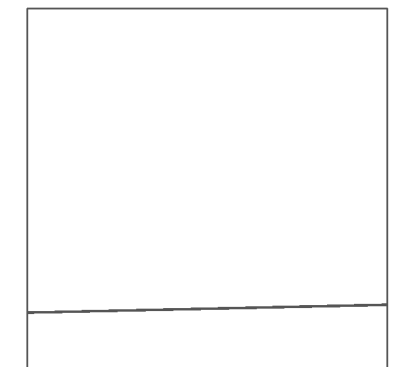
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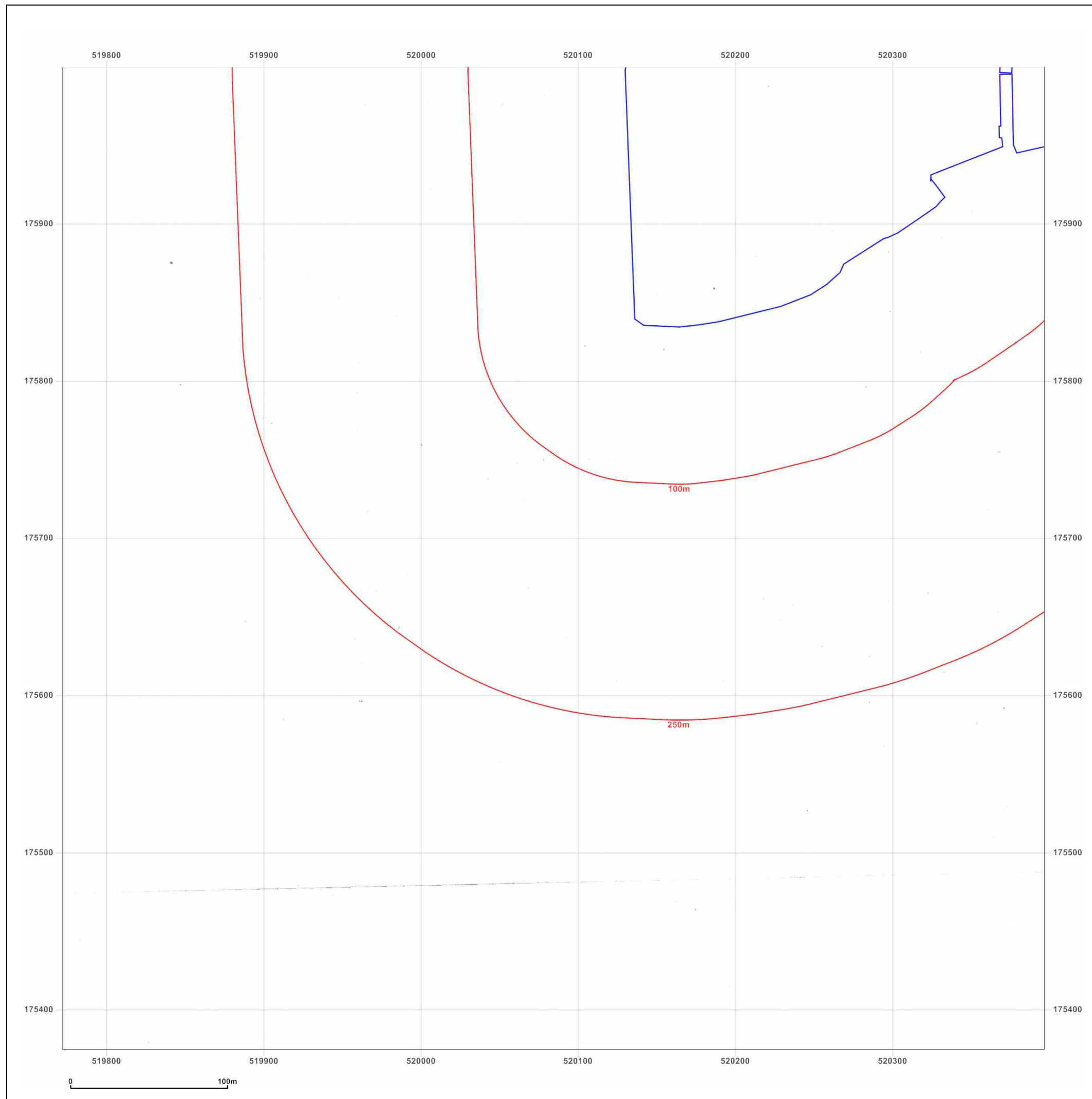
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Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: County Series

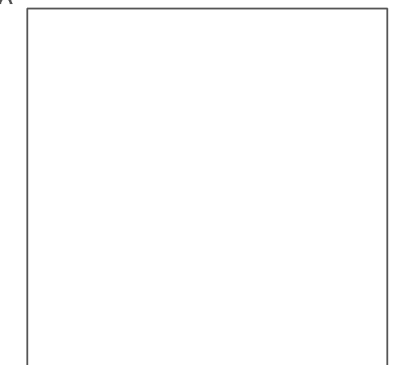
Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1868
Revised 1868
Edition N/A
Copyright N/A
Levelled N/A



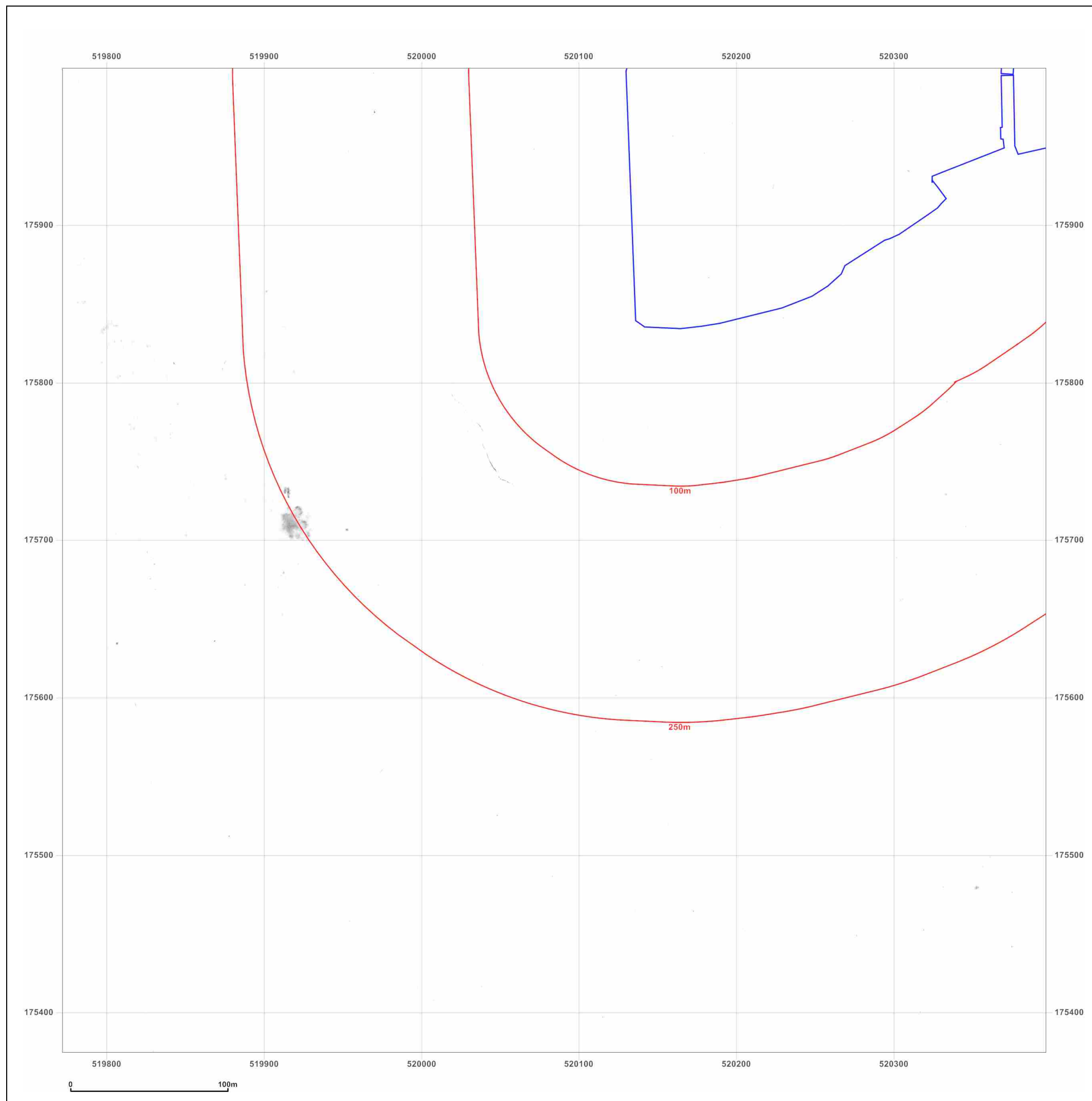
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Site Details:

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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1869
Revised 1869
Edition N/A
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Surveyed 1869
Revised 1869
Edition N/A
Copyright N/A
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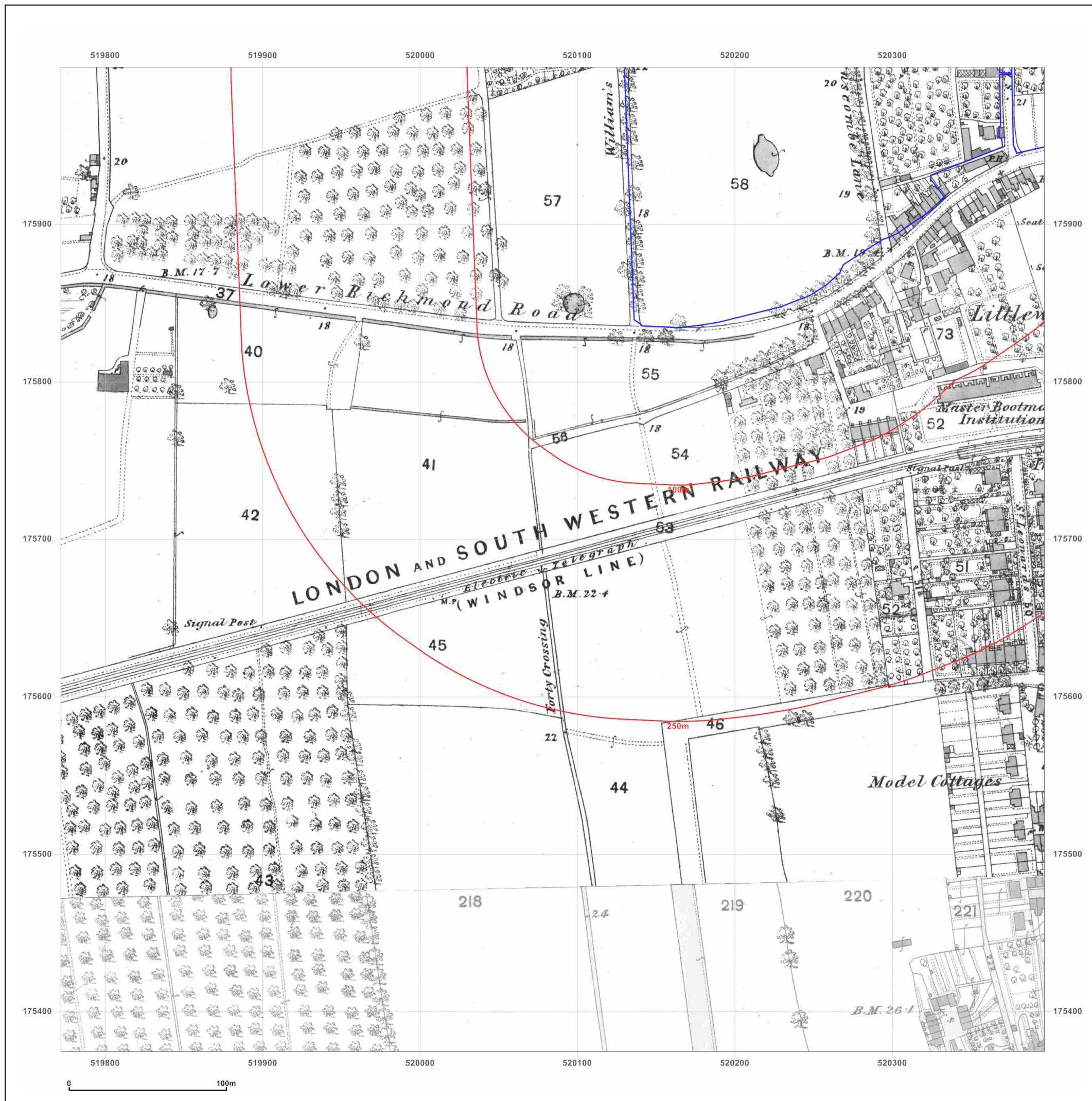
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: County Series

Map date: 1869

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Printed at: 1:2,500



Surveyed 1869
Revised 1869
Edition N/A
Copyright N/A
Levelled N/A



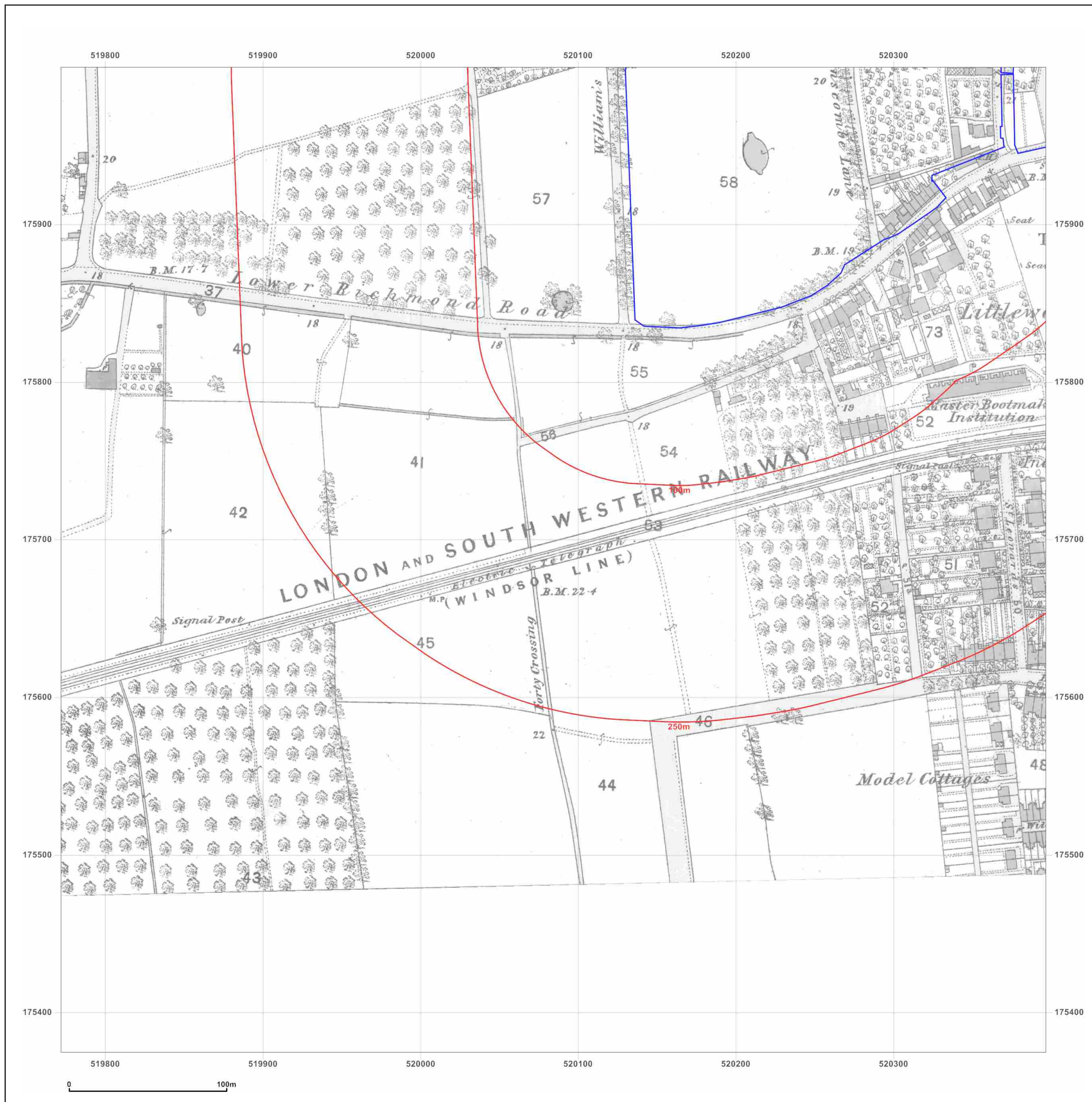
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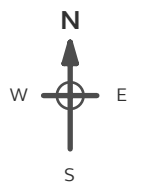
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Map Name: County Series

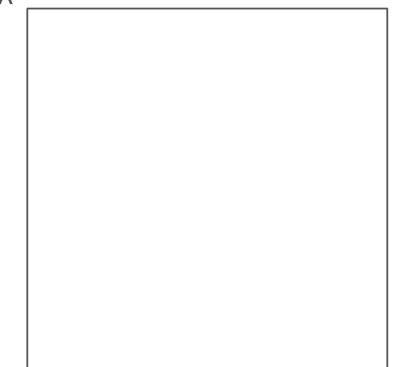
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Printed at: 1:2,500



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



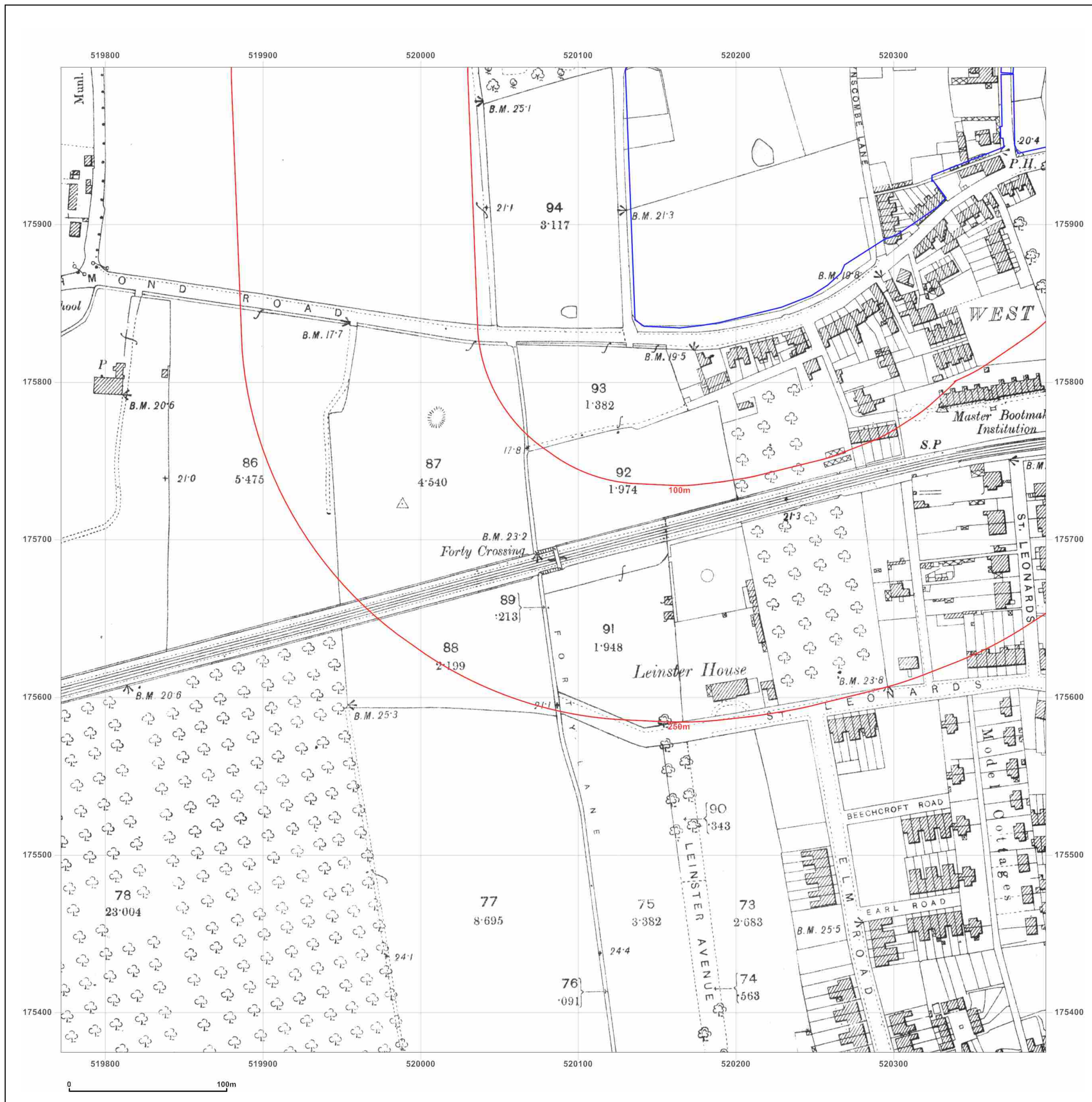
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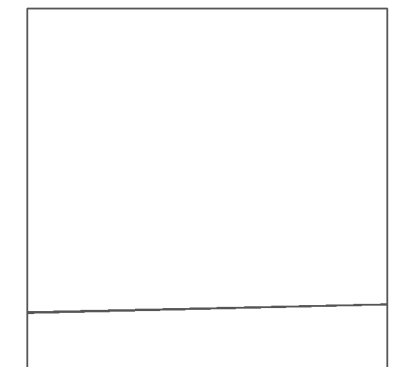
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Printed at: 1:2,500



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Edition N/A
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Edition N/A
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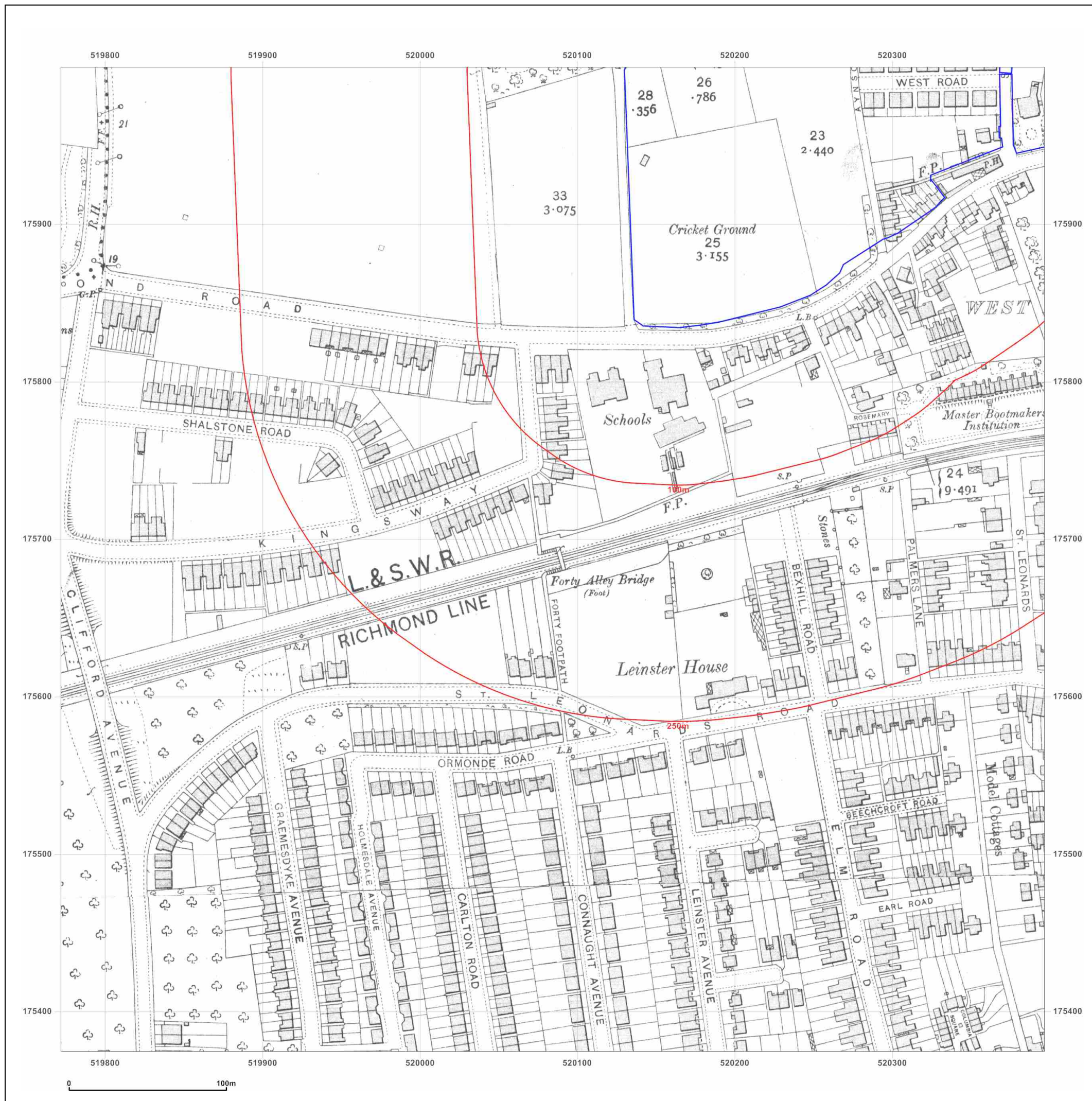
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: County Series

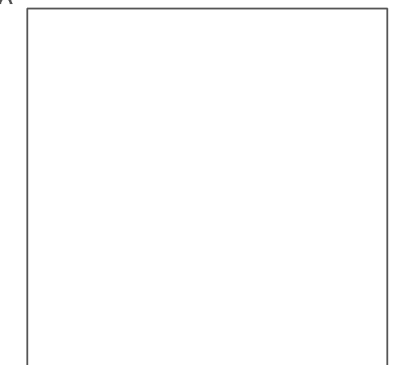
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Printed at: 1:2,500



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Revised 1915
Edition N/A
Copyright N/A
Levelled N/A



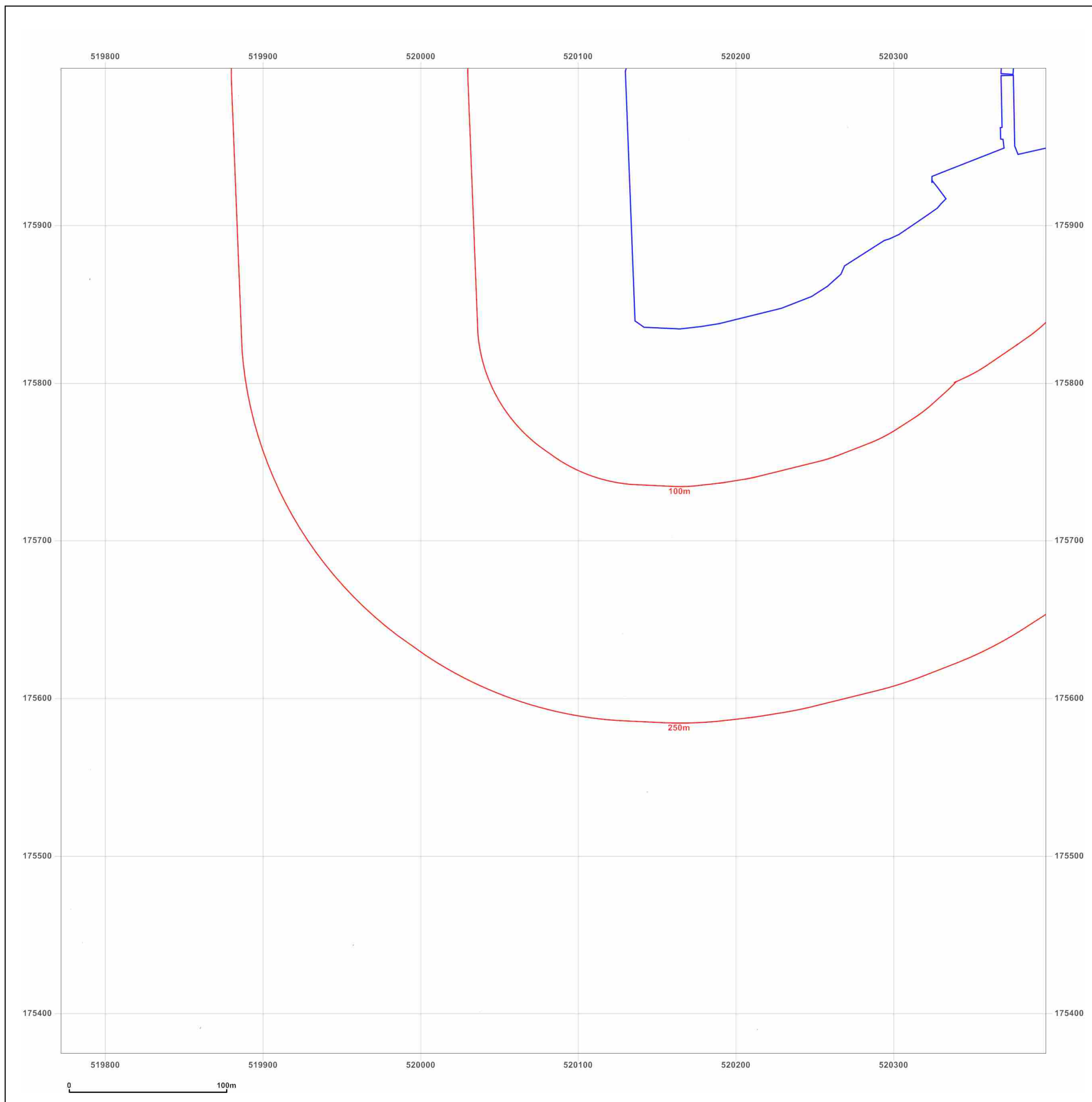
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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Map Name: County Series

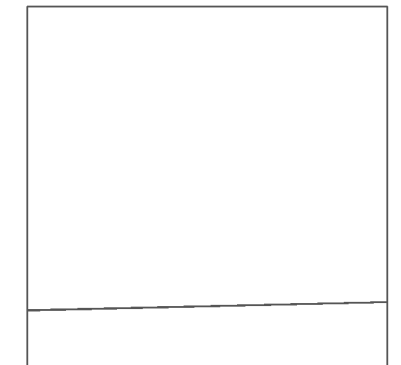
Map date: 1933

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
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Map Name: County Series

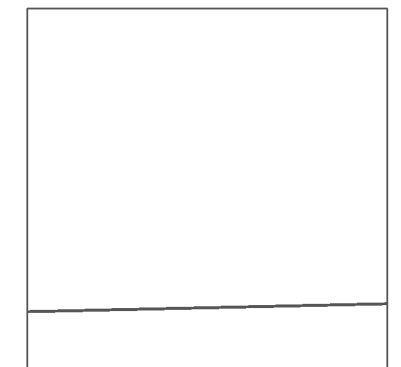
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Scale: 1:2,500

Printed at: 1:2,500



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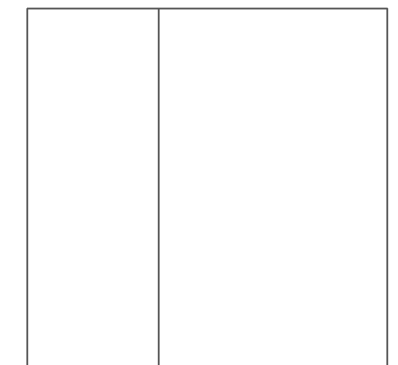
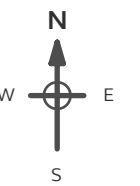
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Grid Ref: 520084, 175687

Map Name: National Grid

Map date: 1953

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition 1960
Copyright 1960
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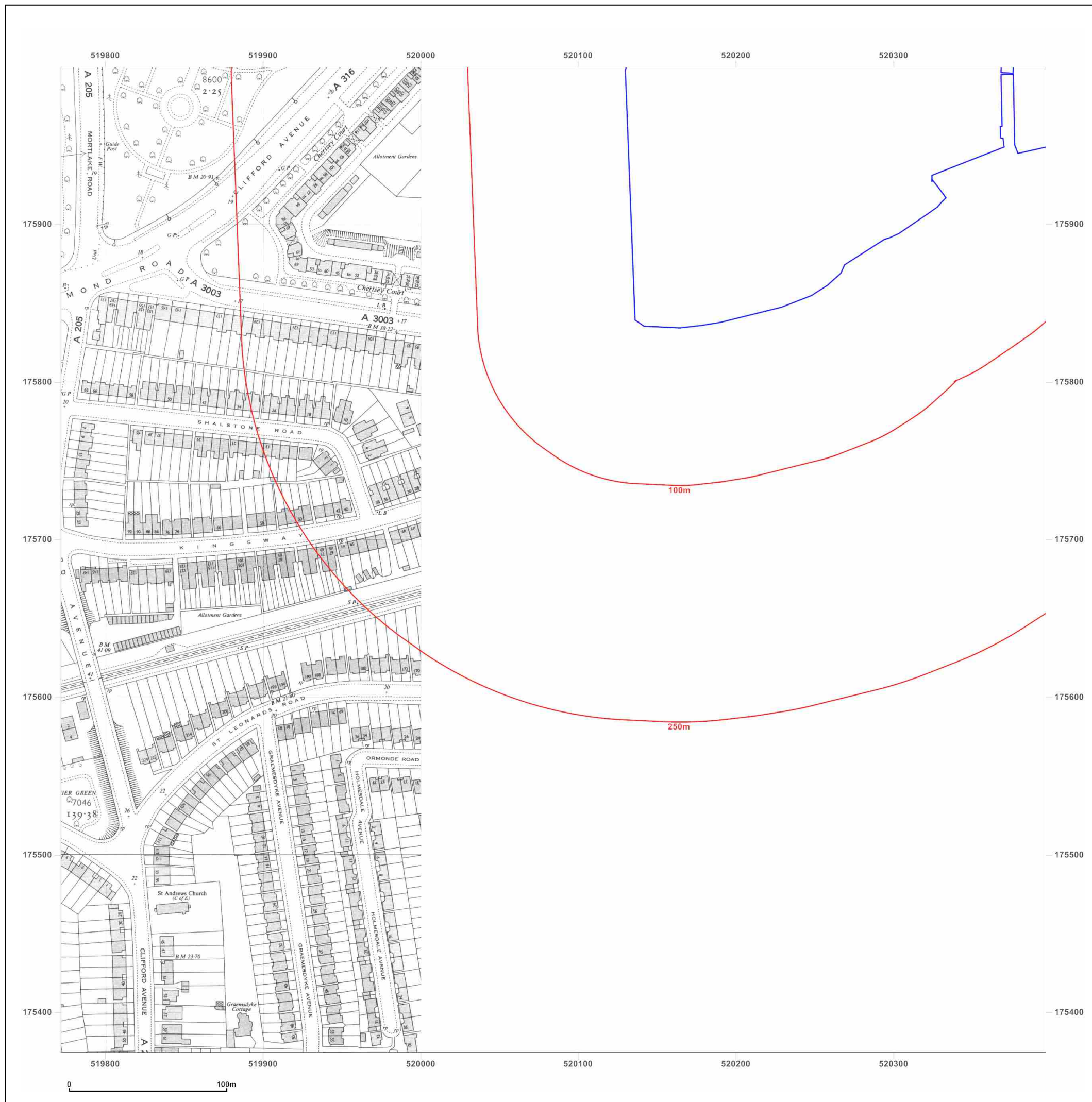
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_1
Grid Ref: 520084, 175687

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



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



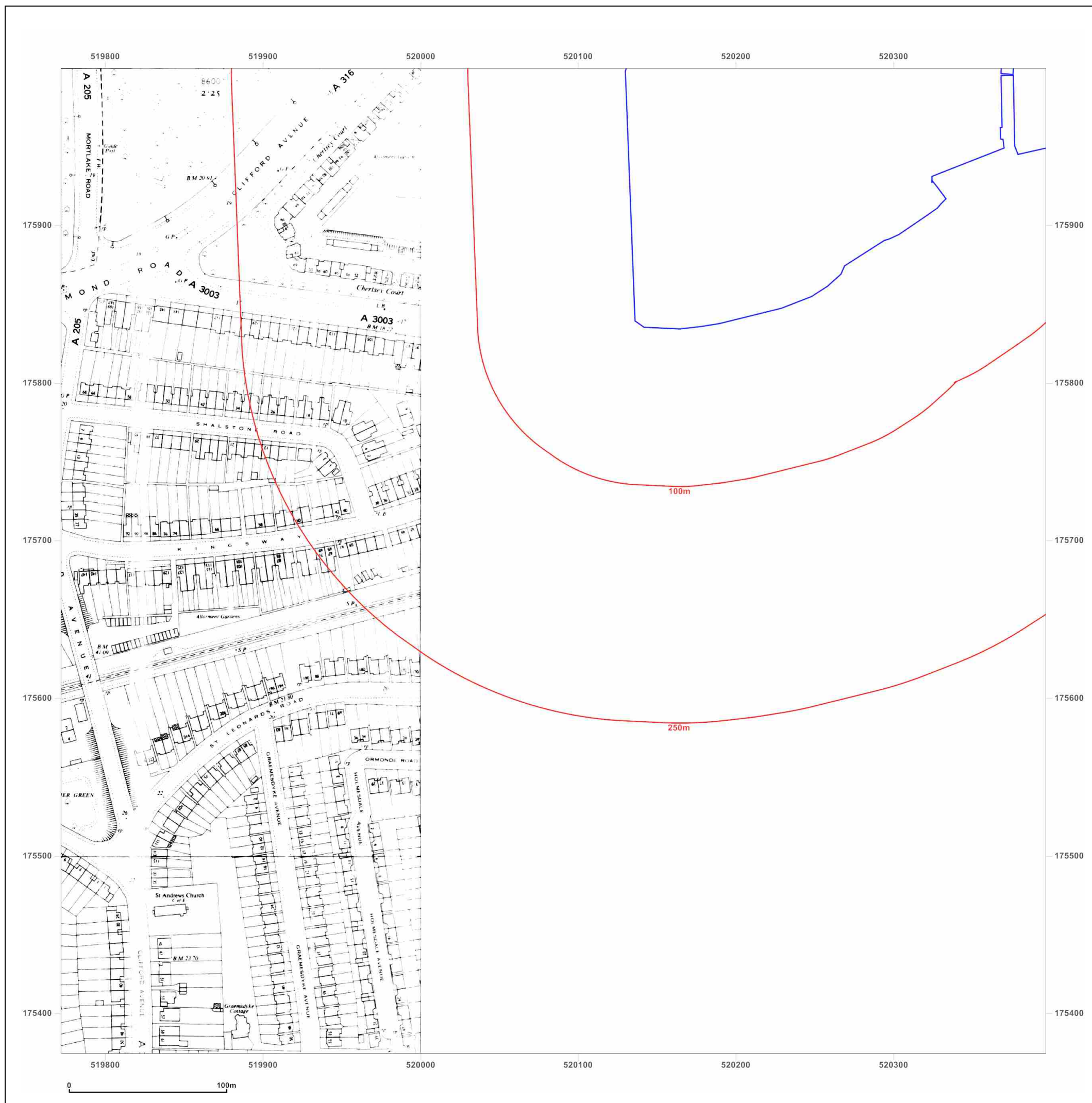
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Map Name: National Grid

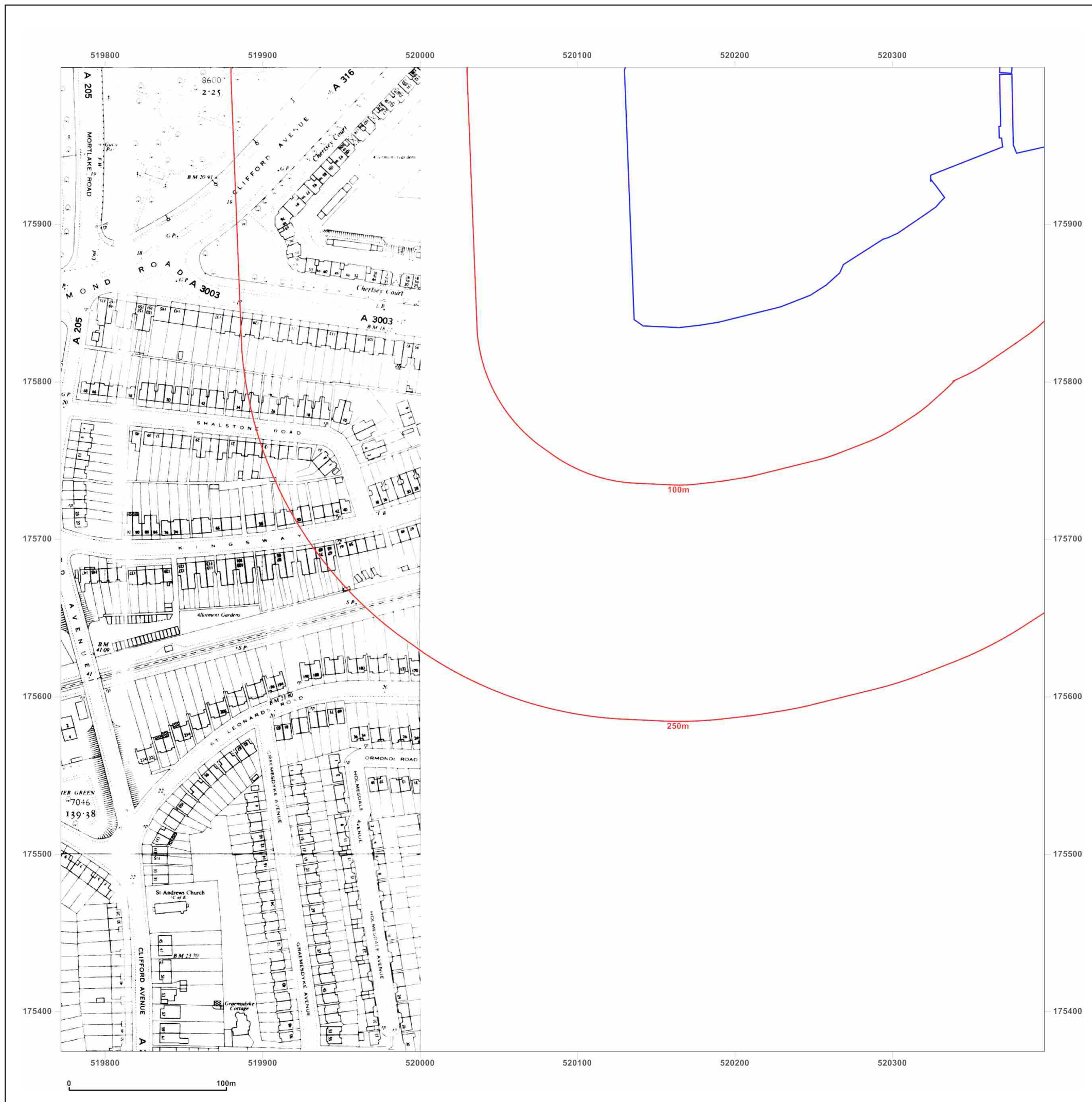
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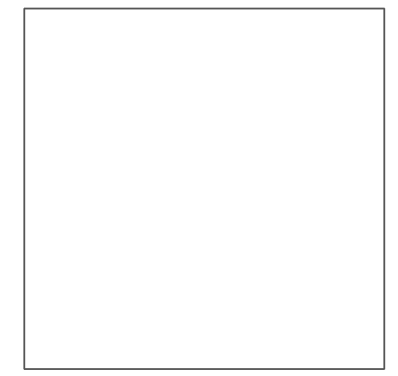
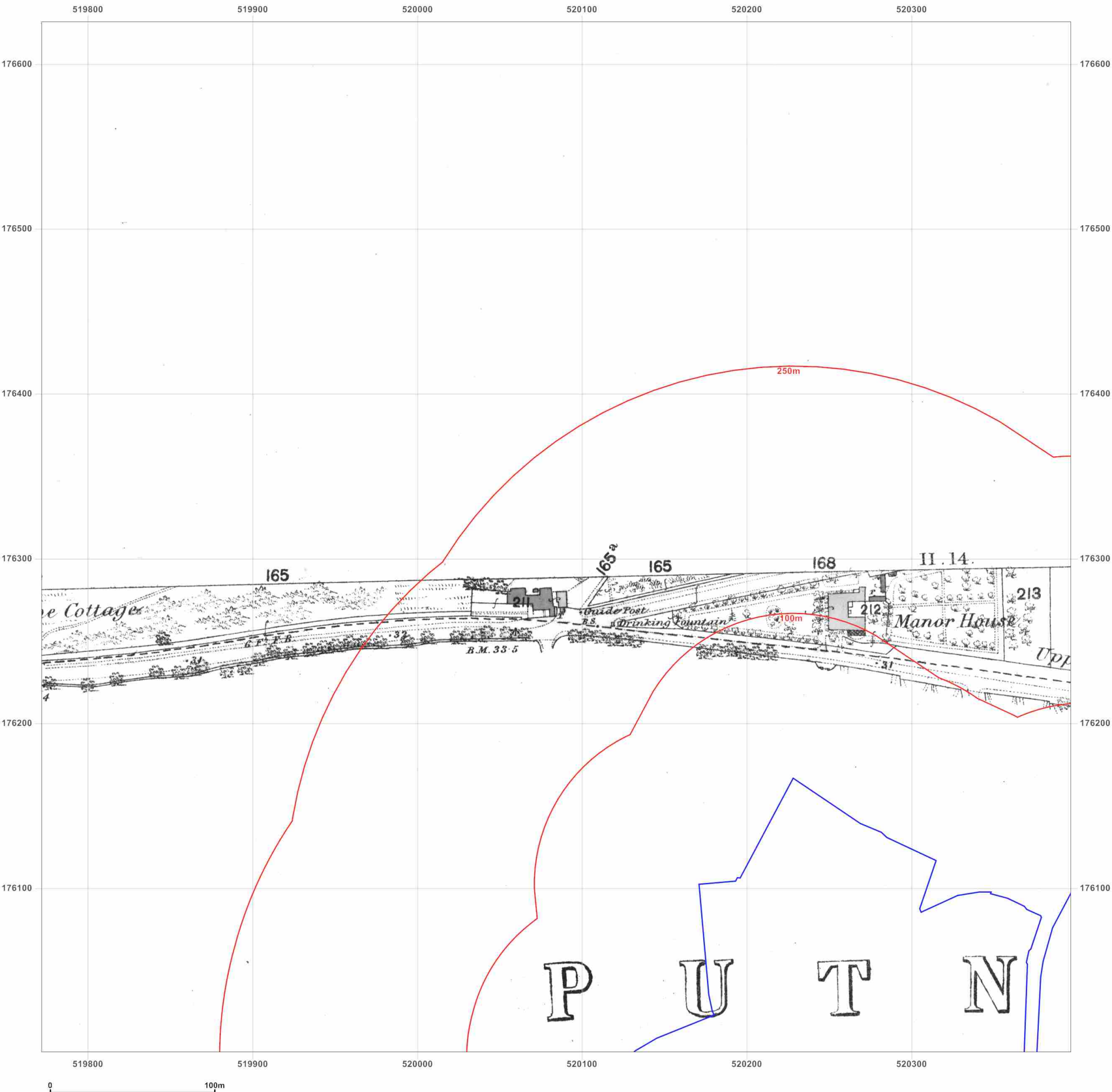
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Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



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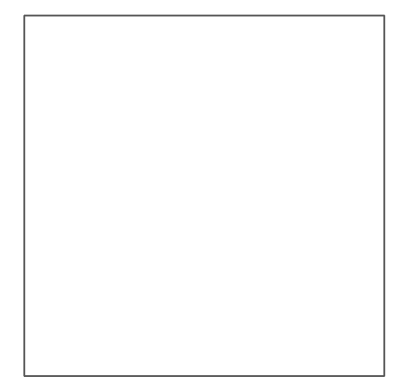
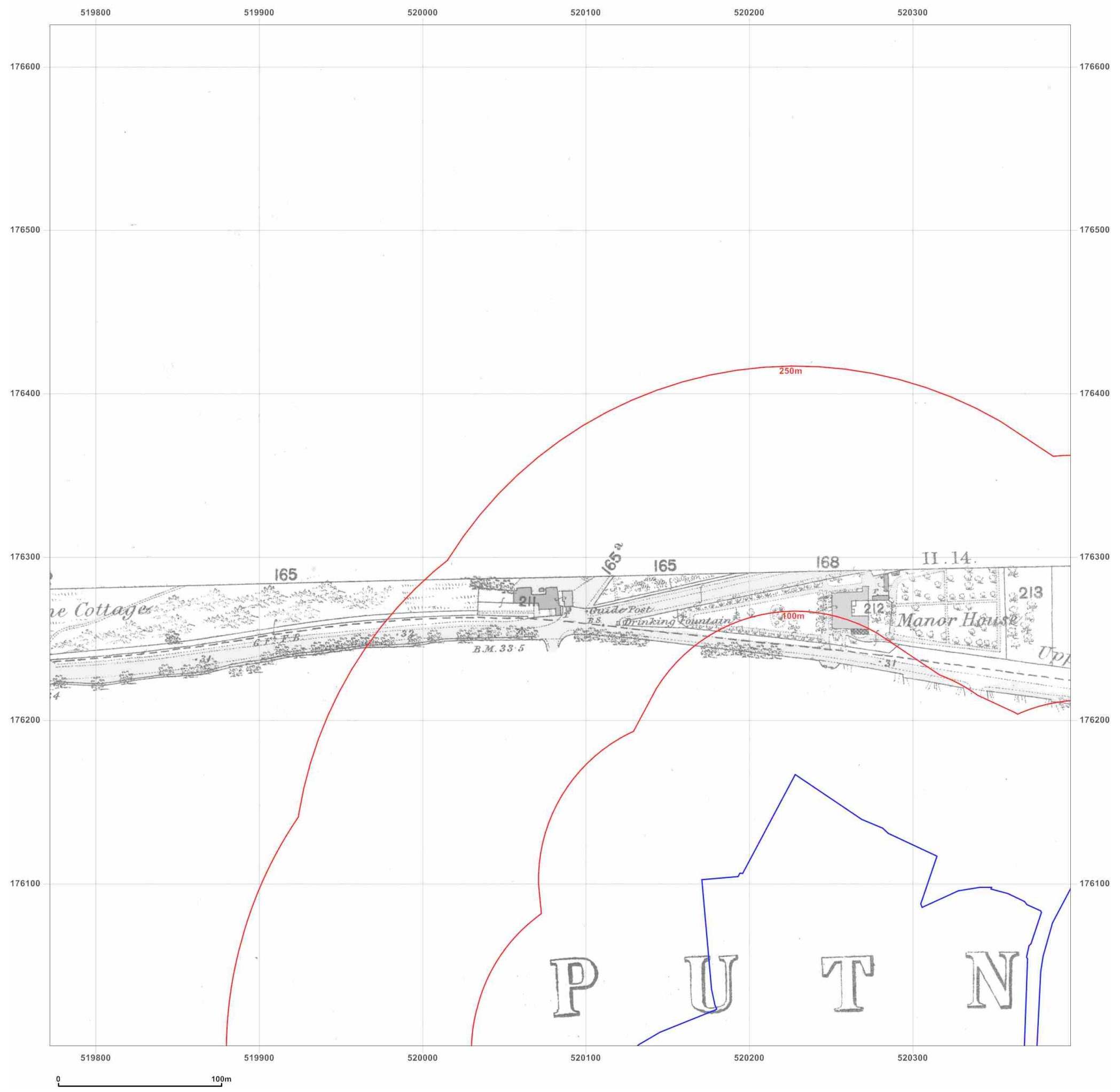
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Map Name: County Series

Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Map Name: County Series

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Surveyed 1868
Revised 1868
Edition N/A
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Levelled N/A

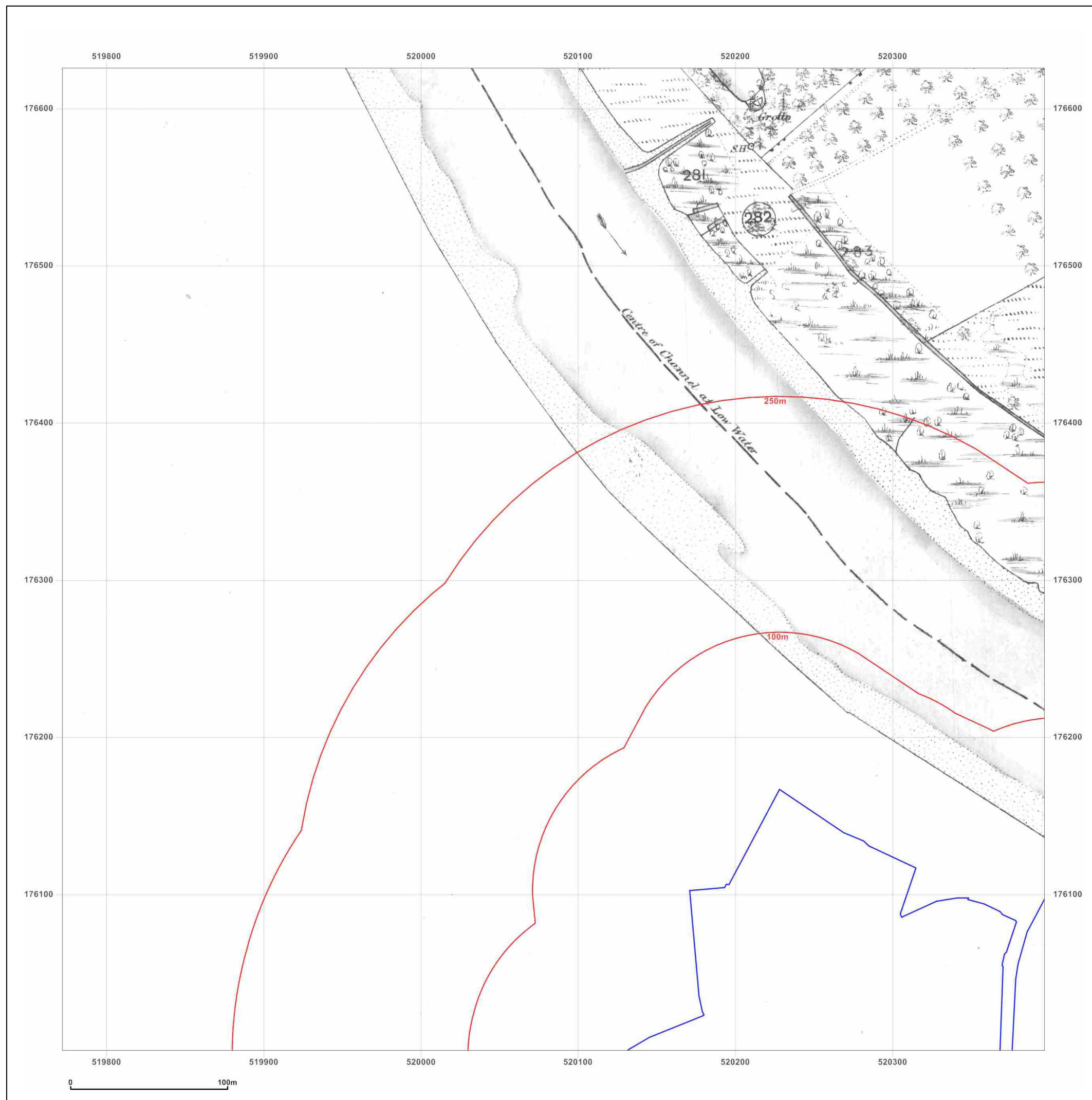


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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1869

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1896

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1896
Revised 1896
Edition N/A
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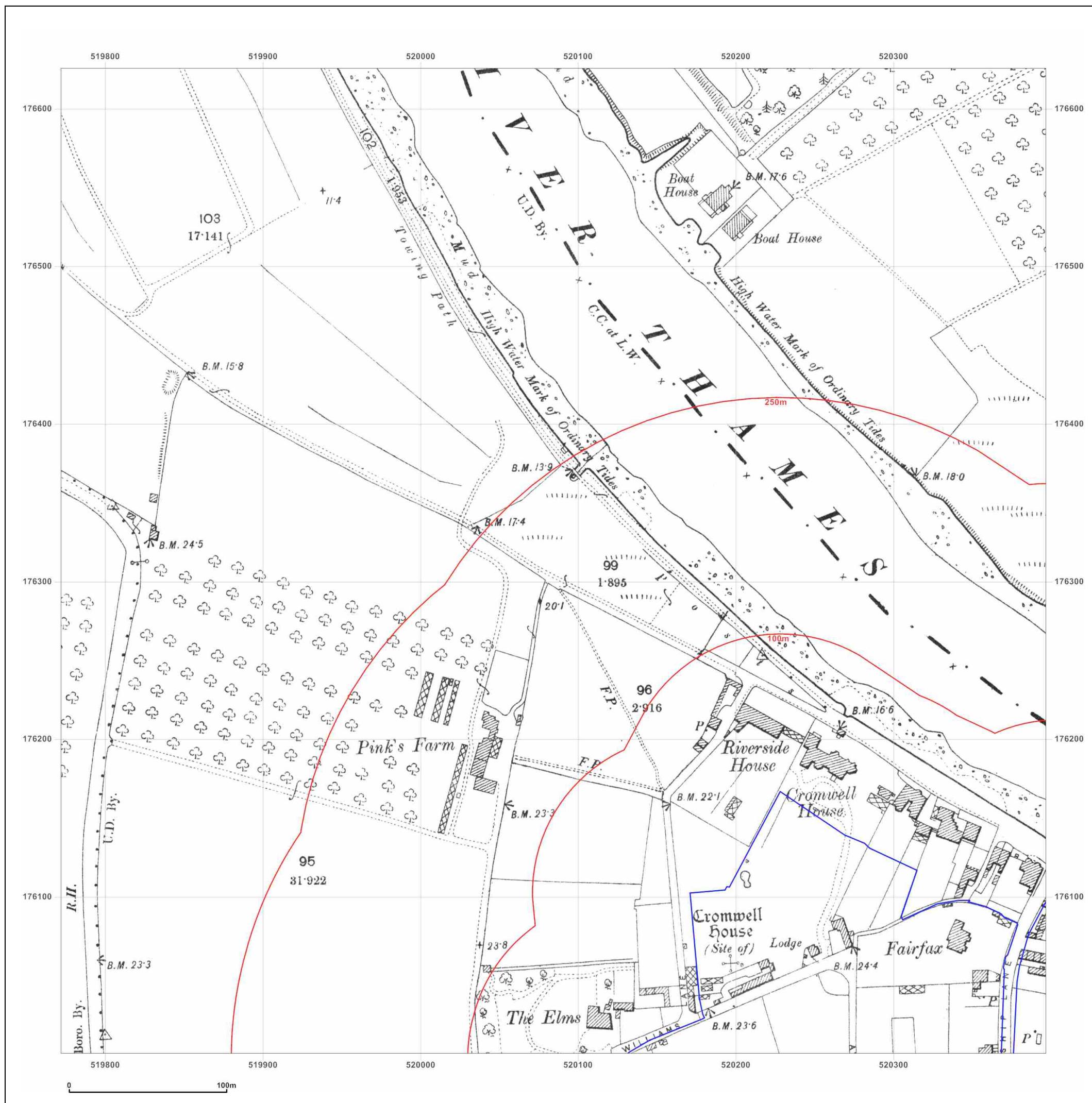
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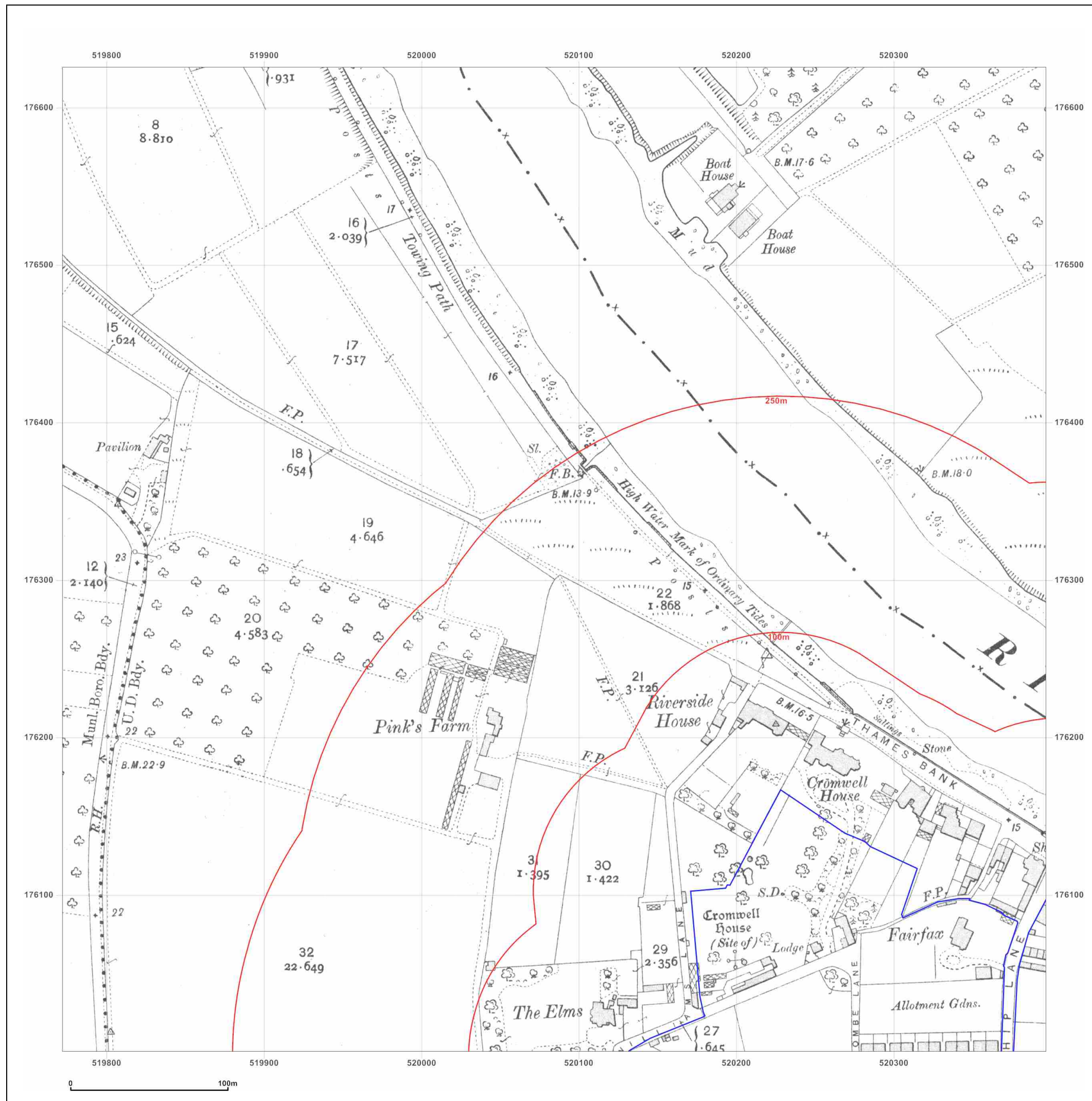
Map date: 1913

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1915

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Printed at: 1:2,500



Surveyed 1915
Revised 1915
Edition N/A
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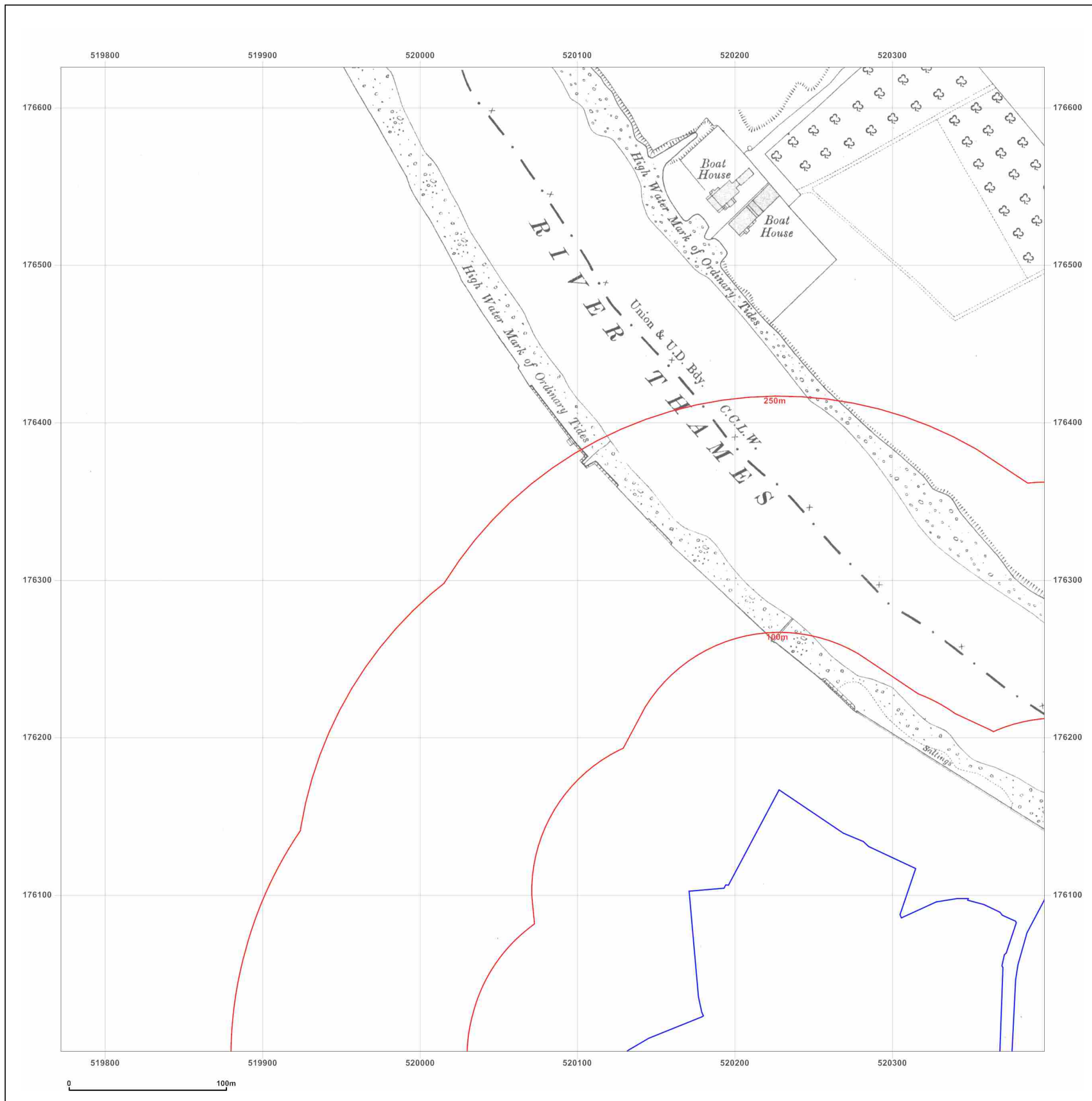
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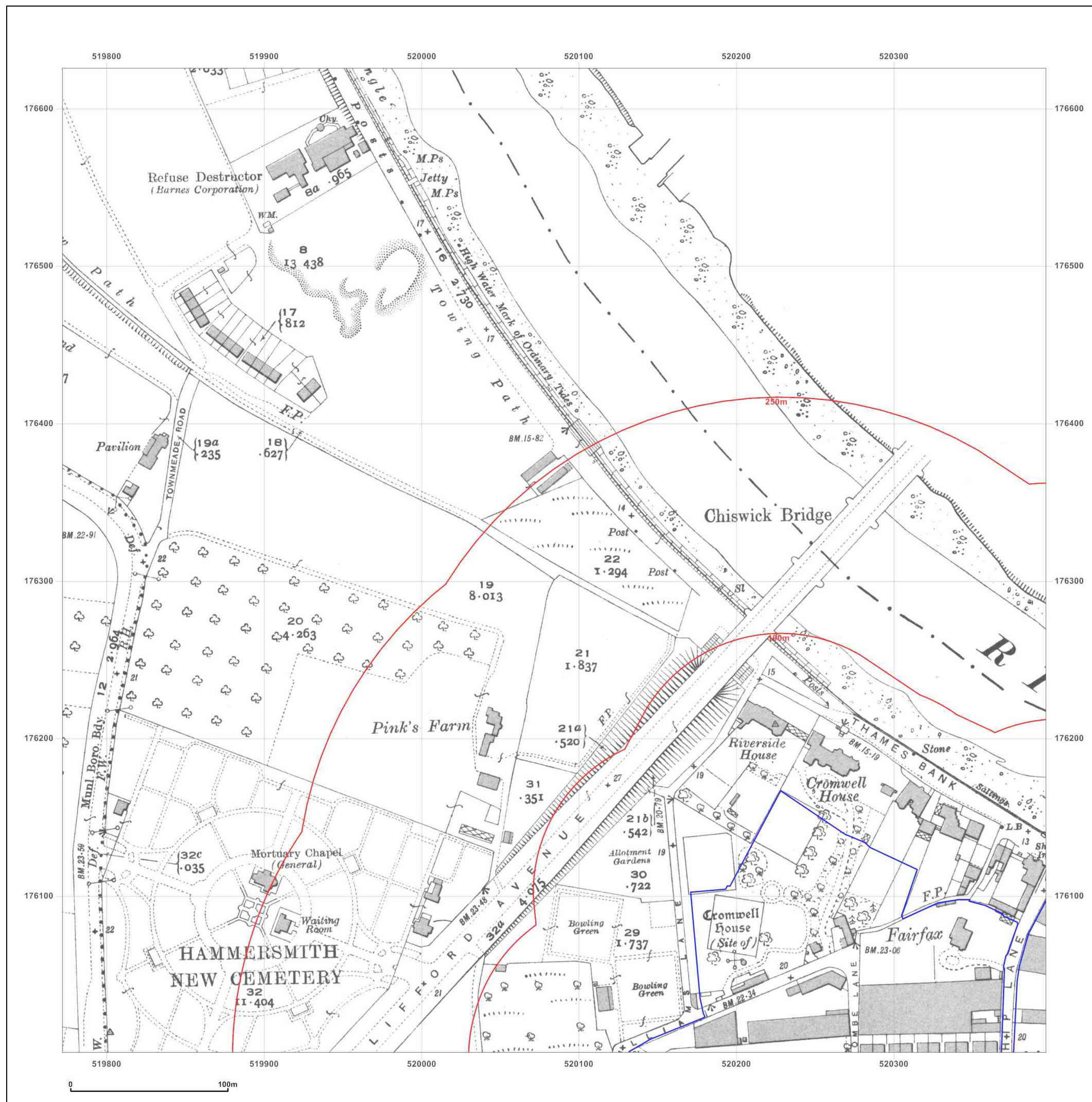
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Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: County Series

Map date: 1940

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1940
Edition N/A
Copyright N/A
Levelled N/A



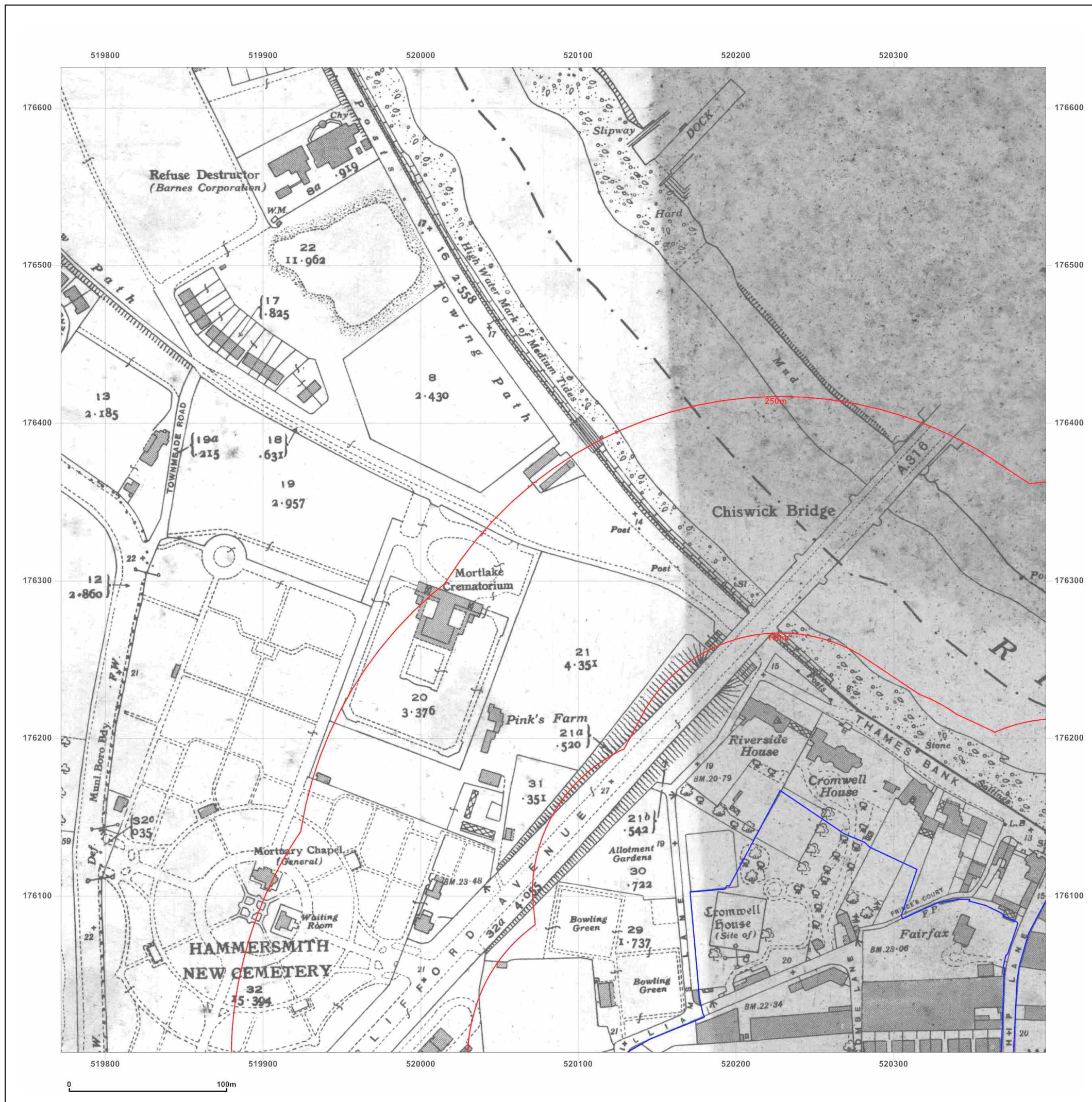
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Site Details:

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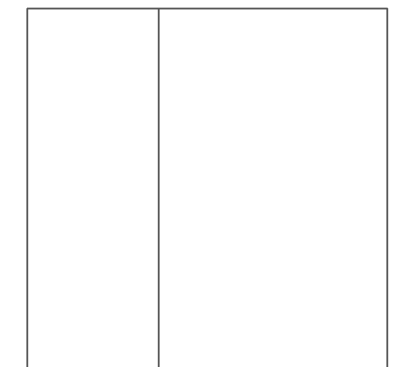
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Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: National Grid

Map date: 1951

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932



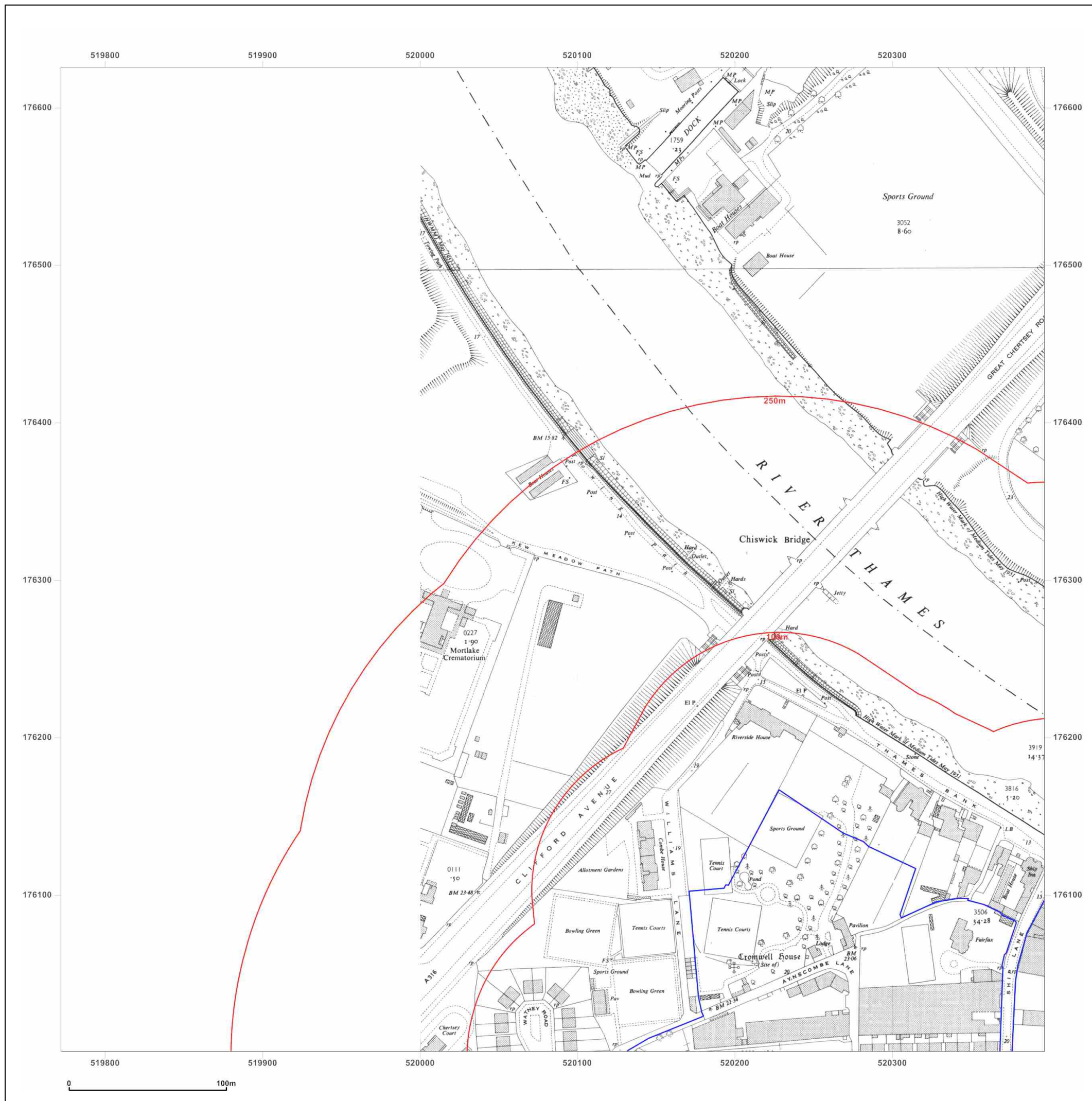
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LONDON, SW14 7QR

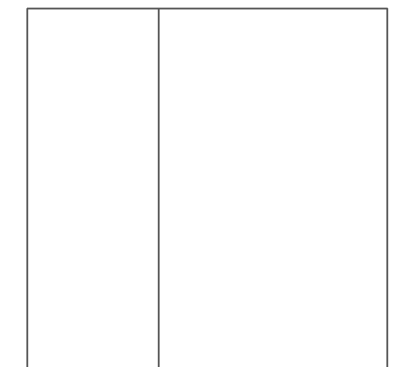
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Grid Ref: 520084, 176313

Map Name: National Grid

Map date: 1951

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
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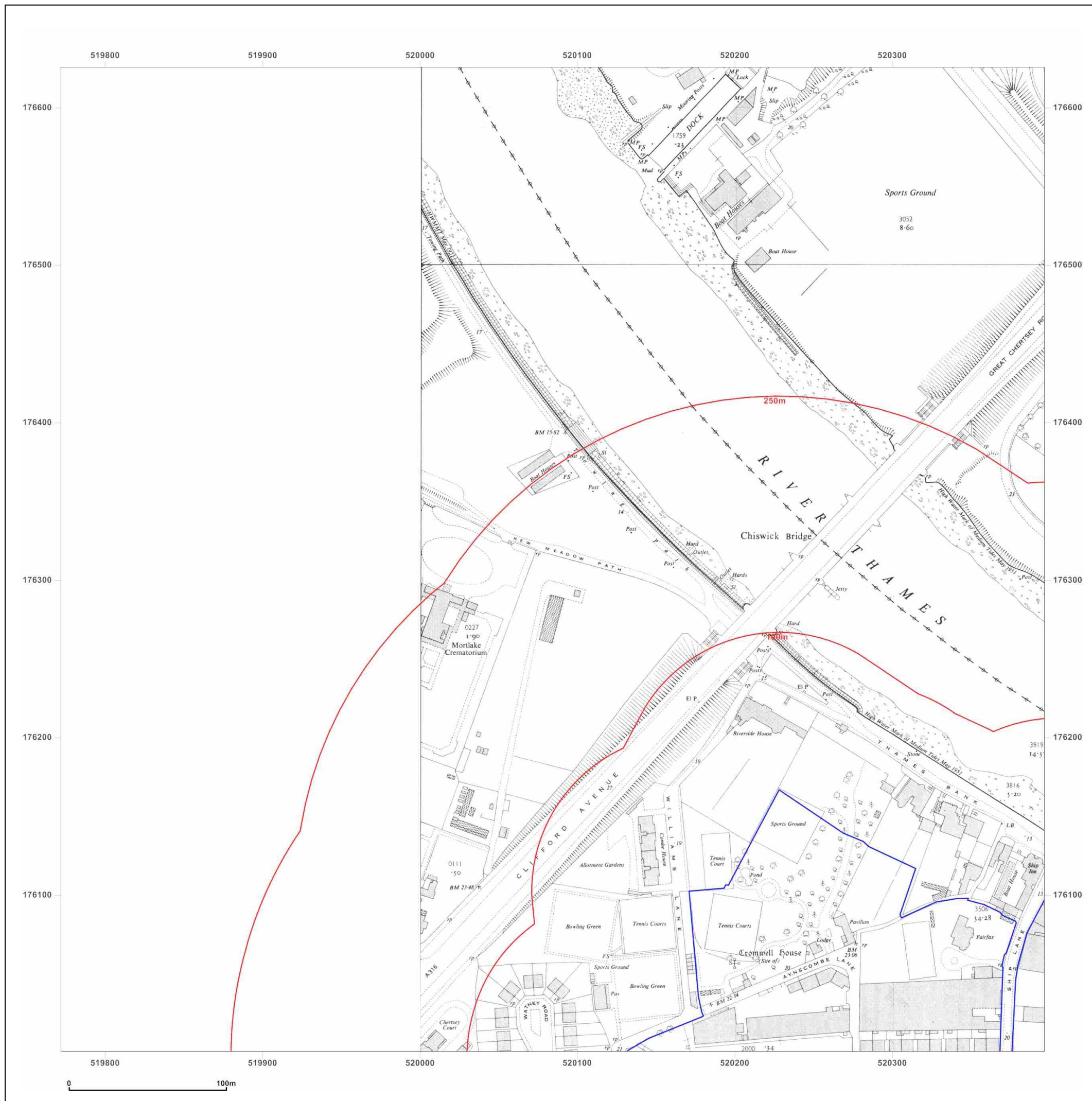
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Grid Ref: 520084, 176313

Map Name: National Grid

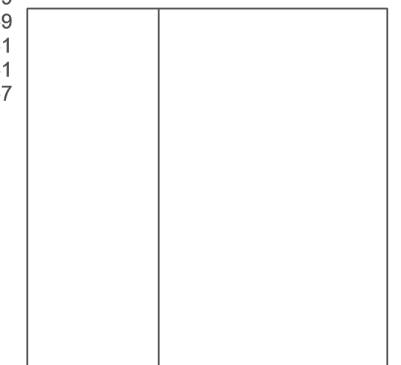
Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Map Name: National Grid

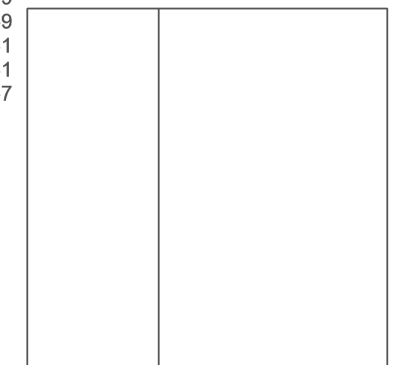
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Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_1_2
Grid Ref: 520084, 176313

Map Name: National Grid

Map date: 1961-1966

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1968
Levelled 1954



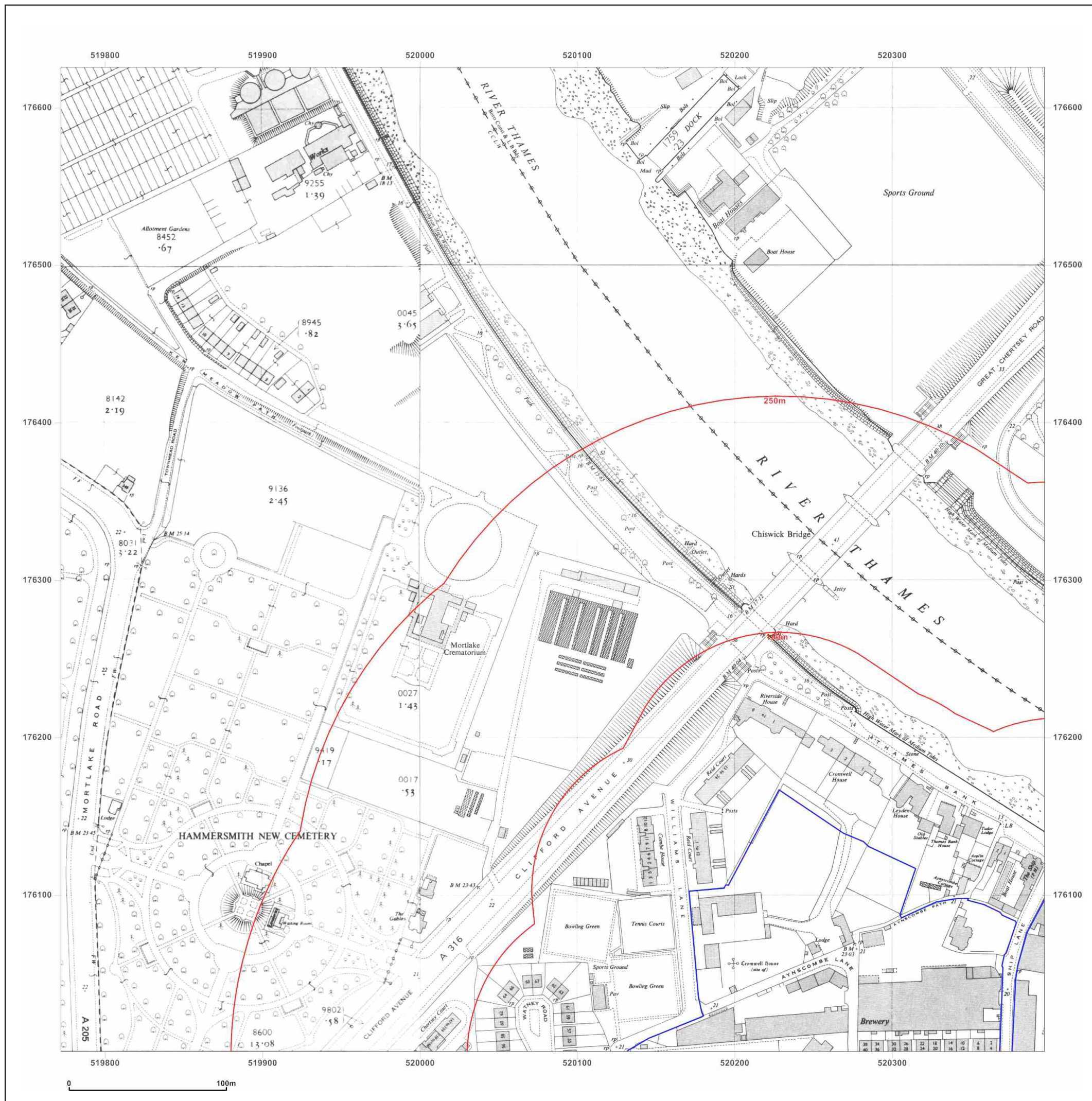
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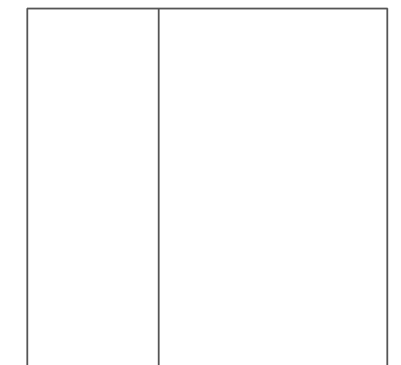
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Grid Ref: 520084, 176313

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
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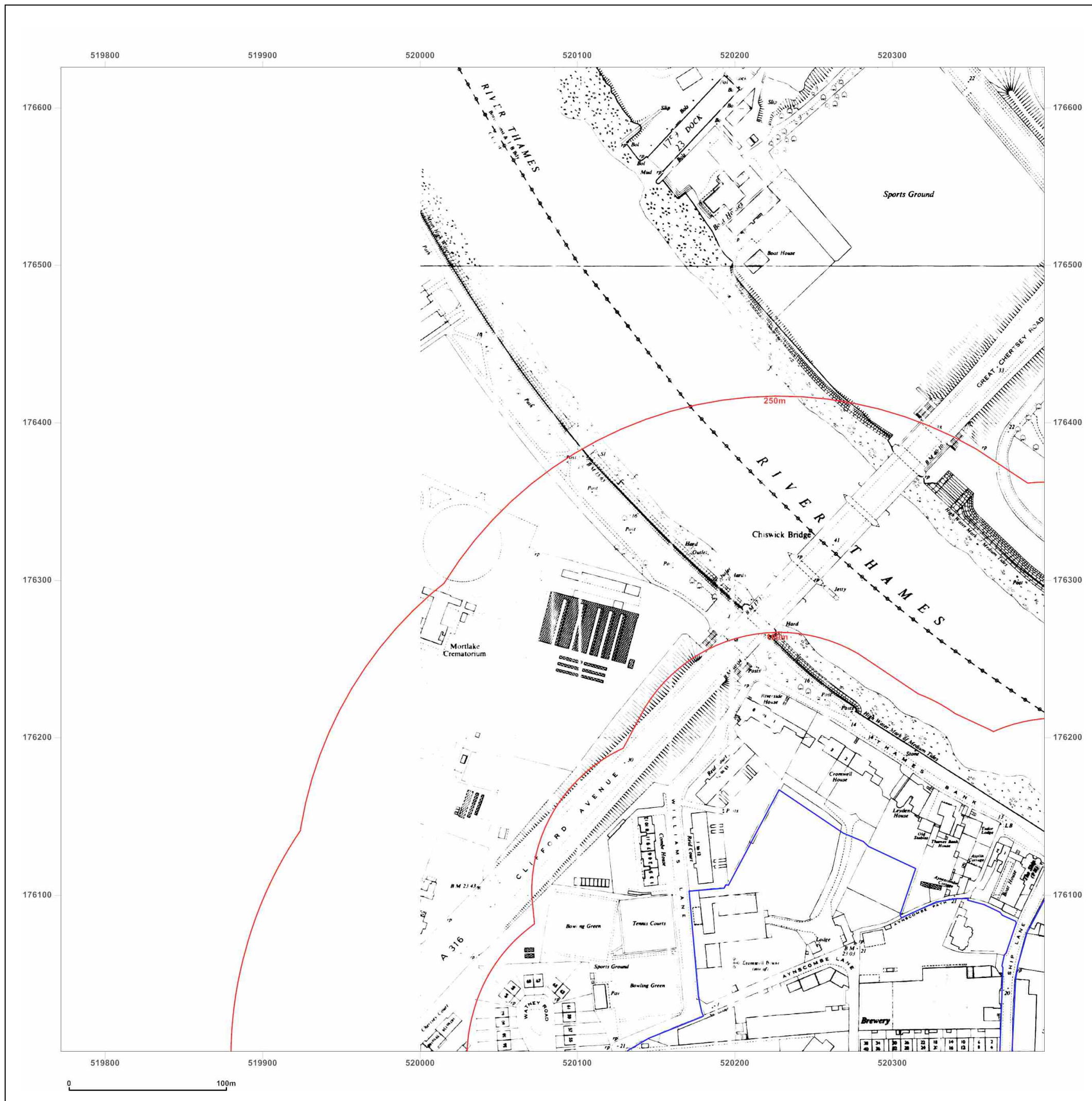
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

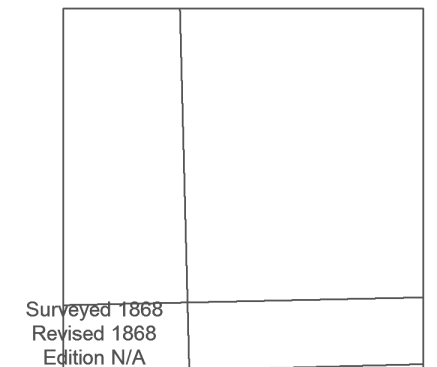
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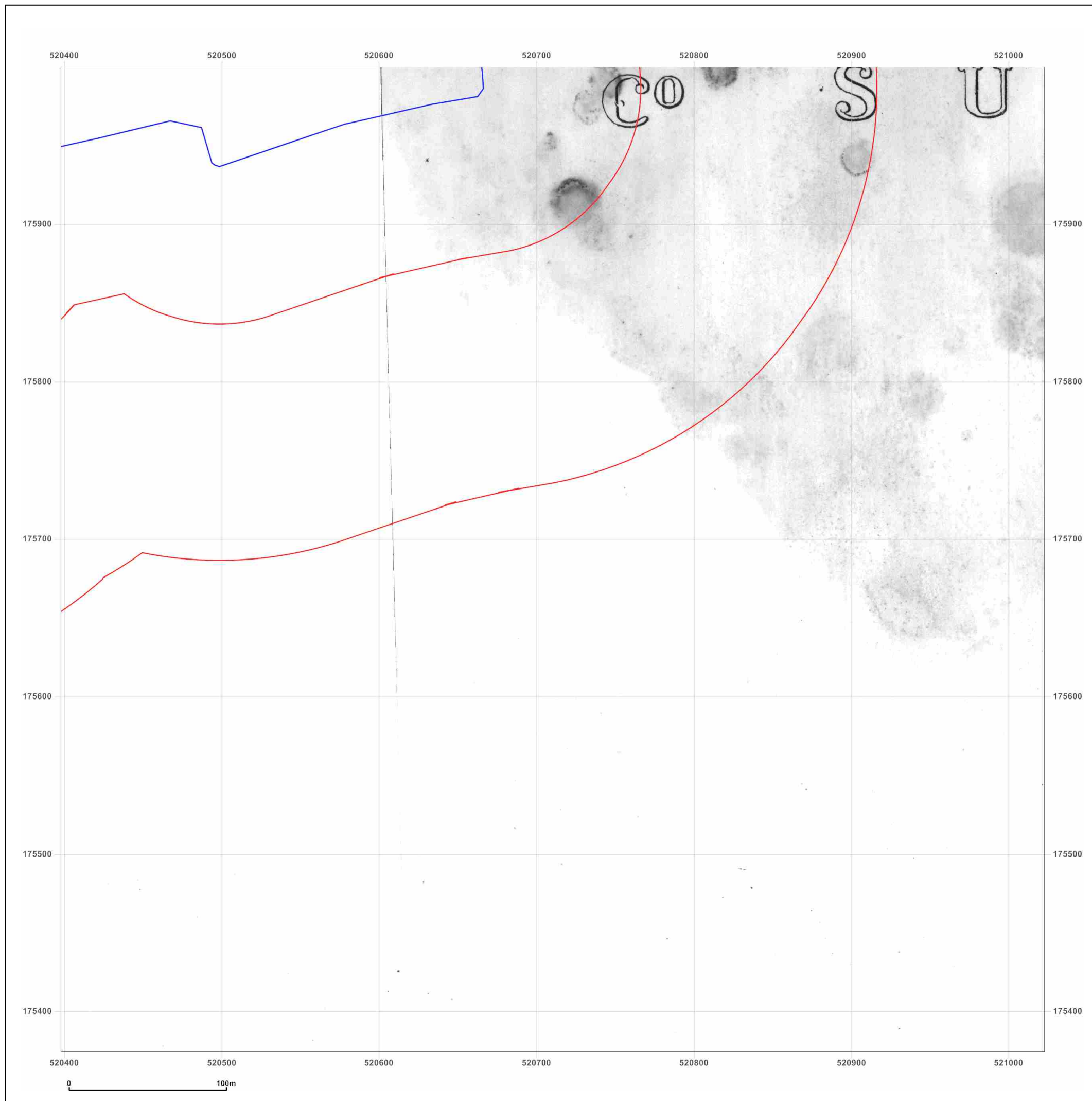
Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

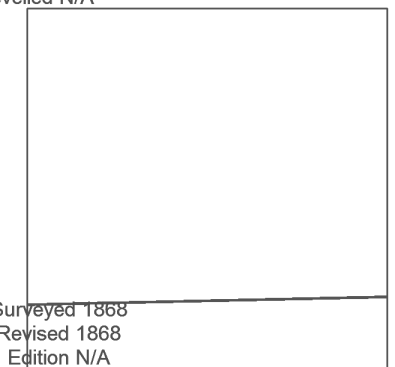
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Scale: 1:2,500

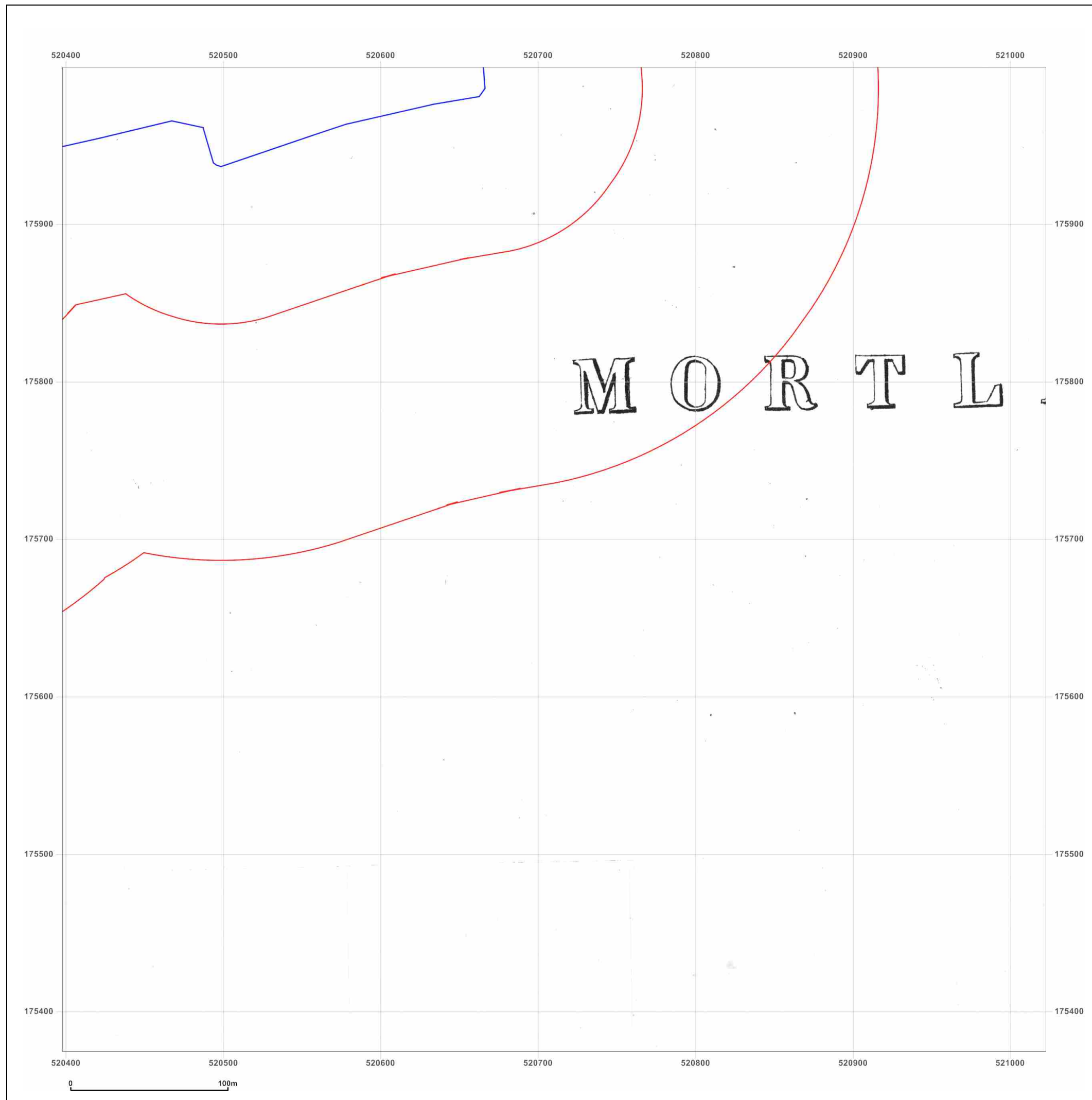
Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

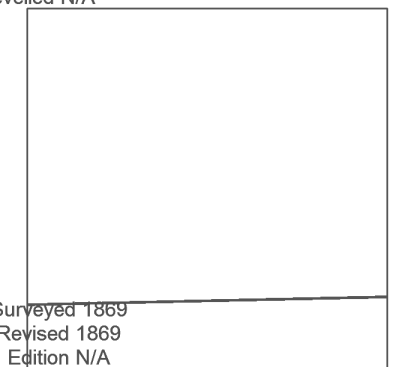
Map date: 1868-1869

Scale: 1:2,500

Printed at: 1:2,500



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Surveyed 1869
Revised 1869
Edition N/A
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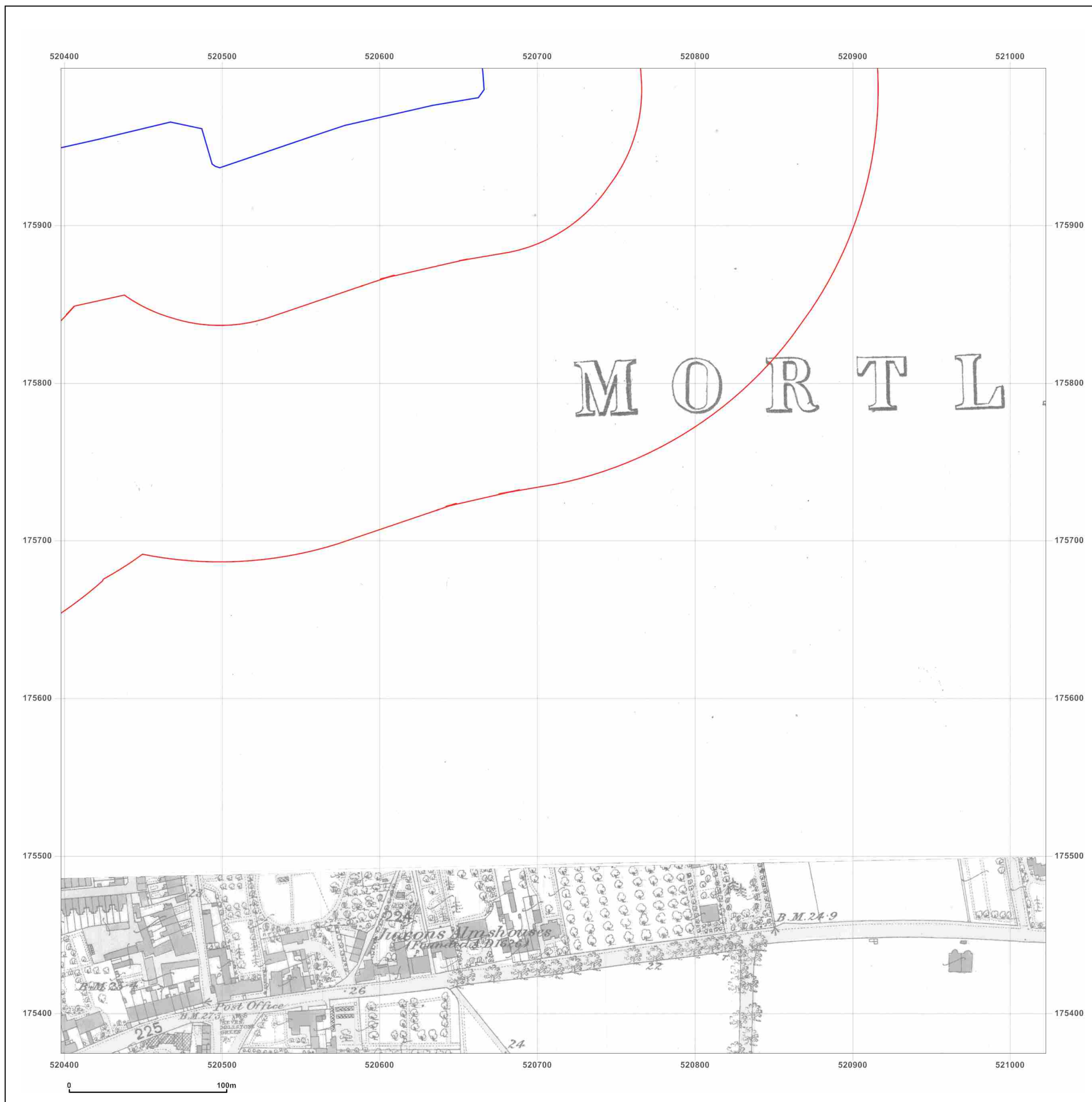
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

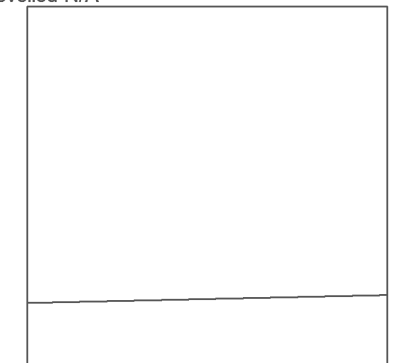
Map date: 1869

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

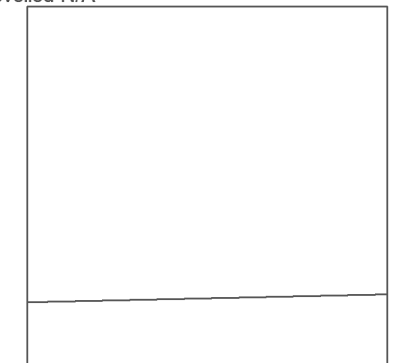
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Surveyed 1869
Revised 1869
Edition N/A
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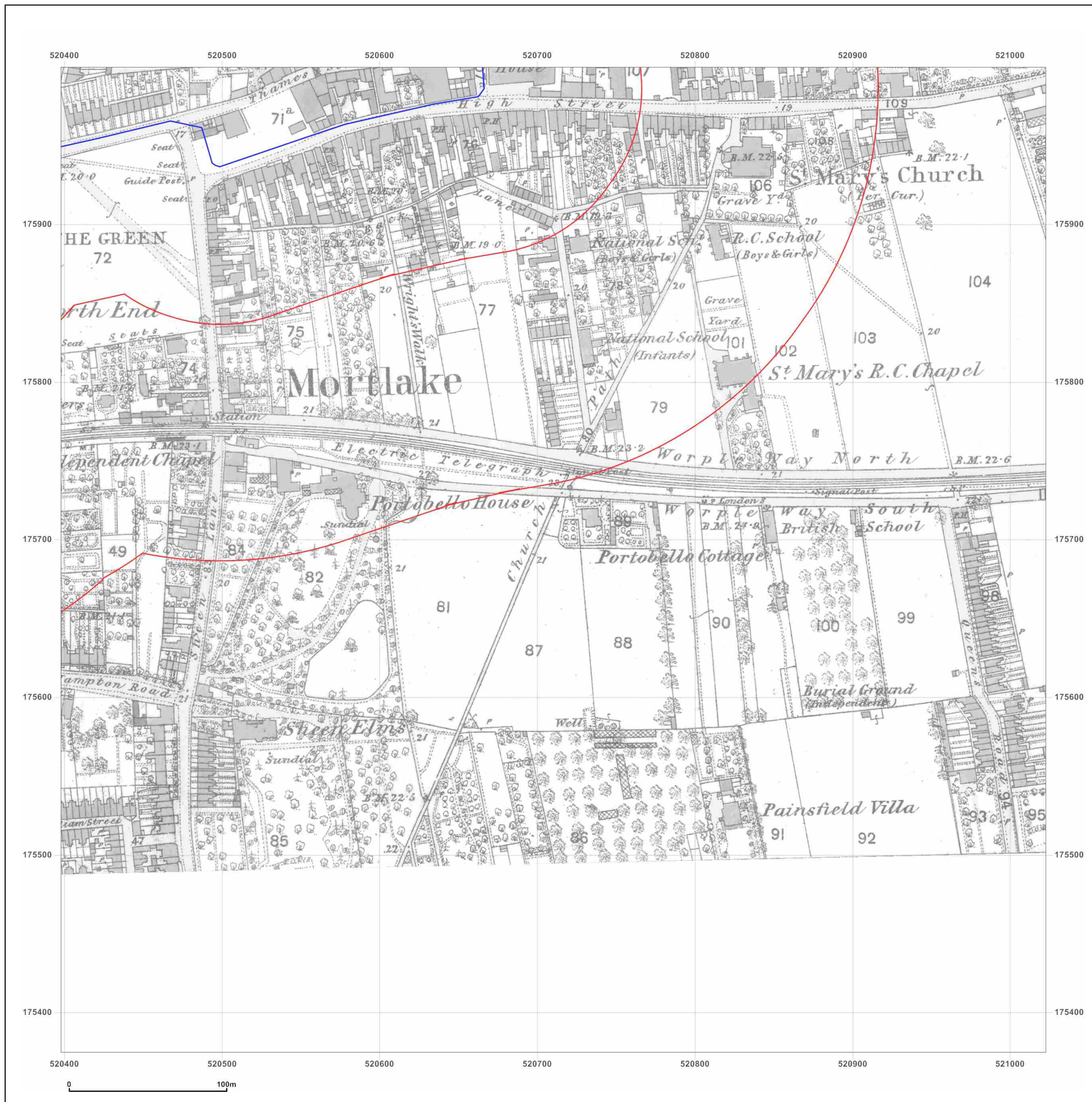
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

Map date: 1868-1871

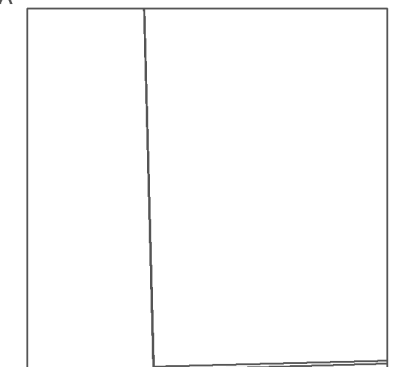
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

Map date: 1896

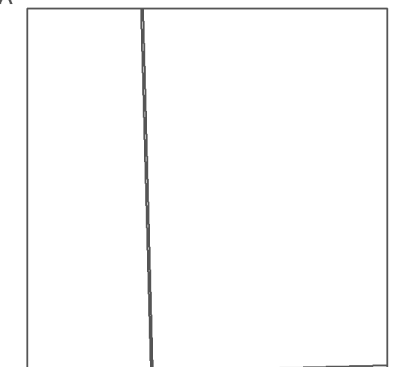
Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

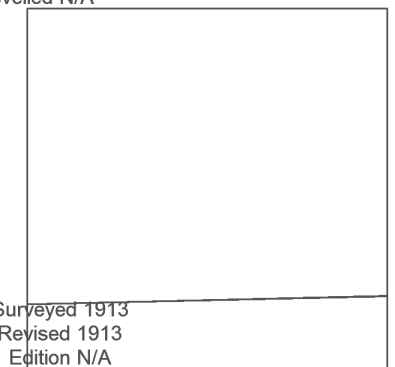
Map date: 1913

Scale: 1:2,500

Printed at: 1:2,500



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Map Name: County Series

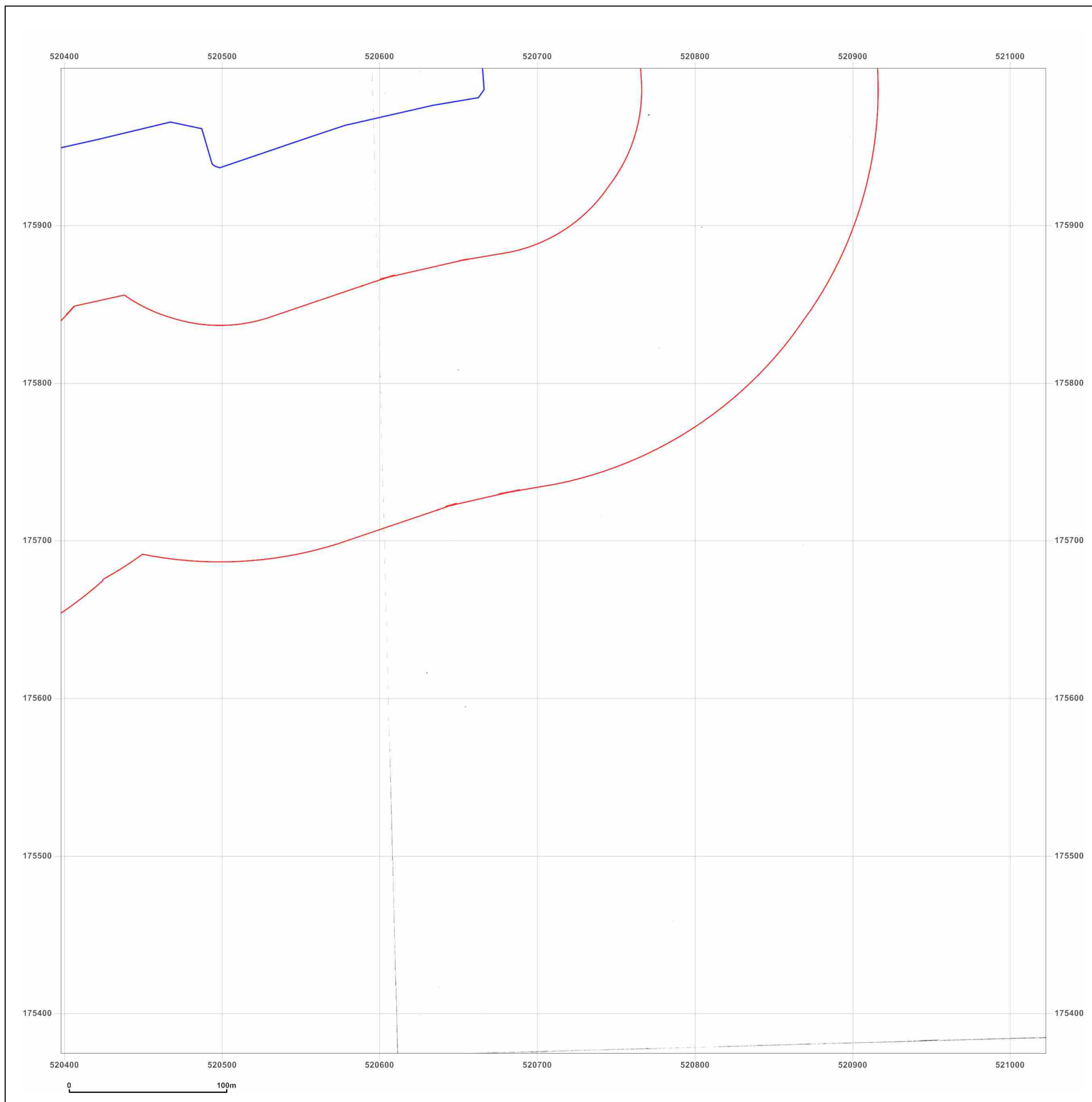
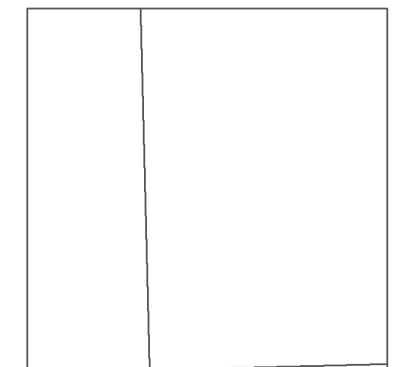
Map date: 1915

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Grid Ref: 520710, 175687

Map Name: County Series

Map date: 1914-1916

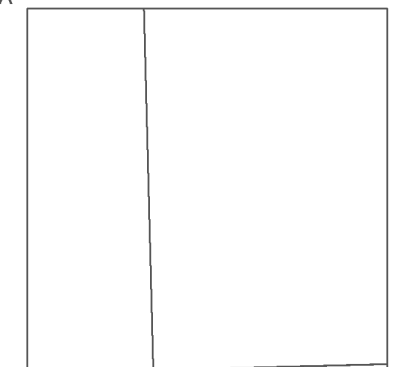
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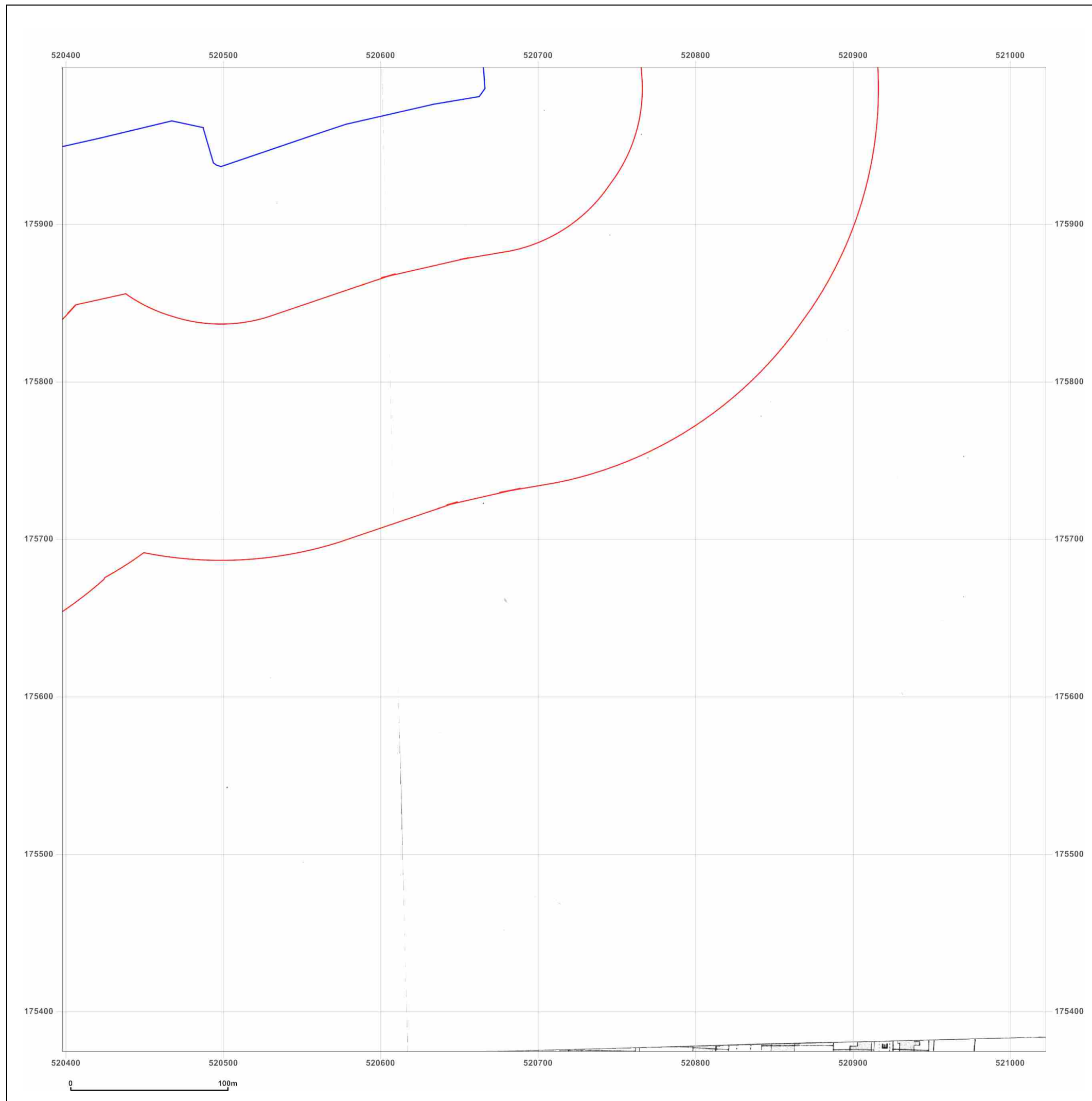


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Map Name: County Series

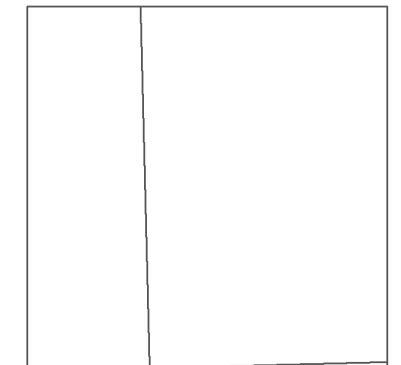
Map date: 1919

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
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Map Name: County Series

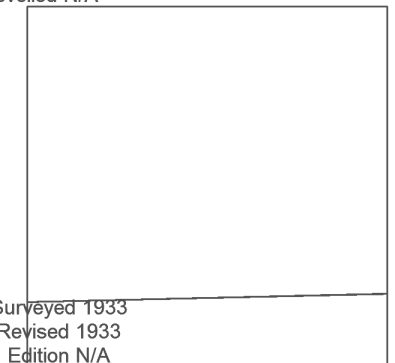
Map date: 1933

Scale: 1:2,500

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LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
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Map Name: County Series

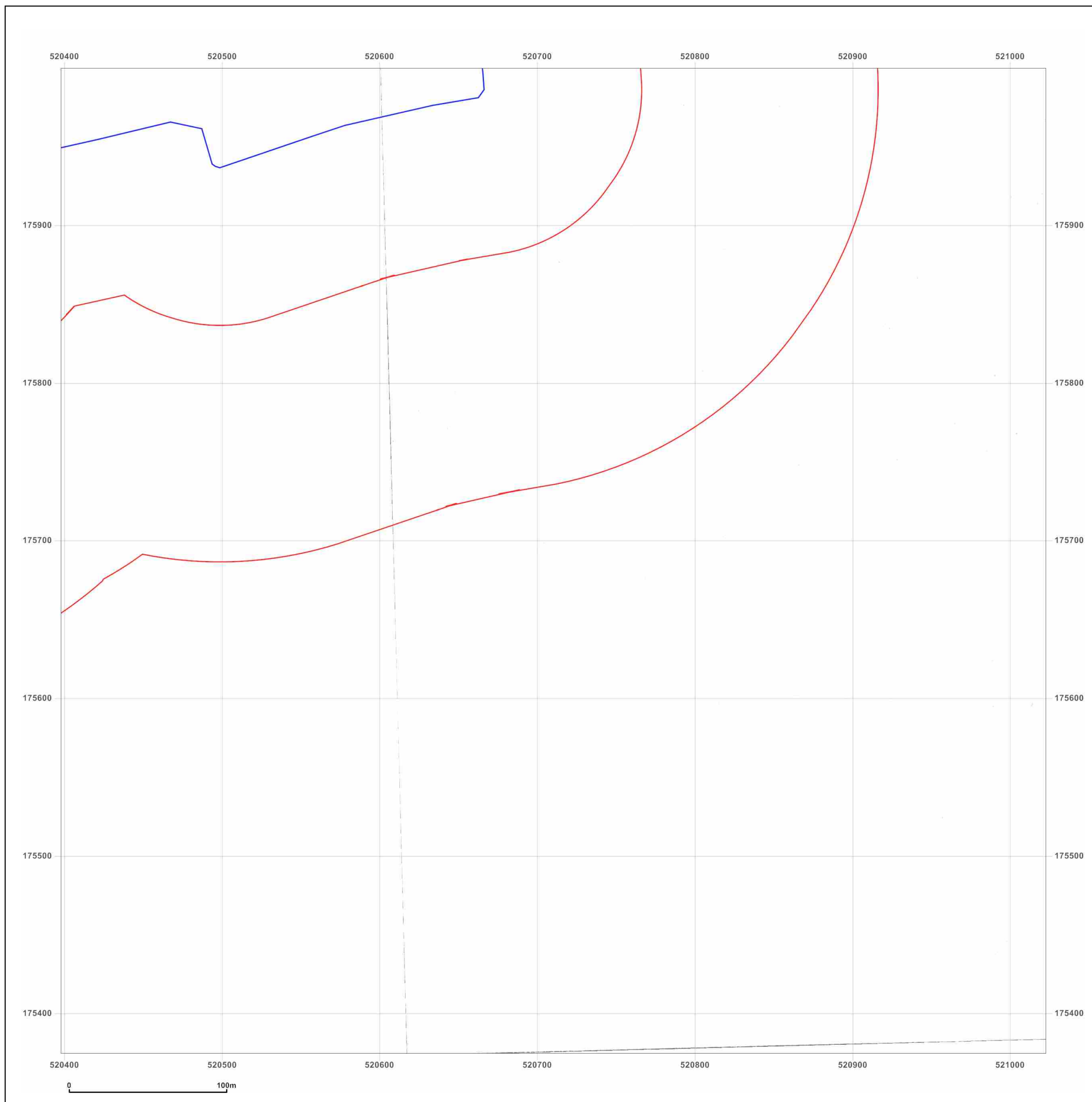
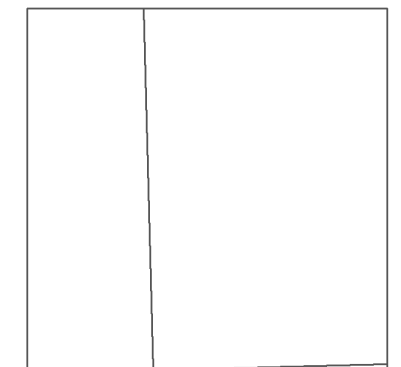
Map date: 1934

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: County Series

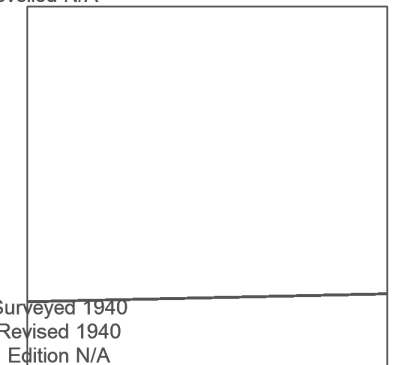
Map date: 1940

Scale: 1:2,500

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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_1
Grid Ref: 520710, 175687

Map Name: National Grid

Map date: 1951-1953

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
Edition N/A
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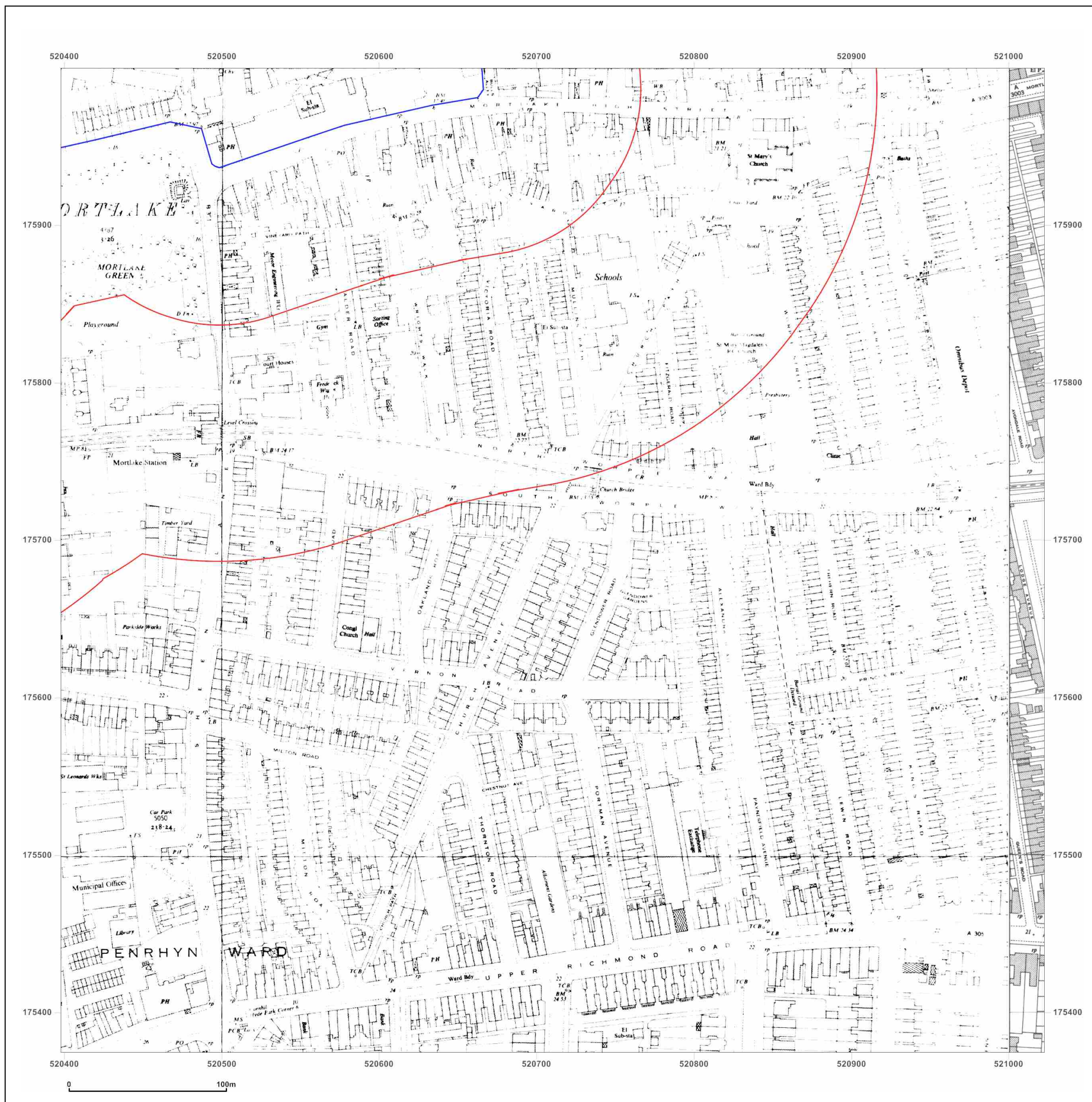
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Site Details:

THE STAG BREWERY, LOWER
RICHMOND ROAD, MORTLAKE,
LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1867-1868

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1868
Revised 1868
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1867
Revised 1867
Edition N/A
Copyright N/A
Levelled N/A



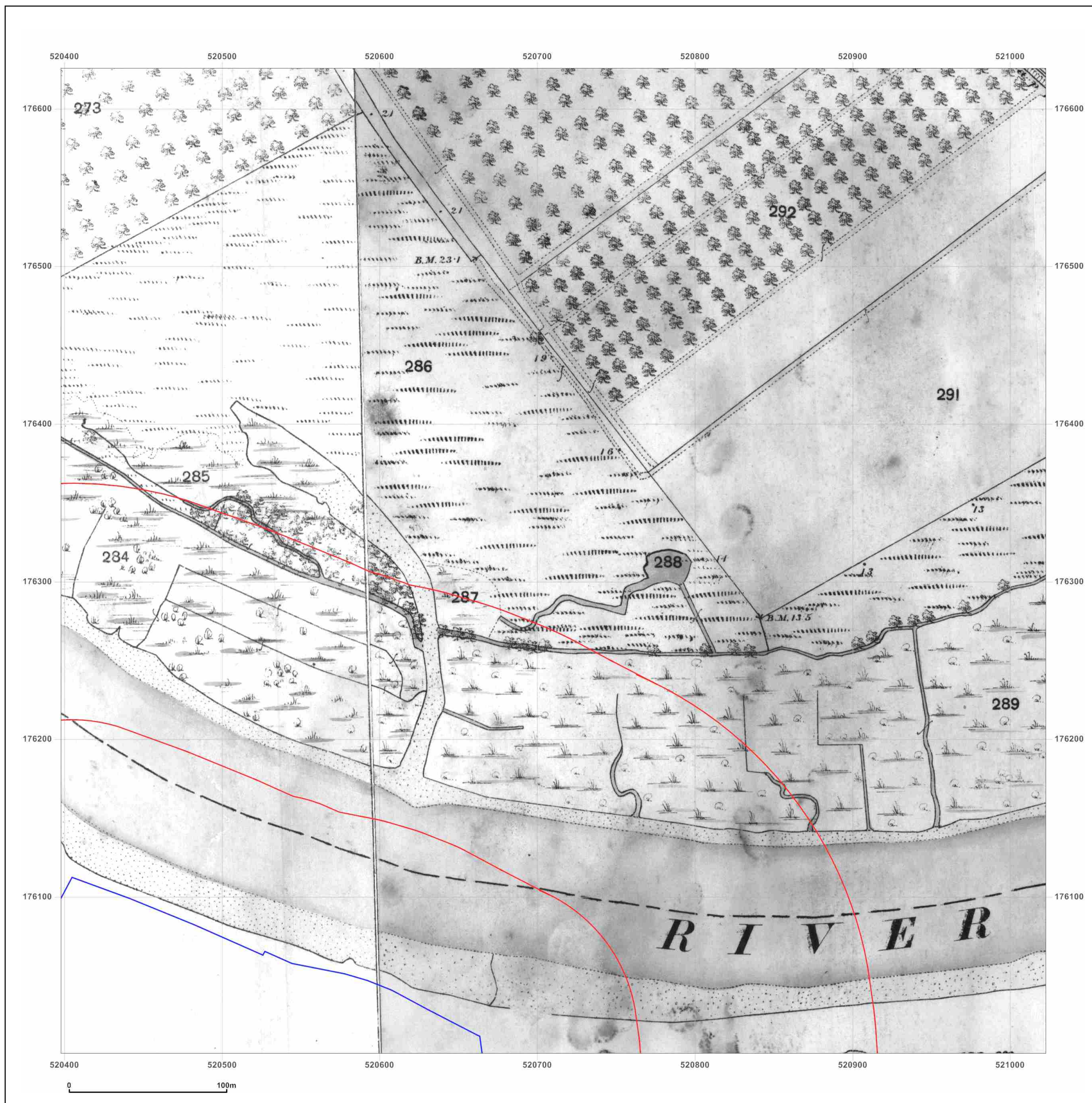
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LONDON, SW14 7QR

Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



Sheet VII. 2.

Surveyed 1868
Revised 1868
Edition N/A
Copyright N/A
Levelled N/A



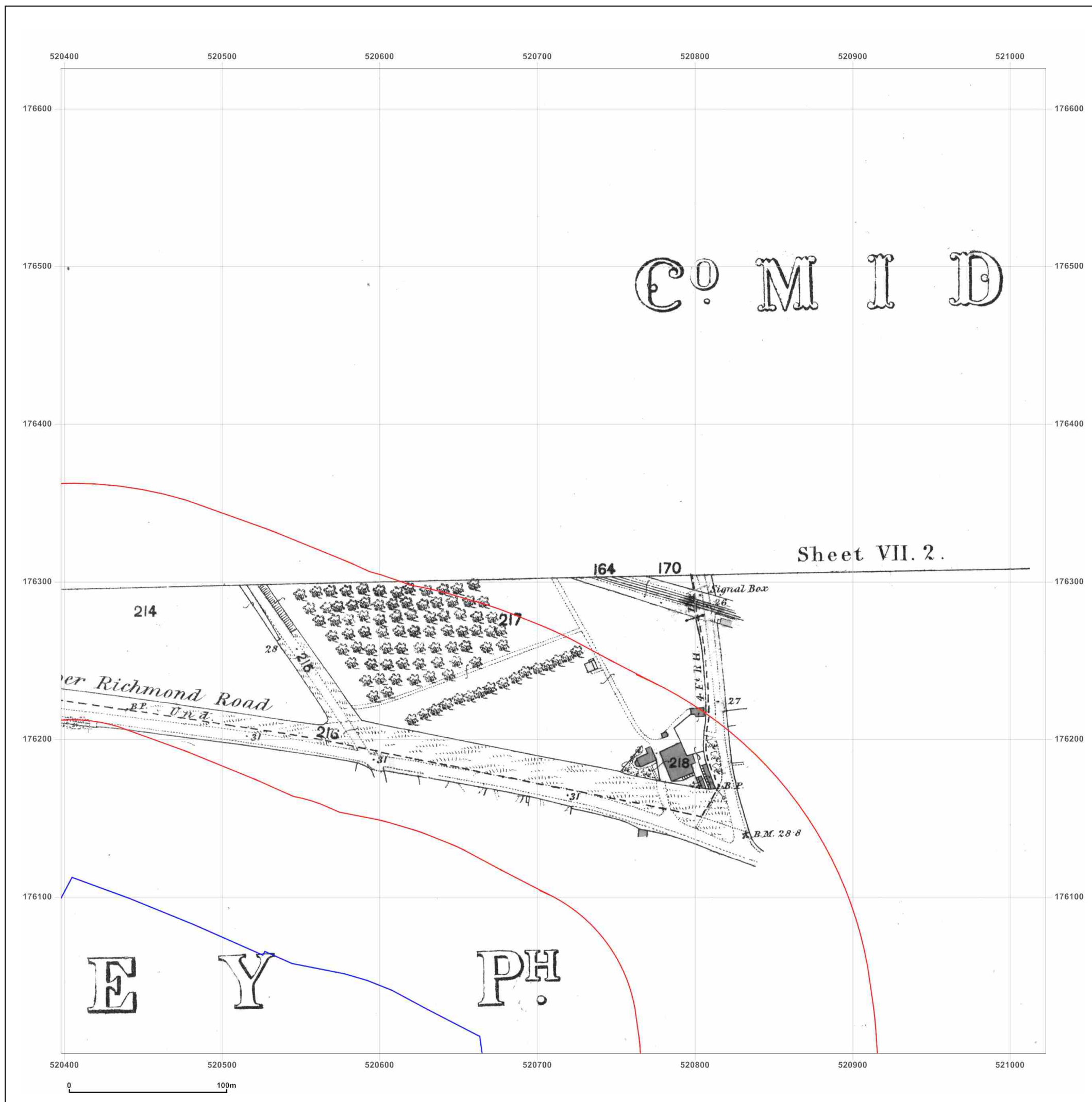
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



Sheet VII. 2.

Surveyed 1868
Revised 1868
Edition N/A
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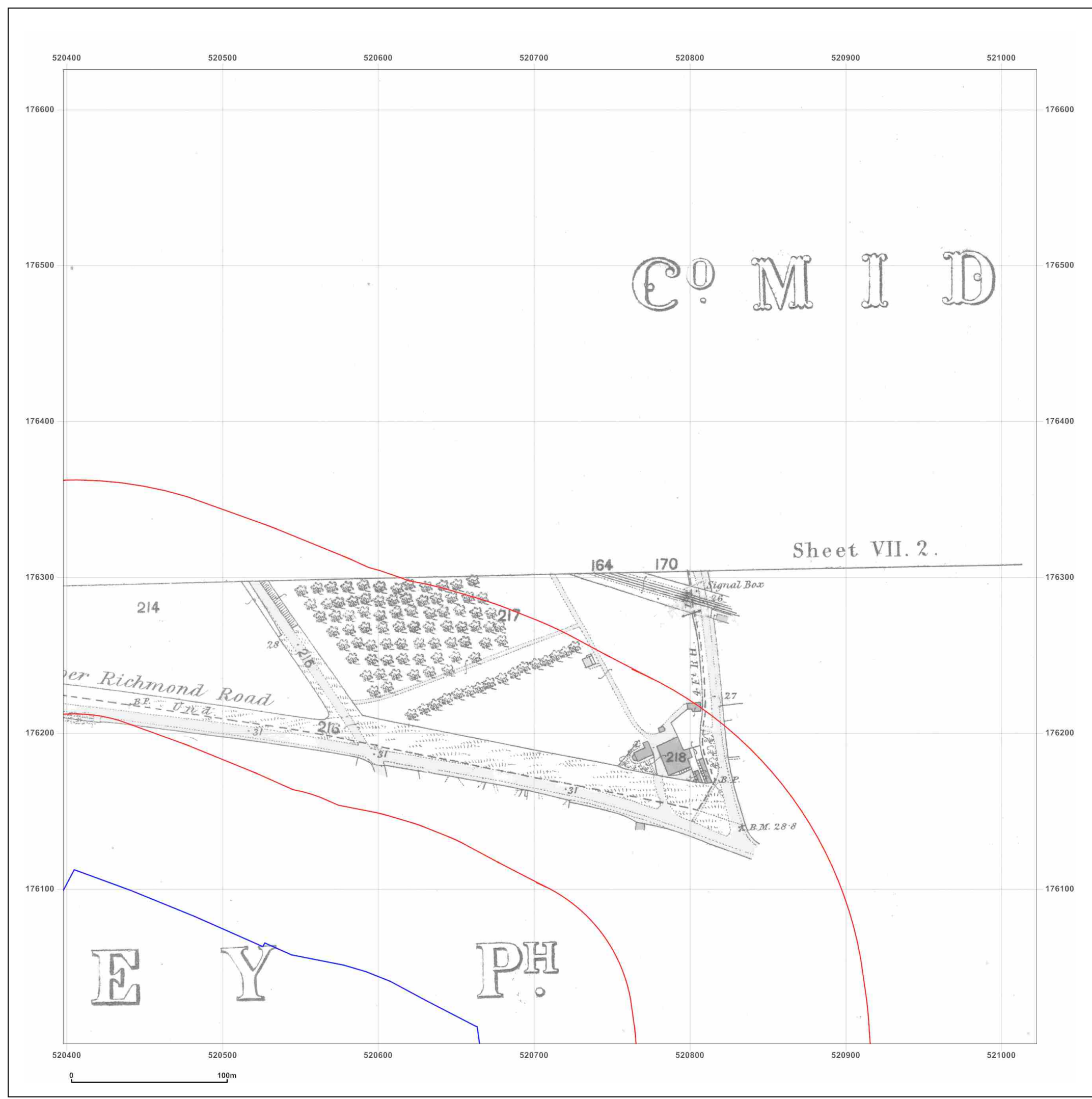
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1869
Revised 1869
Edition N/A
Copyright N/A
Levelled N/A



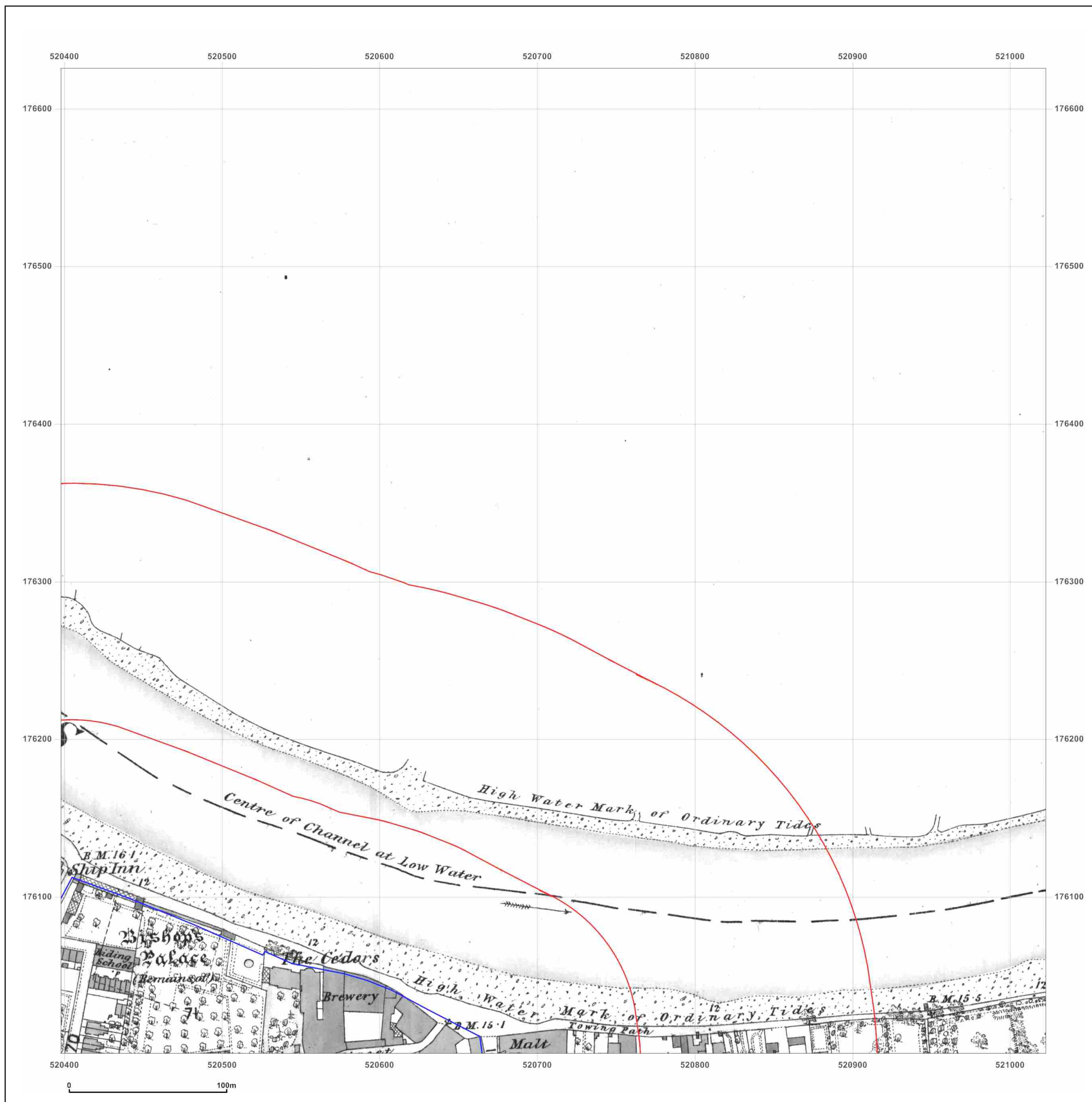
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1869
Revised 1869
Edition N/A
Copyright N/A
Levelled N/A



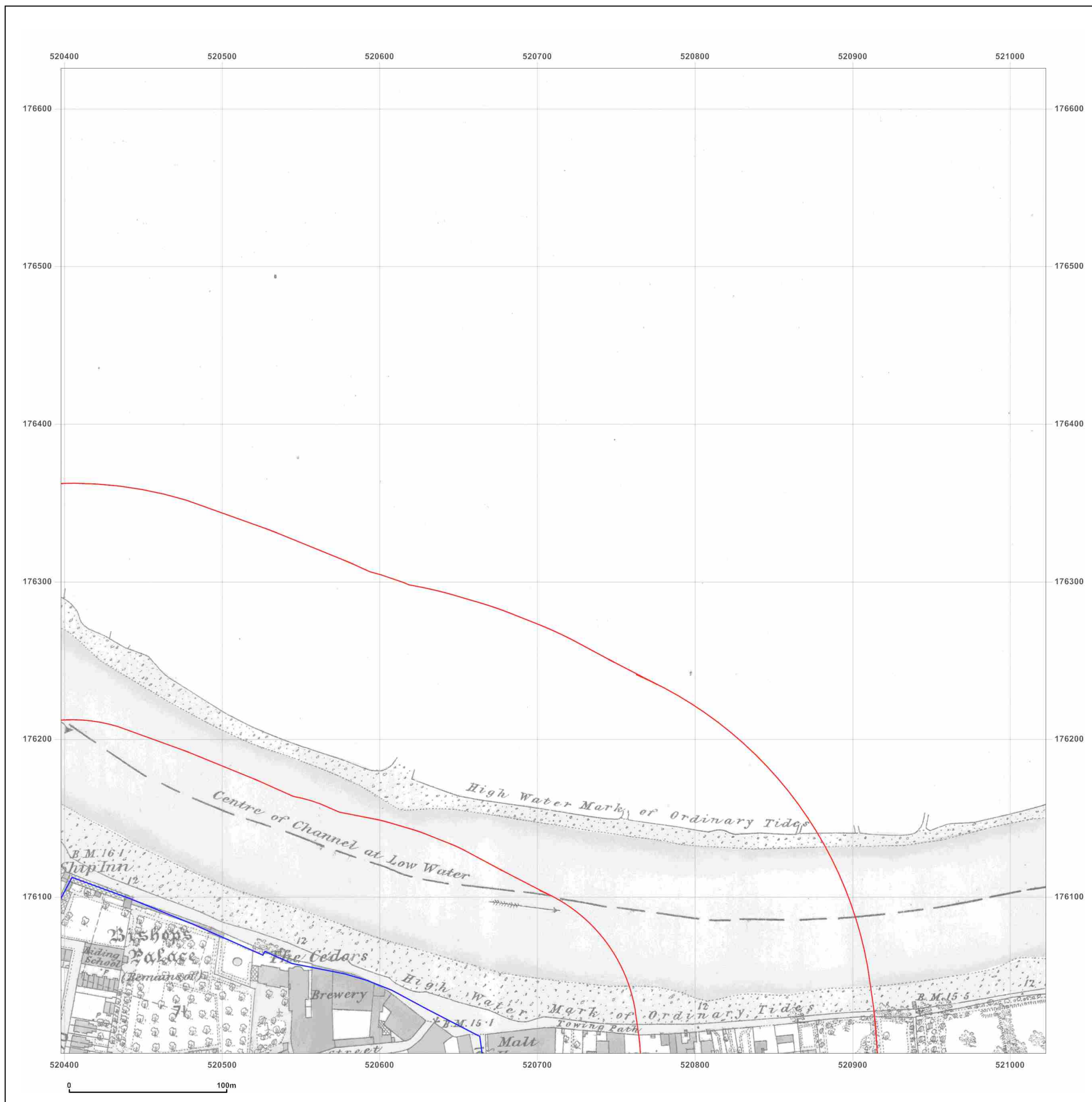
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Site Details:

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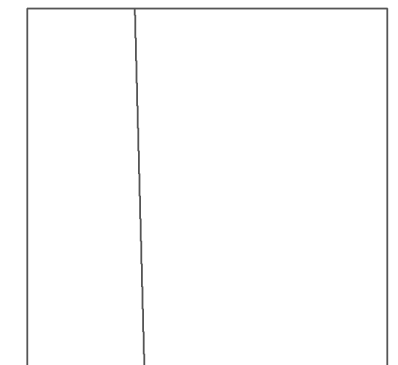
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Map Name: County Series

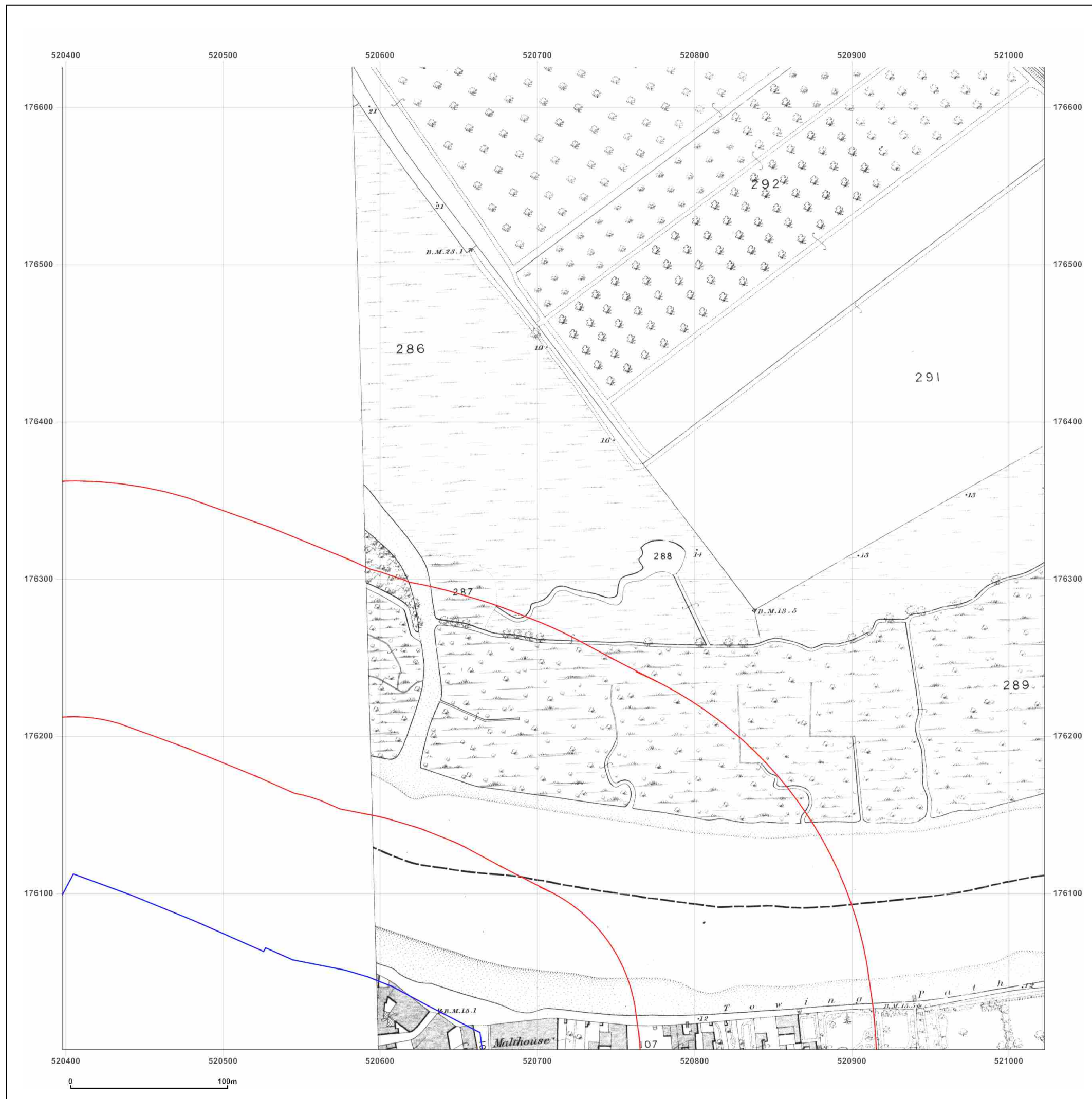
Map date: 1870

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
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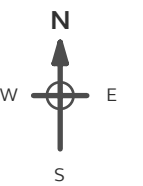
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Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1896

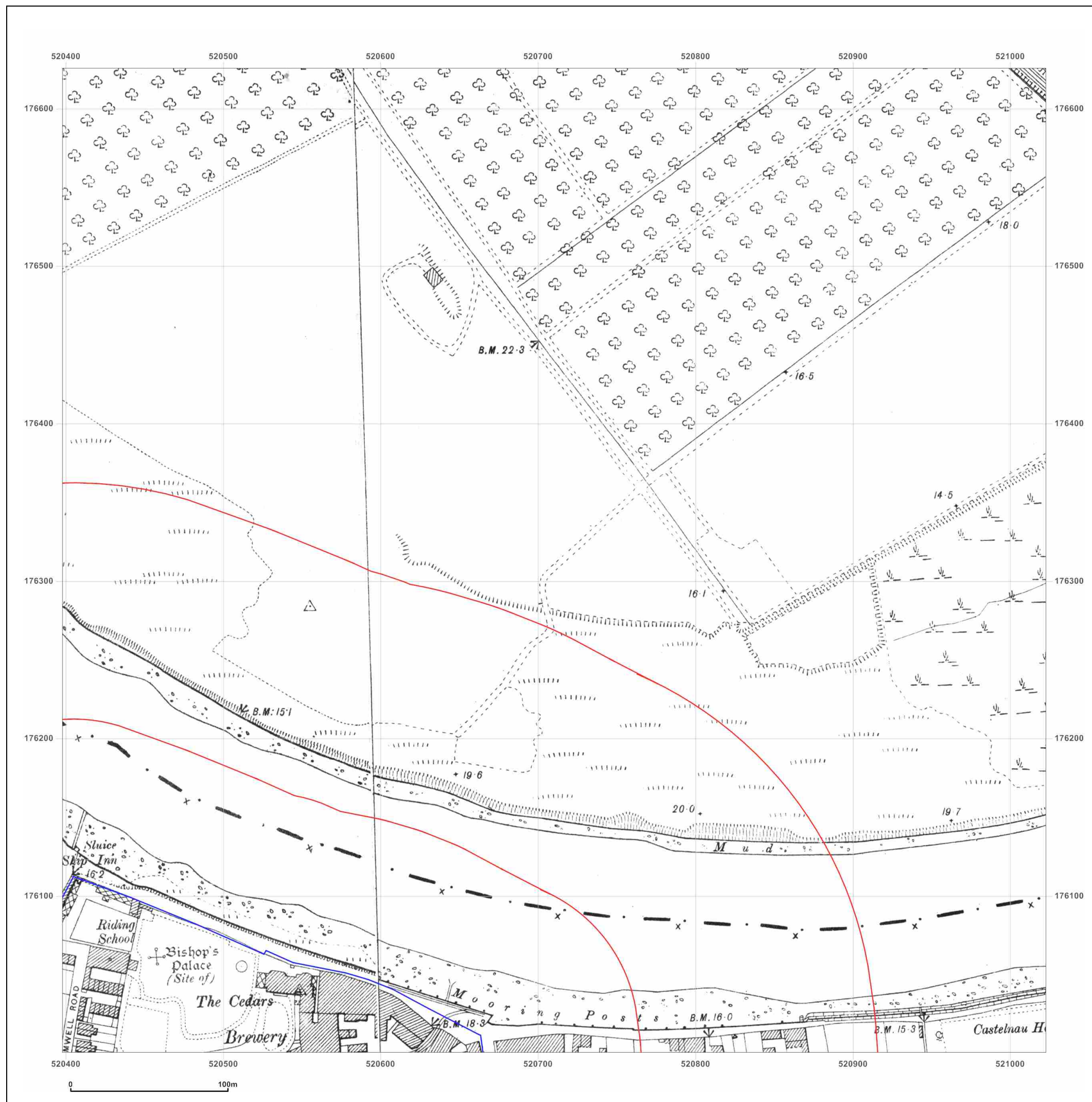
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1896
Revised 1896
Edition N/A
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Surveyed 1896
Revised 1896
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1913

Scale: 1:2,500

Printed at: 1:2,500



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



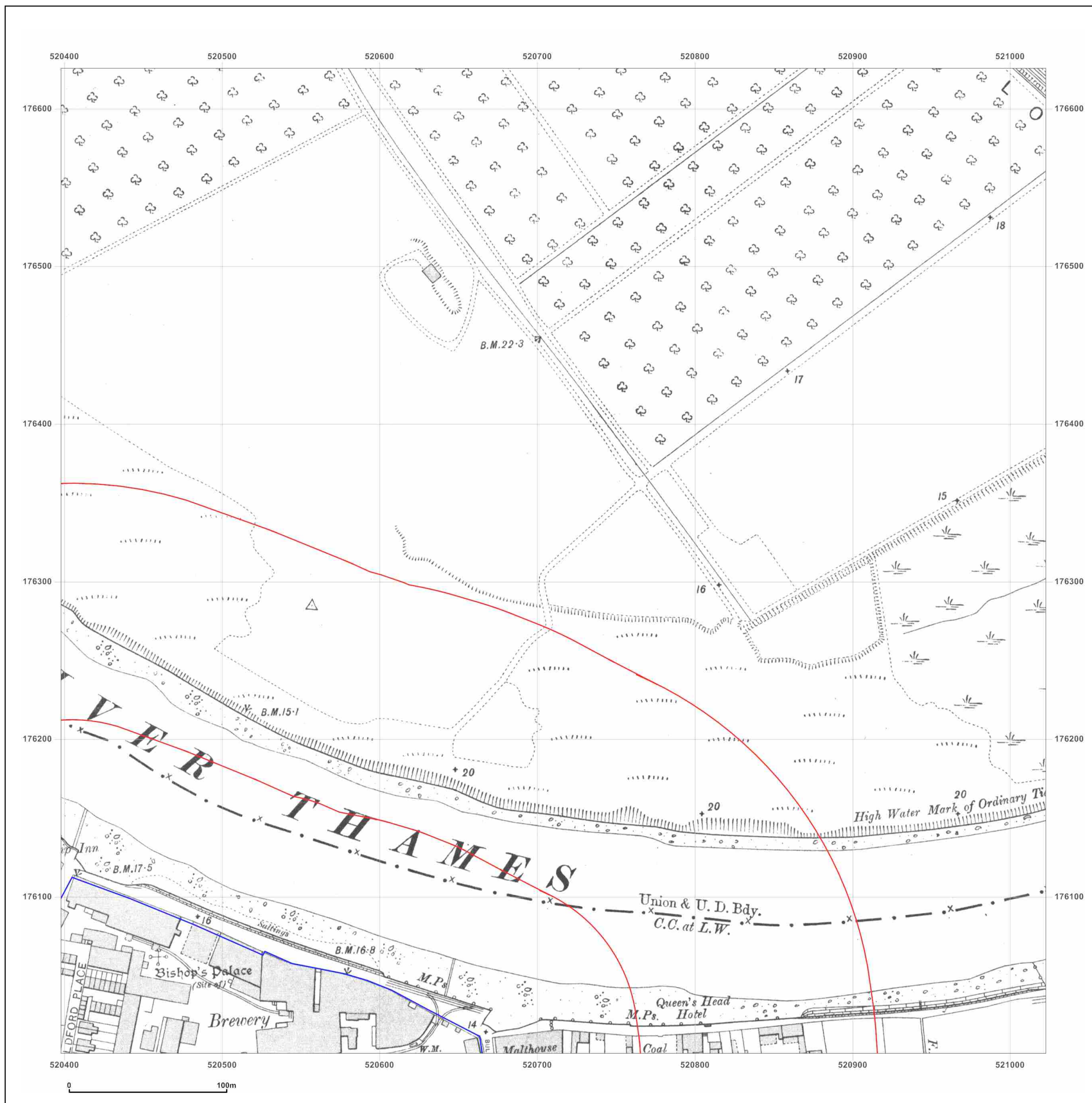
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1914-1915

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1915
Revised 1915
Edition N/A
Copyright N/A
Levelled N/A

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



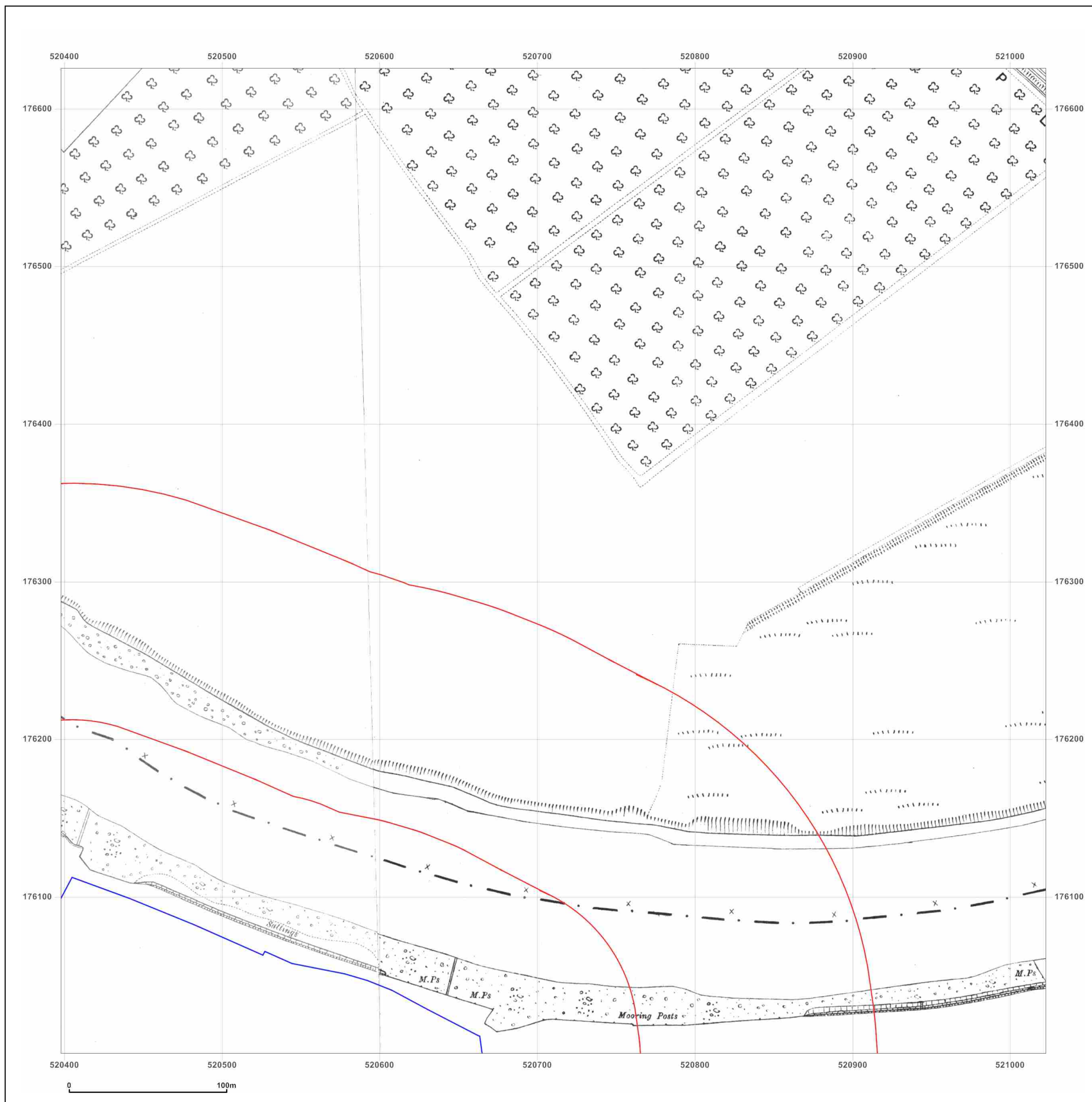
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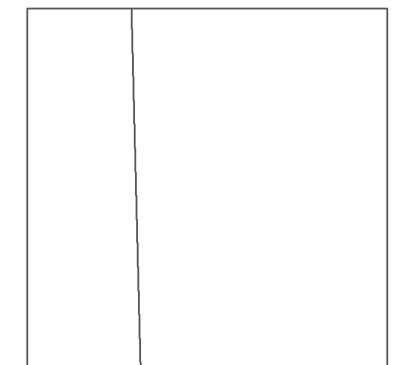
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Map Name: County Series

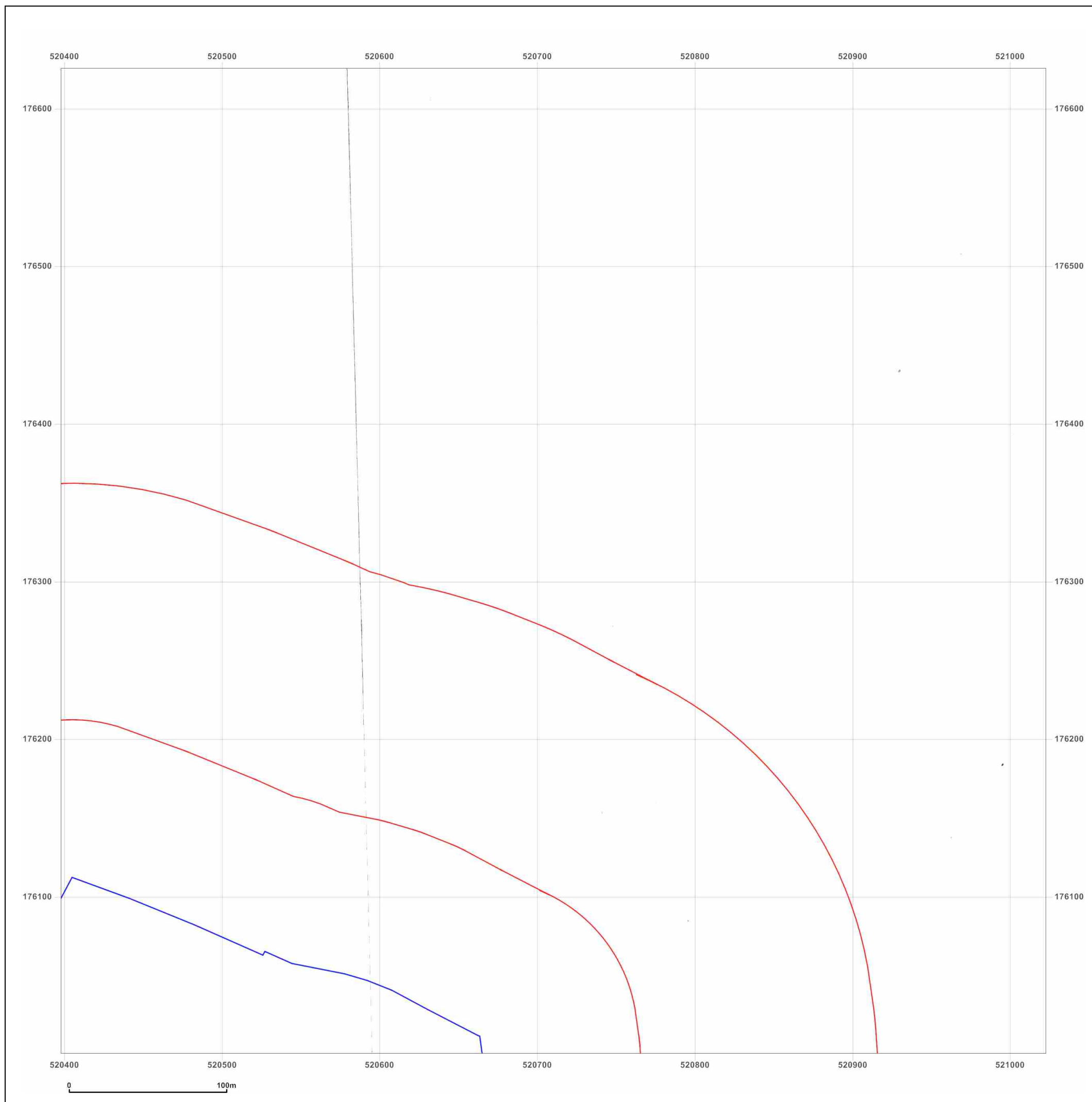
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Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1915
Revised 1915
Edition N/A
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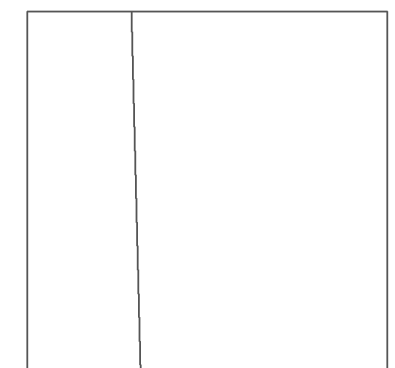
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Map Name: County Series

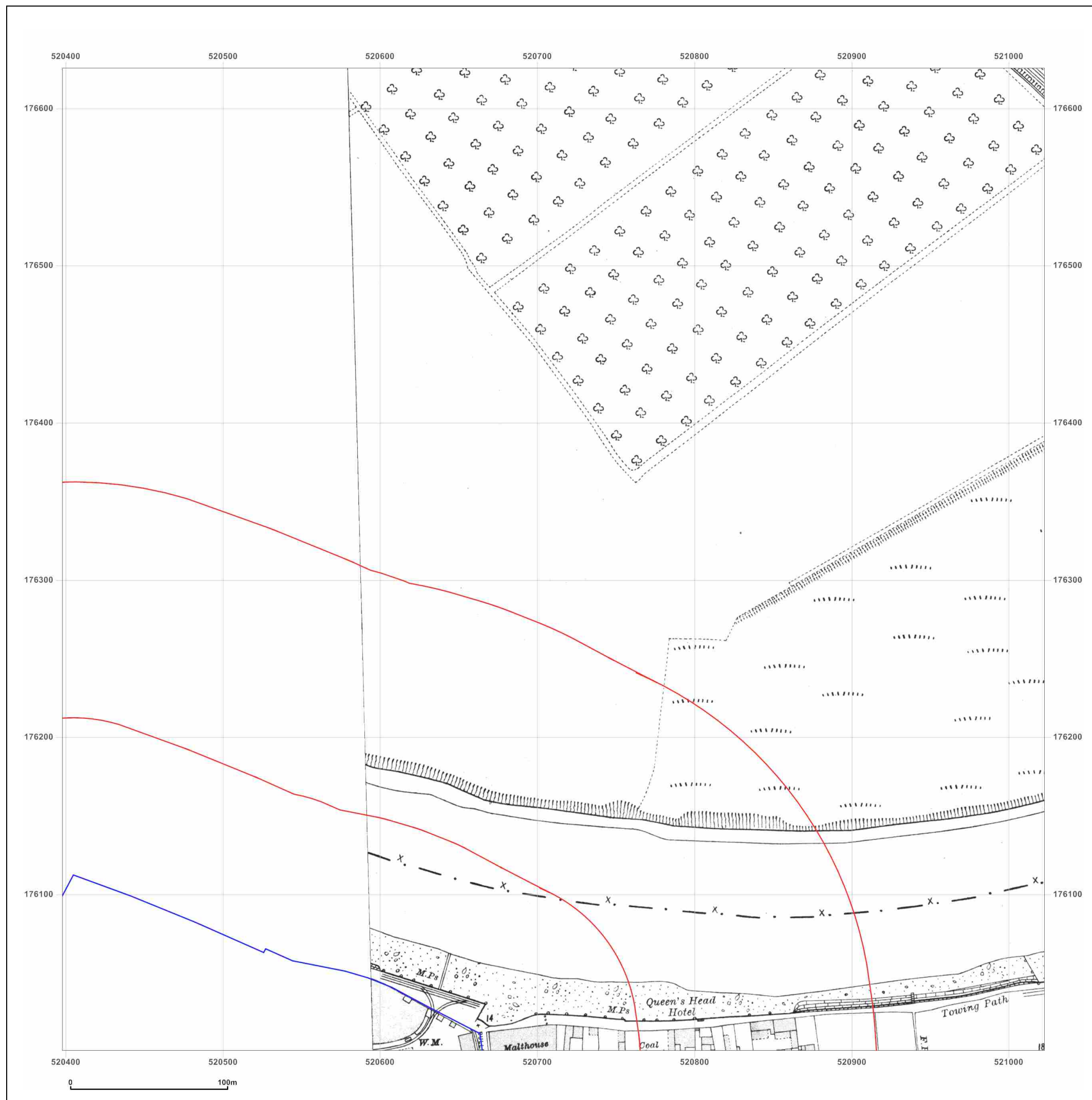
Map date: 1919

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1919
Revised 1919
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1933

Scale: 1:2,500

Printed at: 1:2,500



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



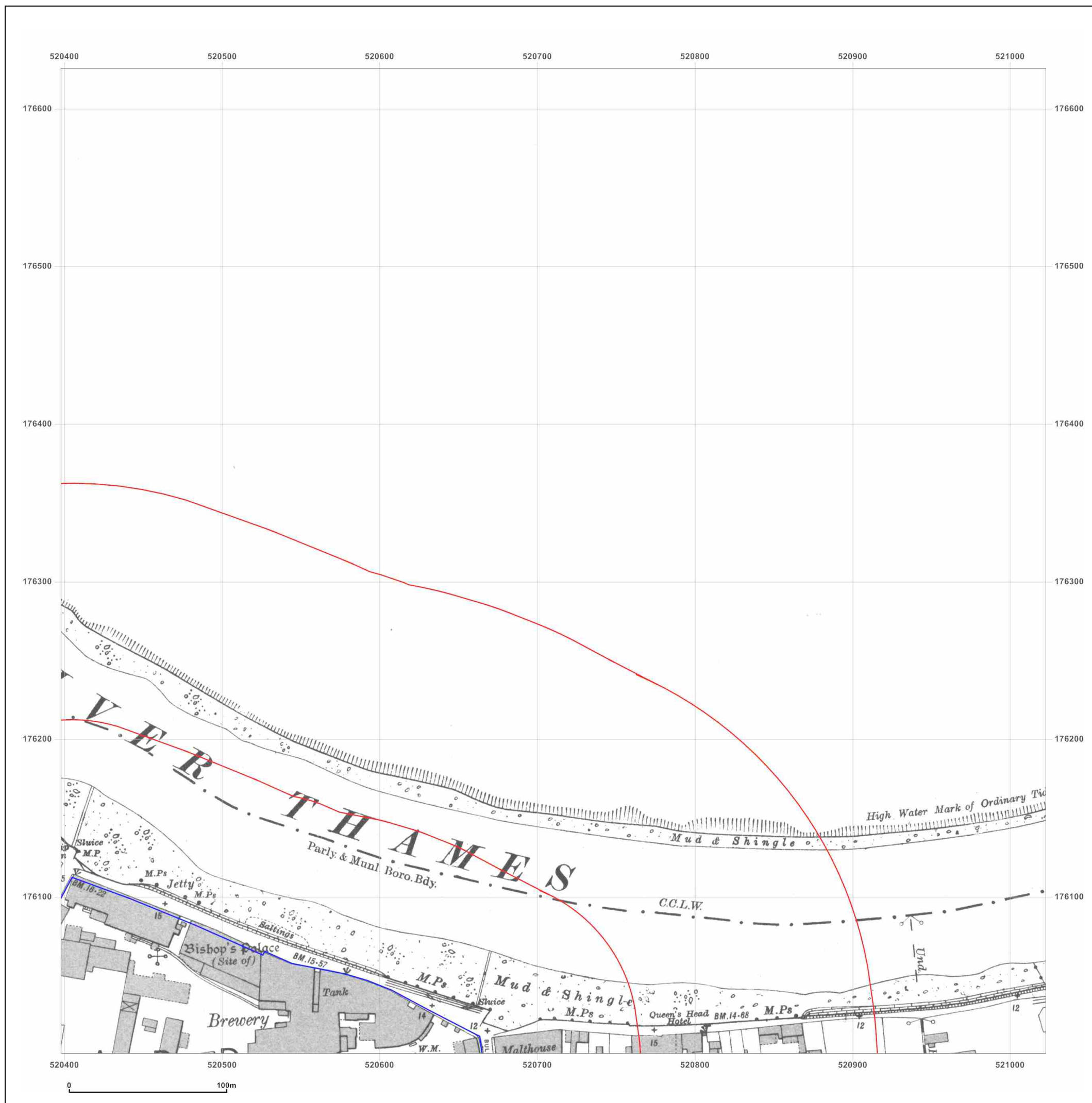
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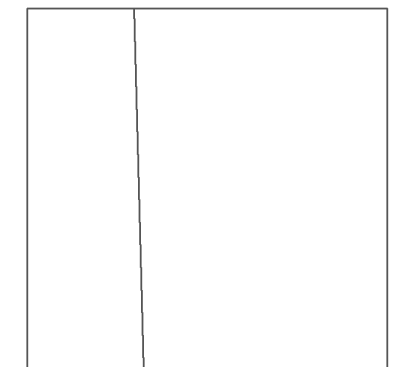
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Map Name: County Series

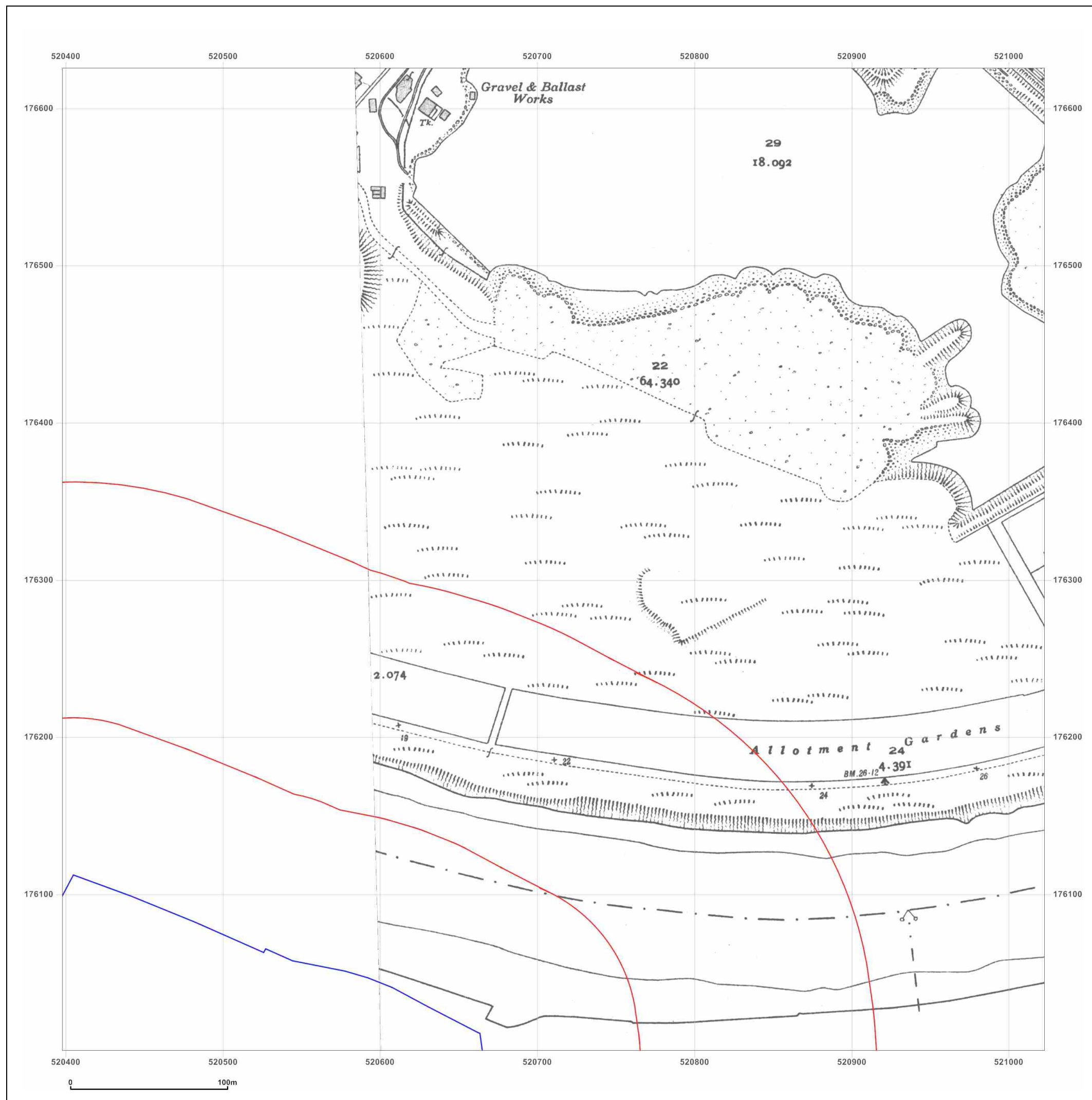
Map date: 1934

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1934
Revised 1934
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: County Series

Map date: 1940

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1940
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A



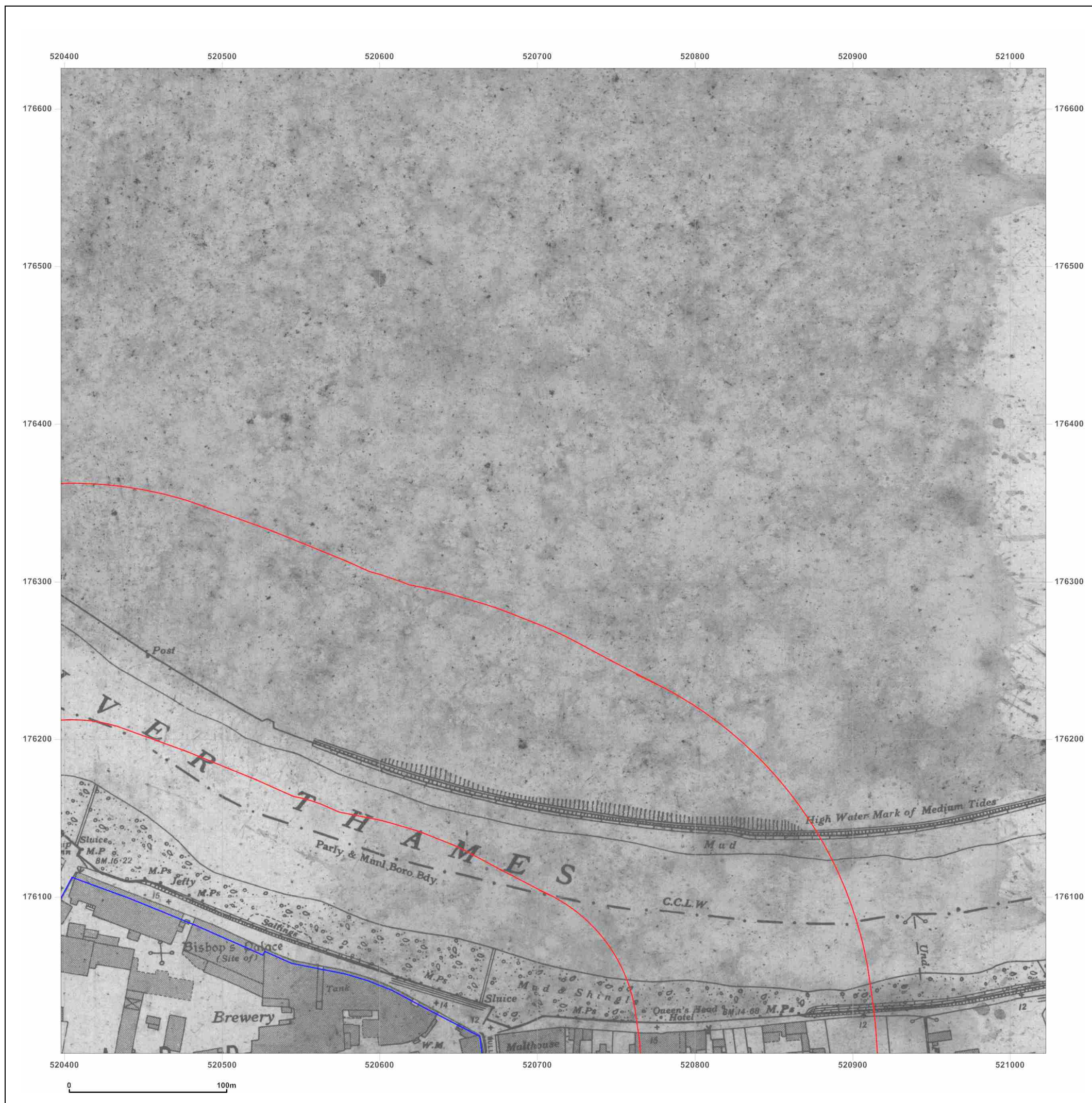
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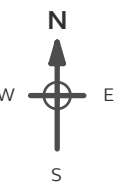
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Grid Ref: 520710, 176313

Map Name: National Grid

Map date: 1951

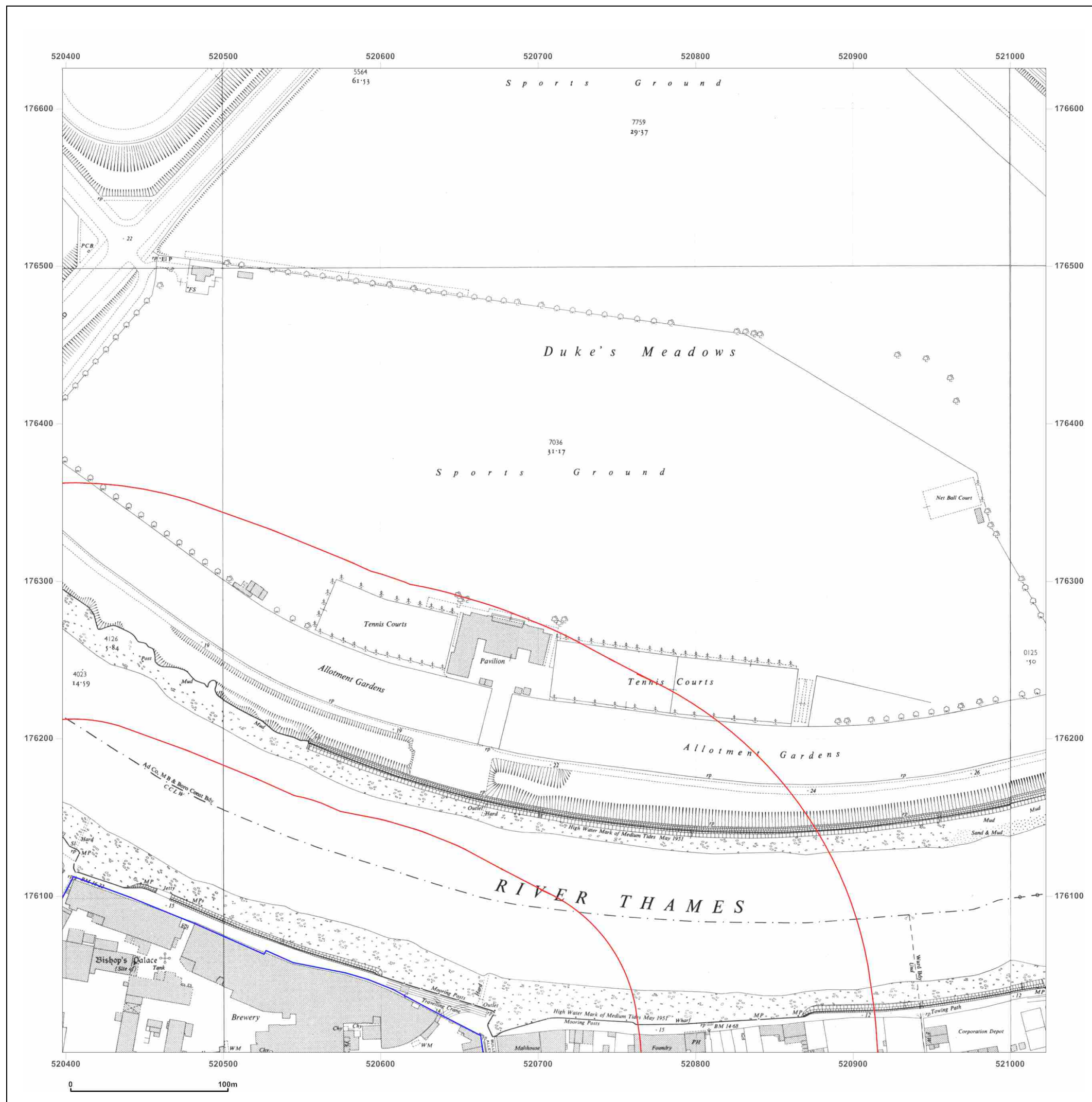
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Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932



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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: National Grid

Map date: 1951

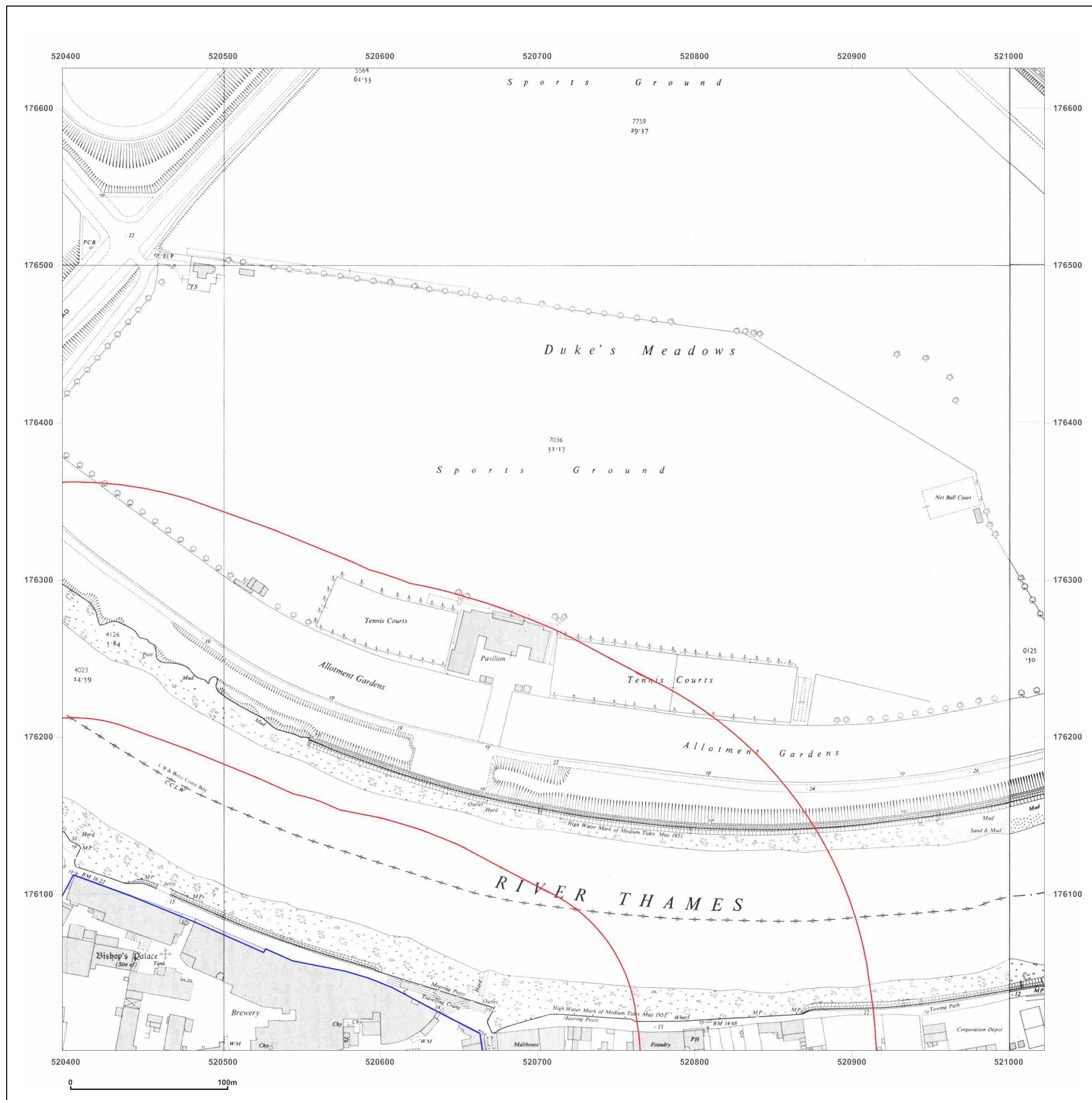
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Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932

Surveyed 1951
Revised 1951
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: National Grid

Map date: 1966

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1967
Revised 1967
Edition N/A
Copyright 1968
Levelled 1954



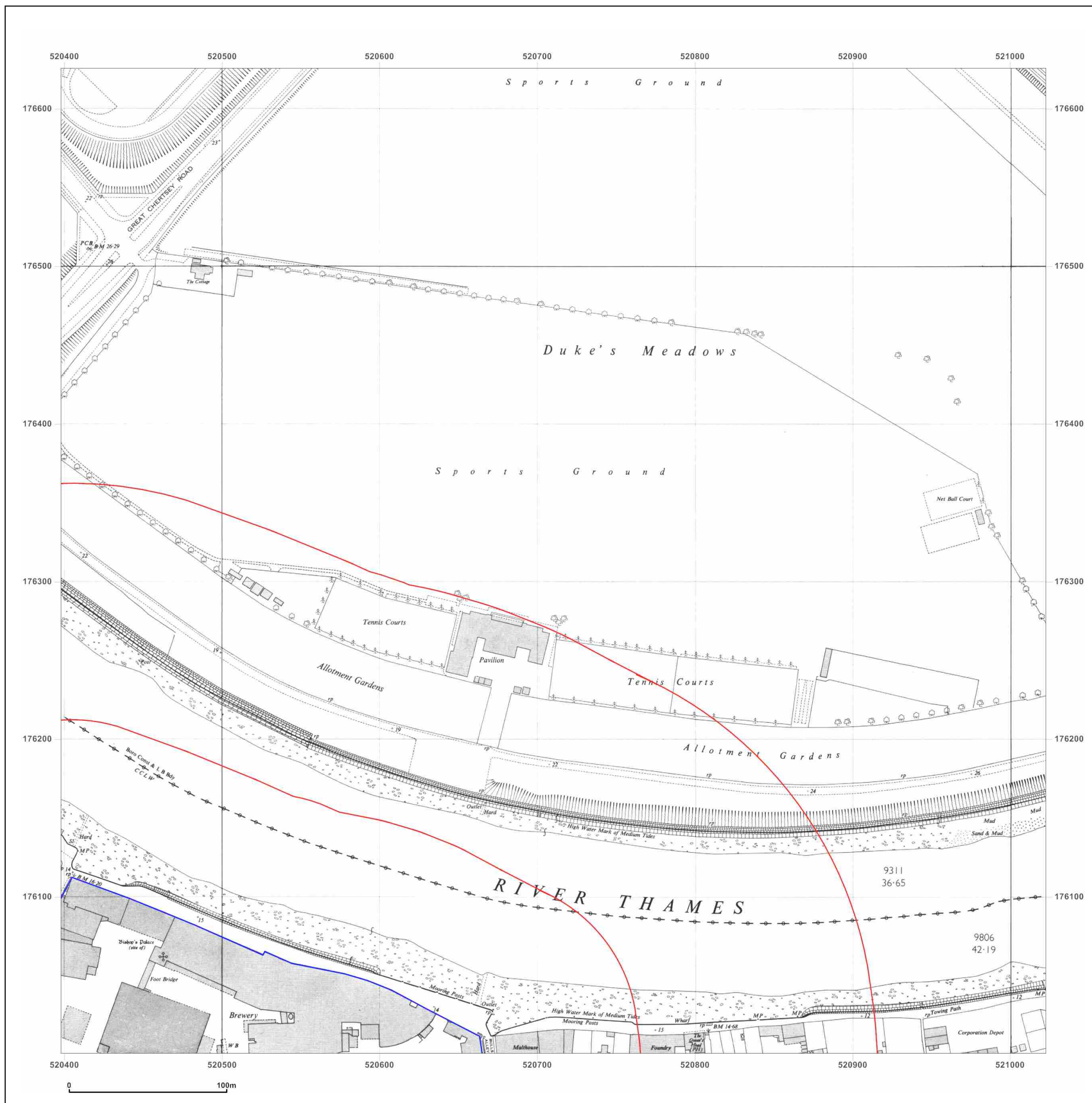
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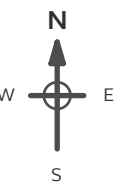
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Report Ref: WTM1-6181570_LS_2_2
Grid Ref: 520710, 176313

Map Name: National Grid

Map date: 1968

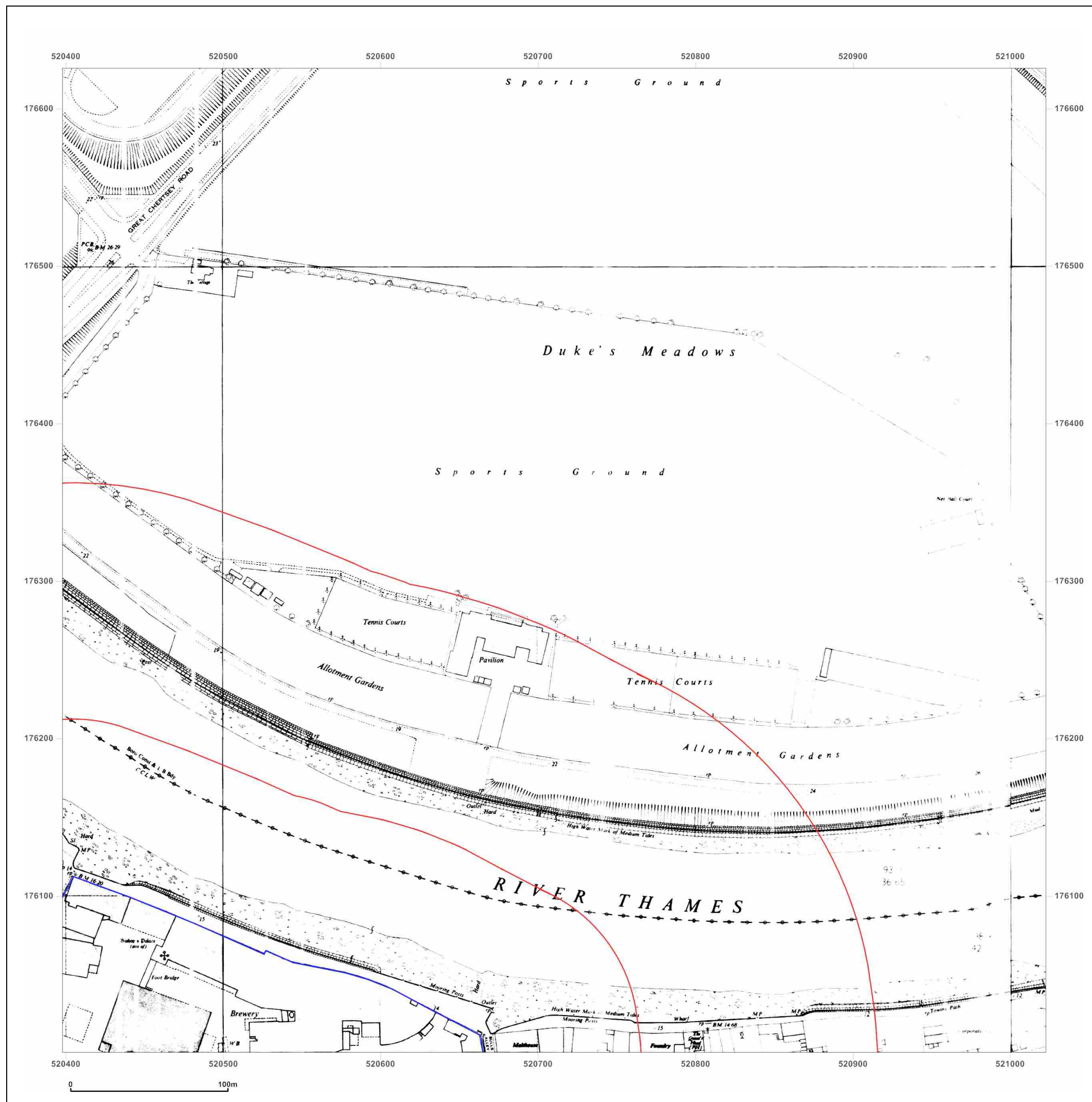
Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed N/A
Revised N/A
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1865-1868

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1867
Revised 1867
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1866
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1868
Revised 1868
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1865
Edition N/A
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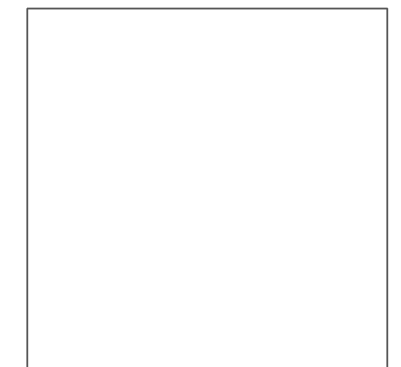
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

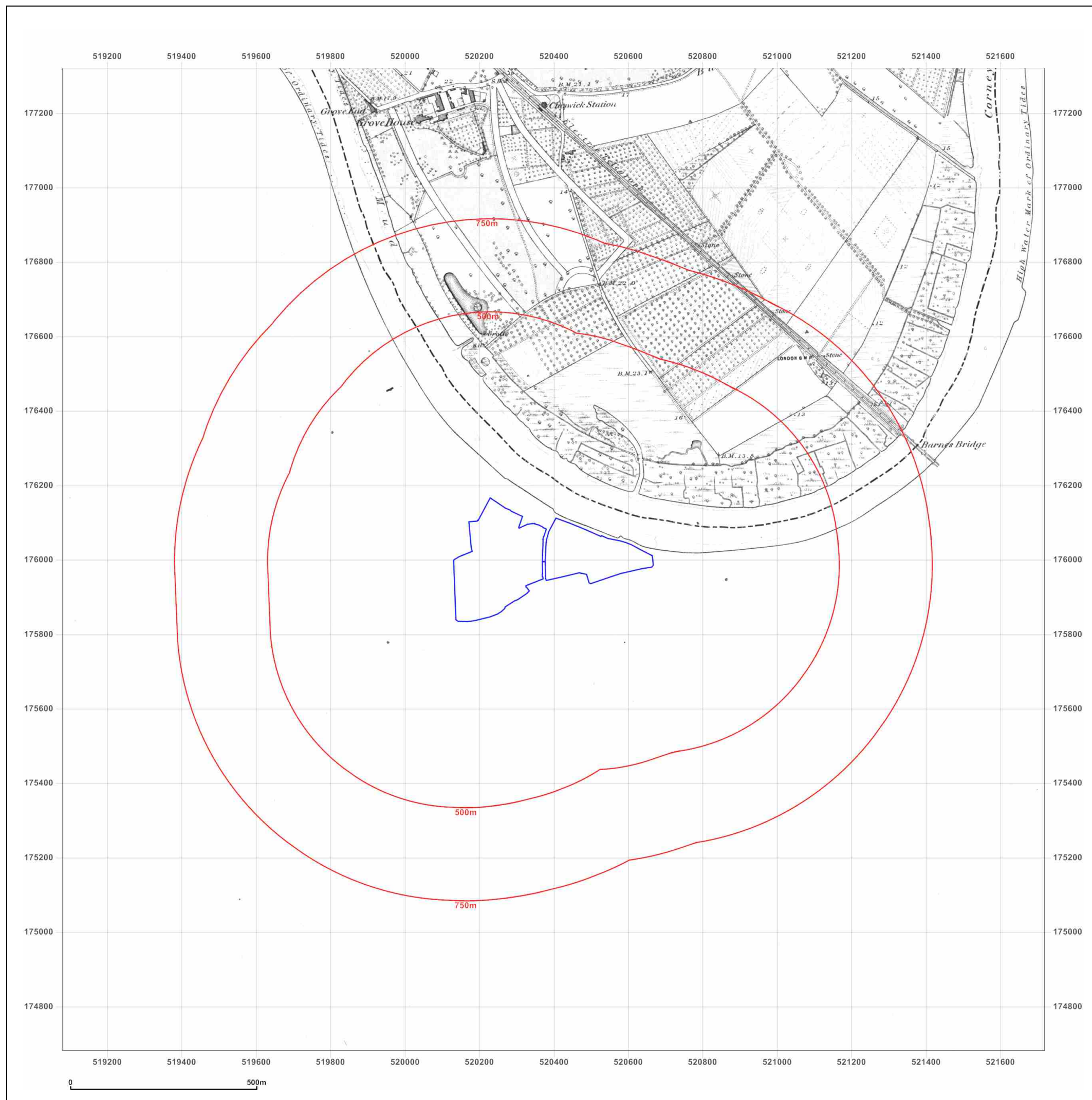
Map date: 1873

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1873
Edition N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1893-1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1868
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1867
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A



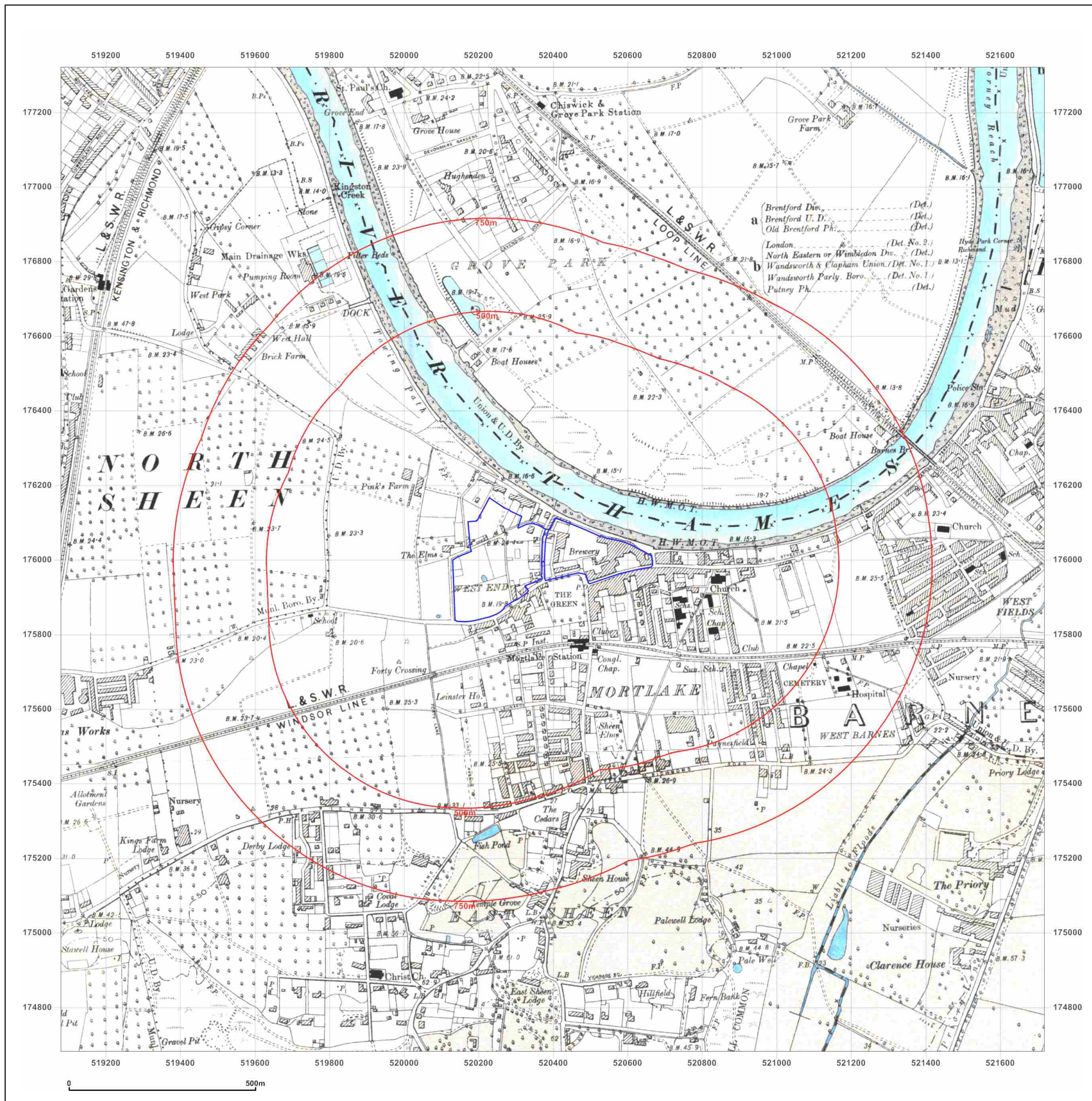
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1893
Revised N/A
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1894-1898

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1894
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Surveyed 1895
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Edition N/A
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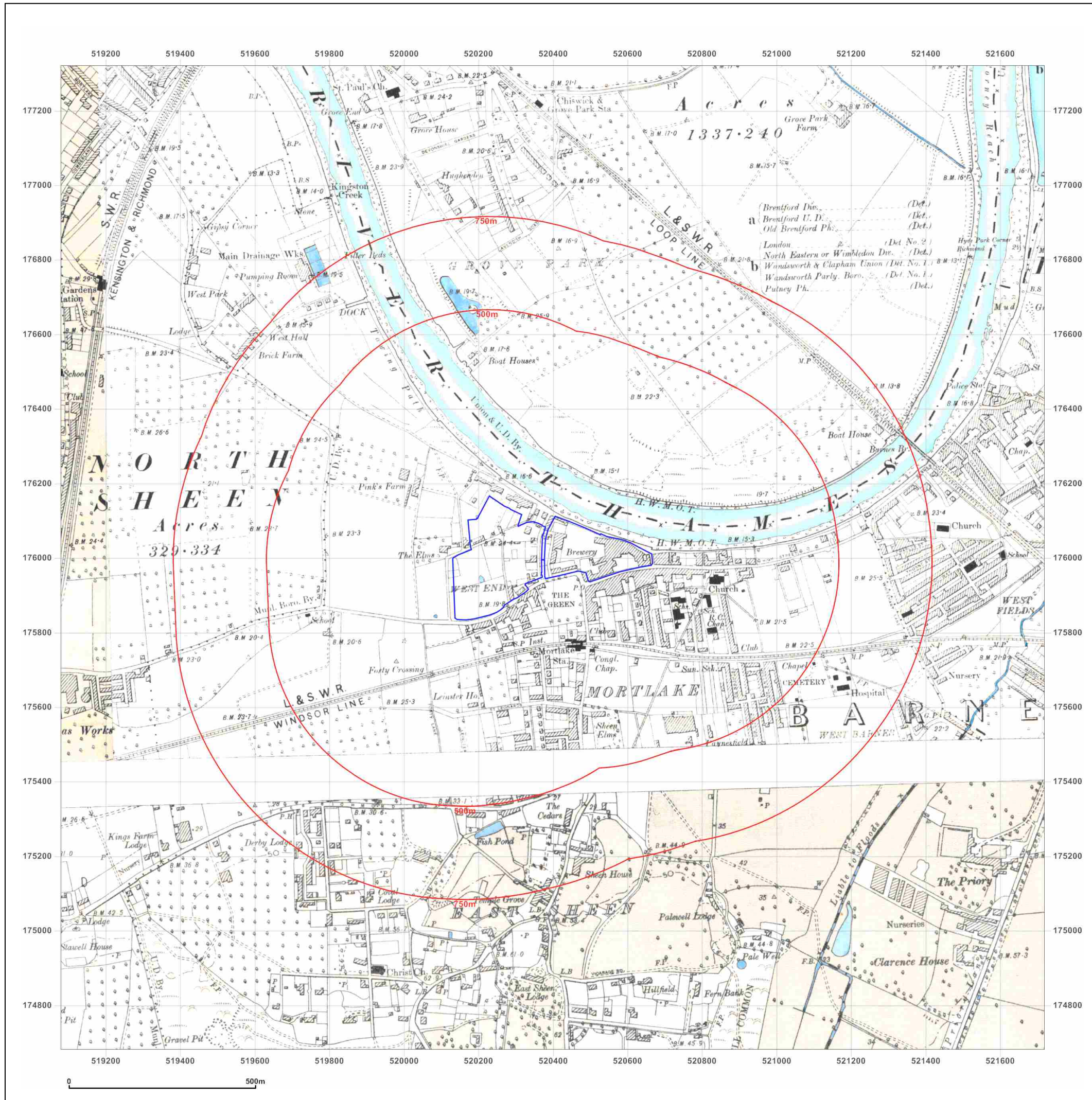
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1894-1899

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1894
Edition N/A
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Surveyed 1867
Revised 1895
Edition N/A
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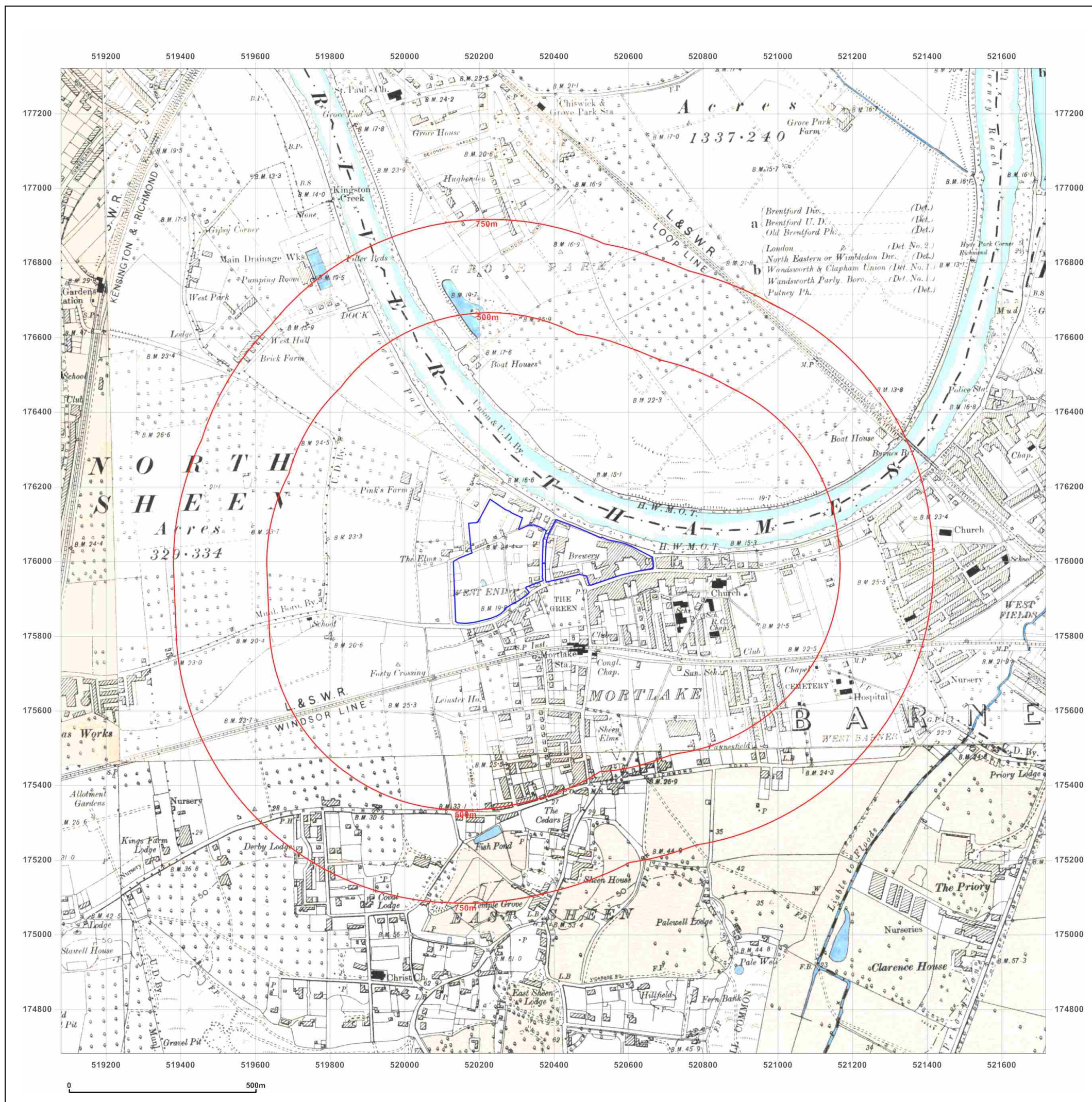
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1912-1913

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1866
Revised 1913
Edition N/A
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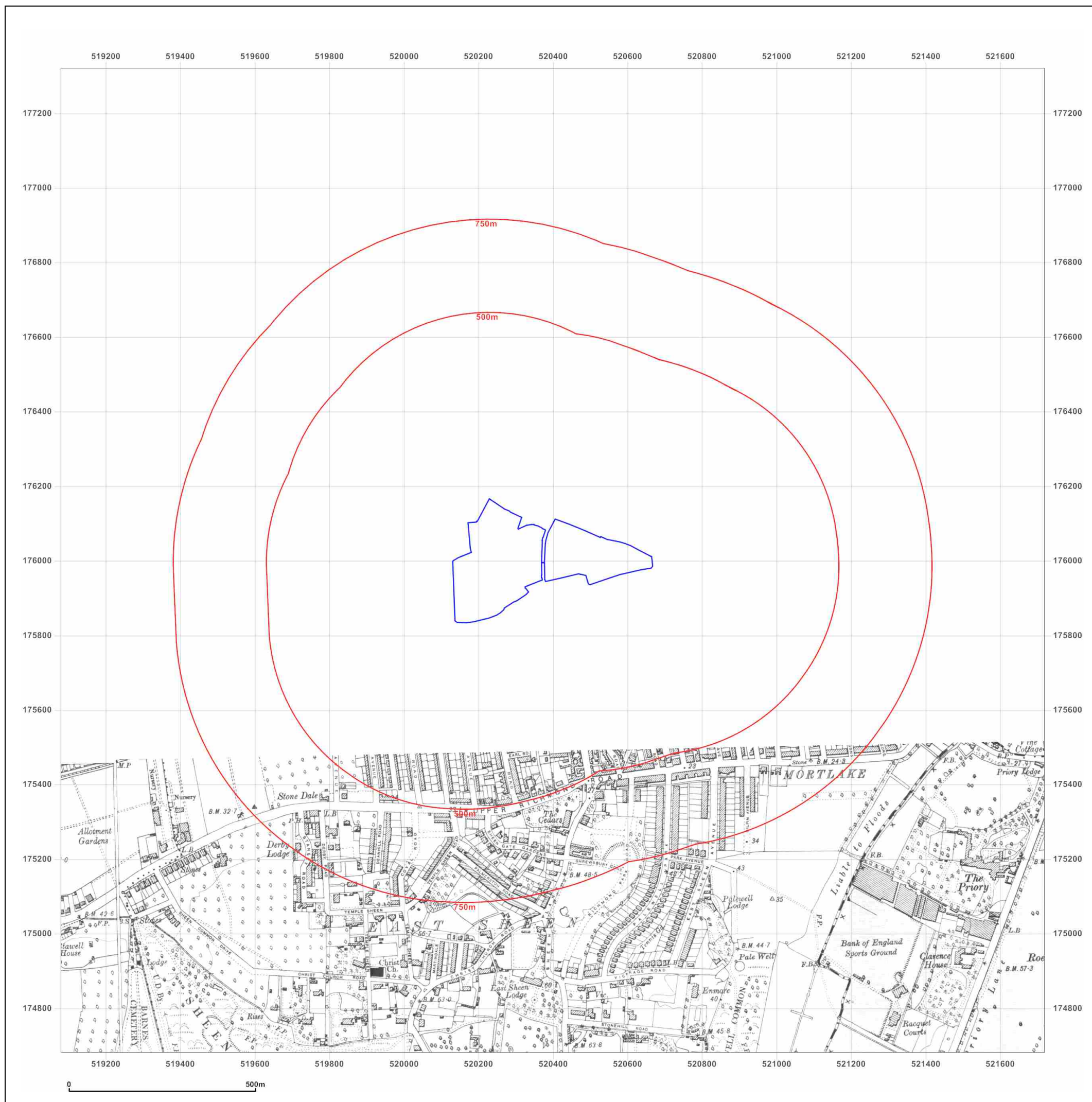
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1919-1920

Scale: 1:10,560

Printed at: 1:10,560



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Edition 1920
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Surveyed 1866
Revised 1919
Edition N/A
Copyright N/A
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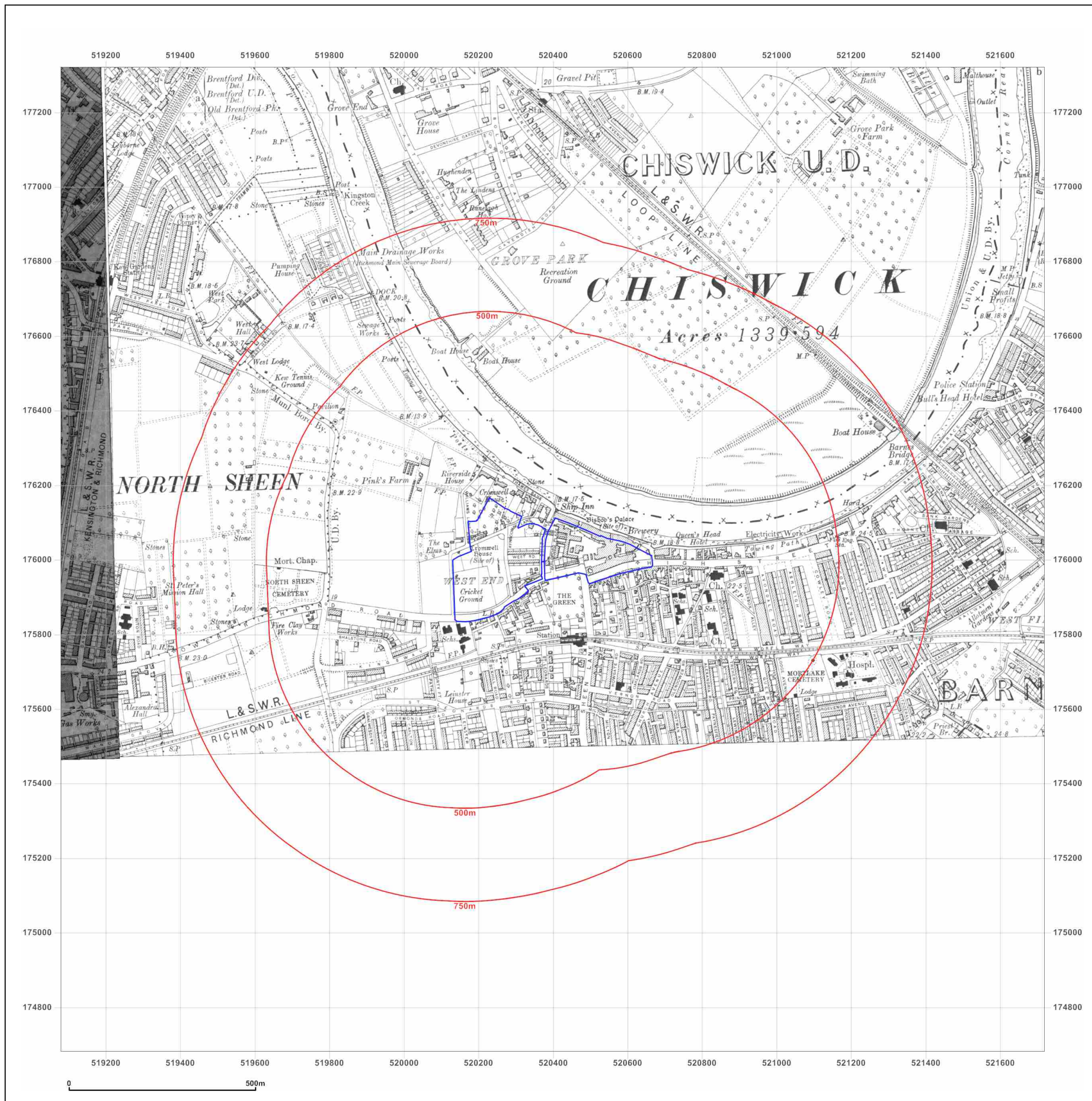
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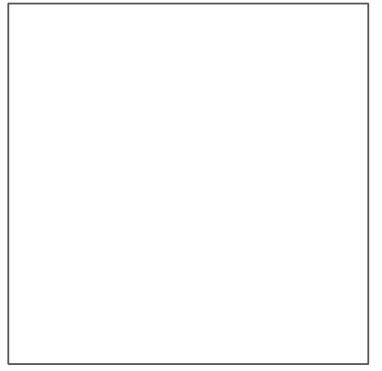
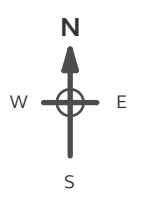
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1920

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1920
Edition N/A
Copyright N/A
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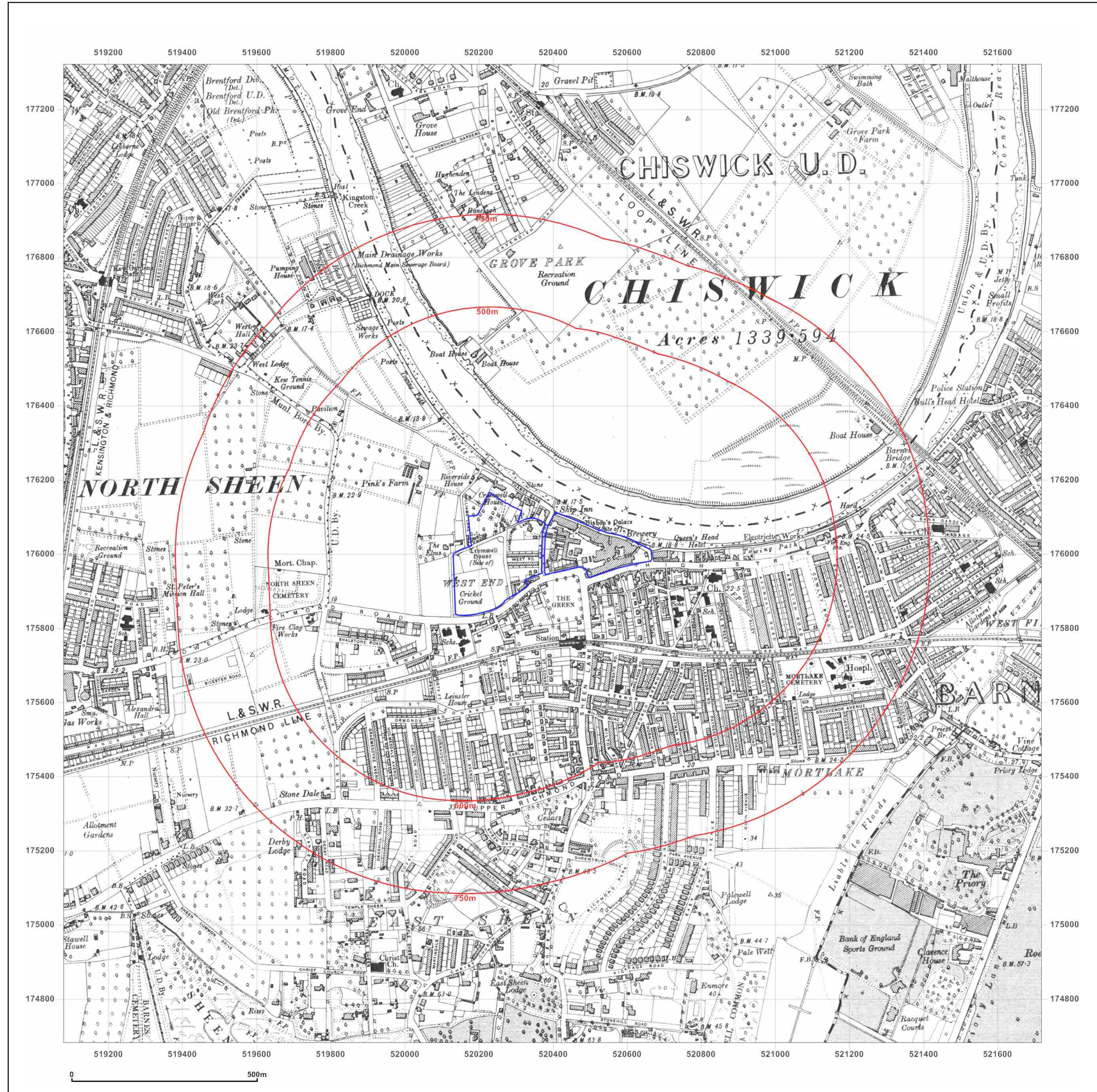
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1933

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1866
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Surveyed 1866
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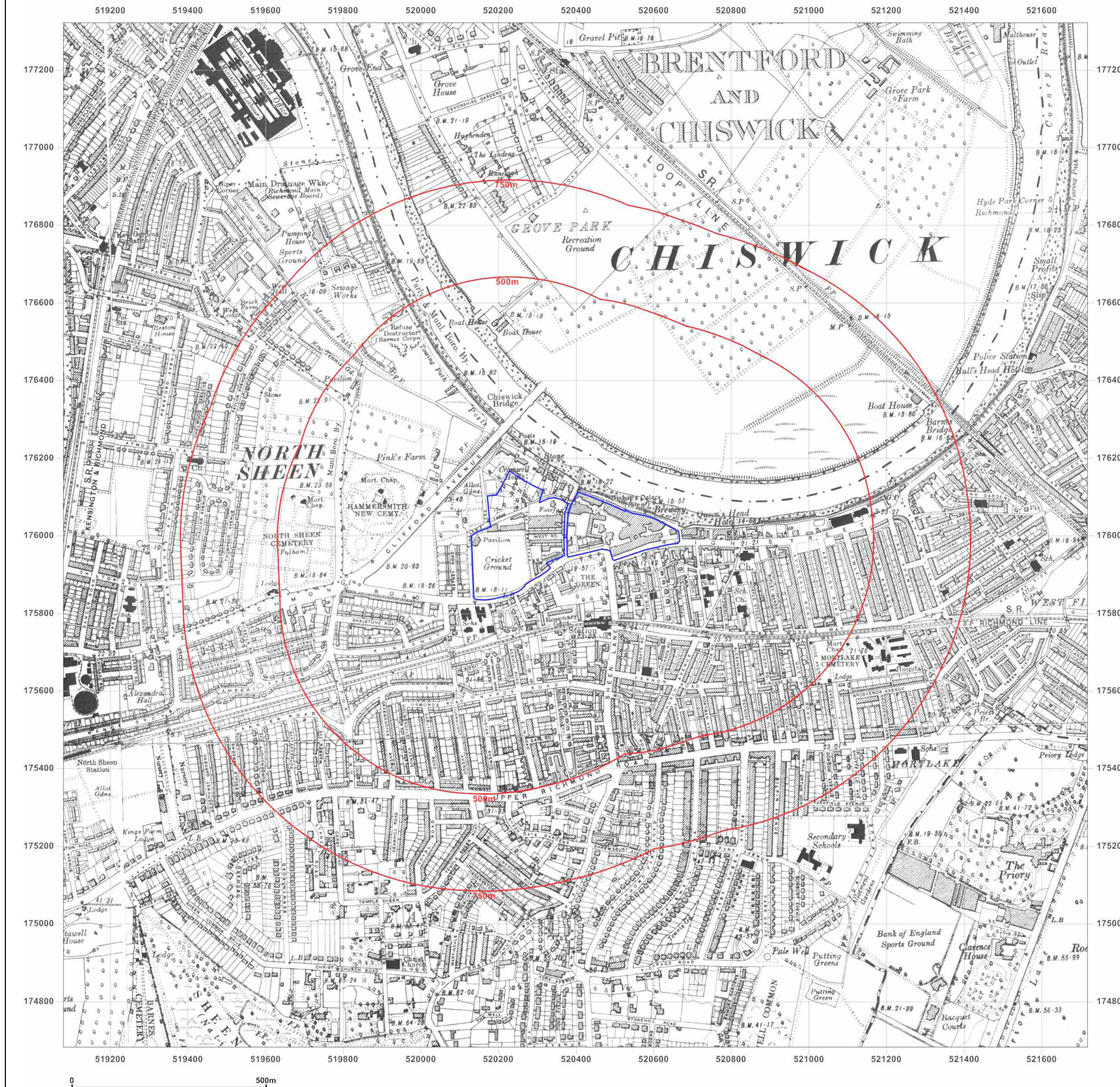
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1933-1938

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1866
Revised 1938
Edition N/A
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Edition 1938
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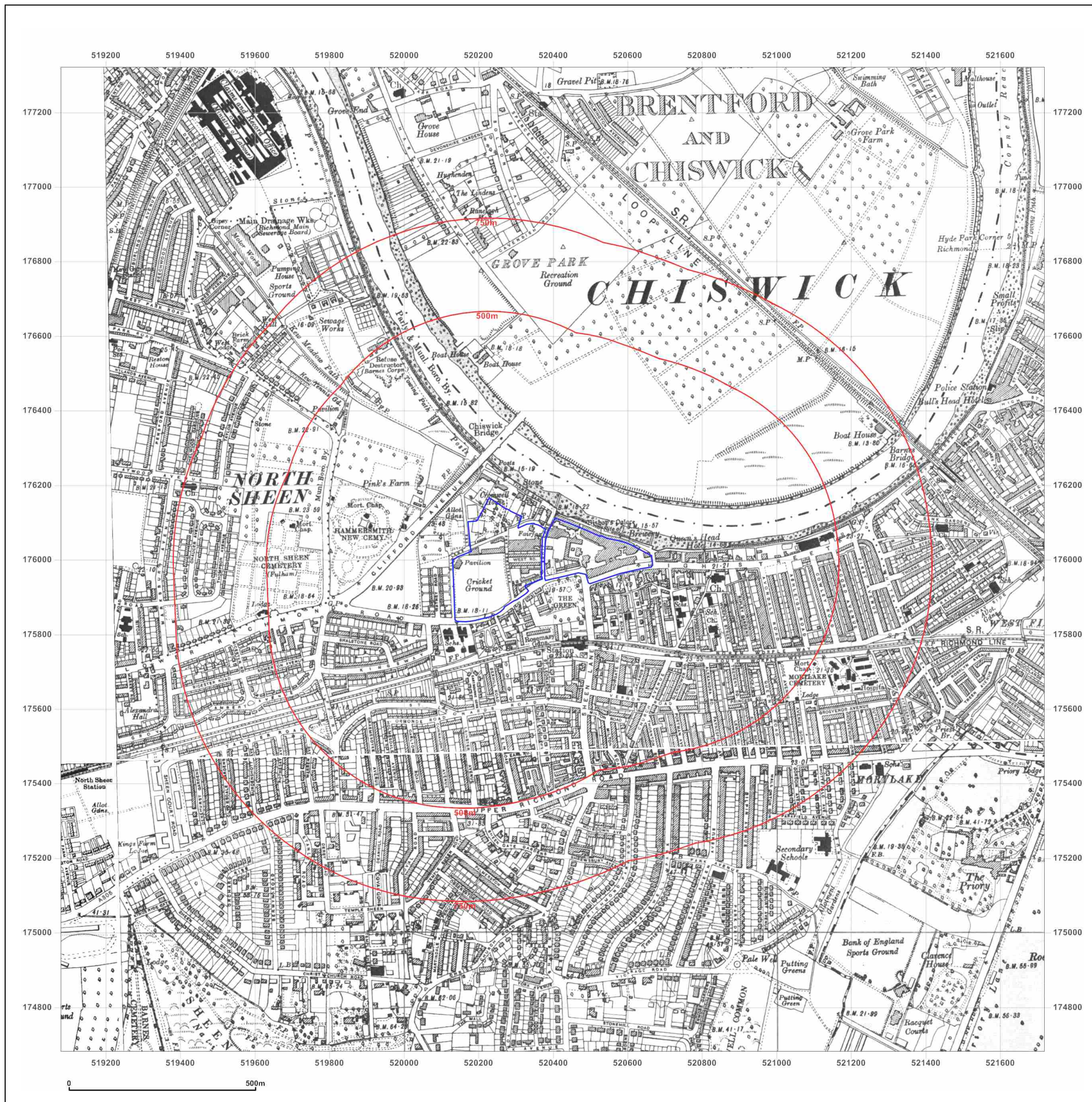
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1866
Revised 1938
Edition N/A
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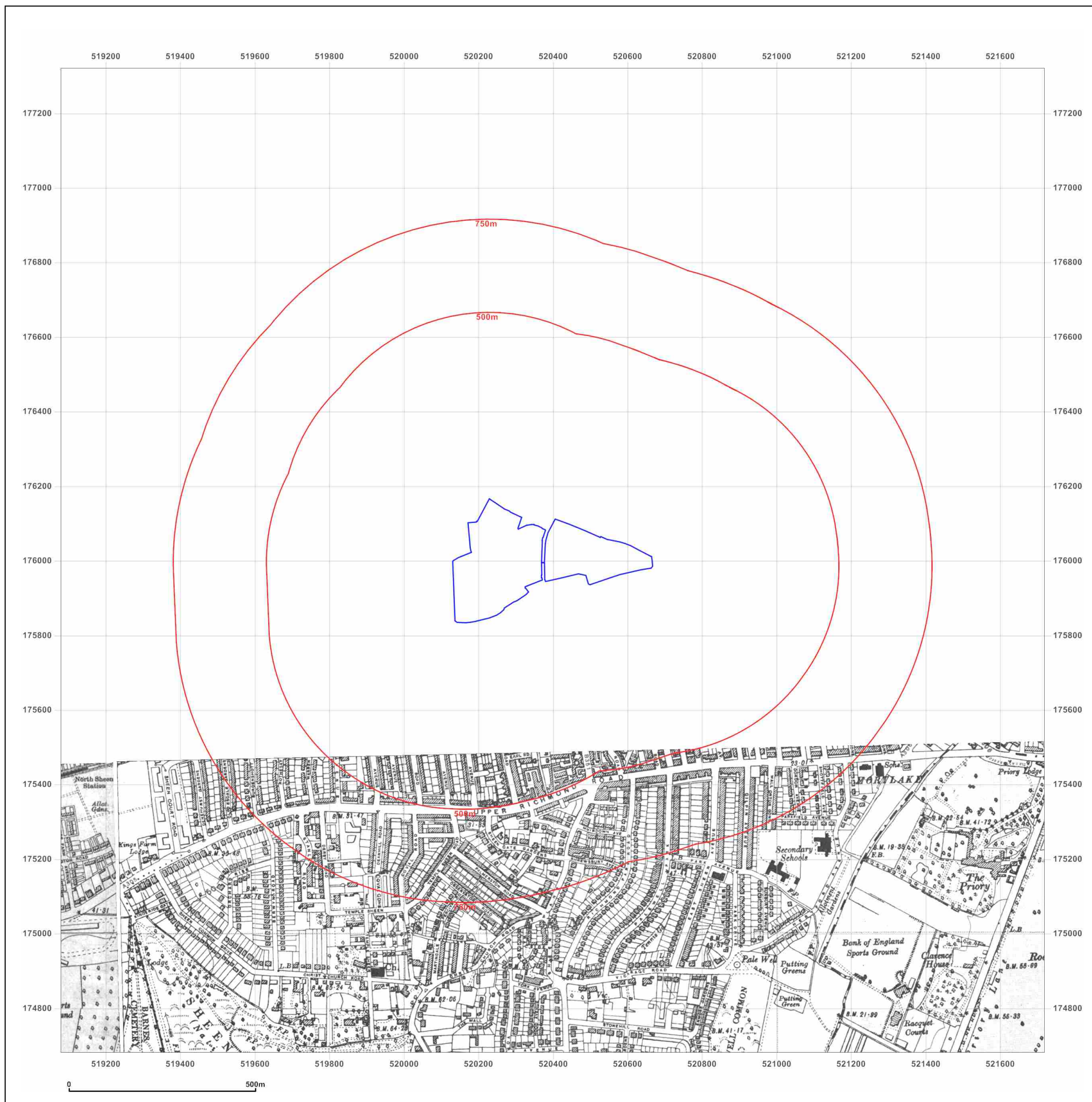
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1867
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



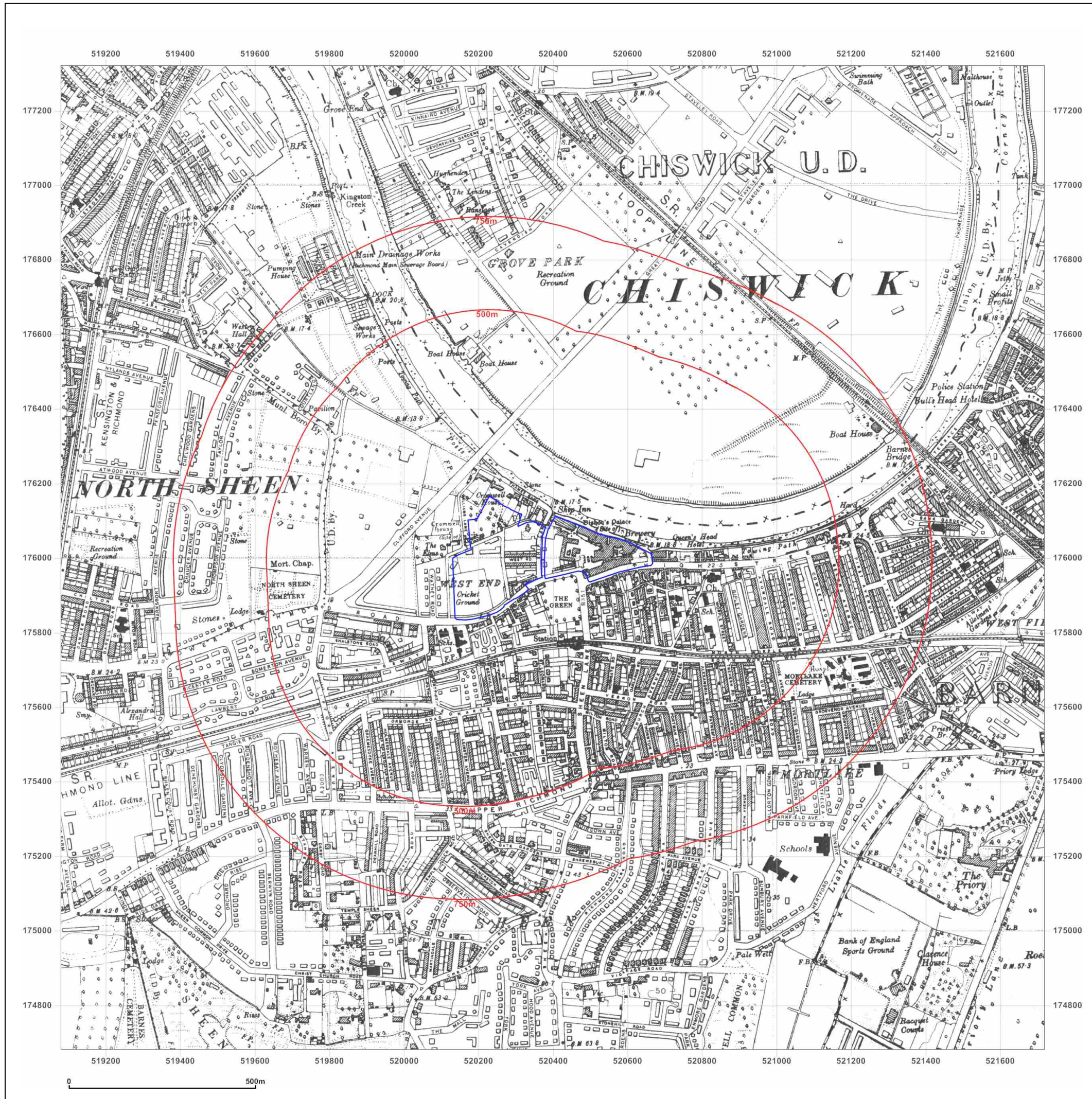
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: Provisional

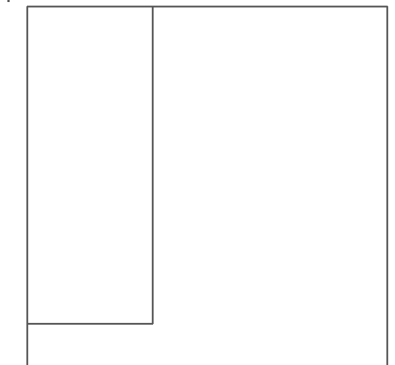
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Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1948
Edition N/A
Copyright N/A
Levelled 1934



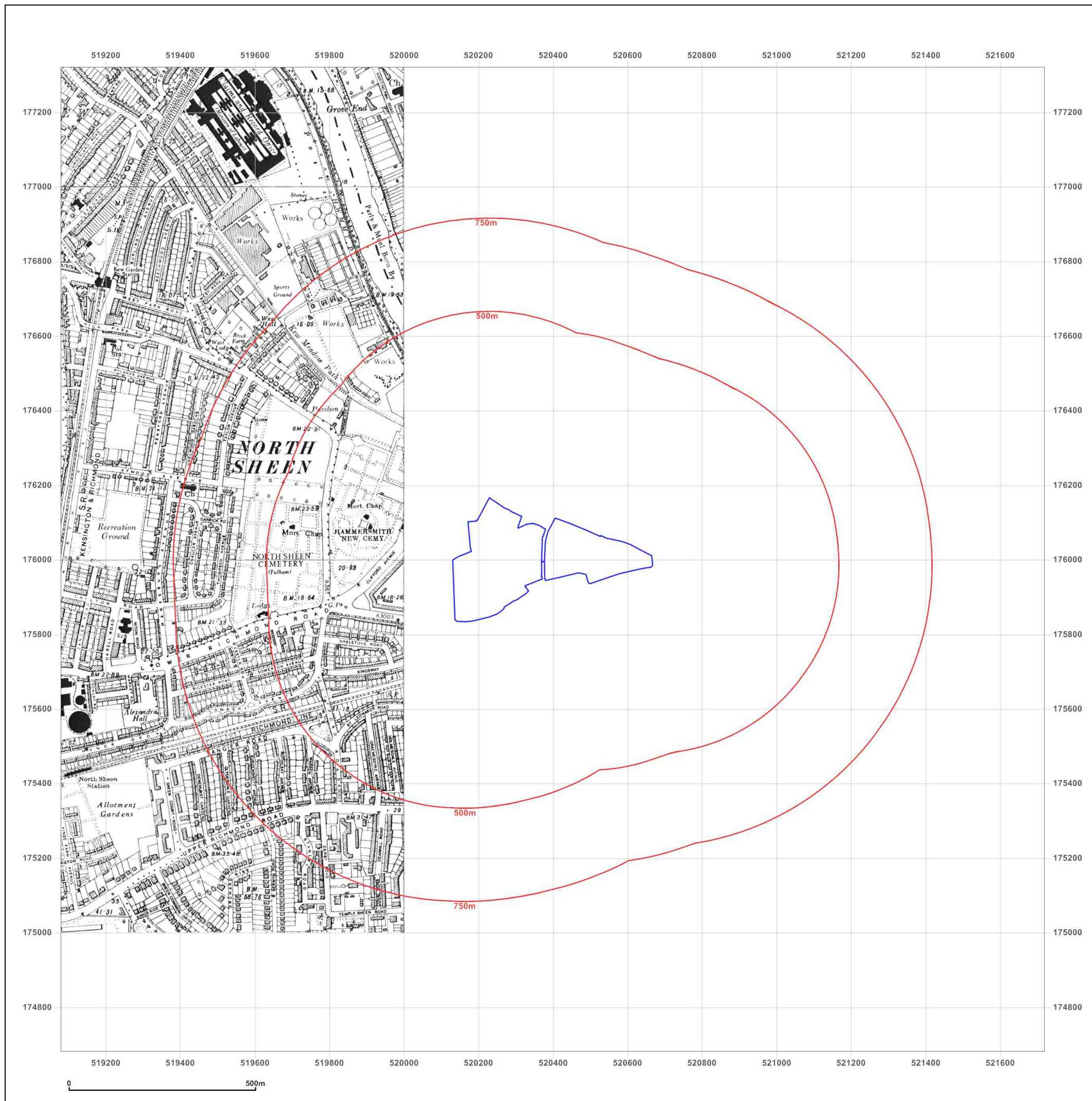
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: Provisional

Map date: 1947-1950

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1940
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

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Edition N/A
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Revised 1948
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: Provisional

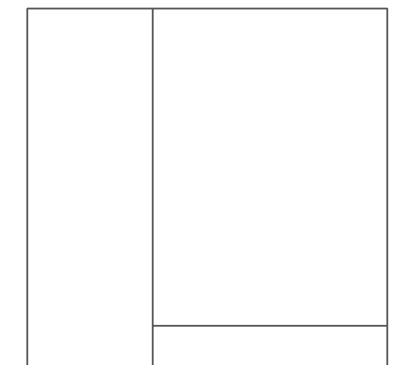
Map date: 1955-1958

Scale: 1:10,560

Printed at: 1:10,560



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Levelled N/A



Surveyed 1955
Revised 1955
Edition N/A
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Levelled N/A



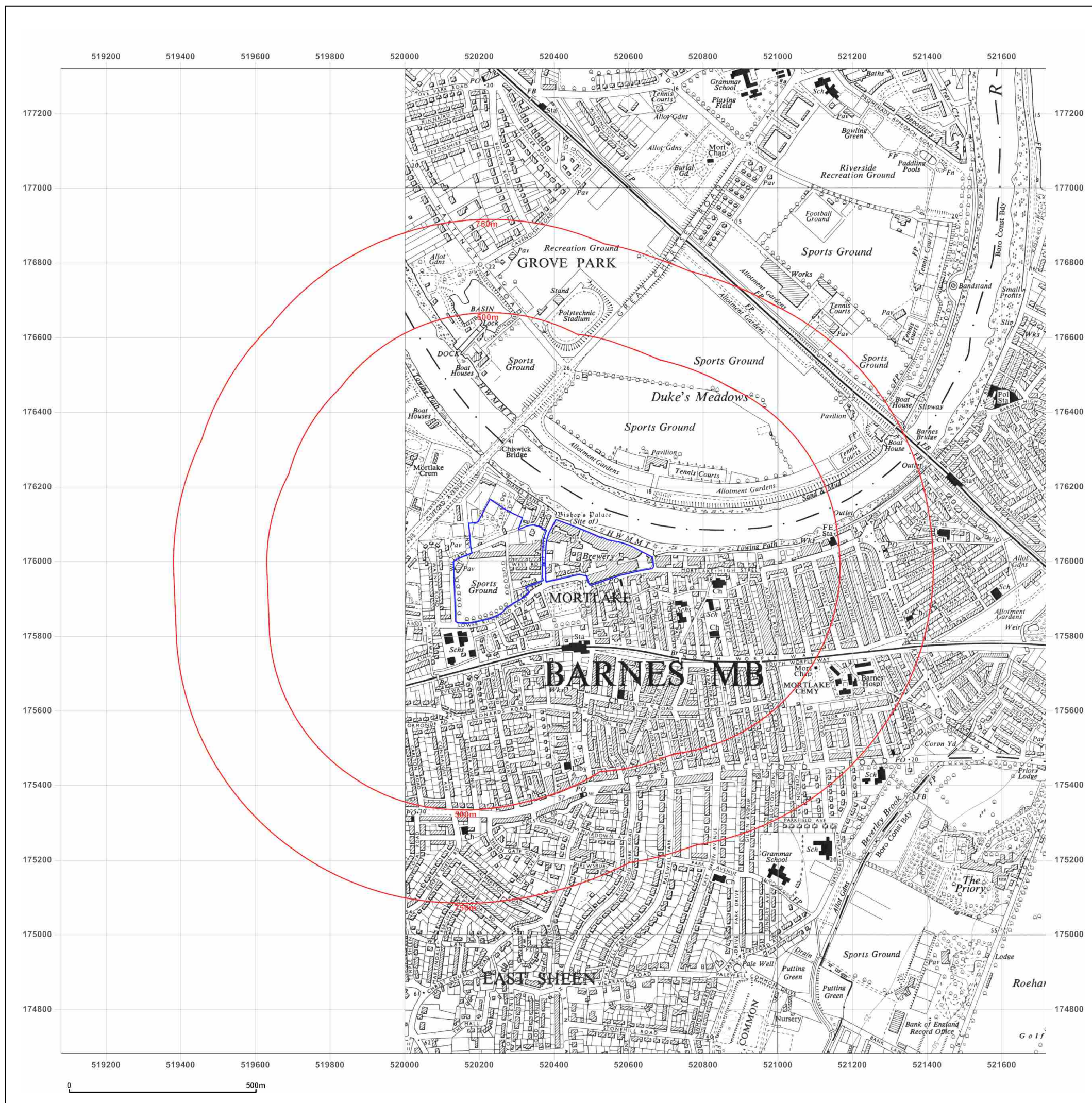
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: Provisional

Map date: 1961-1966

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1962
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: Provisional

Map date: 1966-1967

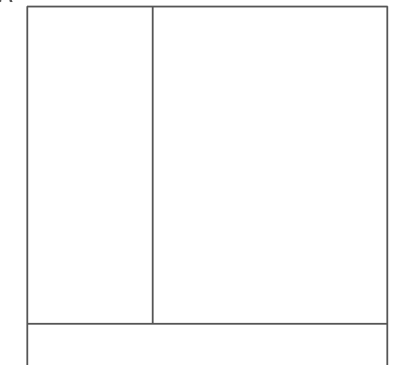
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Client Ref: WIE15582_Stag_Brewery_REQ99015
Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: National Grid

Map date: 1973-1974

Scale: 1:10,000

Printed at: 1:10,000

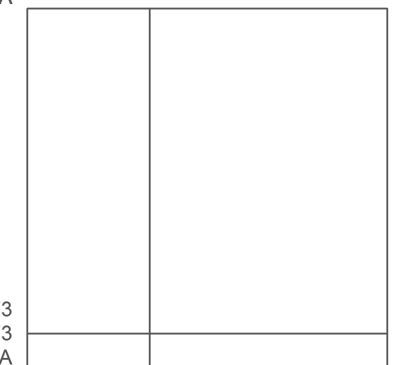


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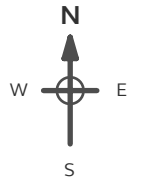
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Grid Ref: 520398, 176001

Map Name: National Grid

Map date: 1987-1991

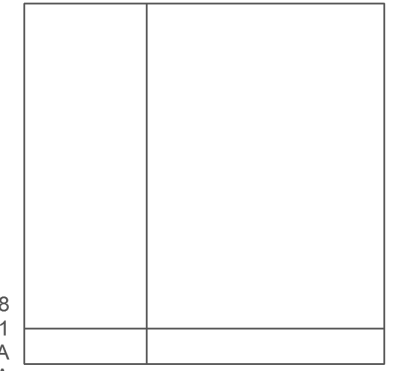
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Surveyed 1981
Revised 1987
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Surveyed 1988
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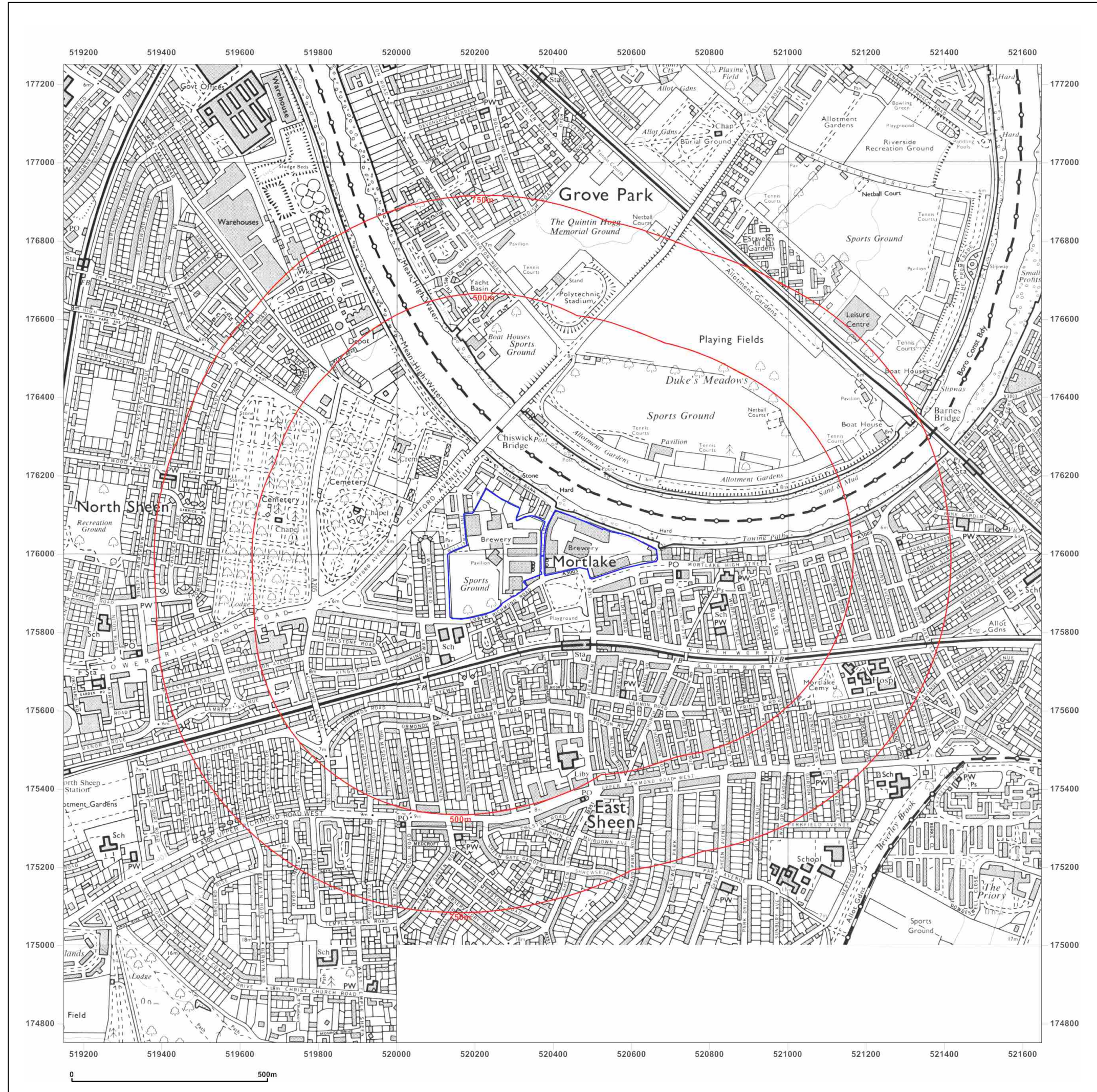
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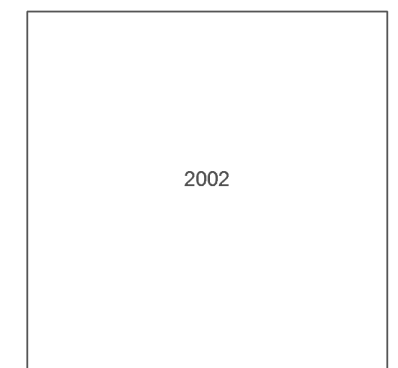
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Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



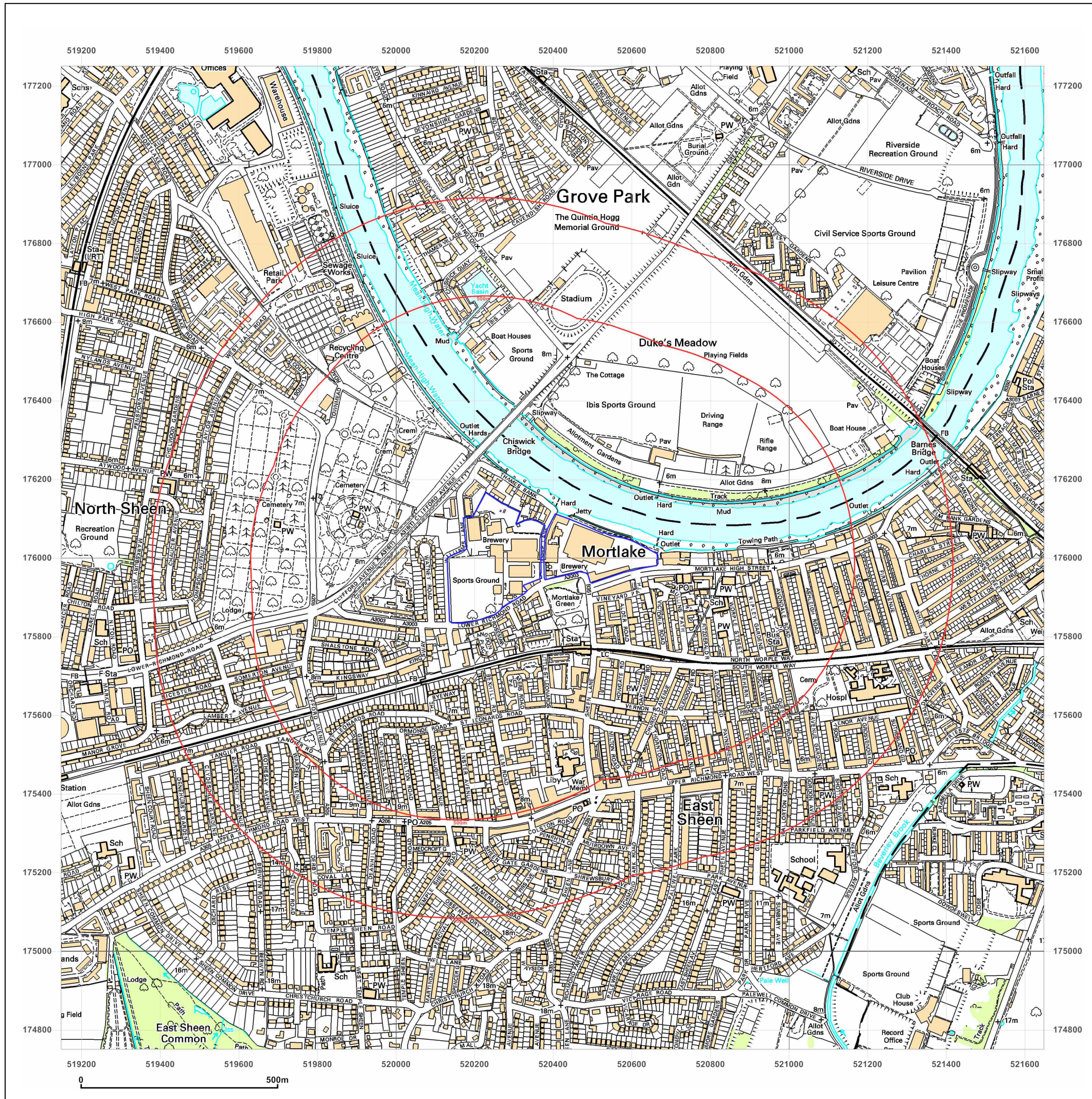
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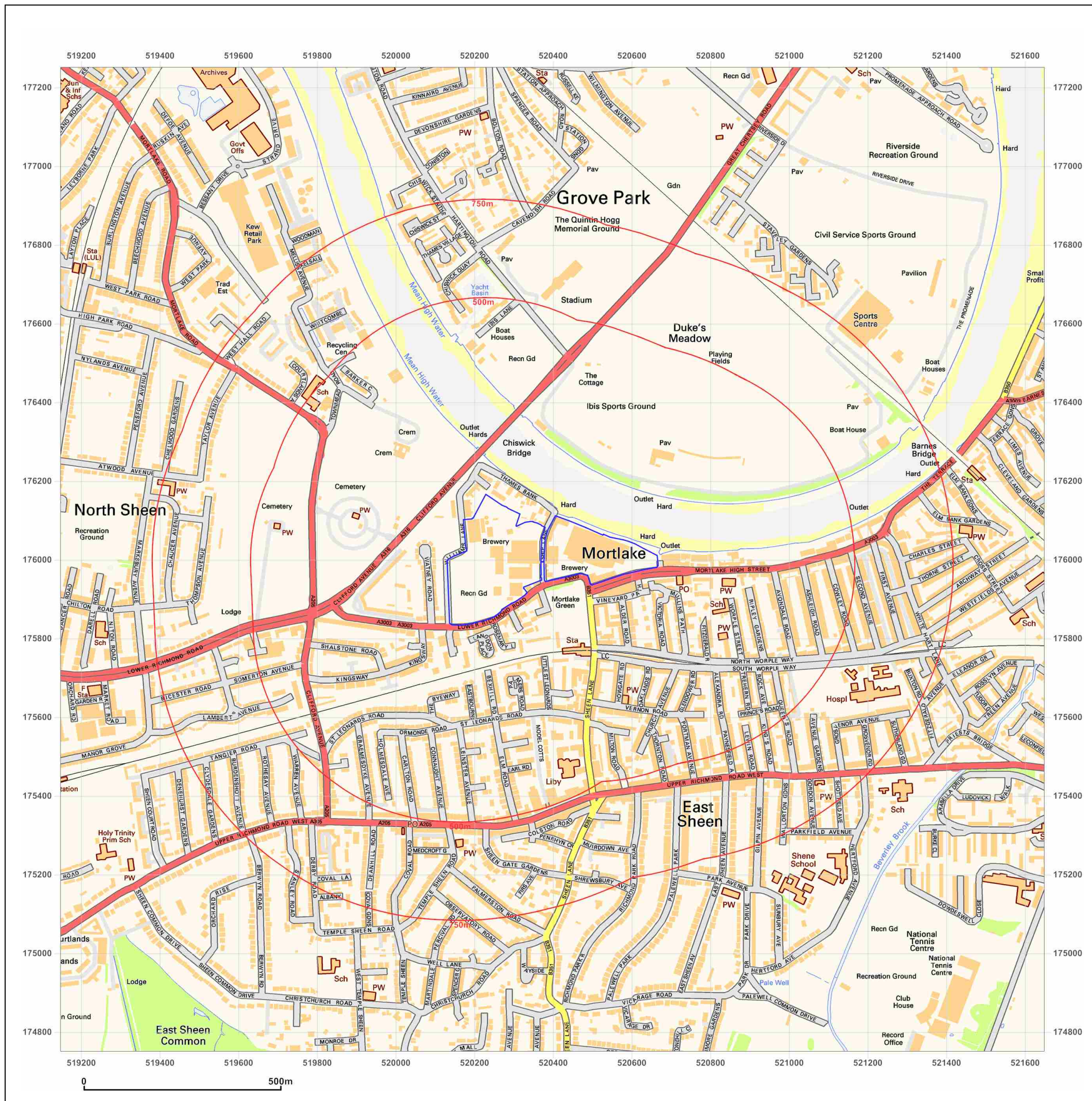
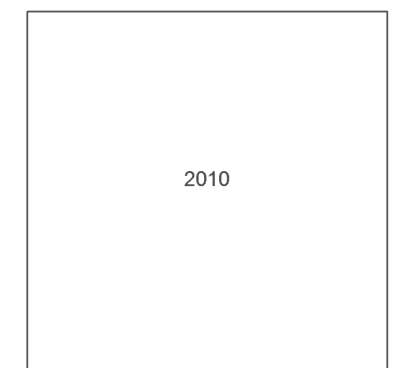
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

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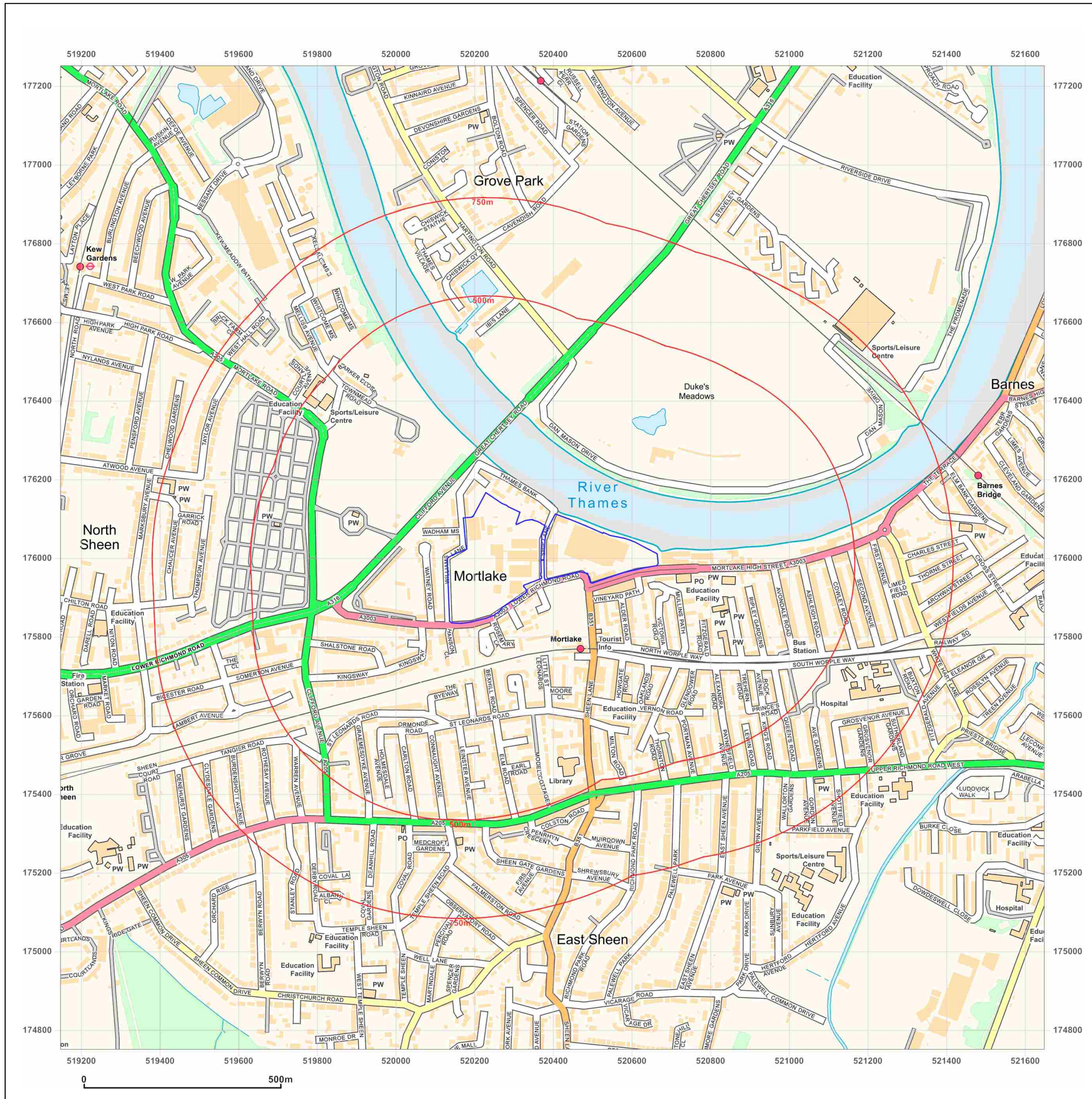
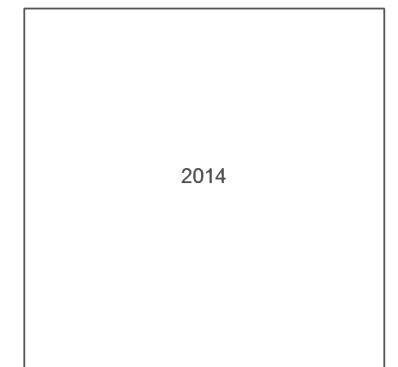
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Report Ref: WTM1-6181570
Grid Ref: 520398, 176001

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

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Waterman Infrastructure & Environment
Limited

PICKFORDS WHARF WATERMAN GROUP,
CLINK STREET,
LONDON, SE1 9DG

Groundsure Reference: WTM1-6181568

Your Reference: WIE15582_Stag_Brewery_REQ99015

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Date: 18 Jul 2019
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Client: Waterman Infrastructure & Environment Limited

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 520394,176013
Site Size: 8.5095ha

Report Reference: WTM1-6181568
Client Reference: WIE15582_Stag_Brewery_REQ99015

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1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	28	0	45	102
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1.3 Additional Information – Historical Energy Features Database	1	3	25	51
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1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	1	1	12	22
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	16	60
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	1	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	2	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	4	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	2	1
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	2
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	2	3	0	2
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	6	0	6	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	6	1	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	12	7	17	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	2
4.3 National Grid Underground Electricity Cables	3	3	6	6
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	1	0	1	5
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	2	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	2	2	6	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High
7.4 Flood Defences within 250m of the study site	Identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	Identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Moderate

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	2
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	2
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	2
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	9
8.8 Records of World Heritage Sites	0	0	0	0	0	2
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	1	1
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence

High

9.1.1 Maximum Shrink-Swell hazard rating identified on the study site

Moderate

9.1.2 Maximum Landslides hazard rating identified on the study site

Low

9.1.3 Maximum Soluble Rocks hazard rating identified on the study site

Negligible

9.1.4 Maximum Compressible Ground hazard rating identified on the study site

High

9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site

Very Low

9.1.6 Maximum Running Sand hazard rating identified on the study site

Low

9.2 Radon

9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?

No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site

None identified

10.2 Non-Coal Mining areas within 50m of the study site boundary

None identified

10.3 Brine affected areas within 75m of the study site

None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

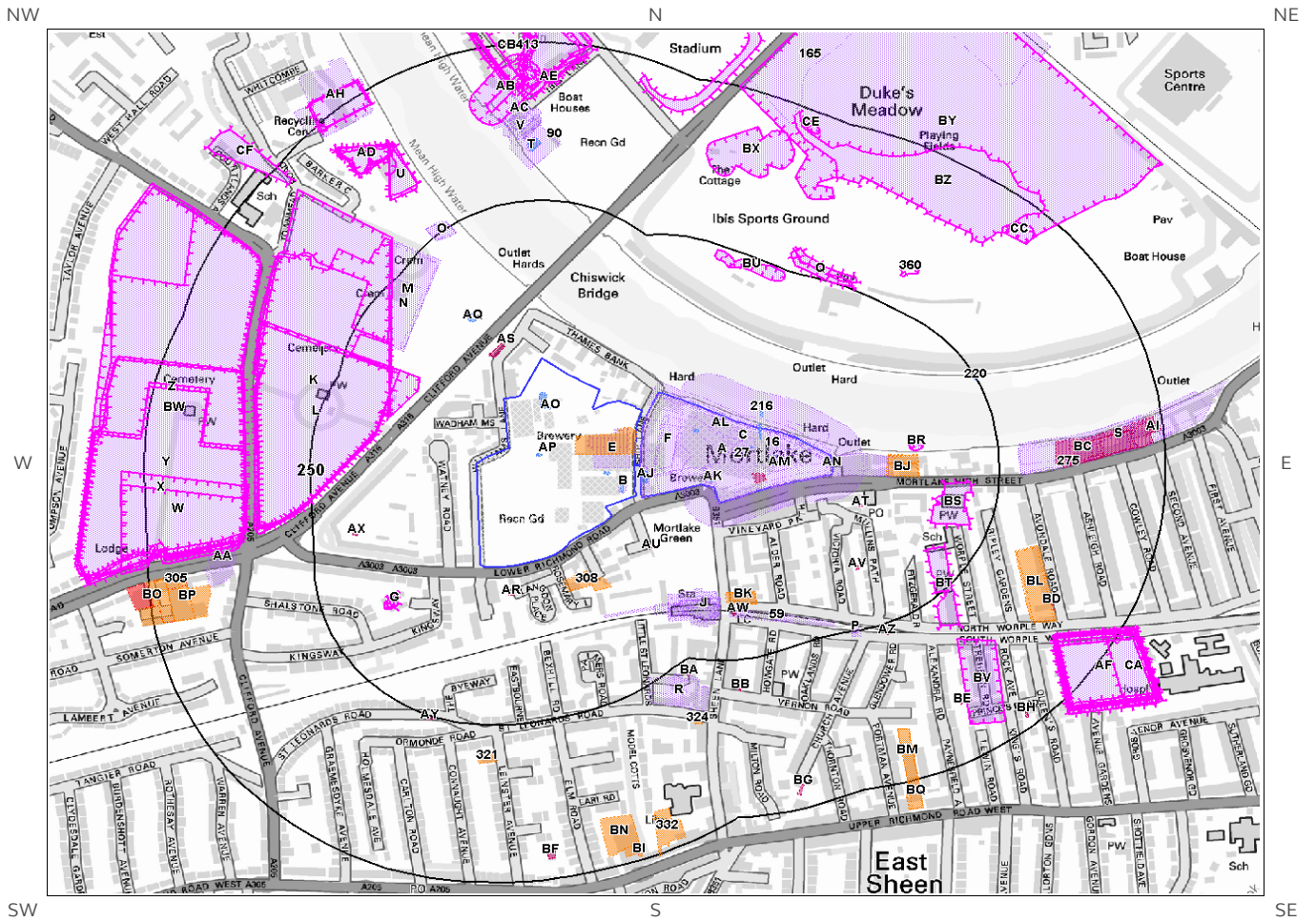
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).










Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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	Site Outline		Industrial Land Use		Potentially Infilled Land
	Search Buffers (m)		Energy Features		Petrol Stations
			Tanks		Garages
					Historical military sites

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 175

ID	Distance [m]	Direction	Use	Date
1AM	0	On Site	Brewery	1894
2A	0	On Site	Brewery	1962
3A	0	On Site	Brewery	1987
4A	0	On Site	Brewery	1974
5A	0	On Site	Brewery	1967
6B	0	On Site	Unspecified Tanks	1974
7B	0	On Site	Unspecified Tanks	1987
8C	0	On Site	Brewery	1933
9C	0	On Site	Brewery	1910
10AJ	0	On Site	Unspecified Tanks	1987
11AN	0	On Site	Malthouse	1866
12D	0	On Site	Railway Sidings	1938
13D	0	On Site	Railway Sidings	1920
14F	0	On Site	Brewery	1893
15E	0	On Site	Brewery	1974
16	0	On Site	Brewery	1866
17D	0	On Site	Railway Sidings	1910
18A	0	On Site	Railway Sidings	1920
19A	0	On Site	Railway Sidings	1938
20E	0	On Site	Brewery	1987
21AL	0	On Site	Railway Sidings	1910
22C	0	On Site	Brewery	1958
23C	0	On Site	Brewery	1947
24C	0	On Site	Brewery	1938
25C	0	On Site	Brewery	1920
26A	0	On Site	Brewery	1933
27	0	On Site	Brewery	1898
28F	0	On Site	Brewery	1911
29BR	118	E	Unspecified Wharf	1967
30H	121	SE	Railway Station	1911
31L	129	W	Cemetery	1933
32G	135	W	Unspecified Pit	1893
33G	138	SW	Unspecified Pit	1911
34H	139	S	Railway Station	1910

35H	139	S	Railway Station	1933
36H	140	S	Railway Station	1947
37G	142	SW	Unspecified Pit	1894
38H	146	S	Railway Station	1933
39J	149	S	Railway Station	1893
40I	150	NW	Cemetery	1961
41I	150	NW	Cemetery	1987
42H	150	S	Railway Station	1958
43H	150	S	Railway Station	1962
44J	152	S	Railway Station	1866
45K	153	NW	Cemetery	1948
46K	153	NW	Cemetery	1948
47J	155	S	Railway Station	1974
48J	155	S	Railway Station	1967
49J	155	S	Railway Station	1987
50J	157	S	Railway Station	1898
51J	157	S	Railway Station	1938
52J	157	S	Railway Station	1920
53J	158	S	Railway Station	1894
54K	158	W	Cemetery	1974
55K	158	W	Cemetery	1966
56L	159	W	Cemetery	1933
57BS	160	E	Grave Yard	1866
58M	168	NW	Crematorium	1962
59	168	S	Railway Buildings	1987
60AW	170	S	Railway Building	1893
61M	170	NW	Crematorium	1947
62M	170	NW	Crematorium	1967
63M	170	NW	Crematorium	1958
64N	175	NW	Crematorium	1987
65N	175	NW	Crematorium	1974
66BT	187	SE	Gravel Pit	1866
67BU	222	N	Unspecified Heaps	1947
68O	235	NW	Boat Houses	1962
69O	236	NW	Boat Houses	1967
70O	238	NW	Boat Houses	1958
71R	239	SE	Unspecified Works	1962
72P	241	S	Railway Building	1987
73Q	250	N	Unspecified Ground Workings	1894
74P	252	S	Railway Building	1920
75P	252	S	Railway Building	1938
76Q	257	N	Unspecified Ground Workings	1893
77R	259	SE	Unspecified Works	1958
78BC	279	E	Unspecified Works	1962

79S	280	E	Unspecified Works	1958
80S	281	E	Unspecified Commercial/Industrial	1933
81V	299	N	Boat House	1938
82BV	322	SE	Burial Ground	1866
83T	327	N	Boat Houses	1962
84U	329	NW	Unspecified Ground Workings	1962
85T	330	N	Boat Houses	1967
86T	330	N	Boat Houses	1974
87T	332	N	Boat Houses	1987
88U	334	NW	Unspecified Heaps	1958
89V	337	N	Boat Houses	1893
90	340	N	Boat Houses	1987
91W	344	W	Cemetery	1910
92W	347	W	Cemetery	1920
93W	347	W	Cemetery	1938
94BW	347	W	Cemetery	1966
95Z	347	W	Cemetery	1987
96Y	347	W	Cemetery	1961
97V	347	N	Boat House	1920
98V	347	N	Boat House	1938
99X	348	W	Cemetery	1933
100X	348	W	Cemetery	1933
101Y	348	W	Cemetery	1948
102Y	348	W	Cemetery	1948
103V	348	N	Boat Houses	1962
104Z	349	W	Cemetery	1974
105V	349	N	Boat Houses	1898
106V	349	N	Boat Houses	1894
107V	352	N	Boat House	1967
108V	352	N	Boat House	1987
109V	352	N	Boat House	1974
110V	355	N	Boat House	1947
111V	355	N	Boat Houses	1958
112V	355	N	Boat House	1933
113BX	356	N	Unspecified Heaps	1947
114V	357	N	Boat Houses	1911
115V	363	N	Boat House	1920
116S	364	E	Electricity Works	1920
117V	366	N	Boat House	1910
118V	366	N	Boat House	1933
119S	367	E	Electricity Works	1910
120AA	367	W	Fire Clay Works	1910
121V	368	N	Boat Houses	1898
122BY	369	NE	Gravel and Ballast Works	1947

123V	371	N	Boat House	1938
124V	372	N	Boat House	1933
125AA	372	W	Fire Clay Works	1920
126V	376	N	Boat Houses	1911
127AB	377	N	Dock	1958
128AB	377	N	Dock	1967
129AC	382	N	Boat House	1933
130AC	382	N	Boat House	1910
131AD	392	NW	Unspecified Pit	1933
132AD	392	NW	Refuse Heap	1961
133AD	393	NW	Refuse Heap	1933
134AD	395	NW	Refuse Heap	1948
135AD	395	NW	Refuse Heap	1948
136AB	397	N	Dock	1962
137BZ	404	NE	Refuse Heap	1947
138AE	411	N	Unspecified Ground Workings	1938
139AE	411	N	Unspecified Ground Workings	1920
140AG	418	N	Unspecified Ground Workings	1933
141AF	421	SE	Cemetery	1911
142AF	422	SE	Cemetery	1947
143AF	422	SE	Cemetery	1958
144AF	423	SE	Cemetery	1893
145AF	423	SE	Cemetery	1933
146AF	423	SE	Cemetery	1894
147AF	423	SE	Cemetery	1910
148AF	425	SE	Cemetery	1933
149AF	426	SE	Cemetery	1898
150AF	429	SE	Cemetery	1962
151AF	431	SE	Cemetery	1938
152AF	431	SE	Cemetery	1920
153AG	431	N	Unspecified Pit	1910
154AG	431	N	Unspecified Pit	1933
155AF	437	SE	Cemetery	1967
156AF	437	SE	Cemetery	1974
157AF	437	SE	Cemetery	1987
158CC	438	NE	Unspecified Heap	1947
159CD	439	NE	Unspecified Ground Workings	1962
160S	448	E	Fire Engine Station	1910
161AH	465	NW	Unspecified Commercial/Industrial	1966
162CE	466	N	Unspecified Heap	1947
163CF	468	NW	Unspecified Heap	1910
164AH	468	NW	Unspecified Depot	1987

165	469	N	Railway Sidings	1947
166AI	471	E	Fire Engine Station	1958
167AI	472	E	Fire Engine Station	1962
168AH	478	NW	Refuse Destructor	1933
169AH	478	NW	Refuse Destructor	1933
170AH	480	NW	Unspecified Works	1961
171AH	481	NW	Corporation Refuse Destructor	1948
172AH	481	NW	Works	1948
173CA	483	SE	Cemetery	1866
174AI	491	E	Fire Engine Station	1920
175AI	491	E	Fire Engine Station	1938

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

49

ID	Distance (m)	Direction	Use	Date
176AJ	0	On Site	Tanks	1991
177AK	0	On Site	Unspecified Tank	1991
178B	0	On Site	Tanks	1991
179B	0	On Site	Tanks	1995
180AK	0	On Site	Unspecified Tank	1995
181B	0	On Site	Tanks	1995
182B	0	On Site	Tanks	1991
183AJ	0	On Site	Tanks	1987
184AJ	0	On Site	Tanks	1991
185AL	0	On Site	Unspecified Tank	1869
186B	0	On Site	Tanks	1995
187AK	0	On Site	Unspecified Tank	1991
188AK	0	On Site	Unspecified Tank	1992
189AK	0	On Site	Unspecified Tank	1995
190B	0	On Site	Tanks	1991
191B	0	On Site	Tanks	1987
192AL	0	On Site	Unspecified Tank	1951
193C	0	On Site	Unspecified Tank	1940
194AL	0	On Site	Unspecified Tank	1951
195AM	0	On Site	Unspecified Tank	1951
196AM	0	On Site	Unspecified Tank	1951
197AN	0	On Site	Unspecified Tank	1869
198AK	0	On Site	Unspecified Tank	1965

199AO	0	On Site	Unspecified Tank	1992
200AO	0	On Site	Unspecified Tank	1992
201AO	0	On Site	Unspecified Tank	1992
202AP	0	On Site	Unspecified Tank	1992
203AP	0	On Site	Tanks	1992
204AM	0	On Site	Unspecified Tank	1991
205B	0	On Site	Tanks	1987
206B	0	On Site	Tanks	1991
207AO	0	On Site	Unspecified Tank	1991
208AO	0	On Site	Unspecified Tank	1991
209AP	0	On Site	Unspecified Tank	1991
210AP	0	On Site	Tanks	1991
211AO	0	On Site	Unspecified Tank	1992
212AJ	0	On Site	Tanks	1951
213AL	0	On Site	Unspecified Tank	1869
214AL	0	On Site	Unspecified Tank	1973
215C	0	On Site	Unspecified Tank	1933
216	19	N	Unspecified Tank	1992
217AQ	115	NW	Unspecified Tank	1991
218AQ	116	NW	Unspecified Tank	1991
219AQ	116	NW	Unspecified Tank	1916
220	247	NE	Unspecified Tank	1992
221T	328	N	Unspecified Tank	1991
222T	328	N	Unspecified Tank	1991
223T	328	N	Unspecified Tank	1991
224T	334	N	Unspecified Tank	

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

80

ID	Distance (m)	Direction	Use	Date
225AM	0	On Site	Electricity Substation	1951
226AR	41	S	Electricity Substation	1995
227AR	41	S	Electricity Substation	1992
228AR	42	S	Electricity Substation	1995
229AS	57	NW	Electricity Substation	1991
230AS	57	NW	Electricity Substation	1991
231AS	58	NW	Electricity Substation	1992
232AS	58	NW	Electricity Substation	1976
233AT	63	SE	Electricity Substation	1991

234AT	63	SE	Electricity Substation	1982
235AT	63	SE	Electricity Substation	1968
236AT	67	SE	Electricity Substation	1994
237AU	75	SE	Electricity Substation	1987
238AU	75	SE	Electricity Substation	1992
239AU	75	SE	Electricity Substation	1991
240AU	75	SE	Electricity Substation	1991
241AU	75	SE	Electricity Substation	1995
242AU	75	SE	Electricity Substation	1995
243AV	147	S	Electricity Substation	1982
244AV	147	S	Electricity Substation	1991
245AV	148	S	Electricity Substation	1968
246AV	148	S	Electricity Substation	1951
247AV	148	S	Electricity Substation	1994
248AW	173	S	Electricity Substation	1982
249AW	173	S	Electricity Substation	1991
250AW	173	S	Electricity Substation	1968
251AW	174	S	Electricity Substation	1994
252AX	182	W	Electricity Substation	1991
253AX	183	W	Electricity Substation	1988
254AY	252	S	Electricity Substation	1995
255AY	252	S	Electricity Substation	1995
256AY	252	S	Electricity Substation	1991
257AY	252	S	Electricity Substation	1992
258AY	252	S	Electricity Substation	1991
259AY	252	S	Electricity Substation	1987
260AZ	261	S	Electricity Substation	1991
261AZ	261	S	Electricity Substation	1982
262AZ	262	S	Electricity Substation	1994
263AZ	262	S	Electricity Substation	1968
264BA	268	SE	Electricity Substation	1992
265BA	268	SE	Electricity Substation	1991
266BA	268	SE	Electricity Substation	1987
267BA	269	SE	Electricity Substation	1995
268BA	269	SE	Electricity Substation	1995
269BA	269	SE	Electricity Substation	1991
270BB	290	S	Electricity Substation	1991
271BB	290	S	Electricity Substation	1982
272BB	290	S	Electricity Substation	1968
273BB	291	S	Electricity Substation	1994
274BC	334	E	Electricity Works	1972
275	344	E	Electricity Depot	1951
276BC	355	E	Electricity Works	1966
277S	368	E	Electricity Works	1913
278S	373	E	Electricity Works	1951
279S	373	E	Electricity Works	1951

280S	373	E	Electricity Works	1951
281S	373	E	Electricity Works	1951
282BD	384	SE	Electricity Substation	1982
283BD	384	SE	Electricity Substation	1991
284BD	385	SE	Electricity Substation	1968
285BD	394	SE	Electricity Substation	1994
286S	403	E	Electricity Works	1919
287BE	409	SE	Electricity Substation	1982
288BE	409	SE	Electricity Substation	1991
289BE	410	SE	Electricity Substation	1968
290BE	410	SE	Electricity Substation	1994
291BF	450	S	Electricity Substation	1991
292BF	450	S	Electricity Substation	1984
293BF	450	S	Electricity Substation	1982
294BF	451	S	Electricity Substation	1951
295BF	451	S	Electricity Substation	1968
296BG	459	S	Electricity Substation	1991
297BG	462	S	Electricity Substation	1972
298BH	466	SE	Electricity Substation	1991
299BH	466	SE	Electricity Substation	1982
300BH	466	SE	Electricity Substation	1968
301BH	467	SE	Electricity Substation	1994
302BI	484	S	Electricity Substation	1982
303BI	484	S	Electricity Substation	1984
304BI	484	S	Electricity Substation	1991

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
305	443	W	Filling Station	1991
306BO	469	W	Filling Station	1988

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 36

ID	Distance (m)	Direction	Use	Date
307E	0	On Site	Garage	1951
308	43	SE	Garages	1951
309BJ	79	E	Garage	1991
310BJ	79	E	Garage	1982
311BJ	81	E	Garage	1994
312BJ	81	E	Garage	1968
313BJ	82	E	Garage	1973
314BJ	83	E	Garage	1993
315BJ	93	E	Garage	1991
316BK	141	S	Garage	1982
317BK	141	S	Garage	1991
318AW	142	S	Garage	1951
319AW	142	S	Garage	1968
320AW	144	S	Garage	1994
321	294	S	Garage	1951
322BL	301	SE	Garage	1913
323BL	304	SE	Omnibus Garage	1919
324	331	SE	Garage	1951
325BP	409	W	Garage	1988
326BM	414	S	Garage	1991
327BM	414	S	Garage	1982
328BM	415	S	Garage	1968
329BM	415	S	Garage	1994
330BN	421	S	Motor Repair Works	1968
331BN	421	S	Garages	1951
332	434	S	Garages	1951
333BO	437	W	Garage	1959
334BP	437	W	Garage	1959
335BP	437	W	Garage	1960
336BP	468	W	Garage	1959
337BP	468	W	Garage	1959
338BO	468	W	Garage	1960
339BI	474	S	Garages	1968
340BQ	495	S	Garage	1951
341BQ	495	S	Garage	1972
342BQ	495	S	Garage	1991

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary:

0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site:

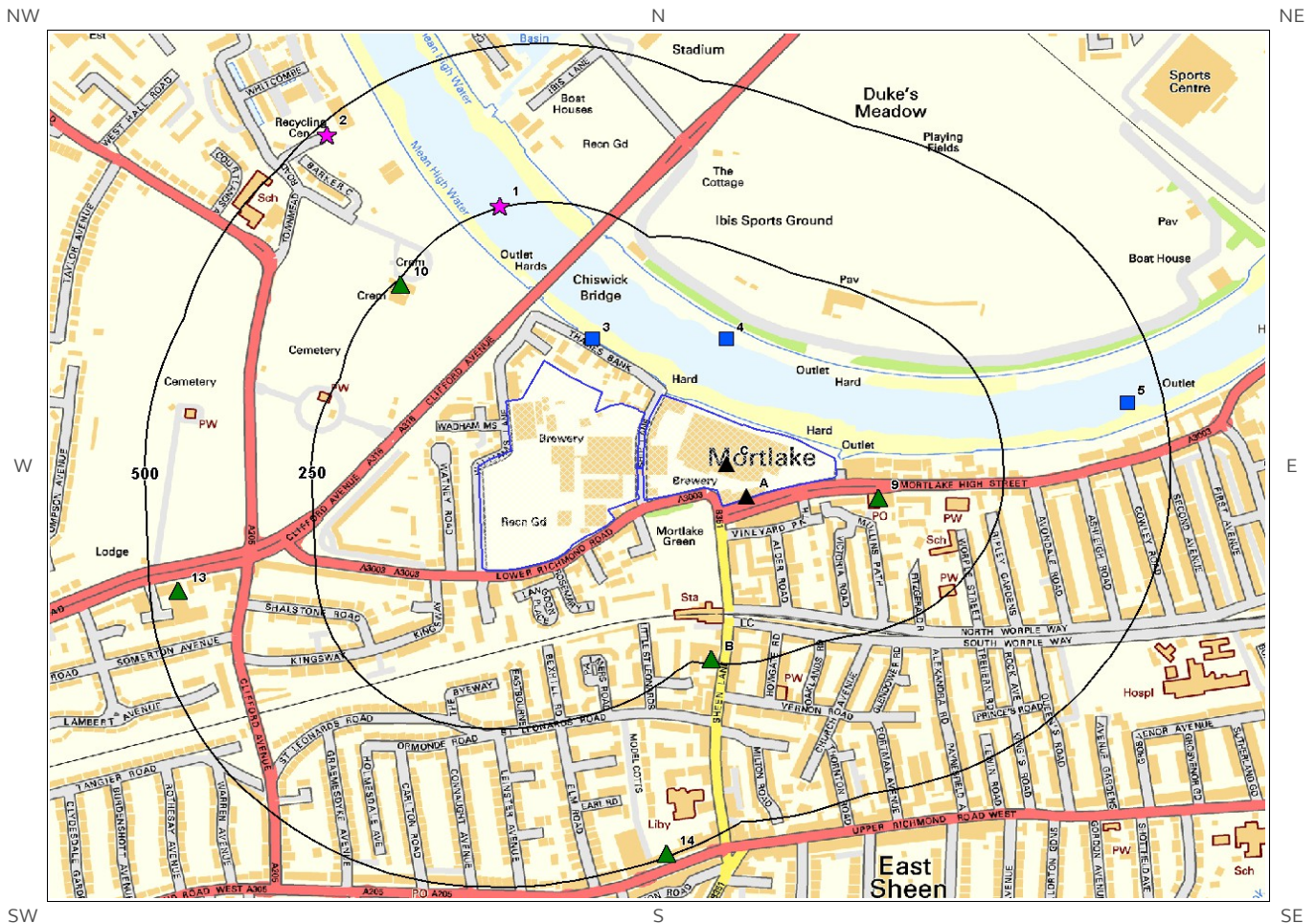
76

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:
















ID	Distance(m)	Direction	Use	Date
343BR	118	E	Unspecified Wharf	1967
344L	129	W	Cemetery	1933
345G	135	W	Unspecified Pit	1893
346G	138	SW	Unspecified Pit	1911
347G	142	SW	Unspecified Pit	1894
348I	150	NW	Cemetery	1987
349I	150	NW	Cemetery	1961
350K	153	NW	Cemetery	1948
351K	153	NW	Cemetery	1948
352K	158	W	Cemetery	1966
353K	158	W	Cemetery	1974
354L	159	W	Cemetery	1933
355BS	160	E	Grave Yard	1866
356BT	187	SE	Gravel Pit	1866
357BU	222	N	Unspecified Heaps	1947
358Q	250	N	Unspecified Ground Workings	1894
359Q	257	N	Unspecified Ground Workings	1893
360	302	NE	Pond	1866
361BV	322	SE	Burial Ground	1866
362U	329	NW	Unspecified Ground Workings	1962
363U	334	NW	Unspecified Heaps	1958
364W	344	W	Cemetery	1910
365W	347	W	Cemetery	1920
366W	347	W	Cemetery	1938
367Y	347	W	Cemetery	1961
368Z	347	W	Cemetery	1987
369BW	347	W	Cemetery	1966
370X	348	W	Cemetery	1933
371X	348	W	Cemetery	1933
372Y	348	W	Cemetery	1948
373Y	348	W	Cemetery	1948
374Z	349	W	Cemetery	1974
375BX	356	N	Unspecified Heaps	1947

376BY	369	NE	Gravel and Ballast Works	1947
377AB	377	N	Dock	1958
378AB	377	N	Dock	1967
379AD	392	NW	Unspecified Pit	1933
380AD	392	NW	Refuse Heap	1961
381AD	393	NW	Refuse Heap	1933
382AD	395	NW	Refuse Heap	1948
383AD	395	NW	Refuse Heap	1948
384AB	397	N	Dock	1962
385BZ	404	NE	Refuse Heap	1947
386AE	411	N	Unspecified Ground Workings	1920
387AE	411	N	Unspecified Ground Workings	1938
388AG	418	N	Unspecified Ground Workings	1933
389CA	421	SE	Cemetery	1911
390CB	421	N	Pond	1911
391AF	422	SE	Cemetery	1958
392AF	422	SE	Cemetery	1947
393AF	423	SE	Cemetery	1893
394AF	423	SE	Cemetery	1894
395AF	423	SE	Cemetery	1933
396AF	423	SE	Cemetery	1910
397AF	425	SE	Cemetery	1933
398AF	426	SE	Cemetery	1898
399CB	428	N	Pond	1898
400CB	428	N	Pond	1894
401AF	429	SE	Cemetery	1962
402CB	430	N	Pond	1893
403AF	431	SE	Cemetery	1938
404AF	431	SE	Cemetery	1920
405AG	431	N	Unspecified Pit	1933
406AG	431	N	Unspecified Pit	1910
407AF	437	SE	Cemetery	1987
408AF	437	SE	Cemetery	1967
409AF	437	SE	Cemetery	1974
410CB	438	N	Pond	1866
411CC	438	NE	Unspecified Heap	1947
412CD	439	NE	Unspecified Ground Workings	1962
413	439	N	Water Body	1962
414CE	466	N	Unspecified Heap	1947
415CF	468	NW	Unspecified Heap	1910
416AH	478	NW	Refuse Destructor	1933
417AH	478	NW	Refuse Destructor	1933
418CA	483	SE	Cemetery	1866

2. Environmental Permits, Incidents and Registers Map



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- | | | | | | |
|---|-------------------------------|---|--|---|---|
|  | Site Outline |  | Recorded Pollution Incident |  | RAS 3 & 4 Authorisations |
|  | Dangerous Substances (List 1) |  | Part A(1) Authorised Processes and Historic IPC Authorisations |  | Part A(2) and Part B Authorised Processes |
|  | Dangerous Substances (List 2) |  | Water Industry Referrals |  | COMAH / NIHHS Sites |
|  | Search Buffers (m) |  | Licenced Discharge Consents |  | Sites Determined as Contaminated Land |
|  | 500 |  | Red List Discharge Consents |  | Hazardous Substance Consents and Enforcements |

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

1

The following IPC Authorisations are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
17C	0	On Site	520500 176000	Operator: Scottish and Newcastle UK Ltd Address: Lower Richmond Road, Mortlake, London, SW14 7ET Process: Combustion Processes	Permit Number: AF4275 Original Permit Number: IPCAPP Date Approved: 12-2-1993 Effective Date: 12-2-1993 Status: Revoked

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

2

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
15A	0	On Site	520530 175950	Operator: BUDWEISER STAG BREWING COMPANY LIMITED Installation Name: THE STAG BREWERY EPR/BS9784IK Process: ANIMAL VEGETABLE AND FOOD TREATING ETC VEGETABLE	Permit Number: FP3037RD Original Permit Number: BS9784IK EPR Reference: - Issue Date: - Effective Date: 10/05/2016 Last date noted as effective: 2019-04-30 Status: SURRENDER EFFECTIVE
16A	0	On Site	520530 175950	Operator: BUDWEISER STAG BREWING CO LTD Installation Name: THE STAG BREWERY EPR/BS9784IK Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D	Permit Number: BS9784IK Original Permit Number: BS9784IK EPR Reference: - Issue Date: 09/11/2005 Effective Date: 09/11/2005 Last date noted as effective: 2019-04-30 Status: SUPERCEDED

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

6

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
9	73	SE	520728 175947	Address: BM Lifestyle, 64 Mortlake High Street, London, SW14 8HR Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
10	241	NW	520012 176284	Address: Mortlake Crematorium, Kew Meadow Path, Richmond, Surrey, TW9 4EN Process: Crematoria Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
11B	245	S	520478 175692	Address: Texaco, Pace Mortlake, Mortlake Service Station, 16-26 Sheen Lane, East Sheen, SW14 8LW Process: Petrol Vapour Recovery Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
12B	245	S	520478 175692	Address: KPR Service Station, Sheen Lane, SW14 8LW Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
13	457	W	519680 175800	Address: Fina, Prospect Service Station, 199 Lower Richmond Road, Richmond, TW9 4LN Process: Petrol Vapour Recovery	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

ID	Distance (m)	Direction	NGR	Details	
				Status: Revoked Permit Type: Part B	
14	498	S	520410 175384	Address: Express Dry Cleaners, 282 Upper Richmond Road West, East Sheen, SW14 7JE Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

3

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
3	68	NE	520300 176200	Address: MORTLAKE, LONDON Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CPLP.0059 Permit Version: 1	Receiving Water: THAMES Status: REVOKED - UNSPECIFIED Issue date: 14/09/1972 Effective Date: 14-Sep-1972 Revocation Date: 05/03/1991
4	116	N	520500 176200	Address: RICHMOND ROAD, MORTLAKE, SURREY Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTMR.0305 Permit Version: 1	Receiving Water: THAMES Status: REVOKED - UNSPECIFIED Issue date: 29/06/1976 Effective Date: 29-Jun-1976 Revocation Date: 26/04/1990
5	446	E	521100 176100	Address: 121 MORTLAKE HIGH STREET, MORTLAKE, 121 MORTLAKE HIGH STREET, MORTLA, KE, LONDON SW14 Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2358 Permit Version: 1	Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 05/05/1988 Effective Date: 05-May-1988 Revocation Date: 06/06/1991

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

2

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	252	N	520160.0 176410.0	Incident Date: 19-Aug-2002 Incident Identification: 101321.0 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	483	NW	519901.0 176522.0	Incident Date: 03-Apr-2003 Incident Identification: 148411.0 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

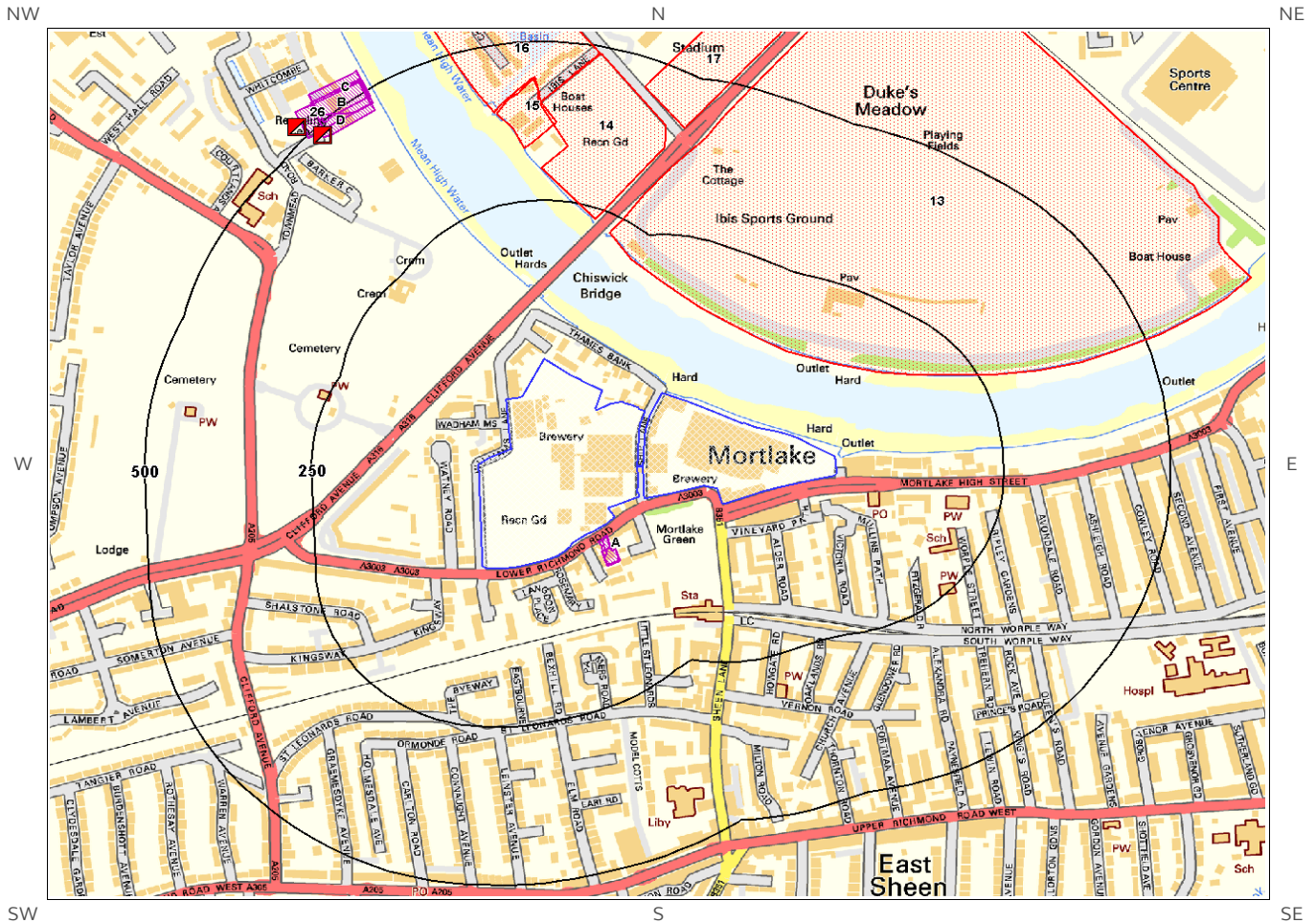
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990










Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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-  Site Outline
-  EA/NRW Active Landfill
-  Historic and Planned Waste Sites
-  EA/NRW Historic Landfill
-  EA/NRW Licensed Waste Site
-  BGS / DoE Survey Landfill
-  Local Authority/Historical Mapping Landfill Records
-  250 Search Buffers (m)
-  500 Search Buffers (m)

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

7

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
13	126	N		Site Address: Dukes Meadow, Great Chertsey Road, London Waste Licence: - Site Reference: 8HO040 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Ham River Grit Licence Holder: London Borough of Hounslow First Recorded: 31-Dec-1945 Last Recorded: 31-Dec-1950
14	233	N		Site Address: Hartington Road Sports Ground, Hartington Road Waste Licence: - Site Reference: 8HO041 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Ham River Grit Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1934
15	334	N		Site Address: Ibis Rowing Club, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO063 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
16	394	N		Site Address: Cubitts Basin, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO046 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
17	419	N		Site Address: Hartington Road Sports Ground, Hartington Road Licence Issue: Licence Surrendered:

ID	Distance (m)	Direction	NGR	Details
				Waste Licence: - Site Reference: 8HO041 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -
Not shown	1110	N		Site Address: Staveley Road, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO062 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -
Not shown	1337	NE		Site Address: Corney Road, Chiswick, London W4 Waste Licence: - Site Reference: 8HO081 Waste Type: Inert, Industrial, Special Environmental Permitting Regulations (Waste) Reference: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

12

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
1A	16	SE	520327 175863	Type of Site: Scrap Yard Site Address: N/A Planning Application Reference: N/A Date: 1995 Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2A	17	SE	520324 175863	Type of Site: Scrap Yard Site Address: N/A Planning Application Reference: N/A Date: 1991 Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
3A	34	SE	520327 175853	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1995	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	34	SE	520329 175854	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1987	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5A	34	SE	520329 175854	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
6A	34	SE	520329 175854	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1992	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
7B	467	NW	519915 176559	Type of Site: Refuse Disposal Depot Site Address: N/A	Planning Application Reference: N/A Date: 1974	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
8B	478	NW	519925 176567	Type of Site: Refuse Destructor Site Address: N/A	Planning Application Reference: N/A Date: 1933	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
9B	479	NW	519922 176578	Type of Site: Refuse Destructor Site Address: N/A	Planning Application Reference: N/A Date: 1940	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
10C	490	NW	519921 176580	Type of Site: Corporation Refuse Destructor Site Address: N/A	Planning Application Reference: N/A Date: 1940	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
11C	490	NW	519921 176580	Type of Site: Corporation Refuse Destructor Site Address: N/A	Planning Application Reference: N/A Date: 1940	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
12C	490	NW	519921 176580	Type of Site: Corporation Refuse Destructor Site Address: N/A	Planning Application Reference: N/A Date: 1940	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

7

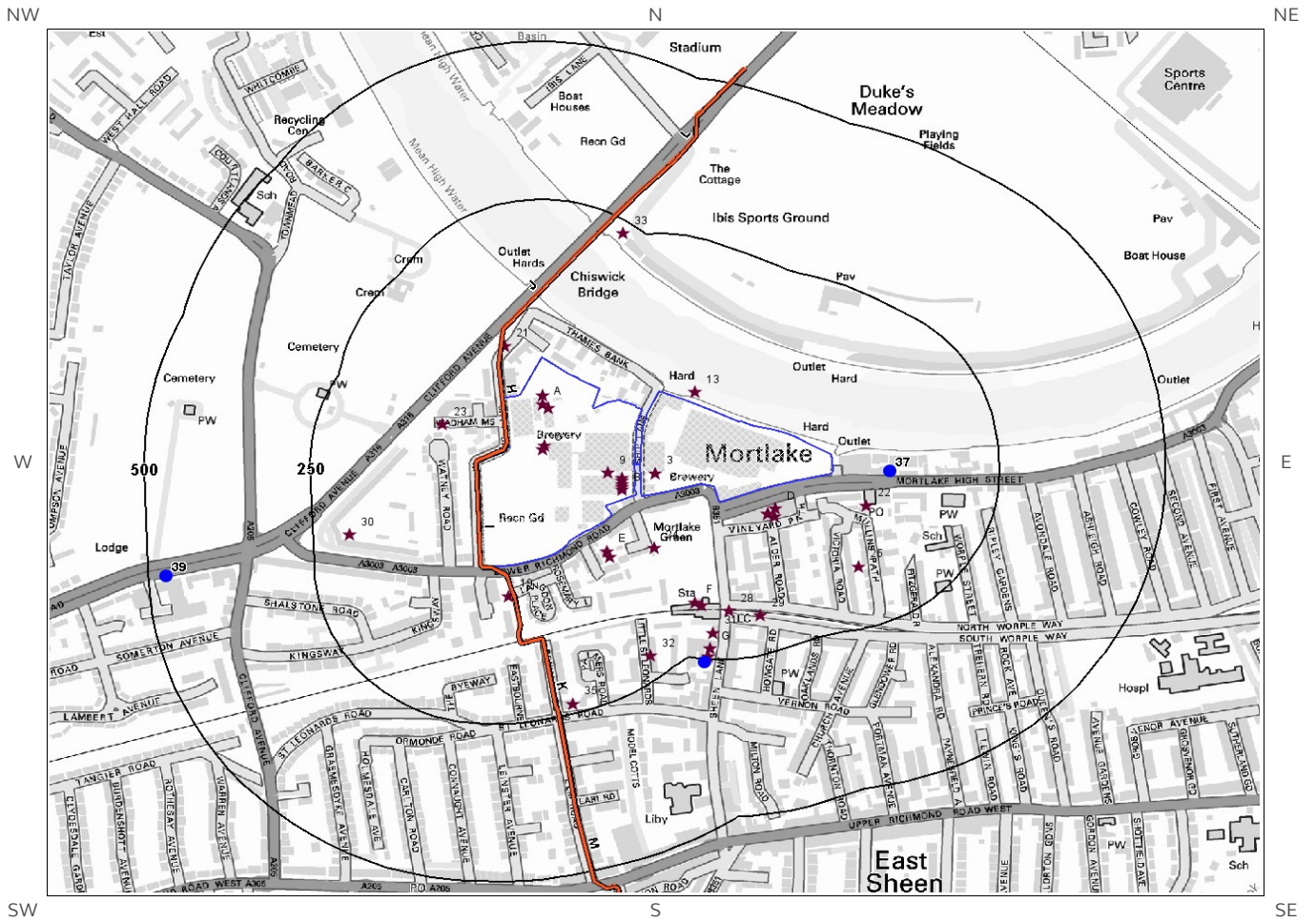
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
20D	485	NW	519895 176520	Site Address: Richmond Upon Thames London B C, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL	Issue Date: 05/12/1996 Effective Date: - Modified: 08/05/2002

ID	Distance (m)	Direction	NGR	Details	
				Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC002 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83209 Annual Tonnage: 107018.0	Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead Road Cas, Kew, Tw9 Correspondence Address: Richmond Upon Thames London B C, Contract Services Dept, Regal House, London Road, Twickenham, Middx, TW1 3QB
21D	485	NW	519895 176520	Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200.0	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead Road Cas, Kew, Tw9 Correspondence Address: Richmond Upon Thames London B C, ""Contract Services Dept, Regal House"" , London Road, Twickenham, Middx, TW1 3QB
22D	485	NW	519895 176520	Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200.0	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead C A S Correspondence Address: Richmond Upon Thames London B C, Richmond Upon Thames L B C, London Road, Twickenham, Middx, TW1 3QB
23D	485	NW	519895 176520	Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: BP3890EF/V002 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83208 Annual Tonnage: 109200.0	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead C A S Correspondence Address: -
24D	485	NW	519895 176520	Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: EA/EPR/BP3890EF/V002 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83208 Annual Tonnage: 109200.0	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Townmead C A S Correspondence Address: -
25D	485	NW	519895 176520	Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site,	Issue Date: 25/05/1994 Effective Date: -

ID	Distance (m)	Direction	NGR	Details	
				Townmead Road, Kew, Surrey, TW9 4EL Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200.0	Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead Road Cas, Kew, Tw9 Correspondence Address: Richmond Upon Thames London B C, Contract Services Dept, Regal House, London Road, Twickenham, Middx, TW1 3QB
26	520	NW	519857 176532	Site Address: Richmond Upon Thames London B C, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC002 EPR reference: EA/EPR/BP3490EL/V003 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83209 Annual Tonnage: 75000.0	Issue Date: 05/12/1996 Effective Date: - Modified: 27/07/2007 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Townmead Civic Amenity Site Correspondence Address: -

4. Current Land Use Map



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Site Outline

Current Industrial Sites

Electricity Transmission Cables

Search Buffers (m)

Petrol & Fuel Sites

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

36

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1A	0	On Site	Tank	520229 176093	Greater London, SW14	Tanks (Generic)	Industrial Features
2A	0	On Site	Tank	520237 176087	Greater London, SW14	Tanks (Generic)	Industrial Features
3	0	On Site	Chimney	520398 175983	Greater London, SW14	Chimneys	Industrial Features
4B	0	On Site	Silo	520348 175957	Greater London, SW14	Hoppers and Silos	Farming
5B	0	On Site	Silo	520348 175962	Greater London, SW14	Hoppers and Silos	Farming
6B	0	On Site	Silo	520348 175966	Greater London, SW14	Hoppers and Silos	Farming
7B	0	On Site	Silo	520348 175971	Greater London, SW14	Hoppers and Silos	Farming
8B	0	On Site	Silo	520348 175976	Greater London, SW14	Hoppers and Silos	Farming
9	0	On Site	Silo	520327 175984	Greater London, SW14	Hoppers and Silos	Farming
10C	0	On Site	Tank	520229 176021	Greater London, SW14	Tanks (Generic)	Industrial Features
11A	0	On Site	Tank	520228 176106	Greater London, SW14	Tanks (Generic)	Industrial Features
12C	0	On Site	Tank	520232 176027	Greater London, SW14	Tanks (Generic)	Industrial Features
13	18	N	Jetty	520458 176112	Greater London, SW14	Moorings and Unloading Facilities	Water
14D	35	S	Low Cost Minicab	520579 175927	Room 108 Mortlake Business Centre, 20 Mortlake High Street, London, Greater London, SW14 8JN	Airlines and Airline Services	Transport, Storage and Delivery
15D	39	S	Global Pharma	520567 175919	20, Mortlake High Street, London, Greater London, SW14 8JN	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
16D	39	S	Norstone UK	520567 175919	Mortlake Business Centre 20, Mortlake High Street, London, Greater London, SW14 8JN	Construction Completion Services	Construction Services
17E	41	SE	Sullivans of Mortlake Ltd	520325 175859	29-31, Lower Richmond Road, London, Greater London, SW14 7EZ	Scrap Metal Merchants	Recycling Services

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
18D	46	S	R J Communications & Media Ltd	520576 175914	39, Vineyard Path, London, Greater London, SW14 8EL	Published Goods	Industrial Products
19	48	S	Electricity Sub Station	520177 175788	Greater London, SW14	Electrical Features	Infrastructure and Facilities
20E	51	SE	Scrap Yard	520329 175850	Greater London, SW14	Scrap Metal Merchants	Recycling Services
21	59	NW	Electricity Sub Station	520171 176185	Greater London, SW14	Electrical Features	Infrastructure and Facilities
22	72	SE	Electricity Sub Station	520715 175932	Greater London, SW14	Electrical Features	Infrastructure and Facilities
23	80	NW	Electricity Sub Station	520078 176061	Greater London, SW14	Electrical Features	Infrastructure and Facilities
24	82	S	Electricity Sub Station	520397 175865	Greater London, SW14	Electrical Features	Infrastructure and Facilities
25	152	S	Electricity Sub Station	520704 175835	Greater London, SW14	Electrical Features	Infrastructure and Facilities
26F	164	S	Rubbish Clearance Unlimited	520458 175778	10-12, Sheen Lane, London, Greater London, SW14 8LL	Waste Storage, Processing and Disposal	Infrastructure and Facilities
27F	167	S	Mortlake Rail Station	520467 175773	Greater London, SW14	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
28	172	S	Electricity Sub Station	520509 175765	Greater London, SW14	Electrical Features	Infrastructure and Facilities
29	188	S	British Travel Awards	520555 175757	East House 109, South Worple Way, London, Greater London, SW14 8TN	Medals, Trophies, Ceremonial and Religious Goods	Consumer Products
30	196	W	Electricity Sub Station	519938 175886	Greater London, SW14	Electrical Features	Infrastructure and Facilities
31	207	S	Classic Chrome Ltd	520484 175730	12, Sheen Lane, London, Greater London, SW14 8LN	Vehicle Repair, Testing and Servicing	Repair and Servicing
32	214	SE	Woodart	520391 175694	Flat 23 Moore Close, Little St. Leonards, London, Greater London, SW14 7LU	General Construction Supplies	Industrial Products
33	232	NE	Slipway	520350 176364	Greater London, W4	Moorings and Unloading Facilities	Water
34G	232	S	M R H Service Station	520480 175705	16-26, Sheen Lane, London, Greater London, SW14 8LW	Petrol and Fuel Stations	Road and Rail
35	234	S	Cookie Crumbles	520274 175617	64, St. Leonards Road, London, Greater London, SW14 7NE	Baking and Confectionery	Foodstuffs
36G	245	S	Esso	520478 175692	26, Sheen Lane, London, Greater London, SW14 8LW	Petrol and Fuel Stations	Road and Rail

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

3

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
37	85	E	520751 175985	OBSOLETE	77 Mortlake High Street, Mortlake, London, Outer London, SW14 8HS	Not Applicable	Obsolete
38G	256	S	520472 175682	ESSO	16-26 Sheen Lane, Mortlake, London, Outer London, SW14 8LW	No	Open
39	474	W	519662 175819	TOTAL	205 Lower Richmond Road, North Sheen, Richmond, Outer London, TW9 4LN	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

18

The following Underground Electricity Transmission Cable records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details	
40H	0	On Site	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
41I	0	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
42H	0	NW	Cable Set: SOUTH (BICC) CABLE SECT 40 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
43I	1	W	Cable Set: SOUTH (BICC) CABLE SECT 39 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
44H	1	NW	Cable Set: - Cable Route: -	Cable Type: PILOT Operating Voltage (kV): -

ID	Distance (m)	Direction	Details	
			Cable Make: -	Year of installation: - Cable in tunnel: -
45I	1	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
46J	73	NW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
47J	74	NW	Cable Set: SOUTH (BICC) CABLE SECT 41 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
48J	74	NW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
49K	100	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
50K	101	S	Cable Set: SOUTH (BICC) CABLE SECT 38 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
51K	101	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
52L	273	NE	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
53L	273	NE	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
54L	276	NE	Cable Set: SOUTH (BICC) CABLE SECT 42 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
55M	331	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
56M	331	S	Cable Set: SOUTH (BICC) CABLE SECT 37 Cable Route: WIMBLEDON - WILLESDEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
57M	331	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT

5.3 Bedrock and Solid Geology

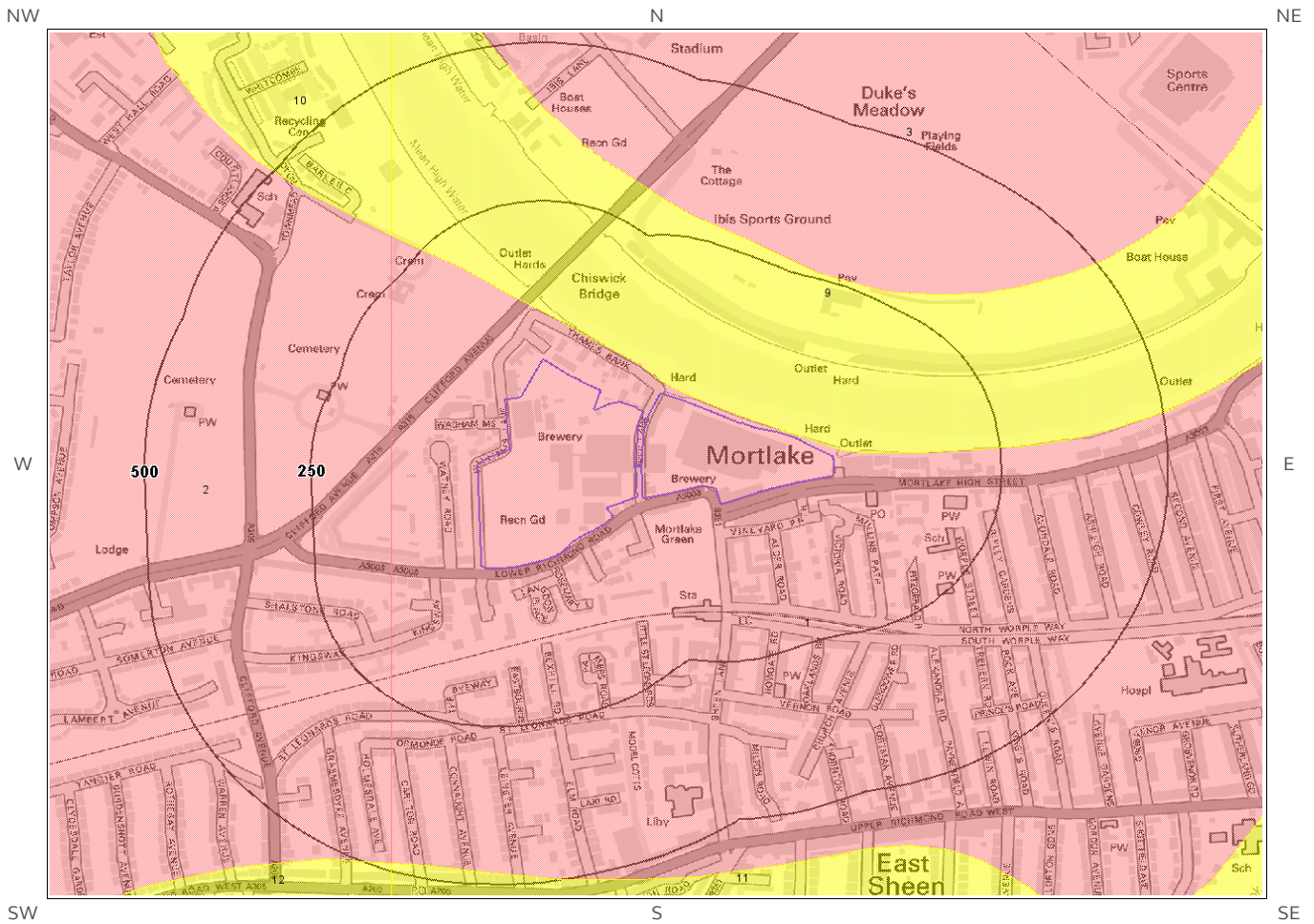
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZ	LONDON CLAY FORMATION	CLAY AND SILT

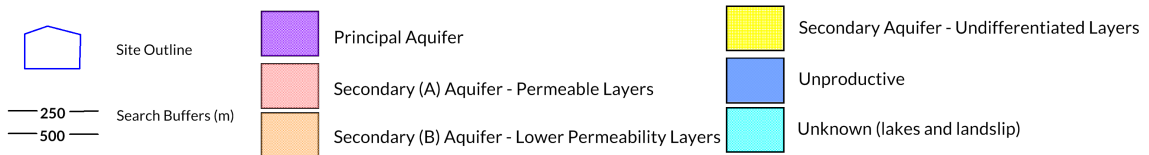
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

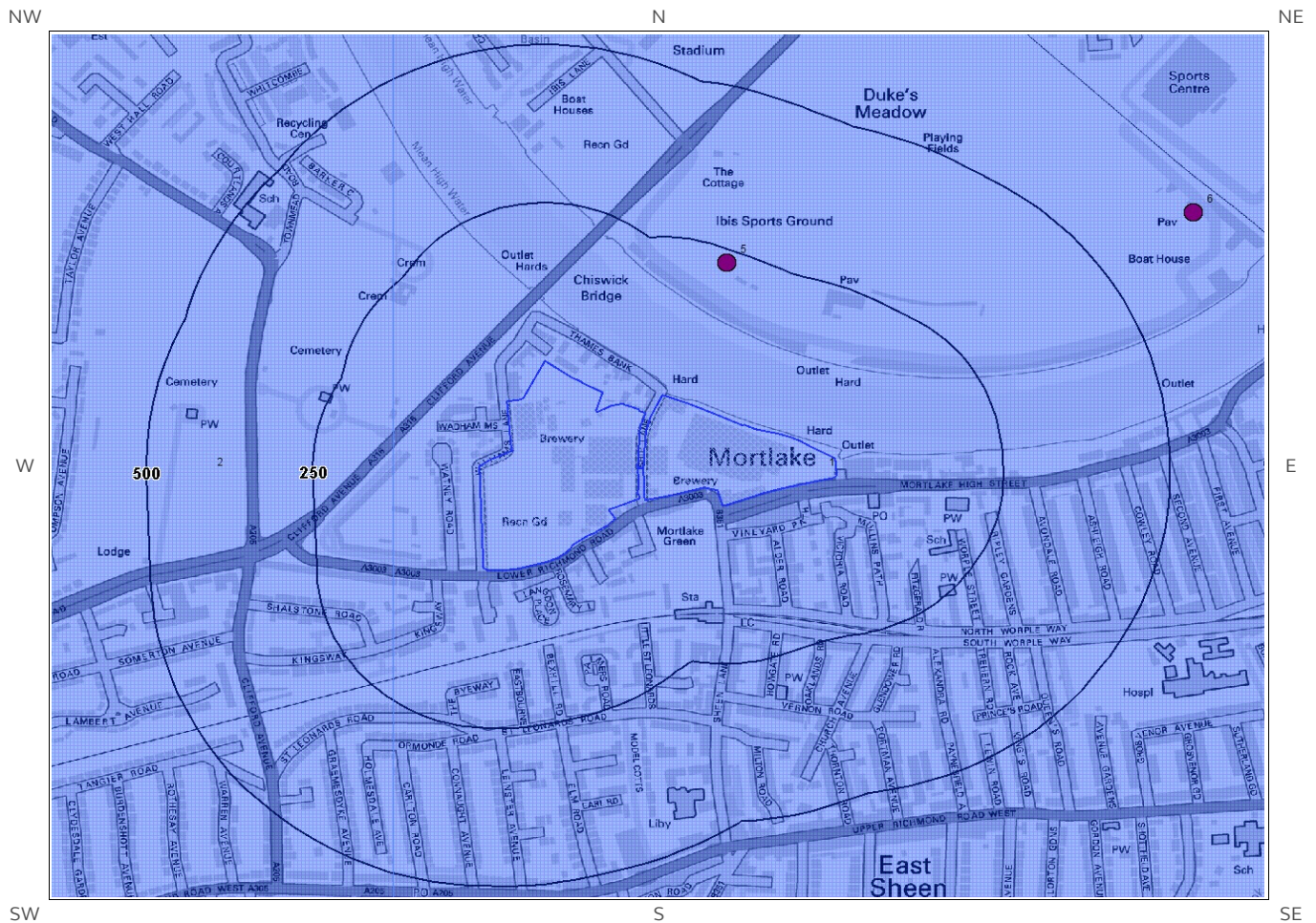
6a. Aquifer Within Superficial Geology



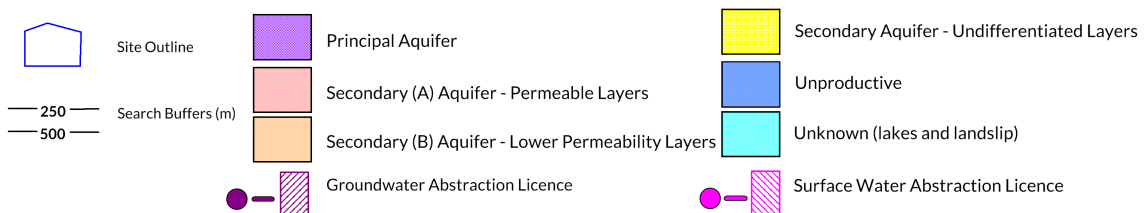
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6b. Aquifer Within Bedrock Geology and Abstraction Licences

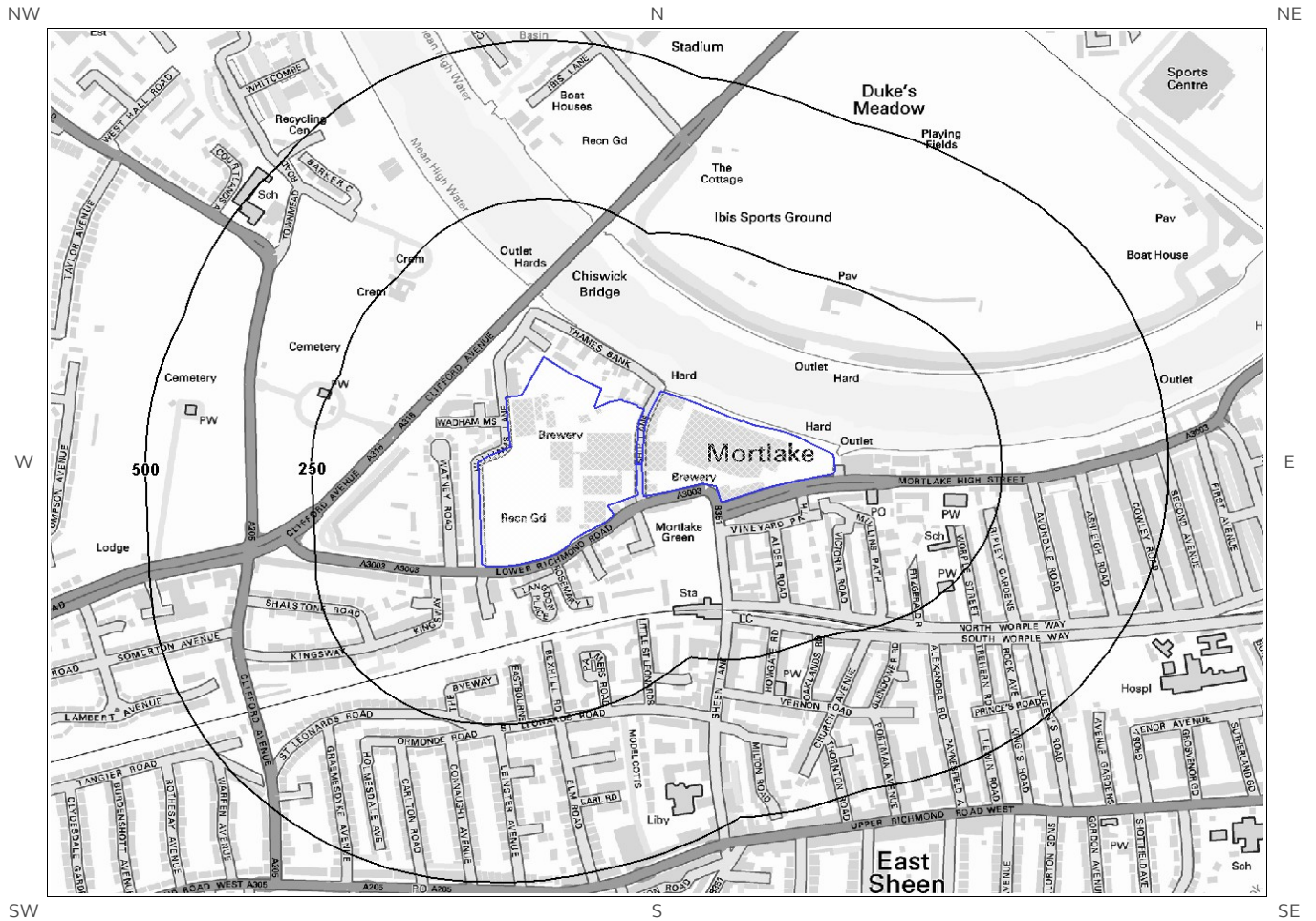


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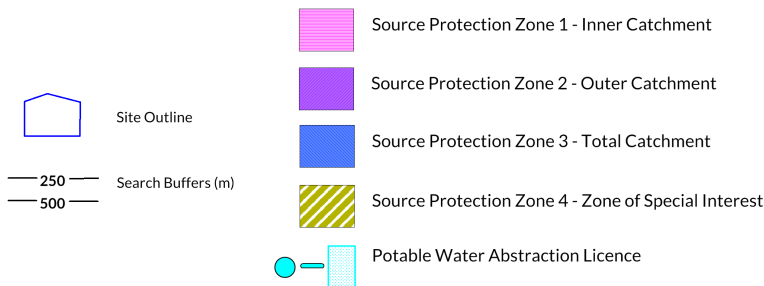




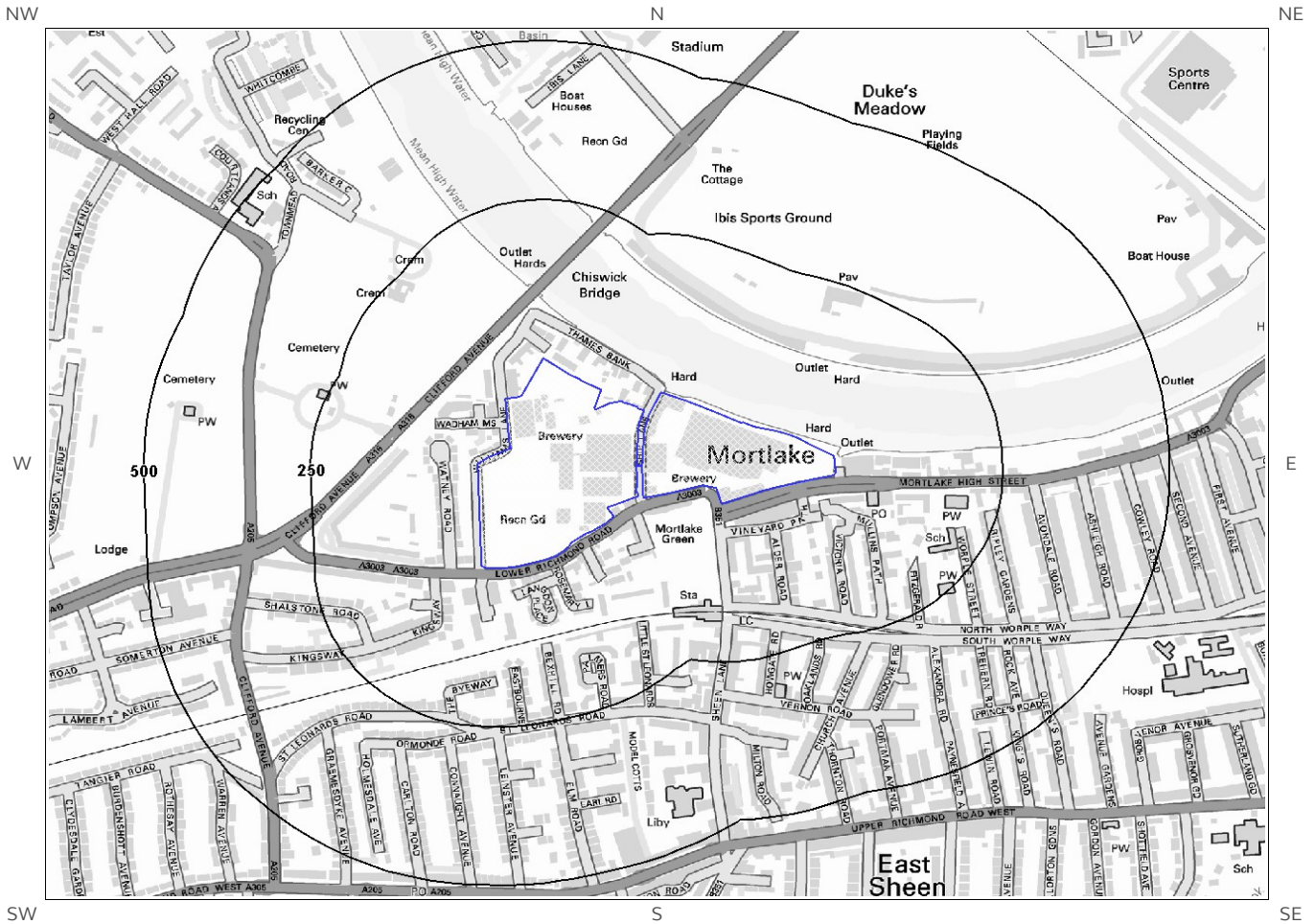
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



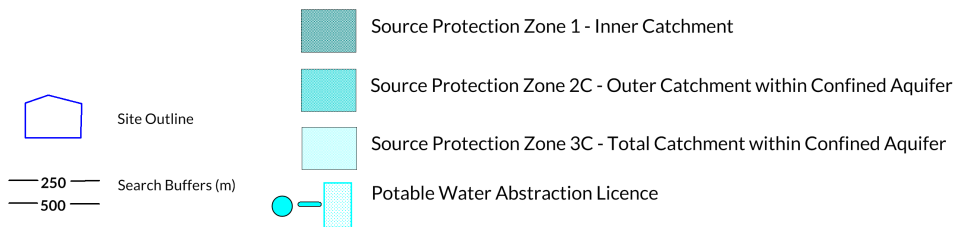
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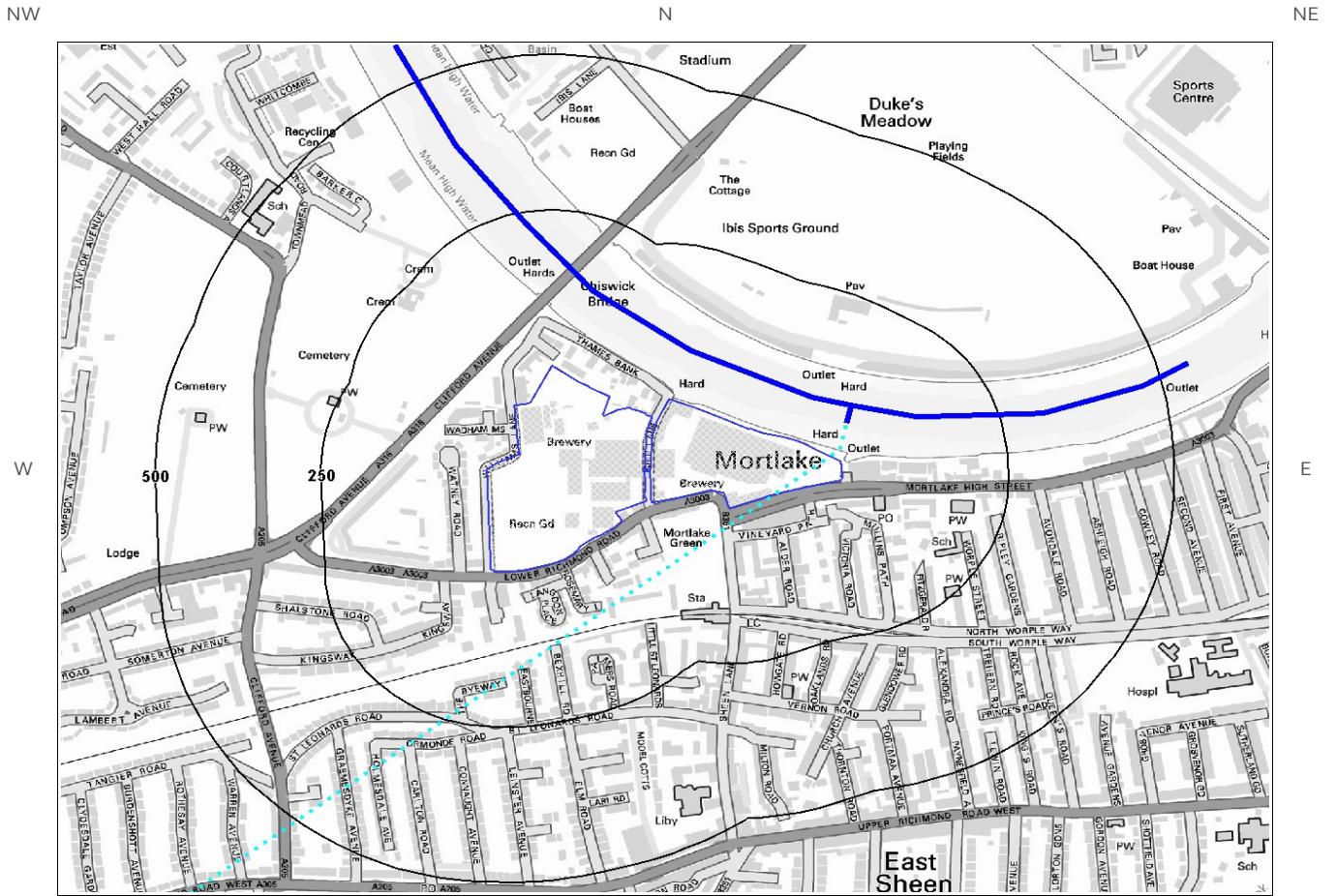
6d. Hydrogeology – Source Protection Zones within confined aquifer



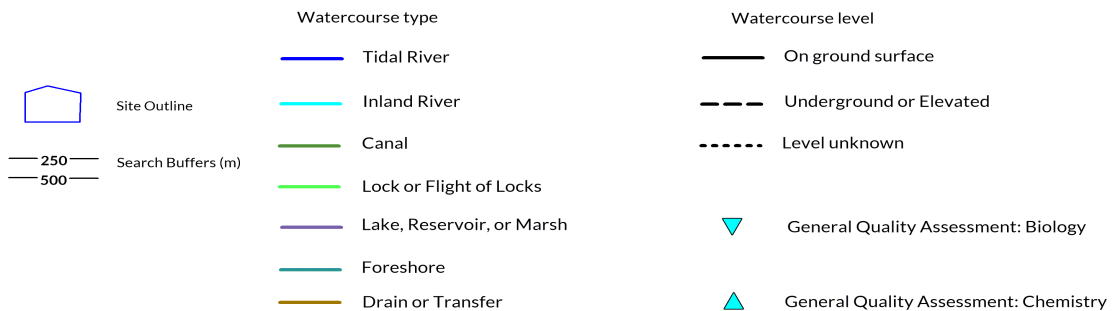
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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	4	N	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	130	W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	259	N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
10	300	NW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
11	478	S	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
12	488	S	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	130	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible

ID	Distance (m)	Direction	Designation	Description
significance for water supply or river base flow				

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
5	228	N	520500 176320	Status: Active Licence No: 28/39/39/0180 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW GOLF CLUB, LONDON - BOREHOLE Data Type: Point Name: D & D LEISURE SPORTS LTD Annual Volume (m ³): 8000 Max Daily Volume (m ³): 55 Original Application No: - Original Start Date: 04/09/1997 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date:
6	662	NE	521200 176400	Status: Historical Licence No: 28/39/39/0174 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW, CHISWICK - BOREHOLE Data Type: Point Name: RIVERSIDE RACQUETS CLUB LTD Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 08/12/1993 Expiry Date: - Issue No: 100 Version Start Date: 08/12/1993 Version End Date:
Not shown	1286	NW	519490 177220	Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice Annual Volume (m ³): 10000 Max Daily Volume (m ³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:
Not shown	1286	NW	519490 177220	Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice Annual Volume (m ³): 10000 Max Daily Volume (m ³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:
Not shown	1324	NW	519480 177260	Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES. KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice Annual Volume (m ³): 10000 Max Daily Volume (m ³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:
Not shown	1324	NW	519480 177260	Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES. KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice Annual Volume (m ³): 10000 Max Daily Volume (m ³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1368	SE	521784 175197	Status: Active Licence No: TH/039/0040/004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT ROEHAMPTON CLUB Data Type: Point Name: Roehampton Club Limited	Annual Volume (m ³): 34960 Max Daily Volume (m ³): 264 Original Application No: - Original Start Date: 03/10/2017 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 03/10/2017 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
130	W	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
139	N	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	17 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	17 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
3	60 NE	-	Tidal river or stream.	Catchment Area: Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	60 NE	-	Tidal river or stream.	Catchment Area: Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	74 N	River Thames	Tidal river or stream.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	74 N	River Thames	Tidal river or stream.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	88 NE	River Thames	Tidal river or stream.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	88 NE	River Thames	Tidal river or stream.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

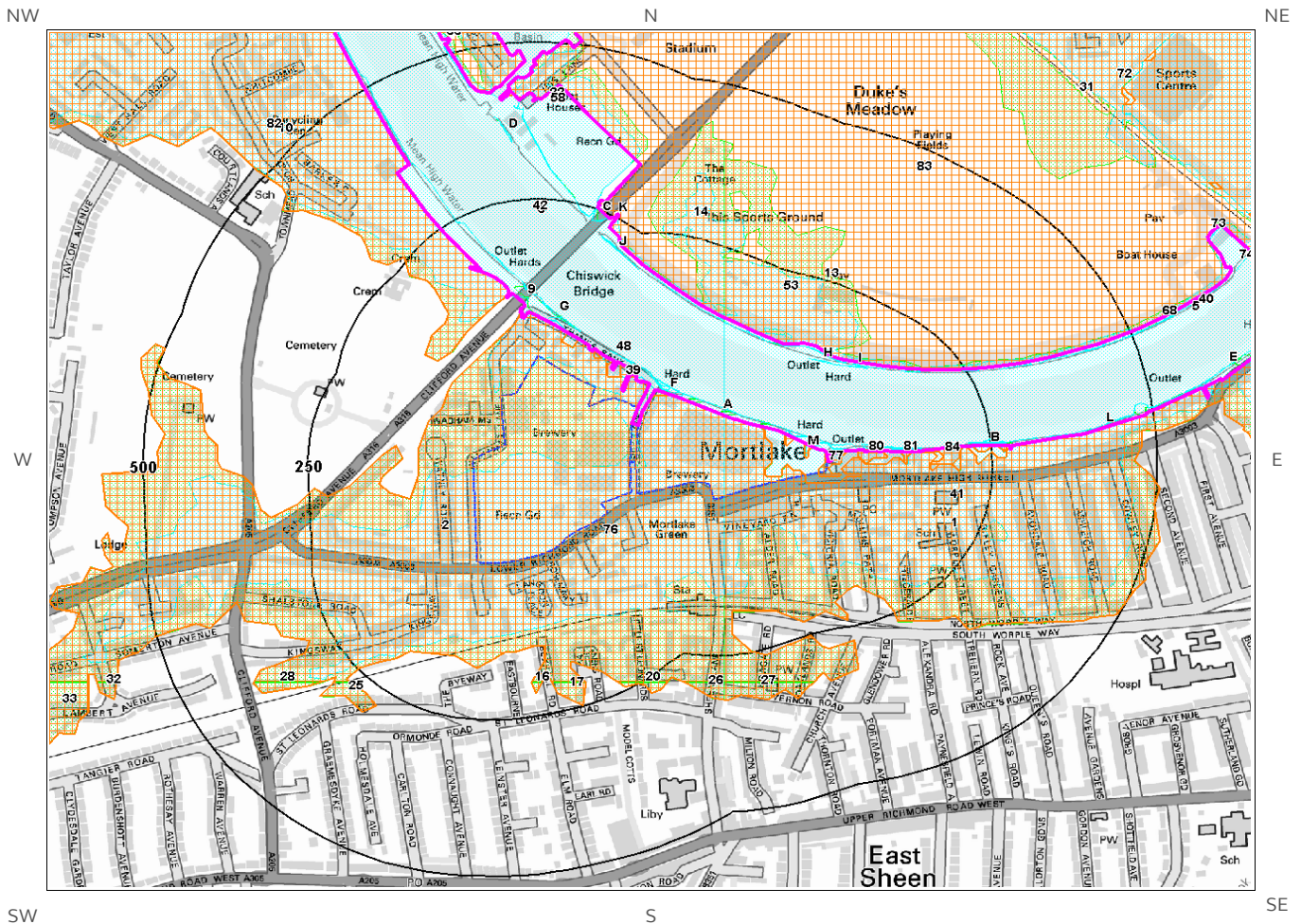
Surface water features within 250m of the study site

Identified

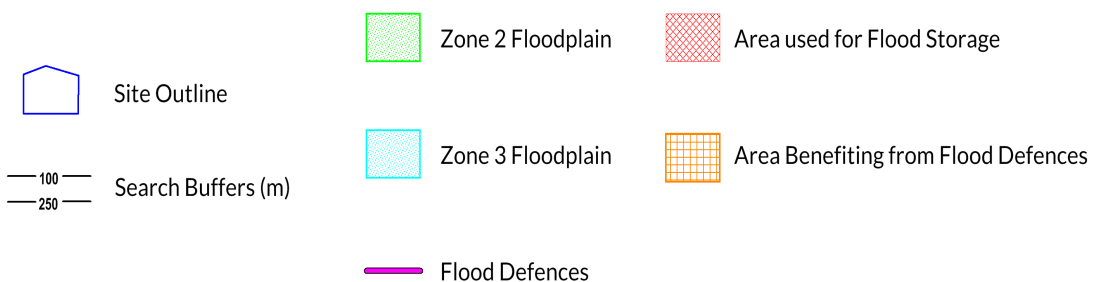
The following surface water records are not represented on mapping:

Distance (m)	Direction
5	N
119	N

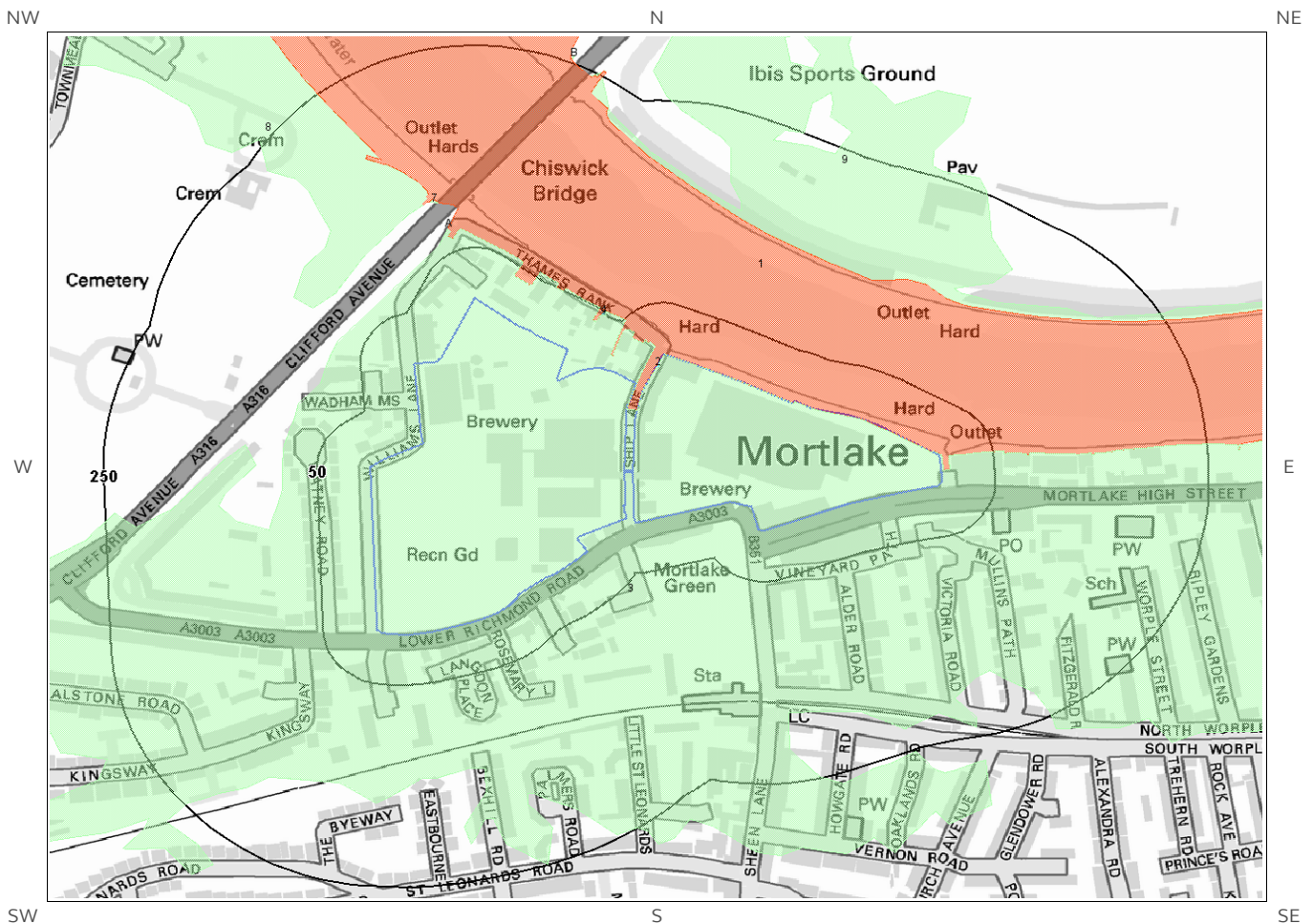
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



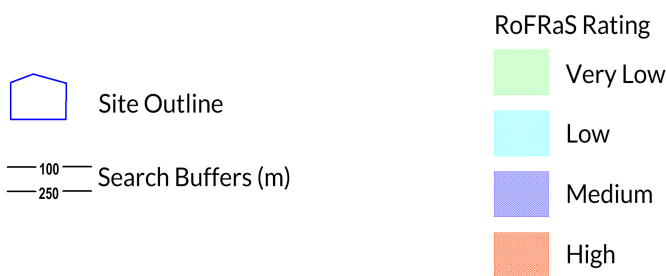
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m

Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
2	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
3F	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
4A	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
5	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
6	0	On Site	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
7A	7	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
8G	68	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
9	90	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
10	95	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
11H	124	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
12I	131	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
13	132	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
14	138	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
15J	194	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
16	195	S	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
17	201	S	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
18B	212	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
19B	212	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)

20	233	SE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
21C	233	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
22	234	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
23C	244	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
24K	249	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	20-Jun-2019	Zone 3 - (Fluvial Models)
2	0	On Site	20-Jun-2019	Zone 3 - (Fluvial Models)
3F	0	On Site	20-Jun-2019	Zone 3 - (Fluvial Models)
4A	0	On Site	20-Jun-2019	Zone 3 - (Fluvial Models)
5	1	N	20-Jun-2019	Zone 3 - (Fluvial Models)
6	1	N	20-Jun-2019	Zone 3 - (Fluvial Models)
7A	3	N	20-Jun-2019	Zone 3 - (Fluvial Models)
8G	4	N	20-Jun-2019	Zone 3 - (Fluvial Models)
9	5	N	20-Jun-2019	Zone 3 - (Fluvial Models)
10	61	NE	20-Jun-2019	Zone 3 - (Fluvial Models)
11H	68	NE	20-Jun-2019	Zone 3 - (Fluvial Models)
12I	74	N	20-Jun-2019	Zone 3 - (Fluvial Models)
13	124	N	20-Jun-2019	Zone 3 - (Fluvial Models)
14	131	NE	20-Jun-2019	Zone 3 - (Fluvial Models)
15J	132	N	20-Jun-2019	Zone 3 - (Fluvial Models)
16	194	N	20-Jun-2019	Zone 3 - (Fluvial Models)
17	222	E	20-Jun-2019	Zone 3 - (Fluvial Models)

18B	222	E	20-Jun-2019	Zone 3 - (Fluvial Models)
19B	231	N	20-Jun-2019	Zone 3 - (Fluvial Models)
20	234	N	20-Jun-2019	Zone 3 - (Fluvial Models)
21C	244	NE	20-Jun-2019	Zone 3 - (Fluvial Models)
22	249	NE	20-Jun-2019	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite High

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a High (1 in 30 or greater) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	High
2	0.0	On Site	Low
3	0.0	On Site	Very Low
4	45.0	NE	Low

7.4 Flood Defences

Flood Defences within 250m of the study site Identified

The following flood defence records are represented as lines on the Flood Map:

ID	Distance (m)	Direction	Update
86	0	On Site	17-Jun-2019
87	136	N	17-Jun-2019
88	226	NE	17-Jun-2019
89	230	NE	17-Jun-2019
90	231	NE	17-Jun-2019

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site

Identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

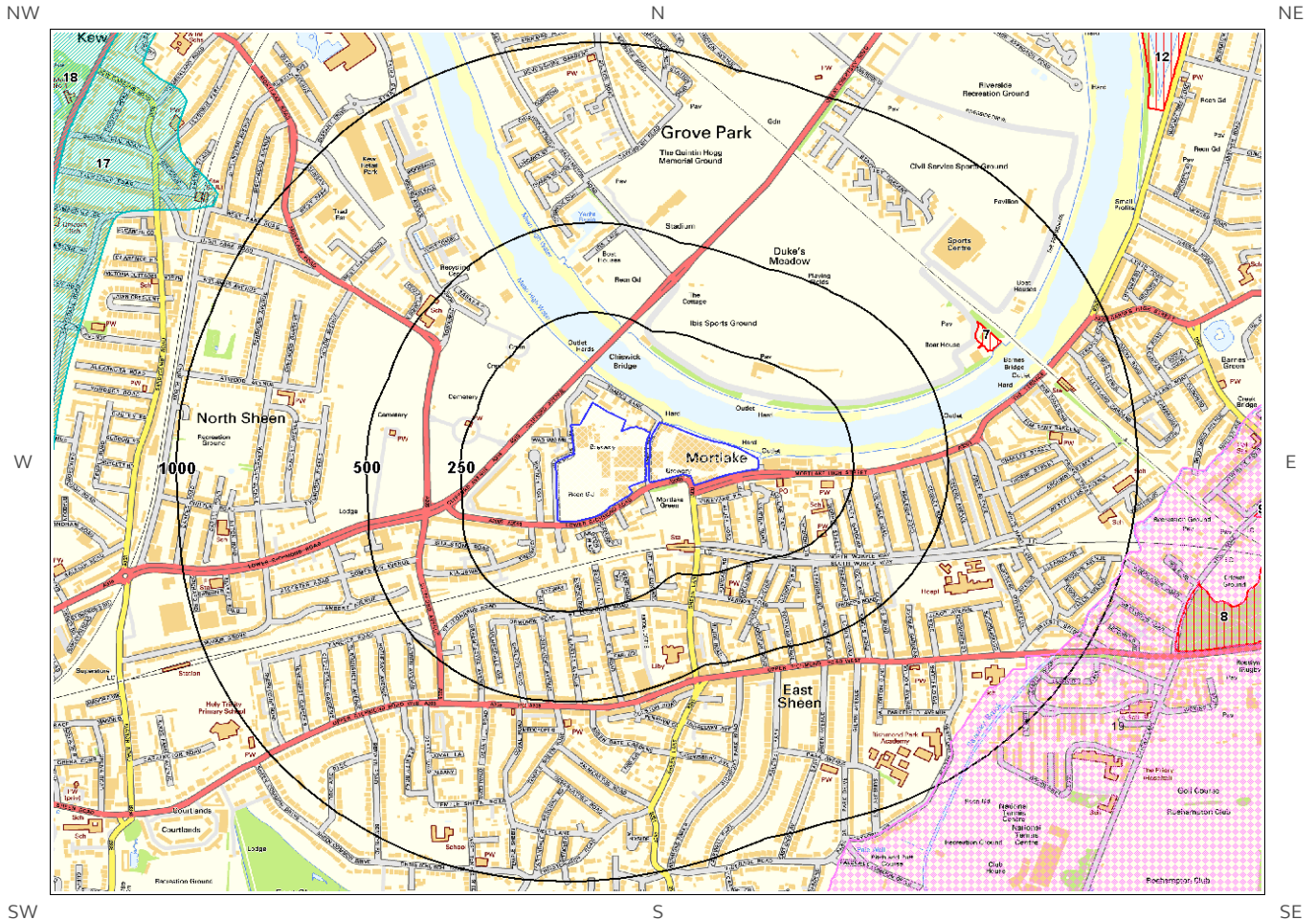
British Geological Survey confidence rating in this result

Moderate

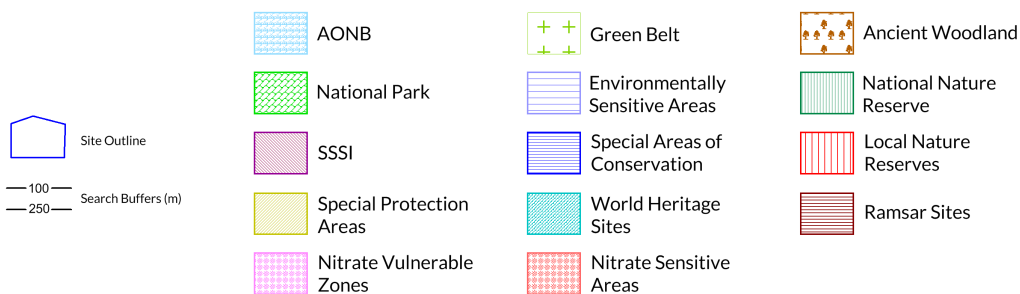
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

2

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
Not shown	1324	S	Richmond Park	Natural England
Not shown	1349	S	Richmond Park	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

2

The following National Nature Reserve (NNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NNR Name	Data Source
Not shown	1324	S	Richmond Park	Natural England
Not shown	1349	S	Richmond Park	Natural England

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

2

The following Special Area of Conservation (SAC) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SAC Name	Data Source
Not shown	1324	S	Richmond Park	Natural England

ID	Distance (m)	Direction	SAC Name	Data Source
Not shown	1349	S	Richmond Park	Natural England

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

10

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
7	659	NE	Duke's Hollow	Natural England
8	1191	E	Barnes Common	Natural England
9	1313	E	Barnes Common	Natural England
Not shown	1351	E	Barnes Common	Natural England
Not shown	1368	E	Barnes Common	Natural England
12	1417	NE	Leg of Mutton Reservoir	Natural England
Not shown	1523	E	Barnes Common	Natural England
Not shown	1609	E	Barnes Common	Natural England
Not shown	1835	E	Barnes Common	Natural England
Not shown	1841	E	Barnes Common	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

2

The following World Heritage Site records provided by English Heritage and Cadw are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	World Heritage Site Name	Data Source
17	1126	NW	Royal Botanic Gardens, Kew Buffer Zone	Historic England
18	1473	W	Royal Botanic Gardens, Kew	Historic England

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

2

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
19	860	SE	Existing	DEFRA
Not shown	1945	S	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure Geo Insight**, available from our [website](#). The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell** hazard rating identified on the study site Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

High

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Very significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Construction may not be possible at economic cost. For existing property probable increase in insurance risk from compressibility especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site

Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

Waterman
Telephone: 0207 9287888
info@groundsure.com



British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk



Environment Agency

National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506

Web: www.environment-agency.gov.uk

Email: enquiries@environment-agency.gov.uk



Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe

Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



Public Health
England

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



The Coal
Authority

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505



Local Authority

Authority: London Borough of Richmond upon Thames
Phone: 08456 122 660
Web: <http://www.richmond.gov.uk/>
Address: Civic Centre, 44 York Street, Twickenham, Middlesex, TW1

Gemapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444





Groundsure

LOCATION INTELLIGENCE



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.

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<https://www.groundsure.com/terms-and-conditions-feb11-2019>



Waterman Infrastructure & Environment
Limited

Report Reference: WTM1-6181569

PICKFORDS WHARF WATERMAN GROUP,
CLINK STREET,
LONDON, SE1 9DG

Your Reference: WIE15582_Stag_Brewery_REQ99015

Report Date 18 Jul 2019

Report Delivery Method: Email - pdf

Geo Insight

Address: THE STAG BREWERY, LOWER RICHMOND ROAD, MORTLAKE, LONDON, SW14 7QR

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000, queries: info@groundsure.com quoting the above report reference number

Yours faithfully,

Waterman

Enc.
Groundsure Geo Insight

Address: THE STAG BREWERY, LOWER RICHMOND ROAD, MORTLAKE,
LONDON, SW14 7QR

Date: 18 Jul 2019

Reference: WTM1-6181569

Client: Waterman Infrastructure & Environment Limited

NW N NE



SW S SE

Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 520394,176013
Site Size: 8.5095ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

No

Section 3: Radon

3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	16	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

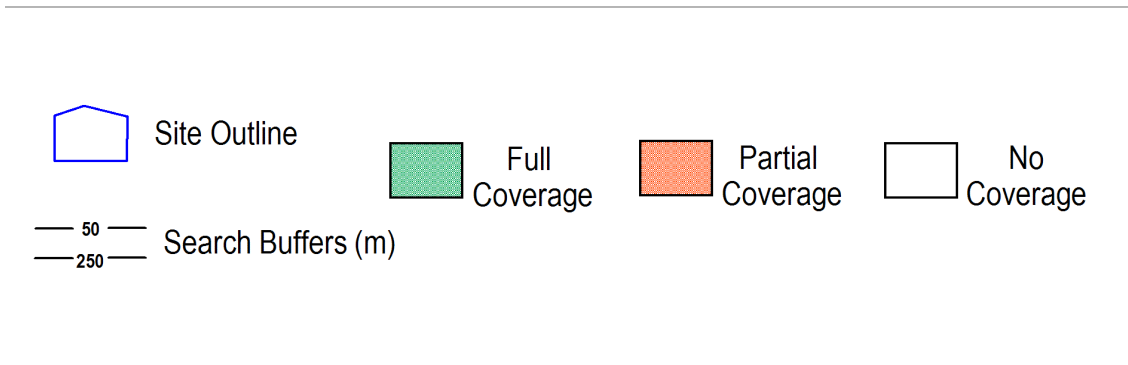
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Moderate				
6.2 Landslides	Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	High				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	22	4	11		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	6	2	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	11	1	6	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	10	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	130.0	Some deposits are mapped	Full	Full	No coverage
3	834.0	Some deposits are mapped	Full	Full	No coverage
4	847.0	Some deposits are mapped	Full	Full	Some deposits are mapped

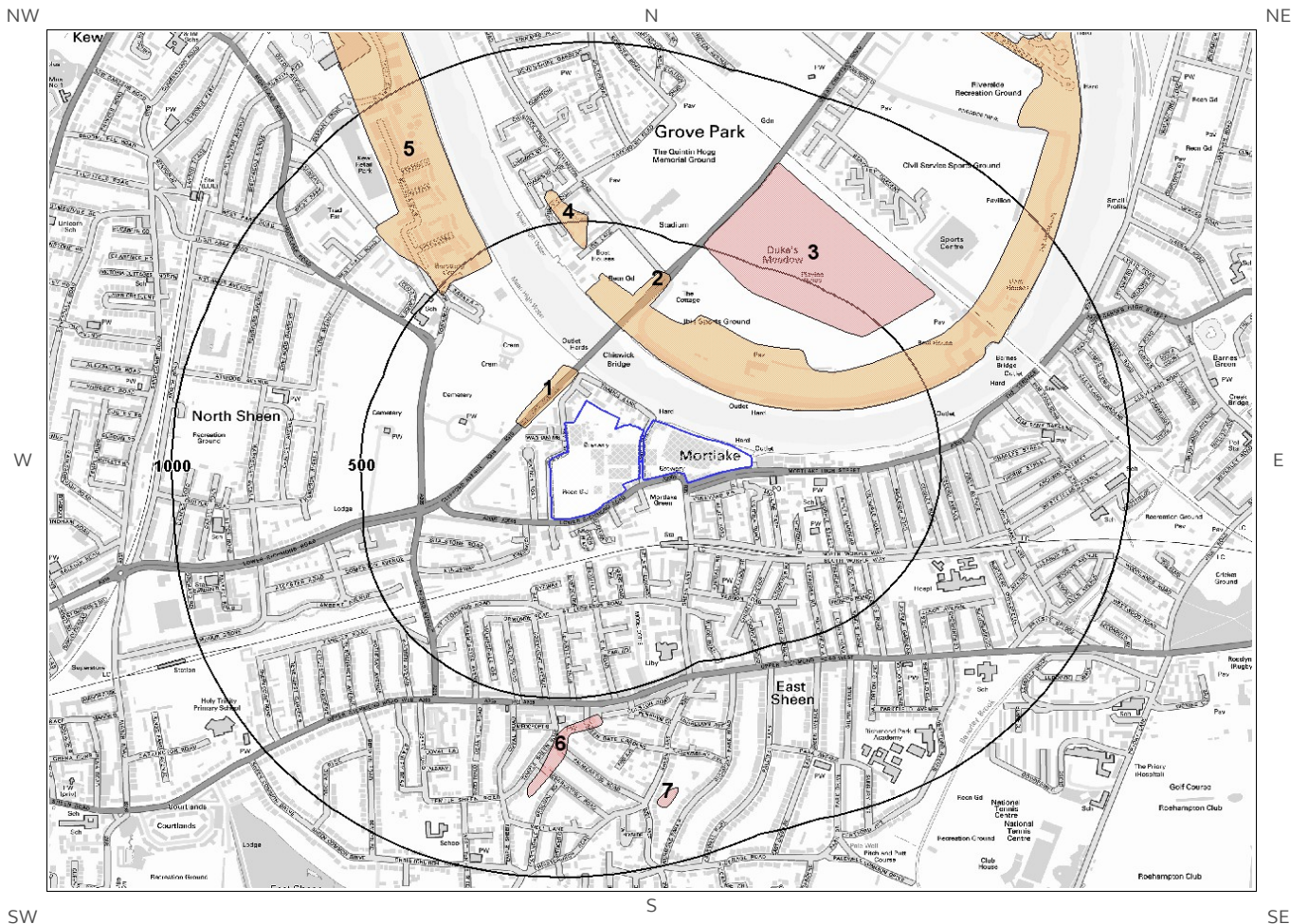
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage




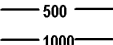




1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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	Site Outline		Made Ground (undivided)		Disturbed Ground (undivided)
	Search Buffers (m)		Worked Ground (undivided)		Landscaped Ground (undivided)
			Infilled Ground		Reclaimed Ground

1. Geology 1:10,000 scale

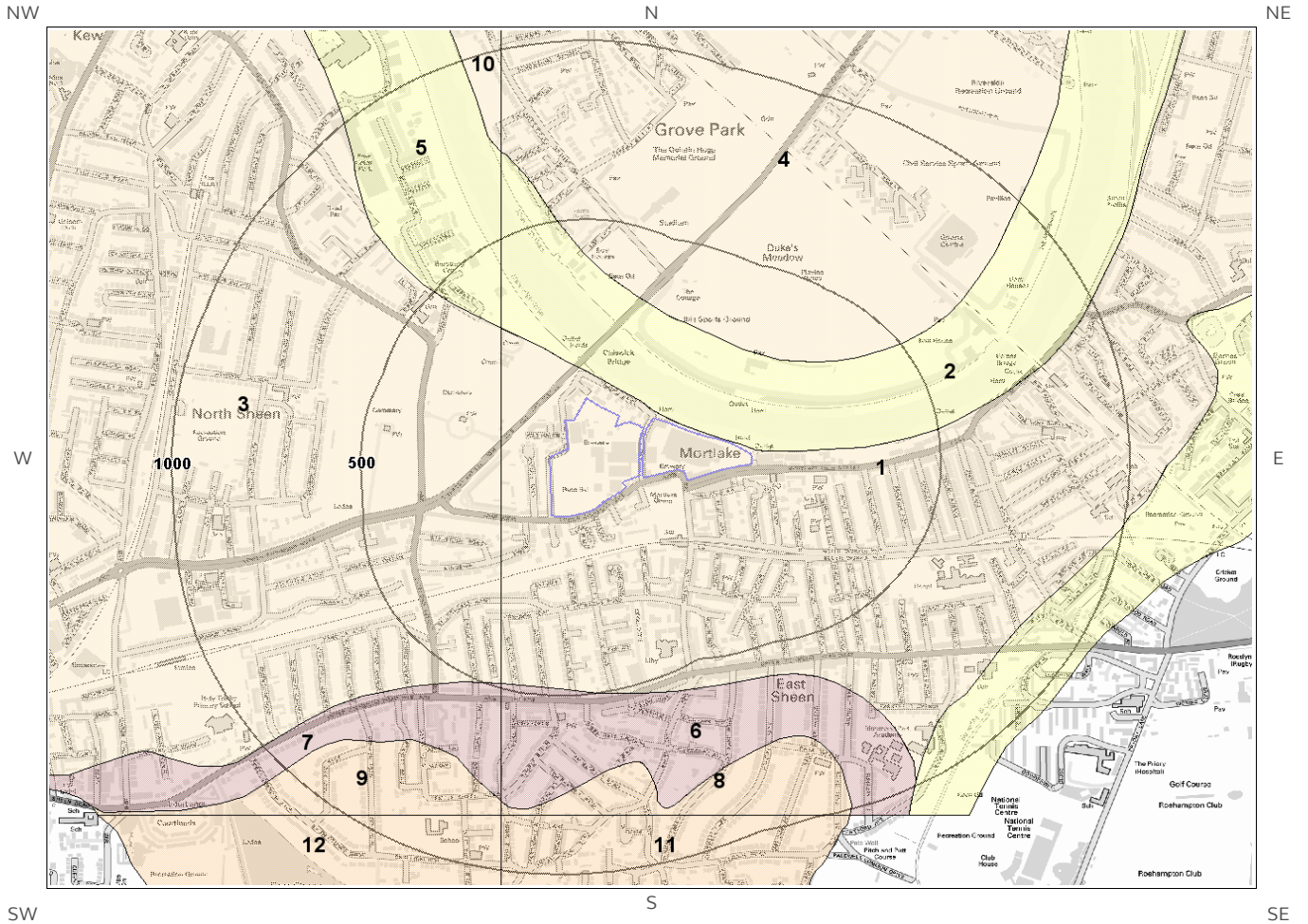
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes


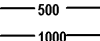
ID	Distance	Direction	LEX Code	Description	Rock Description
1	65.0	NW	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
2	127.0	N	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
3	414.0	NE	WMGR- UNKNOWN	Infilled Ground	Unknown/unclassified Entry
4	424.0	N	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
5	461.0	NW	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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-  Site Outline
-  Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
2	4.0	N	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	130.0	W	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
4	259.0	N	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
5	300.0	NW	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
6	478.0	S	HEAD-C	Head - Clay (unlithified Deposits Coding Scheme)	Clay
7	488.0	S	HEAD-C	Head - Clay (unlithified Deposits Coding Scheme)	Clay

1.2.2 Landslip

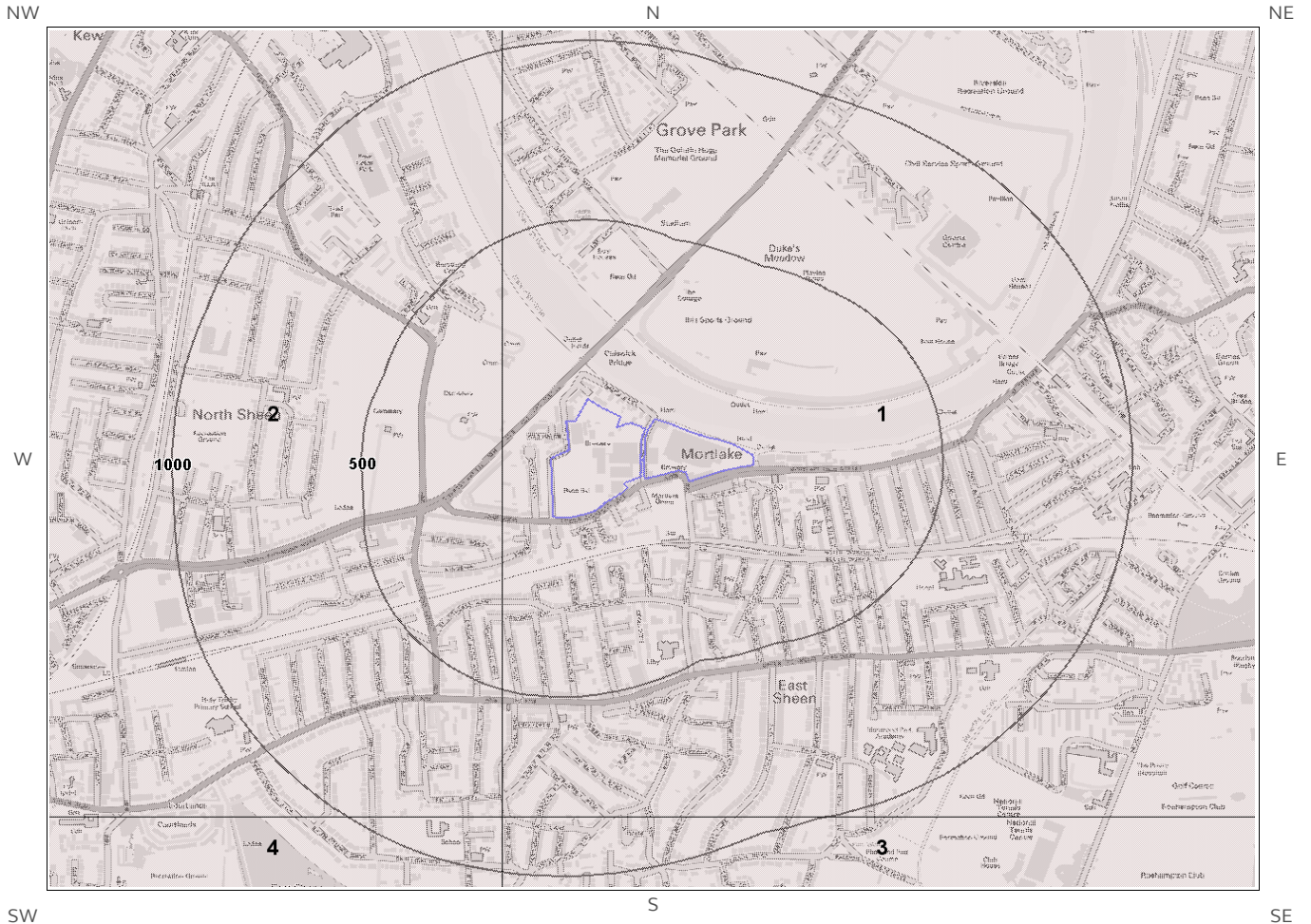
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

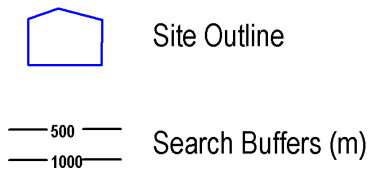
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLAY	London Clay Formation - Clay	Eocene Epoch
2	130.0	W	LC-CLAY	London Clay Formation - Clay	Eocene Epoch

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

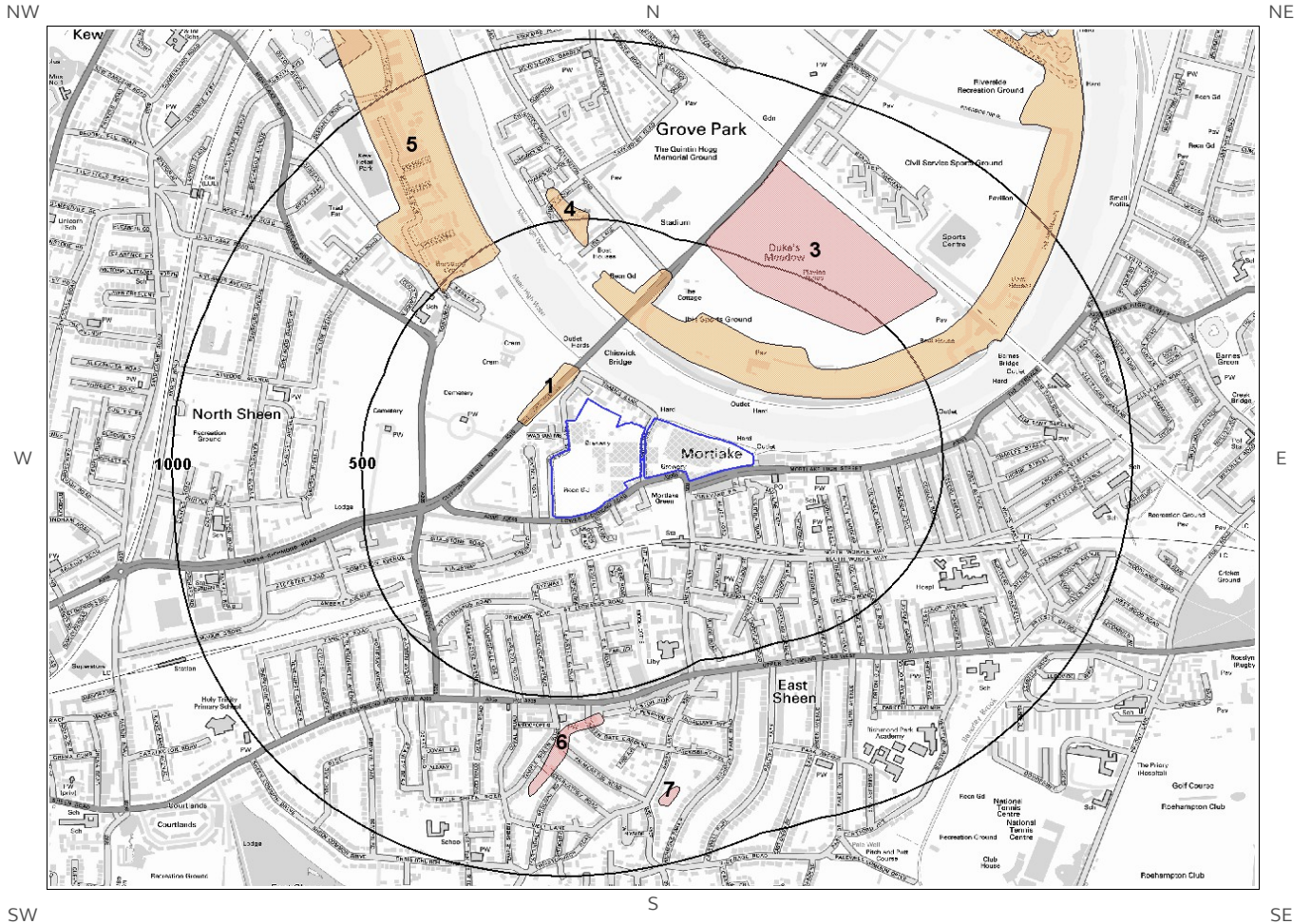
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

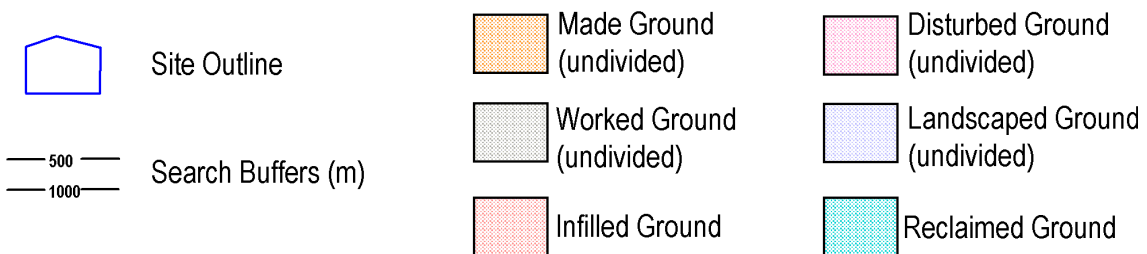
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

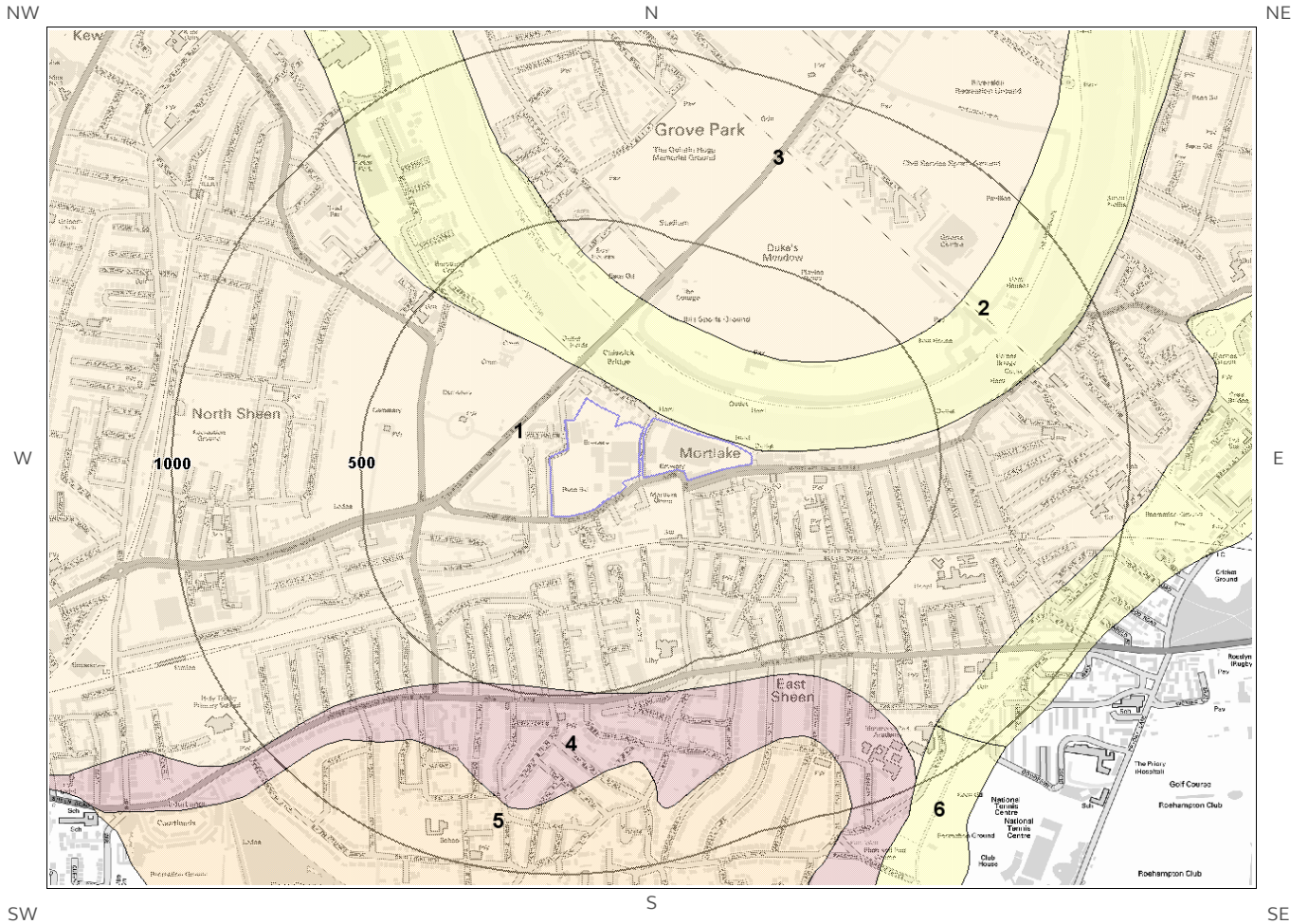
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	64.0	NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	166.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	413.0	NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	423.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
5	460.0	NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

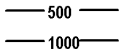
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
2	4.0	N	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT
3	259.0	N	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
4	478.0	S	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	Very High	High
4.0	N	Intergranular	Moderate	Very Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

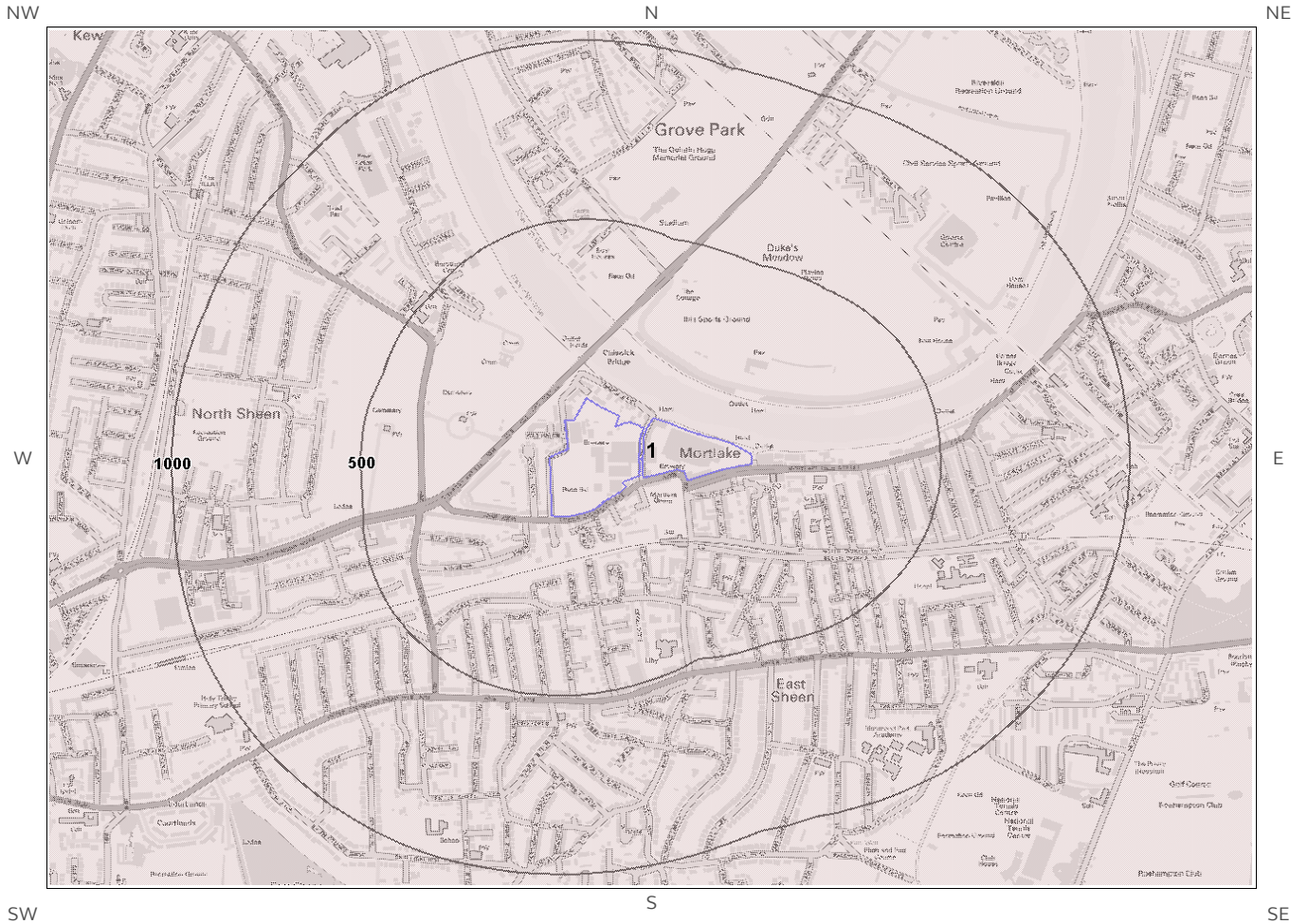
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

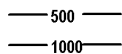
2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	LC-XCZ	LONDON CLAY FORMATION - CLAY AND SILT	YPRESIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

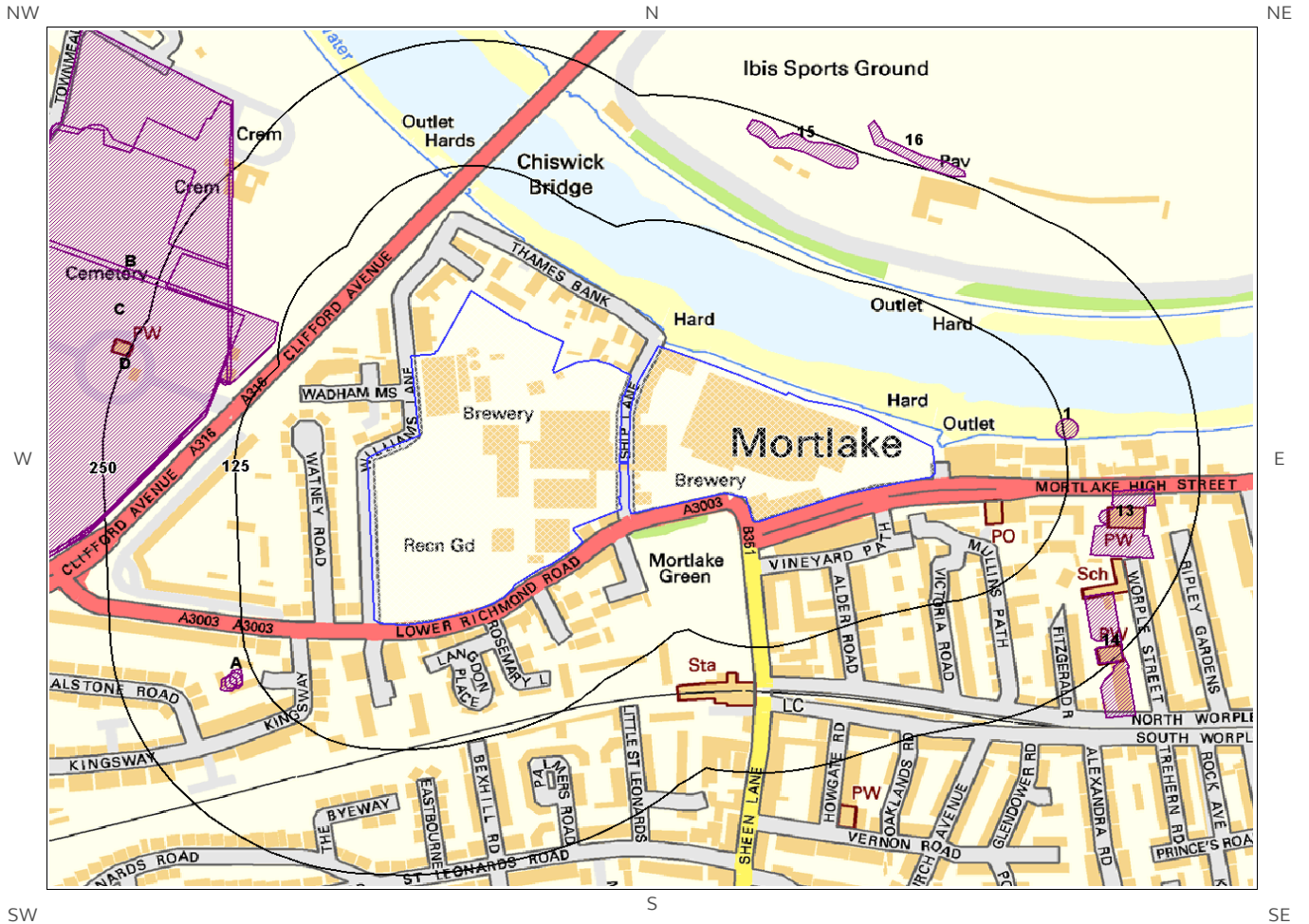
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection





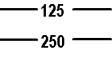
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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-  Site Outline
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings
-  Search Buffers (m)
— 125 —
— 250 —

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	118.0	E	520790 176030	Unspecified Wharf	1967
2D	129.0	W	519922 176063	Cemetery	1933
3A	135.0	W	520006 175782	Unspecified Pit	1893
4A	138.0	SW	520003 175779	Unspecified Pit	1911
5A	142.0	SW	519999 175776	Unspecified Pit	1894
6B	150.0	NW	519901 176168	Cemetery	1987
7B	150.0	NW	519901 176168	Cemetery	1961
8C	153.0	NW	519897 176117	Cemetery	1948
9C	153.0	NW	519897 176117	Cemetery	1948
10C	158.0	W	519899 176122	Cemetery	1974
11C	158.0	W	519899 176122	Cemetery	1966
12D	159.0	W	519905 176058	Cemetery	1933
13	160.0	E	520843 175936	Grave Yard	1866
14	187.0	SE	520831 175804	Gravel Pit	1866
15	222.0	N	520541 176314	Unspecified Heaps	1947
16	250.0	N	520631 176309	Unspecified Ground Workings	1894

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? No

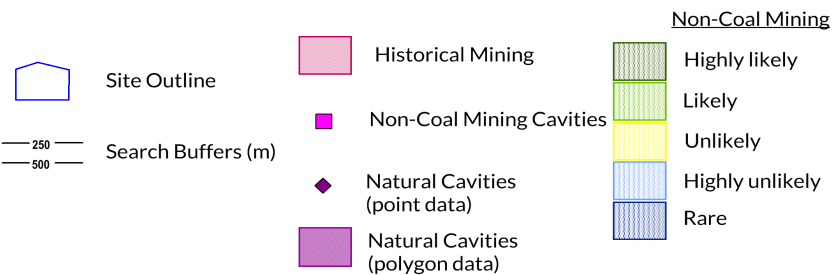
Database searched and no data found.

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

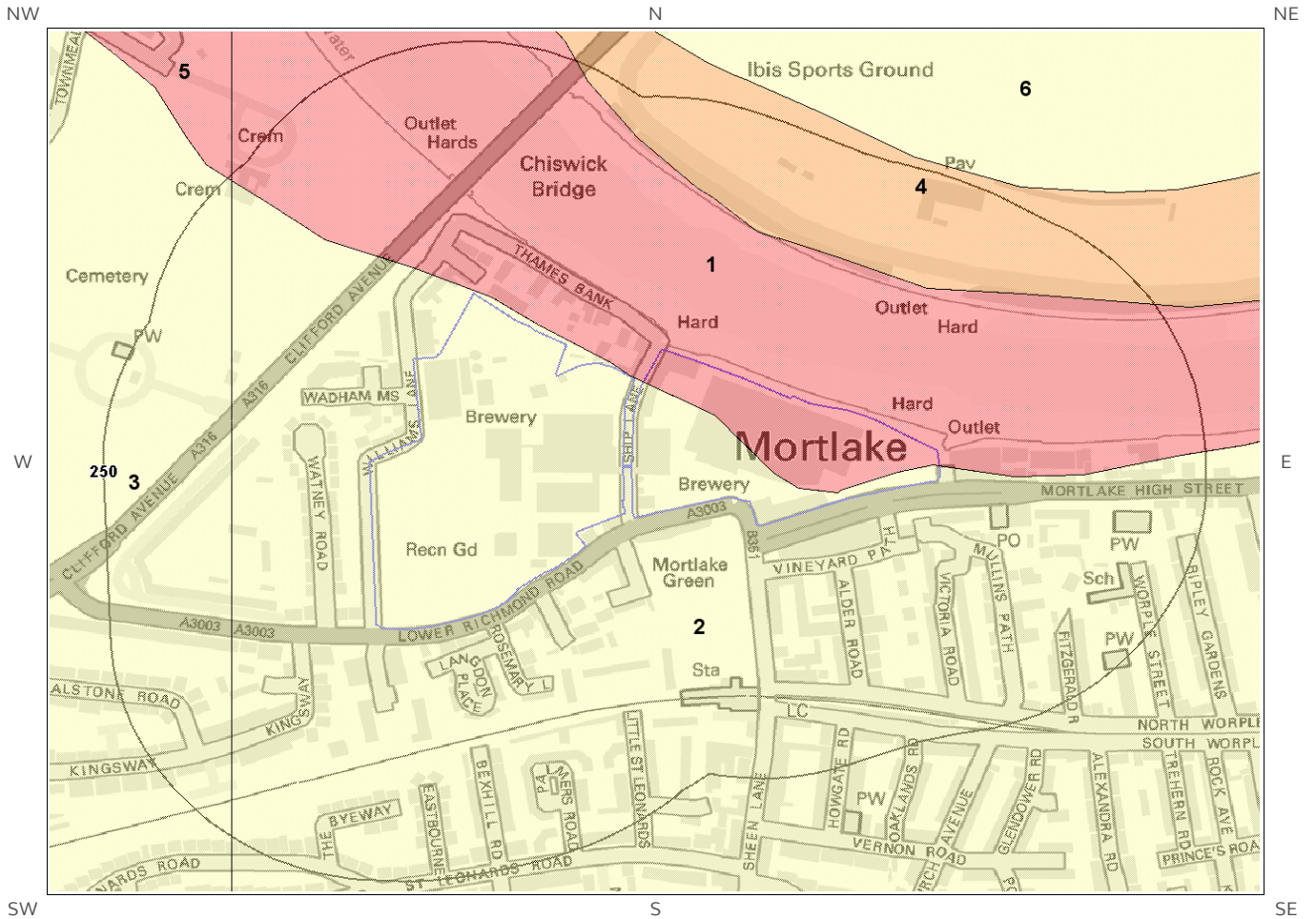
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

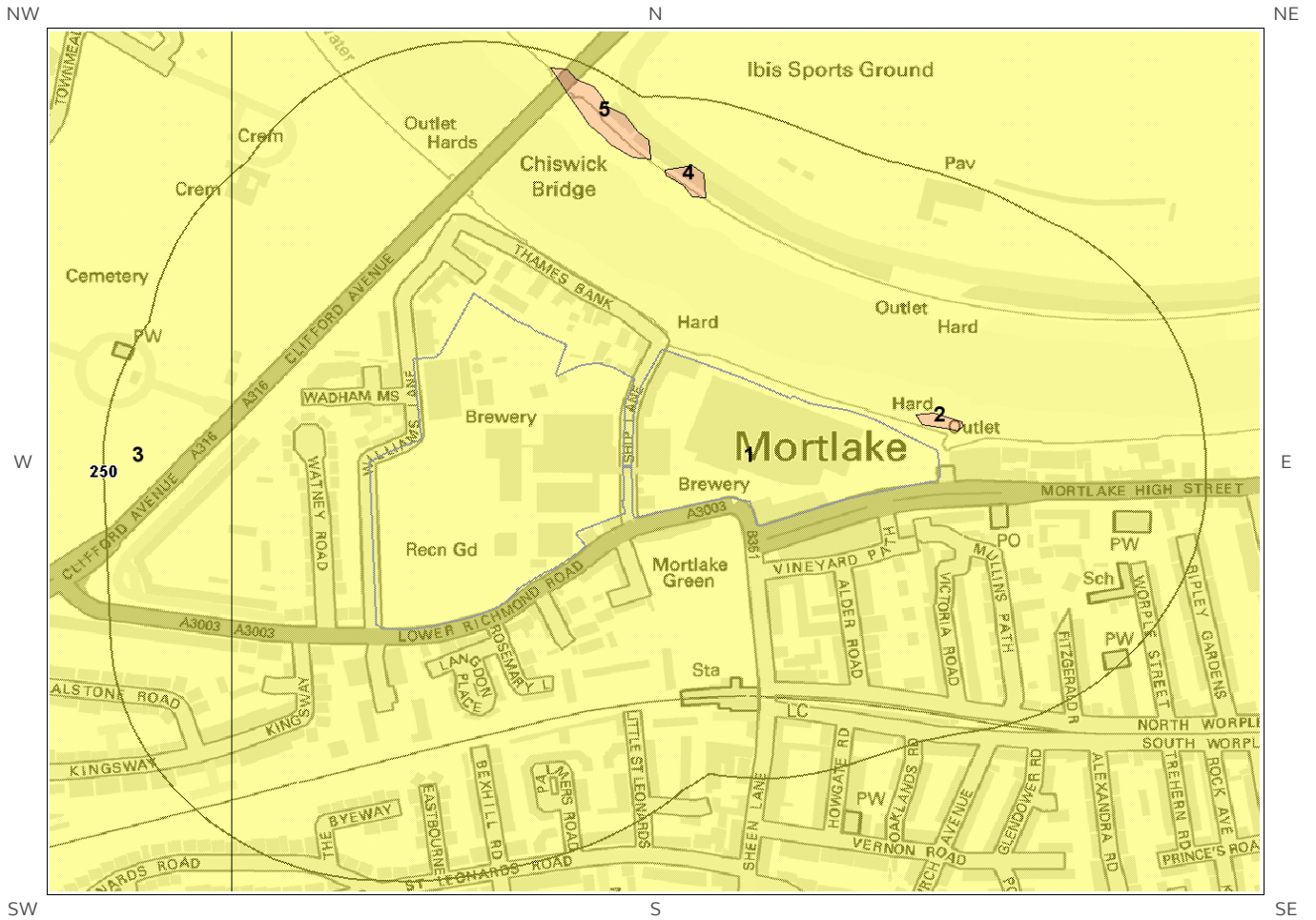


Shrink Swell Clay Legend

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6.2 Landslides map

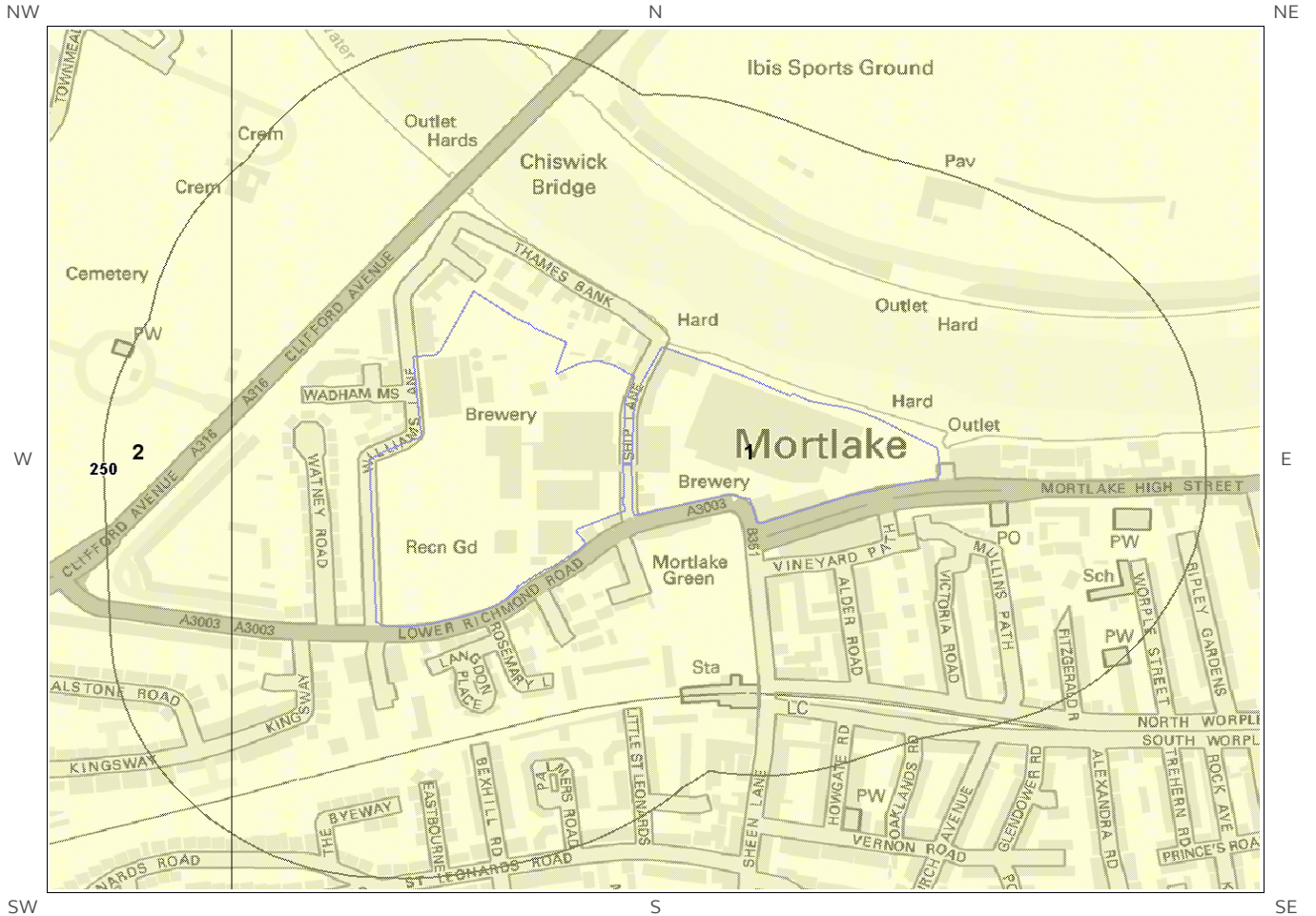


Landslides Legend

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6.3 Ground Dissolution of Soluble Rocks map

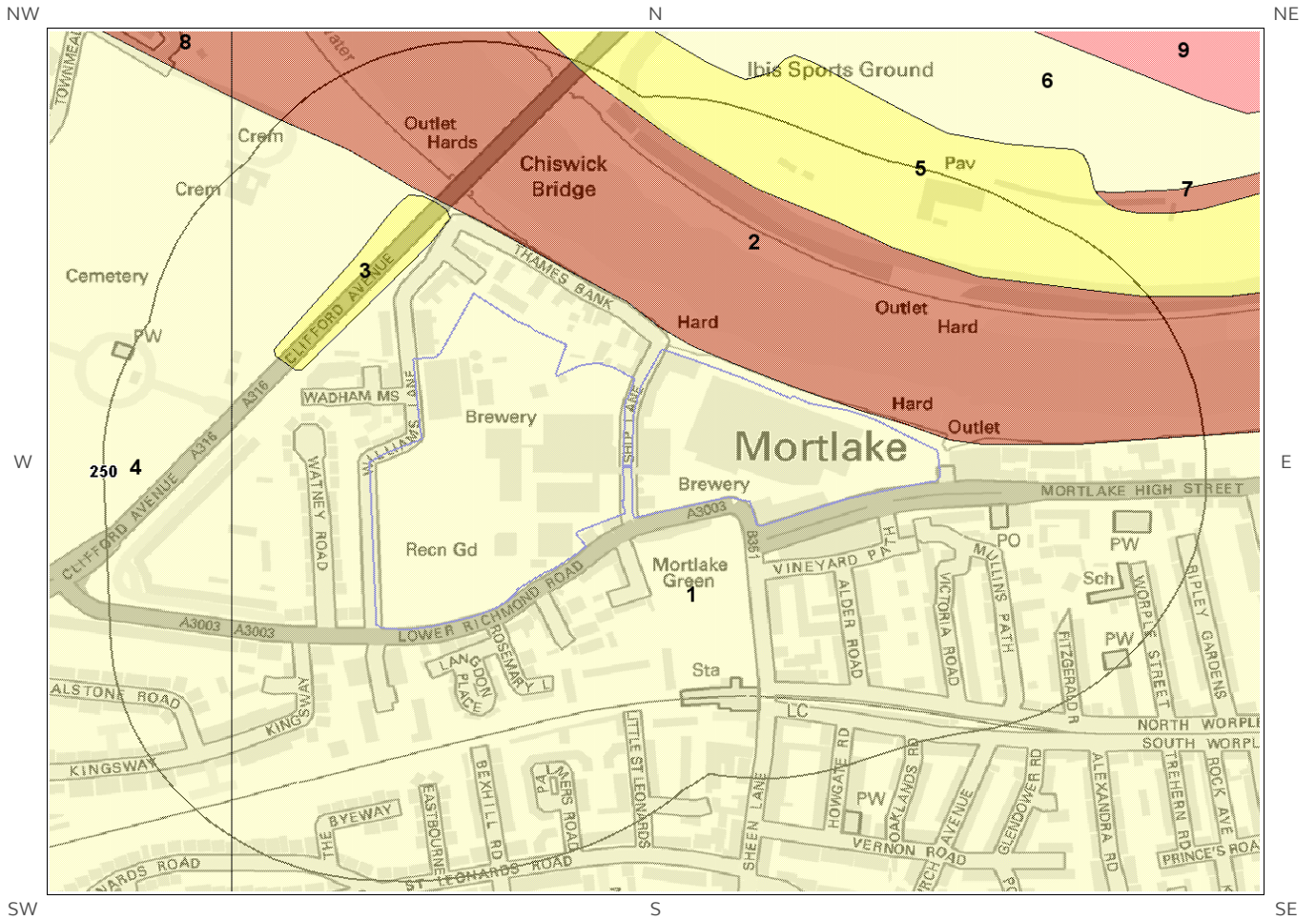


Ground Dissolution Soluble Rocks Legend

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6.4 Compressible Deposits map

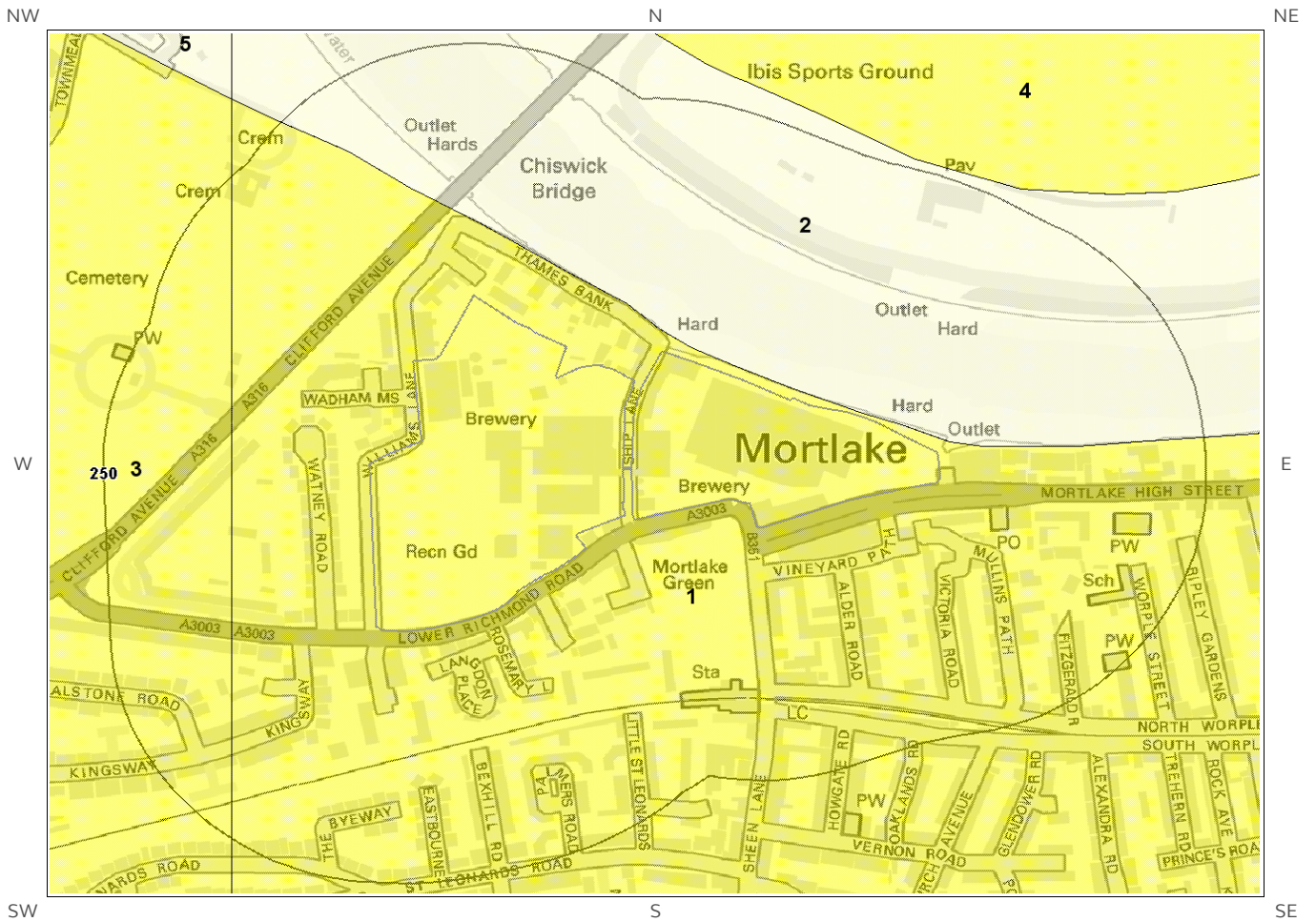


Compressible Deposits Legend

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6.5 Collapsible Deposits map

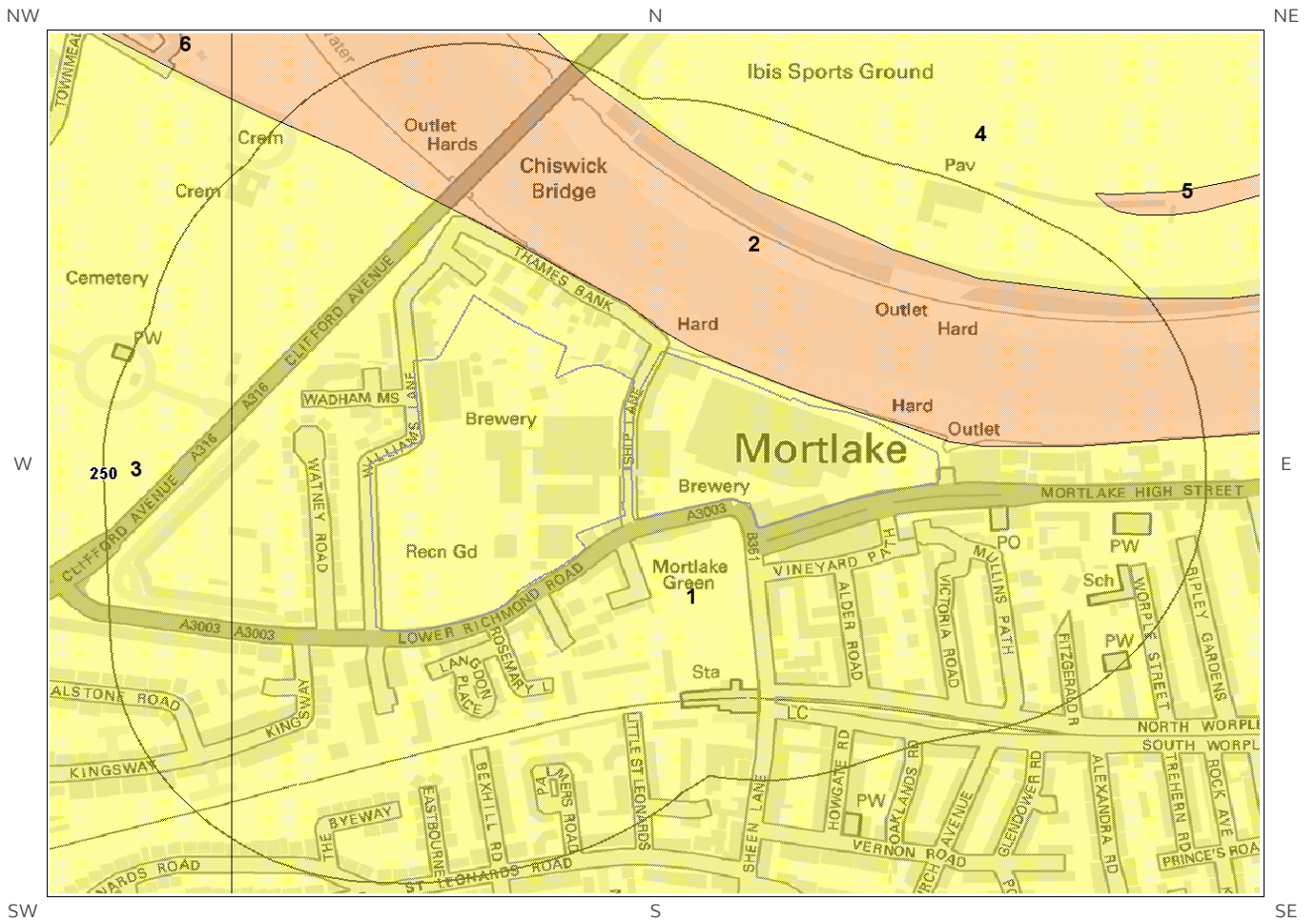


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? High

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

* This includes an automatically generated 50m buffer zone around the site

ID	Distance (m)	Direction	Hazard Rating	Details
2	16.0	NE	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	4.0	N	High	Very significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Construction may not be possible at economic cost. For existing property - probable increase in insurance risk from compressibility especially if water conditions or loading of the ground change significantly.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

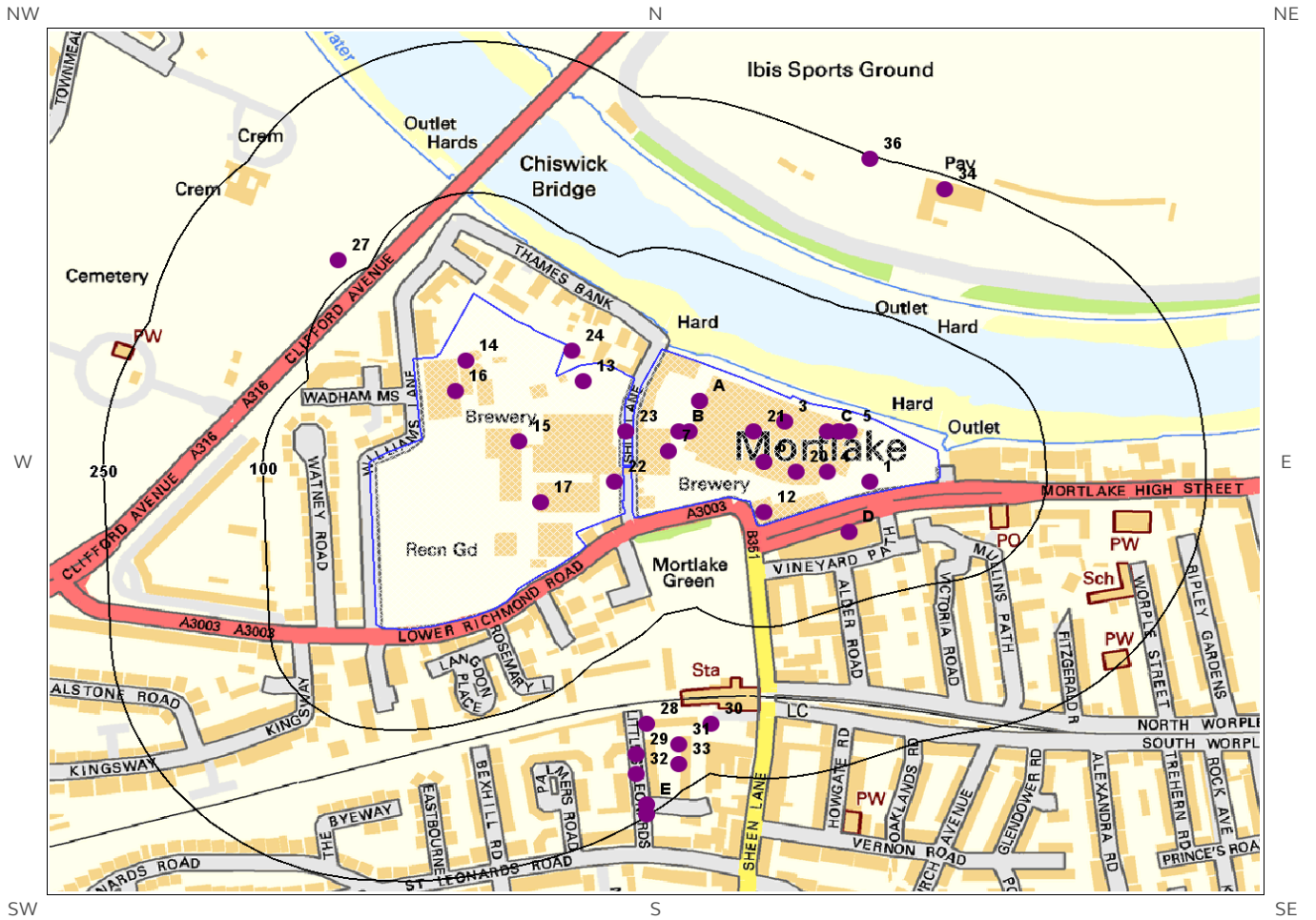
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	4.0	N	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

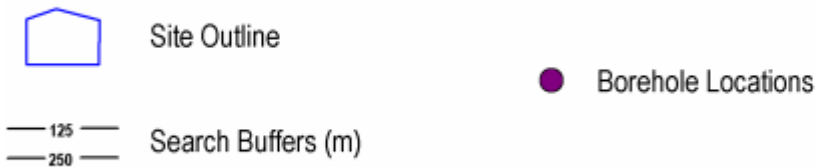
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	4.0	N	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

37

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	520600 175980	TQ27NW927	2	MORTLAKE TP1
2C	0.0	On Site	520560 176030	TQ27NW406	122	MORTLAKE BREWERY
3	0.0	On Site	520520 176040	TQ27NW930	1	MORTLAKE TP4
4	0.0	On Site	520560 175990	TQ27NW928	2	MORTLAKE TP2
5	0.0	On Site	520580 176030	TQ27NW926	8	MORTLAKE 5
6	0.0	On Site	520500 176000	TQ27NW929	2	MORTLAKE TP3
7	0.0	On Site	520410 176010	TQ27NW922	8	MORTLAKE 1
8B	0.0	On Site	520420 176030	TQ27NW931	1	MORTLAKE TP5
9A	0.0	On Site	520440 176060	TQ27NW925	8	MORTLAKE 4
10A	0.0	On Site	520440 176060	TQ27NW405	111	MORTLAKE BREWERY
11B	0.0	On Site	520430 176030	TQ27NW397	10	MORTLAKE DEVELOPMENT BH5
12	0.0	On Site	520500 175950	TQ27NW574	9	WATNEY'S BREWERY, MORTLAKE
13	0.0	On Site	520330 176080	TQ27NW396	10	MORTLAKE DEVELOPMENT BH4
14	0.0	On Site	520220 176100	TQ27NW672	Not available	MORTLAKE BREWERY 1
15	0.0	On Site	520270 176020	TQ27NW394	20	MORTLAKE DEVELOPMENT BH2
16	0.0	On Site	520210 176070	TQ27NW673	Not available	MORTLAKE BREWERY 2
17	0.0	On Site	520290 175960	TQ27NW393	10	MORTLAKE DEVELOPMENT BH1
18C	0.0	On Site	520570 176030	TQ27NW597	122	WATNEY'S BREWERY, MORTLAKE
19C	0.0	On Site	520570 176030	TQ27NW596	101	WATNEY'S BREWERY, MORTLAKE
20	0.0	On Site	520530 175990	TQ27NW923	8	MORTLAKE 2
21	0.0	On Site	520490 176030	TQ27NW924	15	MORTLAKE 3
22	0.0	On Site	520360 175980	TQ27NW398	15	MORTLAKE DEVELOPMENT BH6

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23	1.0	E	520370 176030	TQ27NW399	10	MORTLAKE DEVELOPMENT BH7
24	7.0	E	520320 176110	TQ27NW395	10	MORTLAKE DEVELOPMENT BH3
25D	33.0	S	520580 175930	TQ27NW79/A	20	AMORTLAKE HIGH ST MORTLAKE
26D	33.0	S	520580 175930	TQ27NW79/A-C	20	MORTLAKE HIGH ST MORTLAKE
27	120.0	NW	520100 176200	TQ27NW23	5	RICHMOND MAIN DRAINAGE HOLES MORTLAKE
28	177.0	SE	520390 175740	TQ27NW521	6	LITTLE ST LEONARDE BH2
29	195.0	SE	520380 175710	TQ27NW801	9	LITTLE ST LEONARDS ROAD MORTLAKE 1
30	202.0	S	520450 175740	TQ27NW522	6	LITTLE ST LEONARDE BH3
31	210.0	SE	520420 175720	TQ27NW803	7	LITTLE ST LEONARDS ROAD MORTLAKE 2
32	211.0	SE	520380 175690	TQ27NW816	9	LITTLE ST LEONARDS ROAD MORTLAKE 3
33	227.0	SE	520420 175700	TQ27NW819	7	LITTLE ST LEONARDS ROAD MORTLAKE 4
34	236.0	N	520670 176270	TQ27NW425	168	DUKES MEADOWS CHISWICK
35E	241.0	SE	520390 175660	TQ27NW822	6	LITTLE ST LEONARDS ROAD MORTLAKE 5
36	246.0	N	520600 176300	TQ27NW476	12	DUKES MEADOW GOLF CLUB
37E	249.0	SE	520390 175650	TQ27NW520/N	6	LITTLE ST LEONARDE 1

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/18464321
#2C: scans.bgs.ac.uk/sobi_scans/boreholes/587001
#3: scans.bgs.ac.uk/sobi_scans/boreholes/18464324
#4: scans.bgs.ac.uk/sobi_scans/boreholes/18464322
#5: scans.bgs.ac.uk/sobi_scans/boreholes/18464320
#6: scans.bgs.ac.uk/sobi_scans/boreholes/18464323
#7: scans.bgs.ac.uk/sobi_scans/boreholes/18464316
#8B: scans.bgs.ac.uk/sobi_scans/boreholes/18464325
#9A: scans.bgs.ac.uk/sobi_scans/boreholes/18464319
#10A: scans.bgs.ac.uk/sobi_scans/boreholes/587000
#11B: scans.bgs.ac.uk/sobi_scans/boreholes/586990
#12: scans.bgs.ac.uk/sobi_scans/boreholes/587169
#13: scans.bgs.ac.uk/sobi_scans/boreholes/586989
#15: scans.bgs.ac.uk/sobi_scans/boreholes/586987
#17: scans.bgs.ac.uk/sobi_scans/boreholes/586986
#18C: scans.bgs.ac.uk/sobi_scans/boreholes/587192
#19C: scans.bgs.ac.uk/sobi_scans/boreholes/587191
#20: scans.bgs.ac.uk/sobi_scans/boreholes/18464317
#21: scans.bgs.ac.uk/sobi_scans/boreholes/18464318
#22: scans.bgs.ac.uk/sobi_scans/boreholes/586991
#23: scans.bgs.ac.uk/sobi_scans/boreholes/586994
#24: scans.bgs.ac.uk/sobi_scans/boreholes/586988
#25D: scans.bgs.ac.uk/sobi_scans/boreholes/586658
#26D: scans.bgs.ac.uk/sobi_scans/boreholes/586659
#27: scans.bgs.ac.uk/sobi_scans/boreholes/586602
#28: scans.bgs.ac.uk/sobi_scans/boreholes/587116
#29: scans.bgs.ac.uk/sobi_scans/boreholes/18208130
#30: scans.bgs.ac.uk/sobi_scans/boreholes/587117
#31: scans.bgs.ac.uk/sobi_scans/boreholes/18208132
#32: scans.bgs.ac.uk/sobi_scans/boreholes/18208145
#33: scans.bgs.ac.uk/sobi_scans/boreholes/18208148
#34: scans.bgs.ac.uk/sobi_scans/boreholes/587020
#35E: scans.bgs.ac.uk/sobi_scans/boreholes/18208152
#36: scans.bgs.ac.uk/sobi_scans/boreholes/587071
#37E: scans.bgs.ac.uk/sobi_scans/boreholes/587115

8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

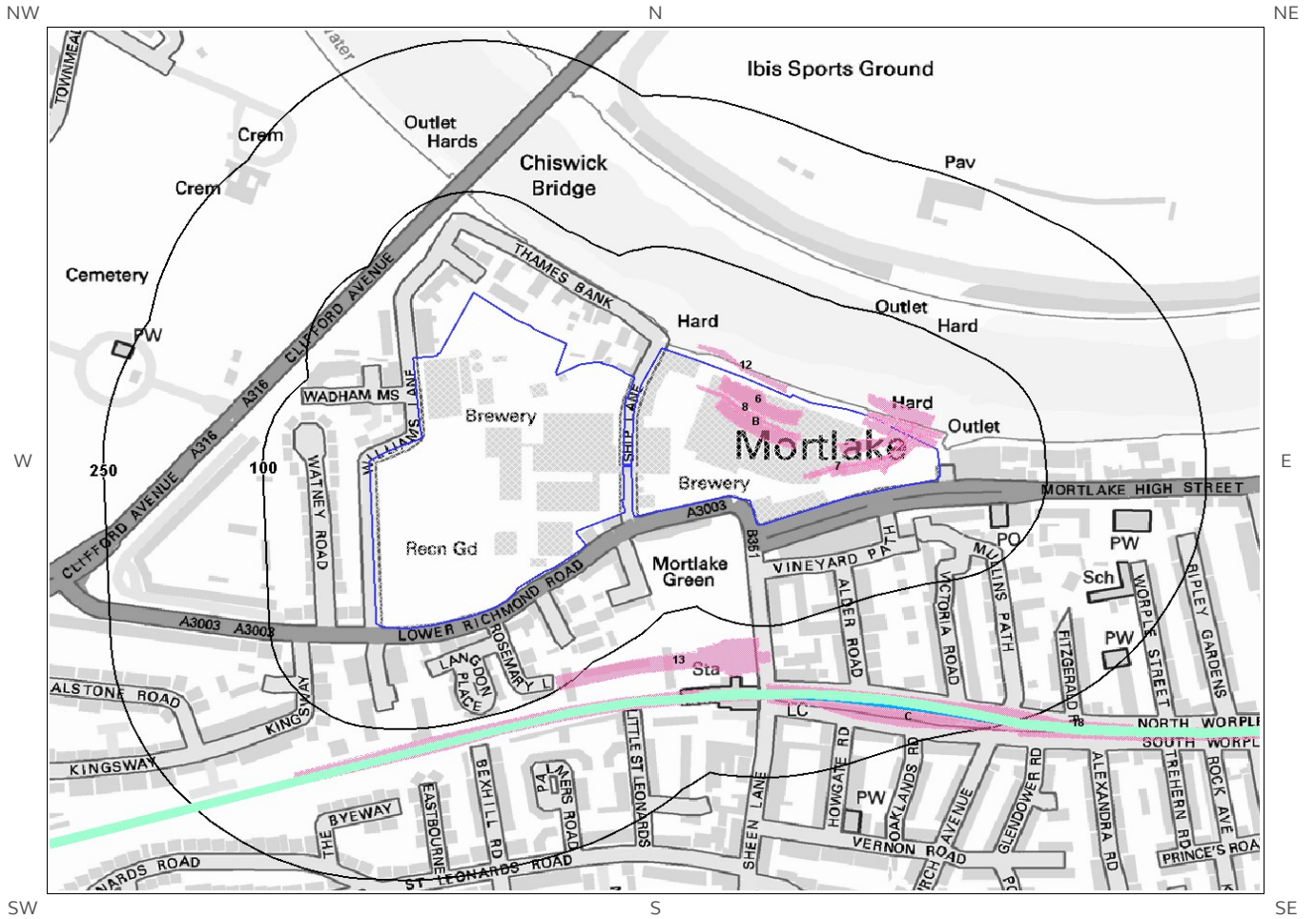
8

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
4.0	N	London	No data	No data	No data	No data	No data
11.0	N	London	No data	No data	No data	No data	No data












*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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-  Underground or Partially Underground Railway / Subway System
-  Railway Track (OpenStreetMap)
-  Railway Tunnel (OS Mapping)
-  High Speed 2
-  Abandoned or Dismantled Railway (OpenStreetMap)
-  High Speed 2 Revised Proposed Route
-  Railway Track (OS Mapping)
-  Railway and/or Tunnel Feature from Historical Mapping
-  Site Outline
-  Search Buffers (m)
-  Crossrail 1

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	0	On Site	520632 176014	Railway Sidings	1920
2A	0	On Site	520632 176014	Railway Sidings	1938
3	0	On Site	520633 176036	Railway Sidings	1910
4B	0	On Site	520494 176037	Railway Sidings	1920
5B	0	On Site	520494 176037	Railway Sidings	1938
6	0	On Site	520497 176061	Railway Sidings	1910

ID	Distance (m)	Direction	NGR	Details	Date
7	0	On Site	520561 175991	Railway Sidings	1896
8	0	On Site	520479 176050	Railway Sidings	1913
9A	0	On Site	520628 176016	Railway Sidings	1913
10A	0	On Site	520631 176017	Railway Sidings	1896
11	0	On Site	520638 176021	Railway Sidings	1919
12	2	NE	520480 176092	Railway Sidings	1933
13	88	SE	520405 175799	Railway Sidings	1933
14C	108	S	n/a	Railways	1898
15C	108	S	n/a	Railways	1866
16C	108	S	n/a	Railways	1913
17C	108	S	n/a	Railways	1935
18	196	S	n/a	Railways	1919

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
115	S	Waterloo to Reading Line	rail
115	S	Waterloo to Reading Line	rail
116	S	Not given	Multi Track
116	S	Not given	Multi Track
117	S	Waterloo to Reading Line	rail
117	S	Waterloo to Reading Line	rail
166	S	Waterloo to Reading Line	rail

Distance (m)	Direction	Name	Type
166	S	Waterloo to Reading Line	rail
186	S	Waterloo to Reading Line	rail
186	S	Waterloo to Reading Line	rail

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries



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<https://www.gov.uk/government/organisations/public-health-england>
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Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-feb11-2019>

E. Risk Rating Matrix

Table E.1: Risk rating for contaminated land qualitative risk assessment

Level of Severity	Likelihood		
	Most Likely	Reasonably Foreseeable	Unlikely
Acute harm or severe chronic harm. Direct pollution of sensitive water receptors or serious pollution of other water bodies.	High	High	Low
Harm from long-term exposure. Slight pollution of sensitive receptors or pollution of other water bodies.	Medium	Medium	Low
No significant harm in either short or long term. No pollution of water that is likely to affect sensitive receptors. No more than slight pollution of other water bodies.	Low	Low	Low

F. Environmental Receptors

The Contaminated Land Statutory Guidance has a four category system that considers harm to human health, controlled waters, flora and fauna, property, livestock and crops. The Categories are broadly defined as follows:

1 Contaminated Land – similar to land where it is known that significant harm has been caused or significant harm is being caused

2 Contaminated Land – no significant harm being caused but there is a significant possibility for significant harm to be caused in the future

3 Not Contaminated Land – there may be harm being caused but no significant possibility for significant harm to be caused in the future

4 Not Contaminated Land – no pollutant linkage, normal levels of contaminants and no significant harm being caused and no significant possibility for significant harm to be caused in the future.

Table F.1: Significant pollution to controlled waters

Pollution of controlled waters

Under Section 78A(9) of Part 2A the term “pollution of controlled waters means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term “controlled waters” in relation to England has the same meaning as in Part 3 of the Water Resources Act 1991, except that “ground waters” does not include water contained in underground strata but above the saturation zones. (Paragraph 4.36)

Given that the Part 2A regime seeks to identify and deal with significant pollution (rather than lesser levels of pollution), the local authority should seek to focus on pollution which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) which may result in damage to material property; or (iii) which may impair or interfere with amenities and other legitimate uses of the environment. (Paragraph 4.37)

Significant pollution of controlled waters

Paragraph 4.38 states that “The following types of pollution should be considered to constitute significant pollution of controlled waters:

(a) Pollution equivalent to “environmental damage” to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.

(b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.

(c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.

(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)5”.

Paragraph 4.39 states that “In some circumstances, the local authority may consider that the

following types of pollution may constitute significant pollution: (a) significant concentrations⁶ of hazardous substances or non-hazardous pollutants in groundwater; or (b) significant concentrations of priority hazardous substances, priority substances or other specific polluting substances in surface water; at an appropriate, risk based compliance point. The local authority should only conclude that pollution is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 (of the Contaminated Land Statutory Guidance). This would normally mean that the authority should conclude that less serious forms of pollution are not significant. In such cases the authority should consult the Environment Agency”.

The following types of circumstance should not be considered to be contaminated land on water pollution grounds:

- (a) The fact that substances are merely entering water and none of the conditions for considering that significant pollution is being caused set out in paragraphs 4.38 and 4.39 above are being met.
- (b) The fact that land is causing a discharge that is not discernible at a location immediately downstream or down-gradient of the land (when compared to upstream or up-gradient concentrations).
- (c) Substances entering water in compliance with a discharge authorised under the Environmental Permitting Regulations.

Significant pollution of controlled waters is being caused

In deciding whether significant pollution of controlled waters is being caused, the local authority should consider that this test is only met where it is satisfied that the substances in question are continuing to enter controlled waters; or that they have already entered the waters and are likely to do so again in such a manner that past and likely future entry in effect constitutes ongoing pollution. For these purposes, the local authority should:

- (a) Regard substances as having entered controlled waters where they are dissolved or suspended in those waters, or (if they are immiscible with water) they have direct contact with those waters on or beneath the surface of the water.
- (b) Take the term “continuing to enter” to mean any measurable entry of the substance(s) into controlled waters additional to any which has already occurred.
- (c) Take the term “likely to do so again” to mean more likely than not to occur again.

Land should not be determined as contaminated land on grounds that significant pollution of controlled waters is being caused where: (a) the relevant substance(s) are already present in controlled waters; (b) entry into controlled waters of the substance(s) from land has ceased; and (c) it is not likely that further entry will take place.

Significant Possibility of Significant Pollution of Controlled Waters

In deciding whether or not a significant possibility of significant pollution of controlled waters exists, the local authority should first understand the possibility of significant pollution of controlled waters posed by the land, and the levels of certainty/uncertainty attached to that understanding, before it goes on to decide whether or not that possibility is significant. The term “possibility of significant pollution of controlled waters” means the estimated likelihood that significant pollution of controlled waters might occur. In assessing the possibility of significant pollution of controlled waters from land, the local authority should act in accordance with the

advice on risk assessment in Section 3 and the guidance in this sub-section.

In deciding whether the possibility of significant pollution of controlled waters is significant the local authority should bear in mind that Part 2A makes the decision a positive legal test. In other words, for particular land to meet the test the authority needs reasonably to believe that there is a significant possibility of such pollution, rather than to demonstrate that there is not.

Before making its decision on whether a given possibility of significant pollution of controlled waters is significant, the local authority should consider:

- (a) The estimated likelihood that the potential significant pollution of controlled waters would become manifest; the strength of evidence underlying the estimate; and the level of uncertainty underlying the estimate.
- (b) The estimated impact of the potential significant pollution if it did occur. This should include consideration of whether the pollution would be likely to cause a breach of European water legislation, or make a major contribution to such a breach.
- (c) The estimated timescale over which the significant pollution might become manifest.
- (d) The authority's initial estimate of whether remediation is feasible, and if so what it would involve and the extent to which it might provide a solution to the problem; how long it would take; what benefit it would be likely to bring; and whether the benefits would outweigh the costs and any impacts on local society or the environment from taking action.

Reproduced from DEFRA (2012) Contaminated Land Statutory Guidance pursuant to section 78YA of the Environmental Protection Act 1990 as amended by Section 57 of the Environment Act 1995.

Table F.2: Significant harm to human health, ecological systems and property

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Human beings	<p>The following health effects should always be considered to constitute significant harm to human health: death; life threatening diseases (eg cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions.</p> <p>Other health effects may be considered by the local authority to constitute significant harm. For example, a wide range of conditions may or may not constitute significant harm (alone or in combination) including: physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. In deciding whether or not a particular form of harm is significant harm, the local authority</p>	<p>The risk posed by one or more relevant contaminant linkage(s) relating to the land comprises:</p> <ul style="list-style-type: none"> (a) The estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question. (b) The estimated impact if the significant harm did occur – i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it. <p>In estimating the likelihood that a specific form of significant harm might occur the local authority should, among other things, consider:</p> <ul style="list-style-type: none"> (a) The estimated probability that the significant harm might

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	<p>should consider the seriousness of the harm in question: including the impact on the health, and quality of life, of any person suffering the harm; and the scale of the harm. The authority should only conclude that harm is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 of the Contaminated Land Statutory Guidance.</p>	<p>occur: (i) if the land continues to be used as it is currently being used; and (ii) where relevant, if the land were to be used in a different way (or ways) in the future having regard to the guidance on “current use” in Section 3 of the Contaminated Land Statutory Guidance.</p> <p>(b) The strength of evidence underlying the risk estimate. It should also consider the key assumptions on which the estimate of likelihood is based, and the level of uncertainty underlying the estimate.</p>
<p>Any ecological system, or living organism forming part of such a system, within a location which is:</p> <ul style="list-style-type: none"> • a site of special scientific interest (under section 28 of the Wildlife and Countryside Act (WCA) 1981 (as amended) and Part 4 of the Natural Environment and Rural Communities Act 2006 (as amended)); • a national nature reserve (under Section 35 of the WCA 1981 (as amended)); • a marine nature reserve (under Section 36 of the WCA 1981 (as amended)); • an area of special protection for birds (under Section 3 of the WCA 1981 (as amended)); • a “European site” within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010 (as amended); • any habitat or site afforded policy protection under Section 15 of The National Planning Policy Framework (NPPF) on conserving and enhancing the natural environment (i.e. possible Special Areas of Conservation, potential Special Protection Areas and 	<p>The following types of harm should be considered to be significant harm:</p> <ul style="list-style-type: none"> • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. <p>In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended).</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that:</p> <ul style="list-style-type: none"> • significant harm of that description is more likely than not to result from the contaminant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. <p>Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.</p>

Appendices

Relevant types of receptor	Significant harm	Significant possibility of significant harm
<p>listed or proposed Ramsar sites); or</p> <ul style="list-style-type: none"> any nature reserve established under Section 21 of the National Parks and Access to the Countryside Act 1949. 		
<p>Property in the form of:</p> <ul style="list-style-type: none"> crops, including timber produce grown domestically, or on allotments, for consumption livestock other owned or domesticated animals; wild animals which are the subject of shooting or fishing rights. 	<p>For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.</p> <p>The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a pollutant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss. In the Guidance states that this description of significant harm is referred to as an “animal or crop effect”.</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.</p>
<p>Property in the form of buildings. For this purpose 'building' means any structure or erection and any part of a building, including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.</p>	<p>Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended.</p> <p>In the case of a scheduled Ancient Monument, substantial damage should be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.</p>

Appendices

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	<p>interest by reason of which the monument was scheduled.</p> <p>The Guidance states that this description of significant harm is referred to as a 'building effect'.</p>	

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UK and Ireland Office Locations

