

FINALRev01

Helix Partnership Homes Limited

Phase I and Phase II

Geo-environmental and Geotechnical Investigation Report

**LAND TO THE WEST OF NURSERY MEWS
GRAVESEND
KENT
DA11 7BU**

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CONTENTS

EXECUTIVE SUMMARY

1	INTRODUCTION	1
1.1	SOURCES OF INFORMATION	2
1.2	DEVELOPMENT PROPOSALS	2
2	PHASE I DESK STUDY	3
2.1	WALKOVER SURVEY	3
2.2	PUBLISHED GEOLOGY	3
2.2.1	Solution Features	3
2.2.2	Natural Cavities Risk Assessment	4
2.2.3	Historical Boreholes	4
2.3	PREVIOUS WORK	4
2.4	HISTORY OF THE SITE	4
2.4.1	Ordnance Survey	5
2.4.2	Aerial Imagery	5
2.5	UNEXPLODED ORDNANCE AND BOMB SITES	6
2.6	HYDROLOGY	6
2.7	HYDROGEOLOGY	6
2.8	WASTE TREATMENT AND LANDFILL SITES	7
2.8.1	Landfills	7
2.8.2	Other Waste Treatment Sites	7
2.9	LOCAL INDUSTRY AND ENVIRONMENTAL PERMITTING	7
2.9.1	Historical Local Industry	7
2.9.2	Local Industry	8
2.9.3	Environmental Permitting and Incidents	8
2.9.4	Historical Site Usage	8
2.10	WORKED OUT GROUND/MADE GROUND	9
2.11	GROUND GASES	9
2.11.1	Radon	9
2.11.2	Landfill Gases	10
2.12	POTENTIAL GEOTECHNICAL HAZARDS	10
2.13	POTENTIALLY SENSITIVE LAND USES	11
3	INITIAL CONCEPTUAL SITE MODEL	12
4	PHASE II INTRUSIVE INVESTIGATION	14
4.1	SITE WORK AND SAMPLING STRATEGY	14
4.2	GROUND CONDITIONS	15
4.2.1	Summary	15
4.2.2	Made Ground	15
4.2.3	Superficial Deposits	15
4.2.4	Lewes Nodular, Seaford & Newhaven Chalk Formation (Undifferentiated)	16
4.2.5	Groundwater	16
4.2.6	Evidence of Contamination	17
4.2.7	Sulphate and pH Tests	17
4.2.8	California Bearing Ratio (CBR) Tests	17
4.2.9	BRE365 Soakaway Testing	17
4.2.10	Super Heavy Dynamic Probe (DPSH)	18
4.2.11	Ground Gas	18
4.3	GEO-ENVIRONMENTAL TESTING	18
5	GEOTECHNICAL INTERPRETATIVE SECTION	20
5.1	GENERAL GROUND CONDITIONS INTERPRETATION	20

5.2	EXCAVATIONS	21
5.3	FOUNDATIONS	21
5.3.1	Shallow Foundations	21
5.4	FLOOR SLAB DESIGN	22
5.5	CONCRETE SULPHATE ATTACK	22
5.6	ACCESS ROADS AND PARKING	22
5.7	SOIL INFILTRATION	23
5.8	GAS PROTECTION	24
6	GEO-ENVIRONMENTAL INTERPRETATION	25
6.1	RISKS TO HUMAN HEALTH	25
6.1.1	Introduction	25
6.1.2	Results of Chemical Testing	26
6.1.3	Polyaromatic Hydrocarbons	26
6.2	RISK TO END USERS	27
6.3	REMEDIAL WORK OR FURTHER WORK REQUIRED	27
6.3.1	Reducing Risk to End Users	27
6.3.2	Reducing the Risk to Construction Workers	28
6.4	POST REMEDIATION VERIFICATION	28
6.5	RISK TO CONTROLLED WATERS	29
6.6	RISKS TO UNDERGROUND WATER SUPPLY PIPES	29
7	WASTE DISPOSAL CLASSIFICATION	30
7.1	INTRODUCTION	30
7.2	RESULTS OF HAZARD ASSESSMENT	30
7.2.1	Blacktop	30
7.3	WASTE ACCEPTANCE CRITERIA (WAC) TESTING RESULTS	31
7.4	RE-USE OF MATERIAL ON SITE	33
8	RECOMMENDATIONS	33
9	REFERENCES	34

APPENDICES

APPENDIX A - PLANS

-  Site Location Plan
-  Site Photographs
-  Exploratory Hole Location Plan
-  Natural Cavities Risk Assessment
-  Zoned Plan – Impacted Made Ground

APPENDIX B – SITE INFORMATION

-  Continuous Tube Logs
-  Super Heavy Dynamic Probe (DPSH) Results
-  Trial Pit Logs
-  Hand Auger Logs
-  Plate Load CBR Results
-  BRE365 Results

APPENDIX C – LABORATORY TESTING

-  Geo-environmental Testing
-  Geotechnical Testing
-  HazWasteOnline Classification Sheets

APPENDIX D - DESK STUDY INFORMATION

-  Groundsure Report
-  Historical Maps

EXECUTIVE SUMMARY

Site Location	Land To The West Of Nursery Mews, Gravesend, Kent, DA11 7BU
OS Grid Reference	TQ 65166 71447
Development Proposals	From the development plans provided (drawing no. 100 rev. K of job no. 7289, dated 02/07/24, from ECE Architecture) it can be seen that there will be the erection of 6no. affordable residential dwellings, emergency access / pedestrian / cycle route with associated parking and landscaping.
Published Geology	Reference to the British Geological Survey website and sheet 271, Dartford 1998, indicates that the site is underlain by Bedrock Strata of the Lewes Nodular, Seaford, and Newhaven Chalk Formation (Undifferentiated) of Cretaceous Age; there are no Superficial Deposits recorded beneath the site.
Topography	The site is generally flat-lying.
Site History	It has been seen from historical maps that the site was undeveloped land since at least 1863, with historical maps showing a rectangular boundary surrounding and extending off the site by 1969. Aerial imagery of the site confirms the site is covered by what appears to be concrete hardstanding and some soft landscaping from at least 1990 until present day. Some parked cars have been seen on the site on aerial imagery over the years.
Ground Conditions Encountered	 Made Ground was encountered across the site, from ground level to depths ranging between 0.20m bgl to 0.40m bgl.  Superficial Deposits were encountered beneath the Made Ground in all locations except CT 2 and SA B, and were present to depths between 0.50m bgl to 0.80m bgl. These were generally encountered as firm brown very gravelly silty dry clay, with gravel of chalk and flint.  The Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated) was encountered beneath the Made Ground and Superficial Deposits, to a maximum depth of 5.00m bgl where the deepest exploratory holes terminated.  The chalk was generally encountered as Grade Dc to depths between 2.00m bgl and 3.00m bgl, and was underlain by Grade Dm chalk to a maximum depth of 5.00m bgl.
Groundwater Encountered	Groundwater was not encountered in any of the exploratory holes during the fieldwork, or during the monitoring visits of the standpipe installed in CT 1.
Chemical Analysis	Six samples were tested from the soils across the whole site. Of all soil samples screened against the relevant GAC for a "Residential with the consumption of home-grown produce" land use scenario, levels of PAHs exceeded the GAC in the granular sub-base Made Ground soils of CBR 101 at 0.20m bgl and CBR 102 at 0.10m bgl.
Gas Protection	The site is recorded as CS1 and therefore no gas protection measures are needed in regards to methane and carbon dioxide. No radon protection measures are required.

Geotechnical Comments	- Atterberg testing confirmed the soils of the Superficial Deposits are non-shrinkable in accordance with the NHBC Standards. - Atterberg testing on the Grade Dm chalk confirmed these soils are non-shrinkable in accordance with the NHBC Standards. - Saturated moisture content testing on the Grade Dc chalk confirmed the density based on the CIRIA C574 Scale is Low. - Super Heavy Dynamic Probes (DPSH) undertaken from 5.00m bgl to depths of 8.00m bgl and 10.00m bgl did not indicate any zones of weakness or dissolution features. - At a minimum of 0.75m bgl or 0.20m into the Lewes Nodular, Seaford and Newhaven Chalk, whichever is the deeper, a net allowable bearing pressure of up to 170kPa may be adopted for shallow foundations. - Foundations should be suitably reinforced; this is routinely recommended for sites expected to be underlain by chalk where there is a potential for dissolution features to occur (even if no evidence has been seen) and where variable ground conditions are present at founding level. Mesh reinforcement is considered to be suitable for this site. - A Design Sulphate Class of DS-1 and a site Aggressive Chemical Environment Classification (ACEC) Class of AC-1 can be used for the natural soils on site. - Ground bearing floor slabs can be used on the site. - CBR testing was undertaken at CBR 101 & CBR 102 at depths of 0.20m bgl and 0.25m bgl, and revealed equivalent CBR values of 0.15% and 0.19%. - Two soakaway tests were conducted to BRE 365 within the Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated), at depths of 1.40m bgl (SA A) and 0.94m bgl (SA B). - SA A completed one test with an infiltration rate of 1.36×10^{-5} m/s. SA B completed three tests with an average infiltration rate of 1.94×10^{-3} m/s. - CIRIA C574 states where chalk is of low density, the closest part of the soakaway must be sited at least 10m away from any foundations.
Waste Soil Classification	Currently, the waste soil on site is classified as follows: - Blacktop: 17 03 02 - Non-Hazardous "Granular Sub-Base" Made Ground: 17 05 04 - Non-Hazardous "Cohesive Sub-Base" Made Ground: 17 05 04 - Inert "General" Made Ground: 17 05 04 – Non-Hazardous - Natural Soil: 17 05 04 - Inert
Recommendations	We recommend that a 600mm clean cover layer or hardstanding will be required in areas of soft landscaping and communal planting in the areas of CBR 101 and CBR 102. It is also recommended that the standpipe in CT 1 is decommissioned in line with the EA guidance "Good practice for decommissioning redundant boreholes and wells", 2012. Barrier pipe should be used to protect underground water pipes in the area of CBR 101; this should be confirmed with the local water company. We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken. It is recommended that a Stage 2 DRA is undertaken prior to the development works commencing.

This executive summary must be read in conjunction with this report.

GROUND INVESTIGATION REPORT

1 INTRODUCTION

Geo-Integrity Ltd were commissioned by Helix Partnership Homes Ltd via email on the 18th of June 2024 to undertake a site investigation at Land To The West of Nursery Mews, Gravesend, Kent, DA11 7BU. This Phase I Desk Study and Phase II Geo-environmental and Geotechnical Investigation Report has been completed to gather geo-environmental and geotechnical data to inform the proposed development.

This report describes desk-based searches of geological, environmental and historical information, the fieldwork and laboratory testing undertaken and provides an interpretative section of the geo-environmental and geotechnical data from this investigation.

The site is located at OS Reference TQ 65166 71447.

This report is likely be reviewed by the Local Council with reference to the NPPF. Once the development is completed, and as a minimum, the land must not be capable of being determined as 'contaminated land' under the terms of Part IIA of the Environmental Protection Act 1990. However, it also states that "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner." As such the desk study in this report is the first stage in investigating whether the site is likely to be considered "contaminated", in accordance with clause 189 of the NPPF.

The objectives of this phase I and phase II interpretative report are:

-  To undertake a site walkover to identify any potential pollution sources on the site.
-  To gather historical, geological and environmental information.
-  To complete a preliminary site conceptual model so that potential pollutant linkages can be established and investigated further.
-  Briefly summarise the site development proposals and site setting.
-  To describe and report the fieldwork undertaken at the site.
-  To describe and report the chemical and geotechnical laboratory work undertaken on selected samples.
-  To provide an interpretation of the results of this investigation with regards to the geo-environmental and geotechnical implications for the site.

The investigation was performed in accordance with the general requirements of BS 5930:2015, BS EN ISO 22475-1 (2006) and other relevant related standards. The fieldwork took place on the 2nd of July 2024.

1.1 SOURCES OF INFORMATION

The following sources of information have been used to compile this report:

-  Extracts of available historical Ordnance Survey (OS) maps covering the period from 1863 to 2024, which are presented in the Appendices.
-  Groundsure Report Ref. GS-KBP-J2O-Y72-E3R included in the Appendices.
-  The British Geological Survey (BGS) and Environment Agency (EA) websites.
-  A site reconnaissance visit undertaken on the 2nd of July 2024.
-  Information from various internet sites on site history and environmental setting.

It should be noted that the information provided in the desk study is obtained from independent third-party sources. It is provided in good faith, but no guarantee can be provided as to its accuracy. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.

1.2 DEVELOPMENT PROPOSALS

From the development plans provided (drawing no. 100 rev. K of job no. 7289, dated 02/07/24, from ECE Architecture) it can be seen that there will be the erection of 6no. affordable residential dwellings, emergency access / pedestrian / cycle route with associated parking and landscaping.

2 PHASE I DESK STUDY

2.1 WALKOVER SURVEY

A site walkover survey was undertaken on the 2nd of July 2024. Site location plans, site photographs and layout plans are included in the Appendices.

The site is situated within a largely residential area within the town of Gravesend, Kent, and is accessed from Nursery Mews to the east. The site is roughly triangular shaped, and is generally flat-lying. The majority of the site is covered by concrete and tarmac hardstanding, with small areas of overgrown soft landscaping on the east, northwest, and running along the northern boundary. At the time of the walkover survey and site investigation, the site was disused, with a small amount of debris/refuse encountered across the majority of the site, and a parked car on the west of the site.

The site is surrounded by both metal and wooden fencing on its boundaries, except on the east of the site where it is accessed. Mature trees were present beyond and adjacent to the northern boundary of the site, and also on the west of the site.

To the north of the site is a primary school, to the west are residential dwellings, to the south is a gymnastics club and car parking, and to the east is another school and further residential dwellings.

There were no potentially significant sources of contamination identified during the walkover.

2.2 PUBLISHED GEOLOGY

Reference to the British Geological Survey website and sheet 271, Dartford 1998, indicates that the site is underlain by Bedrock Strata of the Lewes Nodular, Seaford, and Newhaven Chalk Formation (Undifferentiated) of Cretaceous Age; there are no Superficial Deposits recorded beneath the site.

The BGS memoir describes the Lewes Nodular, Seaford and Newhaven Chalk Formation as: “Chalk with flints. With discrete marl seams, nodular chalk, sponge-rich and flint seams throughout.” This unit is recorded up to 70m thickness in the area, and is further underlain by hundreds of metres of chalk strata.

2.2.1 Solution Features

Chalk, as a calcium-carbonate rich rock, is highly susceptible to dissolution by water containing carbon dioxide. This dissolution can create three common types of features within the chalk, grouped together under the generic term “dissolution features”. These features include:

-  Sinkholes: Depressions at the ground surface caused by the collapse of overlying chalk or superficial deposits into underground voids created by dissolution. Shape and size dependent on underlying void feature.
-  Solution pipes: A feature in the surface of the Chalk caused by increased dissolution in an area of closely spaced discontinuities. These features may, or may not, have a ground surface expression. Up to 20 metres diameter, though commonly much smaller.
-  Swallow Holes: A void within the surface of the Chalk where a stream is 'swallowed' by the Chalk to flow underground. Often occur at the junction of impermeable strata and Chalk. Infilled ancient swallow holes do exist where streams used to flow and may not have any surface expression. Up to 14m in diameter, though commonly a few metres.

2.2.2 Natural Cavities Risk Assessment

A natural cavities risk assessment has been undertaken following the paper written by Clive Edmonds in 2001, "Predicting natural cavities in chalk". This gives a score to various factors including: type of chalk, topography, groundwater level, strata overlying the chalk, periglacial and glacial history. The score for this site was 186, which means there is predicted to be a moderately low subsidence hazard (with a 3.6% occurrence).

2.2.3 Historical Boreholes

The British Geological Survey holds records of exploratory holes, historically put down across the United Kingdom during historical investigation. There are no historical borehole records within 250m of the site.

2.3 PREVIOUS WORK

To our knowledge there has not been any previous works undertaken on the site.

2.4 HISTORY OF THE SITE

The history of the site has been established by the review of old Ordnance Survey maps going back to 1863. The maps and any other relevant information are included in the Appendices and indicated the following.

2.4.1 Ordnance Survey

It can be seen from the earliest maps, from 1863, that the site is undeveloped and is situated within open fields. There are a small number of farms within 750m of the site, with a saw pit located at one of these farms approximately 400m south of the site; tanks are also recorded approximately 500m southwest of the site. Several woodlands and orchards can be seen over 500m from the site.

By 1888, an old chalk pit is recorded approximately 800m southeast of the site; by 1895 a second old chalk pit is recorded approximately 500m southwest of the site.

Development within closer proximity of the site is seen to occur by 1931-1932. A nursery with multiple glasshouses is seen approximately 25m west of the site, with a small number of residential dwellings beyond this. From approximately 125m north of the site, a large number of residential dwellings have been developed, with a sports ground and pavilion adjacent to this development. A second sports ground and pavilion can be seen approximately 100m east of the site. Residential development of the surrounding areas increases over the years from this point.

By 1953, Southfields County Secondary School can be seen approximately 50m southwest of the site.

Development is next seen to occur by 1969, and shows the aforementioned secondary school has been extended, and now covers the site where the nursery was located; the school is now named "Southfields School". King's Farm County Primary School is developed approximately 50m north of the site, and Ifield School is developed approximately 70m southeast of the site. A rectangular boundary surrounds the site by this time.

By 2010 Southfields School is no longer present, and has been replaced by residential dwellings; additionally, alterations to both remaining schools can be seen.

There is little change to the site and its immediate environs from this point. At no point has a significantly contaminative land use been identified on the site.

2.4.2 Aerial Imagery

The first aerial imagery seen of the site, from 1940, confirms the site is still an open and undeveloped field. By 1990 the site is partially covered by what appears to be concrete on the western half, and soft landscaping on the eastern half; the concrete is part of a larger rectangular area, which appears to be associated with Southfields School, similar to the rectangular boundary previously mentioned and seen on historical maps. This concrete area reduces in size and becomes square shaped by

2011, and parked cars can be seen on the area. By 2014 the size of the concreted area reduces again and becomes almost triangular, and spans the site area with small areas of soft landscaping on the east, west and along the northern boundary. There is little change seen from this point to present day.

2.5 UNEXPLODED ORDNANCE AND BOMB SITES

Reference to the site-specific unexploded bomb risk map (UXO) produced by Zetica indicates that the site is located in an area where there is a high risk of unexploded ordnance. High risk regions are those with a bombing density of 50 bombs per 1000 acres or higher.

As such, a Preliminary Explosive Ordnance Risk Assessment (PEORA) was undertaken by Impartial Assessments Ltd ahead of the Phase II Intrusive Investigation. This identified a potential elevated likelihood of EO encounter during both the proposed site investigation works and proposed development works. Therefore, recommendations involved a Stage 2 Detailed Risk Assessment (DRA) to elucidate the potential risk prior to site investigation works and development works. For this site investigation, an EOD Supervising Engineer was utilised during the site investigation works at the Client's request.

However, as the development works will disturb a far greater volume of underlying geology in comparison to the site investigation works, it is recommended that a Stage 2 DRA is undertaken prior to the development works commencing.

Full information is provided within the PEORA within the Appendices of this report.

2.6 HYDROLOGY

No surface water features are recorded within 250m of the site.

There are no active surface water abstraction licences within 2000m of the site.

2.7 HYDROGEOLOGY

Reference to the Environment Agency website indicates that there is no Superficial Aquifer beneath the site, due to the absence of Superficial Deposits beneath the site. A Principal Bedrock Aquifer is recorded beneath the site, associated with the Bedrock Strata of the Lewes Nodular, Seaford, and Newhaven Chalk Formation (Undifferentiated).

The aquifer designation data is based on geological mapping provided by the British Geological Survey. The maps are divided into two different types of aquifer designation:

Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.

Bedrock - solid permeable formations e.g. sandstone, chalk and limestone.

For each type there are four designations: Principal, Secondary A, Secondary B and Unproductive Strata, ranked by importance.

The site is recorded to be within a Source Protection Zone 2, outer catchment.

A Source Protection Zone (SPZ) is a designated area around a well or abstraction borehole defining the sensitivity to contamination. An SPZ is generally divided into three zones (but there can be a fourth).

There is one active groundwater abstraction licence within 2000m of the site, recorded approximately 1743m north. This licence is for potable water.

2.8 WASTE TREATMENT AND LANDFILL SITES

2.8.1 Landfills

There are no active, recent, or historical landfills recorded within 500m of the site.

2.8.2 Other Waste Treatment Sites

One waste exemption has been recorded within 500m of the site, at approximately 224m southeast. The process is recorded to be using waste in construction, and is not considered to pose a risk to the site.

2.9 LOCAL INDUSTRY AND ENVIRONMENTAL PERMITTING

2.9.1 Historical Local Industry

Reference to the Groundsure Datasheet indicates that there were six historical industrial land uses within 500m of the site. The closest of these is a nursery recorded approximately 25m west of the site; due to the land use this is not considered to pose a risk to the site. Examples of other land uses include fire engine stations, a saw pit and a chalk pit. Again, these are not considered to pose a risk to the site due to their distances and processes.

The historical tank database includes one tank within 500m of the site, recorded at approximately 316m south; this is not considered to pose a risk to the site due to its distance.

The historical energy features database includes eleven energy features within 500m of the site. The closest of these is recorded to be an electricity substation approximately 242m southwest of the site.

All records are for either electricity substations or electricity transformers. None of these are considered to pose a risk to the site due to their distances.

No historical petrol stations were identified within 500m of the site.

No historical garages were identified within 500m of the site.

2.9.2 Local Industry

There are four records of recent industrial land uses within 250m of the site. The closest is recorded approximately 56m east of the site and is an electricity substation. Other records include another electricity substation, a stone quarrying and preparation business, and a pest and vermin control business. None of these are considered to pose a risk to the site.

There are no records of current or recent petrol stations within 500m of the site.

2.9.3 Environmental Permitting and Incidents

There are no historic IPC authorisations within 500m of the site.

There are no records of Part A(1) licensed industrial activities within 500m of the site.

There are no records of Part A(2)/B licensed pollutant release within 500m of the site.

There have been two pollution incidents recorded within 500m of the site. The closest incident was recorded approximately 105m southeast of the site in 2003, with the pollutant being Asbestos; this was recorded to have a Category 3 (Minor) impact on air, and a Category 4 (No Impact) impact on water and land. Therefore, this is not considered to pose a risk to the site.

There have been no licensed discharges to controlled waters within 500m of the site.

2.9.4 Historical Site Usage

It has been seen from historical maps that the site was undeveloped land since at least 1863, with historical maps showing a rectangular boundary surrounding and extending off the site by 1969. Aerial imagery of the site confirms the site is covered by what appears to be concrete hardstanding and some soft landscaping from at least 1990 until present day. Some parked cars have been seen on the site on aerial imagery over the years.

2.10 WORKED OUT GROUND/MADE GROUND

The desk study information has identified two areas of Made Ground within 500m of the site. The closest of these is recorded approximately 308m southeast of the site, and is associated with a reservoir historically recorded in this area, the second is recorded approximately 495m southwest of the site, and is associated with the moving of the A2 road.

Two BritPits have been identified within 500m of the site, at approximately 318m northwest and approximately 485m west. Both are recorded to have ceased, with chalk being the commodity.

Two surface ground workings have been recorded within 250m of the site, at approximately 132m northwest and 142m west, and are recorded as pools and ponds respectively.

No underground workings have been identified within 1000m of the site.

The site is recorded to be within an area of non-coal mining, with the commodity being chalk.

One area of researched mining has been recorded within 500m of the site, at approximately 195m west, with the mineral being recorded as stone. This is not considered to pose a risk to the site.

No natural cavities have been recorded within 500m of the site.

Eight mining cavities have been recorded within 1000m of the site, with the closest recorded approximately 683m north and the mineral being chalk. This is not considered to pose a risk to the site due to its distance.

No karst features or recent/historical incidents have been recorded within 500m of the site.

Geo-Integrity holds records from the Chelsea Speleological Society and these were referred to for further information surrounding the site. None of the recorded caves/tunnels/deneholes identified in Gravesend were recorded within close proximity to the site.

2.11 GROUND GASES

2.11.1 Radon

Information obtained from the BGS and the National Geoscience Information Service indicates that the site lies within an area where between 1% and 3% of homes exceed the action level of 200Bq/m³ for radon gas. Therefore, no radon protection measures are necessary in the construction of new dwellings or extensions on this site.

2.11.2 Landfill Gases

In accordance with BS8576:2013 the site has been provisionally assessed for the risk of ground gases. This has been done with reference to “A pragmatic approach to ground gas risk assessment for the 21st Century” Card and Wilson, 2011.

- No credible source or pathway for landfill gas migration from an off-site landfill has been identified.
- The site has not been a registered landfill.
- The Made Ground is not expected to be 5m deep or an average of 3m in thickness.
- The site is recorded to be directly located on a carbonate rich rock that can produce low levels of carbon dioxide, although these are not considered to be significant.
- Radon protection measures are not recommended for this site.
- The site does not significantly lie on a potential naturally organic soil, or humic or degradable Made Ground soil.

As such, it is considered that there is a very low risk of ground gas at this site, and ground gas monitoring is therefore not considered necessary. To prove this, confirmatory gas monitoring has been undertaken alongside groundwater monitoring.

2.12 POTENTIAL GEOTECHNICAL HAZARDS

The risk of naturally occurring geotechnical hazards (as identified by the British Geological Survey) at the site is recorded in the Groundsure report to be as follows:

Ground Stability Hazard	Maximum Hazard Potential Rating
Shrinking and Swelling Clays	Negligible
Running Sands	Negligible
Compressible Deposits	Negligible
Collapsible Deposits	Very Low
Landslides	Negligible
Ground Dissolution of Soluble Rocks	Very Low

From the geotechnical data available in the desk study, it can be seen that the site is identified as having a negligible to very low risk for the majority of the naturally occurring geotechnical hazards.

Groundsure indicates the highest potential risks are recorded to be from collapsible deposits and ground dissolution of soluble rocks, but even the maximum risk from these is expected to be very low.

The Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated) is susceptible to dissolution due to it being a calcium-carbonate rich rock. These dissolution features can lead to instability, and also require the deepening or reinforcing of foundations should these features be present. A natural cavities risk assessment undertaken for the site has predicted a moderately low subsidence hazard beneath the site. These potential risks will be investigated as part of this ground investigation.

2.13 POTENTIALLY SENSITIVE LAND USES

The site is located within a Nitrate Vulnerable Zone.

3 INITIAL CONCEPTUAL SITE MODEL

In accord with the Environment Agency LCRM “Land Contamination Risk Management” 2020, this desk study and site reconnaissance report constitutes a preliminary risk assessment in order to establish the potential presence of pollutant linkages. The chart below illustrates the potential linkages.

Reference to the desk study and walkover survey indicates the site was undeveloped since at least 1863, and the first development was seen by 1969 in the form of a rectangular boundary which surrounded and extend off the site. Aerial imagery confirms the site is covered by what appears to be concrete hardstanding and some soft landscaping from at least 1990 until present day, with some parked cars also seen on the site on aerial imagery over the years. During the walkover survey, the site remained largely undeveloped and was covered by concrete and tarmac hardstanding, with small areas of soft landscaping on the northeast, west and along the northern boundary. Due to the historic development of the site, it is considered that there may be Made Ground present beneath the site; this is not expected to be of a significant depth as there has not been significant development seen. This Made Ground, if present, has the potential to contain heavy metals, hydrocarbons and asbestos, which could pose a risk to end users of the site and to construction workers during development. Additionally, as parked cars have been seen historically and currently on the site, there is the potential for heavy metals and hydrocarbons to be present within the soils beneath the site from any fuel/oil spills/leaks which may have occurred. The surrounding land uses of the site have largely been residential, sports grounds and schools for much of its history; these are not considered to pose a risk to the site.

It is therefore considered that Human Health or Controlled Water receptors could be at an elevated risk from the proposed development.

Therefore, currently it is considered that the following potential source/pathway/receptors may be present at and around the site:

Potential Source	Potential Pathway	Potential Receptor	Considered Risk
Made Ground soils potentially containing elevated heavy metals, hydrocarbons and asbestos within the ground from historic development of the site	Ingestion, inhalation or absorption from direct contact with soil	End Users	Low to Moderate
	Volatile vapours possible	End Users	Low to Moderate
	Leaching through the ground	Controlled Waters	Low to Moderate
	Possible contact during work phase	Construction Workers	Low to Moderate
	Possible contact during work phase	Underground Services	Low to Moderate
Parked cars potentially spilling/leaking oil/fuel, leading to heavy metals and hydrocarbons within the ground	Ingestion, inhalation or absorption from direct contact with soil	End Users	Low to Moderate
	Volatile vapours possible	End Users	Low to Moderate
	Leaching through the ground	Controlled Waters	Low to Moderate
	Possible contact during work phase	Construction Workers	Low to Moderate
	Possible contact during work phase	Underground Services	Low to Moderate

4 PHASE II INTRUSIVE INVESTIGATION

4.1 SITE WORK AND SAMPLING STRATEGY

The fieldwork was undertaken in accordance with BS 5930:2015, BS EN 1997-2 (2007) and BS EN ISO 22475-1 (2006), with the exploratory locations being selected by Geo-Integrity. The exploratory hole locations can be seen in the Appendices.

The fieldwork was undertaken on the 2nd of July 2024 and consisted of three continuous tube boreholes (CT) targeting the proposed dwellings, followed on with super heavy dynamic probes (DPSH) from the base. BRE365 tests (SA) were undertaken in two trial pits to assess infiltration potential of the site. Two CBR tests (CBR) were undertaken in areas where there will be paths/roads/driveways using the plate load kit, and were followed on with trial pits for site coverage and to take samples for contamination testing. One hand auger (HA) was undertaken in a proposed garden to take near-surface samples for contamination testing.

Disturbed samples were taken at selected depths down to the base of the exploratory holes for subsequent laboratory testing and inspection.

Exploratory Hole	Location Reasoning
CT 1 – CT 3	Within/close to the footprints of the proposed developments to understand the deeper ground properties in order to inform foundation design, and to identify any contamination.
P 1 - P 3	To interpret deeper ground conditions, and identify any zones of weakness or voids.
SA A & SA B	To understand the infiltration potential of the site.
CBR 101 & CBR 102	Close to proposed developments to understand the ground properties to inform foundation design, and to identify any contamination.
HA 201	Within proposed garden to identify any contamination.

4.2 GROUND CONDITIONS

4.2.1 Summary

The site and laboratory test work revealed that the general succession of strata can be represented by Made Ground overlying Superficial Deposits, overlying Lewes Nodular, Seaford and Newhaven Chalk Formation. Descriptions of the strata encountered are given on the exploratory hole records, and are summarised below. Further information is provided on the exploratory hole logs within the appendices.

4.2.2 Made Ground

Made Ground was encountered across the site, from ground level to depths ranging between 0.20m bgl and 0.40m bgl.

HA 201, SA A, SA B and CT 3 were undertaken in areas of soft landscaping. In these locations, loose dark brown slightly gravelly topsoil/clay with gravel of flint, chalk and rare ash was generally encountered. The Made Ground encountered in areas of soft landscaping will be referred to as “general” Made Ground.

CT 1, CT 2, CBR 101 and CBR 102 were undertaken within tarmac hardstanding, and the tarmac was present from ground level to a depth of 0.10m bgl. The tarmac of CT 1 and CT 2 was underlain by stiff brown silty sandy gravelly clay, with gravel and cobbles of flint, which will be referred to as “cohesive sub-base”. The tarmac of CBR 101 and CBR 102 was underlain by loose brown gravelly sand, with gravel of flint, quartzite, tarmac and brick, which will be referred to as “granular sub-base”.

4.2.3 Superficial Deposits

The Superficial Deposits were encountered beneath the Made Ground, in all locations except CT 2 and SA B. The Superficial Deposits were present to depths between 0.50m bgl to 0.80m bgl.

The Superficial Deposits were generally encountered as firm brown very gravelly silty dry clay, with gravel of chalk and flint.

Atterberg testing was undertaken on samples taken from the Superficial Deposits, at depths ranging from 0.10m bgl to 0.70m bgl. The results show moisture contents of 14% and 19%, and plasticity indexes of 6% and 11%. These soils are therefore considered to be non-shrinkable in accordance with the NHBC Standards.

4.2.4 Lewes Nodular, Seaford & Newhaven Chalk Formation (Undifferentiated)

The Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated) was encountered beneath the Made Ground and Superficial Deposits, to a maximum depth of 5.00m bgl where the deepest exploratory holes terminated.

The chalk was generally encountered as Grade Dc chalk across the site, as structureless chalk composed of slightly silty gravel, with low to medium density white and cream clasts with occasional black specks, and occasional flint. This was present to depths between 2.00m bgl and 3.00m bgl.

Beneath this, within the CT boreholes, Grade Dm chalk was encountered. This was present from depths between 2.00m bgl and 3.00m bgl, and was present to the base of the exploratory holes at 5.00m bgl. This was generally encountered as structureless chalk, composed of white and cream occasionally gravelly silt, with low to medium density chalk gravel.

SPT tests were undertaken within the CT boreholes across the site within the Lewes Nodular, Seaford & Newhaven Chalk Formation. The testing revealed N values ranging from 14 to 35, with values generally increasing with depth.

PSD testing was undertaken on samples taken from the Grade Dc chalk, at depths from 0.40m bgl to 2.50m bgl. The results revealed percentages of fines between 11% and 81%, percentages of sand between 5% and 13%, percentages of gravel between 6% and 75%, and percentages of cobbles between 0% and 28%. The results show the strata are classed as granular, however samples taken from CT 1 typically exhibited the higher fines contents.

Atterberg testing was undertaken on samples taken from the Dm chalk, at depths from 3.00m bgl to 5.00m bgl. The results show moisture contents between 23% and 28%, and plasticity indexes between 3% and 6%. These soils are classed as non-shrinkable in accordance with the NHBC Standards.

Saturated moisture content testing was undertaken on two samples taken from depths of 1.30m bgl and 1.50m bgl (within the Grade Dc chalk). The results show saturated water contents of 30% and 31%, intact bulk densities of 1.92Mg/m³ and 1.94Mg/m³, intact dry densities of 1.48Mg/m³ and 1.5Mg/m³, and the density based on the CIRIA C574 Scale is Low.

4.2.5 Groundwater

Groundwater was not encountered in any of the exploratory holes during the fieldwork.

A standpipe was installed within CT 1 to a depth of 5.00m bgl for groundwater monitoring purposes; confirmatory gas monitoring was undertaken simultaneously. Four monitoring visits were undertaken between 11/07/24 and 1/08/24, and the standpipe was dry on all occasions.

4.2.6 Evidence of Contamination

No contamination was identified within the Made Ground and Natural Soils during the fieldwork.

4.2.7 Sulphate and pH Tests

Soluble sulphate and pH tests were carried out on three samples from the Natural Soils of the Superficial Deposits and the Lewes Nodular, Seaford and Newhaven Chalk Formation, at depths between 0.40m bgl and 2.00m bgl. Water soluble sulphate was measured between <10mg/l and 39mg/l, and pH was measured at 9.1 and 9.2.

4.2.8 California Bearing Ratio (CBR) Tests

CBR testing was undertaken at two locations (CBR 101 & CBR 102) on the site in and around the proposed parking/driveway areas, using the plate load kit. Testing was undertaken at depths of 0.20m bgl and 0.25m bgl, and revealed equivalent CBR values of 0.15% and 0.19%, and a modulus of subgrade reaction of 4.95MN/m²/m and 5.65MN/m²/m.

4.2.9 BRE365 Soakaway Testing

Two trial pits were tested for their infiltration potential using the methods set out in BRE 365. The full results are attached in the Appendix. The soakaway testing was conducted within the Lewes Nodular, Seaford and Newhaven Chalk in both exploratory holes. The results were recorded as follows:

Location	Test 1	Test 2	Test 3
SA A (1.40m bgl)	1.36x10 ⁻⁵ m/s	-	-
SA B (0.90m bgl)	2.38x10 ⁻³ m/s	2.38x10 ⁻³ m/s	1.05x10 ⁻³ m/s

4.2.10 Super Heavy Dynamic Probe (DPSH)

Dynamic probes involve the use of a 63.5kg weight repeatedly lifted and released from a set height, which hammers rods (with a cone tip) through the ground. The number of hammer blows required to penetrate 100mm is recorded, enabling comparative assessment from which correlations with engineering parameters can be generated. The location of the dynamic probes can be seen on the Exploratory Hole Location Plan attached.

Dynamic probing provides a quick assessment of the 'ground strength' where sample recovery is not required. The results from dynamic probing can be used to interpret the various layers of strata but cannot be used to definitively confirm the actual composition of the strata.

A total of three DPSH were undertaken, and were followed-on from the base of CT 1, CT 2 and CT 3 commencing at 5.00m bgl and terminating at depths of 8.00m bgl and 10.00m bgl.

The dynamic probe results have shown a fairly consistent strength profile across the site, with results generally consistent with depth. There was no indication of any significant dissolution features, extended weakened zones, and no free falling of the probes which would have indicated voids.

4.2.11 Ground Gas

Four monitoring visits were undertaken within CT 1 between 11/07/24 and 1/08/24 to establish the groundwater levels at the site; confirmatory gas monitoring was undertaken simultaneously. Methane was recorded at 0% on all visits, carbon dioxide was recorded between 0% and 0.7%, with oxygen recorded between 17% and 17.6%. Peak flow was recorded at 0l/h on all visits, and atmospheric pressure was recorded between 1002mb and 1011mb.

4.3 GEO-ENVIRONMENTAL TESTING

Geo-environmental laboratory testing was scheduled by Geo-Integrity on six soil samples recovered during the fieldwork. The testing was carried out at a MCERTS and UKAS accredited laboratory. The results are presented in the Appendices.

Six soil samples were tested for a varied suite containing the following:

-  Metals and Inorganic Substances
-  Speciated Polyaromatic Hydrocarbons (PAH)

-  Benzene, Toluene, Ethylbenzene and Xylene (BTEX)
-  Total Petroleum Hydrocarbons (TPH), with eight band split
-  Asbestos Identification and Quantification
-  In addition, one WAC test was carried out on a representative cohesive sub-base Made Ground soil sample taken from CT 2 at 0.10m bgl to 0.40m bgl.

Two additional samples, taken from the granular sub base Made Ground of CT 1 at 0.10m bgl to 0.30m bgl and CT 2 at 0.10m bgl to 0.40m bgl, were tested for a suite of chemicals in accord with the UKWIR publication “Contaminated Land Assessment Guidance”, January 2014. These include:

-  Total Petroleum Hydrocarbons (TPH), with eight band split
-  Semi-volatile Organic Compounds (SVOCs)
-  Phenols.

One additional sample of the blacktop, taken from CBR 101 at ground level, was tested for a suite of chemicals to assess whether the tarmac on site is derived from coal tar. These include:

-  Polycyclic Aromatic Hydrocarbons (PAH)
-  Phenols.

5 GEOTECHNICAL INTERPRETATIVE SECTION

5.1 GENERAL GROUND CONDITIONS INTERPRETATION

The site and laboratory test work revealed that the general succession of strata can be represented by Made Ground overlying Superficial Deposits, overlying the Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated). Descriptions of the strata encountered are given on the exploratory hole records, and are summarised below. Further information is provided on the exploratory hole logs within the appendices.

Made Ground was encountered across the site, from ground level to depths ranging between 0.20m bgl to 0.40m bgl. General Made Ground was encountered within areas of soft landscaping, and sub-base Made Ground was encountered beneath the hardstanding.

Superficial Deposits were encountered beneath the Made Ground in all locations except CT 2 and SA B, and were present to depths between 0.50m bgl to 0.80m bgl. These were generally encountered as firm brown very gravelly silty dry clay, with gravel of chalk and flint. Atterberg testing of these soils confirmed they are classed as non-shrinkable in accordance with the NHBC Standards.

The Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated) was encountered beneath the Made Ground and Superficial Deposits, to a maximum depth of 5.00m bgl where the deepest exploratory holes terminated.

The chalk was generally encountered as Grade Dc to depths between 2.00m bgl and 3.00m bgl, and was underlain by Grade Dm chalk to a maximum depth of 5.00m bgl. SPT tests were undertaken within the CT boreholes, and revealed N values ranging from 14 to 35, with values generally increasing with depth. Additionally Super Heavy Dynamic Probes (DPSH) undertaken from 5.00m bgl to depths of 8.00m bgl and 10.00m bgl did not indicate any zones of weakness or dissolution features.

PSD testing and Atterberg testing on the chalk confirmed it is granular and non-shrinkable in accordance with the NHBC Standards.

Saturated moisture content testing undertaken on two samples taken from the Grade Dc chalk confirmed the density based on the CIRIA C574 Scale is Low.

Groundwater was not encountered in any of the exploratory holes during the investigation, to a depth of 5.00m bgl, or during subsequent monitoring visits of CT 1.

5.2 EXCAVATIONS

Conventional plant should be sufficient for the excavation of the underlying soils at the site.

Shoring should be made available for excavations, and it is important to remember that entry into excavations is strictly prohibited without it.

Groundwater may be encountered during the typically wetter winter months, and this may render excavations less stable. However, significant groundwater ingress is not expected down to depths in excess of 5.00m bgl (the base of this investigation).

5.3 FOUNDATIONS

5.3.1 Shallow Foundations

Shallow foundations may be considered at the site providing the following criterion is followed:

The Made Ground (including reworked deposits, hardstanding and topsoil) is considered unsuitable as a bearing stratum due to its variability, and potential for unacceptable total and differential settlement under applied foundation loadings.

The natural soils of the Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated), present across the site, are considered suitable bearing strata for conventional spread footings, either pads or strips, not exceeding 1.0m in width.

At a minimum of 0.75m bgl or 0.20m into the Lewes Nodular, Seaford and Newhaven Chalk, whichever is the deeper, a net allowable bearing pressure of 170kPa can be adopted. This allows for a factor of safety of three against shear failure, and for settlements generally not to exceed 25mm taking place by the end of construction.

The soils of the Lewes Nodular, Seaford and Newhaven Chalk are classed as granular and non-shrinkable in accordance with the NHBC Standards.

Although there is no evidence to indicate the presence of dissolution features beneath the site, it is considered that dissolution features may still affect the development if present. It is recommended that a watching brief should be undertaken during the construction phase and if during development any indication of instability, or structural changes on the soil profile are observed then site

management should be immediately informed and inspection by a suitably qualified person should be undertaken.

Foundations should be suitably reinforced; this is routinely recommended for sites expected to be underlain by chalk where there is a potential for dissolution features to occur (even if no evidence has been seen) and where variable ground conditions are present at founding level. Mesh reinforcement is considered to be suitable for this site.

5.4 FLOOR SLAB DESIGN

Assuming all Topsoil and Made Ground is stripped, ground bearing floor slabs could be constructed and placed on a layer of good quality, free-draining, well-compacted granular fill, placed prior to the construction of the floor slab to make up the level. However, the advice of the NHBC Standards should be followed.

5.5 CONCRETE SULPHATE ATTACK

Three soil samples from this investigation were scheduled for the measurement of water soluble sulphate and pH to give an indication of the aggressivity of the ground in relation to buried concrete, as set out in the Building Research Establishment (BRE) Special Digest 1 (2005) Concrete in Aggressive Ground, Part 1: Assessing the aggressive chemical environment. The samples were recovered from depths ranging from 0.40m bgl to 2.00m bgl, and were sourced from the Natural Soils of the Superficial Deposits, and the Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated).

The results indicate a Design Sulphate Class of DS-1 and a site Aggressive Chemical Environment Classification (ACEC) Class AC-1 for the Natural Soils.

The recommendations given in the above digest, with respect to suitable concrete design and other associated precautions against sulphate attack, should be followed for all below ground level concrete.

5.6 ACCESS ROADS AND PARKING

Two CBR tests were undertaken at the site using the plate load kit at depths of 0.20m bgl and 0.25m bgl. The results of the in-situ testing identified a CBR value of 0.15% and 0.19%.

Made Ground has been proven across the site, and given the unknown origin of the soil, its variability and the likelihood and proven possibility for soft-spots, we recommend that any areas of soft or

deleterious material should be excavated, replaced with a properly compacted coarse-grained fill and proof rolled prior to construction.

In addition, to avoid uneven and excessive settlement in hard-standing areas it is recommended that the following precautions are taken:

-  Heavy proof-rolling of the exposed sub-grade strata
-  Excavation of soft spots encountered and replacement with well compacted granular material
-  The usage of a geo-textile separator layer above the sub-grade.

If the above methods are followed, it is considered a design CBR value of 2.5% for these soils could be possible. However, due to the high porosity of the chalk, these soils should be considered frost susceptible and therefore a pavement thickness of at least 450mm should be maintained.

5.7 SOIL INFILTRATION

Two soakaway tests were conducted to BRE 365; the results of which can be seen in the Appendix.

Both tests were conducted within the Lewes Nodular, Seaford and Newhaven Chalk Formation (Undifferentiated), at depths of 1.40m bgl (SA A) and 0.94m bgl (SA B).

SA A completed one test with an infiltration rate of 1.36×10^{-5} m/s. SA B completed three tests with an average infiltration rate of 1.94×10^{-3} m/s.

Therefore, it is considered that soakaway drainage is viable at this site, however variable rates may be achieved.

However, it is paramount that if soakaways are considered they must comply with the following guidelines given by CIRIA C574 Shallow Foundations. It is understood that water greatly affects the stability of chalk thus “concentrations of rainwater percolating into the ground should be avoided by careful detailing of the structure.” It is recommended that “in areas where dissolution features are expected, soakaways should be avoided so as not to induce erosion and thereby trigger collapse. Water pipes and foul and surface water drains should be constructed with flexible pipes and joints.”

It is considered that there is a moderately low anticipated subsidence risk hazard relating to natural chalk cavities at the site in accordance with CIRIA C574, no zones of weakness were identified from

the DPSH undertaken, and the chalk on site has been confirmed to be of Low Density in accordance with CIRIA C574.

CIRIA C574 states where chalk is of low density, the closest part of the soakaway must be sited at least 10m away from any foundations.

5.8 GAS PROTECTION

The risk of ground gases impacting the site was assessed by reference to the paper “A pragmatic approach to ground gas risk assessment for the 21st Century” Card and Wilson, 2011 and determined that there is a low risk of ground gases at the site.

Confirmatory ground gas monitoring was undertaken alongside groundwater monitoring on four visits between 11/07/24 and 01/08/24, and revealed no levels of methane above detection limits, and no carbon dioxide levels above 5%. A peak flow rate of 0l/h was recorded, and atmospheric pressure was recorded between 1002mb and 1011mb.

Based on the conditions measured during the monitoring visits carried out to date, and in accordance with BS8485:2015 and CIRIA C665, 2007, the site is currently classified as a Characteristic Situation 1 (CS1), with a Type A (private) building type proposed. Therefore, no gas protection measures are required with regards to carbon dioxide and methane.

In addition, the site lies within an area where between 1% and 3% of homes exceed the action level of 200Bq/m³ for radon gas. Therefore, no radon protection measures are necessary in the construction of new dwellings or extensions on this site.

Full details of gas concentrations and gas flow data recorded during the monitoring visits are given in the Appendices.

6 GEO-ENVIRONMENTAL INTERPRETATION

6.1 RISKS TO HUMAN HEALTH

6.1.1 Introduction

Environment Agency guidance LCRM, Land Contamination Risk Management, (EA, 2020), states that human health risk assessment should be undertaken by a tiered approach using the source-pathway-receptor principle. A desk study constitutes the first tier and this has been undertaken as part of this investigation. The conclusions of this phase were that:

“Reference to the desk study and walkover survey indicates the site was undeveloped since at least 1863, and the first development was seen by 1969 in the form of a rectangular boundary which surrounded and extend off the site. Aerial imagery confirms the site is covered by what appears to be concrete hardstanding and some soft landscaping from at least 1990 until present day, with some parked cars also seen on the site on aerial imagery over the years. During the walkover survey, the site remained largely undeveloped and was covered by concrete and tarmac hardstanding, with small areas of soft landscaping on the northeast, west and along the northern boundary. Due to the historic development of the site, it is considered that there may be Made Ground present beneath the site; this is not expected to be of a significant depth as there has not been significant development seen. This Made Ground, if present, has the potential to contain heavy metals, hydrocarbons and asbestos, which could pose a risk to end users of the site and to construction workers during development. Additionally, as parked cars have been seen historically and currently on the site, there is the potential for heavy metals and hydrocarbons to be present within the soils beneath the site from any fuel/oil spills/leaks which may have occurred. The surrounding land uses of the site have largely been residential, sports grounds and schools for much of its history; these are not considered to pose a risk to the site.

It is therefore considered that Human Health or Controlled Water receptors could be at an elevated *risk from the proposed development.*”

Therefore, six soil samples were tested for chemical suites that were also analysed under the second tier, known as a Generic Quantitative Risk Assessment (GQRA), which uses generic guideline values to compare site chemical data against. The next and final tier would be a Detailed Quantitative Risk Assessment (DQRA), which uses data derived from the ground investigation to assess risks to identified receptors.

The assessment included in this report comprises a GQRA, which is undertaken by comparing soil contaminant concentrations from this investigation with conservative Generic Assessment Criteria (GAC). GAC for various land use and exposure scenarios have been selected from the following sources:

-  CL:AIRE Category 4 Screening Levels (C4SL);
-  LQM Suitable for Use Levels (S4UL);
-  CL:AIRE/EIC/AGS GAC;

The GAC have been derived using the Environment Agency Contaminated Land Exposure Assessment (CLEA) model, for a range of land uses and exposure scenarios, including:

-  Residential with the consumption of home-grown produce
-  Residential without the consumption of home-grown produce
-  Commercial
-  Allotments
-  Public Open Space near residential housing (POS_{resi})
-  Public Open Space public park scenario (POS_{park})

Given the proposed development is to redevelop the site with residential dwellings with associated gardens, as well as communal amenity areas, we have used the “Residential with the consumption of home-grown produce” land use scenario for this assessment.

6.1.2 Results of Chemical Testing

Six samples were tested from the soils across the whole site. Of all soil samples screened against the relevant GAC for a “Residential with the consumption of home-grown produce” land use scenario as described above, it can be seen that levels of levels of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, and Dibenzo(a,h)anthracene exceed the relevant levels in CBR 101 at 0.20m bgl and CBR 102 at 0.10m bgl. These samples were taken from the granular sub-base Made Ground soils. No other levels exceeded the relevant GACs.

None of the samples tested identified Asbestos Containing Material (ACM).

6.1.3 Polyaromatic Hydrocarbons

Elevated levels of four Polyaromatic Hydrocarbons within two granular sub-base Made Ground samples, taken from CBR 101 at 0.20m bgl and CBR 102 at 0.10m bgl. These include

Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, and Dibenz(a,h)anthracene. The table below presents the measured concentrations, alongside the relevant GACs.

Determinant	Recorded Concentrations (mg/kg)	GAC – Residential with the consumption of home-grown produce (mg/kg)
Benzo(a)anthracene	9.2 – 15	7.2
Benzo(a)pyrene	6.9 – 16	5
Benzo(b)fluoranthene	8.3 – 19	2.6
Dibenz(a,h)anthracene	0.8 – 2.0	0.24

PAHs are produced by the incomplete combustion of fuels such as coal and oil. Therefore, their presence within the granular sub-base Made Ground soils beneath the hardstanding is likely due to vehicles being parked in this area.

6.2 RISK TO END USERS

Given the results of the desk study, intrusive investigation and laboratory testing, a source-pathway-receptor linkage has been identified at the site in the form of PAHs in the granular sub-base Made Ground soils of CBR 101 at 0.20m bgl and CBR 102 at 0.10m bgl, via the inhalation/ingestion of soil dust.

To break the pollutant linkage, the impacted soils need to be excluded from End Users of the site, and special control measures need to be in place to protect the surrounding residents and construction workers.

6.3 REMEDIAL WORK OR FURTHER WORK REQUIRED

The laboratory testing at the site identified that samples taken from the granular sub-base Made Ground soils of CBR 101 and CBR 102 contained elevated levels of PAHs, and it has been established that this will pose a risk to end users of the site (should a pathway be available) and to construction workers during the groundworks.

6.3.1 Reducing Risk to End Users

It is considered that the exposure pathway between the impacted granular sub-base Made Ground soils underlying the hardstanding and site/end users needs to be broken.

To break the pathway between the PAHs impacted sub-base Made Ground and end users of the site, a cover system could be engineered in the areas of proposed soft-landscaping and communal

planting in the areas of CBR 101 and CBR 102. Such a cover system would require a 600mm layer of clean cover, consisting of at least 150mm of topsoil. This cover system is not required in areas of hardstanding (car parks, patios and under the building), where this will break the pathway between contaminated soils and site users. A plan showing where the cover system is required is included within the Appendix.

During the development it is recommended that this process of placing the cover layer is tightly monitored and recorded (soil tests, photographs, depth measurements etc) as it is likely that a verification report will be required to prove its existence to Local Authorities or financing organisations (mortgage companies etc).

6.3.2 Reducing the Risk to Construction Workers

For the construction workers, remedial measures would not be in place when they undertake the site work and therefore different measures should be taken to reduce the risk of coming into contact with the soil and break the pollutant linkage with these receptors.

To reduce the risk to as low as reasonably practicable for the construction workers it is recommended that high standards of personal hygiene should be maintained amongst the site personnel at all times. All personnel coming into contact with the soil, ground workers in particular, should be instructed to use gloves when on site to avoid dermal contact and restrict inadvertent hand-to-mouth ingestion. Washing facilities should be provided for the site staff to use, and should be used prior to eating or smoking. Reference should be made to the HSE Document, "Protection of Workers and the General Public during Development of Contaminated Land".

It is also recommended that a watching brief for undiscovered contamination is included in the Works Method Statement. Given the long human history of the site, it is always possible that some previously undiscovered contamination may be encountered. If this is the case, the area should be isolated and contact be made to a suitably qualified professional for further advice. This is particularly important if the contamination is possibly ACM or liquid based.

6.4 POST REMEDIATION VERIFICATION

Any remedial measures undertaken at the site will require independent verification once completed to satisfy the relevant regulatory authorities and other interested parties, including future owners of the site, banks, insurers, and mortgage companies. This usually involves a small validation investigation to confirm that the recommended work has been successful.

6.5 RISK TO CONTROLLED WATERS

The chemical testing as part of this investigation has recorded elevated concentrations of PAHs limited to the near surface soils locally in the areas of CBR 101 and CBR 102. These are generally insoluble in water, which limits their mobility within the environment. The site is located on a Principal Bedrock Aquifer associated with the chalk, with a potable abstraction recorded approximately 1743m north of the site. However, given the insolubility and the limited and localised presence of PAHs on the site, it is considered that the risk to controlled waters is low.

The Environment Agency is the regulatory body charged with protection of controlled waters and may be a consultee in the planning process. We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce any potential delays.

6.6 RISKS TO UNDERGROUND WATER SUPPLY PIPES

Based upon the guidance document from the UK Water Industry Research (UK WIR), 'Contaminated Land Assessment Guidance' February 2014, and the results of the samples tested from the site, specifically the UKWIR suite undertaken on samples from the cohesive sub-base Made Ground from CT 1 at 0.10m bgl to 0.30m bgl and CT 2 at 0.10m bgl to 0.40m bgl, it is considered that conventional PE and PVC water pipes can be used as no significantly elevated hydrocarbons or BTEX were encountered at traditional installation depths. However, elevated levels of TPH were encountered in a separate sample taken from CBR 101 at 0.20m bgl within the granular sub-base Made Ground, and therefore barrier pipe would be required in this material. This should be confirmed with the local water company as not all authorities use this guidance.

A higher limit of detection was used for the sample taken from CT 2 at 0.10m bgl to 0.40m bgl, due to high background within the sample.

7 WASTE DISPOSAL CLASSIFICATION

7.1 INTRODUCTION

Excavation for foundations or services will produce waste soil and possibly other waste streams. As a waste producer you have a duty of care under section 34 of the Environmental Protection Act 1990 to ensure, amongst other things that these wastes are:

-  Correctly stored
-  Correctly classify
-  Handed only to an authorised person
-  Disposed of properly.

To aid with these obligations we have used HazWasteOnline to undertake the Hazard Assessment Screen as part of this investigation, to establish whether the sampled soils should be considered as either hazardous or non-hazardous waste. This classification process is in line with the Environment Agency's guidance WM3 "Guidance on the classification and assessment of waste", Version 1.2, October 2021.

7.2 RESULTS OF HAZARD ASSESSMENT

The full results of the HazWasteOnline Stage-One analyses can be seen in the Appendices.

The HazWasteOnline classification summary sheet from this investigation provides a waste classification of Non-Hazardous waste for all samples tested.

No visible pieces of asbestos were detected (by the naked eye) in any of the exploratory holes, or identified in the chemical testing. Therefore, asbestos was not considered further from a waste perspective.

7.2.1 Blacktop

Of the determinants tested for (PAHs and Phenols) within a representative blacktop sample taken from CBR 101 at ground level, no significantly elevated levels of Benzo(a)pyrene were recorded. It is therefore considered that the blacktop hardstanding at the site is not coal-tar derived. Therefore, the results of this test confirmed that this material would be classified as Non-Hazardous (i.e. not containing coal tar).

7.3 WASTE ACCEPTANCE CRITERIA (WAC) TESTING RESULTS

To further classify the waste soil for landfill disposal, Waste Acceptance Criteria (WAC) testing has been carried out on one representative cohesive sub-base Made Ground sample from the site at CT 2 at 0.10m bgl to 0.40m bgl.

The results show that the soil passes the Inert Waste criteria. The laboratory testing results are presented in the Appendices.

It is considered that the underlying natural soils beneath the site qualify in accordance with EU Council Decision 2003/33/EC para. 2.1.1. "uncontaminated soil can be classified as Inert without testing".

As such, given the testing results, currently the underlying soils from the site are considered to be classified as follows:

Strata	Classification	Description of Material	EWC Code	Recommended Landfill Tax Rate
Blacktop	Non-Hazardous	“Bituminous mixtures other than those mentioned in 17 03 01”	17 03 02	Standard Rate
Made Ground Soils – Clay (with gravels of flint) (cohesive sub-base)	Inert	“Naturally occurring soils and stones (clay).”	17 05 04	Lower Rate
Made Ground Soils – Sand & Gravel (with gravels tarmac and brick) (granular sub-base)	Non-Hazardous (Possibly Inert with further testing)	“Naturally occurring soils and stones (sand/gravel) including tarmac and Group 2 materials: brick.”	17 05 04	Lower Rate
Made Ground Topsoil (general Made Ground)	Non-Hazardous (Possibly Inert with further testing)	“Topsoil”	17 05 04	Standard Rate
Natural Soils	Inert	“Naturally occurring soils and stones (sand, gravel and clay)”	17 05 04	Lower Rate

Under section 63(2) of the Finance Act 1996 it states where a disposal to landfill consists mainly of qualifying material(s), but includes a small amount of standard-rated material, the whole load is taxable at the lower rate. As such, the surrounding Made Ground soils (excluding any Topsoil and Blacktop) are considered to be taxable at the lower rate.

We recommend that analytical results relevant to the materials being disposed of should be provided to the landfill operators or waste management contractors to confirm whether it meets their licence agreements and to confirm tipping costs.

All wastes removed from site should be consigned, transported and disposed of in full accordance with all relevant UK legislation.

7.4 RE-USE OF MATERIAL ON SITE

Currently, if surplus arisings are 'fit for re-use' on the site and have not been treated, its re-use is allowed within the planning law. If it needs treating prior to re-use, exemptions can be sought from the Environment Agency to allow this activity.

Based upon the human health and groundwater risk assessments, the underlying natural soils are suitable for re-use on site. The Made Ground is considered unsuitable for reuse on this site, for the proposed residential land use. This analysis is, however, dependent on the agreement of the Local Authority.

8 RECOMMENDATIONS

We recommend that a 600mm clean cover layer or hardstanding will be required in areas of proposed soft landscaping and communal planting in the areas of CBR 101 and CBR 102 where granular sub-base Made Ground is present. A plan showing the areas requiring the clean cover layer can be found in the Appendix.

It is also recommended that the standpipe in CT 1 is decommissioned in line with the EA guidance "Good practice for decommissioning redundant boreholes and wells", 2012.

Barrier pipe should be used to protect underground water pipes in the granular sub-base Made Ground of CBR 101; this should be confirmed with the local water company.

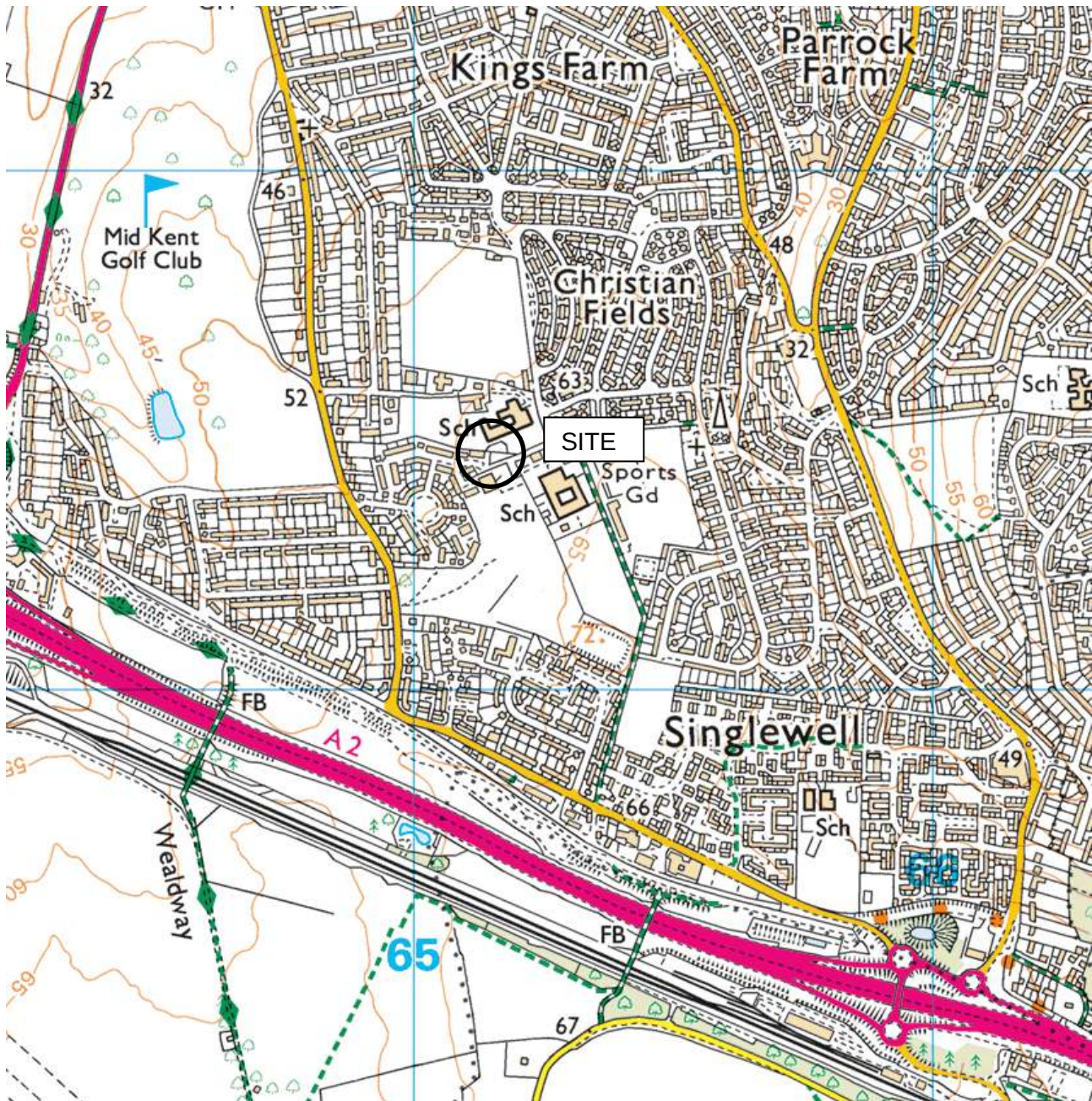
We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken.

It is recommended that a Stage 2 DRA is undertaken prior to the development works commencing.

9 REFERENCES

- Building Research Establishment (BRE) BR 211, Radon: guidance on protective measures for new buildings. 2007.
- BGS Geology of Britain Viewer : 2016. www.bgs.ac.uk. British Geological Survey.
- BRE Special Digest 1 : 2005 : Concrete in aggressive ground. Building Research Establishment.
- BS 10175 : 2011 : Investigation of Potentially Contaminated Sites – Code of Practice
- BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.
- BS 5930 : 2015 : Code of practice for site investigations. British Standards Institution.
- BS EN ISO 14688-1:2002+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.
- BS EN ISO 14688-2:2004+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 2 Principles for a classification. British Standards Institution.
- BS EN ISO 22475-1:2006 : 2007 : Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1 Technical principles for execution. British Standards Institution.
- Environment Agency, “Waste Sampling and Testing for Disposal to Landfill” March 2013
- Environment Agency, ‘Human Health Toxicological Assessment of Contaminants in Soil’, August 2008.
- Environment Agency, ‘Land Contamination Risk Management’, LCRM, 2020.
- G Card and S Wilson, An Alternative Approach for Ground Gas Risk Assessment, 2011.
- Health and Safety Executive (HSE), “Protection of Workers and the General Public during Development of Contaminated Land” HS(G) 66. HMSO London 1991.
- National House Building Council (NHBC) Standards, Chapter 4.2 Building Near Trees. 2011.
- National House Building Council (NHBC) Standards, Chapter 4.1 Land Quality – Managing Ground Conditions. 2011.

APPENDIX A





2nd July 2024 – Hardstanding across the site, looking west from east of site



2nd July 2024 – Soft landscaped area on northeast of site, looking north

August 2024

SITE PHOTOGRAPHS

Report No.:- 24-06-12



2nd July 2024 – Soft landscaping on west of site, looking north



2nd July 2024 – Looking east from the west of the site

August 2024

SITE PHOTOGRAPHS

Report No.:- 24-06-12



Key

-  Continuous Tube Borehole & DPSH
-  BRE365 Soakaway Test
-  Plate Load CBR Test & Trial Pit
-  Hand Auger

Exploratory Hole Location Plan

JOB NO.: 24-06-12

Tel:- 01280 816409
Mob:- 07858 367 125
www. geo-integrity.co.uk

SITE: Land to the west of
Nursery Mews,
Gravesend, DA11 7BU

CLIENT: Helix
Partnership Homes Ltd

4 Church Street
Maids Moreton
MK18 1QE

Drawn
HF

Checked
FW

Scale: Not To Scale, for
indicative purposes only



Natural Cavities Risk Assessment



Project Name : Land off Nursery Mews, Gravesend

Project No : 24-06-12

Client : Helix Partnership Homes Ltd

This site has a Moderately Low Subsidence Hazard Category

Subsidence Hazard Components	Value
G1 - Chalk lithostratigraphic Factor	20
G2 - Post Cretaceous Cover Deposit Factor	1
H1 - Water Table Level Factor	10
H2 - Topographic Relief and Surface Drainage/Subsurface Infiltration Factor	6
GM1 - Former Surface Water Drainage Path Factor	0
GM2 - Glaciation Factor	0
SHR_N = (G1+G2+H1+GM1+GM2)*H2	SHR_N Value
	186

SHR _N	Subsidence Hazard Category
<55	No Anticipated Subsidence Hazard
55 to 89	Very Low Subsidence Hazard
90 to 136	Low Subsidence Hazard
137 to 200	Moderately Low Subsidence Hazard
201 to 300	Moderate Subsidence Hazard
301 to 400	Moderately High Subsidence Hazard
401 to 600	High Subsidence Hazard
>600	Very High Subsidence Hazard

Regional Abbreviations used on Sheets 2 and 3

CH	Chiltern Hills
DPD	Dorset and Purbeck Downs
EA	East Anglia
END	East North Downs
L	Lincolnshire
WND	West North Downs
Y	Yorkshire

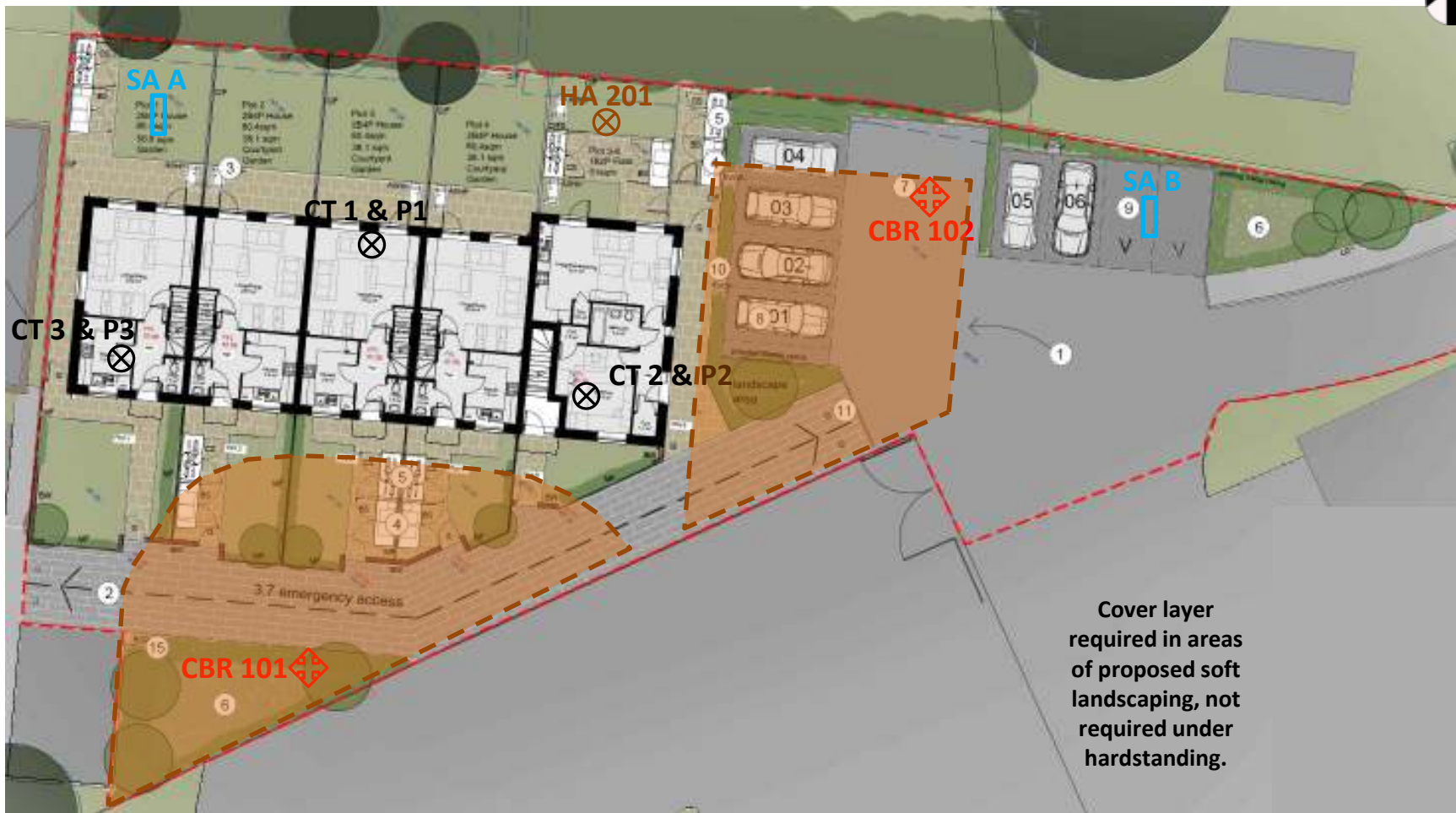
Notes:

Based on Edmonds C N : 2001 :
Predicting natural cavities in chalk
Geological Society, London, Engineering Special
Publications, Vol 18, pp 29-38

Project Land off Nursery Mews, Gravesend
Project No. 24-06-12
Carried out for Helix Partnership Homes Ltd

Table

1
(Sheet 1 of 3)



Key



Area where cover layer is required; where granular sub-base is encountered beneath hardstanding.

Zoning Plan

JOB NO.: 24-06-12

Tel:- 01280 816409
Mob:- 07858 367 125
www. geo-integrity.co.uk

SITE: Land to the west of
Nursery Mews,
Gravesend, DA11 7BU

CLIENT: Helix
Partnership Homes Ltd

4 Church Street
Maids Moreton
MK18 1QE

Drawn
HF

Checked
FW

Scale: Not To Scale, for
indicative purposes only



INTEGRITY

APPENDIX B



www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site

Land To The West Of Nursery Mews, Gravesend, Kent,
DA11 7BU

Number
CT1

Machine : Window Sampling Rig

Method : Drive-in Windowless
Sampler

Dimensions

87mm to 2.00m 57mm to 5.00m
77mm to 3.00m
67mm to 4.00m

Ground Level (mOD)

Client

Helix Partnership Homes Ltd

**Job
Number**
24-06-12

Location (Handheld GPS)

565155 E 171450 N

Dates

02/07/2024

Project Contractor

Geo-Integrity

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.30	D				(0.10) 0.10	MADE GROUND - Tarmac			
0.30-0.50	D				(0.20) 0.30	MADE GROUND - Stiff dark brown and brown silty sandy gravelly CLAY with flint cobbles. Gravel is fine to coarse angular to subrounded of flint			
0.50-1.00	D				(0.20) 0.50	SUPERFICIAL DEPOSITS - Medium dense light brown, orangish brown and white very gravelly slightly clayey fine SAND with flint cobbles. Gravel is fine to coarse angular of chalk			
1.00-1.45 1.00-1.50	SPT N=19 D		4,3/4,5,5,5			LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of slightly silty medium to coarse angular GRAVEL. Clasts are low to medium density, white and cream with occasional black specks, with occasional flint. (Grade Dc)			
1.50-2.00	D				(2.00)				
2.00-2.45 2.00-2.50	SPT N=20 D		5,5/5,5,4,6						
2.50-3.00	D				2.50	LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of white and cream occasionally gravelly SILT. Gravel is medium low density chalk. (Grade Dm)			
3.00-3.45 3.00-3.50	SPT N=29 D		6,5/7,7,7,8						
3.50-4.00	D				(2.50)				
4.00-4.45 4.00-4.50	SPT N=34 D		9,8/8,9,8,9						
4.50-5.00	D								
			Continued with DPSH P1		5.00				

Remarks

**Scale
(approx)**

1:25

**Logged
By**

FW

Figure No.

24-06-12.CT1





www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site

Land To The West Of Nursery Mews, Gravesend, Kent,
DA11 7BU

Number
CT2

Machine : Window Sampling Rig

Method : Drive-in Windowless
Sampler

Dimensions

87mm to 2.00m 57mm to 5.00m
77mm to 3.00m
67mm to 4.00m

Ground Level (mOD)

Client

Helix Partnership Homes Ltd

Job
Number
24-06-12

Location (Handheld GPS)

565167 E 171443 N

Dates

02/07/2024

Project Contractor

Geo-Integrity

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.40	D				(0.10) 0.10	MADE GROUND - Tarmac		
0.40-1.00	D				(0.30) 0.40	MADE GROUND - Stiff dark brown and brown silty sandy gravelly CLAY with flint cobbles. Gravel is fine to coarse angular to sub-rounded of flint		
1.00-1.45 1.00-1.50	SPT N=20 D		4,4/4,5,5,6			LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of slightly silty medium to coarse angular GRAVEL. Clasts are low to medium density, white and cream with occasional black specks, with occasional flint. (Grade Dc)		
1.50-2.00	D				(2.60)			
2.00-2.45 2.00-2.50	SPT N=23 D		7,7/6,5,6,6					
2.50-3.00	D							
3.00-3.45 3.00-3.50	SPT N=27 D		6,5/7,7,6,7		3.00	LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of white and cream occasionally gravelly SILT. Gravel is medium low density chalk. (Grade Dm)		
3.50-4.00	D							
4.00-4.45 4.00-4.50	SPT N=35 D		9,8/9,8,9,9		(2.00)			
4.50-5.00	D							
			Continued with DPSH P2.		5.00			

Remarks

Scale
(approx)

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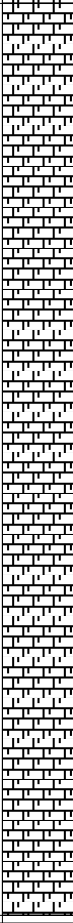
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By

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Figure No.

24-06-12.CT2

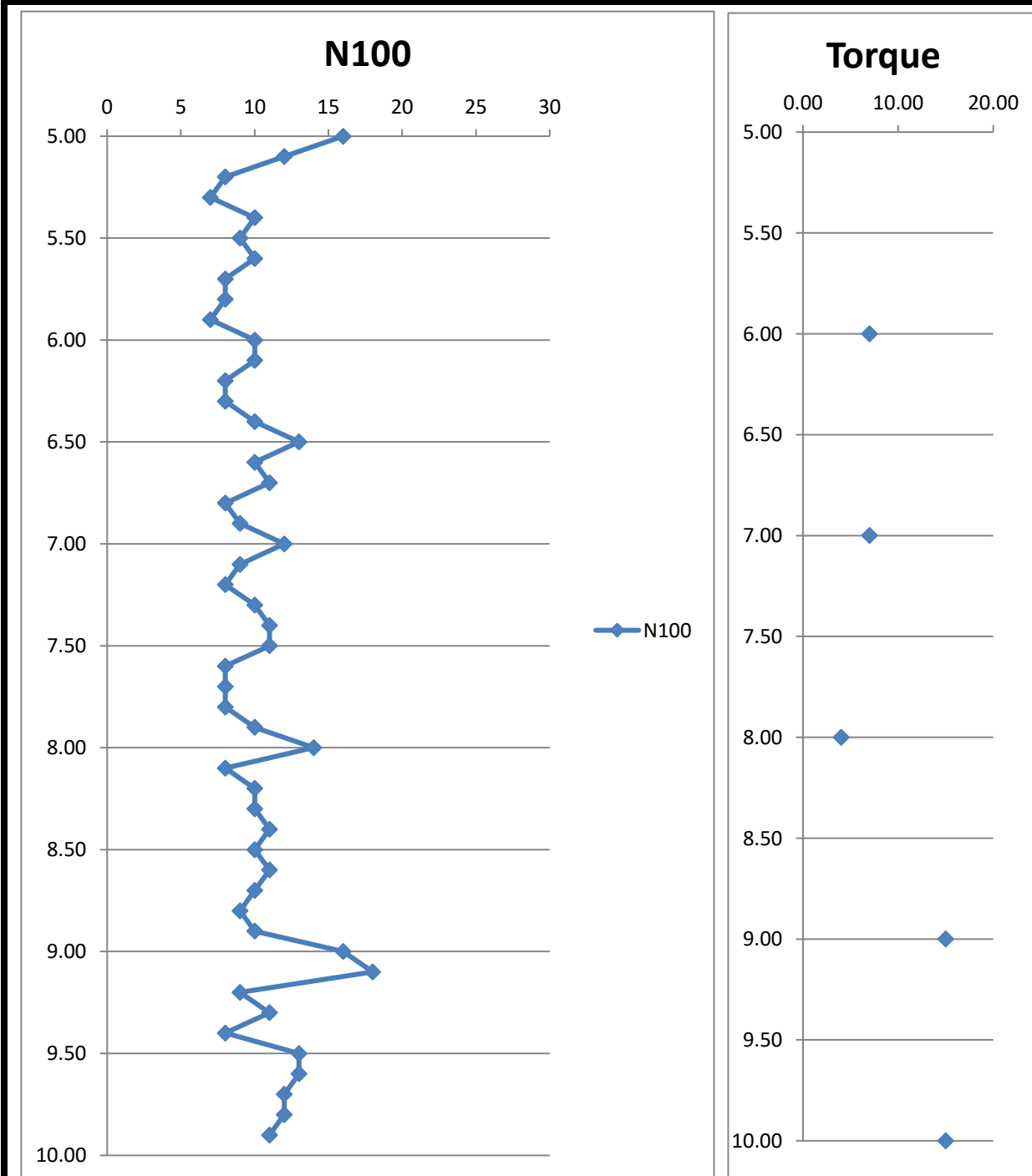


		www.geo-integrity.co.uk info@geo-integrity.co.uk 01280 816409				Site Land To The West Of Nursery Mews, Gravesend, Kent, DA11 7BU		Number CT3
Machine : Window Sampling Rig Method : Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 57mm to 5.00m 77mm to 3.00m 67mm to 4.00m		Ground Level (mOD)		Client Helix Partnership Homes Ltd		Job Number 24-06-12
		Location (Handheld GPS) 565141 E 171446 N		Dates 02/07/2024		Project Contractor Geo-Integrity		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.70	D				(0.70)	SUPERFICIAL DEPOSITS - Stiff orange-brown gravelly CLAY. Gravel is medium to coarse flint and chalk		
0.70-1.00	D				0.70	LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of slightly silty medium to coarse angular GRAVEL. Clasts are low to medium density, white and cream with occasional black specks, with occasional flint. (Grade Dc)		
1.00-1.45 1.00-1.50	SPT N=14 D		3,3/4,3,3,4		(1.30)			
1.50-2.00	D							
2.00-2.45 2.00-2.50	SPT N=20 D		5,5/5,5,5,5		2.00	LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of white and cream occasionally gravelly SILT. Gravel is medium low density chalk. (Grade Dm)		
2.50-3.00	D							
3.00-3.45 3.00-3.50	SPT N=27 D		8,8/6,7,6,8					
3.50-4.00	D				(3.00)			
4.00-4.45 4.00-4.50	SPT N=25 D		3,3/5,5,7,8					
4.50-5.00	D							
			Continued with DPSH P3.		5.00			
Remarks							Scale (approx) 1:25	Logged By FW
							Figure No. 24-06-12.CT3	
								



SUPER HEAVY DYNAMIC PROBE - P1

PROJECT NUMBER	24-06-12	HAMMER WEIGHT	63.5KG
PROJECT NAME	Nursery Mews, Gravesend	HAMMER DROP	0.76m
CLIENT	Helix Partnership Homes Limited		
DRILLING DATE	02/07/2024		



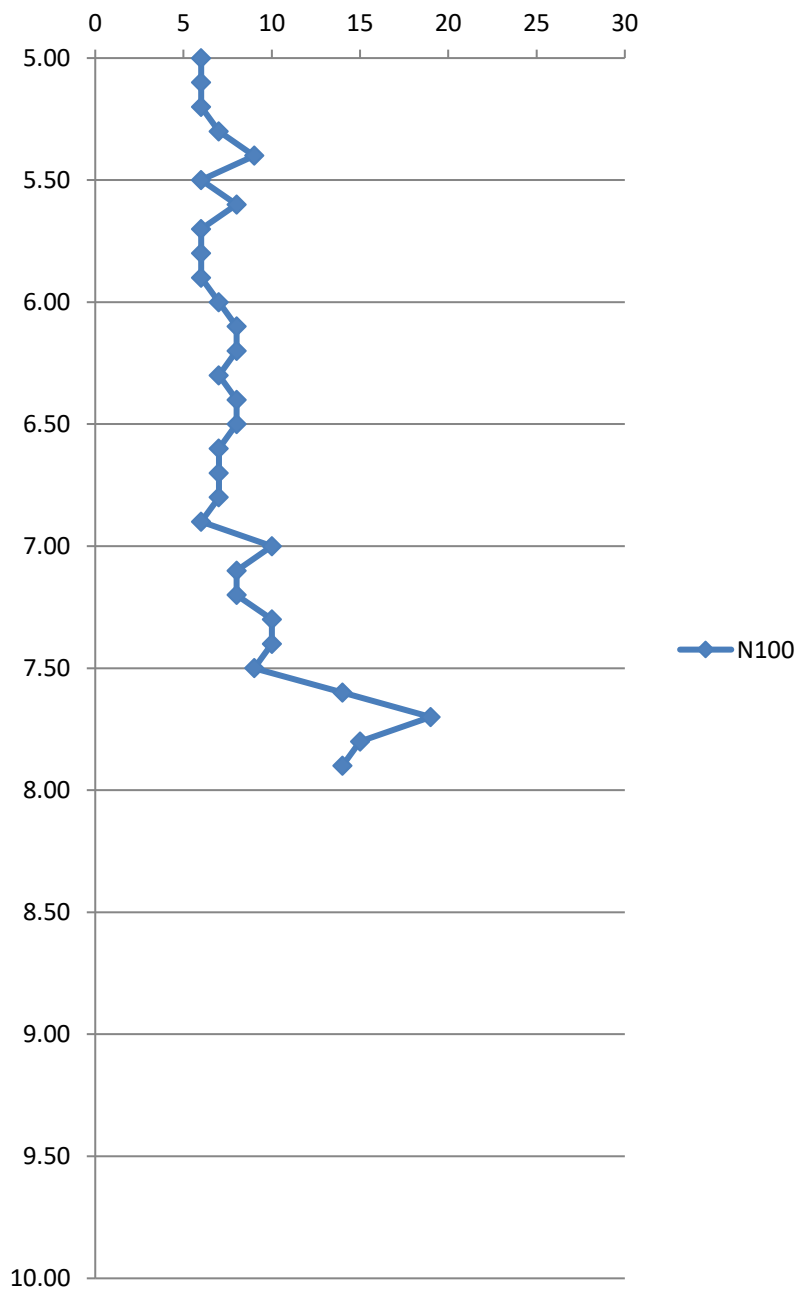
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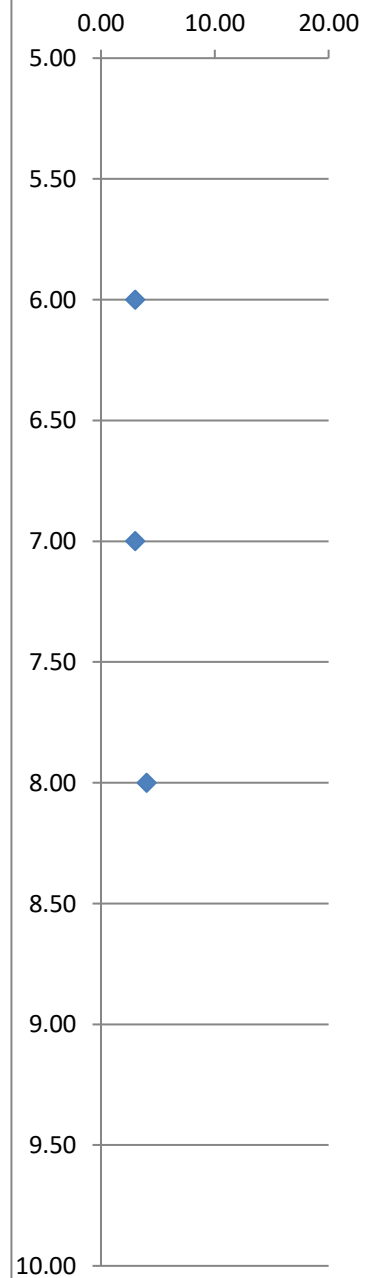
SUPER HEAVY DYNAMIC PROBE - P2

PROJECT NUMBER	24-06-12	HAMMER WEIGHT	63.5KG
PROJECT NAME	Nursery Mews, Gravesend	HAMMER DROP	0.76m
CLIENT	Helix Partnership Homes Limited		
DRILLING DATE	02/07/2024		

N100



Torque



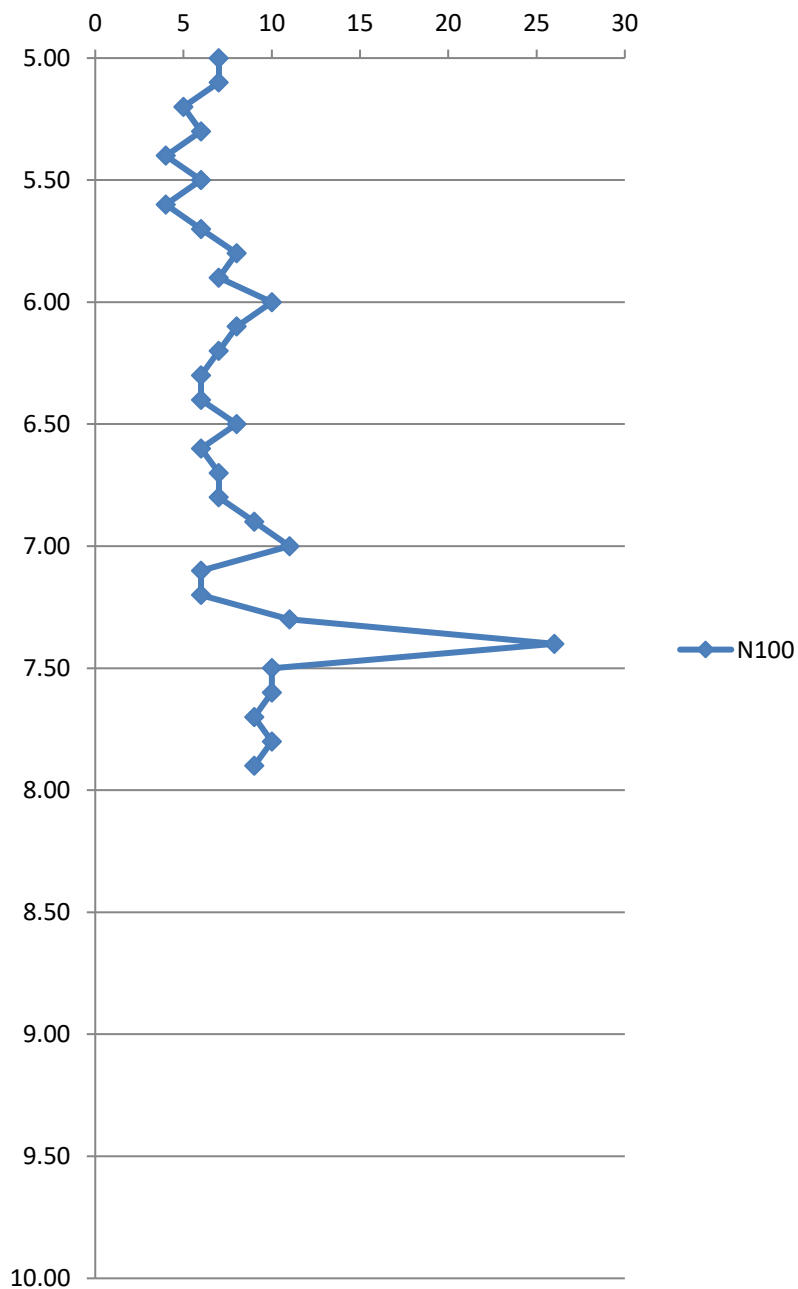
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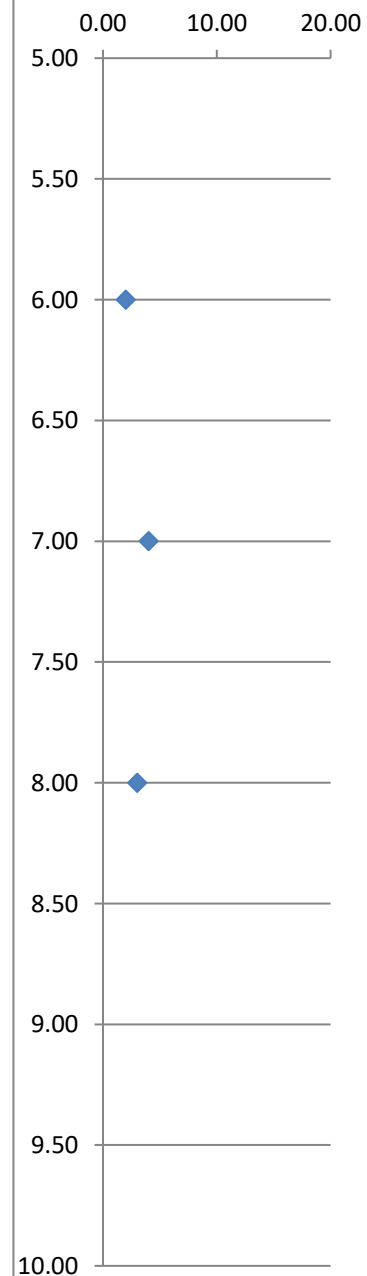
SUPER HEAVY DYNAMIC PROBE - P3

PROJECT NUMBER	24-06-12	HAMMER WEIGHT	63.5KG
PROJECT NAME	Nursery Mews, Gravesend	HAMMER DROP	0.76m
CLIENT	Helix Partnership Homes Limited		
DRILLING DATE	02/07/2024		

N100



Torque



INTERPRETED GROUND CONDITIONS:-



www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

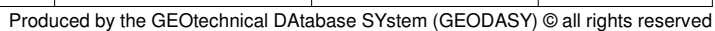
Site
Land To The West Of Nursery Mews, Gravesend, Kent,
DA11 7BU

Trial Pit
Number
CBR101

Machine : JCB 3CX Method : Trial Pit		Dimensions		Ground Level (mOD)		Client Helix Partnership Homes Ltd		Job Number 24-06-12	
		Location (Handheld GPS) 565155 E 171434 N		Dates 02/07/2024		Project Contractor Geo-Integrity		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00	D					MADE GROUND - Tarmac over loose brown gravelly SAND. Gravel is fine to coarse flint, quartzite and tarmac		
0.20	D				(0.30)			
					0.30	SUPERFICIAL DEPOSITS - Firm brown very gravelly silty dry CLAY. Gravel is fine to coarse chalk and flint		
0.50	D				(0.50)			
					0.80	LEWES NODULAR, SEAFORD AND NEWHAVEN CHALK FORMATIONS (UNDIFFERENTIATED) - Structureless CHALK composed of fine to coarse GRAVEL AND COBBLES of cream and white chalk and rare flint. Chalk is low to medium density with occasional black specks. (Grade Dc) Becoming white from 1.10m		
1.50	D				(1.00)			
					1.80	Complete at 1.80m		

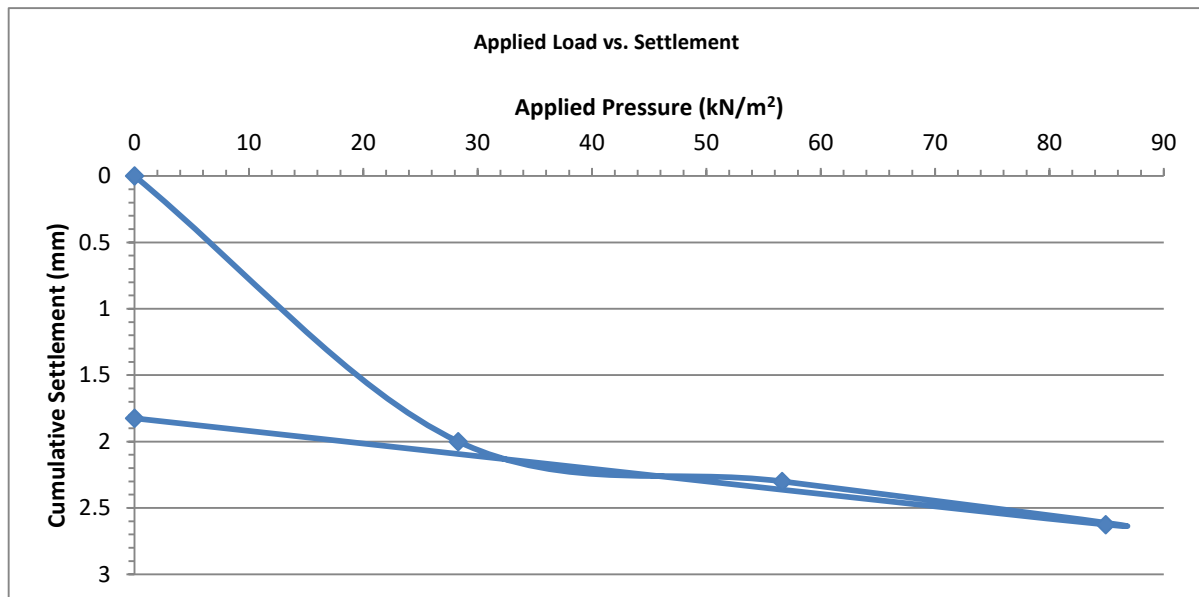
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Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client: Helix Partnership Homes Ltd Job No: 24-06-12
Site: Land off Nursery Mews, Gravesend Date: 02 July 2024
Depth (bgl): 0.25 m TP No: CBR101
Plate Size (m): 0.3 m



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	28	2.00
4	57	2.30
6	85	2.63
0	0	1.83

Seating Pressure for 1.5mm initial settlement
14 kN/m²
Pressure at 1.25mm (kN/m²)
16 kN/m²
Modulus of Subgrade Reaction (MN/m²/m)
5.65 MN/m²/m
Equivalent CBR Value (%)
0.19 %

Seating Pressure for 1.5mm initial settlement
7 kN/m ²
Pressure at 1.25mm (kN/m ²)
14 kN/m ²
Modulus of Subgrade Reaction (MN/m ² /m)
4.95 MN/m ² /m
Equivalent CBR Value (%)
0.15 %

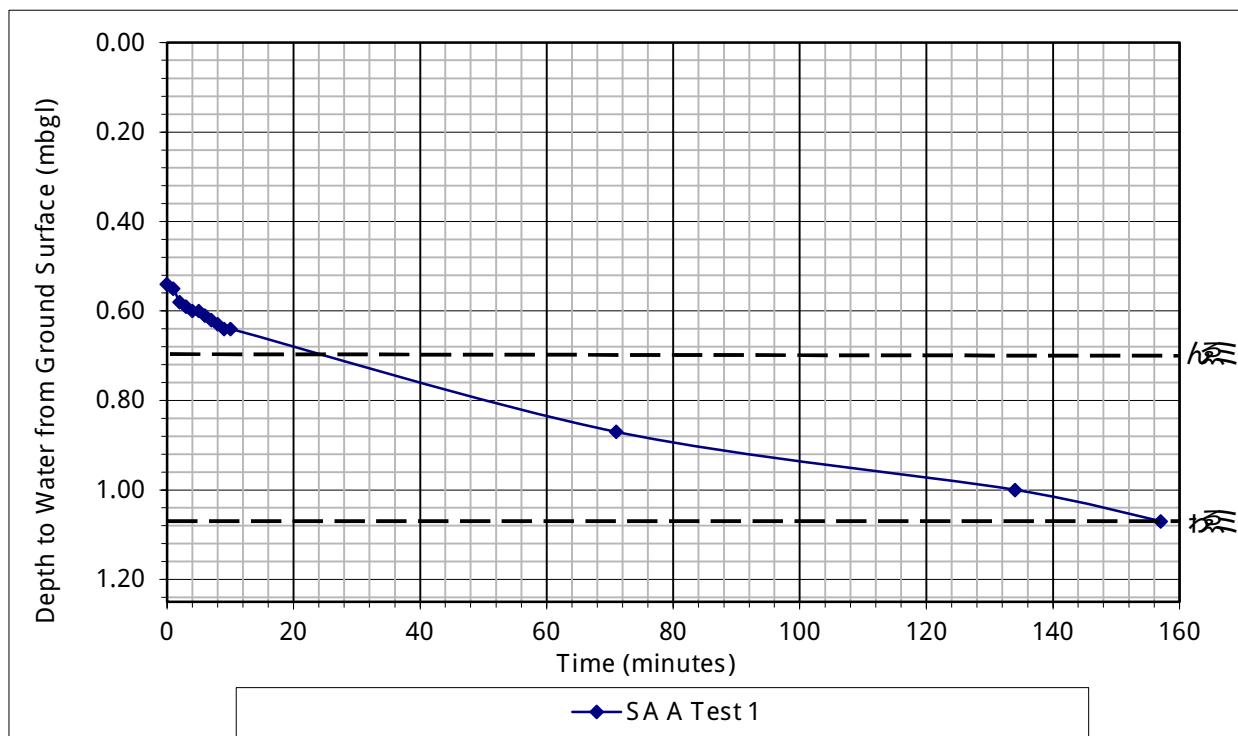
Trial Pit Infiltration Testing to BRE Digest 365

Client: Helix Partnership Homes Limited Report No: 24-06-12
 Site: Land off Nursey Mews, Gravesend Date Tested: 02/07/2024
 Dimensions: 0.40m x 1.40m x 1.40m Test Location: SA A
 (width x length x depth)

Test Response Zone Description: Lewes Nodular, Seaford & Newhaven Chalk

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.54	7	0.62		
1	0.55	8	0.63		
2	0.58	9	0.64		
3	0.59	10	0.64		
4	0.60	71	0.87		
5	0.60	134	1.00		
6	0.61	157	1.07		

Average Soil Infiltration Rate: 1.36×10^{-5} m/s



Trial Pit Infiltration Testing to BRE Digest 365

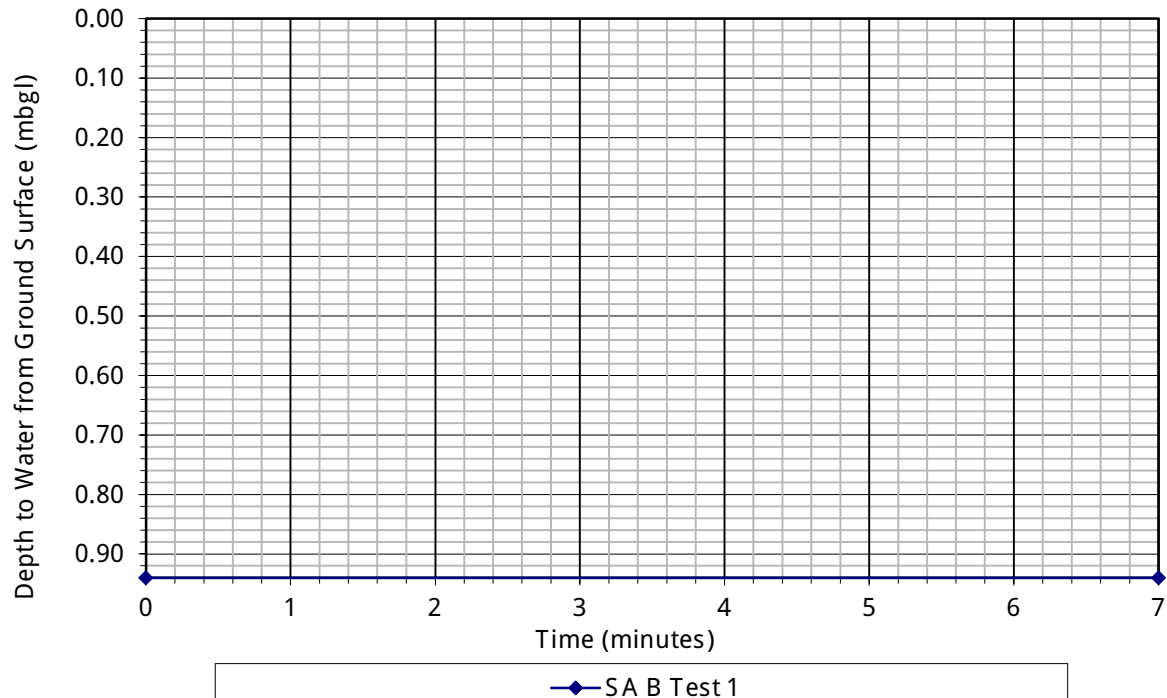
Client: Helix Partnership Homes Limited Report No: 24-06-12
 Site: Land off Nursery Mews, Gravesend Date Tested: 02/07/2024
 Dimensions: 0.40m x 1.20m x 0.94m Test Location: SA B
 (width x length x depth)

Test Response Zone Description: Lewes Nodular, Seaford & Newhaven Chalk

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.94				
7	0.94				

Average Soil Infiltration Rate: 2.38×10^{-3} m/s

Comments: 300L added in 7 minutes; no rise in water level



Trial Pit Infiltration Testing to BRE Digest 365

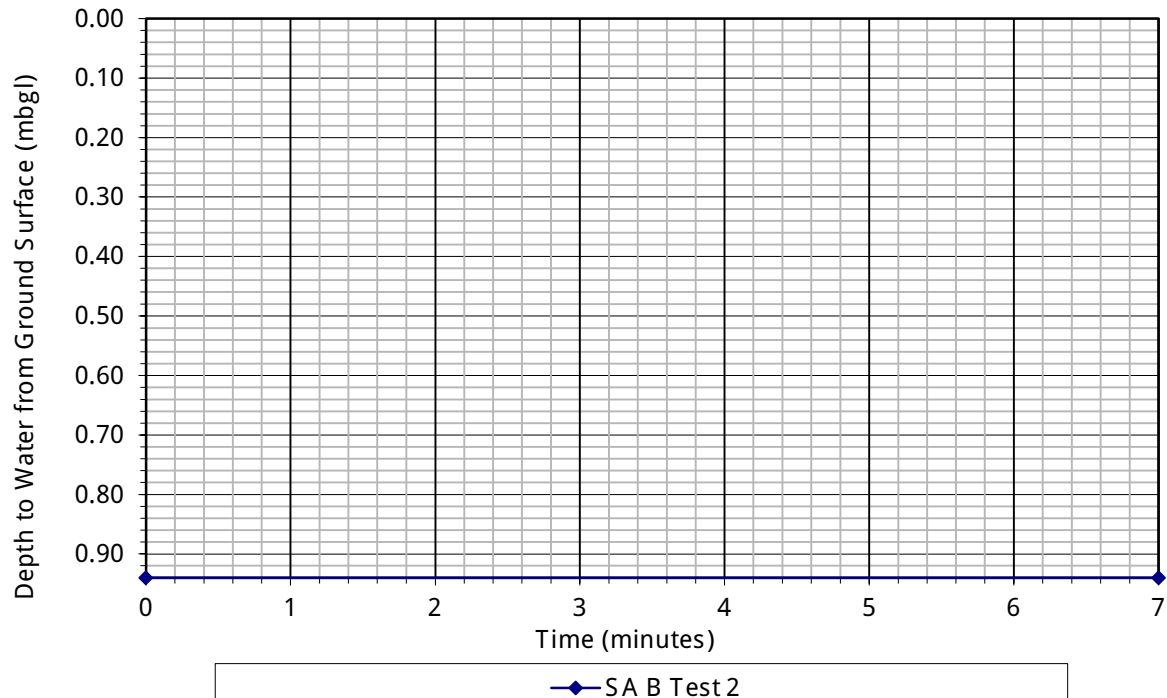
Client: Helix Partnership Homes Limited Report No: 24-06-12
 Site: Land off Nursery Mews, Gravesend Date Tested: 02/07/2024
 Dimensions: 0.40m x 1.20m x 0.94m Test Location: SA B
 (width x length x depth)

Test Response Zone Description: Lewes Nodular, Seaford & Newhaven Chalk

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.94				
7	0.94				

Average Soil Infiltration Rate: 2.38×10^{-3} m/s

Comments: 300L added in 7 minutes; no rise in water level



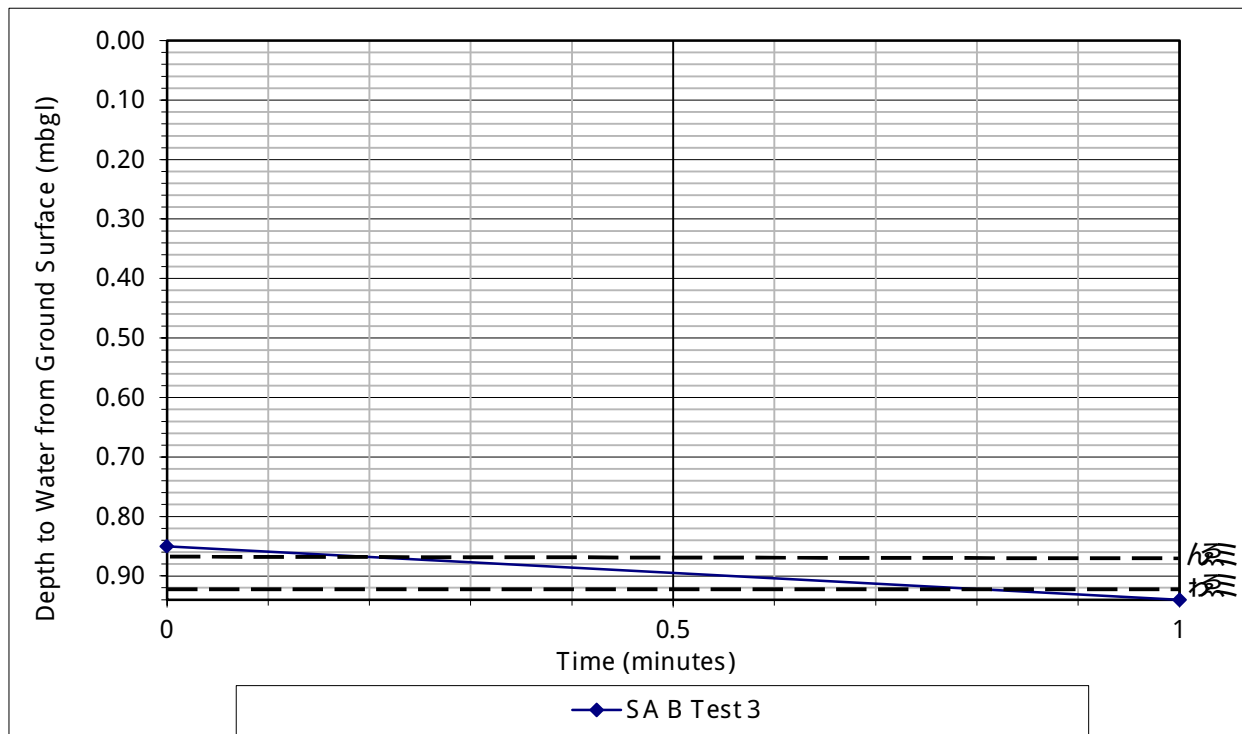
Trial Pit Infiltration Testing to BRE Digest 365

Client: Helix Partnership Homes Limited Report No: 24-06-12
 Site: Land off Nursery Mews, Gravesend Date Tested: 02/07/2024
 Dimensions: 0.40m x 1.20m x 0.94m Test Location: SA B
 (width x length x depth)

Test Response Zone Description: Lewes Nodular, Seaford & Newhaven Chalk

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.85				
1	0.94				

Average Soil Infiltration Rate: 1.05×10^{-3} m/s



APPENDIX C



7 - 11 Harding Street
Leicester
LE1 4DH

Geo-Integrity
4 Church Street
Buckingham
MK18 1QE

Analytical Test Report: L24/06042/GIN - 24-47072

Your Project Reference:	Nursery Mews, Gravesend 24-06-12		
Your Order Number:	Q24-00626/1	Samples Received / Instructed:	05/07/2024 / 05/07/2024
Report Issue Number:	1	Sample Tested:	05/07 to 16/07/2024
Samples Analysed:	12 soil samples	Report issued:	16/07/2024

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

Please note: Where further analysis is required samples identified as containing asbestos are screened and tested on an as received basis. No correction is made for moisture content and these results are not covered by our accreditation

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 29.05.2024

Issued by: J. Gane

Issue No: 4

Rev No: 10



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analytical Test Results - Solid

Lab Reference			379285	379286	379287	379288	379289	379290
Client Sample ID			-	-	-	-	-	-
Client Sample Location			SA A	SA B	HA 201	CBR 101	CBR 102	CT 2
Client Sample Type			S	S	S	S	S	S
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.20	0.10	0.30	0.20	0.10	0.10
Depth - Bottom (m)			0.20	0.10	0.30	0.20	0.10	0.40
Date of Sampling			02/07/2024	02/07/2024	02/07/2024	02/07/2024	02/07/2024	02/07/2024
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Other	Clay	Other
Determinant	Units	Accreditation						
Arsenic	(mg/kg)	MCERTS	< 10	< 10	10	< 10	< 10	< 10
Cadmium	(mg/kg)	MCERTS	0.8	0.8	0.9	0.5	0.8	0.7
Chromium (Total)	(mg/kg)	UKAS	26	22	29	18	16	13
Copper	(mg/kg)	MCERTS	14	21	23	22	23	16
Lead	(mg/kg)	MCERTS	9.1	61	110	20	120	25
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	38	25	28	19	23	20
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	40	70	200	39	150	39
Total Phenols	(mg/kg)	MCERTS	-	-	-	-	-	-
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	< 1.0	1.2	< 1.0	< 1.0	< 1.0
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.20	< 0.20	0.33	0.93	0.03
Acenaphthylene	(mg/kg)	UKAS	< 0.02	< 0.20	< 0.20	1.7	0.57	0.12
Anthracene	(mg/kg)	UKAS	< 0.02	0.27	0.60	4.8	4.9	0.38
Benzo (a) anthracene	(mg/kg)	MCERTS	< 0.02	1.0	1.1	15	9.2	1.2
Benzo (a) pyrene	(mg/kg)	MCERTS	< 0.02	0.95	0.98	16	6.9	1.1
Benzo (b) fluoranthene	(mg/kg)	MCERTS	< 0.02	1.3	1.4	19	8.3	1.4
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	< 0.02	0.83	1.0	14	4.7	1.0
Benzo (k) fluoranthene	(mg/kg)	MCERTS	< 0.02	0.54	0.58	7.0	3.2	0.49
Chrysene	(mg/kg)	MCERTS	< 0.02	0.92	1.0	12	7.0	0.89
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.20	< 0.20	2.0	0.80	0.17
Fluoranthene	(mg/kg)	MCERTS	< 0.02	1.9	2.3	31	25	2.4
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.20	< 0.20	0.25	0.82	< 0.02
Indeno (1, 2, 3-cd) pyrene	(mg/kg)	MCERTS	< 0.02	0.76	0.83	12	4.3	0.88
Naphthalene	(mg/kg)	MCERTS	< 0.02	< 0.20	< 0.20	< 0.20	1.1	< 0.02
Phenanthrene	(mg/kg)	MCERTS	< 0.02	0.50	0.93	7.7	14	0.58
Pyrene	(mg/kg)	MCERTS	< 0.02	1.8	2.0	29	21	2.1
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	< 0.32	12	14	170	110	13
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected



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Leicester
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L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analytical Test Results - Solid

Lab Reference			
379296			
Client Sample ID			
-			
Client Sample Location			
CBR 101			
Client Sample Type			
-			
Client Sample Number			
-			
Depth - Top (m)			
GL			
Depth - Bottom (m)			
-			
Date of Sampling			
02/07/2024			
Time of Sampling			
-			
Sample Matrix			
Other			
Determinant	Units	Accreditation	
Arsenic	(mg/kg)	MCERTS	-
Cadmium	(mg/kg)	MCERTS	-
Chromium (Total)	(mg/kg)	UKAS	-
Copper	(mg/kg)	MCERTS	-
Lead	(mg/kg)	MCERTS	-
Mercury	(mg/kg)	UKAS	-
Nickel	(mg/kg)	MCERTS	-
Selenium	(mg/kg)	u	-
Zinc	(mg/kg)	MCERTS	-
Total Phenols	(mg/kg)	MCERTS	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	-
Acenaphthene	(mg/kg)	MCERTS	2.6
Acenaphthylene	(mg/kg)	UKAS	1.2
Anthracene	(mg/kg)	UKAS	10
Benzo (a) anthracene	(mg/kg)	MCERTS	12
Benzo (a) pyrene	(mg/kg)	MCERTS	7.9
Benzo (b) fluoranthene	(mg/kg)	MCERTS	10
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	5.1
Benzo (k) fluoranthene	(mg/kg)	MCERTS	3.6
Chrysene	(mg/kg)	MCERTS	9.5
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	1.1
Fluoranthene	(mg/kg)	MCERTS	41
Fluorene	(mg/kg)	MCERTS	3.2
Indeno (1, 2, 3-cd) pyrene	(mg/kg)	MCERTS	4.9
Naphthalene	(mg/kg)	MCERTS	1.5
Phenanthrene	(mg/kg)	MCERTS	29
Pyrene	(mg/kg)	MCERTS	34
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	180
Asbestos	-	UKAS	-



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L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analytical Test Results - Chemical Analysis

Lab Reference			379293	379294	379295
Client Sample ID			-	-	-
Client Sample Location			CBR 2	CT 3	CT 2
Client Sample Type			S	S	S
Client Sample Number			-	-	-
Depth - Top (m)			0.40	0.70	1.50
Depth - Bottom (m)			0.40	1.00	2.00
Date of Sampling			02/07/2024	02/07/2024	02/07/2024
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	Units	Accreditation			
Water soluble sulphate (as SO ₄)	(mg/l)	u	39	< 10	< 10
pH Value	pH Units	MCERTS	9.1	9.2	9.2



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L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analytical Test Results - VPH / EPH

Lab Reference			379285	379286	379287	379288	379289	379290	379291
Client Sample ID			-	-	-	-	-	-	-
Client Sample Location			SA A	SA B	HA 201	CBR 101	CBR 102	CT 2	CT 1
Client Sample Type			S	S	S	S	S	S	S
Client Sample Number			-	-	-	-	-	-	-
Depth - Top (m)			0.20	0.10	0.30	0.20	0.10	0.10	0.10
Depth - Bottom (m)			0.20	0.10	0.30	0.20	0.10	0.40	0.30
Date of Sampling			02/07/2024	02/07/2024	02/07/2024	02/07/2024	02/07/2024	02/07/2024	02/07/2024
Time of Sampling			-	-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Other	Clay	Other	Clay
Determinant	Units	Accreditation							
Benzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Toluene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Ethylbenzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
m&p Xylene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
o-Xylene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
MTBE	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Aliphatic >C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.06	-
Aliphatic >C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.06	-
Aliphatic >C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.06	-
Aliphatic >C ₁₀ to C ₁₂ [EH_2D_AL]	(mg/kg)	u	-	-	-	-	-	< 1.0	-
Aliphatic >C ₁₂ to C ₁₆ [EH_2D_AL]	(mg/kg)	u	-	-	-	-	-	< 1.0	-
Aliphatic >C ₁₆ to C ₂₁ [EH_2D_AL]	(mg/kg)	u	-	-	-	-	-	9.1	-
Aliphatic >C ₂₁ to C ₃₅ [EH_2D_AL]	(mg/kg)	u	-	-	-	-	-	21	-
Aliphatic >C ₃₅ to C ₄₄ [EH_2D_AL]	(mg/kg)	u	-	-	-	-	-	< 5.0	-
Aromatic >C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.01	-
Aromatic >C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.01	-
Aromatic >C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-	-	-	-	-	< 0.06	-
Aromatic >C ₁₀ to C ₁₂ [EH_2D_AR]	(mg/kg)	u	-	-	-	-	-	< 1.0	-
Aromatic >C ₁₂ to C ₁₆ [EH_2D_AR]	(mg/kg)	u	-	-	-	-	-	< 1.0	-
Aromatic >C ₁₆ to C ₂₁ [EH_2D_AR]	(mg/kg)	u	-	-	-	-	-	12	-
Aromatic >C ₂₁ to C ₃₅ [EH_2D_AR]	(mg/kg)	u	-	-	-	-	-	38	-
Aromatic >C ₃₅ to C ₄₄ [EH_2D_AR]	(mg/kg)	u	-	-	-	-	-	11	-
Total >C ₅ to C ₃₅ [EH_2D+HS_1D_Total]	(mg/kg)	u	-	-	-	-	-	80	-
Total >C ₅ to C ₄₀ [EH_2D+HS_1D_Total]	(mg/kg)	u	25	130	170	970	210	-	110
Total TPH >C ₅ to C ₆ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total TPH >C ₆ to C ₇ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total TPH >C ₇ to C ₈ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total TPH >C ₈ to C ₁₀ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0
Total TPH >C ₁₀ to C ₁₂ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0
Total TPH >C ₁₂ to C ₁₆ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	15	< 10.0	< 5.0	< 5.0
Total TPH >C ₁₆ to C ₂₁ [EH_2D_TOTAL]	(mg/kg)	u	16	19	19	250	65		33
Total TPH >C ₂₁ to C ₃₅ [EH_2D_TOTAL]	(mg/kg)	u	< 10	91	120	650	120		65
Total TPH >C ₃₅ to C ₄₄ [EH_2D_TOTAL]	(mg/kg)	u	< 10	24	48	76	< 20		12



4161



7 - 11 Harding Street
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LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analytical Test Results - VPH / EPH

Lab Reference		379292	
Client Sample ID		-	
Client Sample Location		CT 2	
Client Sample Type		S	
Client Sample Number		-	
Depth - Top (m)		0.10	
Depth - Bottom (m)		0.40	
Date of Sampling		02/07/2024	
Time of Sampling		-	
Sample Matrix		Clay	
Determinant	Units	Accreditation	
Benzene	(mg/kg)	MCERTS	-
Toluene	(mg/kg)	MCERTS	-
Ethylbenzene	(mg/kg)	MCERTS	-
m&p Xylene	(mg/kg)	MCERTS	-
o-Xylene	(mg/kg)	MCERTS	-
MTBE	(mg/kg)	MCERTS	-
Aliphatic >C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-
Aliphatic >C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-
Aliphatic >C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	MCERTS	-
Aliphatic >C ₁₀ to C ₁₂ [EH_2D_AL]	(mg/kg)	u	-
Aliphatic >C ₁₂ to C ₁₆ [EH_2D_AL]	(mg/kg)	u	-
Aliphatic >C ₁₆ to C ₂₁ [EH_2D_AL]	(mg/kg)	u	-
Aliphatic >C ₂₁ to C ₃₅ [EH_2D_AL]	(mg/kg)	u	-
Aliphatic >C ₃₅ to C ₄₄ [EH_2D_AL]	(mg/kg)	u	-
Aromatic >C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-
Aromatic >C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-
Aromatic >C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	MCERTS	-
Aromatic >C ₁₀ to C ₁₂ [EH_2D_AR]	(mg/kg)	u	-
Aromatic >C ₁₂ to C ₁₆ [EH_2D_AR]	(mg/kg)	u	-
Aromatic >C ₁₆ to C ₂₁ [EH_2D_AR]	(mg/kg)	u	-
Aromatic >C ₂₁ to C ₃₅ [EH_2D_AR]	(mg/kg)	u	-
Aromatic >C ₃₅ to C ₄₄ [EH_2D_AR]	(mg/kg)	u	-
Total >C ₅ to C ₃₅ [EH_2D+HS_1D_Total]	(mg/kg)	u	-
Total >C ₅ to C ₄₀ [EH_2D+HS_1D_Total]	(mg/kg)	u	120
Total TPH >C ₅ to C ₆ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0
Total TPH >C ₆ to C ₇ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0
Total TPH >C ₇ to C ₈ [HS_MS_1D_TOTAL]	(mg/kg)	u	< 1.0
Total TPH >C ₈ to C ₁₀ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0
Total TPH >C ₁₀ to C ₁₂ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0
Total TPH >C ₁₂ to C ₁₆ [EH_2D_TOTAL]	(mg/kg)	u	< 5.0
Total TPH >C ₁₆ to C ₂₁ [EH_2D_TOTAL]	(mg/kg)	u	33
Total TPH >C ₂₁ to C ₃₅ [EH_2D_TOTAL]	(mg/kg)	u	73
Total TPH >C ₃₅ to C ₄₄ [EH_2D_TOTAL]	(mg/kg)	u	11



4161

7 - 11 Harding Street
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L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 2

Analytical Test Results - VOC

Lab Reference		379291	379292
Client Sample ID		-	-
Client Sample Location		CT 1	CT 2
Client Sample Type		S	S
Client Sample Number		-	-
Depth - Top (m)		0.10	0.10
Depth - Bottom (m)		0.30	0.40
Date of Sampling		02/07/2024	02/07/2024
Time of Sampling		-	-
Sample Matrix		Clay	Clay
Determinant	Units	Accreditation	
Benzene	(mg/kg)	MCERTS	< 0.01
Toluene	(mg/kg)	MCERTS	< 0.01
Ethylbenzene	(mg/kg)	MCERTS	< 0.01
m&p Xylene	(mg/kg)	MCERTS	< 0.02
o-Xylene	(mg/kg)	MCERTS	< 0.01
Dichlorodifluoromethane	(mg/kg)	UKAS	< 0.05
Chloromethane	(mg/kg)	UKAS	< 0.02
Vinyl Chloride	(mg/kg)	MCERTS	< 0.02
Bromomethane	(mg/kg)	u	< 0.05
Chloroethane	(mg/kg)	MCERTS	< 0.01
Trichlorofluoromethane	(mg/kg)	MCERTS	< 0.01
1,1-Dichloroethylene	(mg/kg)	MCERTS	< 0.01
Dichloromethane	(mg/kg)	u	< 0.10
MTBE	(mg/kg)	MCERTS	< 0.01
trans-1,2,-dichloroethylene	(mg/kg)	MCERTS	< 0.01
1,1-Dichloroethane	(mg/kg)	MCERTS	< 0.01
2,2-Dichloropropane	(mg/kg)	MCERTS	< 0.01
cis-1,2,-dichloroethylene	(mg/kg)	MCERTS	< 0.01
Bromochloromethane	(mg/kg)	MCERTS	< 0.05
Chloroform	(mg/kg)	MCERTS	< 0.01
1,1,1-Trichloroethane	(mg/kg)	MCERTS	< 0.01
1,1-Dichloropropene	(mg/kg)	MCERTS	< 0.01
Carbon Tetrachloride	(mg/kg)	MCERTS	< 0.01
1,2-dichloroethane	(mg/kg)	MCERTS	< 0.02
Trichloroethylene	(mg/kg)	MCERTS	< 0.01
1,2-Dichloropropane	(mg/kg)	MCERTS	< 0.01
Dibromomethane	(mg/kg)	MCERTS	< 0.02
Bromodichloromethane	(mg/kg)	MCERTS	< 0.01
cis-1,2-dichloropropylene	(mg/kg)	MCERTS	< 0.01
trans-1,3-dichloropropylene	(mg/kg)	MCERTS	< 0.01
1,1,2-Trichloroethane	(mg/kg)	MCERTS	< 0.01
1,3-Dichloropropane	(mg/kg)	MCERTS	< 0.01
Tetrachloroethylene	(mg/kg)	MCERTS	< 0.01
Chlorodibromomethane	(mg/kg)	MCERTS	< 0.01
1,2-Dibromoethane	(mg/kg)	MCERTS	< 0.01
Chlorobenzene	(mg/kg)	MCERTS	< 0.01
1,1,1,2-tetrachloroethane	(mg/kg)	MCERTS	< 0.01
Styrene	(mg/kg)	UKAS	< 0.01
Isopropylbenzene	(mg/kg)	MCERTS	< 0.01
Bromoform	(mg/kg)	MCERTS	< 0.05
1,1,2,2-Tetrachloroethane	(mg/kg)	MCERTS	< 0.01
1,2,3-Trichloropropane	(mg/kg)	MCERTS	< 0.02
n-Propylbenzene	(mg/kg)	MCERTS	< 0.01
Bromobenzene	(mg/kg)	MCERTS	< 0.01
1,3,5-Trimethylbenzene	(mg/kg)	UKAS	< 0.01
2-chlorotoluene	(mg/kg)	MCERTS	< 0.01
4-chlorotoluene	(mg/kg)	MCERTS	< 0.01
tert-butylbenzene	(mg/kg)	UKAS	< 0.01
1,2,4-trimethylbenzene	(mg/kg)	UKAS	< 0.01
sec-Butylbenzene	(mg/kg)	UKAS	< 0.01
4-Isopropyltoluene (P-Cymene)	(mg/kg)	UKAS	< 0.01
1,3-Dichlorobenzene	(mg/kg)	u	< 0.01
1,4-Dichlorobenzene	(mg/kg)	u	< 0.01
n-Butylbenzene	(mg/kg)	UKAS	< 0.01
1,2-Dichlorobenzene	(mg/kg)	MCERTS	< 0.01
1,2-Dibromo-3-chloropropane	(mg/kg)	u	< 0.05
1,2,4-Trichlorobenzene	(mg/kg)	u	< 0.05
Hexachlorobutadiene	(mg/kg)	u	< 0.05
Naphthalene	(mg/kg)	u	< 0.05
1,2,3-Trichlorobenzene	(mg/kg)	u	< 0.05

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesen

Analytical Test Results - SVOC

Lab Reference		379291	379292
Client Sample ID		-	-
Client Sample Location		CT 1	CT 2
Client Sample Type		S	S
Client Sample Number		-	-
Depth - Top (m)		0.10	0.10
Depth - Bottom (m)		0.30	0.40
Date of Sampling		02/07/2024	02/07/2024
Time of Sampling		-	-
Sample Matrix		Clay	Clay
Determinant	Units	Accreditation	
1,2,4-Trichlorobenzene	(mg/kg)	u	< 0.2
1,2-Dichlorobenzene	(mg/kg)	u	< 0.1
1,3-Dichlorobenzene	(mg/kg)	u	< 0.1
1,4-Dichlorobenzene	(mg/kg)	u	< 0.2
1-Chloronaphthalene	(mg/kg)	u	< 0.1
2,3,4,6-Tetrachlorophenol	(mg/kg)	u	< 0.6
2,4,5-Trichlorophenol	(mg/kg)	u	< 0.2
2,4,6-Trichlorophenol	(mg/kg)	u	< 0.3
2,4-Dichlorophenol	(mg/kg)	u	< 0.2
2,4-Dimethylphenol	(mg/kg)	u	< 0.2
2,4-Dinitrophenol	(mg/kg)	u	< 2.0
2,6-Dichlorophenol	(mg/kg)	u	< 0.3
2,6-Dinitrotoluene	(mg/kg)	u	< 0.6
2-Chlorophenol	(mg/kg)	u	< 0.2
2-Methylnaphthalene	(mg/kg)	u	< 0.2
2-Methylphenol	(mg/kg)	u	< 0.2
2-Nitroaniline	(mg/kg)	u	< 0.4
2-Nitrophenol	(mg/kg)	u	< 0.6
3,3-Dichlorobenzidine	(mg/kg)	u	< 0.3
3/4-Methylphenol	(mg/kg)	u	< 0.2
3-Nitroaniline	(mg/kg)	u	< 0.6
4-Chlorophenyl phenyl ether	(mg/kg)	u	< 0.2
4,6-Dinitro-2-methylphenol	(mg/kg)	u	< 1.0
4-Bromophenyl phenyl ether	(mg/kg)	u	< 0.2
4-Chloro-3-methylphenol	(mg/kg)	u	< 0.2
4-Chloroaniline	(mg/kg)	u	< 0.2
4-Nitroaniline	(mg/kg)	u	< 0.3
4-Nitrophenol	(mg/kg)	u	< 0.6
Acenaphthene	(mg/kg)	u	< 0.1
Acenaphthylene	(mg/kg)	u	< 0.1
Aniline	(mg/kg)	u	< 0.2
Anthracene	(mg/kg)	u	0.2
Azobenzene	(mg/kg)	u	< 0.2
Benz[a]anthracene	(mg/kg)	u	0.7
Benzo[ghi]perylene	(mg/kg)	u	0.5
Benzo[a]pyrene	(mg/kg)	u	0.7
Benzo[b]fluoranthene	(mg/kg)	u	0.8
Benzo[k]fluoranthene	(mg/kg)	u	0.3
Benzyl Alcohol	(mg/kg)	u	< 0.3
Benzyl butyl phthalate	(mg/kg)	u	< 0.2
Bis(2-chloroethoxy)methane	(mg/kg)	u	< 0.1
Bis(2-chloroethyl)ether	(mg/kg)	u	< 0.2
Bis(2-chloroisopropyl)ether	(mg/kg)	u	< 0.2
Bis(2-ethylhexyl) phthalate	(mg/kg)	u	< 0.2
Chrysene	(mg/kg)	u	0.4
Dibenz[a,h]anthracene	(mg/kg)	u	< 0.2
Dibenzofuran	(mg/kg)	u	< 0.1
Dibutyl phthalate	(mg/kg)	u	< 0.1
Diethyl Phthalate	(mg/kg)	u	< 0.2
Dimethyl phthalate	(mg/kg)	u	< 0.2
Di-n-octyl phthalate	(mg/kg)	u	< 0.2
Diphenylamine	(mg/kg)	u	< 0.1
Fluoranthene	(mg/kg)	u	1.8
Fluorene	(mg/kg)	u	< 0.1
Hexachlorobenzene	(mg/kg)	u	< 0.3
Hexachlorobutadiene	(mg/kg)	u	< 0.3
Hexachlorocyclopentadiene	(mg/kg)	u	< 1.0
Hexachloroethane	(mg/kg)	u	< 0.2
Indeno[1,2,3-cd]pyrene	(mg/kg)	u	0.5
Isophorone	(mg/kg)	u	< 0.2
Methyl Methanesulfonate	(mg/kg)	u	< 0.3
Naphthalene	(mg/kg)	u	< 0.1
NitroBenzene	(mg/kg)	u	< 0.3
N-Nitrosodimethylamine	(mg/kg)	u	< 0.2
Pentachlorophenol	(mg/kg)	u	< 1.0
Phenanthrene	(mg/kg)	u	0.7
Phenol	(mg/kg)	u	< 0.1
Pyrene	(mg/kg)	u	1.4



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Certificate Of Analysis - WAC Suite

Lab Reference		379290
Client Sample ID	-	
Client Sample Location	CT 2	
Client Sample Type	S	
Client Sample Number	-	
Depth - Top (m)	0.1	
Depth - Bottom (m)	0.4	
Date of Sampling	02/07/2024	
Time of Sampling	-	
Sample Description	Greyish brown crushed rock	
Sample Matrix	Other	
Moisture Content (%)	8.8	
Stone content (%)	44	

	Determined Result	Inert Waste Landfill	Stable non reactive hazardous waste in a non hazardous landfill	Hazardous Waste Landfill
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Solid Analysis

Total Organic Carbon	%	MCERTS	1.1	3.0	5.0	6.0
Loss on Ignition	%	UKAS	2.7	-	-	10.0
BTEX	mg/kg	MCERTS	< 0.06	6.00	-	-
PCB's (7 Congeners)	mg/kg	u	< 0.025	1.00	-	-
Mineral Oil (>C10 to C40) [EH_CU_1D_Tota	mg/kg	u	110	500	-	-
PAH	mg/kg	u	13	100	-	-
pH	units	MCERTS	9.2	-	> 6	-

Eluate Analysis

Arsenic	mg/kg	u	< 0.03	0.50	2	25
Barium	mg/kg	u	< 0.05	20	100	300
Cadmium	mg/kg	u	< 0.03	0.04	1	5
Chromium (total)	mg/kg	u	< 0.03	0.5	10	70
Copper	mg/kg	u	< 0.01	2.0	50	100
Mercury	mg/kg	u	< 0.01	0.01	0.2	2
Molybdenum	mg/kg	u	< 0.03	0.5	10.0	30
Nickel	mg/kg	u	< 0.03	0.4	10.0	40
Lead	mg/kg	u	< 0.05	0.5	10.0	50
Antimony	mg/kg	u	< 0.03	0.06	0.7	5
Selenium	mg/kg	u	0.02	0.1	0.5	7
Zinc	mg/kg	u	< 0.05	4	50	200
Chloride	mg/kg	u	< 1	800	15000	25000
Fluoride	mg/kg	u	5	10	150	500
Sulphate (as SO ₄)	mg/kg	u	13	1000	20000	50000
Total Dissolved Solids	mg/kg	u	400	4000	60000	100000
Phenol Index	mg/kg	u	< 1.0	1	-	-
Dissolved Organic Carbon	mg/kg	u	24.0	500	800	1000



7 - 11 Harding Street
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LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
379285	-	SA A	S	-	Mottled brown very gravelly clay with rare organic matter	11	13	-
379286	-	SA B	S	-	Brown very gravelly sandy clay with occasional organic matter	12	10	-
379287	-	HA 201	S	-	Brown slightly gravelly sandy clay	8.3	< 0.1	-
379288	-	CBR 101	S	-	Greyish brown crushed rock	2.1	86	-
379289	-	CBR 102	S	-	Greyish brown sandy clay	8.1	29	-
379290	-	CT 2	S	-	Greyish brown crushed rock	8.8	44	76
379291	-	CT 1	S	-	Greyish brown very gravelly silty clay	15	< 0.1	-
379292	-	CT 2	S	-	Mottled grey very gravelly crushed rock	14	23	-
379293	-	CBR 2	S	-	Light very gravelly sandy clay	-	-	80
379294	-	CT 3	S	-	Cream slightly sandy sandy clay	-	-	100
379295	-	CT 2	S	-	Cream slightly sandy sandy clay	-	-	100
379296	-	CBR 101	-	-	Blacktop	U/S	U/S	-



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
379285	-	SA A	S	-	VPH/BTEX - Sample taken from container with headspace.
379286	-	SA B	S	-	VPH/BTEX - Sample taken from container with headspace. PAHAR - 1:10 Dilution - Dark coloured extract
379287	-	HA 201	S	-	VPH/BTEX - Sample taken from container with headspace. PAHAR - 1:10 Dilution - Dark coloured extract
379288	-	CBR 101	S	-	VPH/BTEX - Sample taken from container with headspace. PAHAR - 1:10 Dilution - Dark coloured extract
379289	-	CBR 102	S	-	VPH/BTEX - Sample taken from container with headspace. PAHAR - 1:10 Dilution - Dark coloured extract
379290	-	CT 2	S	-	VPH/BTEX - Sample taken from container with headspace.
379291	-	CT 1	S	-	VPH/BTEX - Sample taken from container with headspace. VOC - Sample taken from container with headspace.
379292	-	CT 2	S	-	1:10 dilution - dark coloured extract VPH/BTEX - Sample taken from container with headspace. VOC - Sample taken from container with headspace.
379293	-	CBR 2	S	-	
379294	-	CT 3	S	-	
379295	-	CT 2	S	-	
379296	-	CBR 101	-	-	PAHAR - 1:10 Dilution - Dark coloured extract

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
WACDOC	MS - CL - DOC (WAC)	As received	BSEN:12457 Leaching	Determination of dissolved organic carbon in a leachate as part of a WAC test
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
WACMETALS	MS - CL - ICP - Metals in Waters (WAC)	As received	BSEN:12457 Leaching	Determination of metals in a leachate as part of a WAC test via ICP
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
WACPHS	MS - CL - pH in Soils (WAC)	As received	BSEN:12457 Leaching	Determination of pH in soils as part of a WAC test via pH probe
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
PCB75	MS - CL - PCB Soils	As received	Passing 10mm test sieve	Determination of PCB's (7 congeners) in soils via GC-MS
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
WACANIONS	MS - CL - Anions by Aquakem (WAC)	As received	BSEN:12457 Leaching	Determination of sulphate, chloride and fluoride in a leachate as part of a WAC test using a Aquakem analyser
SVOCS	MS - CL - Semi VOC	As received	Passing 10mm test sieve	Determination of Semi volatile organic compounds in soil via GC-MS
TDSL	MS-CL-Conductivity in Water(TDS by Calc)	As received	BSEN:12457 Leaching	Determination of total dissolved solids in leachates (by calculation)
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Determination of total phenols in soil using Skalar segmented flow analyser
WACTOCS	MS - CL - TOC Eltra (WAC)	Air dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soil as part of a WAC test
TPHSC	MS - CL - TPH (GC-FID) Scrubbed	As received	Passing 10mm test sieve	Determination of Total Petroleum Hydrocarbons in soil using GC-FID. Sample is subjected to a fluorocil cleanup (scrubbing stage) prior to analysis
WACSKALAR	MS - CL - Phenols by Skalar (WAC)	As received	BSEN:12457 Leaching	Determination of Total Phenols within leachate as part of a WAC test using a Skalar Segmented flow analyser
GXCXCS	MS - CL - TPH & EPH by GCXGC	As received	Passing 10mm test sieve	Determination of TPH and EPH in soils via GCXGC-FID
CWGS	Calculation from VPH-S and EPH-S	As received	Passing 10mm test sieve	Determination of TPH CWG (Volatile Petroleum Hydrocarbons and Extractable Petroleum Hydrocarbons) in soils via Headspace-GC-MS and GC-GC-FID respectively
VOCS	MS - CL - VOC and MBTEX	As received	Passing 10mm test sieve	Determination of VOCs (inc BTEX) in soils via Headspace-GC-MS
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
ASB	MS - AS - Asbestos	-	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
ENLEACHP	BS EN 12457-2	As Received	-	Leaching in accordance with BSEN 12457-2 (10:1 Ratio)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
1377LOI	BS1377 Lol	Oven dried	Passing 2mm test sieve	Testing was in accordance with BS 1377: Part 3: 2018 + A1 :2021 Clause 6. Determination of the mass loss on ignition. Some information required by BS1377: 2016: Part 1 has not been reported. This information is available on request.



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
379285	-	SA A	S	-	MS - CL - VPH	X
379286	-	SA B	S	-	MS - CL - VPH	X
379287	-	HA 201	S	-	MS - CL - VPH	X
379288	-	CBR 101	S	-	MS - CL - VPH	X
379289	-	CBR 102	S	-	MS - CL - VPH	X
379290	-	CT 2	S	-	MS - CL - VPH	X
379291	-	CT 1	S	-	MS - CL - VPH	X
379292	-	CT 2	S	-	MS - CL - VPH	X



7 - 11 Harding Street
Leicester
LE1 4DH

L24/06042/GIN - 24-47072

Project Reference - Nursery Mews, Gravesend 24-06-12

HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumlative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

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Email: lab@listersgeotechnics.co.uk

PROJECT INFORMATION		SAMPLE INFORMATION																																																							
Site Location:- Land off Nursery Mews Gravesend	Laboratory Tests Undertaken:- <table border="1"> <thead> <tr> <th>TEST TYPE</th> <th>TEST METHOD</th> <th>TESTED</th> </tr> </thead> <tbody> <tr> <td>Natural Moisture Contents (MC%)</td> <td>(BS 1377:Part 2:1990 Clause 3.2)</td> <td>✓</td> </tr> <tr> <td>Liquid Limits (%)</td> <td>(BS 1377:Part 2:1990 Clause 4.3)</td> <td>✓</td> </tr> <tr> <td>Plastic Limits (%)</td> <td>(BS 1377:Part 2:1990 Clause 5.3)</td> <td>✓</td> </tr> <tr> <td>Plasticity Index (%)</td> <td>(BS 1377:Part 2:1990 Clause 5.4)</td> <td>✓</td> </tr> <tr> <td>Saturated Moisture Content (%)</td> <td>(BS1377 : Part 2 : 1990, clause 3.3)</td> <td>✓</td> </tr> <tr> <td>PSD - Wet Sieving</td> <td>(BS 1377:Part 2:1990 Clause 9.2)</td> <td>✓</td> </tr> <tr> <td>Engineering Sample Descriptions</td> <td>(BS 5930 : Section 6)</td> <td></td> </tr> <tr> <td>Passing 425/63 (µm)</td> <td>-</td> <td>✓</td> </tr> <tr> <td>Hydrometer</td> <td>(BS 1377:Part 2:1990 Clause 9.5)</td> <td></td> </tr> <tr> <td>Loss on Ignition (%)</td> <td>-</td> <td></td> </tr> <tr> <td>Soil Suctions (kPa)</td> <td>BRE Digest IP 4/93, 1993</td> <td></td> </tr> <tr> <td>Bulk Density (Mg/m³)</td> <td>(BS 1377:Part 2:1990 Clause 7.2)</td> <td></td> </tr> <tr> <td>Strength Tests</td> <td>(BS 1377:Part 7:1990 Clause 8 & 9)</td> <td></td> </tr> <tr> <td>Soluble Sulphate Content (SO₄g/l)</td> <td>(BS 1377:Part 3:1990 Clause 5.3)</td> <td></td> </tr> <tr> <td>pH value</td> <td>(BS 1377:Part 3:1990 Clause 9.4)</td> <td></td> </tr> <tr> <td>California Bearing Ratios (CBR)</td> <td>(BS 1377:Part 4:1990 Clause 7)</td> <td></td> </tr> <tr> <td>Compaction Tests</td> <td>(BS 1377:Part 4:1990 Clauses 3.0-3.6)</td> <td></td> </tr> </tbody> </table>			TEST TYPE	TEST METHOD	TESTED	Natural Moisture Contents (MC%)	(BS 1377:Part 2:1990 Clause 3.2)	✓	Liquid Limits (%)	(BS 1377:Part 2:1990 Clause 4.3)	✓	Plastic Limits (%)	(BS 1377:Part 2:1990 Clause 5.3)	✓	Plasticity Index (%)	(BS 1377:Part 2:1990 Clause 5.4)	✓	Saturated Moisture Content (%)	(BS1377 : Part 2 : 1990, clause 3.3)	✓	PSD - Wet Sieving	(BS 1377:Part 2:1990 Clause 9.2)	✓	Engineering Sample Descriptions	(BS 5930 : Section 6)		Passing 425/63 (µm)	-	✓	Hydrometer	(BS 1377:Part 2:1990 Clause 9.5)		Loss on Ignition (%)	-		Soil Suctions (kPa)	BRE Digest IP 4/93, 1993		Bulk Density (Mg/m ³)	(BS 1377:Part 2:1990 Clause 7.2)		Strength Tests	(BS 1377:Part 7:1990 Clause 8 & 9)		Soluble Sulphate Content (SO ₄ g/l)	(BS 1377:Part 3:1990 Clause 5.3)		pH value	(BS 1377:Part 3:1990 Clause 9.4)		California Bearing Ratios (CBR)	(BS 1377:Part 4:1990 Clause 7)		Compaction Tests	(BS 1377:Part 4:1990 Clauses 3.0-3.6)	
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Client Reference:- 24-06-12																																																									
Date Samples Received:- 04 July 2024																																																									
Date Testing Completed:- 16 July 2024																																																									
The results relate only to the samples tested																																																									
This test-report may not be reproduced, except with full and written approval of GROUNDTECH LABORATORIES		Laboratory testing in accord with BS EN ISO/IEC 17025-2000 and Quality Management in accord with ISO 9001																																																							
Signed on behalf of GroundTech Laboratories:- _____ Technical Signatory			Quality Assured to ISO 9001																																																						
GEOTECHNICAL LABORATORY TEST RESULTS		Report No:	24.07.013																																																						

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**Quality Assured
to ISO 9001**

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS			
Test Location	Sample Type	Sample Depth -m	Test Type	WC %	LL %	PL %	PI %	Passing 425 μm %	Modified PI %	Class	Passing 63 μm %	WC/ LL	PL + 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m³	Test Type	Cell Pressure kN/m²	Deviator Stress kN/m²	Apparent Cohesion kN/m²	φ	pH Value	Soluble Sulphate Content SO4 g/l		
CBR101	D	1.50	PSD																							
CBR102	D	1.30	PSD																							
CT 01	D	1.00	PSD																							
	D	2.00	PSD																							
	D	4.00	PI/63	26	31	25	6	99	6	ML	92	0.84	27	0.17												
CT 02	D	0.40	PSD																							
	D	3.00	PI/63	23	29	23	6	94	6	ML	88	0.79	25	0.00												
	D	4.50	PI/63	28	28	25	3	95	3	ML	87	1.00	27	1.00												
CT 03	D	0.10	PI/63	19	31	21	10	64	6	CL	54	0.61	23	-0.20												
	D	1.50	PSD																							
	D	4.00	PI/63	28	31	25	6	85	5	ML	76	0.90	27	0.50												
SA A	D	0.50	PI/63	14	33	19	14	77	11	CL	60	0.42	21	-0.36												
Symbols:				U	Undisturbed Sample					R	Remoulded				PI	Plasticity Index			T	Triaxial Undrained				L	100mm specimen	
				D	Disturbed Sample					63	Passing 63μm				F	Filter Paper Suction Tests			M	Multistage Triaxial				S	38mm specimen	
				B	Bulk Sample					H	Hydrometer				CC	Continuous Core			HP	Hand Penetrometer						
				W	Water Sample					PSD	Wet Sieving								V	Vane Test						
LABORATORY TEST RESULTS																					Project Reference 24.07.013					

GroundTech Laboratories

Geotechnical Testing Facility

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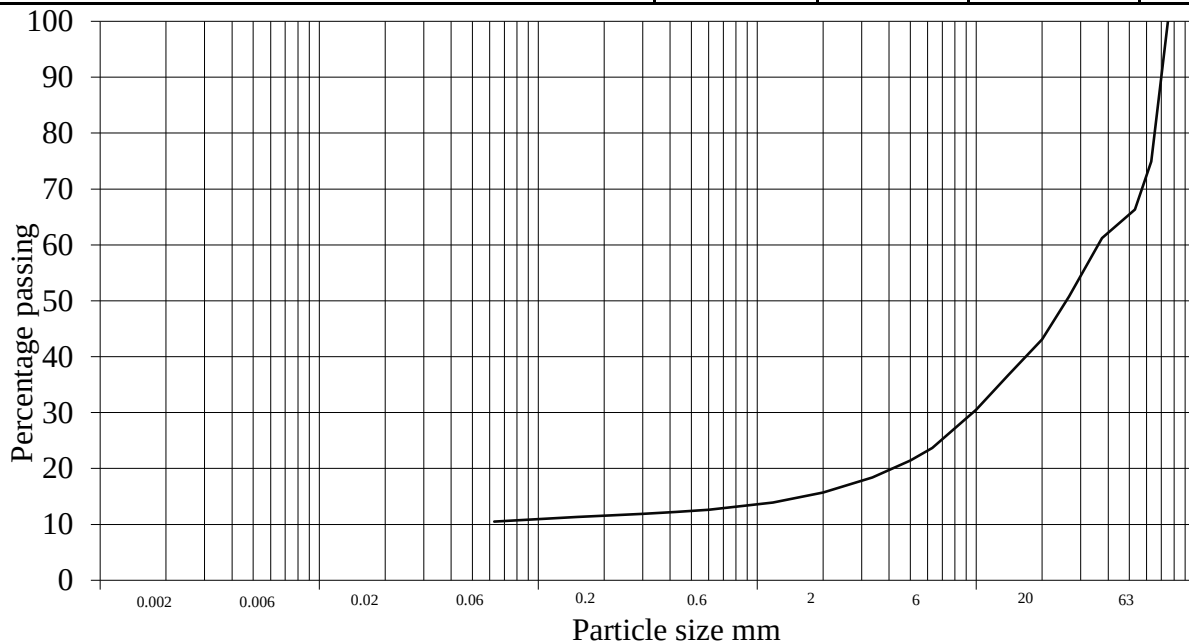
Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

**Quality
Assured
ISO 9001**

		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site:	Land of Nursery Mews, Gravesend	75mm	100.00		
		63mm	74.90		
Test Location:	CBR101	50mm	66.30		
		37.5mm	61.20		
Sample Depth:	1.50m	26.5mm	50.80		
		20mm	43.10		
Hydrometer No.:		14mm	36.70		
		10mm	30.50		
SG Gs:		6.3mm	23.70		
		5mm	21.40		
Water Visc. (N):		3.5mm	18.40		
		2mm	15.70		
Dry Mass of Soil after pretreatment (g):		1.18mm	13.90		
		600µm	12.60		
		425µm	12.20		
		300µm	11.90		
		212µm	11.60		
		150µm	11.30		
		63µm	10.50		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	(i)11%	(ii)14%		(i)5%	(ii)7%		(i)59%	(ii)79%		25%

(i) Percentage of whole sample (ii) Percentage of sample excluding very coarse soils

PARTICLE SIZE DISTRIBUTION

Project Reference
24.07.013

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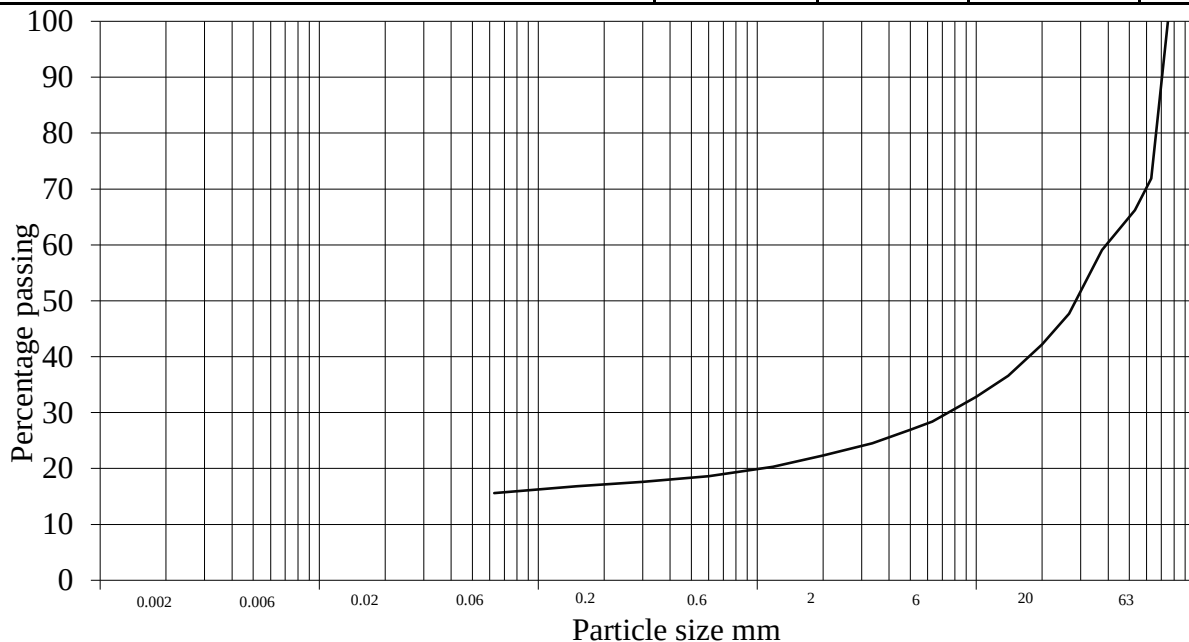
Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

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ISO 9001**

		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site:	Land of Nursery Mews, Gravesend	75mm	100.00		
		63mm	71.90		
Test Location:	CBR102	50mm	66.20		
		37.5mm	59.10		
Sample Depth:	1.30m	26.5mm	47.70		
		20mm	42.20		
Hydrometer No.:		14mm	36.60		
		10mm	32.80		
SG Gs:		6.3mm	28.40		
		5mm	26.90		
Water Visc. (N):		3.5mm	24.50		
		2mm	22.30		
Dry Mass of Soil after pretreatment (g):		1.18mm	20.30		
		600µm	18.60		
		425µm	18.10		
		300µm	17.60		
		212µm	17.20		
		150µm	16.80		
		63µm	15.60		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	(i)16%	(ii)22%		(i)7%	(ii)9%		(i)50%	(ii)69%		28%

(i) Percentage of whole sample (ii) Percentage of sample excluding very coarse soils

PARTICLE SIZE DISTRIBUTION

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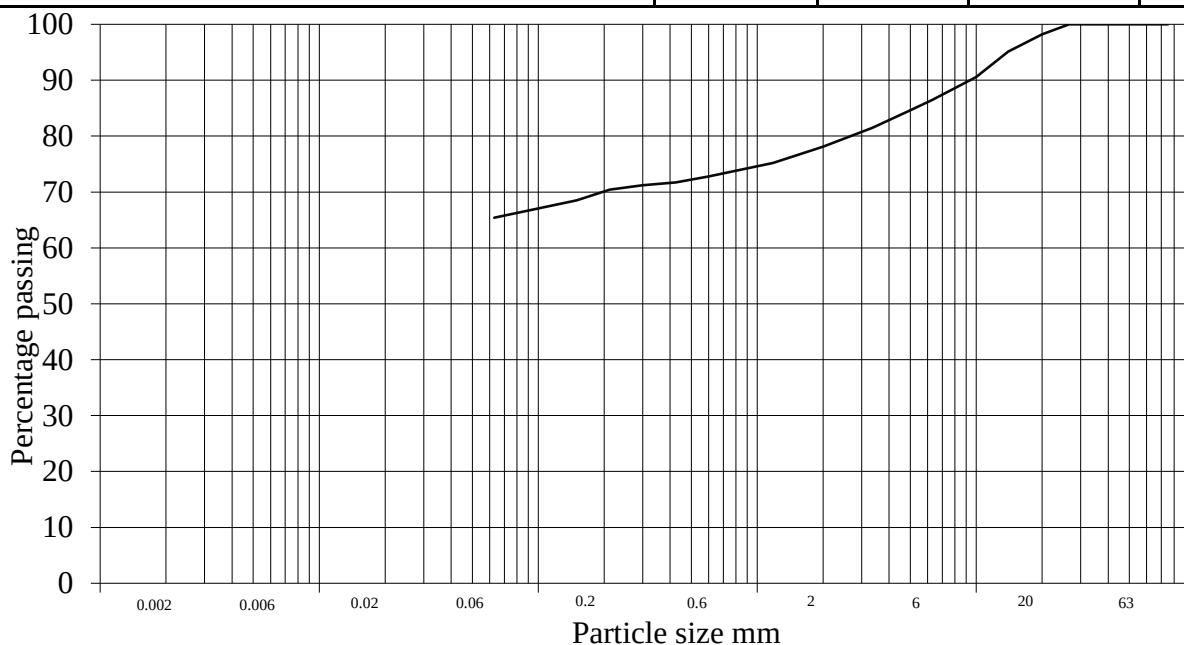
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Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

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		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site:	Land of Nursery Mews, Gravesend	75mm	100.00		
		63mm	100.00		
Test Location:	CT 01	50mm	100.00		
		37.5mm	100.00		
Sample Depth:	1.00m -1.50m	26.5mm	100.00		
		20mm	98.20		
Hydrometer No.:		14mm	95.10		
		10mm	90.60		
SG Gs:		6.3mm	86.50		
		5mm	84.60		
Water Visc. (N):		3.5mm	81.50		
		2mm	78.10		
Dry Mass of Soil after pretreatment (g):		1.18mm	75.20		
		600µm	72.80		
		425µm	71.70		
		300µm	71.20		
		212µm	70.40		
		150µm	68.50		
		63µm	65.40		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
65%				13%			22%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
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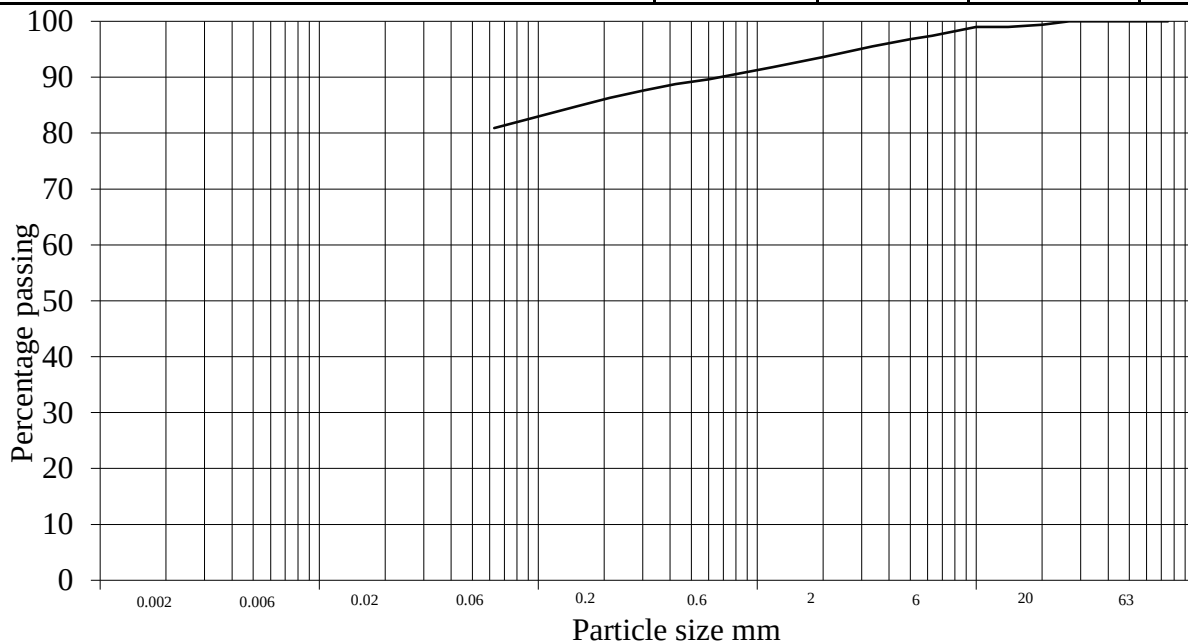
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Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

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		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site: Land of Nursery Mews, Gravesend Test Location: CT 01 Sample Depth: 2.00m -2.50m Hydrometer No.: SG Gs: Water Visc. (N): Dry Mass of Soil after pretreatment (g):		75mm	100.00		
		63mm	100.00		
		50mm	100.00		
		37.5mm	100.00		
		26.5mm	100.00		
		20mm	99.40		
		14mm	99.00		
		10mm	99.00		
		6.3mm	97.40		
		5mm	96.80		
		3.5mm	95.50		
		2mm	93.60		
		1.18mm	91.80		
		600µm	89.60		
		425µm	88.80		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	81%			13%			6%			0%

PARTICLE SIZE DISTRIBUTION

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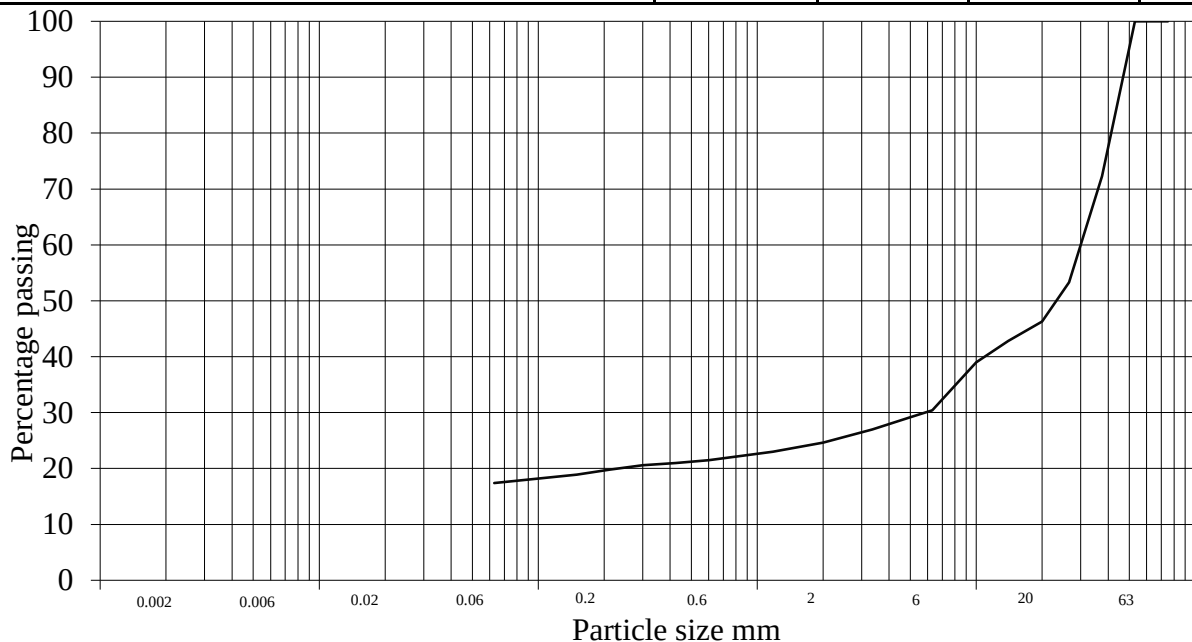
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Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

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		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site:	Land of Nursery Mews, Gravesend	75mm	100.00		
		63mm	100.00		
Test Location:	CT 02	50mm	100.00		
		37.5mm	72.30		
Sample Depth:	0.40m -1.00m	26.5mm	53.30		
		20mm	46.30		
Hydrometer No.:		14mm	42.80		
		10mm	39.00		
SG Gs:		6.3mm	30.40		
		5mm	29.20		
Water Visc. (N):		3.5mm	27.00		
		2mm	24.60		
Dry Mass of Soil after pretreatment (g):		1.18mm	23.00		
		600µm	21.50		
		425µm	21.00		
		300µm	20.60		
		212µm	19.80		
		150µm	18.90		
		63µm	17.40		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
17%				7%			75%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
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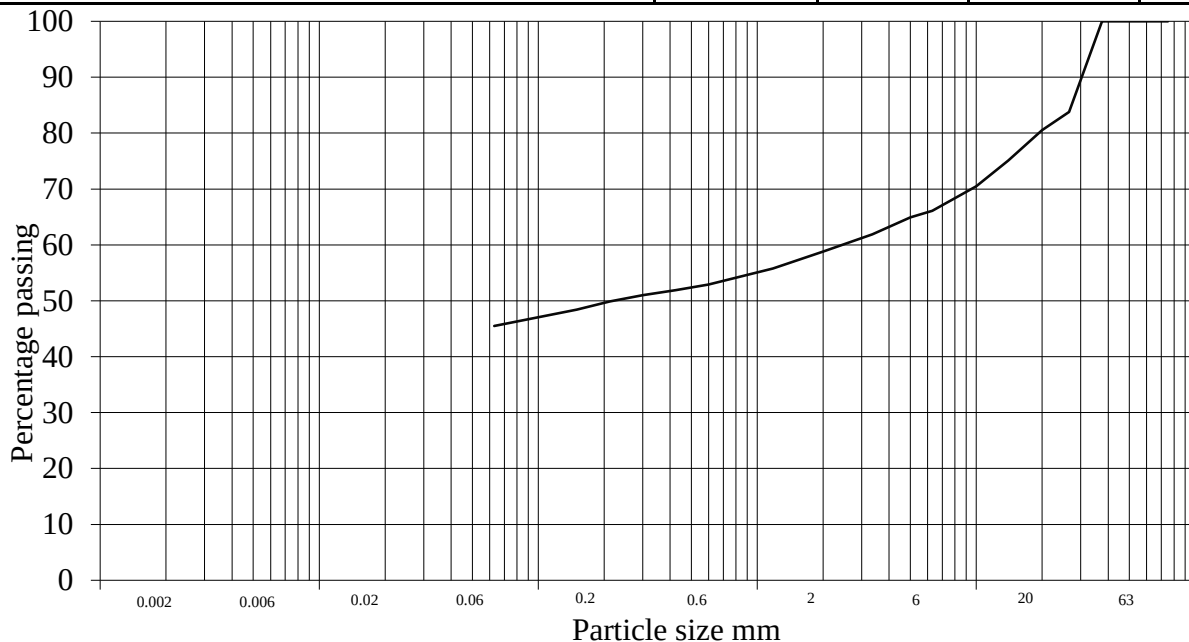
Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

**Quality
Assured
ISO 9001**

		Test Method: BS 1377 : Part 2 : 1990 : 9.2			
		BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
Site: Land of Nursery Mews, Gravesend Test Location: CT 03 Sample Depth: 1.50m -2.00m Hydrometer No.: SG Gs: Water Visc. (N): Dry Mass of Soil after pretreatment (g):		75mm	100.00		
		63mm	100.00		
		50mm	100.00		
		37.5mm	100.00		
		26.5mm	83.80		
		20mm	80.50		
		14mm	75.10		
		10mm	70.50		
		6.3mm	66.10		
		5mm	64.90		
		3.5mm	61.90		
		2mm	58.80		
		1.18mm	55.80		
		600µm	52.90		
		425µm	51.90		
		300µm	51.00		
		212µm	49.90		
		150µm	48.40		
		63µm	45.50		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
46%				13%			41%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
24.07.013

Telephone: 01327 860947/860060 Fax: 01327 860430

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



QJP0C-WESFL-8YARK

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

Gravesend

Description/Comments

Project

24-06-12

Site

Land off Nursery Mews, Gravesend

Classified by

Name: **Fiona White**
Date: **25 Jul 2024 12:43 GMT**
Telephone: **01280 816409**
Company: **Geo-Integrity Limited**
Geo-Integrity
Unit 7
Towcester
NN12 8TA

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification

Date

05 Oct 2023

Next 3 year Refresher due by Oct 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

Land off Nursery Mews, Gravesend, Kent

Post Code DA12 5JT

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Redevelopment of site

Description of the specific process, sub-process and/or activity that created the waste

Waste created during excavation of foundations and services.

Description of the waste

Made Ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	SA A	0.20	Non Hazardous		3
2	SA B	0.10	Non Hazardous		5
3	HA 201	0.30	Non Hazardous		7
4	CBR 101	0.20	Non Hazardous		9
5	CBR 102	0.10	Non Hazardous		11
6	CT 2	0.10	Non Hazardous		13

Related documents

#	Name	Description
1	WM3 v1.2 2021 compliant	waste stream template used to create this Job

Report

Created by: Fiona White

Created date: 25 Jul 2024 12:43 GMT

Appendices

	Page
Appendix A: Classifier defined and non GB MCL determinands	15
Appendix B: Rationale for selection of metal species	16
Appendix C: Version	16

Classification of sample: SA A

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SA A	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.20 m	

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203	mg/kg	<0.00132 %		<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.8 mg/kg	1.855	1.484	mg/kg	0.000148 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				26 mg/kg	1.462	38	mg/kg	0.0038 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				14 mg/kg	3.929	55.007	mg/kg	0.0055 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				38 mg/kg	2.976	113.098	mg/kg	0.0113 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	9.1 mg/kg	1.56	14.194	mg/kg	0.00091 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				40 mg/kg	2.774	110.966	mg/kg	0.0111 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<LOD
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		25 mg/kg		25	mg/kg	0.0025 %	✓	
12	naphthalene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		205-917-1	208-96-8								
14	acenaphthene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-469-6	83-32-9								
15	fluorene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
17	anthracene	204-371-1	120-12-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
18	fluoranthene	205-912-4	206-44-0		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
19	pyrene	204-927-3	129-00-0		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
20	benzo[a]anthracene	601-033-00-9	200-280-6		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
21	chrysene	601-048-00-0	205-923-4		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
28	PAHs (total)				<0.32 mg/kg		<0.32 mg/kg	<0.000032 %		<LOD
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.0383 %		

Key	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0025%)

Classification of sample: SA B

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SA B	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.10 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203 mg/kg		<0.00132 %		<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.8 mg/kg	1.855	1.484 mg/kg		0.000148 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				22 mg/kg	1.462	32.154 mg/kg		0.00322 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				21 mg/kg	3.929	82.51 mg/kg		0.00825 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg		<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				25 mg/kg	2.976	74.407 mg/kg		0.00744 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	61 mg/kg	1.56	95.149 mg/kg		0.0061 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg		<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				70 mg/kg	2.774	194.19 mg/kg		0.0194 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27 mg/kg		<0.000227 %		<LOD
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		130 mg/kg		130 mg/kg		0.013 %	✓	
12	naphthalene				<0.2 mg/kg		<0.2 mg/kg		<0.00002 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				<0.2 mg/kg		<0.2 mg/kg		<0.00002 %		<LOD
		205-917-1	208-96-8								
14	acenaphthene				<0.2 mg/kg		<0.2 mg/kg		<0.00002 %		<LOD
		201-469-6	83-32-9								
15	fluorene				<0.2 mg/kg		<0.2 mg/kg		<0.00002 %		<LOD
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		0.5 mg/kg		0.5 mg/kg	0.00005 %	✓	
17	anthracene	204-371-1	120-12-7		0.27 mg/kg		0.27 mg/kg	0.000027 %	✓	
18	fluoranthene	205-912-4	206-44-0		1.9 mg/kg		1.9 mg/kg	0.00019 %	✓	
19	pyrene	204-927-3	129-00-0		1.8 mg/kg		1.8 mg/kg	0.00018 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		1 mg/kg		1 mg/kg	0.0001 %	✓	
21	chrysene	601-048-00-0	205-923-4		0.92 mg/kg		0.92 mg/kg	0.000092 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		1.3 mg/kg		1.3 mg/kg	0.00013 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.54 mg/kg		0.54 mg/kg	0.000054 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.95 mg/kg		0.95 mg/kg	0.000095 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.76 mg/kg		0.76 mg/kg	0.000076 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		0.83 mg/kg		0.83 mg/kg	0.000083 %	✓	
28	PAHs (total)				12 mg/kg		12 mg/kg	0.0012 %	✓	
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.063 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.013%)

Classification of sample: HA 201

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
HA 201	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.30 m	

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				10 mg/kg	1.32	13.203	mg/kg	0.00132 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.9 mg/kg	1.855	1.669	mg/kg	0.000167 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				29 mg/kg	1.462	42.385	mg/kg	0.00424 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				23 mg/kg	3.929	90.368	mg/kg	0.00904 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				28 mg/kg	2.976	83.335	mg/kg	0.00833 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	110 mg/kg	1.56	171.58	mg/kg	0.011 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				200 mg/kg	2.774	554.829	mg/kg	0.0555 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				1.2 mg/kg	2.27	2.724	mg/kg	0.000272 %	✓	
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		170 mg/kg		170	mg/kg	0.017 %	✓	
12	naphthalene				<0.2 mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				<0.2 mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		205-917-1	208-96-8								
14	acenaphthene				<0.2 mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		201-469-6	83-32-9								
15	fluorene				<0.2 mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		0.93 mg/kg		0.93 mg/kg	0.000093 %	✓	
17	anthracene	204-371-1	120-12-7		0.6 mg/kg		0.6 mg/kg	0.00006 %	✓	
18	fluoranthene	205-912-4	206-44-0		2.3 mg/kg		2.3 mg/kg	0.00023 %	✓	
19	pyrene	204-927-3	129-00-0		2 mg/kg		2 mg/kg	0.0002 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		1.1 mg/kg		1.1 mg/kg	0.00011 %	✓	
21	chrysene	601-048-00-0	205-923-4		1 mg/kg		1 mg/kg	0.0001 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		1.4 mg/kg		1.4 mg/kg	0.00014 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.58 mg/kg		0.58 mg/kg	0.000058 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.98 mg/kg		0.98 mg/kg	0.000098 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.83 mg/kg		0.83 mg/kg	0.000083 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		1 mg/kg		1 mg/kg	0.0001 %	✓	
28	PAHs (total)				14 mg/kg		14 mg/kg	0.0014 %	✓	
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.111 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.017%)

Classification of sample: CBR 101

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CBR 101	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.20 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203 mg/kg		<0.00132 %		<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.5 mg/kg	1.855	0.927 mg/kg		0.0000927 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18 mg/kg	1.462	26.308 mg/kg		0.00263 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				22 mg/kg	3.929	86.439 mg/kg		0.00864 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384 mg/kg		<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				19 mg/kg	2.976	56.549 mg/kg		0.00565 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	20 mg/kg	1.56	31.196 mg/kg		0.002 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24 mg/kg		<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				39 mg/kg	2.774	108.192 mg/kg		0.0108 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27 mg/kg		<0.000227 %		<LOD
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		970 mg/kg		970 mg/kg		0.097 %	✓	
12	naphthalene				<0.2 mg/kg		<0.2 mg/kg		<0.00002 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				1.7 mg/kg		1.7 mg/kg		0.00017 %	✓	
		205-917-1	208-96-8								
14	acenaphthene				0.33 mg/kg		0.33 mg/kg		0.000033 %	✓	
		201-469-6	83-32-9								
15	fluorene				0.25 mg/kg		0.25 mg/kg		0.000025 %	✓	
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		7.7 mg/kg		7.7 mg/kg	0.00077 %	✓	
17	anthracene	204-371-1	120-12-7		4.8 mg/kg		4.8 mg/kg	0.00048 %	✓	
18	fluoranthene	205-912-4	206-44-0		31 mg/kg		31 mg/kg	0.0031 %	✓	
19	pyrene	204-927-3	129-00-0		29 mg/kg		29 mg/kg	0.0029 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		15 mg/kg		15 mg/kg	0.0015 %	✓	
21	chrysene	601-048-00-0	205-923-4		12 mg/kg		12 mg/kg	0.0012 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		19 mg/kg		19 mg/kg	0.0019 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		7 mg/kg		7 mg/kg	0.0007 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		16 mg/kg		16 mg/kg	0.0016 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		12 mg/kg		12 mg/kg	0.0012 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		2 mg/kg		2 mg/kg	0.0002 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		14 mg/kg		14 mg/kg	0.0014 %	✓	
28	PAHs (total)				170 mg/kg		170 mg/kg	0.017 %	✓	
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.164 %		

Key	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.097%)

Classification of sample: CBR 102

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CBR 102	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10 m	

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203	mg/kg	<0.00132 %		<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.8 mg/kg	1.855	1.484	mg/kg	0.000148 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	23.385	mg/kg	0.00234 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				23 mg/kg	3.929	90.368	mg/kg	0.00904 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				23 mg/kg	2.976	68.454	mg/kg	0.00685 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	120 mg/kg	1.56	187.178	mg/kg	0.012 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				150 mg/kg	2.774	416.122	mg/kg	0.0416 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<LOD
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		210 mg/kg		210	mg/kg	0.021 %	✓	
12	naphthalene				1.1 mg/kg		1.1	mg/kg	0.00011 %	✓	
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				0.57 mg/kg		0.57	mg/kg	0.000057 %	✓	
		205-917-1	208-96-8								
14	acenaphthene				0.93 mg/kg		0.93	mg/kg	0.000093 %	✓	
		201-469-6	83-32-9								
15	fluorene				0.82 mg/kg		0.82	mg/kg	0.000082 %	✓	
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		14 mg/kg		14 mg/kg	0.0014 %	✓	
17	anthracene	204-371-1	120-12-7		4.9 mg/kg		4.9 mg/kg	0.00049 %	✓	
18	fluoranthene	205-912-4	206-44-0		25 mg/kg		25 mg/kg	0.0025 %	✓	
19	pyrene	204-927-3	129-00-0		21 mg/kg		21 mg/kg	0.0021 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		9.2 mg/kg		9.2 mg/kg	0.00092 %	✓	
21	chrysene	601-048-00-0	205-923-4		7 mg/kg		7 mg/kg	0.0007 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		8.3 mg/kg		8.3 mg/kg	0.00083 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		3.2 mg/kg		3.2 mg/kg	0.00032 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		6.9 mg/kg		6.9 mg/kg	0.00069 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		4.3 mg/kg		4.3 mg/kg	0.00043 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.8 mg/kg		0.8 mg/kg	0.00008 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		4.7 mg/kg		4.7 mg/kg	0.00047 %	✓	
28	PAHs (total)				110 mg/kg		110 mg/kg	0.011 %	✓	
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.118 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.021%)

Classification of sample: CT 2

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CT 2	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10 m	

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				<10 mg/kg	1.32	<13.203	mg/kg	<0.00132 %		<LOD
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium sulfate }				0.7 mg/kg	1.855	1.298	mg/kg	0.00013 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				13 mg/kg	1.462	19	mg/kg	0.0019 %	✓	
		215-160-9	1308-38-9								
4	copper { copper sulphate pentahydrate }				16 mg/kg	3.929	62.865	mg/kg	0.00629 %	✓	
	029-023-00-4	231-847-6	7758-99-8								
5	mercury { mercury dichloride }				<2.5 mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel chromate }				20 mg/kg	2.976	59.525	mg/kg	0.00595 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
7	lead { lead chromate }			1	25 mg/kg	1.56	38.995	mg/kg	0.0025 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<8 mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
	034-002-00-8										
9	zinc { zinc chromate }				39 mg/kg	2.774	108.192	mg/kg	0.0108 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
10	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<LOD
	024-017-00-8										
11	TPH (C6 to C40) petroleum group		TPH		80 mg/kg		80	mg/kg	0.008 %	✓	
12	naphthalene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				0.12 mg/kg		0.12	mg/kg	0.000012 %	✓	
		205-917-1	208-96-8								
14	acenaphthene				0.03 mg/kg		0.03	mg/kg	0.000003 %	✓	
		201-469-6	83-32-9								
15	fluorene				<0.02 mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		201-695-5	86-73-7								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	phenanthrene	201-581-5	85-01-8		0.58 mg/kg		0.58 mg/kg	0.000058 %	✓	
17	anthracene	204-371-1	120-12-7		0.38 mg/kg		0.38 mg/kg	0.000038 %	✓	
18	fluoranthene	205-912-4	206-44-0		2.4 mg/kg		2.4 mg/kg	0.00024 %	✓	
19	pyrene	204-927-3	129-00-0		2.1 mg/kg		2.1 mg/kg	0.00021 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		1.2 mg/kg		1.2 mg/kg	0.00012 %	✓	
21	chrysene	601-048-00-0	205-923-4		0.89 mg/kg		0.89 mg/kg	0.000089 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		1.4 mg/kg		1.4 mg/kg	0.00014 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.49 mg/kg		0.49 mg/kg	0.000049 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		1.1 mg/kg		1.1 mg/kg	0.00011 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.88 mg/kg		0.88 mg/kg	0.000088 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.17 mg/kg		0.17 mg/kg	0.000017 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		1 mg/kg		1 mg/kg	0.0001 %	✓	
28	PAHs (total)				13 mg/kg		13 mg/kg	0.0013 %	✓	
29	benzene	601-020-00-8	200-753-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	toluene	601-021-00-3	203-625-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	ethylbenzene	601-023-00-4	202-849-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.0412 %		

Key	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No free-phase product. Long chain hydrocarbons, not flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.008%)

Appendix A: Classifier defined and non GB MCL determinands

• **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

• **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

• **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

• **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

• **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **PAHs (total)**

Description/Comments: Worst case scenario combining risk phrases and substance specific thresholds from benzo[a]pyrene (CLP# 601-032-00-3) and benzo[a]anthracene (CLP# 601-033-00-9)
Data source: 2008/1272/EC – Table 3.2 of Annex VI of regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures and 2009/790/EC Annex IV – Annex IV of regulation 2009/790/EC - 1st Adaptation to Technical Progress for European Regulation 1272/2008
Data source date: 16 Dec 2008
Hazard Statements: Skin Sens. 1; H317 , Carc. 1B; H350 , Carc. 1B; H350 >= 0.01 % , Muta. 1B; H340 , Aquatic Acute 1; H400 (M=100) , Aquatic Chronic 1; H410 (M=100) , Repr. 1B; H360FD

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

cadmium {cadmium sulfate}

Worst Case Species Selected

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

(enter justification for selecting this species)

copper {copper sulphate pentahydrate}

Worst Case Species Selected

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

lead {lead chromate}

Worst Case Species Selected

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

(enter justification for selecting this species)

zinc {zinc chromate}

Worst Case Species Selected

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Next worst case species selected.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2024.158.6092.11254 (06 Jun 2024)
HazWasteOnline Database: 2024.158.6092.11254 (06 Jun 2024)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

GB MCL List v2.0 - version 2.0 of 20th October 2023

GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

APPENDIX D

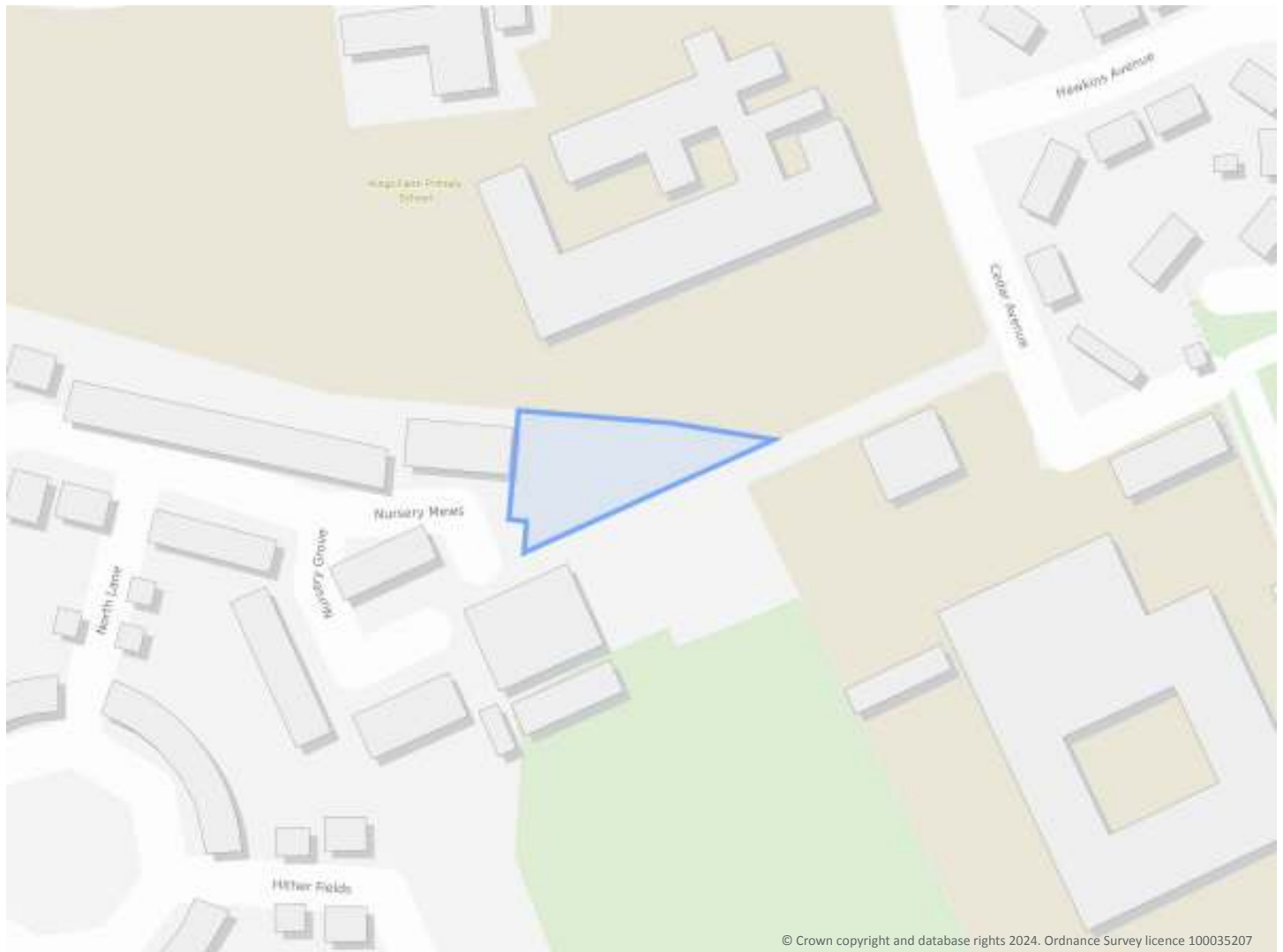
LAND AT NURSERY MEWS, GRAVESEND, KENT, DA12 5JT

Order Details

Date: 24/06/2024
Your ref: 24-06-12
Our Ref: GS-KBP-J20-Y72-E3R

Site Details

Location: 565157 171445
Area: 0.12 ha
Authority: [Gravesham Borough Council](#) ↗



Summary of findings

[p. 2 >](#) **Aerial image**

[p. 9 >](#)

OS MasterMap site plan

[p.14 >](#) [Insight User Guide](#) ↗

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	3	1	4	-
16 >	1.2 >	Historical tanks >	0	0	0	1	-
16 >	1.3 >	Historical energy features >	0	0	2	9	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
19 >	2.1 >	Historical industrial land uses >	0	3	2	6	-
20 >	2.2 >	Historical tanks >	0	0	0	1	-
20 >	2.3 >	Historical energy features >	0	0	5	9	-
21	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23 >	3.7 >	Waste exemptions >	0	0	1	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
25 >	4.1 >	Recent industrial land uses >	0	0	4	-	-
26	4.2	Current or recent petrol stations	0	0	0	0	-
26	4.3	Electricity cables	0	0	0	0	-
26	4.4	Gas pipelines	0	0	0	0	-
26	4.5	Sites determined as Contaminated Land	0	0	0	0	-



26	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
27	4.7	Regulated explosive sites	0	0	0	0	-
27	4.8	Hazardous substance storage/usage	0	0	0	0	-
27	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
27	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
27	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
28	4.12	Radioactive Substance Authorisations	0	0	0	0	-
28	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
28	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
28	4.15	Pollutant release to public sewer	0	0	0	0	-
28	4.16	List 1 Dangerous Substances	0	0	0	0	-
29	4.17	List 2 Dangerous Substances	0	0	0	0	-
29 >	4.18 >	<u>Pollution Incidents (EA/NRW) ></u>	0	0	1	1	-
29	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	<u>Hydrogeology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
31 >	5.1 >	<u>Superficial aquifer ></u>	Identified (within 500m)				
33 >	5.2 >	<u>Bedrock aquifer ></u>	Identified (within 500m)				
35 >	5.3 >	<u>Groundwater vulnerability ></u>	Identified (within 50m)				
36 >	5.4 >	<u>Groundwater vulnerability- soluble rock risk ></u>	Identified (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37 >	5.6 >	<u>Groundwater abstractions ></u>	0	0	0	0	3
38	5.7	Surface water abstractions	0	0	0	0	0
39 >	5.8 >	<u>Potable abstractions ></u>	0	0	0	0	1
39 >	5.9 >	<u>Source Protection Zones ></u>	1	0	1	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	<u>Hydrology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
40	6.1	Water Network (OS MasterMap)	0	0	0	-	-



40	6.2	Surface water features	0	0	0	-	-
41 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
41	6.4	WFD Surface water bodies	0	0	0	-	-
41 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
43	7.3	Flood Defences	0	0	0	-	-
44	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
46	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
47 >	9.1 >	Groundwater flooding >	Negligible (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
48	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
49	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
49	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
49	10.4	Special Protection Areas (SPA)	0	0	0	0	0
49	10.5	National Nature Reserves (NNR)	0	0	0	0	0
50	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
50 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	1
50	10.8	Biosphere Reserves	0	0	0	0	0
50	10.9	Forest Parks	0	0	0	0	0
51	10.10	Marine Conservation Zones	0	0	0	0	0
51 >	10.11 >	Green Belt >	0	0	0	0	1
51	10.12	Proposed Ramsar sites	0	0	0	0	0



51	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
52	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
52	10.15	Nitrate Sensitive Areas	0	0	0	0	0
52 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	3
53 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
54	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
55	11.1	World Heritage Sites	0	0	0	-	-
55	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
55	11.3	National Parks	0	0	0	-	-
55	11.4	Listed Buildings	0	0	0	-	-
56	11.5	Conservation Areas	0	0	0	-	-
56	11.6	Scheduled Ancient Monuments	0	0	0	-	-
56	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
57 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
58	12.2	Open Access Land	0	0	0	-	-
58	12.3	Tree Felling Licences	0	0	0	-	-
58	12.4	Environmental Stewardship Schemes	0	0	0	-	-
58	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
59	13.1	Priority Habitat Inventory	0	0	0	-	-
59	13.2	Habitat Networks	0	0	0	-	-
59	13.3	Open Mosaic Habitat	0	0	0	-	-
59	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
60 >	14.1 >	10k Availability >	Identified (within 500m)				
61 >	14.2 >	Artificial and made ground (10k) >	0	0	0	1	-
62 >	14.3 >	Superficial geology (10k) >	0	0	0	2	-



63	14.4	Landslip (10k)	0	0	0	0	-
64 >	14.5 >	Bedrock geology (10k) >	1	0	1	0	-
65	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
66 >	15.1 >	50k Availability >	Identified (within 500m)				
67 >	15.2 >	Artificial and made ground (50k) >	0	0	0	2	-
68	15.3	Artificial ground permeability (50k)	0	0	-	-	-
69 >	15.4 >	Superficial geology (50k) >	0	0	0	2	-
70	15.5	Superficial permeability (50k)	None (within 50m)				
70	15.6	Landslip (50k)	0	0	0	0	-
70	15.7	Landslip permeability (50k)	None (within 50m)				
71 >	15.8 >	Bedrock geology (50k) >	1	0	0	0	-
72 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
72	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
73	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
74 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
75 >	17.2 >	Running sands >	Negligible (within 50m)				
76 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
77 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
78 >	17.5 >	Landslides >	Negligible (within 50m)				
79 >	17.6 >	Ground dissolution of soluble rocks >	Very low (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
81 >	18.1 >	BritPits >	0	0	0	2	-
82 >	18.2 >	Surface ground workings >	0	0	2	-	-
82	18.3	Underground workings	0	0	0	0	0
83	18.4	Underground mining extents	0	0	0	0	-
83	18.5	Historical Mineral Planning Areas	0	0	0	0	-



83 >	18.6 >	Non-coal mining >	1	0	2	1	3
84	18.7	JPB mining areas	None (within 0m)				
84	18.8	The Coal Authority non-coal mining	0	0	0	0	-
85 >	18.9 >	Researched mining >	0	0	1	0	-
85	18.10	Mining record office plans	0	0	0	0	-
85	18.11	BGS mine plans	0	0	0	0	-
85	18.12	Coal mining	None (within 0m)				
86	18.13	Brine areas	None (within 0m)				
86	18.14	Gypsum areas	None (within 0m)				
86	18.15	Tin mining	None (within 0m)				
86	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
87	19.1	Natural cavities	0	0	0	0	-
88 >	19.2 >	Mining cavities >	0	0	0	0	8
88	19.3	Reported recent incidents	0	0	0	0	-
89	19.4	Historical incidents	0	0	0	0	-
89	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
90 >	20.1 >	Radon >	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
92 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	1	-	-	-
92	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
92	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
93	22.1	Underground railways (London)	0	0	0	-	-
93	22.2	Underground railways (Non-London)	0	0	0	-	-
93	22.3	Railway tunnels	0	0	0	-	-
93	22.4	Historical railway and tunnel features	0	0	0	-	-
93	22.5	Royal Mail tunnels	0	0	0	-	-



94	22.6	Historical railways	0	0	0	-	-
94	22.7	Railways	0	0	0	-	-
94	22.8	Crossrail 1	0	0	0	0	-
94	22.9	Crossrail 2	0	0	0	0	-
94	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 31/05/2021

Site Area: 0.12ha



Recent site history - 2018 aerial photograph



Capture Date: 21/10/2018

Site Area: 0.12ha



Recent site history - 2012 aerial photograph



Capture Date: 25/05/2012

Site Area: 0.12ha



Recent site history - 2009 aerial photograph



Capture Date: 23/08/2009

Site Area: 0.12ha



Recent site history - 1999 aerial photograph



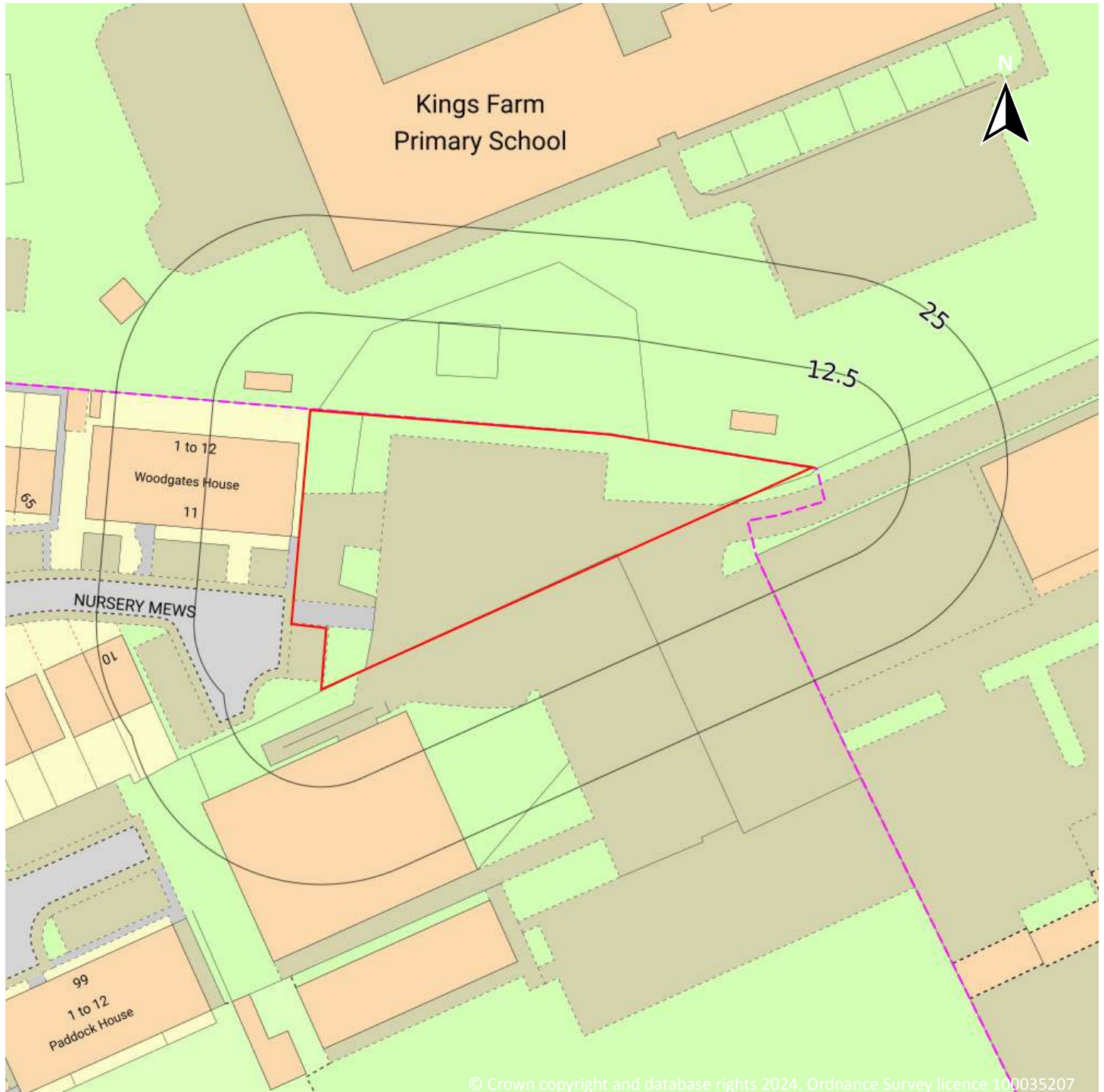
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 03/09/1999

Site Area: 0.12ha



OS MasterMap site plan



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Site Area: 0.12ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

8

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
A	25m W	Nurseries	1932	2249859



ID	Location	Land use	Dates present	Group ID
A	25m W	Nurseries	1938	2254497
A	28m W	Nurseries	1946	2231832
1	136m W	Nursery	1955 - 1966	2290356
D	390m N	Fire Engine Station	1946	2266100
3	402m S	Saw Pit	1865	2162495
D	439m N	Fire Engine Station	1932 - 1938	2177574
4	485m W	Old Chalk Pit	1888 - 1895	2201937

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

1

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
2	316m S	Unspecified Tank	1993	369289

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

11

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)



ID	Location	Land use	Dates present	Group ID
B	242m SW	Electricity Substation	1953 - 1993	278731
B	250m SW	Electricity Substation	1953 - 1970	286402
C	347m NE	Electricity Transformer	1973	250919
C	347m NE	Electricity Substation	1953	269736
C	348m NE	Electricity Substation	1969	253489
C	350m NE	Electricity Substation	1995	253675
C	354m NE	Electricity Substation	1953	255680
E	451m S	Electricity Substation	1993	247482
D	457m N	Electricity Substation	1995	247481
D	459m N	Electricity Transformer	1973	250920
E	465m S	Electricity Substation	1981	247483

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

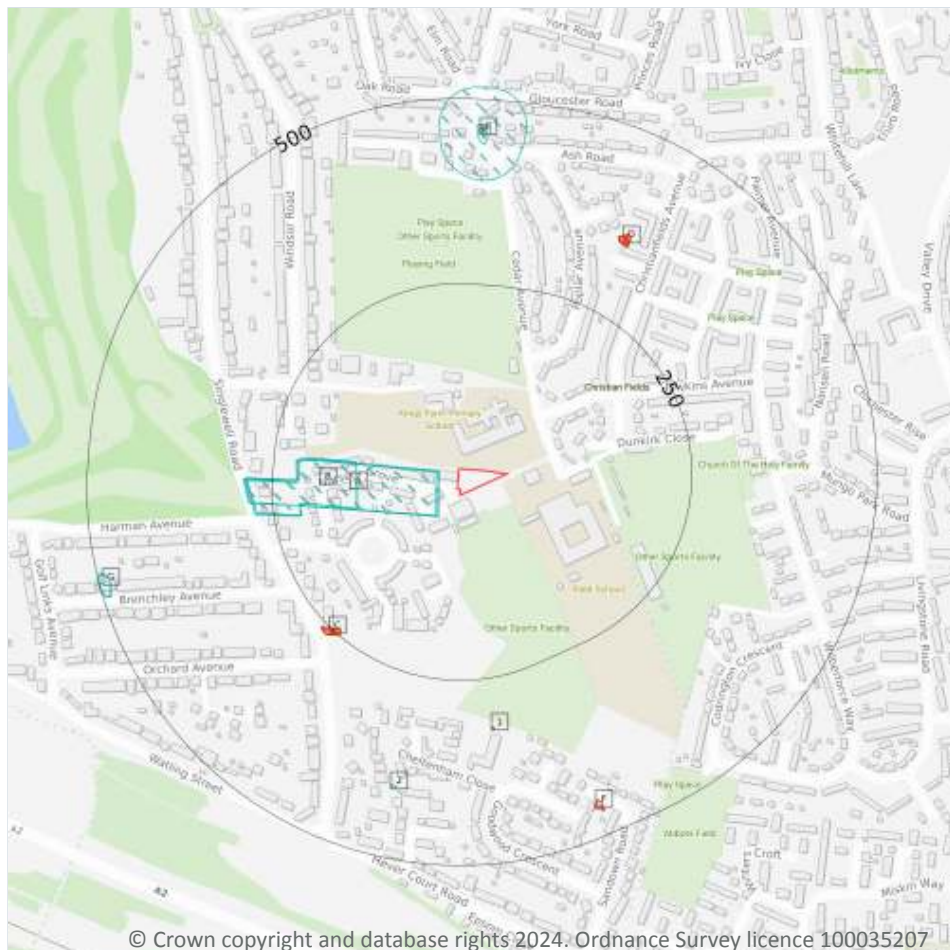
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

2.1 Historical industrial land uses

Records within 500m

11

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
A	25m W	Nurseries	1932	2249859
A	25m W	Nurseries	1938	2254497
A	28m W	Nurseries	1946	2231832



ID	Location	Land Use	Date	Group ID
B	136m W	Nursery	1955	2290356
B	136m W	Nursery	1966	2290356
E	390m N	Fire Engine Station	1946	2266100
2	402m S	Saw Pit	1865	2162495
E	439m N	Fire Engine Station	1932	2177574
E	453m N	Fire Engine Station	1938	2177574
G	485m W	Old Chalk Pit	1888	2201937
G	485m W	Old Chalk Pit	1895	2201937

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

1

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19 >](#)

ID	Location	Land Use	Date	Group ID
1	316m S	Unspecified Tank	1993	369289

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

14

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19 >](#)

ID	Location	Land Use	Date	Group ID
C	242m SW	Electricity Substation	1969	278731
C	243m SW	Electricity Substation	1993	278731



ID	Location	Land Use	Date	Group ID
C	243m SW	Electricity Substation	1953	278731
C	250m SW	Electricity Substation	1953	286402
C	250m SW	Electricity Substation	1970	286402
D	347m NE	Electricity Substation	1953	269736
D	347m NE	Electricity Transformer	1973	250919
D	348m NE	Electricity Substation	1969	253489
D	350m NE	Electricity Substation	1995	253675
D	354m NE	Electricity Substation	1953	255680
F	451m S	Electricity Substation	1993	247482
E	457m N	Electricity Substation	1995	247481
E	459m N	Electricity Transformer	1973	250920
F	465m S	Electricity Substation	1981	247483

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

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3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m**0**

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m**1**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on [page 22](#) >

ID	Location	Site	Reference	Category	Sub-Category	Description
1	224m SE	The Sports Ground, Dunkirk Close, Gravesend, Da12 5nd	WEX305079	Using waste exemption	Not on a farm	Use of waste in construction



This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

4

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 25 >](#)

ID	Location	Company	Address	Activity	Category
1	56m E	Electricity Sub Station	Kent, DA12	Electrical Features	Infrastructure and Facilities
3	115m W	Electricity Sub Station	Kent, DA11	Electrical Features	Infrastructure and Facilities
4	196m W	Stone Arcade	1, Nursery Grove, Gravesend, Kent, DA11 7BB	Stone Quarrying and Preparation	Extractive Industries



ID	Location	Company	Address	Activity	Category
5	202m SW	Biggs Pest Damp & Timber Solutions	4, Southfields Green, Gravesend, Kent, DA11 7AD	Pest and Vermin Control	Contract Services

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0
---------------------	---

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0
---------------------	---

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0
---------------------	---

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0
---------------------	---

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0
---------------------	---

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.



This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.



4.12 Radioactive Substance Authorisations

Records within 500m**0**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m**0**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m**0**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

2

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on [page 25 >](#)

ID	Location	Details	
2	105m SE	Incident Date: 26/08/2003 Incident Identification: 184985 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
6	446m N	Incident Date: 20/06/2002 Incident Identification: 86330 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Fumes	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m

0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



4.20 Pollution inventory waste transfers

Records within 500m

0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m

0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



5 Hydrogeology - Superficial aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 31](#) >

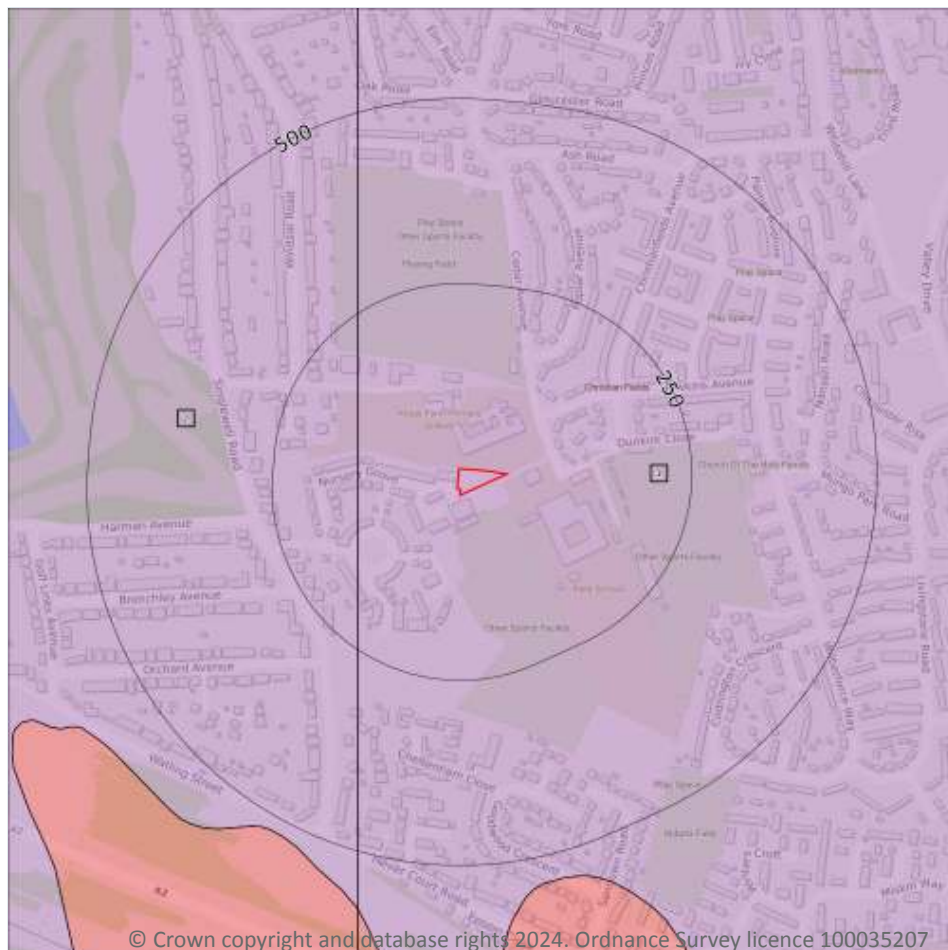
ID	Location	Designation	Description
1	293m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	463m SW	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



This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 33](#) >

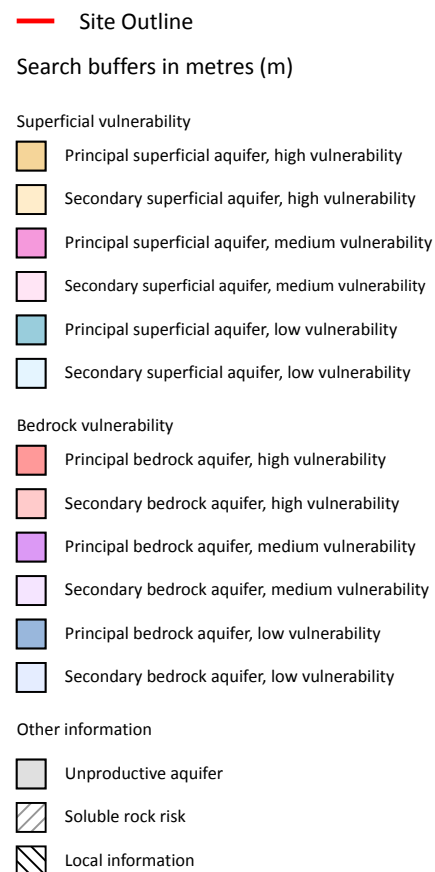
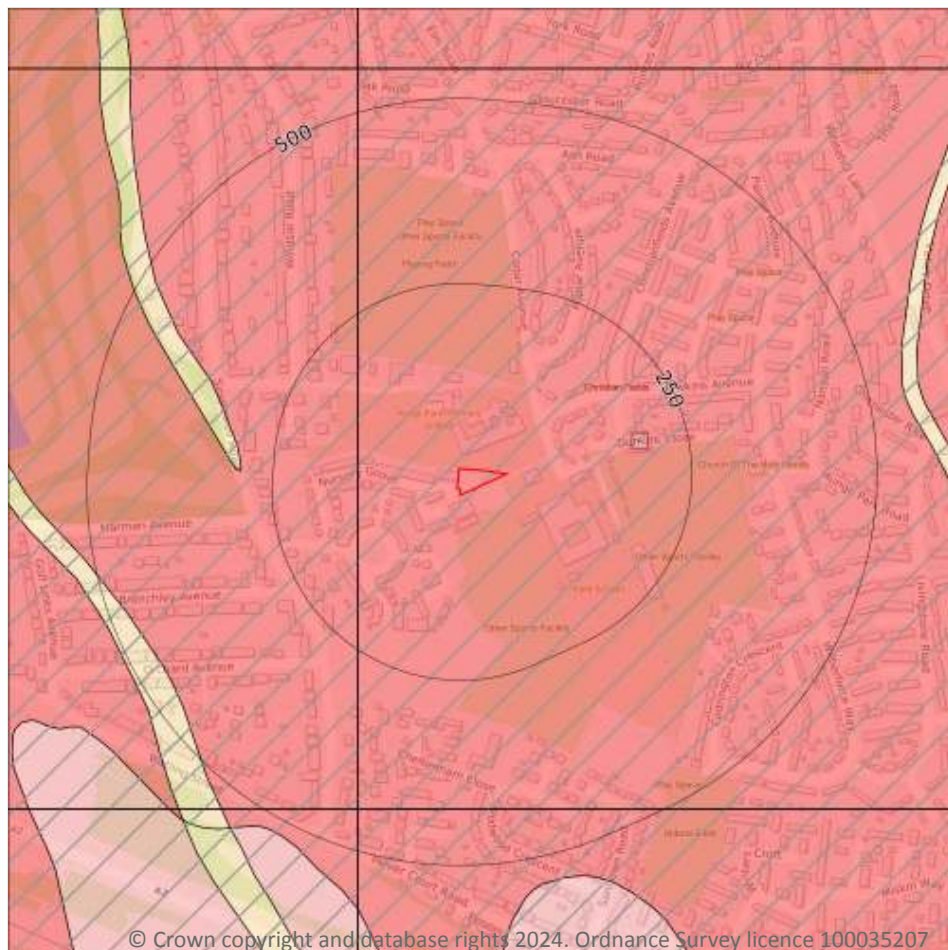
ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	134m W	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers



This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on [page 35](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
A	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	1
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	0.0%

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

3

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37](#) >

ID	Location	Details	
-	908m NW	Status: Historical Licence No: SO/040/0001/019 Details: Spray Irrigation - Storage Direct Source: Southern Region Groundwater Point: MID KENT GOLF CLUB BOREHOLE Data Type: Point Name: Mid Kent Golf Club Limited Easting: 564325 Northing: 171869	Annual Volume (m ³): 10000 Max Daily Volume (m ³): 50 Original Application No: NPS/WR/013047 Original Start Date: 29/10/2014 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 29/10/2014 Version End Date: -
-	1247m W	Status: Historical Licence No: 01/164 Details: Dust Suppression Direct Source: Southern Region Groundwater Point: TOLLGATE JUNCTION Data Type: Point Name: Skanska Civil Engineering Easting: 563900 Northing: 171250	Annual Volume (m ³): 38220 Max Daily Volume (m ³): 156 Original Application No: - Original Start Date: 01/11/2007 Expiry Date: 31/10/2008 Issue No: 1 Version Start Date: 01/11/2007 Version End Date: -
-	1743m N	Status: Active Licence No: 9/40/01/0511/G Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BOREHOLES, ADITS AND CATCHPITS AT WINDMILL HILL PS Data Type: Poly4 Name: Southern Water Services Ltd Easting: 565060 Northing: 173270	Annual Volume (m ³): 17700000 Max Daily Volume (m ³): 92000 Original Application No: 169/0639D Original Start Date: 24/03/1986 Expiry Date: - Issue No: 100 Version Start Date: 27/11/2006 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	0
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Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.



5.8 Potable abstractions

Records within 2000m

1

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Details	
-	1743m N	Status: Active Licence No: 9/40/01/0511/G Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BOREHOLES, ADITS AND CATCHPITS AT WINDMILL HILL PS Data Type: Poly4 Name: Southern Water Services Ltd Easting: 565060 Northing: 173270	Annual Volume (m ³): 17700000 Max Daily Volume (m ³): 92000 Original Application No: 169/0639D Original Start Date: 24/03/1986 Expiry Date: - Issue No: 100 Version Start Date: 27/11/2006 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

2

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Type	Description
1	On site	2	Outer catchment
2	81m SW	3	Total catchment

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on [page 40](#) >

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	Coastal Catchment	Not part of a river WB catchment	130	Lower Medway	Medway

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	0
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1
------------------------	----------

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on [page 40](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	North Kent Medway Chalk	GB40601G500300 ↗	Poor	Poor	Poor	2019



This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0
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Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	0
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Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding

8.1 Surface water flooding

Highest risk on site**Negligible****Highest risk within 50m****Negligible**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

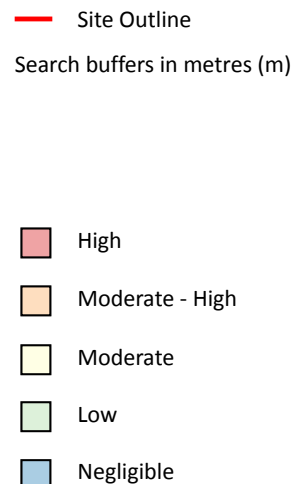
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on [page 47](#) >

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m**0**

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m**1**

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on [page 48 >](#)

ID	Location	Name	Woodland Type
2	1325m SE	Claylane Wood	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m**0**

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m**0**

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.



10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

1

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on [page 48](#) >

ID	Location	Name	Local Authority name
1	544m SW	London	Gravesham

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m**3**

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
560m SW	North Kent	Groundwater	65	Existing
851m S	COASTAL STREAMS TO LOWER THAMES NVZ	Surface Water	665	Existing
1049m W	North Kent	Groundwater	65	Existing

This data is sourced from Natural England and Natural Resources Wales.



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on [page 53](#) >

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Notes: Strategic solutions for recreational impacts are in place. Please contact your Local Planning Authority as they have the information to advise on specific requirements.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0
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Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.



This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 57](#) >

ID	Location	Classification	Description
1	On site	Urban	-
2	81m NE	Urban	-

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m**0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m**0**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.



13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

2

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on [page 60](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ67SE
2	134m W	Full	Full	Full	Full	TQ67SW

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

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14.2 Artificial and made ground (10k)

Records within 500m

1

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 61](#) >

ID	Location	LEX Code	Description	Rock description
1	343m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

2

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 62](#) >

ID	Location	LEX Code	Description	Rock description
1	292m W	HEAD-XSC	Head - Sand And Clay	Sand And Clay
2	474m SW	HEAD-XSC	Head - Sand And Clay	Sand And Clay

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

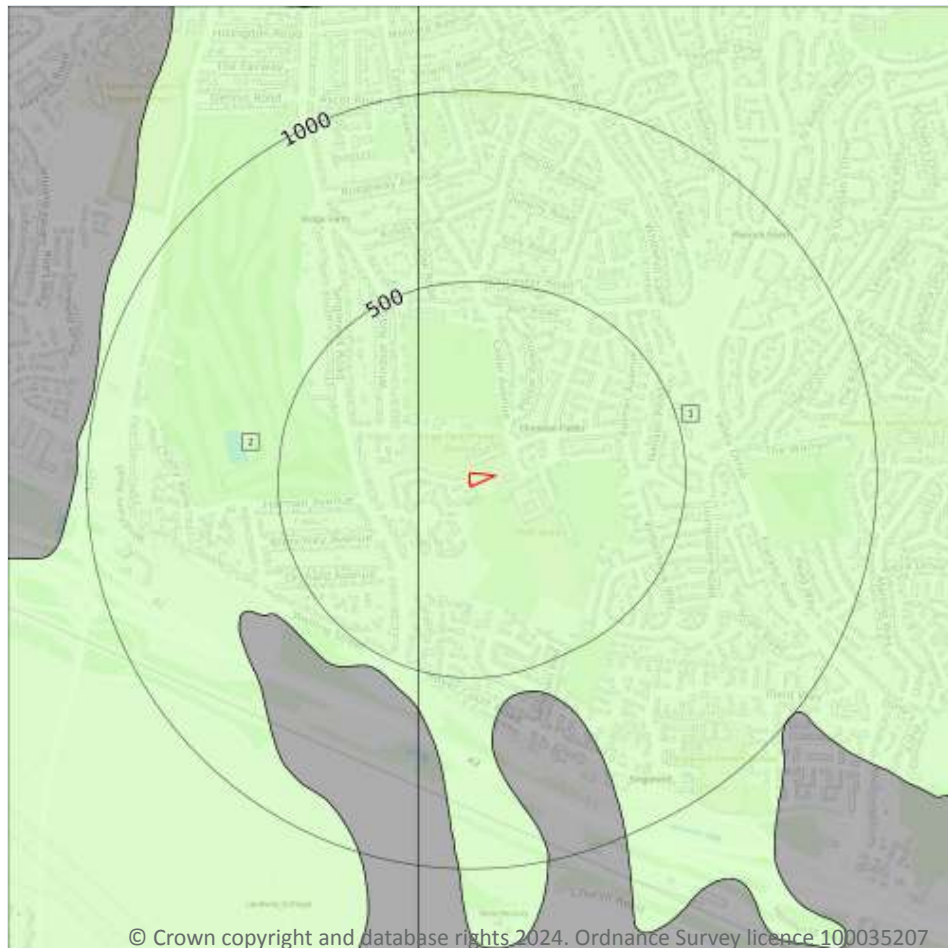
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

2

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 64](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age
2	134m W	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on [page 66](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW271_dartford_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

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15.2 Artificial and made ground (50k)

Records within 500m

2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 67](#) >

ID	Location	LEX Code	Description	Rock description
1	308m SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	495m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

2

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 69](#) >

ID	Location	LEX Code	Description	Rock description
1	293m W	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
2	463m SW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

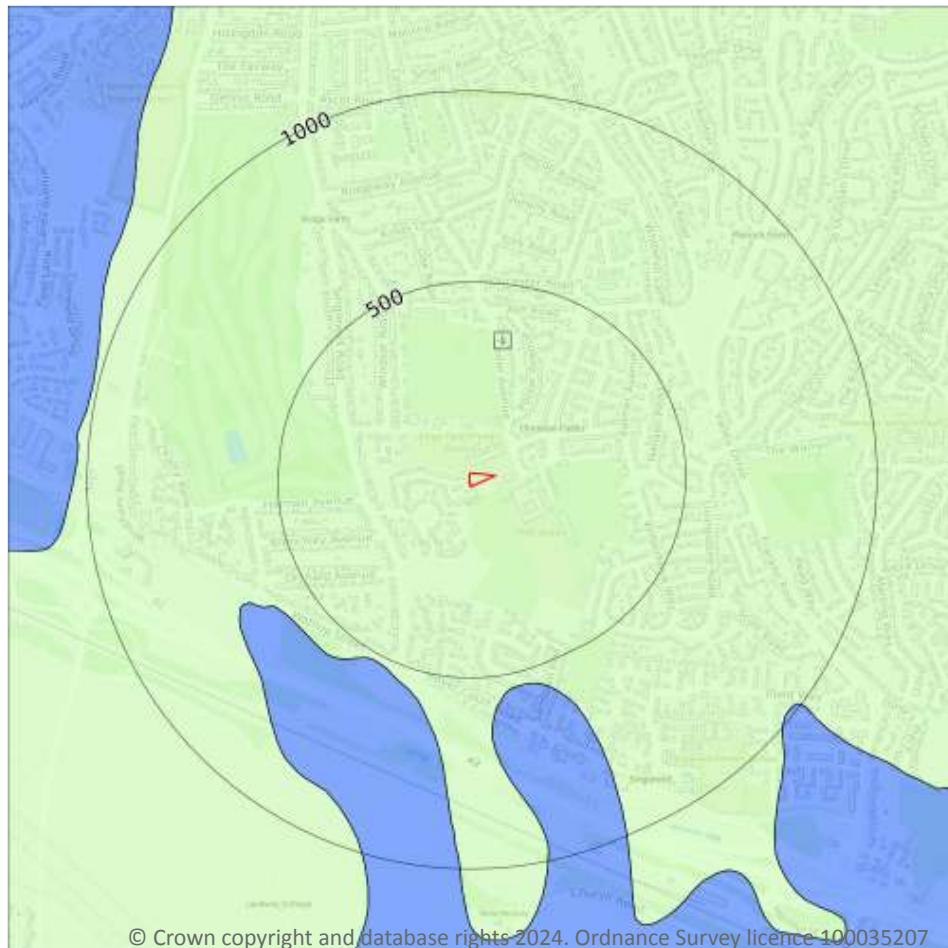
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 71](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Very High	Very High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

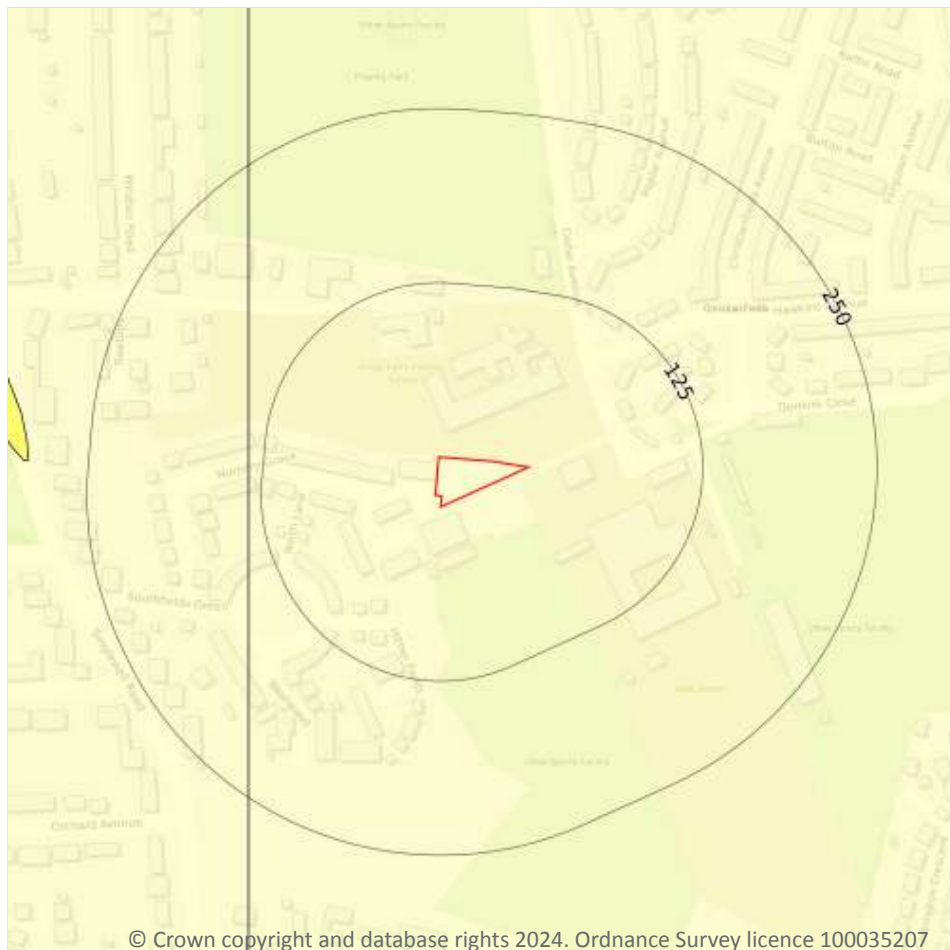
0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

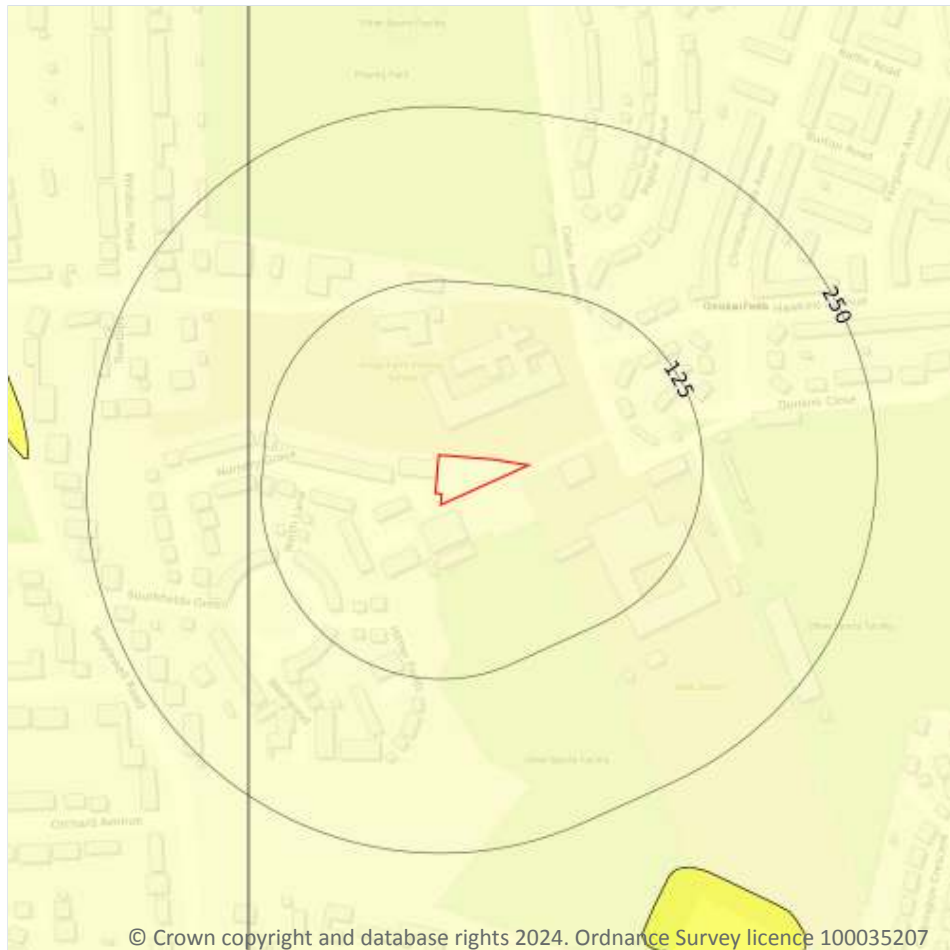
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 74 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.2 Running sands

Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

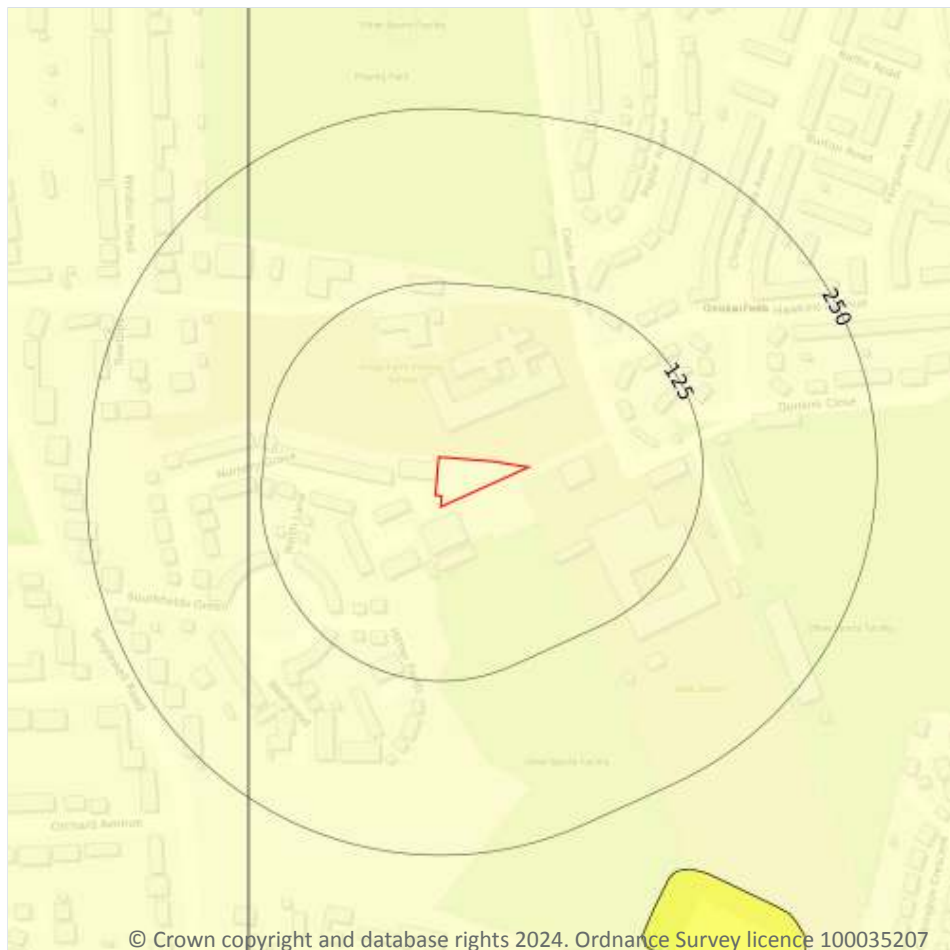
Features are displayed on the Natural ground subsidence - Running sands map on [page 75 >](#)

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.3 Compressible deposits

Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

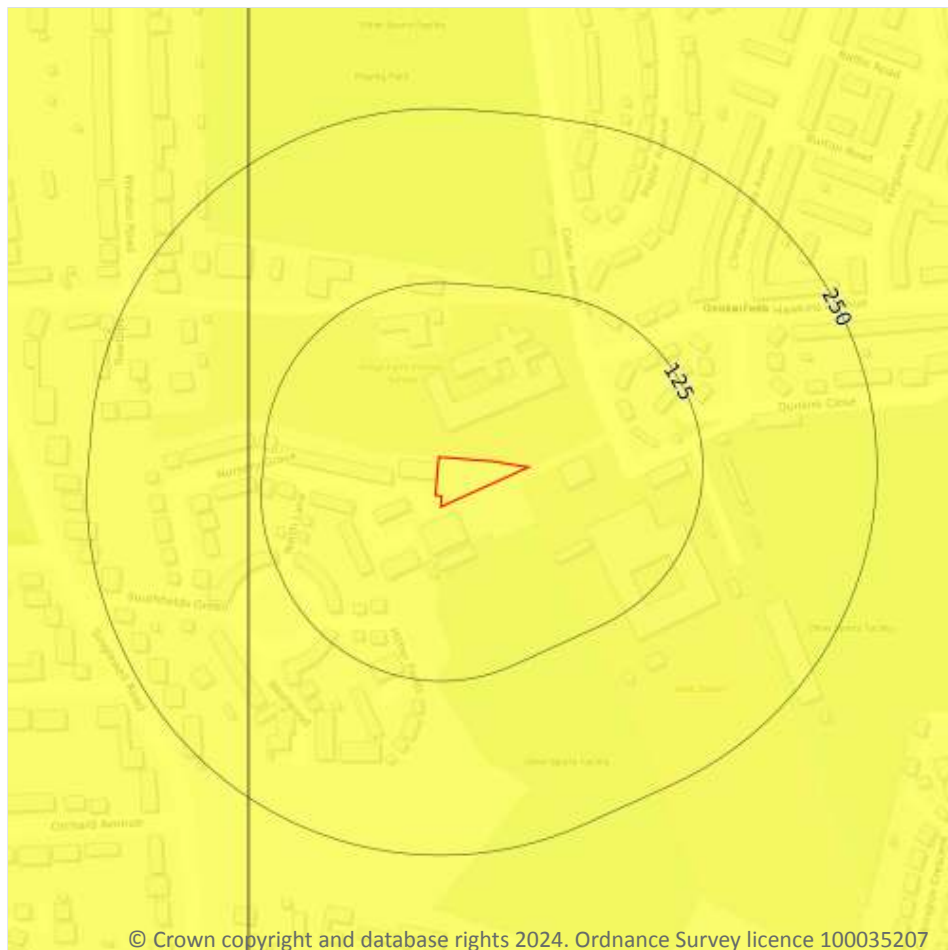
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 76 >](#)

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

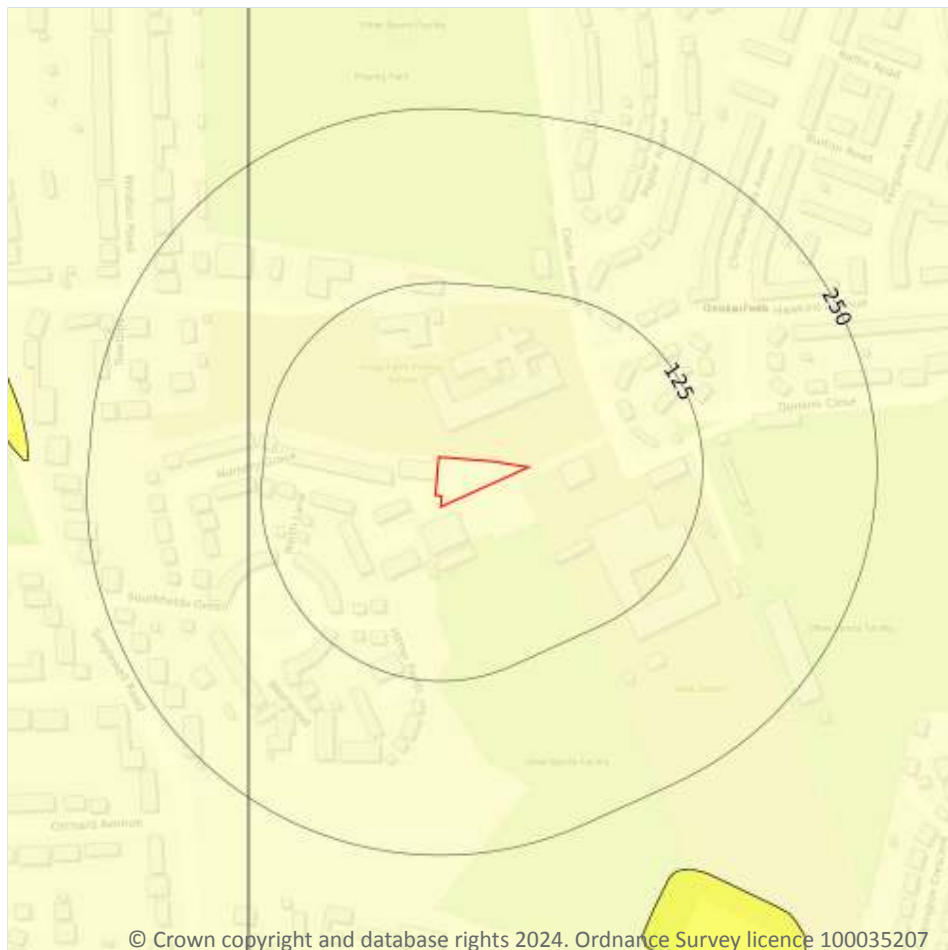
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 77 >](#)

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

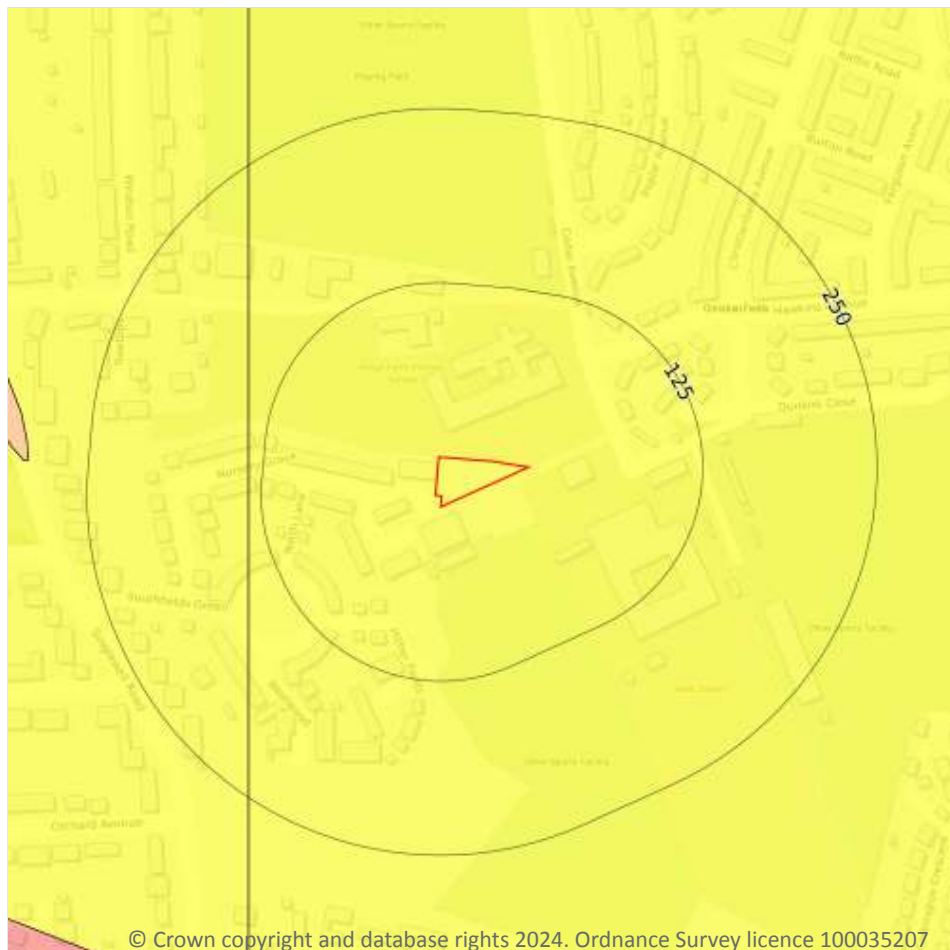
Features are displayed on the Natural ground subsidence - Landslides map on [page 78 >](#)

Location	Hazard rating	Details
On site	Negligible	Slope instability problems are not thought to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 79](#)

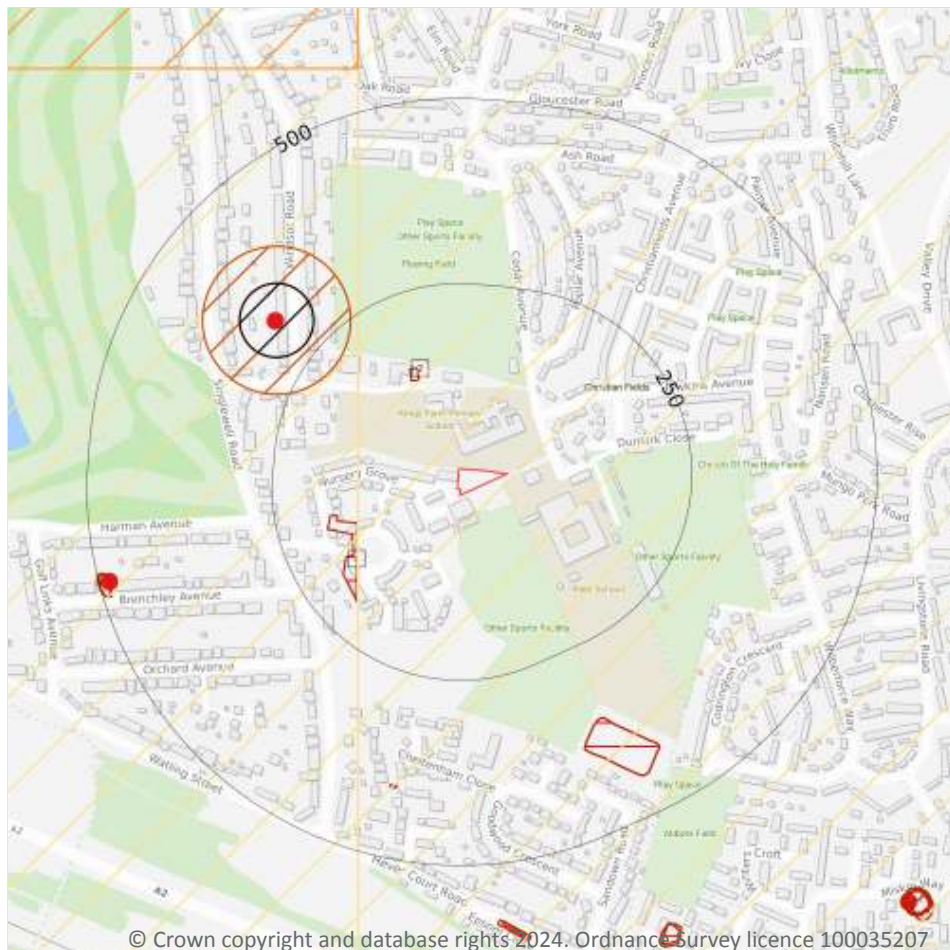
Location	Hazard rating	Details
On site	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.



This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on [page 81](#) >

ID	Location	Details	Description
A	318m NW	Name: Gravesend Denehole Address: GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	485m W	Name: Northumberland Bottom Chalk Pit Address: Northfleet, GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	2
----------------------------	----------

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 81 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
2	132m NW	Pool	1981	1:10000
4	142m W	Ponds	1966	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0
-----------------------------	----------

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This data is sourced from Ordnance Survey/Groundsure.



18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

7

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 81](#) >

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
3	134m W	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
A	218m NW	Windsor Street	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.

ID	Location	Name	Commodity	Class	Likelihood
A	268m NW	Windsor Street	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
6	557m N	Not available	Chalk	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.
-	821m S	Church Road	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
-	872m S	Church Road	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0
------------------------	----------

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0
----------------------------	----------

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.



18.9 Researched mining

Records within 500m

1

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

Location	Mineral type
195m W	Stone

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.



18.13 Brine areas

Records on site	0
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The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0
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Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents
- BGS karst database (Point)
- BGS karst database (Line)
- BGS karst database (Area)

19.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

8

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

Features are displayed on the Ground cavities and sinkholes map on [page 87](#) >

ID	Location	Mine Address	Mineral	Data source	Publisher
-	683m N	Gravesend, Kent	Chalk	-	Chelsea Speleological Society
2	685m SW	Gravesend, Kent	Chalk	-	-
-	725m S	Gravesend, Kent	Chalk	-	-
4	751m SW	Gravesend, Kent	Chalk	-	-
-	762m SW	Gravesend, Kent	Chalk	-	-
-	825m S	Gravesend, Kent	Chalk	-	-
-	835m W	A2 Trunk Road Adit, Istead Rise, Kent	Chalk	THE IRON INDUSTRY OF THE WEALD	LEICESTER UNIVERSITY PRESS
-	865m S	Singlewell, Kent	Unknown	-	Chelsea Speleological Society

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.



19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

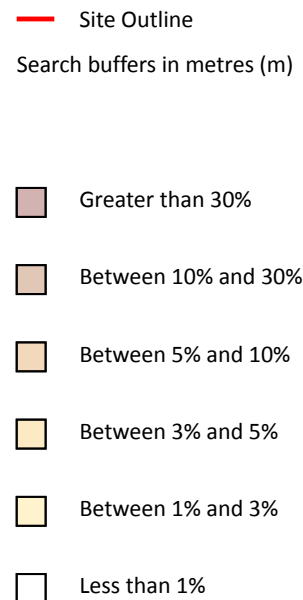
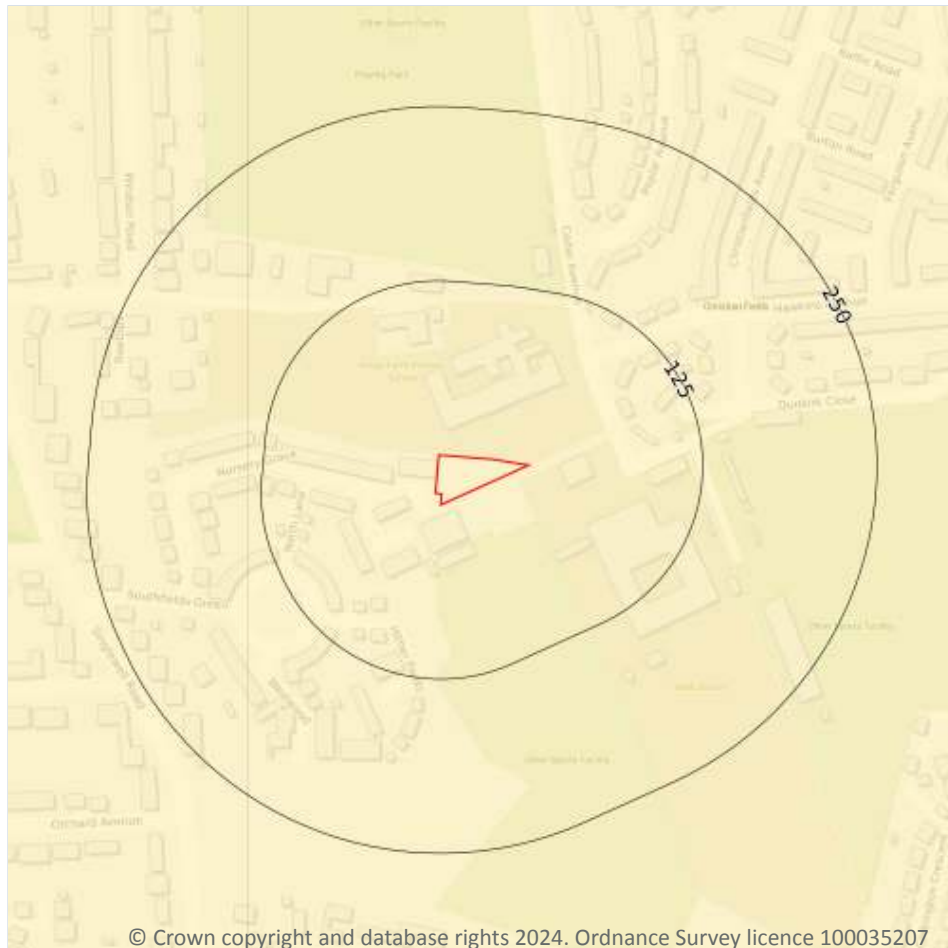
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



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20.1 Radon

Records on site

1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 90](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None



This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg
40m N	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m**0**

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m**0**

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m**0**

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m**0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m

0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m

0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m

0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m

0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1863

Scale: 1:2,500

Printed at: 1:2,500



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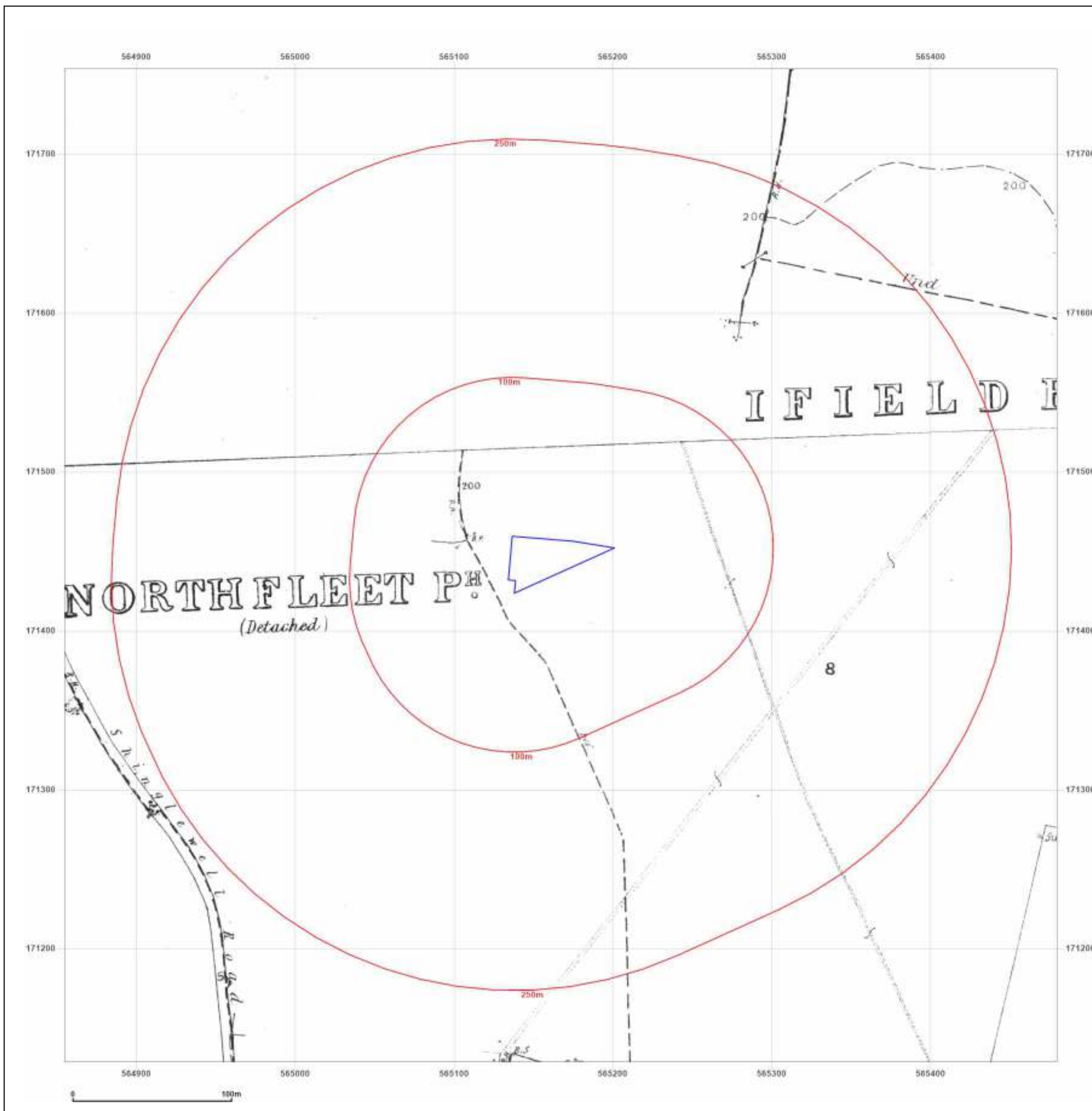


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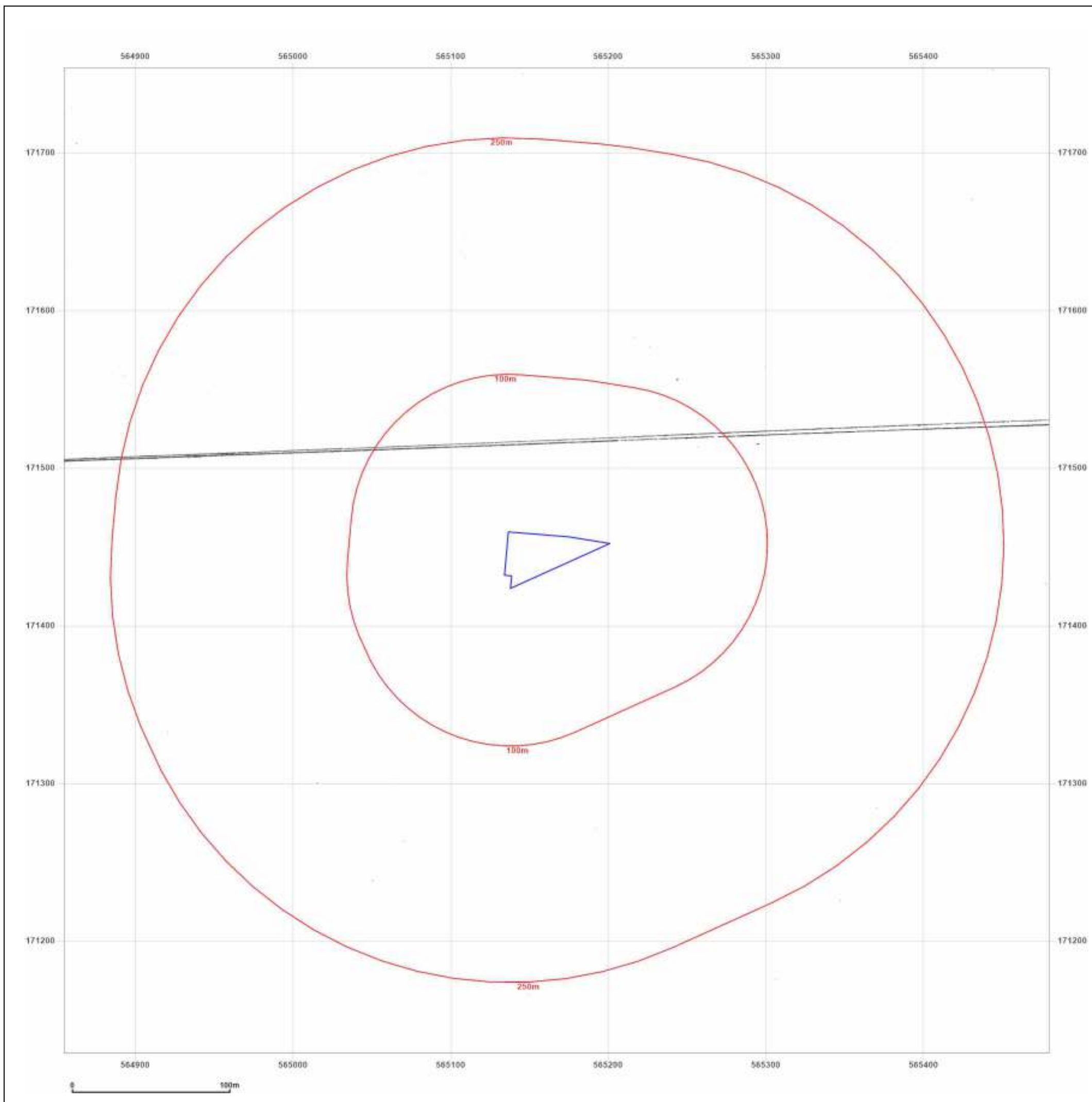


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1864

Scale: 1:2,500

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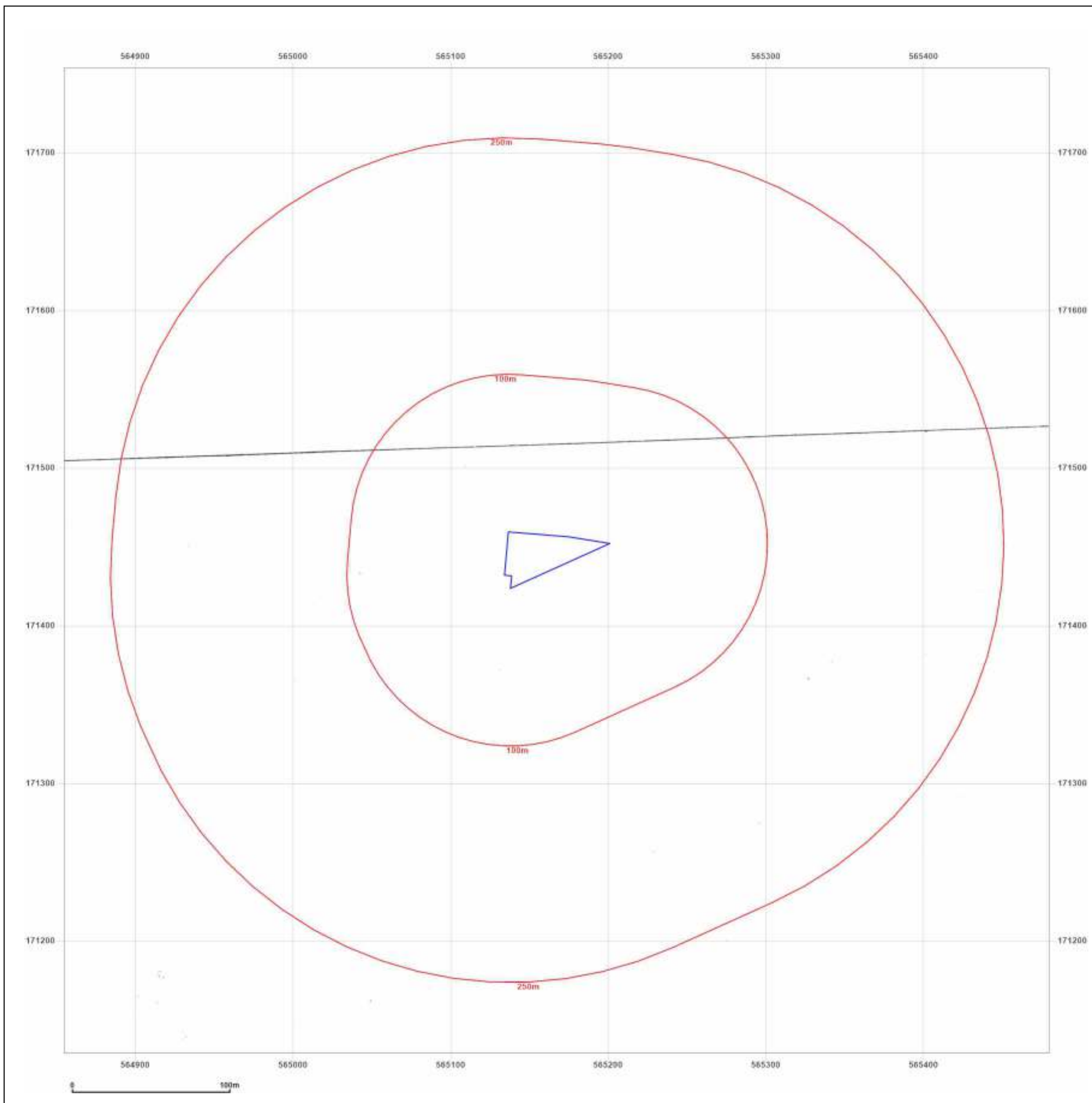


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1864

Scale: 1:2,500

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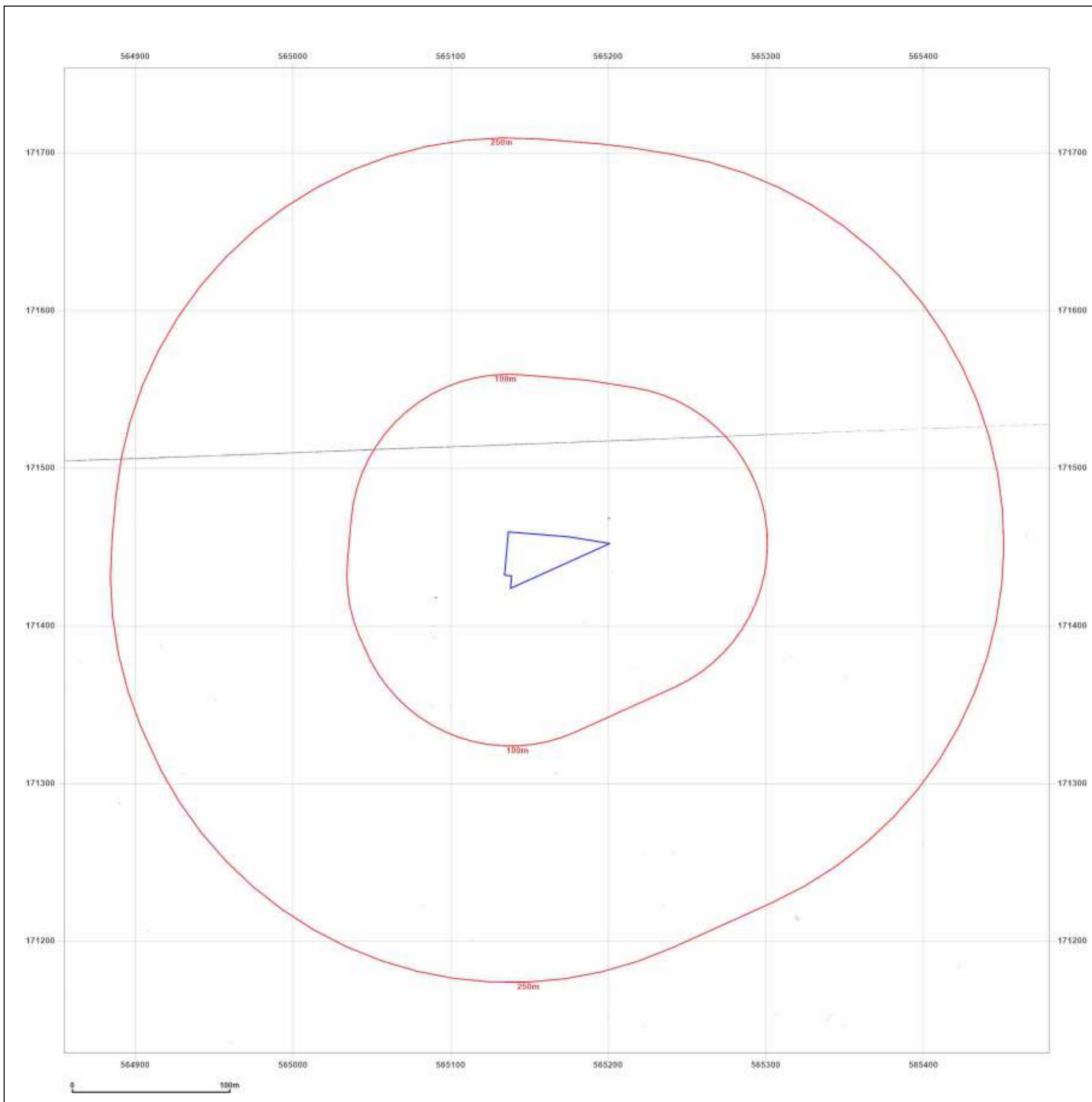


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Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1864-1866

Scale: 1:2,500

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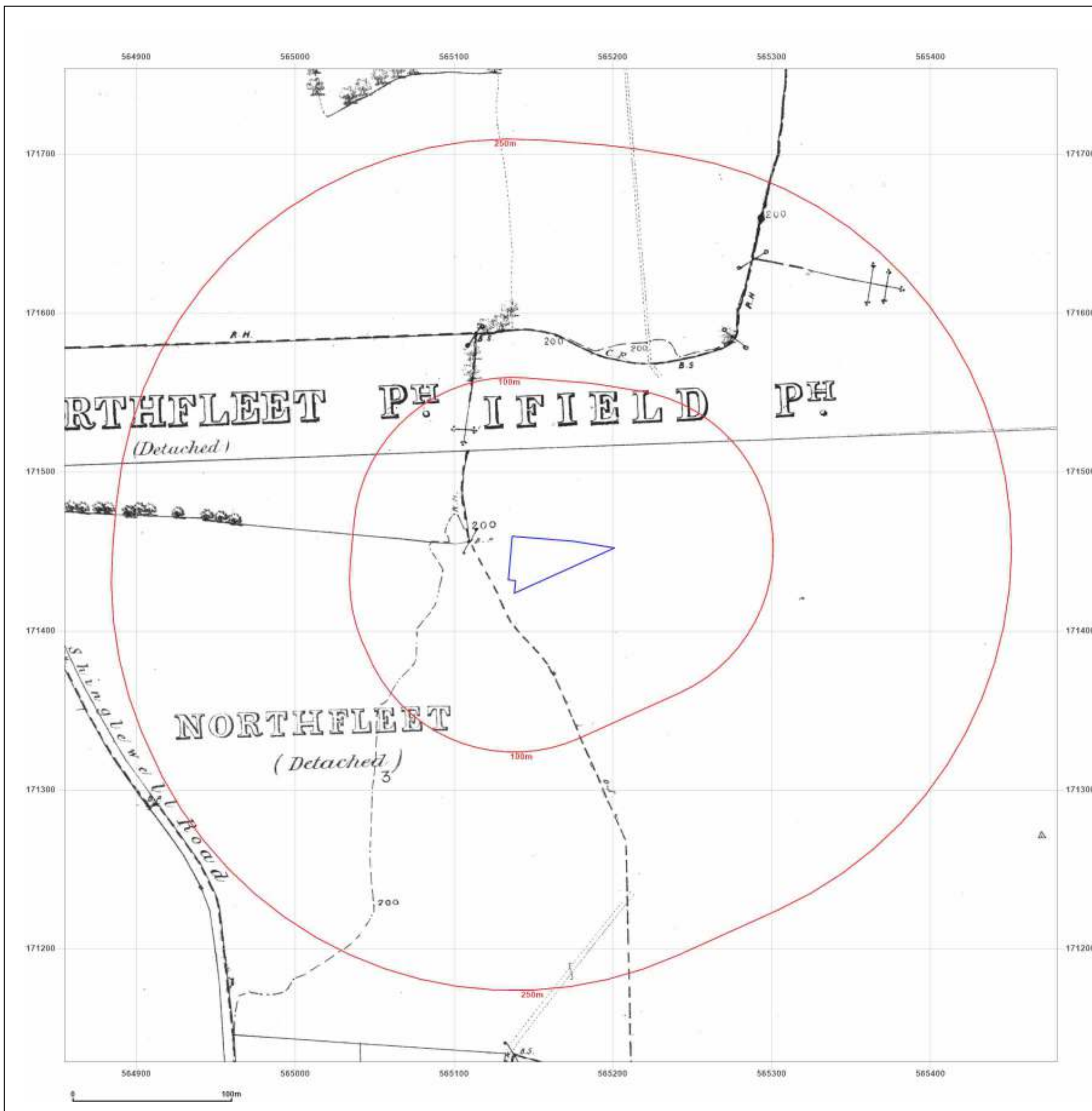


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Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1897

Scale: 1:2,500

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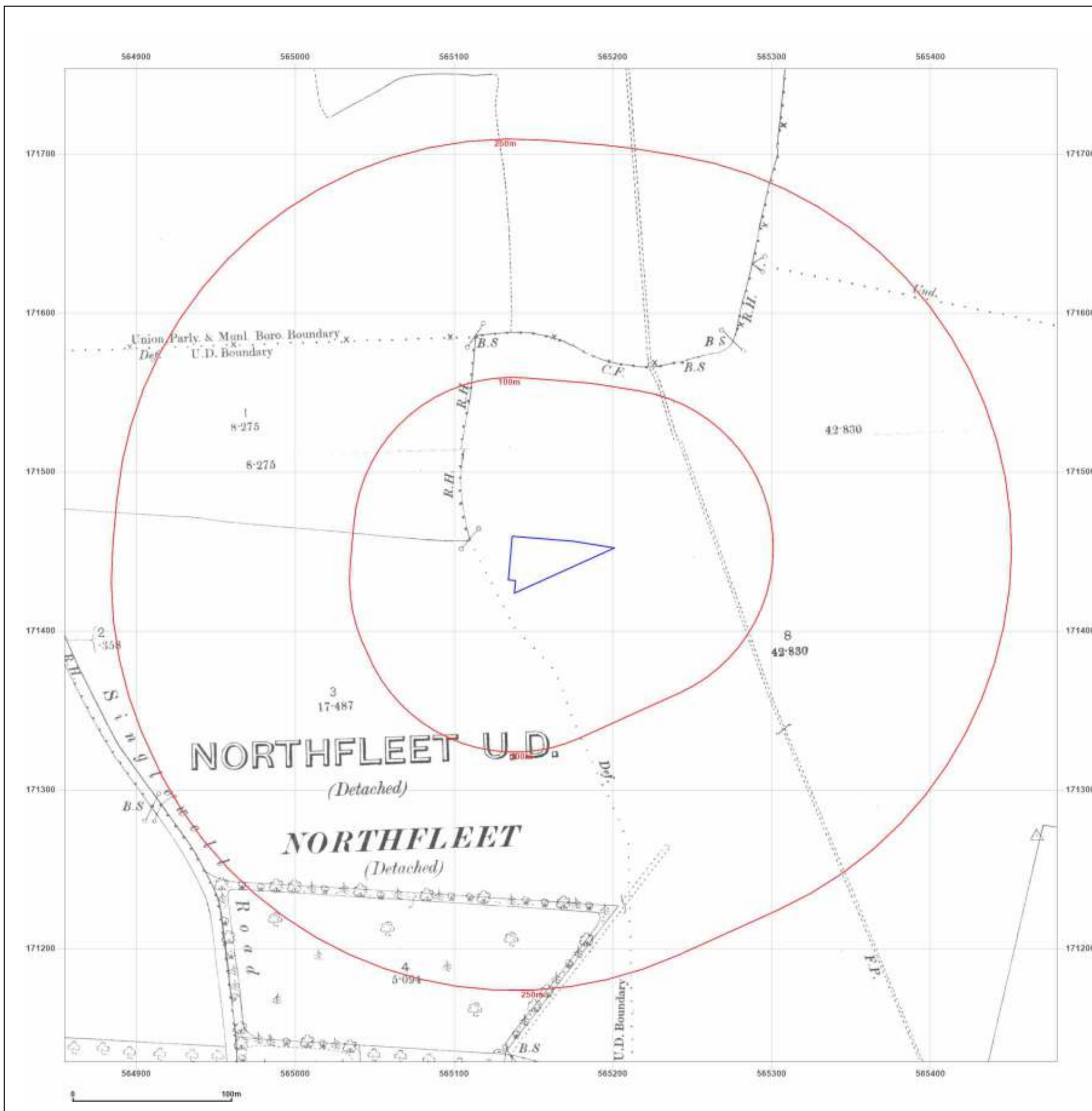


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Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1908-1909

Scale: 1:2,500

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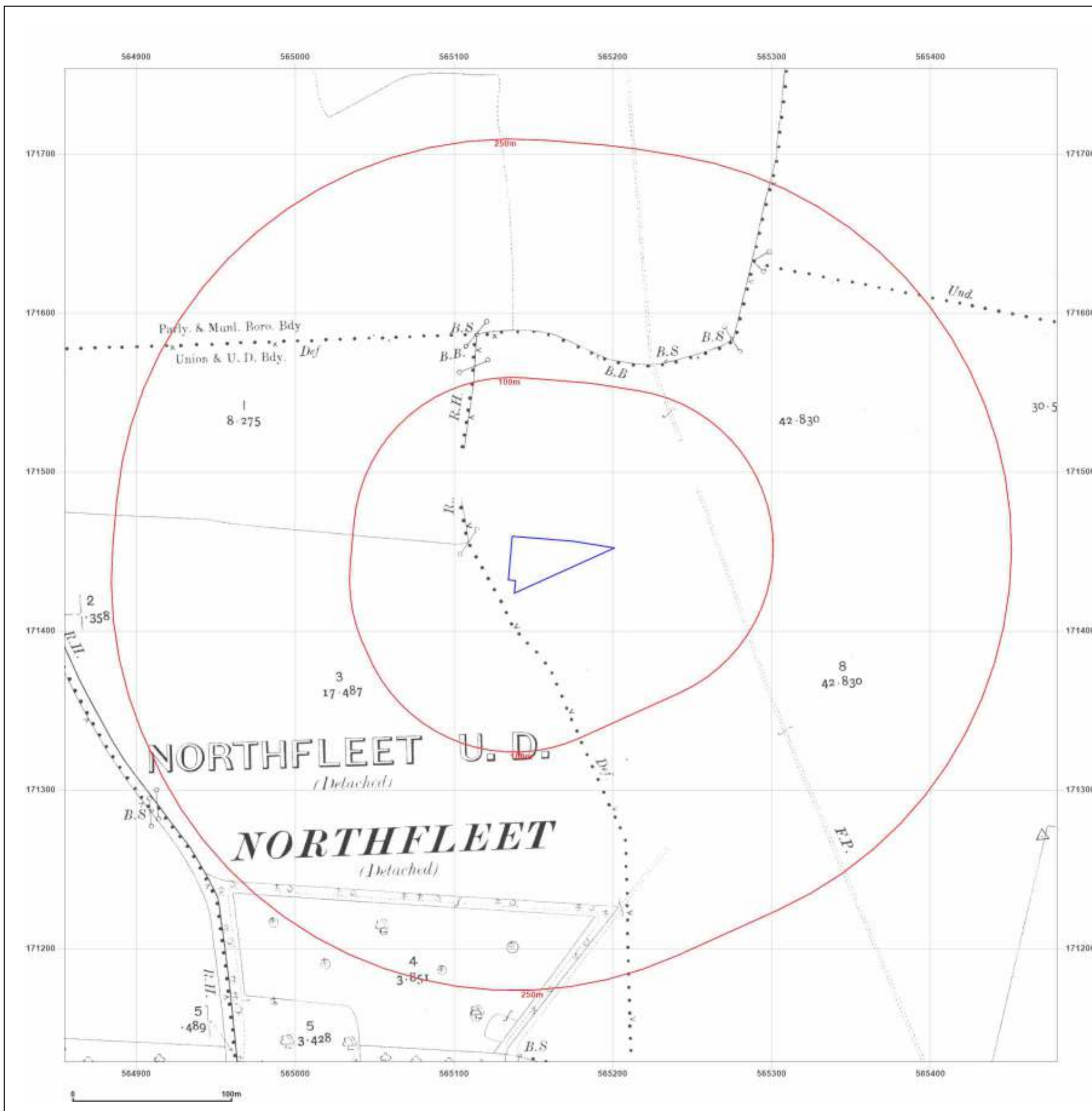


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Map date: 1909

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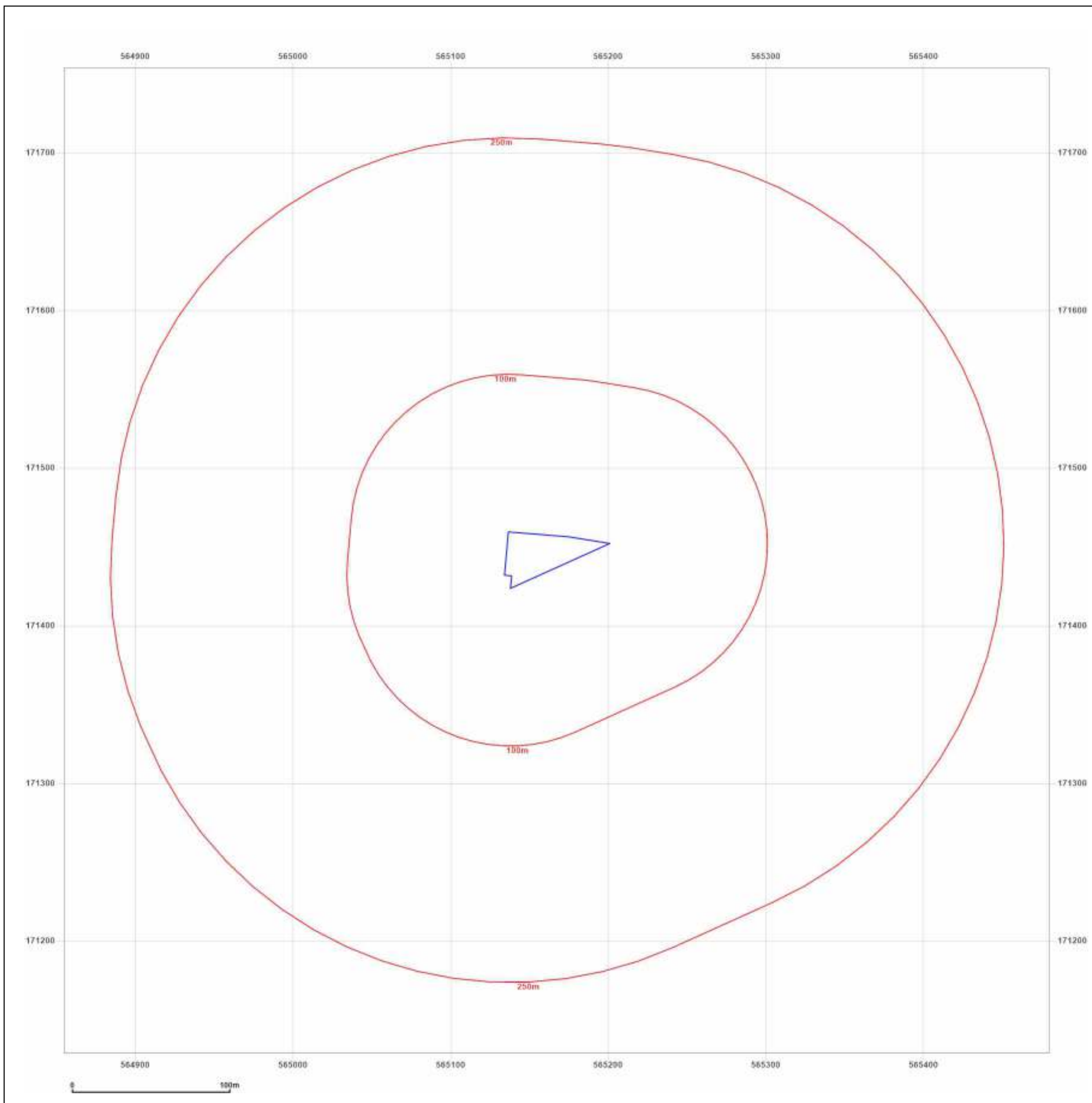


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Map Name: County Series

Map date: 1933

Scale: 1:2,500

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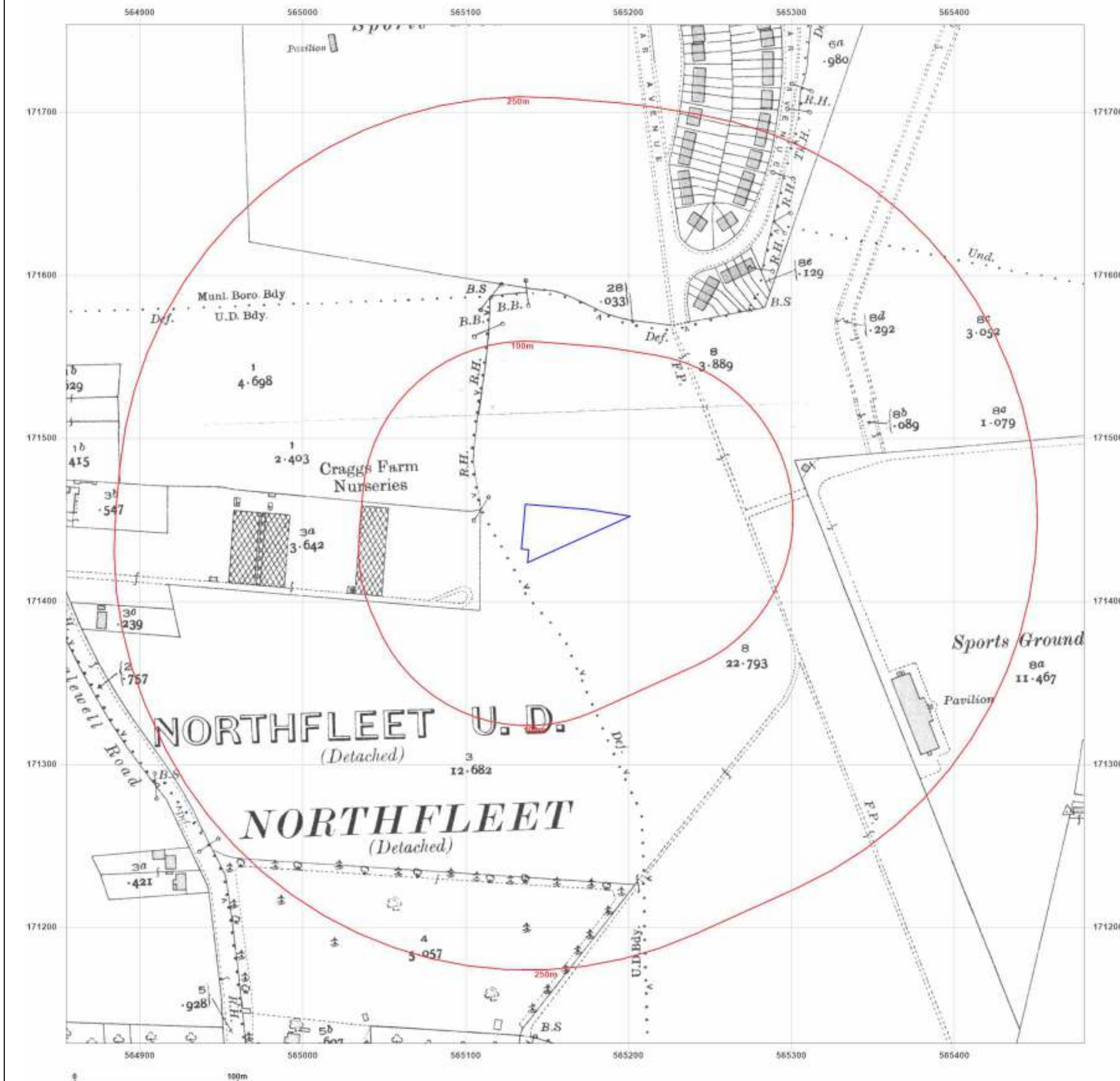


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Map Name: County Series

Map date: 1936

Scale: 1:2,500

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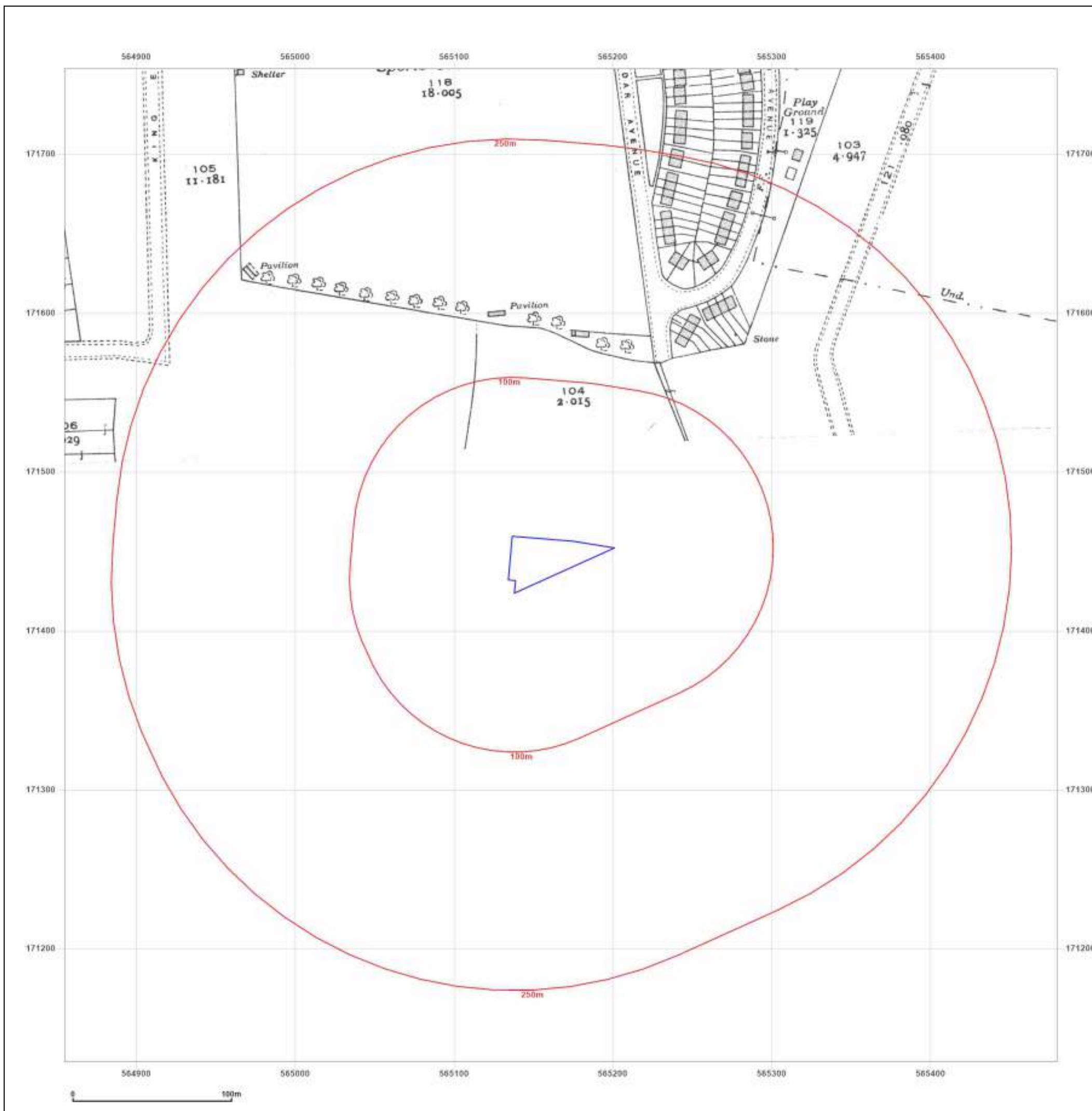


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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1953

Scale: 1:1,250

Printed at: 1:2,000



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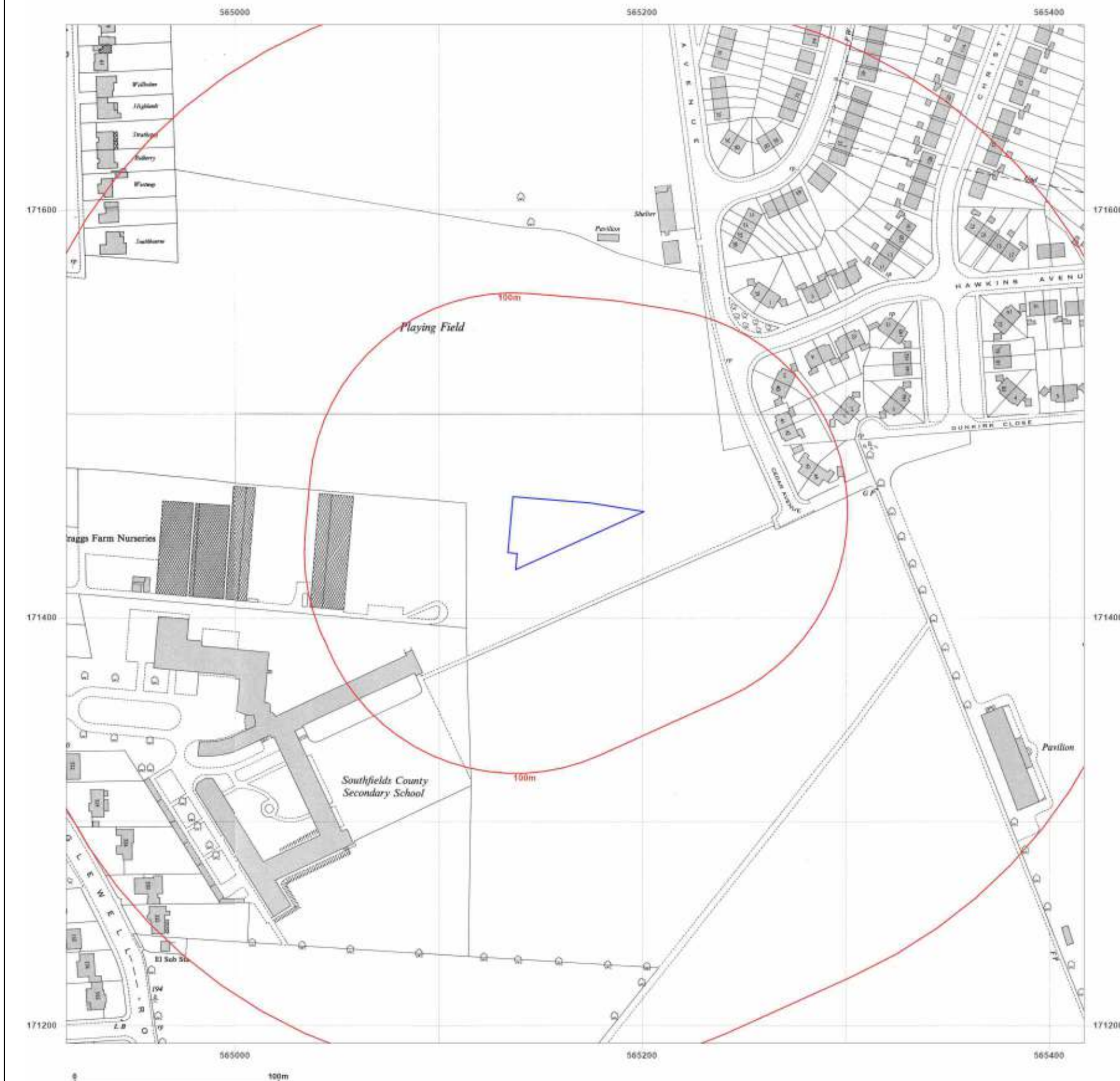


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Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1953

Scale: 1:2,500

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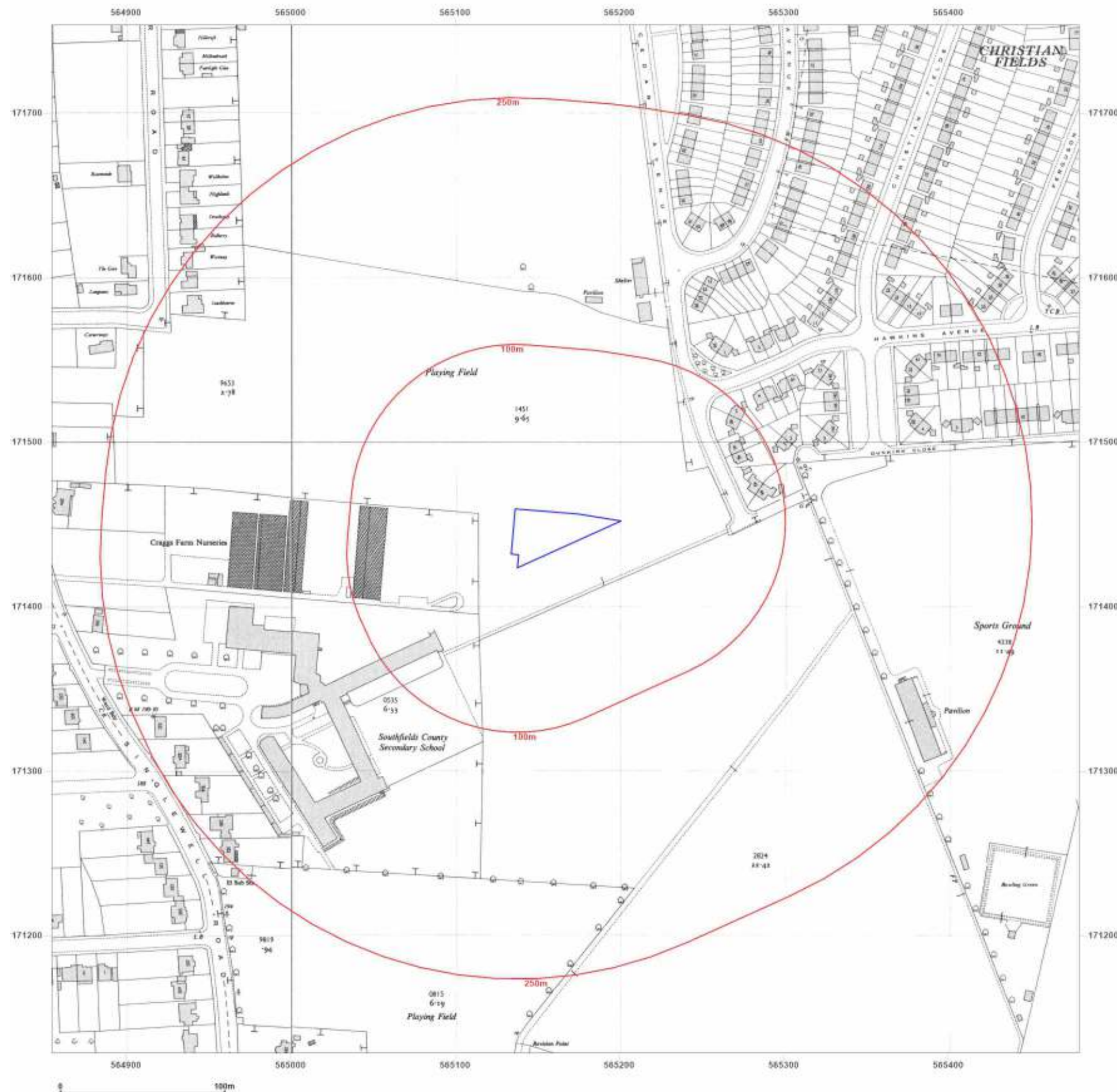


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1954

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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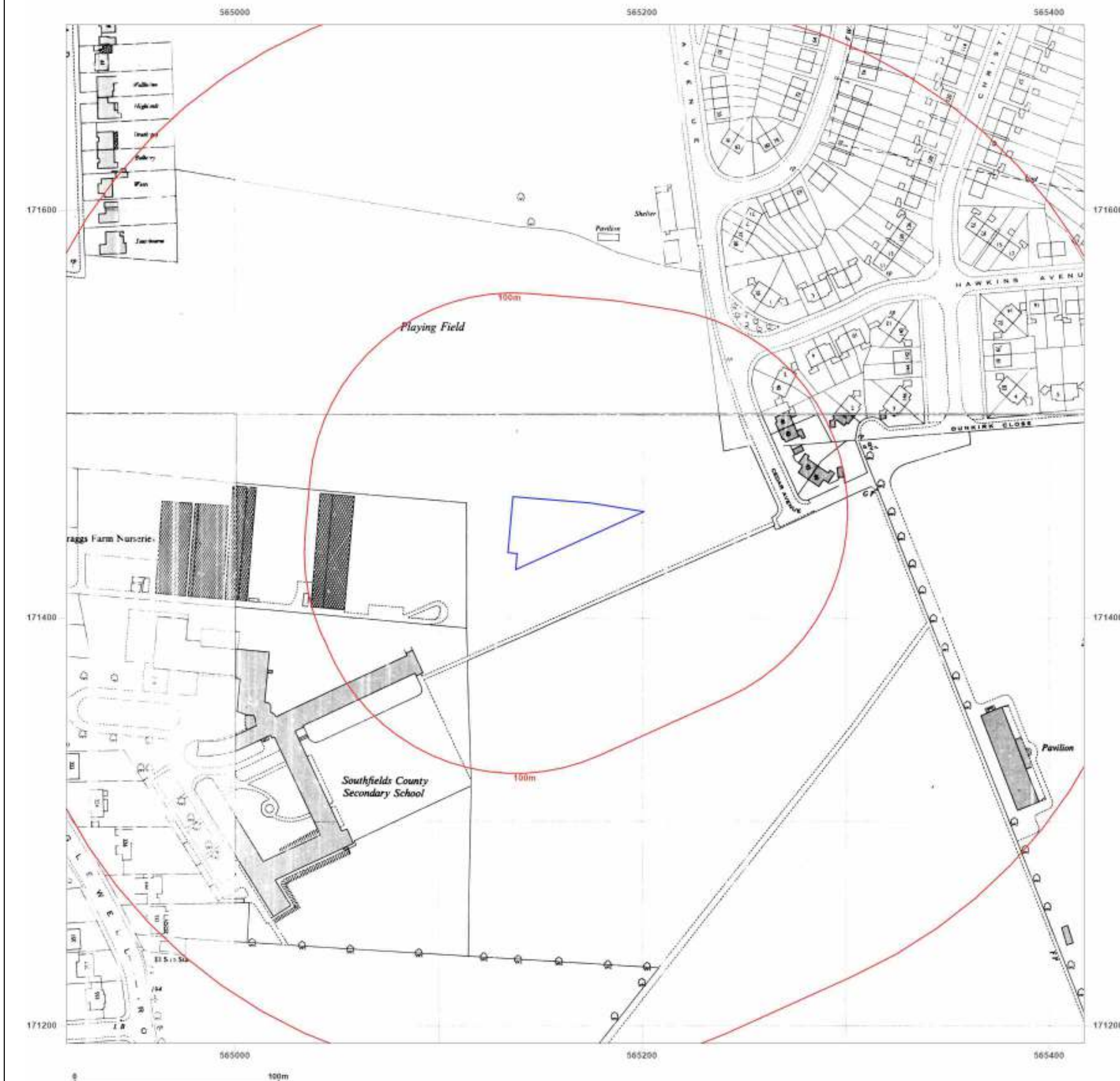


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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1969

Scale: 1:2,500

Printed at: 1:2,500



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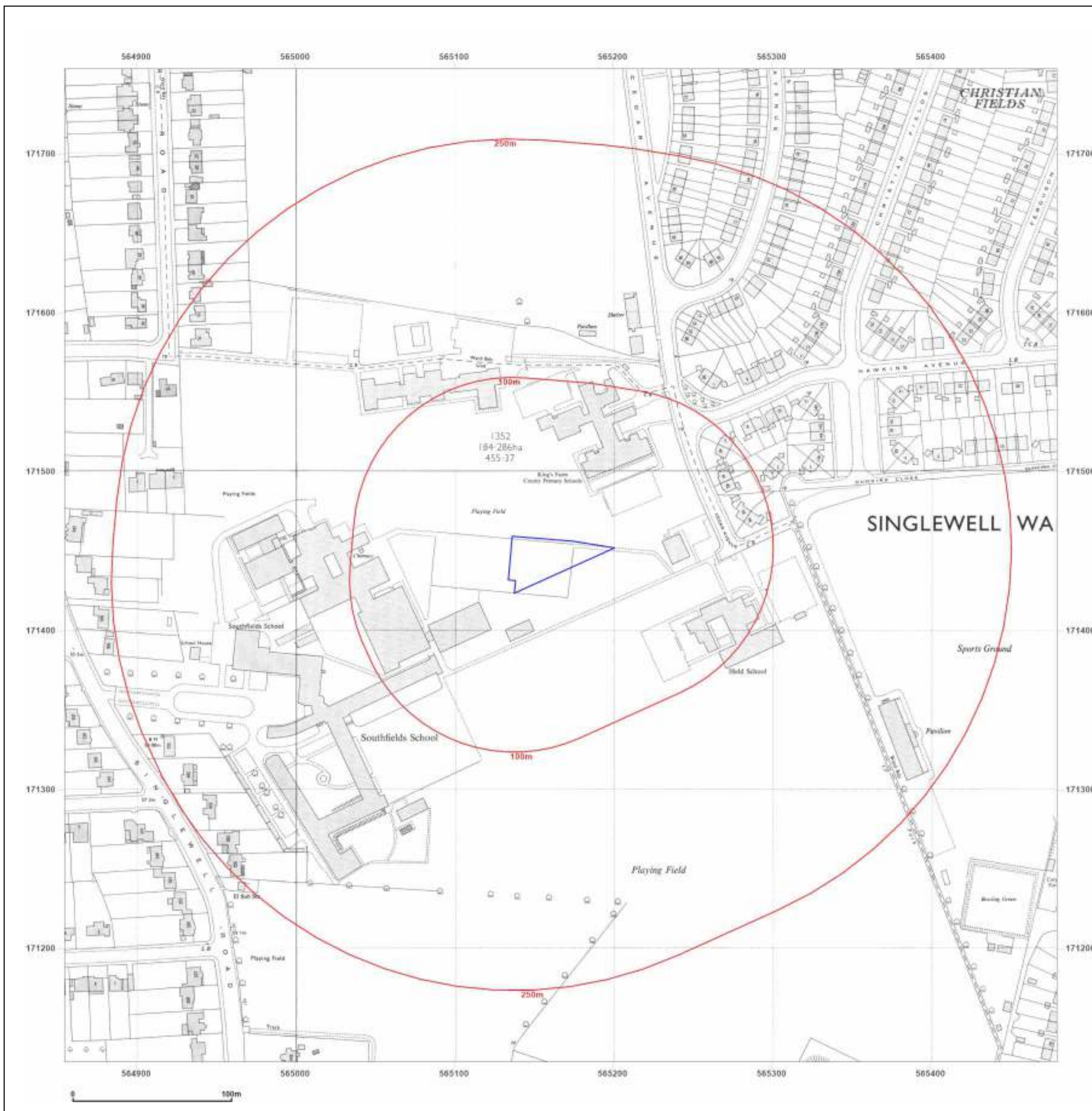


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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

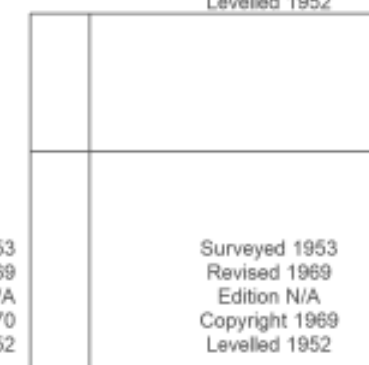
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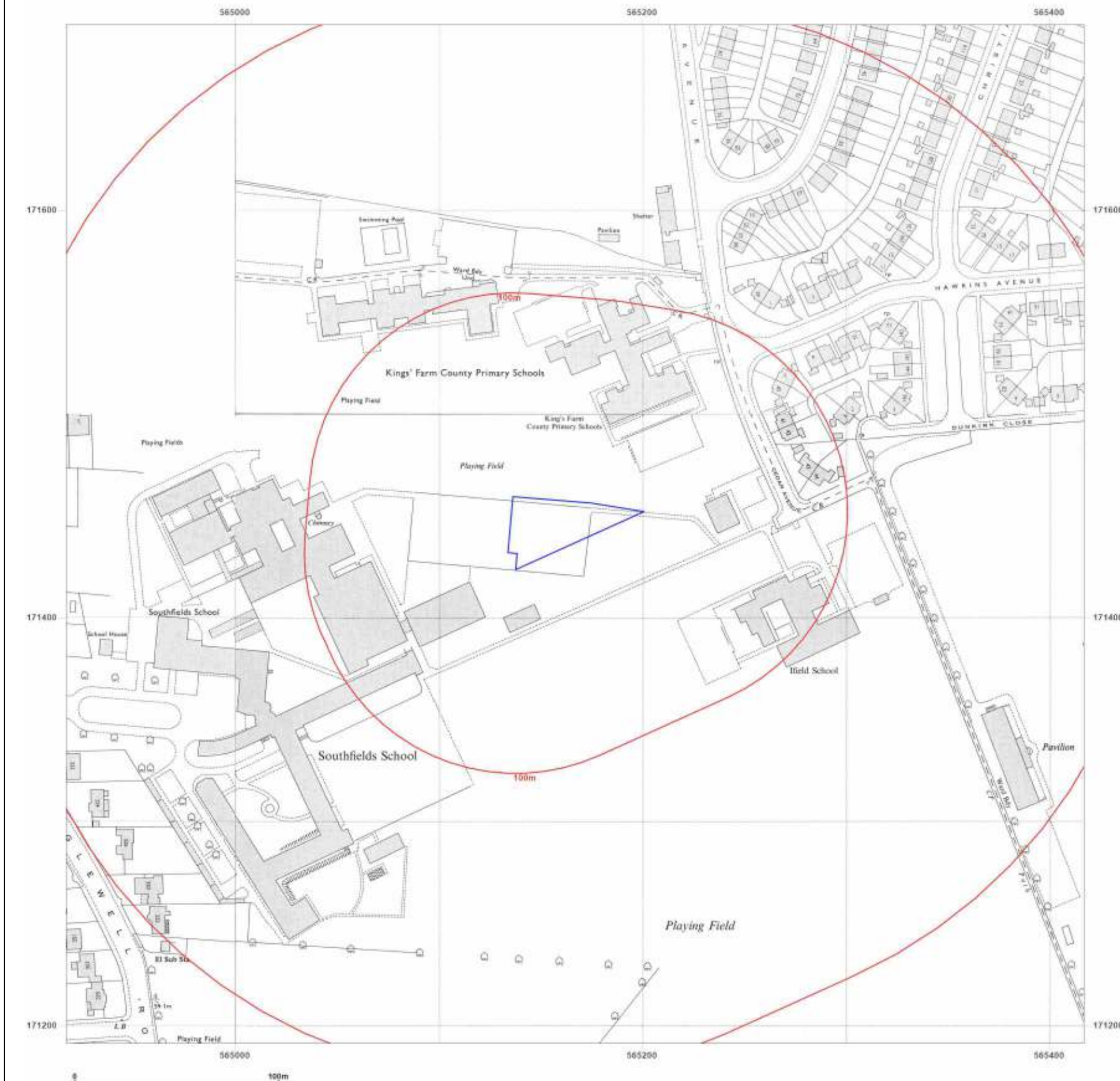


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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1973

Scale: 1:1,250

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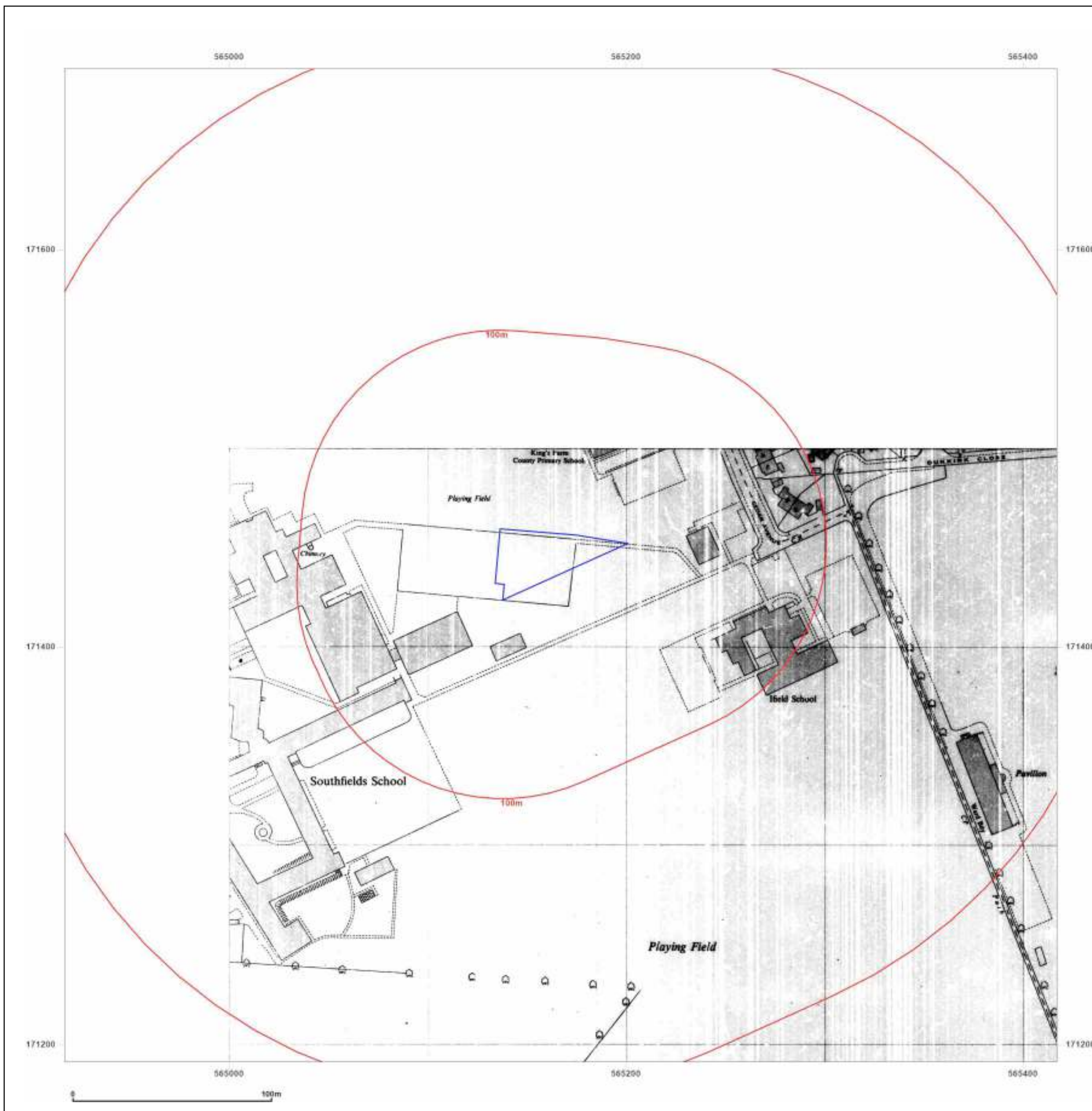


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Report Ref: GS-5OE-4UE-225-RGI
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Map Name: National Grid

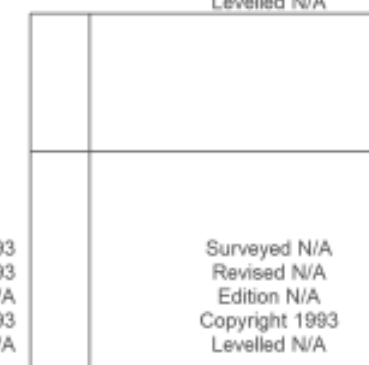
Map date: 1993

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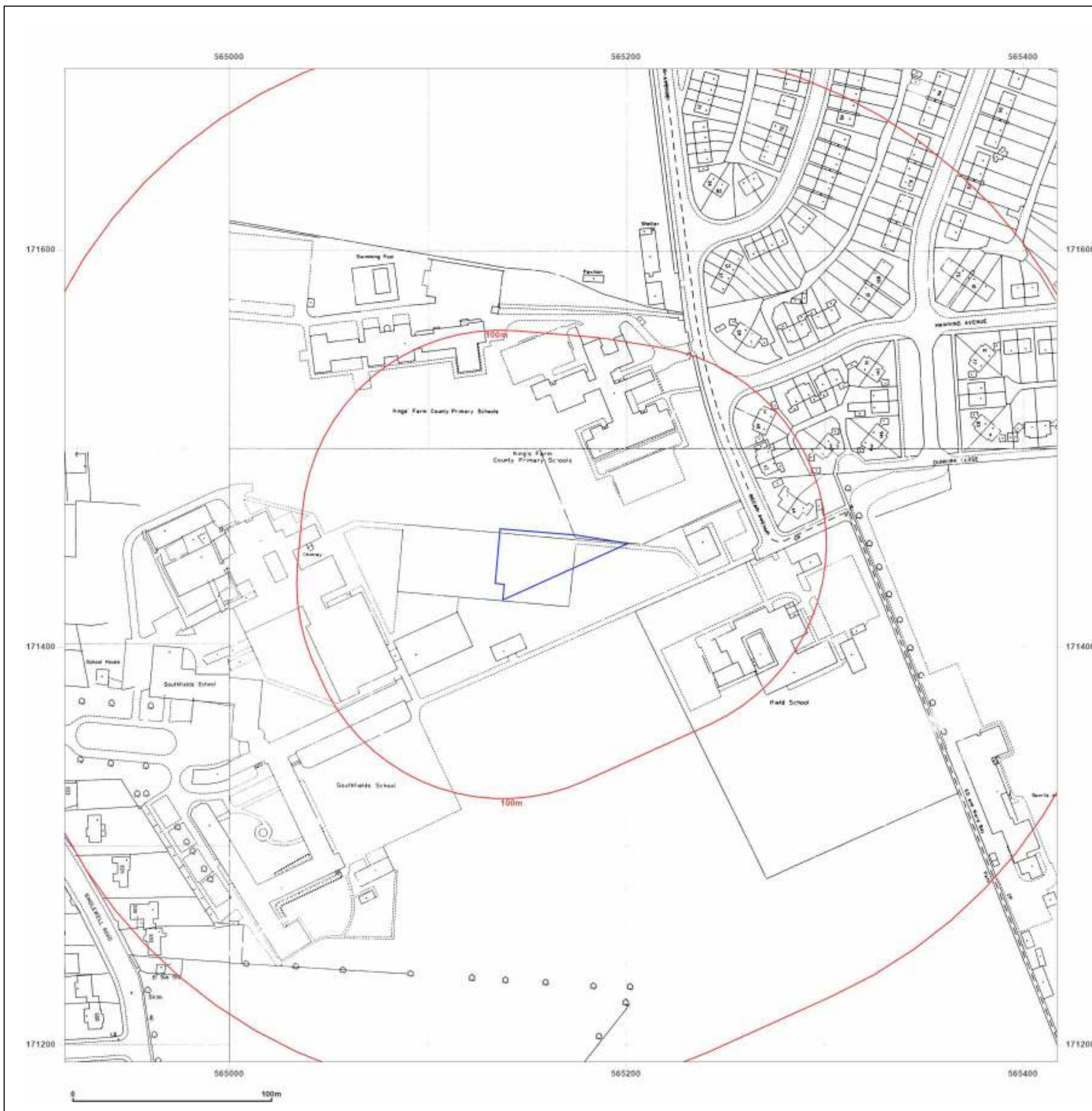


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Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1993-1995

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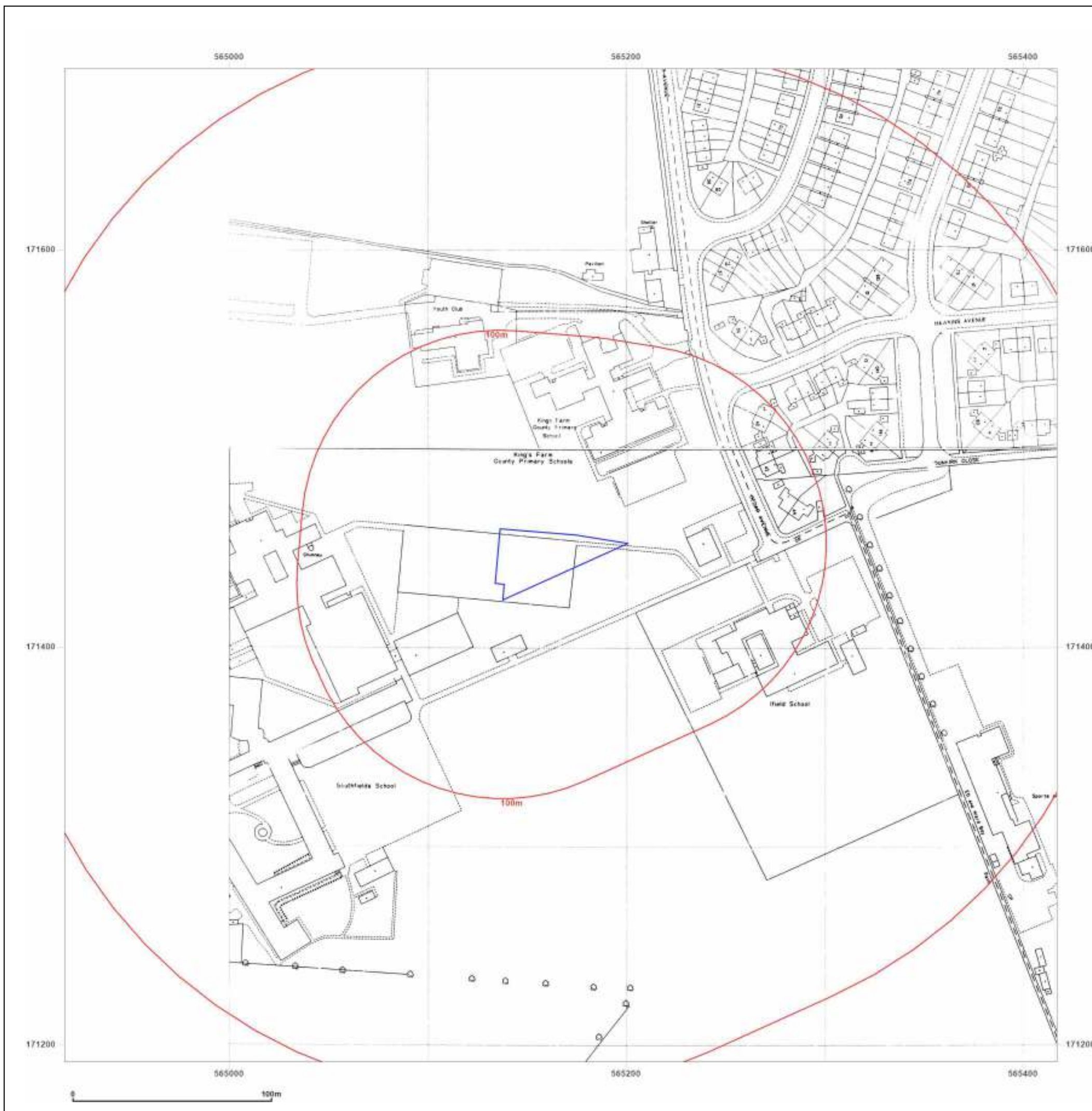


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1993-1995

Scale: 1:1,250

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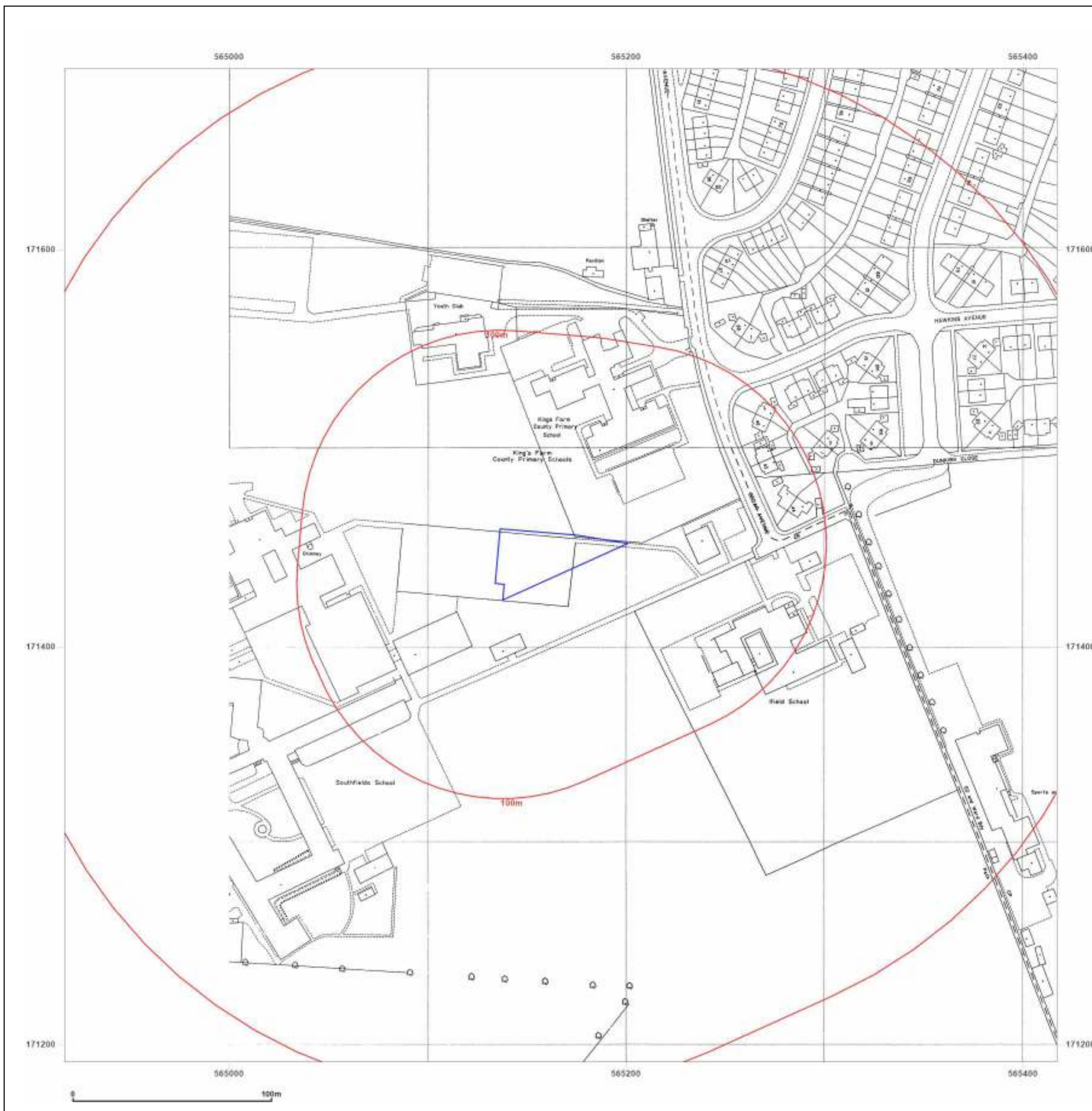


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Grid Ref: 565167, 171441

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1865

Scale: 1:10,560

Printed at: 1:10,560



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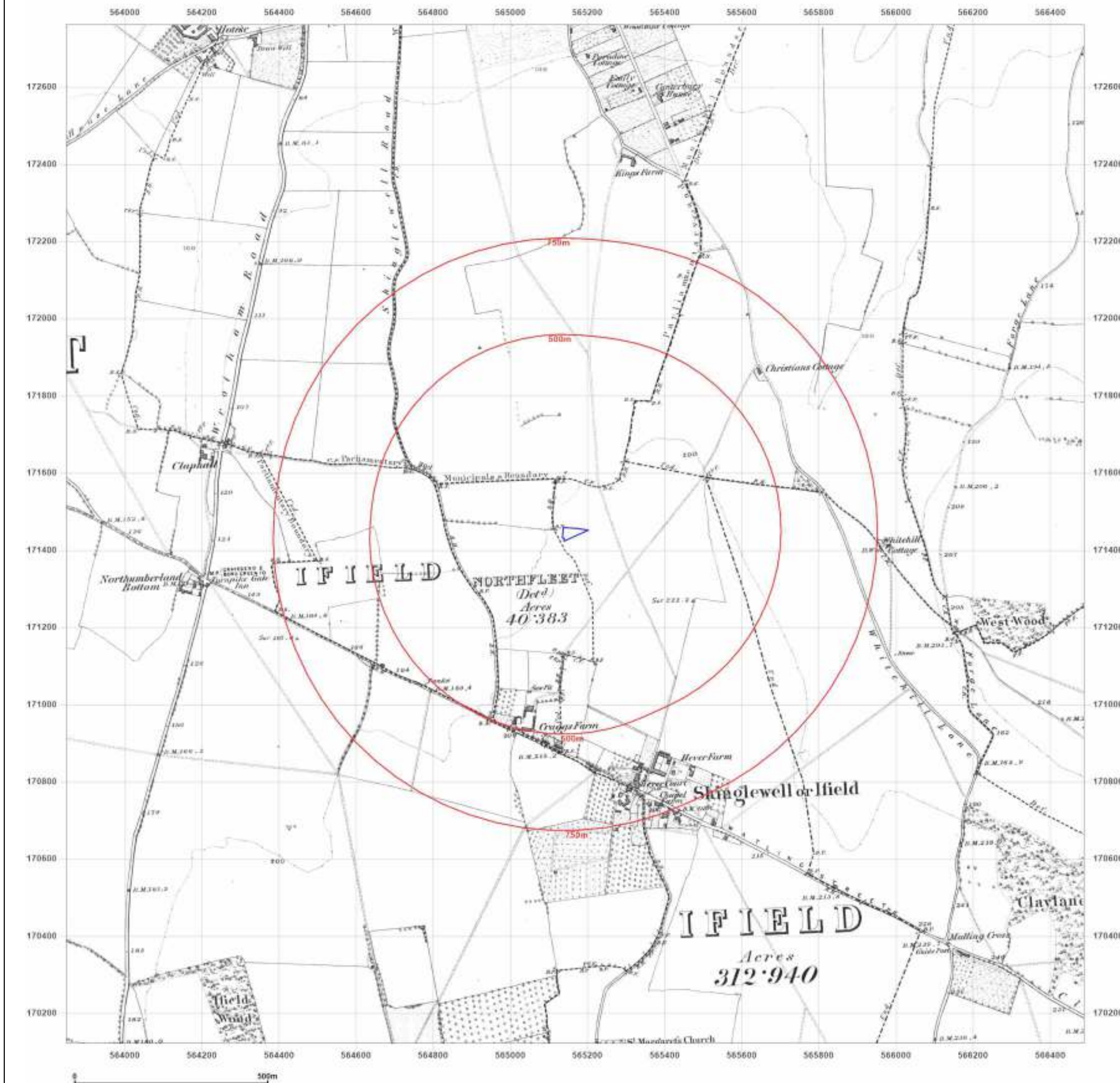


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Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

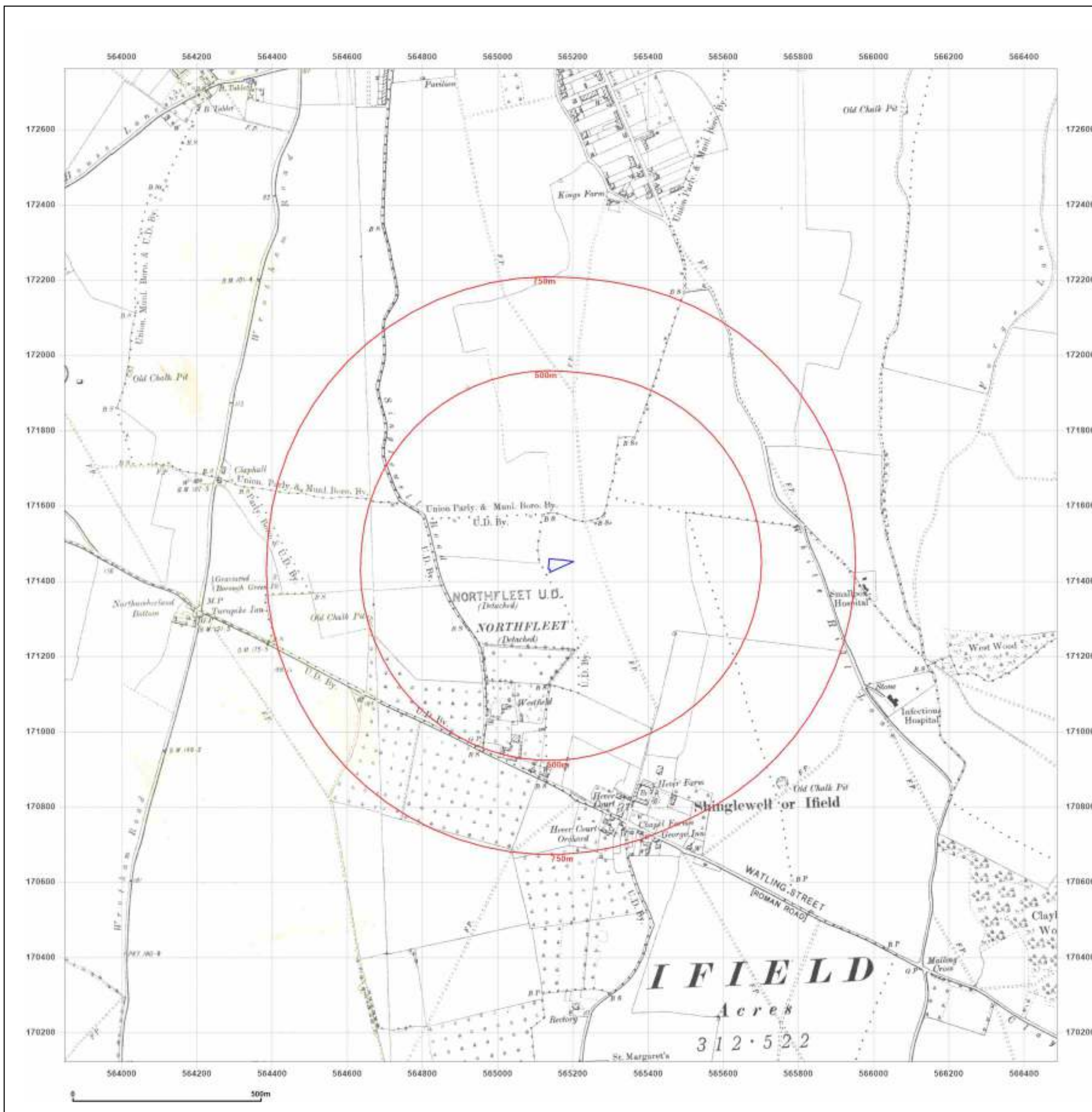


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Site Details:

LAND AT NURSERY MEWS,
GRAVESEND, KENT, DA12 5JT

Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1895-1898

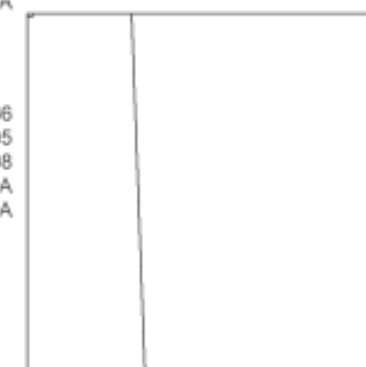
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Printed at: 1:10,560



Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1895
Edition 1898
Copyright N/A
Levelled N/A

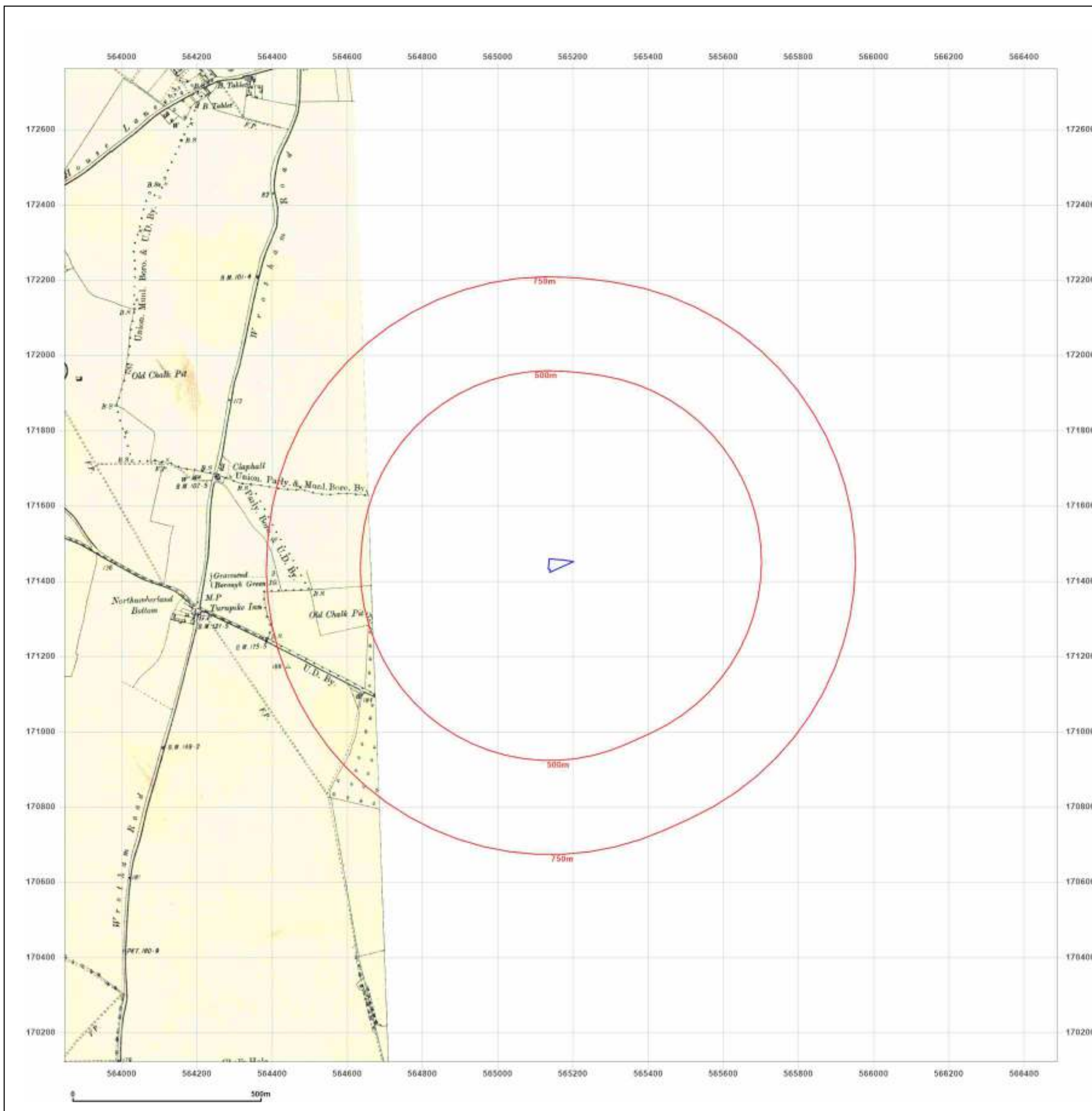


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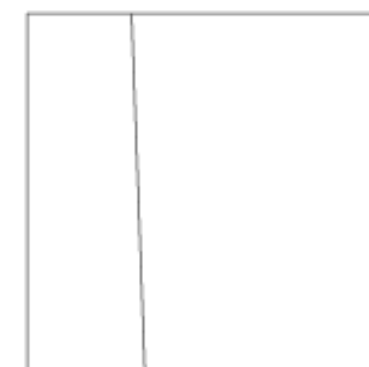
Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1907

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1862
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

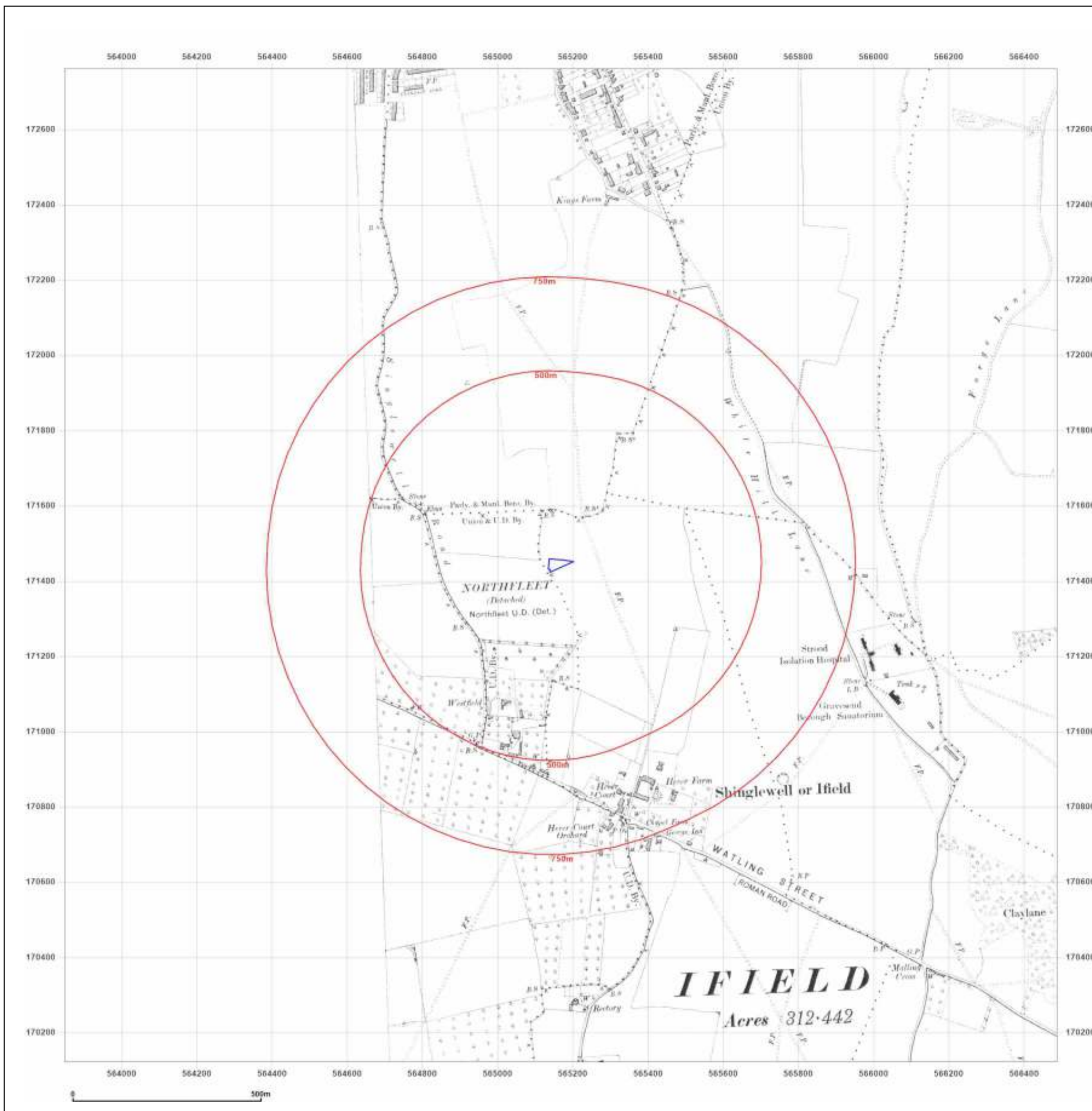


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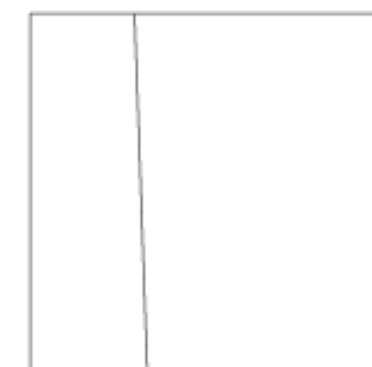
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Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1907

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1862
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

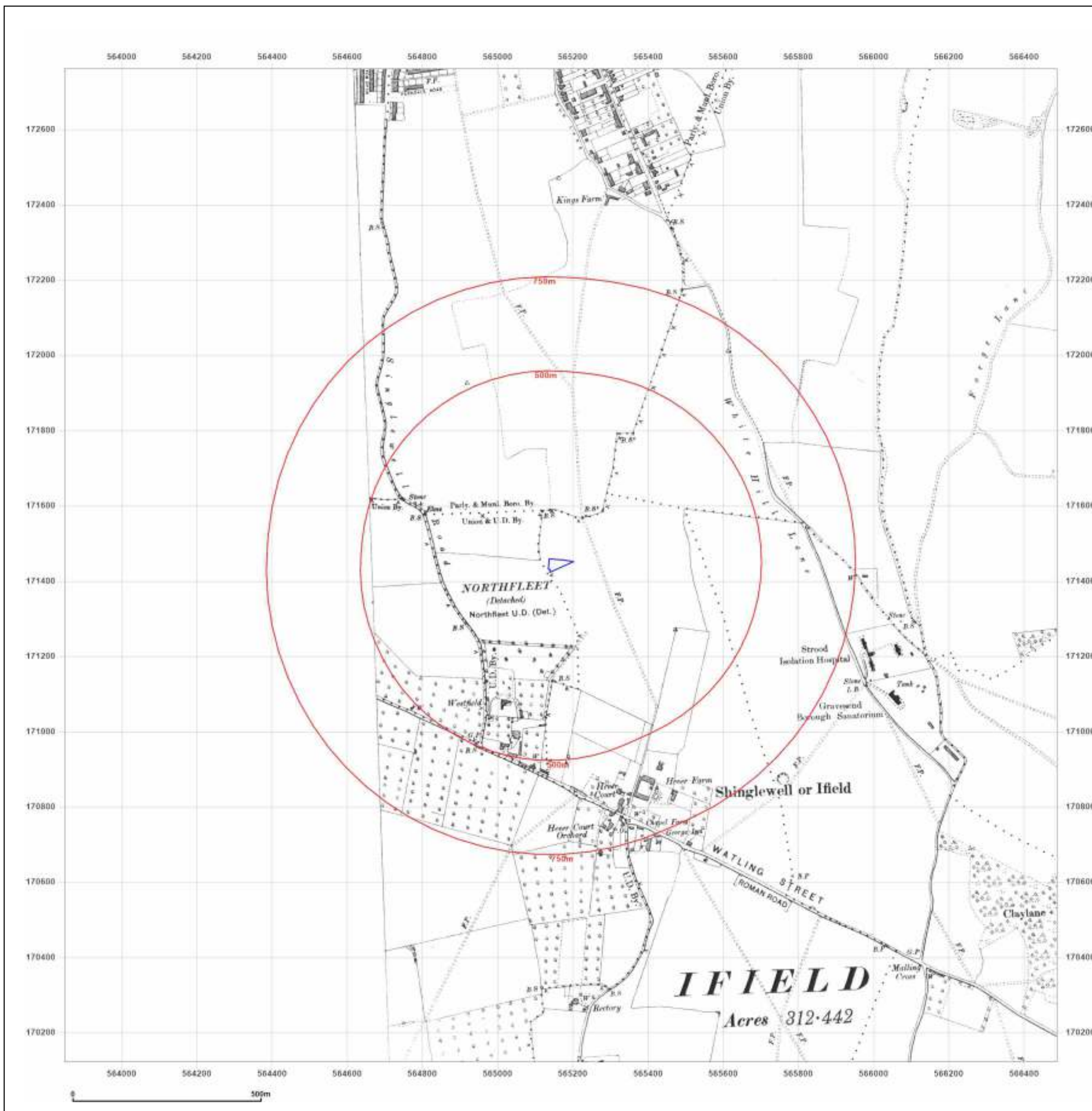


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Site Details:

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Client Ref: 24-06-12
Report Ref: GS-50E-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1931-1932

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1862
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

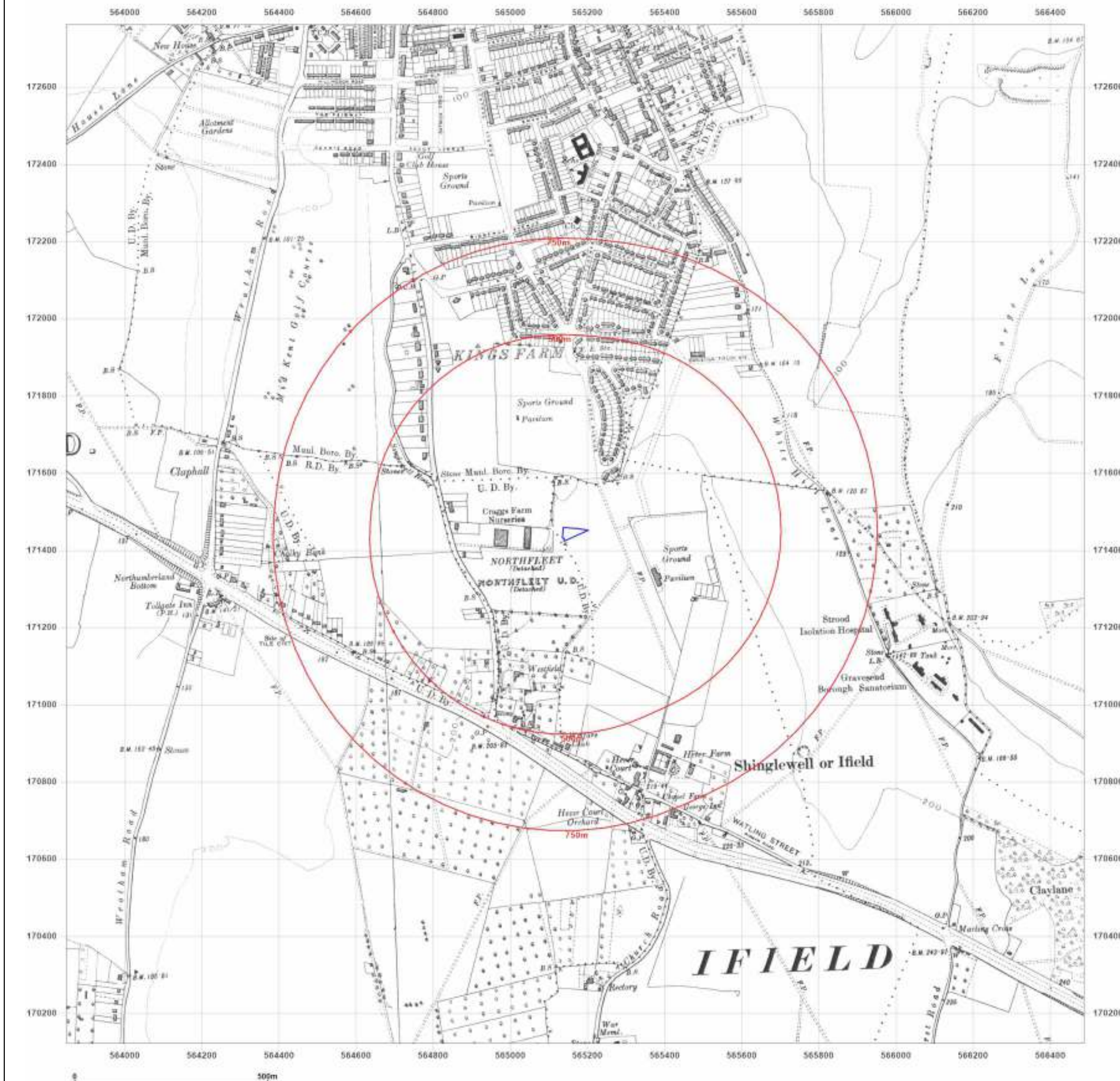


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Client Ref: 24-06-12
Report Ref: GS-50E-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1862
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

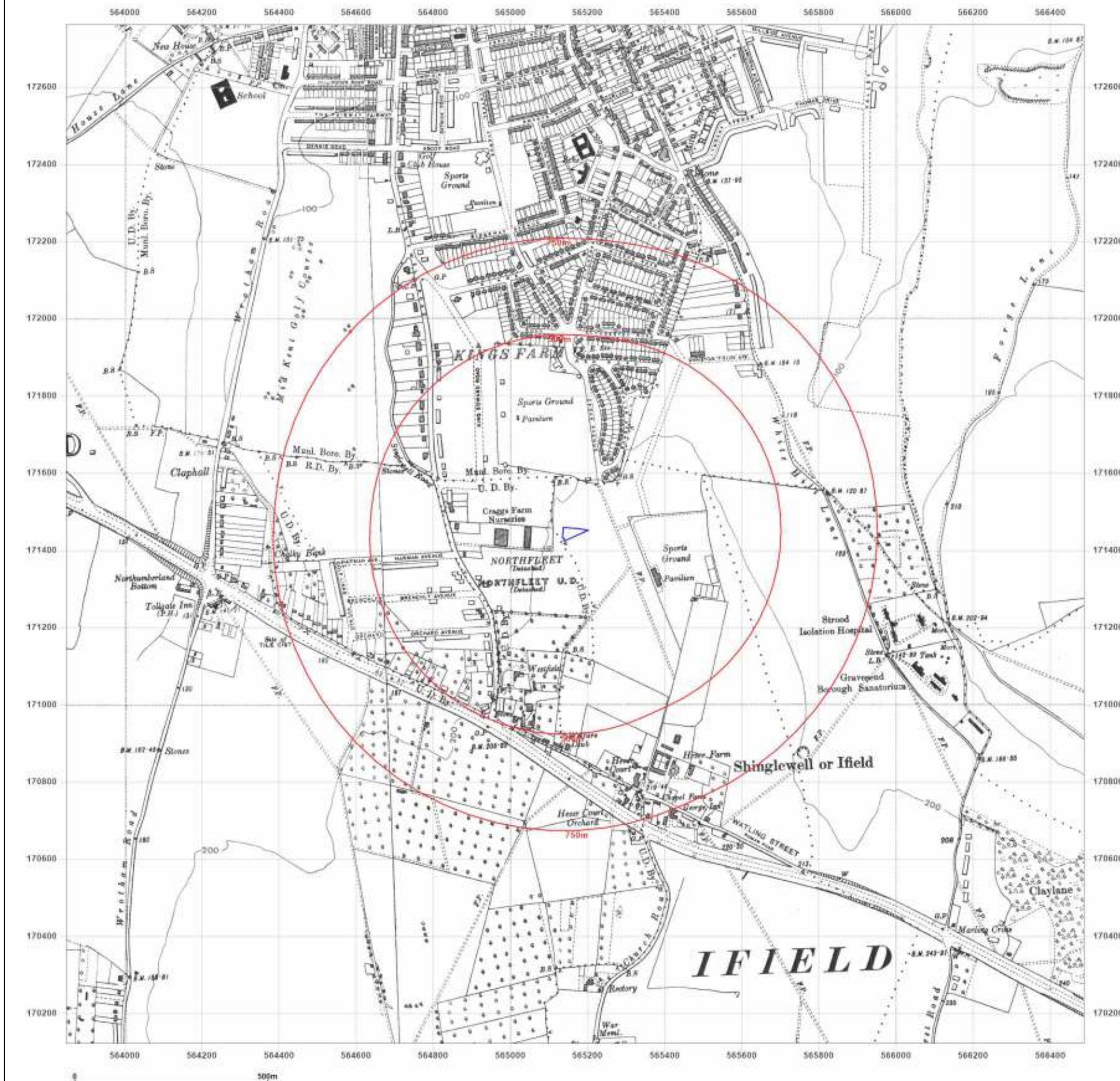


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

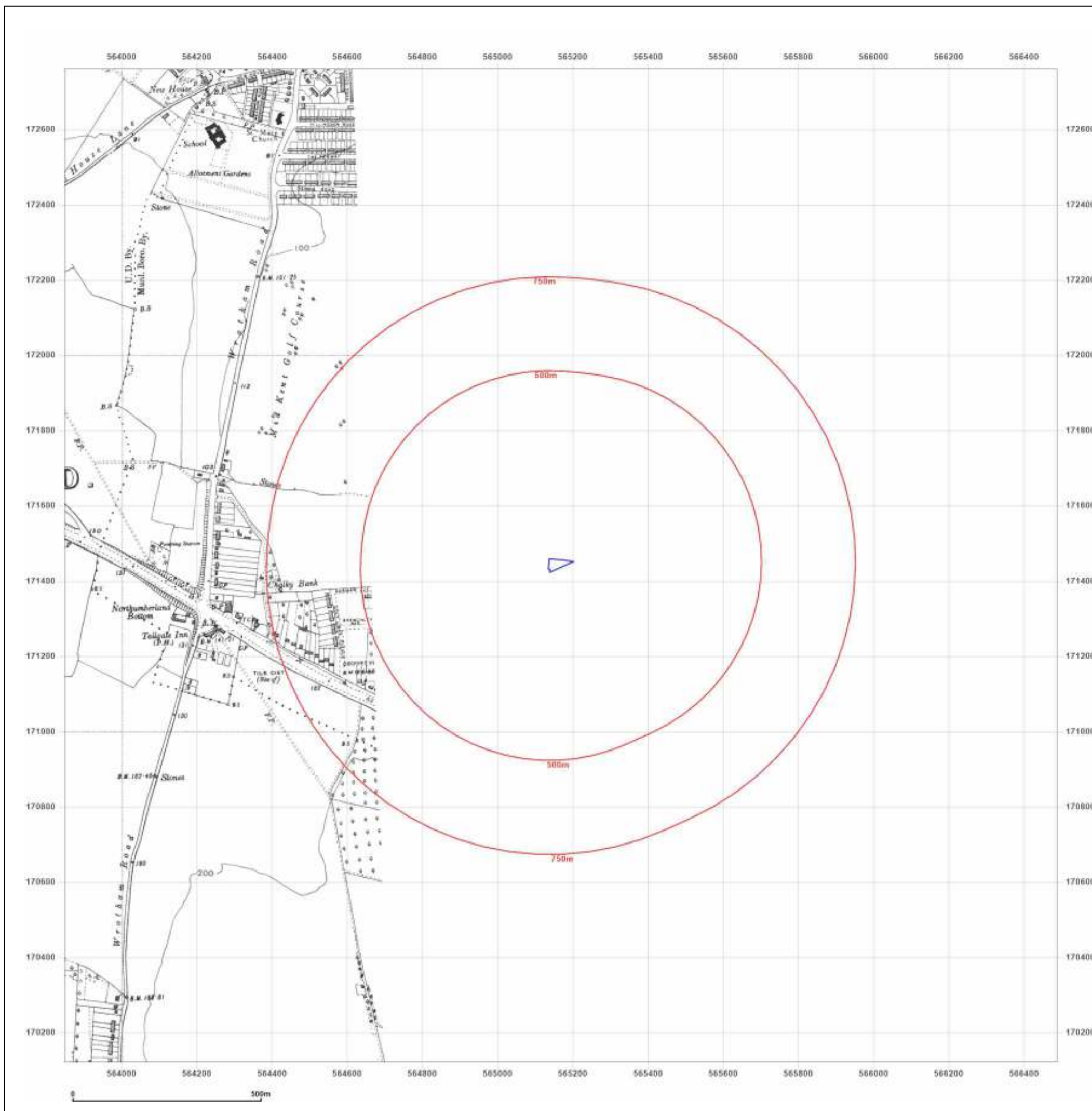


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: Provisional

Map date: 1955

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

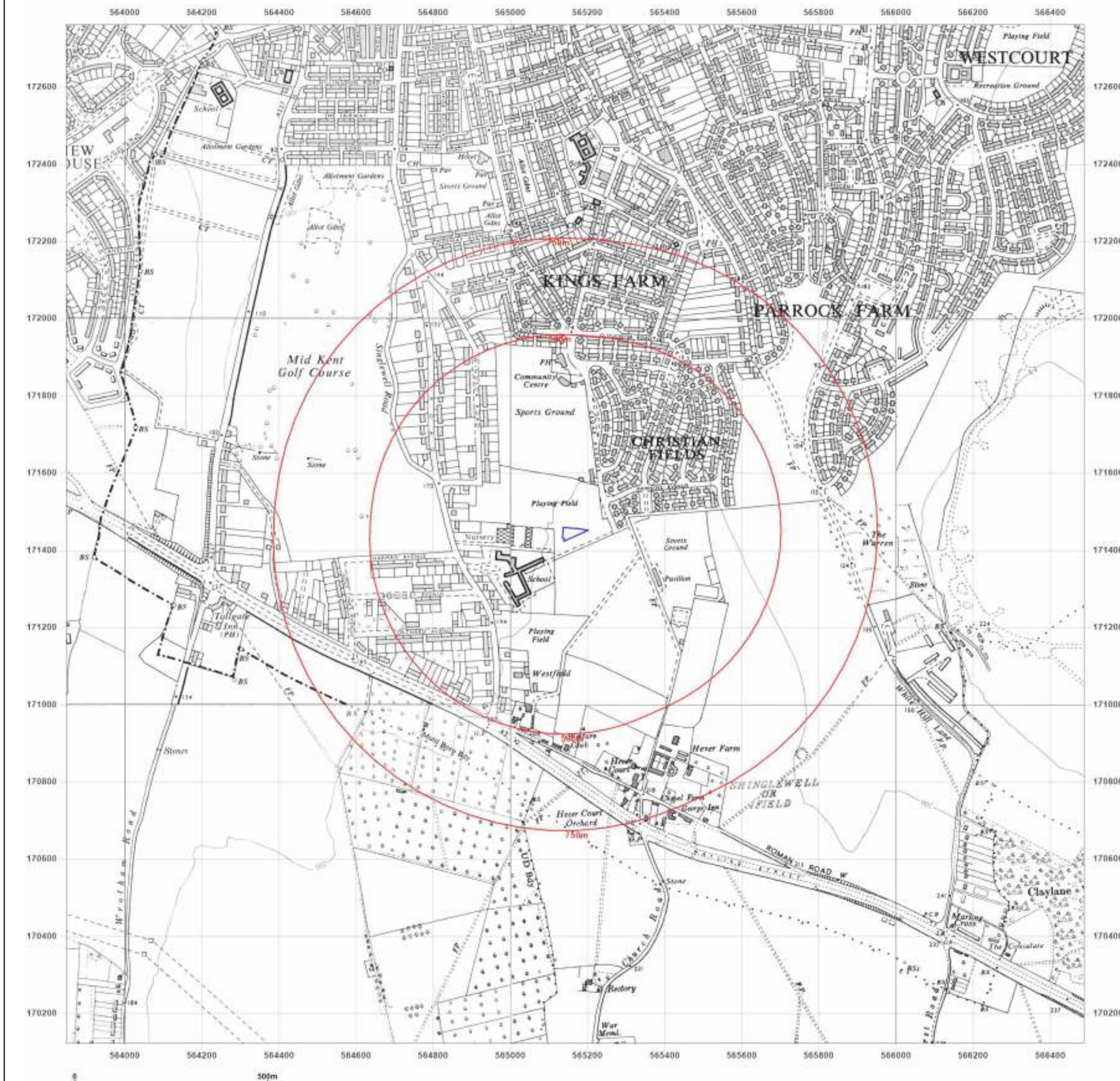


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: Provisional

Map date: 1966

Scale: 1:10,560

Printed at: 1:10,560



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

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

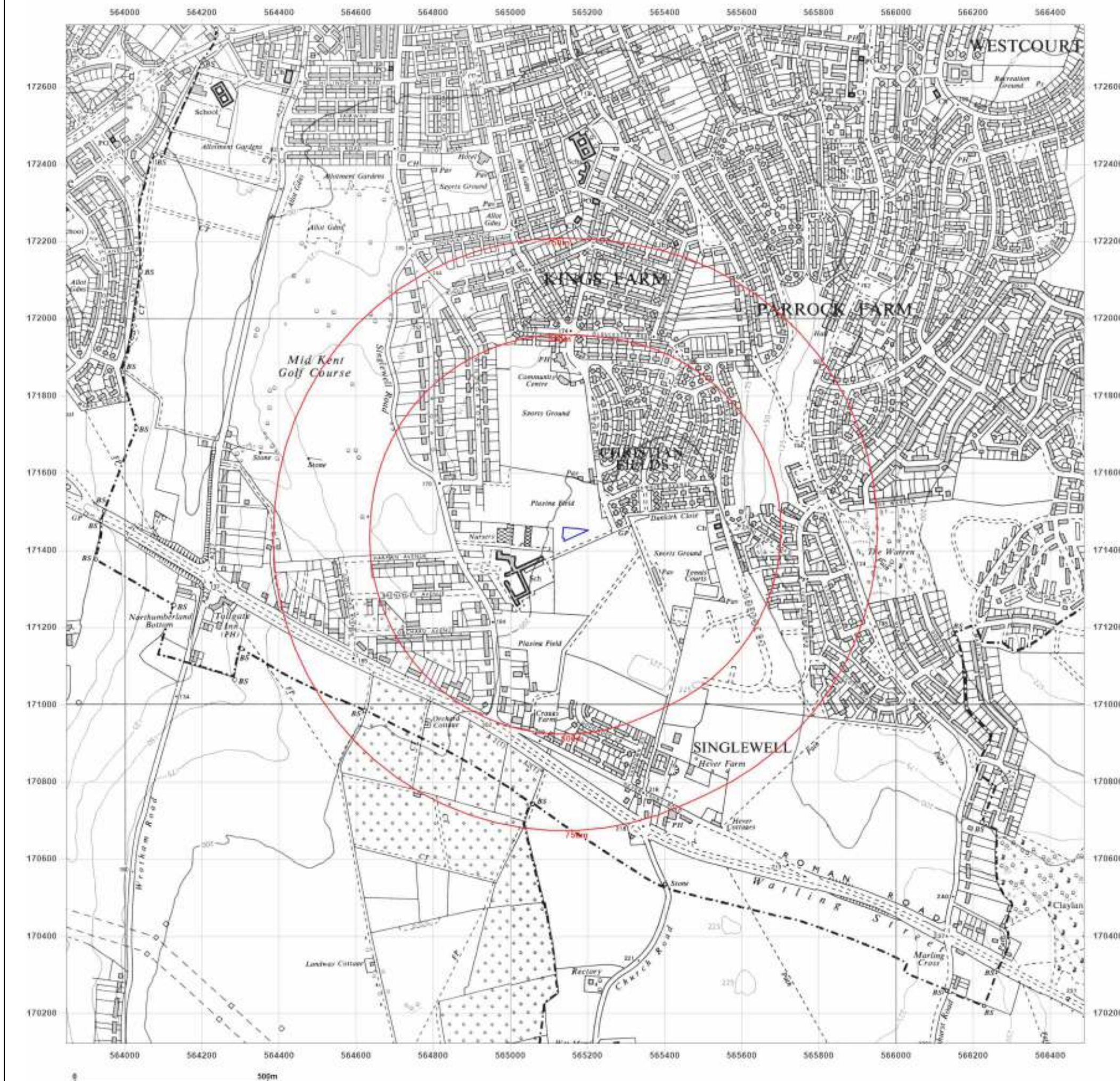


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1971-1973

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A

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

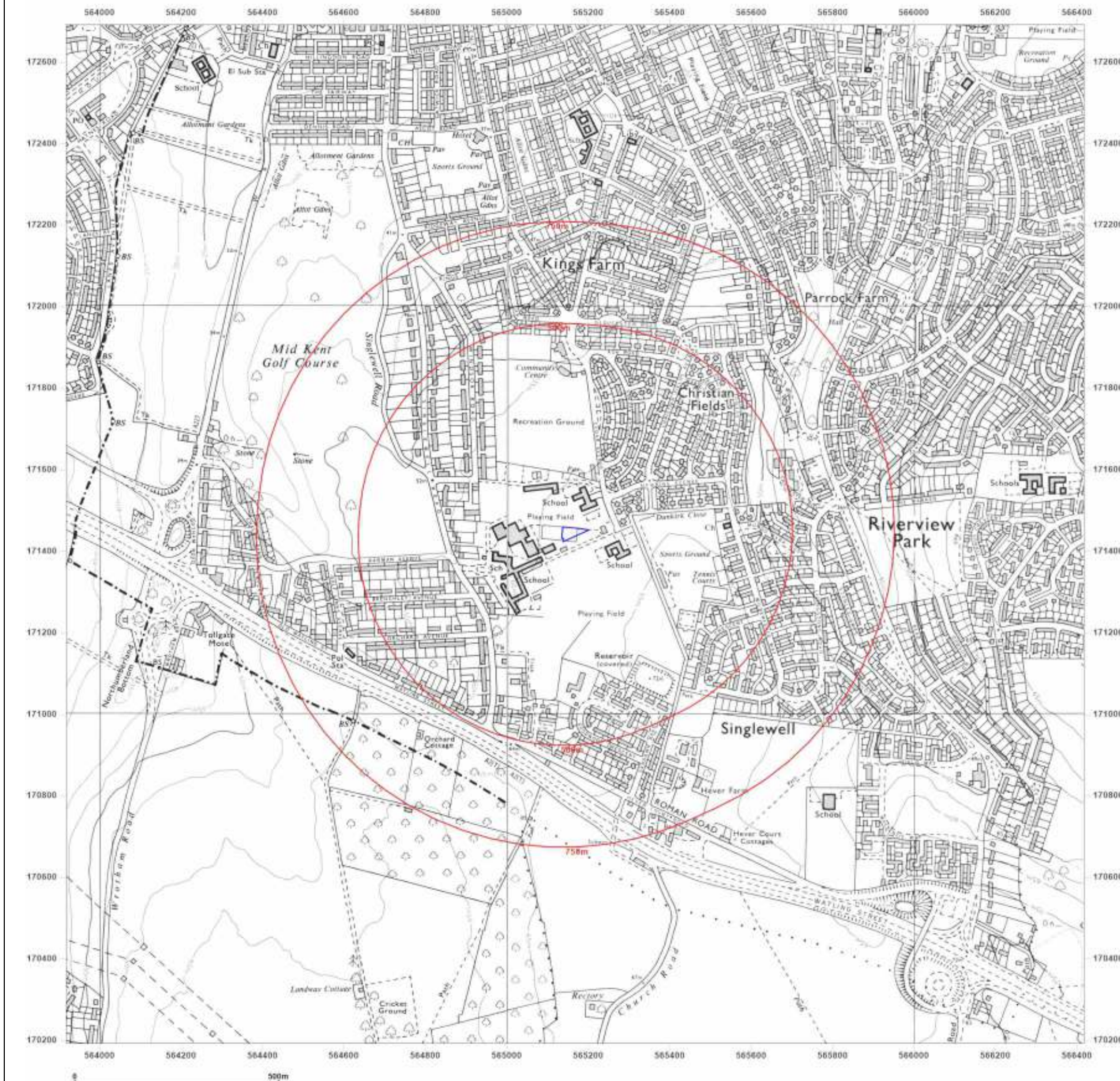


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1977-1981

Scale: 1:10,000

Printed at: 1:10,000



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

Surveyed 1980
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

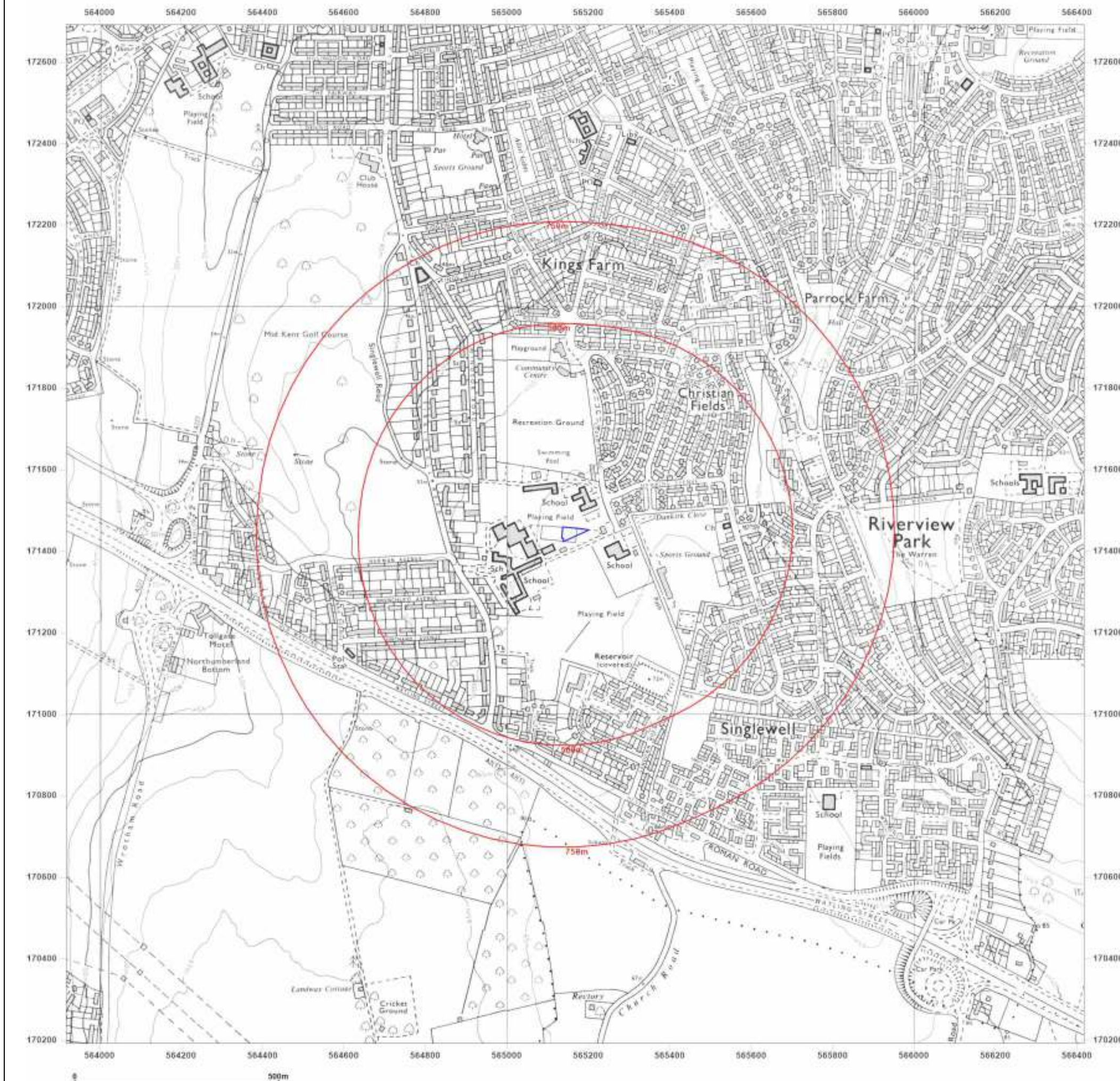


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 1990

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1988
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

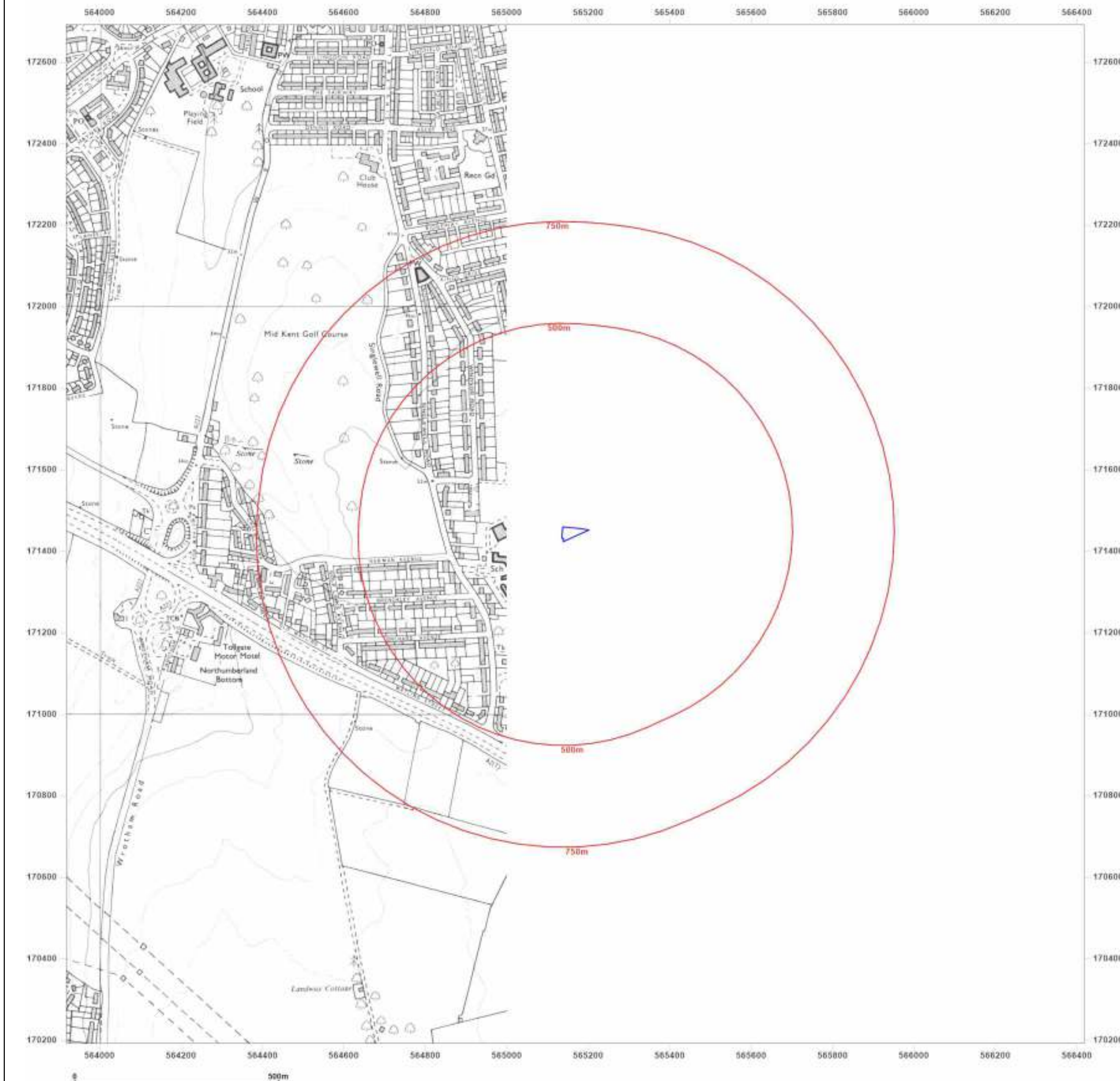


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Client Ref: 24-06-12
Report Ref: GS-50E-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

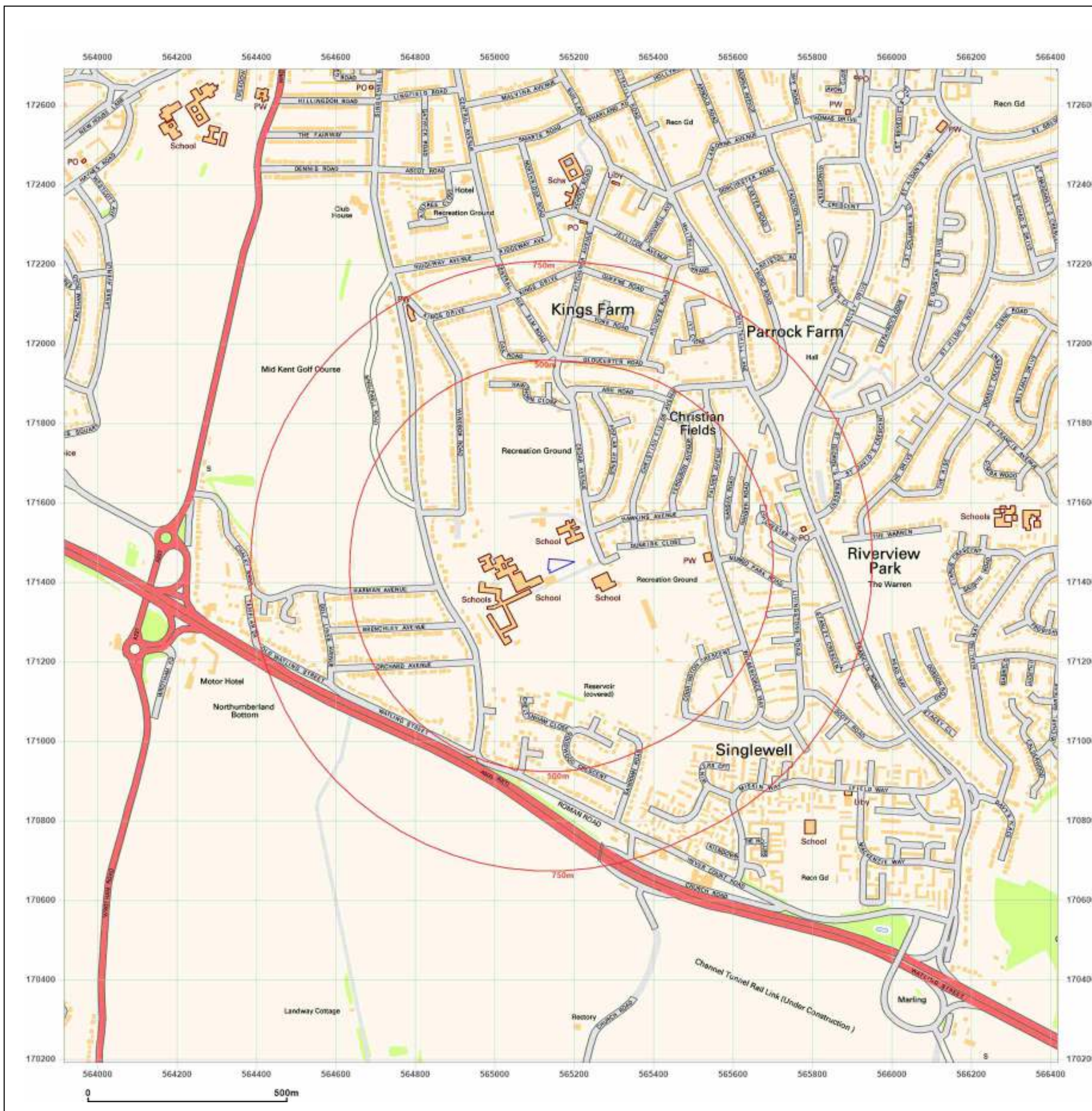


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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

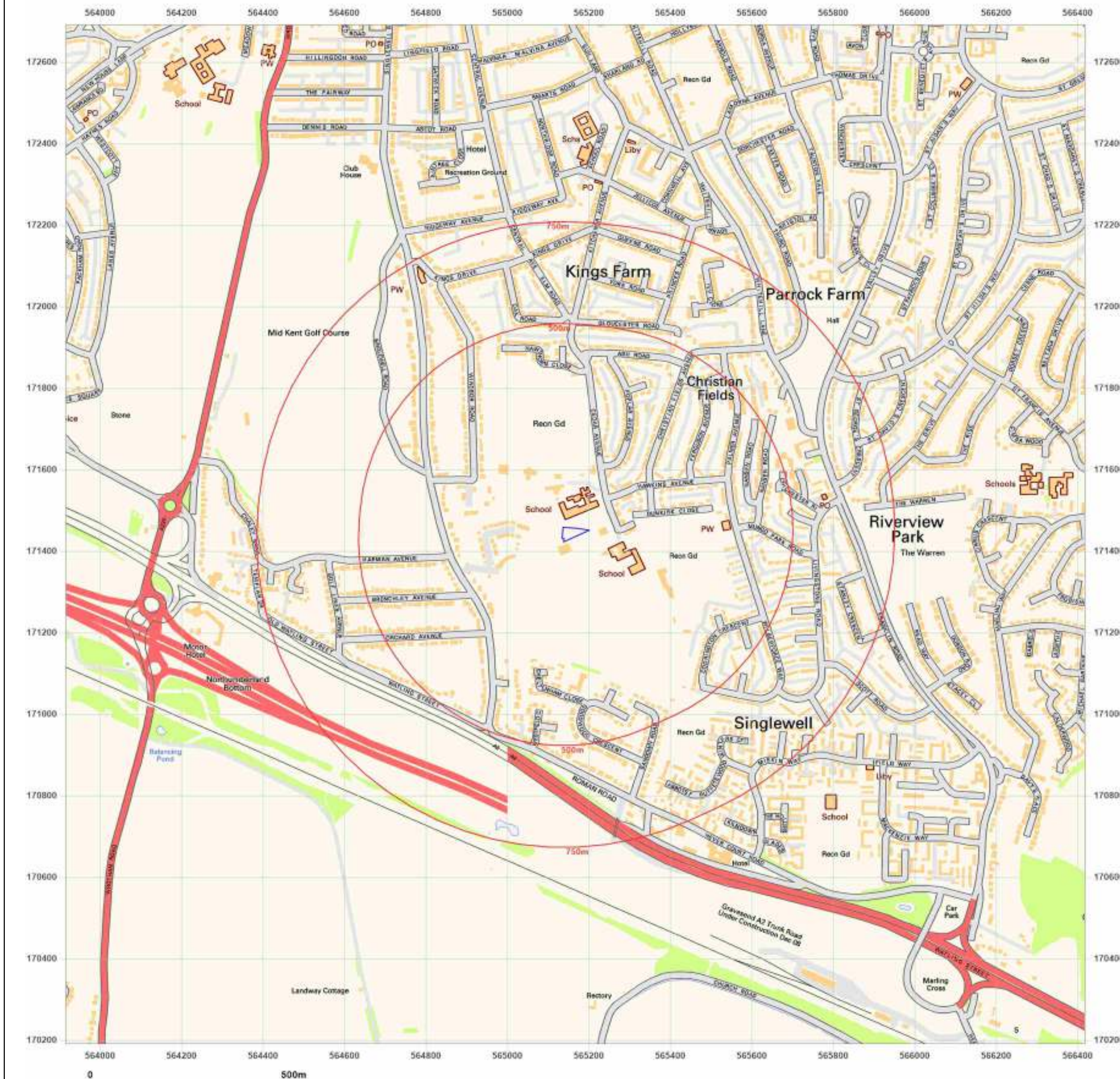


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Site Details:

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Client Ref: 24-06-12
Report Ref: GS-5OE-4UE-225-RGI
Grid Ref: 565167, 171441

Map Name: National Grid

Map date: 2024

Scale: 1:10,000

Printed at: 1:10,000



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