



Environmental Report

Nobel Drive, Harlington, Hayes, Heathrow, UB3 5EY.
for:

Planning and Consulting Limited

'Experience and expertise working in union'

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For:	Planning and Consulting Limited
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Executive Summary

Proposed Development

The site is to be converted from offices and car parking on the lower ground floor the residential flats with car parking on the lower ground floor surrounded by soft landscaping are proposed.

Investigation

Site works were undertaken by Enzygo Ltd. in February 2017, together with monitoring visits and preliminary soil infiltration testing.

Ground Conditions

Ground conditions comprise Made Ground over Taplow Gravel and in turn London Clay. Groundwater was encountered during drilling at 2.90mbgl and recorded in the installation at 2.72mbgl.

Contamination

No contamination was encountered above the GAC values for residential without garden uptake.

Re-use of Materials

Made Ground is not considered suitable for re-use as general fill.

Gas and Radon

Gas monitoring recorded characteristic situation 1 conditions and no gas precaution measures are required. No radon risk has been identified.

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1.0 INTRODUCTION

Background

- 1.1 Enzygo Limited has been commissioned by Planning and Consulting Ltd to undertake a contamination investigation for a site at Nobel Drive, Harlington, Hayes, Heathrow, UB3 5EY.

Proposed Development

- 1.2 The site is to be converted from commercial offices into residential use with associated garden areas and infrastructure. The existing site plan supplied by Planning and consulting Limited, which has been incorporated in to the site plan presented as Drawing CRM.1398.001.GE.D.001.

Objectives

- 1.1 The objectives of the study are to:
- Undertake desk study, a copy of desk study information is included within Appendix A;
 - Undertake a Ground investigation;
 - Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
 - Provide a factual and interpretative report relating to the desk study and site investigations. Provide a revised conceptual model and recommendations on any potential development issues and mitigation measures, where appropriate.

Risk Classification

- 1.2 Enzygo has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table:

Risk	Description
Negligible	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

2.0 SITE SETTING

Site Description

Item	Description
Site Address	Nobel drive, Harlington, Hayes, Heathrow, UB3 5RY
National Grid Reference	509163,176989
Site Area	2.24 ha

Current Site Description

- 2.1 The following site description has been compiled from the site inspection, together with current maps, aerial photographs and a topographical survey.
- 2.2 The site comprises a three 4 storey office blocks surrounded by communal landscaping and car parking.
- 2.3 Two electrical substations are shown on site located to the north west of building 4 and north of building 2. A separate backup generator is also shown to the north of building 2. Both the substations are of modern construction and are sealed units. Drainage networks were shown in the car parking.
- 2.4 The site is accessed of Nobel Drive which is located to the east of buildings 3 and 4 and in-between buildings 3 and 4.
- 2.5 The site is generally level with a slight gradient to the east.

Surrounding Area

- 2.6 The surrounding land uses are summarised as follows:

Direction	Land Use
North	Site boundary and fields.
West	Site boundary and fields.
East	Hotel ibis and Bowling alley and residential units associated with Nobel Drive and David's Close.
South	Bath Road, residential unit, Car hire offices and car parking, with Heathrow Run way beyond.

- 2.7 No evidence of contamination sources was noted adjacent to the site.

3.0 SITE HISTORY

Historical Maps

- 3.1 A review of historical Ordnance Survey maps and information pertinent to the site and within a 250m radius is summarised below:

Potentially Contaminative Historical Land Use		
Map Edition	Site	Surrounding Area
1865 -1881	Field and trees to the west of the site.	Site area shown as Harlington corner comprises a few scattered houses and the Crown Inn 20m SW. A road is shown 0m S. Plantation wood 0m N. Field 0m E. Earthworks 200m and 250m SE.
1895	All trees.	Terraced house with associated wells 20m S. Residential house 0m SE and building 0m NE. 3 ponds 110m SE to 150m SE. 3 ponds 200m SE.
1913-1914	No changes.	Scattered residential houses south side of road up to 100m S.
1932	Vacant site no trees shown	Sport Ground 100m W. Gravel pit 150m SE. Possible earthworks associated with gravel pit 20m SE (pond). 3 ponds 200m infilled with houses and gardens.
1935	No changes.	Sports ground shown as Greyhound Stadium. Pond 120m S. Gravel pit enlarged 90m SE to 500m SE.
1965-1966	William Byrd County Primary School (southern part of site). playing fields (northern part of site). Three earthworks bunds shown on southern boundary of playing fields (centre of site).	Road 0m S shown as Bath Road. Greyhound stadium disused. Gravel pit in the south east not shown infilled with Vacant land and commercial units. Builders yard 100m SE. Northern Perimeter Road 110m S. Approach lights for Heathrow airport 110m SE, 20m S and 10m W. Heathrow Airport shown 250m SW and 500m S.
1974	No changes.	Bowling Alley replaces Stadium. Commercial units 20m S. Electrical substation 20m S. Contractors yard 80m SW. Parking 20m SW. Argonaut House 150m SE.
1987	Vacant site (primary school not shown)	Ibis Hotel 10m W.
1990	Current development	Caroline Place and David Close and residential units 20m NW. Gravel pit 10m E and 10m NE
2002-2014	No significant changes	Gravel pit not shown in 2002 presumed infilled.

- 3.2 The site has been remodelled a number of times and Made Ground may be to present underneath the site. The potential presence of Made Ground requires contamination testing to be undertaken as part of the investigation.
- 3.5 The presence of gravel pit to the north and east of the site. The exact date of the infilling cannot be obtained from historical maps or goggle images although it appears as fields post the gravel pit indicating it has been infilled. Given the presence of landfill gas monitoring is

recommended as part of the investigation and contamination testing should be undertaken on the northern and eastern boundary of the site.

4.0 ENVIRONMENTAL SETTING

Ground Conditions

- 4.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

Geological Unit	Type	Descriptions	Aquifer Classification
Drift.	Langley Silt	Silt and Clay.	Unproductive
	Taplow Gravel (northern and eastern site Boundary)	Gravel	Principal
Solid.	London Clay	Clay	Unproductive

- 4.2 Made Ground is identified on the site by the BGS immediately to the north and east of the site and further to the south and is identified as infilled materials, which is likely to associated with extraction of the Taplow Gravel identified on the historical plans.
- 4.3 There are no records of landslips on the site.
- 4.4 Records of background soil chemistry do not indicate any elevated concentrations above residential GAC values
- 4.5 There are no faults on or surrounding the site.
- 4.6 BGS borehole records close to the site confirm Made Ground over gravel and clay consistent with the Taplow gravel over London Clay.

Groundwater

- 4.7 The permeability of the Langley Silt is recorded as low to very low and has a mixed flow which reflects the mixed nature of these materials. The permeability of the Taplow Gravel is recorded as very high to high and has an intergranular flow which reflects the high granular nature of the materials. The Permeability of the solid geology is recorded as high to moderate and has a mixed and fracture flow which represents the sands band generally encountered within the upper sections of the London Clay.
- 4.8 The Ground Sure Report indicates the site is not located within a Source Protection Zone.
- 4.9 There are three groundwater abstraction licenses within 500m of the site with the closest being 139m south west used for process waters and from a borehole. The other two are also

used for process water and from boreholes. All of these wells are last shown as used in 2008. Given the distance of these and the unknown depth of the boreholes these may be considered as viable receptors although they are likely to be from the underlying chalk at depth.

- 4.10 BGS records show that the site is moderate risk of groundwater flooding associated with the superficial gravels. However, given no below ground works are proposed the risk has been dismissed.

Coal Mining

- 4.11 The groundsure report has identified that the site is not within an area of potential coal mining.

Non Coal Mining and Cavities

- 4.12 The groundsure report has identified no non-coal mining activities or cavities within 500m of the site.

Ground Workings

- 4.13 No ground workings are shown other than those identified from historical maps in Section 3. The majority of these are associated with ponds and gravel extraction with the closest recorded as 49m south east. Information from the Ground sure report indicates historical gravel extraction associated with Cranford Lane South is shown as ceased and 179m north. This is the centre of the workings however the boundary of the gravel extraction is extending to 1m north and east of the site. Given the distance of these working to the north and east of the site and the subsequent infilling of these working gas monitoring will be undertaken as part of the investigation to assess if any gases are migrating from these backfilled workings. The risk from the ponds has been dismissed given the distance to the site.
- 4.14 No other risks are identified from the ground workings.

Hydrology

- 4.15 There are no surface water courses on site or within 500m of the site.
- 4.16 There is no surface water abstractions within 1000m of the site.
- 4.17 Environment Agency records show that the site is not located within a flood risk zone.

Radon Risk Potential

- 4.18 The Groundsure GeoInsight Report indicates that the site is situated within an area where no Radon protective measures are necessary.

Natural Hazards Finding

- 4.19 BGS information presented within the Groundsure report identified the following ground conditions:

Hazard	Risk Designation (Groundsure)
Coal Mining	None identified.
Collapsible Ground	Very low to low.
Compressible Ground	Negligible to moderate.
Ground Dissolution	Negligible.
Landslide	Very low.
Running Sand	Negligible.
Swelling / Shrinking Clay	Negligible to very Low.

- 4.20 The moderate compressible ground risk is associated with the materials 1m east of the site and associated with the Taplow Gravel which have been removed and replaced with infilled materials. Given no instructive works are being undertaken in this area off site the moderate compressible risk is dismissed.
- 4.21 No other significant risks are identified.

Sensitive Land Uses

- 4.22 The site comprises office blocks which is surrounded by landscaping and hardstanding and is therefore considered to be of low sensitivity.
- 4.23 No historical features are identified on the site.

Environmental Sensitivity

- 4.24 Overall the site is currently considered to be of **moderate** environmental sensitivity due to the following:
- The underlying stratum is designated as a un productive Aquifer.
 - There are no water courses close to the site,
 - The site is not located within a source protection zone;

- Three un used groundwater abstractions within 500m of the site; and
- No ecological designations on the site.

4.25 The proposed end use of the site is for residential end use with communal gardens and hardstanding. As such future sensitivity will be high for end users.

Industrial Land Uses

- 4.26 There are no significant industrial land uses within 250m of the site. Land uses are limited to electrical substation, car hire units and lighting for the run way. Given the modern construction of the electrical substations these are not considered a risk to the site.
- 4.27 The Groundsure Report indicates that there are no fuel stations within 500m of the site.
- 4.28 Records indicate no high pressure underground oil or gas pipelines within 250m of the site.
- 4.29 No new risks are identified from the register of industrial land uses.

Regulatory Database

4.30 The following information has been obtained from a commercially available environmental database.

Environmental Permits, Incidents and Registers	0 -250m	250-500m	Details
Site determined as contaminated land	0	0	Not applicable.
Authorised industrial processes	0	1	490m SE Hawker pacific aerospace ltd Revoked licence. No risk to the site.
Registered radioactive substances	0	1	490m SE British Airways Plc disposal of radioactive materials superseded and revoked. No risk to the site.
Enforcements, prohibitions or prosecutions	0	0	Not applicable.
Pollution Incidents	0	1	490m SE British Airways Plc disposal of contaminated waters into public sewer in 2016. No risk to the site.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	Not applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites	0	0	Not applicable.

Records of Licensed Discharge Consents	0	1	490m SE British Airways Plc disposal of contaminated waters into public sewer in 2016. No risk to the site.
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4.31 No significant risks are identified from the regulatory data base.

Landfill Sites and Waste Treatment Sites

4.32 No current landfills are identified within 500m of the site.

4.33 There are a number of historical landfills within 250m of the site. These are listed below:

Location	Address	Description of waste	Classification of risk
9m East	Henry Streeter South of Cranford Lane	Non Bio-gradable Inert Wastes (last dated 1955)	Gas monitoring will be undertaken as part of the investigation
437m North (extends of 1m North)	The gravel Pit, High Street Harlington	Inert (last dated 1989)	Gas monitoring will be undertaken as part of the investigation
18m South	Northern Perimeter Road, Cranford, Hounslow	Inert (last dated 1945)	Gas monitoring will be undertaken as part of the investigation
169m West	Land to rear of Airport Bowl	Unknown	Given the distance the risk of gas migration is reduced, however Gas monitoring will be undertaken.

4.34 Given landfills have been identified surrounding the site it is recommended that gas monitoring should be undertaken as part of the investigation. Given the presence of impact of the landfill surrounding the site this will have affected the quality and reduced the value of the surrounding groundwater.

4.33 One waste transfer station (Landfill taking non bio-gradable waste) is located within 439m north of the site. This was licensed to accept less than 25000 tonnes of non bio-gradable waste up until 1993. There are no records of spillages or enforcements associated with this licence. Given the recorded distance this is not considered a risk to the site, however the landfill extends to southwards to the site and therefore will need consideration. Gas generation and migration could occur and it is therefore recommended that gas monitoring is undertaken as part of the investigation.

4.34 No other new risks are identified from waste activities.

5.0 PRELIMINARY CONCEPTUAL MODEL

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, metals and hydrocarbons.	Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users	Negligible.	No significant source identified
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Negligible.	No significant source identified
Asbestos, metals and hydrocarbons.	On-site sources other than the Made Ground	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Negligible.	Landfill to the north and east.
			Site users.		
Ground Gas.	Landfill.	Inhalation & Explosive.	Construction Workers.	Negligible.	Inert Landfill 0m N and E. Gas monitoring proposed as part of investigation.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No putrescible material identified.
			Site users.		
Radon.	Natural.	Inhalation	Site users.	Dismissed	No radon protection measures required.
Groundwater					
Hydrocarbon and metals.	Unforeseen Contamination.	Vertical Migration.	Groundwater.	Negligible.	No significant on site source.
Surface Water					
Hydrocarbon and metals.	Unforeseen Contamination.	Horizontal Migration.	River Network.	Dismissed.	No receptor.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	None present.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	None present.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors.
		Direct.	Proposed Buildings.	Dismissed.	No sources identified.
		Permeate into pipework.	Water Pipes.	Negligible.	No significant sources identified.

5.1 There is a negligible risk associated with unforeseen contamination such as inclusions of foreign material within soils.

- 5.2 There is a negligible risk associated with the inert Landfills to the north and east of the site and Made ground on site. Gas monitoring and chemical analysis are proposed as part of the investigation.

6.0 GROUND CONDITIONS

Summary of Ground and Groundwater Conditions

6.1 The Enzygo investigation identified the following strata:

Strata	Summary Description	Thickness (m)
Made Ground (Hard landscaping)	Up to four layers of brick pavements, (70mm thick) or tarmac (100mm thick) over orange and brown gravelly sand over pinkish brown sandy gravel. (locally overlain by a layer of concrete 110mm thick).	0.27m to 0.70m
Made Ground (soft landscaping)	Up to two layers of topsoil like materials comprising brown to dark brown silty sandy clay with roots, locally overlain by ornamental gravel (100mm thick) and locally underlain by pinkish brown sandy gravel.	Up to 0.60mb
Langley Silt	Not encountered during the investigation.	N/a
Taplow Gravel	Very dense orange brown clayey sandy sub-angular to subrounded fine to coarse gravel of flint with occasional fine cobbles. Locally becoming sandy below 1.00mbgl.	3.15
London Clay	Firm becoming stiff orange brown clay becoming brown and grey silty clay with depth	In excess of 1.50m
Groundwater	Seepage at 2.90mbgl	

6.2 Details of the ground and groundwater conditions encountered are given on the exploratory hole records included in Appendix B and are summarised in the sections below:

Made Ground

6.3 Made Ground was noted to comprise either brick paving, (70mm thick) or tarmac (100mm thick) over orange and brown gravelly sand over pinkish brown sandy gravel. In Borehole WS1 a layer of concrete 110mm thick was encountered below the gravelly sand. These materials were proved to depths ranging from 0.27mbgl to 0.70mbgl.

6.4 In soft landscaping areas surrounding the building and hardstanding the materials comprise Up to two layers of topsoil like materials comprising brown to dark brown silty sandy clay with roots, locally overlain by ornamental gravel (100mm thick) and locally underlain by pinkish brown sandy gravel. These materials were proved to depth up to 0.60mbgl.

Langley Silt

6.5 Although identified on the Geological sheet and within the Groundsure Report these materials were not encountered on site and have been replaced by the Taplow Gravels.

Taplow Gravel

- 6.6 These materials were encountered below the Made Ground across the entire site and comprised very dense orange brown clayey sandy sub-angular to subrounded fine to coarse gravel of flint with occasional fine cobbles. In Boreholes WS1, WS2 and WS4 these materials become sandy below 1.00mbgl. The thickness of these materials was proved in Borehole WS3 which confirm the Taplow Gravel was proved to 3.65mbgl.

London Clay

- 6.7 London Clay was encountered below the Taplow Gravel and comprised stiff grey clay. A weathering profile was encountered above the stiff grey clay and comprised firm becoming stiff orange brown becoming dark brown oxidised clay. This weathering profile was proved from 3.65mbgl to 3.90mbgl.

Visual and Olfactory Evidence of Contamination

- 6.8 No visual or olfactory evidence of contamination was encountered during the site works other than the presence of spoil materials excavated from the adjacent excavation on site.

Groundwater

- 6.9 Groundwater was encountered as a seepage at 2.90mbgl in Borehole WS3 and towards the base of the Taplow Gravel.
- 6.10 Results of subsequent monitoring rounds are summarised below:

Exploratory Hole	Depth m(bgl)			
	27-02-17	10-03-17	17.03.17	23.03.17
WS1	Dry	2.73	2.72	2.75
WS2	Dry	Dry	Dry	Dry
WS3	2.90	Dry	Dry	Dry
WS4	Dry	Dry	Dry	Dry
WS5	Dry	Dry	Dry	Dry

- 6.11 Results of monitoring indicates that a groundwater seepage was encountered in the Taplow Gravel at depths ranging from 2.72m bgl to 2.90mbgl.

Ground Gas

- 6.12 Ground gas was monitored during the return visit and the results are summarised on the table below:

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
10-03-17							
WS1	1008	0.1	<0.1	<0.0001	0.2	<0.0002	20.1
WS2	1008	0.1	<0.1	<0.0001	0.1	<0.0001	20.5
WS3	1008	0.1	<0.1	<0.0001	0.1	<0.0001	21.2
WS4	1008	0.1	<0.1	<0.0001	0.1	<0.0001	21.4
WS5	1008	0.1	<0.1	<0.0001	0.1	<0.0001	21.2
17-03-17							
WS1	1018	0.1	<0.1	<0.0001	0.3	<0.0003	20.0
WS2	1018	0.1	<0.1	<0.0001	0.2	<0.0002	20.1
WS3	1018	0.1	<0.1	<0.0001	0.1	<0.0001	21.2
WS4	1018	0.1	<0.1	<0.0001	0.1	<0.0001	21.2
WS5	1018	0.1	<0.1	<0.0001	0.1	<0.0001	21.3
23-03-17							
WS1	1016	0.1	<0.1	<0.0001	0.2	<0.0002	20.8
WS2	1016	0.1	<0.1	<0.0001	0.3	<0.0003	21.0
WS3	1016	0.1	<0.1	<0.0001	0.1	<0.0001	21.3
WS4	1016	0.1	<0.1	<0.0001	0.1	<0.0001	21.3
WS5	1016	0.1	<0.1	<0.0001	0.1	<0.0001	21.3

6.13 Where gas concentrations exceed 1% by volume Methane or 5% by volume Carbon Dioxide the concentrations are coloured yellow. If concentrations are lower the values are coloured green. Where gas flux meets characteristic situation 1 the GSV is coloured green. The GSV is coloured yellow for Characteristic Situation 2 and red for Characteristic Situation 3 and above.

7.0 CONTAMINATION ASSESSMENT

General

- 7.1 A Tier I risk assessment has been undertaken using available and current screening values for human health. The assessment has been undertaken using the results from the Enzygo Ltd investigation.
- 7.2 Where significant risks are identified remedial measures are recommended.

Human Health

- 7.3 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4ULs values are used and summary tables of the reference values are included in Appendix C.
- 7.4 Where an exceedance is identified the risk is assessed by considering the sensitivity of the proposed development and the potential pathway. The proposed development is for flats surrounding by communal landscaping. As such the GAC values for residential use without plant uptake are used.
- 7.5 No asbestos fibres were noted.
- 7.6 The soil quality shows no exceedance of the reference values for residential use without plant uptake.

Controlled Waters

- 7.7 Where groundwater samples have been analysed the results are compared against reference values. These reference values are summarised in Appendix C and are taken from Fresh Water Environmental Quality Standards (EQS), UK Drinking Water Standards and World Health Organisation (WHO) values for Drinking Water.
- 7.8 Where the controlled waters receptor is a surface water course then the EQS are used as the primary reference value. Drinking Water Standards and WHO values are used where EQS values are not available. An assessment of likely risk is then made based on a source-pathway-receptor model. Where the receptor is potable groundwater resources the Drinking Water Standards and WHO values are used.

- 7.9 Risk to groundwater has been reassessed given that the Langley Silt was not encountered on site and was replaced by the Taplow Gravel which is classified as a Principal Aquifer. Given that no exceedance of the GAC values were noted and no hydrocarbon source has been encountered the risk to groundwater resources is dismissed. The landfills to the north and east will have impacted the quality of the groundwater and the value of the groundwater.
- 7.10 Risk to surface waters was dismissed within the Preliminary Conceptual Model and no new risks or sources have been identified therefore the risk is dismissed.

Ground Gas

- 7.11 Following the guidance provided in CIRIA C665 an initial assessment is undertaken to determine if there are any significant sources of potential ground gas. Such sources include landfills, organic clays and made ground incorporating putrescible materials such as rags, paper and wood. Where no significant source is identified no further assessment is necessary.
- 7.12 Where significant potential risk from ground gas has been identified from the Initial Conceptual Model and the intrusive ground investigation works ground gas monitoring is undertaken and the results of the monitoring are compared against the Gas Screening Values given in CIRIA Report 665. From this the Characteristic Situation is identified and remedial measures proposed.
- 7.13 When assessing the risk and type of remedial measures appropriate consideration is given to the likely construction of the development, the nature of the gas posing a risk and the nature of the likely source. The use of engineering judgement when determining risk from ground gas is consistent with the recommendations given in CIRIA C665. No significant sources of ground gas were noted from the desk study. Made Ground was encountered on site but this did not include significant putrescible materials and there is a negligible gas risk from the landfills to the north and east of the site.
- 7.14 Gas monitoring was undertaken during a return visits to monitor groundwater levels. Ground gas has not recorded significant elevated concentrations of Methane or Carbon Dioxide and no detectable gas flow rates have been measured.
- 7.15 Based on the gas monitoring Characteristic Situation 1 is considered appropriate and no gas precautions measures are required.

Revised Conceptual Model

- 7.16 The Initial Conceptual Model presented in Section 6 has been revised based on the findings of the ground investigation and the revised Conceptual Model is presented below:

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, metals and hydrocarbons.	Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No exceedance of GAC.
			Site users.		
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Negligible.	Discovery strategy.
Metals and hydrocarbons.	Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No exceedance of GAC.
			Site users.		
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No Source.
			Site users.		
Ground Gas.	Made Ground.	Inhalation & Explosive.	Construction Workers.	Dismissed.	Characteristic situation 1 recommended. No Gas precaution measures required
			Site users.		
	Landfill	Inhalation & Explosive.	Construction Workers.		
			Site users.		
Radon.	Natural.	Inhalation	Site users.	Dismissed.	No radon protection measures required.
Groundwater					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No on site Source.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No receptor.
Environmental Receptors					
On site contaminants.		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	None present.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	None present.
Building Services					
On site contaminants.		Direct.	Historic Buildings.	Dismissed.	No receptors.
		Direct.	Proposed Buildings.	Dismissed.	No sources identified.
		Permeate into pipework.	Water Pipes.	Dismissed.	No sources identified.

Remediation and Verification Strategy

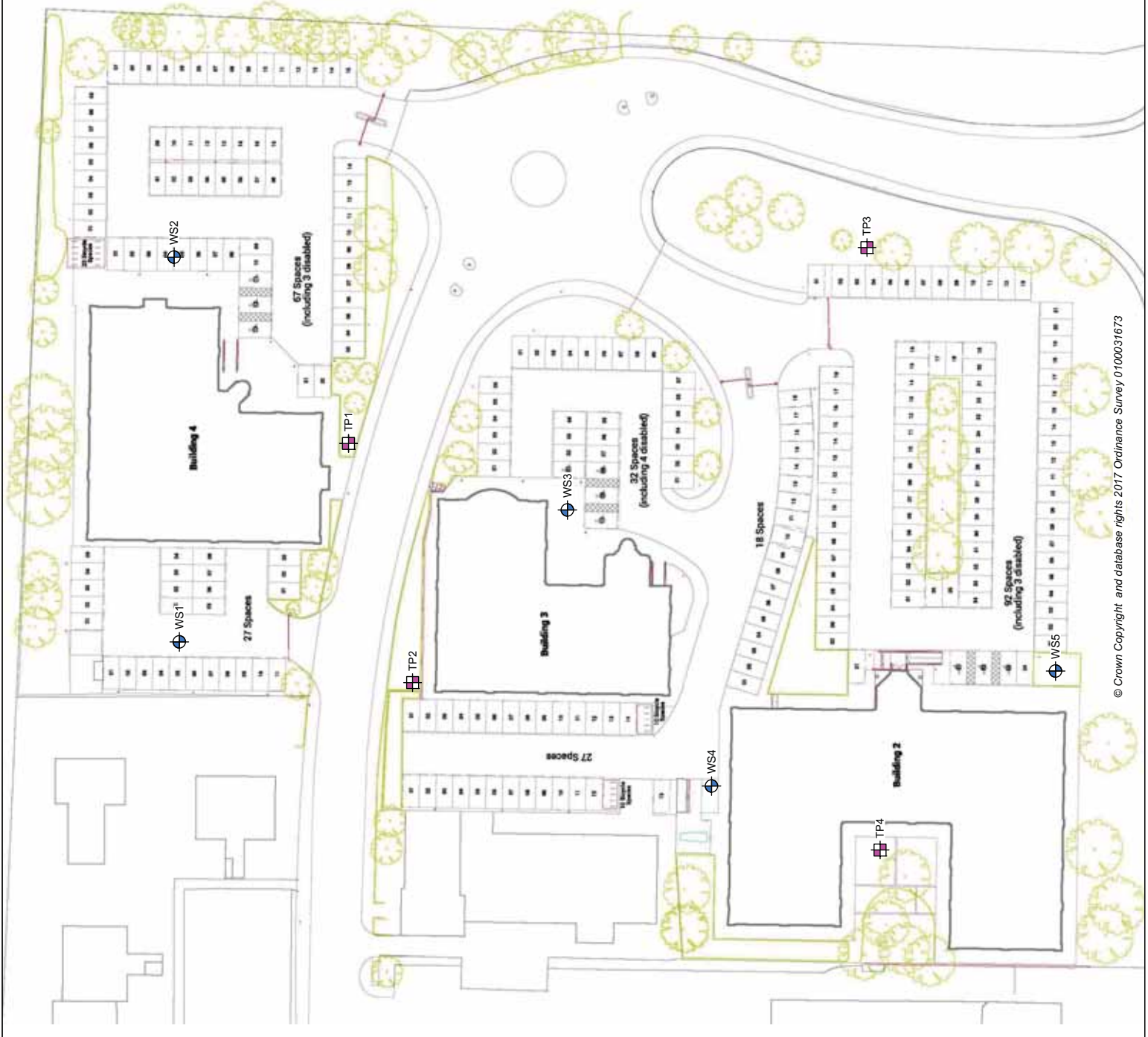
- 7.17 No remediation is recommended.
- 7.18 If unforeseen contamination is encountered during construction works such as localised spillage outside the areas investigated an Environmental consultant will be available on a 'call out' basis to undertake an assessment of risk based on discovery strategy. If 'unforeseen contamination' is encountered the discovery strategy will be to remove the source as it is likely to be very limited in extent and the Local Planning Authority advised.



Key



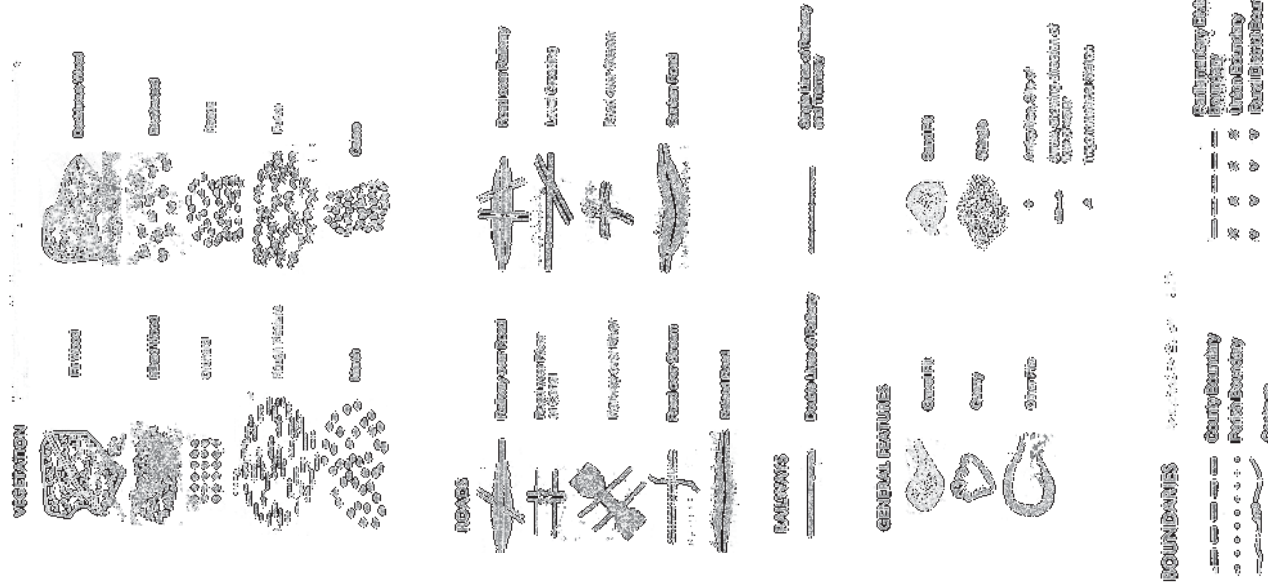
Window Sampler Location (WS)
(WS1 - WS5)
Trial Pit (TP)
(TP1 - TP4)



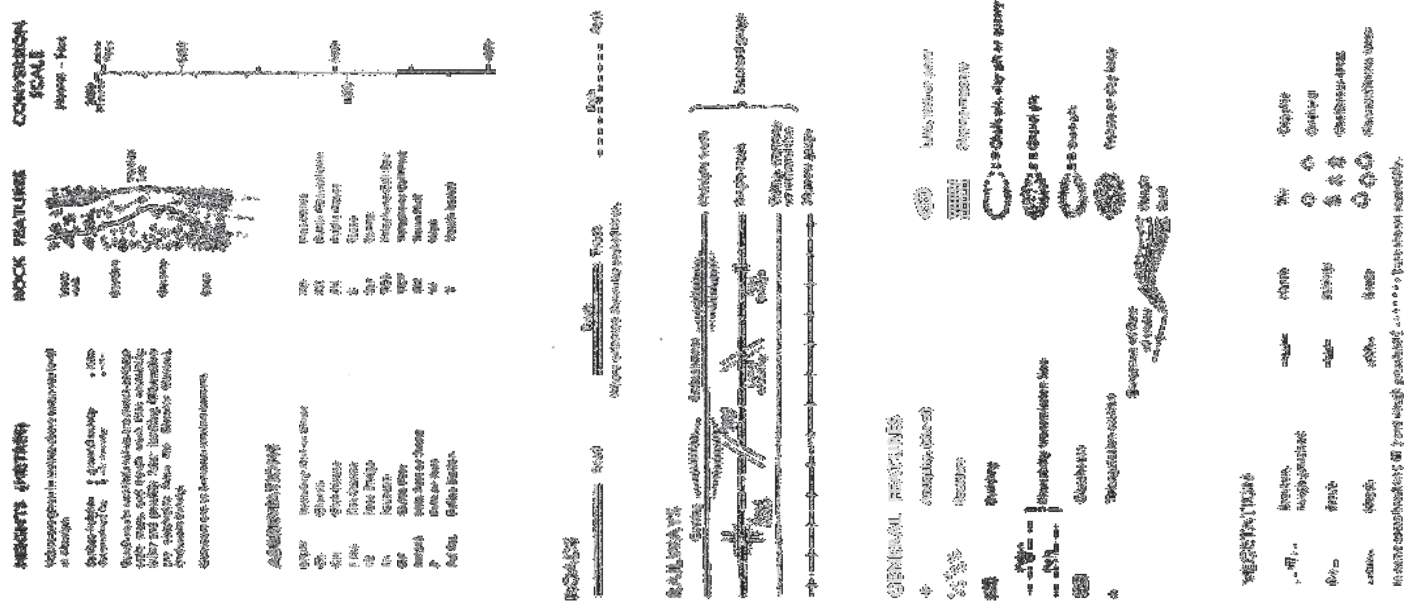
Samuel House, 5 Fox Valley Way, Stockbridge, Sheffield, S36 2AA

Planning and Consulting Ltd			
SCALE:	1:600@A3	PROJECT REF:	CRM.1398.001
DRAWN:	NP	CHECKED:	RH
		DATE:	Mar 2017
		PROJECT:	Nobel Drive
		TITLE:	Location Plan
CRM.1398.001.GE.D.001			

County Series 1:10,560 scale



National Grid 1:10,000 scale



County Series & National Grid

1:10,560 scale

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Technical Helpline

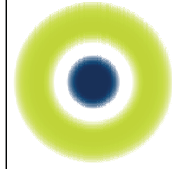
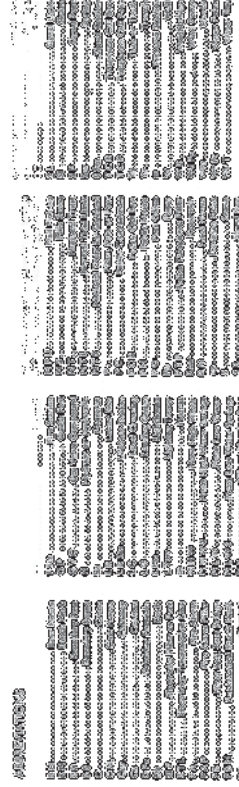
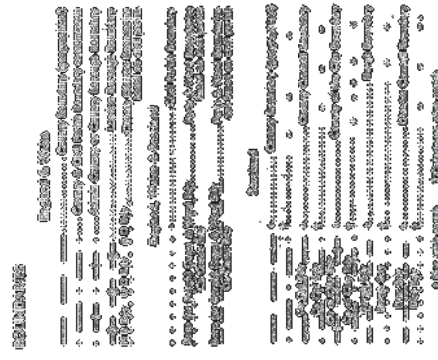
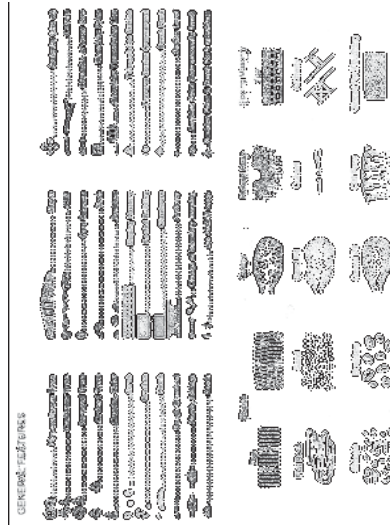
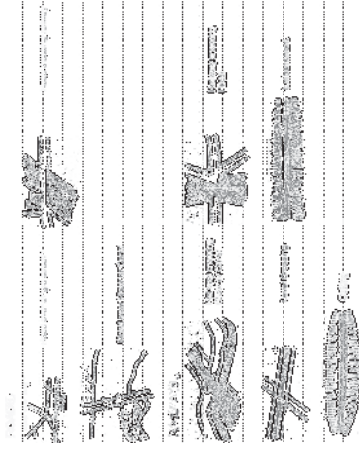
Tel 08444159000

groundsurreinsight@groundsurre.com

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

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



GroundSure

Historical Map Pack Legend

County Series

1:1,250 scale



County Series & National Grid

1:2,500 scale

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NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 509163,176989
Site Size: 2.24ha

Report Reference: EMS-408096_545459
Client Reference: EMS_408096_545459

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Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	5	25	22
1.2 Additional Information – Historical Tank Database	0	0	9	19
1.3 Additional Information – Historical Energy Features Database	3	4	14	21
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	1	0
1.6 Potentially Infilled Land	0	6	19	12

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	2
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	1	3	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	3
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	2
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	1	0	1	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	2	1	0	3	4
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	1
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	3	4	9

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	2	1	13	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology						
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	Yes					
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes					
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.						

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	2	1	1	8
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	1	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	0	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No					
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	No					
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low					
7.4 Are there any Flood Defences within 250m of the study site?	No					
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No					
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No					
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate					

Section 8: Designated Environmentally Sensitive Sites

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

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	1
8.14 Records of Green Belt land	1	0	0	1	6	8

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

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

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

1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 52

ID	Distance [m]	Direction	Use	Date
1	17	S	Airport	1964
2A	20	SE	Sand and Gravel Works	1935
3A	21	S	Sand and Gravel Works	1938
4AD	36	SW	Saw Pit	1865
5AE	40	W	Saw Pit	1882
6	76	E	Airport	1959
7B	133	S	Airport	1974
8B	133	S	Airport	1987
9AG	137	S	Gravel Pit	1932
10C	173	E	Gravel Pit	1935
11C	173	E	Refuse Heap	1938
12AI	178	N	Gravel Pit	1987
13D	183	E	Unspecified Works	1970
14D	186	E	Unspecified Factory	1974
15D	187	E	Unspecified Factory	1987
16G	209	E	Unspecified Pit	1865
17AK	211	E	Unspecified Ground Workings	1882
18E	220	SW	Nursery	1912
19E	222	SW	Nursery	1912
20E	222	SW	Nursery	1935
21F	223	SW	Nursery	1938
22F	223	SW	Nursery	1932
23G	229	SE	Unspecified Tank	1935
24G	231	SE	Unspecified Tank	1938
25H	239	E	Unspecified Works	1970
26	240	W	Telephone Exchange	1974
27	240	E	Unspecified Works	1987
28Q	241	W	Unspecified Depot	1987
29H	246	SE	Unspecified Works	1974
30A	246	SE	Unspecified Warehouse	1987
31AL	251	SE	Unspecified Pit	1865
32C	257	SE	Unspecified Warehouse	1974
33	290	SE	Unspecified Warehouse	1987

34	293	SE	Unspecified Commercial/Industrial	1974
35Y	298	W	Telephone Exchange	1987
36I	304	NW	Smithy	1894
37I	304	NW	Smithy	1897
38	309	SE	Unspecified Works	1974
39AM	320	SE	Gravel Pit	1932
40	344	SW	Airport	1970
41J	345	SE	Unspecified Works	1987
42J	374	SE	Unspecified Works	1970
43K	410	SE	Unspecified Tank	1935
44K	411	SE	Unspecified Tank	1938
45K	411	SE	Unspecified Tank	1932
46L	424	SW	Sewage Tanks	1935
47L	424	SW	Sewage Tanks	1935
48L	426	SW	Sewage Tanks	1938
49L	436	SW	Sewage Tanks	1938
50M	436	W	Sewage Pumping Station	1935
51M	437	W	Sewage Pumping Station	1938
52AC	498	S	Electric Substation	1987

1.2 Additional Information – Historical Tank Database

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

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

28

ID	Distance (m)	Direction	Use	Date
53N	98	W	Unspecified Tank	1987
54N	98	W	Unspecified Tank	1986
55N	98	W	Unspecified Tank	1974
56G	232	SE	Unspecified Tank	1935
57G	233	SE	Unspecified Tank	1932
58D	235	E	Unspecified Tank	1990
59D	235	E	Unspecified Tank	1974
60D	235	E	Unspecified Tank	1993
61V	250	W	Unspecified Tank	1998
62O	263	W	Unspecified Tank	1998
63O	264	W	Unspecified Tank	1987
64O	264	W	Unspecified Tank	1986
65D	265	E	Unspecified Tank	1974
66	268	E	Unspecified Tank	1974
67H	281	E	Tanks	1990

68P	282	E	Unspecified Tank	1990
69H	282	E	Tanks	1997
70P	282	E	Unspecified Tank	1997
71Q	312	W	Unspecified Tank	1974
72Q	314	W	Unspecified Tank	1974
73Q	325	W	Unspecified Tank	1974
74K	408	SE	Unspecified Tank	1935
75K	408	SE	Unspecified Tank	1932
76L	421	SW	Sewage Tanks	1935
77L	421	SW	Sewage Tanks	1932
78L	432	SW	Sewage Tanks	1935
79L	432	SW	Sewage Tanks	1932
80	488	S	Unspecified Tank	1913

1.3 Additional Information – Historical Energy Features Database

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

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

42

ID	Distance (m)	Direction	Use	Date
81	0	On Site	Electricity Substation	1990
82R	0	On Site	Electricity Substation	1990
83R	0	On Site	Electricity Substation	1993
84S	19	S	Electricity Substation	1990
85S	19	S	Electricity Substation	1974
86S	28	S	Electricity Substation	1993
87T	50	W	Electricity Substation	1993
88T	51	W	Electricity Substation	1990
89S	53	S	Electricity Substation	1993
90N	100	W	Electricity Substation	1998
91U	154	E	Electricity Substation	1990
92U	155	E	Electricity Substation	1993
93U	156	E	Electricity Substation	1974
94	186	W	Electricity Substation	1998
95V	236	SW	Electricity Substation	1974
96W	237	SW	Electricity Substation	1987
97W	237	SW	Electricity Substation	1986
98W	237	SW	Electricity Substation	1998
99V	249	W	Electricity Substation	1974
100W	250	W	Electricity Substation	1987
101W	250	W	Electricity Substation	1986
102X	284	W	Electricity Substation	1972

103X	285	W	Electricity Substation	1990
104X	285	W	Electricity Substation	1988
105	294	W	Electricity Substation	1990
106Y	320	W	Electricity Substation	1974
107Y	321	W	Electricity Substation	1998
108Y	322	W	Electricity Substation	1987
109Y	322	W	Electricity Substation	1986
110	376	W	Electricity Substation	1998
111Z	387	NW	Electricity Substation	1972
112Z	388	NW	Electricity Substation	1988
113Z	388	NW	Electricity Substation	1990
114AA	480	W	Electricity Substation	1972
115AA	481	W	Electricity Substation	1988
116AB	481	NW	Electricity Substation	1972
117AB	482	NW	Electricity Substation	1988
118AB	482	NW	Electricity Substation	1990
119AC	497	S	Electricity Substation	1990
120AC	498	S	Electricity Substation	1973
121AC	499	S	Electricity Substation	1993
122AC	499	S	Electricity Substation	1997

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 1

ID	Distance (m)	Direction	Use	Date
123D	184	E	Motor Car Equipment Factory	1974

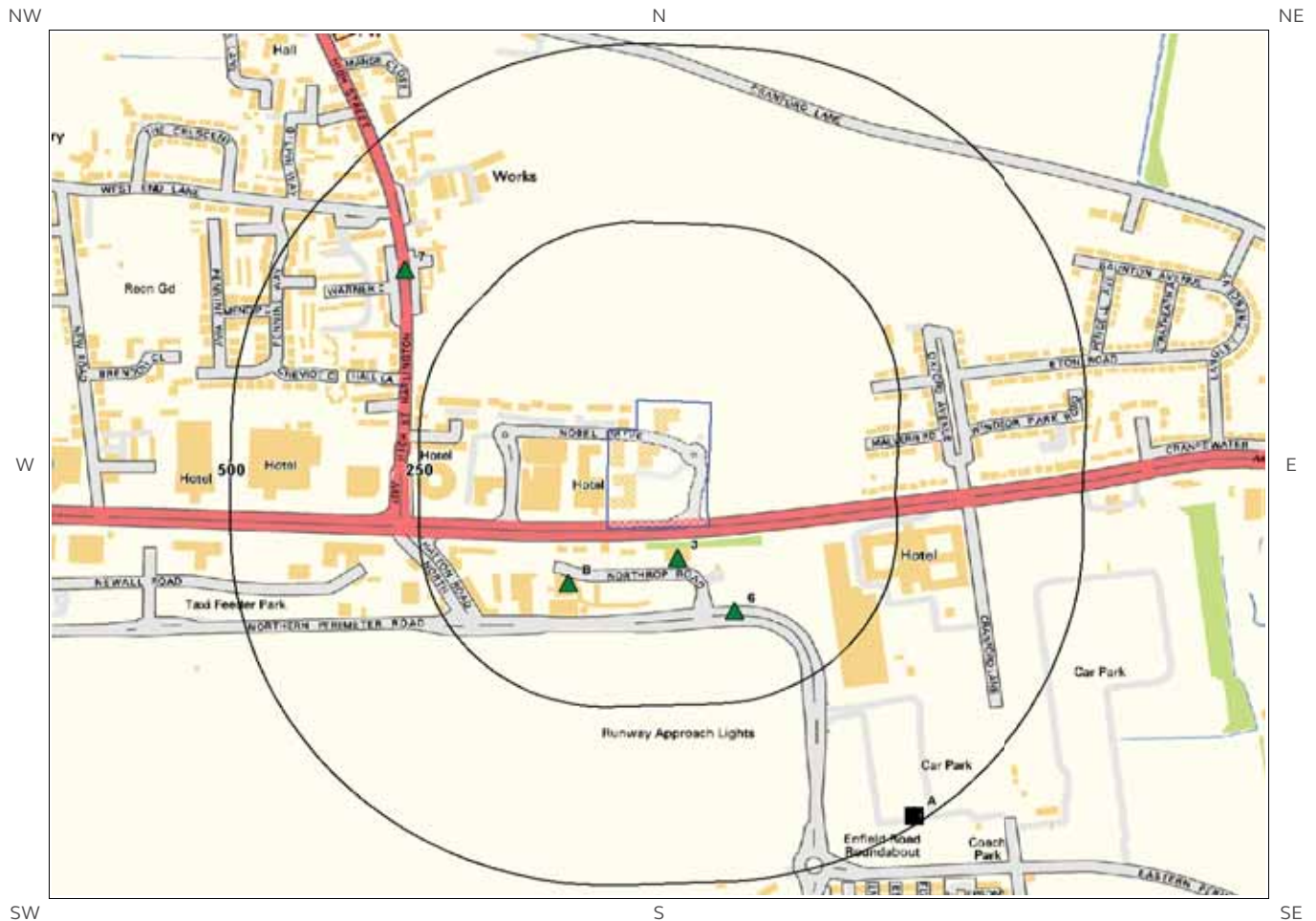
1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 37

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

ID	Distance(m)	Direction	Use	Date
124A	20	SE	Sand and Gravel Works	1935
125A	21	S	Sand and Gravel Works	1938
126	30	SW	Pond	1882
127AD	36	SW	Saw Pit	1865
128AE	40	W	Saw Pit	1882
129	49	SE	Pond	1932
130AF	85	SW	Pond	1865
131AF	93	S	Pond	1912
132AF	95	S	Pond	1897
133AF	95	S	Pond	1894
134AF	95	S	Pond	1938
135AF	95	S	Pond	1932
136AF	95	S	Pond	1912
137AG	137	S	Gravel Pit	1932
138AH	149	SW	Ponds	1912
139AH	151	SW	Ponds	1865
140C	173	E	Gravel Pit	1935
141C	173	E	Refuse Heap	1938
142AI	178	N	Gravel Pit	1987
143AJ	190	S	Ponds	1912
144AJ	191	S	Ponds	1894
145AJ	191	S	Ponds	1912
146AJ	196	S	Ponds	1865
147G	209	E	Unspecified Pit	1865
148AK	211	E	Unspecified Ground Workings	1882
149AL	251	SE	Unspecified Pit	1865
150	305	SE	Pond	1932
151AM	320	SE	Gravel Pit	1932
152AN	407	W	Pond	1912
153AN	411	W	Pond	1894
154AN	411	W	Pond	1932
155AN	411	W	Pond	1912
156AN	412	W	Ponds	1865
157L	424	SW	Sewage Tanks	1935
158L	424	SW	Sewage Tanks	1935
159L	426	SW	Sewage Tanks	1938
160L	436	SW	Sewage Tanks	1938

2. Environmental Permits, Incidents and Registers Map



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

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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

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

2

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

ID	Distance (m)	Direction	NGR	Details
13A	490	SE	509500 176500	Operator: Hawker Pacific Aerospace Ltd Address: Heathrow Airport, Tba S337, PO Box 10, Hounslow, TW6 2JA Process: Inorganic Chemical Processes Permit Number: AO0130 Original Permit Number: IPCAPP Date Approved: 1-5-1995 Effective Date: 8-5-1995 Status: Superseded By Variation
14A	490	SE	509500 176500	Operator: Hawker Pacific Aerospace Ltd Address: Heathrow Airport, Tba S337, PO Box 10, Hounslow, TW6 2JA Process: Inorganic Chemical Processes Permit Number: BC9291 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

5

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

ID	Distance (m)	Direction	NGR	Details
3	46	S	509186 176860	Address: Avis Rent-a-Car Ltd, Unit B, Northrop Road, London Heathrow Airport, Hounslow, TW6 2EB Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
4B	95	SW	509041 176824	Address: Avis Rent-a-Car Ltd, Valet Building, Northrop Road, London Heathrow Airport, Hounslow, TW6 2QA Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
5B	95	SW	509041 176824	Address: Valet Building Avis Rent A Car, Northrop Road, HAL, TW6 2QA Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
6	125	S	509261 176786	Address: Budget Rent A Car, Northern Perimeter Rd, HAL Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

ID	Distance (m)	Direction	NGR	Details	
7	350	NW	508824 177264	Address: Tesco Harlington, High Street, Harlington Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

3

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
15A	490	SE	509500 176500	British Airways Plc, Heathrow Airport, Tba S337, Po Box 10, Hounslow, TW6 2JA	British Airways Plc	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BA4418	Date of Approval: 20/7/2000 Effective from: 20/7/2000 Last date of update: 2015-01-01	Superseded By Variation
16A	490	SE	509500 176500	British Airways Plc, Heathrow Airport, Tba S337, Po Box 10, Hounslow, TW6 2JA	British Airways Plc	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BA4418	Date of Approval: 1/12/2003 Effective from: 1/1/2004 Last date of update: 2015-01-01	Revoked/cancelled
17A	490	SE	509500 176500	British Airways Plc, Heathrow Airport, Tba S337, Po Box 10, Hounslow, TW6 2JA	British Airways Plc	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BA4418	Date of Approval: 6/4/2001 Effective from: 4/5/2001 Last date of update: 2015-01-01	Superseded By Variation

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

0

Database searched and no data found.

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

2

The following Water Industry Referral records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Address	Permission reference	Local Authority	First Date Received	Last Date Received	Status
18A	490	SE	BRITISH AIRWAYS PLC, STAND TA2-4, EAST BASE, HEATHROW AIRPORT, HOUNSLOW, LONDON, TW6 2JA	AV4032	LONDON BOROUGH OF HOUNSLOW	01-Jul-2010	08-Oct-2016	EFFECTIVE
19A	490	SE	BRITISH AIRWAYS PLC, BAY 17 - TBA, WEST BASE, HEATHROW AIRPORT, HOUNSLOW, LONDON, TW6 2JA	AV4016	LONDON BOROUGH OF HOUNSLOW	01-Jul-2010	08-Oct-2016	DEAD (APPLICATION)

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

0

Database searched and no data found.

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

0

Database searched and no data found.

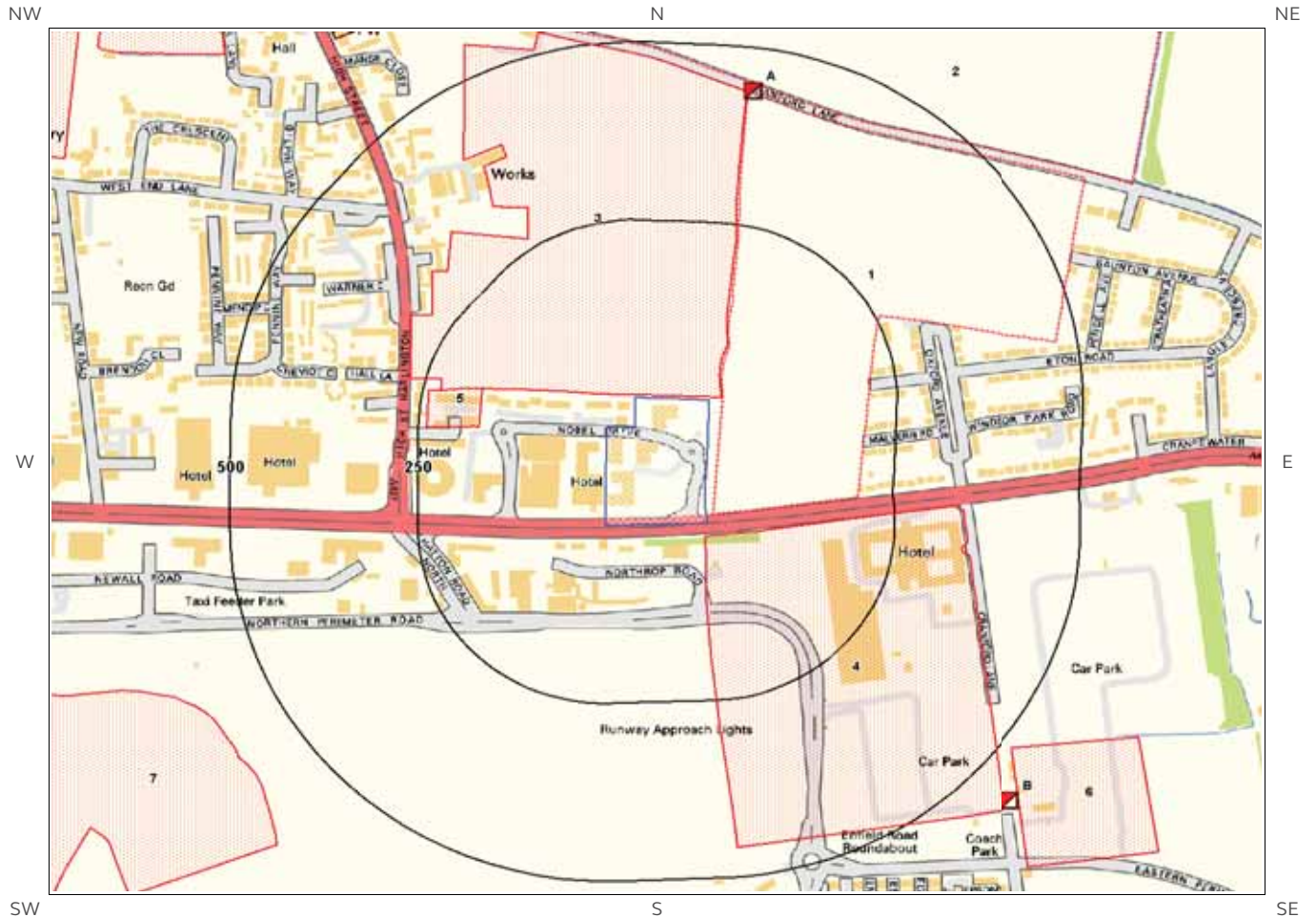
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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- | | | | | | |
|---|---------------------------|---|----------------------------|---|---|
|  | Site Outline |  | EA/NRW Active Landfill |  | Historic and Planned Waste Sites |
|  | EA/NRW Historic Landfill |  | EA/NRW Licensed Waste Site |  | Local Authority/Historical Mapping Landfill Records |
|  | BGS / DoE Survey Landfill | | | | |

3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

2

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
1	9	E	509289 177515	Address: Henry Streeter (Sand & Ballast) Ltd, Land South Of Cranford Lane, North Of Bath Road, Harlington, Middlesex, UB3 5DA Landfill Reference: 80068.0 Environmental Permitting Regulations (Waste) Reference: STR003 Landfill Type: A05: Landfill taking Non-Biodegradable Wastes Operator: Henry Streeter (Sand & Ballast) Ltd Status: Closure IPPC Reference: EPR Reference:
2	437	N	509274 177931	Address: The Gravel Pit, High Street, Harlington, Hayes, Middlesex, UB3 5DA Landfill Reference: 80066.0 Environmental Permitting Regulations (Waste) Reference: STR001 Landfill Type: A06: Landfill taking other wastes Operator: Henry Streeter (Sand & Ballast) Ltd Status: Closure IPPC Reference: EPR Reference:

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

10

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

ID	Distance (m)	Direction	NGR	Details
3	3	N	509000 177300	Site Address: South of Cranford Lane, Cranford Lane West Waste Licence: Yes Site Reference: DL207, 8HI017, HIL018 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 06-Jun-1985 Licence Surrendered: 16-Aug-1993 Licence Holder Address: - Operator: - Licence Holder: Henry Streeter (Sand and Ballast) Limited First Recorded: 10-Jul-1986 Last Recorded: 03-Oct-1989

ID	Distance (m)	Direction	NGR	Details	
4	18	S	509400 176600	Site Address: Northern Perimeter Road, Cranford, Hounslow, London Waste Licence: - Site Reference: 8HI055 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Greenhams sand and Gravel Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1945
5	169	W	508800 177000	Site Address: Land Rear of Airport Bowl, Airport Bowl Waste Licence: - Site Reference: 8HI063 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
6	517	SE	509700 176500	Site Address: East of Cranford Lane, Cranford Lane Waste Licence: - Site Reference: 8HI072, HIL081 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1951 Last Recorded: 31-Dec-1955
7	582	SW	508000 176400	Site Address: Heathrow Runway, Heathrow Airport, Hillingdon, London Waste Licence: - Site Reference: 8HI054 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
8	728	NW	508100 177600	Site Address: Imperial College, South of Sipson Lane, Harlington, Middlesex Waste Licence: Yes Site Reference: STR030 Waste Type: - Environmental Permitting Regulations (Waste) Reference: TE1/L/STR004	Licence Issue: 05-Jun-1997 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Henry Streeter (Sand and Ballast) Limited First Recorded: 31-Dec-1997 Last Recorded: -
Not shown	1049	NE	509600 178100	Site Address: Crane Meadow, Harlington, West Drayton, Hillingdon, London Waste Licence: Yes Site Reference: DL292, 8HI016, HIL017 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 12-Jan-1989 Licence Surrendered: 22-Feb-1990 Licence Holder Address: - Operator: - Licence Holder: H Streeter (Sand and Ballast) Limited First Recorded: 31-Oct-1986 Last Recorded: 31-Oct-1989
Not shown	1112	N	508900 178200	Site Address: Saint Peters Way, Harlington, West Drayton, Hillingdon, London Waste Licence: - Site Reference: 8HI039 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1973 Last Recorded: 31-Dec-1989
Not shown	1371	SE	510500 176000	Site Address: Cranebank-Hazelmere, North Feltham, Hounslow, London Waste Licence: - Site Reference: 8HO030 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Sand and Shingle Licence Holder: Sand and Shingle Limited First Recorded: 31-Dec-1931 Last Recorded: 31-Dec-1946

ID	Distance (m)	Direction	NGR	Details	
Not shown	1496	NW	508300 178500	Site Address: Frogditch Farm, Harlington, West Drayton, Hillingdon, London Waste Licence: - Site Reference: 8HI020, DL102, HIL071 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 07-Jul-1982 Licence Surrendered: 01-Aug-1989 Licence Holder Address: - Operator: - Licence Holder: Hall Aggregates Limited First Recorded: 31-Dec-1973 Last Recorded: 01-Aug-1989

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	1363	SE	510572 176002	-	London Borough of Hounslow	Polygon

3.2 Other Waste Sites

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

0

Database searched and no data found.

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

16

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

ID	Distance (m)	Direction	NGR	Details
13A	439	N	509289 177515	Site Address: Henry Streeter (Sand & Ballast) Ltd, Land South Of Cranford Lane, North Of Bath Road, Harlington, Middlesex, UB3 5DA Type: Landfill taking Non-Biodegradeable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR003 EPR reference: EA/EPR/AP3296NR/V002 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80068 Annual Tonnage: 289340.0 Issue Date: 13/02/1990 Effective Date: - Modified: 07/09/1993 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Cranford Lane, Bath Road, Harlington Correspondence Address: -
14A	439	N	509289 177515	Site Address: Henry Streeter (Sand & Ballast) Ltd, Land South Of Cranford Lane, North Of Bath Road, Harlington, Middlesex, UB3 5DA Type: Landfill taking Non-Biodegradeable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR003 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80068 Annual Tonnage: 0.0 Issue Date: 13/02/1990 Effective Date: - Modified: 07/09/1993 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Cranford Lane, Bath Road, Harlington Correspondence Address: Henry Streeter (Sand & Ballast) Ltd, 66, Purley Way, Croydon, Surrey, CR9 4BD
15A	439	N	509289 177515	Site Address: Henry Streeter (Sand & Ballast) Limited, land south of Cranford Lane, north of Bath Road, Harlington, Middlesex, UB3 5DA Type: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR003 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80068 Annual Tonnage: 0.0 Issue Date: 13/02/1990 Effective Date: - Modified: 07/09/1993 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: "Cranford Lane/bath Road, Harlington" Correspondence Address: Henry Streeter (Sand & Ballast) Limited, 66, Purley Way, Croydon, Surrey, CR9 4BD
16B	563	SE	509634 176517	Site Address: Heathrow Airport Ltd, Cranford Lane Transfer Station, Eastern Perimeter Road, Hillingdon, Middlesex, TW6 1JH Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HEA001 EPR reference: EA/EPR/VP3096NC/V002 Operator: Heathrow Airport Ltd Waste Management licence No: 80042 Annual Tonnage: 31025.0 Issue Date: 03/08/1981 Effective Date: - Modified: 14/07/1989 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Cranford Lane T S, Heathrow Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
17B	563	SE	509634 176517	Site Address: Heathrow Airport Ltd, Cranford Lane Transfer Station, Eastern Perimeter Road, Hillingdon, London, TW6 1JH Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HEA001 EPR reference: - Operator: Heathrow Airport Ltd Waste Management licence No: 80042 Annual Tonnage: 0.0	Issue Date: 03/08/1981 Effective Date: - Modified: 14/07/1989 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: "Cranford Lane TS, Heathrow" Correspondence Address: Heathrow Airport Ltd, Heathrow Point West, 234, Bath Road, Harlington, Middlesex, UB3 5AP
Not shown	852	N	509274 177931	Site Address: The Gravel Pit, High Street, Harlington, Hayes, Middlesex, UB3 5DA Type: Landfill taking other wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR001 EPR reference: EA/EPR/AP3896NG/V006 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80066 Annual Tonnage: 0.0	Issue Date: 28/09/1977 Effective Date: - Modified: 08/05/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: The Gravel Pit Correspondence Address: -
Not shown	852	N	509274 177931	Site Address: The Gravel Pit, High Street, Harlington, Hayes, Middlesex, UB3 5DA Type: Landfill taking other wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR001 EPR reference: EA/EPR/AP3896NG/V006 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80066 Annual Tonnage: 0.0	Issue Date: 28/09/1977 Effective Date: - Modified: 08/05/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: The Gravel Pit Correspondence Address: -
Not shown	1230	N	509166 178314	Site Address: The Gravel Pit, High Street, Harlington, Hayes, Middlesex, UB3 5DA Type: Landfill taking other wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR000 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80066 Annual Tonnage: 0.0	Issue Date: 28/09/1977 Effective Date: - Modified: 23/09/1993 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: High Street, Harlington Correspondence Address: Henry Streeter (Sand & Ballast) Limited, 66, Purley Way, Croyden, Surrey, CR9 4BD
Not shown	1230	N	509166 178314	Site Address: The Gravel Pit, High Street, Harlington, Hayes, Middlesex, UB3 5DA Type: Landfill taking other wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR001 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80066 Annual Tonnage: 0.0	Issue Date: 28/09/1977 Effective Date: - Modified: 23/09/1993 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: "High Street, Harlington" Correspondence Address: Henry Streeter (Sand & Ballast) Limited, 66, Purley Way, Croyden, Surrey, CR9 4BD

ID	Distance (m)	Direction	NGR	Details	
Not shown	1442	NW	507900 177850	Site Address: Henry Streeter (Sand & Ballast) Ltd, Imperial College, (south, Of) Sipson Lane, Harlington, Middlesex, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR004 EPR reference: EA/EPR/AP3696NL/V002 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80069 Annual Tonnage: 360144.0	Issue Date: 05/06/1997 Effective Date: - Modified: 17/06/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Imperial College, Harlington Correspondence Address: -
Not shown	1442	NW	507900 177850	Site Address: Henry Streeter (Sand & Ballast) Limited, Imperial College, (south of) Sipson Lane, Harlington, Middlesex, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR004 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80069 Annual Tonnage: 0.0	Issue Date: 05/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: "Imperial College, Harlington" Correspondence Address: Henry Streeter (Sand & Ballast) Limited, 66, Purley Way, Croydon, Surrey, CR9 4BD
Not shown	1442	NW	507900 177850	Site Address: Henry Streeter (Sand & Ballast) Ltd, Imperial College, (south, Of) Sipson Lane, Harlington, Middlesex, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR004 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80069 Annual Tonnage: 360144.0	Issue Date: 05/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Imperial College, Harlington Correspondence Address: Henry Streeter (Sand & Ballast) Ltd, 66, Purley Way, Croydon, Surrey, CR9 4BD
Not shown	1442	NW	507900 177850	Site Address: Henry Streeter (Sand & Ballast) Ltd, Imperial College, (south, Of) Sipson Lane, Harlington, Middlesex, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR004 EPR reference: EA/EPR/AP3696NL/A001 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80069 Annual Tonnage: 360144.0	Issue Date: 05/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Imperial College, Harlington Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details
Not shown	1442	NW	507900 177850	Site Address: Henry Streeter (Sand & Ballast) Limited, Imperial College, (south of) Sipson Lane, Harlington, Middlesex, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR004 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80069 Annual Tonnage: 0.0 Issue Date: 05/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: "Imperial College, Harlington" Correspondence Address: Henry Streeter (Sand & Ballast) Limited, 66, Purley Way, Croydon, Surrey, CR9 4BD
Not shown	1449	NW	508360 178310	Site Address: Off Sipson Road, Sipson, West Drayton, Middx, UB7 0JG Type: Landfill taking Non-Biodegradable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR008 EPR reference: - Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80594 Annual Tonnage: 0.0 Issue Date: 04/06/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Sipson Ne Correspondence Address: High Street, Harlington, Middx, UB3 5DA
Not shown	1449	NW	508360 178310	Site Address: Off Sipson Road, Sipson, West Drayton, Middlesex, UB7 0JG Type: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: STR008 EPR reference: EA/EPR/BT7183IA/A001 Operator: Henry Streeter (Sand & Ballast) Ltd Waste Management licence No: 80594 Annual Tonnage: 100000.0 Issue Date: 04/06/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: - Site Name: Sipson N E Correspondence Address: 14-16, Station Road West, Oxted, Surrey, RH8 9EP

[illegible]

 Site Outline
  Current Industrial Sites
  Electricity Transmission Cables

 Search Buffers (m)
  Petrol & Fuel Sites
  Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

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

16

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Electricity Sub Station	509121 176992	Electricity Sub Station, UB3	Electrical Features	Infrastructure and Facilities
2	0	On Site	Electricity Sub Station	509140 177075	Electricity Sub Station, UB3	Electrical Features	Infrastructure and Facilities
3A	45	S	Electricity Sub Station	509111 176858	Electricity Sub Station, TW6	Electrical Features	Infrastructure and Facilities
4	52	W	Electricity Sub Station	509041 176954	Electricity Sub Station, UB3	Electrical Features	Infrastructure and Facilities
5A	55	S	Electricity Sub Station	509108 176848	Electricity Sub Station, TW6	Electrical Features	Infrastructure and Facilities
6B	96	SW	Budget Rent A Car	509036 176826	Budget Rent A Car, Unit B Northrop Road, London Heathrow Airport, Hounslow, TW6 2QA	Vehicle Hire and Rental	Hire Services
7B	96	SW	Avis Rent A Car	509036 176825	Avis Rent A Car, Building 220, Northrop Road, London Heathrow Airport, Hounslow, TW6 2QA	Vehicle Hire and Rental	Hire Services
8	103	W	Electricity Sub Station	508990 176980	Electricity Sub Station, UB3	Electrical Features	Infrastructure and Facilities
9	134	SE	Approach Lights	509322 176812	Approach Lights, TW6	Aeronautical Features	Air
10	147	E	Approach Lights	509365 176855	Approach Lights, TW6	Aeronautical Features	Air
11	189	W	Electricity Sub Station	508904 176929	Electricity Sub Station, TW6	Electrical Features	Infrastructure and Facilities
12	223	S	Approach Lights	509219 176684	Approach Lights, TW6	Aeronautical Features	Air
13	227	W	Oscar Cars Heathrow	508866 176957	Oscar Cars Heathrow, 118, Bath Road, Harlington, Hayes, UB3 5AJ	Airlines and Airline Services	Transport, Storage and Delivery
14	227	E	Enterprise Rent-A-Car	509453 176885	Enterprise Rent-A-Car, 11, Bath Road, Heathrow, Hounslow, TW6 2AA	Vehicle Hire and Rental	Hire Services
15	234	SW	Electricity Sub Station	508884 176797	Electricity Sub Station, TW6	Electrical Features	Infrastructure and Facilities
16	239	E	Tank	509462 176857	Tank, TW6	Tanks (Generic)	Industrial Features

4.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
WMGR-MGRD	INFILLED GROUND	ARTIFICIAL DEPOSIT
WMGR-MGRD	INFILLED GROUND	ARTIFICIAL DEPOSIT

5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
TPGR	TAPLOW GRAVEL FORMATION	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
LASI	LANGLEY SILT MEMBER	CLAY AND SILT [UNLITHIFIED DEPOSITS CODING SCHEME]

5.3 Bedrock and Solid Geology

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

Lex Code	Description	Rock Type
LC-CLSISA	LONDON CLAY FORMATION	CLAY, SILT AND SAND

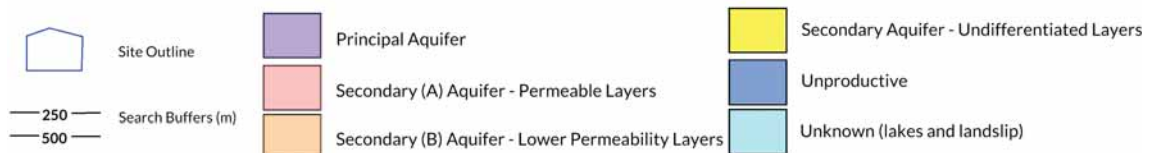
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

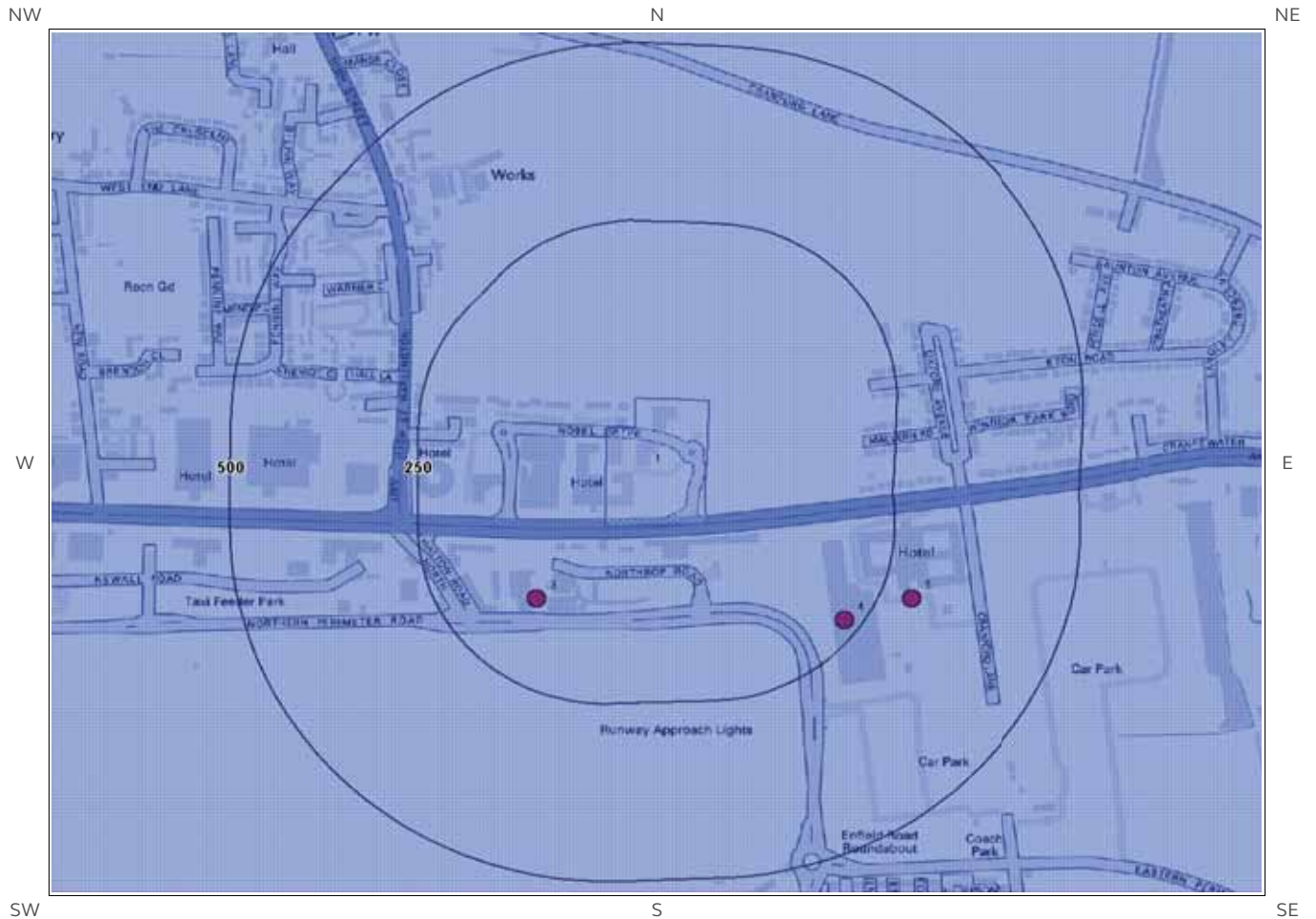
6a. Aquifer Within Superficial Geology



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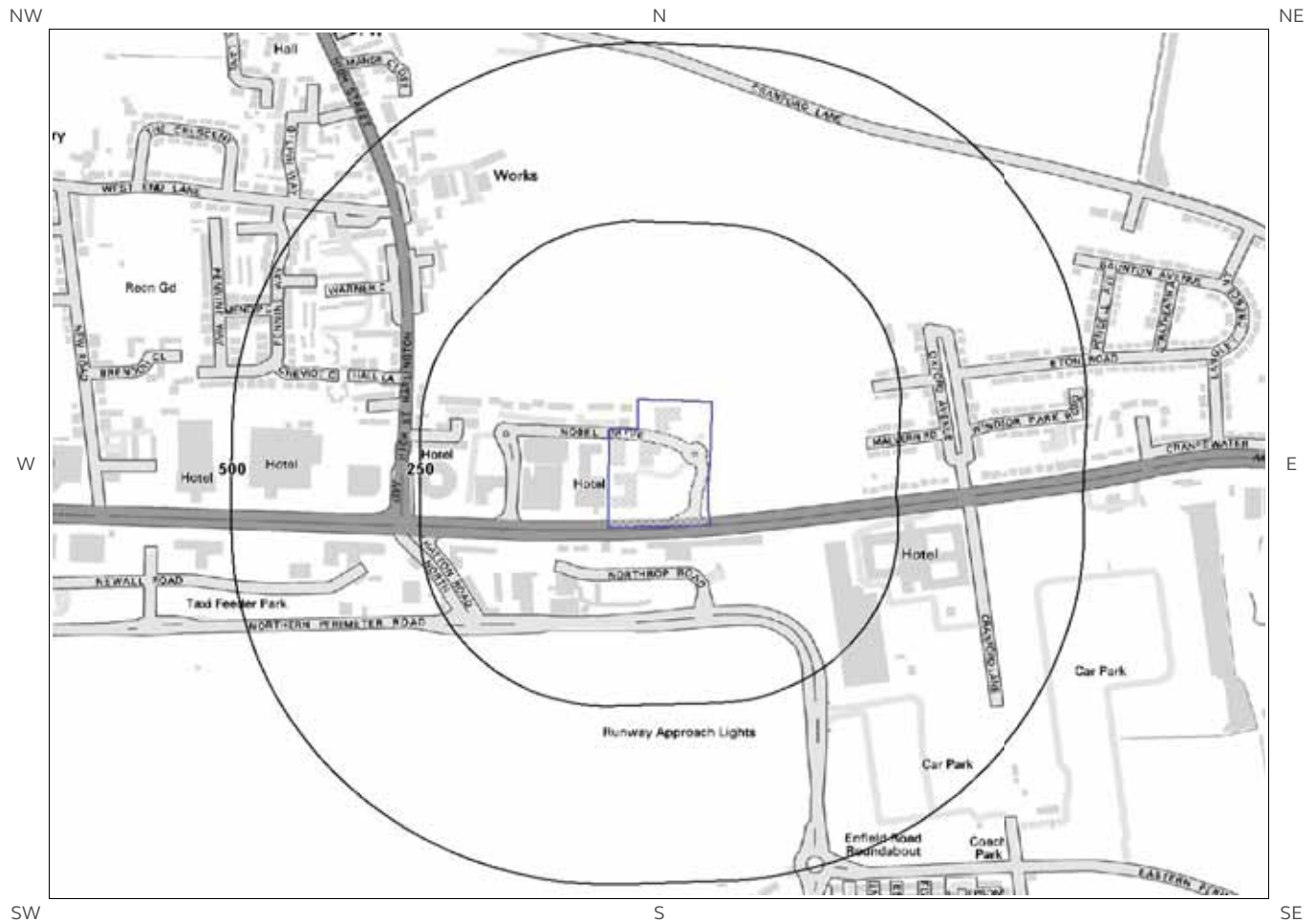
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



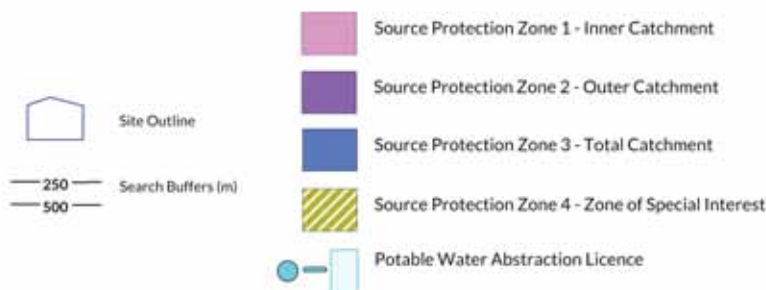
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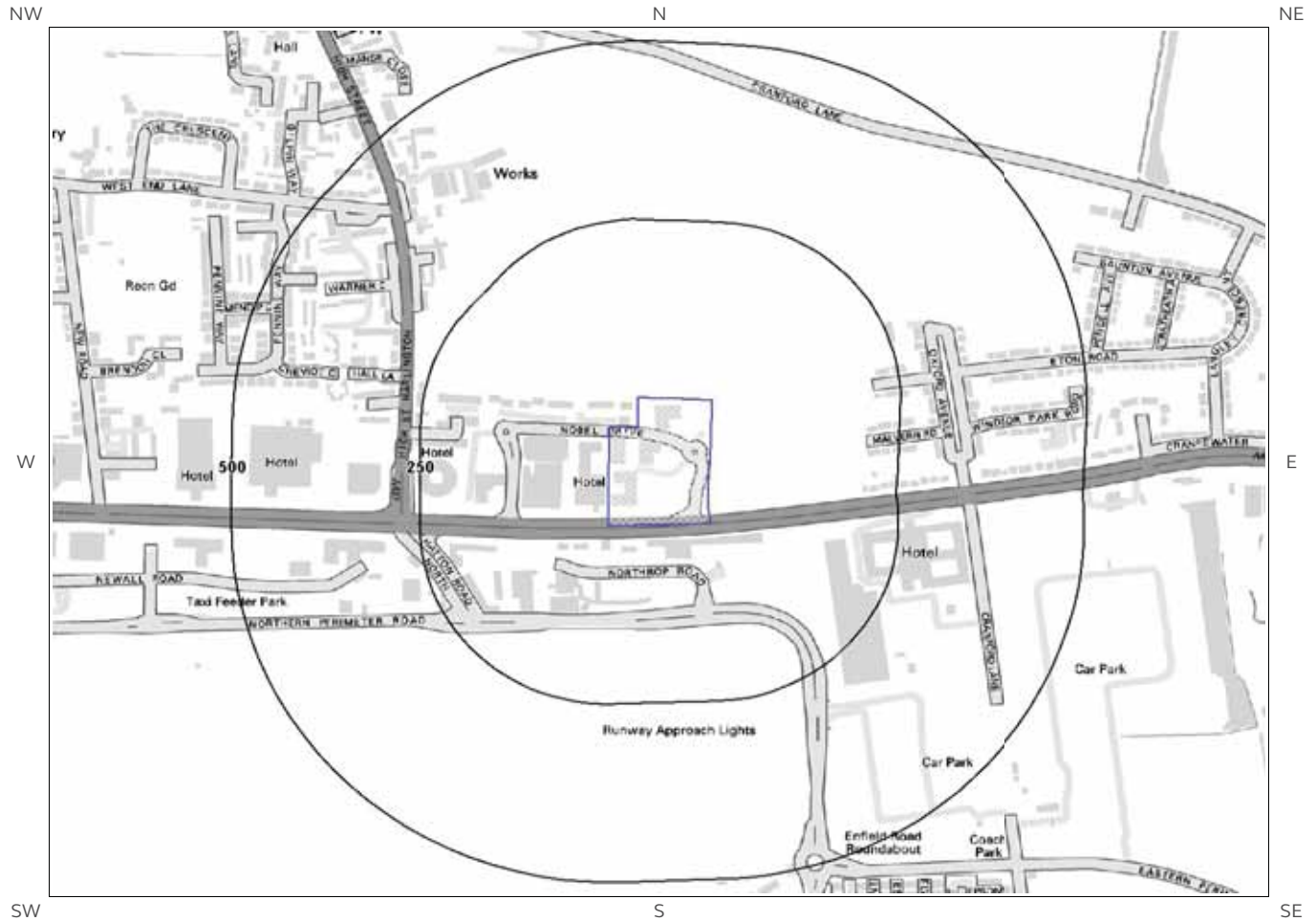
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



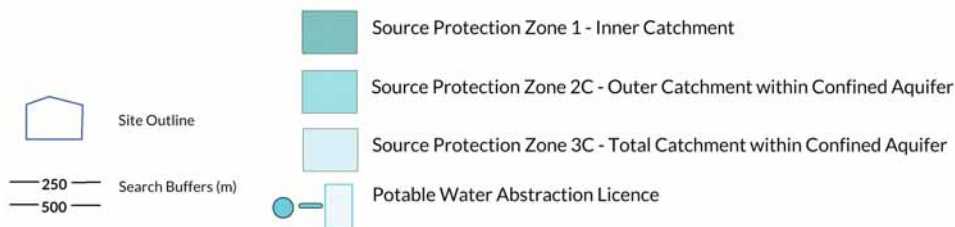
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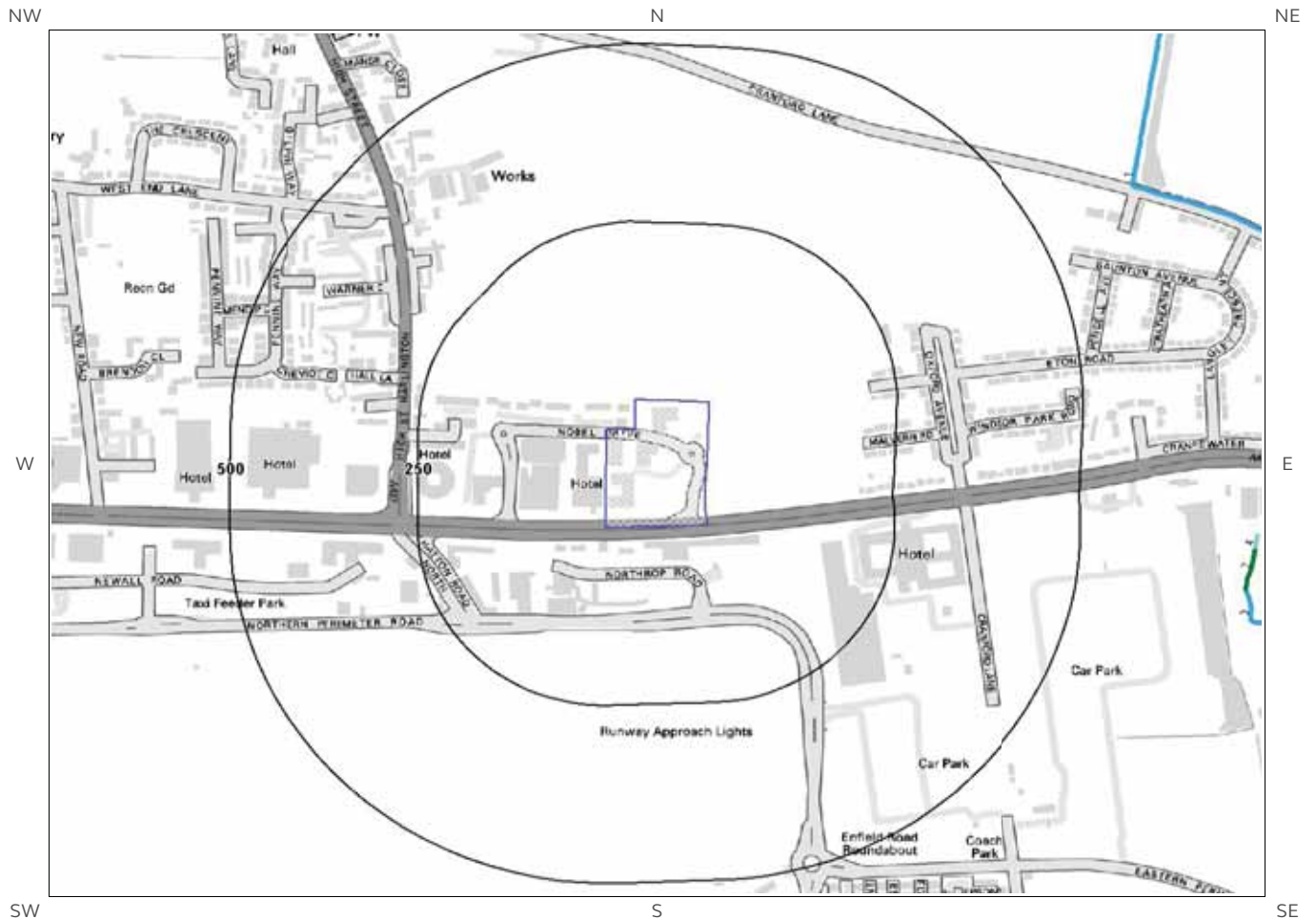
6d. Hydrogeology – Source Protection Zones within confined aquifer



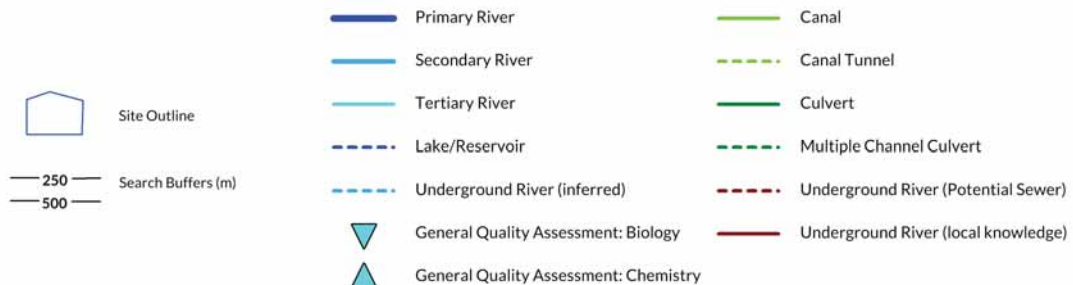
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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	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
7	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	120	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

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

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

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

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

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

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

ID	Distance (m)	Direction	NGR	Details
3	139	SW	509000 176800	Status: Historical Licence No: 28/39/36/0058 Details: Process Water Direct Source: Thames Groundwater Point: Borehole At Northrop Road, Heathrow Airport, Hounslow Data Type: Point Name: AVIS RENT A CAR LIMITED Annual Volume (m³): 10980 Max Daily Volume (m³): 30 Original Application No: - Original Start Date: 1/3/1993 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
4	228	SE	509410 176770	Status: Historical Licence No: 28/39/36/0063 Details: Process water Direct Source: Thames Groundwater Point: Argonaut House, Bath Road, Hayes-Borehole A Data Type: Point Name: Q-PARK LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/12/1998 Expiry Date: 31/12/2008 Issue No: 101 Version Start Date: 13/12/2002 Version End Date:
5	292	E	509500 176800	Status: Historical Licence No: 28/39/36/0063 Details: Process water Direct Source: Thames Groundwater Point: Argonaut House, Hayes - Borehole Data Type: Point Name: BUDGET RENT A CAR INTERNATIONAL Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRA/N/1036 Original Start Date: 16/12/1998 Expiry Date: 31/12/2008 Issue No: 100 Version Start Date: 16/12/1998 Version End Date:
Not shown	935	N	509400 178000	Status: Historical Licence No: 28/39/36/0060 Details: Mineral Washing Direct Source: Thames Groundwater Point: Wet Pit At High Street, Harlington, Middlesex Data Type: Point Name: HENRY STREETER (SAND & BALLAST) LIMITED Annual Volume (m³): 649318 Max Daily Volume (m³): 2455 Original Application No: - Original Start Date: 6/12/1994 Expiry Date: - Issue No: 101 Version Start Date: 1/3/2006 Version End Date:
Not shown	1373	S	509650 175600	Status: Historical Licence No: 28/39/36/0068 Details: Pollution Remediation Direct Source: Thames Groundwater Point: Boreholes At Heathrow Airport, Elmdon Road, Hatton Cross Data Type: Point Name: CELTIC TECHNOLOGIES LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRA/N/1169 Original Start Date: 4/6/2001 Expiry Date: 31/05/2002 Issue No: 1 Version Start Date: 4/6/2001 Version End Date:
Not shown	1582	SE	510600 176120	Status: Historical Licence No: 28/39/36/0071 Details: Pollution Remediation Direct Source: Thames Groundwater Point: Heathrow Estate, Hounslow- Point A Data Type: Point Name: BRIXTON PLC Annual Volume (m³): 61488 Max Daily Volume (m³): 168 Original Application No: WRA/N/1314 Original Start Date: 23/12/2003 Expiry Date: 31/12/2006 Issue No: 1 Version Start Date: 23/12/2003 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1831	NW	507600 178100	Status: Historical Licence No: 28/39/36/0059 Details: Mineral Washing Direct Source: Thames Groundwater Point: Wet Pit At Sipson Lane, Harmondsworth Data Type: Point Name: HENRY STREETER (SAND & BALLAST) LIMITED	Annual Volume (m³): 649318 Max Daily Volume (m³): 2455 Original Application No: - Original Start Date: 6/12/1994 Expiry Date: - Issue No: 101 Version Start Date: 1/3/2006 Version End Date:
Not shown	1897	E	511100 176600	Status: Historical Licence No: 28/39/36/0035 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Borehole At Rectory Farm, Bath Road, Cranford Data Type: Point Name: BARWICK	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 11/10/1971 Expiry Date: - Issue No: 100 Version Start Date: 29/9/1995 Version End Date:
Not shown	1899	E	511110 176650	Status: Historical Licence No: 28/39/36/0035 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Borehole At Rectory Farm, Bath Road, Cranford Data Type: Point Name: BARWICK	Annual Volume (m³): 6818 Max Daily Volume (m³): 262 Original Application No: - Original Start Date: 11/10/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/7/2001 Version End Date:
Not shown	1953	SW	507663 175573	Status: Historical Licence No: TH/039/0028/007 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Heathrow Airport - Borehole C Data Type: Point Name: HEATHROW AIRPORT LIMITED	Annual Volume (m³): 706000 Max Daily Volume (m³): 3197 Original Application No: NPS/WR/014700 Original Start Date: 13/2/2010 Expiry Date: 31/12/2019 Issue No: 2 Version Start Date: 29/4/2014 Version End Date:
Not shown	1953	SW	507663 175573	Status: Historical Licence No: TH/039/0028/007 Details: Evaporative Cooling Direct Source: Thames Groundwater Point: Heathrow Airport - Borehole C Data Type: Point Name: HEATHROW AIRPORT LIMITED	Annual Volume (m³): 706000 Max Daily Volume (m³): 3197 Original Application No: NPS/WR/014700 Original Start Date: 13/2/2010 Expiry Date: 31/12/2019 Issue No: 2 Version Start Date: 29/4/2014 Version End Date:
Not shown	1953	SW	507663 175573	Status: Historical Licence No: TH/039/0028/007 Details: General Use Relating To Secondary Category (High Loss) Direct Source: Thames Groundwater Point: Heathrow Airport - Borehole C Data Type: Point Name: HEATHROW AIRPORT LIMITED	Annual Volume (m³): 706000 Max Daily Volume (m³): 3197 Original Application No: NPS/WR/014700 Original Start Date: 13/2/2010 Expiry Date: 31/12/2019 Issue No: 2 Version Start Date: 29/4/2014 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site?

Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details
Not shown	1953	SW	507663 175573	Status: Historical Licence No: TH/039/0028/007 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Heathrow Airport - Borehole C Data Type: Point Name: HEATHROW AIRPORT LIMITED Annual Volume (m³): 706000 Max Daily Volume (m³): 3197 Original Application No: NPS/WR/014700 Original Start Date: 13/2/2010 Expiry Date: 31/12/2019 Issue No: 2 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
17	N	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? No

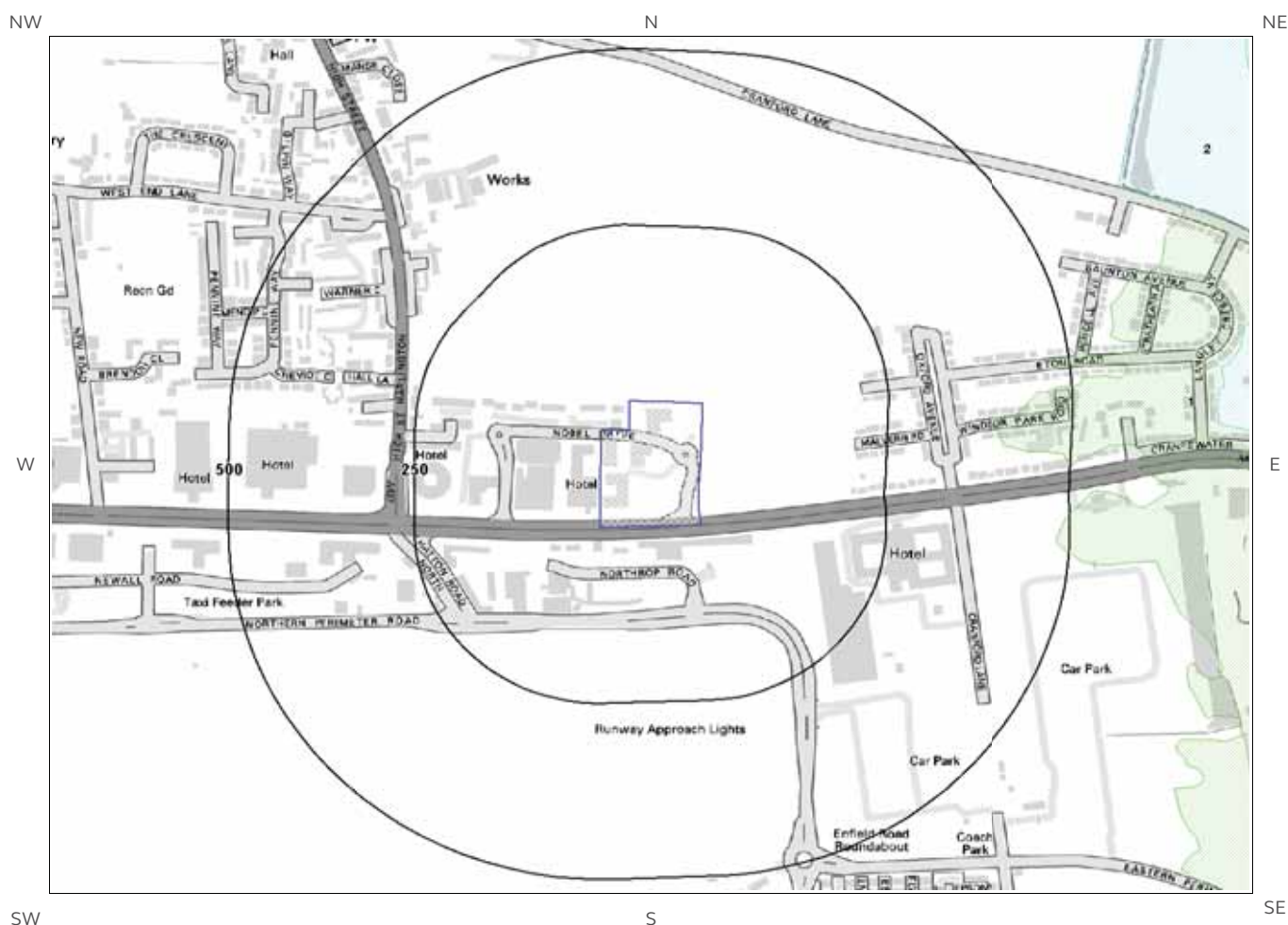
Database searched and no data found.

6.11 Surface Water Features

Are there any surface water features within 250m of the study site? No

Database searched and no data found.

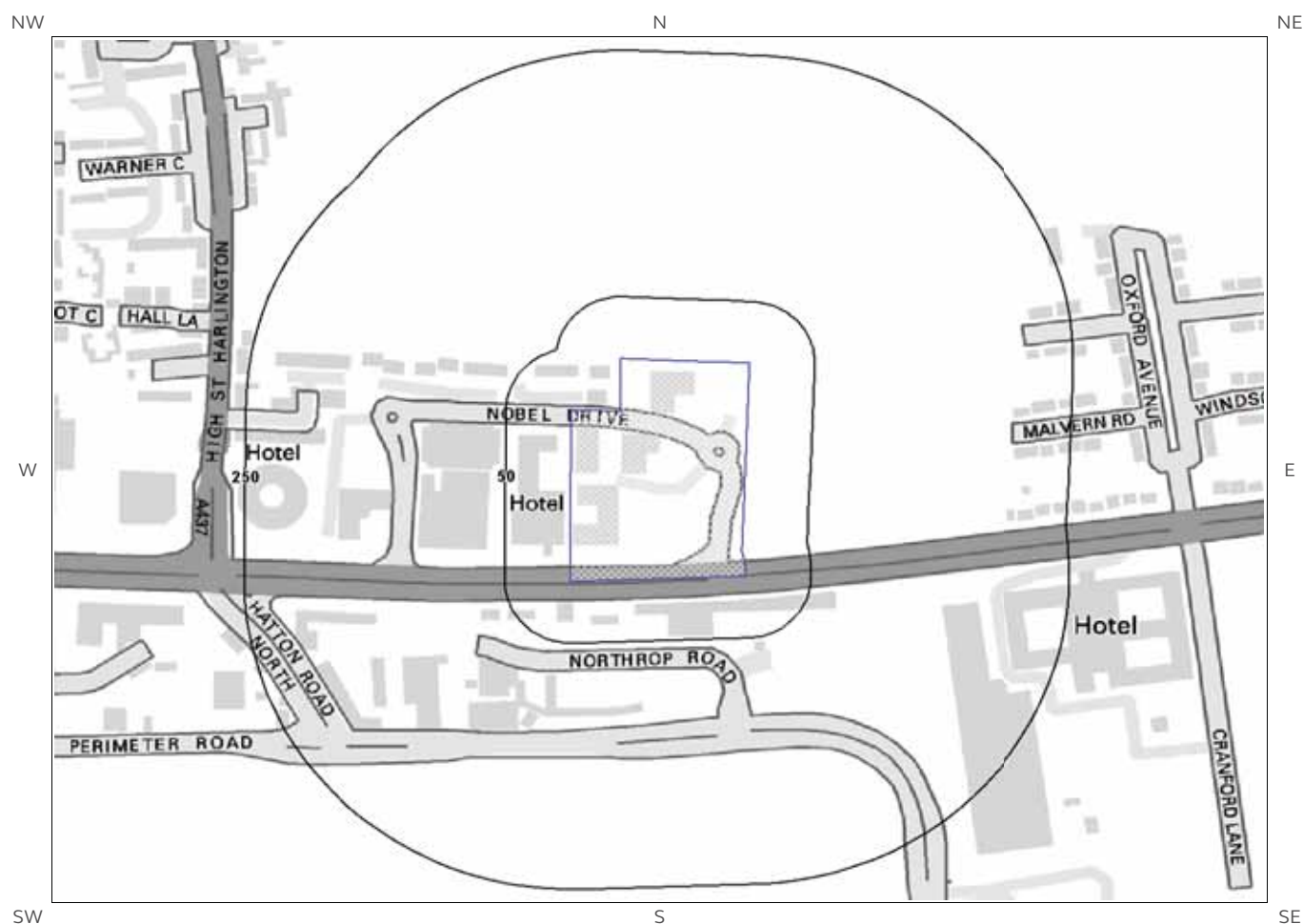
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



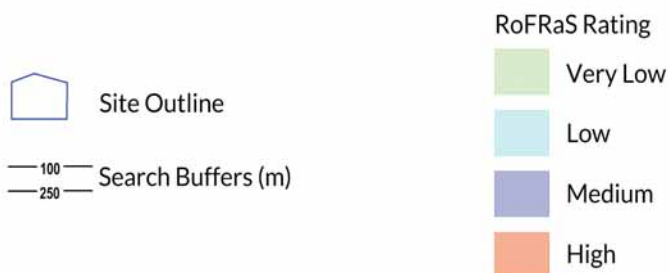
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? No

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

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? No

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

Database searched and no data found.

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

What is the highest risk of flooding onsite? Very Low

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

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site?

No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

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

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential at Surface

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

7.8 Groundwater Flooding Confidence Areas

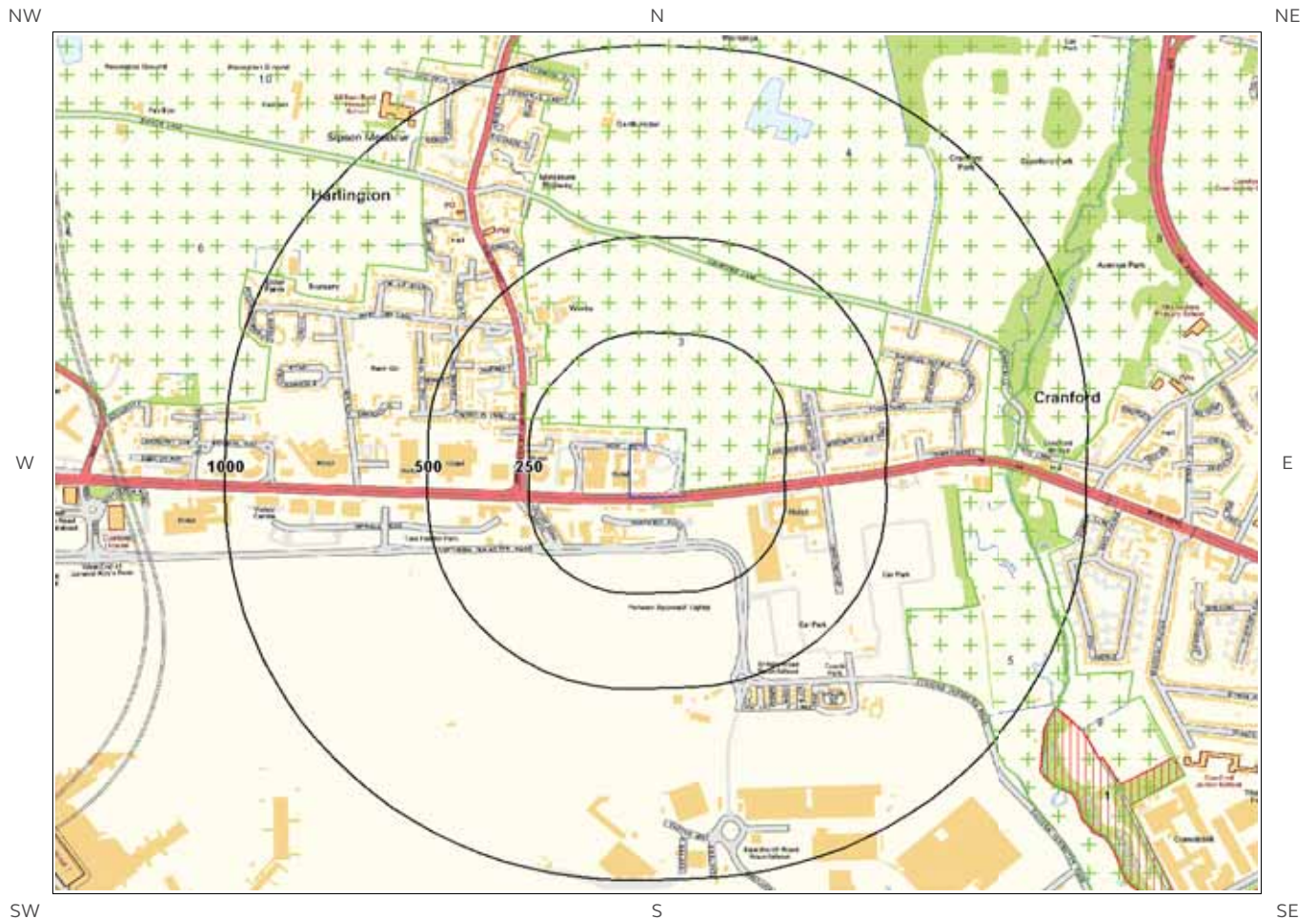
What is the British Geological Survey confidence rating in this result?

Moderate

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

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

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?

Yes

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	LNR Name	Data Source
1	1075	SE	Cranebank	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NVZ Name	Data Source
Not shown	1784	W	Existing	DEFRA

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

16

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
3	0	On Site	London Area Greenbelt	Hillingdon London Borough
4	440	N	London Area Greenbelt	Hillingdon London Borough
5	624	SE	London Area Greenbelt	Hillingdon London Borough
6	677	NW	London Area Greenbelt	Hillingdon London Borough
7	739	E	London Area Greenbelt	Hillingdon London Borough
8	795	E	London Area Greenbelt	Hounslow London Borough
9	809	E	London Area Greenbelt	Hounslow London Borough
10	882	NW	London Area Greenbelt	Hillingdon London Borough
Not shown	1282	N	London Area Greenbelt	Hillingdon London Borough
Not shown	1289	N	London Area Greenbelt	Hillingdon London Borough
Not shown	1374	N	London Area Greenbelt	Hillingdon London Borough
Not shown	1561	NW	London Area Greenbelt	Hillingdon London Borough
Not shown	1612	W	London Area Greenbelt	Hillingdon London Borough
Not shown	1626	S	London Area Greenbelt	Hounslow London Borough
Not shown	1859	W	London Area Greenbelt	Hillingdon London Borough
Not shown	1871	NW	London Area Greenbelt	Hillingdon London Borough

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Very Low

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

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

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

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

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

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

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

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site?

Moderate

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

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site?

Low

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

Hazard
Slight possibility for collapsible deposit problems after major changes in loading or groundwater conditions. Normal maintenance to avoid large amounts of water entering the ground through pipe leakage or soak-aways should reduce the likelihood of problems due to collapsible deposits. For new build, assess the possibility of collapsible (loessic) deposits in ground investigation. For existing property, no significant increase in insurance risk from collapsible deposits is likely.

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site?

Very Low

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

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

9.2 Radon

9.2.1 Radon Affected Areas

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

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

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing

ones as described in publication BR211 by the Building Research Establishment?

No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

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**British
Geological Survey**

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Authority: London Borough of Hillingdon
Phone: 01895 250 111

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Report Reference: EMS-408096_545458

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Report Date 23 Feb 2017

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Yours faithfully,

emapsite customer services team

Enc.
Groundsure Geoinsight



Groundsure Geo Insight

Address: ,
Date: 23 Feb 2017
Reference: EMS-408096_545458
Client: emapsite



Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 509163,176989
Site Size: 2.24ha

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Overview of Findings

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

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

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

Section 1:Geology

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	Yes
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	Yes
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	No
1.4 Radon data	1.4.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

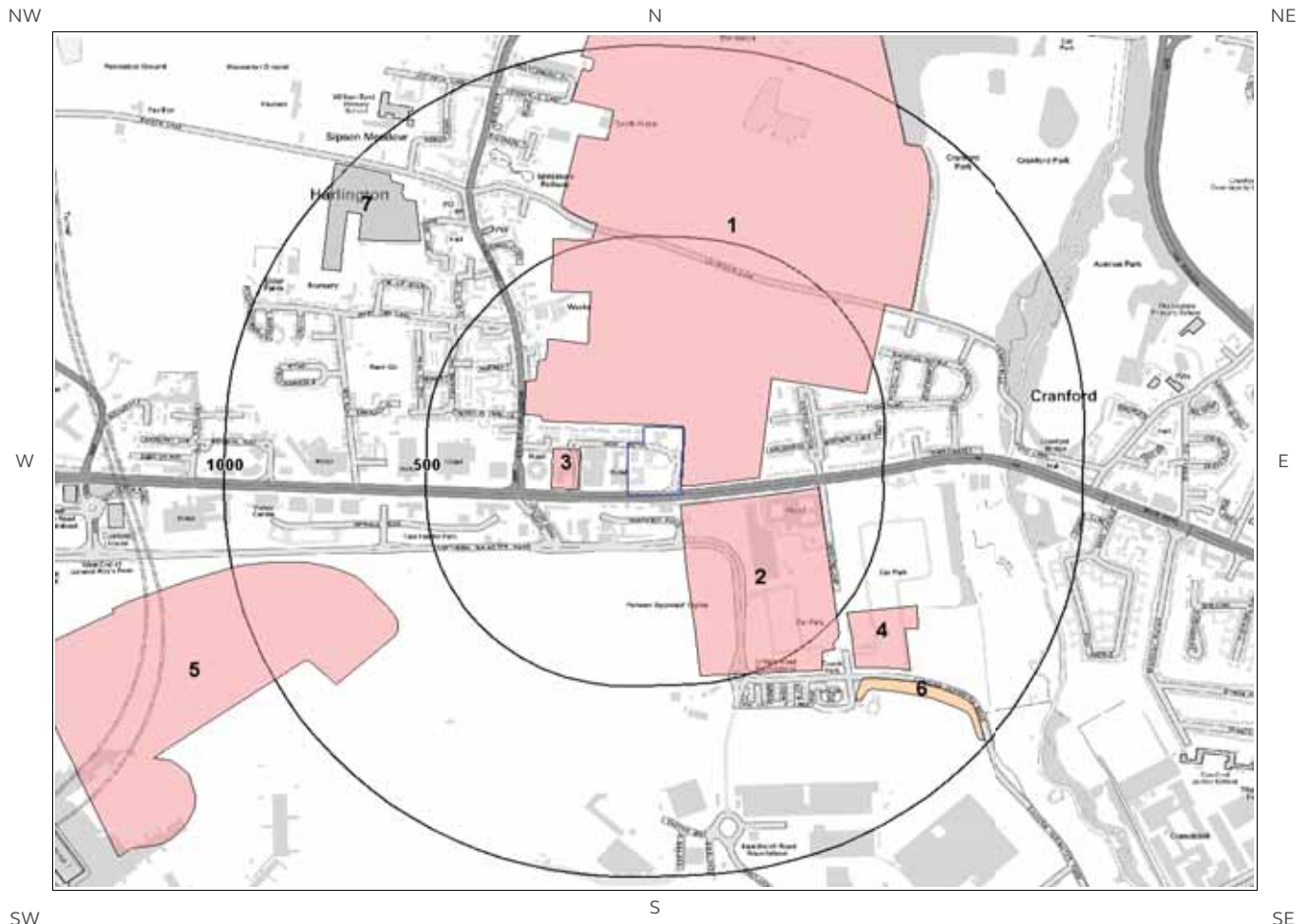
Section 2:Ground Workings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	1	15	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Workings	0	0	1	0	1

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	0	0	0	0	0
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0
Section 4: Natural Ground Subsidence	On-site				
4.1 Shrink Swell Clay	Very Low				
4.2 Landslides	Very Low				
4.3 Ground Dissolution of Soluble Rocks	Negligible				
4.4 Compressible Deposits	Moderate				
4.5 Collapsible Deposits	Low				
4.6 Running Sand	Very Low				
Section 5: Borehole Records	On-site	0-50m	51-250		
5 BGS Recorded Boreholes	0	1	21		
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
6 Records of Background Soil Chemistry	4	2	14		
Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500	
7.1 Tunnels	0	0	0	Not Searched	
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
7.3 Historical Railways	0	0	0	Not Searched	
7.4 Active Railways	0	0	0	Not Searched	

Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0

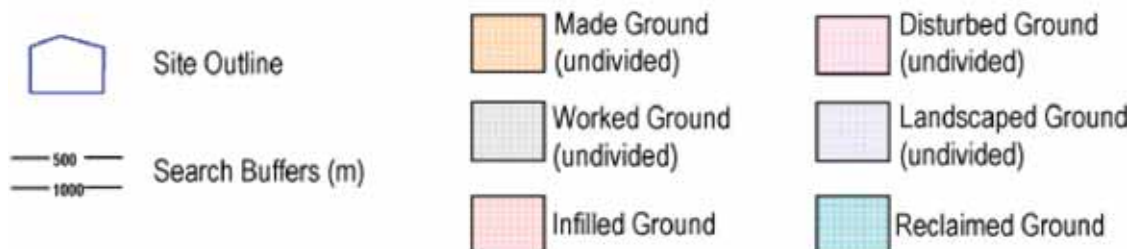
1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend

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1 Geology

1.1 Artificial Ground

1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:269

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

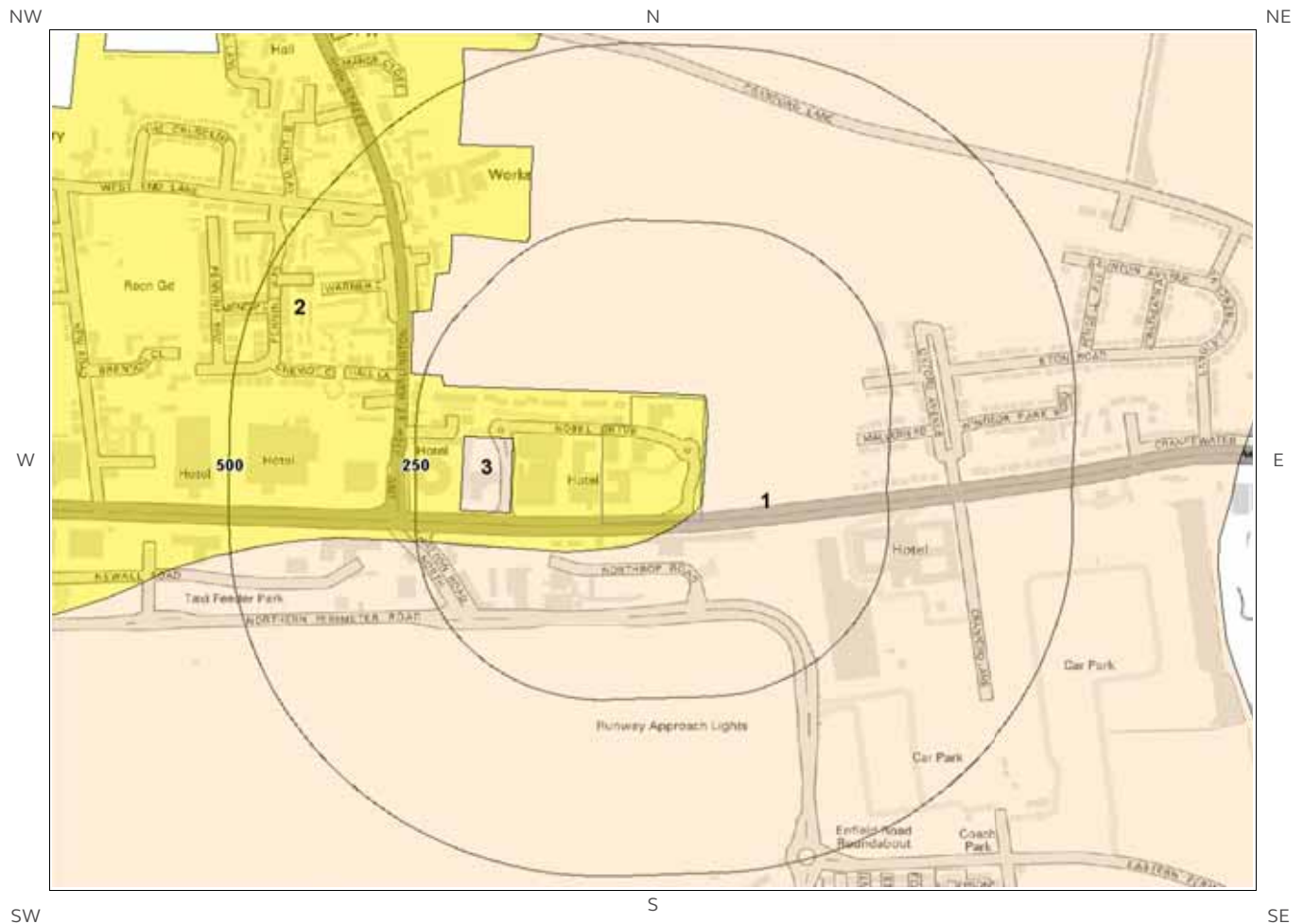
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	1.0	E	WMGR-MGRD	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	28.0	S	WMGR-MGRD	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	120.0	W	WMGR-MGRD	INFILLED GROUND	ARTIFICIAL DEPOSIT

1.1.2 Permeability of Artificial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
1.0	E	Mixed	Very High	Low
28.0	S	Mixed	Very High	Low

1.2 Superficial Deposits and Landslips Map



**Superficial Deposits and Landslips
Legend**

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1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TPGR	TAPLOW GRAVEL FORMATION	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
2	0.0	On Site	LASI	LANGLEY SILT MEMBER	CLAY AND SILT [UNLITHIFIED DEPOSITS CODING SCHEME]
3	120.0	W	TPGR	TAPLOW GRAVEL FORMATION	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]

1.2.2 Permeability of Superficial Ground

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

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

1.2.3 Landslip

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

Database searched and no data found.

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

1.2.4 Landslip Permeability

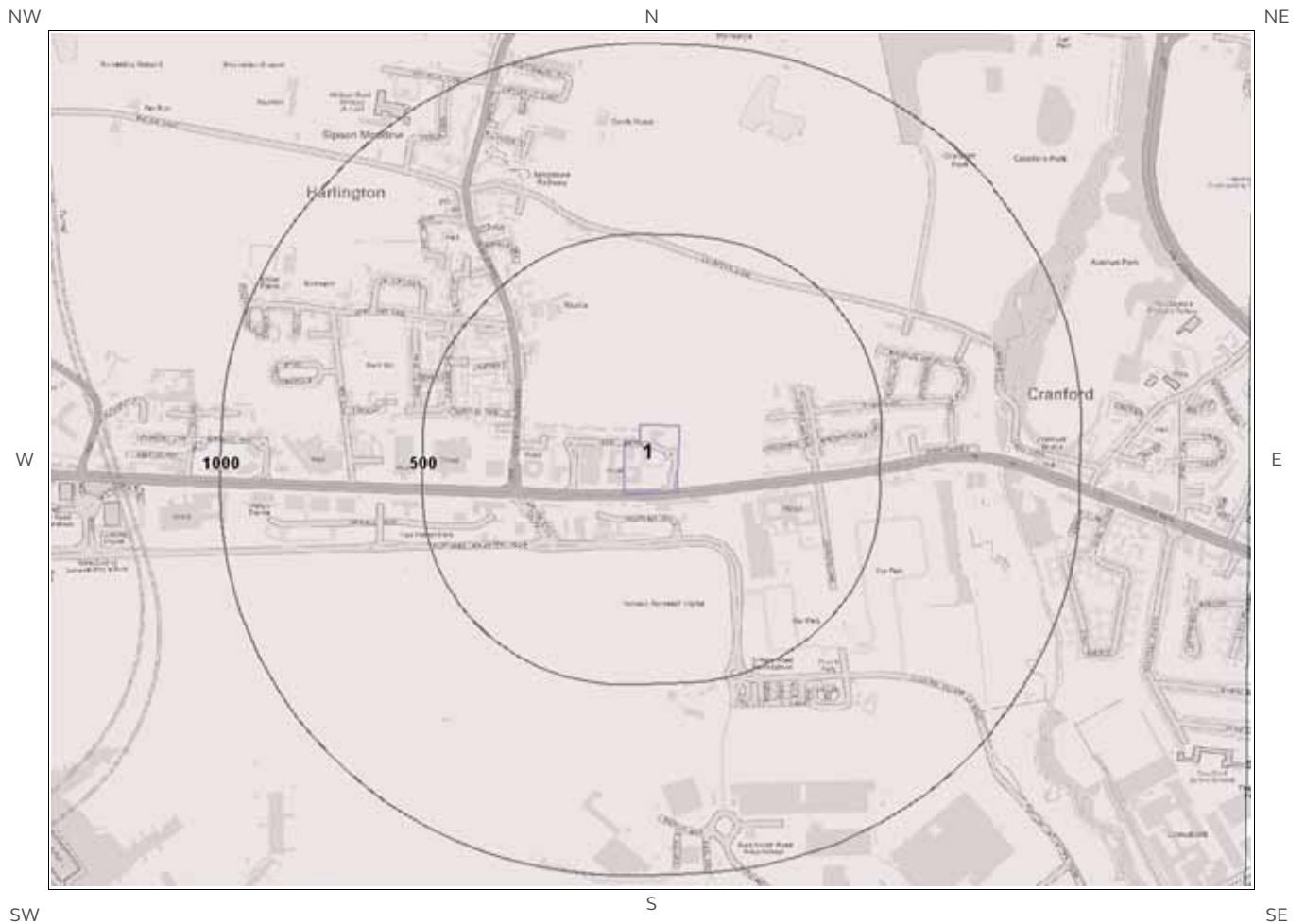
Are there any records relating to permeability of landslips within the study site** boundary?

No

Database searched and no data found.

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

1.3 Bedrock and Faults Map



Bedrock and Faults Legend

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1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:269

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLSISA	London Clay Formation - Clay, Silt And Sand	No Details

1.3.2 Permeability of Bedrock Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Moderate	Very Low

1.3.3 Faults

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

Database searched and no data found.

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

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

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

1.4 Radon Data

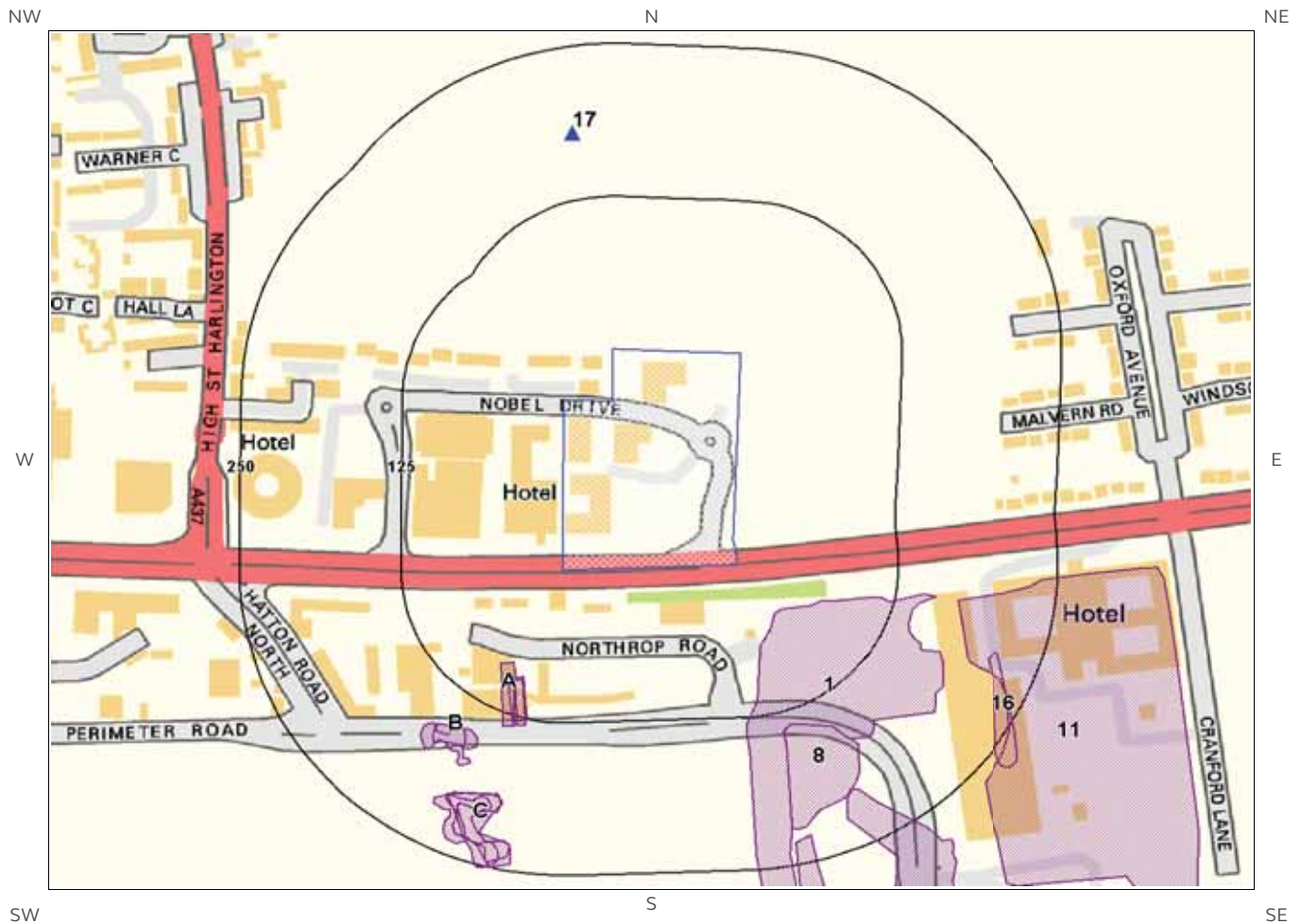
1.4.1 Radon Affected Areas

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

1.4.2 Radon Protection

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

2 Ground Workings Map



Ground Workings Legend

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2 Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

The following Historical Surface Ground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
1	49.0	SE	509256 176699	Pond	1932
2A	85.0	SW	509052 176801	Pond	1865
3A	93.0	S	509060 176797	Pond	1912
4A	95.0	S	509057 176795	Pond	1932
5A	95.0	S	509057 176795	Pond	1912
6A	95.0	S	509057 176795	Pond	1938
7A	95.0	S	509057 176795	Pond	1894
8	137.0	S	509294 176734	Gravel Pit	1932
9B	149.0	SW	509010 176767	Ponds	1912
10B	151.0	SW	508989 176760	Ponds	1865
11	173.0	E	509285 176685	Refuse Heap	1938
12C	190.0	S	509026 176702	Ponds	1912
13C	191.0	S	509016 176692	Ponds	1894
14C	191.0	S	509016 176692	Ponds	1912
15C	196.0	S	509009 176689	Ponds	1865
16	209.0	E	509435 176788	Unspecified Pit	1865

2.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

2.3 Current Ground Workings

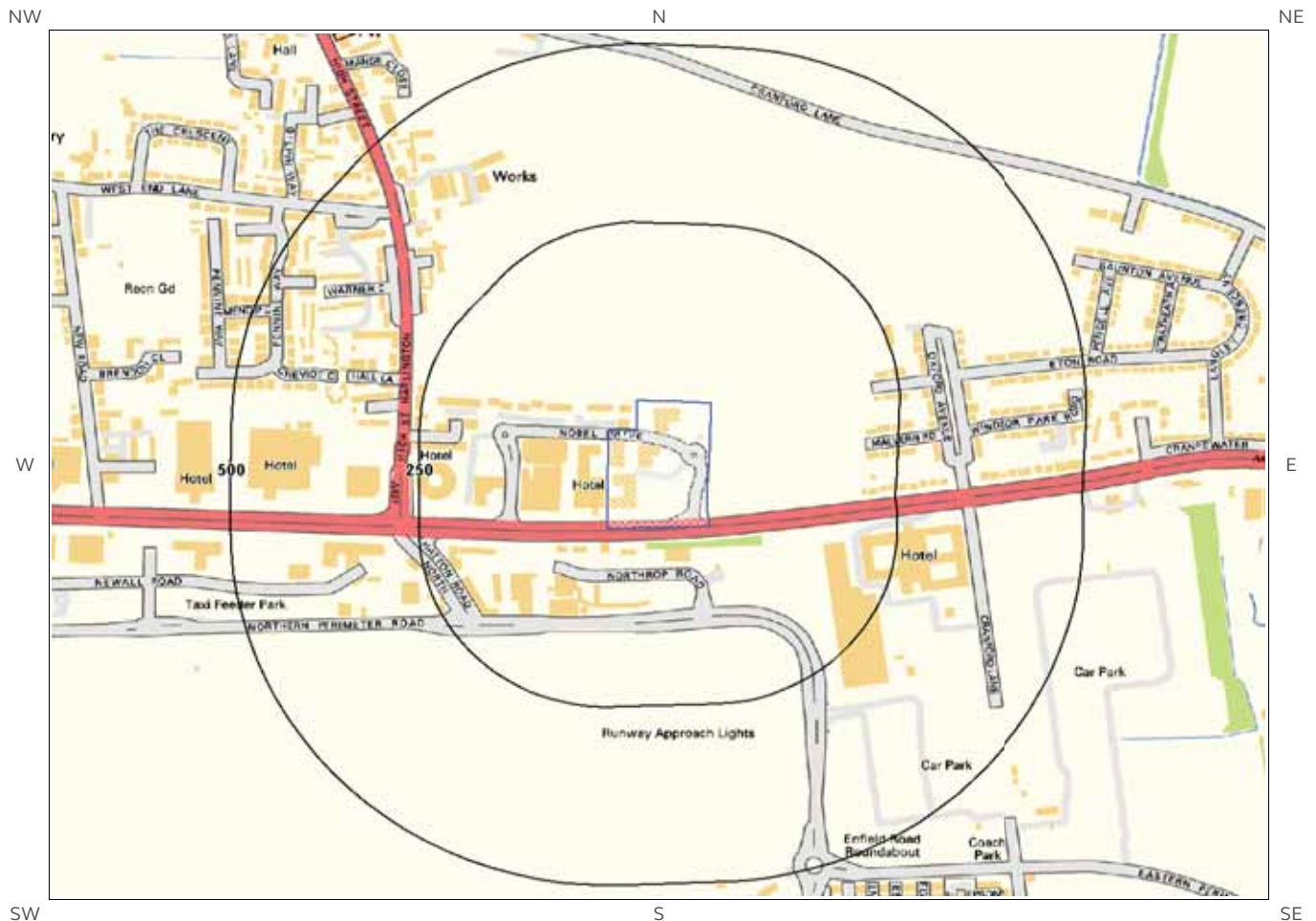
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
17	179.0	N	509100 177260	Sand & Gravel	Cranford Lane South	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	863.0	N	509500 177900	Sand & Gravel	Cranford Lane	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and
Natural Cavities Legend

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3 Mining, Extraction & Natural Cavities

3.1 Historical Mining

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

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

Database searched and no data found.

3.2 Coal Mining

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

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

Database searched and no data found.

3.3 Johnson Poole and Bloomer

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

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

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

3.4 Non-Coal Mining

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

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

Database searched and no data found.

3.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

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

Database searched and no data found.

3.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

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

Database searched and no data found.

3.8 Gypsum Extraction

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

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

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level.

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

Database searched and no data found.

3.10 Clay Mining

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

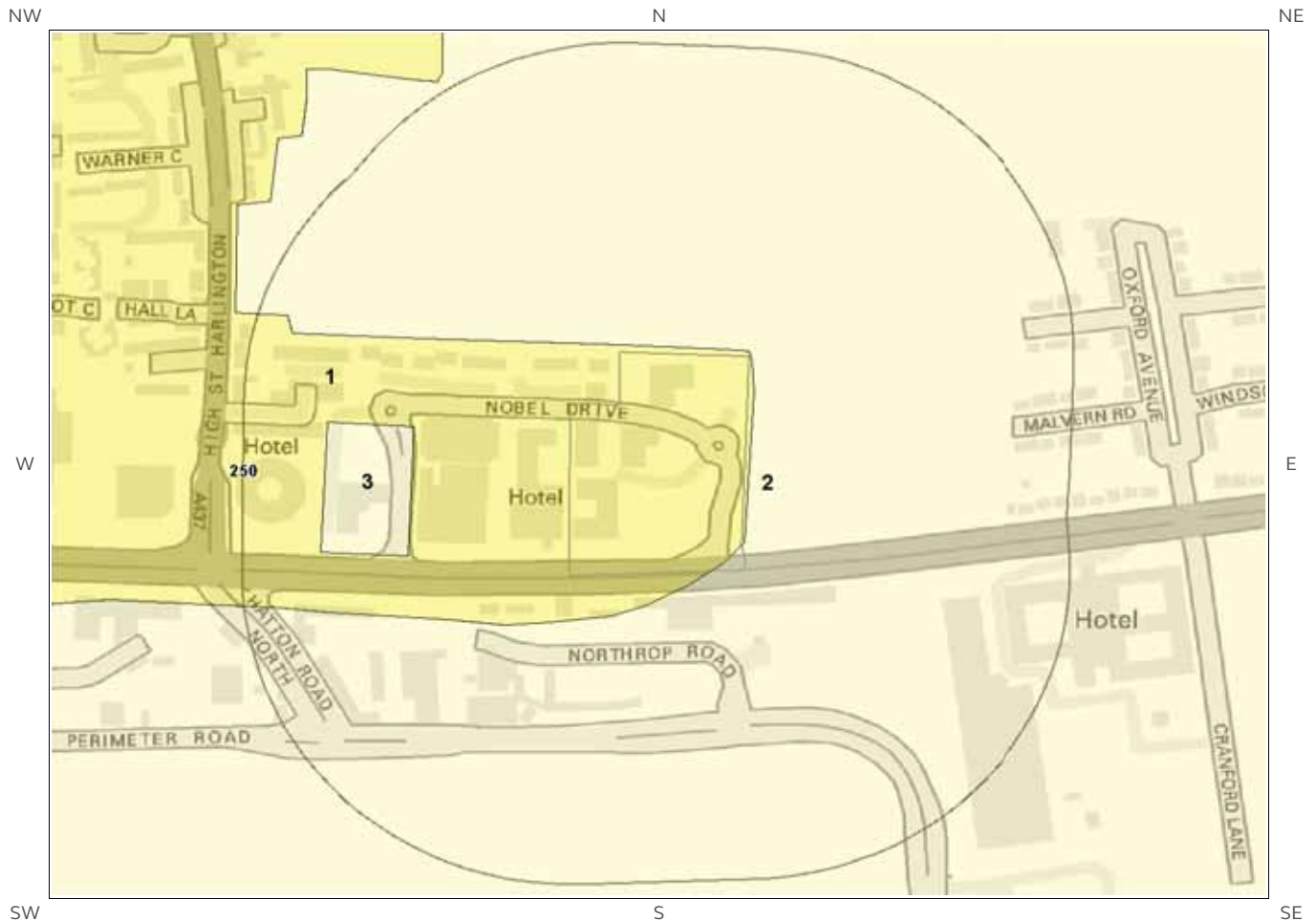
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

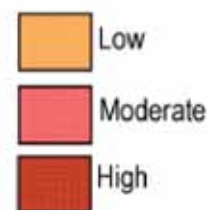
4 Natural Ground Subsidence

4.1 Shrink-Swell Clay Map

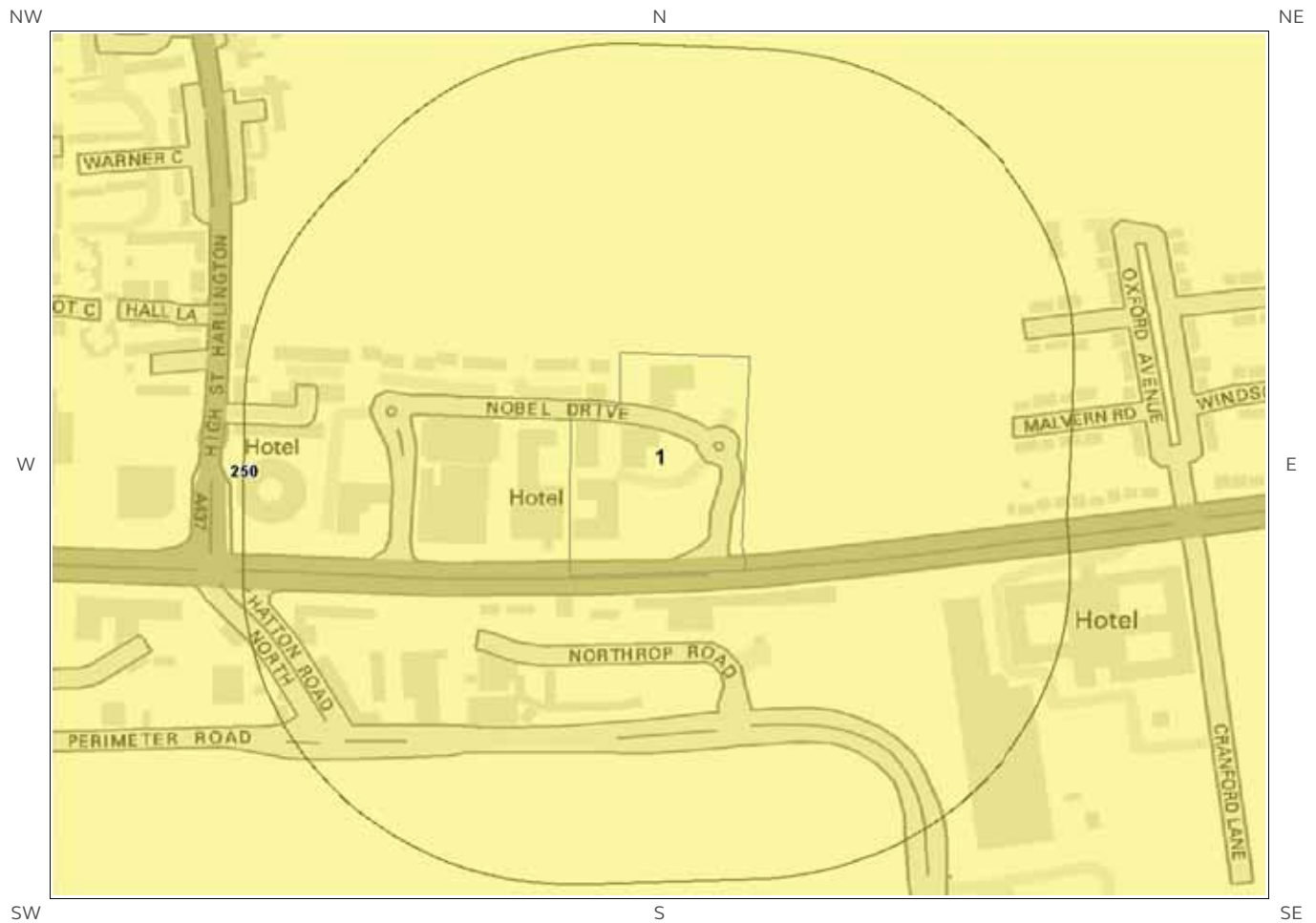


Shrink Swell Clay Legend

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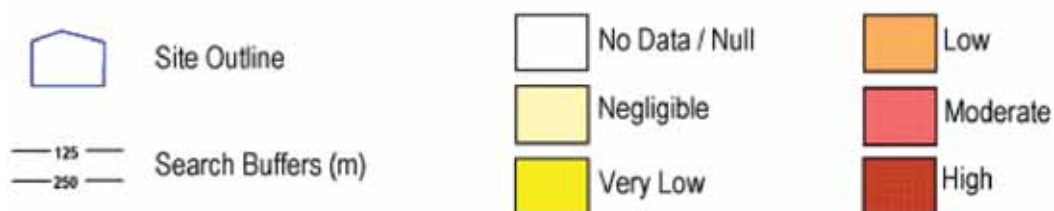


4.2 Landslides Map

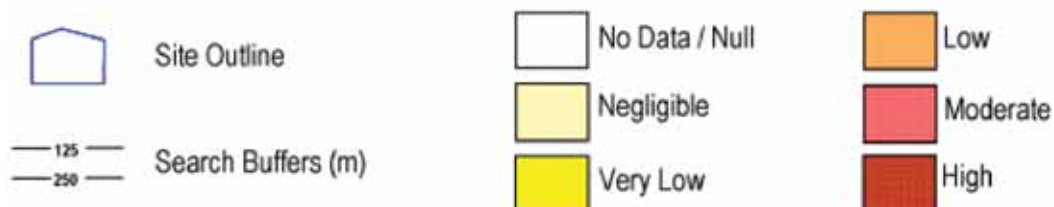
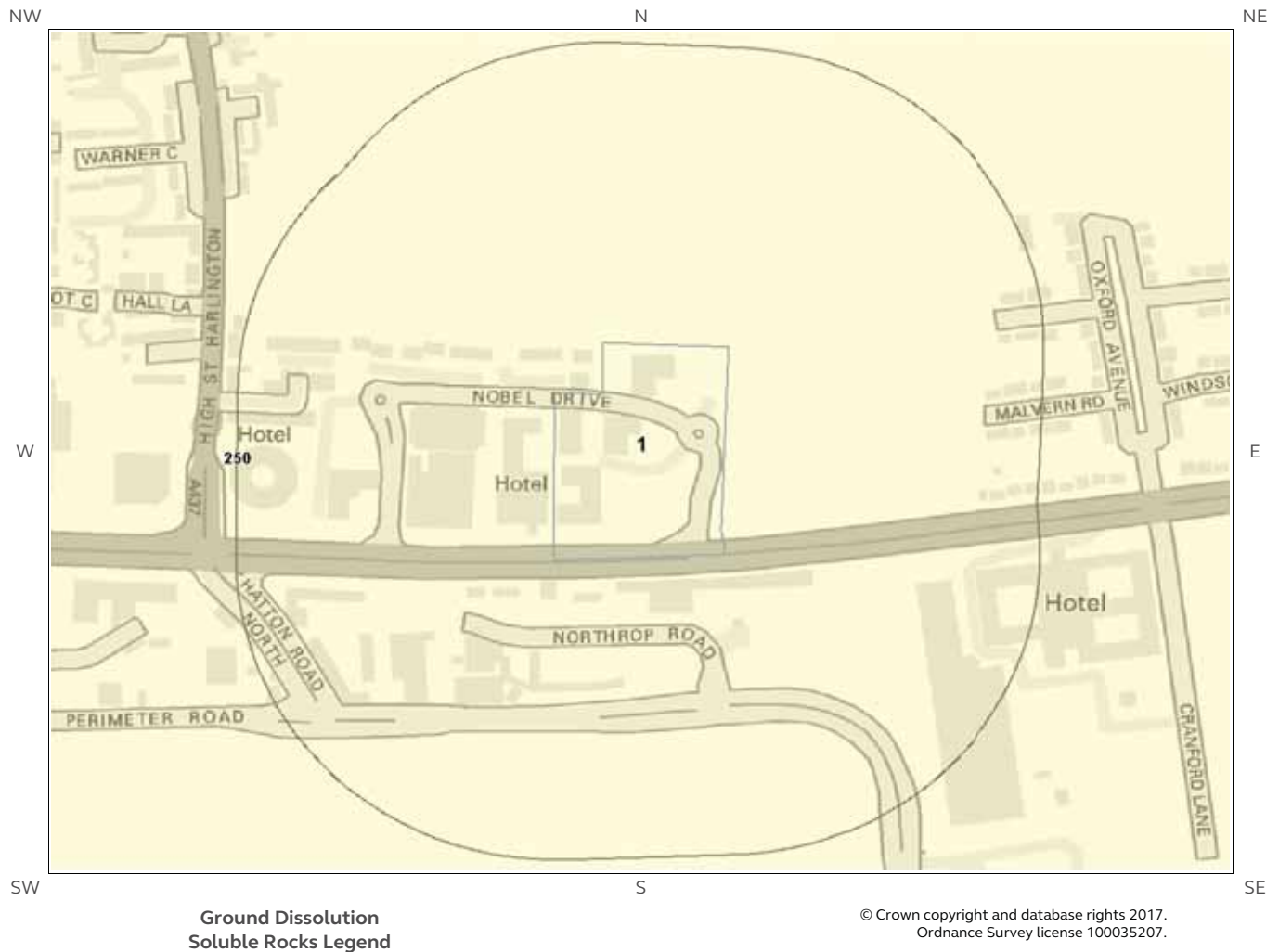


Landslides Legend

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4.3 Ground Dissolution Soluble Rocks Map

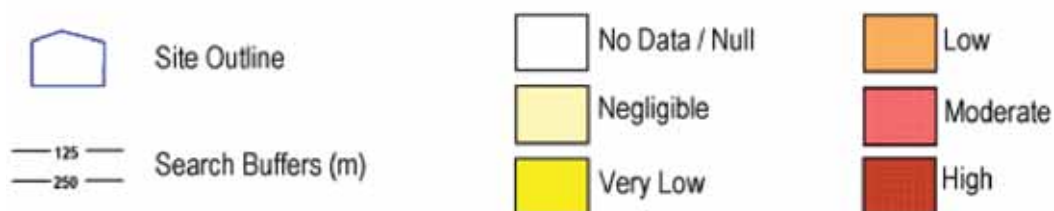


4.4 Compressible Deposits Map

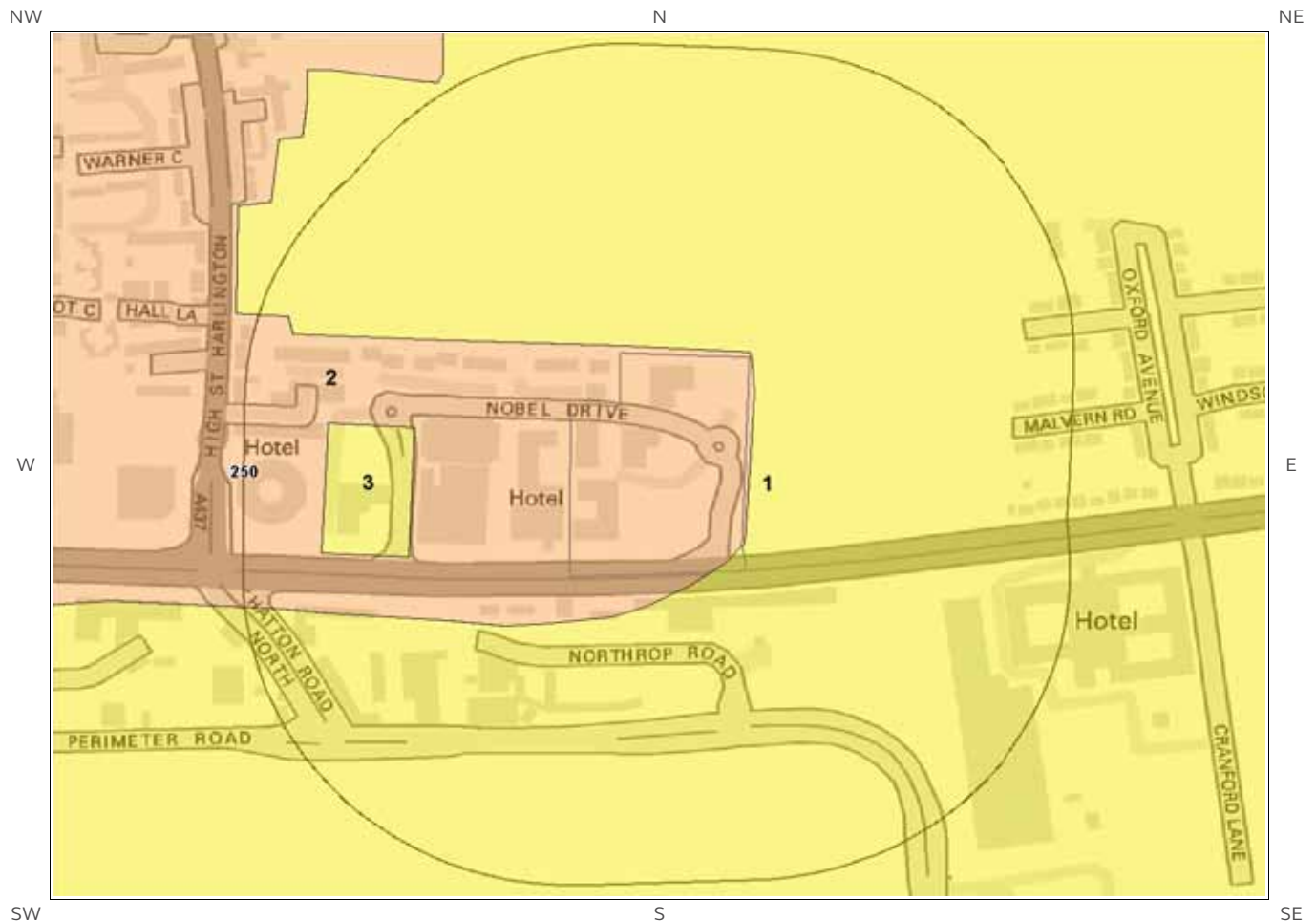


Compressible Deposits Legend

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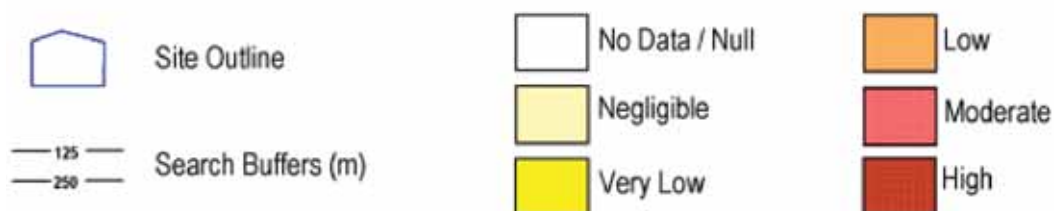


4.5 Collapsible Deposits Map



Collapsible Deposits Legend

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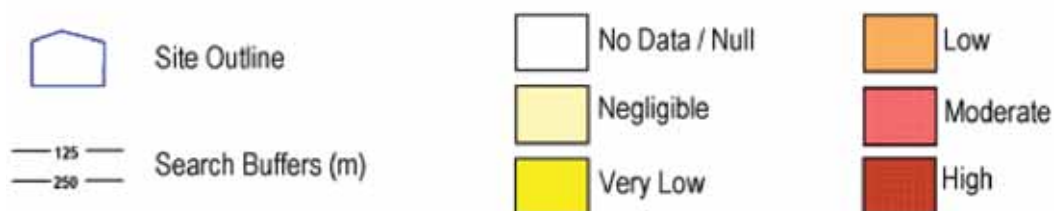


4.6 Running Sand Map



Running Sand Legend

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4 Natural Ground Subsidence

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

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

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

4.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

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

4.3 Ground Dissolution of Soluble Rocks

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

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

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

4.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible ground identified. No special actions required to avoid problems due to compressible ground. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible ground.
2	1.0	E	Moderate	Significant potential for compressibility problems. Do not drain, load or de-water ground near the property without technical advice. For new build, consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property, possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
3	28.0	S	Moderate	Significant potential for compressibility problems. Do not drain, load or de-water ground near the property without technical advice. For new build, consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property, possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

4.5 Collapsible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Low	Slight possibility for collapsible deposit problems after major changes in loading or groundwater conditions. Normal maintenance to avoid large amounts of water entering the ground through pipe leakage or soak-aways should reduce the likelihood of problems due to collapsible deposits. For new build, assess the possibility of collapsible (loessic) deposits in ground investigation. For existing property, no significant increase in insurance risk from collapsible deposits is likely.

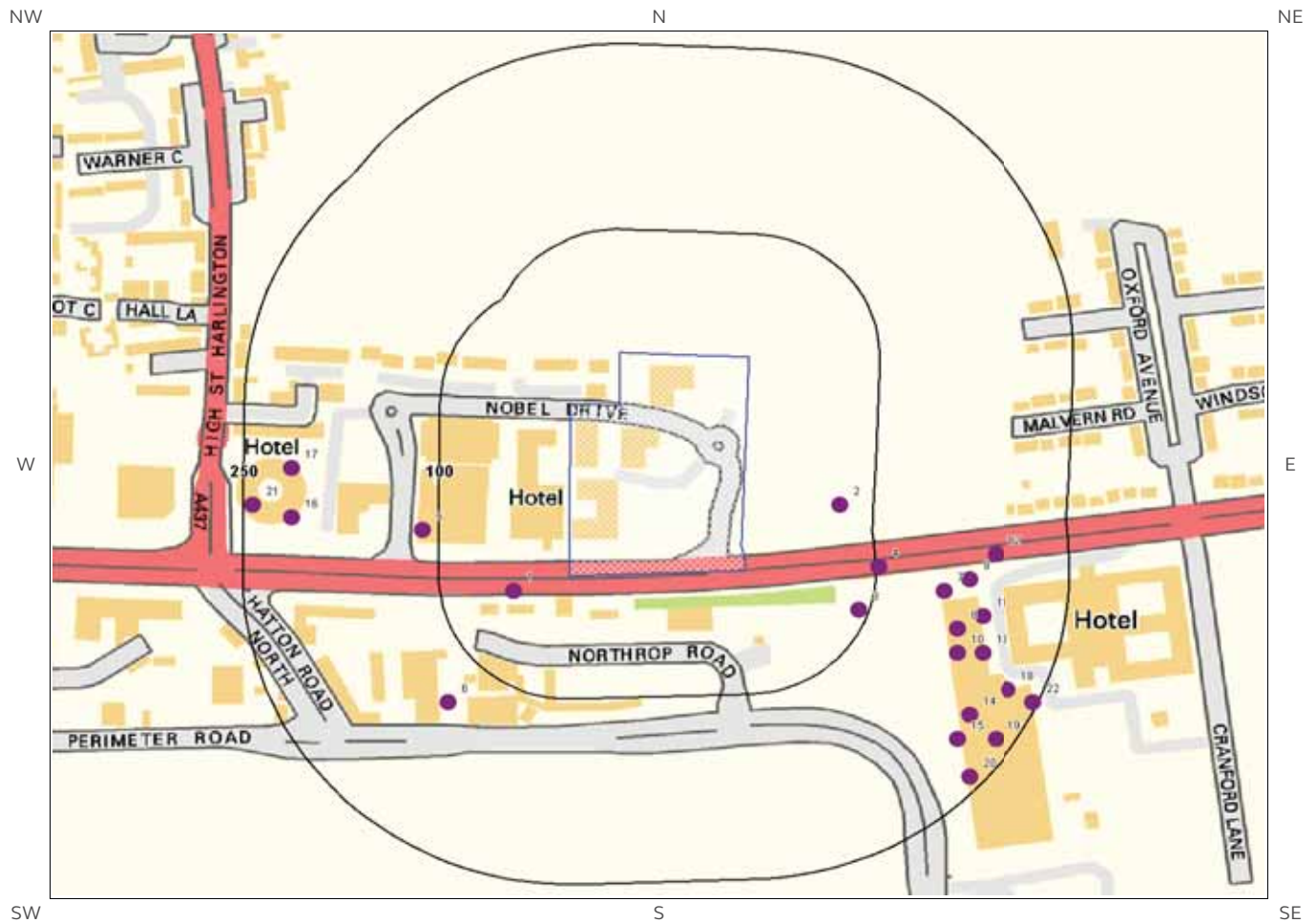
4.6 Running Sands

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

ID	Distance (m)	Direction	Hazard Rating	Details
2	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

5 Borehole Records Map



Borehole Records Legend

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5 Borehole Records

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

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

22

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	45.0	W	509050 176890	TQ07NE174	-1.0	HARLINGTON DRAINAGE 15
2	74.0	E	509300 176960	TQ07NE242	5.0	HEATHROW SURFACE ACCESS STUDIES 297
3	93.0	E	509315 176875	TQ07NE243	4.3	HEATHROW SURFACE ACCESS STUDIES TP 298
4	102.0	E	509330 176910	TQ07NE183	-1.0	HARLINGTON DRAINAGE 30
5	113.0	W	508980 176940	TQ07NE19	3.04	HAYES UB.8 HAYES & HARLINGTON
6	139.0	SW	509000 176800	TQ07NE379	8.6	AVIS CAR RENTAL HOUNSLOW
7	153.0	E	509380 176890	TQ07NE586	-1.0	FLY A WAY BATH ROAD HEATHROW 7
8	169.0	E	509390 176860	TQ07NE579	-1.0	BATH ROAD HEATHROW TP10
9	172.0	E	509400 176900	TQ07NE587	-1.0	FLY A WAY BATH ROAD HEATHROW 8
10	175.0	E	509390 176840	TQ07NE585	-1.0	FLY A WAY BATH ROAD HEATHROW 6
11	186.0	E	509410 176870	TQ07NE578	-1.0	BATH ROAD HEATHROW TP9
12	192.0	E	509420 176920	TQ07NE175	-1.0	HARLINGTON DRAINAGE 16
13	194.0	E	509410 176840	TQ07NE577	-1.0	BATH ROAD HEATHROW TP8
14	208.0	SE	509400 176790	TQ07NE575	-1.0	BATH ROAD HEATHROW TP6
15	212.0	SE	509390 176770	TQ07NE583	-1.0	FLY A WAY BATH ROAD HEATHROW 4
16	213.0	W	508880 176950	TQ07NE305	9.14	HARLINGTON CORNER HOTEL 1
17	213.0	W	508880 176990	TQ07NE307	9.36	HARLINGTON CORNER HOTEL 3
18	224.0	SE	509430 176810	TQ07NE584	-1.0	FLY A WAY BATH ROAD HEATHROW 5
19	236.0	SE	509420 176770	TQ07NE574	-1.0	BATH ROAD HEATHROW TP5
20	240.0	SE	509400 176740	TQ07NE572	-1.0	BATH ROAD HEATHROW TP3
21	243.0	W	508850 176960	TQ07NE306	9.14	HARLINGTON CORNER HOTEL 2
22	246.0	SE	509450 176800	TQ07NE576	-1.0	BATH ROAD HEATHROW TP7

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

#2: scans.bgs.ac.uk/sobi_scans/boreholes/574070
#3: scans.bgs.ac.uk/sobi_scans/boreholes/574071
#5: scans.bgs.ac.uk/sobi_scans/boreholes/573847
#6: scans.bgs.ac.uk/sobi_scans/boreholes/574207
#16: scans.bgs.ac.uk/sobi_scans/boreholes/574133
#17: scans.bgs.ac.uk/sobi_scans/boreholes/574135
#21: scans.bgs.ac.uk/sobi_scans/boreholes/574134

6 Estimated Background Soil Chemistry

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

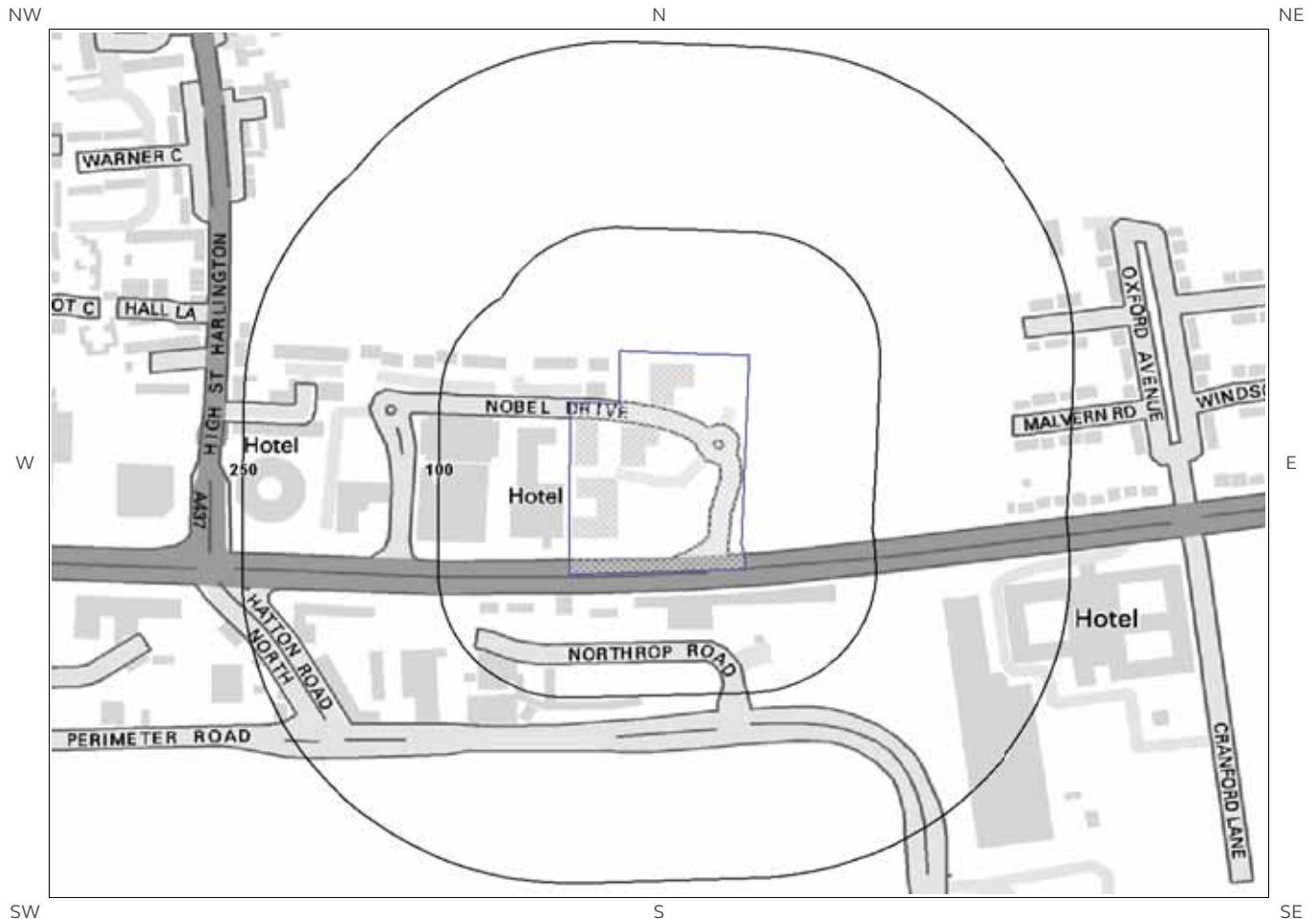
20

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuSoilLond	<15 mg/kg	No data	60 - 90 mg/kg	15 - 30 mg/kg	No data
1.0	E	London	No data	No data	No data	No data	No data
3.0	E	RuSoilLond	<15 mg/kg	No data	60 - 90 mg/kg	15 - 30 mg/kg	No data
93.0	W	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
93.0	W	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
93.0	W	RuSoilLond	<15 mg/kg	No data	60 - 90 mg/kg	15 - 30 mg/kg	No data
93.0	W	London	No data	No data	No data	No data	No data
93.0	W	RuSoilLond	<15 mg/kg	No data	60 - 90 mg/kg	15 - 30 mg/kg	No data
93.0	W	London	No data	No data	No data	No data	No data
100.0	W	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
100.0	W	RuSoilLond	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
108.0	NW	London	No data	No data	No data	No data	No data
108.0	NW	London	No data	No data	No data	No data	No data
120.0	W	London	No data	No data	No data	No data	No data
120.0	W	London	No data	No data	No data	No data	No data
120.0	W	London	No data	<1.8 mg/kg	No data	No data	100 - 200 mg/kg
187.0	W	RuSoilLond	<15 mg/kg	No data	60 - 90 mg/kg	15 - 30 mg/kg	No data

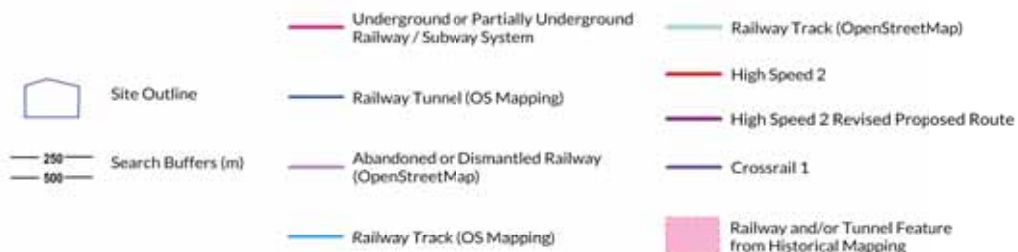
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

7 Railways and Tunnels Map



Railways and Tunnels Legend

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7 Railways and Tunnels

7.1 Tunnels

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

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

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

Database searched and no data found.

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

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

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

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

Database searched and no data found.

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

7.2 Historical Railway and Tunnel Features

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

Have any historical railway or tunnel features been identified within the study site boundary? No

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

Database searched and no data found.

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

7.3 Historical Railways

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

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

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

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

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

7.4 Active Railways

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

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

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

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

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

7.5 Railway Projects

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

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

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

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

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

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

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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX



The Coal Authority

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



Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
<https://www.gov.uk/government/organisations/public-health-england>
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



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<https://www.groundsure.com/terms-and-conditions-sept-2016/>

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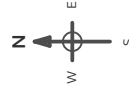
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1865-1868

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1868
Edition 1868
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1865
Edition 1868
Copyright N/A
Levelling N/A

Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A



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Production date: 23 February 2017

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Site Details:

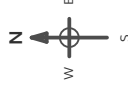
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1881

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised N/A
Edition 1881
Copyright N/A
Levelled N/A



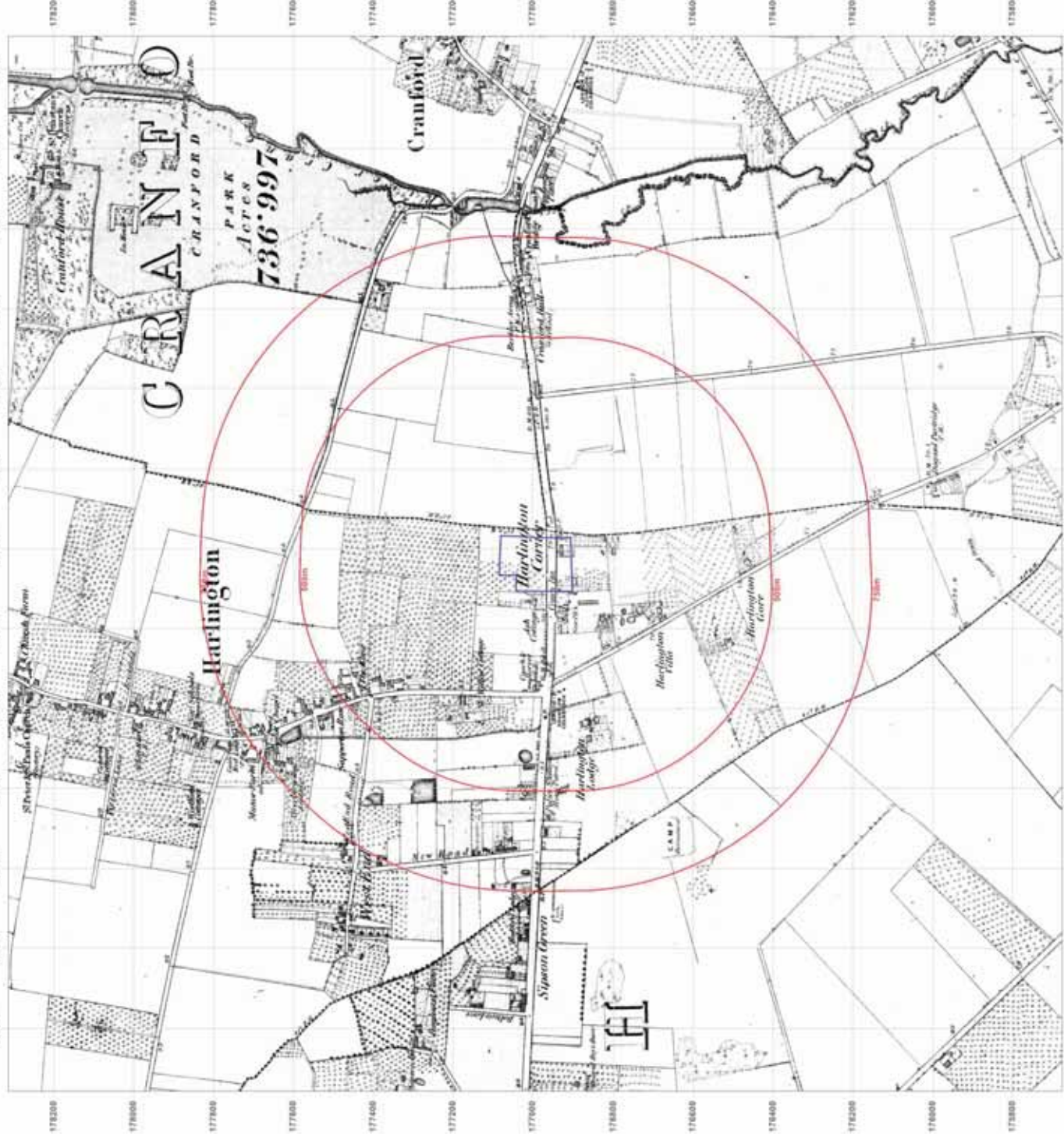
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Site Details:

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Report Ref: EMS_408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1894-1895

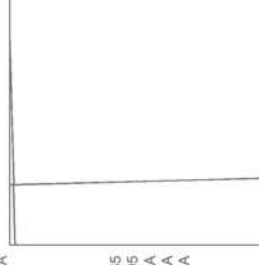
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A



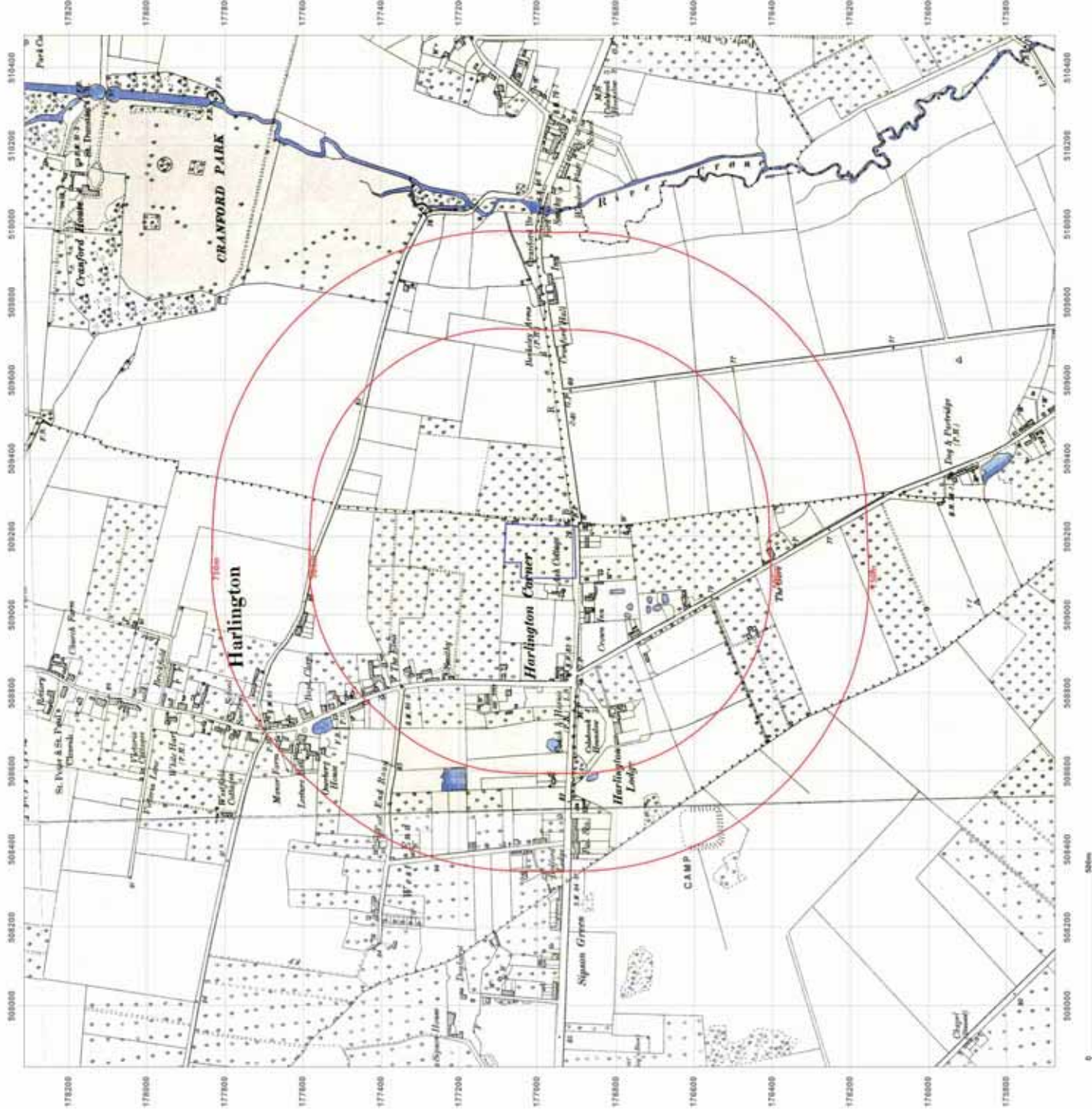
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Production date: 23 February 2017

To view map legend click here [Legend](#)



Site Details:

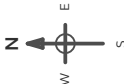
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

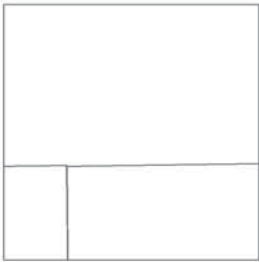
Map date: 1898-1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A



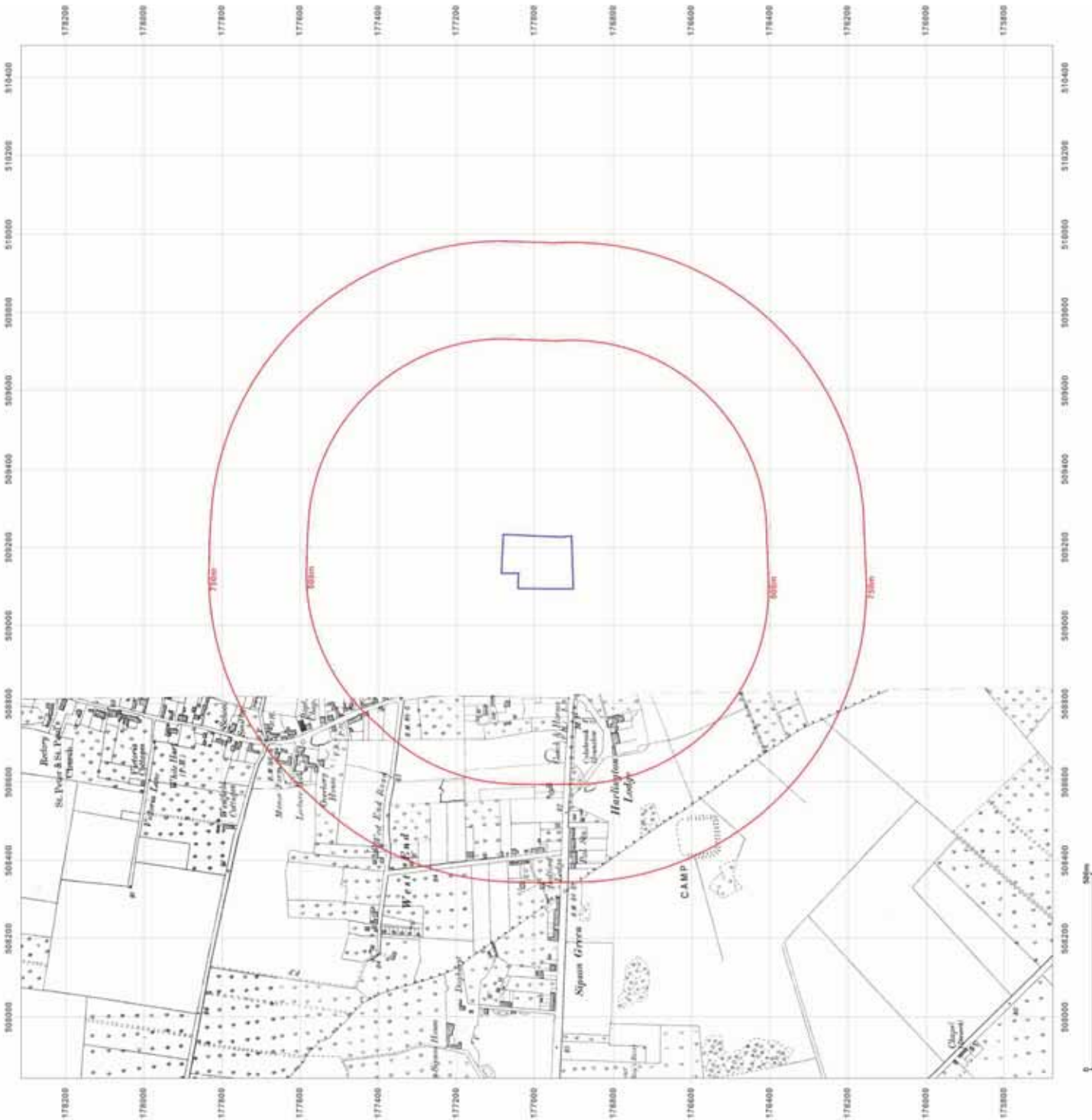
Surveyed 1875
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1912-1913

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1913
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1912
Edition N/A
Copyright N/A
Unpublished N/A

Surveyed 1865
Revised 1913
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865	Copyright N/A
Revised 1912	Levelling N/A
Edition N/A	

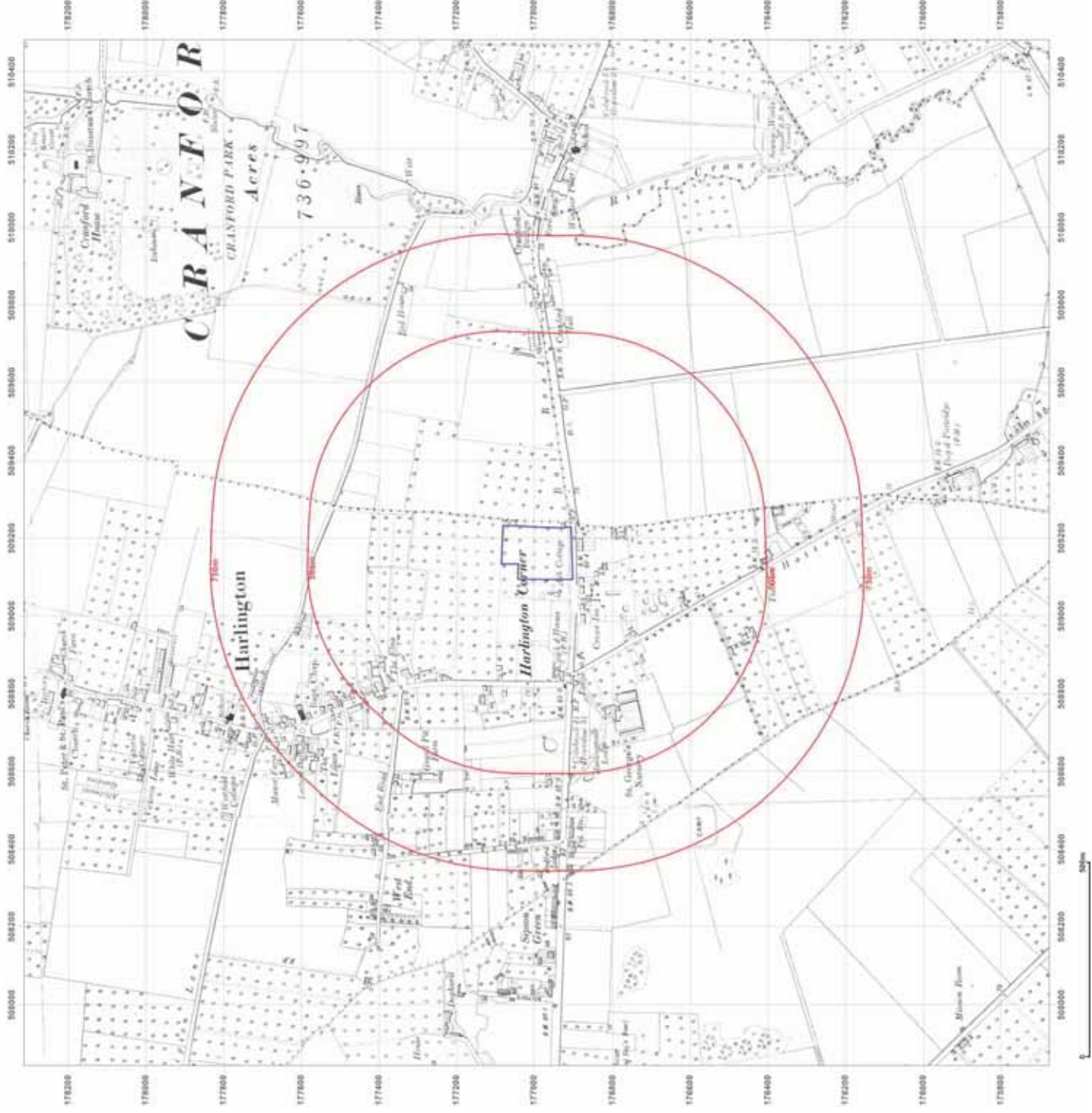


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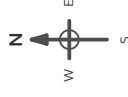
Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1932-1935

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A



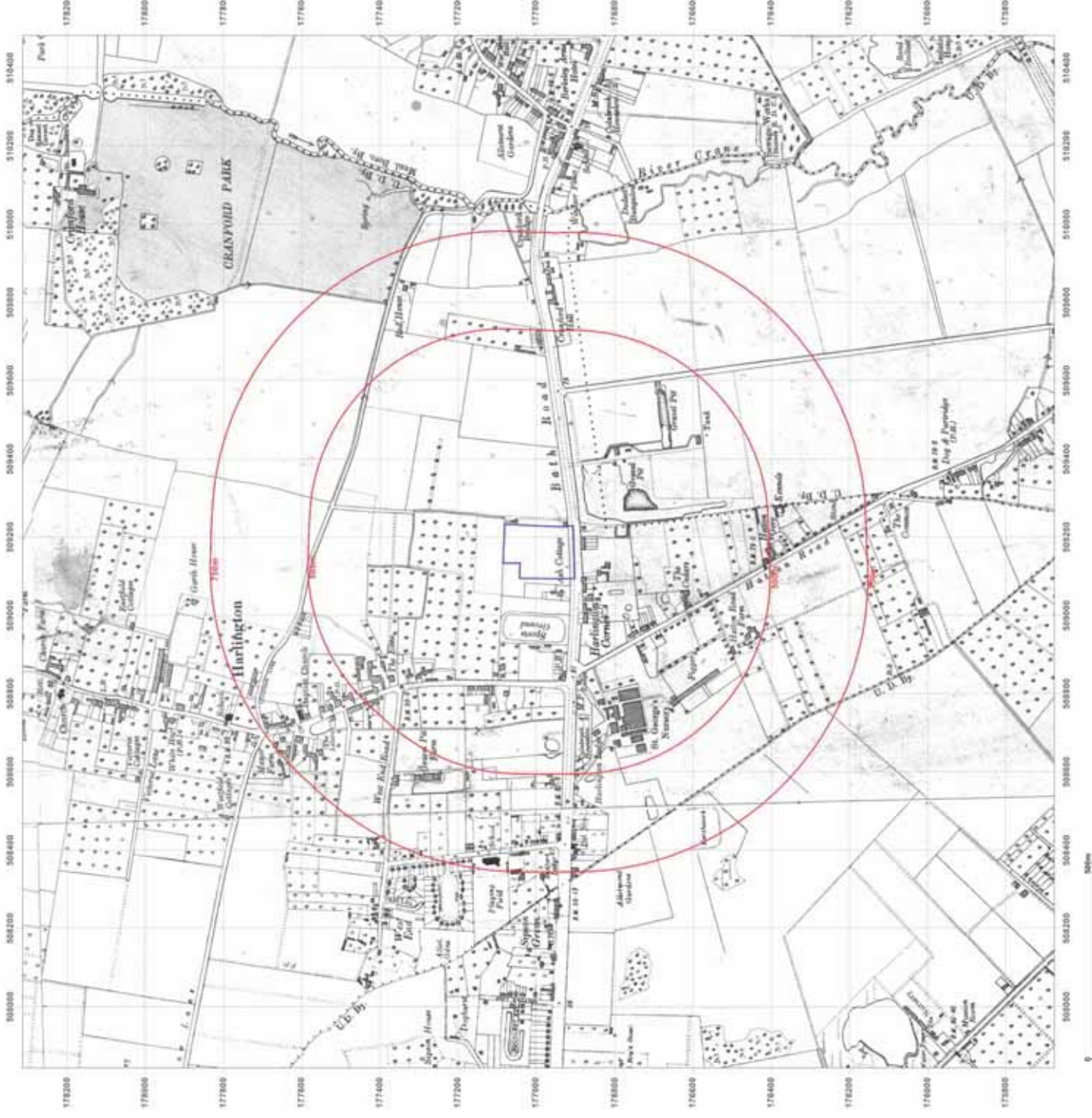
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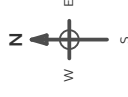
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Report Ref: EMS_408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1935-1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

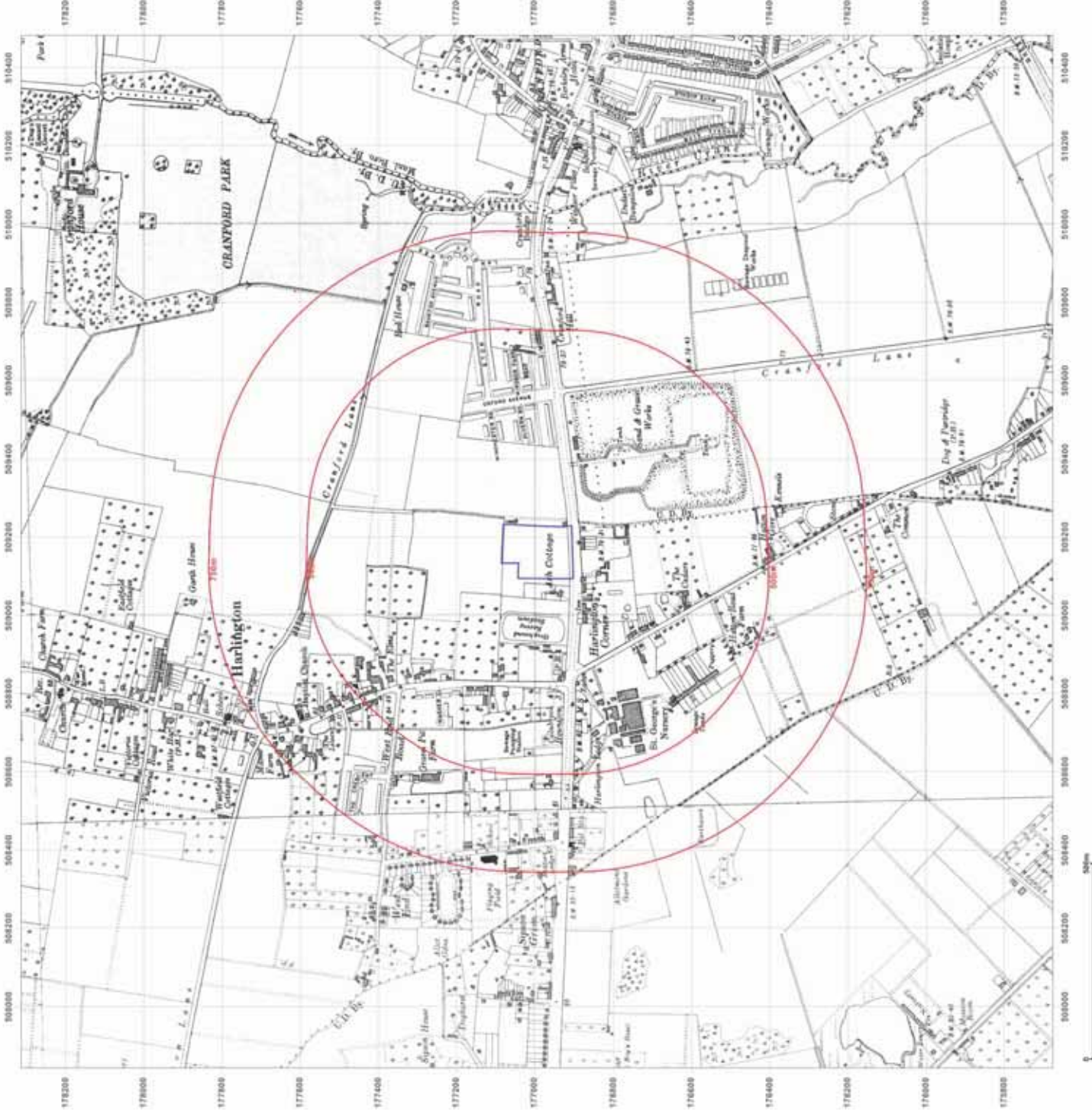
Surveyed 1885
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



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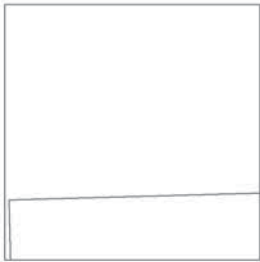
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series
Map date: 1938
Scale: 1:10,560
Printed at: 1:10,560



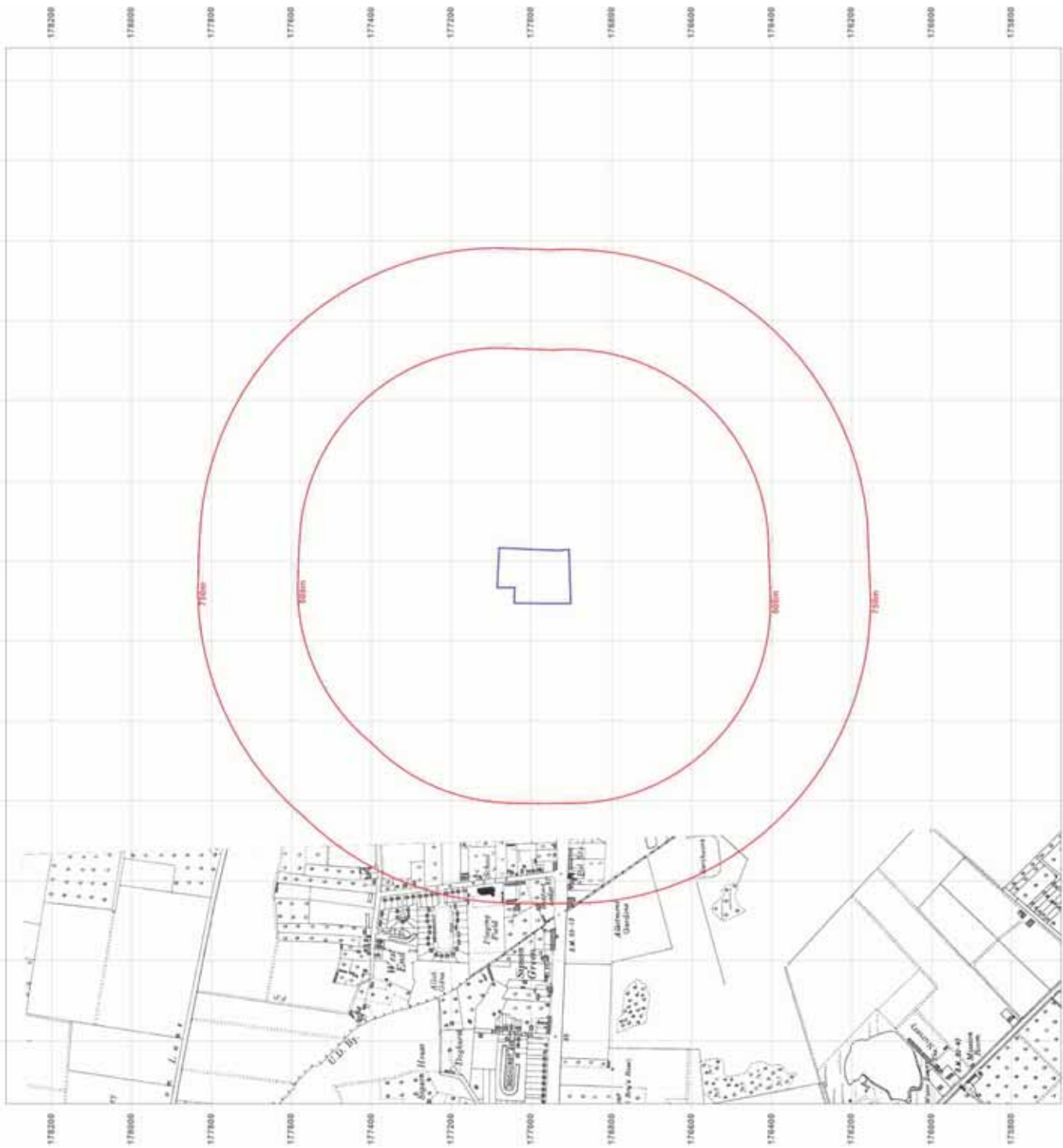
Surveyed 1865
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



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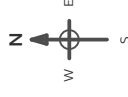
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: Provisional

Map date: 1960

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1959
Edition N/A
Copyright 1960
Levelled N/A

Surveyed N/A
Revised 1959
Edition N/A
Copyright 1960
Levelled N/A



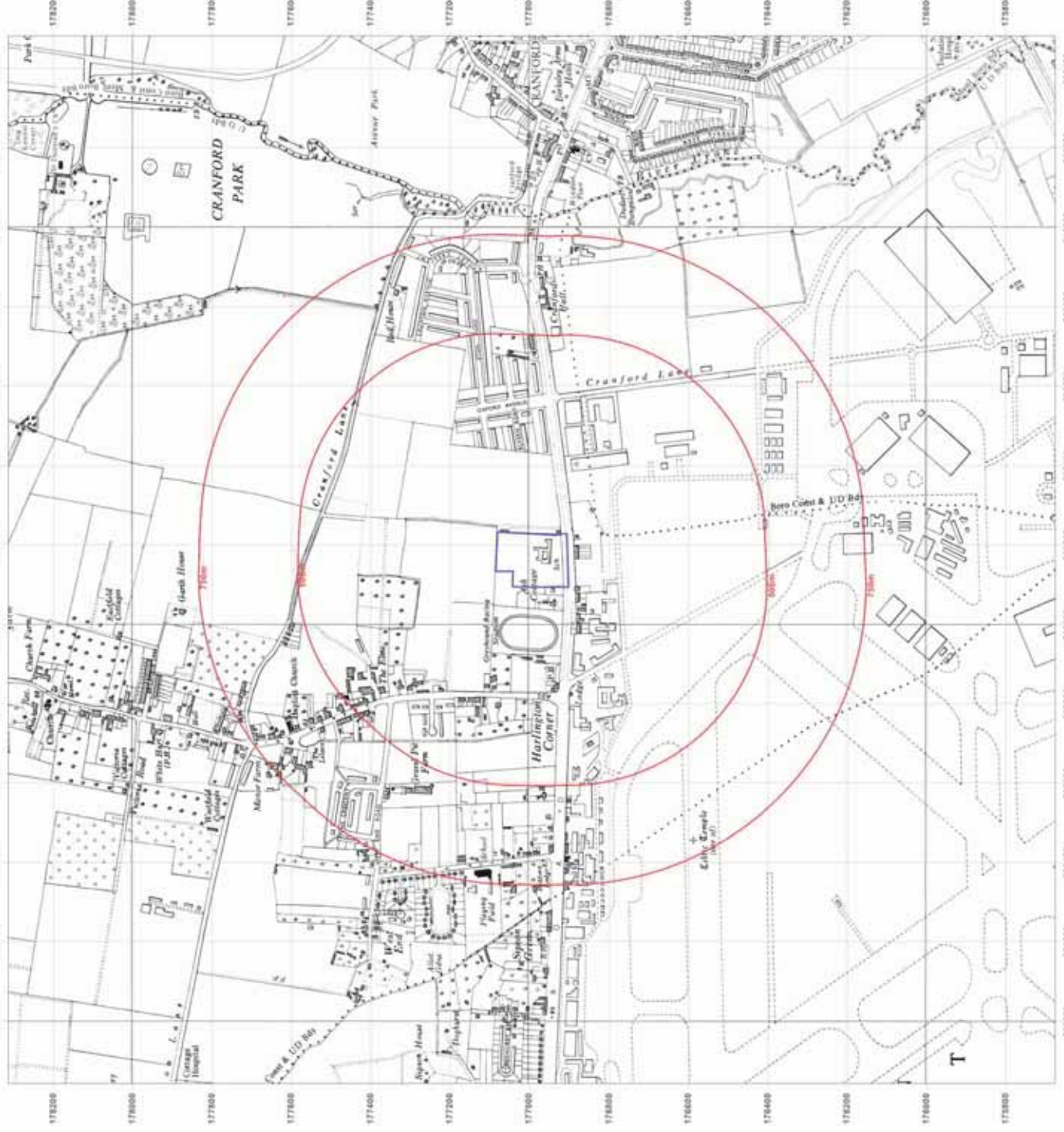
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Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: Provisional

Map date: 1964-1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1964
Edition N/A
Copyright 1960
Levelled N/A

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



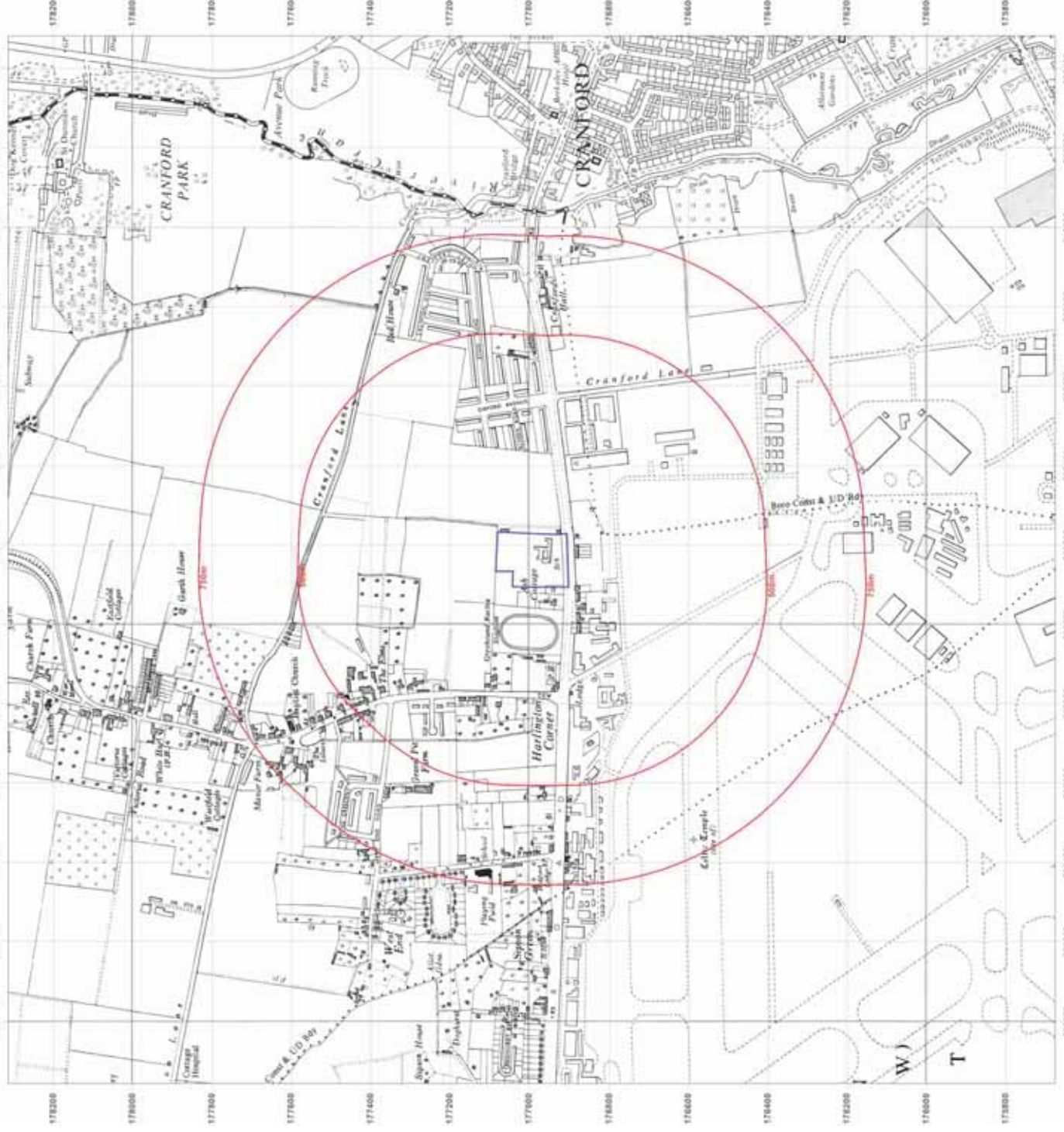
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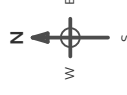
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name:	Provisional
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Map date: 1970

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1968
Revised 1970
Edition N/A
Copyright N/A
Levelled N/A



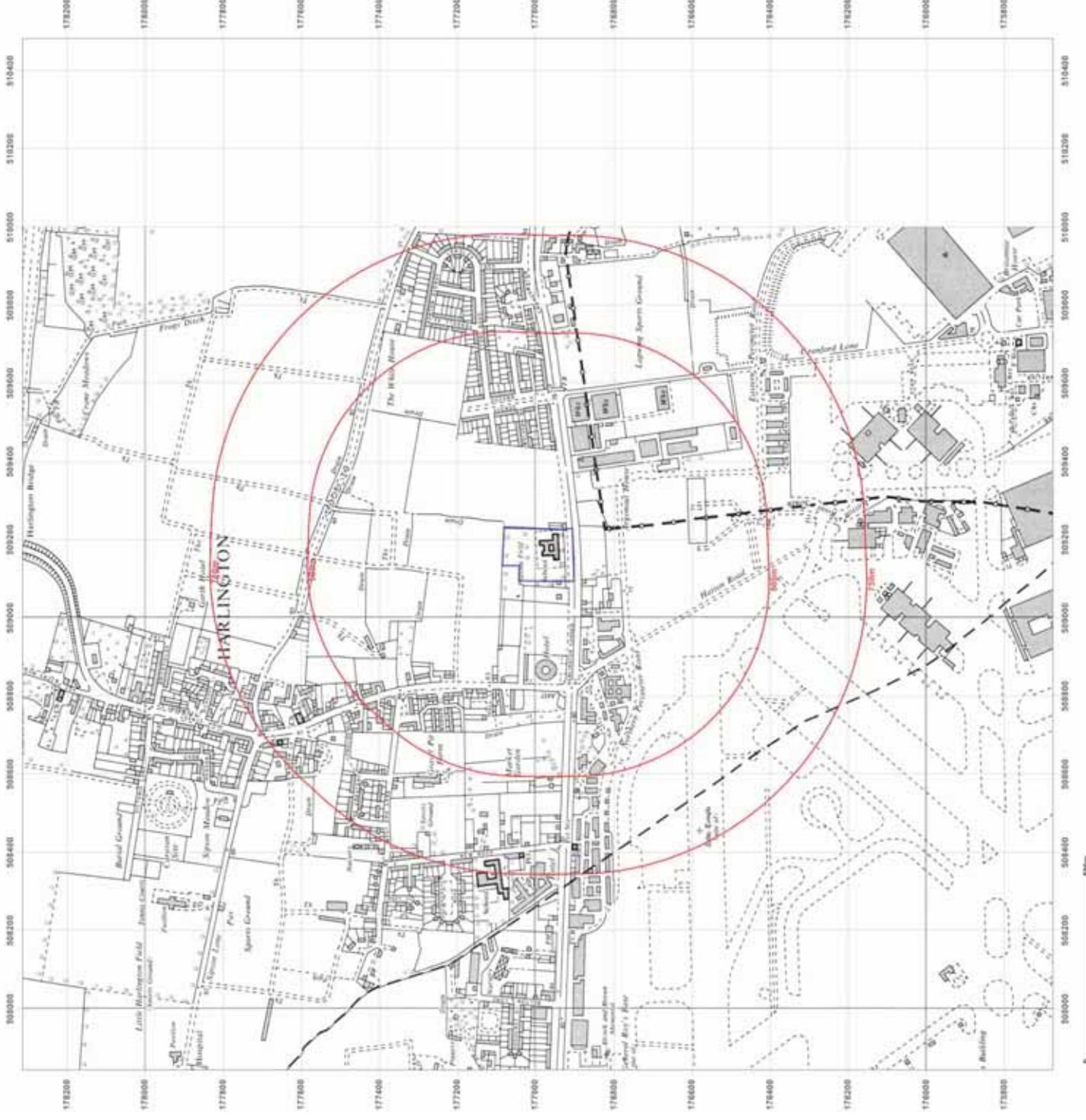
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1974

Scale: 1:10,000

Printed at: 1:10,000



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

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



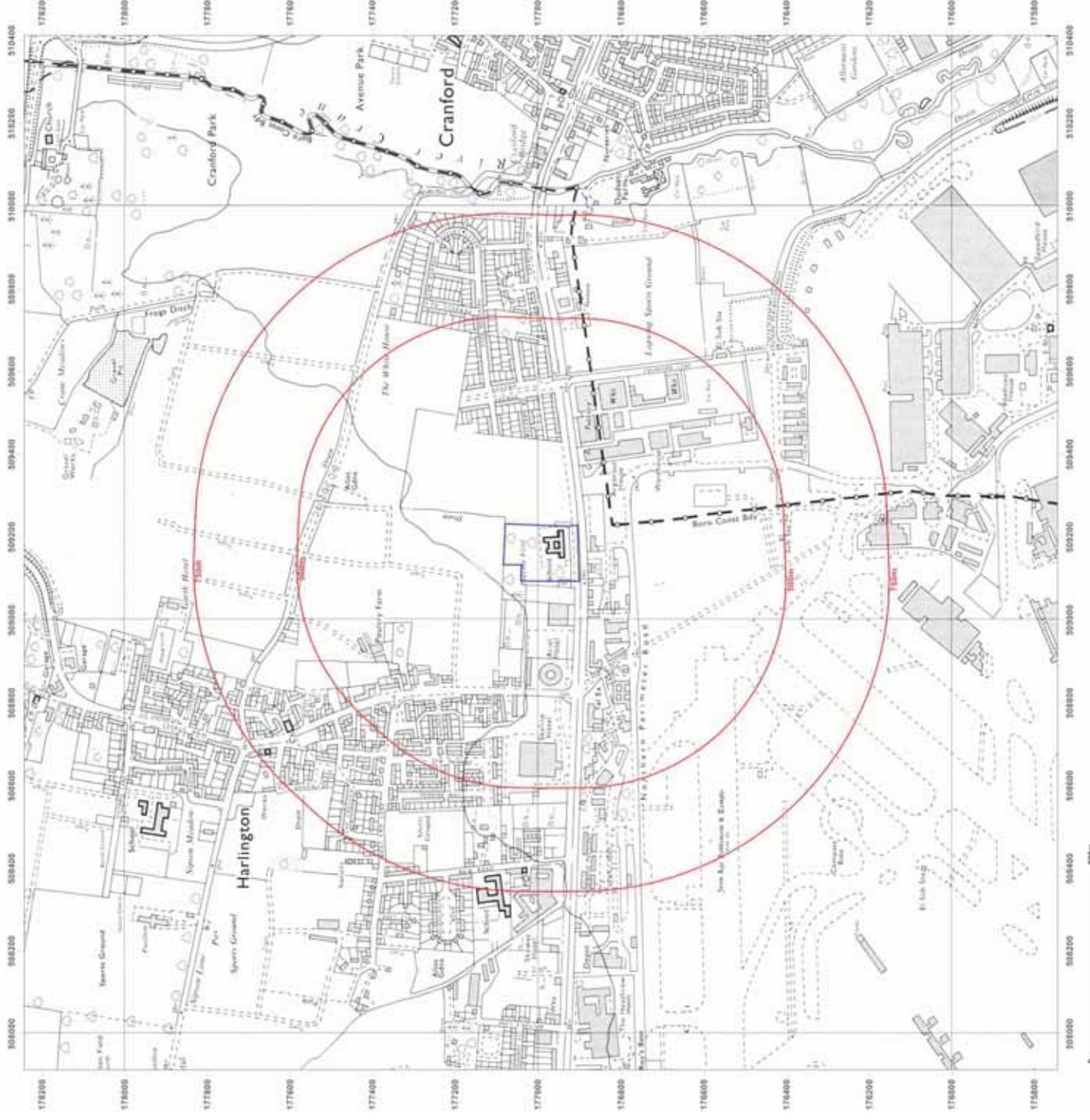
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1985-1987

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1982
Revised 1987
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1984
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A



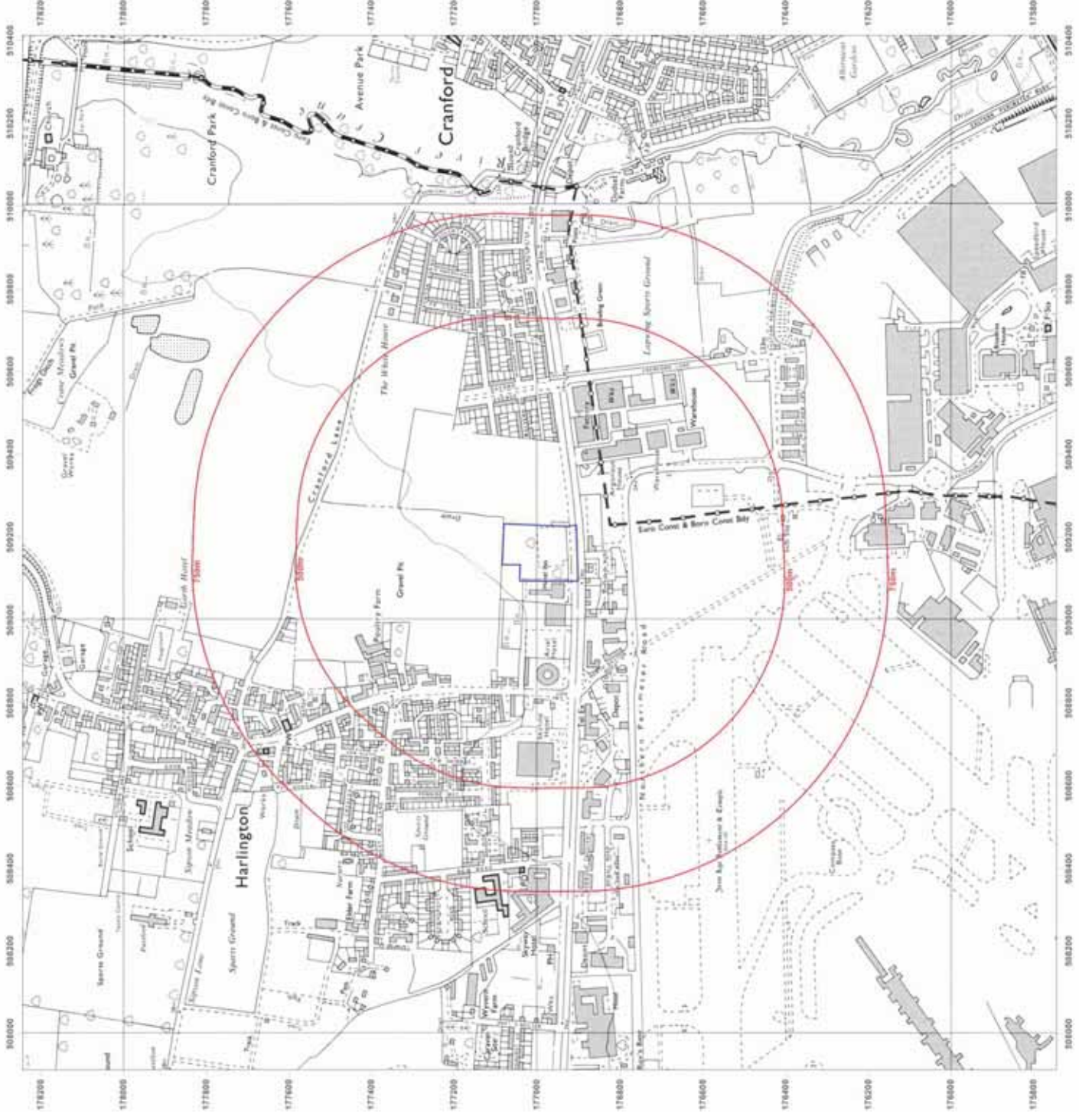
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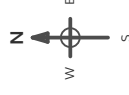
Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



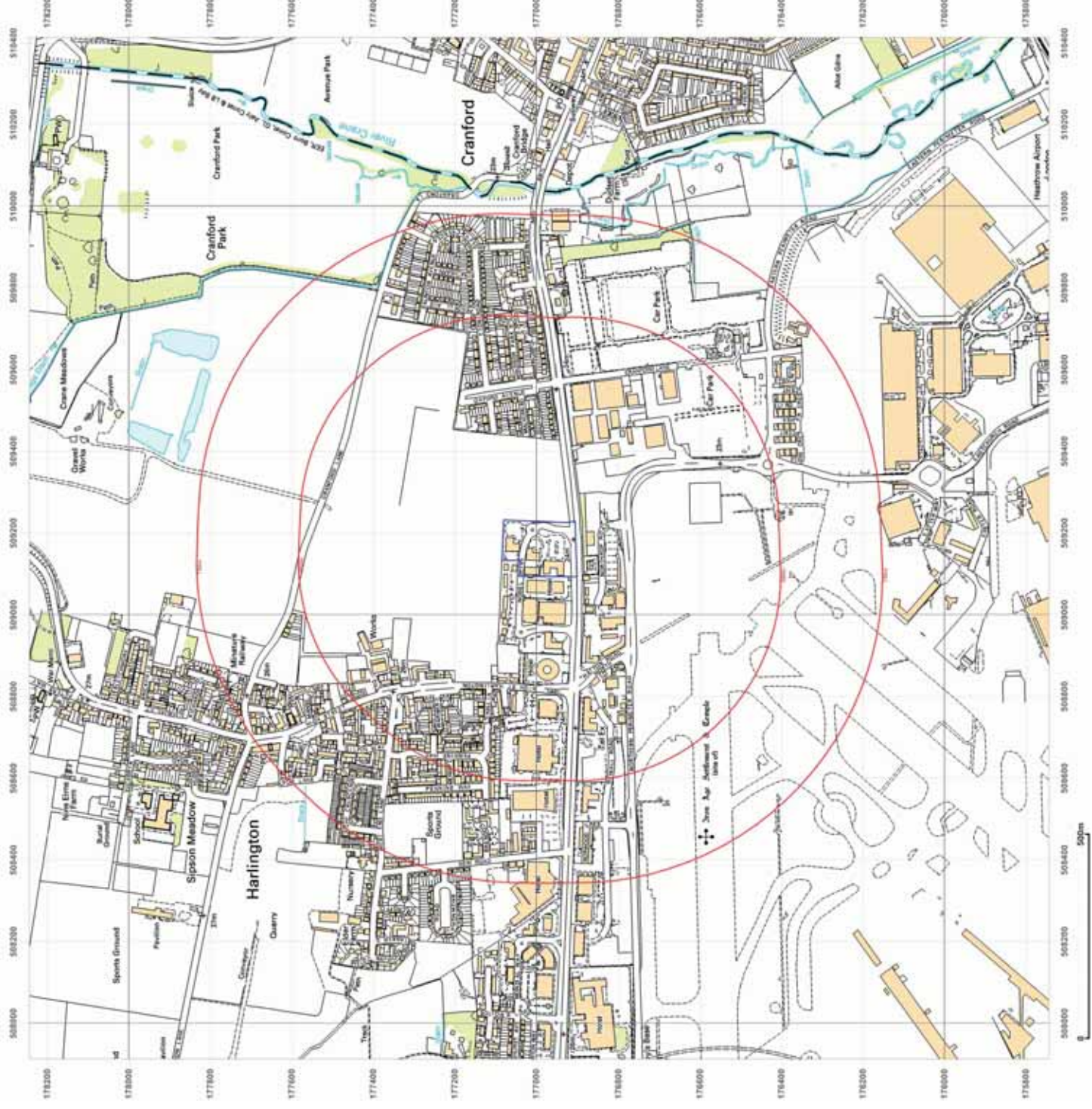
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Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



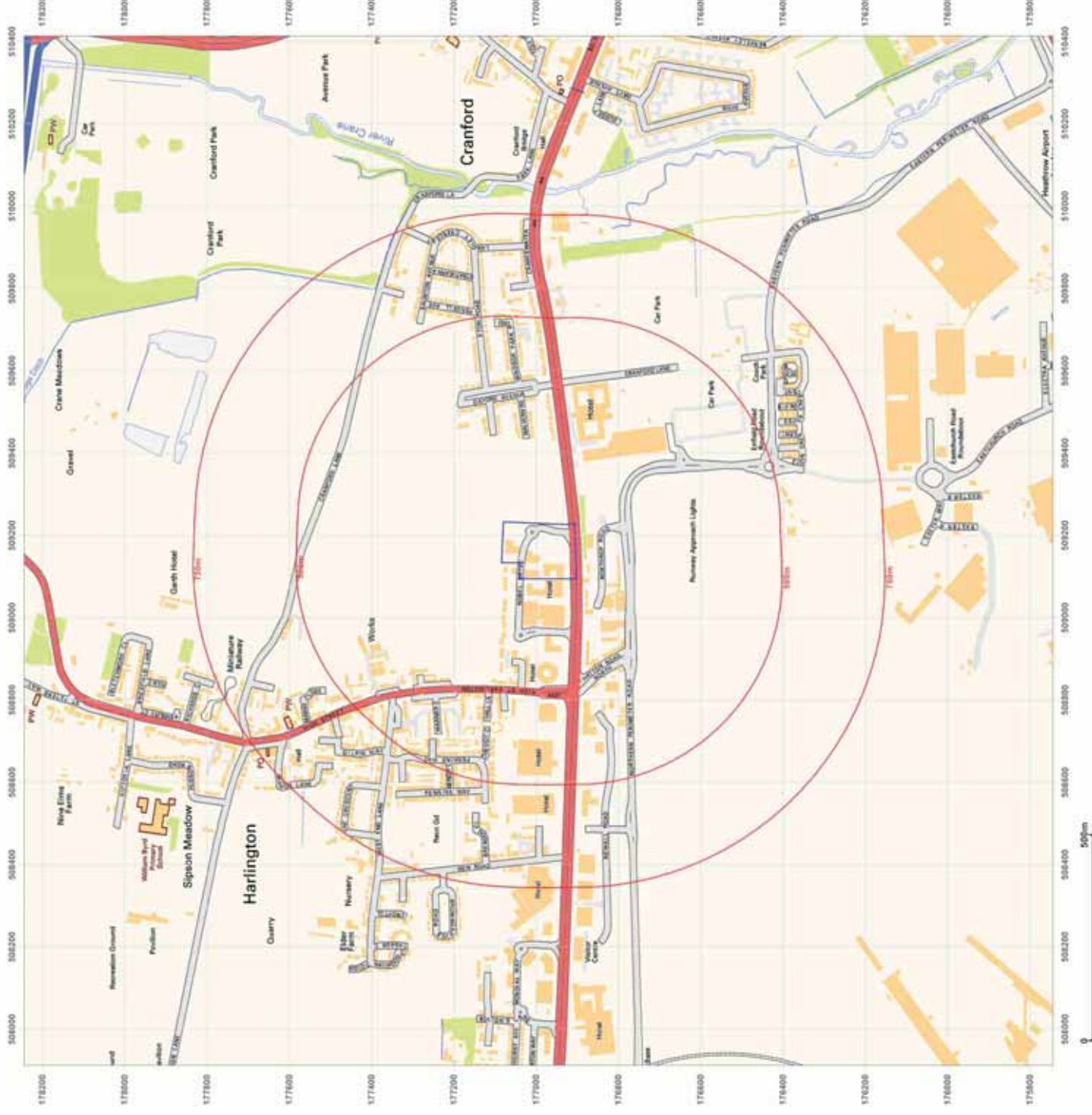
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



2014



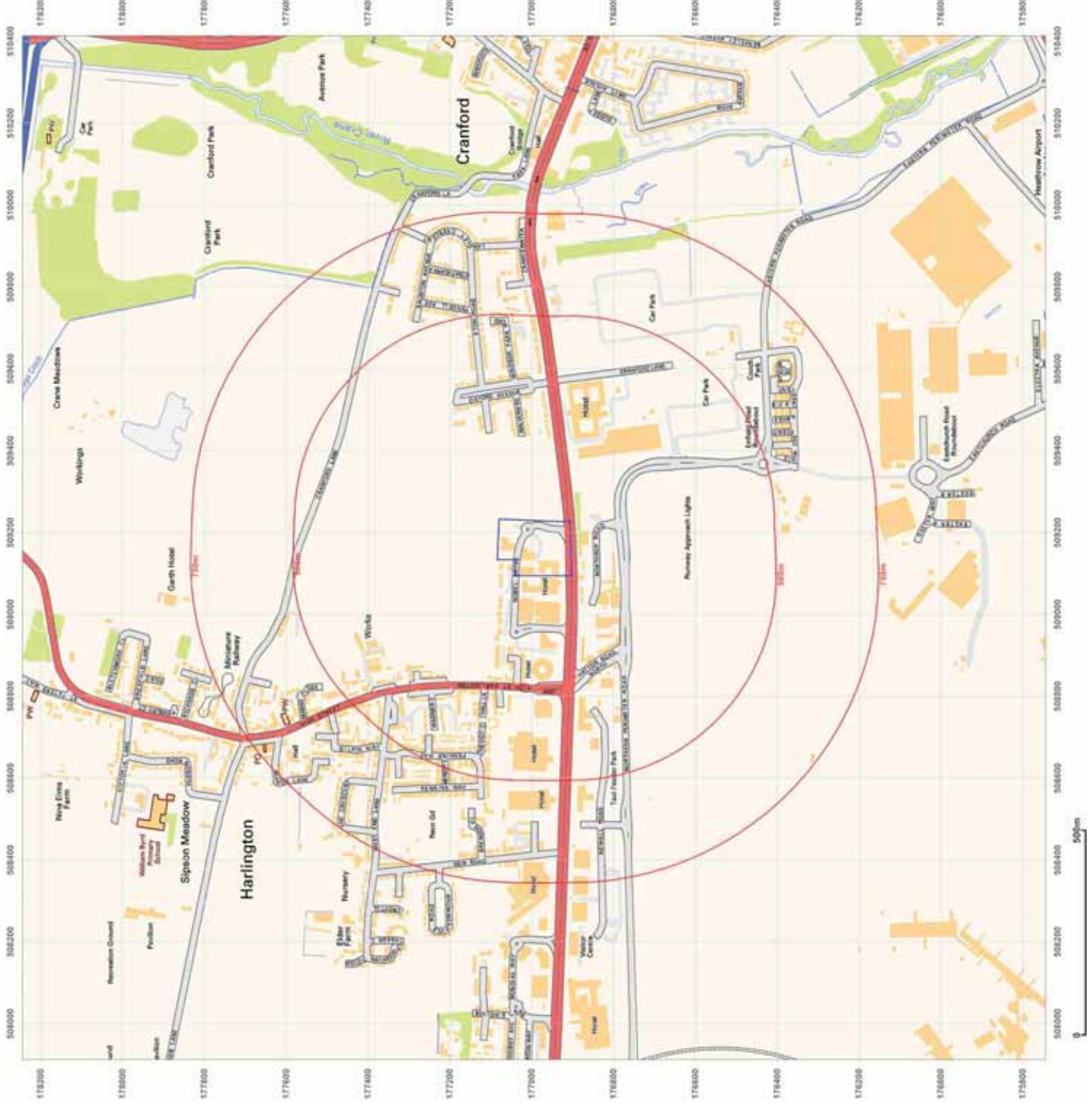
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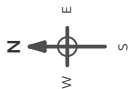
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Grid Ref: 509162, 176994

Map Name: County Series

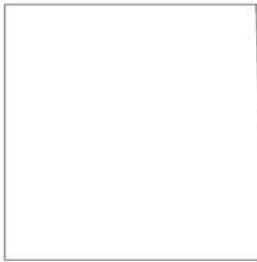
Map date: 1865

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



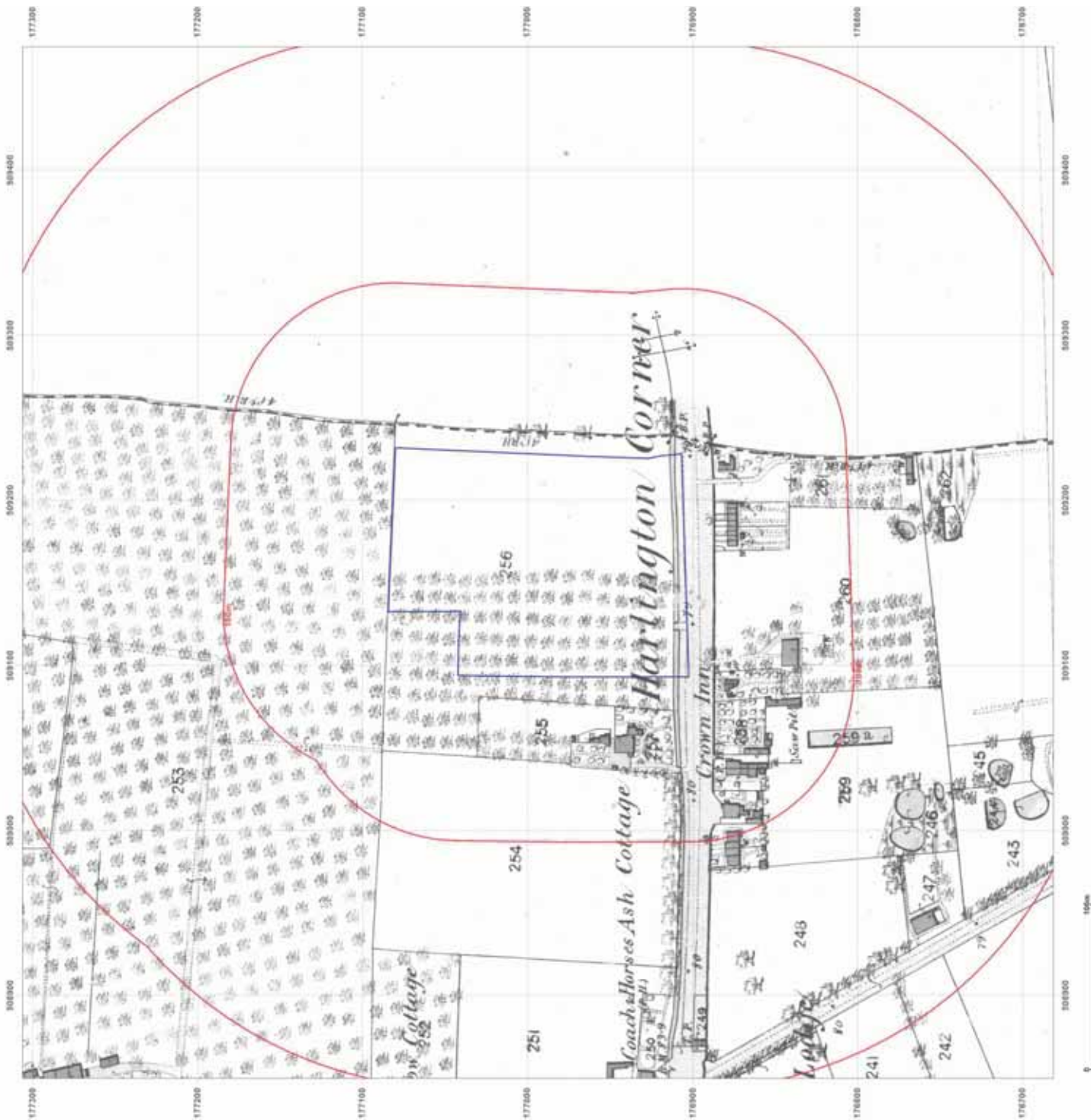
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1864-1865

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1864
Revised 1864
Edition N/A
Copyright N/A
Levelled N/A



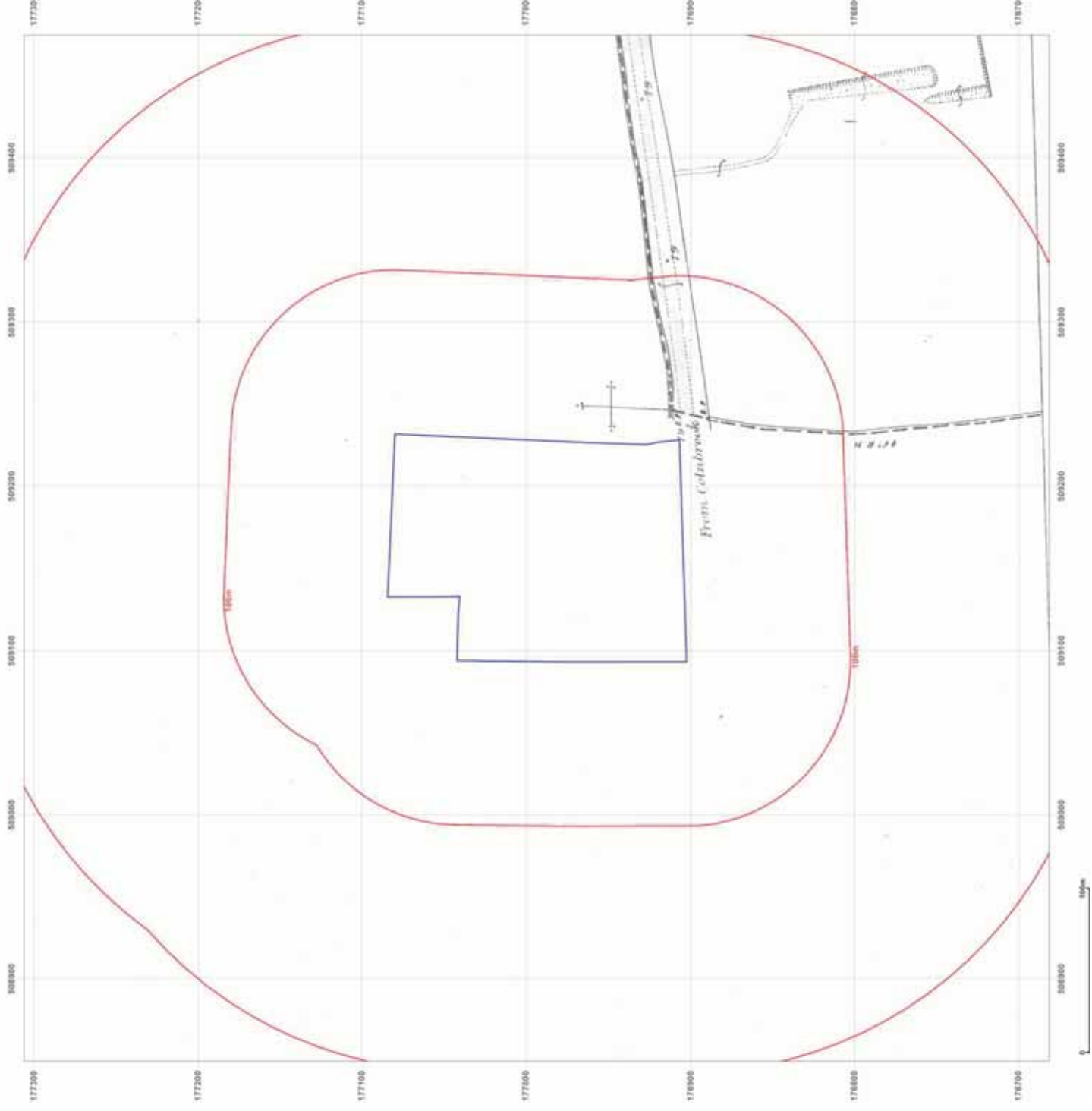
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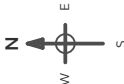
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

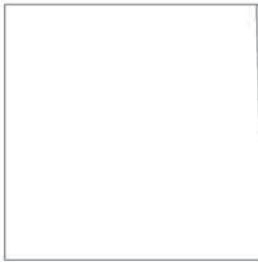
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Scale: 1:2,500

Printed at: 1:2,500



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



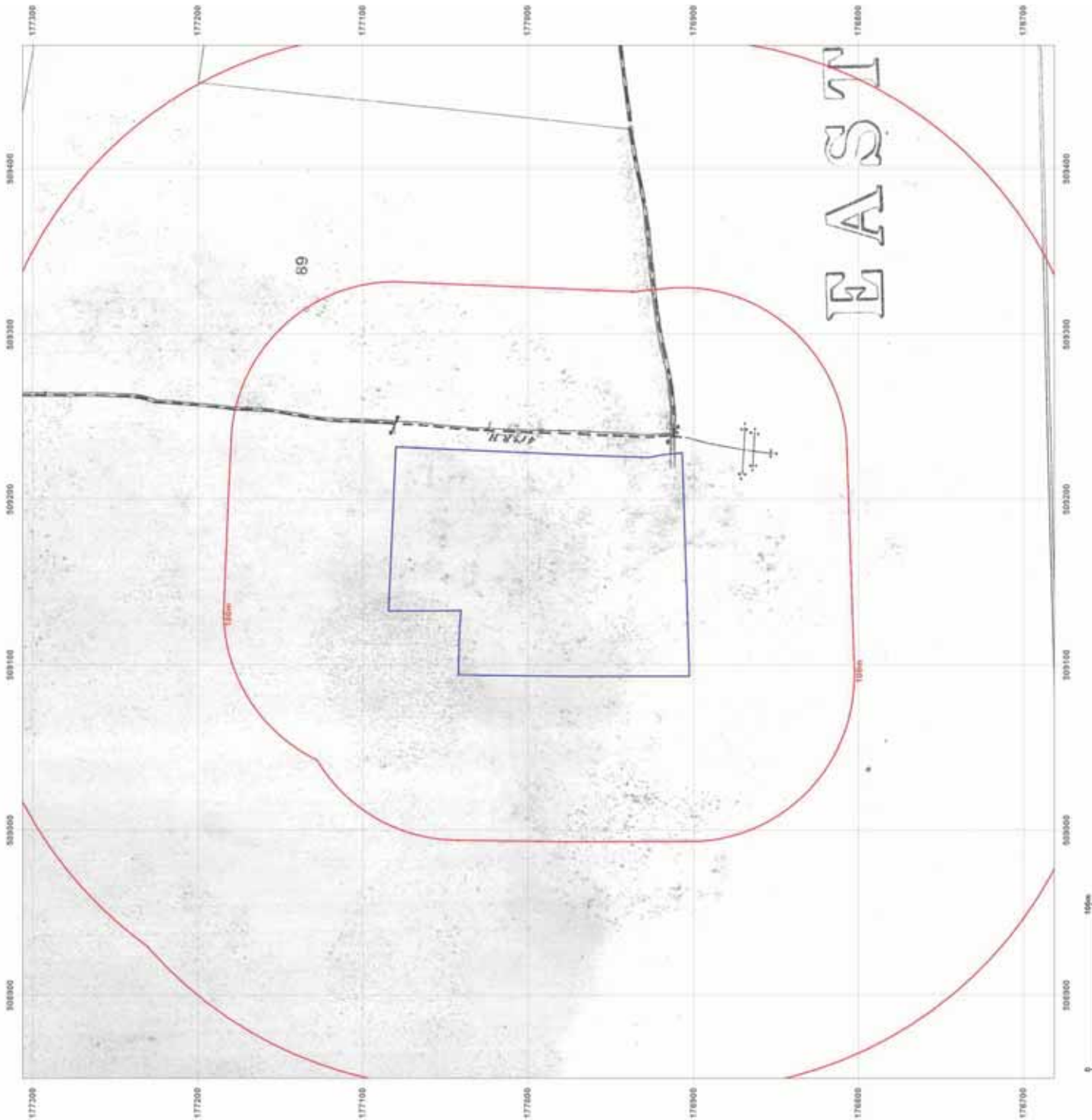
Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A



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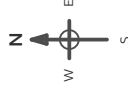
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1895

Scale: 1:2,500

Printed at: 1:2,500



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



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



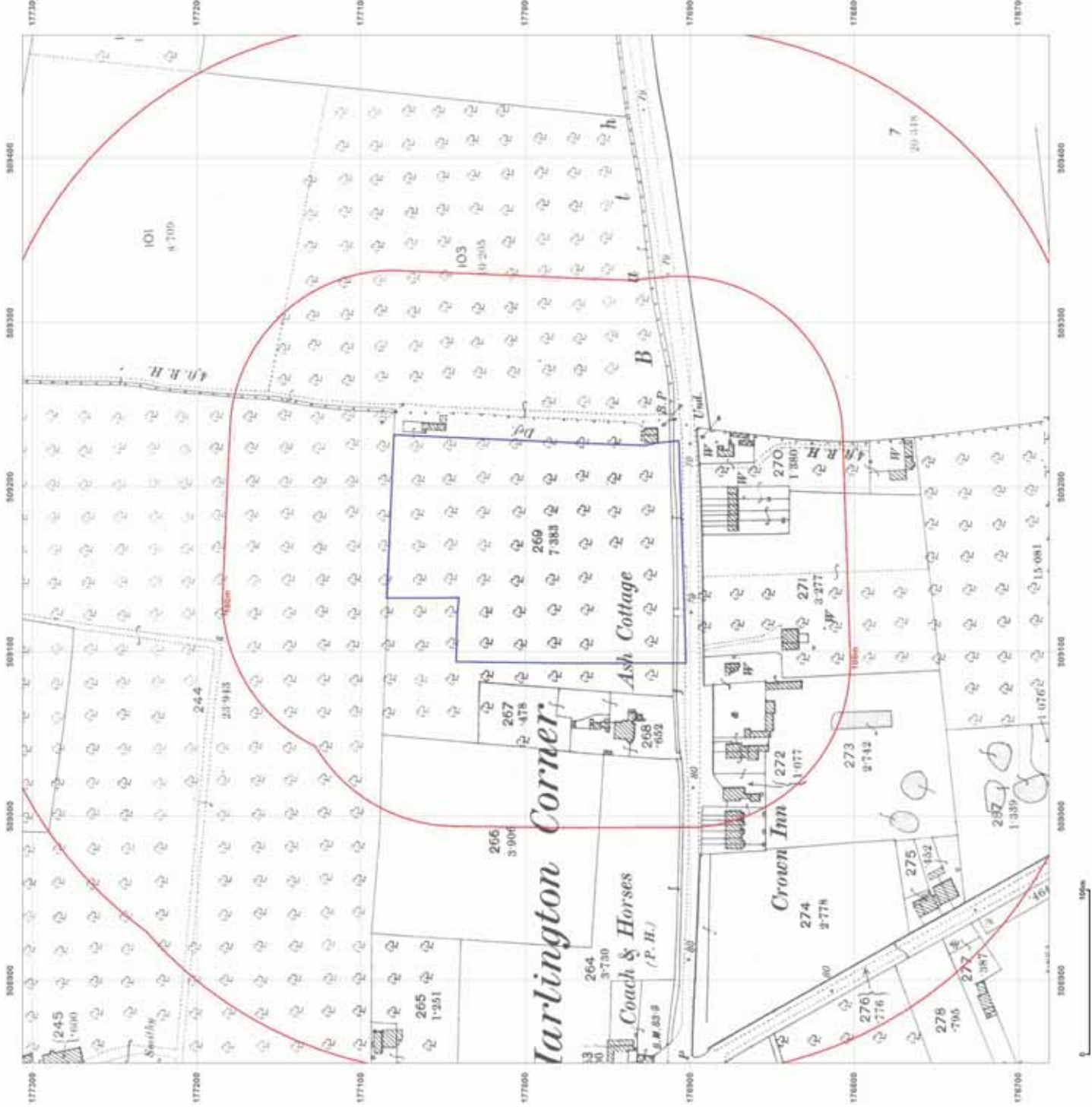
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1913-1914

Scale: 1:2,500

Printed at: 1:2,500



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



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



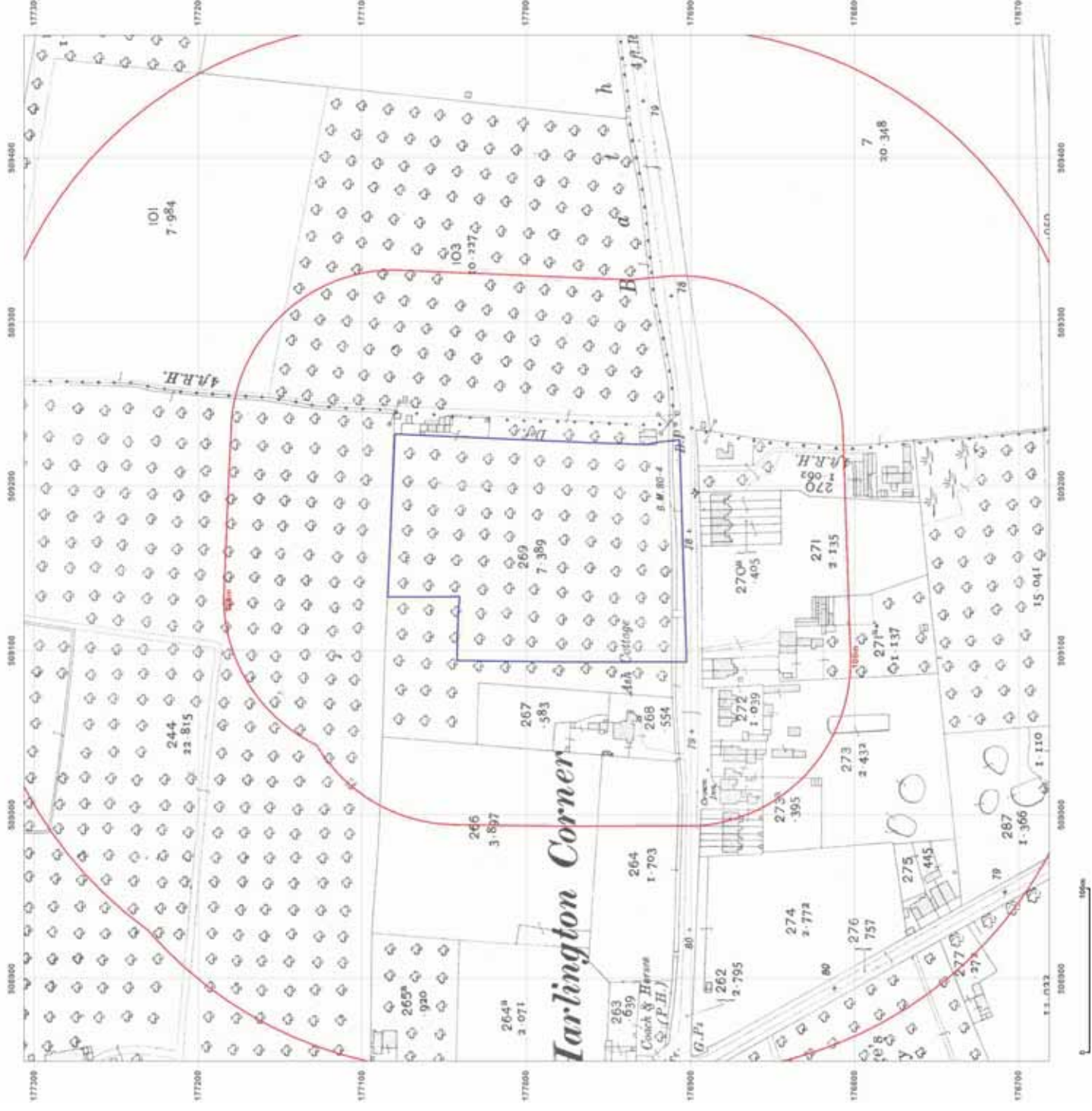
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Site Details:

Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1932

Scale: 1:2,500

Printed at: 1:2,500



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



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



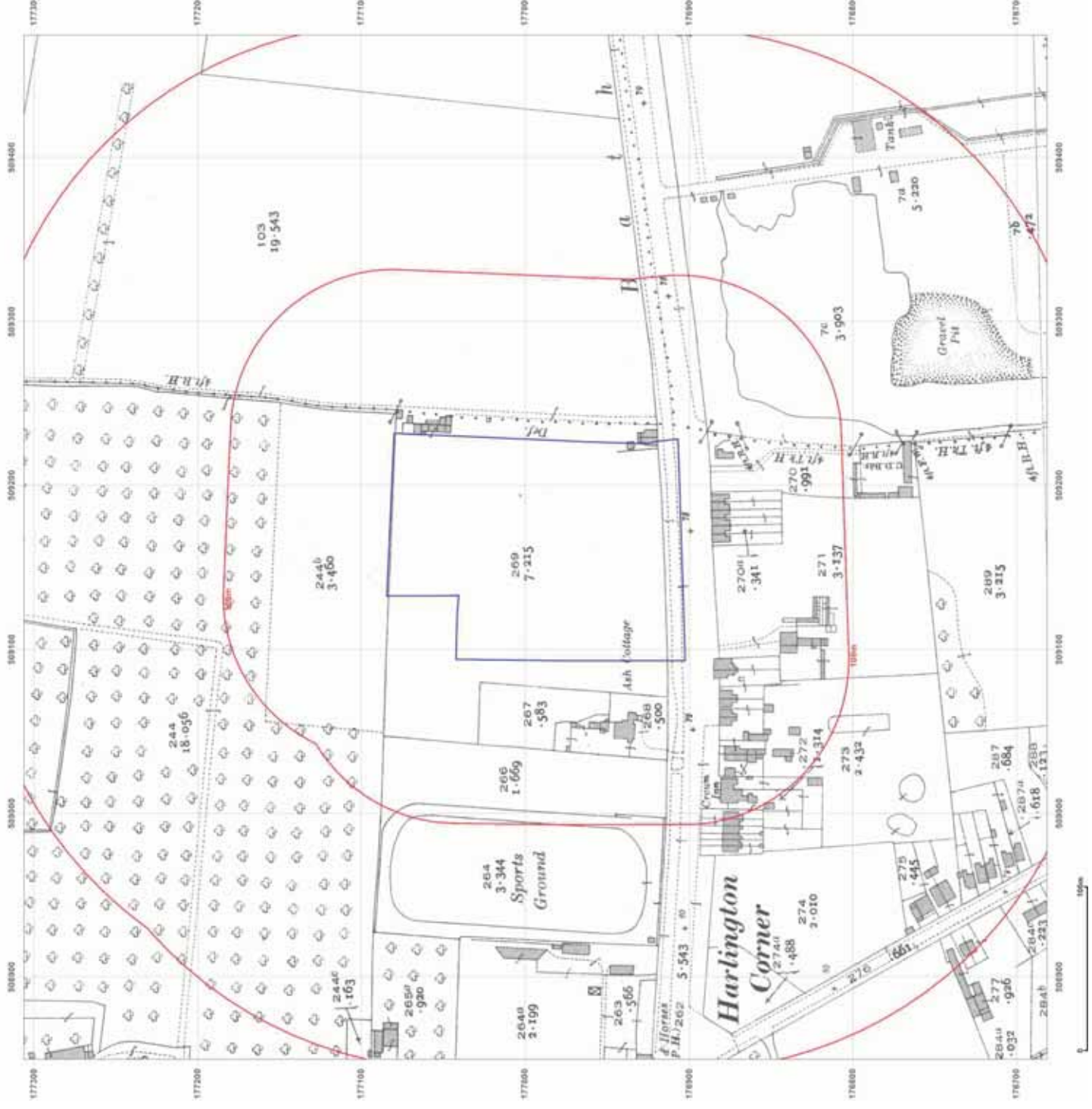
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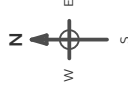
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: County Series

Map date: 1935

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1935
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1935
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A



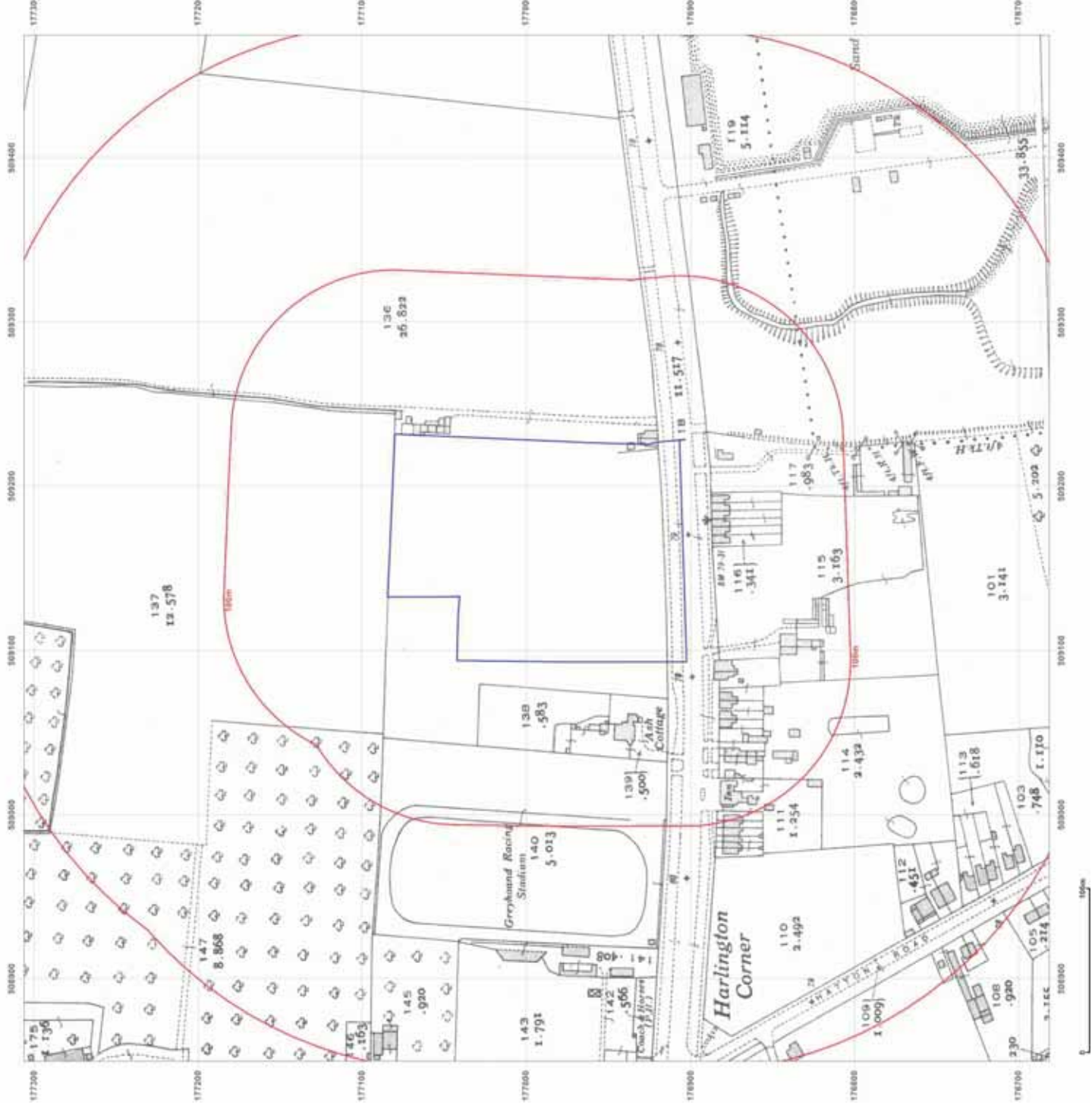
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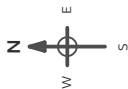
Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1961-1966

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1965
Revised 1965
Edition N/A
Copyright 1966
Levelled 1957



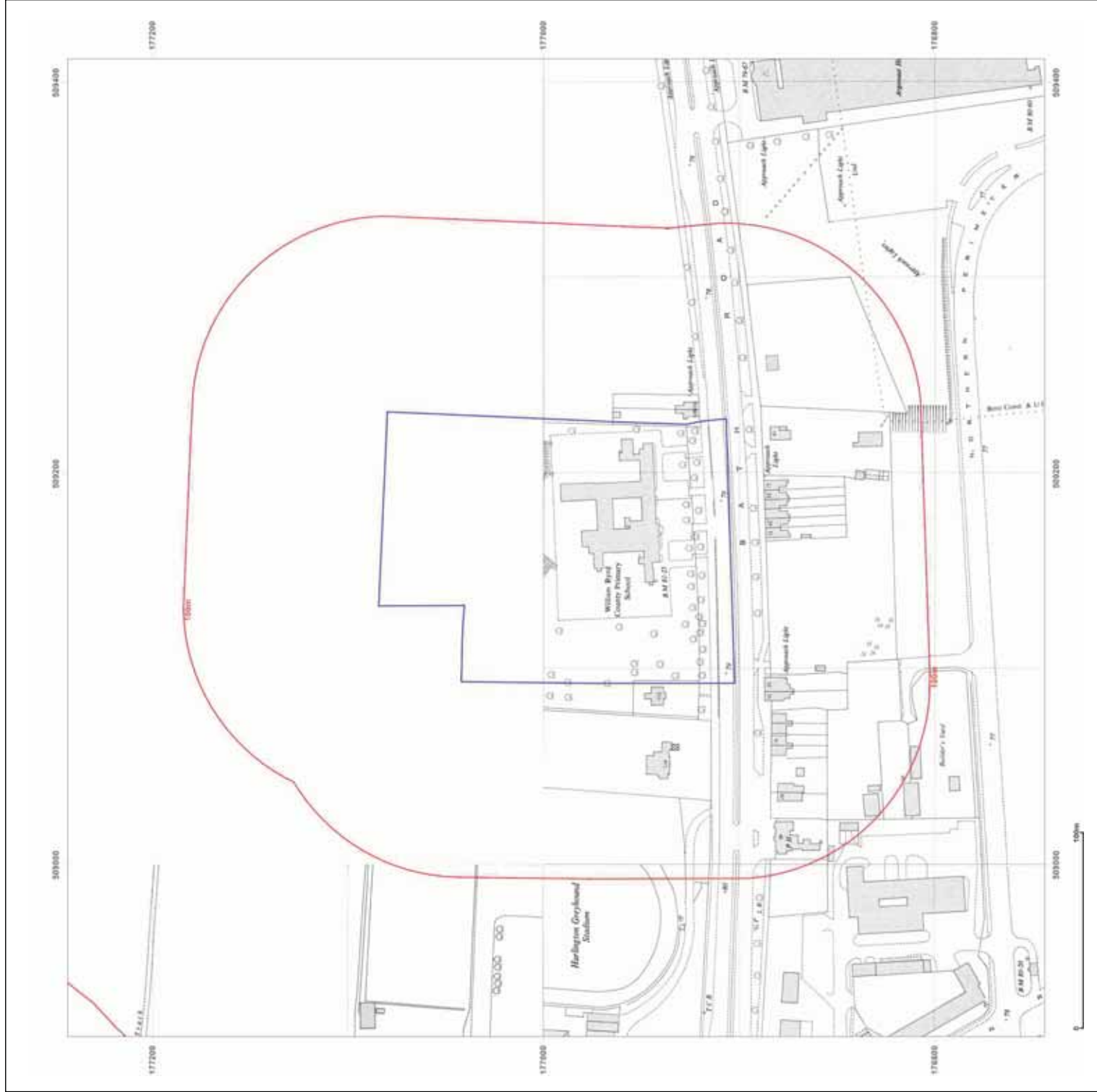
Surveyed 1961
Revised 1961
Edition N/A
Copyright 1961
Levelled 1957



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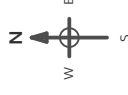
Client Ref: EMS_408096_545457
Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1964-1966

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1962
Revised 1962
Edition 1964
Copyright 1964
Levelled 1957



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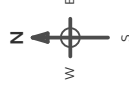
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1962-1967

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1957

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1957



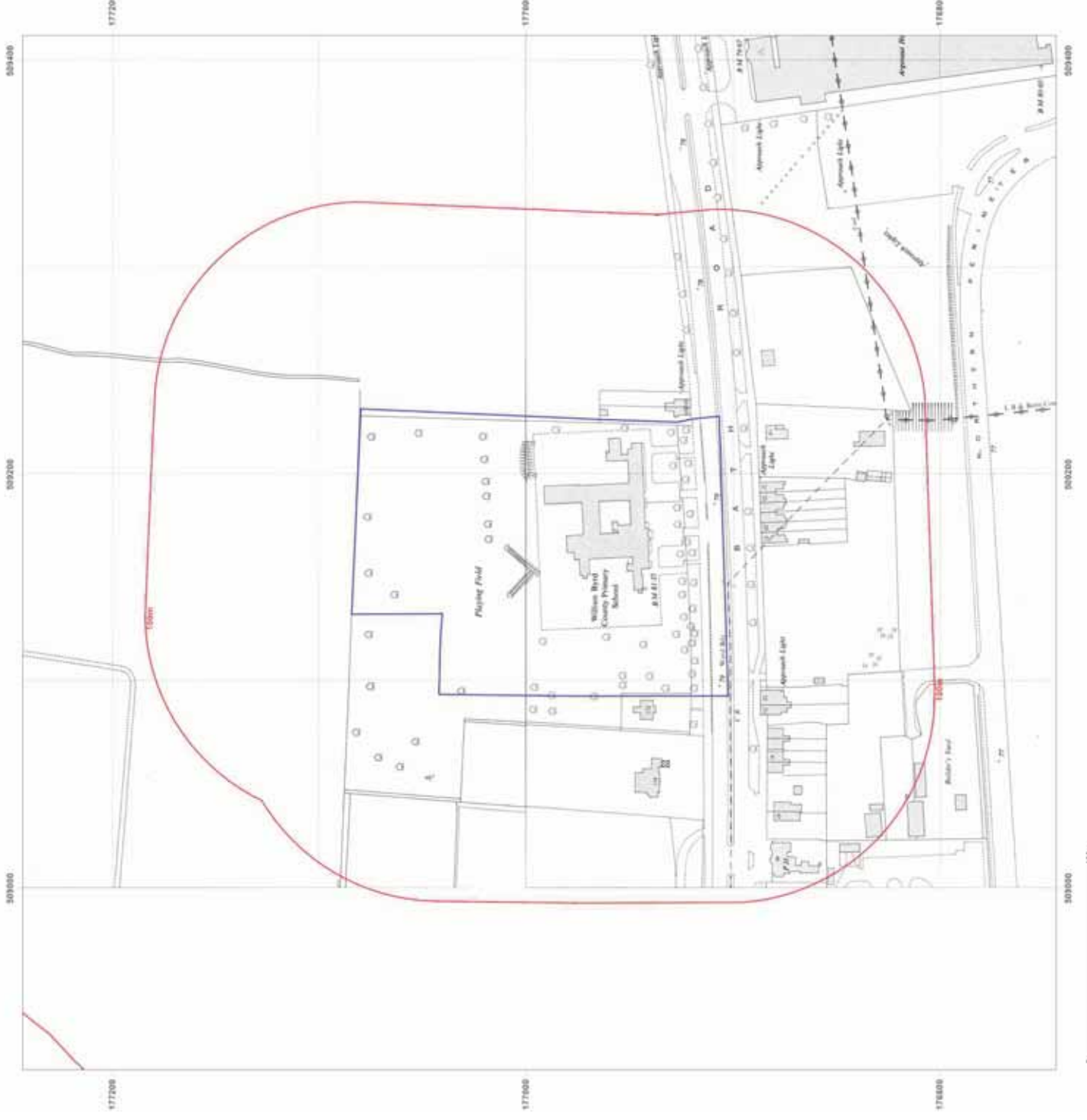
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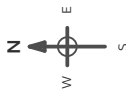
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1972-1974

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1965
Revised 1971
Edition N/A
Copyright 1972
Levelled 1957



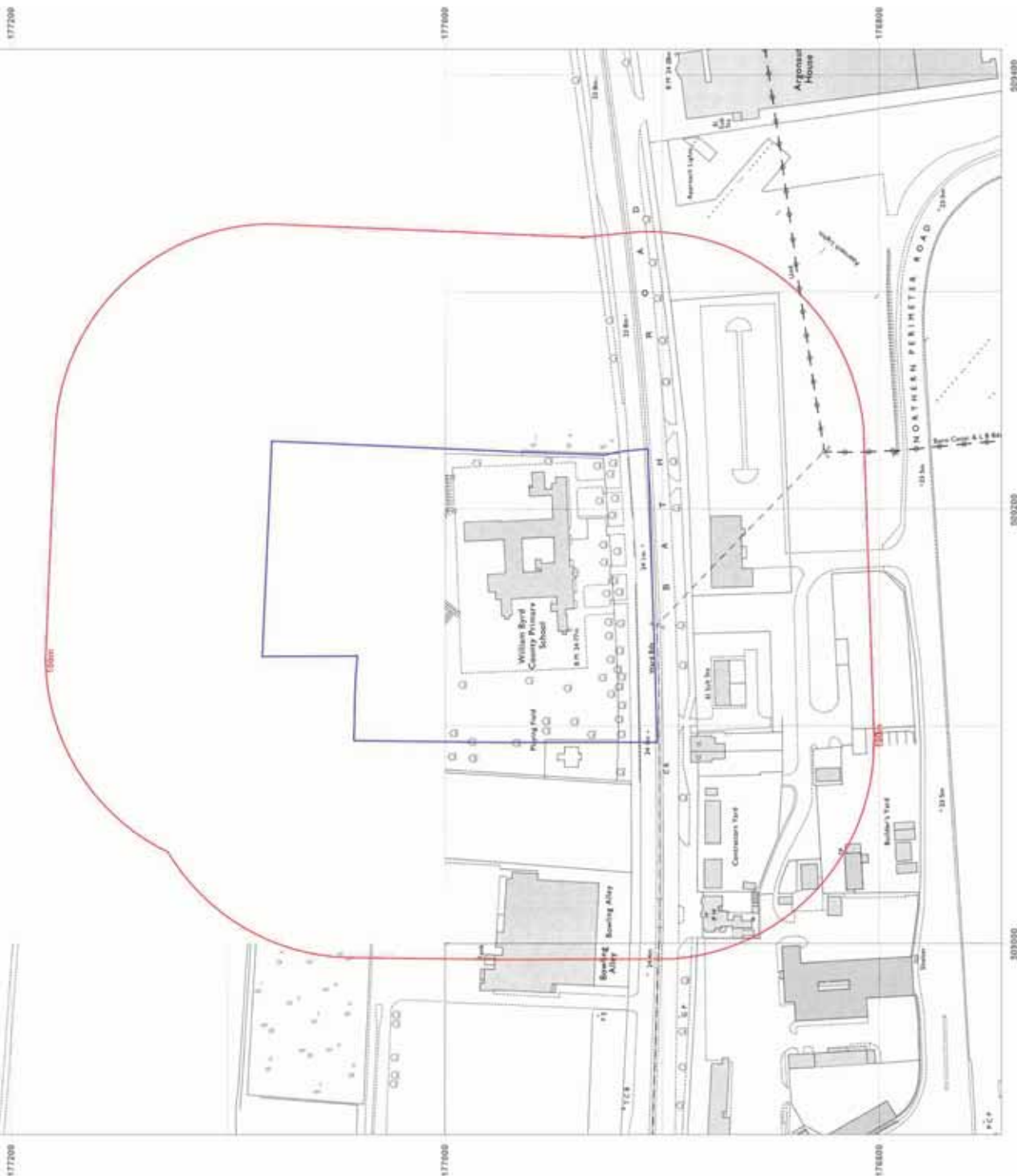
Surveyed 1962
Revised 1973
Edition N/A
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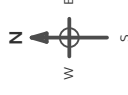
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Report Ref: EMS-408096_545457
Grid Ref: 509162, 176994

Map Name: National Grid

Map date: 1990-1992

Scale: 1:1,250

Printed at: 1:2,000



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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS1
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 1 of 1

Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description			
		Depth (m)	No/Type	Results							
		0.50 - 0.60	ES		0.07			(MADE GROUND) Brick pavours.	0		
					0.15			(MADE GROUND) Orange brown gravelly sand. Gravel is fine flint. Sand is fine to coarse.			
					0.28			(MADE GROUND) Concrete.			
								(MADE GROUND) Pinkish brown sandy gravel. Gravel is subangular. medium to coarse limestone. Sand is medium to coarse.			
		0.80 - 0.90	ES		0.70			Brown clayey sandy GRAVEL, becoming sandier below 1.00mbgl [TAPLOW TERRACE GRAVEL].	1		
		1.20 - 1.55	SPT	C 50	1.20			Brown clayey sandy GRAVEL. [TAPLOW TERRACE GRAVEL].			
								1.20 - 1.55 Very dense. Refused at 1.55mbgl.			
					1.55			Borehole completed at 1.55m.	2		
									3		
									4		

General Remarks

EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20mbgl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 1.20m, granular response zone (1.20m-0.80m), bentonite seal 0.80m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater	Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
All dimensions in metres Scale 1:25				Logged By MO

Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS2
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 1 of 1

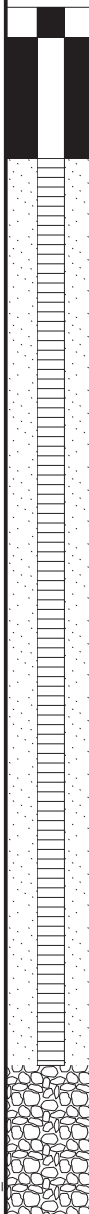
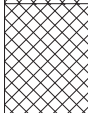
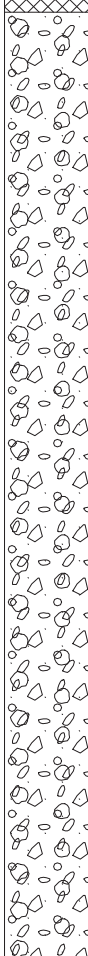
Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
		Depth (m)	No/Type	Results					
					0.10			(MADE GROUND) Brick pavements.	0
					0.18			(MADE GROUND) Orange brown gravelly sand. Gravel is fine flint. Sand is fine to coarse.	
		0.50 - 0.60	ES		0.50			(MADE GROUND) Pinkish brown sandy gravel. Gravel is subangular, medium to coarse of limestone. Sand is medium to coarse.	
		1.00	ES					Brown sandy GRAVEL, becoming sandier below 1.00mbgl [TAPLOW TERRACE GRAVEL].	1
		1.20 - 1.65	SPT	C 44					
		1.50 - 1.87	SPT	C 50	1.50			Brown sandy GRAVEL. [TAPLOW TERRACE GRAVEL]. 1.50 - 1.87 Very dense. Refused at 1.87mbgl.	
					1.87			Borehole completed at 1.87m.	2
									3
									4

General Remarks

EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20m. Dynamic sampled 1.20m-1.50mbgl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 1.50m, granular response zone (1.50m-1.00m), bentonite seal 1.00m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater	Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
All dimensions in metres Scale 1:25				Logged By MO

Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS3
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 1 of 2

Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
		Depth (m)	No/Type	Results					
					0.10			(MADE GROUND) Tarmac.	0
		0.40	ES		0.50			(MADE GROUND) Pinkish brown sandy gravel. Gravel is subangular fine to coarse limestone. Sand is medium to coarse.	
		1.00	ES					Orange brown slightly cobbly sandy GRAVEL. Gravel is subangular to rounded, fine to coarse of flint, and occasional flint cobbles. [TAPLOW TERRACE GRAVEL].	1
					3.65			(Firm becoming stiff) Orange brown oxidised CLAY, becoming darker brown to base [LONDON CLAY].	2
					3.90			(Stiff) Grey silty CLAY [LONDON CLAY].	3
					{4.00}			Continued next sheet	4

General Remarks

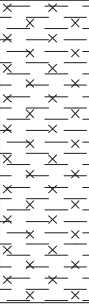
EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20m. Dynamic sampled 1.20m-5.00mbgl.
CASING: Not used.
GROUNDWATER: Groundwater encountered at 2.90mbgl.
REMARKS: Borehole collapsed to 3.50mbgl.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 3.50m, granular response zone (3.50m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater				
Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)	
27/02/17	2.90			
All dimensions in metres Scale 1:25				Logged By MO



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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS3
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 2 of 2

Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
		Depth (m)	No/Type	Results					
					5.00				4
								Borehole completed at 5.00m.	5
									6
									7
					{8.00}				8

General Remarks
EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20m. Dynamic sampled 1.20m-5.00mbgl.
CASING: Not used.
GROUNDWATER: Groundwater encountered at 2.90mbgl.
REMARKS: Borehole collapsed to 3.50mbgl.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 3.50m, granular response zone (3.50m-0.50m), bentonite seal 0.50m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater	Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
All dimensions in metres Scale 1:25				Logged By MO



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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS4
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 1 of 1

Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description				
		Depth (m)	No/Type	Results								
		0.40	ES		0.07			(MADE GROUND) Brick paviours.	0			
					0.12			(MADE GROUND) Orange brown gravelly sand. Gravel is fine flint. Sand is fine to coarse.				
					0.27			(MADE GROUND) Pinkish brown sandy gravel. Gravel is subangular, medium to coarse limestone. Sand is medium to coarse.				
		0.80	ES					Orange brown clayey sandy GRAVEL, becoming sandier below 1.00mbgl [TAPLOW TERRACE GRAVEL].				
									1			
		1.20 - 1.61	SPT	C 50	1.20			Orange brown clayey sandy GRAVEL [TAPLOW TERRACE GRAVEL]. 1.20 - 1.61 Very dense. Refused at 1.605mbgl.				
					1.61					2		
									Borehole completed at 1.61m.			
											3	
											4	

General Remarks

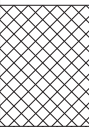
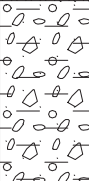
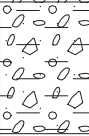
EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20mbgl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 1.20m, granular response zone (1.20m-1.00m), bentonite seal 1.00m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater	Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
All dimensions in metres Scale 1:25				Logged By MO



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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY				WS5
Job No CRM.1398.001	Dates Start 27-02-17 Finish 27-02-17	Ground Level (m)	Co-Ordinates	
Client Planning and Consulting Ltd.				Sheet 1 of 1

Well	Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
		Depth (m)	No/Type	Results					
		0.40	ES		0.40			(MADE GROUND) Topsoil: Brown silty sandy clay.	0
					0.60			(MADE GROUND) Pinkish brown sandy gravel. Gravel is subangular, fine to medium limestone. Sand is medium to coarse.	
		1.20 - 1.64	SPT	C 50	1.20			Yellowish brown slightly cobbly clayey sandy GRAVEL. Gravel is subangular to rounded, fine to coarse flint, and occasional flint cobbles, sandier and orange brown below 0.90mbgl [TAPLOW TERRACE GRAVEL].	1
					1.64			Yellowish brown slightly cobbly clayey sandy GRAVEL. Gravel is subangular to rounded, fine to coarse flint, and occasional flint cobbles [TAPLOW TERRACE GRAVEL]. 1.20 - 1.64 Very dense. Refused at 1.635mbgl.	
					1.64			Borehole completed at 1.64m.	2
					{4.00}				4

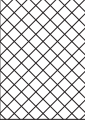
General Remarks

EQUIPMENT: Window Sampling Tracked Rig.
METHOD: Hand dug inspection pit 0.00m-1.20mbgl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 1.20m, granular response zone (1.20m-1.00m), bentonite seal 1.00m-0.10m, concrete and stopcock cover 0.10m-0.00m.

Groundwater	Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
All dimensions in metres Scale 1:25				
				Logged By MO



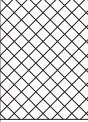
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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY						TP1		
Job No CRM.1398.001		Dates Start 27-02-17 Finish 27-02-17		Ground Level (m)				Co-Ordinates
Client Planning and Consulting Ltd.						Sheet 1 of 1		
Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
	0.30 - 0.40	ES		0.40			(MADE GROUND) Brown sandy clay with rootlet, and occasional subangular fine to medium gravel of flint and angular medium to coarse gravel of brick. 0.30 75mm diameter grey plastic pipe encountered at 0.30mbgl, pipe intact). Trial Pit completed at 0.40m.	0
								1
								2
								3
				{4.00}				4
General Remarks Dimensions: xx0.40 Trial pit manually excavated. Trial pit sides remained vertical and stable. Groundwater not encountered. On completion, the trial pit was backfilled with materials arisings.								
All dimensions in metres Scale 1:25						Logged By MO		

1.1 ENZYGO TP LOG CRM.1398.001 HAYES.GPJ GINT STD AGS 3.1 ENZYGO.GPJ 13/3/17



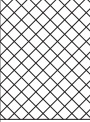
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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY						TP2		
Job No CRM.1398.001		Dates Start 27-02-17 Finish 27-02-17		Ground Level (m)				Co-Ordinates
Client Planning and Consulting Ltd.						Sheet 1 of 1		
Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
	0.30 - 0.40	ES		0.40			(MADE GROUND) Brown to dark brown sandy clay with rootlets. 0.30 25mm diameter black plastic conduit pipe encountered at 0.3mbgl, pipe intact. Concrete foundation of adjacent wall encountered at 0.4mbgl. Trial Pit completed at 0.40m.	0
								1
								2
								3
				{4.00}				4
General Remarks Dimensions: xx0.40 Trial pit manually excavated. Trial pit sides remained vertical and stable. Groundwater not encountered. On completion, the trial pit was backfilled with materials arisings.								
All dimensions in metres Scale 1:25						Logged By MO		

1.1 ENZYGO TP LOG CRM.1398.001 HAYES.GPJ GINT STD AGS 3.1 ENZYGO.GPJ 13/3/17



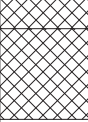
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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY						TP3		
Job No CRM.1398.001		Dates Start 27-02-17 Finish 27-02-17		Ground Level (m)				Co-Ordinates
Client Planning and Consulting Ltd.						Sheet 1 of 1		
Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
	0.30 - 0.40	ES		0.40			(MADE GROUND) Turf over brown sandy clay with rootlets, and occasional subangular to subrounded medium to coarse flint gravel.	0
							Trial Pit completed at 0.40m.	1
								2
								3
				{4.00}				4
General Remarks Dimensions: xx0.40 Trial pit manually excavated. Trial pit sides remained vertical and stable. Groundwater not encountered. On completion, the trial pit was backfilled with materials arisings.								
All dimensions in metres Scale 1:25						Logged By MO		

1.1 ENZYGO TP LOG CRM.1398.001 HAYES.GPJ GINT STD AGS 3.1 ENZYGO.GPJ 13/3/17



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Site 4 Status Park, Nobel Drive, Harlington, Hayes UB3 5EY						TP4		
Job No CRM.1398.001		Dates Start 27-02-17 Finish 27-02-17		Ground Level (m)				Co-Ordinates
Client Planning and Consulting Ltd.						Sheet 1 of 1		
Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
	0.30 - 0.40	ES		0.10			(MADE GROUND) Ornamental rounded coarse gravel.	0
			0.40				(MADE GROUND) (Firm) Brown gravelly Clay. Gravel is subangular to subrounded, fine to coarse (possibly reworked Terrace Gravel).	
							Trial Pit completed at 0.40m.	1
								2
								3
								4
				{4.00}				
General Remarks Dimensions: xx0.40 Trial pit manually excavated. Trial pit sides remained vertical and stable. Groundwater not encountered. On completion, the trial pit was backfilled with materials arisings.								
All dimensions in metres Scale 1:25						Logged By MO		

1.1 ENZYGO TP LOG CRM.1398.001 HAYES.GPJ GINT STD AGS 3.1 ENZYGO.GPJ 13/3/17

APPENDIX C – CHEMICAL TESTING

Human Health Assessment Reference Values

Determinant	Units	GAC Value Residential					
		With Plant Uptake			Without Plant Uptake		
Arsenic	mg/kg	37			40		
Cadmium	mg/kg	11			85		
Chromium	mg/kg	910			910		
Chromium VI	mg/kg	6			6		
Lead	mg/kg	200			310		
Mercury	mg/kg	40			56		
Nickel	mg/kg	180			180		
Selenium	mg/kg	250			430		
Copper	mg/kg	2400			7100		
Zinc	mg/kg	3700			40000		
Cyanide	mg/kg	791			800		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	280	550	1100	750	1300	2300
Napthalene	mg/kg	2.3	5.6	13	2.3	5.6	13
Acenaphtylene	mg/kg	170	420	920	2900	4600	6000
Acenaphthene	mg/kg	210	510	1100	3000	4700	6000
Flourene	mg/kg	170	400	860	2800	3800	4500
Phenanthrene	mg/kg	95	220	440	1300	1500	1500
Anthracene	mg/kg	2400	5400	11000	31000	35000	37000
Fluoranthene	mg/kg	280	560	890	1500	1600	1600
Pyrene	mg/kg	620	1200	2000	3700	3800	3800
Benzo(a)Anthracene	mg/kg	7.2	11	13	11	14	15
Chrysene	mg/kg	15	22	27	30	31	32
Benzo(b)Flouranthene	mg/kg	2.6	3.3	3.7	3.9	4.0	4.0
Benzo(k)Flouranthene	mg/kg	77	93	100	110	110	110
Benzo(a)Pyrene	mg/kg	2.2	2.7	3.0	3.2	3.2	3.2
Indeno(123-cd)Pyrene	mg/kg	27	36	41	45	46	46
Dibenzo(a,h)Anthracene	mg/kg	0.24	0.28	0.3	0.31	0.32	0.32
Benzo(ghi)Perylene	mg/kg	320	340	350	360	360	360
TPH C ₅ -C ₆ Aliphatic	mg/kg	42	78	160	42	78	160
TPH C ₆ -C ₈ Aliphatic	mg/kg	100	230	530	100	230	530
TPH C ₈ -C ₁₀ Aliphatic	mg/kg	27	65	150	27	65	150
TPH C ₁₀ -C ₁₂ Aliphatic	mg/kg	130	330	760	130	330	770
TPH C ₁₂ -C ₁₆ Aliphatic	mg/kg	1100	2400	4300	1100	2400	4400
TPH C ₁₆ -C ₃₅ Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C ₃₅ -C ₄₄ Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C ₅ -C ₇ Aromatic	mg/kg	70	140	300	370	690	1400
TPH C ₇ -C ₈ Aromatic	mg/kg	130	290	660	860	1800	3900
TPH C ₈ -C ₁₀ Aromatic	mg/kg	34	83	190	47	110	270
TPH C ₁₀ -C ₁₂ Aromatic	mg/kg	74	180	380	250	590	1200
TPH C ₁₂ -C ₁₆ Aromatic	mg/kg	140	330	660	1800	2300	2500
TPH C ₁₆ -C ₂₁ Aromatic	mg/kg	260	540	930	1900	1900	1900
TPH C ₂₁ -C ₃₅ Aromatic	mg/kg	1100	1500	1700	1900	1900	1900
TPH C ₃₅ -C ₄₄ Aromatic	mg/kg	1100	1500	1700	1900	1900	1900
Benzene	mg/kg	0.087	0.17	0.37	0.38	0.70	1.4
Toluene	mg/kg	130	290	660	880	1900	3900
Ethylbenzene	mg/kg	47	110	260	83	190	440
Xylene	mg/kg	56	130	310	79	180	430

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Determinant	Units	GAC Value					
		Residential POS			Commercial		
Arsenic	mg/kg	79			640		
Cadmium	mg/kg	120			190		
Chromium	mg/kg	1500			8600		
Chromium VI	mg/kg	7.7			33		
Lead	mg/kg	630			2330		
Mercury	mg/kg	120			1100		
Nickel	mg/kg	230			980		
Selenium	mg/kg	1100			12000		
Copper	mg/kg	12000			68000		
Zinc	mg/kg	81000			730000		
Cyanide	mg/kg	N/A			16200		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	760	1500	3200
Napthalene	mg/kg	4900	4900	4900	190	460	1100
Acenaphtylene	mg/kg	15000	15000	15000	83000	97000	100000
Acenaphthene	mg/kg	15000	15000	15000	84000	97000	100000
Flourene	mg/kg	9900	9900	9900	63000	68000	71000
Phenanthrene	mg/kg	3100	3100	3100	22000	22000	23000
Anthracene	mg/kg	74000	74000	74000	520000	540000	540000
Fluoranthene	mg/kg	3100	3100	3100	23000	23000	23000
Pyrene	mg/kg	7400	7400	7400	54000	54000	54000
Benzo(a)Anthracene	mg/kg	29	29	29	170	170	180
Chrysene	mg/kg	57	57	57	350	350	350
Benzo(b)Flouranthene	mg/kg	7.1	7.2	7.2	44	44	45
Benzo(k)Flouranthene	mg/kg	190	190	190	1200	1200	1200
Benzo(a)Pyrene	mg/kg	5.7	5.7	5.7	35	35	36
Indeno(123-cd)Pyrene	mg/kg	82	82	82	500	510	510
Dibenzo(a,h)Anthracene	mg/kg	0.57	0.57	0.58	3.5	3.6	3.6
Benzo(ghi)Perylene	mg/kg	640	640	640	3900	4000	4000
TPH C ₅ -C ₆ Aliphatic	mg/kg	570000	590000	600000	3200	5900	12000
TPH C ₆ -C ₈ Aliphatic	mg/kg	600000	610000	620000	7800	17000	40000
TPH C ₈ -C ₁₀ Aliphatic	mg/kg	13000	13000	13000	2000	4800	11000
TPH C ₁₀ -C ₁₂ Aliphatic	mg/kg	13000	13000	13000	9700	23000	47000
TPH C ₁₂ -C ₁₆ Aliphatic	mg/kg	13000	13000	13000	59000	82000	90000
TPH C ₁₆ -C ₃₅ Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C ₃₅ -C ₄₄ Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C ₅ -C ₇ Aromatic	mg/kg	56000	56000	56000	26000	46000	86000
TPH C ₇ -C ₈ Aromatic	mg/kg	56000	56000	56000	56000	110000	180000
TPH C ₈ -C ₁₀ Aromatic	mg/kg	5000	5000	5000	3500	8100	17000
TPH C ₁₀ -C ₁₂ Aromatic	mg/kg	5000	5000	5000	16000	28000	34000
TPH C ₁₂ -C ₁₆ Aromatic	mg/kg	5100	5100	5000	36000	37000	38000
TPH C ₁₆ -C ₂₁ Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
TPH C ₂₁ -C ₃₅ Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
TPH C ₃₅ -C ₄₄ Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
Benzene	mg/kg	72	72	73	27	47	90
Toluene	mg/kg	56000	56000	56000	56000	110000	180000
Ethylebenzene	mg/kg	24000	24000	25000	5700	13000	27000
Xylene	mg/kg	41000	42000	43000	5900	14000	30000

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Determinant	Units	GAC Value					
		Park POS			Allotments		
Arsenic	mg/kg	170			43		
Cadmium	mg/kg	532			1.9		
Chromium	mg/kg	33000			18000		
Chromium VI	mg/kg	220			1.8		
Lead	mg/kg	1300			80		
Mercury	mg/kg	240			19		
Nickel	mg/kg	3400			230		
Selenium	mg/kg	1800			88		
Copper	mg/kg	44000			520		
Zinc	mg/kg	170000			620		
Cyanide	mg/kg						
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	66	140	280
Napthalene	mg/kg	1200	1900	3000	4.1	10	24
Acenaphtylene	mg/kg	29000	30000	30000	28	69	160
Acenaphthene	mg/kg	29000	30000	30000	34	85	200
Flourene	mg/kg	20000	20000	20000	27	67	160
Phenanthrene	mg/kg	6200	6200	6300	15	38	90
Anthracene	mg/kg	150000	150000	150000	380	950	2200
Fluoranthene	mg/kg	6300	6300	6400	52	130	290
Pyrene	mg/kg	15000	15000	15000	110	270	620
Benzo(a)Anthracene	mg/kg	49	56	62	2.9	6.5	13
Chrysene	mg/kg	93	110	120	4.1	9.4	19
Benzo(b)Flouranthene	mg/kg	13	15	16	0.99	2.1	3.9
Benzo(k)Flouranthene	mg/kg	370	410	440	37	75	130
Benzo(a)Pyrene	mg/kg	11	12	13	0.97	2.0	3.5
Indeno(123-cd)Pyrene	mg/kg	150	170	180	9.5	21	39
Dibenzo(a,h)Anthracene	mg/kg	1.1	1.3	1.4	0.14	0.27	0.43
Benzo(ghi)Perylene	mg/kg	1400	1500	1600	290	470	640
TPH C ₅ -C ₆ Aliphatic	mg/kg	95000	130000	180000	730	1700	3900
TPH C ₆ -C ₈ Aliphatic	mg/kg	150000	220000	320000	2300	5600	13000
TPH C ₈ -C ₁₀ Aliphatic	mg/kg	14000	18000	21000	320	770	1700
TPH C ₁₀ -C ₁₂ Aliphatic	mg/kg	21000	23000	24000	2200	4400	7300
TPH C ₁₂ -C ₁₆ Aliphatic	mg/kg	25000	25000	26000	11000	13000	13000
TPH C ₁₆ -C ₃₅ Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C ₃₅ -C ₄₄ Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C ₅ -C ₇ Aromatic	mg/kg	76000	84000	92000	13	27	57
TPH C ₇ -C ₈ Aromatic	mg/kg	87000	95000	100000	22	51	120
TPH C ₈ -C ₁₀ Aromatic	mg/kg	7200	8500	9300	8.6	21	51
TPH C ₁₀ -C ₁₂ Aromatic	mg/kg	9200	9700	10000	13	31	74
TPH C ₁₂ -C ₁₆ Aromatic	mg/kg	10000	10000	10000	23	57	130
TPH C ₁₆ -C ₂₁ Aromatic	mg/kg	7600	7700	7800	46	110	260
TPH C ₂₁ -C ₃₅ Aromatic	mg/kg	7800	7800	7900	370	820	1600
TPH C ₃₅ -C ₄₄ Aromatic	mg/kg	7800	7800	7900	370	820	1600
Benzene	mg/kg	90	100	110	0.017	0.034	0.075
Toluene	mg/kg	87000	95000	100000	22	51	120
Ethylbenzene	mg/kg	17000	22000	27000	16	39	91
Xylene	mg/kg	17000	23000	31000	28	67	160

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Controlled Waters Assessment Reference Values

Determinant	Unit	EQS Freshwater						Uk DWS	WHO
Hardness	mg/l	0-50	50-100	100-150	150-200	200-250	>250		
Arsenic	ug/l	50						10	10
Boron	ug/l	2000						1000	0.3
Cadmium	ug/l	5						5	3
Chromium	ug/l	2	10	10	20	20	20	50	50
Lead	ug/l	4	10	10	20	20	20	10	10
Mercury	ug/l	1						1	1
Selenium	ug/l							10	10
Copper	ug/l	0.5	3	3	3	8	12	20000	2000
Nickel	ug/l	8	20	20	40	40	40	20	70
Zinc	ug/l	8	15	15	50	50	50	5000	3000
Sulphate	mg/l	400						250	250
PAH	ug/l							0.1	
Anthracene	ug/l	0.02							
Napthalene	ug/l	10							
Benzo(a)Pyrene	ug/l	0.03							0.01
Fluoranthene	ug/l	0.02							
Benzene	ug/l	30						1	10
Toluene	ug/l	50							
Ethylebenzene	ug/l	20							
Xylene	ug/l	30							
C ₅ – C ₆ Aliphatic	ug/l								15000
C ₆ – C ₈ Aliphatic	ug/l								15000
C ₈ – C ₁₀ Aliphatic	ug/l								300
C ₁₀ – C ₁₂ Aliphatic	ug/l								300
C ₁₂ – C ₁₆ Aliphatic	ug/l								300
C ₁₆ – C ₃₆ Aliphatic	ug/l								N/A
C ₆ – C ₇ Aromatic	ug/l								10
C ₇ – C ₈ Aromatic	ug/l	50							10
C ₈ – C ₁₀ Aromatic	ug/l	20							300
C ₁₀ – C ₁₂ Aromatic	ug/l								1000
C ₁₂ – C ₁₆ Aromatic	ug/l								1000
C ₁₆ – C ₂₁ Aromatic	ug/l								90
C ₂₁ – C ₃₅ Aromatic	ug/l								90

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 17/01594
Issue Number: 1

Date: 14 March, 2017

Client: Enzygo Ltd
The Byre
Tortworth Estate
Woodend Lane
Cromhall
Gloucestershire
GL12 8AA

Project Manager: Richard Hamilton/Steve Rhodes
Project Name: Nobel Drive
Project Ref: CRM.1398.001
Order No: CRM.1398.001
Date Samples Received: 03/03/17
Date Instructions Received: 06/03/17
Date Analysis Completed: 14/03/17

Prepared by:


Melanie Marshall
Laboratory Coordinator

Approved by:


Georgia King
Client Service Manager



Envirolab Job Number: 17/01594

Client Project Name: Nobel Drive

Client Project Ref: CRM.1398.001

Lab Sample ID	17/01594/1	17/01594/3	17/01594/5	17/01594/7	17/01594/9	17/01594/10	17/01594/11		Units	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	TP1	TP3	WS1	WS2	WS3	WS4	WS5			
Depth to Top	0.30	0.30	0.50	0.40	0.50	0.40	0.40			
Depth To Bottom	0.40	0.40			0.60					
Date Sampled	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	4AE	4A	7	1A	1A	4AE			
% Stones >10mm _A [#]	9.1	17.9	10.4	<0.1	16.4	23.2	20.4		% w/w	A-T-044
pH _D ^{M#}	8.51	7.94	9.95	9.46	9.00	9.98	8.33		pH	A-T-031s
Organic matter _D ^{M#}	4.2	3.4	<0.1	0.3	<0.1	0.2	0.9		% w/w	A-T-032 OM
Arsenic _D ^{M#}	6	9	4	5	8	7	4		mg/kg	A-T-024s
Cadmium _D ^{M#}	1.2	1.6	0.7	0.9	1.3	0.8	0.7		mg/kg	A-T-024s
Copper _D ^{M#}	28	39	4	5	5	4	11		mg/kg	A-T-024s
Chromium _D ^{M#}	16	20	8	6	17	9	11		mg/kg	A-T-024s
Lead _D ^{M#}	96	275	30	33	13	12	41		mg/kg	A-T-024s
Mercury _D	<0.17	0.38	0.38	0.50	<0.17	<0.17	0.21		mg/kg	A-T-024s
Nickel _D ^{M#}	12	16	7	5	13	9	8		mg/kg	A-T-024s
Selenium _D	<1	<1	<1	<1	<1	<1	<1		mg/kg	A-T-024s
Zinc _D ^{M#}	73	108	66	86	28	22	45		mg/kg	A-T-024s

Envirolab Job Number: 17/01594

Client Project Name: Nobel Drive

Client Project Ref: CRM.1398.001

Lab Sample ID	17/01594/1	17/01594/3	17/01594/5	17/01594/7	17/01594/9	17/01594/10	17/01594/11		Units	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	TP1	TP3	WS1	WS2	WS3	WS4	WS5			
Depth to Top	0.30	0.30	0.50	0.40	0.50	0.40	0.40			
Depth To Bottom	0.40	0.40			0.60					
Date Sampled	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	4AE	4A	7	1A	1A	4AE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	NAD	NAD	NAD	NAD	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Envirolab Job Number: 17/01594

Client Project Name: Nobel Drive

Client Project Ref: CRM.1398.001

Lab Sample ID	17/01594/1	17/01594/3	17/01594/5	17/01594/7	17/01594/9	17/01594/10	17/01594/11		Units	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	TP1	TP3	WS1	WS2	WS3	WS4	WS5			
Depth to Top	0.30	0.30	0.50	0.40	0.50	0.40	0.40			
Depth To Bottom	0.40	0.40			0.60					
Date Sampled	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17	27-Feb-17			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	4AE	4A	7	1A	1A	4AE			
PAH 16										
Acenaphthene _A ^{M#}	0.02	0.05	0.02	<0.01	<0.01	<0.01	<0.01		mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	A-T-019s
Anthracene _A ^{M#}	0.06	0.21	0.05	<0.02	<0.02	<0.02	<0.02		mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.61	1.57	0.48	<0.04	<0.04	0.04	0.07		mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.59	1.53	0.48	<0.04	<0.04	0.04	0.08		mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.60	1.77	0.51	<0.05	<0.05	<0.05	0.09		mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.39	0.79	0.22	<0.05	<0.05	<0.05	<0.05		mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.24	0.57	0.18	<0.07	<0.07	<0.07	<0.07		mg/kg	A-T-019s
Chrysene _A ^{M#}	0.67	1.60	0.53	<0.06	<0.06	<0.06	0.10		mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	0.11	0.21	0.07	<0.04	<0.04	<0.04	<0.04		mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.78	2.78	0.77	<0.08	<0.08	<0.08	<0.08		mg/kg	A-T-019s
Fluorene _A ^{M#}	0.02	0.07	0.02	<0.01	<0.01	<0.01	<0.01		mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.51	0.99	0.31	<0.03	<0.03	0.03	0.06		mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.38	1.33	0.25	<0.03	<0.03	<0.03	0.03		mg/kg	A-T-019s
Pyrene _A ^{M#}	0.71	2.50	0.68	<0.07	<0.07	<0.07	0.08		mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	5.71	16.1	4.56	<0.08	<0.08	0.16	0.62		mg/kg	A-T-019s
TPH Banded 13										
>C6-C8 _A [#]	<10	<10	<10	<10	<10	<10	<10		mg/kg	A-T-007s
>C8-C10 _A [#]	<10	<10	<10	<10	<10	<10	<10		mg/kg	A-T-007s
>C10-C12 _A [#]	<10	<10	<10	<10	<10	<10	<10		mg/kg	A-T-007s
>C12-C16 _A [#]	<10	<10	<10	<10	<10	<10	<10		mg/kg	A-T-007s
>C16-C21 _A [#]	<10	<10	<10	<10	<10	<10	<10		mg/kg	A-T-007s
>C21-C35 _A [#]	92	119	21	27	<10	<10	<10		mg/kg	A-T-007s
>C35-C44 _A	31	69	<10	24	<10	<10	<10		mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C44) _A	122	188	21	51	<10	<10	<10		mg/kg	A-T-007s

REPORT NOTES

General:

This report shall not be reproduced, except in full, without written approval from Envirolab.

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.



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