now part of

Proposed Residential Development
Torridon House Car Park, Westminster

Phase 1 Ground Condition Assessment

On behalf of: City of Westminster

City of Westminster

Project Ref: 44802/3500 | Document: R003/rev0b | November 2019

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Document Control Sheet

Project: **Torridon House Car Park, Westminster**

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Document: **Phase 1 Ground Condition Assessment**

Doc Ref: **R003/rev0b**

Date: **November 2019**

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Issue	Date	Description	Prepared	Reviewed	Approved
rev 0	Mar 2019	Issued final to Client	mdh	pj	pj
rev 0b	Nov 2019	Issued for planning (with minor amendments)	mdh	-	-

Contents

Summary **1**

1.0 Introduction **2**
1.1 Preamble 2
1.2 Objective and Scope of Work 2
1.3 Limitations 2

2.0 The Site **3**
2.1 Site Location 3
2.2 Site History 3
2.3 Current Site Use 3
2.4 Environmental and Industrial Setting 4
2.5 Proposed Development 5

3.0 Geology, Hydrogeology and Hydrology **6**
3.1 Geology 6
3.2 Hydrogeology 6
3.3 Hydrology 7
3.4 Groundwater and Surface Water Controls 7

4.0 Ground Stability Risk Assessment **8**
4.1 Introduction 8
4.2 Potential Ground Stability Hazards 8
4.3 Assessed Ground Stability Risk 9

5.0 Tier 1 Land Contamination Risk Assessment **10**
5.1 Risk Assessment Strategy 10
5.2 Potential Sources 10
5.3 Potential Exposure Pathways 10
5.4 Potential Receptors 11
5.5 Assessed Pollution Linkages 11
5.6 Potential Remediation/Mitigation Measures 13
5.7 Assessed Preliminary Land Contamination Risk 14
5.8 Management of Unexpected Sources of Contamination 15

References **16**

Guidance Notes
Essential Guidance on the Context of the Report
Methodology for Geoenvironmental Risk Assessments

Figures
1 Site Location Plan
2 Site Layout Plan
3 Site Photographs

Appendix
1 Historical Ordnance Survey Maps
2 EnviroInsight Report
3 Historical BGS Records
4 GeoInsight Report

Summary

This report presents the findings of a Phase 1 Ground Condition Assessment for the proposed residential development at Torridon House Car Park, Westminster.

SITE DESCRIPTION The Site is situated on the gently undulating ground adjacent to the former Westbourne river. The natural ground conditions comprise the London Clay Formation.

Historically the Site was occupied by terraced properties. In the mid-1960s the Site was redeveloped as the existing at-grade car park.

GROUND STABILITY RISK ASSESSMENT A review of potential ground stability hazards has identified a **Moderate** potential hazard associated with shrinking/swelling clays. Due allowance will need to be made for the presence of trees and shrubs in the design of foundations, floor slabs and infrastructure.

TIER 1 LAND CONTAMINATION RISK ASSESSMENT Based on the known history of the Site, the overall potential for significant contamination and hazardous ground gases to be present are assessed respectively to be low and very low. The results of a Geoenvironmental Risk Assessment determined using a Conceptual Site Model of plausible 'source-pathway-receptor' linkages are summarised in the following table.

Summary of Assessed Land Contamination Risks

Potential Receptor	Risk Assessment	Description
Site Workers	Low	The risk to site workers will effectively be mitigated by wearing appropriate protective clothing and equipment, and adopting good standards of hygiene and good working practices to prevent prolonged skin contact, inhalation and ingestion of soils.
Future Site Users and Site Neighbours	Very Low	The proposed buildings and hard surfaces, together with the provision of a layer of clean soil cover to areas of soft landscaping will effectively mitigate the risk to future site users and neighbours.
Groundwaters Resources	Very Low	The potential for any mobile contaminants to adversely affect the quality of groundwaters will be unaffected by the proposed development and is assessed to remain as Very Low.
Surface Water Resources	Very Low	The potential for any mobile contaminants to adversely affect the quality of surface waters will be unaffected by the proposed development and is assessed to remain as Very Low.
Ecology and Wildlife	Very Low	Owing to the potential for contaminants to be present in the ground and the distance to the nearest ecological receptor the risk to ecology and wildlife is assessed to be Very Low.
Built Environment	Very Low	The assessed risk is assessed to be Very Low as potential contaminants are not expected to be present at concentrations that would have a deleterious affect on building materials.

The land contamination risk assessment does not indicate any significant risk to human health, controlled waters or ecology and wildlife associated with the development of the Site as currently proposed. On this basis, there is no reason that the condition of the Site would be deemed incompatible with the intended use of the Site in accordance with City of Westminster Contaminated Land Guidance. It is anticipated that a ground investigation is not required to support the planning application for the proposed redevelopment and that any requirement for an intrusive geoenvironmental investigation can be dealt with by incorporation of a condition in the planning consent.

The summary contains an overview of the key findings and conclusions. However no reliance should be placed on any part of the summary until the whole of the report has been read.

1.0 Introduction

1.1 Preamble

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by the City of Westminster (the Client) to prepare a Phase 1 Ground Condition Assessment in support of a planning application for the proposed residential development at Torridon House Car Park, Westminster.

1.1.2 The primary aim of the assessment is to meet the requirements of the National Planning Policy Framework (NPPF) (DCLG, 2019) that requires an appropriate risk assessment of land contamination, and ground and slope stability to support a planning application.

1.1.3 In accordance with the requirements of the NPPF the assessment has been carried out in accordance with "established procedures" using current UK good practice and guidance as given in British Standard 10175 (BS 10175, 2017), Contaminated Land Report 11 (EA, 2004) and NHBC Standards Chapter 4.1 (NHBC, 2016a) with regard to land contamination, and DCLG (2014) with regard to ground and slope stability.

1.2 Objective and Scope of Work

1.2.1 The objective of the assessment is to review published and readily available information to identify the likely ground conditions at the Site and immediate surrounding land and to assess whether there are significant land contamination, and ground and slope stability risks associated with the ground conditions that may require management (remediation or mitigation).

1.2.2 The scope of work performed by PBA for the study comprises:

i) A desk study review of readily available geological, hydrogeological and aquifer vulnerability maps; and historical Ordnance Survey maps supplemented where possible by reference to early maps and other historical records; together with any ground investigation data; and construction drawings and reports.

ii) A walkover survey to examine the existing condition of the Site and surrounding area.

iii) A qualitative assessment of geological hazards, and ground and slope stability hazard to identify the potential risk, if any, arising from artificial cavities; natural cavities; and other potential adverse foundation conditions.

iv) A qualitative Tier 1 land contamination risk assessment utilising a Conceptual Site Model to identify 'source-pathway-receptor' linkages to assess the potential risk and hazards, if any, associated with existing contamination in the ground.

1.2.3 This report presents the findings of the desk study review together with a qualitative assessment of any potential ground and slope stability, and land contamination hazards and constraints posed by the existing ground conditions to the proposed development. This report also comments on potential mitigation or remediation measures that may be required as part of the proposed redevelopment.

1.3 Limitations

1.3.1 Guidance on the context of this report and any general limitations or constraints on its content and usage are given in a separate guidance note included after the text of this report.

2.0 The Site

2.1 Site Location

2.1.1 The Site is centred at National Grid Reference TQ 256 832 about 0.6 km southeast of the historical village of Kilburn. The location of the Site is shown on a Site Location Plan presented as **Figure 1**.

2.1.2 The Site is rectangular in plan with overall dimensions of about 25 by 35 m. The Site is bounded by Andover Place to the northeast, un-named access roads to the southeast and southwest and a synagogue and primary school to the northwest. Torridon House is located to the southwest of the Site. The layout of the Site is shown on a Site Layout Plan presented as **Figure 2**.

2.1.3 The Site is situated on the gently undulating ground adjacent to the former Westbourne river which formerly flowed southwest about 125 m northwest of the Site. Natural ground levels in the vicinity of the Site are between about 32.0 and 33.0 m OD with a gentle fall to the northwest of about 1 vertical in 200 horizontal.

2.2 Site History

2.2.1 Information on the history of the Site and surrounding area has been determined by reference to a number of readily available historical and current Ordnance Survey (OS) maps, supplemented where possible by reference to early maps and other historical records. Copies of the extracts from the historical and current OS maps are presented in **Appendix 1**; for ease of presentation the OS maps are presented with duplicate and blank maps omitted.

2.2.2 Historically the Site was undeveloped agricultural land to the south of the historical hamlet of Kilburn up to the early-1860s when the Site was developed with terraced properties fronting onto Andover Place. Also by this date the area surrounding the Site had largely been developed with terraced properties fronting onto a network of local streets. It is expected that the buildings were primarily used for residential purposes although a number may have been used for small scale local commercial and retail purposes, including a “smithy” marked on the 1915 OS mapping to the southeast of the Site.

2.2.3 In the mid-1930s the properties to the northeast of the Site were demolished and the area redeveloped with a series of medium-rise blocks of apartments (denoted Dibden House).

2.2.4 During World War II a number of buildings to the northwest of the Site were damaged beyond repair by bomb damage whilst the adjacent buildings on the Site suffered general blast damage (LTS, 2005).

2.2.5 By the late-1960s, the Site had been redeveloped as a car park associated with the adjacent Torridon House development. As part of this redevelopment a synagogue and primary school were constructed to the northwest of the Site, now Naima Preparatory School.

2.3 Current Site Use

2.3.1 A site visit was made by a representative from PBA on 3 December 2018 to carry out a walkover to observe the current site conditions. Selected photographs of the Site are presented on **Figure 3** and the layout of the Site and photograph viewpoints are shown on the Site Layout Plan presented as **Figure 2** of this report.

2.3.2 The Site is currently occupied by the Torridon House car park comprising an at-grade car park with provision for off street parking of 37 cars. Access to the car park is through a gated entrances on Andover Place and Kilburn Park Road. . A series of lockup stores are located along the southeast and northeast boundaries of the Site. An electrical substation is present on the western part of the Site.

2.3.3 The car park surface comprises asphalt. No evidence of significant fuel or oil spillages was noted during the site walkover.

2.4 Environmental and Industrial Setting

2.4.1 Information on the environmental and industrial setting of the Site is presented in an EnviroInsight Report (Emap, 2019a) prepared for the Site, a copy of this report is reproduced in **Appendix 2**. The results of the database search are summarised on the following table and discussed in the following sections.

Summary of Environmental and Industrial Setting

Data Type	Number on Site[1]	Number within 250 m of Site[1]
Waste Regulation		
Landfill Sites	0 (0)	0 (0)
Licensed Waste Management Facilities	0 (0)	0 (0)
Statutory Permits/Authorisations		
Part A(1) and IPPC Permitted Activities[2]	0 (0)	0 (0)
Part A(2) and Part B Permitted Activities	0 (0)	0 (0)
Radioactive Substance Authorisations	0 (0)	0 (0)
Planning Hazardous Substances[3]	0 (0)	0 (0)
Potential Contaminative Uses		
Current Land Use	1	~4
Fuel Stations	0	0

Notes:
1) Numbers in brackets denotes number of authorisations, licences or permits that are lapsed, revoked, cancelled, superseded, defunct, surrendered, not applicable, withdrawn or not yet started.
2) Includes Integrated Pollution Controls, Integrated Pollution Prevention and Control, Local Authority Integrated Pollution Prevention and Control and Local Authority Pollution Prevention and Control permits.
3) Includes COMAH (Control of Major Accident Hazards) and NIHHS (Notification of Installations Handling Hazardous Substances) sites.

2.4.2 **Statutory Permits/Authorisations/Potential Contaminative Uses** Whilst there are no statutory permits and authorisations trade directory entries indicate a number of potentially contaminative uses are present on and in the vicinity of the Site; these entries typically relate to local commercial activities together with local infrastructure facilities. The potentially contaminative use on the Site relates to an electrical substation. Other potentially contaminative uses in the immediate vicinity of the Site include a footwear retailer about 150 m east of the Site, and an electronic equipment supplier about 180 m southeast of the Site.

2.4.3 Given their nature, size and/or distance from the Site, none of the activities listed are considered to represent a particular risk of environmental hazard to the Site or the proposed development.

2.4.4 **Areas of Environmental Sensitivity** The closest area of environmental sensitivity to the Site is Randolph Gardens located about 50 m southwest of the Site. The gardens form a small local park and consist mainly of open grassland with scattered large mature trees.

2.5 Proposed Development

2.5.1 The proposed development comprises the demolition of existing structures including storage sheds and redevelopment of existing car park to provide two blocks of three and five storeys residential units together with other associated works, including the provision of storage units, and at-grade car and cycle parking.

2.5.2 An area of at-grade communal open green space will be provided between the apartment blocks together with a border of soft landscaping along the southwest boundary of the Site.

3.0 Geology, Hydrogeology and Hydrology

3.1 Geology

Published Geology

3.1.1 The 1:50 000 scale geological sheet of the area (BGS, 2006), indicates that the Site is underlain by the London Clay Formation with the Lambeth Group present at depth.

3.1.2 In addition, it is expected that the natural strata are overlain by Made Ground associated with the previous and existing development of the Site.

Historical Borehole Records

3.1.3 The British Geological Survey archives contain records from a number of exploratory holes and water wells sunk in the vicinity of the Site. Copies of four borehole records have been obtained from the archives and are reproduced in **Appendix 3**, these comprises:

i) The record of three boreholes, denoted Boreholes A to C in this report, sunk in 1957 on the site of Torridon House immediately southwest of the Site.

ii) The record of a single borehole, denoted Borehole GPO11 in this report, sunk in 1951 on a site on Edgware Road about 100 m southeast of the Site.

3.1.4 The locations of the boreholes adjacent to the Site are shown on the Site Layout Plan presented as **Figure 2**.

3.1.5 The information presented on these records is consistent with the stratigraphy presented on the published geological map and indicates the London Clay extends to about 45 m below ground level in the area of the Site.

3.2 Hydrogeology

3.2.1 The latest EA groundwater vulnerability mapping included in the EnviroInsight Report (Emap 2019a) prepared for the Site, as presented in **Appendix 2**, indicates the London Clay Formation is classified as an Unproductive Strata.

3.2.2 The leaching potential of the soils on the Site has not been determined as the potential mobility of non-absorbed diffuse source pollutants and liquid discharges will be determined by the properties of the underlying strata.

3.2.3 From consideration of the ground conditions and the geomorphological setting of the Site, it is expected that groundwater is present about 1.0 m below existing ground level. It should be noted, however that locally higher water levels may be present following periods of prolonged rainfall. In addition, local pockets of perched groundwater are expected to be present within the Made Ground.

3.2.4 The latest EA groundwater mapping included in the EnviroInsight Report (Emap 2019a) indicates that the Site is not located in a groundwater Source Protection Zone.

3.3 Hydrology

3.3.1 The nearest surface water feature is the Regents Canal which is aligned east-west about 1.3 km south of the Site.

3.4 Groundwater and Surface Water Controls

3.4.1 Information on ground and surface water controls is presented in the EnviroInsight Report (Emap, 2019a) reproduced in **Appendix 1**. The results of the database search are summarised on the following table.

Summary of Groundwater and Surface Water Controls

Groundwater and Surface Water Controls	Number on Site [1]	Number within 0.5 km of Site [1]
Abstractions	0 (0)	0 (0)
Discharge Consents	0 (0)	0 (0)
Pollution Incidents to Controlled Waters	0	1
Prosecutions Relating to Controlled Waters	0	0

Notes:
1) Numbers in brackets denotes number of authorisations, licences or permits that are lapsed, revoked, cancelled, superseded, defunct, surrendered, not applicable or not yet started.

3.4.2 **Abstractions** The closest abstraction for potable water relates to the abstraction of groundwater from the White Chalk present at depth below the London Clay Formation at a property in Park Road located approximately 1.8 km east of the Site.

3.4.3 **Pollution Incidents** The pollution incident was classified as minor and relate to discharge of fire fighting run-off at a site located about 0.4 km northwest of the Site in 2001. No details of the receiving waters are given in the database record.

3.4.4 Given the scale, date of occurrence and location relative to the Site this incident is not considered to represent a particular risk of environmental hazard to the Site or the proposed development.

4.0 Ground Stability Risk Assessment

4.1 Introduction

4.1.1 In accordance with the requirements of the National Planning Policy Framework (DCLG, 2019), the potential for the proposed development to contribute to or to be adversely affected by land instability has been assessed. Accordingly, consideration is given below to the potential risk of ground and slope instability arising from Artificial Cavities; Natural Cavities; and Potential Adverse Foundation Conditions associated with the existing ground conditions across the Site, as identified by the desk study review. In addition, consideration is given to potential instability associated with surface workings and unexploded ordnance.

4.2 Potential Ground Stability Hazards

Artificial and Natural Cavities

4.2.1 The Natural and National Mining Cavities Database maintained and updated by PBA has been searched for relevant natural and mining cavity records. No record was found of natural and mining cavities within a 1.0 km radius of the Site. Whilst the absence of existing records does not, in itself, demonstrate that natural or mining cavities are not present on the Site, the geology and geomorphological setting of the Site is such that the potential for such features to be present is considered to be **Very Low**.

Potential Adverse Foundation Conditions

4.2.2 An assessment of potential geological hazards that may give rise to adverse foundation or construction conditions as supplied by the British Geological Society from their National Geoscience Information Service are presented in the GeoInsight Report (Emap, 2019b) reproduced in **Appendix 4**. The assessment is generated automatically based on digital geological maps and the scope and the accuracy is limited by the methods used to create the dataset and is therefore only indicative for the site area.

4.2.3 The information contained in the GeoInsight Report has been reviewed and where considered necessary reassessed by PBA considering the specific information available for the Site with the potential hazards being rated as very low, low, moderate, high or very high in general accordance with the criteria given by the BGS property hazard rating system. The PBA assessment of the potential for geological hazards to be present on the Site is summarised below.

Summary of the Potential Geological Hazards

Stability Hazard	Hazard Potential	Comment
Shrinking or Swelling Clay	Moderate	The near-surface soils present on the Site are expected to have a high volume change potential.
Slope Instability	Very Low	The gradient of the Site is significantly flatter than the expected maximum safe gradient of the ground.
Ground Dissolution	Very Low	The ground conditions are not considered to be susceptible to the development of natural cavities as a result of dissolution
Compressible Ground	Very Low	The ground conditions are such that layers of very soft compressible materials such as organic clay or peat are not expected to be present

Stability Hazard	Hazard Potential	Comment
Collapsible Ground	Very Low	The ground conditions are such that a rapid reduction in volume is not expected to occur when they are loaded and saturated with water.
Running Sand	Very Low	The ground conditions are such that there is expected to be no significant potential for internal erosion associated with groundwater flows into excavations below the water table.

Surface Workings

4.2.4 The historical OS maps do not indicate any surface workings on or in the immediate vicinity of the Site.

Unexploded Ordnance

4.2.5 An unexploded ordnance risk assessment for the Site has been carried out by 1st Line Defence UXO Solutions (FLD, 2019). Whilst bomb damage has been recorded during World War II in the immediate vicinity of the Site, given the intensity of bombing and records of bomb strikes in the vicinity of the Site the risk has been assessed as **Low**.

4.2.6 It is recommend that a site-specific plan for the management of UXO risk be written for this Site and, as a minimum precaution, all personnel working on the Site be briefed on the basic identification of UXO and what to do in the event of encountering a suspect item (FLD, 2019).

4.3 Assessed Ground Stability Risk

4.3.1 The review of potential ground stability hazards has identified a **Moderate** potential hazard associated with shrinking/swelling clays.

4.3.2 To mitigate the potential risk associated with shrinking/swelling clays, due allowance will need to be made for the presence of the trees and shrubs in the design of foundations, floor slabs and infrastructure in accordance with the guidelines given in NHBC (2016b).

5.0 Tier 1 Land Contamination Risk Assessment

5.1 Risk Assessment Strategy

5.1.1 To assess the potential risk to the proposed residential development in relation to land contamination, a qualitative risk assessment has been carried out utilising a Conceptual Site Model to identify plausible 'source-pathway-receptor' linkages. This assessment has been made from consideration of the information currently available.

5.1.2 For the purposes of this assessment the potential for a significant source, pathway or receptor being present have been assessed in terms of their probability and magnitude as being very low, low, moderate, high or very high. The land contamination risk is determined by the interrelationship between the potential for a source of contamination to be present, the potential for migration along a given pathway, and the significance of potential receptors for any plausible source-pathway-receptor linkage. This approach allows the probability and magnitude of the possible consequences that may arise as a result of a potential hazard to be assessed and possible unacceptable risks to be identified. Details of the methodology used are given in a separate guidance note included after the text of this report.

5.2 Potential Sources

5.2.1 Historically the Site was occupied by terraced properties. In the mid-1960s the Site was redeveloped as the existing at-grade car park.

5.2.2 Based on the known history of the Site, the assessed significance of potential sources of contamination are summarised in the following table.

Significance of Potential Sources of Contamination

Source	Significance	Comment
On-Site		
Soils	Low	Isolated point sources of contamination are expected to be present associated with scattered fragments of man-made materials in the Made Ground.
Groundwaters	Low	Groundwater quality is expected to reflect the background quality of the groundwater in the vicinity of the Site.
Ground Gases and Vapours	Very Low	Predominantly near atmospheric conditions are expected to be present across the Site.
Off-Site		
Soils	Low	Isolated point sources of contamination are expected to be present associated with the previous and current development in the vicinity of the Site.
Groundwaters	Low	Groundwater quality is expected to reflect the background quality of the groundwater in the vicinity of the Site.
Ground Gases and Vapours	Very Low	Predominantly near atmospheric conditions are expected to be present in the vicinity of the Site.

5.3 Potential Exposure Pathways

5.3.1 Potential pathways for the uptake of contaminants by potential receptors include skin contact, inhalation and ingestion of soils and dust by site workers and future site users; absorption by crops and other vegetation; and indirectly associated with migration of potential contaminants by ground and surface water flows, including flow along site drainage channels and trenches.

5.3.2 The assessed significance of potential exposure pathways are summarised in the following table.

Significance of Potential Exposure Pathways

Pathway	Significance	Comment
Contact, Uptake and Leaching	High	During construction and maintenance work given the presence of exposed surface soils.
	Very Low	To areas of buildings and hard surfaces during future site use assuming no significant areas of exposed surface soils.
	Low	To areas of proposed soft landscaping during future site use assuming the presence of well established surface vegetation.
Site Drainage	Low	Given that there are expected to be a limited number of discharge points to the existing and proposed site drainage.
Groundwater Flow	Very Low	Given the expected very low mass permeability of the London Clay Formation

5.4 Potential Receptors

5.4.1 Potential receptors include site workers and future site users/neighbours, ground and surface water resources, and ecology and wildlife. With regard to site workers and future site users, their potential significance is related directly to the cumulative length of time they will be on or in the immediate vicinity of the Site. With regard to ground and surface water resources, ecology and wildlife, and built environment their potential significance as a receptor is based on the value of the attributes of the receptor and will be influenced by a number of factors such as the relative quality, sensitivity, scale, rarity and substitutability. In addition, specific consideration is given to the effect of the distance and time of travel along a potential pathway to the receptor to allow for, as an example, the effect of dilution and dispersion of groundwater flow through an aquifer.

5.4.2 The assessed significance of potential receptors with respect to the proposed development are summarised in the following table.

Significance of Potential Receptors

Receptor	Significance	Comment
Site Workers	Moderate	During construction works given the number and length of time that workers involved in ground works are present on the Site.
	Very Low	During future maintenance works given such works are expected to be limited with little if any additional ground works.
Future Site Users/Neighbours	Low/Moderate	Given the cumulative length of time future site users are likely to access the areas of soft landscaping.
Ground Water Resources	Very Low	Given the London Clay Formation is classified as an Unproductive Strata.
Surface Water Resources	Very Low	Given the absence of licensed abstraction points from surface water in the vicinity of the Site
Ecology and Wildlife	Low	Given the nature of and distance to the areas of environmental sensitivity in the vicinity of the Site
Built Environment	Low	Given the proposed buildings on the Site are assessed to be of local importance

5.5 Assessed Pollution Linkages

5.5.1 Based on the Conceptual Ground Model a preliminary assessment of the land contamination risks associated with the Site and its proposed residential development are discussed in this section with respect to the identified potential receptors.

Site Workers

5.5.2 The effect on site workers relates to the risk of ingestion, inhalation or prolonged skin contact of contaminated material on the Site and inhalation of any potentially hazardous ground gases and vapours. The assessed risks to site workers with respect to the proposed development are summarised in the following table.

Assessed Risks to Site Workers

Source	Significance	Comment
On-Site Sources of Contamination		
During construction works	Low	Given the low potential for sources of contamination to be present on Site.
During future maintenance works	Very Low	Given the limited length of time future maintenance workers are likely to be on the Site.
Off-Site Sources of Contamination		
During construction and future maintenance works	Very Low	Given the distance to, the nature of and potential for migration from off site sources of contamination.
Ground Gases and Vapours		
During construction and future maintenance works	Very Low	Given the very low potential for potentially hazardous ground gases and vapours to be present on the Site and surrounding areas.

Future Site Users and Site Neighbours

5.5.3 The effect on future site users relates to the risk of ingestion, inhalation or prolonged skin contact of any contaminated material on the site and inhalation of any potentially hazardous ground gases and vapours. The assessed risks to site workers with respect to the proposed development are summarised in the following table.

Assessed Risks to Future Site Users/Neighbours

Source	Significance	Comment
On-Site Sources of Contamination		
Areas of buildings and hard surfaces	Very Low	Given the very low potential for skin contact, inhalation and ingestion of any potential contaminants.
Areas of soft landscaping	Low	Given the low potential for sources of contamination to be present and assuming the presence of well established surface vegetation.
Off-Site Sources of Contamination		
Areas of buildings, hard surfaces and soft landscaping	Very Low	Given the distance to, the nature of and potential for migration from off site sources of contamination.
Ground Gases and Vapours		
Areas of buildings, hard surfaces and soft landscaping	Very Low	Given the very low potential for potentially hazardous ground gases and vapours to be present on the Site and surrounding areas.

Ground and Surface Water Resources

5.5.4 The effect on groundwater relates to the movement of any potential contaminants by surface water infiltration and drainage and the leaching of any such contaminants from the near-surface soils on the Site. The effect on surface waters relates to the risk of movement of any potential contaminants by groundwater flows and surface water drainage into adjacent watercourses.

5.5.5 The assessed risks to ground and surface water resources with respect to the proposed development are summarised in the following table.

Assessed Risks to Ground and Surface Water Resources

Receptor	Significance	Comment
Ground Water Resources	Very Low(1)	Given the very low relative importance of the groundwaters as a water resource.
Surface Water Resources	Very Low(1)	Given the very low relative importance of the surface waters as a water resource.

Note 1) The assessed risks will not be affected by the proposed development and are assessed to remain at this level both during construction works and on completion of the scheme.

Ecology and Wildlife

5.5.6 The effect on ecology and wildlife relates, primarily, to the risk of potentially mobile contaminants being present within the ground and surface waters on and adjacent to the Site. The assessed risks to ecology and wildlife with respect to the proposed development are summarised in the following table.

Assessed Risks to Ecology and Wildlife

Receptor	Significance	Comment
Ecology and Wildlife	Very Low(1)	Given the nature of and the distance to the identified sites of ecological and wildlife interest.

Note 1) The assessed risk will not be affected by the proposed development and is assessed to remain at this level both during construction works and on completion of the scheme.

Built Environment

5.5.7 The effect on the built environment relates, primarily, to the risk of chemical attack and decay of buried concrete structures, including pile foundations, and the permeation of water supply pipes by contaminants. The assessed risks to the built environment with respect to the proposed development are summarised in the following table.

Assessed Risks to the Built Environment

Receptor	Significance	Comment
Built Environment	Very Low(1)	Given the potential for sources of contamination to be present on Site at concentrations that would have a significant deleterious affect on building materials.

Note 1) Notwithstanding this assessment, in line with current regulations and best practice, appropriate concrete design and water supply pipes will be specified to mitigate the risks of chemical attack and permeation as required.

5.6 Potential Remediation/Mitigation Measures

5.6.1 The preliminary land contamination risk assessment presented in **Section 5.5** indicates that any potential contaminants in the ground or groundwater are unlikely to represent an unacceptable risk to human health, controlled waters or ecology and wildlife provided appropriate remediation and/or mitigation measures are adopted.

5.6.2 The remediation and/or mitigation measures expected to be required relate to:

i) The risks to site workers associated with ingestion, inhalation or prolonged skin contact of contaminated material during the construction works.

ii) The risks to future site users and site neighbours associated with ingestion, inhalation or prolonged skin contact of any contaminated material present in areas of soft landscaping following completion of the proposed development.

5.6.3 The remediation and/or mitigation measures expected to be required are presented in the following sections. These measures will need to be confirmed by an intrusive geoenvironmental investigation and agreed with the Local Authority. Remediation and/or mitigation measures in advance of or in addition to the construction works are not expected to be required.

Ingestion, Inhalation or Contact of Contaminated Material by Site Workers

5.6.4 Measures to be adopted to mitigate the risk to site workers will include (i) informing the site workers of any potential contamination on the site and the potential health effects from exposure through site induction and 'tool box talks'; (ii) the provision of appropriate protective clothing and equipment to be worn by site workers; (iii) the adoption of good standards of hygiene to prevent prolonged skin contact, inhalation and ingestion of soils during construction.

5.6.5 In addition, in line with current regulations and good practice, (i) appropriate methods of working will be selected to limit disturbance to any potentially contaminated materials and the potential for air-borne dust to arise associated with the excavation and disturbance of the soils present on the site and (ii) appropriate ventilation will be provided to all confined spaces and appropriate procedures adopted to ensure they are checked for hazardous gases prior to man-entry to ensure any potential risk associated with ground gases does not occur.

5.6.6 Details of the proposed mitigation measures will be presented in the Construction Environment Management Plan.

5.6.7 Although the provision of appropriate protective clothing and adoption of good standards of hygiene and appropriate methods of working will mitigate many of the significant effects, the potential risk to site workers during the construction works will, at worst, remain as **Low** owing to the risk for unidentified sources of contamination to be encountered during the works.

Ingestion, Inhalation or Contact of Contaminated Material by Future Site Users and Site Neighbours

5.6.8 To limit any potential risk of ingestion, inhalation or prolonged skin contact of contaminated material by future site users and site neighbours, it is expected that a layer of clean soil cover may need to be provided in areas of soft landscaping. The depth and form of the required soil cover depends on the risk associated with any potential contaminants and requirements for planting. Based on the available information the overall potential for significant contamination to be present on the Site is assessed to be low. On this basis, it is expected that a 300 mm thick layer of clean soil cover may be required in soft landscaped areas to limit any risk of bulk movement of contaminated material to the surface by landscape gardening, burrowing animals or other similar activities (BRE, 2004). A greater depth of soil cover may be required in landscaped areas where trees or deep rooting shrubs are to be planted.

5.6.9 The actual depth of any clean soil cover to be provided will be informed by an intrusive geoenvironmental investigation and agreed with the Local Authority. If required, the provision of a layer of clean soil cover will effectively limit the exposure of future site users and site neighbours to any potential contaminants such that the potential risk will be **Very Low**.

5.7 Assessed Preliminary Land Contamination Risk

5.7.1 The results of the preliminary land contamination risk assessment indicate that the potential risk to sensitive receptors with the expected remediation/mitigation measures in place is, in general, **Very Low**. The exceptions relate to the risk to site workers during the proposed construction works for which the potential risk is assessed to be **Low**. On this basis, any potential contaminants and hazardous ground gases do not by themselves represent an unacceptable risk to the human health, controlled waters or ecology and wildlife associated with the development of the Site as currently proposed.

5.7.2 Given the information currently available and the assessed land contamination risks, it is anticipated that a ground investigation is not required to verify the preliminary assessment of land contamination risks in support of the planning application for proposed redevelopment of the Site. Subject to agreement with the Local Authority, the requirement to carry out an intrusive

geoenvironmental investigation may be satisfactorily dealt with by incorporation of a suitable condition in any planning consent; any such condition will be addressed by the subsequent stages of studies and investigations to be carried out for the Site.

5.7.3 From consideration of the assessed land contamination risks there is no reason that the condition of the Site would be deemed incompatible with the intended use of the Site in accordance with City of Westminster Contaminated Land Guidance (WCC, 2018) and Policy 5.21 of The London Plan (GLA, 2017), or that the Site would be designated as Contaminated Land under Part IIa of the Environmental Protection Act 1990.

5.8 Management of Unexpected Sources of Contamination

5.8.1 There is a possibility that unexpected sources of contamination associated with, for example, disposal of asbestos and other construction material during previous construction works or the storage and use of fuel oils may be encountered during the site clearance or ground works.

5.8.2 Should visual and olfactory examination of any unusual solid materials or liquids encountered during the construction works identify areas of contamination specific management procedures will be adopted. These procedures will allow for the short-term storage of the suspected material in stockpiles and/or storage tanks while verification testing for potential contamination is carried out. The storage area will be contained to ensure that contamination does not migrate and affect other areas of the site.

5.8.3 Once the nature, location and extent of the unexpected contamination have been identified appropriate remediation or mitigation measures will be adopted. Although these cannot be identified at this time the main emphasis will be on methods of isolating or treating the affected materials. If such measures are unlikely to be practical or effective in mitigating the risk from the identified contamination, consideration will be given to excavating and removing the contaminated material from site for disposal or treatment at a suitably licensed facility.

5.8.4 Where remediation or mitigation of unexpected contaminants is required, an implementation and verification process will be established to identify the remediation activities required and to confirm that the remediation has been undertaken correctly. As part of this process, remediation objectives will be identified and remediation criteria selected for measuring compliance against these objectives in consultation with the Local Authority and other statutory consultees.

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GUIDANCE NOTES

Essential Guidance for Report Readers

This report has been prepared within an agreed timeframe and to an agreed budget that will necessarily apply some constraints on its content and usage. The remarks below are presented to assist the reader in understanding the context of this report and any general limitations or constraints. If there are any specific limitations and constraints they are described in the report text.

1) The opinions and recommendations expressed in this report are based on statute, guidance, and appropriate practice current at the date of its preparation. Peter Brett Associates LLP (PBA) does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and we will be pleased to advise if any report requires revision due to changing circumstances. Following delivery of the report PBA has no obligation to advise the Client or any other party of such changes or their repercussions.

2) Some of the conclusions in this report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third party data used. Historical maps and aerial photographs provide a "snap shot" in time about conditions or activities at the site and cannot be relied upon as indicators of any events or activities that may have taken place at other times.

3) The conclusions and recommendations made in this report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be taken into account in any analysis and reporting.

4) It should be noted that groundwater levels, groundwater chemistry, surface water levels, surface water chemistry, soil gas concentrations and soil gas flow rates can vary due to seasonal, climatic, tidal and man made effects.

5) If the report indicates that asbestos has been identified within the ground, any work that involves, or is likely to involve, contact with asbestos must be undertaken in accordance with the Control of Asbestos Regulations 2012, particularly in regard to risk assessment, licensing and training. A risk assessment should be carried out prior to any activities that could lead to the disturbance of asbestos materials, either buried or on the ground surface and should include appropriate mitigation measures, such as damping down to prevent the spread of asbestos, air monitoring and minimum PPE and/or RPE requirements for the work proposed.

6) This report has been written for the sole use of the Client stated at the front of the report in relation to a specific development or scheme. The conclusions and recommendations presented herein are only relevant to the scheme or the phase of project under consideration. This report shall not be relied upon or transferred to any other party without the express written authorisation of PBA. Any such party relies upon the report at its own risk.

7) The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not taken into account the perceptions of, for example, banks, insurers, other funders, lay people, etc, unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

8) Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

Methodology for Land Contamination Risk Assessments

1 Objective

The objective of the Phase 1 Preliminary Risk Assessment is to identify the existing ground conditions and environmental setting of a defined site using readily available published information. The aim is to identify the potential presence of ground contamination which might have associated environmental liabilities or which may affect the site redevelopment. A combined assessment including geotechnical information will also appraise the likely foundation requirements and geotechnical constraints at the site.

2 Introduction

The statutory definition of contaminated land is given in Part IIA of the Environmental Protection Act as "land which appears to the Local Authority in whose area it is situated to be in such as condition, by reason of substances in, on or under the land that (i) significant harm is being caused to people, ecosystems or infrastructure, or there is a significant possibility that such harm could be caused, or (ii) pollution of controlled waters is being, or likely to be, caused"

Situations where harm is to be regarded as significant are (i) chronic or acute toxic effect, serious injury or death to humans, (ii) irreversible or other adverse harm to the ecological system, (iii) substantial damage to, or failure of buildings, (iv) disease, other physical damage or death of livestock or crops, and (v) pollution of controlled waters

The definition of "pollution of controlled water" has been amended by the introduction of Section 86 of the Water Act 2003 and makes clear that, for the purposes of Part IIA only, groundwater does not include waters above the saturated zone.

3 Approach

UK policy and legislation promote the use of a risk based approach to the assessment of ground quality/conditions. Risk is defined the probability or frequency of exposure to a substance with the potential to cause harm, and the seriousness of the consequence.

The technical guidance supporting the legislation is presented in a series of documents known as the Contaminated Land Reports (CLRs 1 to 11). The guidance proposes a four-stage approach to the assessment of contamination and associated risks. The four stages are:-

i) Hazard Identification – identifying potential contaminant sources on and off site

ii) Hazard Assessment – analysing the potential for unacceptable risks by identifying what linkages could be present and what could be affected (Conceptual Model)

iii) Risk Estimation – establish the magnitude and probability of the possible consequences (what degree of harm might result to defined receptors and how likely)

iv) Risk Evaluation – deciding whether the risk is unacceptable.

The underlying principle is the evaluation of pollutant linkages for assessing whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements:-

i) A Source/Hazard (chemical or geotechnical) which has the potential to cause harm or pollution;

ii) A Pathway for the hazard to move along / generate exposure; and

iii) A Receptor that is affected by the Source/Hazard.

The Source may be an identified leak of oil, an area of radioactive contamination or a former landfill for example. Pathways include transport by groundwater, surface water, windblown dust, vapours etc, and for humans will include the means by which contaminants enter the body, for example dermal contact, ingestion, inhalation etc. Receptors include people, other living organisms and the built environment. Groundwater and surface waters are receptors as well as being contaminant pathways.

4 Risk Assessment Strategy

To assess the potential risk related to the quality of the ground and groundwaters, a qualitative risk assessment is carried out utilising a Conceptual Site Model to identify plausible 'source-pathway-receptor' linkages. This assessment is made from consideration of the information currently available and the findings of any ground investigations.

In the conceptual model the potential environmental risk is related to the potential for a source of contamination to be present, the potential for migration of the contaminant along a given pathway, and the significance of potential receptors. A significant environmental risk occurs only when there is significant migration along a pathway connecting a significant contamination source to a significant receptor. If either the potential for a source, pathway or receptor being present is not significant, then the risk is also not significant. For the purposes of the assessment, the potential for a significant source, pathway or receptor being present is assessed in terms of their magnitude and extent as being very low, low, moderate, high or

very high. The criteria used to assess the significance of the identified sources, pathways and receptors are given in the following sections.

4.1 Potential Sources

The significance of potential sources of contamination has been determined from consideration of the previous or ongoing activities on or near to the site and any available results of contamination analyses in general accordance with the criteria presented in the **Table 1**. In addition, specific consideration is given to the potential for "diffuse source" pollutants to be present.

4.2 Potential Pathways

The significance of potential pathways for the migration of contamination has been determined from consideration of the nature of the ground conditions on the site and the current use of the site in general accordance with the criteria presented in the **Table 2**. In addition, specific consideration is given to the effect of the distance and time of travel along a potential pathway on the environmental risks, for example the effect of dilution and dispersion of groundwater flow through an aquifer.

4.3 Potential Receptors

The significance of potential receptors is based on the value of the attributes of the receptor and will be influenced by a number of factors such as the relative quality, sensitivity, scale, rarity and substitutability of the receptor. The determination of the significance of the potential receptors is based mainly on existing designations but allows for professional judgement where receptors are found that do not have any formal national or local designation.

The significance of potential receptors has been determined in general accordance with the criteria presented in **Table 3**.

5 Risk Estimation and Evaluation

The environmental risk is related to the potential for a significant source of contamination to be present, the potential for significant migration of the contaminant along a given pathway, and the potential for significant harm to sensitive receptors. A significant environmental risk occurs only when there is significant migration along a pathway connecting a significant contamination source to a significant receptor. If either the potential for a source, pathway or receptor being present is not significant, then the environmental risk is also not significant.

The environmental risk is determined by the interrelationship between the potential for a source of contamination to be present, the potential for migration of the contaminant along a given pathway, and the significance of potential receptors for any identified source-pathway-receptor' linkage. This approach allows the magnitude and probability of the possible consequences that may arise as a result of a hazard to be assessed and possible unacceptable risks to be identified.

Table 1: Criteria for Determining the Significance of Potential Sources of Contamination

Potential Significance	Typical Land Use/ Sources of Gas Generation/ Concentrations of Potential Contaminants
Very Low	Land Use: Greenfield site. Gas Source: Soils with low organic content. Contamination: No significant contamination.
Low	Land Use: Residential, retail or office use. Gas Source: Soils with high organic content. Contamination: Locally slightly elevated concentrations of limited number of contaminants.
Moderate	Land Use: Railway land, collieries, scrap yards, light industry, inert landfills. Gas Source: Old landfills, inert waste. Contamination: Locally elevated concentrations of a number of contaminants.
High	Land Use: Gas works, chemical works, heavy industry, non-hazardous landfills. Gas Source: Shallow mine workings. Contamination: Widespread elevated concentrations of a number of contaminants.
Very High	Land Use: Hazardous landfills. Gas Source: Recent landfills. Contamination: Widespread highly elevated concentrations of a number of contaminants.

Table 2: Criteria for Determining the Significance of Potential Pathways

Significance	Typical Example
Very Low	Contact, uptake or leaching: Hard surfaces Absorption: Hard surfaces Infiltration: Hard surfaces Ground and surface water flow: Unproductive strata, strata with no significant groundwater flow
Low	Contact, uptake or leaching: Established surface vegetation, significant surface cover Absorption: Non-agricultural land, well established surface vegetation Infiltration: Soils of low leaching potential Ground and surface water flow: Secondary aquifers, materials with low mass permeability
Moderate	Contact, uptake or leaching: Limited surface vegetation or surface cover Absorption: Non-agricultural land, poorly established surface vegetation Infiltration: Soils of intermediate leaching potential Ground and surface water flow: Secondary aquifers, materials with moderate mass permeability
High	Contact, uptake or leaching: Exposed surface soils, areas with no significant surface cover Absorption: Cultivated arable land, grazing land Infiltration: Soils of high leaching potential Ground and surface water flow: Principle aquifer, materials with high mass permeability
Very High	Contact, uptake or leaching: Excavation or disturbance of surface soils Absorption: Land cultivated for fruit and vegetables Infiltration: Direct contact with mobile ground or surface waters Ground and surface water flow: Surface water flow

Table 3: Criteria for Determining the Significance of Potential Receptors

Potential Significance	Criteria	Typical Example
Very Low	Receptor of no significant importance.	Groundwater**:** Unproductive Strata, Secondary B Aquifer Surface Water: CQA Grade F, no abstraction in the vicinity of the site Ecology: No significant value Built Environment: No significant value
Low	Receptor of local or regional importance with potential for replacement.	Groundwater: Secondary A Aquifer Surface Water: CQA Grade D/E, limited abstraction in the vicinity of the site Ecology: Local habitat resources Built Environment: Sites of local value
Moderate	Receptor of local or regional importance with limited potential for replacement.	Groundwater: Principal Aquifer Surface Water: CQA Grade B/C, abstracted at a number of locations in the vicinity of the site Ecology: County Wildlife Sites Built Environment: Areas of Historic Character
High	Receptor of regional or national importance with limited potential for replacement.	Groundwater: Source Protection Outer Zone Surface Water: CQA Grade A providing potable water to a small population Ecology: SSSI, NNR or MNR sites Built Environment: Conservation Area
Very High	Receptor of national or international importance with limited potential for replacement.	Groundwater: Source Protection Inner Zone Surface Water: CQA Grade A providing potable water to a large population Ecology: SPA, SAC or Ramsar sites Built Environment: World Heritage Sites

Note: The potential for significant harm to site workers, site users and site neighbours is related directly to the cumulative length of time people will be on or in the vicinity of the site.

A two-stage assessment is adopted to determine the environmental risk associated with land contamination. Firstly the potential for a source of contamination to be present and the potential for migration of the contaminant along a given pathway are used to determine the potential for a contaminant to affect a sensitive receptor using the matrix presented in **Table 4**.

Secondly the potential for a contaminant to affect a sensitive receptor and the significance of potential receptors are used to determine the consequent

environmental risk using the matrix presented in **Table 5**.

Risk classifications are then referenced to the following descriptions.

Very Low Risk – It is unlikely that harm will arise to a designated receptor and there is unlikely to be a liability/cost for the owner of the business/land.

Low Risk – It is possible that harm could arise to a designated receptor however, the consequences are likely to be limited and it is considered unlikely that the issue will represent a liability/cost for the owner of the business/land.

Moderate Risk – It is possible that harm could arise to a designated receptor but is unlikely that the harm will be significant or permanent. Remedial action may be necessary and therefore the issue could arise as a liability/cost for the owner/occupier whilst retained in the current use. Development/change of use will require further assessment and is likely to incur additional costs.

High Risk – It is likely that significant harm to a designated receptor will occur and therefore it is likely that the issue will represent a liability/cost for the owner of the business/land.

Very High Risk – It is likely that irreversible harm to or loss of a designated receptor will occur and therefore it is likely that the issue will represent a significant liability/cost for the owner of the business/land.

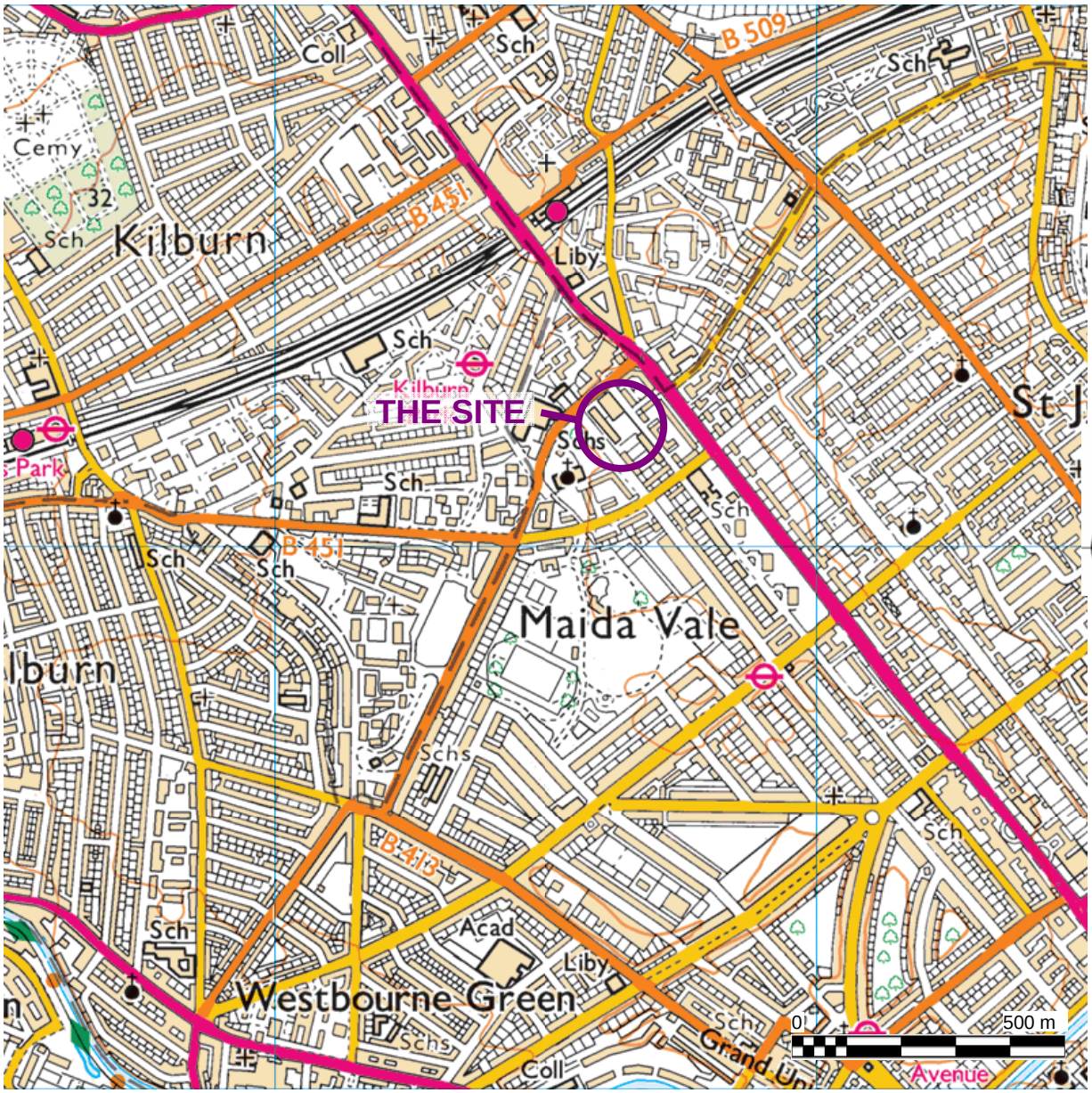
Table 4: Assessed Potential for a Contaminant to Affect a Sensitive Receptor

		Potential for Migration of the Contaminant along a given Pathway				
		Very Low	Low	Moderate	High	Very High
Potential for a Source of Contamination to be Present	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
	Low	Very Low	Low	Low	Low	Moderate
	Moderate	Very Low	Low	Moderate	Moderate	High
	High	Very Low	Low	Moderate	High	Very High
	Very High	Very Low	Moderate	High	Very High	Very High

Table 5: Assessed Environmental Risk

		Significance of Potential Receptors				
		Very Low	Low	Moderate	High	Very High
Potential for a Contaminant to Affect a Sensitive Receptor	Very Low	Very Low	Very Low	Very Low	Very Low	Low
	Low	Very Low	Low	Low	Low	Moderate
	Moderate	Very Low	Low	Moderate	Moderate	High
	High	Very Low	Low	Moderate	High	Very High
	Very High	Low	Moderate	High	Very High	Very High

FIGURES



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Coordinates	N51:32:02 W0:11:24
Nearest Post Code	NW6 5HR

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Client

City of Westminster

SITE LOCATION PLAN

TORRIDON HOUSE CAR PARK, WESTMINSTER

Date	Jan 2019
A4 Scale	1:12 500
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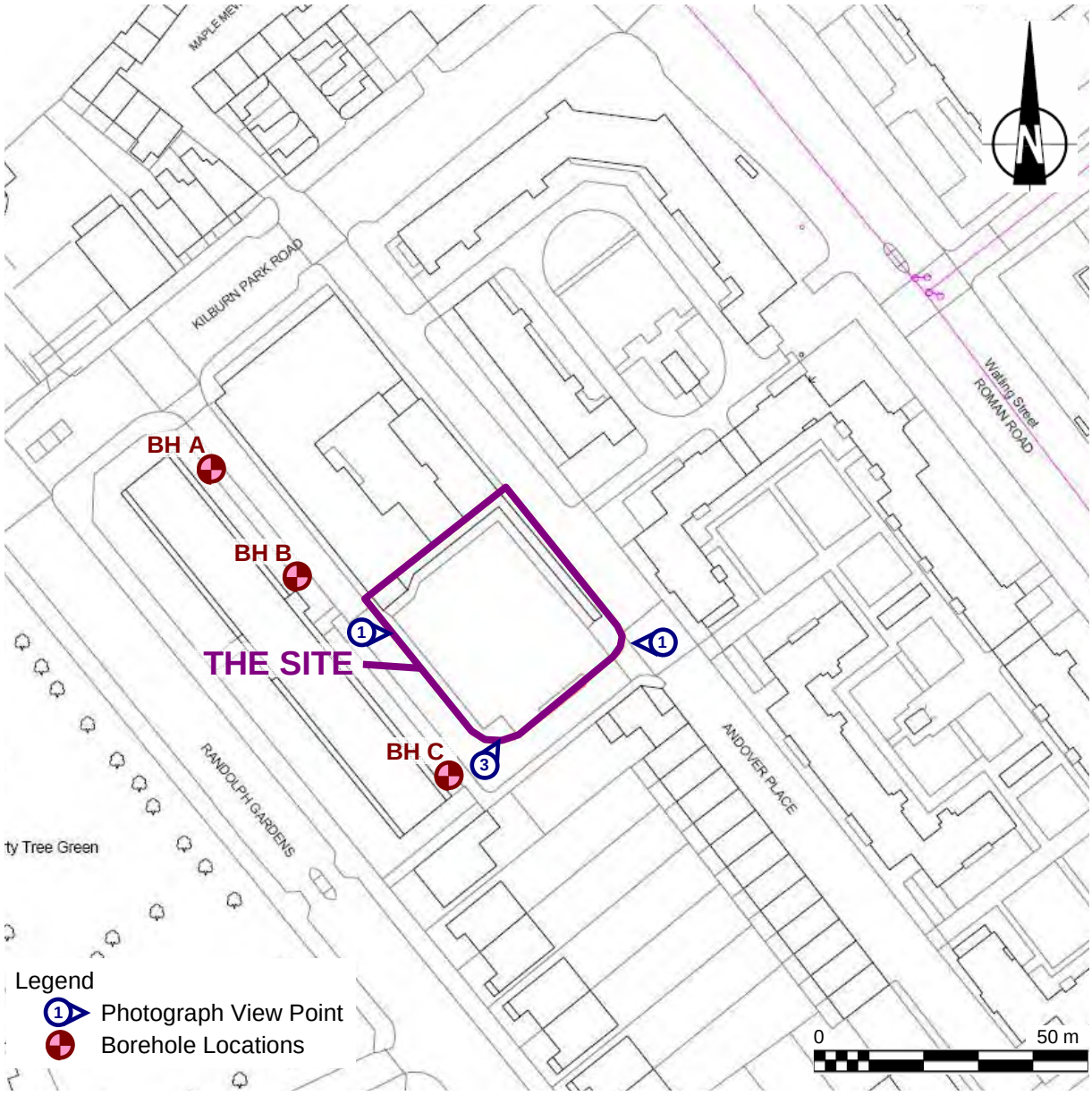

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Photograph 1: Torridon House car park looking west

Photograph 2: Car park interior looking east

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			A4 Scale	approx 1:1250
			Drawn	mdh
			Checked	
			Revision	00
			Figure	**3a**

Photograph 3: Car park interior looking northeast

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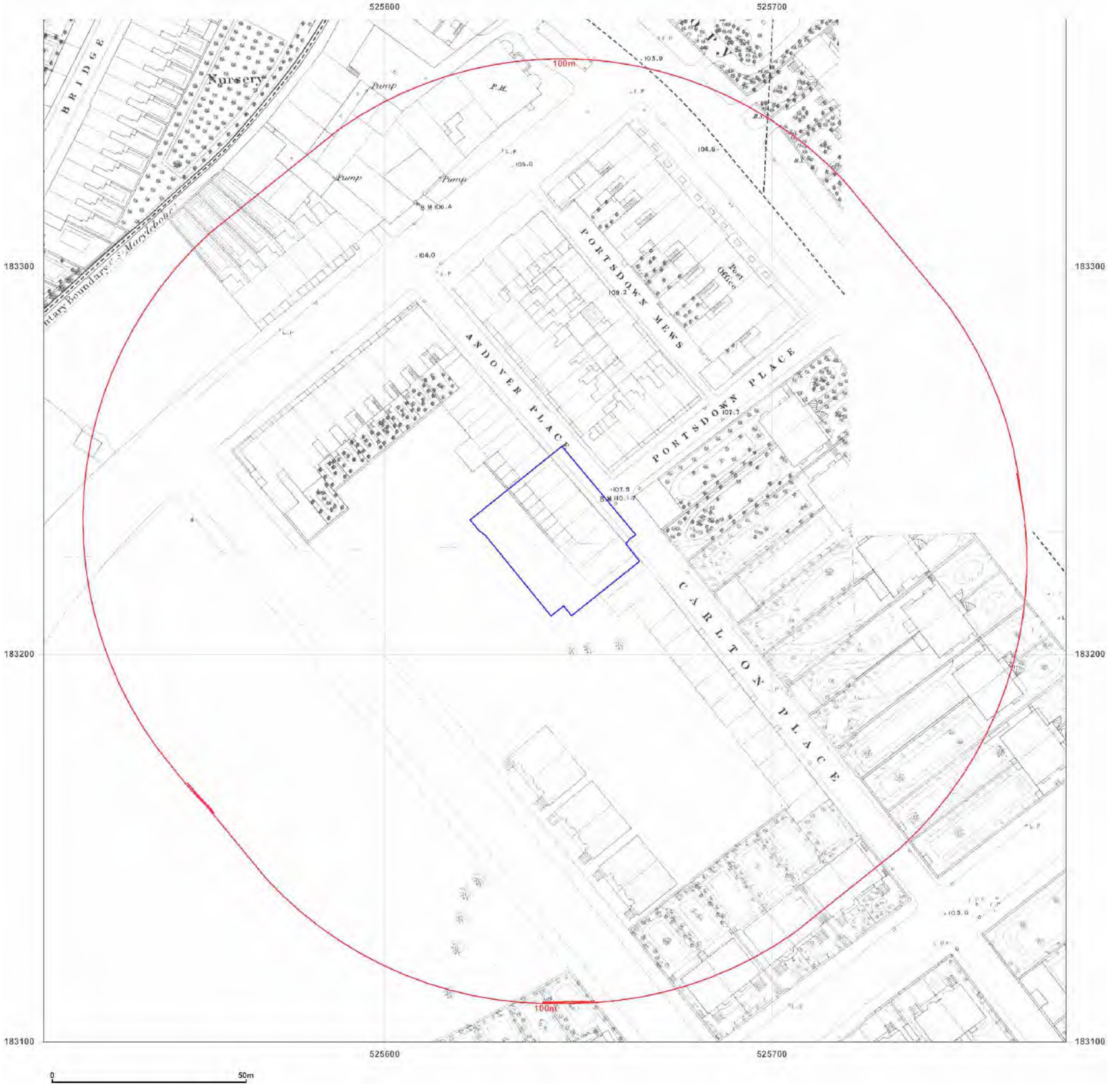
APPENDIX 1
Historical Ordnance Survey Maps



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Site Details:

Torridon House Car Park,
Westminster

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Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

Map Name: 1056 Scale Town Plan

Map date: **1863-1866**

Scale: 1:1,056

Printed at: 1:1,056

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Surveyed 1865
Revised N/A
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Copyright N/A
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Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

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Map date: **1896**

Scale: 1:1,056

Printed at: 1:1,056

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Surveyed 1893
Revised N/A
Edition 1896
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Client Ref: EMS_525015_706181
Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

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Map date: **1915**

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Printed at: 1:2,500

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Surveyed 1915
Revised 1915
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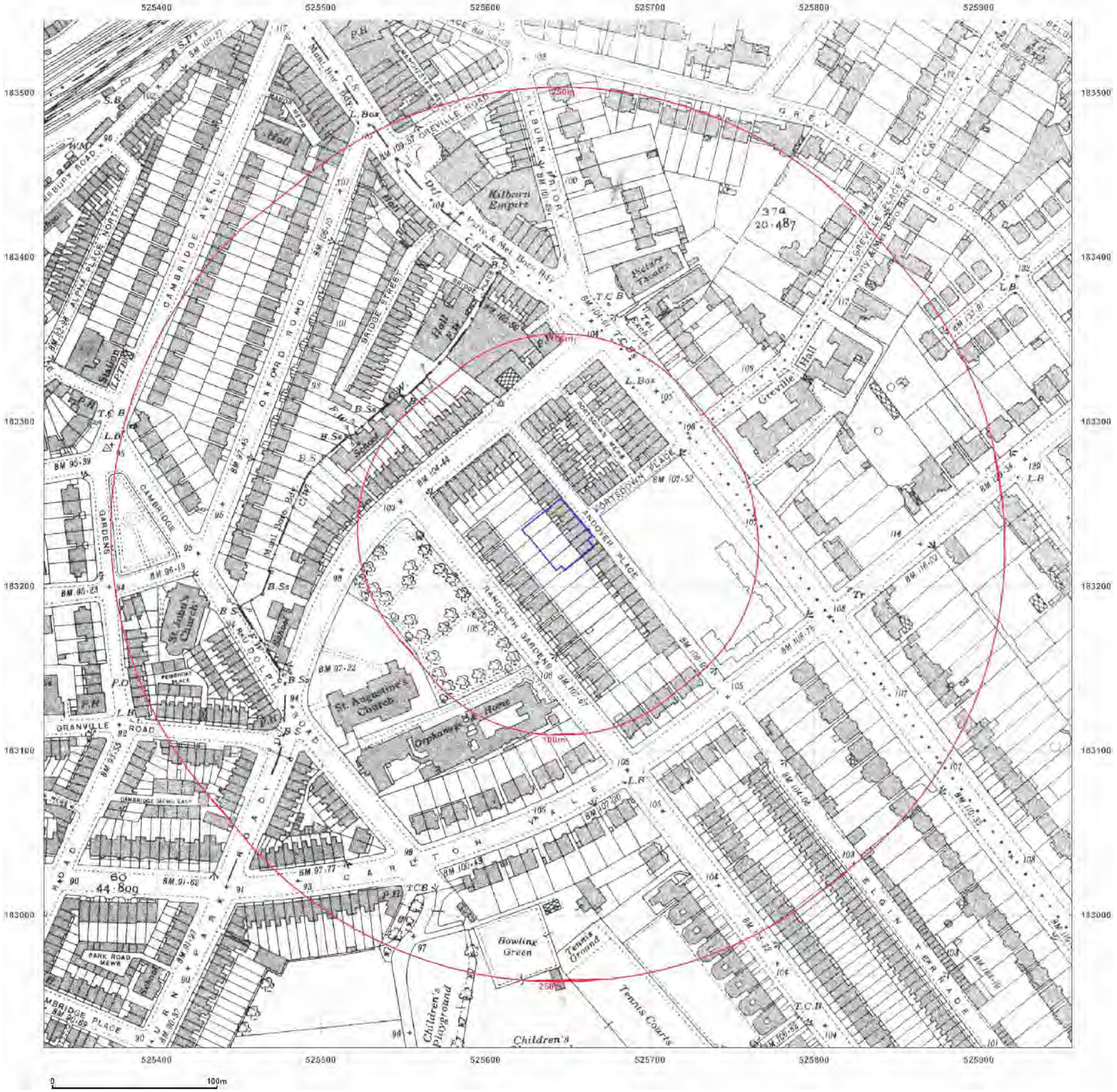

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Printed at: 1:2,500

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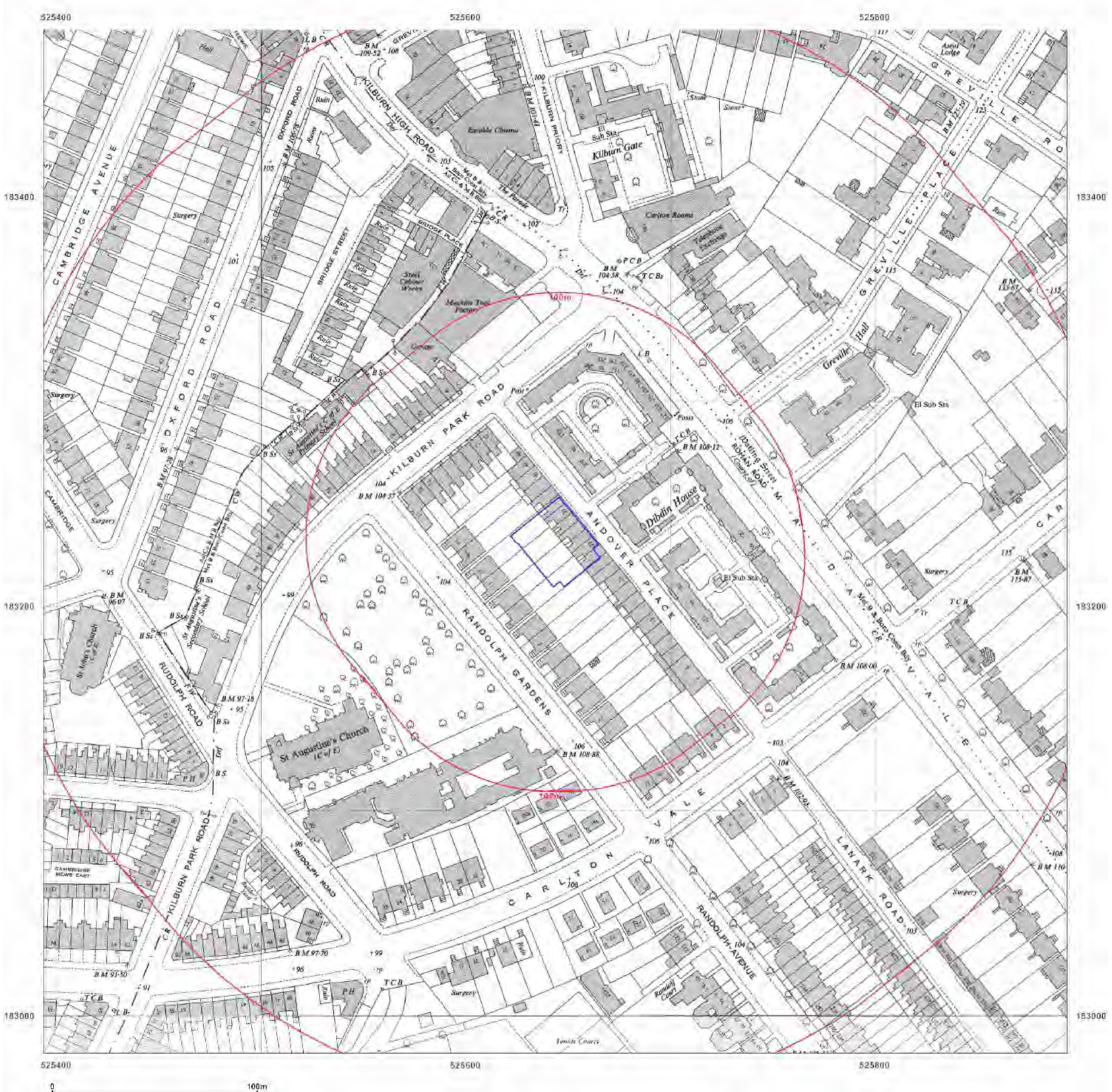

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Grid Ref: 525644, 183232

Map Name: National Grid

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Scale: 1:1,250

Printed at: 1:2,000

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Map legend available at:
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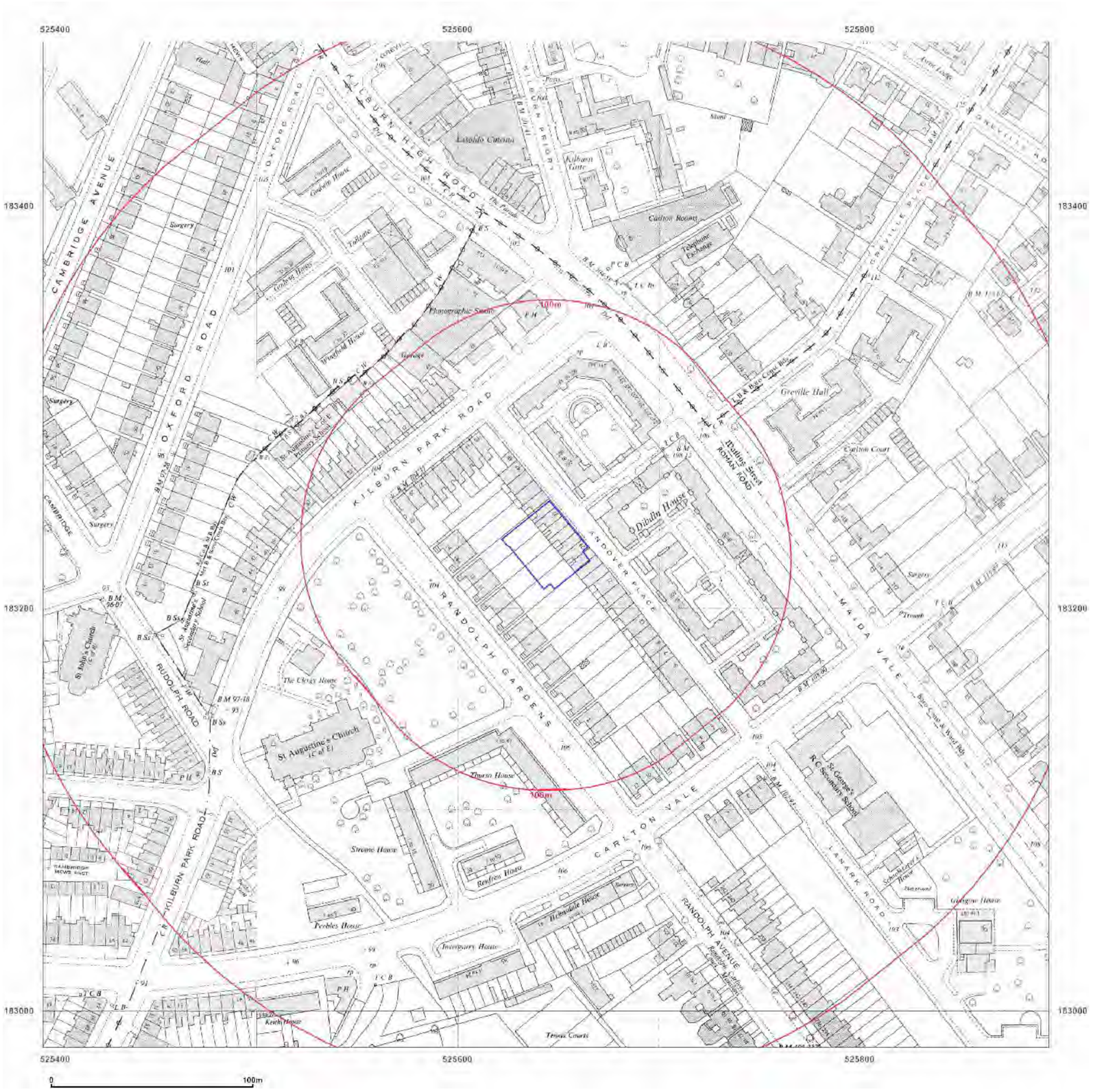

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Site Details:

Torridon House Car Park,
Westminster

Client Ref: EMS_525015_706181
Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

Map Name: National Grid

Map date: **1962-1966**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1953 Revised 1962 Edition N/A Copyright 1962 Levelled 1953	Surveyed 1953 Revised 1965 Edition N/A Copyright 1966 Levelled 1953
Surveyed 1953 Revised 1965 Edition N/A Copyright N/A Levelled 1953	Surveyed 1966 Revised 1966 Edition N/A Copyright 1966 Levelled 1953

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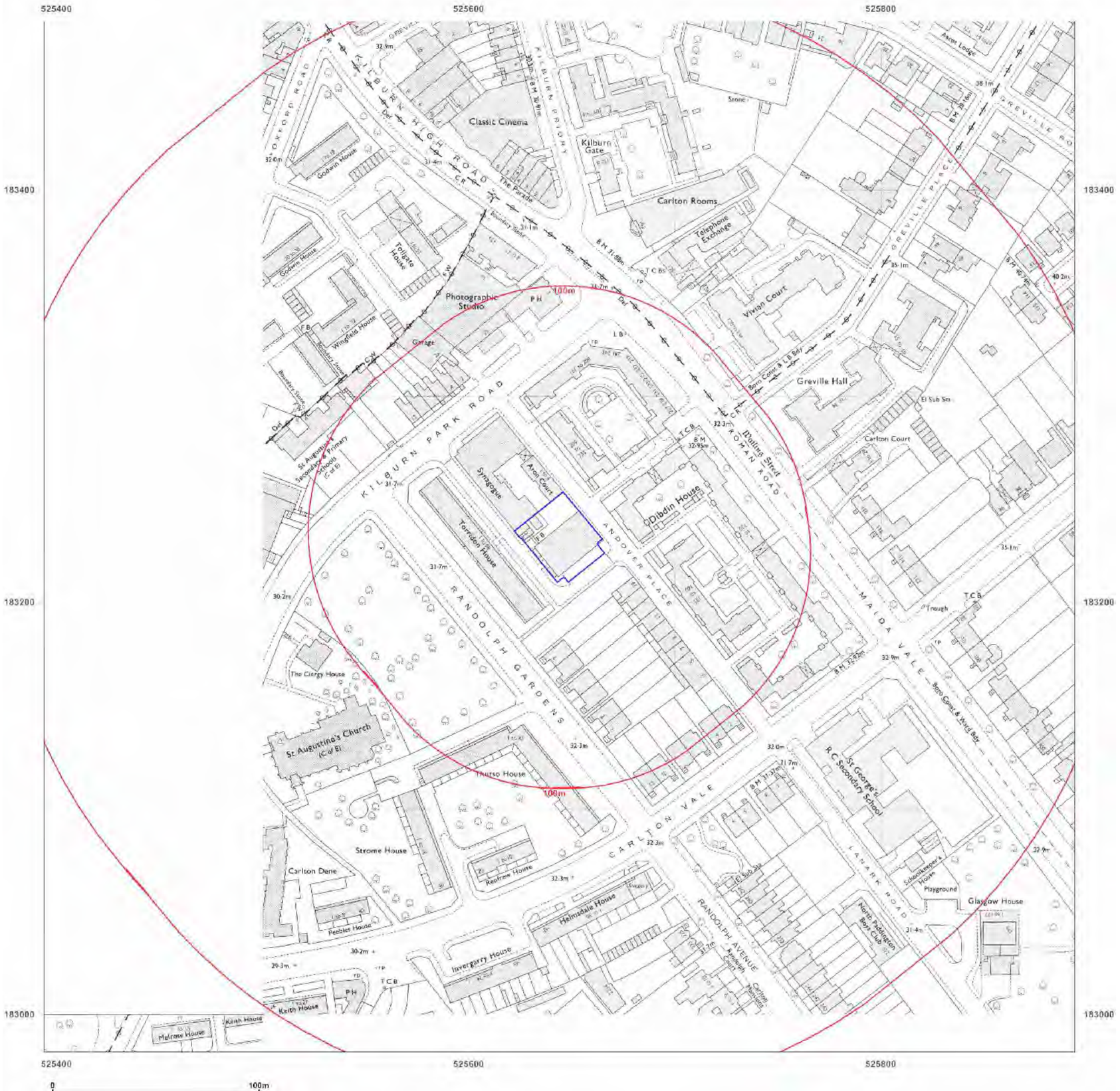

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Site Details:

Torridon House Car Park,
Westminster

Client Ref: EMS_525015_706181
Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

Map Name: National Grid

Map date: **1974-1975**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1953
Revised 1974
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Edition N/A
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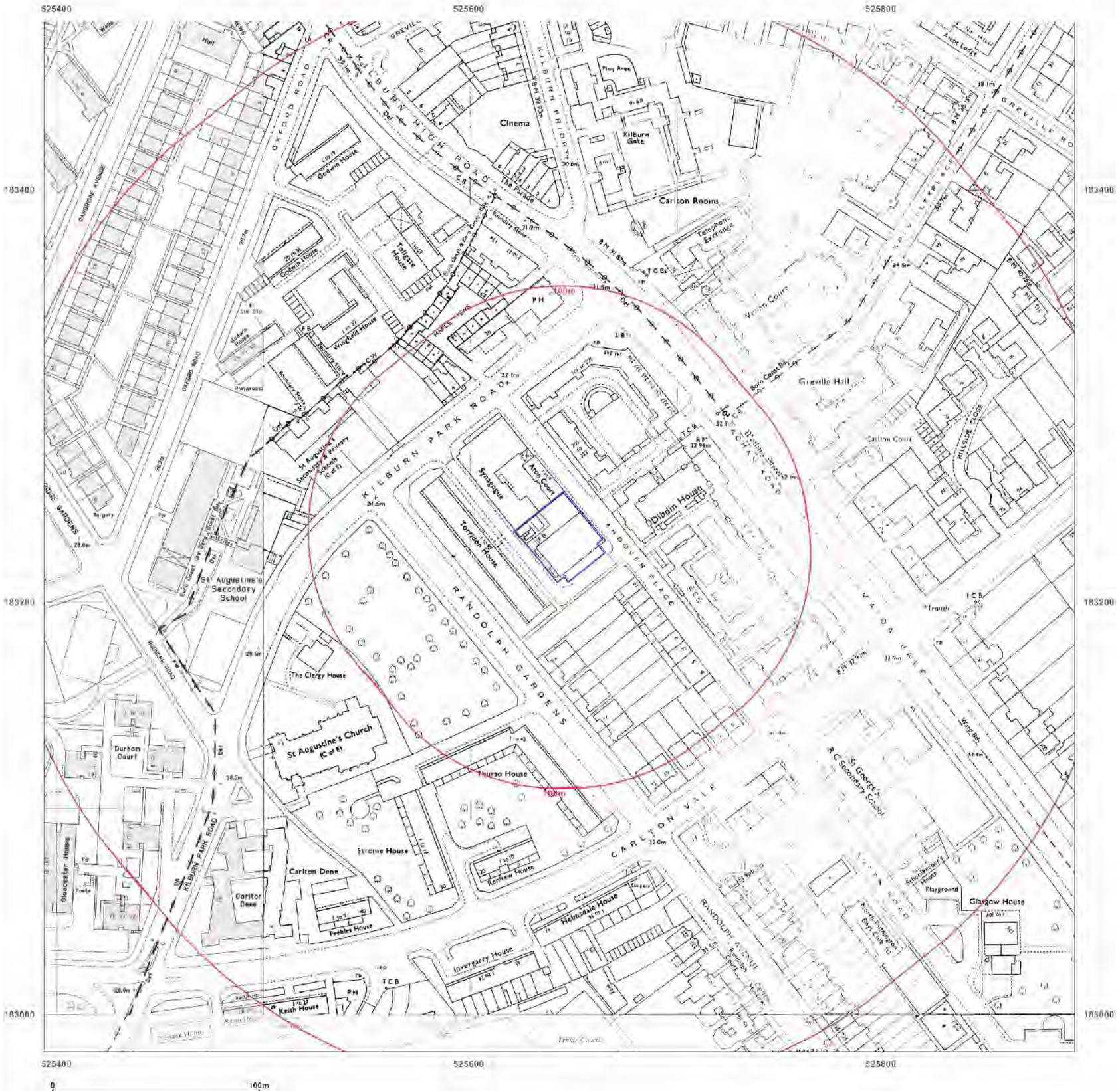

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Site Details:

Torridon House Car Park,
Westminster

Client Ref: EMS_525015_706181
Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

Map Name: National Grid

Map date: **1984-1987**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1974 Revised 1986 Edition N/A Copyright 1986 Levelled 1974	Surveyed 1974 Revised 1986 Edition N/A Copyright 1986 Levelled 1974

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Site Details:

Torridon House Car Park,
Westminster

Client Ref: EMS_525015_706181
Report Ref: EMS-525015_706181
Grid Ref: 525644, 183232

Map Name: National Grid

Map date: **1986-1991**

Scale: 1:1,250

Printed at: 1:2,000

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Production date: 04 February 2019

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APPENDIX 2
EnviroInsight Report

Enviro Insight

Address:	**Torridon House Car Park, Westminster,**
Date:	**4 Feb 2019**
Reference:	**EMS-525015_706183**
Client:	**EmapSite**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	07-Jun-2015
Grid Reference:	525645,183231
Site Size:	0.10ha

Report Reference: EMS-525015_706183
Client Reference: EMS_525015_706183

Contents Page

Contents Page 3
Overview of Findings 6
Using this report 10
1. Historical Land Use 11
1. Historical Industrial Sites 12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping 12
1.2 Additional Information – Historical Tank Database 13
1.3 Additional Information – Historical Energy Features Database 13
1.4 Additional Information – Historical Petrol and Fuel Site Database 15
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database 15
1.6 Historical military sites 16
1.7 Potentially Infilled Land 16
2. Environmental Permits, Incidents and Registers Map 17
2. Environmental Permits, Incidents and Registers 18
2.1 Industrial Sites Holding Licences and/or Authorisations 18
2.1.1 Records of historic IPC Authorisations within 500m of the study site: 18
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: 18
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: 18
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: 18
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: 18
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: 19
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations: 19
2.1.8 Records of Licensed Discharge Consents within 500m of the study site: 19
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: 19
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 20
2.2 Dangerous or Hazardous Sites 20
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents 20
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site: 20
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site: 20
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990 21
3. Landfill and Other Waste Sites Map 22
3. Landfill and Other Waste Sites 23
3.1 Landfill Sites 23
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site: 23
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site: 23
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 23
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site: 23
3.2 Other Waste Sites 24
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site: 24
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site: 24
4. Current Land Use Map 25
4. Current Land Uses 26
4.1 Current Industrial Data 26
4.2 Petrol and Fuel Sites 26
4.3 National Grid High Voltage Underground Electricity Transmission Cables 26
4.4 National Grid High Pressure Gas Transmission Pipelines 27

5. Geology 28
5.1 Artificial Ground and Made Ground 28
5.2 Superficial Ground and Drift Geology 28
5.3 Bedrock and Solid Geology 28
6 Hydrogeology and Hydrology 29
6a. Aquifer Within Superficial Geology 29
6b. Aquifer Within Bedrock Geology and Abstraction Licences 30
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences 31
6d. Hydrogeology – Source Protection Zones within confined aquifer 32
6e. Hydrology – Watercourse Network and River Quality 33
6.Hydrogeology and Hydrology 34
6.1 Aquifer within Superficial Deposits 34
6.2 Aquifer within Bedrock Deposits 34
6.3 Groundwater Abstraction Licences 34
6.4 Surface Water Abstraction Licences 36
6.5 Potable Water Abstraction Licences 36
6.6 Source Protection Zones 37
6.7 Source Protection Zones within Confined Aquifer 37
6.8 Groundwater Vulnerability and Soil Leaching Potential 37
6.9 River Quality 37
6.9.1 Biological Quality: 37
6.9.2 Chemical Quality: 37
6.10 Ordnance Survey MasterMap Water Network 38
6.11 Surface Water Features 38
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea) 39
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map 40
7 Flooding 41
7.1 River and Coastal Zone 2 Flooding 41
7.2 River and Coastal Zone 3 Flooding 41
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating 41
7.4 Flood Defences 41
7.5 Areas benefiting from Flood Defences 41
7.6 Areas benefiting from Flood Storage 42
7.7 Groundwater Flooding Susceptibility Areas 42
7.8 Groundwater Flooding Confidence Areas 42
8. Designated Environmentally Sensitive Sites Map 43
8. Designated Environmentally Sensitive Sites 44
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 44
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 44
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 44
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 44
8.5 Records of Ramsar sites within 2000m of the study site: 44
8.6 Records of Ancient Woodland within 2000m of the study site: 45
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site: 45
8.8 Records of World Heritage Sites within 2000m of the study site: 45
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site: 45
8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 45
8.11 Records of National Parks (NP) within 2000m of the study site: 45
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site: 46
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site: 46

8.14 Records of Green Belt land within 2000m of the study site:.....46
9. Natural Hazards Findings 47
9.1 Detailed BGS GeoSure Data.....47
9.1.1 Shrink Swell.....47
9.1.2 Landslides.....47
9.1.3 Soluble Rocks.....47
9.1.4 Compressible Ground.....48
9.1.5 Collapsible Rocks.....48
9.1.6 Running Sand.....48
9.2 Radon.....49
9.2.1 Radon Affected Areas.....49
9.2.2 Radon Protection.....49
10. Mining 50
10.1 Coal Mining.....50
10.2 Non-Coal Mining.....50
10.3 Brine Affected Areas 50
Contact Details 51
Standard Terms and Conditions 53

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	0	0	42
1.2 Additional Information – Historical Tank Database	0	0	9	4
1.3 Additional Information – Historical Energy Features Database	0	0	17	50
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	7	6
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	0	6

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	0
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	0	0	3
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	2
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

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

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

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

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	None identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	9
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
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)	0	0	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	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 Enviroment Agency Zone 2 floodplains within 250m of the study site	None identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Not Prone
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Not Applicable

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	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

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

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

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

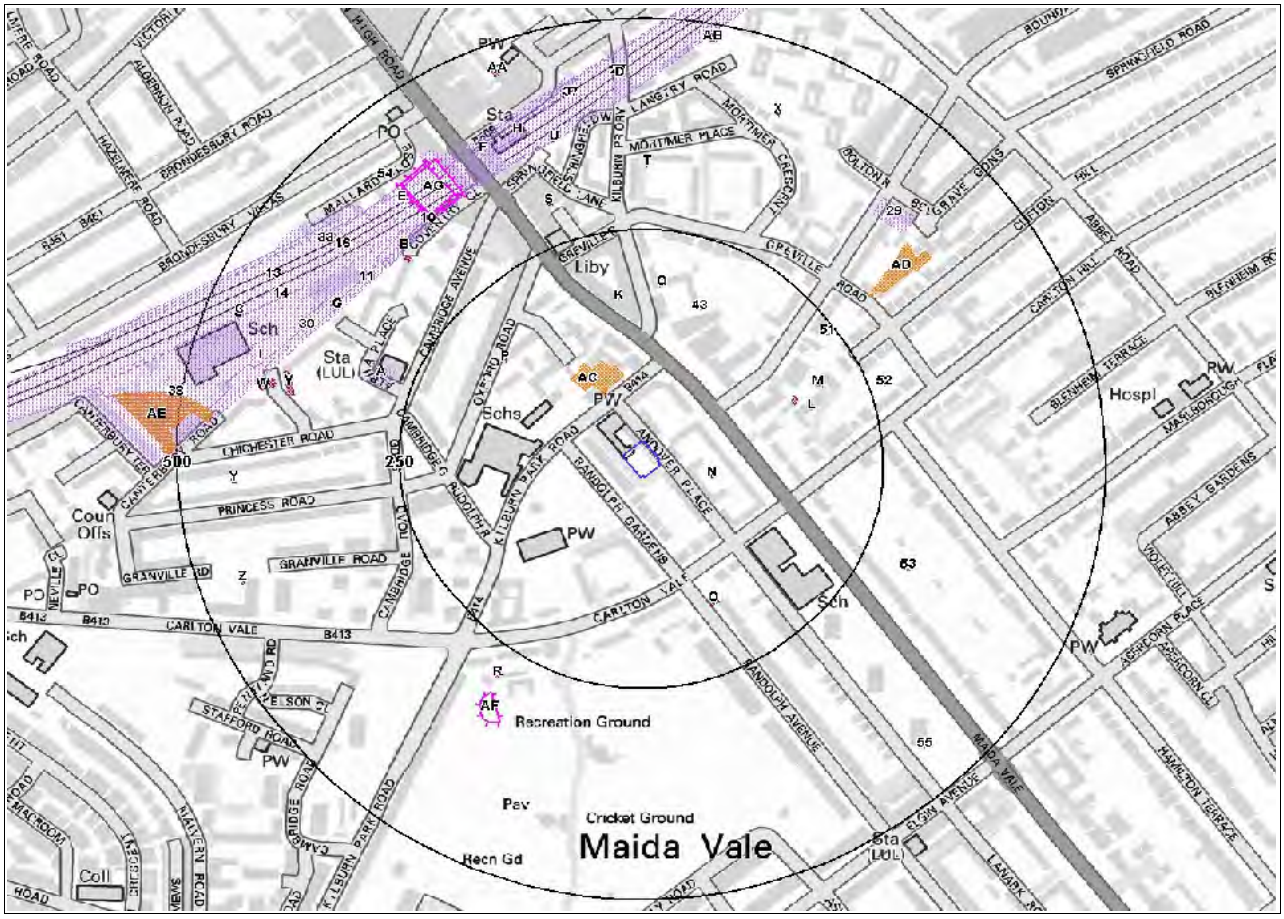
All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use

NW N NE

W E

SW S SE



Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

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: 42

ID	Distance [m]	Direction	Use	Date
1A	274	W	London Transport Station	1957
2A	274	W	Unspecified Station	1948
3A	274	W	Unspecified Station	1989
4A	274	W	London Transport Station	1973
5A	274	W	London Transport Station	1968
6C	345	NW	Railway Sidings	1894
7B	345	NW	Railway Building	1894
8J	347	NW	Railway Sidings	1920
9B	347	NW	Railway Buildings	1920
10	349	NW	Railway Building	1920
11	350	NW	Railway Building	1920
12E	352	NW	Railway Sidings	1989
13	352	NW	Railway Sidings	1973
14	354	NW	Railway Sidings	1866
15AG	354	NW	Cuttings	1866
16	355	NW	Railway Sidings	1957
17C	355	NW	Railway Sidings	1948
18C	355	NW	Railway Sidings	1968
19F	357	NW	Railway Station	1948
20D	358	NW	Railway Sidings	1973
21D	358	NW	Railway Sidings	1968
22E	358	NW	Cuttings	1948
23H	359	NW	Railway Station	1894
24F	359	NW	Railway Station	1920
25G	360	NW	Railway Building	1894
26G	360	NW	Coal Depot	1866
27	360	N	Railway Sidings	1894
28G	366	NW	Railway Building	1920
29	372	NE	Telephone Exchange	1948
30	377	NW	Railway Building	1894
31H	378	NW	Railway Station	1957
32C	379	NW	Railway Building	1968
33	379	NW	Coal Depot	1920
34H	381	NW	Railway Station	1973

35H	381	NW	Railway Station	1989
36H	381	NW	Railway Station	1968
37	395	N	Railway Station	1866
38	407	W	Coal Depot	1894
39I	412	W	Railway Building	1968
40I	435	W	Railway Building	1894
41J	473	W	Railway Building	1948
42AE	477	W	Unspecified Works	1948

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: 13

ID	Distance (m)	Direction	Use	Date
43	166	N	Unspecified Tank	1896
44K	168	N	Unspecified Tank	1871
45K	169	N	Unspecified Tank	1896
46L	178	E	Unspecified Tank	1896
47L	180	E	Unspecified Tank	1936
48M	196	NE	Unspecified Tank	1896
49M	197	NE	Unspecified Tank	1936
50M	200	NE	Unspecified Tank	1871
51	238	NE	Unspecified Tank	1871
52	266	E	Unspecified Tank	1871
53	300	SE	Unspecified Tank	1936
54	423	NW	Unspecified Tank	1871
55	444	SE	Unspecified Tank	1871

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: 67

ID	Distance (m)	Direction	Use	Date
56N	56	E	Electricity Substation	1953
57N	57	E	Electricity Substation	1955
58N	57	E	Electricity Substation	1955

59O	162	SE	Electricity Substation	1996
60L	163	NE	Electricity Substation	1974
61L	164	NE	Electricity Substation	1953
62O	164	SE	Electricity Substation	1974
63L	164	NE	Electricity Substation	1955
64L	164	NE	Electricity Substation	1955
65O	164	SE	Electricity Substation	1987
66O	164	SE	Electricity Substation	1991
67P	171	NW	Electricity Substation	1991
68P	171	NW	Electricity Substation	1984
69P	171	NW	Electricity Substation	1995
70Q	182	N	Electricity Substation	1953
71Q	182	N	Electricity Substation	1955
72Q	182	N	Electricity Substation	1955
73R	282	SW	Electricity Substation	1991
74R	282	SW	Electricity Substation	1986
75R	282	SW	Electricity Substation	1991
76R	282	SW	Electricity Substation	1975
77S	296	N	Electricity Substation	1972
78S	296	N	Electricity Substation	1968
79S	297	N	Electricity Substation	1969
80S	297	N	Electricity Substation	1991
81S	297	N	Electricity Substation	1978
82T	325	N	Electricity Substation	1972
83T	325	N	Electricity Substation	1991
84T	325	N	Electricity Substation	1978
85B	332	NW	Electricity Substation	1969
86B	333	NW	Electricity Substation	1991
87B	333	NW	Electricity Substation	1984
88B	333	NW	Electricity Substation	1968
89B	334	NW	Electricity Substation	1995
90U	367	N	Electricity Substation	1972
91U	367	N	Electricity Substation	1968
92U	367	N	Electricity Substation	1991
93U	367	N	Electricity Substation	1978
94U	367	N	Electricity Substation	1969
95V	375	W	Electricity Substation	1991
96V	398	W	Electricity Substation	1995
97W	408	W	Electricity Substation	1969
98W	409	W	Electricity Substation	1984
99W	409	W	Electricity Substation	1968
100X	414	N	Electricity Substation	1955
101X	414	N	Electricity Substation	1955
102X	414	N	Electricity Substation	1969
103X	414	N	Electricity Substation	1968
104X	414	N	Electricity Substation	1972

105X	414	N	Electricity Substation	1953
106X	415	N	Electricity Substation	1991
107X	415	N	Electricity Substation	1978
108Y	434	W	Electricity Substation	1953
109Y	435	W	Electricity Substation	1955
110Y	435	W	Electricity Substation	1955
111Z	448	W	Electricity Substation	1953
112Z	448	W	Electricity Substation	1955
113Z	448	W	Electricity Substation	1955
114AA	461	N	Electricity Substation	1972
115AA	467	N	Electricity Substation	1994
116AA	467	N	Electricity Substation	1953
117AA	467	N	Electricity Substation	1955
118AA	467	N	Electricity Substation	1955
119AA	467	N	Electricity Substation	1991
120AB	479	N	Electricity Substation	1972
121AB	479	N	Electricity Substation	1991
122AB	479	N	Electricity Substation	1978

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: 13

ID	Distance (m)	Direction	Use	Date
123AC	69	NW	Garage	1974
124AC	69	NW	Garage	1966
125AC	69	NW	Garage	1953
126AC	71	NW	Garage	1955
127AC	71	NW	Garage	1955
128AC	71	NW	Garage	1969
129AC	72	NW	Garage	1915
130AD	304	NE	Garage	1955

131AD	304	NE	Garage	1955
132AD	304	NE	Garage	1953
133AE	461	W	Vehicle Service Depot	1968
134AE	464	W	Vehicle Service Depot	1969
135AE	465	W	Garage	1962

1.6 Historical military sites

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

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

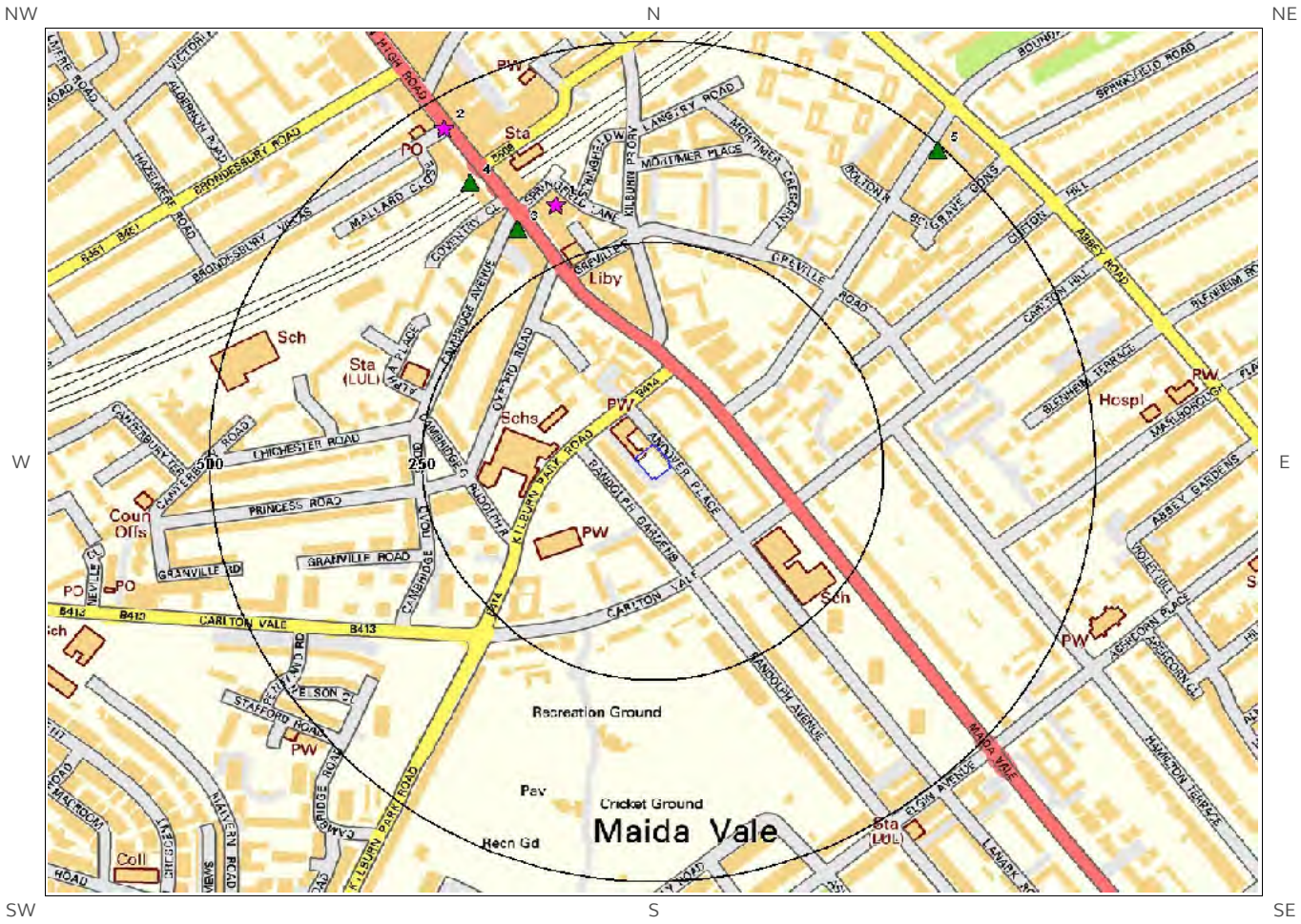
1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 6

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

ID	Distance(m)	Direction	Use	Date
136AF	305	SW	Pond	1957
137AF	305	SW	Pond	1968
138AF	305	SW	Pond	1973
139AF	305	SW	Pond	1989
140AG	354	NW	Cuttings	1866
141E	358	NW	Cuttings	1948

2. Environmental Permits, Incidents and Registers Map



- Site Outline
- Search Buffers (m) (250, 500)
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- 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:

0

Database searched and no data found.

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:

3

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	310	NW	525484 183517	Address: Perfect Dry Cleaners and Launderette, 59 Kilburn High Road, London, NW6 5SB Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
4	388	NW	525428 183575	Address: Essi's Dry Cleaners, 7 Kilburn High Road, London, NW6 6HT Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
5	492	NE	525979 183616	Address: Bromptons of Windsor Street (formerly Dee West Dry Cleaners), 91 Boundary Road, NW8 0RG Process: Dry Cleaning 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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

2

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

ID	Distance (m)	Direction	NGR	Details	
1	318	N	525529 183550	Incident Date: 15-Oct-2003 Incident Identification: 196261 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2	464	NW	525397 183645	Incident Date: 14-Oct-2001 Incident Identification: 36498 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

0

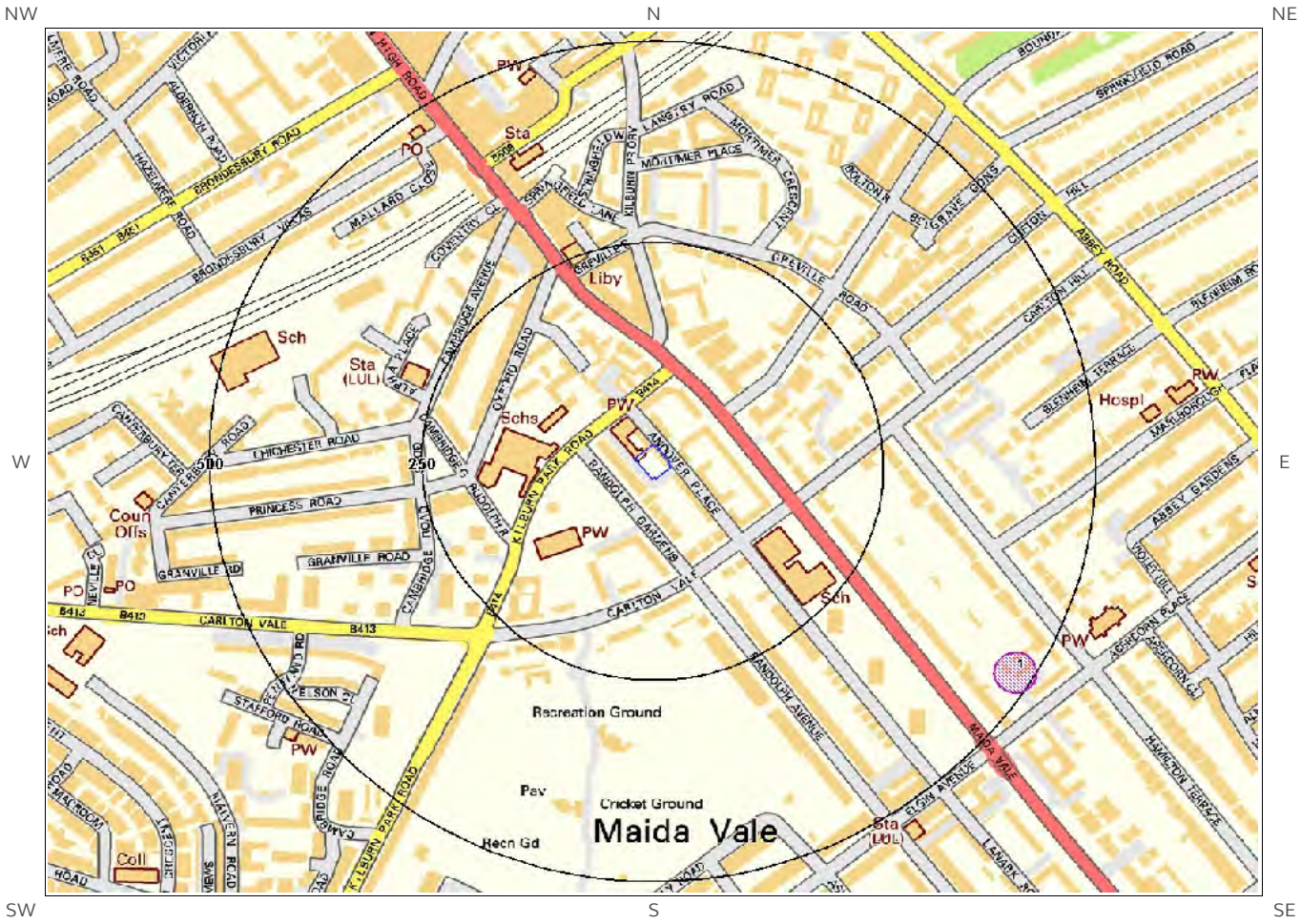
Database searched and no data found.

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

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

Database searched and no data found.

3. Landfill and Other Waste Sites Map



Site Outline

250 / 500 Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

3.2 Other Waste Sites

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

1

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

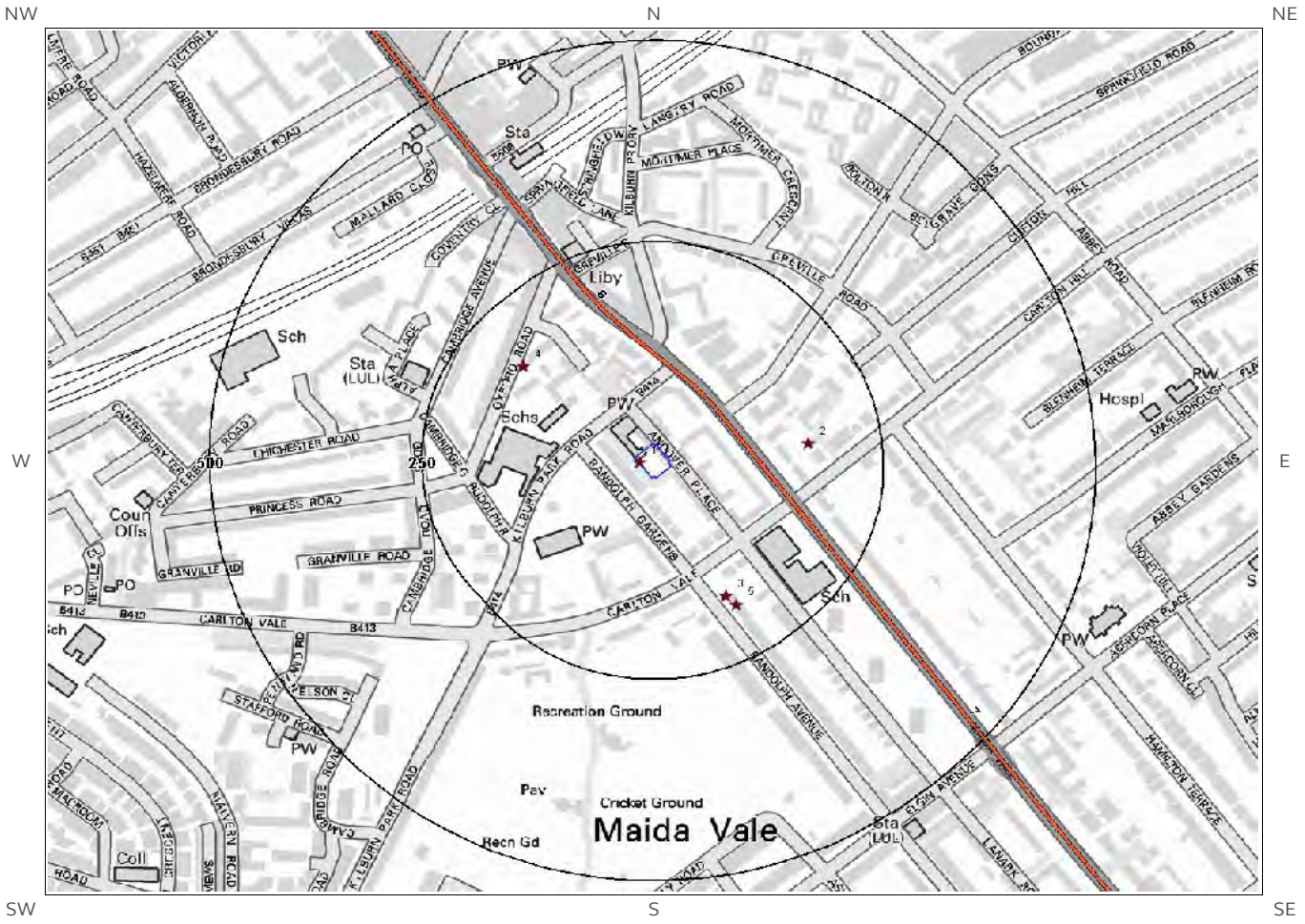
ID	Distance (m)	Direction	NGR	Details		
1	454	SE	526070 182969	Type of Site: Waste Storage Site Address: Bradman House, Abercorn Place, LONDON, Central London, NW8 9XY	Planning Application Reference: 11/00952/FULL Date: -	Further Details: Scheme comprises construction of gates and railings around the perimeter of the Abercorn estate and construction of waste and recycling store. Construction - railings site works. An application (ref: 11/00952/FULL) for detailed planning permission wasfused by Westminster L.B. A detailed planning application has been refused. Data Source: Historic Planning Application Data Type: Point

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

0

Database searched and no data found.

4. Current Land Use Map



Site Outline

Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 5

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	525628 183230	Greater London, NW6	Electrical Features	Infrastructure and Facilities
2	163	E	B C Musikant Ltd	525826 183253	2, Hillside Close, London, Greater London, NW8 0EF	Footwear	Consumer Products
3	167	SE	Electricity Sub Station	525730 183064	Greater London, W9	Electrical Features	Infrastructure and Facilities
4	174	NW	Electricity Sub Station	525491 183349	Greater London, NW6	Electrical Features	Infrastructure and Facilities
5	183	SE	Harmonized Systems	525742 183053	258, Randolph Avenue, London, Greater London, W9 1PF	Electronic Equipment	Industrial Products

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: 2

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

ID	Distance (m)	Direction	Details	
6	82	NE	Cable Set: -	Cable Type: A/C

ID	Distance (m)	Direction	Details	
			Cable Route: - Cable Make: -	Operating Voltage (kV): 400 Year of installation: - Cable in tunnel: -
7	185	SE	Cable Set: - Cable Route: - Cable Make: -	Cable Type: A/C Operating Voltage (kV): 400 Year of installation: - Cable in tunnel: -

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

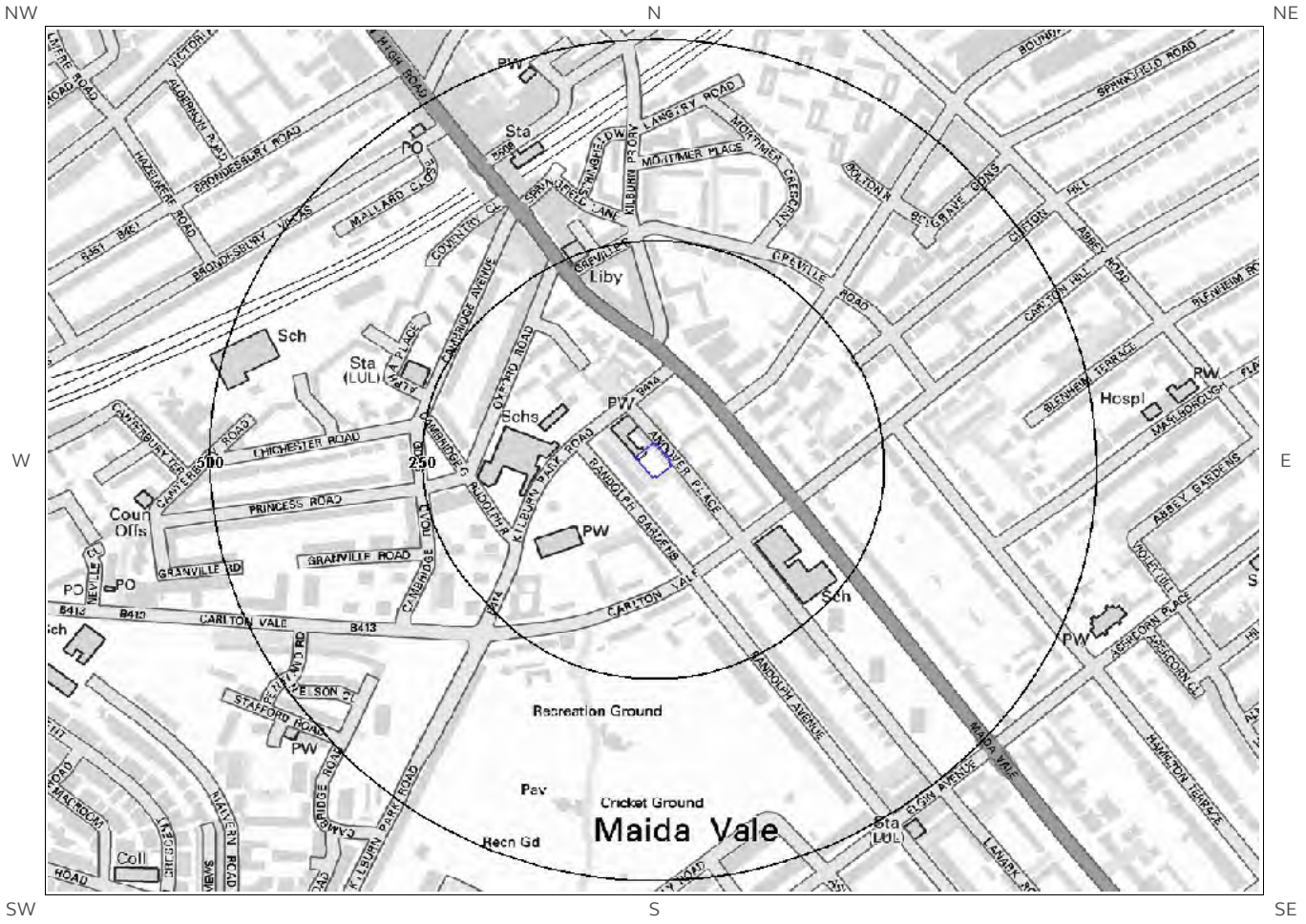
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZS	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



Site Outline

Search Buffers (m)
250
500

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

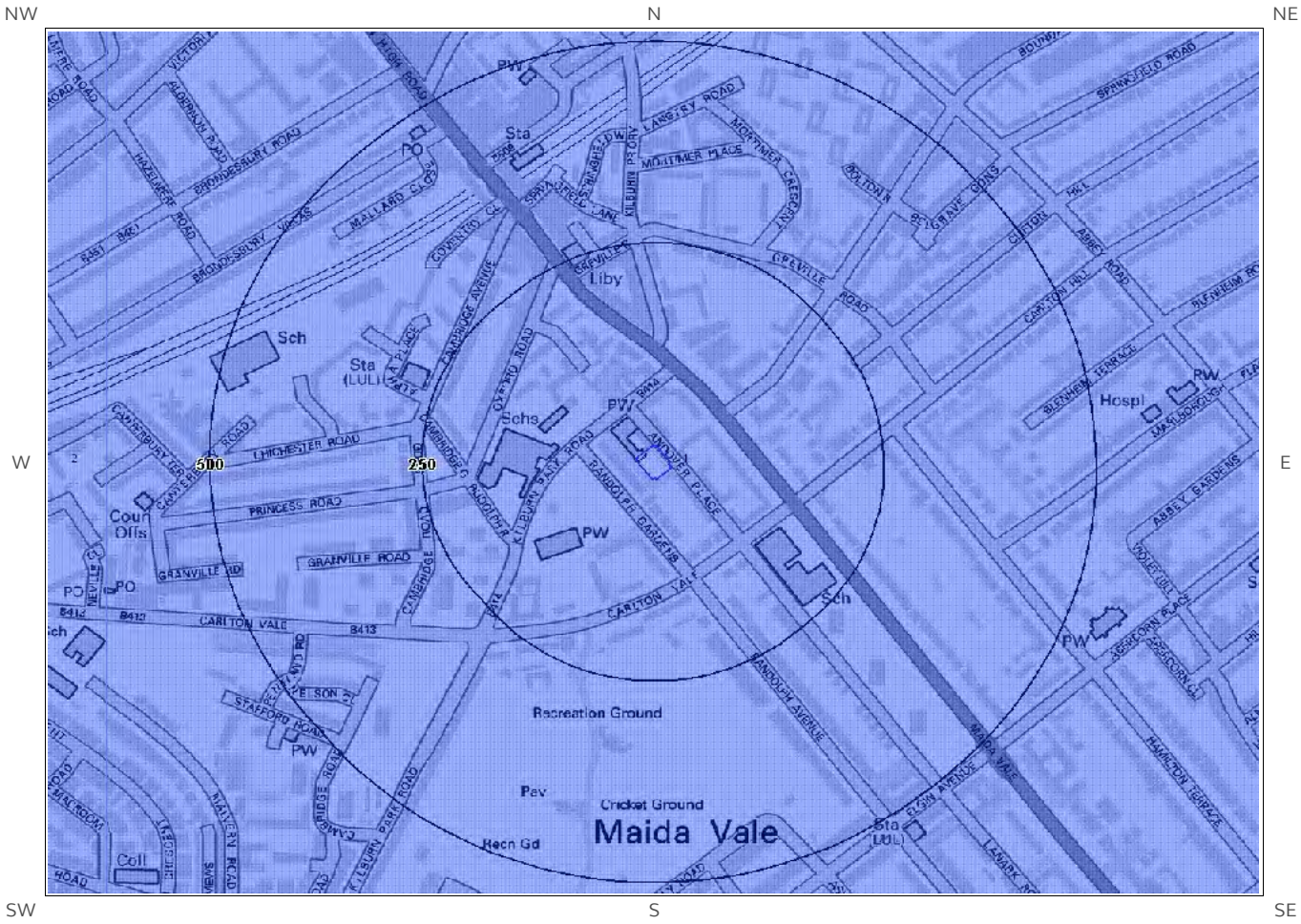
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

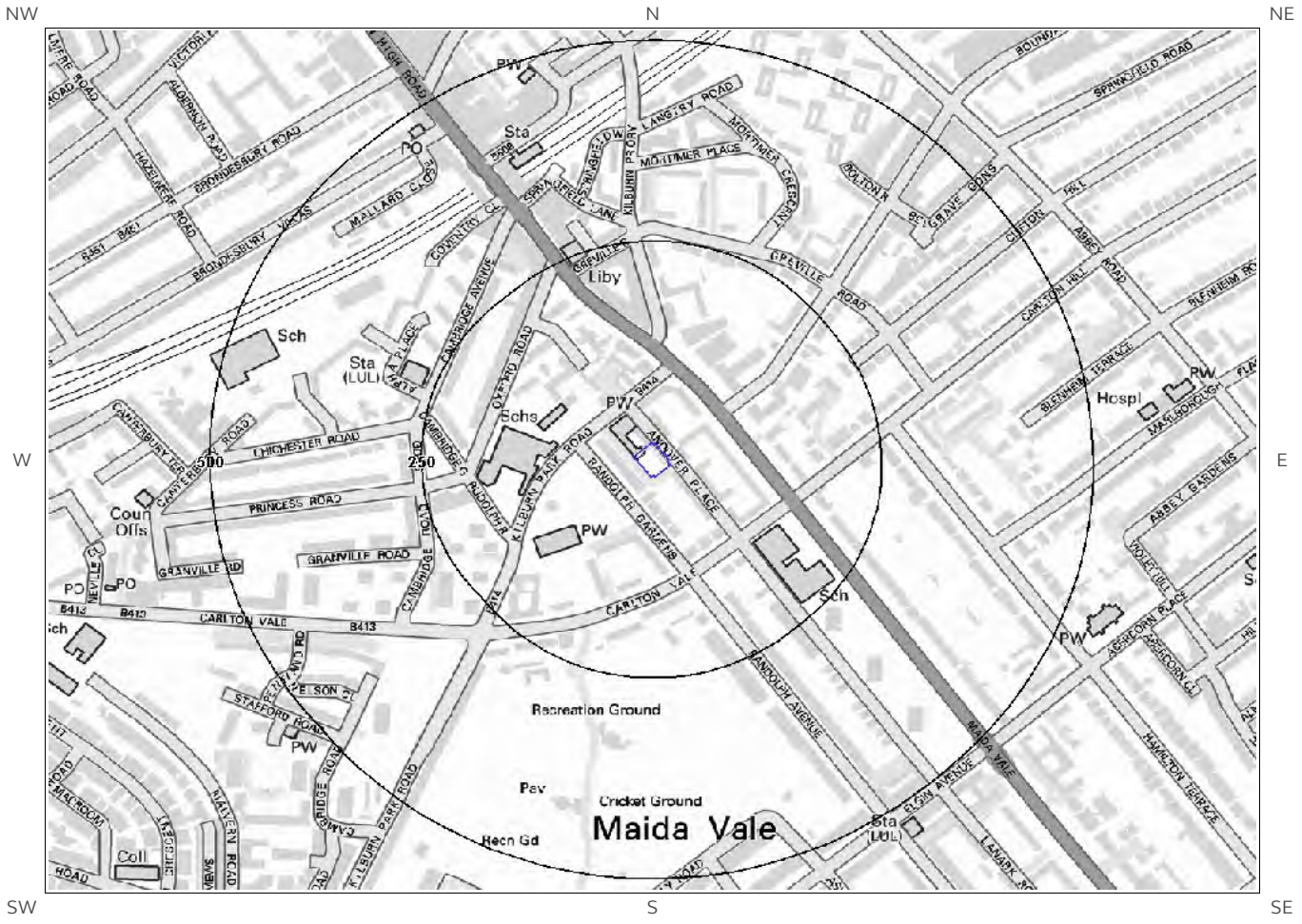
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

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



Site Outline

250 — 500 — Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

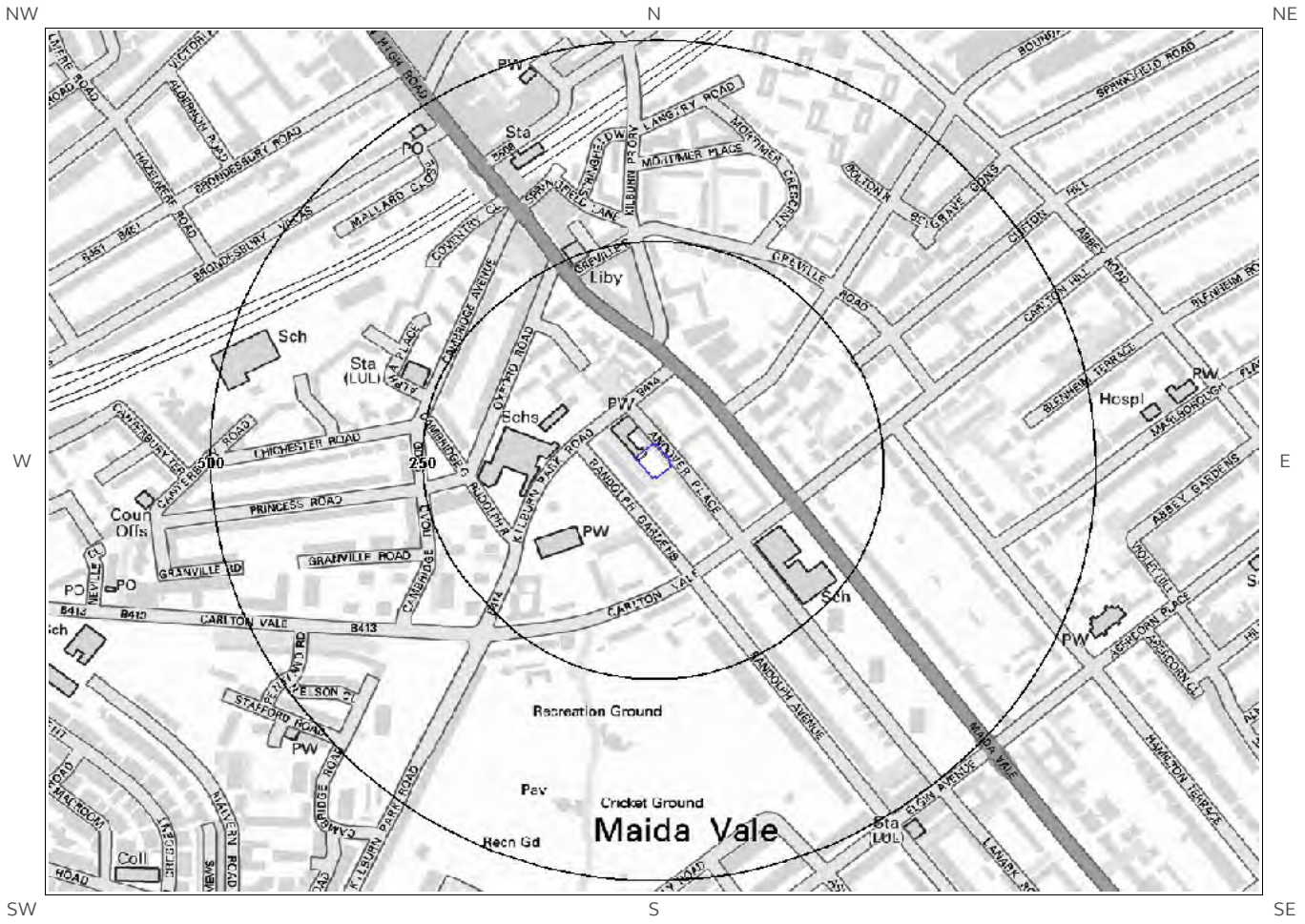
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Site Outline

250 Search Buffers (m)
500

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

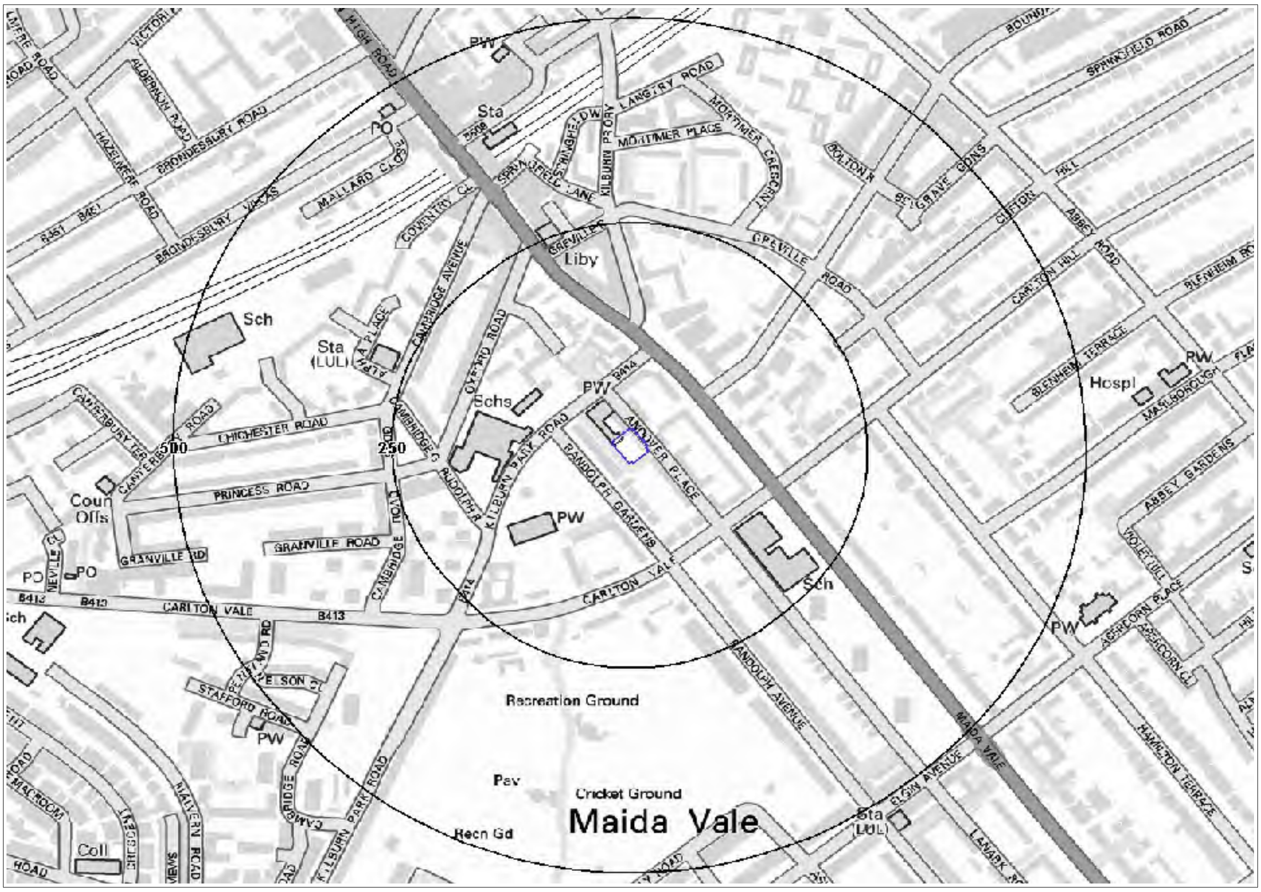
Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E



SW S SE

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- Site Outline
- 250 / 500 — Search Buffers (m)
- Tidal River
- Inland River
- Underground or Elevated Tidal River
- Underground or Elevated Inland River
- Foreshore
- General Quality Assessment: Chemistry
- Canal
- Underground or Elevated Canal
- Lock or Flight of Locks
- Lake, Reservoir, or Marsh
- Drain or Transfer
- General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property No

Database searched and no data found.

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.

6.2 Aquifer within Bedrock Deposits

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

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

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

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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site Identified

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	1285	E	526902 182872	Status: Active Licence No: TH/039/0039/116 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: LORDS CRICKET GROUND, LONDON. Data Type: Point Name: MARYLEBONE CRICKET CLUB	Annual Volume (m^3): 30000 Max Daily Volume (m^3): 300 Original Application No: - Original Start Date: 17/05/2017 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 17/05/2017 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1495	NE	526750 184261	Status: Active Licence No: TH/039/0039/087 Details: Lake & Pond Throughflow Direct Source: THAMES GROUNDWATER Point: SWISS COTTAGE OPEN SPACE-BOREHOLE Data Type: Point Name: LONDON BOROUGH OF CAMDEN	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: - Original Start Date: 05/12/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 05/12/2013 Version End Date:
Not shown	1495	NE	526750 184261	Status: Active Licence No: TH/039/0039/087 Details: General Washing/Process Washing Direct Source: THAMES GROUNDWATER Point: SWISS COTTAGE OPEN SPACE-BOREHOLE Data Type: Point Name: LONDON BOROUGH OF CAMDEN	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: - Original Start Date: 05/12/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 05/12/2013 Version End Date:
Not shown	1495	NE	526750 184261	Status: Active Licence No: TH/039/0039/087 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: SWISS COTTAGE OPEN SPACE-BOREHOLE Data Type: Point Name: LONDON BOROUGH OF CAMDEN	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: - Original Start Date: 05/12/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 05/12/2013 Version End Date:
Not shown	1545	NE	526800 184280	Status: Historical Licence No: 28/39/39/0219 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: SWISS COTTAGE OPEN SPACE-BOREHOLE Data Type: Point Name: LONDON BOROUGH OF CAMDEN	Annual Volume (m^3): 10512 Max Daily Volume (m^3): 28.8 Original Application No: - Original Start Date: 12/08/2005 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 01/04/2008 Version End Date:
Not shown	1687	S	526131 181594	Status: Active Licence No: TH/039/0039/070 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: THE NOVOTEL, 3 KINGDOM ST, PADDINGTON, LONDON, W2 - BOREHOLE Data Type: Point Name: ACCOR UK BUSINESS & LEISURE HOTELS LIMITED	Annual Volume (m^3): 70000 Max Daily Volume (m^3): 390 Original Application No: - Original Start Date: 20/06/2013 Expiry Date: 31/03/2019 Issue No: 2 Version Start Date: 20/06/2013 Version End Date:
Not shown	1718	S	526220 181590	Status: Historical Licence No: 28/39/39/0237 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: THE NOVOTEL, 3 KINGDOM ST, PADDINGTON, LONDON, W2 - BOREHOLE Data Type: Point Name: ACCOR UK BUSINESS & LEISURE HOTELS LIMITED	Annual Volume (m^3): 70000 Max Daily Volume (m^3): 390 Original Application No: - Original Start Date: 18/12/2008 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 18/12/2008 Version End Date:
Not shown	1855	E	527420 182620	Status: Historical Licence No: 28/39/39/0115 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: THAMES GROUNDWATER Point: TWO BOREHOLES AT ABBEY LODGE, PARK ROAD, LONDON NW8 Data Type: Point Name: WOOD MANAGEMENT TRUSTEES LTD	Annual Volume (m^3): 28640 Max Daily Volume (m^3): 100 Original Application No: - Original Start Date: 05/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/11/1991 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not show n	1855	E	527420 182620	Status: Active Licence No: 28/39/39/0115 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: THAMES GROUNDWATER Point: ABBEY LODGE, PARK ROAD, LONDON NW8-TWO BOREHOLES Data Type: Point Name: ABBEY LODGE RTM COMPANY LIMITED	Annual Volume (m^3): 28640 Max Daily Volume (m^3): 100 Original Application No: - Original Start Date: 05/09/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/06/2006 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	1581	SE	527050 182460	Status: Active Licence No: 28/39/39/0164 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: ST JOHN'S WOOD, LONDON - REGENTS CANAL Data Type: Point Name: Canal and River Trust	Annual Volume (m^3): 7.01e+006 Max Daily Volume (m^3): 19520 Application No: - Original Start Date: 18/07/1980 Expiry Date: - Issue No: 101 Version Start Date: 17/12/2007 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

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	1855	E	527420 182620	Status: Historical Licence No: 28/39/39/0115 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: THAMES GROUNDWATER Point: TWO BOREHOLES AT ABBEY LODGE, PARK ROAD, LONDON NW8 Data Type: Point Name: WOOD MANAGEMENT TRUSTEES LTD	Annual Volume (m^3): 28640 Max Daily Volume (m^3): 100 Original Application No: - Original Start Date: 05/09/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1855	E	527420 182620	Status: Active Licence No: 28/39/39/0115 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: THAMES GROUNDWATER Point: ABBEY LODGE, PARK ROAD, LONDON NW8-TWO BOREHOLES Data Type: Point Name: ABBEY LODGE RTM COMPANY LIMITED	Annual Volume (m^3): 28640 Max Daily Volume (m^3): 100 Original Application No: - Original Start Date: 05/09/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:

6.6 Source Protection Zones

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

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site — None identified

Database searched and no data found.

6.9 River Quality

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

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

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

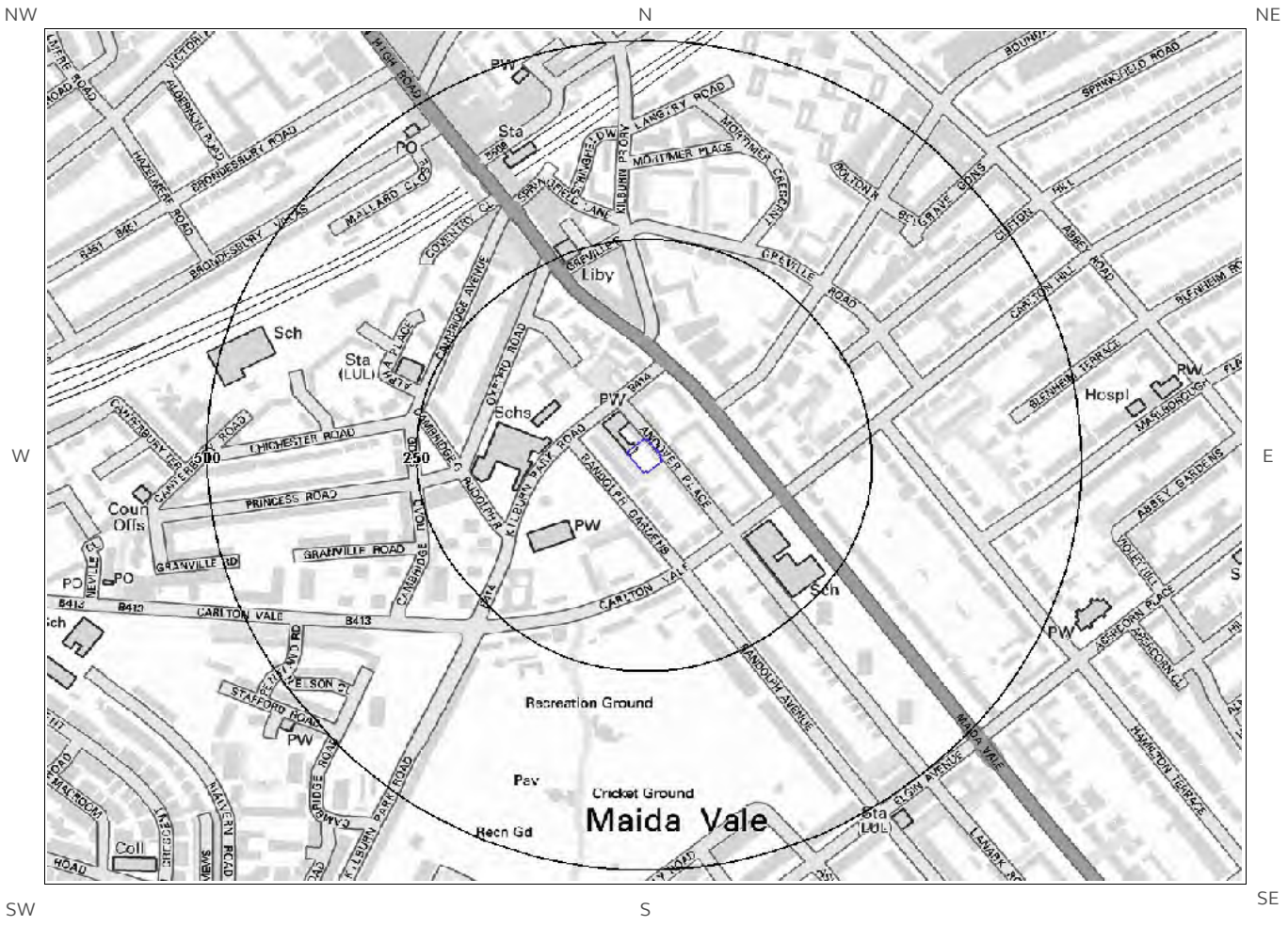
Database searched and no data found.

6.11 Surface Water Features

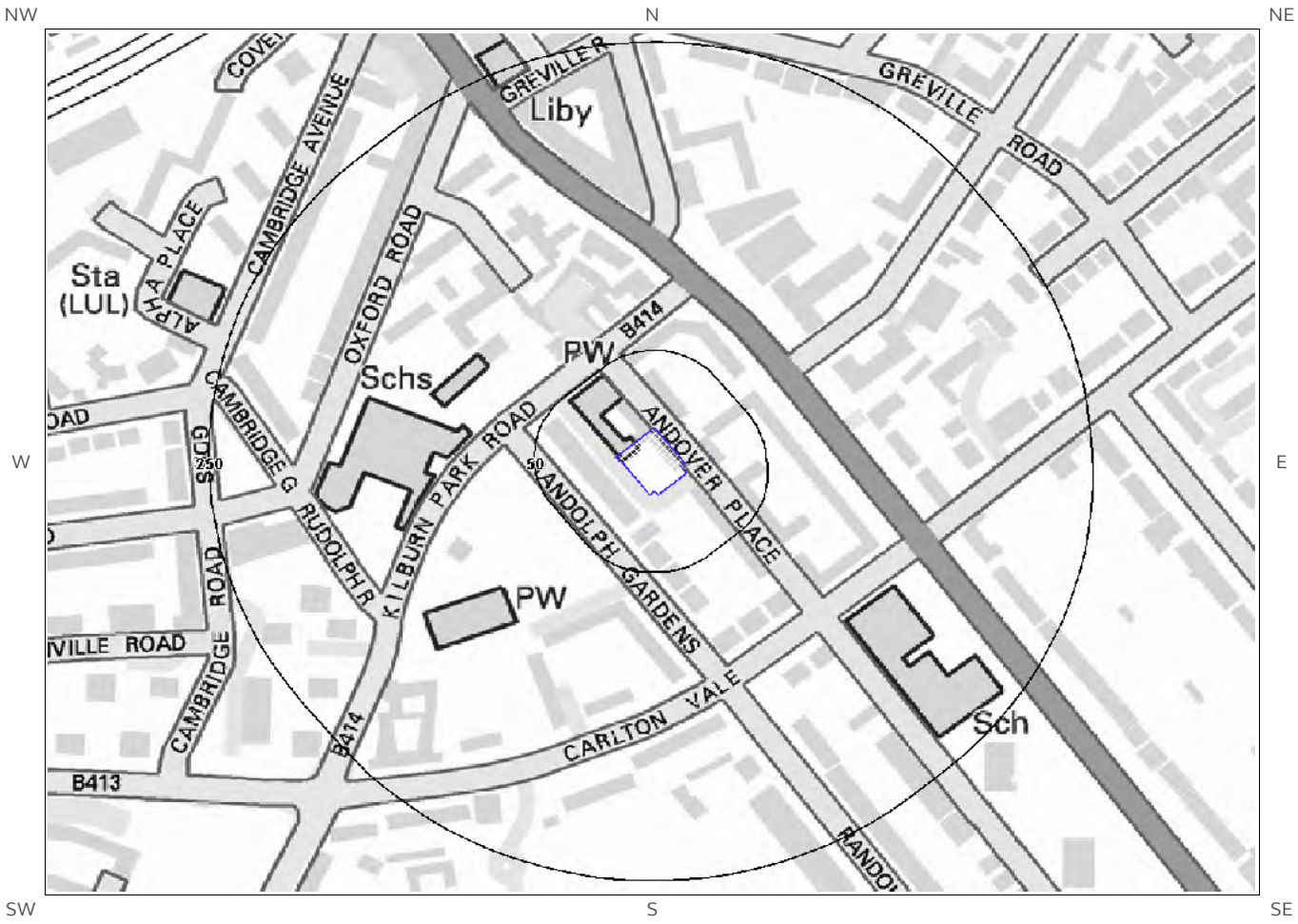
Surface water features within 250m of the study site — None identified

Database searched and no data found.

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



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



Site Outline

100
250
Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — None identified

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

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — None identified

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

Database searched and no data found.

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

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

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — None identified

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

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

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

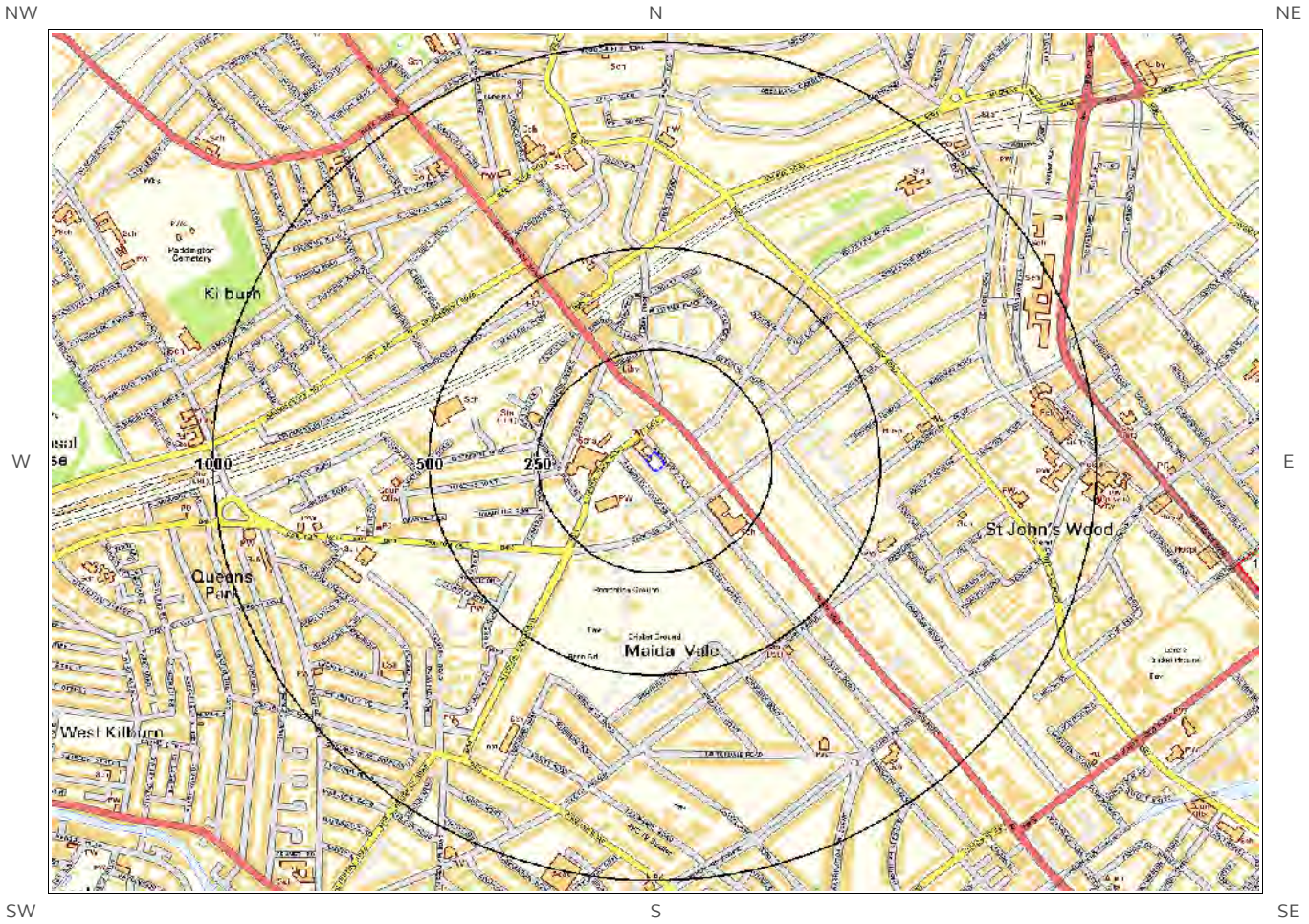
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result — Not Applicable

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



Site Outline

100
250
Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

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

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	1349	E	St John's Wood Church Grounds	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:

0

Database searched and no data found.

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

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

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

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — 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

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

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

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

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

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

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

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

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

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

9.1.6 Running Sand

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

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

9.2 Radon

9.2.1 Radon Affected Areas

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

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

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

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sales@emapsite.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

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

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: City of Westminster
Phone: 020 7641 6000
Web: http://www.westminster.gov.uk/
Address: P.O. Box 240, Westminster City Hall, London, SW1E 6QP

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Tel: 01252 845444

Standard Terms and Conditions

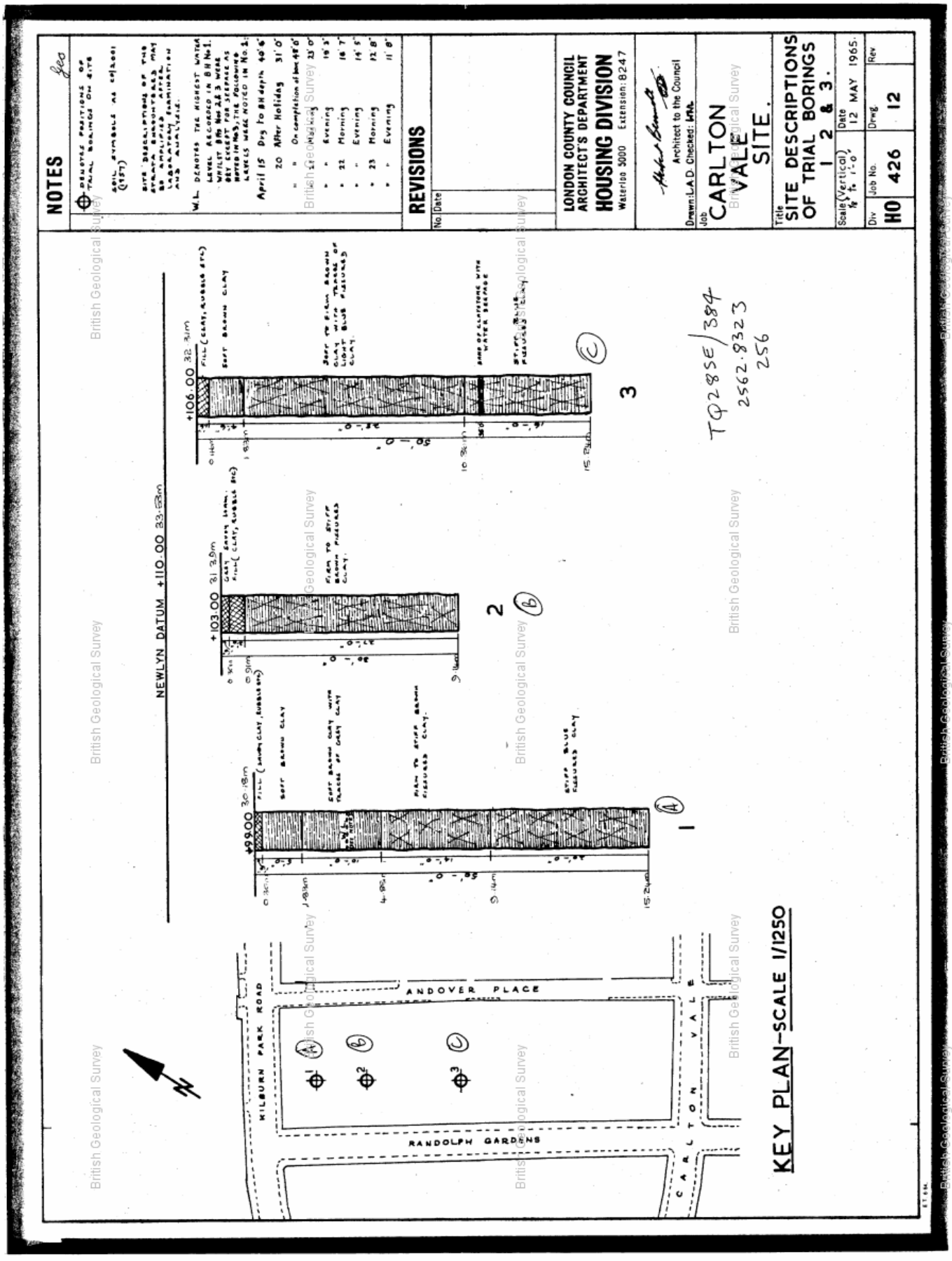
Groundsure's Terms and Conditions can be viewed online at this link:

https://www.groundsure.com/terms-and-conditions-may25-2018

APPENDIX 3
Historical BGS Records

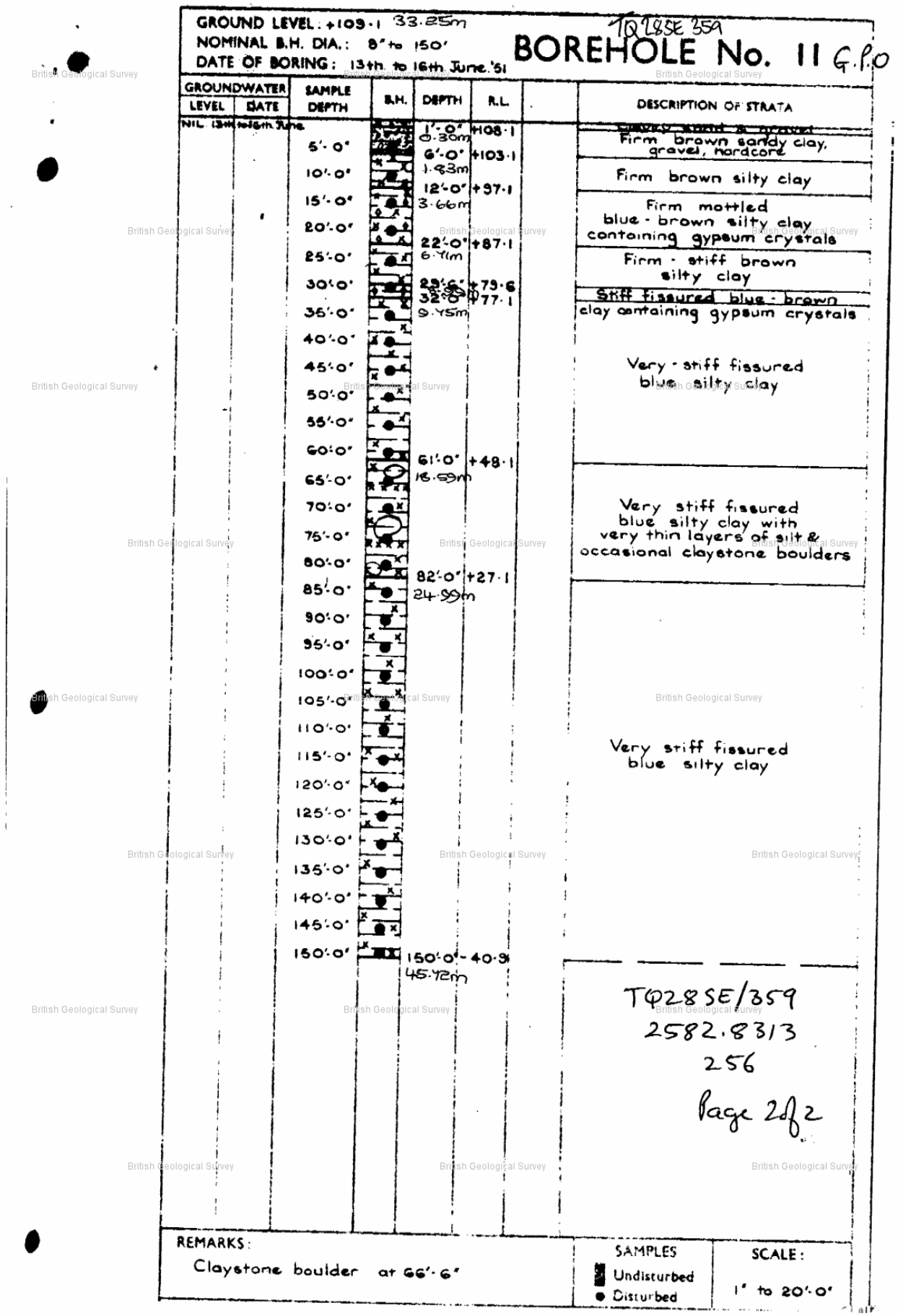
Record of Historical Borehole or Water Well

LBH Reference: TQ28SE384
Location: G.L.C. CARLTON VALE SITE
National Grid Ref: 525620,183230
Depth: 15m



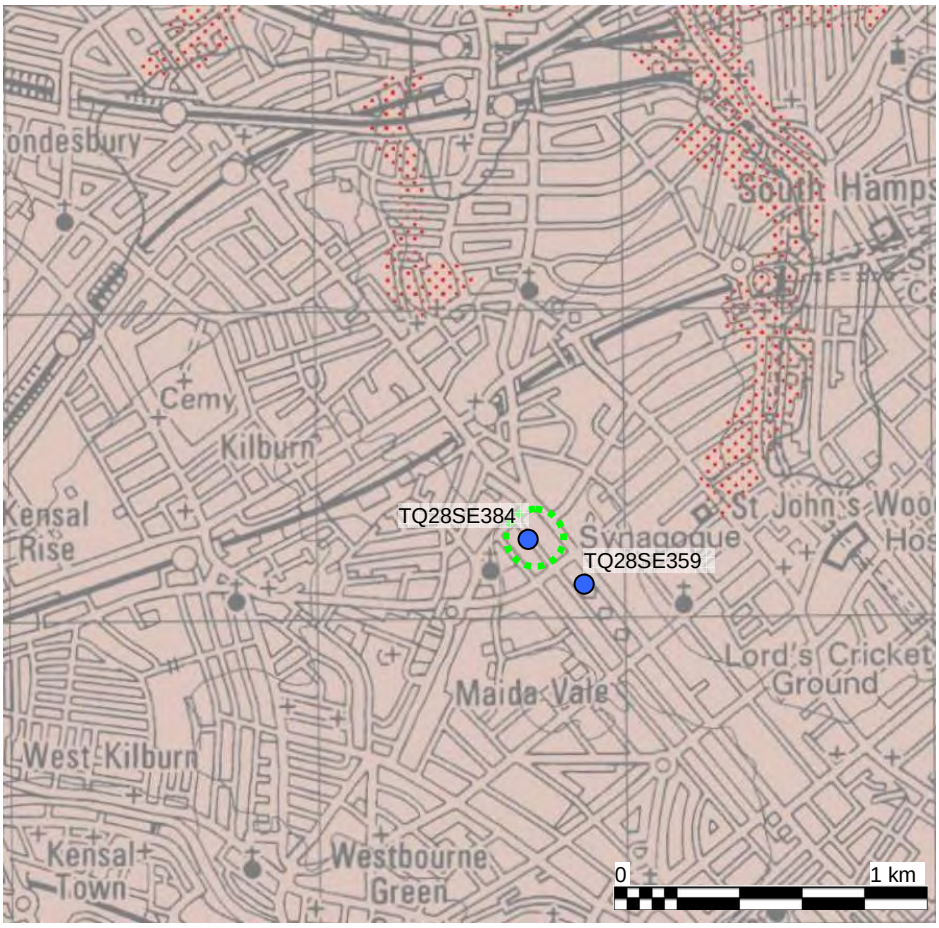
Record of Historical Borehole or Water Well

LBH Reference: TQ28SE359
Location: G.P.O. BH11 PADDINGTON
National Grid Ref: 525820,183130
Depth: 45.72m



Extract of Geological Map

Map Record Details	Sheet number	256
	Sheet title	North London
	Map type	Bedrock and Superficial
	Scale	1:50 000
	Publication year	2006
Site Location	National Grid Ref:	TQ 256 828



EXPLANATION OF GEOLOGICAL SYMBOLS AND COLOURS

Head propensity

London Clay Formation

Historical Borehole/Water Well

APPENDIX 4
GeoInsight Report

Geo Insight

Address:	**Torridon House Car Park, Westminster,**
Date:	**4 Feb 2019**
Reference:	**EMS-525015_706182**
Client:	**EmapSite**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	07-Jun-2015
Grid Reference:	525645,183231
Site Size:	0.10ha

Groundsure
LOCATION INTELLIGENCE

emapsite™

Contents Page

Contents Page ... 3
Overview of Findings ... 5
1:10,000 Scale Availability ... 8
Availability of 1:10,000 Scale Geology Mapping ... 9
1 Geology (1:10,000 scale) ... 10
1.1 Artificial Ground map (1:10,000 scale) ... 10
1. Geology 1:10,000 scale ... 11
1.1 Artificial Ground ... 11
1.2 Superficial Deposits and Landslips map (1:10,000 scale) ... 12
1.2 Superficial Deposits and Landslips ... 13
1.2.1 Superficial Deposits/ Drift Geology ... 13
1.2.2 Landslip ... 13
1.3 Bedrock and linear features map (1:10,000 scale) ... 14
1.3 Bedrock and linear features ... 15
1.3.1 Bedrock/ Solid Geology ... 15
1.3.2 Linear features ... 15
2 Geology 1:50,000 Scale ... 16
2.1 Artificial Ground map ... 16
2. Geology 1:50,000 scale ... 17
2.1 Artificial Ground ... 17
2.1.1 Artificial/ Made Ground ... 17
2.1.2 Permeability of Artificial Ground ... 17
2.2 Superficial Deposits and Landslips map (1:50,000 scale) ... 18
2.2 Superficial Deposits and Landslips ... 19
2.2.1 Superficial Deposits/ Drift Geology ... 19
2.2.2 Permeability of Superficial Ground ... 19
2.2.3 Landslip ... 19
2.2.4 Landslip Permeability ... 19
2.3 Bedrock and linear features map (1:50,000 scale) ... 20
2.3 Bedrock, Solid Geology & linear features ... 21
2.3.1 Bedrock/Solid Geology ... 21
2.3.2 Permeability of Bedrock Ground ... 21
2.3.3 Linear features ... 21
3 Radon Data ... 22
3.1 Radon Affected Areas ... 22
3.2 Radon Protection ... 22
4 Ground Workings map ... 23
4 Ground Workings ... 24
4.1 Historical Surface Ground Working Features derived from Historical Mapping ... 24
4.2 Historical Underground Working Features derived from Historical Mapping ... 24
4.3 Current Ground Workings ... 25
5 Mining, Extraction & Natural Cavities ... 27
5.1 Historical Mining ... 27
5.2 Coal Mining ... 27
5.3 Johnson Poole and Bloomer ... 27
5.4 Non-Coal Mining ... 28
5.5 Non-Coal Mining Cavities ... 28
5.6 Natural Cavities ... 28
5.7 Brine Extraction ... 28
5.8 Gypsum Extraction ... 28
5.9 Tin Mining ... 29
5.10 Clay Mining ... 29
6 Natural Ground Subsidence ... 30
6.1 Shrink-Swell Clay map ... 30
6.2 Landslides map ... 31
6.3 Ground Dissolution of Soluble Rocks map ... 32
6.4 Compressible Deposits map ... 33
6.5 Collapsible Deposits map ... 34
6.6 Running Sand map ... 35

6 Natural Ground Subsidence..... 36
6.1 Shrink-Swell Clays.....36
6.2 Landslides.....36
6.3 Ground Dissolution of Soluble Rocks.....37
6.4 Compressible Deposits.....37
6.5 Collapsible Deposits.....37
6.6 Running Sands.....37
7 Borehole Records..... 39
8 Estimated Background Soil Chemistry..... 40
9 Railways and Tunnels map..... 41
9 Railways and Tunnels..... 42
9.1 Tunnels 42
9.2 Historical Railway and Tunnel Features 43
9.3 Historical Railways.....43
9.4 Active Railways.....43
9.5 Railway Projects.....43

Overview of Findings

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

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

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

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

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	0	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	8
4.3 Current Ground Workings	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	3
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

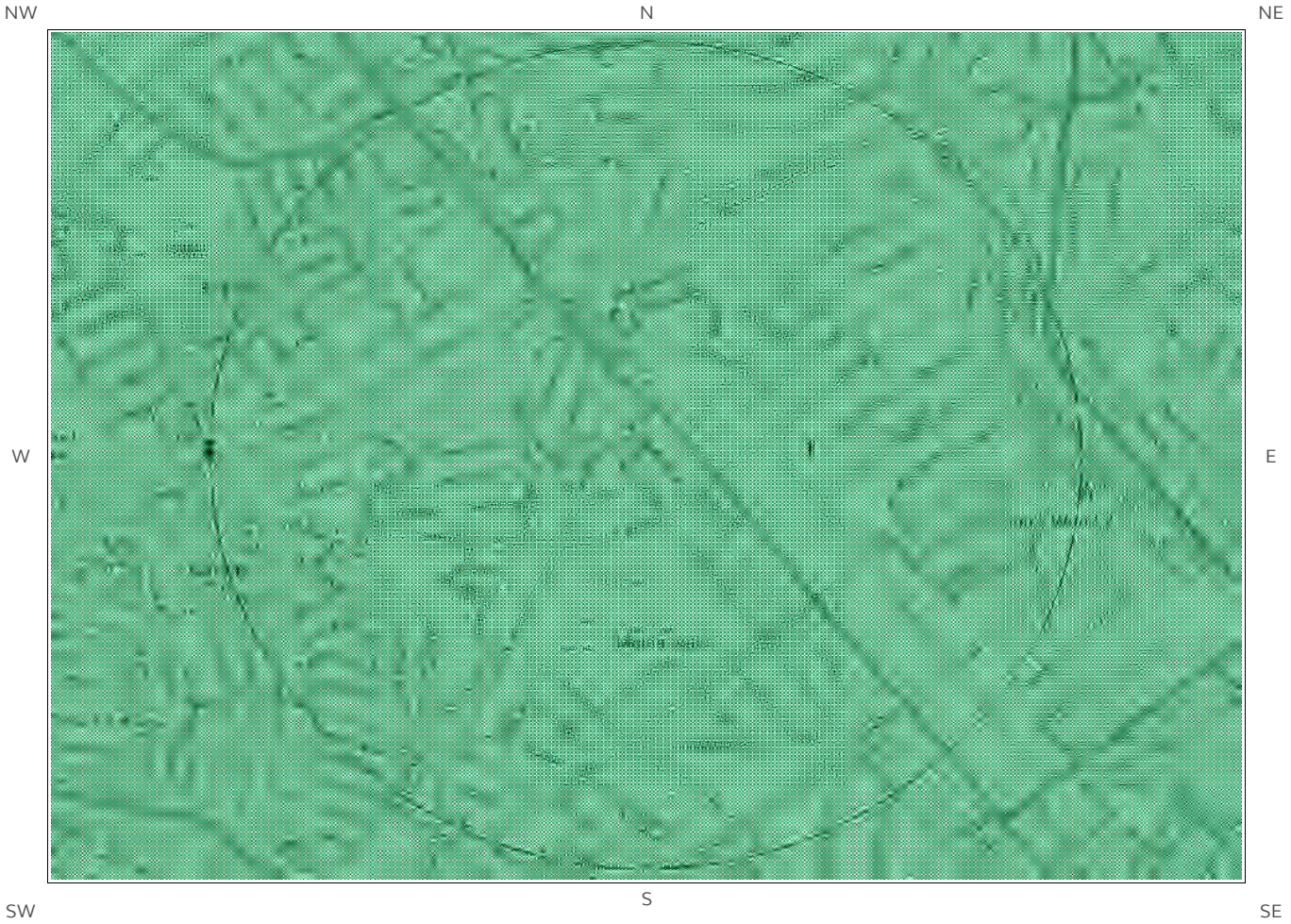
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Moderate
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Very Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	2	9

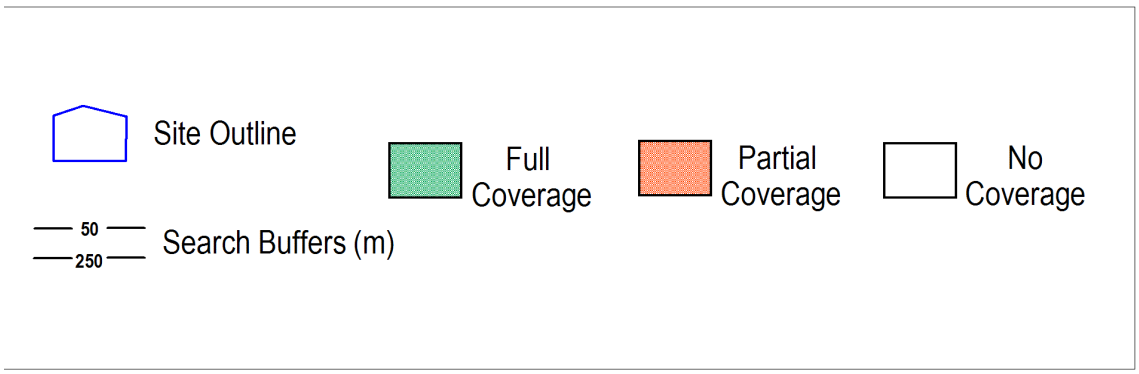
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	1	0	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	1	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	2

1:10,000 Scale Availability



1_10,000 Availability Legend



Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	622.0	Some deposits are mapped	Full	Full	No coverage
N3	1746.0	Some deposits are mapped	Full	Full	No coverage
N4	1862.0	Some deposits are mapped	Full	Full	No coverage

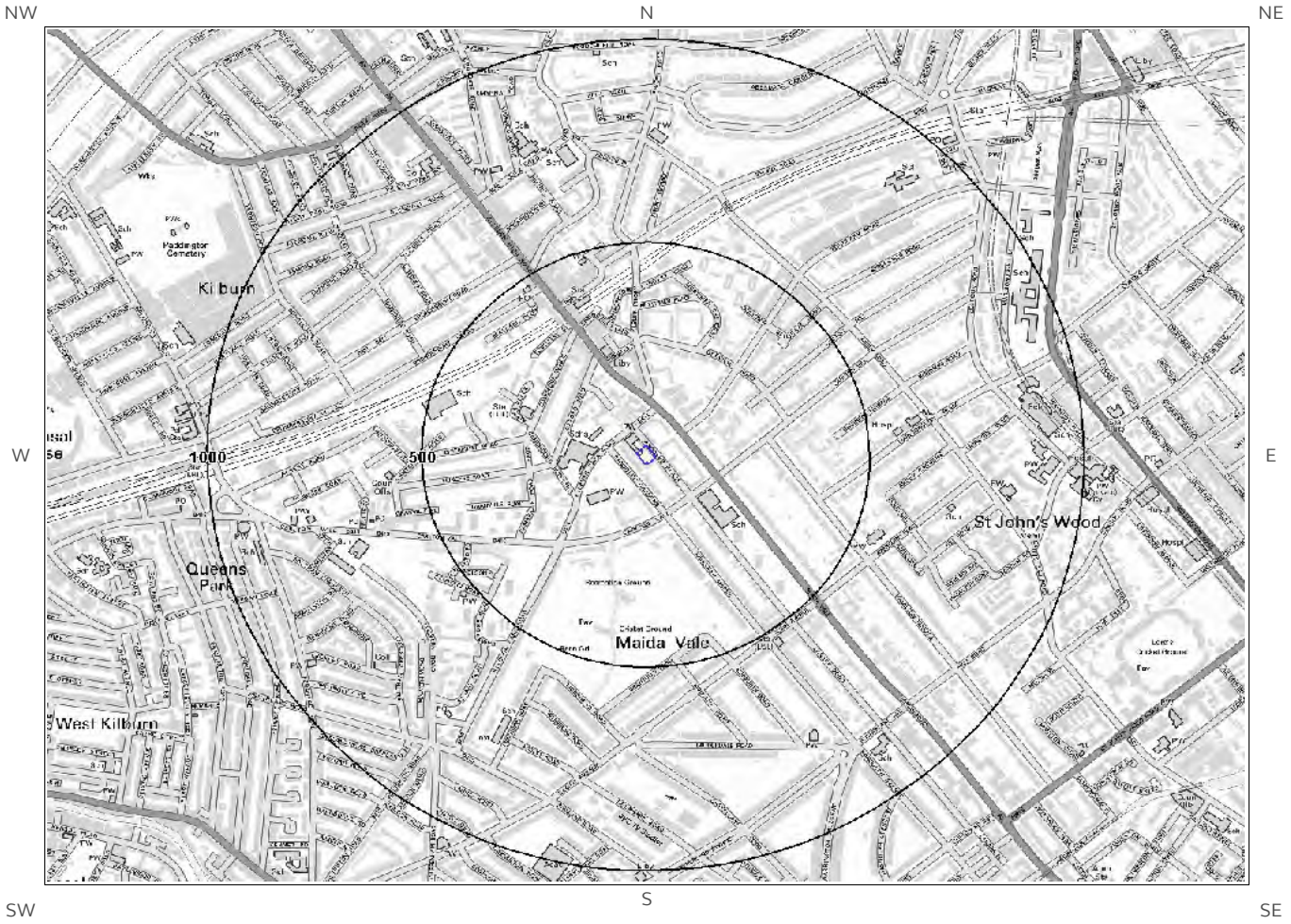
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

The definitions of coverage are as follows:

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

1 Geology (1:10,000 scale).

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



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

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

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

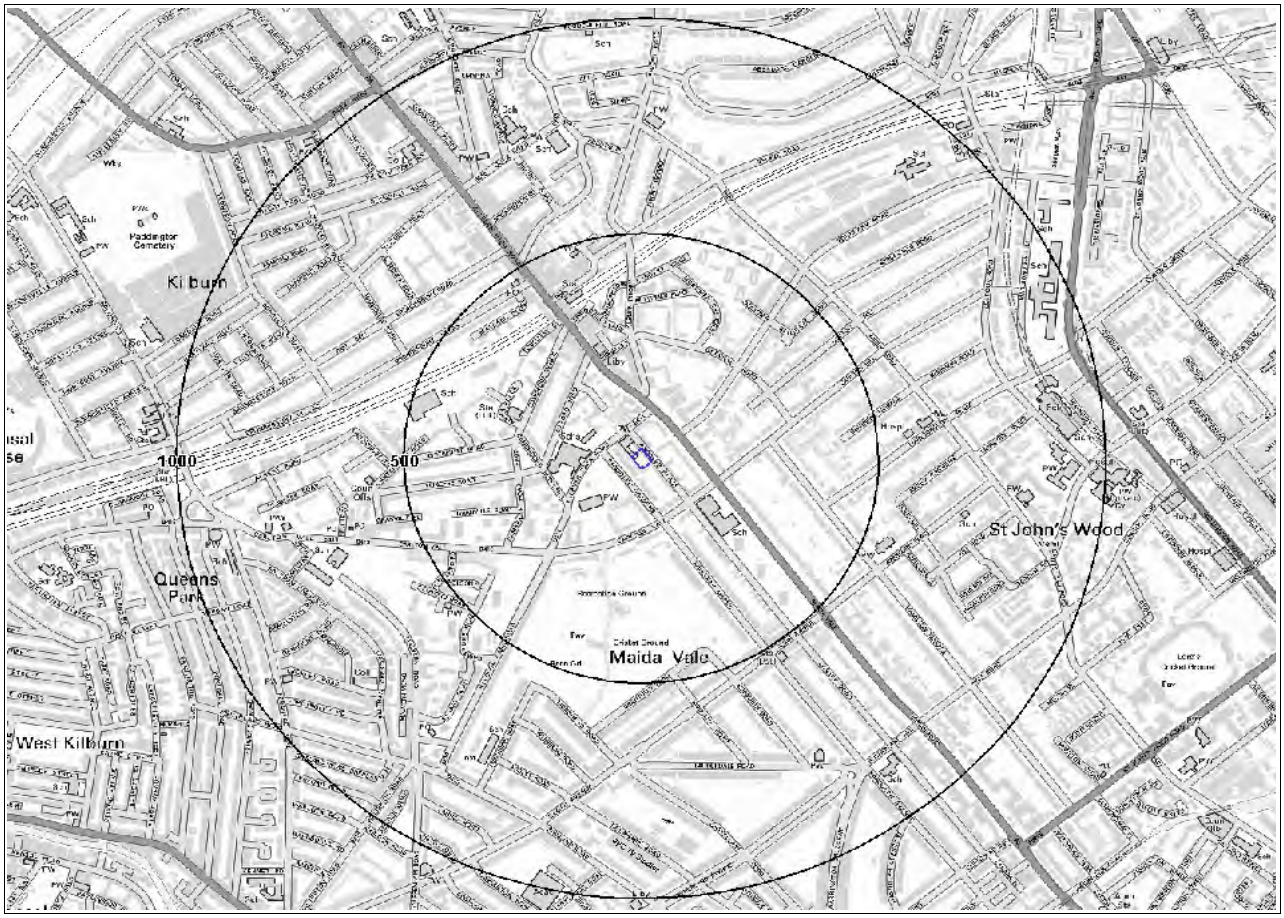
Database searched and no data found.

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

NW N NE

W E

SW S SE



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

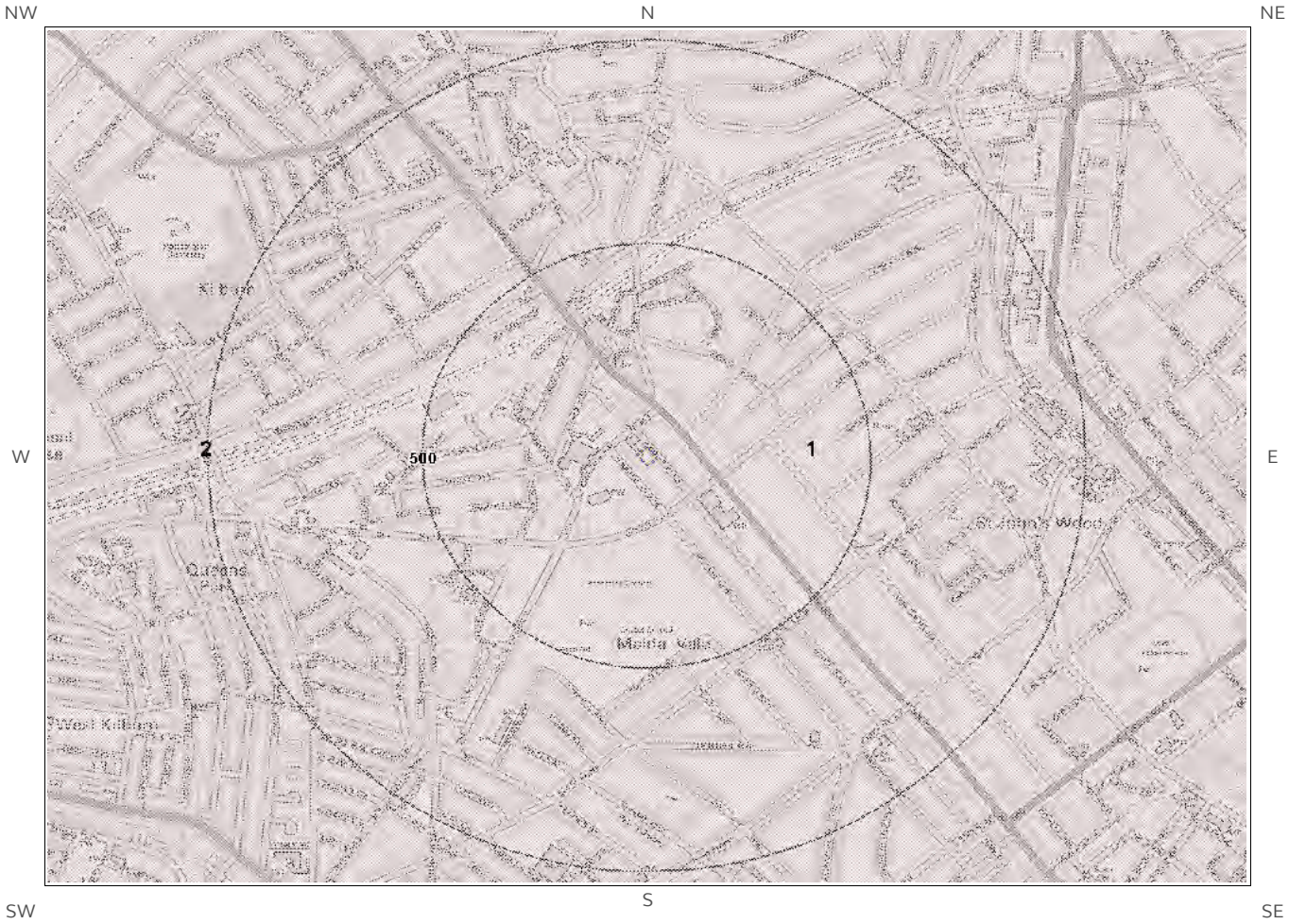
No

Database searched and no data found.

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

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

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



Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

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

1.3.2 Linear features

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

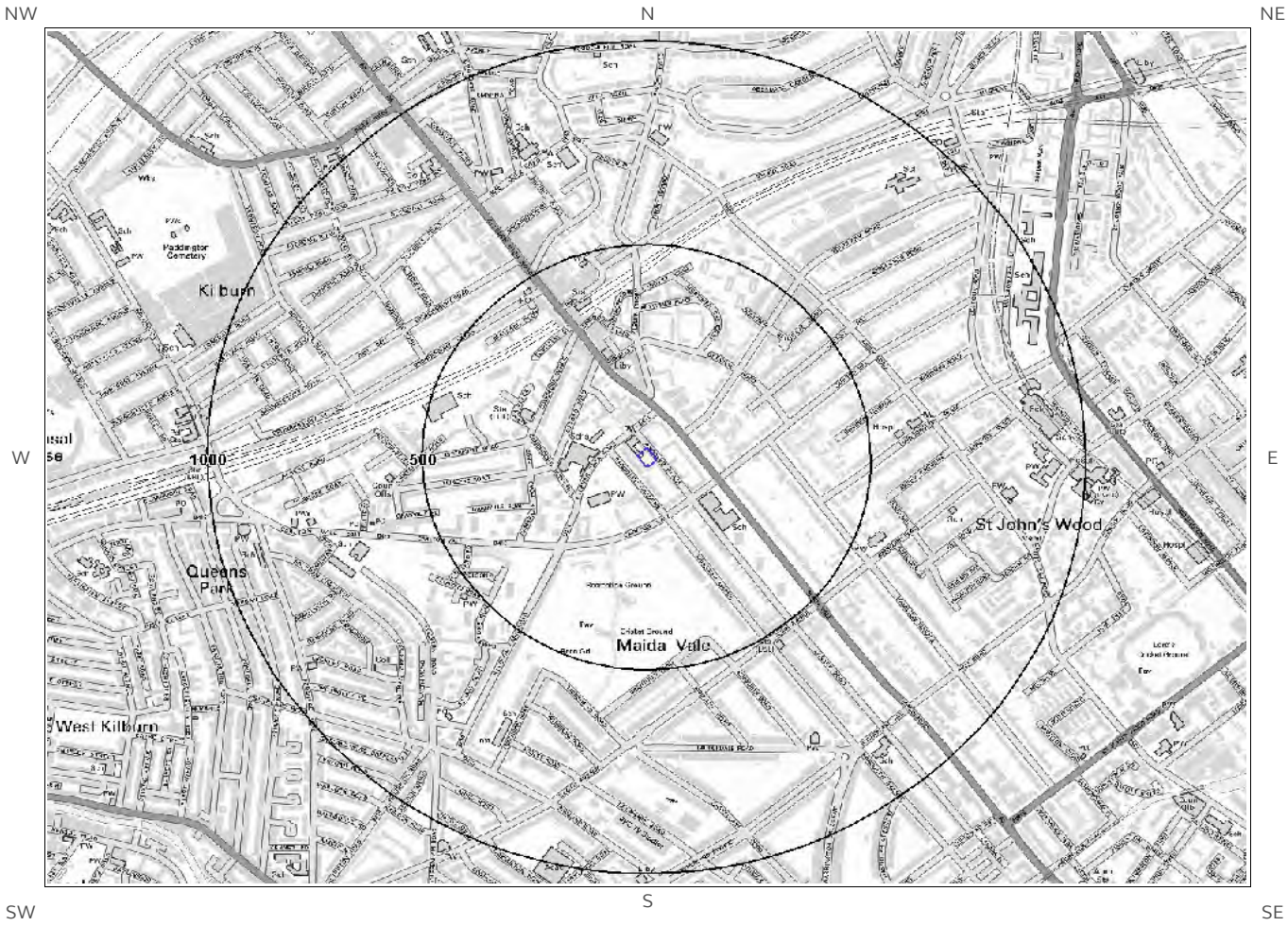
Database searched and no data found at this scale.

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

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

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 256

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

Database searched and no data found.

2.1.2 Permeability of Artificial Ground

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

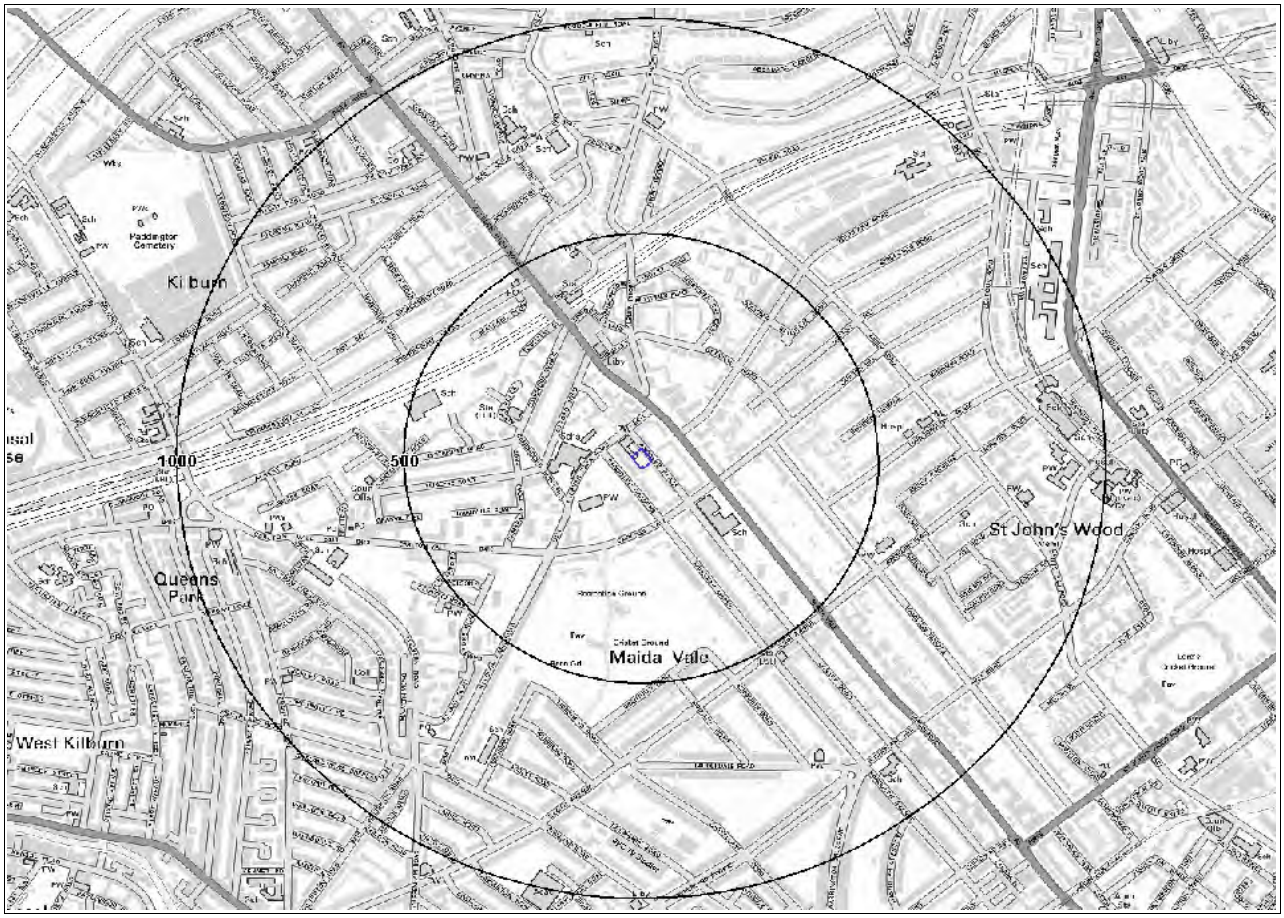
Database searched and no data found.

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

NW N NE

W E

SW S SE



Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? No

Database searched and no data found.

2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

2.2.3 Landslip

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

Database searched and no data found.

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

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

2.2.4 Landslip Permeability

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

Database searched and no data found.

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

Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 256

2.3.1 Bedrock/Solid Geology

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

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

2.3.2 Permeability of Bedrock Ground

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

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

2.3.3 Linear features

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

Database searched and no data found.

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

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

3 Radon Data

3.1 Radon Affected Areas

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

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

3.2 Radon Protection

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

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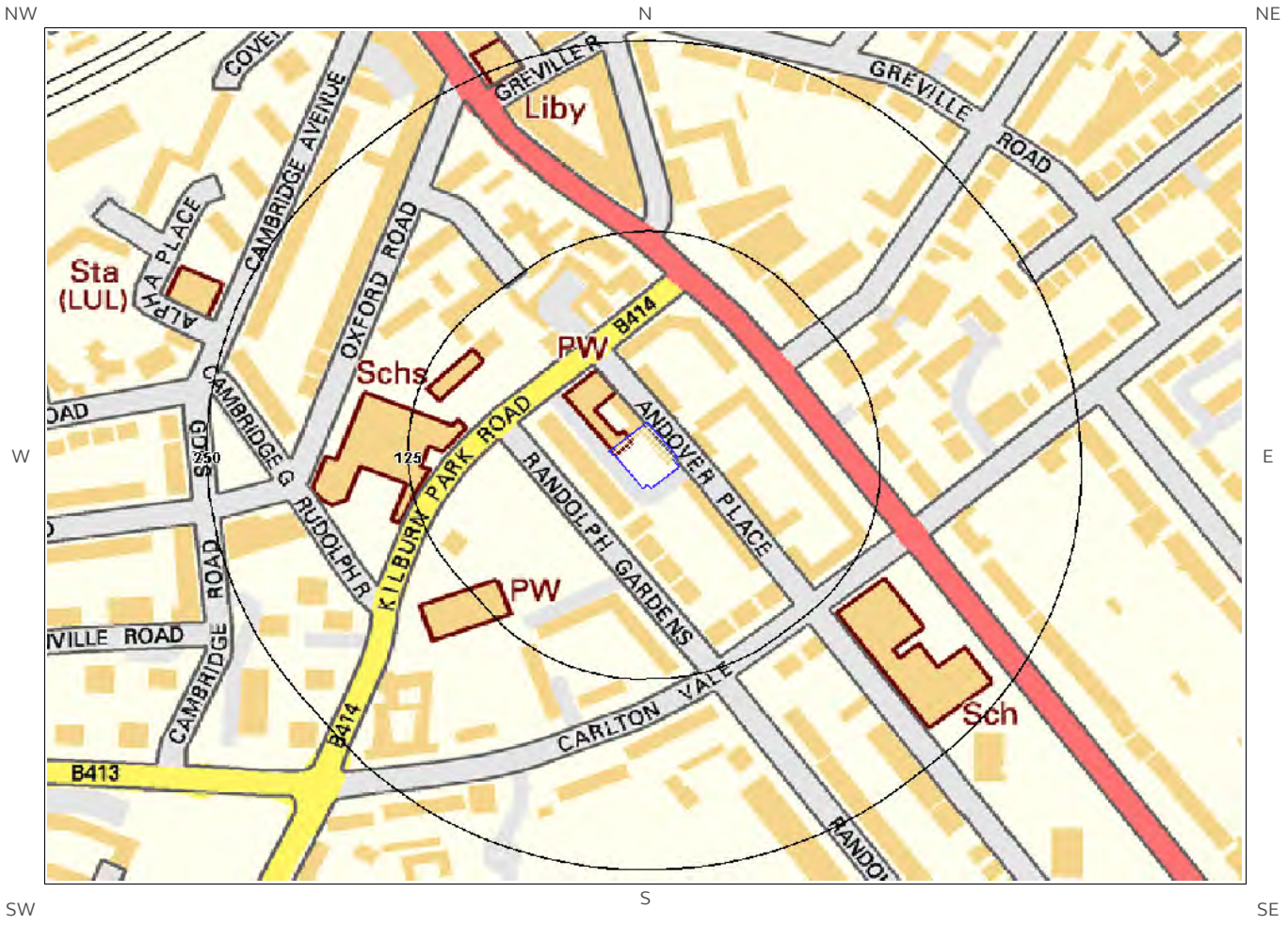
4 Ground Workings map



Ground Workings Legend

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? No

Database searched and no data found.

4.2 Historical Underground Working Features derived from Historical Mapping

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

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	853.0	E	526471 183522	Tunnel	1973
Not shown	853.0	E	526471 183522	Tunnel	1989
Not shown	853.0	E	526471 183522	Tunnel	1968
Not shown	853.0	E	526471 183522	Tunnel	1957
Not shown	876.0	NE	526434 183659	Air Shaft	1940
Not shown	886.0	NE	526452 183836	Tunnel	1968
Not shown	906.0	NE	526434 183717	Air Shafts	1940
Not shown	948.0	NE	526440 183785	Air Shafts	1940

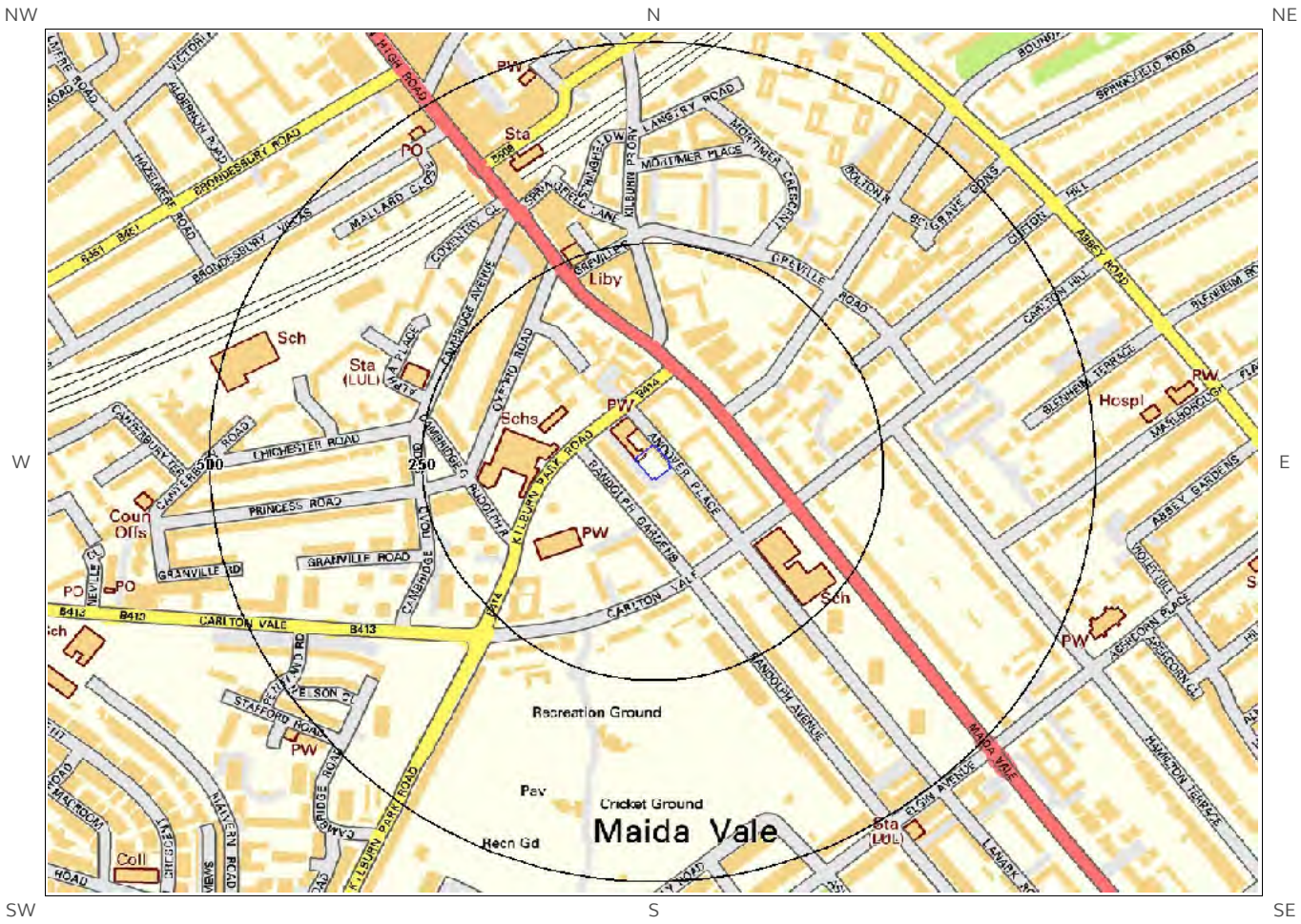
4.3 Current Ground Workings

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

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

Database searched and no data found.

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

Site Outline

Search Buffers (m) — 250 — 500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	876.0	NE	526434 183659	Air Shaft	1940
Not shown	906.0	NE	526434 183717	Air Shafts	1940
Not shown	948.0	NE	526440 183785	Air Shafts	1940

5.2 Coal Mining

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

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

Database searched and no data found.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

Database searched and no data found.

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

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

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

Database searched and no data found.

5.7 Brine Extraction

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

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 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.

5.10 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.

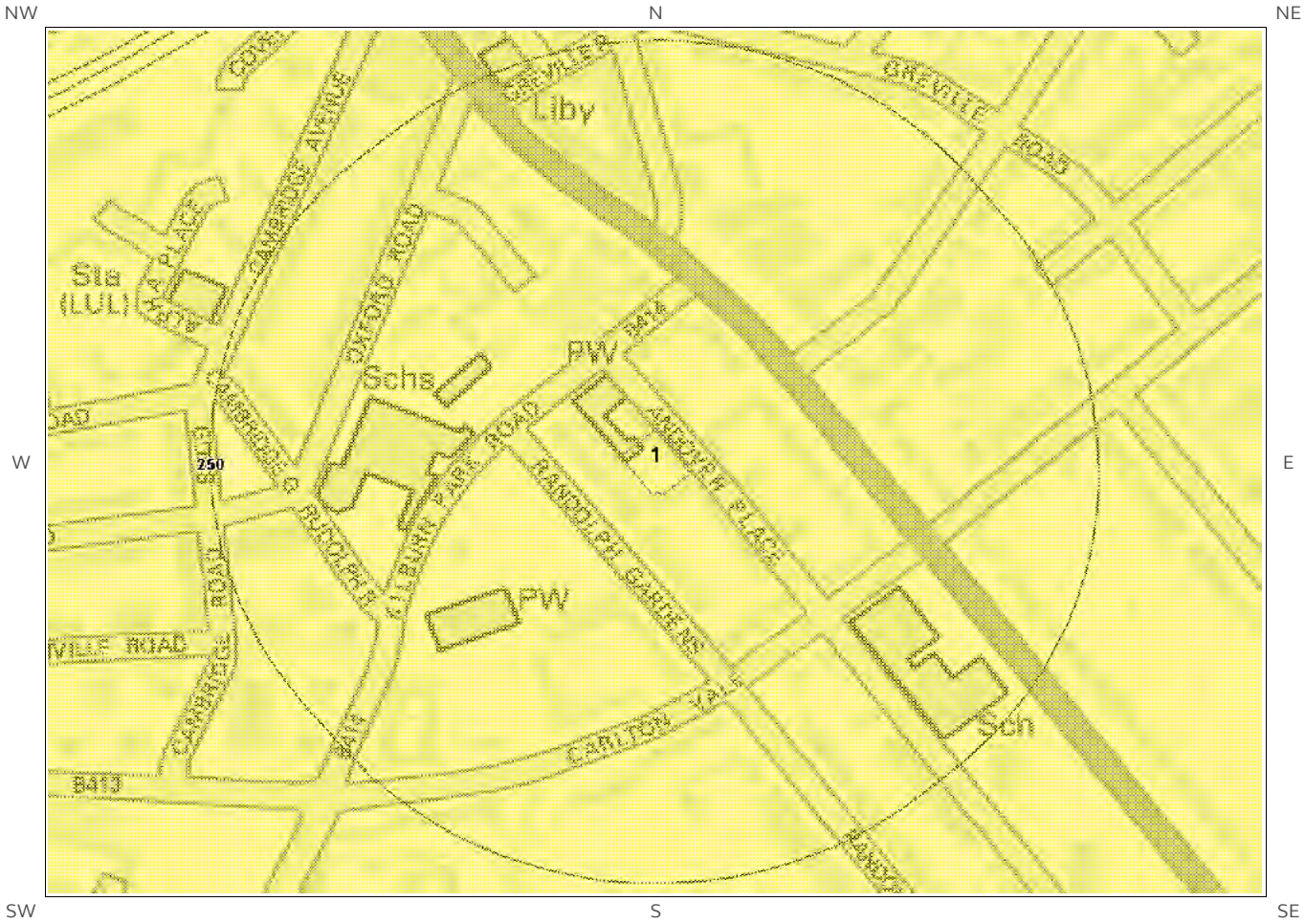
---

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

Shrink Swell Clay Legend

6.2 Landslides map



Landslides Legend

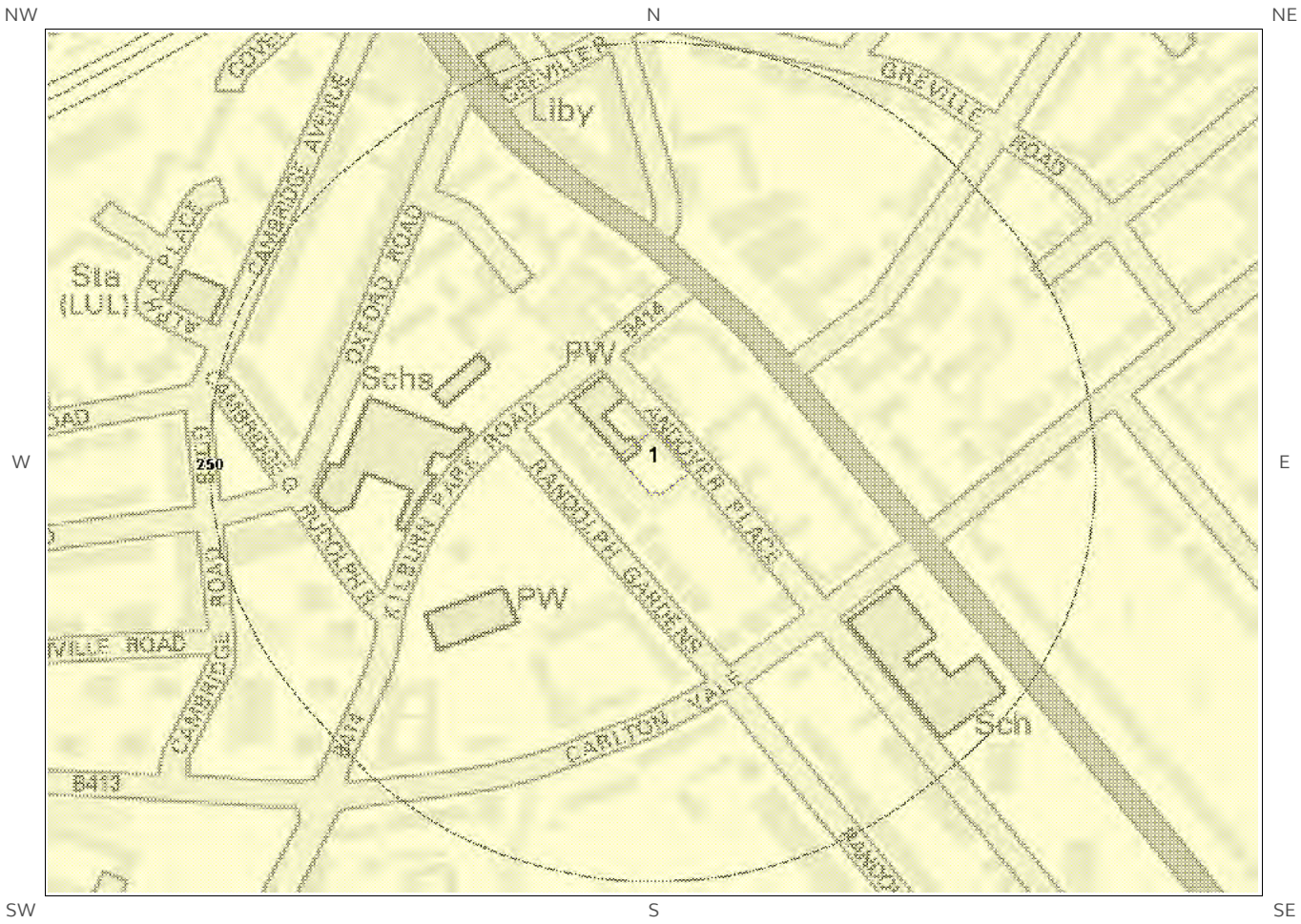
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

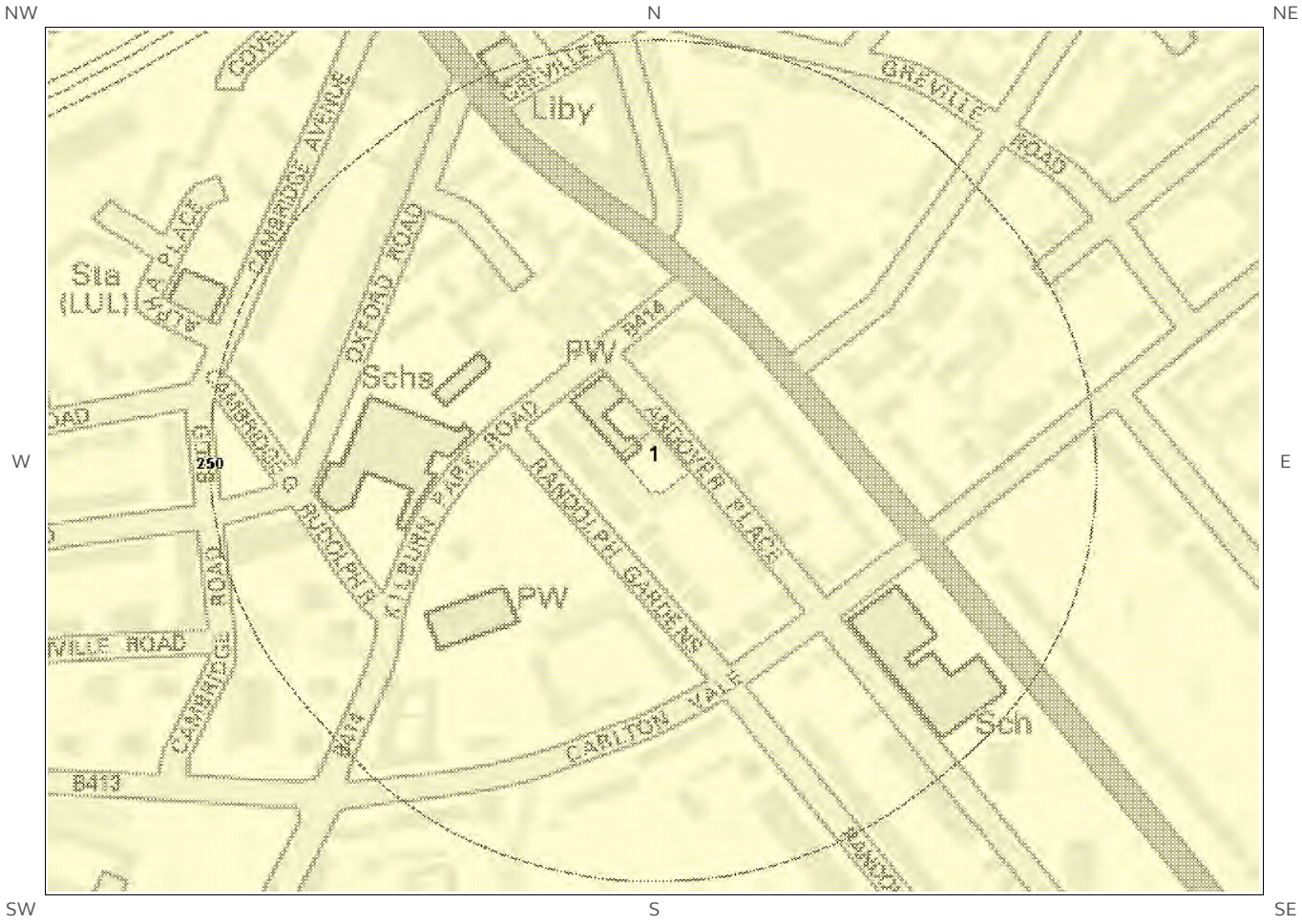
Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



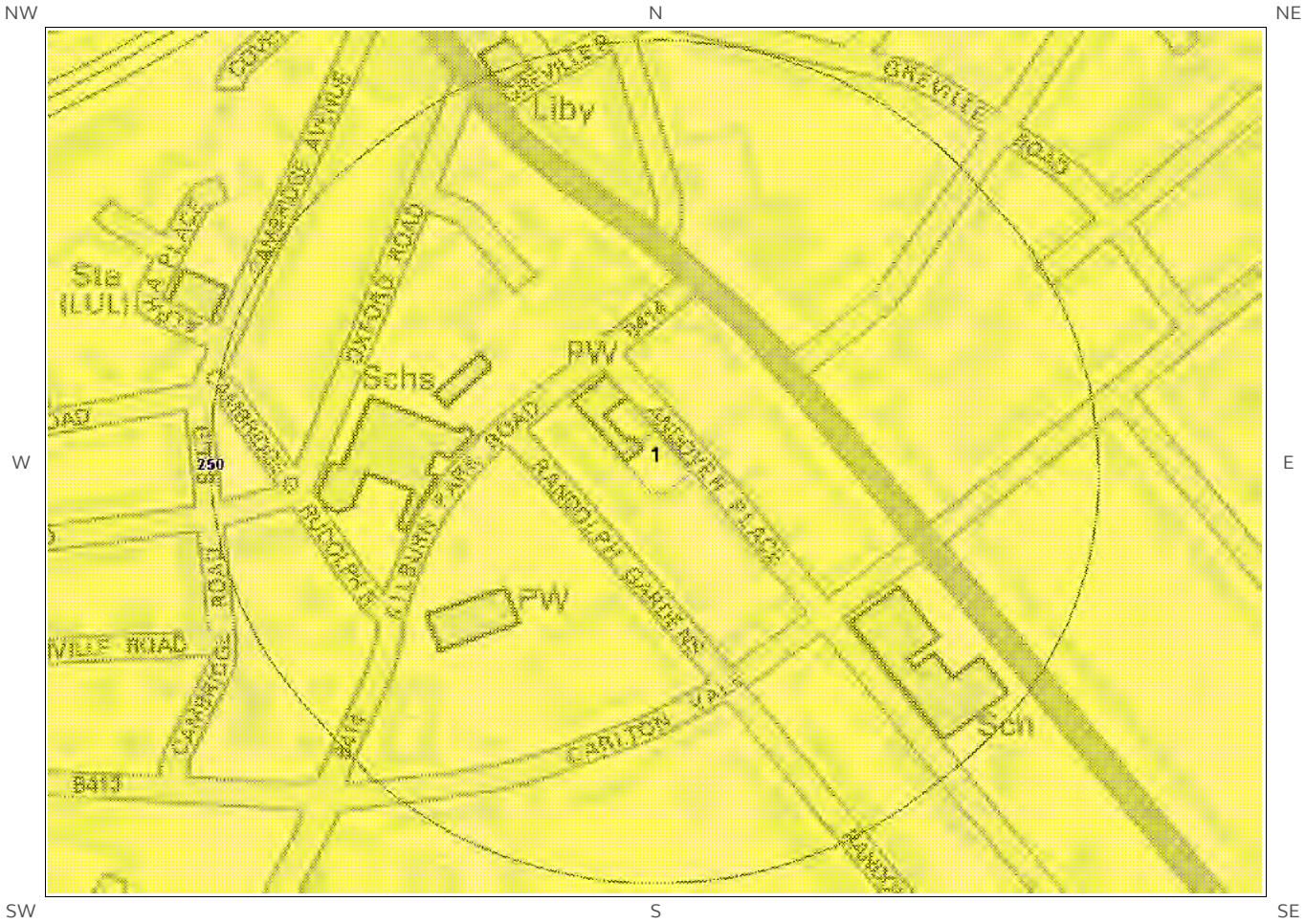
Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map



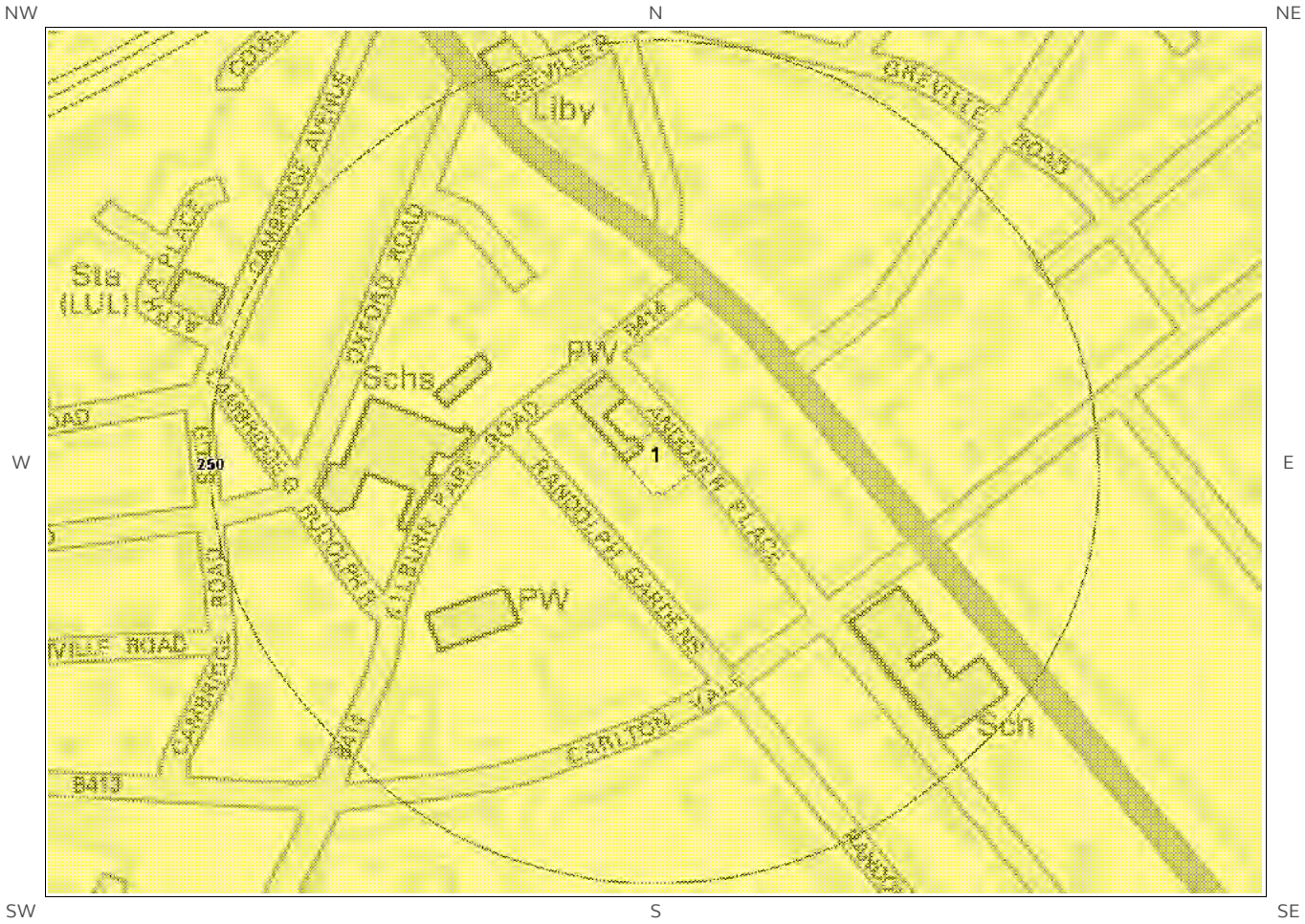
Compressible Deposits Legend

6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



Running Sand Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

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

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

6.3 Ground Dissolution of Soluble Rocks

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

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

6.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

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

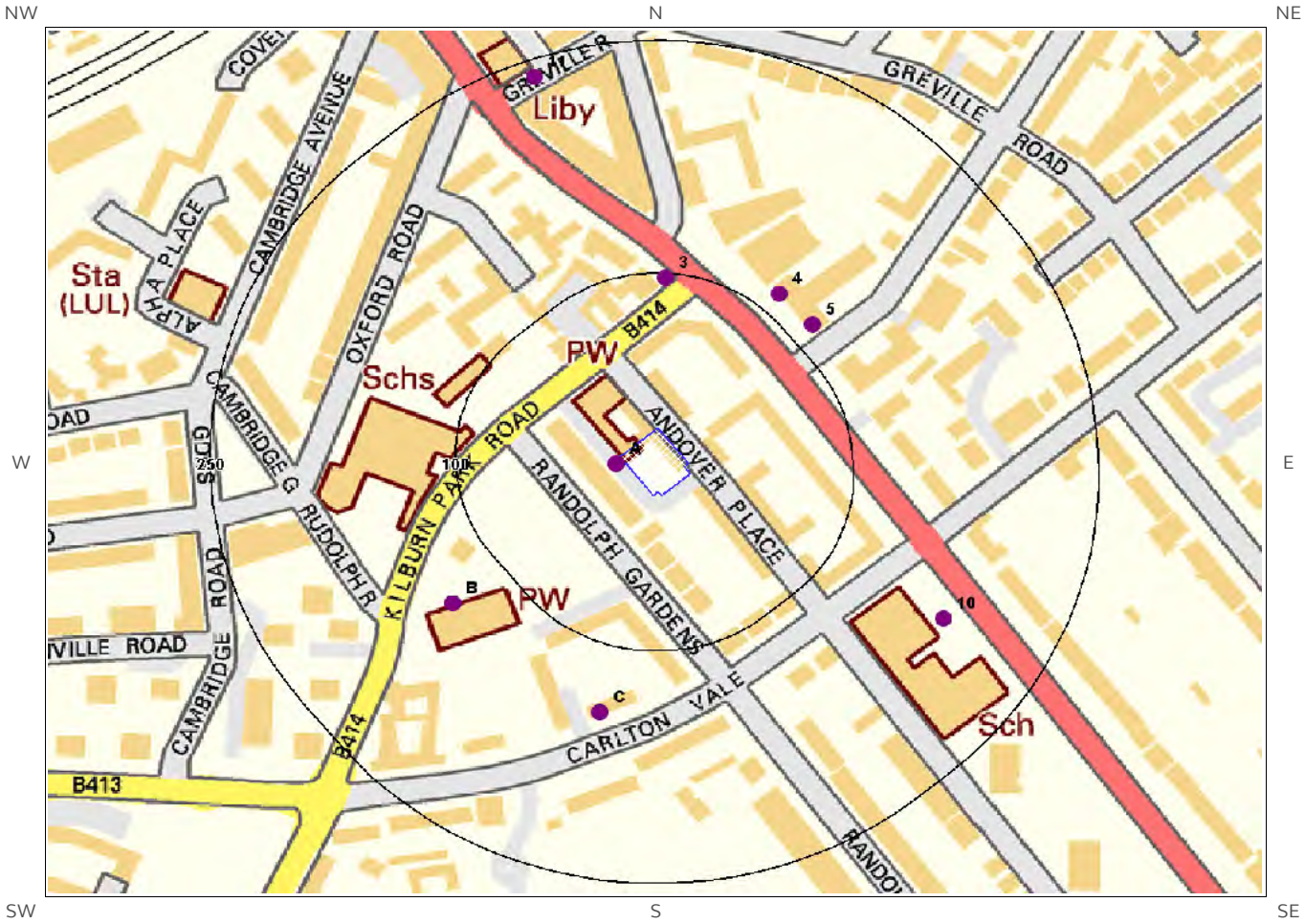
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

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

7 Borehole Records map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

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

Records of boreholes within 250m of the study site boundary: 11

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1A	4.0	SW	525620 183230	TQ28SE384/A-C	15.24	G.L.C.CARLTON VALE PADDINGTON
2A	4.0	SW	525620 183230	TQ28SE384	15.0	G.L.C. CARLTON VALE SITE
3	96.0	N	525650 183350	TQ28SE604	8.53	RANELAGH SEWER-W HAMPSTEAD BH10
4	114.0	NE	525720 183340	TQ28SE680	18.29	MAIDA VALE (GREVILLE PLACE) BH1
5	115.0	NE	525740 183320	TQ28SE681	9.14	MAIDA VALE (GREVILLE PLACE) 2
6B	139.0	SW	525520 183140	TQ28SE230/A	5.0	ST.AUGUSTINES CHURCH
7B	139.0	SW	525520 183140	TQ28SE230/A-C	4.57	RUDOLPH ROAD KILBURN
8C	144.0	S	525610 183070	TQ28SE589/A	9.0	CARLTON VALE SITE A
9C	144.0	S	525610 183070	TQ28SE589/A-P	9.14	CARLTON VALE SITE PADDINGTON A-P
10	181.0	SE	525820 183130	TQ28SE359	45.72	G.P.O. BH11 PADDINGTON
11	239.0	N	525570 183480	TQ28SE603	10.36	RANELAGH SEWER-W HAMPSTEAD BH9

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.

#1A: scans.bgs.ac.uk/sobi_scans/boreholes/591914
#2A: scans.bgs.ac.uk/sobi_scans/boreholes/591915
#3: scans.bgs.ac.uk/sobi_scans/boreholes/592166
#4: scans.bgs.ac.uk/sobi_scans/boreholes/592252
#5: scans.bgs.ac.uk/sobi_scans/boreholes/592253
#6B: scans.bgs.ac.uk/sobi_scans/boreholes/591723
#7B: scans.bgs.ac.uk/sobi_scans/boreholes/591724
#8C: scans.bgs.ac.uk/sobi_scans/boreholes/592150
#9C: scans.bgs.ac.uk/sobi_scans/boreholes/592151
#10: scans.bgs.ac.uk/sobi_scans/boreholes/591885
#11: scans.bgs.ac.uk/sobi_scans/boreholes/592165

8 Estimated Background Soil Chemistry

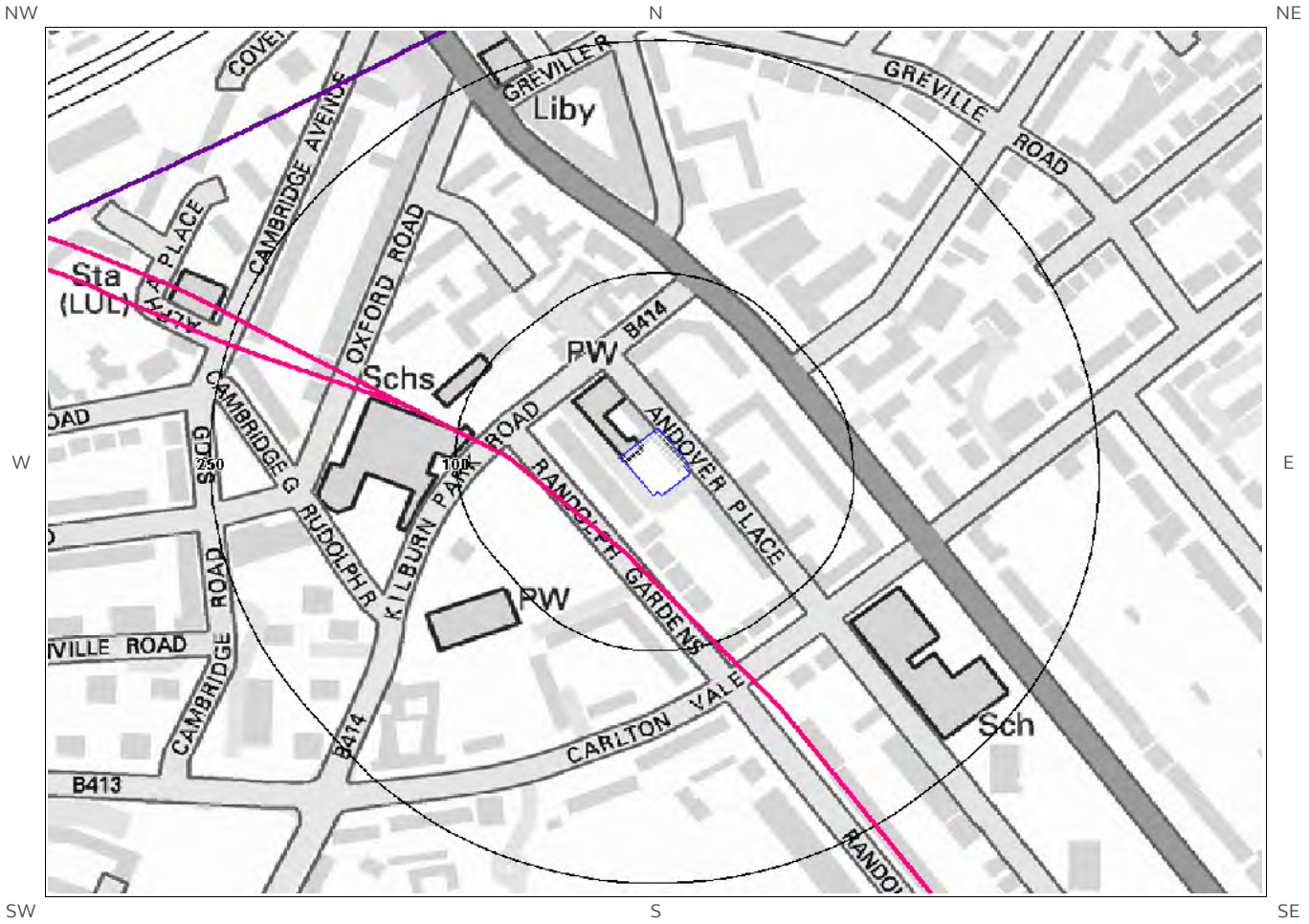
Records of background estimated soil chemistry within 250m of the study site boundary: 1

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

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

9 Railways and Tunnels map



Railways and Tunnels Legend

- Site Outline
- Search Buffers (m) — 250, 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

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

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

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

Distance (m)	Direction	Detail
39	SW	London Underground - Bakerloo Line

The approximate depth value for the nearest London Underground line given in this dataset has been extrapolated from published depths of tube lines at station platforms, and assume a constant gradient between stations. Using this method, topographical variation has resulted in some parts of the line having associated depth values either shallower or deeper than the real-world situation. Depth values are for indication only and should not be relied upon for any calculation or technical purpose and are in no way a substitute for a professional survey.

Line
London Underground Line: Bakerloo Line Depth: 15mbgl Track Type: Tunnel

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

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

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

9.5 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? Yes

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

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

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

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

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