



Geo-Environmental Report

Northfield Road, Reading, RG1 8AH

for:

Elstree Land Ltd & Carter and Son (Thatcham) Limited

'Experience and expertise working in union'

enzygo.com

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For:	Elstree Land Ltd & Carter and Son (Thatcham) Limited.
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Executive Summary

Proposed Development

The site is to be re-developed for residential use.

Investigation

Site investigation, desk study and a monitoring visit were undertaken by Enzygo Geoenvironmental Ltd.

Ground Conditions

Ground Conditions comprise Made Ground over very soft clays with medium dense sand and gravel being encountered at depths of between 1.7m and 3.9m bgl. Groundwater was encountered at depths of 1.1m and 1.7m bgl

Contamination

Contamination associated with ash and clinker within Made Ground was encountered and remediation through the use of cover soils to garden areas is recommended.

Foundations

Piled foundations are recommended.

Pavement Design

An equilibrium CBR of 2% is recommended. Soils are not considered to be frost susceptible.

Drainage

It is considered that soakaway drainage is not feasible.

Ground Gas and Radon

No radon or ground gas risk risks have been identified at the site. Additional monitoring is being undertaken.

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1.0 INTRODUCTION

Background

- 1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Geo-Environmental Report for a site at Northfield Road, Reading, RG1 8AH.

Proposed Development

- 1.2 The client is seeking to re-develop the site for residential use comprising domestic houses and gardens with associated infrastructure. The proposed development is shown on Drawing 051901-BRAD-Layout-02, prepared by DHA Architecture Ltd, which has been incorporated into the Site Plan, CRM.1726.001.GE.D.001, prepared by Enzygo Geoenvironmental Ltd.

Objectives

- 1.3 The objectives of the study are to:
- Review historical plans, geology, hydrogeology, site sensitivity, mining records and contaminated land information in order to complete a Desk Study. A Groundsure Report has been obtained which includes a larger area than the application site. A copy of the Groundsure Report is included in Appendix A;
 - Undertake a targeted ground investigation;
 - Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
 - Provide a factual and interpretative report relating to the desk study and site investigations.
 - Provide a revised conceptual model and recommendations on any potential development issues and mitigation measures, where appropriate.
 - Provide geotechnical recommendations in relation to foundations and infrastructure.

Risk Classification

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

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

- 1.5 Where adverse risks from ground instability are identified these are discussed within the report.

2.0 SITE SETTING

Site Description

Item	Description
Site Address	Northfield Road, Reading, RG1 8AH
National Grid Reference	471171,174135
Site Area	0.1 Ha

Current Site Description

- 2.1 The following site description has been compiled from the site inspection undertaken by Enzygo Geoenvironmental staff, together with current maps, aerial photographs and a topographical survey.
- 2.2 At the time of the ground investigation the site comprised derelict residential properties bordering Northfield Road to the south of the site. The houses were bordered up and access was limited by hording along the site boundary.
- 2.3 The residential houses were set back from Northfield Road with small front gardens which were overgrown with dense vegetation.
- 2.4 The western boundary of the site is formed by Swansea Road. Derelict commercial buildings are present along the western site boundary comprising two storey brick build structures which appear to comprise a former workshop and office.
- 2.5 An area of hardstanding is present within the northern area of the site. A corrugated metal building previously used for car servicing is present within the north eastern area of the site. The building was noted to have a concrete floor slab.
- 2.6 The central area of the site comprises concrete hardstanding and a small area of overgrown garden.
- 2.7 No evidence of tanks, fuel and chemical storage or spillage and leakage was noted on site. The presence of hardstanding should limit potential leakage in to the underlying soils.

Surrounding Area

2.8 The surrounding land uses are summarised as follows:

Direction	Land Use
South	Northfield Road with residential use beyond.
East	Residential development and storage.
West	Swansea Road with residential use beyond.
North	Residential development.

2.9 There are no significant risks of potential contaminants identified on site.

2.10 There is a low risk of localised spillage of fuels and oils and also presence of Made Ground below the site. Significant contamination is unlikely and any residual contamination can easily be address through development.

3.0 SITE HISTORY

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

Potentially Contaminative Historical Land Use		
Historical Land Use		
Map Edition	On Site	Off Site
1879	Field with ditch on site.	Fields 0m N, S, E & W. Malthouse 50m SE. Railway station 130m SE. Timber yard 10m SE. Railway line 150m S. Residential and commercial development 230m S.
1899	Residential development with gardens. Workshop within central area.	Swansea Road 0m W. Northfield Road 0m S. Residential development 0m N, W & 10m S & N. Sidings and coal depot 120m W. Saw mill and smithy 150m NE.
1912	Building in E.	No significant change.
1931	No significant change.	Smithy no longer present. Timber yard and Maltings no longer shown. Now un-named commercial buildings.
1936	No significant change.	No significant change.
1956	Warehouse in central area of site.	Engineering works 50m NE & 80m E. Warehouses 50m SE. Works 150m W. Coal depot no longer shown. Works 150m SE. Fire station 120m S. Earthworks associated with railway 170m SW.
1969	No significant change.	No significant change.
1979	No significant change.	No significant change.
1984	No significant change.	Sidings no longer shown. Warehouse 50m E.
1993	No significant change.	Residential properties 30m SE.
2003	No significant change.	No significant change.
2010	No significant change.	No significant change.
2014	No significant change.	No significant change.

3.2 No new risks to the site are identified to the site from the historical maps.

4.0 ENVIRONMENTAL SETTING

Ground Conditions

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

Geological Unit	Type	Description	Aquifer Classification
Drift.	Langley Silt.	Clay and Silt.	Unproductive.
Solid.	Lewes Nodular Chalk Formation.	Chalk.	Principal.

- 4.2 There are no records of Made Ground below or adjacent to the site.
- 4.3 There are no records of landslips near to the site.
- 4.4 BGS borehole records close to the site confirm clay and gravel over Chalk.
- 4.5 Records of background soil chemistry show no exceedances of residential values.

Groundwater

- 4.6 The recorded permeability of the drift geology is very low to low. Permeability for the solid geology is very high consistent with structured Chalk. The Chalk formation weathers to a matrix dominant material near surface with corresponding reduction in permeability.
- 4.7 The GroundSure Report shows the site not to be within a Source Protection Zone.
- 4.8 There are four groundwater abstraction licenses within 500m of the site, all located 249m west. Abstractions are licensed for cooking, sanitary and washing.

Coal Mining

- 4.9 No historical or current coal mining extraction has been identified within 500m of the site.

Non Coal Mining

- 4.10 No other significant mining activity has been identified within 500m of the site.

Natural Cavities

- 4.11 No natural cavities or solution features are identified within 500m of the site.

Ground Workings

- 4.12 No additional ground workings are identified within 250m of the site. No new risks are identified.

Hydrology

- 4.13 There are no surface water courses on or close to the site.
- 4.14 The nearest water course is located 182m south of the site and not considered a significant receptor given the distance.
- 4.15 Environment Agency records show that the site is within Flood Zone 2 (moderate risk).

Radon Risk Potential

- 4.16 The Groundsure GeoInsight Report indicates that the site is not within a Radon Affected Area. No radon protective measures are necessary in the construction of new dwellings.

Natural Hazards Finding

- 4.17 BGS information presented within the Groundsure Geoinsight report identifies the following:

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

- 4.18 No significant risks are identified.

Sensitive Land Uses

- 4.19 There are no sites of special interest on or adjacent to the site.
- 4.20 English Heritage has not identified any listed buildings or scheduled ancient monuments on or close to the site. No sensitive geology has been identified at the site.

Environmental Sensitivity

- 4.21 Overall the site is currently considered to be of **Low** sensitivity due to the following:
- The underlying stratum is classified as an Unproductive Aquifer;
 - Groundwater abstraction license 249m west from the deeper Chalk aquifer;
 - Not located within a Source Protection Zone;
 - No surface water-courses adjacent to the site; and
 - No sensitive ecology designation is noted adjacent to or on the site.
- 4.22 The proposed end use of the site is residential and as such future sensitivity will be high for end users.

Industrial Land Uses

- 4.23 A warehouse is identified on site. There are no significant industrial uses within 250m of the site which are not considered a significant risk.
- 4.24 The Groundsure EnviroInsight Report indicates that there is one fuel station within 250m of the site. This is located 217m west and is dismissed as a significant risk based on distance from the site.
- 4.25 There are no high-pressure oil pipelines within 250m of the site.
- 4.26 No new potential contamination risks are identified on or adjacent to the site from the register of industrial activities.

5.0 CONSULTATIONS

Regulatory Database

- 5.1 The following information has been obtained from a commercially available environmental database. The summary table only includes records not otherwise detailed in the report.

Environmental Permits, Incidents and Registers	0 -250m	250-500m	Details
Site determined as contaminated land.	0	0	Not Applicable.
Authorised industrial processes.	0	0	Not Applicable.
Registered radioactive substances.	0	0	Not Applicable.
Enforcements, prohibitions or prosecutions.	0	0	Not Applicable.
Pollution Incidents.	3	5	Nearest is Category 4 (No) impact from oils 129m E. Not considered a risk.
Consents issued under the Planning (Hazardous Substances) Act 1990.	0	0	Not Applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites.	0	0	Not Applicable.
Records of Licensed Discharge Consents.	0	2	Surface water discharges with nearest being 292m N. Not considered a risk.

- 5.2 No risks are identified from the regulatory database.

Landfill Sites and Waste Treatment Sites

- 5.3 There are no historic landfills within 250m of the site.
- 5.4 There are no significant waste sites within 250m of the site.
- 5.5 There are no new significant risks are identified from waste activities.

6.0 PRELIMINARY CONCEPTUAL MODEL

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, Hydrocarbon and metals.	Potential Made Ground and localised spillages.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal PPE will address risk.
			Site users.	Low.	No significant source identified and any residual risk can easily be mitigated during development.
Asbestos, Hydrocarbon and metals.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal PPE will address risk.
			Site users.	Negligible.	No significant source identified.
Hydrocarbon and metals.	Potential migration from off-site source.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant off-site sources identified.
			Site users.		
Ground Gas.	Historic Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Groundwater					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No significant source identified.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No source identified.
Environmental Receptors					
On site contaminants.		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	No sensitive receptor presents.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	No source identified.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No source identified.
Building Services					
On site contaminants.		Direct.	Historic Buildings.	Dismissed.	None present.
		Direct.	Proposed Buildings.	Dismissed.	No source identified.
		Permeate into pipework.	Water Pipes.	Dismissed.	No source identified.

6.1 There is a low risk associated with potential Made Ground and hydrocarbons from localised spillage.

7.0 SITE INVESTIGATION

General

- 7.1 A ground investigation was undertaken based on the findings of the desk study.

Site Works

- 7.2 The site investigation works were undertaken between 25th and 30th September 2019, comprising three window sampler boreholes (WS1, WS3 & WS4), one soakaway pit locations (SA1) and one hand pit (HP2). Access could not be obtained for the proposed location of Borehole WS2.
- 7.3 The locations of the exploratory holes are shown on Drawing CRM.1726.001.GE.D.001 and summarised below:

Rational	Exploratory Holes	Notes
Foundations.	WS1, WS3 & WS4.	Below or adjacent to proposed structures.
Proposed garden areas.	WS1, SA1 & TP2.	Based on site plan.
Former garage and warehouse.	SA1, WS3 & WS4.	Based on site inspection.
Pavement Design.	SA1.	CBR test.
Groundwater and ground gas monitoring.	WS1, WS3 & WS4.	Installations.
Soil Infiltration.	SA1.	Soakaway test.

- 7.4 Representative soil samples were collected for chemical and geotechnical testing. Soil samples destined for chemical analysis were collected in appropriate containers provided by the analytical laboratory. Samples were stored in cool boxes prior to dispatch to the laboratory for analysis. All samples were collected using appropriate sampling equipment that was cleaned at each sampling location.
- 7.5 Generally samples were collected from Made Ground, which may contain potential inclusions of contaminating materials and materials displaying evidence of potential contamination.
- 7.6 In the absence of any evidence of contamination samples were collected near surface as this material is more likely to be contaminated by surface spillages and also will potentially be in contact with future residents.

Monitoring

- 7.7 Return visits to monitor groundwater levels from installations were undertaken and during these visits ground gas was also measured.

Laboratory Testing

- 7.8 Samples for geotechnical testing were sent to the laboratories of I2, which is UKAS accredited, for the following analysis:
- California Bearing Ratio(CBR) tests undertaken on re-compacted samples
 - Atterberg Limits Determinations; and
 - Soluble sulphate and pH.
- 7.9 Samples for chemical analysis were sent to the laboratories of laboratories of I2 who are UKAS and MCERTS accredited. Samples were tested for the CLEA metal suite, pH, sulphate, cyanide, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAH), organic carbon, banded Total Petroleum Hydrocarbon (TPH) and asbestos screen.
- 7.10 Six samples were tested which represents a grid density of 1 sample per 13m, consistent with recommendations given in BS10175 for a main ground investigation.

8.0 GROUND AND GROUNDWATER CONDITIONS

Summary of Ground and Groundwater Conditions

8.1 The investigation undertaken identify the following strata:

Strata	Summary Description	Thickness (m)
Made Ground	Concrete over dark brown clayey gravel of flint brick and concrete gravel. Fragments of ash and clinker.	0.2 to 0.35
	Dark brown gravelly clay with brick, concrete and ash.	0.5 to 1.9
Langley Silt	Very soft becoming soft with depth grey brown sandy gravelly clay.	0.5 to 2.7
	Medium dense yellow brown sand and flint gravel.	>4.3
Groundwater	Seepages.	1.4 to 1.7m bgl.

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

Made Ground

8.3 Within areas of hardstanding Made Ground was noted to comprise 200mm of concrete over dark brown clayey gravel of flint brick and concrete gravel. This was underlain by general Made Ground described below:

8.4 Elsewhere Made Ground was noted to comprise dark brown gravelly clay with brick, concrete and ash.

Langley Silt

8.5 Langley Silt was encountered below Made ground at depths of between 0.7m and 2.1m below ground level (bgl) and was noted to comprise very soft becoming soft with depth grey brown sandy gravelly clay.

8.6 Soft clays were underlain by medium dense yellow brown sand and flint gravel at depths of between 1.7m and 3.9m bgl. This material is considered to form part of the Langley Silt formation.

Visual and Olfactory Evidence of Contamination

8.7 No visual or olfactory evidence of contamination was encountered during the site works other than the presence of ash and clinker within the Made Ground.

Soil Strength

- 8.7 Undrained shear strength values for the cohesive soils have been measured from SPT values using the correlations of Stroud and Butler. Density of granular soils have been measured directly from SPT.
- 8.8 This shows the clay soils of the Langley Silt are very soft to soft with undrained shear strength increasing from 10kN/m² at 1m bgl to 25kN/m² at 3m bgl. Granular soils are medium dense with SPT values increasing from 11 at 4m bgl to over 20 at 6m bgl.

Groundwater

- 8.9 Groundwater was encountered during the site investigation at depths of between 1.4 to 1.7m bgl. The depth to groundwater measured from installations during monitoring visits are summarised on the table below:

Exploratory Hole	Depth m(bgl)			
	7.10.19	16.10.19	23.10.19	30.10.19
WS1	1.78	1.72	1.81	1.77
WS3	1.16	1.10	1.11	1.06
WS4	1.71	1.64	1.73	1.71

Soil Infiltration

- 8.10 A soakaway test (SA1) was undertaken but insufficient soakage was recorded for a soil infiltration rate to be estimated.

Ground Gas

- 8.11 Ground gas was monitored during the return visits to monitor groundwater levels. Results are provided on the table below:

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
7.10.19							
WS1	1006 (F)	<0.1	<0.1	<0.0001	1.2	<0.0012	18.1
WS3	1006 (F)	<0.1	<0.1	<0.0001	0.5	<0.0005	20.7
WS4	1006 (F)	<0.1	<0.1	<0.0001	4.5	<0.0045	13.4
16.10.19							
WS1	999 (F)	<0.1	<0.1	<0.0001	1.1	<0.0011	19.5
WS3	999 (F)	<0.1	<0.1	<0.0001	1.0	<0.0010	18.5
WS4	999 (F)	<0.1	<0.1	<0.0001	<0.1	<0.0001	21.2
23.10.19							
WS1	1011 (S)	<0.1	<0.1	<0.0001	1.3	<0.0013	19.6
WS3	1011 (S)	<0.1	<0.1	<0.0001	2.1	<0.0021	16.8
WS4	1011 (S)	<0.1	<0.1	<0.0001	3.8	<0.0038	15.6
30.10.19							
WS1	1023 (R)	<0.1	<0.1	<0.0001	1.1	<0.0011	19.9
WS3	1023 (R)	<0.1	<0.1	<0.0001	1.6	<0.0016	19.1
WS4	1023 (R)	<0.1	<0.1	<0.0001	3.9	<0.0039	15.5

9.0 CONTAMINATION ASSESSMENT

General

- 9.1 A Tier I risk assessment has been undertaken using available and current screening values for human health and where appropriate controlled waters. The risk assessment is undertaken based on the findings of the preliminary conceptual model presented in Section 6. Based on the contamination testing and Tier I assessment a revised Conceptual Model has been prepared, which is presented later in this section.
- 9.2 Where significant risks are identified remedial measures are recommended.

Human Health

- 9.3 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4UL4 values are used and summary tables of the reference values are included in Appendix C.
- 9.4 Where an exceedance is identified the risk is assessed by considering the sensitivity of the proposed development and the potential pathway. As the site is to be developed for residential houses the GAC for residential use with plant up-take are considered appropriate.
- 9.5 The soil quality shows exceedances of the reference values for residential use with plant uptake for PAH and Lead within Made Ground.
- 9.6 PAH and Lead are commonly identified with ash material and this has been confirmed as the source with a double ratio plot.
- 9.7 Asbestos fibres were also detected in samples of Made Ground.

Controlled Waters

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

pathway-receptor model. Where the receptor is potable groundwater resources the Drinking Water Standards and WHO values are used.

- 9.10 The risk to surface water is dismissed due to the absence of contaminant source on site.
- 9.11 The risk to groundwater is dismissed due to the absence of mobile contaminant source on site. PAH and Lead are associated with ash and clinker which are present in a vitrified form which is of low mobility.

Ground Gas

- 9.12 Following the guidance provided in Section 3 of CIRIA C665 an initial assessment is undertaken to determine if there are any significant sources of potential ground gas. Such sources include landfills, organic clays and made ground incorporating putrescible materials such as rags, paper and wood. Where no significant source is identified no further assessment is necessary.
- 9.13 This approach is further supported by supplementary guidance given in RB17, published by CL:AIRE which confirms that gas monitoring is not generally required on sites where Made Ground is less than 5m thick and with low organic matter content or on natural soils such as alluvial clays and Chalk as the ground gas sources are not considered significant. The supplementary guidance given in RB17 also takes account of the current requirements for sealing of floor slabs and substructures to meet air tightness requirements under Part L of the Building Regulations which were not considered in CIRIA C665. The advice given in RB17 is consistent with CIRIA C665 and the Local Authority Guide to Ground Gas published by CIEH.
- 9.14 Where significant potential risk from ground gas has been identified from the Initial Conceptual Model and the intrusive ground investigation works ground gas monitoring is undertaken and the results of the monitoring are compared against the Gas Screening Values given in CIRIA Report 665. From this the Characteristic Situation is identified and remedial measures proposed.
- 9.15 When assessing the risk and type of remedial measures appropriate consideration is given to the likely construction of the development, the nature of the gas posing a risk and the nature of the likely source. The use of engineering judgement when determining risk from ground gas is consistent with the recommendations given in CIRIA C665.

- 9.16 No significant sources of ground gas were noted from the desk study. Soils encountered on site did not include significant discrete putrescible materials. As such there is not considered to be a viable significant risk from ground gas.
- 9.17 Gas monitoring was undertaken during return visits to monitor groundwater levels. Ground gas has not recorded significant elevated concentrations of Methane or Carbon Dioxide and no detectable gas flow rates have been measured.
- 9.18 It is considered that Characteristic Situation 1 applies with no special precautions required.

Revised Conceptual Model

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

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, Hydrocarbon and metals.	Made Ground	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Management practice.
			Site users.	Negligible.	Addressed through development.
Asbestos, Hydrocarbon and metals.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal PPE will address risk.
			Site users.	Negligible.	No source identified.
Hydrocarbon and metals.	Potential migration from off-site source.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant off-site sources identified.
			Site users.		
Ground Gas.	Historic Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No source identified.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source identified, and no elevated gas flux measured.
			Site users.		
Groundwater					
Hydrocarbon and metals.	Potential spillage on site	Vertical Migration.	Groundwater	Dismissed.	No significant mobile source.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site	Horizontal Migration.	River Network	Dismissed.	No receptor.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	No sensitive receptor presents.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	No source identified.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No source identified.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	None present.
		Direct.	Proposed Buildings.	Dismissed.	No source identified.
		Permeate into pipework.	Water Pipes.	Negligible.	Requirements of Water authority to be followed.

Remediation and Verification Strategy

9.20 Hardstanding associated with the proposed buildings and pavement areas will provide a physical barrier separating end users from residual contamination within the Made Ground thereby breaking the potential pollutant linkage.

9.21 Within proposed garden areas it is recommended that 600mm of clean cover soils are provided over a geotextile separator to break the potential pollutant linkage. Gardens are of

a modest size and the existing Made Ground is not considered suitable for a planting medium. As such the proposed cover soils, comprising topsoil will also act to provide suitable planting material for the proposed garden areas.

- 9.22 It is proposed that the thickness of cover soils is verified using hand pits with collection and testing of one sample per pit to confirm that the cover soil meets the GAC values for residential use with plant up-take.
- 9.23 The locations of proposed validation pits are shown on Drawing CRM.1726.001.GE.R.D.002 and the number of pits has been determined based on NHBC guidance documents derived in consultation with the Environment Agency.
- 9.24 Following completion of the remediation works a verification report will be prepared which will include:
- Photographs of each validation pit confirming thickness of cover soil and showing the geotextile no dig layer;
 - Chemical results from the testing of imported soils;
 - Copy of the import certificate to show that the soils meet the GAC;
 - Waste tickets for materials removed; and
 - Confirmation that based on information obtained the requirements of the agreed remediation works have been completed.
- 9.25 If the Local Planning Authority has any other specific requirements for verification report these can be included.
- 9.26 To protect construction worker's from potential asbestos fibres measures should to be incorporated into the Contractors Construction Stage Health and Safety Plan and Asbestos Management Plan as required under the Construction Design and Management (CDM) Regulations to mitigate risk to construction works. Measures may include:
- Designing temporary works to minimise disturbance of the Back fill material;
 - Separating material and disposal of soils containing asbestos;
 - Wetting down during excavation;
 - Sheeting of stockpiles where asbestos is suspected;
 - Testing of soils and off-site disposal of any soils found or suspected of containing asbestos;

- Preventing access to the construction site by members of the public;
- Use of good hygiene measures, including washing down of plant; and
- Use of appropriate PPE, including face masks.

9.27 Additional measures may be required which are to be incorporated into the Contractors Asbestos Management Plan.

9.28 If unforeseen contamination is encountered during construction works an Environmental Consultant will be available on a 'call out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered this will be discussed with the Local Planning Authority and remedial measures agreed prior to implementation. A validation report will be prepared should any remediation of unforeseen contamination be required in accordance with the NPPF.

Waste Classification

9.29 The Waste Management paper 2 has recently been updated to version 3 which states that that sites which previously could be considered 'uncontaminated land' surplus soils if they did not exceed the GAC values now requires the landfill to make an appropriate assessment of the waste classification. As such final assessment, will be undertaken by the receiving landfill based on the requirements of their permit.

10.0 GEOTECHNICAL ASSESSMENT

Proposed Development

- 10.1 The proposed development comprises two storey residential houses. Structural loadings are not known but assumed to be 50 kN/m wall run.
- 10.2 It is considered that the scheme meets the criteria of Geotechnical Category 1 of Eurocode 7.

Ground Conditions

- 10.3 Ground Conditions comprise Made Ground over very soft clays with medium dense sand and gravel being encountered at depths of between 1.7m and 3.9m bgl. Groundwater was encountered at depths of 1.1m and 1.7m bgl.
- 10.4 Additional monitoring is being undertaken.

Site Preparation

- 10.5 The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:
- Removal of existing buildings, together with any asbestos;
 - Any redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill;
 - Tree root balls and soils with significant organic material should be grubbed out and replaced with appropriate compacted materials.

Foundations

- 10.6 Due to the thickness of Made Ground and very soft clay it is considered that conventional strip foundations are not suitable.
- 10.7 Consideration has been given to the use of vibro granular columns, however, the cohesive Langley Silts are considered too soft to be suitable for ground improvement.
- 10.8 It is recommended that piled foundations are used set within the medium dense sand and gravel of the lower Langley Silt Formation.
- 10.9 Modified plasticity index values show the soils to be of moderate shrinkage potential in accordance with NHBC Standards.

Ground Floor Slab

10.10 It is considered that suspended floor slabs should be used.

Pavement Construction

10.11 An assessment of the likely California Bearing Ratio (CBR) has been assessed from the following sources:

- Laboratory CBR tests undertaken on re-compacted soil samples;
- Description of the materials encountered in the exploratory holes; and
- Guidance given in HD25/94.

10.12 Based on the above it is considered that an equilibrium CBR of 2% is recommended.

10.13 It is recommended that the sub-formation is proof rolled with any soft materials being excavated and replaced with suitable compacted capping.

10.14 Soils are not considered to be frost susceptible.

Drainage

10.15 Based on soil infiltration testing and depth to groundwater soakaway drainage is not considered suitable at the site.

10.16 Chemical results should be provided to the water authority to confirm the design of potable water supply pipes. Based on PAH concentrations it is likely that barrier pipe may be required.

Buried Concrete

10.17 Results of the sulphate testing indicate that soils have soluble sulphate concentrations greater than 500 mg/l consistent with class DS2. It is considered that buried concrete may be designed to Class AC2.

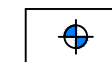
Excavation

10.18 Site observations show that excavations should be suitable with normal construction plant. Where access is required the excavations should be designed in accordance with CIRIA RR97.

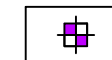
10.19 Existing hardstanding and foundations should be removed as part of the demolition works as these will require assistance from a breaker.



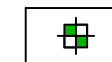
Key



Window Sampler Borehole (WS)
(WS1 - WS3)



Soakaway Location (SA)
(SA1)



Trial Pit Location (TP)
(TP2)



enzygo
environmental consultants

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

CLIENT:

**Elstree Land Ltd &
Carter and Sons (Thatcham) Ltd**

SCALE:

1:500@A3

PROJECT REF:

CRM.1726.001

DRAWN:

MG

CHECKED:

SR

DATE:

Oct 2019

PROJECT:

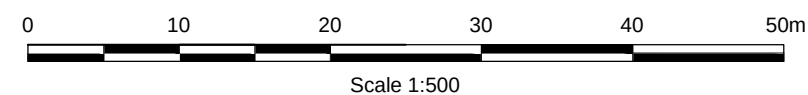
Northfield Road, Reading

TITLE:

Site Plan

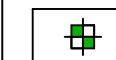
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CRM.1726.001.GE.D.001

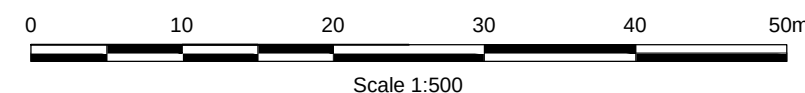




Key



Hand Pit Location (HP)
(HPA - HPE)



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

CLIENT:

Elstree Land Ltd &
Carter and Sons (Thatcham) Ltd

SCALE:

1:500@A3

PROJECT REF:

CRM.1726.001

DRAWN:

MG

CHECKED:

SR

DATE:

Nov 2019

PROJECT:

Northfield Road, Reading

TITLE:

Proposed Remediation Plan

FIGURE NO:

CRM.1726.001.GE.D.002

Site Details:

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Report Ref: EMS-57049
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Map Name: County Ser
Map date: 1877
Scale: 1:2,500
Printed at: 1:2,500



Client Ref: EMS_57049
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Map Name: County Ser
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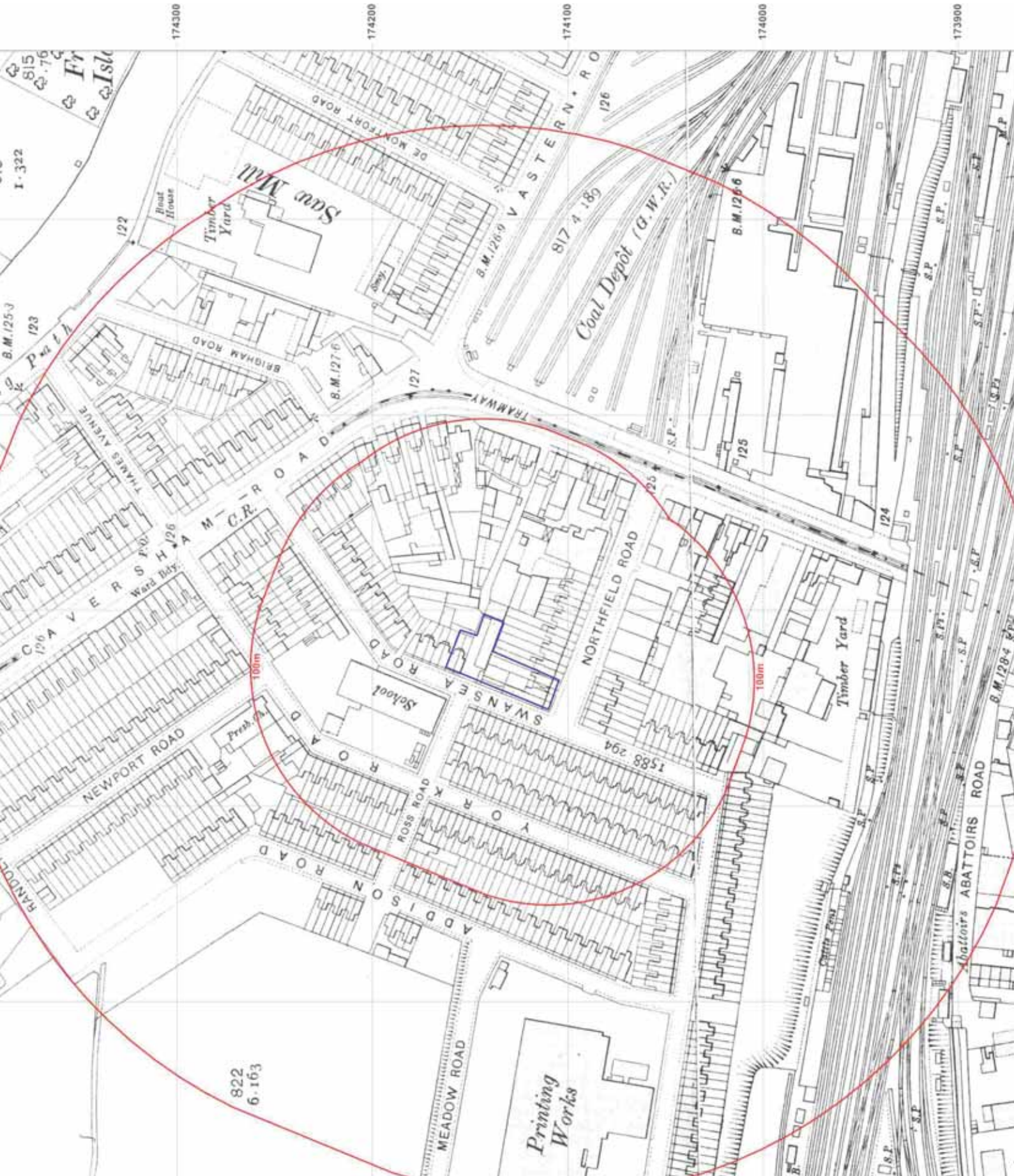
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Map Name: County Ser
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Site Details:

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Grid Ref: 471174, 174300

Map Name: County Ser

Map date: 1931-1932

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: EMS_57049
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Grid Ref: 471174, 173900

Map Name: County Ser
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Printed at: 1:2,500



Powered by

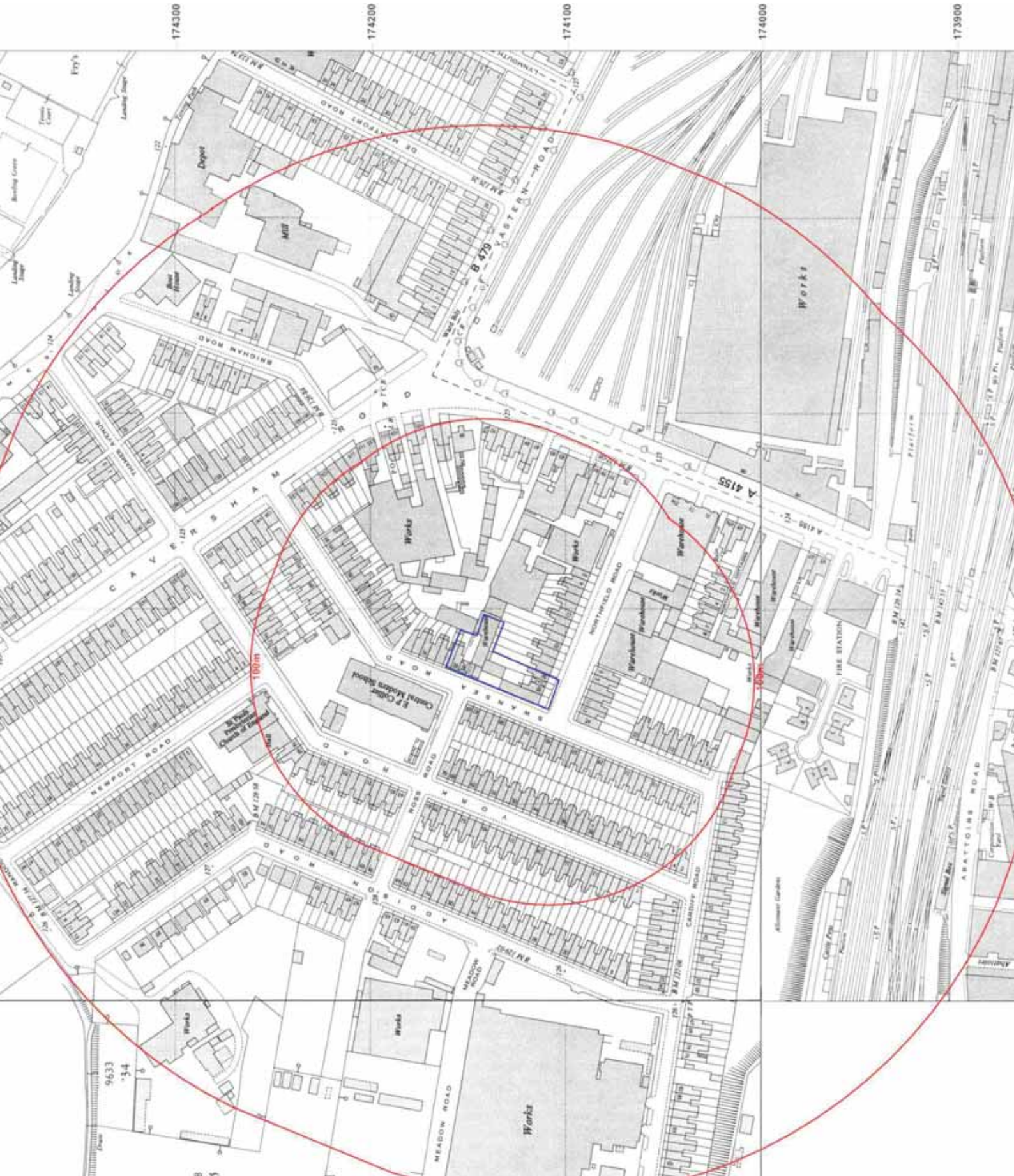


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Surveyed 1955
Revised 1955
Edition 1961
Copyright 1995
Levelled 1955



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Map Name:	National Grid
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Surveyed 1956
Revised 1956
Edition 1961
Copyright 1996
Levelled 1956



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Map date: 1957-1962
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Map Name: National Grid
Map date: 1969-1971
Scale: 1:1,250
Printed at: 1:2,000

Surveyed 1959
Revised 1969
Edition N/A
Copyright 1970
Levelled 1951

Surveyed 1958
Revised 1971
Edition N/A
Copyright 1971
Levelled 1951



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Report Ref: EMS-57049
Grid Ref: 471174, 174200

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Map date: 1979-1982
Scale: 1:1,250
Printed at: 1:2,000



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Grid Ref: 471174, 174200

Map Name: National Grid
Map date: 1984-1988
Scale: 1:1,250
Printed at: 1:2,000

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

Surveyed 1973
Revised 1986
Edition N/A
Copyright 1986
Levelled 1973



Site Details:

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Report Ref:	EMS-57049
Grid Ref:	471174, 17
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Scale:	1:1,250
Printed at:	1:2,000



Powered by



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Report Ref: EMS-57049
Grid Ref: 471174, 174200

Map Name: National Grid
Map date: 1993
Scale: 1:1,250
Printed at: 1:2,000

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



Client Ref: EMS_57049
Report Ref: EMS-57049
Grid Ref: 471174, 174200

Map Name: LandLine
Map date: 2003
Scale: 1:1,250
Printed at: 1:1,250



Site Details:

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Report Ref: EMS-57049
Grid Ref: 471174, 17

Map Name: County Ser
Map date: 1878
Scale: 1:10,560
Printed at: 1:10,560

Surveyed 1878
Revised 1878
Edition N/A
Copyright N/A
Levelled N/A



Map Name:	County Series
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Printed at:	1:10,560

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



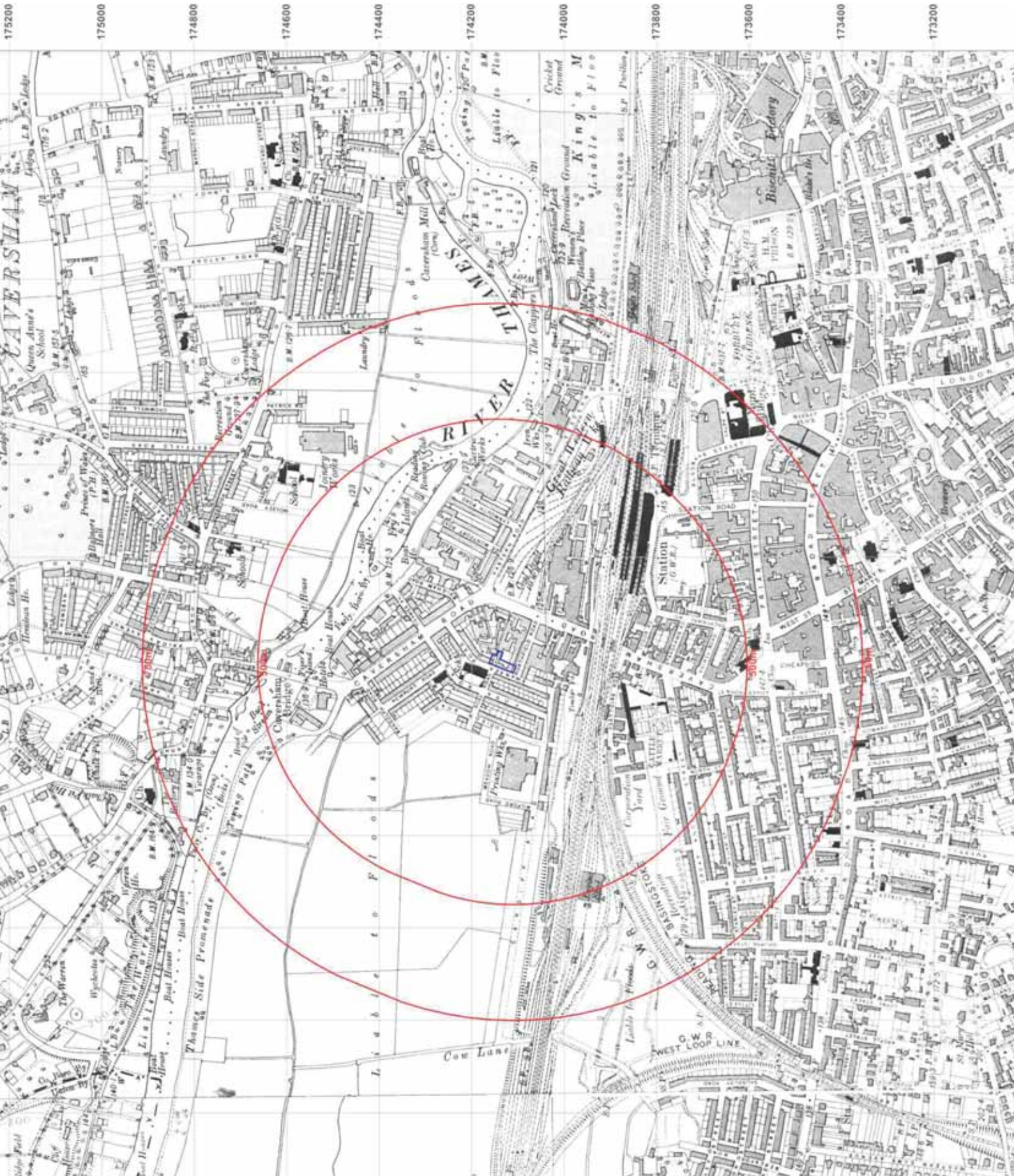


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Grid Ref: 471174, 17

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Map date: 1900
Scale: 1:10,560
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Surveyed 1877
Revised 1897
Edition 1900
Copyright N/A
Levelled N/A

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



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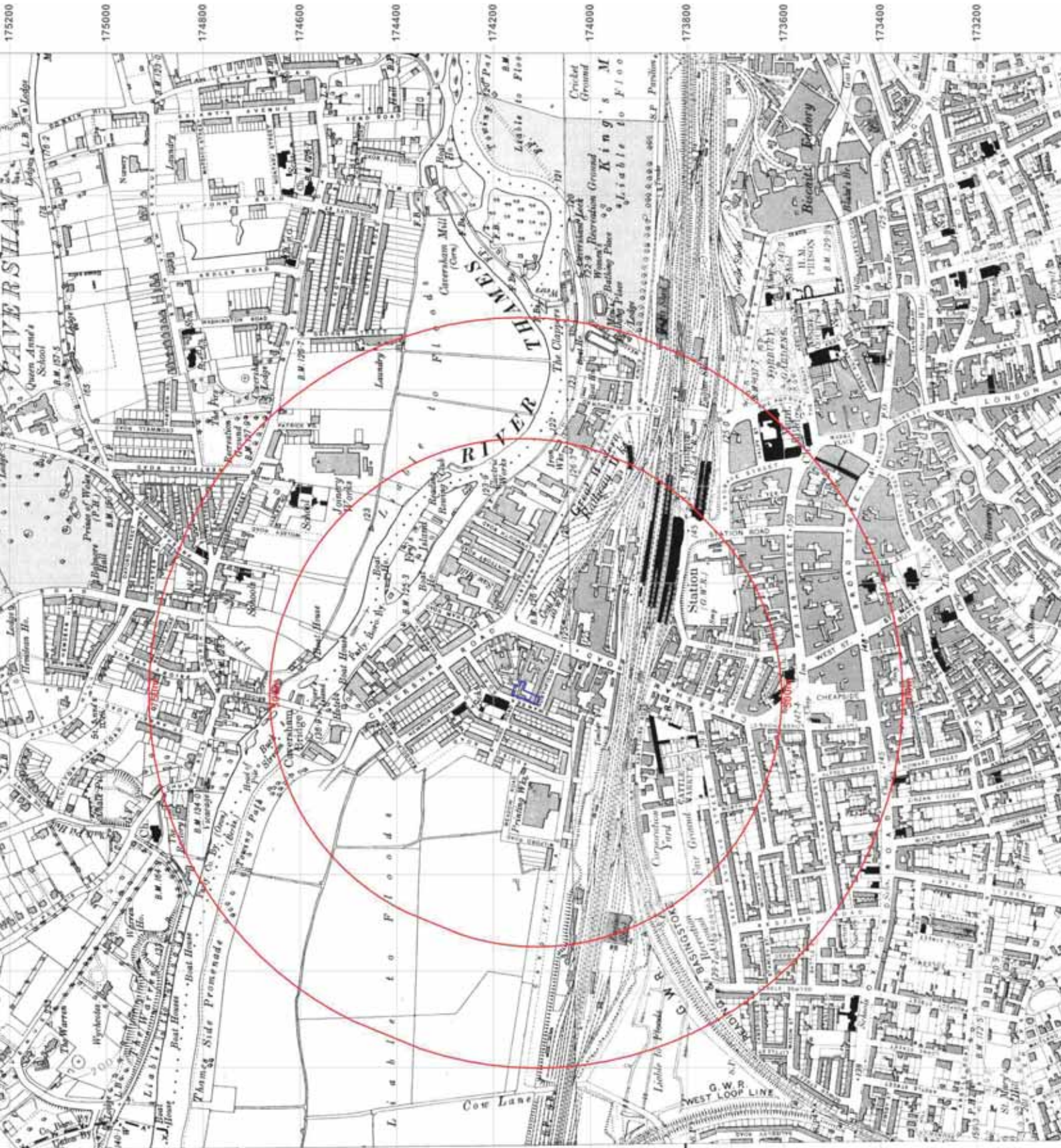
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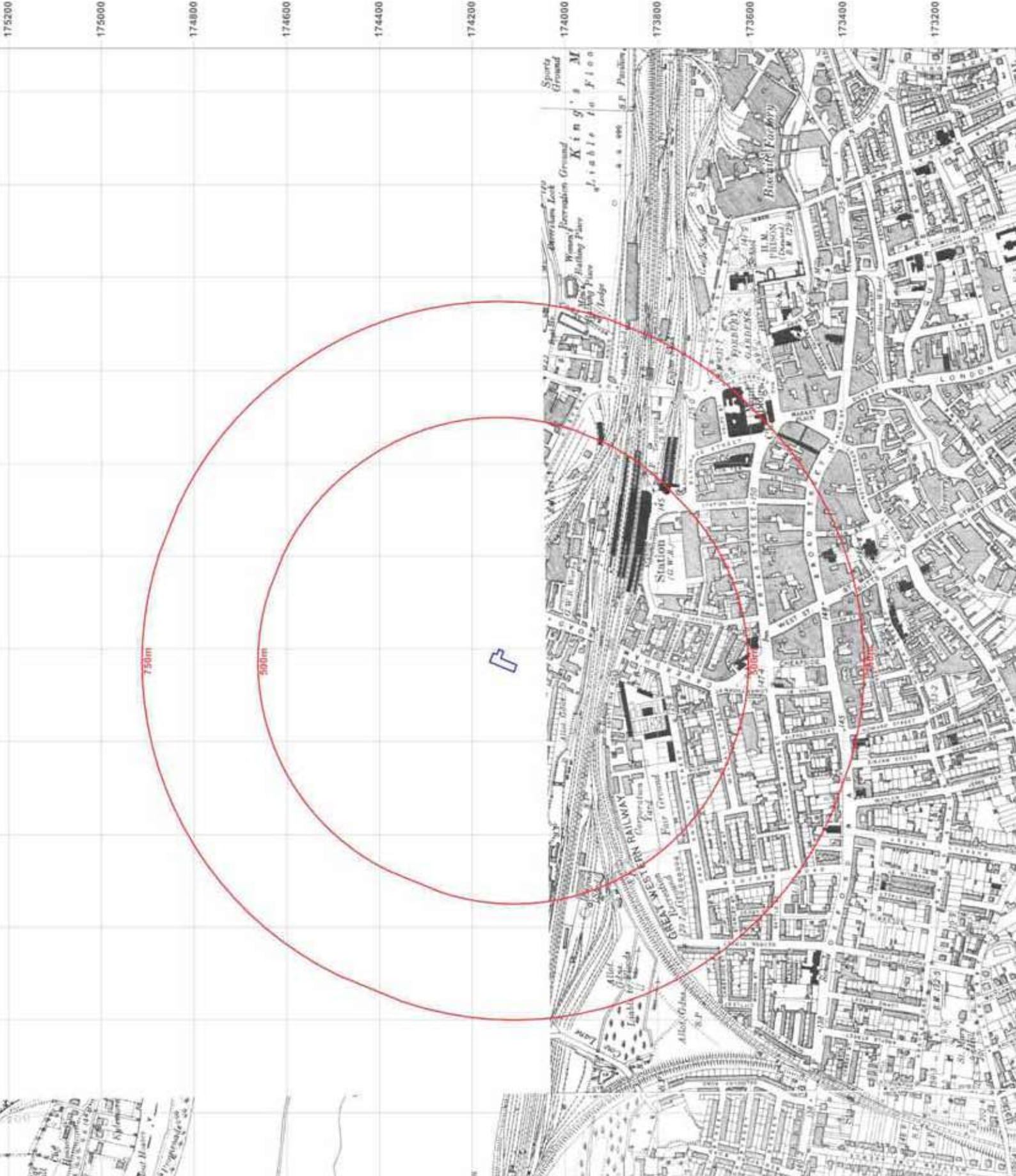
Surveyed 1877
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

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

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Report Ref: EMS-57049
Grid Ref: 471174, 173500

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Printed at: 1:10,560





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Report Ref: EMS-57049
Grid Ref: 471174, 17

Map Name: County Ser

Map date: 1932-1933

Scale: 1:10,560

Printed at: 1:10,560

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

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

Site Details:



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Report Ref: EMS-57049
Grid Ref: 471174, 17

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

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

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

174800

177

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[illegible]

Map Name:	Provisional
Map date:	1960-1962
Scale:	1:10,560
Printed at:	1:10,560

Surveyed N/A
Revised 1960
Edition 1961
Copyright 1961
Levelled N/A

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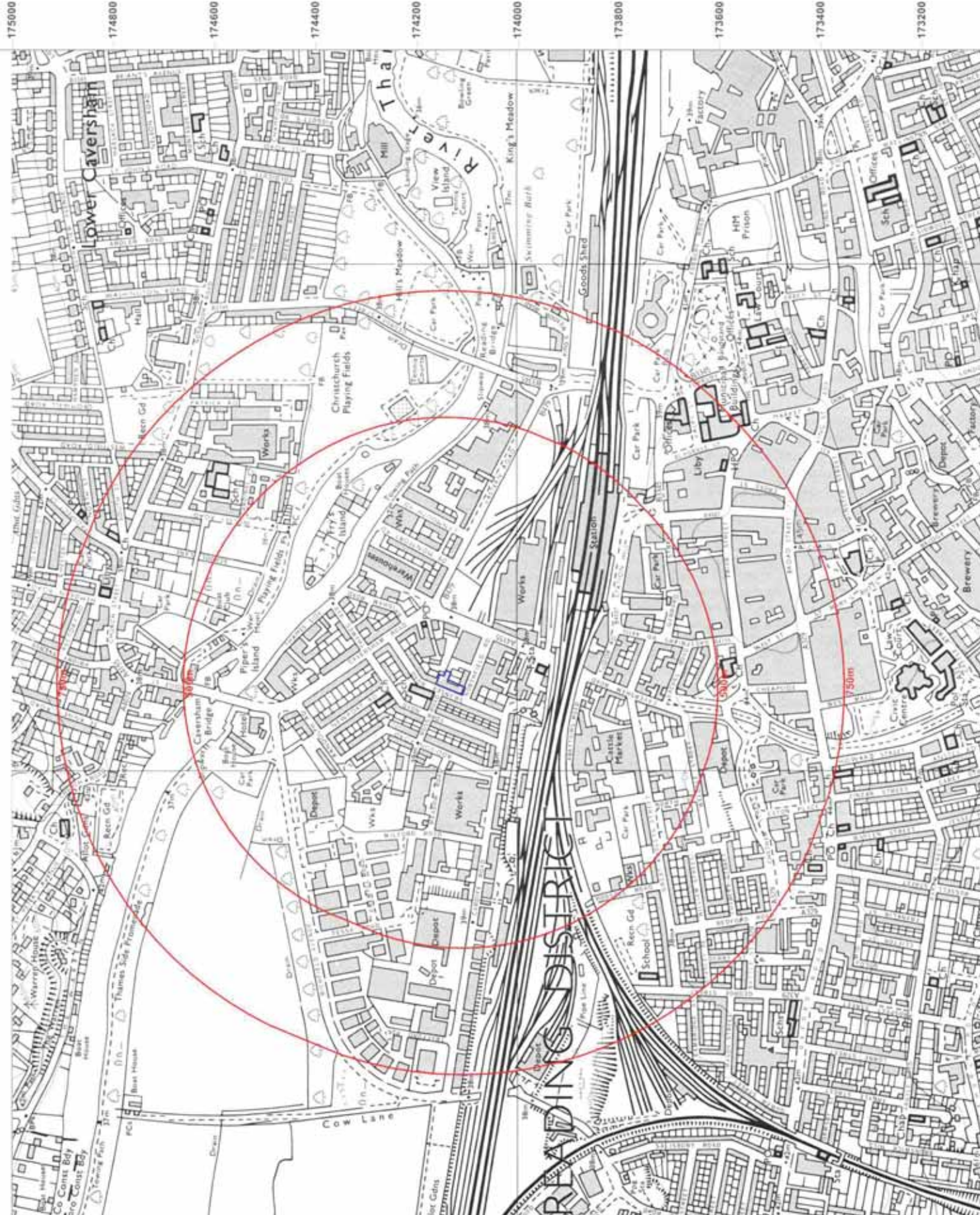
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Printed at: 1:10,000

Surveyed 1968
Revised 1970
Edition N/A
Copyright 1970
Levelled 1969



Map Name:	National Grid
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Scale:	1:10,000
Printed at:	1:10,000

Surveyed 1973
 Revised 1975
 Edition N/A
 Copyright 1976
 Levelled 1969



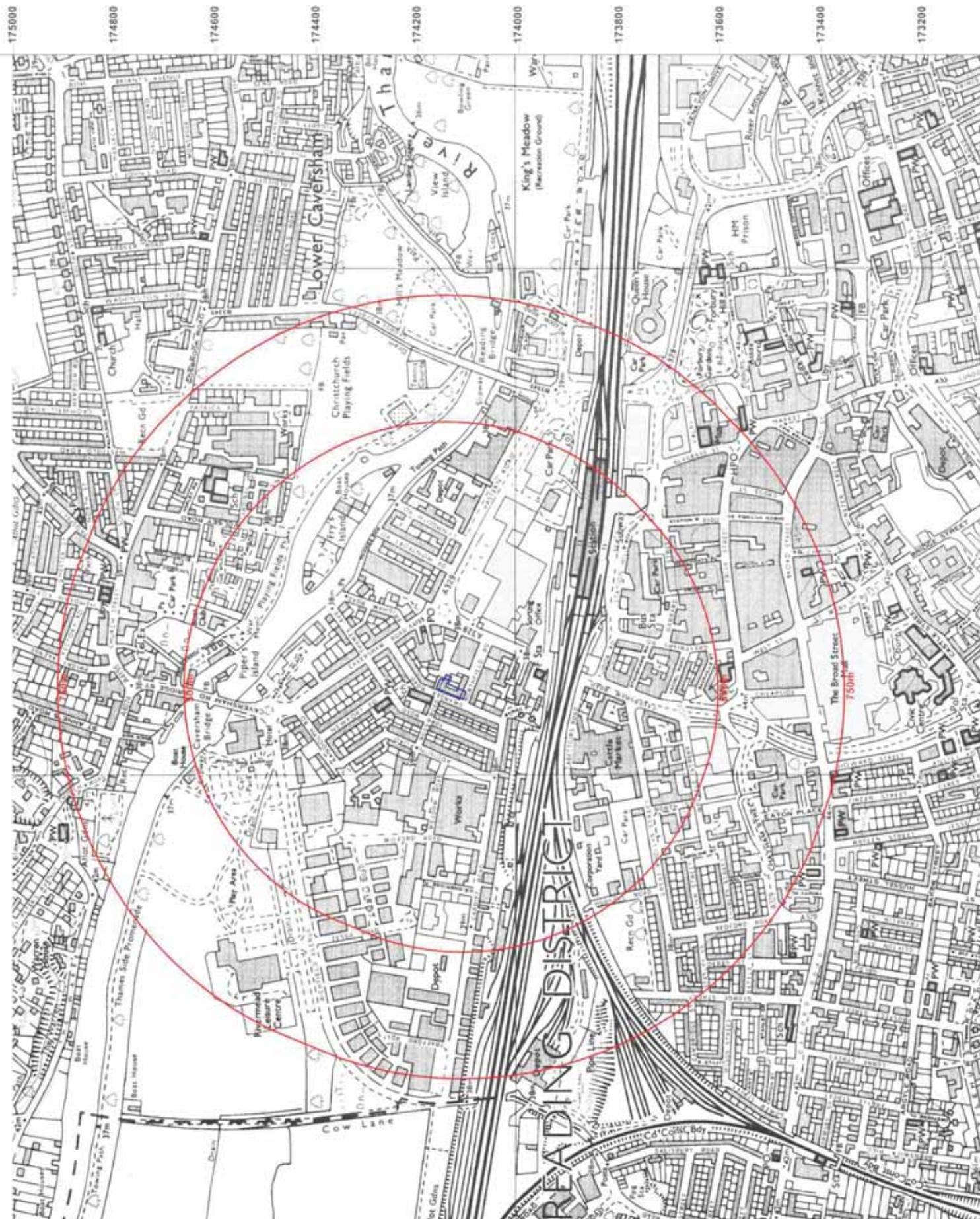
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Surveyed 1990
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A



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Grid Ref: 471174, 17

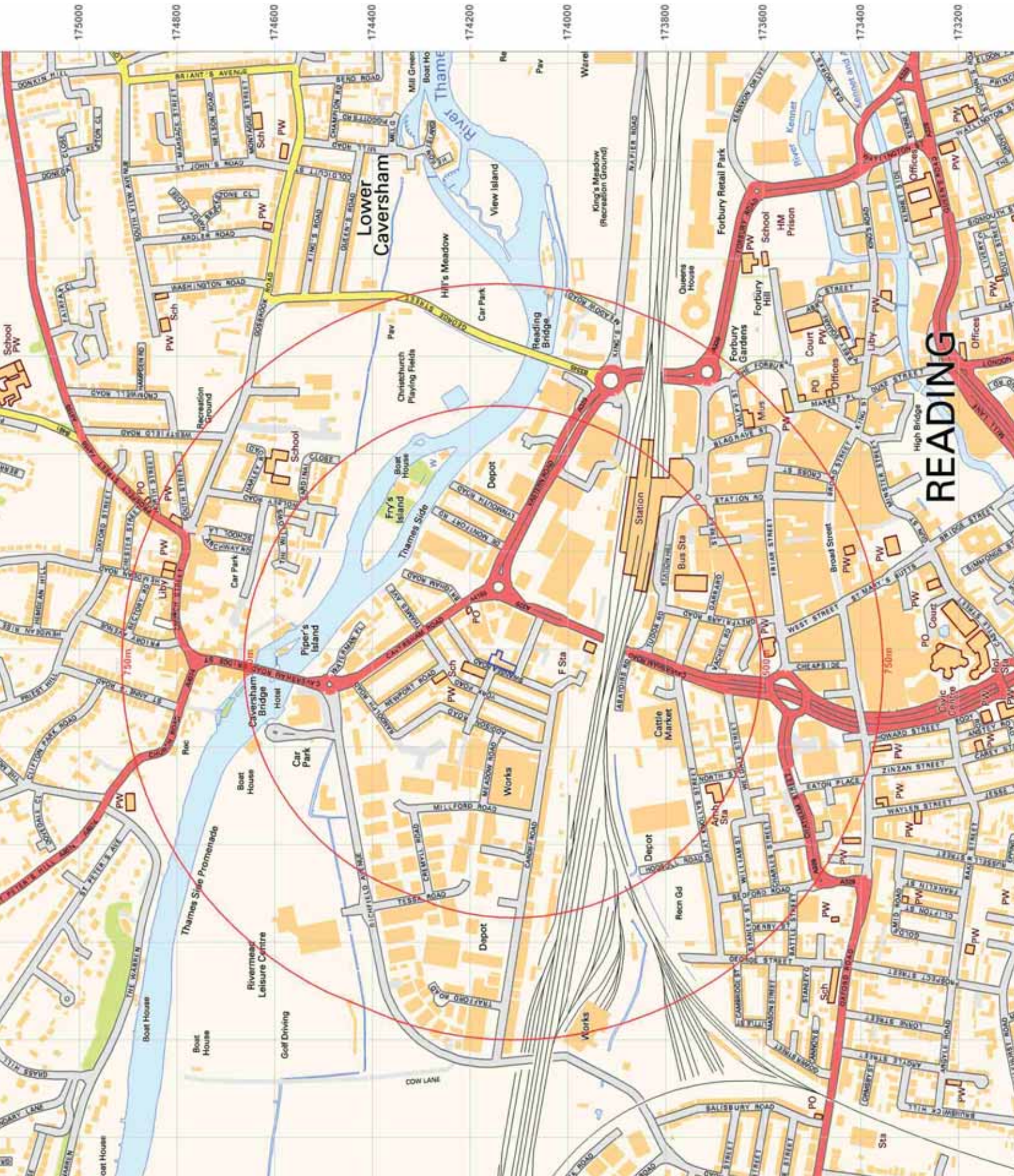
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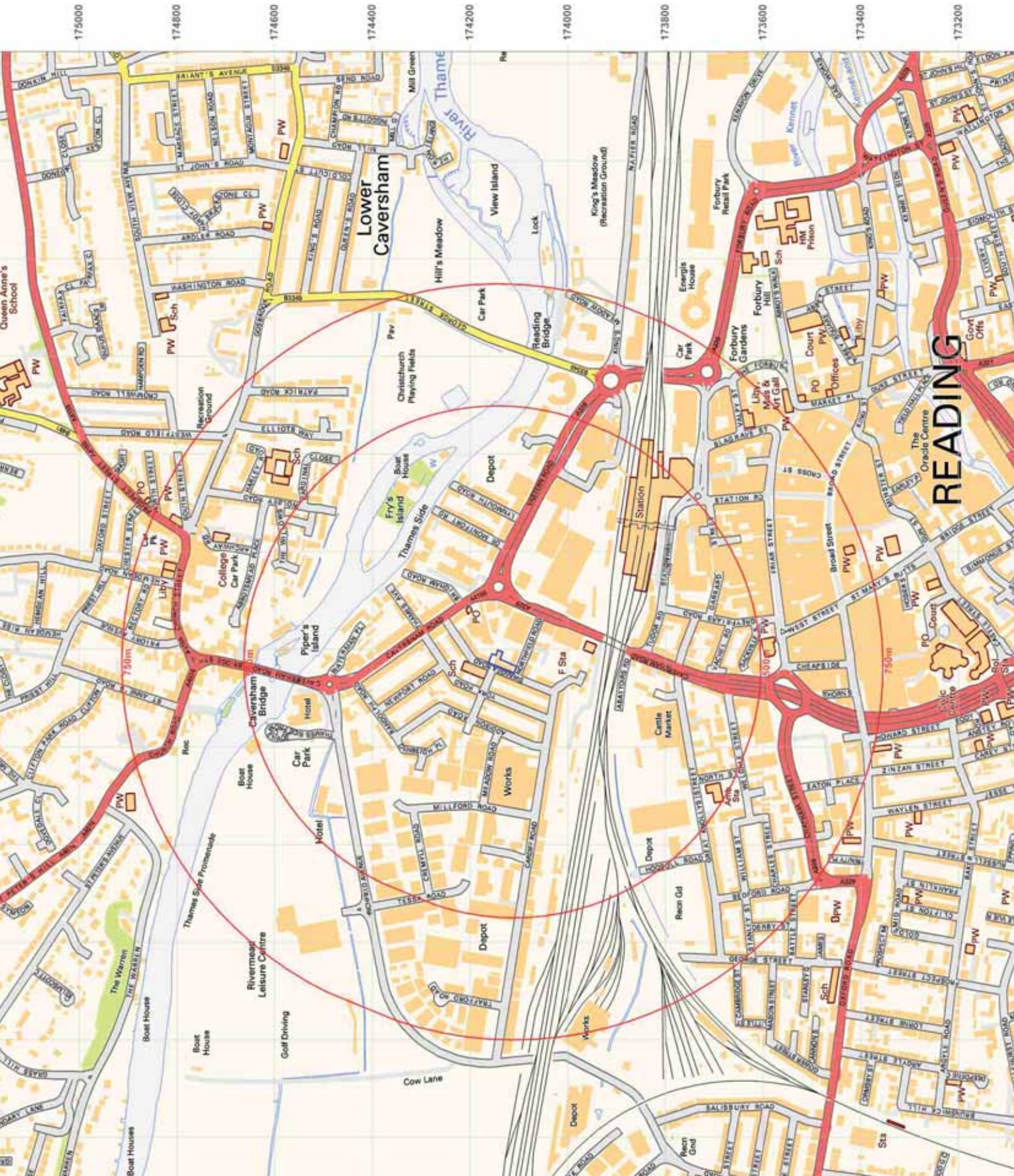
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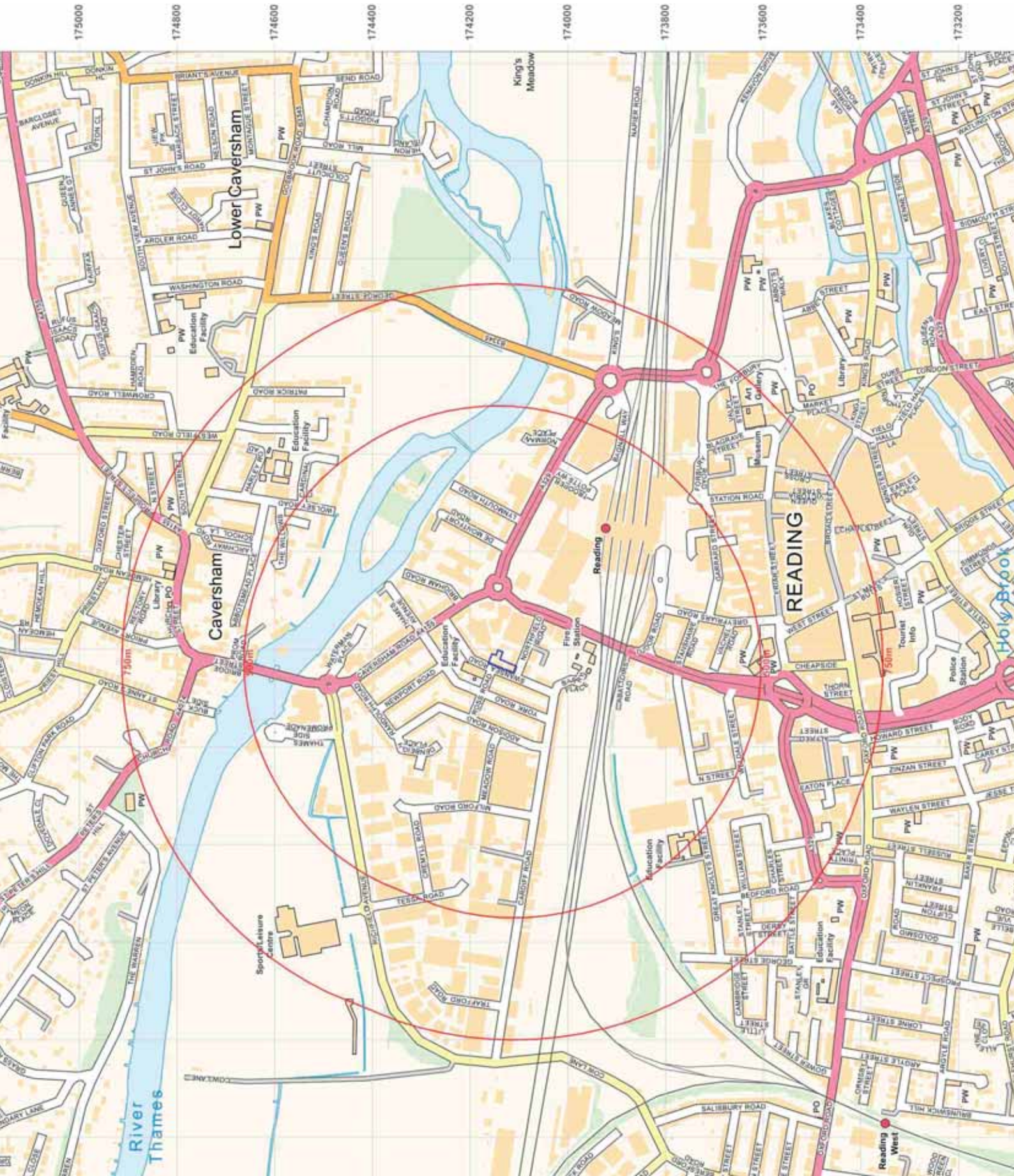
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Client Ref: EMS_57049
Report Ref: EMS-57049
Grid Ref: 471174, 173320

Map Name: National Grid
Map date: 2019
Scale: 1:10,000
Printed at: 1:10,000





emapsite

Report Reference: EMS-570494_766309

Building A2 Office 1052 Cody Technology Park,
Old Ively Road,
Farnborough, GU14 0LX

Your Reference: EMS_570494_766309

Report Date 8 Oct 2019

Report Delivery Email - pdf
Method:

Geo Insight

Address: ,

Dear Sir/ Madam,

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

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
Groundsure Geo Insight

Geo Insight

Address: ,
Date: 8 Oct 2019
Reference: EMS-570494_766309
Client: emapsite



Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 471171,174135
Site Size: 0.1131ha

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Overview of Findings

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

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

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

Section 1: Geology 1:10,000 Scale

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

Section 2: Geology 1:50,000 Scale

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

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

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

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

Yes

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

No

Section 3: Radon

3. Radon

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

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

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	2	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	1

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	1	0	3	0	4
5.4 Non-Coal Mining*	0	0	0	2	3
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	7

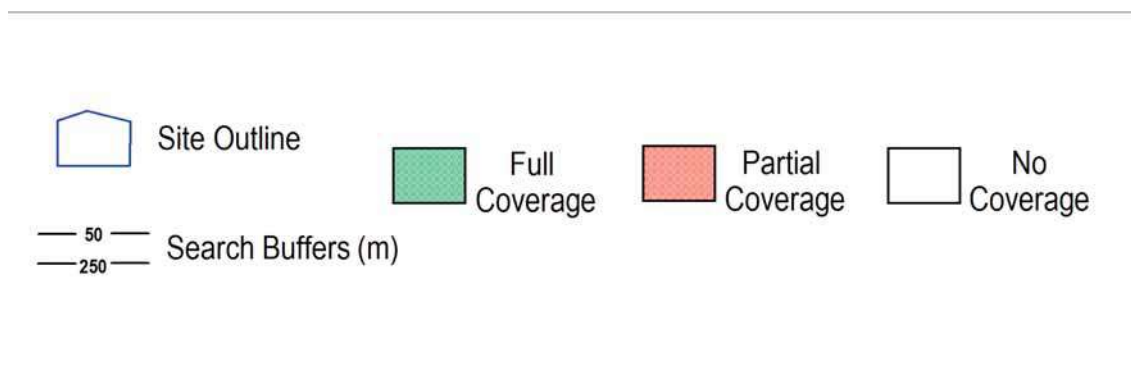
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Very Low				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Negligible				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	2	11		
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	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	94	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	108	Not Searched	
9.5 Railway Projects	0	0	0	1	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	838.0	Some deposits are mapped	Full	Full	No coverage
3	1149.0	Some deposits are mapped	Full	Full	No coverage
4	1440.0	Some deposits are mapped	Full	Full	No coverage

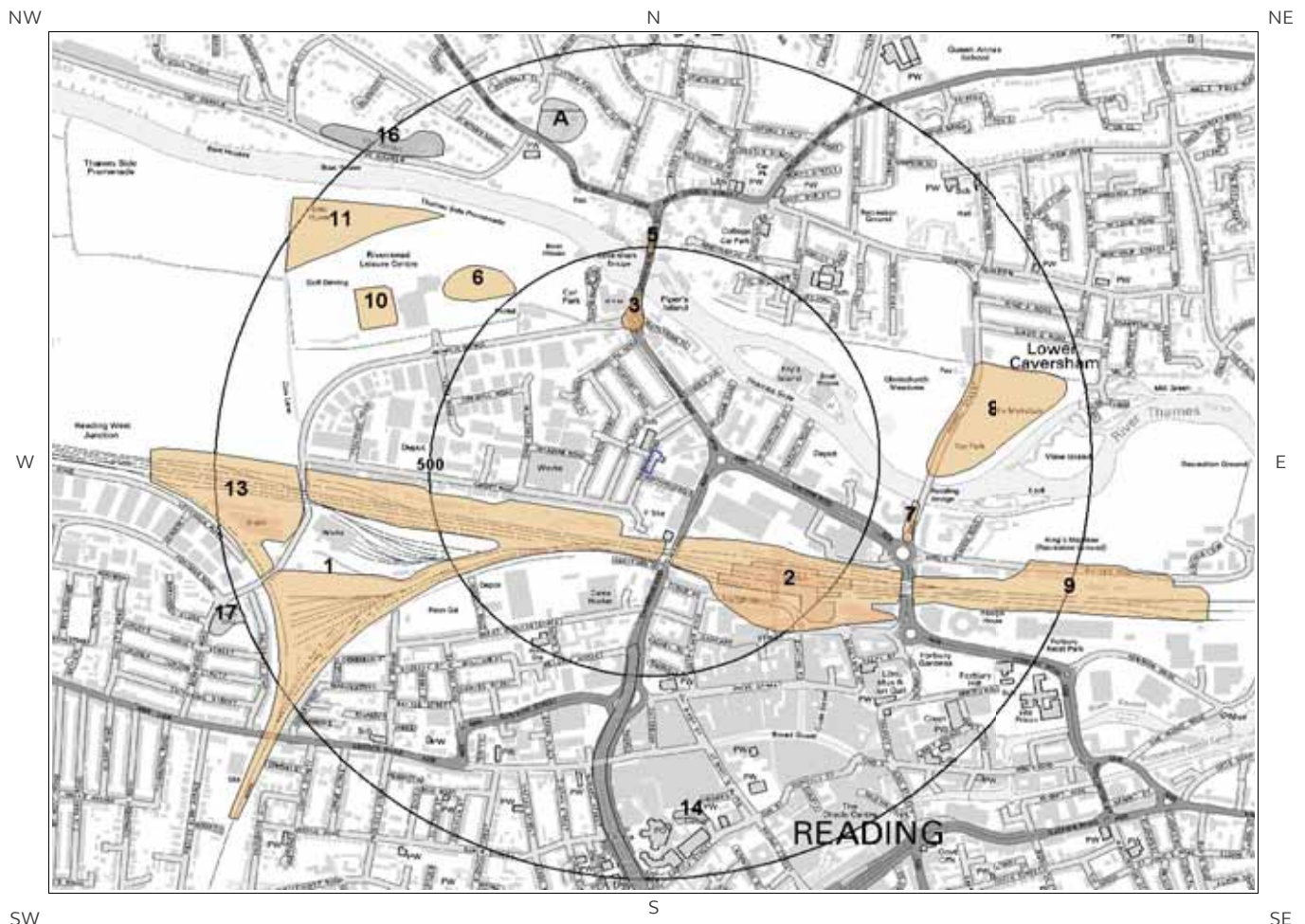
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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

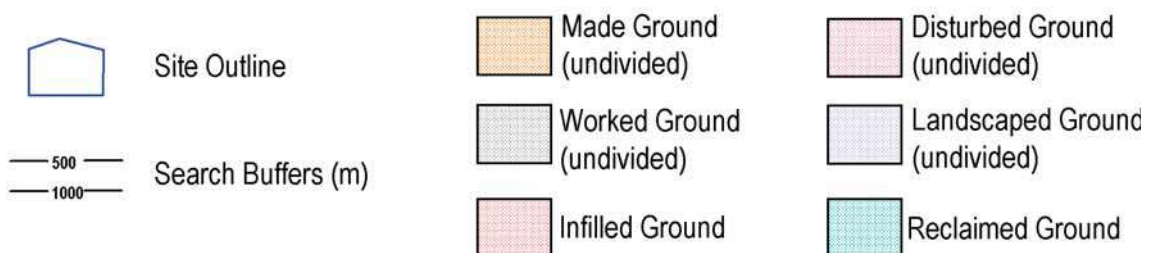
1 Geology (1:10,000 scale).

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



Artificial Ground Legend

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1. Geology 1:10,000 scale

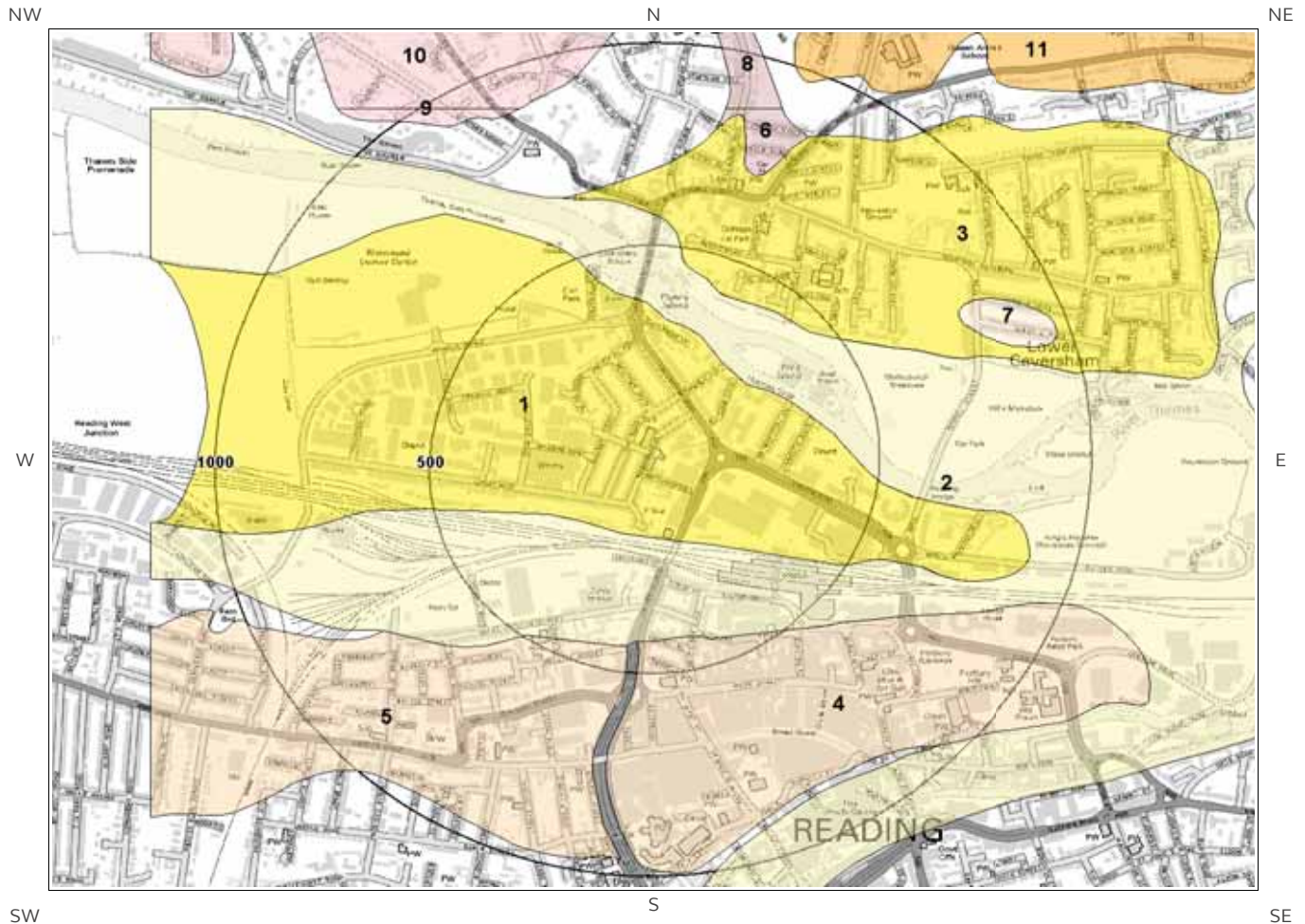
1.1 Artificial Ground

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

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

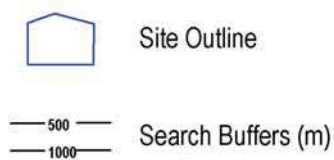
ID	Distance	Direction	LEX Code	Description	Rock Description
1	129.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	172.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	298.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	421.0	S	WGR-VOID	Worked Ground (Undivided)	Void
5	483.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-XCZ	Langley Silt Member - Clay And Silt	Clay And Silt
2	161.0	S	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	410.0	N	LASI-XCZ	Langley Silt Member - Clay And Silt	Clay And Silt
4	415.0	S	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel
5	435.0	S	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel

1.2.2 Landslip

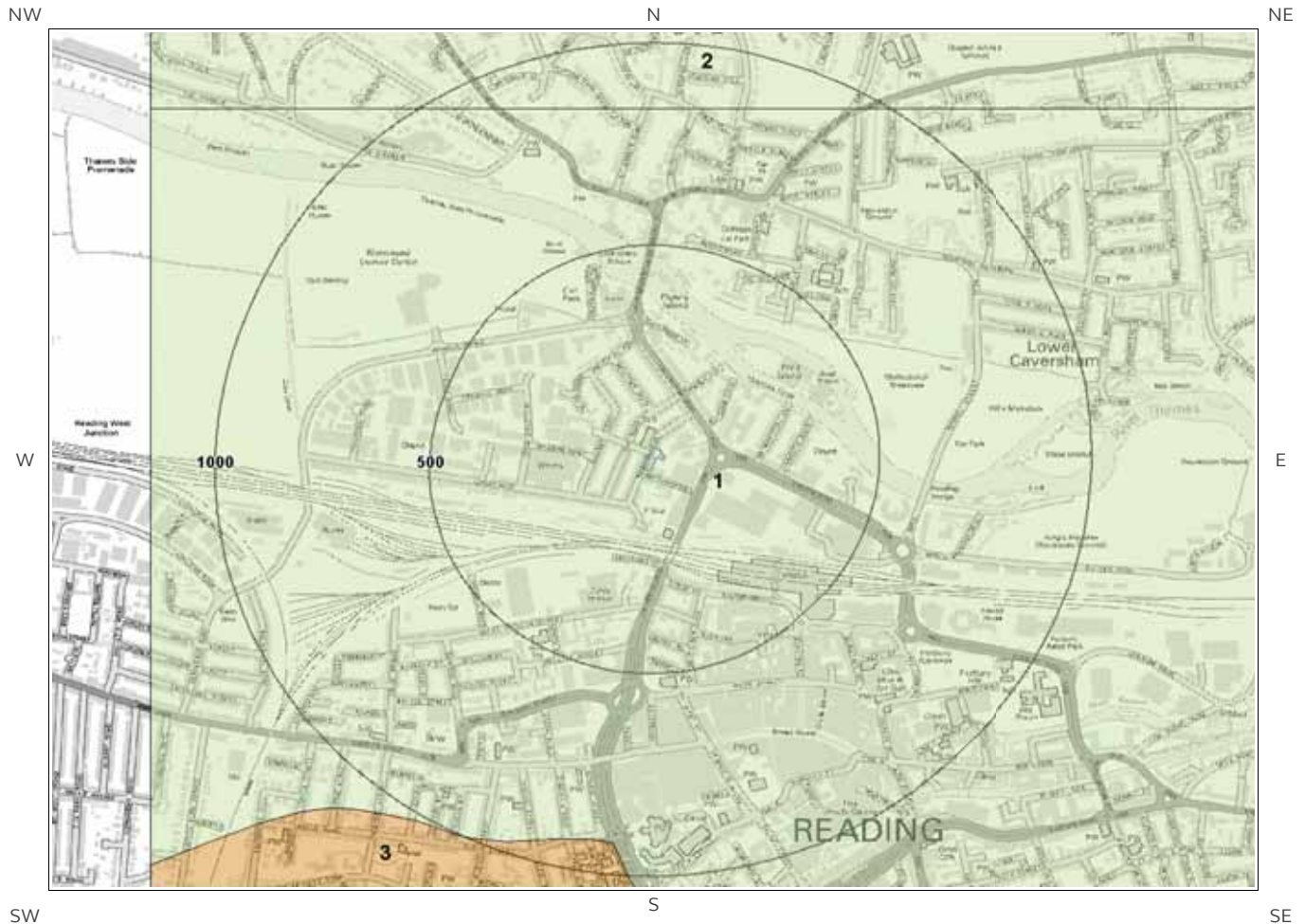
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

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

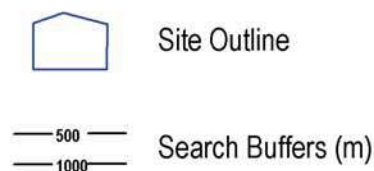
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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



Bedrock and linear features Legend

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1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LSNCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age

1.3.2 Linear features

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

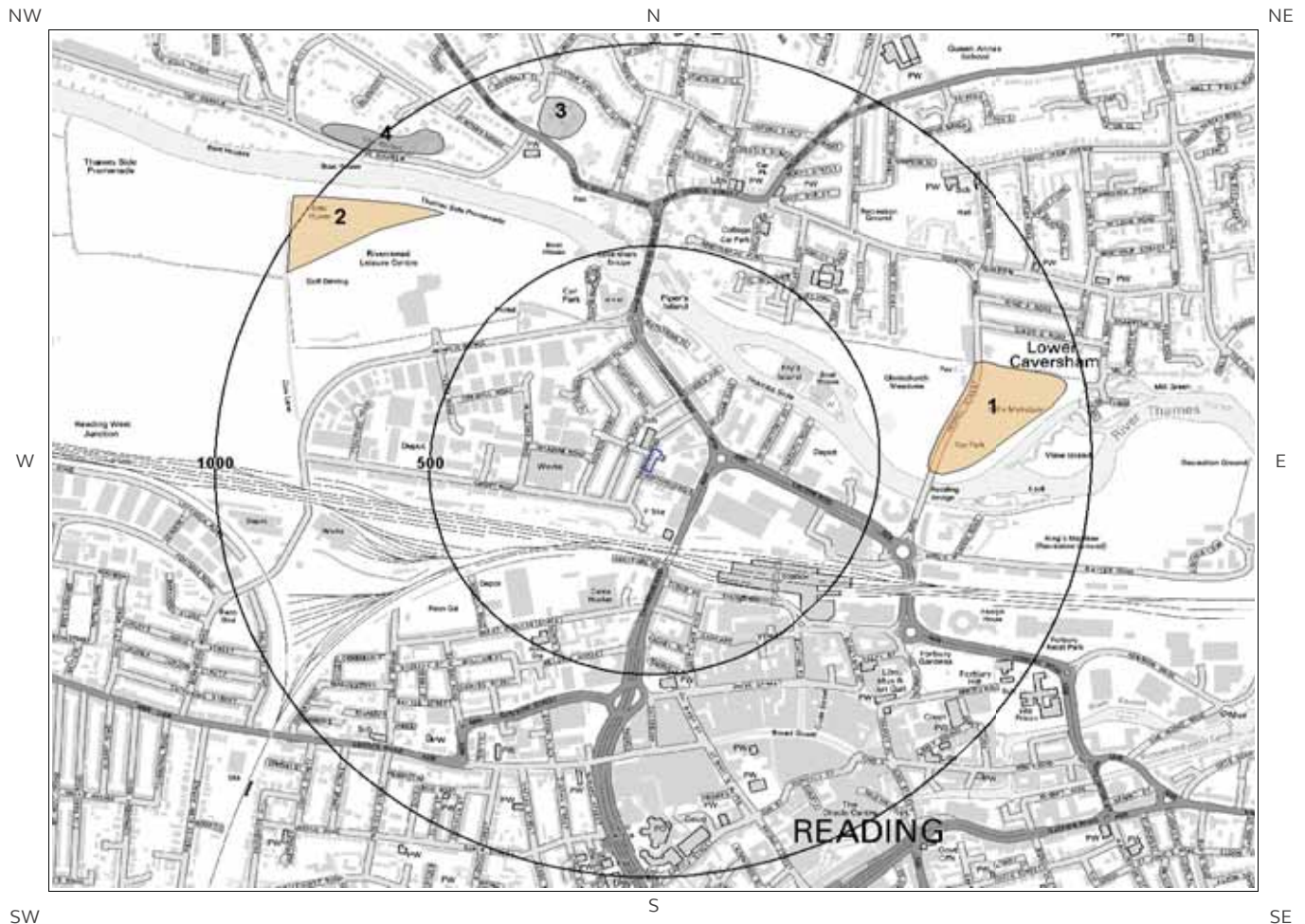
Database searched and no data found at this scale.

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

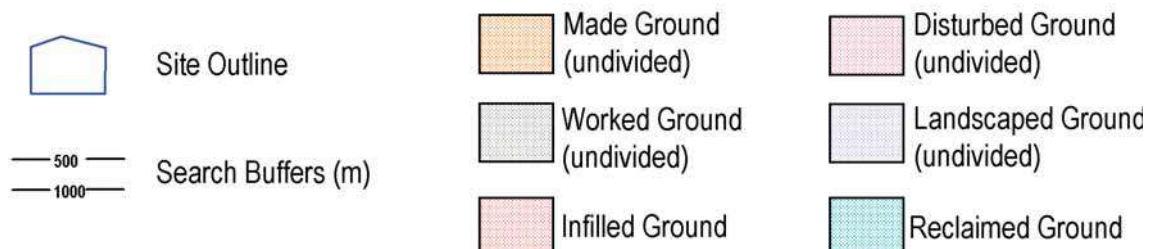
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 268

2.1.1 Artificial/ Made Ground

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

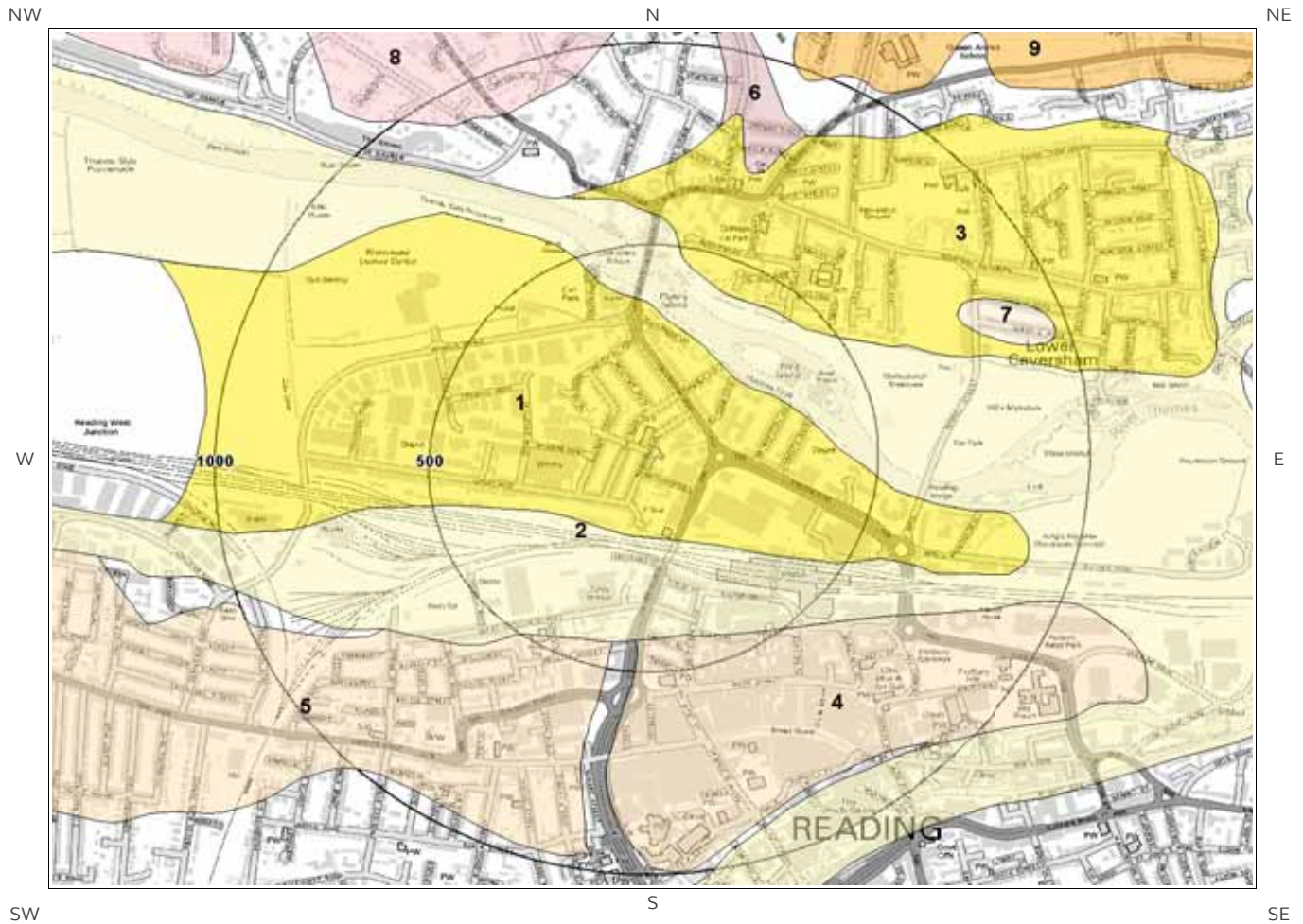
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

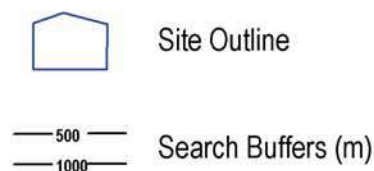
Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

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



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2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
2	165.0	S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	413.0	N	LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
4	415.0	S	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL
5	432.0	S	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

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

2.2.3 Landslip

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

Database searched and no data found.

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

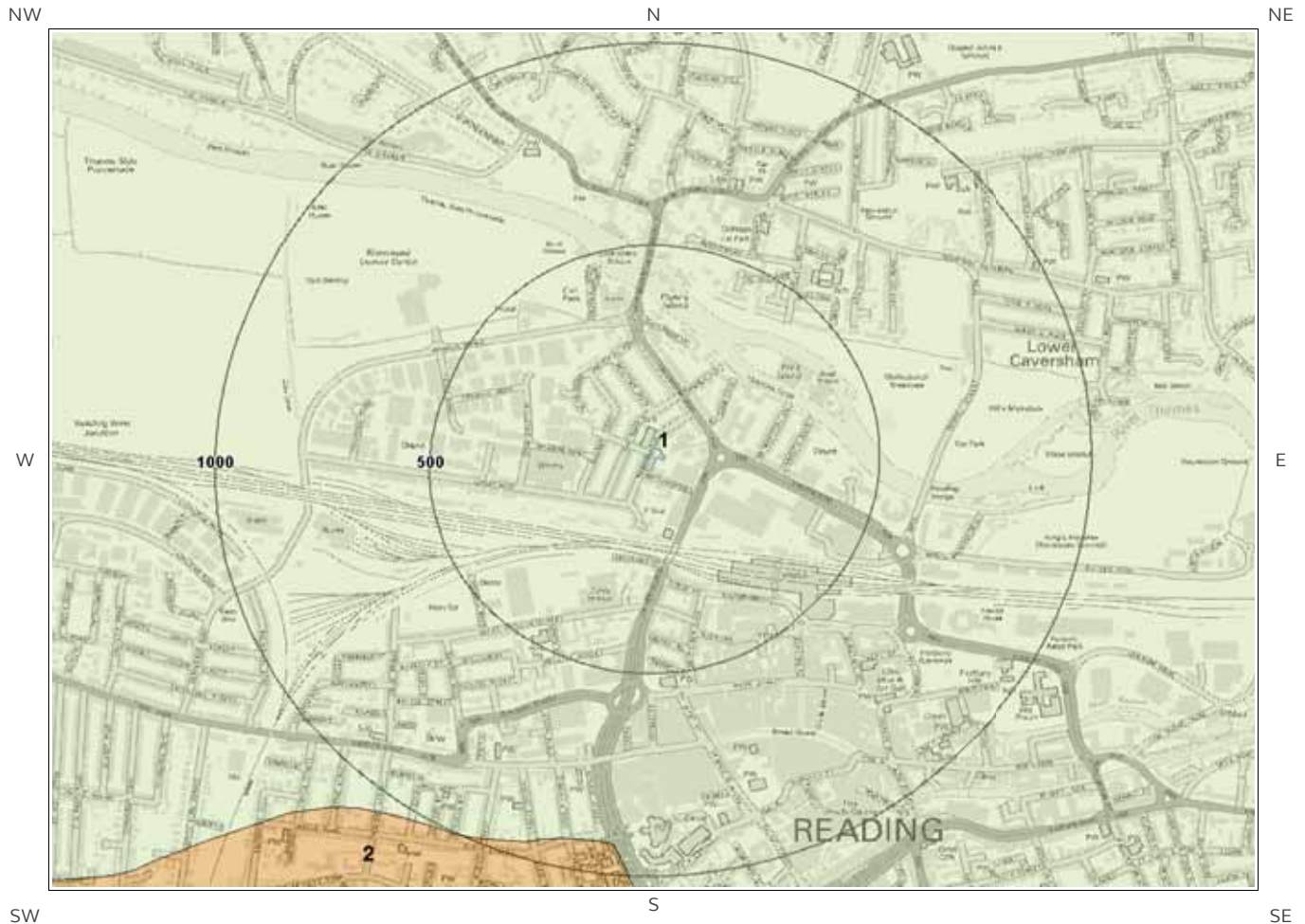
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

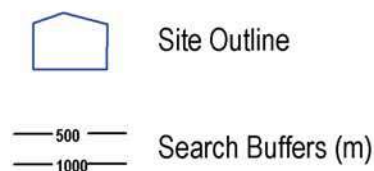
Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

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



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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: 268

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	SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CONIACIAN

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	Fracture	Very High	Very High

2.3.3 Linear features

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

Database searched and no data found.

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

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

3 Radon Data

3.1 Radon Affected Areas

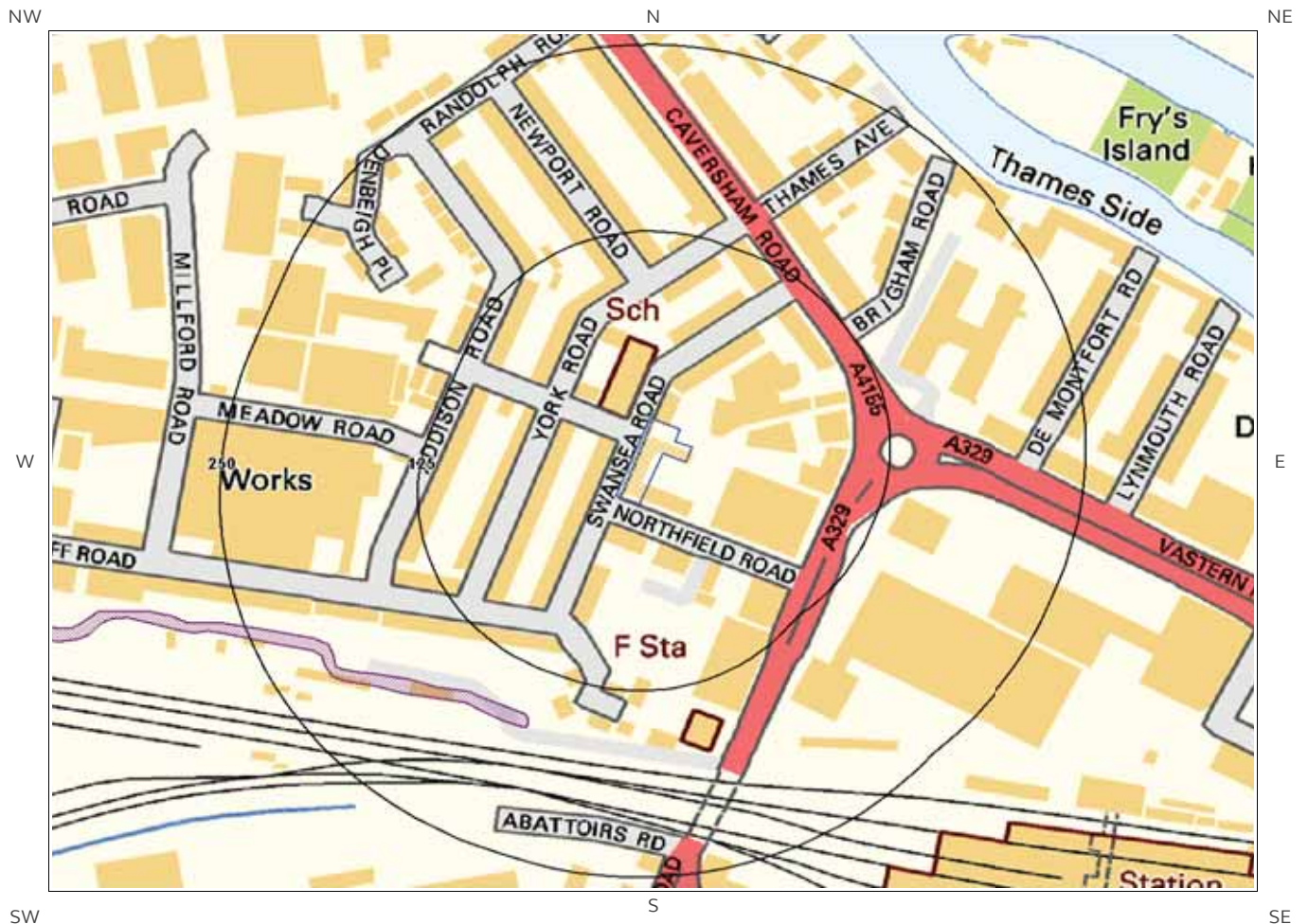
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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

3.2 Radon Protection

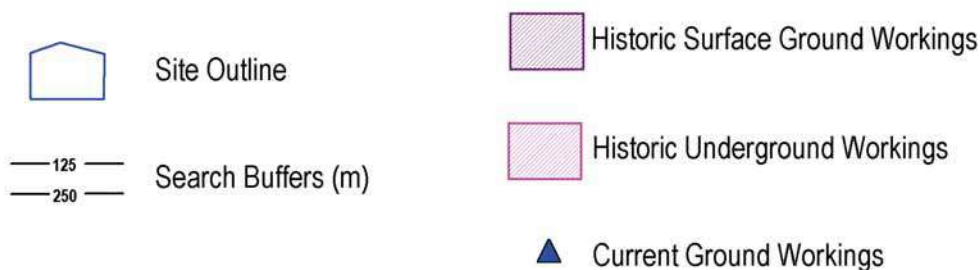
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	157.0	S	470973 173994	Unspecified Ground Workings	1938
2A	157.0	S	470973 173994	Unspecified Ground Workings	1913

4.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

4.3 Current Ground Workings

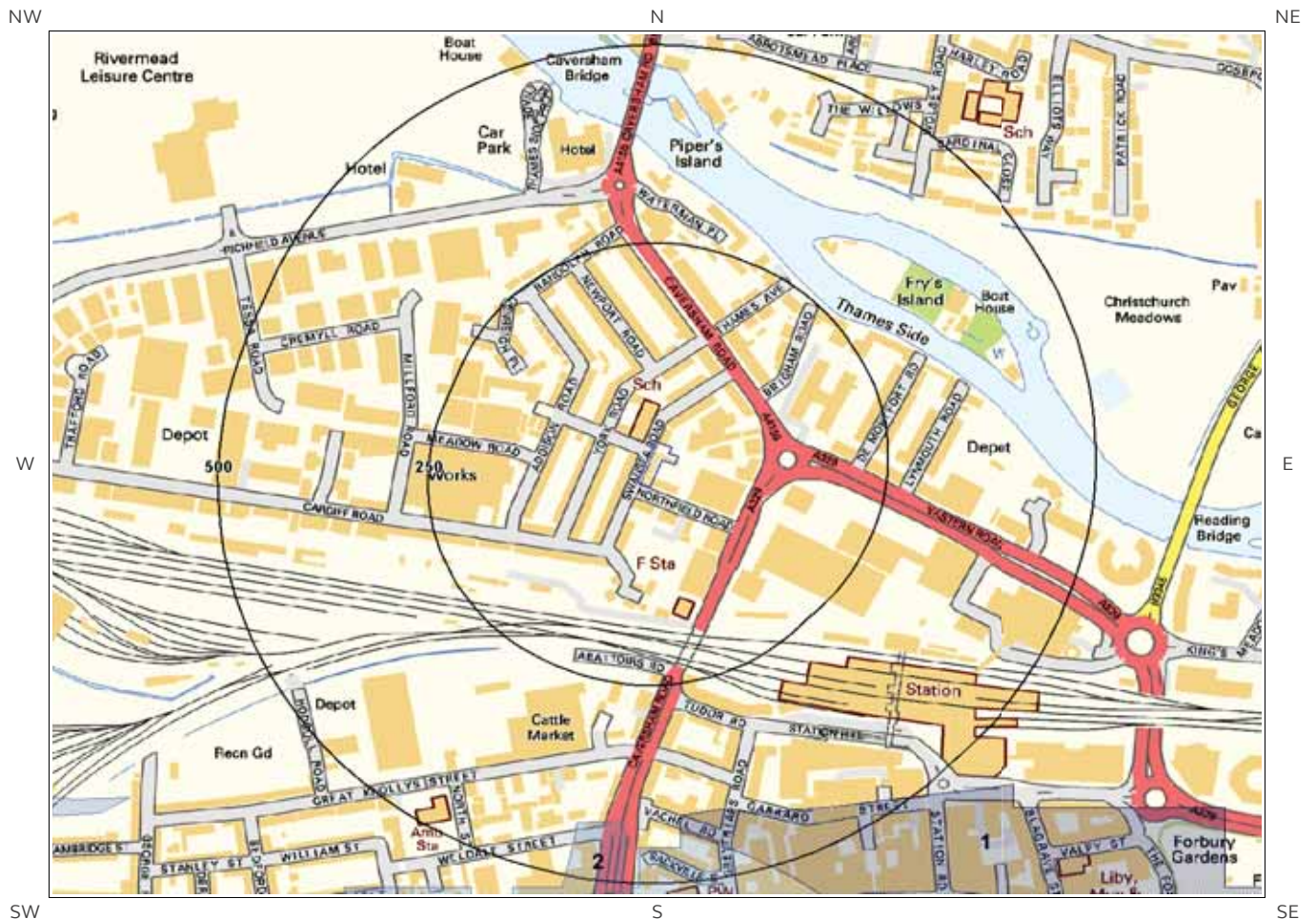
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

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

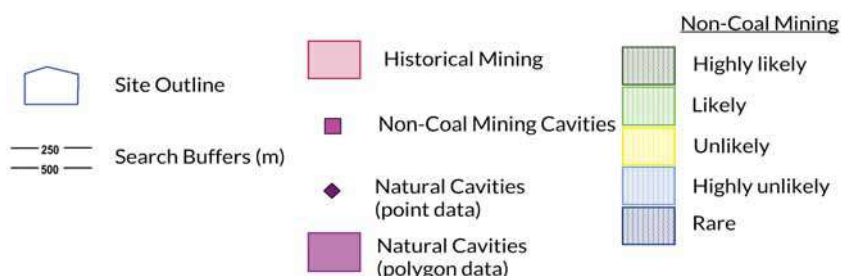
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	844.0	N	470960 174980	Chalk	St Peter's Hill Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

Database searched and no data found.

5.2 Coal Mining

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

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

Database searched and no data found.

5.3 Johnson Poole and Bloomer

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

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

The following information provided by JPB is not represented on mapping: Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

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? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	415.0	S	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
2	422.0	S	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Not shown	651.0	N	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	838.0	N	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	918.0	W	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

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? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
Not shown	707.0	S	471100 173400	Taplow Gravel	Chalk Group	Solution Pipe x 3
Not shown	780.0	SE	471500 173400	Taplow Gravel	Chalk Group	Solution Pipe x 3
Not shown	803.0	SE	471550 173400	Taplow Gravel	Chalk Group	Solution Pipe x 5
Not shown	872.0	SE	471500 173300	Taplow Gravel	Chalk Group	Solution Pipe x 1
Not shown	917.0	S	471010 173200	-	Chalk Group, Lambeth Group	Solution Widened Joint or Fissure x 3
Not shown	935.0	S	471400 173200	Taplow Gravel	Chalk Group	Solution Pipe x 2

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
Not shown	984.0	N	471550 175070	Lynch Hill Gravel	Chalk Group	Sinkhole x 1

5.7 Brine Extraction

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

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Cornwall and Devon Metalliferous Mining

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

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

Database searched and no data found.

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.

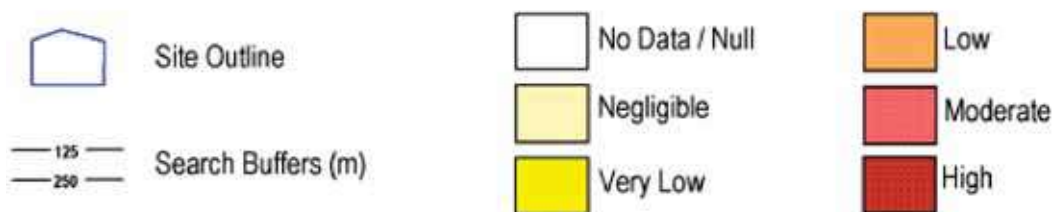
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

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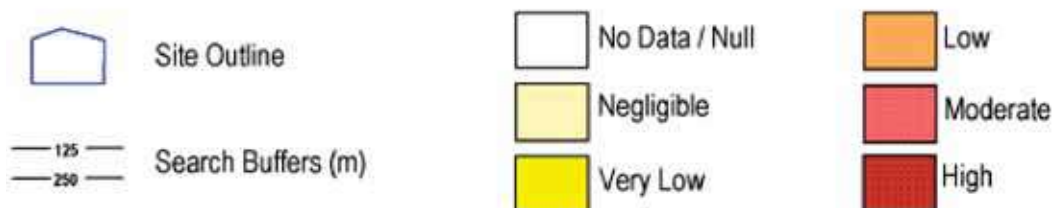


6.2 Landslides map



Landslides Legend

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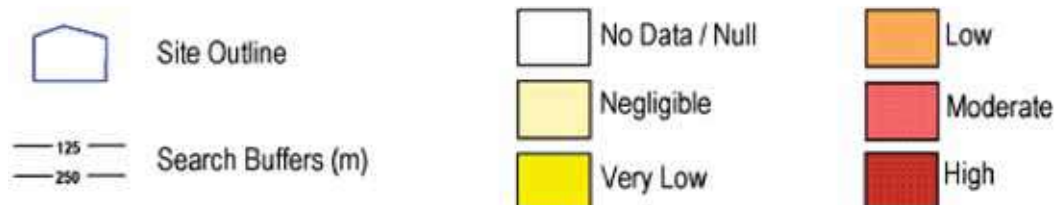


6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution
Soluble Rocks Legend

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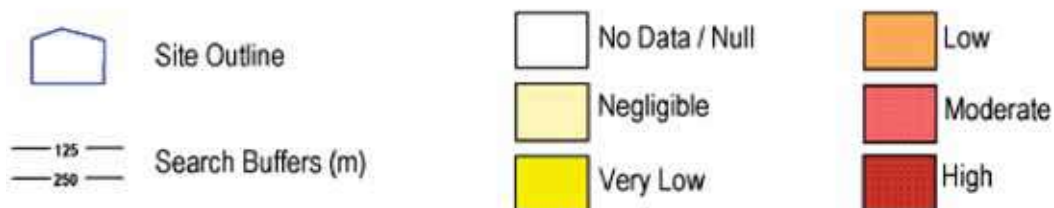


6.4 Compressible Deposits map



Compressible Deposits Legend

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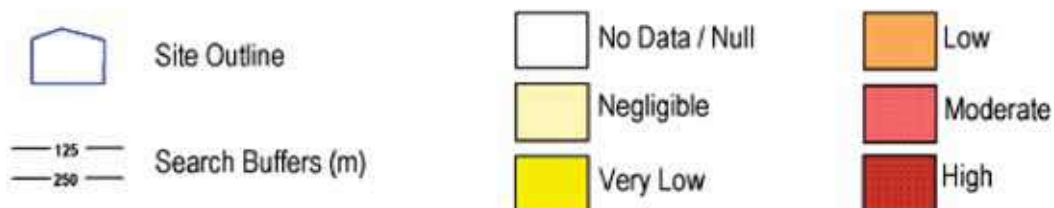


6.5 Collapsible Deposits map



Collapsible Deposits Legend

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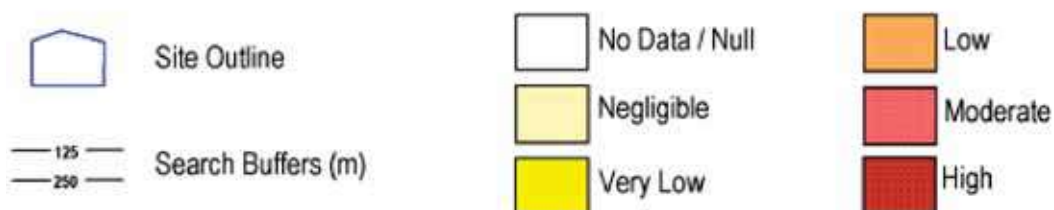


6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

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

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

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

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

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.

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	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

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

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:

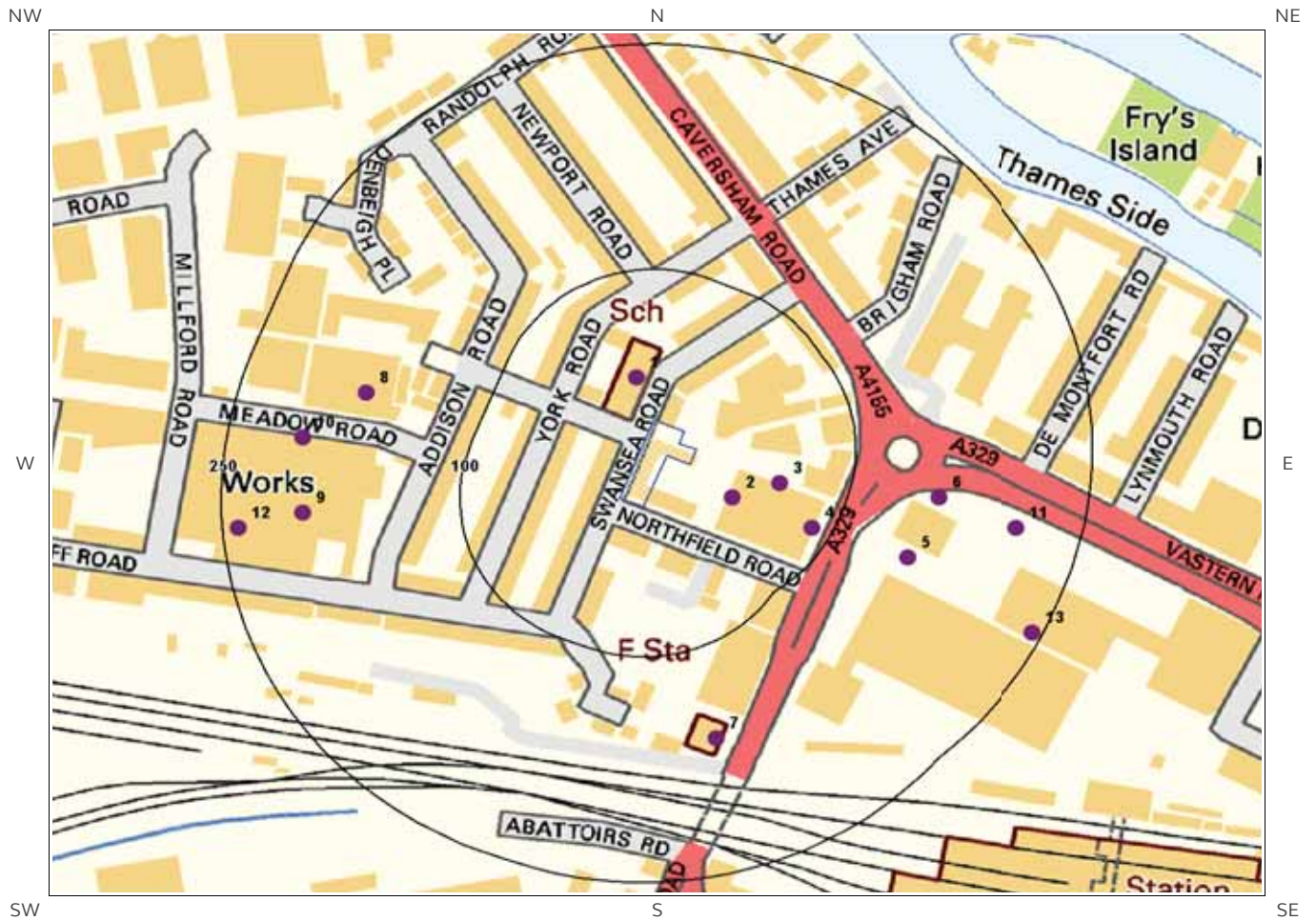
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

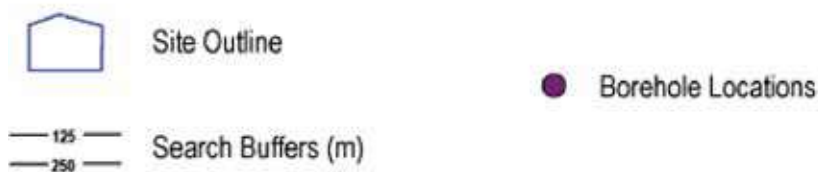
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due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

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

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

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

13

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	30.0	N	471160 174190	SU77SW49	7.31	SCHOOL BOARD SWANSEA ROAD
2	35.0	SE	471220 174110	SU77SW661	22.86	81 CAVERSHAM ROAD READING
3	57.0	E	471250 174120	SU77SW623	19.4	CAVERSHAM ROAD READING A
4	87.0	SE	471270 174090	SU77SW662	3.96	81 CAVERSHAM ROAD READING
5	150.0	SE	471330 174070	SU77SW893	2.6	VASTERN ROAD READING TP 2
6	156.0	E	471350 174110	SU77SW892	2.6	VASTERN ROAD READING TP 1
7	161.0	S	471210 173950	SU77SW44	5.79	CAVERSHAM ROAD READING
8	174.0	W	470990 174180	SU77SW48	45.72	MEADOW ROAD WORKS CAVERSHAM
9	199.0	W	470950 174100	SU77SW190	11.43	14 CROSS ST READING
10	203.0	W	470950 174150	SU77SW649	18.28	MEADOW ROAD READING
11	209.0	E	471400 174090	SU77SW897	2.3	VASTERN ROAD READING TP 6
12	240.0	W	470910 174090	SU77SW660	15.24	ADDISON ROAD READING
13	244.0	SE	471410 174020	SU77SW894	2.5	VASTERN ROAD READING TP 3

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

#1: scans.bgs.ac.uk/sobi_scans/boreholes/428201
#2: scans.bgs.ac.uk/sobi_scans/boreholes/428813
#3: scans.bgs.ac.uk/sobi_scans/boreholes/428775
#4: scans.bgs.ac.uk/sobi_scans/boreholes/428814
#5: scans.bgs.ac.uk/sobi_scans/boreholes/15952059
#6: scans.bgs.ac.uk/sobi_scans/boreholes/15952058
#7: scans.bgs.ac.uk/sobi_scans/boreholes/428196
#8: scans.bgs.ac.uk/sobi_scans/boreholes/428200
#9: scans.bgs.ac.uk/sobi_scans/boreholes/428342
#10: scans.bgs.ac.uk/sobi_scans/boreholes/428801
#11: scans.bgs.ac.uk/sobi_scans/boreholes/15952063
#12: scans.bgs.ac.uk/sobi_scans/boreholes/428812
#13: scans.bgs.ac.uk/sobi_scans/boreholes/15952060

8 Estimated Background Soil Chemistry

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

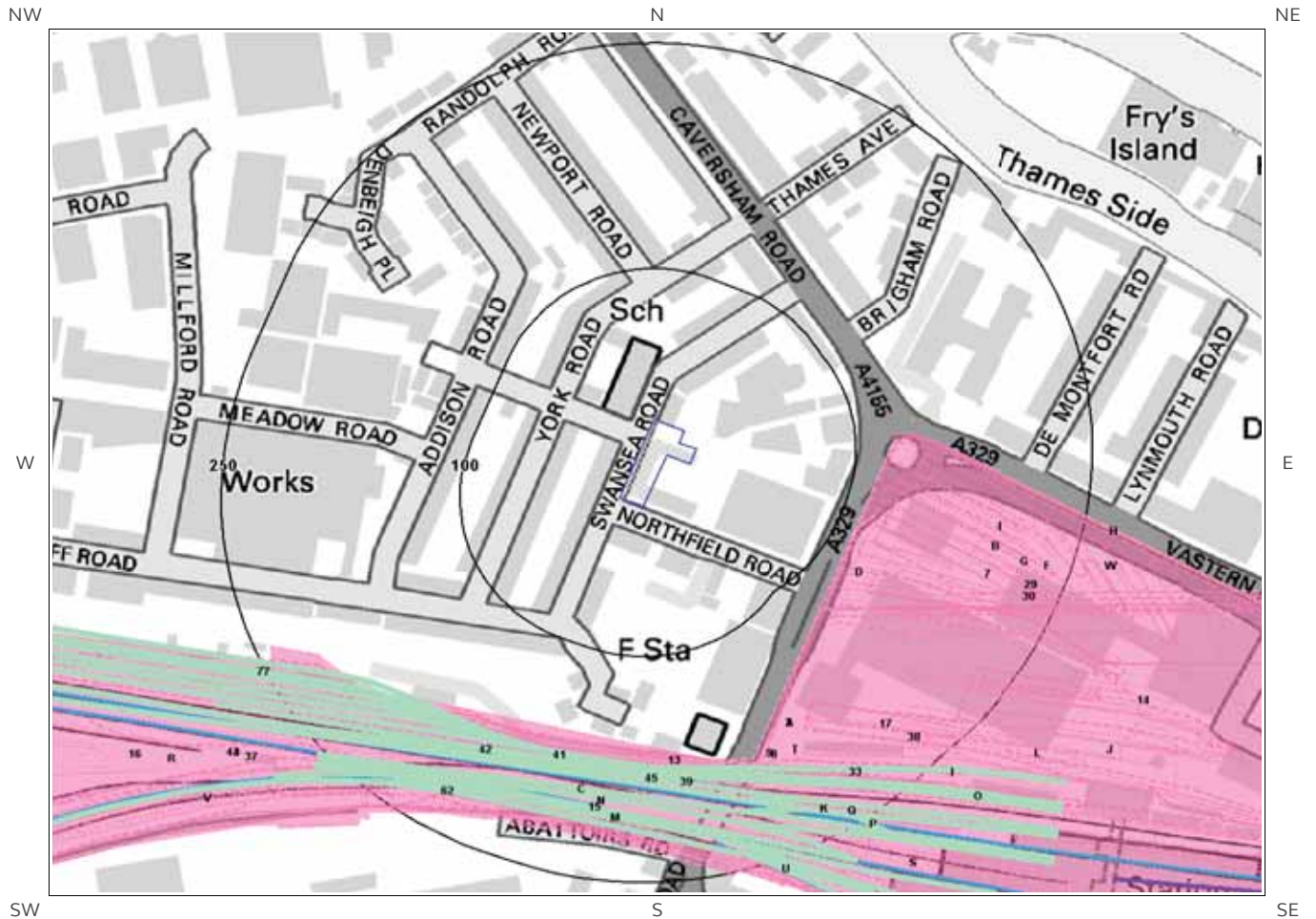
1

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	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

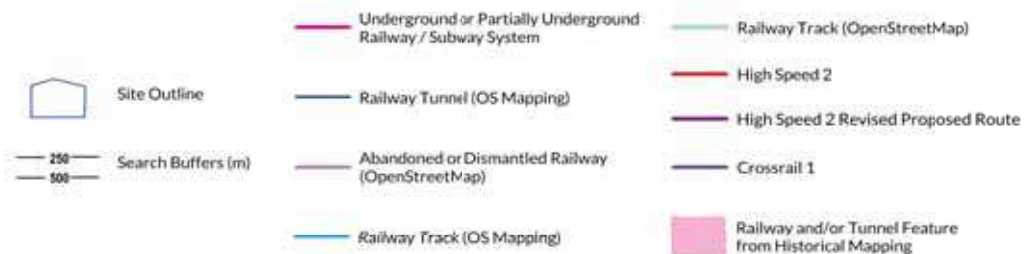
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

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

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

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

Database searched and no data found.

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

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

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

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

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

ID	Distance (m)	Direction	NGR	Details	Date
1A	112	SE	470437 173767	Railway Sidings	1971
2A	112	SE	470437 173767	Railway Sidings	1977
3	112	SE	471525 173860	Railway Sidings	1962
4B	113	E	471439 174092	Railway Sidings	1897
17	114	E	n/a	Railway	1910
5B	115	E	471417 174093	Railway Sidings	1938

ID	Distance (m)	Direction	NGR	Details	Date
6B	115	E	471417 174093	Railway Sidings	1910
18D	118	SE	471356 174070	Railway Sidings	1936
19D	118	SE	471356 174070	Railway Sidings	1932
20D	118	SE	471356 174070	Railway Sidings	1913
21B	119	SE	471399 174087	Railway Sidings	1899
22E	119	E	471386 174092	Railway Sidings	1913
23E	119	E	471386 174092	Railway Sidings	1936
24E	119	E	471386 174092	Railway Sidings	1932
25G	119	E	471394 174072	Railway Sidings	1956
26F	121	E	471461 174073	Railway Sidings	1956
27F	121	E	471461 174073	Railway Sidings	1959
28G	125	E	471400 174050	Railway Sidings	1971
29	126	E	471403 174050	Railway Sidings	1982
7	127	SE	471380 174072	Railway Sidings	1900
8	127	SE	471693 173770	Railway Sidings	1938
9	127	SE	471677 173761	Railway Sidings	1913
10T	129	SE	471639 173719	Railway Sidings	1898
30	129	E	471400 174050	Railway Sidings	1984
31I	138	SE	n/a	Railway	1879
32	138	SE	471419 174026	Railway Sidings	1982
33	140	SE	n/a	Railway	1932
34H	155	E	471454 174092	Railway Sidings	1932
35H	155	E	471454 174092	Railway Sidings	1913
36H	155	E	471454 174092	Railway Sidings	1936
11C	161	S	471493 173844	Railway Sidings	1994
12C	161	S	471493 173844	Railway Sidings	1989
13	161	S	471714 173783	Railway Sidings	1938
14	162	S	471797 173791	Railway Sidings	1933
37	163	S	n/a	Railway	1879
38	164	SE	472117 173727	Railway Sidings	1900

ID	Distance (m)	Direction	NGR	Details	Date
39	170	S	471309 173894	Railway Sidings	1958
40I	170	S	471309 173894	Railway Sidings	1957
41	170	SE	472120 173730	Railway Sidings	1931
42	170	SE	472120 173730	Railway Sidings	1912
43	172	SW	n/a	Railway	1900
44	172	SW	n/a	Railway	1931
45	173	S	471629 173867	Railway Sidings	1879
46J	189	SE	471475 173923	Railway Sidings	1879
47J	189	SE	471475 173923	Railway Sidings	1879
48K	191	S	471249 173897	Railway Sidings	1957
49K	191	S	471249 173897	Railway Sidings	1962
50L	191	SE	471430 173937	Railway Sidings	1979
51L	192	SE	471430 173938	Railway Sidings	1962
52L	192	SE	471430 173938	Railway Sidings	1957
53L	192	SE	471430 173938	Railway Sidings	1969
54M	195	S	471209 173878	Railway Sidings	1996
55M	195	S	471209 173878	Railway Sidings	1994
56N	198	S	471138 173906	Railway Sidings	1879
57N	198	S	471138 173906	Railway Sidings	1879
58O	200	SE	471377 173908	Railway Sidings	1996
59O	200	SE	471377 173908	Railway Sidings	1994
60P	200	S	471293 173884	Railway Sidings	1994
61P	200	S	471293 173884	Railway Sidings	1996
15	201	S	470754 173877	Railway Sidings	1933
62	202	S	470683 173901	Railway Sidings	1900
63O	202	SE	471395 173905	Railway Sidings	1979
64O	202	SE	471395 173905	Railway Sidings	1993
65O	202	SE	471395 173905	Railway Sidings	1988
66O	203	SE	471394 173905	Railway Sidings	1986
67K	203	S	471294 173901	Railway Sidings	1969

ID	Distance (m)	Direction	NGR	Details	Date
68Q	203	S	471294 173900	Railway Sidings	1979
69Q	203	S	471294 173900	Railway Sidings	1993
70Q	203	S	471294 173900	Railway Sidings	1988
71K	203	S	471293 173898	Railway Sidings	1986
72R	206	SW	470892 173935	Railway Sidings	1879
73R	206	SW	470892 173935	Railway Sidings	1879
74P	208	S	471302 173880	Railway Sidings	1979
75P	208	S	471302 173880	Railway Sidings	1988
76P	208	S	471302 173880	Railway Sidings	1993
77	210	SW	470842 173991	Railway Sidings	1959
78S	220	S	471439 173850	Railway Sidings	1879
79S	220	S	471439 173850	Railway Sidings	1879
80T	225	SE	n/a	Railway	1898
81U	236	S	471291 173844	Railway Sidings	1979
82U	236	S	471291 173844	Railway Sidings	1993
83U	236	S	471291 173844	Railway Sidings	1988
84V	240	SW	470830 173898	Railway Sidings	1959
16	241	SW	470607 173955	Railway Sidings	1933
85V	241	SW	470824 173899	Railway Sidings	1986
86V	241	SW	470824 173899	Railway Sidings	1993
87V	241	SW	470824 173898	Railway Sidings	1971
88U	244	S	471292 173844	Railway Sidings	1986
89U	244	S	471292 173844	Railway Sidings	1969
90U	244	S	471292 173844	Railway Sidings	1957
91U	244	S	471292 173844	Railway Sidings	1962
92W	248	E	471459 174063	Railway Sidings	1932
93W	248	E	471459 174063	Railway Sidings	1936
94W	248	E	471459 174063	Railway Sidings	1913

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

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

Distance (m)	Direction	Name	Type
171	S	Not given	rail
171	S	Not given	rail
174	S	Not given	rail
174	S	Great Western Main Line	rail
174	S	Great Western Main Line	rail
174	S	Not given	rail
174	S	Not given	rail
174	S	Great Western Main Line	rail
174	S	Great Western Main Line	rail
174	S	Not given	rail
175	SW	Not given	rail
175	SW	Not given	rail
178	SW	Not given	rail
178	S	Great Western Main Line	rail
178	SW	Not given	rail
178	S	Great Western Main Line	rail
178	S	Great Western Main Line	rail
178	SW	Not given	rail
178	S	Great Western Main Line	rail
178	SW	Not given	rail
178	S	Great Western Main Line	rail
178	S	Great Western Main Line	rail
182	S	Not given	rail
182	S	Reading to Plymouth Line	rail
182	S	Not given	rail
182	S	Reading to Plymouth Line	rail
185	S	Not given	rail
185	S	Not given	rail
185	S	Not given	Multi Track
185	S	Not given	Multi Track
185	S	Not given	rail

Distance (m)	Direction	Name	Type
185	S	Not given	rail
186	SW	Not given	rail
186	SW	Not given	rail
191	S	Great Western Main Line	rail
191	S	Great Western Main Line	rail
192	S	Not given	rail
192	S	Not given	rail
192	S	Not given	rail
192	S	Not given	rail
195	S	Not given	rail
195	S	Not given	rail
195	S	Not given	rail
195	S	Not given	rail
196	S	Great Western Main Line	rail
196	S	Great Western Main Line	rail
201	S	Not given	Multi Track
201	S	Not given	Multi Track
202	S	Great Western Main Line	rail
202	S	Great Western Main Line	rail
202	S	Great Western Main Line	rail
202	S	Great Western Main Line	rail
203	S	Not given	Multi Track
203	S	Not given	Multi Track
203	S	Not given	Multi Track
203	S	Not given	Multi Track
205	S	Not given	rail
205	S	Reading to Taunton line	rail
205	S	Not given	rail
205	S	Reading to Taunton line	rail
206	S	Reading to Taunton line	rail
206	S	Not given	rail
206	S	Reading to Taunton line	rail
206	S	Not given	rail
207	S	Great Western Main Line	rail
207	S	Great Western Main Line	rail
210	S	Great Western Main Line	rail
210	S	Great Western Main Line	rail
212	S	Not given	rail
212	S	Not given	rail
213	S	Not given	rail
213	S	Not given	rail
214	S	Great Western Main Line	rail
214	SW	Reading to Taunton line	rail
214	S	Great Western Main Line	rail
214	SW	Reading to Taunton line	rail
215	S	Great Western Main Line	rail
215	S	Great Western Main Line	rail
217	S	Reading to Taunton line	rail
217	S	Reading to Taunton line	rail
218	S	Not given	rail
218	S	Not given	rail
220	SW	Great Western Main Line	rail
220	SW	Great Western Main Line	rail

Distance (m)	Direction	Name	Type
222	S	Great Western Main Line	rail
222	S	Great Western Main Line	rail
223	S	Not given	rail
223	S	Not given	rail
224	S	Reading to Plymouth Line	rail
224	S	Not given	rail
224	SW	Great Western Main Line	rail
224	SE	Not given	rail
224	S	Reading to Plymouth Line	rail
224	S	Not given	rail
224	SW	Great Western Main Line	rail
224	SE	Not given	rail
228	S	Not given	Multi Track
228	S	Not given	Multi Track
230	S	Not given	rail
230	S	Not given	rail
237	SW	Not given	rail
237	SW	Not given	rail
239	S	Not given	rail
239	S	Not given	rail
239	S	Not given	rail
239	S	Not given	rail
243	SE	Not given	rail
243	SE	Not given	rail

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

9.5 Railway Projects

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

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

Is the study site within 500m of the route of the Crossrail 1 rail project? Yes

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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8 Oct 2019

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Yours faithfully,

emapsite customer services team

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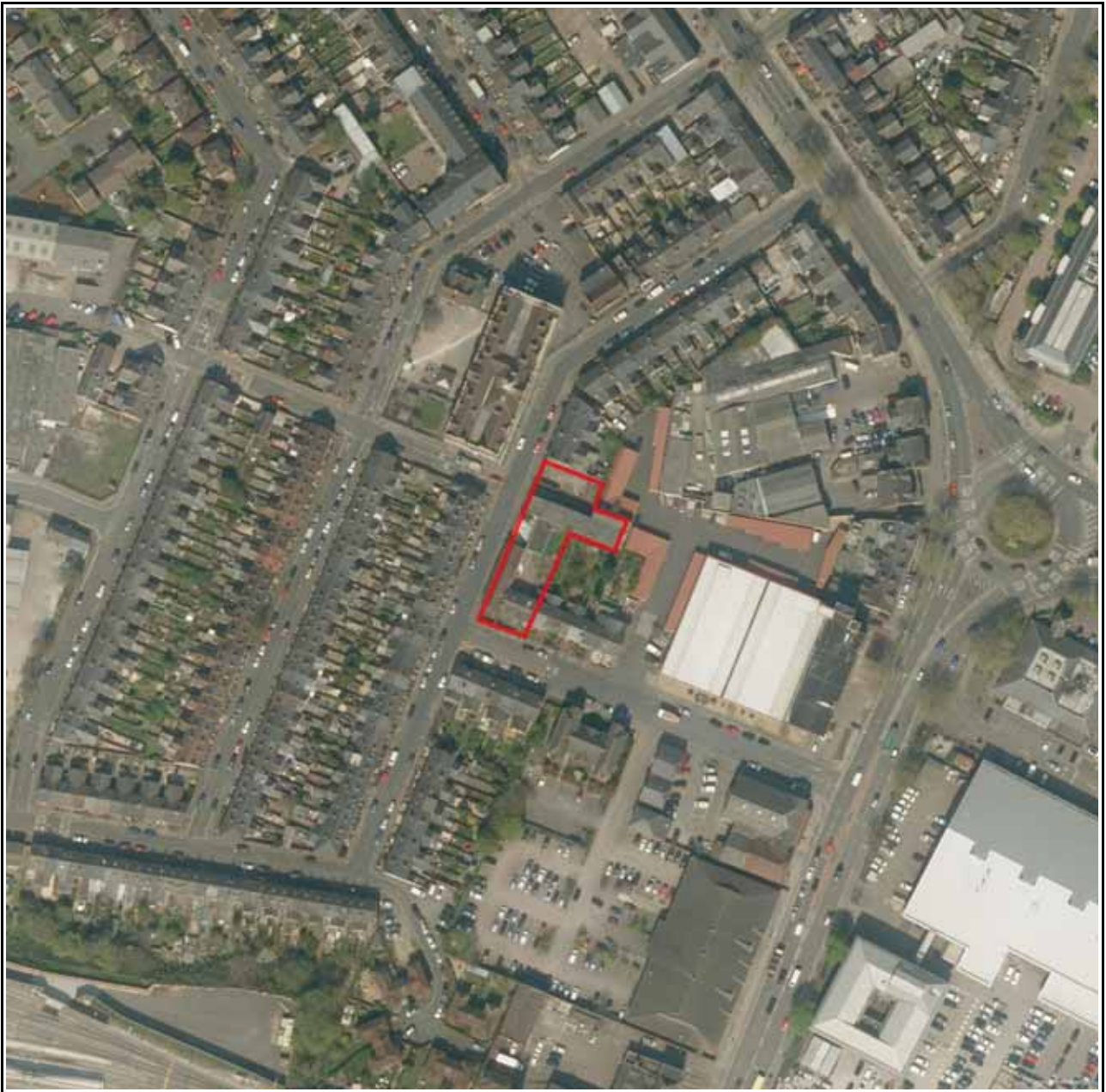
NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 471171,174135
Site Size: 0.1131ha

Report Reference: EMS-570494_766310
Client Reference: EMS_570494_766310

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Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	5	1	75	122
1.2 Additional Information – Historical Tank Database	0	0	6	57
1.3 Additional Information – Historical Energy Features Database	0	0	19	43
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	1
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	3	25
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	2	5
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	4
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	6
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	3	5
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	1	1	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	1	2	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	8	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	1	0	20	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	2
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

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

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	4	0	4	8
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	3	1	2
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	2	0	1	2
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	1	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	Yes	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	2	46	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 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	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	0
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	1	0	0	0	0	2
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	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
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	Very Low
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	Negligible
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

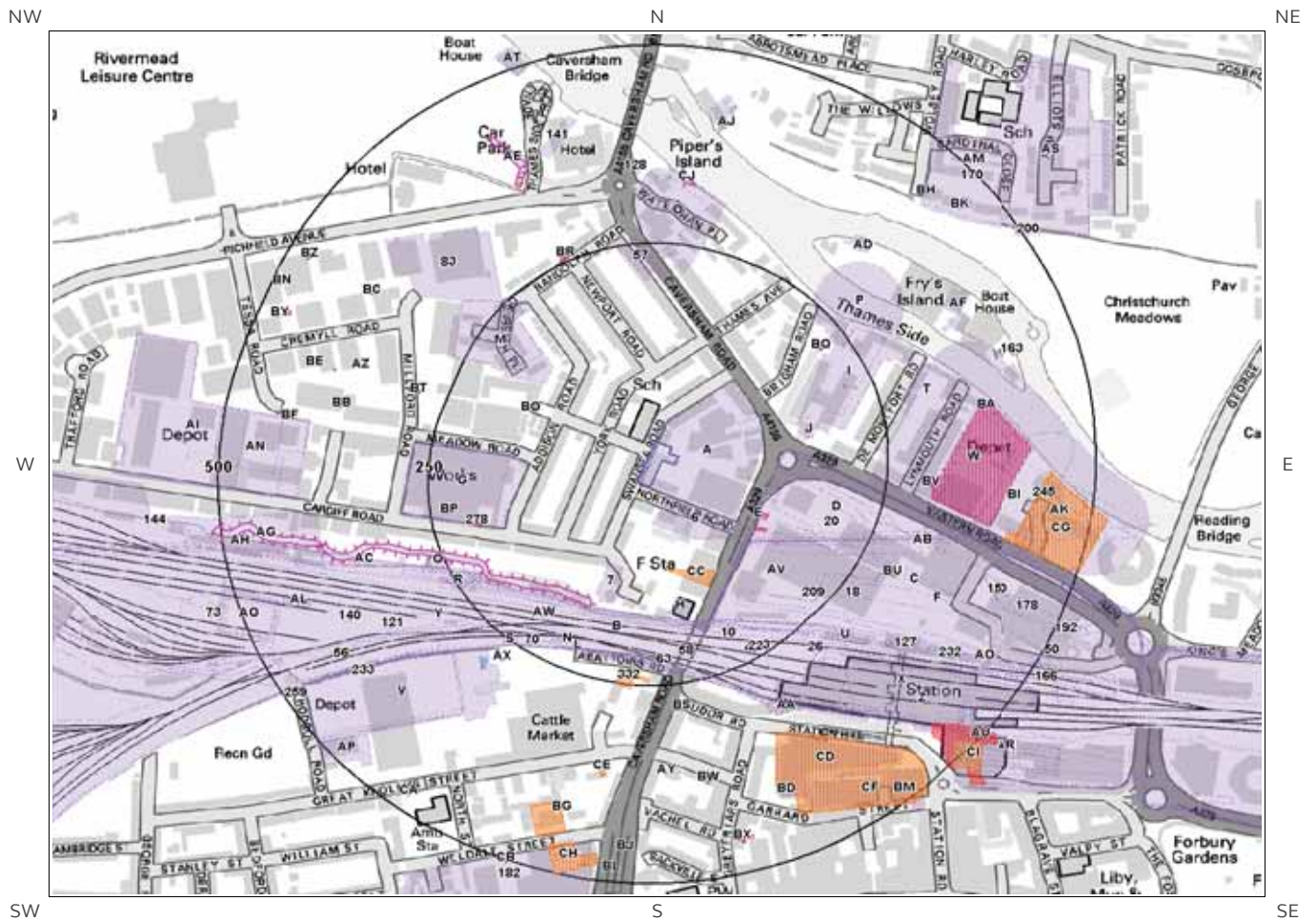
Note: Maps

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

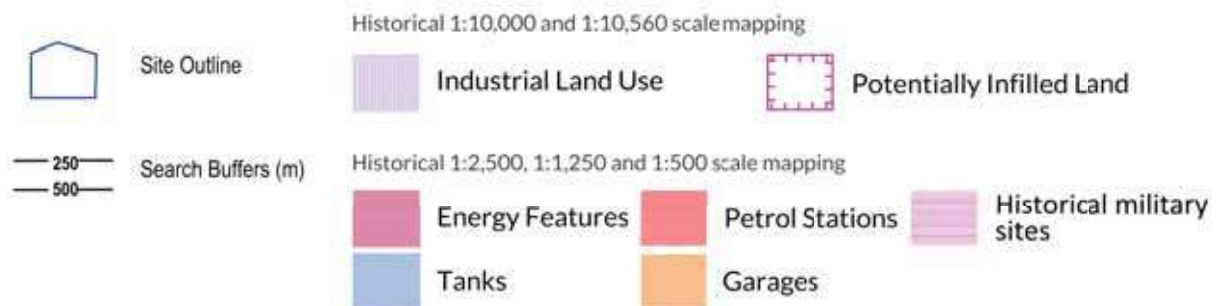
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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

1. Historical Land Use



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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: 203

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Commercial/Industrial	1989
2A	0	On Site	Unspecified Commercial/Industrial	1971
3A	0	On Site	Unspecified Works	1962
4A	0	On Site	Unspecified Commercial/Industrial	1977
5A	0	On Site	Unspecified Commercial/Industrial	1994
6	21	SE	Malthouses	1878
7	106	S	Timber Yard	1913
8B	112	SE	Railway Sidings	1971
9B	112	SE	Railway Sidings	1977
10	112	SE	Railway Sidings	1962
11C	112	SE	Unspecified Works	1977
12C	112	SE	Unspecified Works	1962
13C	112	SE	Unspecified Works	1971
14D	113	E	Railway Sidings	1897
15D	115	E	Railway Sidings	1938
16D	115	E	Railway Sidings	1910
17E	117	SE	Coal Depot	1910
18	122	SE	Unspecified Works	1933
19E	122	E	Coal Depot	1938
20	127	SE	Railway Sidings	1900
21F	127	SE	Unspecified Works	1938
22	127	SE	Railway Sidings	1938
23	127	SE	Railway Sidings	1913
24F	127	SE	Railway Works	1938
25F	127	SE	Railway Works	1913
26	129	SE	Railway Sidings	1898
27F	129	SE	Railway Works	1898
28G	131	W	Printing Works	1910
29G	132	W	Unspecified Works	1971
30G	132	W	Unspecified Works	1962
31G	132	W	Unspecified Works	1977
32G	132	W	Unspecified Works	1989

33G	132	W	Unspecified Works	1994
34H	142	S	Fire Station	1971
35H	142	S	Fire Station	1962
36H	142	S	Fire Station	1977
37H	142	S	Fire Station	1989
38H	142	S	Fire Station	1994
39I	146	E	Sawmill	1910
40I	146	E	Sawmill	1938
41G	149	W	Printing Works	1938
42M	150	NW	Unspecified Works	1962
43J	152	E	Smithy	1900
44J	154	E	Smithy	1897
45K	157	S	Unspecified Ground Workings	1938
46K	157	S	Unspecified Ground Workings	1913
47L	161	S	Railway Sidings	1989
48L	161	S	Railway Sidings	1994
49	161	S	Railway Sidings	1938
50	162	S	Railway Sidings	1933
51M	174	NW	Unspecified Works	1971
52M	174	NW	Unspecified Commercial/Industrial	1989
53M	174	NW	Unspecified Works	1977
54I	176	NE	Unspecified Warehouses	1977
55AW	197	SW	Railway Building	1898
56	201	S	Railway Sidings	1933
57	203	N	Timber Yard	1878
58	208	S	Railway Building	1913
59N	211	S	Railway Building	1938
60N	215	S	Railway Building	1938
61N	215	S	Railway Building	1913
62O	216	N	Unspecified Shed	1878
63	218	S	Railway Building	1898
64W	229	E	Electric Works	1910
65K	229	SW	Railway Buildings	1938
66K	229	SW	Railway Buildings	1933
67O	230	N	Unspecified Works	1971
68O	230	N	Unspecified Works	1977
69R	233	SW	Railway Buildings	1962
70	233	SW	Railway Building	1913
71P	235	NE	Boat House	1910
72P	235	NE	Boat House	1938
73	241	SW	Railway Sidings	1933
74K	242	SW	Railway Buildings	1938
75K	242	SW	Railway Buildings	1913
76Q	242	SW	Railway Buildings	1989

77Q	242	SW	Railway Buildings	1994
78Q	243	SW	Railway Buildings	1977
79R	243	SW	Railway Buildings	1898
80S	246	SW	Railway Building	1938
81S	246	SW	Railway Building	1913
82X	252	SE	Railway Station	1933
83	253	NW	Unspecified Depot	1977
84Q	257	W	Railway Building	1933
85T	273	E	Unspecified Works	1971
86T	273	E	Unspecified Works	1977
87U	274	SE	Railway Building	1971
88U	274	SE	Railway Building	1989
89U	274	SE	Railway Building	1977
90U	274	SE	Railway Building	1994
91V	274	SW	Corporation Yard	1994
92V	274	SW	Corporation Yard	1989
93W	280	E	Unspecified Depot	1994
94W	280	E	Unspecified Depot	1989
95Z	285	SE	Railway Station	1994
96X	287	SE	Railway Station	1938
97Y	288	SW	Railway Building	1913
98X	290	SE	Railway Station	1938
99X	290	SE	Railway Station	1913
100Y	290	SW	Railway Building	1898
101X	290	SE	Railway Station	1989
102X	291	SE	Railway Station	1971
103Z	291	SE	Railway Station	1962
104X	291	SE	Railway Station	1977
105AB	295	E	Railway Sidings	1900
106Z	295	SE	Railway Station	1898
107V	304	SW	Corporation Yard	1938
108V	305	SW	Corporation Yard	1933
109BI	307	E	Railway Sidings	1901
110V	307	SW	Corporation Yard	1962
111V	308	SW	Corporation Yard	1913
112V	308	SW	Corporation Yard	1938
113W	311	E	Electric Works	1897
114W	311	E	Electric Works	1900
115AA	314	SE	Railway Building	1994
116AA	314	SE	Railway Building	1977
117AA	314	SE	Railway Building	1989
118AB	322	E	Railway Sidings	1900
119CJ	326	N	Unspecified Wharf	1878
120AD	332	NE	Boat House	1900
121	333	SW	Railway Building	1898
122AC	335	W	Railway Building	1977

123AC	335	W	Railway Building	1989
124AC	335	W	Railway Building	1994
125AC	336	W	Railway Building	1971
126AC	336	W	Railway Building	1962
127	337	SE	Railway Building	1898
128	339	N	Boat House	1910
129AD	339	NE	Boat House	1897
130AD	344	NE	Boat House	1938
131AD	344	NE	Boat House	1910
132CD	348	SE	Bus Station	1994
133AE	358	NW	Unspecified Ground Workings	1938
134AE	358	NW	Unspecified Ground Workings	1910
135AF	362	NE	Boat Houses	1989
136AF	362	NE	Boat Houses	1977
137AF	362	NE	Boat Houses	1994
138BA	365	E	Smithy	1901
139AK	365	E	Iron Works	1910
140	378	SW	Railway Building	1898
141	379	N	Boat House	1977
142AG	382	W	Unspecified Ground Workings	1938
143AG	382	W	Unspecified Ground Workings	1910
144	382	W	Railway Sidings	1901
145AG	384	W	Railway Buildings	1977
146AG	384	W	Railway Buildings	1989
147AG	384	W	Railway Buildings	1994
148AH	385	W	Railway Buildings	1971
149AH	385	W	Railway Buildings	1962
150	393	E	Railway Building	1933
151AI	397	W	Unspecified Depot	1977
152AI	398	W	Unspecified Depots	1989
153AN	399	W	Unspecified Depot	1971
154AJ	403	N	Boat House	1878
155AJ	407	N	Boat House	1910
156AJ	407	N	Boat House	1938
157BD	408	S	Smithy	1913
158CF	416	SE	Garage	1971
159AL	416	W	Railway Building	1938
160AK	417	E	Iron Works	1897
161AL	419	W	Railway Building	1938
162AL	419	W	Railway Building	1933
163	419	E	Boat House	1938
164AL	420	W	Railway Building	1962
165CG	422	E	Iron Works	1900

166	423	SE	Railway Sidings	1933
167AM	427	NE	Unspecified Works	1971
168AM	427	NE	Unspecified Works	1962
169AN	429	W	Unspecified Depot	1977
170	431	NE	Engineering Works	1938
171AO	434	SE	Railway Building	1938
172AO	434	SE	Railway Building	1913
173AO	438	SE	Railway Building	1898
174AP	451	SW	Unspecified Works	1977
175AP	451	SW	Unspecified Commercial/Industrial	1989
176AP	451	SW	Unspecified Commercial/Industrial	1994
177AQ	452	W	Engine Shed	1938
178	452	SE	Railway Building	1933
179AQ	453	W	Engine Shed	1898
180AQ	453	W	Engine Shed	1913
181AQ	453	W	Engine Shed	1933
182	453	S	Unspecified Depot	1977
183AQ	456	W	Engine Shed	1938
184AQ	456	W	Engine Shed	1962
185AI	473	W	Unspecified Depot	1994
186AR	482	SE	Terminus	1933
187AS	484	NE	Joinery Works	1910
188AR	486	SE	Terminus	1913
189AR	486	SE	Terminus	1938
190AS	486	NE	Unspecified Works	1971
191AR	486	SE	Terminus	1938
192	488	SE	Railway Building	1933
193AS	489	NE	Unspecified Works	1994
194AS	489	NE	Unspecified Works	1977
195AS	489	NE	Unspecified Works	1989
196AS	490	NE	Joinery Works	1938
197AT	490	N	Boat House	1994
198AT	490	N	Boat House	1989
199AR	491	SE	Terminus	1898
200	491	NE	Boat Houses	1901
201AU	492	SE	Railway Building	1913
202AU	492	SE	Railway Building	1938
203CI	492	SE	Garage	1971

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:

63

ID	Distance (m)	Direction	Use	Date
204AV	181	SE	Tank or Trough	1879
205AV	181	SE	Tank or Trough	1879
206AV	181	SE	Tank or Trough	1879
207AW	202	SW	Tank or Trough	1879
208BP	226	W	Unspecified Tank	1970
209	233	SE	Tank or Trough	1879
210AX	273	SW	Unspecified Tank	1986
211AX	273	SW	Unspecified Tank	1993
212AX	285	SW	Tanks	1993
213AX	285	SW	Tanks	1986
214AZ	360	W	Unspecified Tank	1970
215AY	360	S	Tank or Trough	1879
216AY	360	S	Tank or Trough	1879
217AZ	361	W	Unspecified Tank	1988
218AY	362	S	Tank or Trough	1879
219AY	362	S	Tank or Trough	1879
220BA	363	E	Unspecified Tank	1936
221BB	365	W	Tanks	1970
222BB	366	W	Tanks	1988
223BA	378	E	Tanks	1913
224BA	378	E	Tanks	1932
225BA	381	E	Tanks	1913
226BA	381	E	Tanks	1932
227BC	384	NW	Unspecified Tank	1970
228BA	385	E	Tanks	1913
229BC	385	NW	Unspecified Tank	1988
230AZ	386	W	Unspecified Tank	1970
231AZ	387	W	Unspecified Tank	1988
232	405	SE	Unspecified Tank	1879
233	405	SW	Tank or Trough	1879
234BE	412	W	Unspecified Tank	1970
235BD	412	SE	Unspecified Tank	1969
236BE	413	W	Unspecified Tank	1988
237BF	415	W	Tanks	1988
238BF	419	W	Unspecified Tank	1970
239BG	420	S	Pump and Tank	1880
240BG	420	S	Pump and Tank	1880
241BH	437	NE	Unspecified Tank	1956
242BH	437	NE	Unspecified Tank	1971
243BH	438	NE	Unspecified Tank	1956
244BI	439	E	Unspecified Tank	1989

245	439	E	Unspecified Tank	1972
246BK	454	NE	Unspecified Tank	1972
247BJ	457	S	Unspecified Tank	1880
248BJ	457	S	Unspecified Tank	1880
249AK	458	E	Unspecified Tank	1989
250BJ	458	S	Unspecified Tank	1880
251BJ	458	S	Unspecified Tank	1880
252AK	458	E	Unspecified Tank	1972
253BK	464	NE	Unspecified Tank	1972
254BK	467	NE	Unspecified Tank	1956
255BK	467	NE	Unspecified Tank	1956
256BY	472	W	Unspecified Tank	1988
257BL	483	S	Tank or Trough	1880
258BL	483	S	Tank or Trough	1880
259	487	SW	Tank or Trough	1879
260BM	487	SE	Tank or Trough	1879
261BM	487	SE	Tank or Trough	1879
262BN	487	NW	Unspecified Tank	1970
263BM	488	SE	Tank or Trough	1879
264BN	488	NW	Unspecified Tank	1988
265BN	498	NW	Unspecified Tank	1970
266BN	498	NW	Unspecified Tank	1988

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:

62

ID	Distance (m)	Direction	Use	Date
267E	115	SE	Electricity Substation	1984
268E	119	SE	Electricity Substation	1993
269E	124	SE	Electricity Substation	1982
270E	124	SE	Electricity Substation	1971
271E	124	SE	Electricity Substation	1984
272BO	150	W	Electricity Substation	1993
273BO	150	W	Electricity Substation	1982
274BO	150	W	Electricity Substation	1984
275BO	150	W	Electricity Substation	1984
276BO	150	W	Electricity Substation	1971
277BP	192	W	Electricity Substation	1970
278	195	W	Electricity Substation	1988
279BQ	213	NE	Electricity Substation	1984

280BQ	213	NE	Electricity Substation	1982
281BQ	214	NE	Electricity Substation	1993
282BQ	214	NE	Electricity Substation	1971
283BQ	214	NE	Electricity Substation	1984
284I	215	NE	Electricity Substation	1956
285I	216	NE	Electricity Substation	1956
286BR	252	NW	Electricity Substation	1984
287BR	255	NW	Electricity Substation	1993
288BR	256	NW	Electricity Substation	1971
289BR	256	NW	Electricity Substation	1982
290BR	256	NW	Electricity Substation	1984
291BS	279	S	Electricity Substation	1996
292BS	279	S	Electricity Substation	1994
293BS	280	S	Electricity Substation	1993
294BS	280	S	Electricity Substation	1988
295BT	282	W	Electricity Substation	1970
296BT	283	W	Electricity Substation	1988
297BU	292	SE	Electricity Substation	1993
298BU	292	SE	Electricity Substation	1994
299C	292	SE	Electricity Substation	1996
300BV	300	E	Electricity Substation	1982
301BV	300	E	Electricity Substation	1984
302BV	300	E	Electricity Substation	1993
303BV	300	E	Electricity Substation	1971
304BV	300	E	Electricity Substation	1984
305W	304	E	Electricity Depot	1972
306BV	304	E	Electricity Substation	1972
307BV	304	E	Electricity Substation	1989
308BA	363	E	Electricity Substation	1972
309BA	364	E	Electricity Substation	1989
310BW	372	S	Electricity Substation	1994
311BW	372	S	Electricity Substation	1996
312BW	375	S	Electricity Substation	1993
313BI	387	E	Electricity Substation	1989
314BX	453	S	Electricity Substation	1996
315BX	453	S	Electricity Substation	1994
316BX	455	S	Electricity Substation	1969
317BX	459	S	Electricity Substation	1988
318BX	459	S	Electricity Substation	1979
319BX	459	S	Electricity Substation	1993
320BX	459	S	Electricity Substation	1986
321BY	462	W	Electricity Substation	1970
322BY	463	W	Electricity Substation	1988
323BZ	471	NW	Electricity Substation	1970
324BZ	472	NW	Electricity Substation	1988
325CA	475	SW	Electricity Substation	1993

326CA	475	SW	Electricity Substation	1986
327CB	498	S	Electricity Substation	1986
328CB	498	S	Electricity Substation	1971

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: 1

ID	Distance (m)	Direction	Use	Date
329AU	447	SE	Filling Station	1979

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: 28

ID	Distance (m)	Direction	Use	Date
330CC	106	S	Garage	1988
331CC	107	S	Garage	1986
332	230	S	Garage	1969
333CD	344	SE	Garage	1958
334CD	344	SE	Garage	1957
335CD	344	SE	Garage	1957
336CE	349	S	Garage	1957
337CE	349	S	Garage	1958
338CE	349	S	Garage	1962
339CE	349	S	Garage	1969
340CE	349	S	Garage	1957
341CF	402	SE	Garage	1969
342CF	402	SE	Garage	1962
343CG	404	E	Garage	1972
344CG	405	E	Garage	1989
345BG	409	S	Garage	1994
346BG	409	S	Garage	1996
347BG	410	S	Garage	1986
348BG	411	S	Garage	1988
349BG	411	S	Garage	1993
350AK	415	E	Garage	1956

351AK	415	E	Garage	1959
352AK	415	E	Garage	1956
353CH	454	S	Garage	1962
354CH	464	S	Garage	1958
355CH	464	S	Garage	1957
356CH	464	S	Garage	1957
357CI	482	SE	Garage	1971

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.

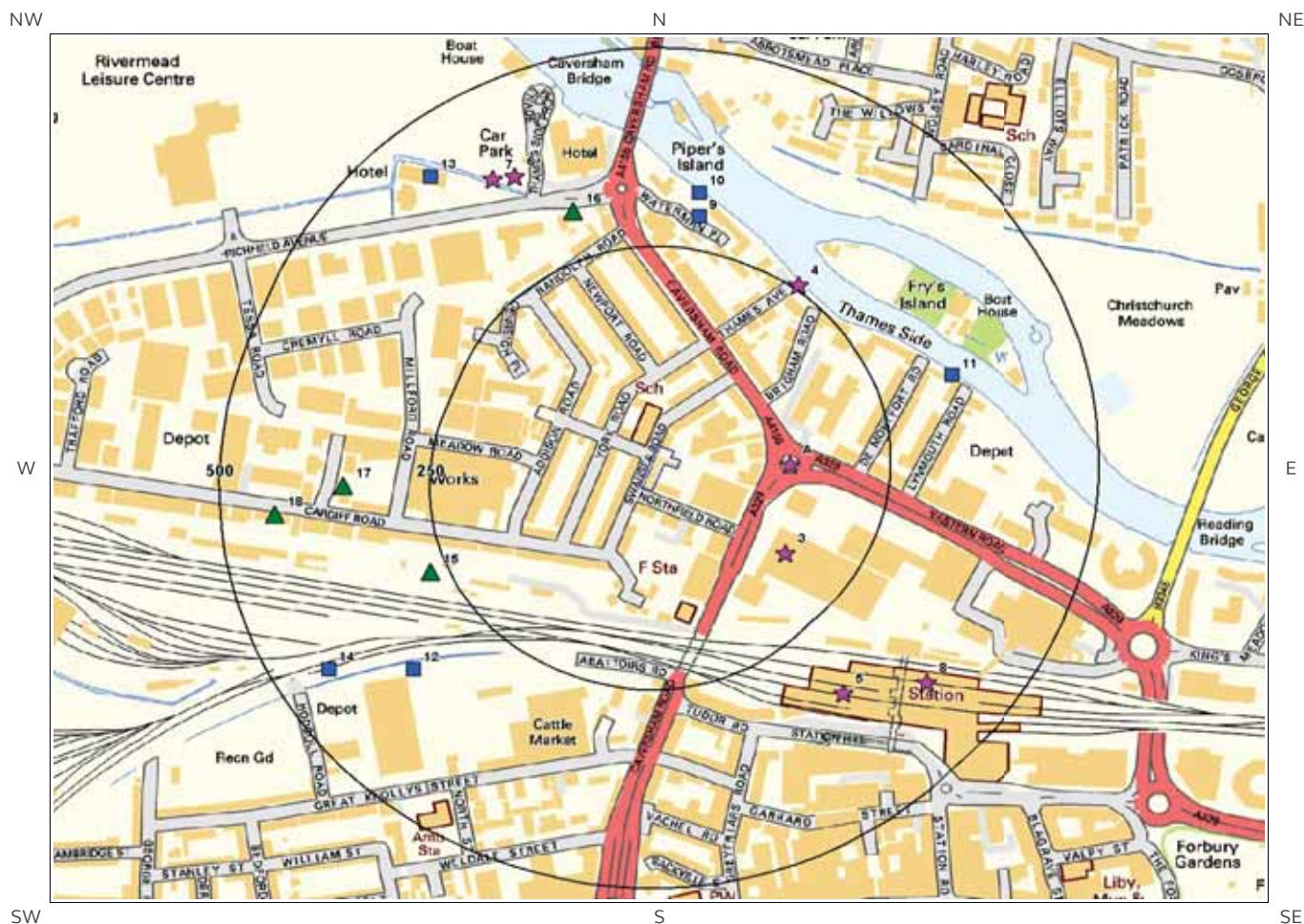
1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 7

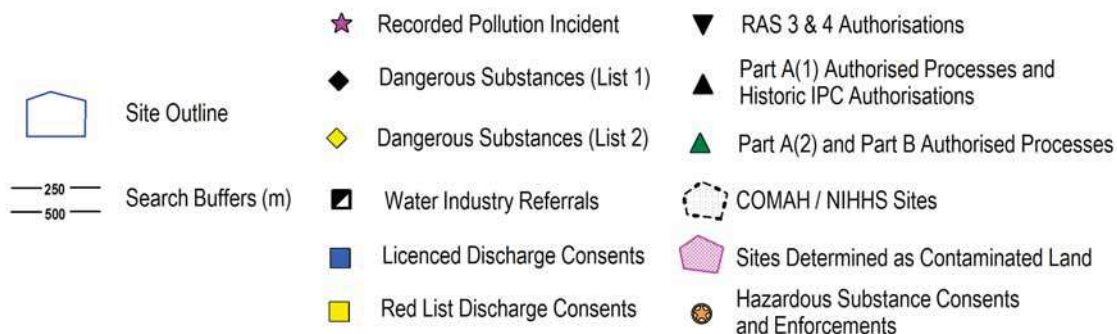
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
358K	157	S	Unspecified Ground Workings	1913
359K	157	S	Unspecified Ground Workings	1938
360CJ	326	N	Unspecified Wharf	1878
361AE	358	NW	Unspecified Ground Workings	1938
362AE	358	NW	Unspecified Ground Workings	1910
363AG	382	W	Unspecified Ground Workings	1910
364AG	382	W	Unspecified Ground Workings	1938

2. Environmental Permits, Incidents and Registers Map



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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:

4

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
15	272	SW	470900 174000	Address: Scenery Salvage, Cardiff Road, Reading, Berkshire, RG1 8ES Process: Combustion & Incineration Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
16	309	N	471070 174454	Address: Snax 24 Limited, Richfield Avenue, Reading, Berkshire, RG1 8EQ Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
17	353	W	470796 174109	Address: Rivermead Accident Repair Centre Limited, 64 Cardiff Road, Reading, Berkshire, RG1 8LL Process: Respraying of Road Vehicles Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
18	436	W	470715 174073	Address: Sprayworks Limited, Unit 5, 151-155 Cardiff Road, Reading, RG1 8ES Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

6

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

ID	Distance (m)	Direction	NGR	Details
9	292	N	471220 174450	Address: RETIREMENT HOMES DEVELOPMENT, CAVER, RETIREMENT HOMES DEVELOPMENT, CA, VERSHAM ROAD, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2313 Permit Version: 1 Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 25/03/1988 Effective Date: 25-Mar-1988 Revocation Date: 31/10/1991
10	321	N	471220	Address: OFFICES, CAVERSHAM ROAD, Receiving Water: RIVER THAMES

ID	Distance (m)	Direction	NGR	Details
			174480	READING, B, OFFICES, CAVERSHAM ROAD, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2078 Permit Version: 1 Status: REVOKED - UNSPECIFIED Issue date: 02/12/1987 Effective Date: 02-Dec-1987 Revocation Date: 06/02/1995
11	340	E	471520 174250	Address: LYNMOUTH ROAD / DE MONTFORT ROAD, R, LYNMOUTH ROAD / DE MONTFORT ROAD, READING, BERKS. Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0264 Permit Version: 1 Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 05/08/1985 Effective Date: 05-Aug-1985 Revocation Date: 19/03/1991
12	354	SW	470880 173880	Address: GREAT KNOLLEYS STREET, READING, BERKS, GREAT KNOLLEYS STREET, READING, BE, RKSHIRE, RG1 7HP Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.3308 Permit Version: 1 Receiving Water: ABATTOIR DITCH Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 06/07/1998 Effective Date: 06-Jul-1998 Revocation Date:
13	433	NW	470900 174500	Address: CALENDARS RESTAURANT, RICHFIELD AVE, CALENDARS RESTAURANT, RICHFIELD, AVENUE, CAVERSHAM, READING, BERK, S Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2379 Permit Version: 1 Receiving Water: PORTMAN BROOK Status: TRANSFERRED FROM COPA 1974 Issue date: 22/04/1988 Effective Date: 22-Apr-1988 Revocation Date:
14	435	SW	470780 173880	Address: GREAT KNOLLEYS STREET, READING, BERKS, GREAT KNOLLEYS STREET, READING, BE, RKSHIRE, RG1 7HP Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.3307 Permit Version: 1 Receiving Water: ABATTOIR DITCH Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 06/07/1998 Effective Date: 06-Jul-1998 Revocation Date:

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 & NIHS 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:

8

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

ID	Distance (m)	Direction	NGR	Details
1A	129	E	471327.0 174138.0	Incident Date: 17-Sep-2002 Incident Identification: 108560.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	129	E	471327.0 174138.0	Incident Date: 17-Sep-2002 Incident Identification: 108560.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	166	SE	471321.0 174026.0	Incident Date: 12-Sep-2001 Incident Identification: 42851.0 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Composted Material Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
4	256	NE	471337.0 174364.0	Incident Date: 22-Aug-2001 Incident Identification: 25897.0 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Food and Drink Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	340	SE	471390.0 173850.0	Incident Date: 26-Apr-2002 Incident Identification: 74851.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	378	NW	471000.0 174500.0	Incident Date: 10-Jul-2001 Incident Identification: 15233.0 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7	388	NW	470974.0 174497.0	Incident Date: 13-Aug-2002 Incident Identification: 99851.0 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
8	400	SE	471490.0 173864.0	Incident Date: 14-May-2003 Incident Identification: 158358.0 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) 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.

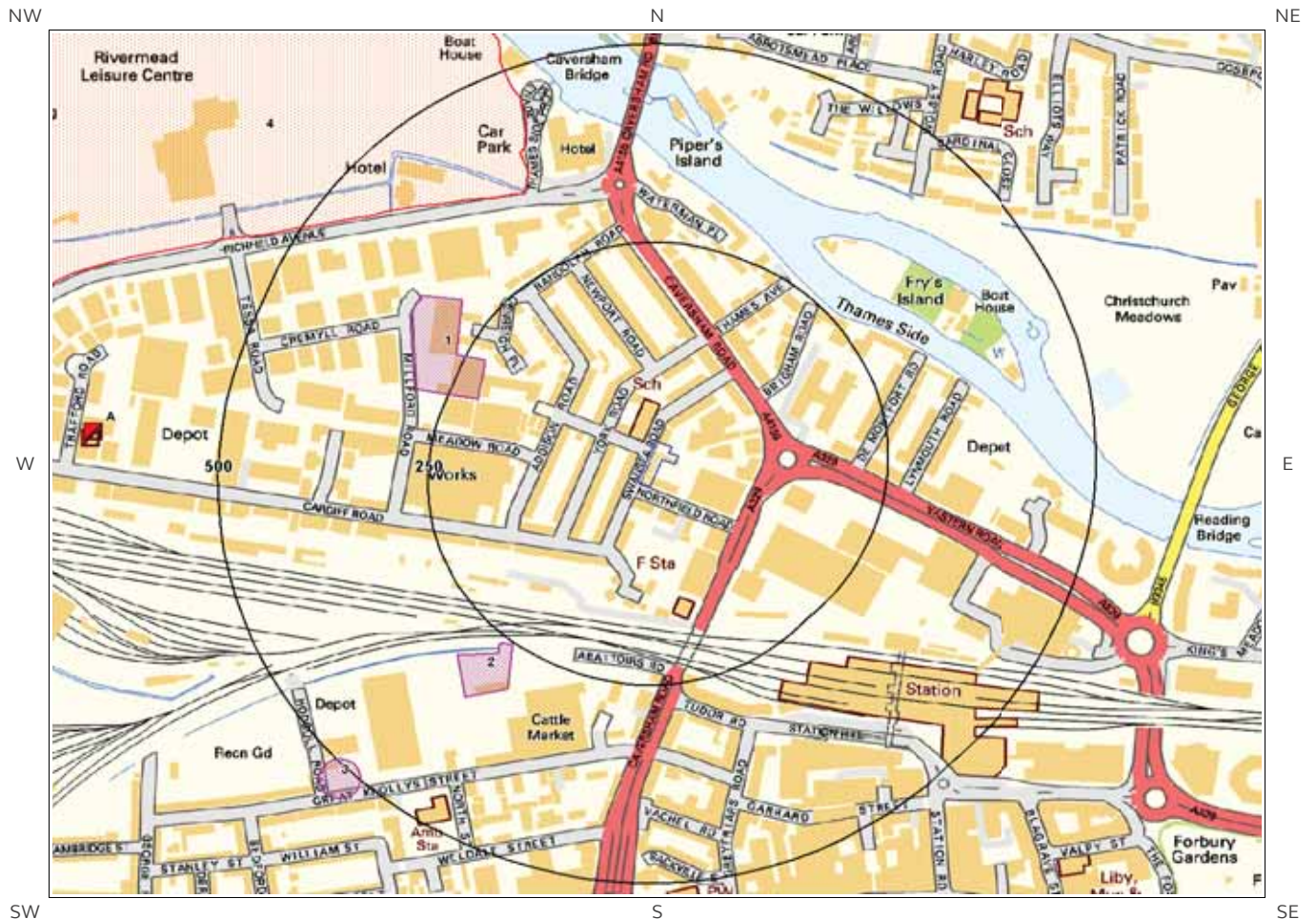
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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



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Site Outline

— 250 — Search Buffers (m)

— 500 —

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

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:

2

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

ID	Distance (m)	Direction	NGR	Details
4	348	NW		Site Address: Richfield Avenue, Reading, Berkshire Waste Licence: - Site Reference: RDG11, TP0122 Waste Type: Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1970 Last Recorded: 31-Dec-1979
Not shown	843	W		Site Address: Cow Lane, Reading, Berkshire Waste Licence: - Site Reference: TP0340, RDG4 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1950 Last Recorded: 31-Dec-1959

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:

3

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	216	W	470923 174279	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2	252	SW	470967 173873	Type of Site: Refuse Yard Site Address: N/A	Planning Application Reference: N/A Date: 1879	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3	490	SW	470794 173736	Type of Site: Surface Car Park/Waste Station Site Address: Great Knollys Street, Hodsoll Road, READING, Berkshire, RG1 7HP	Planning Application Reference: 96/0097/R3/NJP Date: 01/09/1996	Further Details: Relocation of a public car park and civic amenity recycling centre with associated landscaping. Relocation of a public car park and civic amenity recycling centre with associated landscaping. Detailed plans approved 29th May, 1996. An application (ref: 96/0097/R3/NJP) for Detailed Planning permission was submitted to Reading B.C. on 14th February 1996. 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:

10

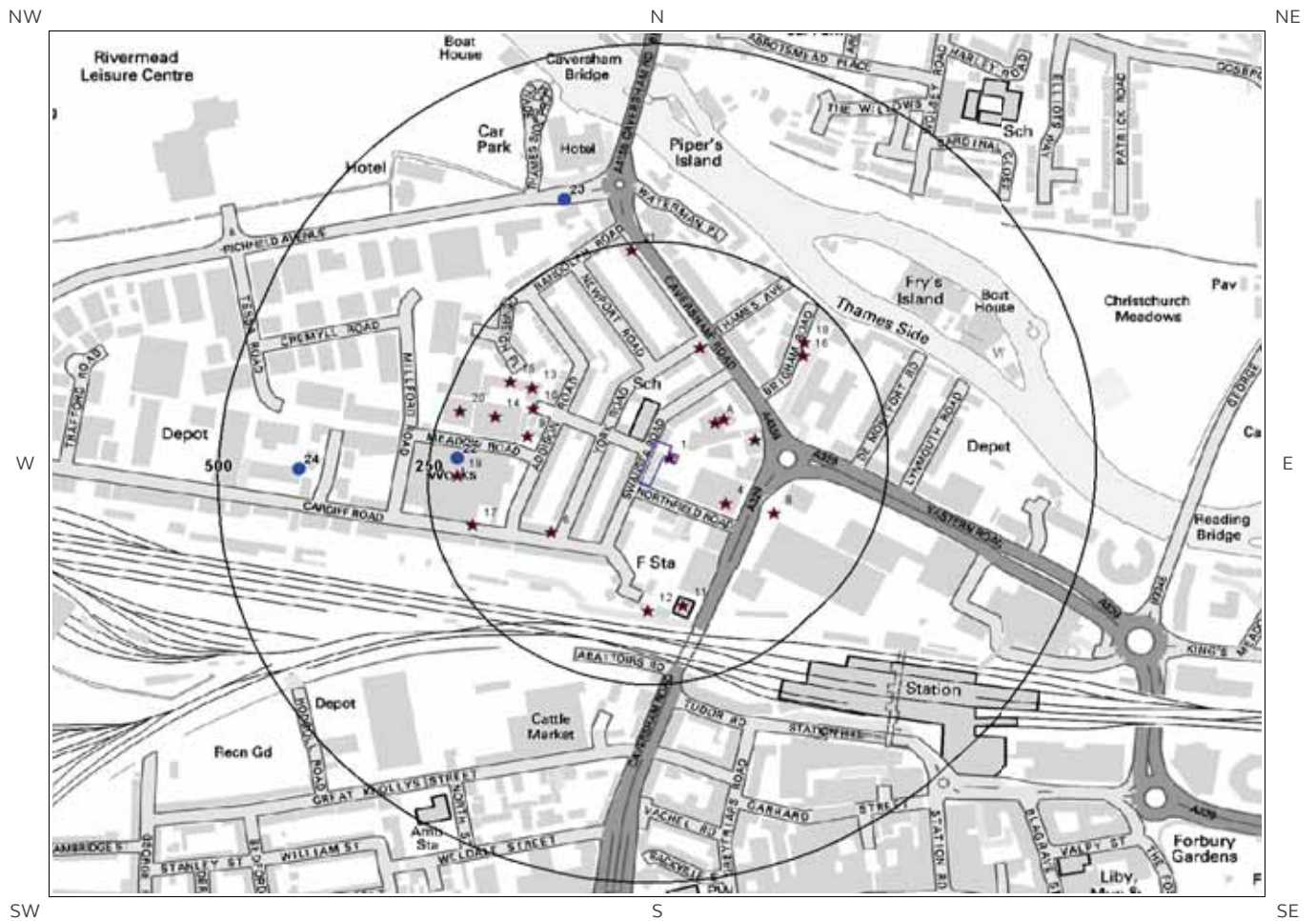
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
6A	652	W	470500	Site Address: 128, Cardiff Road, Reading,	Issue Date: 11/02/2010	

ID	Distance (m)	Direction	NGR	Details
				Berkshire, RG1 8PQ Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCO003 EPR reference: EA/EPR/EP3893VZ/V002 Operator: M Collard Waste Management Services Ltd Waste Management licence No: 101199 Annual Tonnage: 74999.0
				Effective Date: - Modified: 09/07/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: M Collard Waste Management Services Ltd Correspondence Address: -
7A	652	W	470500 174174	Site Address: 128, Cardiff Road, Reading, Berkshire, RG1 8PQ Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RCO001 EPR reference: EA/EPR/EB3500KB/V002 Operator: R Collard Limited Waste Management licence No: 101199 Annual Tonnage: 74999.0
				Issue Date: 11/02/2010 Effective Date: 11/10/2016 Modified: 16/10/2018 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: R Collard Limited Correspondence Address: -
8A	655	W	470497 174166	Site Address: 128, Cardiff Road, Reading, Berkshire, RG1 8PQ Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCO003 EPR reference: EP3893VZ/A001 Operator: M Collard Waste Management Services Ltd Waste Management licence No: 101199 Annual Tonnage: 0.0
				Issue Date: 11/02/2010 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: M Collard Waste Management Services Ltd Correspondence Address: -
Not shown	906	SW	470400 173600	Site Address: E.G.W Carter, 54, Gower Street, Reading, Berkshire, RG1 7PE Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAR001 EPR reference: EA/EPR/LP3699EF/S004 Operator: E G W Carter Waste Management licence No: 86001 Annual Tonnage: 9322.0
				Issue Date: 19/03/1996 Effective Date: - Modified: - Surrendered Date: Jul 23 1999 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: E G W Carter Correspondence Address: -
Not shown	999	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: - Operator: Simsmetal Uk Limited Waste Management licence No: 86002 Annual Tonnage: 4999.0
				Issue Date: 06/04/1993 Effective Date: 27/04/2002 Modified: 26/04/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Simsmetal U K Limited Correspondence Address: 4, The Uplands, Nailsea, Somerset, BS48 4RR
Not shown	999	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: EA/EPR/LP3199EB/V006 Operator: Sims Group U K Ltd Waste Management licence No: 86002 Annual Tonnage: 74999.0
				Issue Date: 06/04/1993 Effective Date: 27/04/2002 Modified: 27/08/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Sims Group U K Ltd Correspondence Address: -
Not shown	999	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est,
				Issue Date: 06/04/1993 Effective Date: 27/04/2002

ID	Distance (m)	Direction	NGR	Details
				Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: EA/EPR/LP3199EB/V005 Operator: Sims Group Uk Limited Waste Management licence No: 86002 Annual Tonnage: 74999.0
Not shown	999	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: PAR197 EPR reference: EA/EPR/CB3909KB/S002 Operator: Parsons Metal Recycling Limited Waste Management licence No: 86002 Annual Tonnage: 0.0
Not shown	1408	SE	472390 173390	Site Address: Omega Park, Alton, Hampshire, GU34 2QE Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HOP003 EPR reference: - Operator: Hopkins Recycling Ltd Waste Management licence No: 83406 Annual Tonnage: 4910.0
Not shown	1431	W	469718 174096	Site Address: Part A, Unit B, 75, Loverock Road, Tilehurst, Reading, Berkshire, RG30 1DZ Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: OAK056 EPR reference: EA/EPR/EP3993VE/A001 Operator: Oakford U K Ltd Waste Management licence No: 101222 Annual Tonnage: 74999.0

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

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

21

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	Warehouse	471187 174141	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
2A	59	NE	Works	471241 174185	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
3A	71	NE	Caversham MOT	471252 174189	109, Caversham Road, City Centre, Reading, Berkshire, RG1 8AR	Vehicle Repair, Testing and Servicing	Repair and Servicing
4	77	SE	Shurgard Self Storage	471253 174083	75, Caversham Road, Reading, Berkshire, RG1 8AN	Container and Storage	Transport, Storage and Delivery
5	94	E	Carter & Son Thatcham Ltd	471289 174163	99-113, Caversham Road, Reading, Berkshire, RG1 8AR	Canvas Goods	Consumer Products
6	121	SW	Euro Car Parts	471046 174046	4 Weighbridge Row, Cardiff Road, Reading, Berkshire, RG1 8LX	Vehicle Parts and Accessories	Motoring
7	128	N	The Scooter Cafe Ltd	471223 174279	153, Caversham Road, Reading, Berkshire, RG1 8AU	New Vehicles	Motoring
8	133	SE	Electricity Sub Station	471311 174071	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
9	144	W	Works	471018 174168	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
10	151	W	Electricity Sub Station	471024 174203	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
11	154	S	Caversham Road Fire Station	471202 173955	Caversham Road, Reading, Berkshire, RG1 8AA	Fire Brigade Stations	Central and Local Government
12	156	S	Pylon	471161 173948	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
13	162	NW	Samka	471023 174229	Ground Floor Talbot House, 2 Ross Road, Reading, Berkshire, RG1 8EL	Metalworkers Including Blacksmiths	Construction Services
14	189	W	Works	470979 174193	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
15	189	NW	Depot	470997 174237	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
16	194	NE	Electricity Sub Station	471346 174269	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
17	204	W	Electricity	470952	Berkshire, RG1	Electrical Features	Infrastructure and

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
			Sub Station	174056			Facilities
18	206	NE	Electricity Sub Station	471348 174286	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
19	215	W	Works	470934 174118	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
20	231	W	Warehouse	470937 174200	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
21	242	N	Caversham Bridge Motor Cycles	471141 174402	209, Caversham Road, Reading, Berkshire, RG1 8BB	New Vehicles	Motoring

4.2 Petrol and Fuel Sites

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

3

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

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
22	217	W	470934 174140	OBSOLETE	Cardiff Road, Reading, Reading, RG1 8HW	Not Applicable	Obsolete
23	323	N	471062 174466	BP	Richfield Avenue, Reading, Reading, RG1 8EQ	No	Open
24	404	W	470746 174126	OBSOLETE	165-7, Cardiff Road, Reading, Reading, RG1 8HY	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT

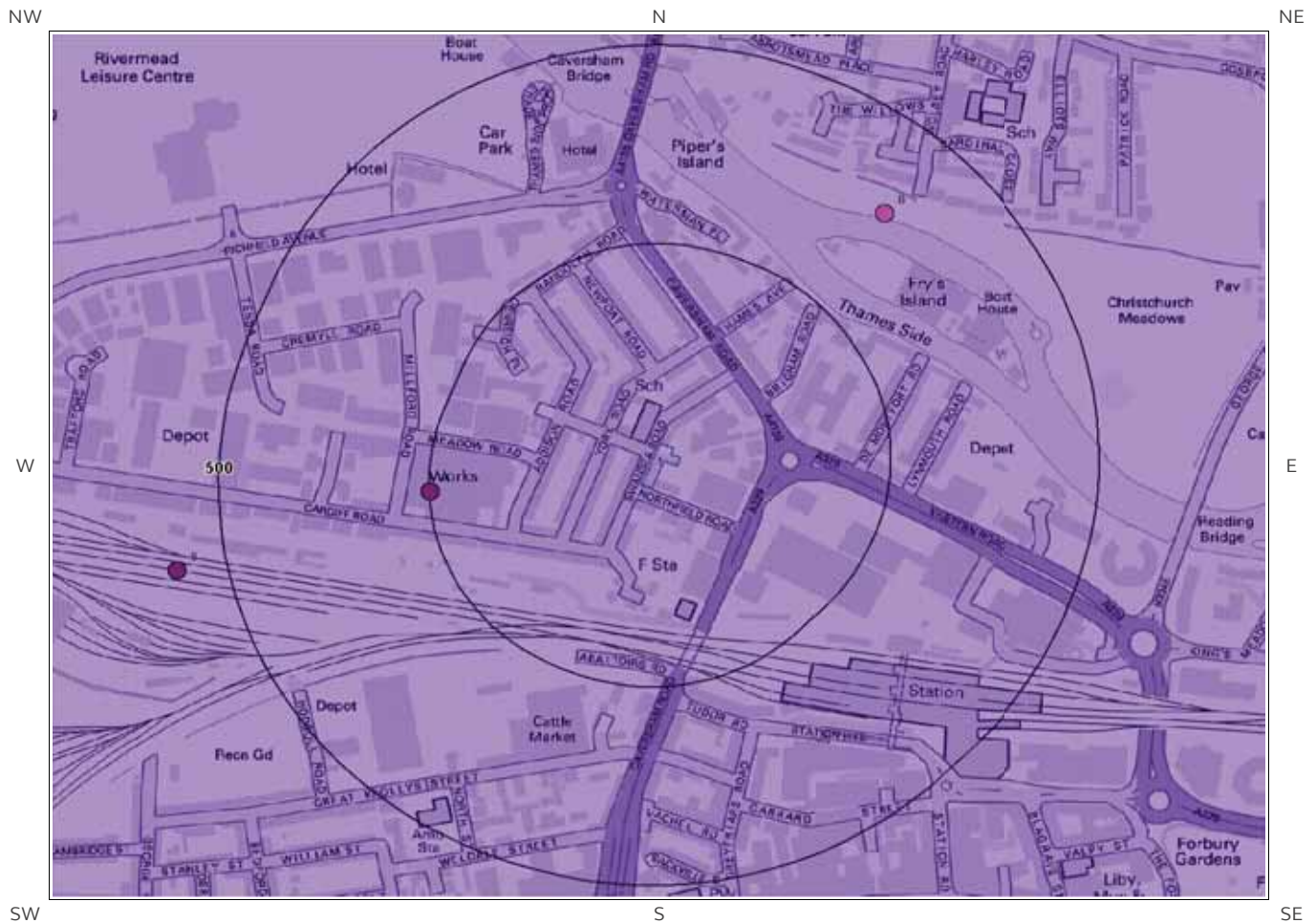
5.3 Bedrock and Solid Geology

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

Lex Code	Description	Rock Type
SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED)	CHALK

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

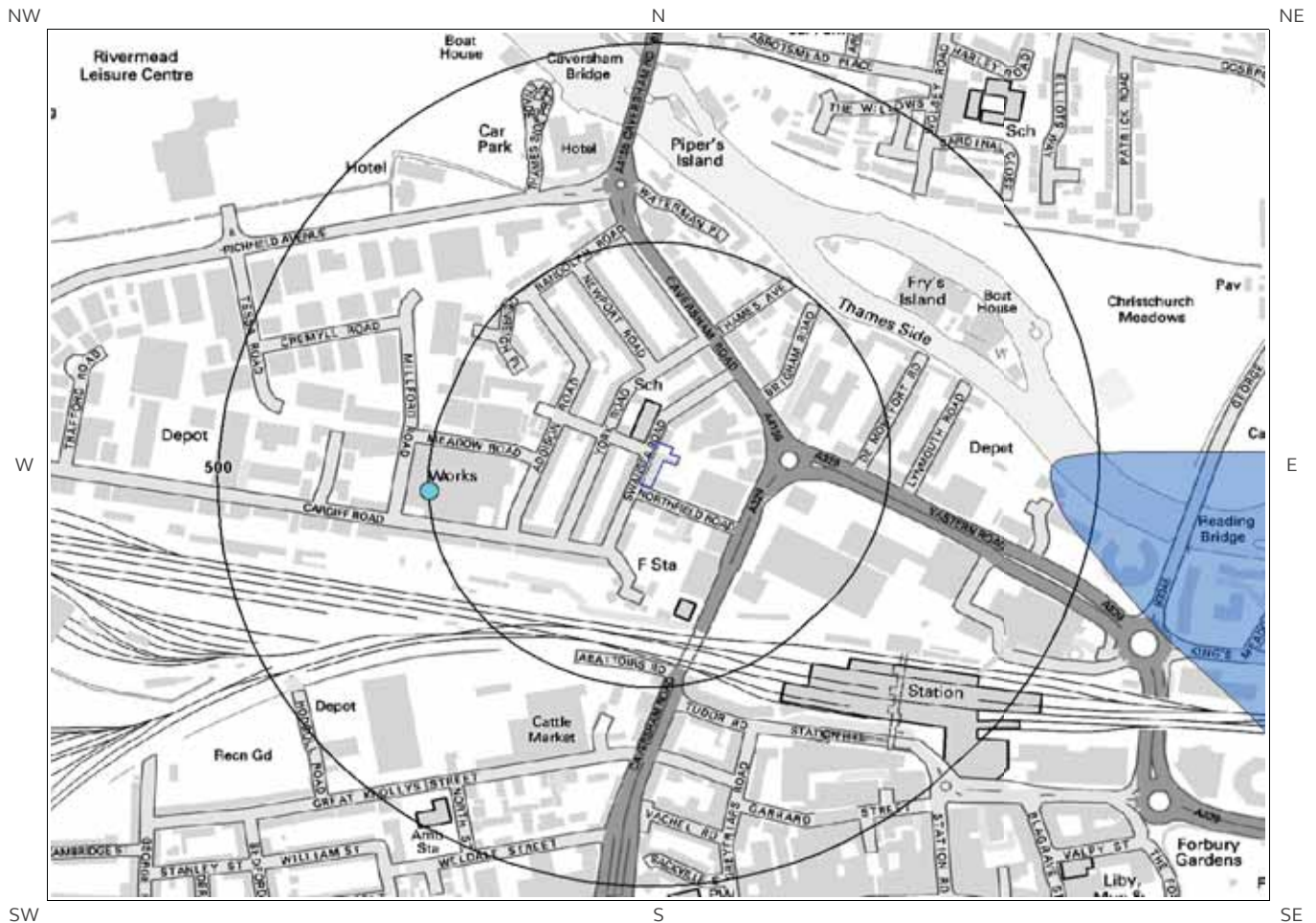
6b. Aquifer Within Bedrock Geology and Abstraction Licences



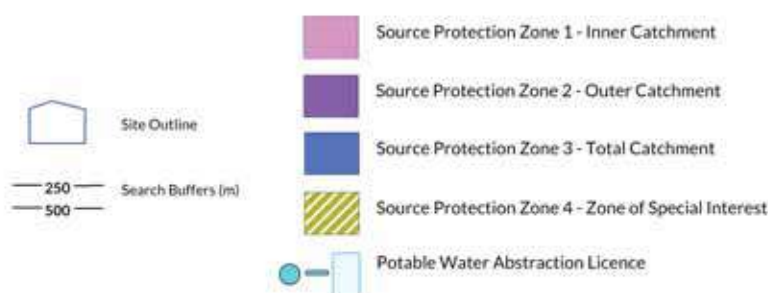
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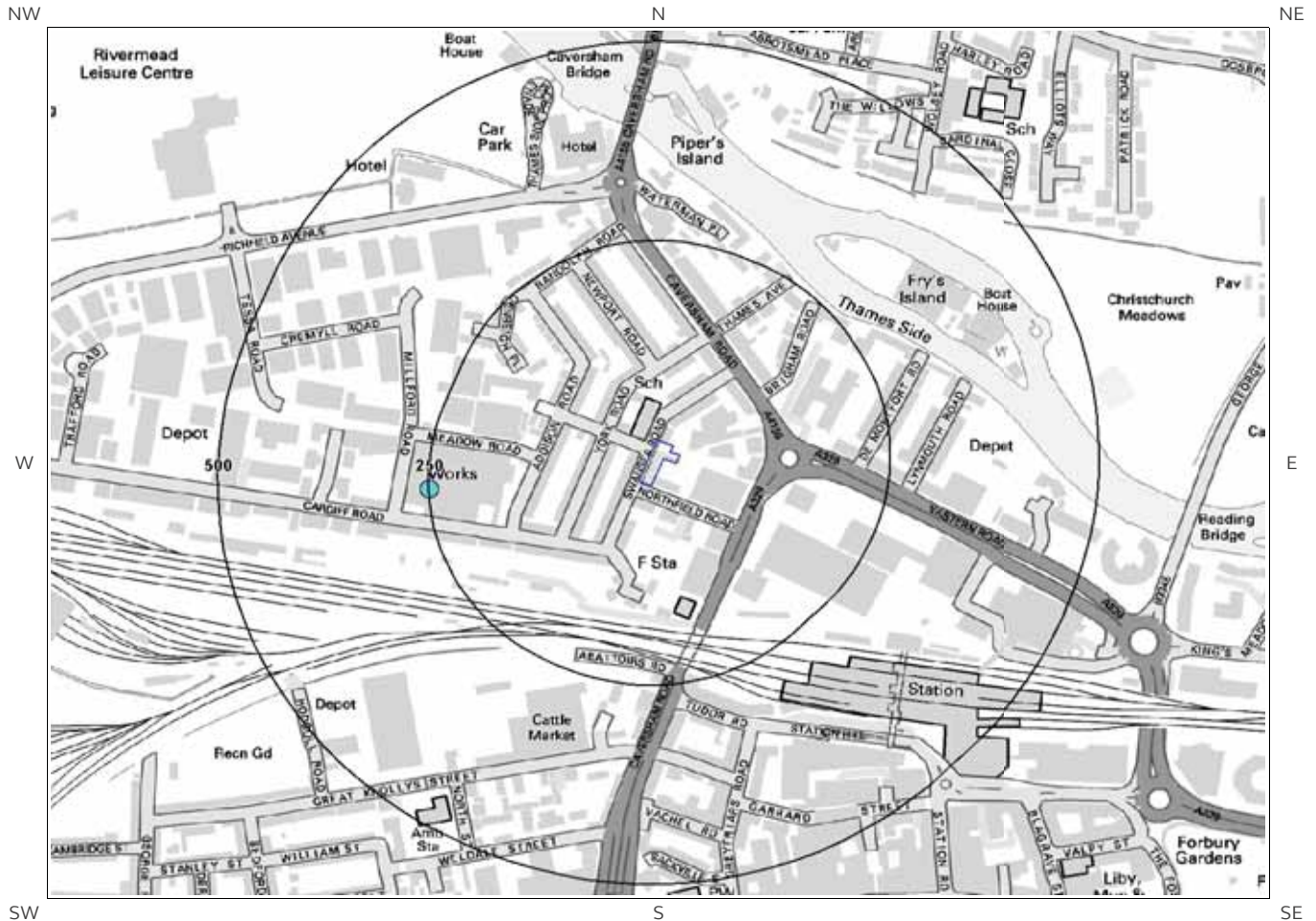
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



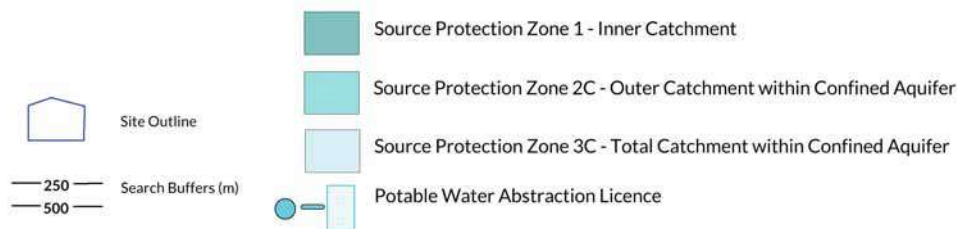
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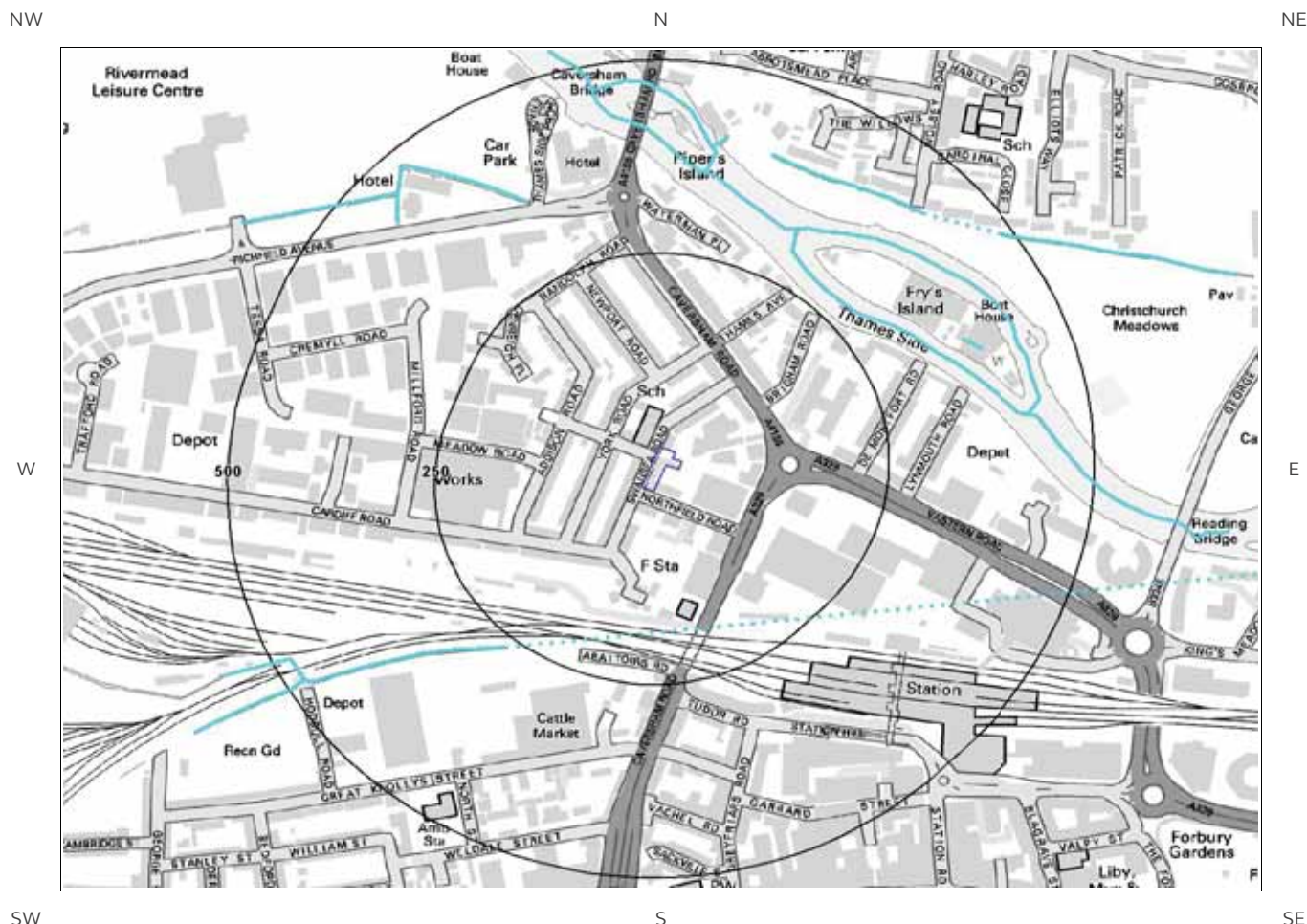
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
8	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
1	165	S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	413	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

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	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 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	
4A	249	W	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 11/07/1966 Version End Date:
5A	249	W	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 11/07/1966 Version End Date:
6A	249	W	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 30/06/2006 Version End Date:
7A	249	W	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 30/06/2006 Version End Date:
8	560	W	470600 174000	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT B Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m³): 6,682 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:
Not shown	605	S	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Data Type: Point Name: PRIMARK STORES LIMITED	Annual Volume (m³): 14,933 Max Daily Volume (m³): 41 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details		
Not shown	748	E	471900 174400	Status: Active Licence No: 28/39/23/0020 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: 72 GEORGE STREET, CAVERSHAM, - BOREHOLE 'A' Data Type: Point Name: Berendsen UK Limited	Annual Volume (m³): 68,190 Max Daily Volume (m³): 300 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 12/01/2016 Version End Date:	
Not shown	749	W	470400 174100	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT A Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m³): 6,682 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:	
Not shown	1066	W	470100 174300	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (E) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9,819 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 09/01/1967 Version End Date:	
Not shown	1157	W	470100 174600	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (D) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9,819 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 09/01/1967 Version End Date:	
Not shown	1365	W	469800 173900	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY	Annual Volume (m³): 136,875 Max Daily Volume (m³): 400 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 07/01/1999 Version End Date:	
Not shown	1478	W	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (B) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9,819 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 09/01/1967 Version End Date:	
Not shown	1478	W	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (C) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9,819 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 09/01/1967 Version End Date:	

ID	Distance (m)	Direction	NGR	Details
Not shown	1597	E	472700 173600	Status: Historical Licence No: 28/39/22/0600 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: FORMER GASWORKS, KENAVON DRIVE, READING (5 BOREHOLES) Data Type: Point Name: M J GLEESON GROUP PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 31/07/2000 Version End Date:
Not shown	1652	W	469500 174200	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (A) Data Type: Point Name: DRAYTON Annual Volume (m³): 9,819 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 09/01/1967 Version End Date:
Not shown	1797	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL Annual Volume (m³): 127,750 Max Daily Volume (m³): 350 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 17/01/1992 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
20B	387	NE	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Transfer between sources Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 12/05/2003 Version End Date:
21B	387	NE	471440 174450	Status: Historical Licence No: 28/39/23/0199/TR Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES - CHRISTCHURCH MEADOWS Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 4,800 Application No: - Original Start Date: 10/09/2008 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/09/2008 Version End Date:
22B	387	NE	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): 31,536 Max Daily Volume (m³): 86 Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 01/04/2006 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	875	E	472072 174185	Status: Active Licence No: TH/039/0023/022 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES AT CAVERSHAM WEIR Data Type: Point Name: The Reading Sustainability Centre CIC Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/02/2016 Expiry Date: 31/03/2028 Issue No: 2 Version Start Date: 19/02/2019 Version End Date:
Not shown	1045	SE	471590 173150	Status: Active Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: ST.GILES STREAM AT THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD Annual Volume (m³): 737,856 Max Daily Volume (m³): 2,016 Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 Version End Date:
Not shown	1045	SE	471590 173150	Status: Historical Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 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
2A	249	W	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
3A	249	W	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: 23/01/1990 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	605	S	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Annual Volume (m³): 14,933 Max Daily Volume (m³): 41 Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 101 Version Start Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1365	W	469800 173900	Data Type: Point Name: PRIMARK STORES LIMITED Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY
				Version End Date: Annual Volume (m³): 136,875 Max Daily Volume (m³): 400 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1797	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL
				Annual Volume (m³): 127,750 Max Daily Volume (m³): 350 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

Identified

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
1	443	E	3	Total catchment

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	941	E	472135 174053	River Name: Thames Reach: Whitchurch Stw - Kennet End/Start of Stretch: Sample Point NGR	A	A	A	A	A
Not shown	1078	SE	472020 173440	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: Start of Stretch NGR	B	A	A	A	A
Not shown	1078	SE	472020 173440	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	1311	S	471351 172807	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: Sample Point NGR	B	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

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

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

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

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	182 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	182 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	265 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
28	265 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
3	278 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 37.2
29	278 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 37.2
4	318 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
Not shown	318 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
5	324 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 37.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
31	324 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 37.2
6	353 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
Not shown	353 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
7	359 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 44.0
8	359 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
Not shown	359 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 44.0
Not shown	359 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
9	374 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	374 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	375 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
36	375 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	393 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.9
12	393	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	393 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.9
Not shown	393 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	398 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
Not shown	398 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
14	425 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	425 E	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 29.7
Not shown	425 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	425 E	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 29.7
16	429 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	429 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
17	430 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	430 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
18	456 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	456 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
19	468 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.4
20	468 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.4
Not shown	468 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.4
Not shown	468 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.4
21	476 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
Not shown	476 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
22	477 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	477 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	478 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	478 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	485 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
Not shown	485 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6

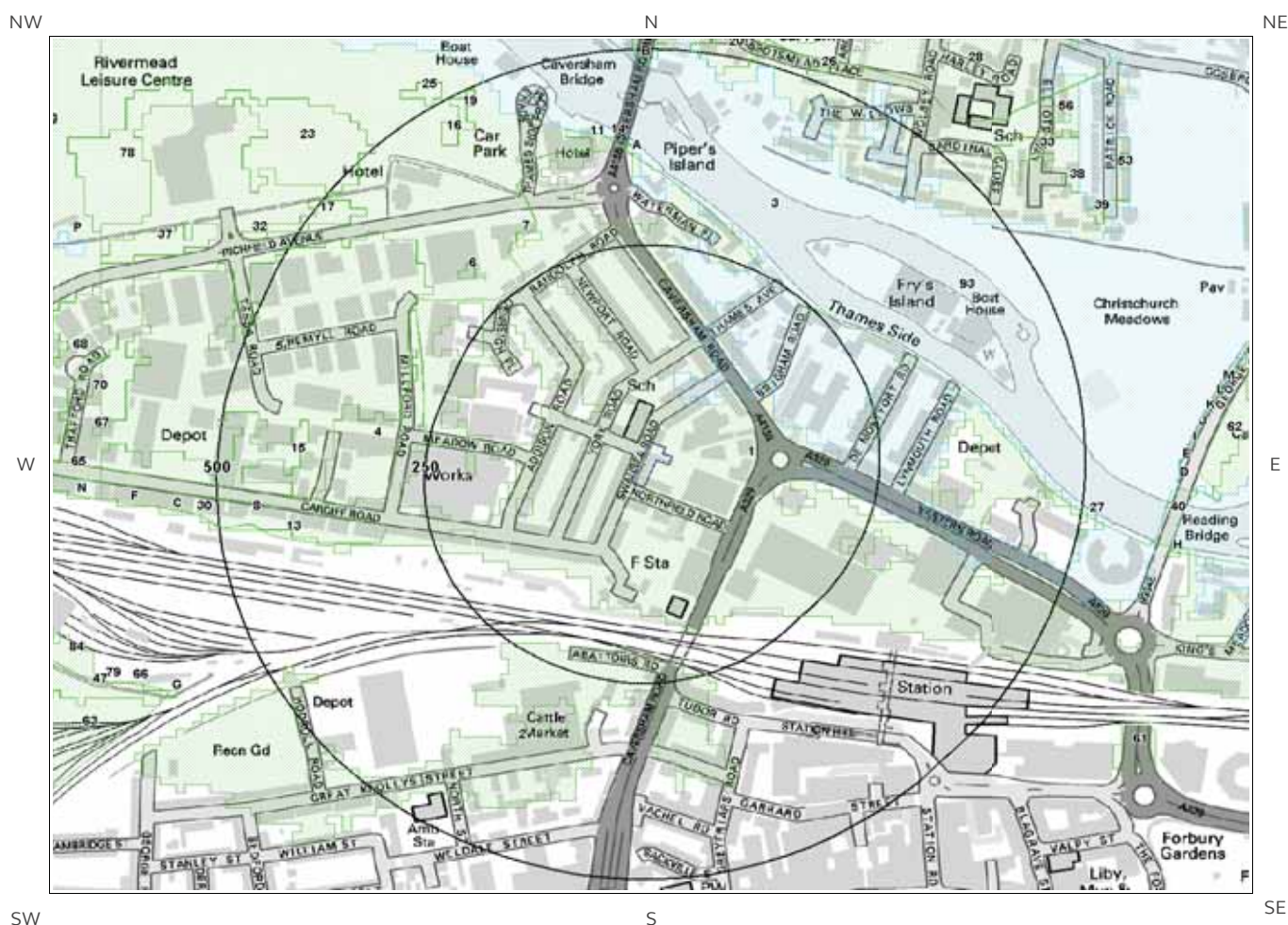
6.11 Surface Water Features

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)



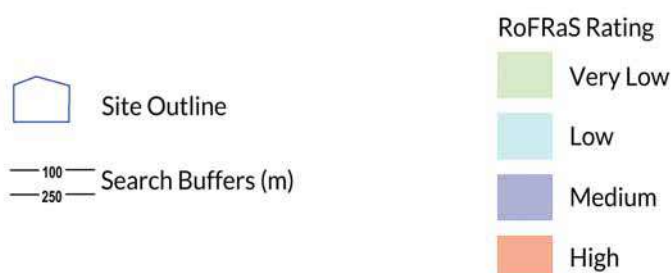
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

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

Identified

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

ID	Distance (m)	Direction	Update	Type
1	0	On Site	09-Sep-2019	Zone 2 - (Fluvial /Tidal Models)
2	210	S	09-Sep-2019	Zone 2 - (Fluvial /Tidal Models)
3	234	NE	09-Sep-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

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

Identified

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

ID	Distance (m)	Direction	Update	Type
1	59	N	09-Sep-2019	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite

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 Low (greater than 1 in 1000 but less than 1 in 100) chance of flooding in any given year.

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

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Low

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

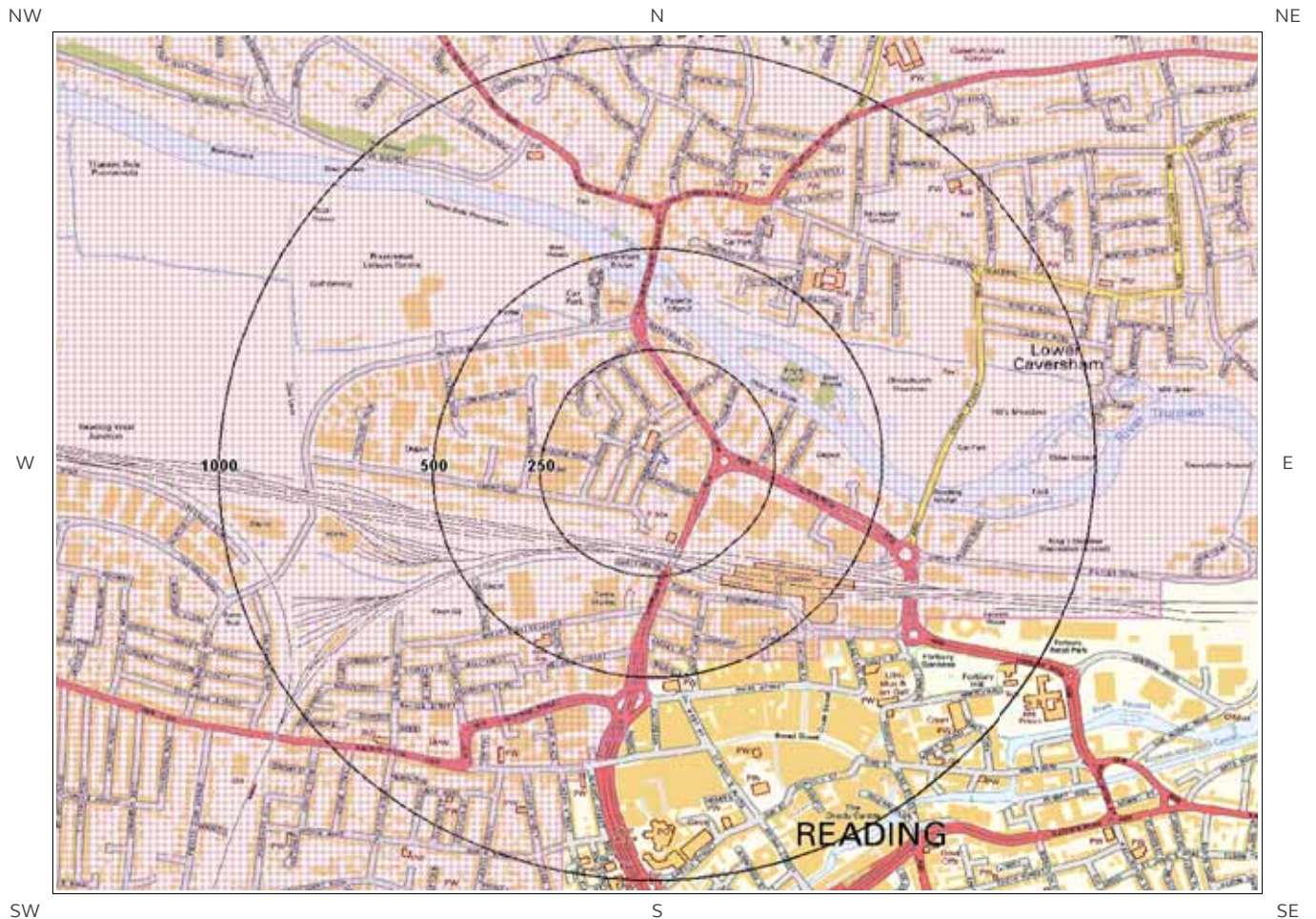
British Geological Survey confidence rating in this result

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



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

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

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:

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

3

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

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
Not shown	1821	N	Existing	DEFRA
Not shown	1912	E	Existing	DEFRA

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

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

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

9.1.2 Landslides

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 Very Low

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

Hazard
Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

* 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

Negligible

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

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

* 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

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Fax: 0115 936 3276.
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BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk



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www.coal.gov.uk



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Adanac Drive, Southampton
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Tel: 08456 050505



Local Authority
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Phone: 0118 937 3787
Web: <http://beta.reading.gov.uk/>
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Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



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

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

Borehole Log

Borehole No.

WS 3

Sheet 1 of 1

Project Name: 28-32 Northfield Road

Project No.
CRM.1726.001

Co-ords:

Hole Type
WS

Location: Reading, RG1 8AH

Level:

Scale
1:50

Client:

Dates: 30/09/2019

Logged By
dn

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
— — — — — — — — — — — —		0.40	ES		0.20			Concrete	
					0.60			MADE GROUND dark brown, grey and black sandy gravelly clay with fine brick fragments	
					0.80			MADE GROUND firm brown silty sandy clay	
		1.00	ES					MADE GROUND dark brown sandy gravelly clay with fine brick fragments, pieces of coal and clinker	1
		1.00	SPT	N=4 (1,1/1,1,1,1)	1.10			MADE GROUND loose grey clayey silty sandy gravel with brick and concrete fragments	
		2.00	SPT	N=0 (0,0/0,0,0,0)	2.10			Very soft becoming firm grey and brown mottled silty sandy gravelly CLAY	2
		2.20	D						
		3.00	D						3
		3.00	SPT	N=3 (1,0/1,1,0,1)					
		4.00	D		3.80			Medium dense grey silty gravelly medium SAND. Gravel is fine sub-angular to rounded of flint	4
		4.00	SPT	N=12 (1,1/3,3,3,3)					
		5.00	D						5
		5.00	SPT	N=14 (4,2/3,3,4,4)	5.30			Medium dense yellow brown sandy fine to medium sub-angular to rounded GRAVEL of flint	
		6.00	SPT	N=16 (4,3/3,3,5,5)	6.00			End of Borehole at 6.00m	6
									7
									8
									9
									10

Remarks

50 mm diameter standpipe installed to 4.0 m

Site Northfield Road				SA1
Job No CRM.1726.001	Dates Start 25-09-19 Finish 25-09-19	Ground Level (m)	Co-Ordinates	

Client	Sheet 1 of 1
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Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
▽	0.20 - 0.30	ES		0.10			MADE GROUND: Angular coarse gravel granite in CONCRETE.	0
				0.20			MADE GROUND: Light to dark grey to light brown angular and subangular fine to coarse gravel of flint CONCRETE (subbase).	
				0.32			MADE GROUND: Light black to light grey angular fine to medium SAND of ash and angular fine GRAVEL of ash.	
				0.60			MADE GROUND: Light brown occasionally light grey occasionally gravelly sandy CLAY with pottery fragments. Gravel is angular coarse brick and concrete. Sand is fine.	
							MADE GROUND: Light brown occasionally very light grey occasionally gravelly slightly clayey angular coarse SAND. Gravel is rounded fine flint.	1
				1.20				
							MADE GROUND: Light black to dark grey occasionally gravelly slightly sandy CLAY. Gravel is angular and subangular, fine to medium flint. Sand is fine to coarse.	
				1.80			Light green light grey occasionally gravelly sandy CLAY. Gravel is angular medium flint. Sand is fine.	2
				2.10			1.80 - 2.10 Increasing flint gravel below 1.80m begl.	
							Trial Pit completed at 2.10m.	
				{4.00}				4

General Remarks

- Dimensions: 1.30x0.70x2.10
1. Machine excavated pit from ground level to 2.10m begl.
2. Groundwater seepage encountered at 2.10m begl.
3. All sides remained vertical and stable.
4. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25	Logged By KC
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Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site Northfield Road				TP2
Job No CRM.1726.001	Dates Start 25-09-19 Finish 25-09-19	Ground Level (m)	Co-Ordinates	

Client	Sheet 1 of 1
--------	-----------------

Water Levels	Samples & In Situ Testing			Depth (m)	Level (mAD)	Legend	Stratum Description	
	Depth (m)	No/Type	Results					
▽	0.20 - 0.30	ES		0.20			MADE GROUND: Light cream to light grey subangular and subrounded fine to medium gravel of flint CONCRETE with steel reinforcement.	0
				0.35			MADE GROUND: Multicoloured (light brown occasionally light dark grey to light red) slightly clayey very sandy angular and subrounded fine to coarse GRAVEL of concrete with brick, flint, nails, glass and occasional cobbles of brick. Sand is fine to coarse.	
				0.70			MADE GROUND: Dark brown occasionally gravelly slightly sandy CLAY. Gravel is angular fine to medium flint and brick. Sand is fine.	
				1.55			Dark brown occasionally gravelly sandy CLAY. Gravel is subangular and rounded, fine to medium flint. Sand is fine.	1
				2.00			Dark brown to brown and light grey slightly sandy clayey subangular and subrounded fine to coarse GRAVEL of flint. Sand is fine to medium.	2
							Trial Pit completed at 2.00m.	
				{4.00}				4

General Remarks
Dimensions: 1.00x1.00x2.00
1. Machine excavated pit from ground level to 2.00m begl.
2. Groundwater seepage encountered at 1.70m begl.
3. All sides remained vertical and stable.
4. On completion, trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25	Logged By KC
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1.1 ENZYGO TP LOG CRM.1726.001 NORTHFIELD ROAD.GPJ GINT STD AGS 3.1 ENZYGO.GPJ 10/10/19

APPENDIX C – CHEMICAL TESTING

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Analytical Report Number : 19-63623

Project / Site name:	Reading	Samples received on:	01/10/2019
Your job number:	CRM.1726.001	Samples instructed on:	02/10/2019
Your order number:		Analysis completed by:	10/10/2019
Report Issue Number:	1	Report issued on:	10/10/2019
Samples Analysed:	4 soil samples		

Signed: Karolina Marek

Karolina Marek
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-63623-1 Reading CRM.1726.001

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The results included within the report are representative of the samples submitted for analysis.

Page 1 of 5

Analytical Report Number: 19-63623

Project / Site name: Reading

Lab Sample Number				19789	19790	19791	19792	
Sample Reference				WS1	WS3	WS3	WS4	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.40	1.00	0.60	
Date Sampled				30/09/2019	30/09/2019	30/09/2019	30/09/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SOILS								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	13	17	18	27	
Total mass of sample received	kg	0.001	NONE	0.98	1.0	0.88	0.76	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite- Loose Fibres	-	Chrysotile- Loose Fibres	-	
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Not-detected	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.9	8.6	10.1	8.2	
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.9	1.6	2.1	8.3	

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.20	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	0.57	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	2.5	0.41	0.40	0.59	
Anthracene	mg/kg	0.05	MCERTS	0.55	< 0.05	< 0.05	0.13	
Fluoranthene	mg/kg	0.05	MCERTS	10	0.92	0.72	1.2	
Pyrene	mg/kg	0.05	MCERTS	9.9	0.89	0.64	1.1	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.8	0.70	0.42	1.0	
Chrysene	mg/kg	0.05	MCERTS	6.2	0.67	0.41	0.90	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	7.9	0.73	0.46	0.99	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	6.2	0.52	0.21	0.71	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	8.8	0.73	0.37	0.98	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	8.3	0.73	0.34	0.87	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.3	0.26	< 0.05	0.38	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	10	0.94	0.51	1.1	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	81.8	7.50	4.48	9.98	
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	17	24	81	
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	1.0	0.9	5.5	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.0	< 0.2	0.4	1.6	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	15	12	30	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	62	39	67	220	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	900	330	410	750	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.0	1.0	< 0.3	6.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	23	30	100	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	84	120	560	

Analytical Report Number: 19-63623

Project / Site name: Reading

Lab Sample Number	19789	19790	19791	19792	
Sample Reference	WS1	WS3	WS3	WS4	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	0.30	0.40	1.00	0.60	
Date Sampled	30/09/2019	30/09/2019	30/09/2019	30/09/2019	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	6.9	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.2	< 2.0	4.7	14	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	11	< 8.0	13	11	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	74	< 8.0	56	70	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	32	< 8.4	< 8.4	21	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	88	< 10	73	100	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	120	< 10	73	120	

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.5	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	3.4	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	40	< 10	< 10	11	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	120	23	19	42	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	17	< 8.4	15	24	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	160	33	26	57	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	180	33	41	81	

TPH (>C5 - C7)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH (>C7 - C8)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	7.9	
TPH (C12 - C16)	mg/kg	4	MCERTS	4.8	< 4.0	4.8	18	
TPH (C16 - C21)	mg/kg	1	MCERTS	51	9.6	20	22	
TPH (C21 - C35)	mg/kg	1	MCERTS	190	23	75	110	
TPH (C35 - C44)	mg/kg	10	NONE	50	< 10	15	45	
TPH Total C5 - C44	mg/kg	10	NONE	300	33	110	200	

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 19-63623

Project / Site name: Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
19789	WS1	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
19790	WS3	None Supplied	0.40	Brown loam and clay with gravel and vegetation.
19791	WS3	None Supplied	1.00	Brown loam and clay with gravel and vegetation.
19792	WS4	None Supplied	0.60	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 19-63623

Project / Site name: Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L009-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 19-64803

Project / Site name:	Reading	Samples received on:	01/10/2019
Your job number:	CRM.11726.001	Samples instructed on:	09/10/2019
Your order number:		Analysis completed by:	11/10/2019
Report Issue Number:	1	Report issued on:	11/10/2019
Samples Analysed:	2 soil samples		

Signed: *Karolina Marek*

Karolina Marek
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-64803-1 Reading CRM.11726.001

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The results included within the report are representative of the samples submitted for analysis.

Page 1 of 5

Analytical Report Number: 19-64803

Project / Site name: Reading

Lab Sample Number				1324974	1324975			
Sample Reference				SA1	TP2			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	0.30			
Date Sampled				26/09/2019	26/09/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	17	11			
Total mass of sample received	kg	0.001	NONE	1.0	1.7			

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile, Amosite- Loose Fibrous Debris			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected			

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.3	10.3			
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.6	1.6			

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0			
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	1.0	0.23			
Anthracene	mg/kg	0.05	MCERTS	0.23	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	1.9	0.42			
Pyrene	mg/kg	0.05	MCERTS	1.8	0.38			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.8	0.26			
Chrysene	mg/kg	0.05	MCERTS	1.3	0.23			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.7	0.31			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.0	0.20			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.7	0.30			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.8	0.22			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.45	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.4	0.38			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	19.2	2.93			
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	14			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.2	1.1			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.9			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	35			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	140	90			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	84	260			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.3	1.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	42	21			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	530			

Analytical Report Number: 19-64803

Project / Site name: Reading

Lab Sample Number				1324974	1324975			
Sample Reference				SA1	TP2			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	0.30			
Date Sampled				26/09/2019	26/09/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.7	2.4			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	11	16			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	76	240			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	17	46			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	91	260			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	110	310			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	5.3	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	22	13			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	74	90			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	19	52			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	100	100			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	120	160			

TPH (>C5 - C7)	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH (>C7 - C8)	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH (C12 - C16)	mg/kg	4	MCERTS	9.0	< 4.0			
TPH (C16 - C21)	mg/kg	1	MCERTS	34	29			
TPH (C21 - C35)	mg/kg	1	MCERTS	150	330			
TPH (C35 - C44)	mg/kg	10	NONE	36	98			
TPH Total C5 - C44	mg/kg	10	NONE	230	460			



Analytical Report Number : 19-64803

Project / Site name: Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1324974	SA1	None Supplied	0.30	Grey clay and sand with gravel.
1324975	TP2	None Supplied	0.30	Brown clay and sand with gravel and brick.

Analytical Report Number : 19-64803

Project / Site name: Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Human Health Assessment Reference Values

Determinant	Units	GAC Value Residential					
		With Plant Uptake			Without Plant Uptake		
Arsenic	mg/kg	37			40		
Cadmium	mg/kg	11			85		
Chromium	mg/kg	910			910		
Chromium VI	mg/kg	6			6		
Lead	mg/kg	200			310		
Mercury	mg/kg	40			56		
Nickel	mg/kg	130			180		
Selenium	mg/kg	250			430		
Copper	mg/kg	2400			7100		
Zinc	mg/kg	3700			40000		
Cyanide	mg/kg	791			800		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	120	200	380	440	690	1200
Napthalene	mg/kg	2.3	5.6	13	2.3	5.6	13
Acenaphtylene	mg/kg	170	420	920	2900	4600	6000
Acenaphthene	mg/kg	210	510	1100	3000	4700	6000
Flourene	mg/kg	170	400	860	2800	3800	4500
Phenanthrene	mg/kg	95	220	440	1300	1500	1500
Anthracene	mg/kg	2400	5400	11000	31000	35000	37000
Fluoranthene	mg/kg	280	560	890	1500	1600	1600
Pyrene	mg/kg	620	1200	2000	3700	3800	3800
Benzo(a)Anthracene	mg/kg	7.2	11	13	11	14	15
Chrysene	mg/kg	15	22	27	30	31	32
Benzo(b)Flouranthene	mg/kg	2.6	3.3	3.7	3.9	4.0	4.0
Benzo(k)Flouranthene	mg/kg	77	93	100	110	110	110
Benzo(a)Pyrene	mg/kg	2.2	2.7	3.0	3.2	3.2	3.2
Indeno(123-cd)Pyrene	mg/kg	27	36	41	45	46	46
Dibenzo(a,h)Anthracene	mg/kg	0.24	0.28	0.3	0.31	0.32	0.32
Benzo(ghi)Perylene	mg/kg	320	340	350	360	360	360
TPH C ₅ -C ₆ Aliphatic	mg/kg	42	78	160	42	78	160
TPH C ₆ -C ₈ Aliphatic	mg/kg	100	230	530	100	230	530
TPH C ₈ -C ₁₀ Aliphatic	mg/kg	27	65	150	27	65	150
TPH C ₁₀ -C ₁₂ Aliphatic	mg/kg	130	330	760	130	330	770
TPH C ₁₂ -C ₁₆ Aliphatic	mg/kg	1100	2400	4300	1100	2400	4400
TPH C ₁₆ -C ₃₅ Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C ₃₅ -C ₄₄ Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C ₅ -C ₇ Aromatic	mg/kg	70	140	300	370	690	1400
TPH C ₇ -C ₈ Aromatic	mg/kg	130	290	660	860	1800	3900
TPH C ₈ -C ₁₀ Aromatic	mg/kg	34	83	190	47	110	270
TPH C ₁₀ -C ₁₂ Aromatic	mg/kg	74	180	380	250	590	1200
TPH C ₁₂ -C ₁₆ Aromatic	mg/kg	140	330	660	1800	2300	2500
TPH C ₁₆ -C ₂₁ Aromatic	mg/kg	260	540	930	1900	1900	1900
TPH C ₂₁ -C ₃₅ Aromatic	mg/kg	1100	1500	1700	1900	1900	1900
TPH C ₃₅ -C ₄₄ Aromatic	mg/kg	1100	1500	1700	1900	1900	1900
Benzene	mg/kg	0.087	0.17	0.37	0.38	0.70	1.4
Toluene	mg/kg	130	290	660	880	1900	3900
Ethylbenzene	mg/kg	47	110	260	83	190	440
Xylene	mg/kg	56	130	310	79	180	430

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

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Determinant	Units	GAC Value					
		Park POS			Allotments		
Arsenic	mg/kg	170			43		
Cadmium	mg/kg	532			1.9		
Chromium	mg/kg	33000			18000		
Chromium VI	mg/kg	220			1.8		
Lead	mg/kg	1300			80		
Mercury	mg/kg	240			19		
Nickel	mg/kg	800			53		
Selenium	mg/kg	1800			88		
Copper	mg/kg	44000			520		
Zinc	mg/kg	170000			620		
Cyanide	mg/kg						
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	66	140	280
Napthalene	mg/kg	1200	1900	3000	4.1	10	24
Acenaphtylene	mg/kg	29000	30000	30000	28	69	160
Acenaphthene	mg/kg	29000	30000	30000	34	85	200
Flourene	mg/kg	20000	20000	20000	27	67	160
Phenanthrene	mg/kg	6200	6200	6300	15	38	90
Anthracene	mg/kg	150000	150000	150000	380	950	2200
Fluoranthene	mg/kg	6300	6300	6400	52	130	290
Pyrene	mg/kg	15000	15000	15000	110	270	620
Benzo(a)Anthracene	mg/kg	49	56	62	2.9	6.5	13
Chrysene	mg/kg	93	110	120	4.1	9.4	19
Benzo(b)Flouranthene	mg/kg	13	15	16	0.99	2.1	3.9
Benzo(k)Flouranthene	mg/kg	370	410	440	37	75	130
Benzo(a)Pyrene	mg/kg	11	12	13	0.97	2.0	3.5
Indeno(123-cd)Pyrene	mg/kg	150	170	180	9.5	21	39
Dibenzo(a,h)Anthracene	mg/kg	1.1	1.3	1.4	0.14	0.27	0.43
Benzo(ghi)Perylene	mg/kg	1400	1500	1600	290	470	640
TPH C ₅ -C ₆ Aliphatic	mg/kg	95000	130000	180000	730	1700	3900
TPH C ₆ -C ₈ Aliphatic	mg/kg	150000	220000	320000	2300	5600	13000
TPH C ₈ -C ₁₀ Aliphatic	mg/kg	14000	18000	21000	320	770	1700
TPH C ₁₀ -C ₁₂ Aliphatic	mg/kg	21000	23000	24000	2200	4400	7300
TPH C ₁₂ -C ₁₆ Aliphatic	mg/kg	25000	25000	26000	11000	13000	13000
TPH C ₁₆ -C ₃₅ Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C ₃₅ -C ₄₄ Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C ₅ -C ₇ Aromatic	mg/kg	76000	84000	92000	13	27	57
TPH C ₇ -C ₈ Aromatic	mg/kg	87000	95000	100000	22	51	120
TPH C ₈ -C ₁₀ Aromatic	mg/kg	7200	8500	9300	8.6	21	51
TPH C ₁₀ -C ₁₂ Aromatic	mg/kg	9200	9700	10000	13	31	74
TPH C ₁₂ -C ₁₆ Aromatic	mg/kg	10000	10000	10000	23	57	130
TPH C ₁₆ -C ₂₁ Aromatic	mg/kg	7600	7700	7800	46	110	260
TPH C ₂₁ -C ₃₅ Aromatic	mg/kg	7800	7800	7900	370	820	1600
TPH C ₃₅ -C ₄₄ Aromatic	mg/kg	7800	7800	7900	370	820	1600
Benzene	mg/kg	90	100	110	0.017	0.034	0.075
Toluene	mg/kg	87000	95000	100000	22	51	120
Ethylbenzene	mg/kg	17000	22000	27000	16	39	91
Xylene	mg/kg	17000	23000	31000	28	67	160

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Controlled Waters Assessment Reference Values

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



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

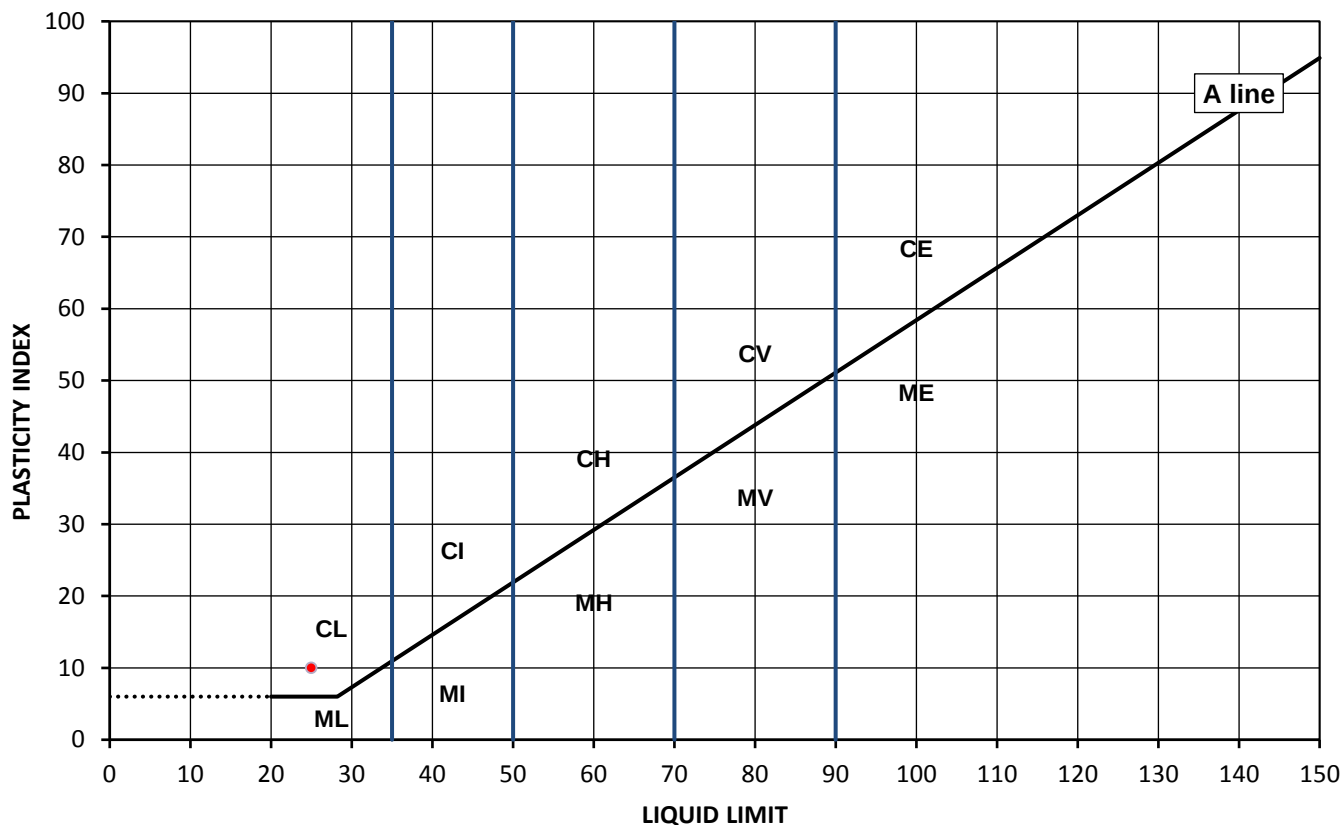
Test Results:

Laboratory Reference: 1322185
Hole No.: WS1
Sample Reference: Not Given
Soil Description: Brown gravelly clayey SAND

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
14	25	15	10	62



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 232.5

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The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

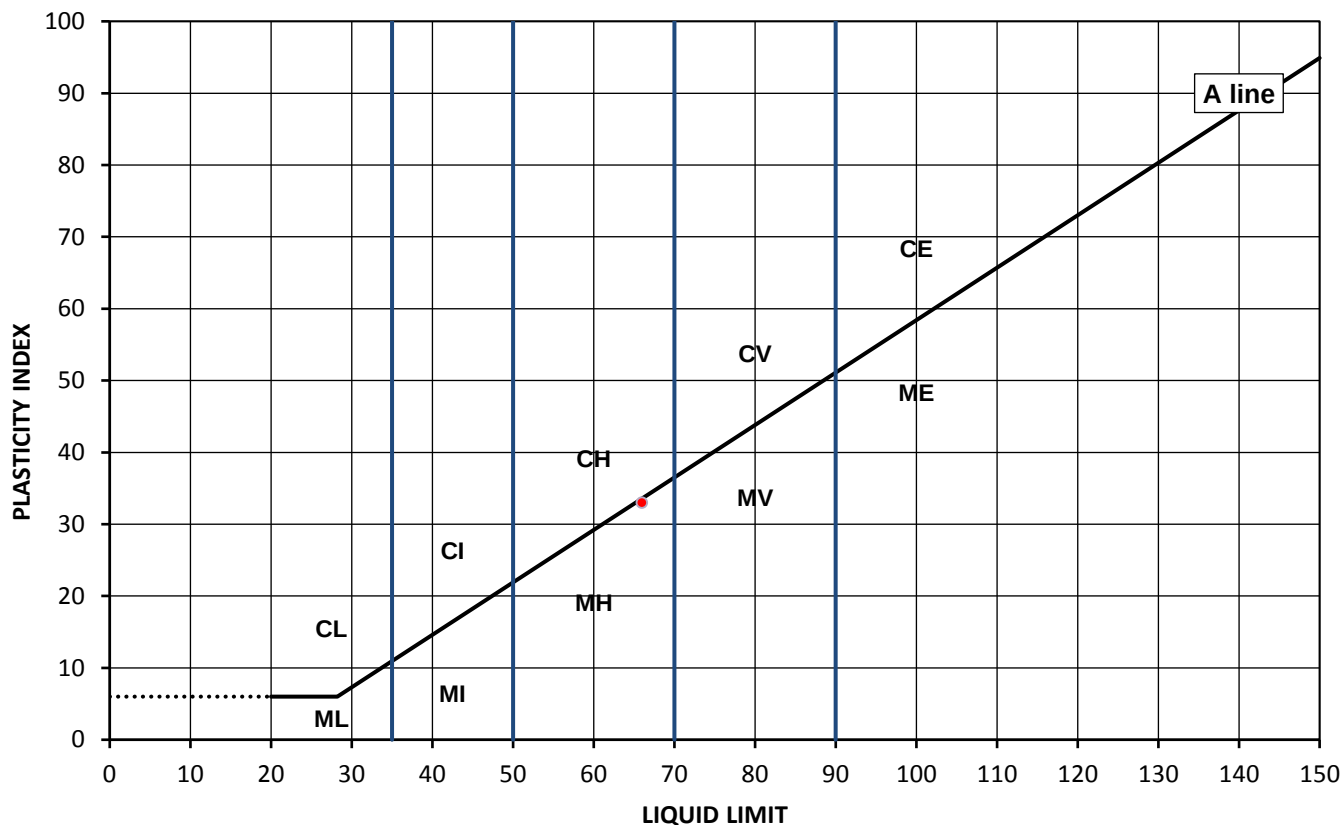
Test Results:

Laboratory Reference: 1322195
Hole No.: WS4
Sample Reference: Not Given
Soil Description: Dark grey slightly gravelly CLAY

Depth Top [m]: 1.10
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	66	33	33	69



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 232.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

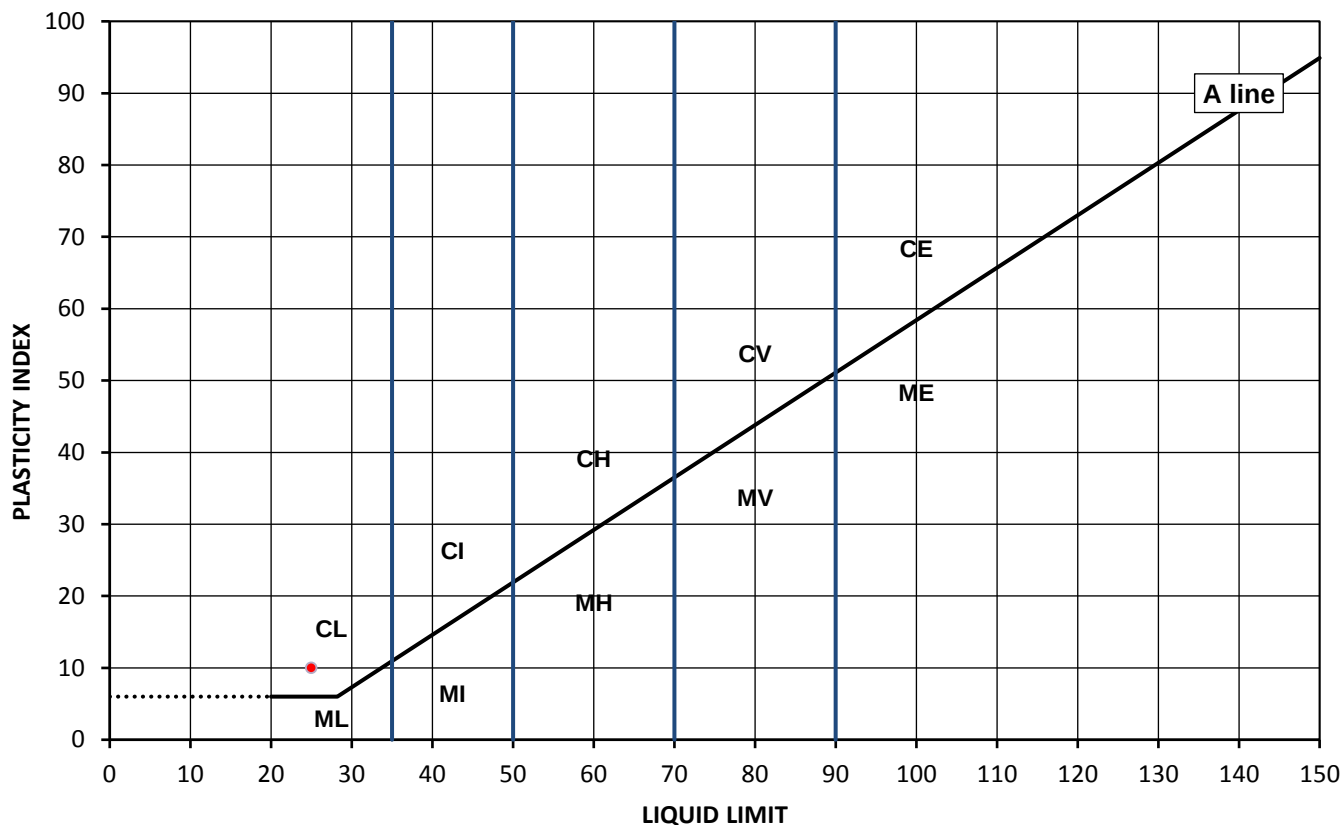
Test Results:

Laboratory Reference: 1322186
Hole No.: WS1
Sample Reference: Not Given
Soil Description: Brown gravelly clayey SAND

Depth Top [m]: 3.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
23	25	15	10	49



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

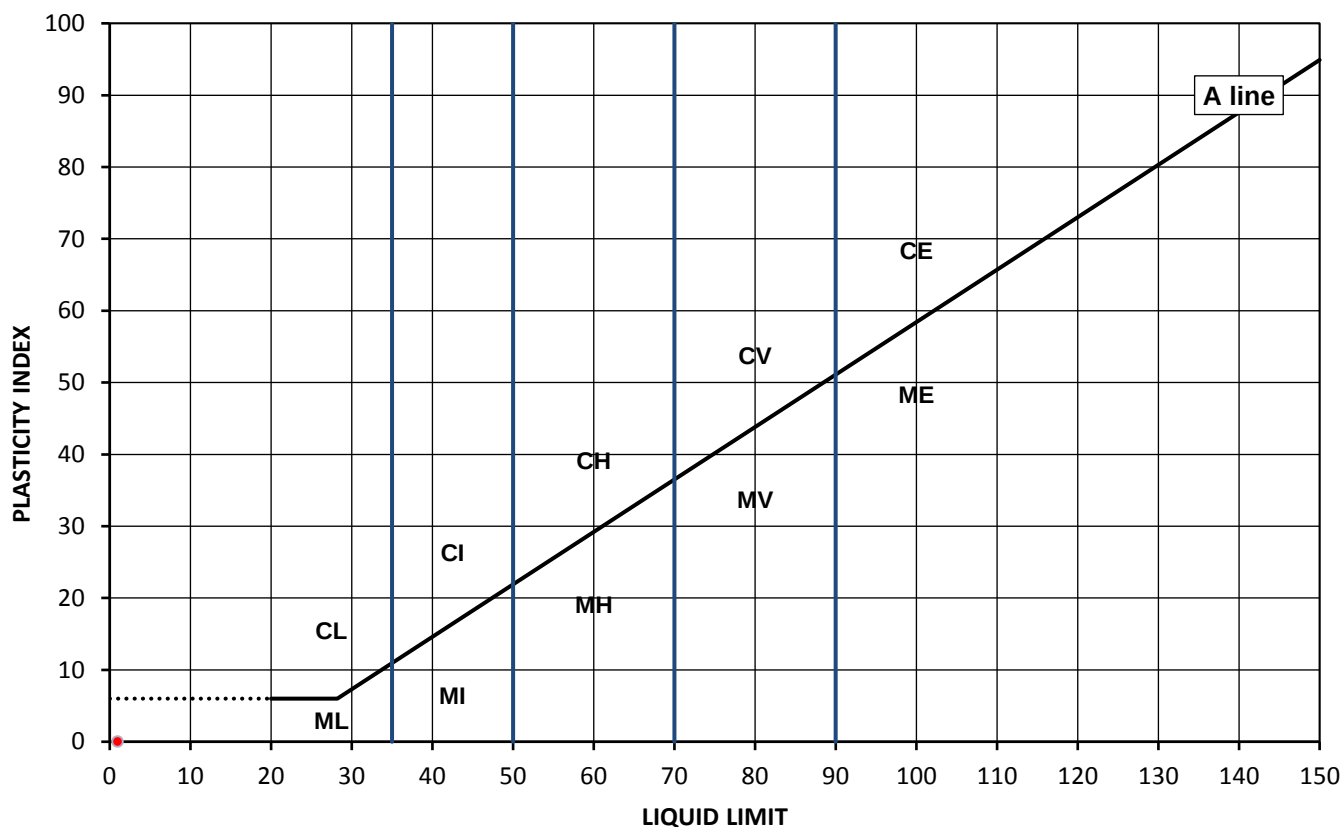
Test Results:

Laboratory Reference: 1322187
Hole No.: WS1
Sample Reference: Not Given
Soil Description: Brown very sandy GRAVEL

Depth Top [m]: 4.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
8.8	N/A	NP.	NP.	-



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP – non plastic

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

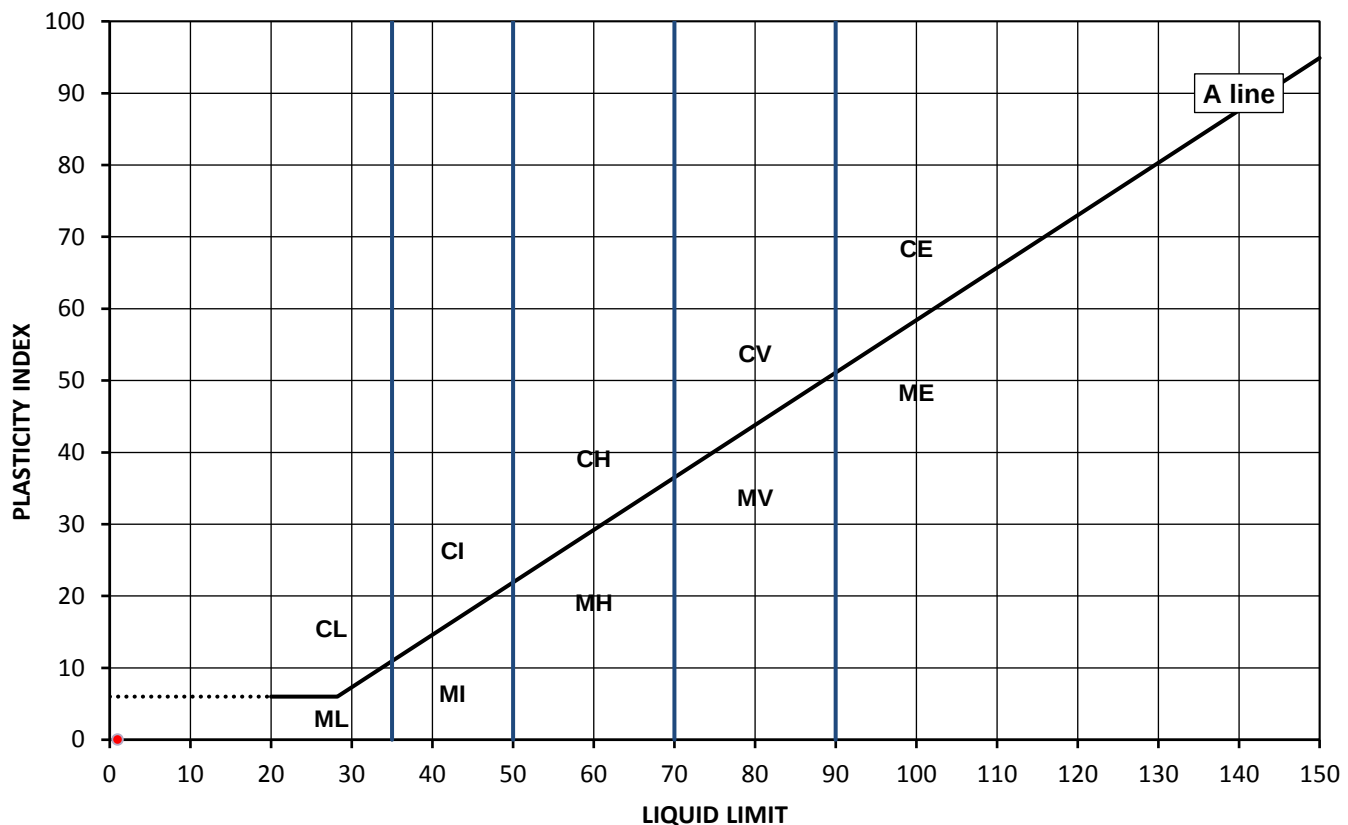
Test Results:

Laboratory Reference: 1322188
Hole No.: WS1
Sample Reference: Not Given
Soil Description: Brown very sandy GRAVEL

Depth Top [m]: 5.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
8.4	N/A	NP.	NP.	-



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	L	Low	Liquid Limit	below 35
M	Silt		I	Medium		35 to 50
			H	High		50 to 70
			V	Very high		70 to 90
			E	Extremely high		exceeding 90
	Organic		O	append to classification for organic material (eg CHO)		

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP – non plastic

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
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Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

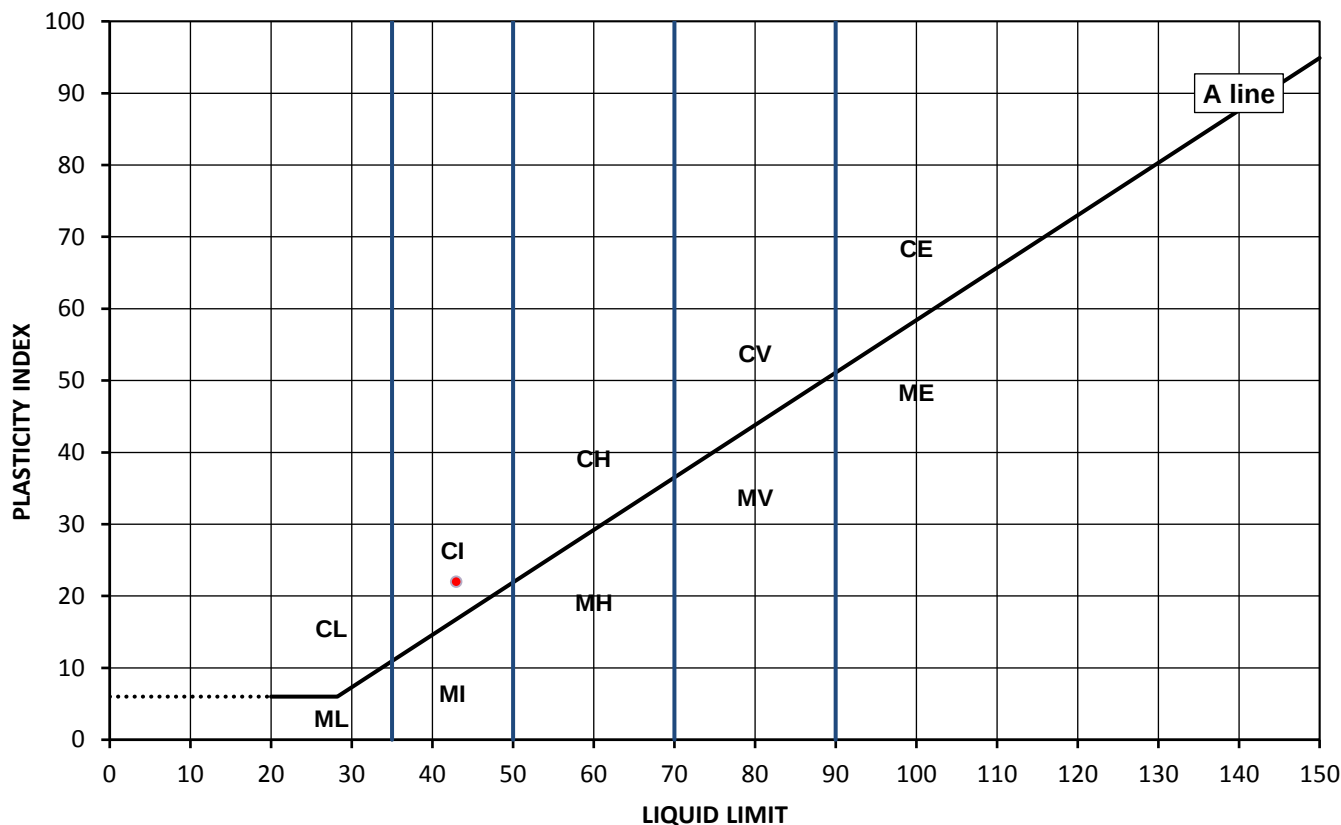
Test Results:

Laboratory Reference: 1322189
Hole No.: WS3
Sample Reference: Not Given
Soil Description: Grey slightly gravelly sandy CLAY

Depth Top [m]: 2.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
33	43	21	22	69



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
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Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

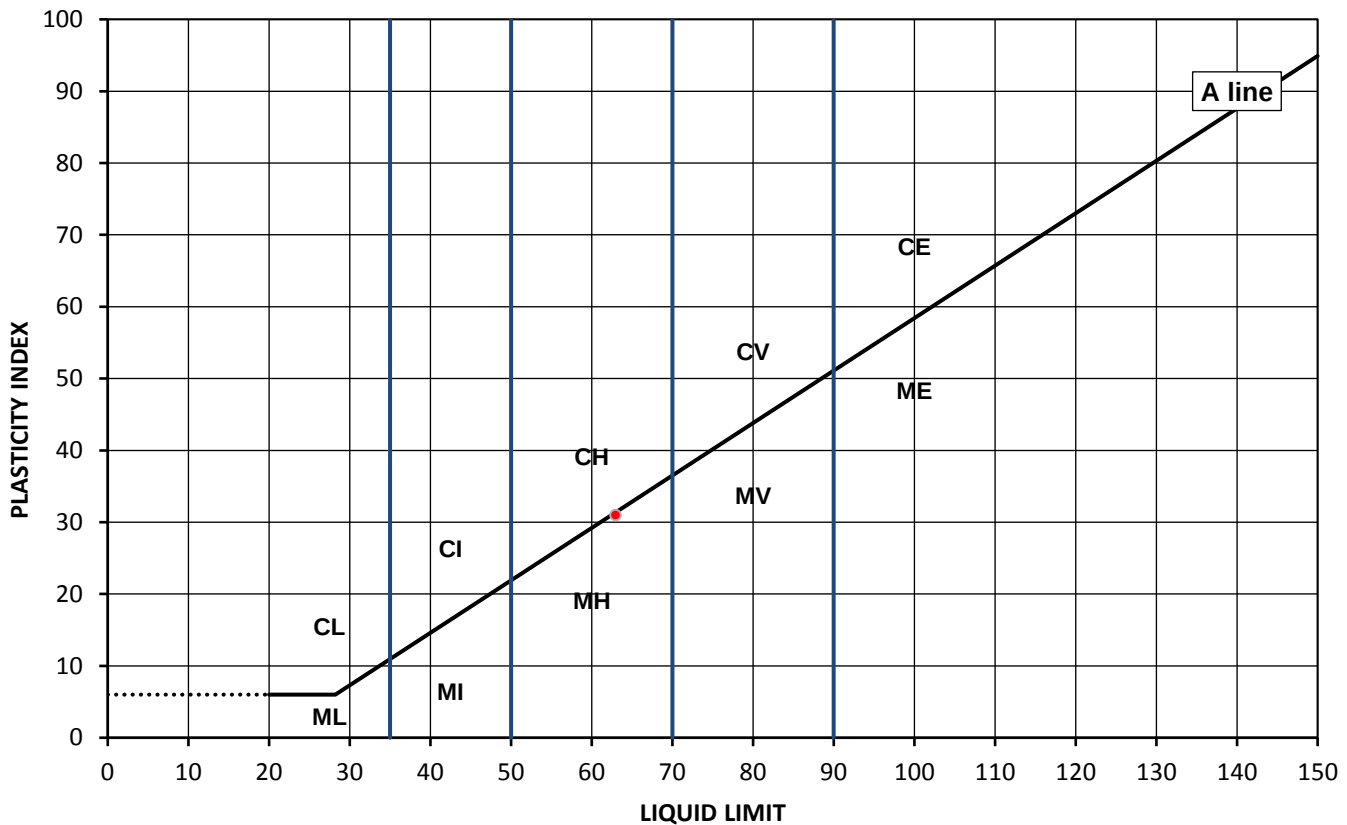
Test Results:

Laboratory Reference: 1322190
Hole No.: WS3
Sample Reference: Not Given
Soil Description: Brownish grey CLAY

Depth Top [m]: 3.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
39	63	32	31	100



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

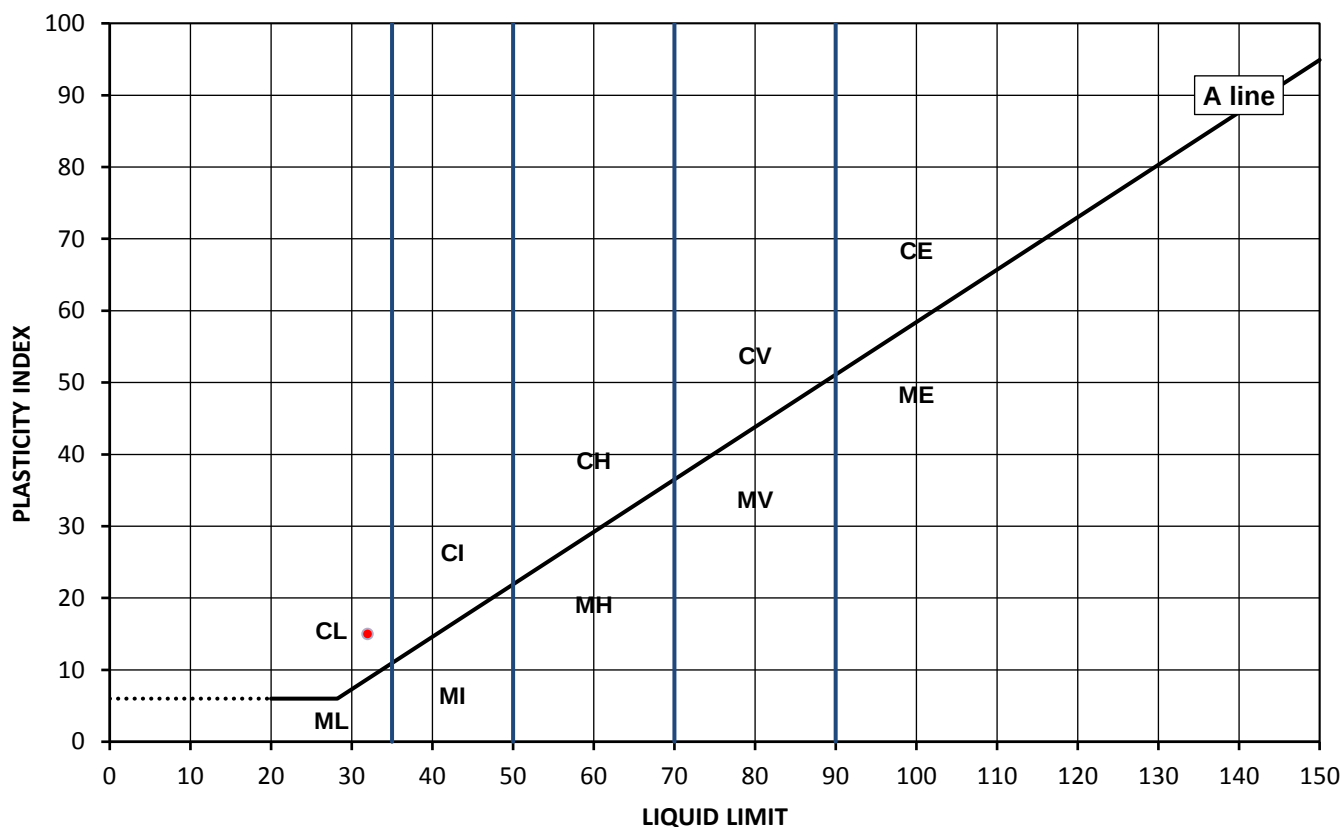
Test Results:

Laboratory Reference: 1322191
Hole No.: WS3
Sample Reference: Not Given
Soil Description: Brown gravelly very sandy CLAY

Depth Top [m]: 4.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	32	17	15	47



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

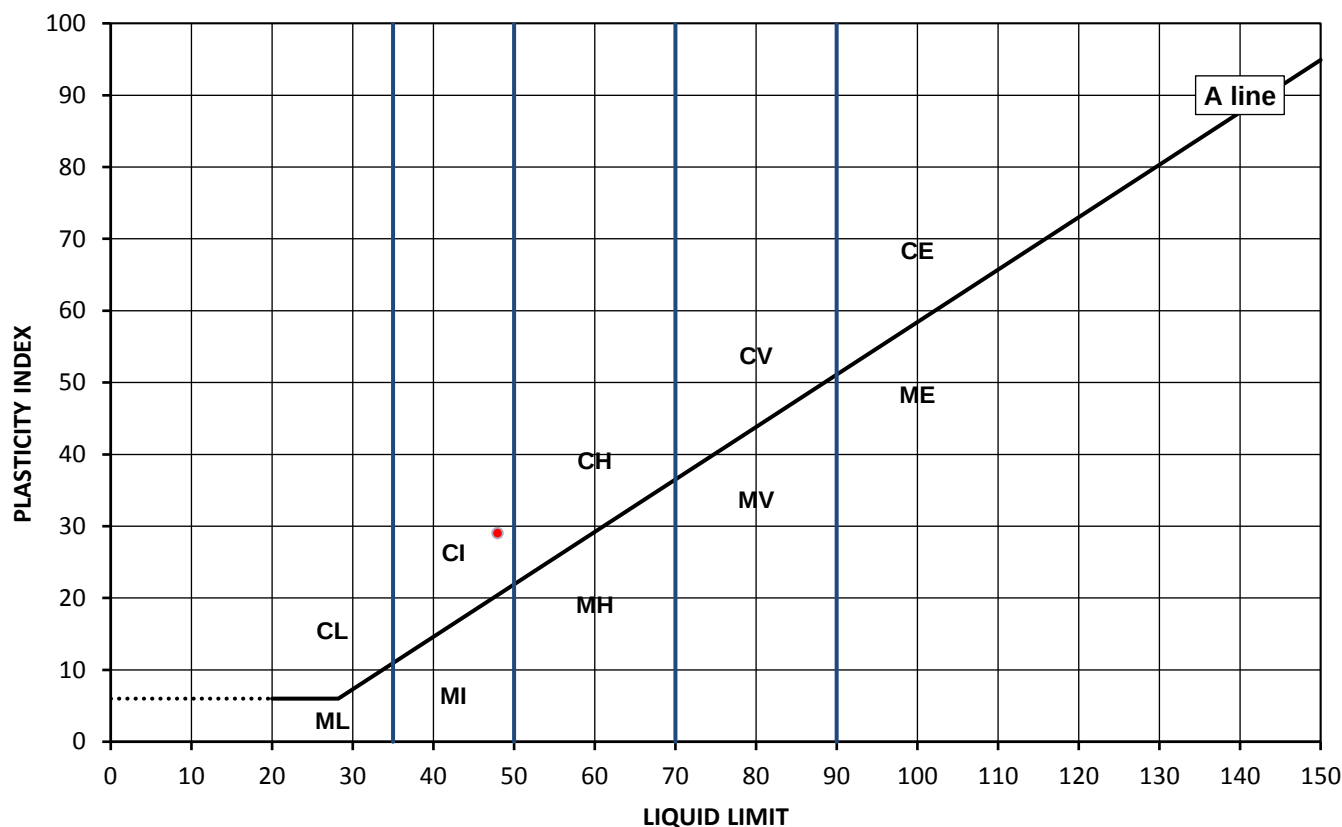
Test Results:

Laboratory Reference: 1322192
Hole No.: WS4
Sample Reference: Not Given
Soil Description: Brown gravelly slightly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	48	19	29	64



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

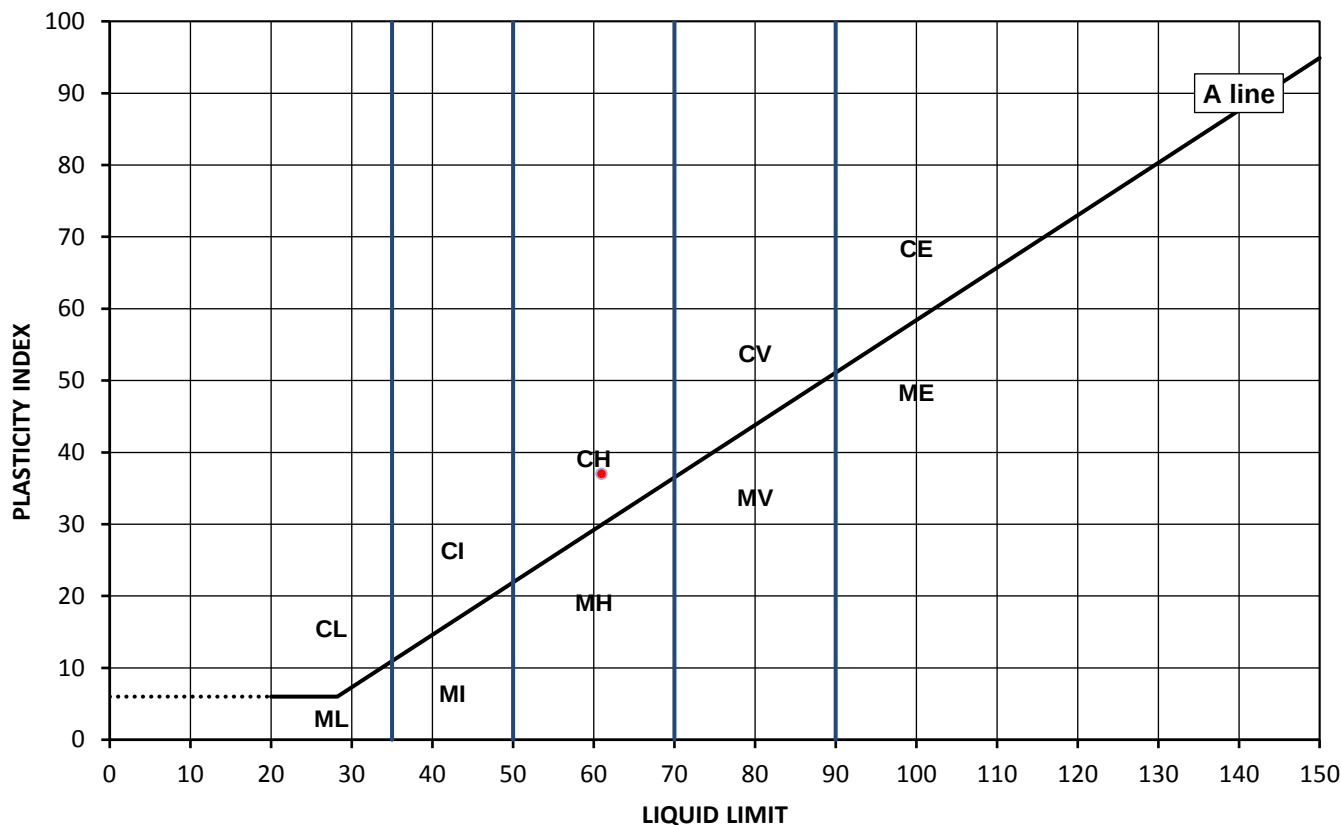
Test Results:

Laboratory Reference: 1322193
Hole No.: WS4
Sample Reference: Not Given
Soil Description: Brownish grey CLAY

Depth Top [m]: 3.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
34	61	24	37	100



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64205
Date Sampled: 30/09/2019
Date Received: 01/10/2019
Date Tested: 08/10/2019
Sampled By: Not Given

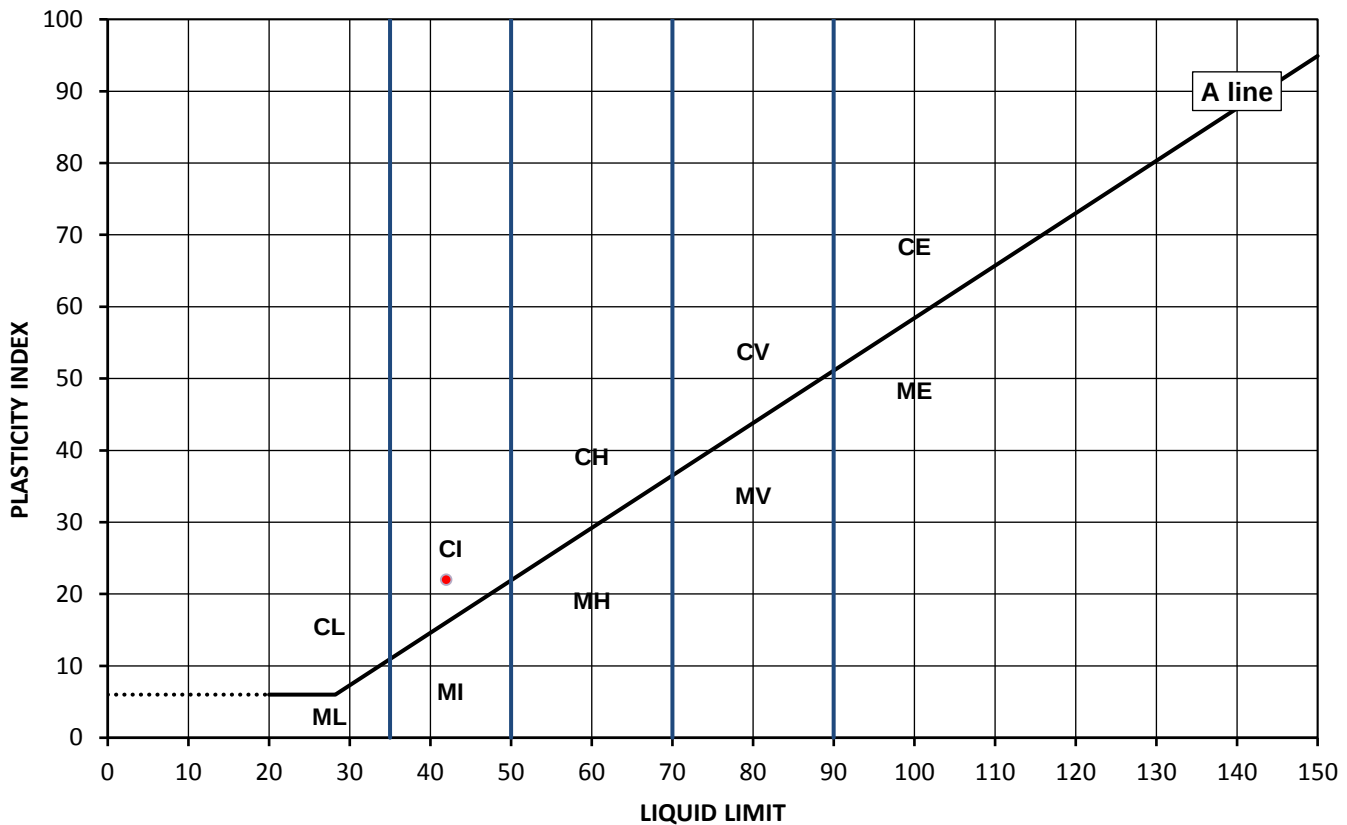
Test Results:

Laboratory Reference: 1322194
Hole No.: WS4
Sample Reference: Not Given
Soil Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 4.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
25	42	20	22	95



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 16/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 236.5

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4041

Client: Enzygo Geoenvironmental Ltd
 Client Address: The Byre, Woodend Lane,
 Cromhall, Gloucestershire,
 GL12 8AA
 Contact: Steve Rhodes
 Site Name: Reading
 Site Address: Not Given

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg
 by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990:
 Clause 8.2

i2 Analytical Ltd
 7 Woodshots Meadow
 Croxley Green Business Park
 Watford Herts WD18 8YS



Environmental Science

Client Reference: CRM.1726.001

Job Number: 19-64205

Date Sampled: 30/09/2019

Date Received: 01/10/2019

Date Tested: 08/10/2019

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	LL	PL	PI	bulk	dry	PD			
			m	m															
1322185	WS1	Not Given	2.00	Not Given	D	Brown gravelly clayey SAND	Atterberg 1 Point	14		62	25	15	10						
1322186	WS1	Not Given	3.00	Not Given	D	Brown gravelly clayey SAND	Atterberg 4 Point	23		49	25	15	10						
1322187	WS1	Not Given	4.00	Not Given	D	Brown very sandy GRAVEL	Atterberg 4 Point	8.8		-	N/A	NP.	NP.						
1322188	WS1	Not Given	5.00	Not Given	D	Brown very sandy GRAVEL	Atterberg 4 Point	8.4		-	N/A	NP.	NP.						
1322189	WS3	Not Given	2.20	Not Given	D	Grey slightly gravelly sandy CLAY	Atterberg 4 Point	33		69	43	21	22						
1322190	WS3	Not Given	3.00	Not Given	D	Brownish grey CLAY	Atterberg 4 Point	39		100	63	32	31						
1322191	WS3	Not Given	4.00	Not Given	D	Brown gravelly very sandy CLAY	Atterberg 4 Point	29		47	32	17	15						
1322195	WS4	Not Given	1.10	Not Given	D	Dark grey slightly gravelly CLAY	Atterberg 1 Point	26		69	66	33	33						
1322192	WS4	Not Given	2.00	Not Given	D	Brown gravelly slightly sandy CLAY	Atterberg 4 Point	26		64	48	19	29						
1322193	WS4	Not Given	3.00	Not Given	D	Brownish grey CLAY	Atterberg 4 Point	34		100	61	24	37						

Note: # Non accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
 PL Geotechnical Laboratory Manager
 Date Reported: 16/10/2019

Signed:

Darren Berrill
 Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

GF 234.7

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4041

Client: Enzygo Geoenvironmental Ltd
 Client Address: The Byre, Woodend Lane,
 Cromhall, Gloucestershire,
 GL12 8AA
 Contact: Steve Rhodes
 Site Name: Reading
 Site Address: Not Given

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg
 by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990:
 Clause 8.2

i2 Analytical Ltd
 7 Woodshots Meadow
 Croxley Green Business Park
 Watford Herts WD18 8YS



Environmental Science

Client Reference: CRM.1726.001

Job Number: 19-64205

Date Sampled: 30/09/2019

Date Received: 01/10/2019

Date Tested: 08/10/2019

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um	LL	PL	PI	bulk Mg/m3	dry Mg/m3	PD Mg/m3			
1322194	WS4	Not Given	4.00	Not Given	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 4 Point	25		95	42	20	22						

Note: # Non accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
 PL Geotechnical Laboratory Manager
 Date Reported: 16/10/2019

Signed: Darren Berrill
 Geotechnical General Manager

for and on behalf of i2 Analytical Ltd GF 234.7

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64929
Date Sampled: 26/09/2019
Date Received: 01/10/2019
Date Tested: 12/10/2019
Sampled By: Not Given

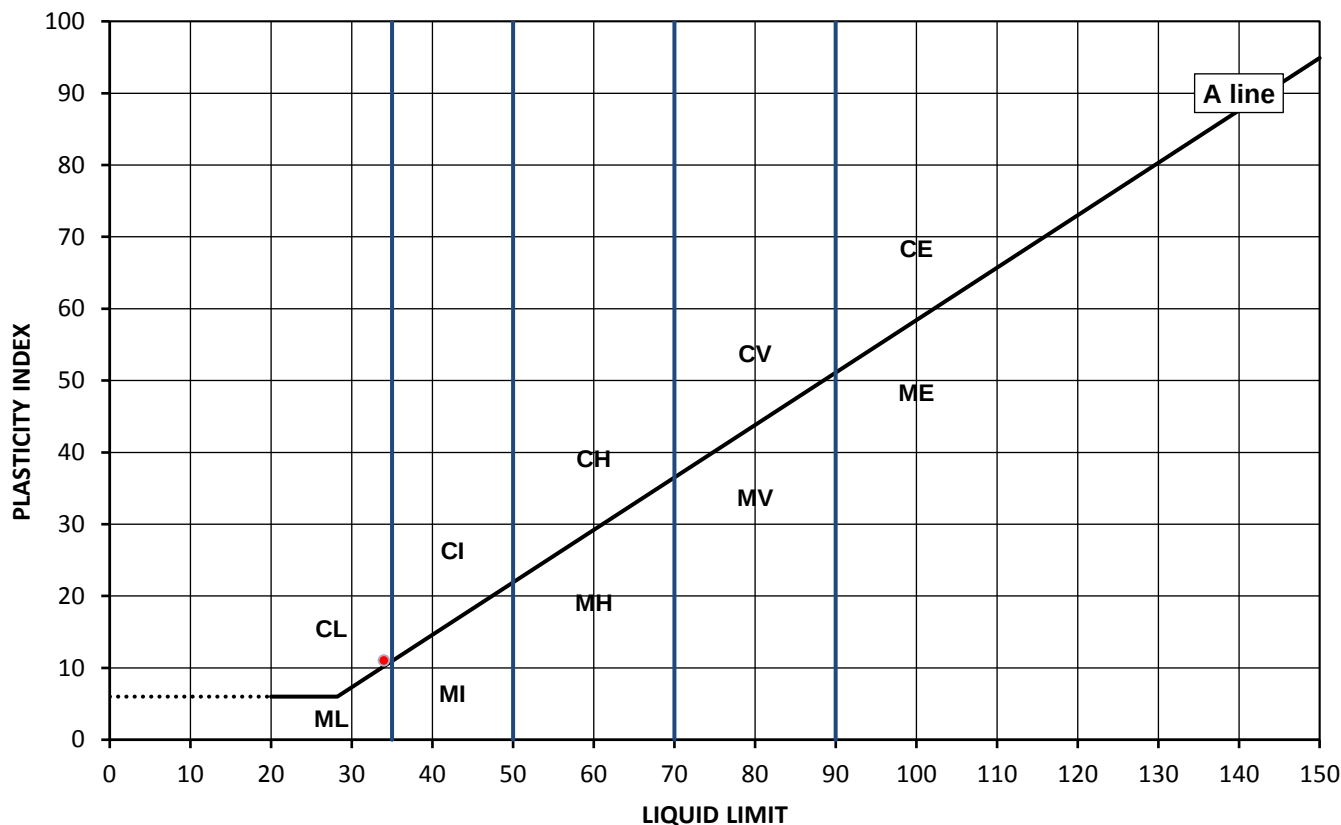
Test Results:

Laboratory Reference: 1325711
Hole No.: SA1
Sample Reference: Not Given
Soil Description: Dark brown gravelly very sandy CLAY

Depth Top [m]: 0.60
Depth Base [m]: Not Given
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
18	34	23	11	57



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 17/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 232.5

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TEST CERTIFICATE

California Bearing Ratio Top Only

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA
Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM.1726.001
Job Number: 19-64929
Date Sampled: 26/09/2019
Date Received: 01/10/2019
Date Tested: 16/10/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1325711
Hole No.: SA1
Sample Reference: Not Given
Sample Description: Dark brown gravelly very sandy CLAY

Depth Top [m]: 0.60
Depth Base [m]: Not Given
Sample Type: B

Specimen Preparation:

Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammer

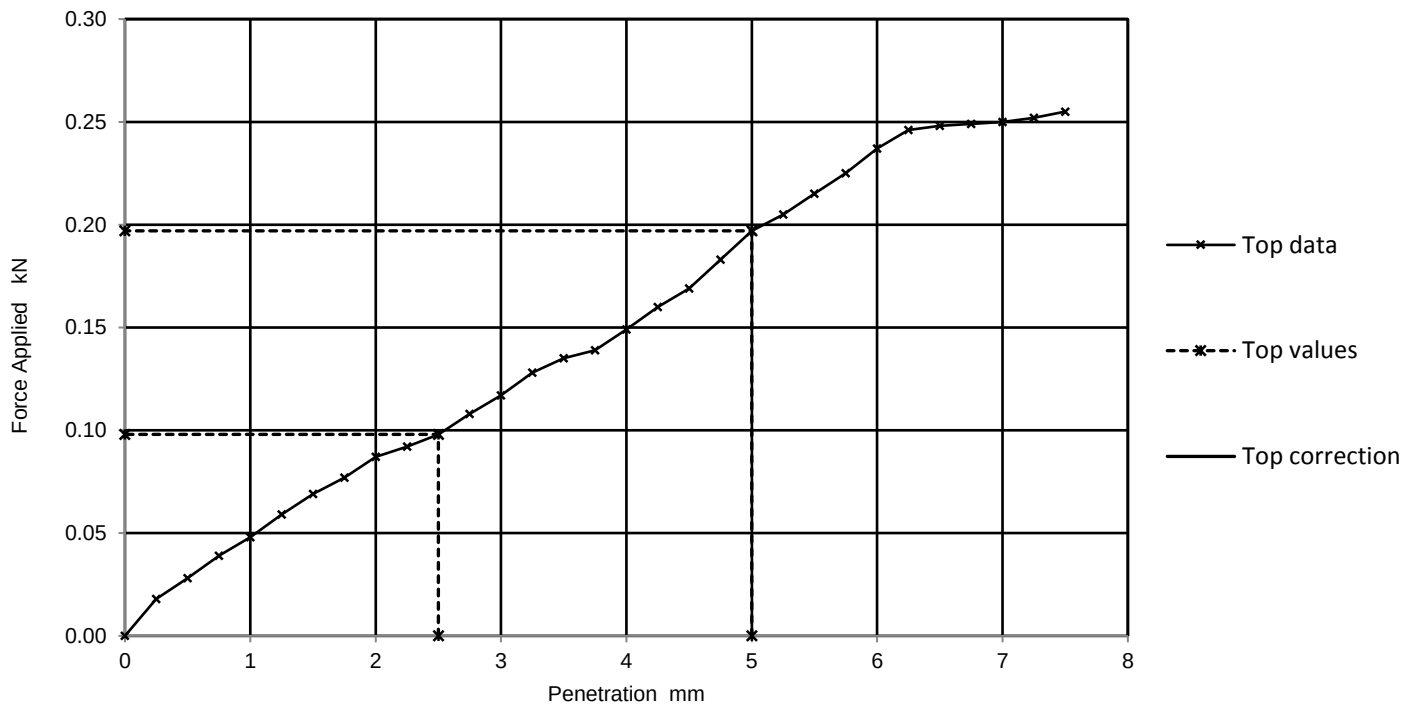
Soaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 3 %

Initial Specimen details Bulk density 1.99 Mg/m3
Dry density 1.67 Mg/m3
Moisture content 19 %

Surcharge applied 8 kg
4.9 kPa

Force v Penetration Plots



Results

TOP

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.7	1.0	1.0	N/A

Moisture Content %
19

Remarks:

Test/ Specimen
specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 17/10/2019

Signed: Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd GF 277.4

*Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA

Contact: Steve Rhodes

Site Name: Reading

Site Address: Not Given

Client Reference: CRM-1726-001

Job Number: 19-65683

Date Sampled: 28/09/2019

Date Received: 11/10/2019

Date Tested: 17/10/2019

Sampled By: Not Given

Test Results:

Laboratory Reference: 1329886

Hole No.: SA1

Sample Reference: Not Given

Soil Description: Dark brown gravelly slightly sandy CLAY

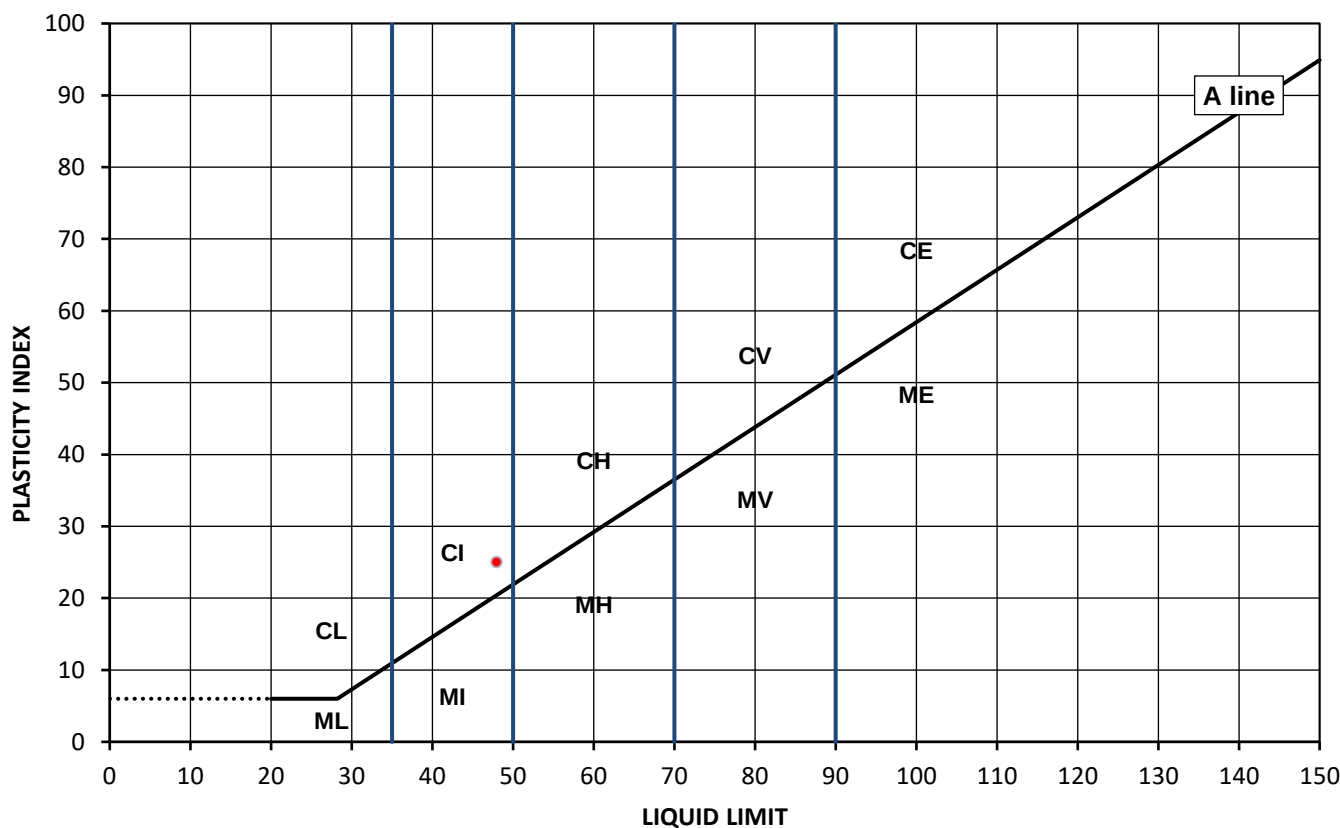
Depth Top [m]: 0.60

Depth Base [m]: Not Given

Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	48	23	25	55



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
	Organic	O	append to classification for organic material (eg CHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 232.5

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TEST CERTIFICATE

California Bearing Ratio Top Only

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Environmental Science

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client: Enzygo Geoenvironmental Ltd
Client Address: The Byre, Woodend Lane,
Cromhall, Gloucestershire,
GL12 8AA

Contact: Steve Rhodes
Site Name: Reading
Site Address: Not Given

Client Reference: CRM-1726-001

Job Number: 19-65683
Date Sampled: 28/09/2019
Date Received: 11/10/2019
Date Tested: 23/10/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1329886
Hole No.: SA1
Sample Reference: Not Given
Sample Description: Dark brown gravelly slightly sandy CLAY

Depth Top [m]: 0.60
Depth Base [m]: Not Given
Sample Type: D

Specimen Preparation:

Condition Remoulded
Details Recompacted with specified standard effort using 2.5kg rammer

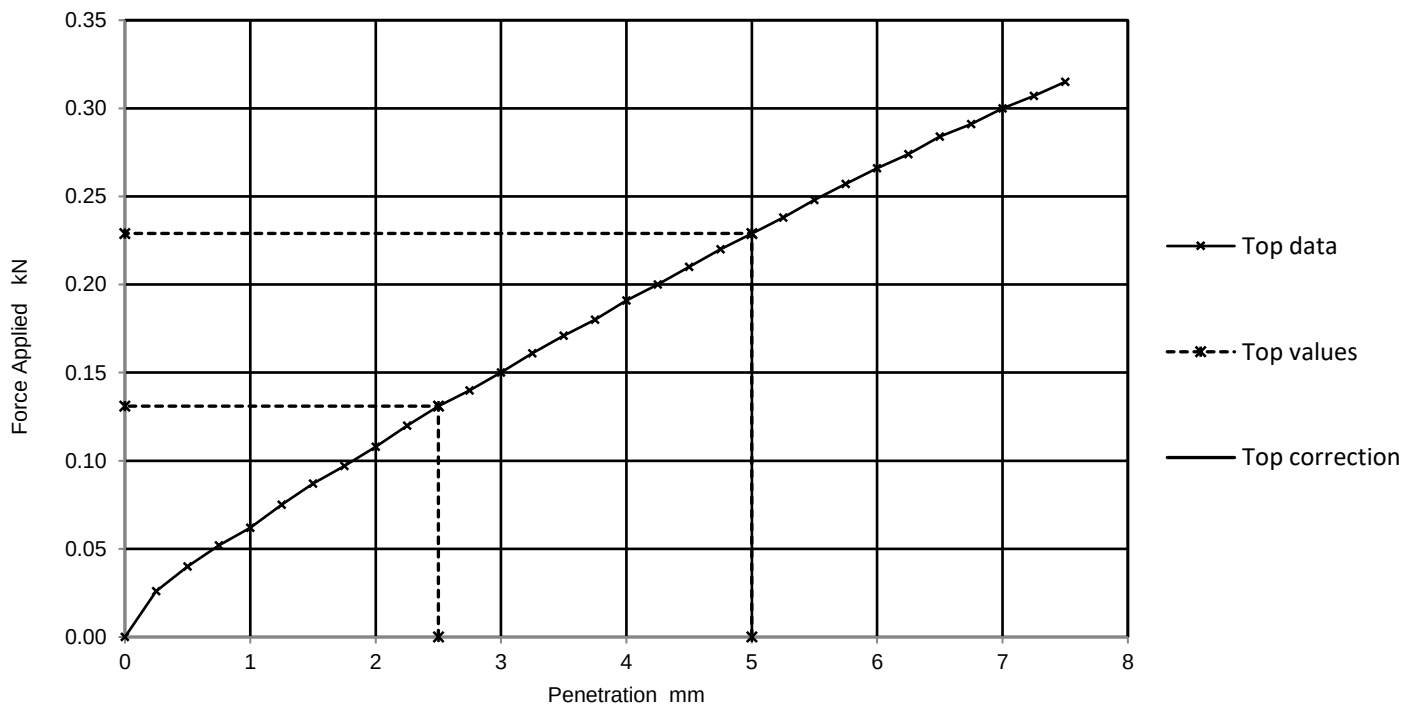
Soaking details Not soaked
Period of soaking days
Time to surface days
Amount of swell recorded mm
Dry density after soaking Mg/m3

Material retained on 20mm sieve removed 13 %

Initial Specimen details Bulk density 1.96 Mg/m3
Dry density 1.56 Mg/m3
Moisture content 26 %

Surcharge applied 16 kg
9.7 kPa

Force v Penetration Plots



Results

TOP

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	1.0	1.1	1.1	N/A

Moisture Content %
25

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/10/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 277.4

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



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Analytical Report Number : 19-64212

Project / Site name:	Reading	Samples received on:	01/10/2019
Your job number:	CRM.1726.001	Samples instructed on:	03/10/2019
Your order number:		Analysis completed by:	16/10/2019
Report Issue Number:	1	Report issued on:	16/10/2019
Samples Analysed:	5 soil samples		

Signed:

Katarzyna Lewicka
Head of Reporting Section
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-64212-1 Reading CRM.1726.001

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The results included within the report are representative of the samples submitted for analysis.

Page 1 of 4

Analytical Report Number: 19-64212

Project / Site name: Reading

Lab Sample Number				1322215	1322216	1322217	1322218	1322219
Sample Reference				WS1	WS1	WS1	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	4.00	5.00	3.00	1.10
Date Sampled				30/09/2019	30/09/2019	30/09/2019	30/09/2019	30/09/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Stone Content				%	0.1	NONE	< 0.1	< 0.1
Moisture Content				%	N/A	NONE	14	6.5
Total mass of sample received				kg	0.001	NONE	0.36	0.37

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.2	8.3	7.9	7.4
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.012	0.016	0.046	1.9

Analytical Report Number : 19-64212

Project / Site name: Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1322215	WS1	None Supplied	3.00	Brown clay and sand with vegetation.
1322216	WS1	None Supplied	4.00	Brown clay and sand with vegetation.
1322217	WS1	None Supplied	5.00	Brown clay and sand with vegetation.
1322218	WS4	None Supplied	3.00	Brown clay and sand.
1322219	WS4	None Supplied	1.10	Brown loam and clay with gravel.

Analytical Report Number : 19-64212

Project / Site name: Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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