

PHASE 1 & 2 GEOENVIRONMENTAL ASSESSMENT

Grevatts Lane, Climping

Prepared for: The Southern Co-Operative Ltd

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SLR



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Drawing 01: Site Location Plan

Drawing 02: Borehole Location Plan Existing Layout

Drawing 03: Borehole Location Plan Proposed Layout

APPENDICES

Appendix 01: Desk Study Data

Appendix 02: Borehole Logs

Appendix 03: Monitoring Data

Appendix 04: Infiltration test data

Appendix 04: Chemical Laboratory Analysis Certificates

Appendix 05: SLR GQRA Screening Sheets

Appendix 06: CBR Test Certificates

Appendix 07: Geotechnical Laboratory Analysis Certificates

1.0 Introduction

1.1 Context and Objectives of the Report

In July 2018, SLR Consulting Limited (SLR) was commissioned by The Southern Co-Operative Limited (The Client) to undertake a geo-environmental investigation at Crematorium Site, Grevatts Lane, Climping. It is understood that the Client is developing the site as a crematorium and associated parking. This report has been prepared in support of the acquisition and planning application.

This report presents a summary of the environmental site investigation undertaken, which comprised a desk study, site walkover, ground investigation, a conceptual site model with respect to potential pollutant linkages, in accordance with current UK guidance, a generic risk assessment and recommendations for further actions considered necessary.

The fieldwork was undertaken in August 2018.

1.2 Proposed development

SLR has been provided with a site layout feasibility produced by Southern Co-Operative property department which indicates that the site is to comprise a chapel, crematory, 102 space car park, overflow parking and landscaped areas.

The proposed site layout plan is included as Drawing 02.

1.3 Scope of Work

In order to understand the conditions at the site, the following scope of desk study was undertaken:

- ✦ document review to outline historic use of the site and surrounding land and environmental setting;
- ✦ site walk-over survey;
- ✦ review planning files;
- ✦ produced Phase 1 report containing preliminary conceptual model;

The programme of site investigation works undertaken included the following key elements:

- ✦ Excavation of six trial pits across the site to a maximum depth of 3.53m, including sampling for contamination and limited geotechnical testing;
- ✦ Infiltration testing carried out in accordance with BRE 365 within three trial pits;
- ✦ Construction of three boreholes to a maximum depth of 5.0m depth by percussive (window) sampling methods, including sampling for contamination and limited geotechnical testing;
- ✦ Installation of monitoring wells in three boreholes to record groundwater level and gas monitoring.

Desk study data are presented in Appendix 01. Appendix 02 presents the borehole logs, Appendix 03 presents the monitoring data, Appendix 04 presents the chemical laboratory analysis certificates, Appendix 05 presents the output from the generic quantitative risk assessment and Appendix 06 presents geotechnical laboratory analysis certificates.

2.0 Background Information

2.1 Site Details

Table 2-1 summarises the background details of the Site.

Table 2-1 Site Details

Site Details			
Site Name	Crematorium Site		
Address	Grevatts Lane, Climping, West Sussex		
Post Code	BN17 5RX	Grid Reference	498758mE 101410mN

A plan of the Site layout is shown on Drawing 02.

2.2 Desk Study

The findings of the Desk Study are summarised in Table 2-2.

Table 2-2 Desk Study

Desk Study		
Scope	The desk-based study comprised a site visit, a GroundSure EnviroInsight database search, a review of published geological and hydrogeological maps and a review of historical OS maps.	
Current Usage and Features	The site exists as open undeveloped agricultural land. It should be noted that the site has previous application of sewage bio-solids as a fertilizer.	
Surrounding Land Use	North	A259 road with agricultural land beyond
	East	Agricultural land with Hobbs New Farm, Fabco Sanctuary, McCaffneys Granite and a paintballing venue beyond.
	South	Ryebank Rife with agricultural land beyond
	West	Agricultural land
Site History	On-site	The site has generally remained as undeveloped agricultural land since the 1876 OS map edition. Grevatts Lane encroached onto the northern section of the site until the road was developed circa 1966, and a layby associated with the road is present on the site until circa 2010.
	Off-site	The site vicinity has remained largely unchanged since the 1876 OS mapping edition. Ryebank Rife is adjacent to the southern boundary, a drain is present adjacent to the western boundary and Grevatts Lane is adjacent to the northern boundary. A drain is present 75-200m east of the site flowing towards Ryebank Rife. Grevatts Lane was redeveloped and rerouted circa 1966

Desk Study		
Geography	Topography and Gradient	The site is largely flat with a gentle slope towards the south east.
	Elevation	The site ranges from 2.37-4.78m Above Ordnance Datum (AOD).
Geology and Hydrogeology	Artificial/ Made ground	There is no record of artificial or worked ground being present across the site.
	Superficial	River Terrace Deposits are recorded underlying the whole of the site. A nearby borehole log indicates that the superficial deposits comprise of sandy silt/clayey sandy gravel.
	Solid	The whole of the site is listed as being underlain by Lewes Nodular Chalk Formation.
	Mining	No records of historic or current mining or ground workings within 250m of the site boundary.
	Radon	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level, therefore no radon protective measures are considered necessary.
	Natural Ground Subsidence	The following natural ground subsidence ratings are listed for the site: Shrink-swell Clays – Low Landslides – Very Low Dissolution of soluble rocks – Very Low Compressible Deposits - Negligible Collapsible Deposits – Low Running Sands – Low
	Aquifer status	The bedrock underlying the site (Lewes Nodular Chalk) is classified as a Principal aquifer and the Superficial Deposits (River Terrace) are classified as a Secondary A aquifer. The site is not listed as being within a source protection zone.
	Groundwater abstractions	There is one groundwater abstraction license within 1km of the site located 396m southeast of the site. The License status is 'Active' and is operated by Baird. The license is for an annual volume of 36,368 m ³ and has an original start date of 21/3/1977.
Hydrology	Surface waters	The Ryebank Rife (inland river) is located 2m south of the site, an inland river is listed running along the western site boundary, and an inland river is listed running 73m east of the site. The inland rivers are listed as drains on the historical maps and appear to be flowing southwest towards the Ryebank Rife.
	Flooding	The South and eastern areas of the site are listed as being a Zone 3 Floodplain, and the western and central areas of the site are listed as

Desk Study		
		being a Zone 2 floodplain. The remainder of the site is not listed as a floodplain. The majority of the site is listed as having a Risk of Flooding from Rivers and the Sea (RoFRaS) rating of low, with medium and high ratings encroaching onto the eastern area of the site. Further details can be found within the Preliminary Flood Risk Assessment.
	Discharge consents	There are no records of Red List Discharge consents within 500m of the site. There are three records of licensed discharge consents within 500m of the site, the closest relating to miscellaneous discharges – surface water 380m west of the site. This license was revoked on 31/03/1997.
	Surface water abstractions	Two surface water abstraction licenses are listed on the site relating to Spray Irrigation from Ryebank Rife operated by James D Baird (Home Farm) with an annual volume of 27,272 m³. One surface water abstraction is listed within 500m of the site relating to spray irrigation operated by James D Baird (Home Farm) Ltd with an annual volume of 27,272 m³.
Contamination	Landfill and waste sites	There are no current or historical Environment Agency (EA), Local Authority or DoE landfills recorded within 1km of the study site. There are three records of EA licensed waste sites within 1km of the study site, the closest relating to treatment of waste to produce soil at Hobbs Farm 332m southeast of the site. There is one record of other waste sites within 500m of the site relating to a waste transfer station at Hobbs Barn 368m southeast of the site.
	Historical Potentially Contaminative Land Uses	There two potentially contaminative land uses within 500m of the study site, the closest relating to an aerodrome 421m north of the site. There are no records tanks, energy features, garages, military sites or potentially infilled land. There are no records within a 500m radius of any site being determined as Contaminated Land under Part 2A of the Environmental Protection Act (1990)
	Current Potentially Contaminative Land Uses	There are no records of current potentially contaminative land uses within 250m of the site. It should be noted that the site has previous application of sewage bio-solids as a fertilizer.

Desk Study		
	Environment Agency Recorded Pollution Incidents/permits	There are no recorded environmental permits, licenses or authorisations listed within 500m of the site. There is one EA recorded pollution incidents within 500m of the study site relating to construction and demolition materials and wastes 350m south east of the site. This incident is classed as a Category 3 (Minor) land impact, and Category 4 (No Impact) impact.
Planning Portal Review		SLR reviewed the West Sussex County Council Planning Portal on 18th July 2018. No applications were identified for the site. The following planning applications have been registered to the adjacent Hobbs Barn Site: • WSCC/013/11/CM – an application for the change of use from B1/B8 to a waste transfer and recycling station. • WSCC/067/15/CM – Operation of a waste transfer station and materials recycling facility to process mixed skip waste including the construction of a 1,925sqm building, concrete pad and drainage infrastructure. Contaminated land planning conditions were included within WSCC/013/11/CM and stated that if during development any contamination not previously identified then no further development shall be carried out without approval of remediation strategy.

2.3 Site Walkover

A site walkover was undertaken by SLR on 15th August 2018. The site consists of an agricultural field bound by Grevatt's Lane to the north of the site, a ditch along the western boundary, Ryebank Rife on the southern boundary and an agricultural field on the eastern site boundary. The site slopes gently towards the southeast. The ditch along the western site boundary appears to flow towards the south into the Ryebank Rife at the southwest corner of the site which was dry during the site walkover.

Access to the site is off Grevatt's Lane where an overgrown layby is present. Anecdotally a small fly tip was present which appears to have been burnt.

3.0 Investigation Works

3.1 Fieldwork Summary

SLR Consulting Ltd conducted an intrusive site investigation at the Site in August 2018. The scope of investigations included the following:

- ✦ Excavation of six trial pits across the site to a maximum depth of 3.53m, including sampling for contamination and limited geotechnical testing;
- ✦ Infiltration testing carried out in accordance with BRE 365 within three trial pits;
- ✦ advancing three boreholes (BH1 to BH3) to a maximum depth of 5.0m and installing 'permanent' 50mm diameter groundwater and ground gas monitoring wells in all wells within all of the boreholes drilled.
- ✦ sampling and logging the soil strata for visual and olfactory indications of contamination, soil type, grain size and strength using classification defined in BS5930:2015 and CIRIA C574;
- ✦ field screening of all samples for hydrocarbon vapours using a GMI Gas Surveyor;
- ✦ One round of ground gas and groundwater monitoring from the installed monitoring wells on 29th August 2018;
- ✦ Collection of soil samples for geotechnical and chemical analysis which were sent to the laboratory for analysis under full chain of custody.

The results of the investigation are described in the following sections. SLR borehole logs are included in Appendix 02 and monitoring data in Appendix 03. Borehole locations are shown on Drawing 03

3.2 Ground Conditions

Exploratory Hole Logs are included in Appendix 02

Made Ground

Made Ground was not encountered within any of the exploratory holes during the ground investigation. However it should be noted that some anthropogenic material could be seen on the ground surface including brick fragments.

River Terrace Deposits

River Terrace Deposits were encountered within all of the exploratory holes during the site investigation to a maximum depth of 5mbgl. These deposits generally comprised a variably gravelly silt and a variably sandy gravelly clay. This material was underlain by the Lewes Nodular Chalk formation where encountered.

Lewes Nodular Chalk

The Lewes Nodular Chalk formation was encountered within two of the boreholes during the site investigation encountered between 2.87-3.50mbgl. Chalk was not encountered within BH2 and this could represent a buried river channel or a solution feature.

A slight seepage was encountered between 2.4 and 3.2m during the ground investigation.

The geology encountered is summarised in Table 3-1 overleaf:

Table 3-1 Summary of Strata Encountered

Strata	Description	Depth (m)
River Terrace Deposits	Firm friable light brown slightly gravelly silt. Gravel comprised flint.	0.27-1.90m
River Terrace Deposits	Firm light brown slightly sandy slightly gravel clay. Gravel comprised flint and chalk.	1.20-3.0m
River Terrace Deposits	Firm light grey slightly gravelly silty clay. Gravel comprised fine chalk.	2.20-3.94m
River Terrace Deposits	Grey slightly gravelly clayey/silty sand. Gravel comprised chalk and flint.	3.2-5.0m
Lewes Nodular Chalk	White/off white chalk recovered as gravelly clayey silt. Gravel comprised chalk and flint.	2.87-5.0m

3.3 Field Observations

No hydrocarbon or sulphurous odours were noted during the site investigation and all samples retained for laboratory analysis were screened for organic vapours using a GMI Gas surveyor. All of the samples measured <5ppm, and therefore VOCs are not considered significant.

No visible evidence of potential contaminants were encountered within the exploratory holes. However brick fragments were noted on the surface of the site in various locations.

No potentially asbestos containing materials (ACM) were visually identified.

3.4 Groundwater

Groundwater was encountered during the trial pits between 2.4 and 3.2m during the ground investigation, and 2.21-2.52m during drilling. A groundwater monitoring visit was carried out on the 29th August 2018. Groundwater was encountered between 2.331-2.520mbgl.

3.5 Infiltration Results

The data collected from the infiltration tests is provided in Appendix 04. A summary of the infiltration rates within each geological unit is provided in Table 3-2, below.

Table 3-2
Infiltration Results

Unit Test Undertaken	Trial Pit	Depth Test Undertaken (m bgl)	Indicative Infiltration Rate (m/s)
River Terrace Deposits: Firm slightly gravelly sandy SILT/Firm slightly gravelly silty sandy CLAY	TP 2B	0.81-1.93	<1.0x10 ⁻¹⁰
	TP 3B	1.0-2.24	<1.0x10 ⁻¹⁰
	TP5B	0.81-1.83	<1.0x10 ⁻¹⁰

3.6 Gas Monitoring Data

During the monitoring round undertaken on 29th August 2018, gas monitoring was undertaken. Monitoring was carried out using a calibrated GA5000 gas analyser. Parameters monitored comprised:

- ✦ measurement of methane (% volume), carbon dioxide (% volume), hydrogen sulphide (ppm), carbon monoxide (ppm) and oxygen (% volume); and
- ✦ measurement of gas flow rates, borehole gas pressures and atmospheric pressure.

Both peak and steady state parameters were recorded.

Field record sheets are included as Appendix 03.

Table 3-3 Gas Monitoring Data

BH	Date	Methane (% v/v max)	Carbon Dioxide (% v/v max)	Oxygen (% v/v min)	Hydrogen sulphide (ppm)	Carbon Monoxide (ppm)	Flow (l/hr) [steady state]
BH1	29/08/2018	<0.1	1.3	19.1	<1	<1	0.1
BH2	29/08/2018	<0.1	1.5	18.9	<1	<1	0.0
BH3	29/08/2018	<0.1	2.3	19.1	<1	<1	0.0

During the gas monitoring visit the barometric pressure was recorded at 1014-1015mb.

3.6.1 Methane

Methane was not recorded at concentrations in excess of the limit of detection of the instrument in any of the boreholes during the monitoring round.

3.6.2 Carbon Dioxide

Carbon dioxide was recorded at low concentrations during the site investigation with the maximum concentration recorded being 2.3% vol/vol within BH3.

3.6.3 Carbon Monoxide, Hydrogen Sulphide and VOCs

All boreholes were monitored for the presence of carbon monoxide, hydrogen sulphide and VOCs. All concentrations of were recorded below the detection limits for hydrogen sulphide and carbon monoxide.

3.6.4 Borehole Flow Rates

Borehole flow rates were generally very low. The highest steady positive flow rate during the monitoring round was measured at 0.1 l/hr.

4.0 LABORATORY RESULTS

4.1 Chemical Analysis – Soil Samples

A total of forty five soil samples were collected during the August 2018 investigation, nine of these have been analysed for a range of organic and inorganic determinants including:

- ✦ pH;
- ✦ heavy metals;
- ✦ Poly-aromatic Hydrocarbons (PAHs);
- ✦ Asbestos screening (and quantification where necessary)

The results and laboratory certificates are presented in Appendix 04.

4.2 Summary of Laboratory Results

The data trends are summarised below:

- ✦ The concentrations of metals are generally low and do not show a propensity towards a particular area of the site.
- ✦ PAHs have been revealed in excess of the laboratory limit of detection (LOD) within six of the nine samples analysed. Concentrations are generally higher in the north and central areas of the site, with a maximum PAH concentration of 0.19mg/kg (fluoranthene and benzo(bk)fluoranthene) recorded within TP1.
- ✦ Asbestos was not identified within any of the six samples screened for asbestos.

Based on the above, the following conclusions have been drawn with respect to assessment of contaminants:

- ✦ Concentrations of metals and PAHs are generally low.

4.3 Chemical Analysis – Groundwater Samples

A total of three groundwater samples were collected during the August 2018 monitoring visit, these have been analysed for a range of organic and inorganic determinants including:

- ✦ pH;
- ✦ heavy metals;
- ✦ Poly-aromatic Hydrocarbons (PAHs);
- ✦ Sulphate, Chloride

The results and laboratory certificates are presented in Appendix 04.

4.4 Summary of Laboratory Results

The data trends are summarised below:

- ✦ The concentrations of metals are generally low and do not exceed the LOD with the exception of chromium, nickel and zinc within all of the samples tested.

- ✧ The concentrations of PAHs are generally low and do not exceed the LOD with the exception of fluorine, phenanthrene and fluoranthene.

Based on the above, the following conclusions have been drawn with respect to assessment of contaminants:

- ✧ Concentrations of metals and PAHs are generally low.

5.0 Conceptual Site Model

As part of the evaluation of the Site and in accordance with current best practice, the desktop review of the Site considered the property in terms of a Conceptual Model using the principles of a risk assessment comprising the potential **Source → Pathway → Receptor** linkages, either known or suspected at the subject property.

The potential **Sources → Pathways → Receptors** for the Site have been reviewed and are considered in Table 5-1 below.

Table 5-1 Preliminary Conceptual Model

Potential Sources	
Current/Historical land use	There are no significant potential sources of contaminants from historical land uses present on site, as the site has existed as open undeveloped land since the earliest mapping edition. The previous application of sewage bio-solids as a fertilizer has the potential to cause heavy metal contamination within the shallow soils on site.
Potential Pathways	
Groundwater Migration	The underlying geology of the site comprises the River Terrace Deposits identified as a Secondary A aquifer, and the Lewes Nodular Chalk, a Principal Aquifer. As concentrations of Metals and PAHs are generally low it is unlikely that they will leach and migrate into the underlying aquifer. <i>Pathway is unlikely to be active.</i>
Surface Water Migration	The closest surface water feature is the Ryebank Rife and associated ditch along the south and western site boundary. Mobile contaminants have not been identified during the site investigation. <i>Pathway is unlikely to be active.</i>
Direct (Dermal) Contact	Once developed the site will comprise a single storey building with hard and soft landscaping and an associated parking area, therefore there is a small risk for to site users coming into contact with soil. It is also possible that maintenance workers (gardeners etc) and workers during the development may come into contact with contaminants. <i>Pathway is active.</i>
Ingestion/Inhalation of dust	The site is expected to be covered largely by buildings and hard paving with limited managed communal gardens such that the risks to Site end users are minimal. It is possible that maintenance workers (gardeners etc) and workers during the development may come into contact with contaminants during construction. <i>Possible pathway is active.</i>
Inhalation of volatile contaminants	Field screening of soils did not identify significant total organic vapours and site history shows no storage or use of such chemicals. <i>Pathway is unlikely to be active.</i>
Ingress of ground gases into enclosed spaces. Asphyxiation and explosion.	Soil gas results do not indicate significant ground gas concentrations and gas flow rates were low. <i>Pathway is unlikely to be active.</i>

Potential Receptors	
Site Staff / Visitors and Contractors	Human receptors are likely to be present on the site. Staff will be present most days during working hours. Visitors will only be occasional and for short duration. <i>Moderate Risk</i>
Buildings	No contaminants or gases have been identified which might affect a building or service. <i>Low risk.</i>
Surface Water (off site)	The closest surface water feature listed is the Ryebank Rife situated adjacent to the southern site. It is not anticipated that contaminants present within the natural soils will be mobile. <i>Low risk</i>
Groundwater	Potential contaminants are not anticipated to migrate to the aquifer or leach from overlying fills through the cohesive natural strata. <i>Low Risk</i>

5.1 Linkage and Overall Qualitative Risk Assessment

There are potential sources of contamination that could be present on site associated with the shallow soils.

Potential pathways and receptors have also been identified. Therefore, potentially complete pollution linkages are considered present, as summarised in Table 5-2, and require further evaluation.

Table 5-2 Potential Pollutant Linkage and Risk Assessment Summary

Potential Pollutant Linkages	Future On Site Human Health	Potential for heavy metal contamination within the shallow soils and soil impact upon future site users through inhalation, ingestion or dermal contact.
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6.0 Generic Quantitative Risk Assessment

6.1 Generic Assessment Methodology

6.1.1 Human Health Assessment Methodology

With regard to the assessment of the results, it should be noted that the generic risk assessment criteria are drawn from several sources of guidance, some from non-statutory guidance and some informal. SLR uses a combination of assessment criteria that are currently available to assist in the screening of soil data prior to determining whether further action is required. The following assessment criteria have been used for the assessment of contaminant levels in soil:

- ✦ Soil Guideline Values – since March 2002, the Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency have been involved in publishing a series of reports that provide a scientifically based framework for the assessment of risks to human health from land contamination;
- ✦ LQM/CIEH Suitable for Use Levels (S4ULs) – in 2015 Land Quality Management and the Chartered Institute of Environmental Health have published S4ULs derived following CLEA technical guidance and using the Environment Agency's CLEA UK model, with updated toxicological and exposure parameters and land uses following the publication of the draft C4SLs.
- ✦ SLR's own in-house screening criteria derived following CLR technical guidance using the CLEA UK model;
- ✦ CLAIRE / AGS / EIC Generic Assessment Criteria (GAC) – these institutions have published publically available GACs derived following CLR technical guidance and using the Environment Agency's CLEA UK model, and
- ✦ CLAIRE/DEFRA Category 4 Screening Levels (C4SLs).

The above assessment criteria have been developed as a guide for regulators and developers; if the concentrations recorded on site are lower than the SGV / GAC it is generally accepted that the contaminants in question are present at acceptable concentrations which aren't capable of putting human health at significant risk - as long as the humans make normal use of the site. An exceedance of these values indicates to an assessor that soil contaminant concentrations need to be considered further. Generic assessment criteria combine both authoritative science and policy judgements.

The SGVs, GAC and S4ULs / C4SLs used have been derived using the CLEA model according to several typical land uses:

- ✦ Residential (with and without vegetable growth);
- ✦ Allotments;
- ✦ Commercial/Industrial;
- ✦ Public Open Space residential (POS1);
- ✦ Public Open space park (POS2).

The site is proposed to be developed into a crematorium. Given the small time period in which highly sensitive receptors may be exposed to contaminants within the ground (i.e. small children visiting), it is likely the sensitive receptor for this type of development would be adult workers present on-site (funeral directors, technicians, ground maintenance staff etc).

Commercial/industrial land use assumed a female adult (aged between 16-65) on site for 230 days per year. This is considered representative of site conditions, and therefore the GAC for commercial/industrial land use

have been adopted. Where contaminants are sensitive to soil organic matter (SOM), values for 1% have been used as a conservative initial screen.

The GAC screening sheets are included in Appendix 05, with samples exceeding the GAC highlighted in red. The results of the GAC screening are included in Table 6-1 to 6-5.

6.2 Soils to Human Health

The whole site has been used as an averaging area for the risks from contaminants. All reference criteria (RC) are maximum recorded concentrations.

Table 6-1
Human Health Generic Risk Assessment – Soils – Metals

Contaminants	GAC	RC	No. Over GAC	Pass / Fail
Arsenic	640	13	0	Pass
Cadmium	190	0.3	0	Pass
Chromium	8,600	61	0	Pass
Copper	68,000	22	0	Pass
Lead	2,330	20	0	Pass
Mercury	1,100	<0.1	0	Pass
Nickel	980	29	0	Pass
Selenium	12,000	1	0	Pass
Hexavalent Chromium	33	<0.3	0	Pass
Zinc	730,000	60	0	Pass

Note: All concentrations in mg/kg rounded to 2 significant figures unless stated.

Table 6-2
Human Health Generic Risk Assessment – Soils – PAHs

Contaminants	GAC	RC	No. Over GAC	Pass / Fail
Naphthalene	190	<0.04	0	Pass
Acenaphthylene	83,000	<0.03	0	Pass
Acenaphthene	84,000	<0.05	0	Pass
Fluorene	63,000	<0.04	0	Pass
Phenanthrene	22,000	0.07	0	Pass
Anthracene	520,000	<0.04	0	Pass
Fluoranthene	23,000	0.19	0	Pass
Pyrene	54,000	0.16	0	Pass

Contaminants	GAC	RC	No. Over GAC	Pass / Fail
Benzo(a)anthracene	170	0.12	0	Pass
Chrysene	350	0.08	0	Pass
Benzo(a)pyrene	35	0.1	0	Pass
Indeno(123cd)pyrene	500	0.07	0	Pass
Dibenzo(ah)anthracene	3.5	<0.04	0	Pass
Benzo(ghi)perylene	3,900	0.07	0	Pass
Benzo(b)fluoranthene	44	0.14	0	Pass
Benzo(k)fluoranthene	1,200	0.05	0	Pass

Note: All concentrations in mg/kg rounded to 2 significant figures unless stated.

Table 6-3
Human Health Generic Risk Assessment – Asbestos

Sample Location	Depth	Asbestos Type	Asbestos Form	Asbestos Quantity
BH 3	0.2	NAD	-	-
TP 1	0.2	NAD	-	-
TP 2	0.2	NAD	-	-
TP 3	0.2	NAD	-	-
TP 5	0.2	NAD	-	-
TP 6	0.2	NAD	-	-

Note: No Asbestos Detected (NAD).

No metals or PAHS were identified at concentrations in excess of the adopted screening criteria. Asbestos was not encountered within any of the samples tested for.

In addition to the above, the metals and PAH concentrations were compared to generic assessment criteria suitable for domestic gardens and were again found to be below the screening criteria. As these are the most conservative assessment criteria, this shows that the site is essentially uncontaminated.

6.3 Groundwater to Human Health

Risks to groundwater and surface water from dissolved contaminants have been assessed by screening the results against generic water quality standards (WQS).

These criteria are protective of the environmental quality of surface waters (EQS) or of human health (via Drinking Water Standards). The screening criteria are drawn from the following list with criteria from the latter standards/guidance only being used where Environmental Quality Standards (EQS) and UK Drinking Water Standards are not available:

- Environmental Quality Standards (EQS) - The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Directions 2010

- UK Drinking Water Standards (UK DWS) – are for the protection for human health and derive from either the Water Supply (Water Quality) Regulations 1989 or 2000.
- EU Drinking Water Standards (EU DWS) – are for the protection of human health and derive from the Council Directive 98/83/EC.
- World Health Organisation Guidelines (WHO Health) protect health and derive from the World Health Organisation Guidelines for Drinking Water Quality, 1984.

As an initial tier of generic screening, the lowest applicable WQS have been used to screen the laboratory results. The screening sheets are included in Appendix 05, with samples exceeding the GAC highlighted in red. The results of the water environment screening are discussed below.

Table 6-4
Summary of Elevated Metals in Groundwater

	WQS (mg/l)	Maximum (mg/l)	Number of samples exceeding WQS
Total Dissolved Chromium	0.0047	0.021 in BH2	3/3

Note: All concentrations in mg/kg rounded to 2 significant figures unless stated.

Table 6-5
Summary of Elevated PAHs in Groundwater

	WQS (mg/l)	Maximum (mg/l)	Number of samples exceeding WQS
Fluoranthene	0.0000063	0.000013 in BH3	1/3

Note: All concentrations in mg/kg rounded to 2 significant figures unless stated.

Concentrations of total dissolved chromium were revealed within the groundwater in excess of the adopted WQS within all the samples tested for.

Concentrations of fluoranthene were revealed in excess of the WQS with one of the samples tested for (BH3).

7.0 Ground Gas Risk Assessment

7.1 Approach

In line with current guidance, developers are required to undertake ground gas risk assessments to demonstrate to the local planning authority that their proposed construction is adequately protected against any potential hazards associated with ground gas. As this is an existing property, the assessment will examine how the current gas protection measures compare to current legislative requirements.

This section considers the monitoring data available to date, as detailed in Appendix 03, and puts forward an assessment of the ground gas regime at the site, which takes account of its future commercial/industrial land use, and provides recommendations for the level of protective measures necessary.

The following semi-quantitative assessment of potentially hazardous soil gases and recommended mitigation measures to protect buildings and their occupants is based on the guidance provided within:

- ✦ British Standard 8576:2013, Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs);
- ✦ NHBC Report, Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present, March 2007;
- ✦ British Standard BS8485:2015, Code of Practice for the Characterisation and Remediation from Ground Gas Affected Developments, 2015; and
- ✦ The Local Authority Guide to Ground Gas, CIEH, September 2008.

We also consider health risks with reference to Waste Management Paper No. 27 by the Department of the Environment and guidance from the Health and Safety Executive (HSE). Waste Management Paper No. 27 states that a concentration of greater than 1% methane in a confined space is considered hazardous to health as the methane can act as an asphyxiant when oxygen is depleted. The same paper states that carbon dioxide is a hazard to health at 1.5% by volume in air. The HSE set a workplace long-term exposure limit (i.e. an 8-hour time weighted average reference period) of 30ppm for carbon monoxide and 5ppm for hydrogen sulphide.

With respect to damage to buildings, probably the most applicable guidance is that within Part 2C of the Building Regulations. Part 2C gives guidance on gas concentrations with respect to new developments and when protection measures should be considered. The document states that protection measures should be considered when methane is >1% and carbon dioxide is >5%.

7.2 Site Characterisation

It should be noted that to date, one round of sampling has been carried out. This assessment is therefore not a robust assessment of the gas regime on site, but does provide useful initial data to carry out a preliminary assessment.

Methane was not detected above the limit of detection of the instrument (<0.1%). Carbon dioxide was recorded at or above the Waste Management Paper No. 27 trigger level (1.5%) within BH3 and BH2, at a maximum concentration of 2.3%.

Borehole gas flow rate was close to the limit of detection or less than the detection limit of the instrument (0.1 l/hr), indicating a very low flow rate.

Monitoring occurred during atmospheric conditions rising from 1014mb to 1015mb; these conditions are not representative of works case gas emission conditions.

There are currently two main methods by which consultants can determine ground gas regimes; the method selected is dependent on the form of development. BS8485:2015 involves assigning the building a category (A-D), based on the buildings sensitivity (A being the most sensitive, D being the least), and assigning the site a characteristic situation (CS) based on gas monitoring data. Gas protection measures are then specified, depending on the sensitivity of the building category.

The NHBC method assumes a residential construction (excluding flats and apartments) with a footprint of 8m by 8m, with a suspended floor slab and vented under floor void (minimum 150mm). Where low-rise housing is proposed, but the building footprint differs from the area assumed in the published NHBC Gas Screening Values, the NHBC Gas Screening Values can still be employed as it has been shown that changes in the building footprint area do not change the Gas Screening Values.

Both methods include the calculation of risk based Gas Screening Values (GSVs) and consideration of 'Typical Maximum Concentrations' for initial screening purposes. The GSVs are calculated by multiplying the borehole gas volume flow rate by the concentration of the particular gas being considered, as defined by Wilson and Card (1999):

$$\text{GSV} = (\text{Gas concentration (\%)} / 100) \times \text{Flow (l/hr)}$$

The proposed development comprises a single storey crematorium, the BS8485:2015 classification is therefore applicable.

No methane was recorded; therefore no GSV has been calculated.

For carbon dioxide, using the maximum recorded gas value (2.3%– BH3) and the maximum flow rate (0.1l/hr) the Gas Screening Value (GSV) has been calculated as: $0.023 \times 0.1 = 0.0023$ l/hr (GSV).

A Gas Screening Value of 0.0156 l/hr represents a "Very Low" hazard potential gas regime for the site as defined by BS8485:2015¹ and CIRIA C665.

Based on the above, given the limited data set, SLR consider the site can be classified as CS1. Further monitoring is however necessary to satisfactorily confirm this.

¹ Table 2 (Page 19), BS8485:2015

8.0 Geotechnical Assessment

8.1 In-Situ Testing

8.1.1 Standard Penetration Tests

Standard penetration Tests (SPTs) were conducted during the progression of boreholes. SPT N-values in the superficial River Terrace Deposits range from 4 to 25. Within the underlying Chalk, SPT N-values range from 15 to 29. Figure 8-1 shows there is an increase in N-value with depth.

Figure 8-1 SPT N-values by Borehole

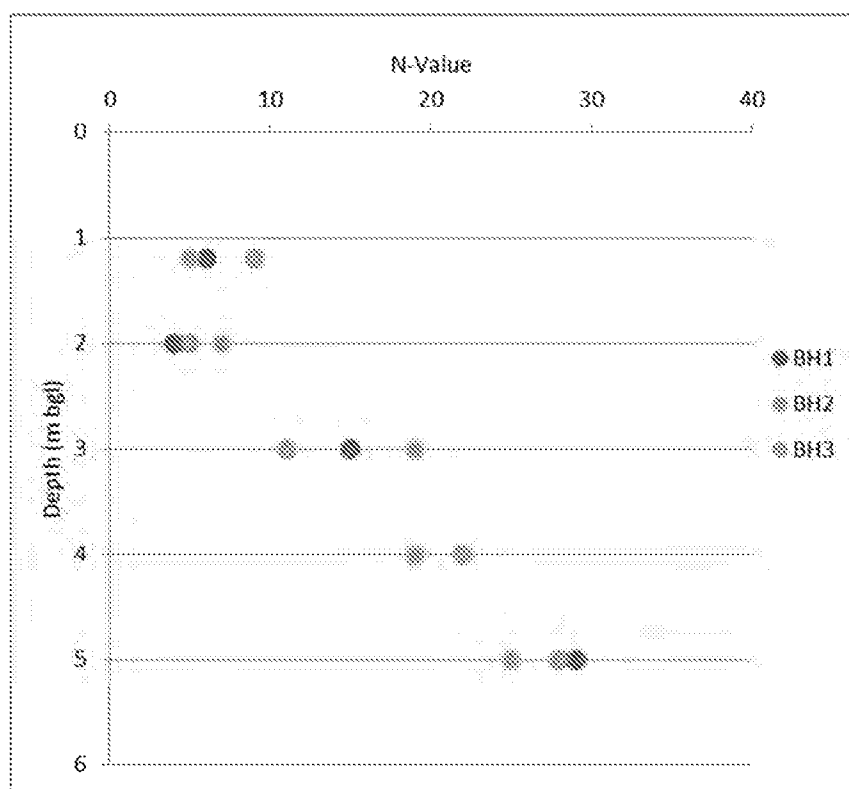


Figure 8-2 presents N-values and depth within each lithology. It demonstrates SPT N-values are generally lower within the superficial deposits but increase with depth in both the River Terrace Deposits and Chalk.

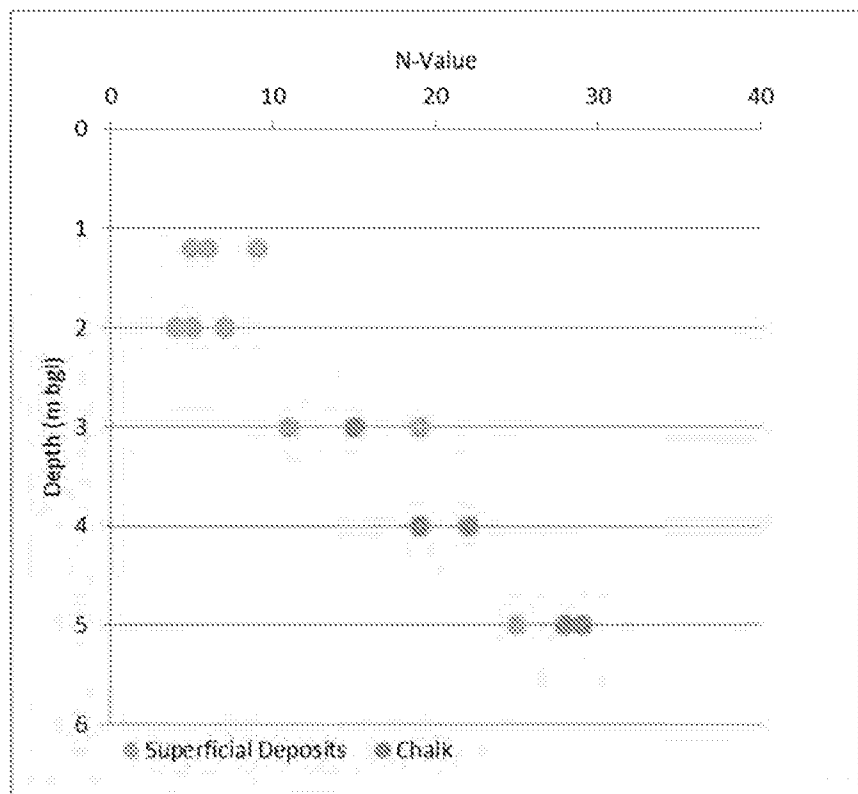
A correlation between SPT N-values and shear strength in cohesive material has been proposed by Stroud²; however, the relationship is not considered to be as reliable as laboratory testing and alternative in-situ testing methods.

SPT N-values from tests carried out in the cohesive superficial deposits range from 4 to a maximum of 19 which suggests low to high strength clays. Testing at 3.0m and 4.0m in BH2 returned higher N-values which may be a result of interbedded clay and sand recorded in field observations.

² Stroud, M.A., 1989. The Standard Penetration Test – its application and interpretation. Penetration testing in the UK, Thomas Telford.

One test, conducted in slightly gravelly silty sand at 5.0m in BH2, returned an N-value of 25 indicative of medium dense sand.

Figure 8-2 SPT N-values by Lithology



8.1.2 California Bearing Ratio Tests

In-situ testing to determine California Bearing Ratio (CBR) of the underlying soils was undertaken at 8 No. locations within the proposed car parking and access routes.

The test results are summarised in Table 8-1 with test certificates presented in Appendix 06.

Table 8-1 CBR Test Results

Location ID	Depth (m bgl)	CBR (%)	Moisture Content (%)
CBR01	0.5	18	16
CBR02	0.5	7.6	13
CBR03	0.5	12	14
CBR04	0.5	16	8.6
CBR05	0.5	17	11
CBR06	0.5	24	8.2
CBR07	0.5	16	12

8.2 Geotechnical Laboratory Testing

On completion of the fieldwork disturbed and bulk samples were submitted to an accredited geotechnical laboratory. Geotechnical testing comprised the following:

- ✦ pH and sulphate content by 2:1 aqueous solution;
- ✦ water soluble chloride;
- ✦ Atterberg (plasticity) classification;
- ✦ water content;
- ✦ particle size distribution analysis with sedimentation (if >10% fines);
- ✦ saturated moisture content; and,
- ✦ intact dry density

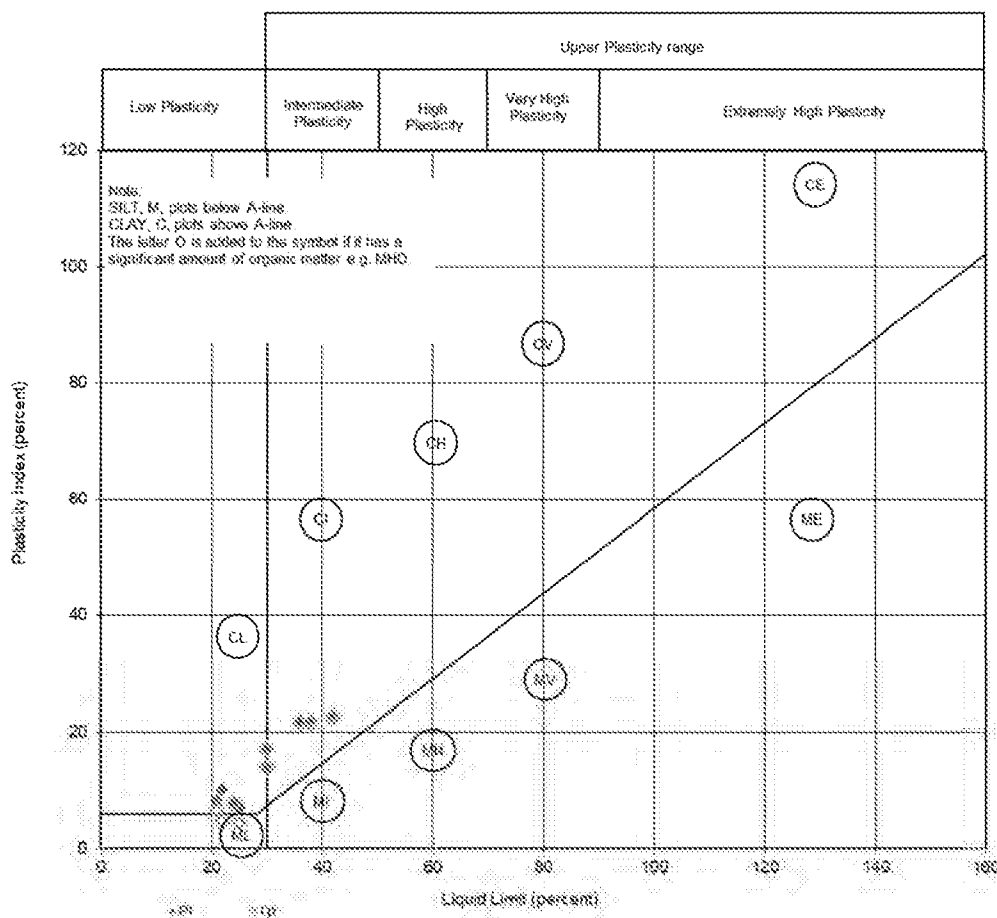
The results are summarised in Table 8-2 and the laboratory report is included in Appendix 07.

Table 8-2 Geotechnical Laboratory Results

BH No.	Depth (m)	Type	Water Content (%)	Atterberg Classification					SMC (%)	Porosity (%)	Particle Size Distribution					Chemical		
				LL (%)	PL (%)	PI (%)	% passing <425µm sieve	Ip*			Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Cobbles (%)	pH	2.1 WSO4 (g/l)	WS Chloride (g/l)
BH1	1.2	D	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	<0.010	0.018
BH1	2.0	D	20.9	30	16	14	99	13.9	-	-	-	-	-	-	-	-	-	-
BH2	1.6	D	17.5	38	16	22	98	21.6	-	-	-	-	-	-	-	-	-	-
BH2	2.0	D	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	<0.010	<0.010
BH2	3.0	D	20.3	24	16	8.0	96	7.7	-	-	-	-	-	-	-	-	-	-
BH3	1.2	D	16.3	30	13	17	100	17.0	-	-	-	-	-	-	-	-	-	-
BH3	3.0	D	17.2	21	13	8.0	83	6.6	-	-	-	-	-	-	-	-	-	-
BH3	5.0	D	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	<0.010	<0.010
TP1	0.6	B	13.9	42	19	23	97	22.3	-	-	-	-	-	-	-	-	-	-
TP1	2.6	B	-	-	-	-	-	-	29	44	8	12	60	20	0	-	-	-
TP2A	0.7	D	11.0	36	14	22	98	21.6	-	-	-	-	-	-	-	-	-	-
TP2A	2.8	B	13.8	22	12	10	47	4.7	30	45	11	11	31	33	14	-	-	-
TP5	3.0	B	20.9	25	15	7.0	64	4.5	-	-	32	22	18	28	0	-	-	-
TP6	1.9	B	20.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Ip Modified Plasticity Index – $PI^ (\% < 425\mu m / 100\%)$

Figure 8-3 Atterberg Plot



The ground investigation intersected superficial deposits comprising Terrace Deposits overlying weathered chalk of the Lewes Chalk Formation.

Water content testing was carried out on 10 samples from depths between 0.6 and 3.0m bgl. Water content ranges from 11.0% to a maximum of 20.9%. There is a broad increase in water content with depth with the lowest water content recorded at 0.7m bgl in TP2A and the highest at 2.0m bgl and 3.0m bgl in BH1 and TP5 respectively.

Nine samples of cohesive material were submitted for plasticity testing to determine Atterberg Limits. The plasticity index ranges from 7% to 23%. Six samples returned a plasticity index of <20% and are considered to be low plasticity clays with low to negligible (<10%) volume change potential. The remaining samples, recovered between 0.6m to 1.6m bgl in BH1, TP1 and TP2A are considered to be intermediate plasticity clays with medium volume change potential.

When plotted using the modified plasticity index (I'_p) taking into consideration the percentage passing a <425 μ m sieve. Two of the samples plot below the 'A-line' and are considered to be low plasticity silts.

The pH tests range from 8.2 to a maximum of 9.0. Testing to determine soluble sulphate content returned concentrations below the level of detection of <0.010 WS SO₄. This should be taken into account when selecting the concrete qualities for construction. Based on BRE guidelines³, using the highest water soluble

³ BRE Construction Division. Special Digest 1: Concrete in Aggressive Ground. Third edition 2005

sulphate concentration, the Site is classified as Design Sulphate class DS-1 and as ACEC (aggressive chemical environment for concrete) AC-1s.

8.3 Foundation Options

The proposed development comprises the construction of a single-storey chapel and crematory with associated car parking and access.

During foundation assessment a worst case scenario is considered. This uses the lowest bearing ground conditions with the highest load. This allows for variation across the Site as well as considering a maximum load. Design parameters for the strata are based on published guidance, field observations and laboratory results.

The ground investigation intersected superficial River Terrace Deposits comprising variable silts, clays, sand and gravels with occasional cobbles to a depth of 2.5-3.5m bgl across the majority of the site. However, at one location (BH2), immediately east of the proposed development, the deposits extend to more than 5.0m bgl, the limit of the investigation.

The single-storey property is likely to impart moderately low loads on the underlying strata. Based on an estimated loading of 110kN/m^2 , the ground conditions encountered onsite and foundations constructed in firm cohesive deposits at 1.0m depth, a design bearing capacity of up to 180kPa would be anticipated. Settlement magnitudes of around 10-18mm are anticipated in the worst case condition with an anticipated load of 110kN/m^2 .

However, due to the variation in depth of superficial deposits there is a risk of differential settlement between portions of the building underlain by chalk at 2.5-3.5m bgl and those underlain by an unknown depth of superficial deposits. BH2 may have intersected a former stream bed or a solution feature within the in-situ Chalk that may have been subsequently infilled with poorly compacted superficial deposits.

In order to determine if shallow or deep foundations are appropriate and delineate the size and orientation of the infill feature it is recommended that further ground investigation is undertaken. A site investigation comprising the completion of Cone Penetration Tests across the site has been carried out and is reported separately⁴.

There is potential for areas of softer clay with a reduced allowable bearing capacity. Prior to construction foundation excavations should be proof rolled to highlight any soft areas. These should then be removed and backfilled with suitable granular material to ensure the structure remains stable.

8.4 Floor Slabs

The ground investigation intersected shallow topsoil overlying natural strata comprising firm silt and clay. Based on the ground conditions encountered ground bearing floor slabs are considered appropriate. As with foundation excavations there is potential for areas of softer clay at formation level. Prior to construction excavations should be proof rolled to highlight any soft areas. These should then be removed and backfilled with suitable granular material to ensure the floor slab remains stable.

8.5 Pavements and Hardstanding Areas

The proposed development includes car parking and an access road to the north and northeast of the proposed building.

⁴ SLR Ref: 402.05324.00005, Geotechnical Investigation Report, Grevatts Lane, Climping, October 2018.

The Highways Agency's Design Guidance for Road and Pavement Foundations⁵ estimates a CBR value of between 4-6% for this range of material. However, In-situ CBR testing conducted at 0.5m bgl in 8 No. locations across the site returned CBR values ranging from 7.6% to a maximum of 24% predominantly in silt and clay. Based on this a typical design CBR value of 7% is recommended at this time.

8.6 General

In addition to the above, it is recommended that all design and construction works be carried out on site in accordance with recognised engineering codes of practice including BS 8004 (2015: Code of Practice for Foundations) and BS 6031 (2009: Code of Practice for Earthworks).

⁵ Interim Advice Note (IAN) 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations

9.0 Summary and Recommendations

9.1 Summary

A geo-environmental site investigation has been undertaken by SLR at the Grevatts Lane, Climping as part of pre-acquisition due diligence. The primary purpose of this report was to provide information regarding the underlying ground conditions and chemical quality of the shallow soils. The information obtained was used to generate a conceptual site model, undertake a generic risk assessment for the site and to provide recommendation with respect to Land Quality.

The information obtained to date for the site is summarized below:

- ✦ The site has existed as open undeveloped land since the earliest mapping edition (1876). The site has a history of previous application of sewage bio-solids as a fertilizer.
- ✦ Regional geological mapping records the site to be underlain by the River Terrace Deposits which overlie the Lewes Nodular Chalk Formation. Worked ground is not recorded on-site.
- ✦ Two surface water abstraction licenses are listed on the site relating to Spray Irrigation There is one groundwater abstraction license within 1km of the site located 396m southeast of the site. There are three records of licensed discharge consents within 500m of the site, the closest relating to miscellaneous discharges 380m west of the site.
- ✦ Field observations did not record evidence of volatile contaminants or asbestos containing materials (ACM).
- ✦ A total of forty five soil samples were collected for laboratory analysis, nine were scheduled for a range of potential contaminants. The results of the laboratory analyses of soils did not record any elevated levels of contaminants, and no asbestos was encountered within any of the samples tested for. The data has been assessed using a generic quantitative risk assessment (GQRA) to assess risks to human health. No contaminants were identified in excess of the adopted screening criteria.
- ✦ With respect to controlled waters, concentrations of total dissolved chromium were revealed within the natural soils. Chromium was not encountered at high levels within the soil samples therefore these results could be naturally occurring background levels, and therefore the risk to site end users and to the underlying aquifer is considered very low.
- ✦ Concentrations of fluoranthene were revealed in excess of the WQS within one of the water samples tested for (BH3). It should also be noted that PAHs are large hydrocarbon molecules, with a very low solubility with a tendency to sorb to soil particles. The detected concentrations are therefore unlikely to be reflective of dissolved contaminants, and are likely to be indicative of PAHs sorbed to sediment.
- ✦ Ground gas monitoring has not identified elevated concentrations of ground gas; this would classify this area as characteristic situation 1. Further monitoring would be required to confirm this.
- ✦ The ground investigation intersected superficial deposits in excess of 5.8m to the east of the proposed development. This may be associated with an infilled solution feature or stream bed. As a result it is recommended a further ground investigation is carried out in order to determine the depth and extent of the feature. Traditional shallow foundations installed in firm silt will provide adequate bearing capacity, in excess of 150kPa. However, there is a risk of differential settlement as a result of the unknown depth of poorly compacted superficial deposits. Deep piled foundations may be required and this will be confirmed by the additional geotechnical ground investigation.

9.2 Recommendations

9.2.1 Land Quality

The results of the investigation show that the site is not significantly contaminated, either for its intended use or for the more stringent domestic garden situation. This suggests that past use of sewage derived bio solids as fertiliser has been undertaken according to relevant guidelines and has not had a detrimental effect on the land.

Traces of chromium and PAH found in groundwater are not considered significant and are likely to be either naturally elevated or caused by sediment within the sample analysed.

Gas concentrations recorded on site indicate that protection measures would not be required to the building. However, additional monitoring in accordance with published guidance will be required to confirm this.

During the construction phase the contractors should be briefed on the risk of finding contamination on site and should report any unusual items, colours or odours. In particular, fragments of corrugated cement board may be indicative of the presence of asbestos waste in the ground.

Excess construction arisings are likely to be suitable for disposal as inert waste. However additional WAC testing would be required to confirm this.

9.2.2 Geotechnical Recommendation

The ground investigation intersected superficial deposits in excess of 5.8m to the east of the proposed development. This may be associated with an infilled solution feature or stream bed.

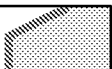
It is recommended a further ground investigation is carried out in order to determine the depth and extent of the feature. An intrusive investigation such as Cone Penetration Testing (CPT) carried out in the area surrounding BH2 and underlying the proposed building will determine the contact with the underlying chalk and finalise foundation recommendations.

Notwithstanding this traditional shallow foundations installed in firm silt will provide adequate bearing capacity, in excess of 150kPa. However, there is a risk of differential settlement as a result of the unknown depth of poorly compacted superficial deposits.

DRAWINGS



LEGEND

 SITE LOCATION

**THE SOUTHERN
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**GREVATTS LANE
CLIMPING**

GROUND INVESTIGATION

SITE LOCATION PLAN

DRAWING 1

Scale
1:12,500 @ A3

Date
SEPTEMBER 2018

05324.00005.19.001.0_SITE_LOC_PLAN.dwg

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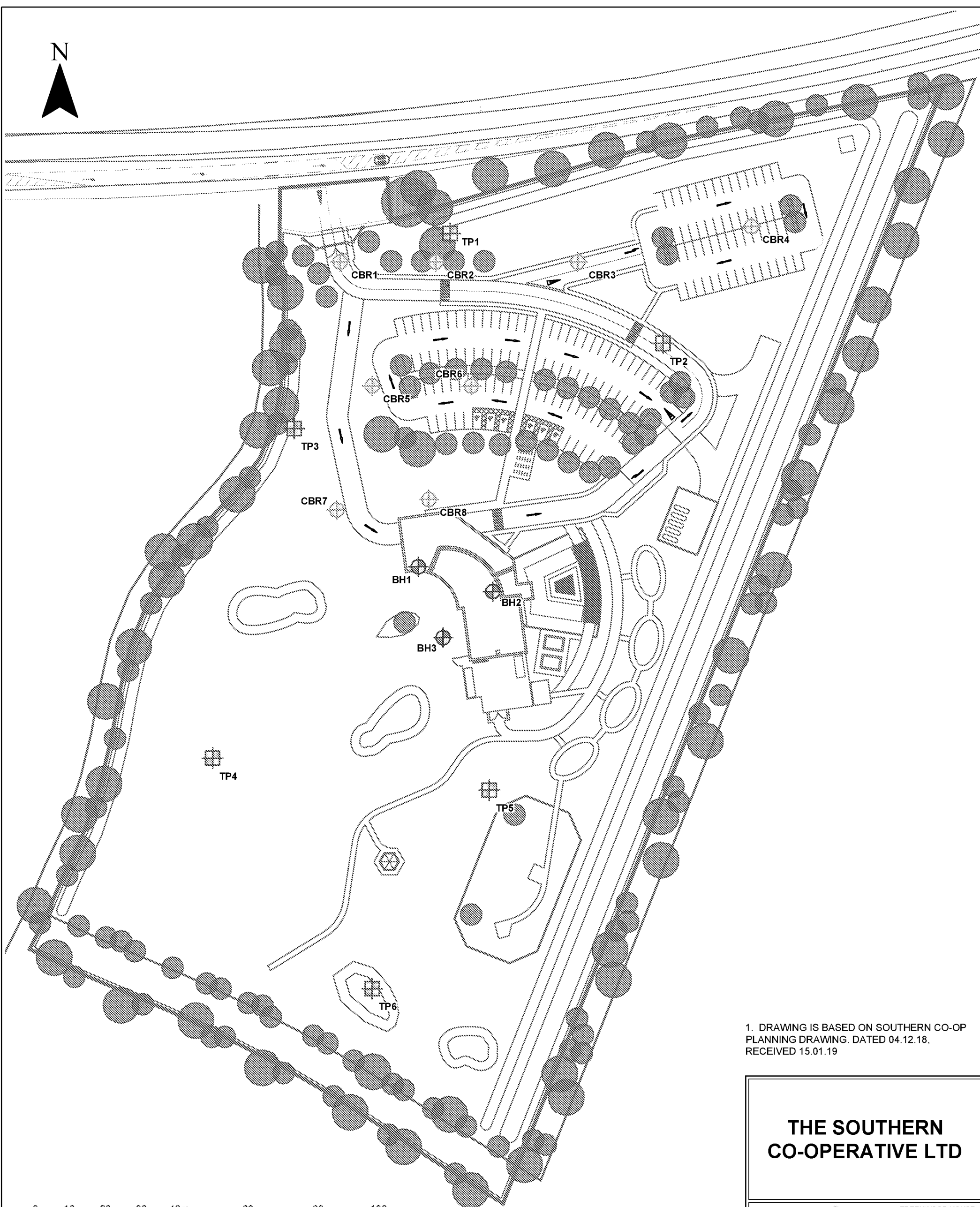
GREENVATTS LANE
CLIMPING
GROUND INVESTIGATION
BOREHOLE LOCATION PLAN
EXISTING LAYOUT
DRAWING 2

Scale
1:1000 @ A3

Date
SEPTEMBER 2018

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GREVATTS LANE
CLIMPING

GROUND INVESTIGATION

**BOREHOLE LOCATION PLAN
PROPOSED LAYOUT**

DRAWING 3

Scale
1:1000 @ A3

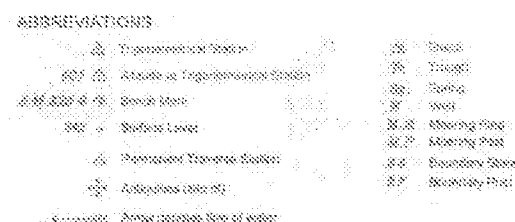
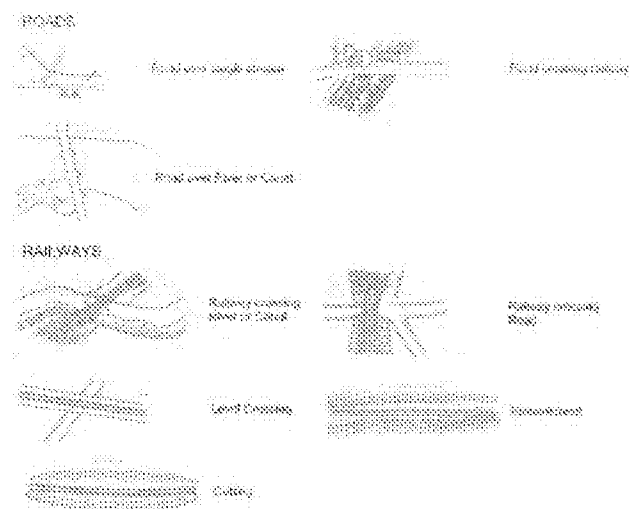
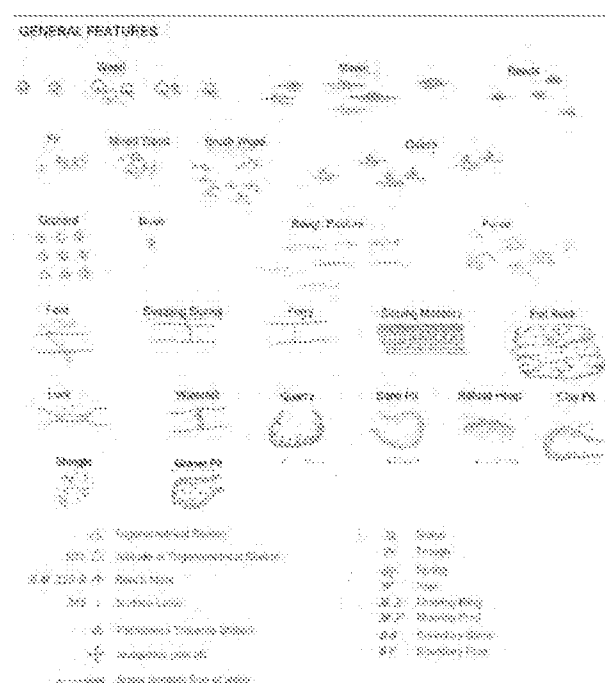
Date
SEPTEMBER 2018

- | | | | | | |
|--|---------------|--|--------------------|--|-------------------|
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| | BUILDING | | BOREHOLE LOCATION | | |

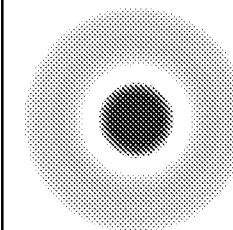
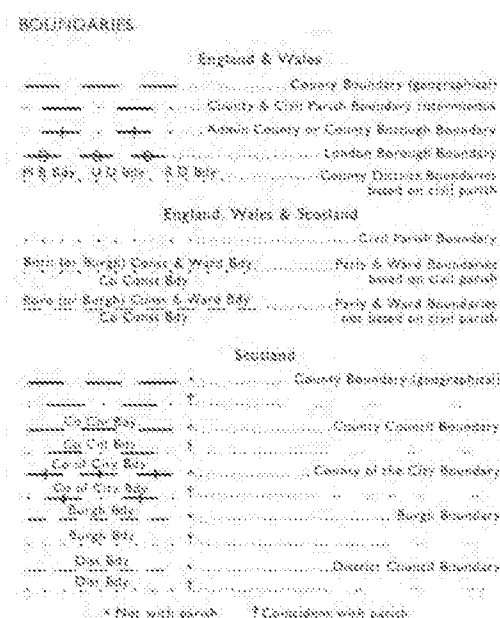
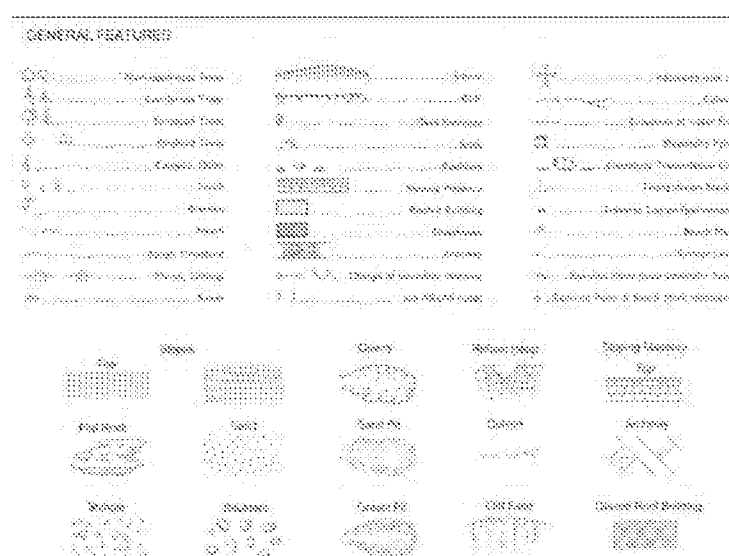
APPENDIX A

Desk Study Data

County Series 1:2,500 scale



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



GroundSure

Historical Map Pack Legend

County Series

1:1,250 scale

County Series & National Grid

1:2,500 scale

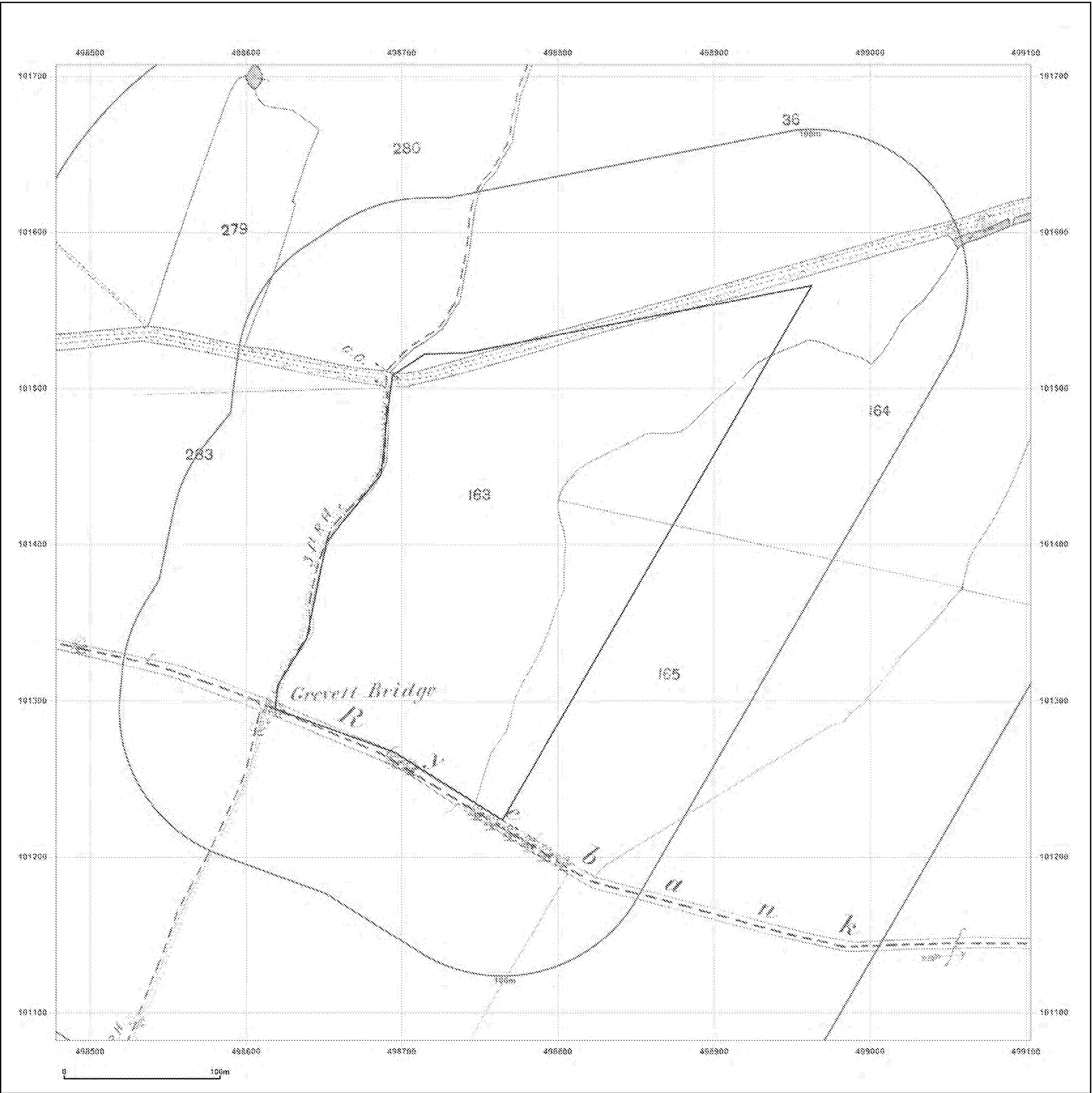
Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

If you have a query regarding any of the maps provided within this map pack, please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

Technical Helpline:

Tel 08444159000

groundsureinsight@groundsure.com
www.groundsure.com



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Site Details:

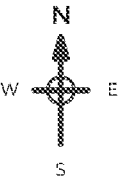
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Grid Ref: 498790, 101395

Map Name: County Series

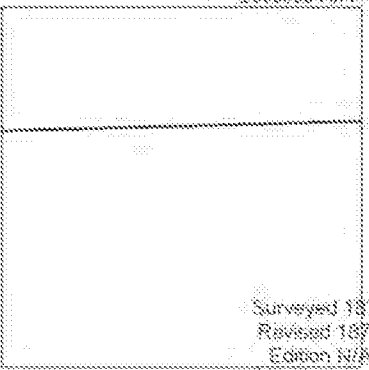
Map date: 1876

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
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Surveyed 1876
Revised 1876
Edition N/A
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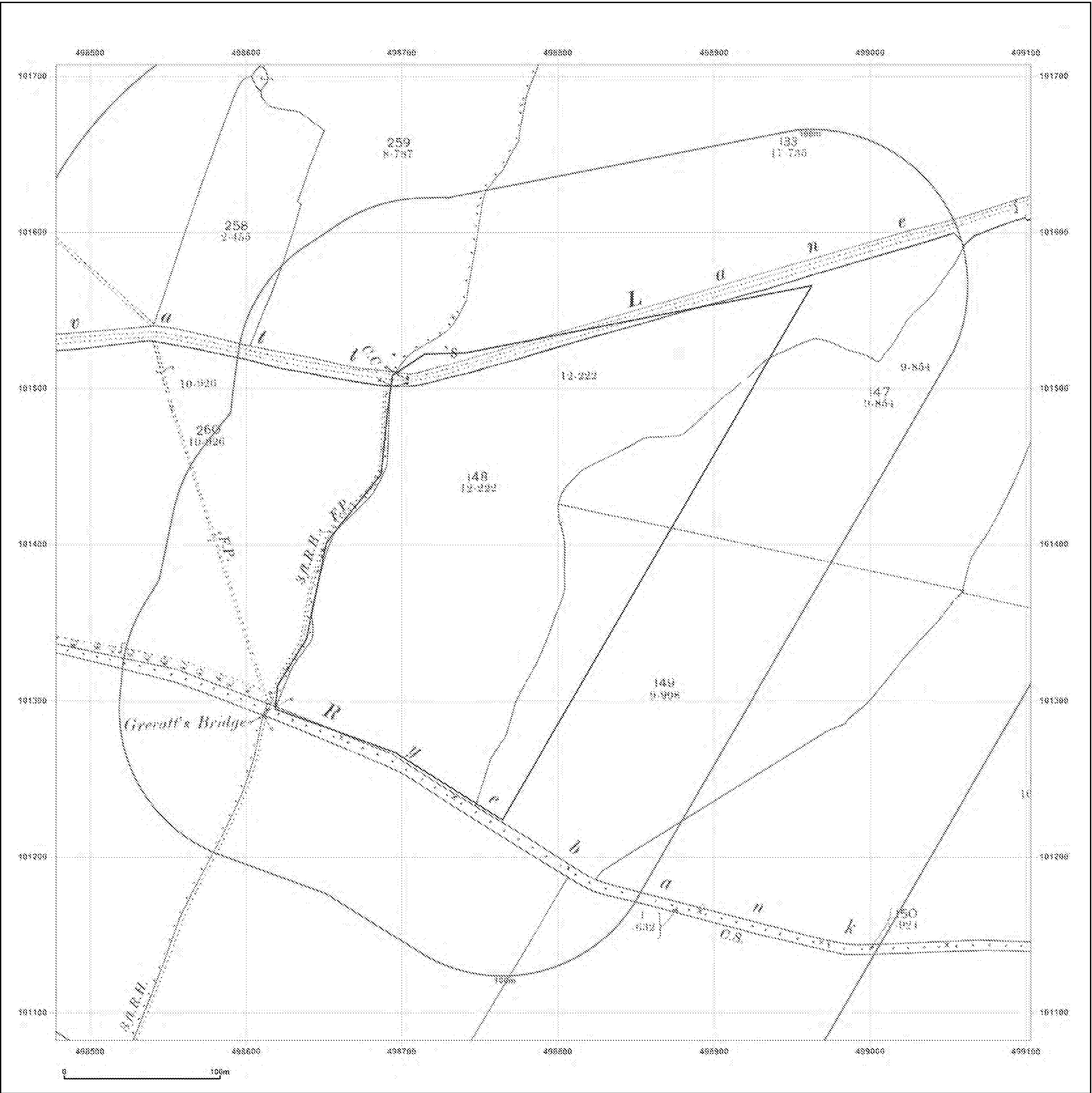


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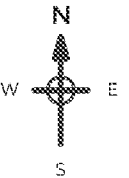
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Grid Ref: 498790, 101395

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1898
Edition N/A
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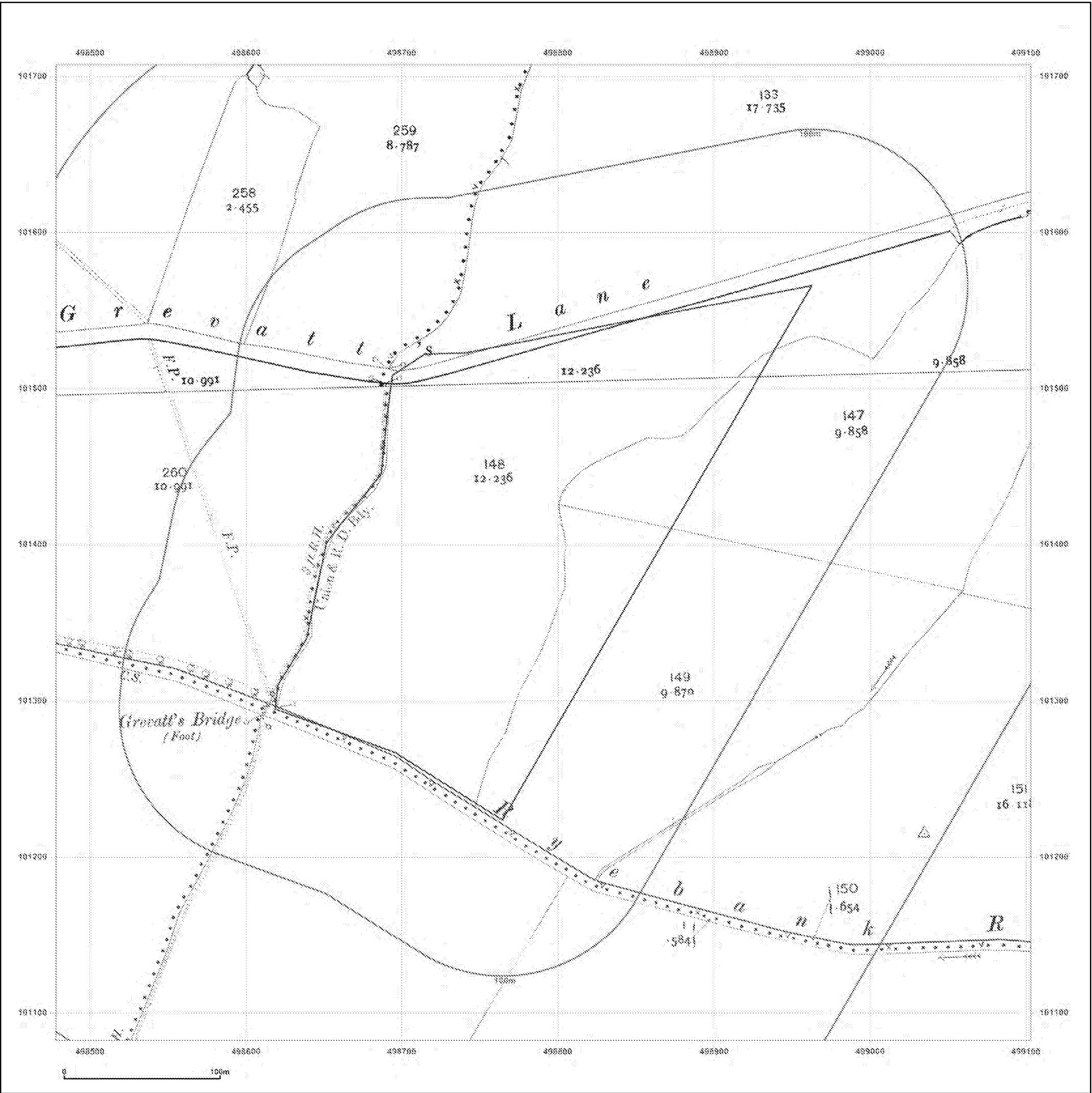


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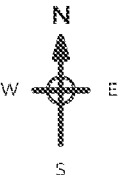


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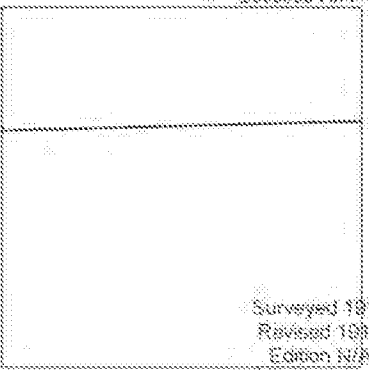
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Map Name: County Series
Map date: 1912
Scale: 1:2,500
Printed at: 1:2,500



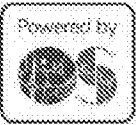
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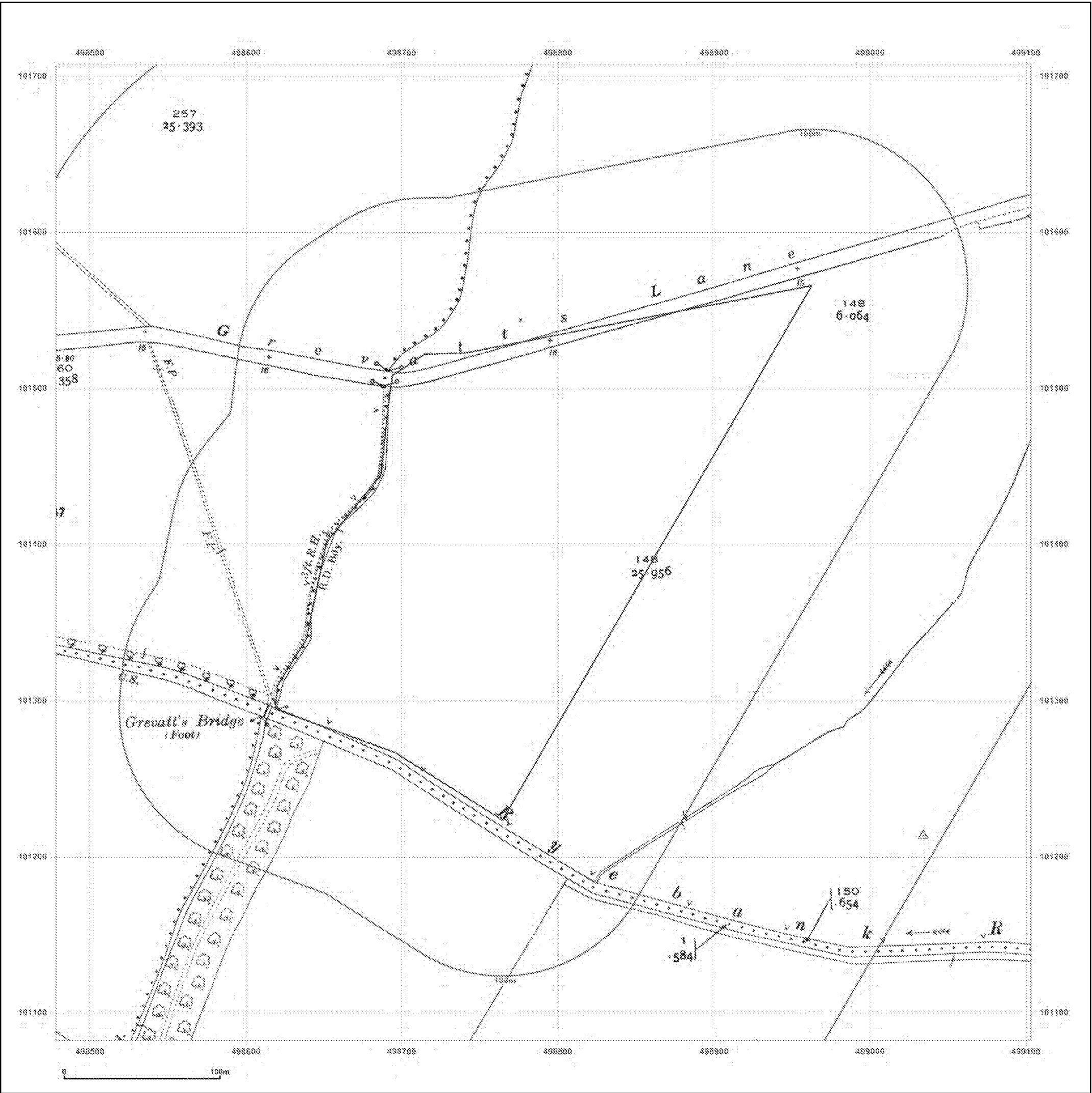


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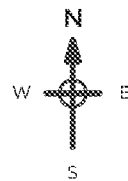


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Map Name: County Series
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Scale: 1:2,500
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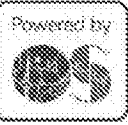


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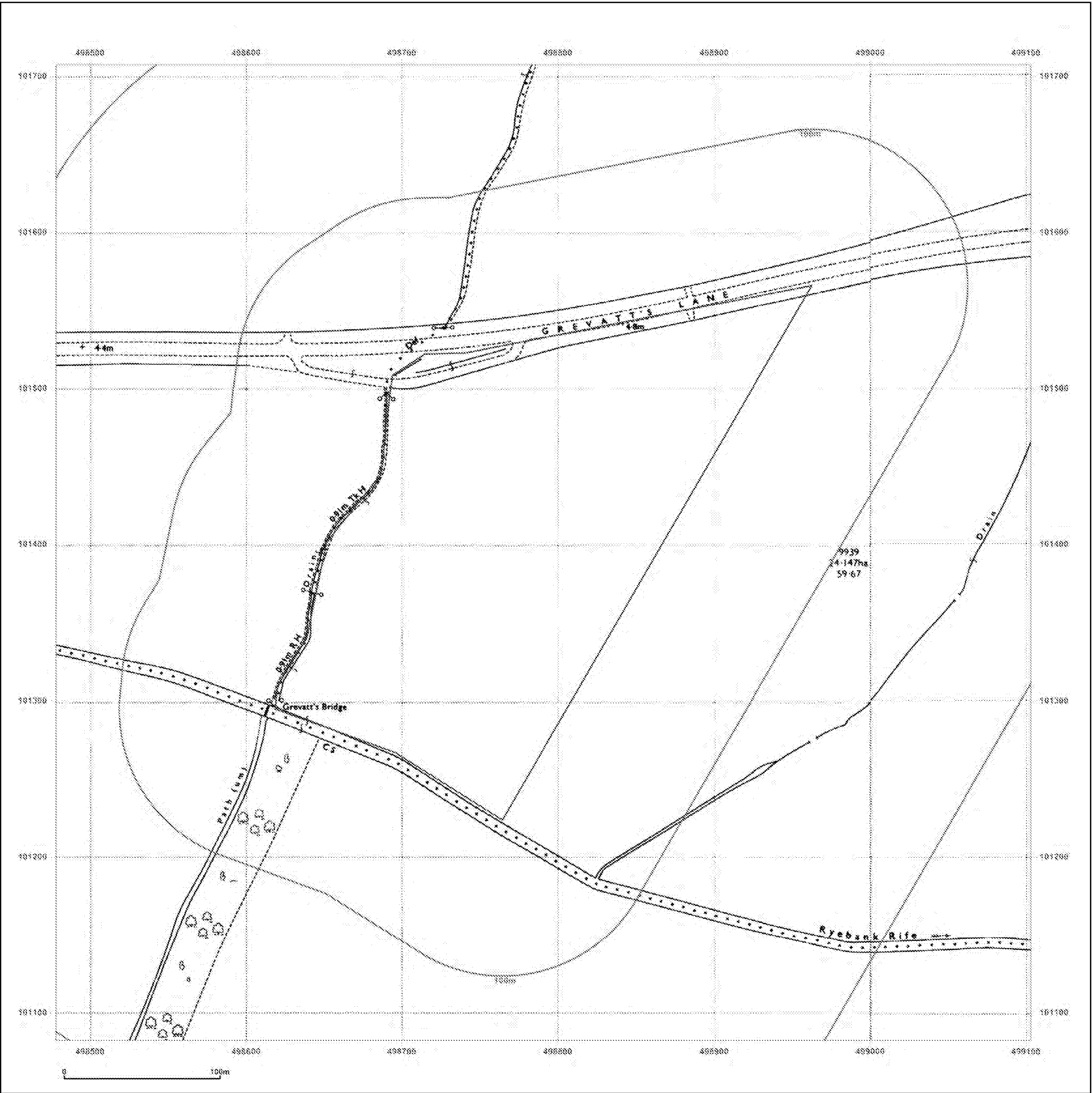


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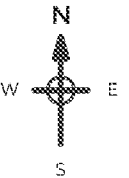
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Map Name: National Grid

Map date: 1974

Scale: 1:2,500

Printed at: 1:2,500

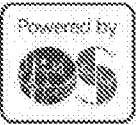


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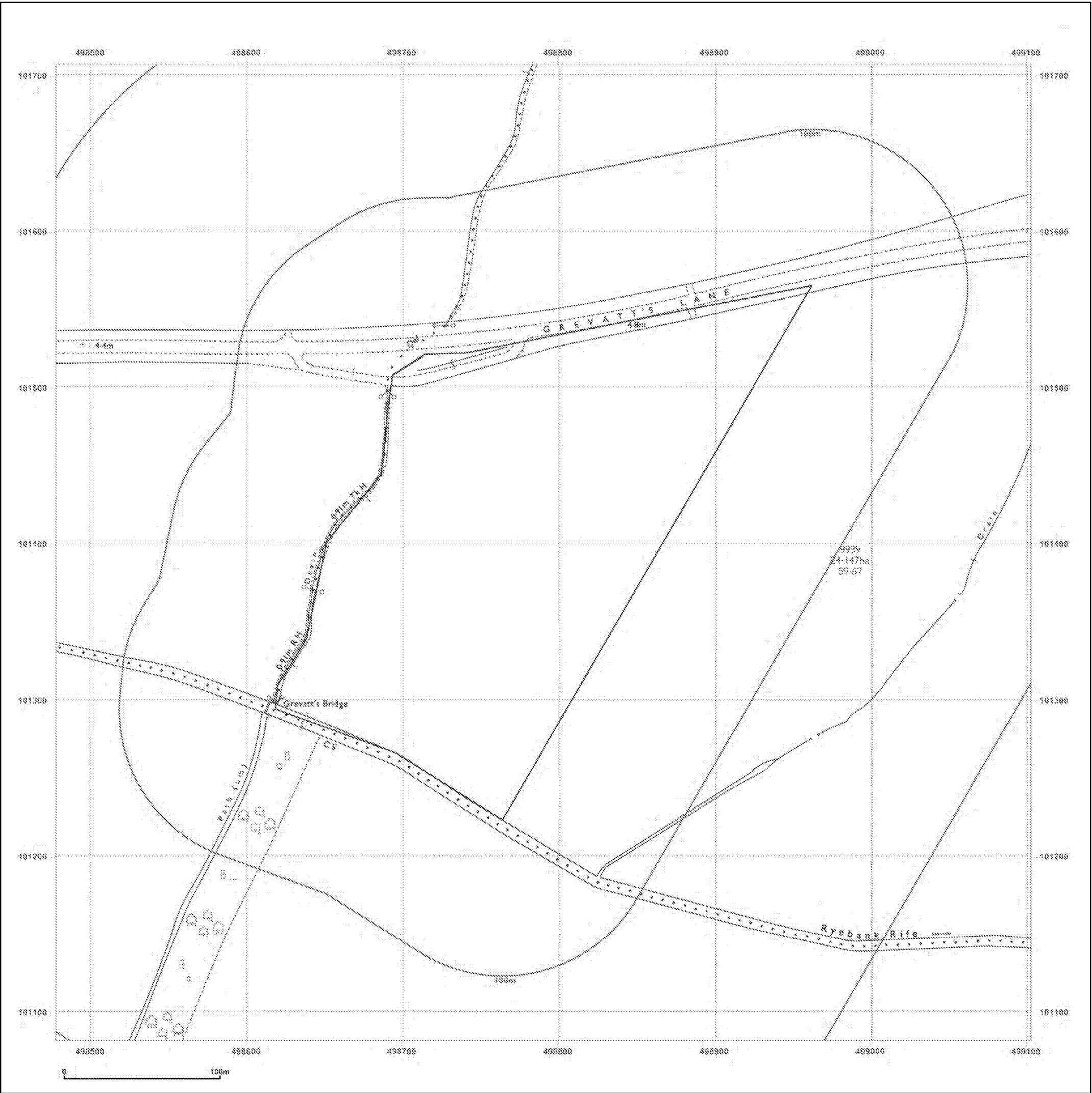


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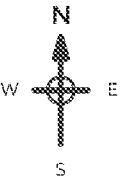
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Map Name: National Grid

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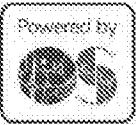
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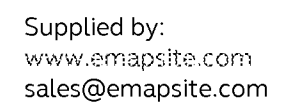
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County Series 1:10,560 scale

VEGETATION



Fir Wood



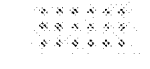
Deciduous Wood



Mixed Wood



Bracken



Orchard



Reeds



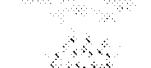
Rough Pasture



Furze



Marsh



Dens

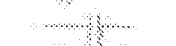
ROADS



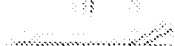
Railway over Road



Road over Railway



Road over River or Canal



Level Crossing



Railway over River



Road over Stream



Road over Stream



Embankment Road



Road over Stream

RAILWAYS

Double Lines of Railway

Single Lines of Railway and Tramway

GENERAL FEATURES



Gravel Pit



Sand Pit



Quarry



Shingle



Other Pits



Anemometer, Etc. of



Arrow showing direction of flow of water



Triangulation Station

BOUNDARIES

County Boundary

Parish Boundary

Canal

Parliamentary Division Boundary

Union Boundary

Rural District Boundary

National Grid 1:10,000 scale

HEIGHTS (METRES)

Values are given in metres above mean sea level as shown in the following:

Spot heights determined by ground survey are shown in the following:

Bench marks and their values are shown on large scale maps and bench mark data containing further and possibly later leveling information are obtainable from the Director General, Ordnance Survey.

Contours are at 5 metres vertical interval

ROCK FEATURES

Limestone

Quartzite

Granite



CONVERSION SCALE

Metres - Feet

2000 Metres

6500 Feet

1000 Metres

3200 Feet

500 Metres

1500 Feet

100 Metres

300 Feet

50 Metres

150 Feet

ABBREVIATIONS

BP/BP Boundary Point or Station

CH Church

CM Club House

FS Fire Station

FB Foot Bridge

RS Railway Station

GP Guide Post

MP/MP Mile Post or Stone

P Post or Post

PS Police Station

PO Post Office

PC Public Commission

PH Public House

S Stone

SP Spring

TGB Telephone Call Box

TGP Telephone Call Post

TH Town Hall

W Well

Y Youth Hostel

ROADS

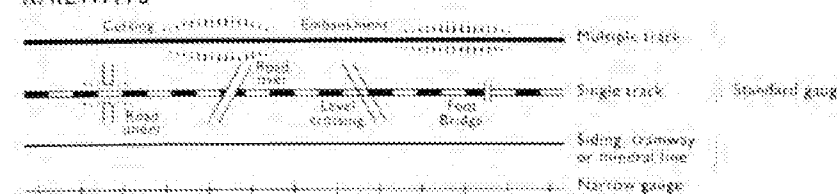
Road

Track

Path

Where unfenced shown by dashed lines

RAILWAYS



GENERAL FEATURES

Antiquity (date of)

Quartzite

Granite

Building

Pylon

Post

Glasshouse

Triangulation station

Direction of flow of water

Shingle

Sand

Gravel

Clay

Chalk

Gravel pit

Sand pit

Refuse or slag heap

Shingle

Sand

Gravel

Clay

Chalk

Gravel pit

Sand pit

Refuse or slag heap

Shingle

Sand

VEGETATION

Bracken, rough grassland

Scrub

Heath

Reeds

Marsh

Sedges

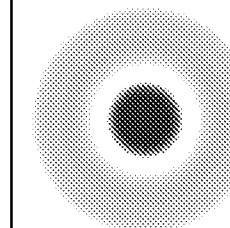
Coppice

Orchard

Coniferous trees

Non-coniferous trees

In some areas bracken () and rough grassland () are shown separately.



GroundSure

Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

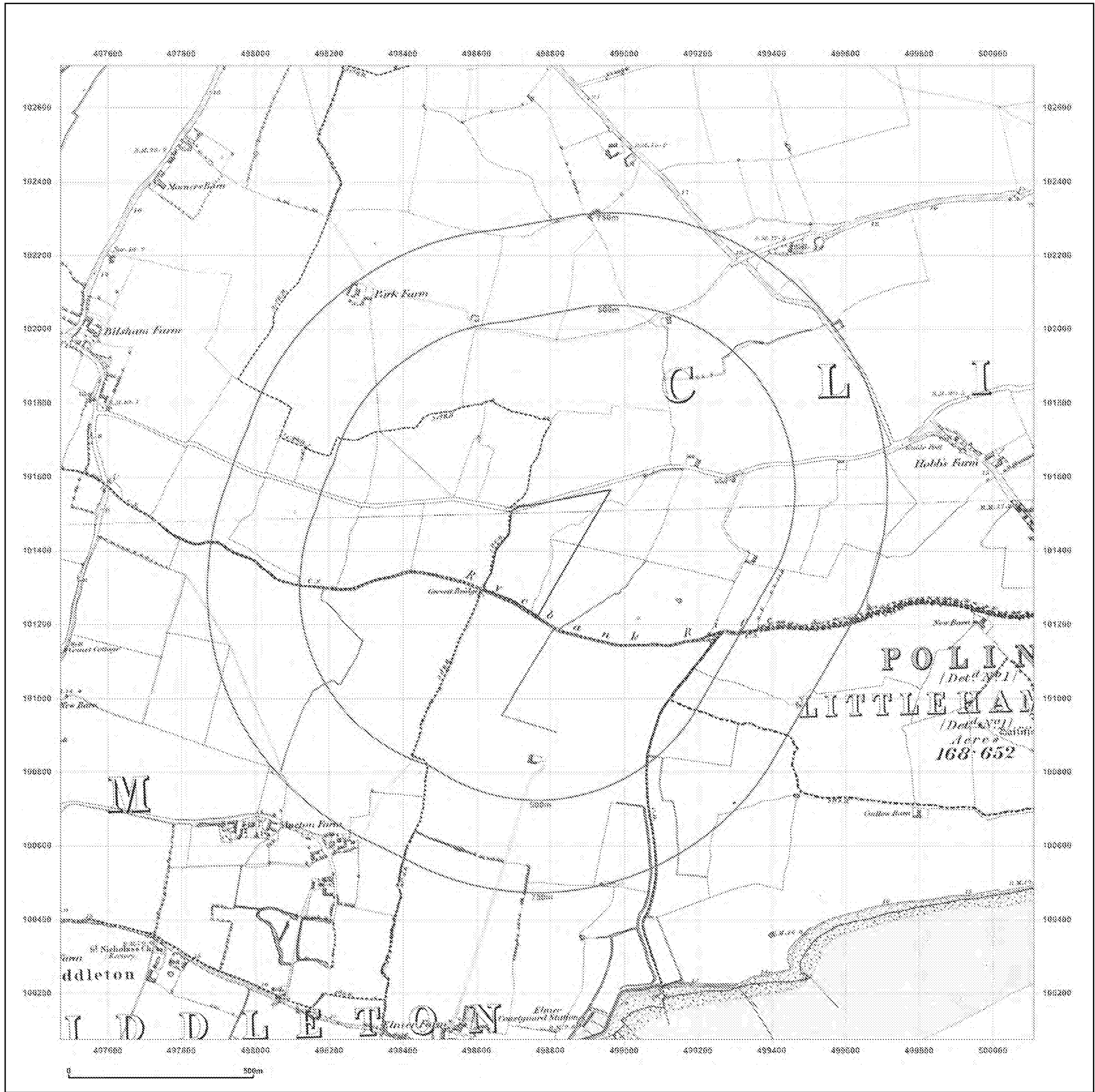
If you have a query regarding any of the maps provided please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

Technical Helpline

Tel 08444159000

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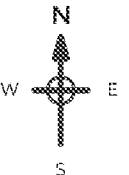
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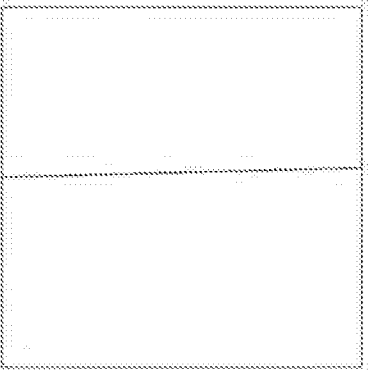
Map date: 1876

Scale: 1:10,560

Printed at: 1:10,560



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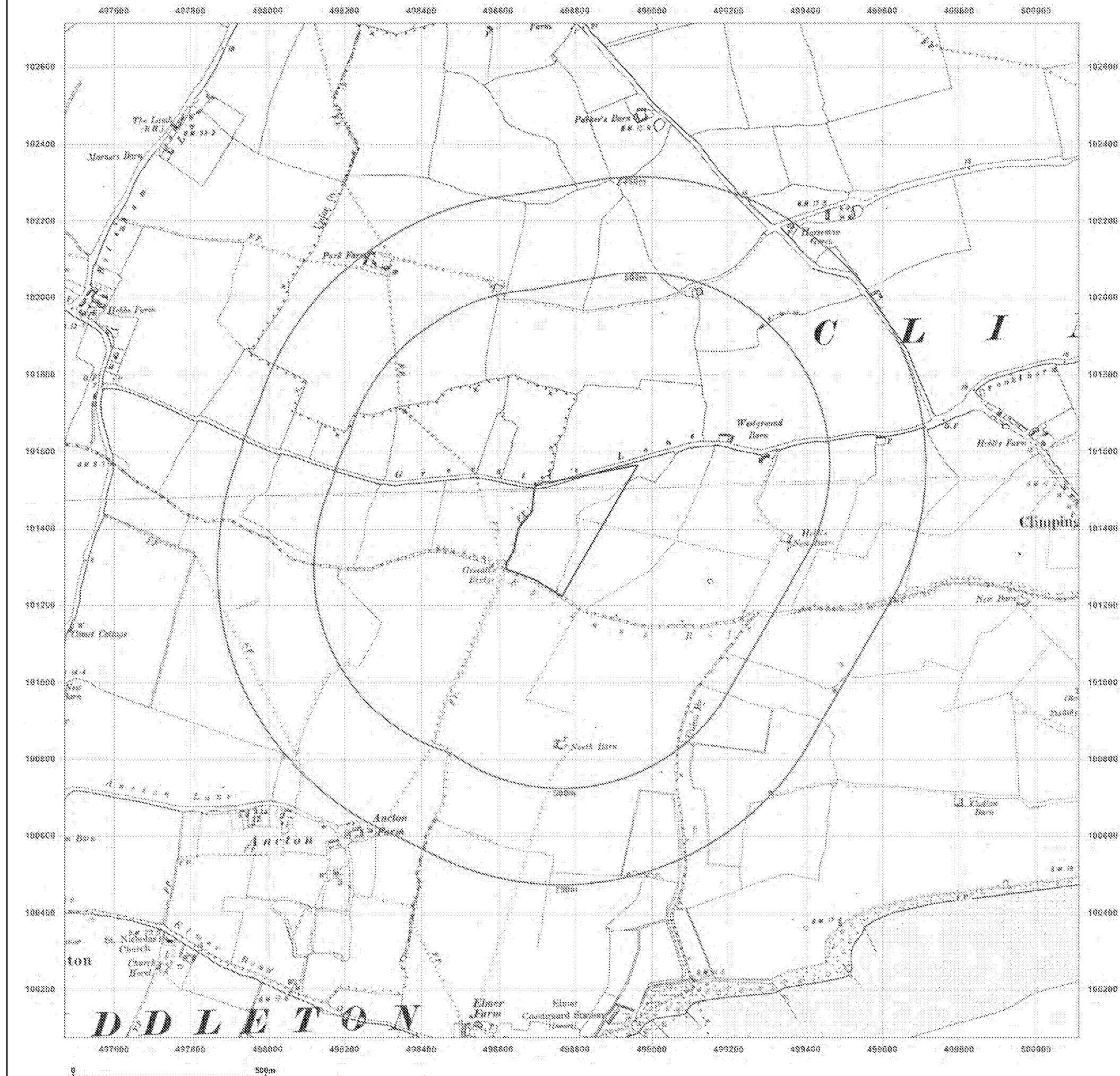


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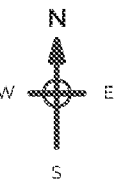
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Map date: 1896

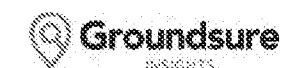
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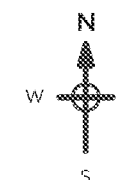
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Map Name: County Series

Map date: 1910

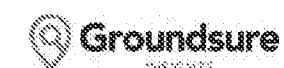
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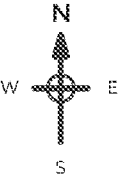
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Map Name: County Series

Map date: 1910

Scale: 1:10,560

Printed at: 1:10,560



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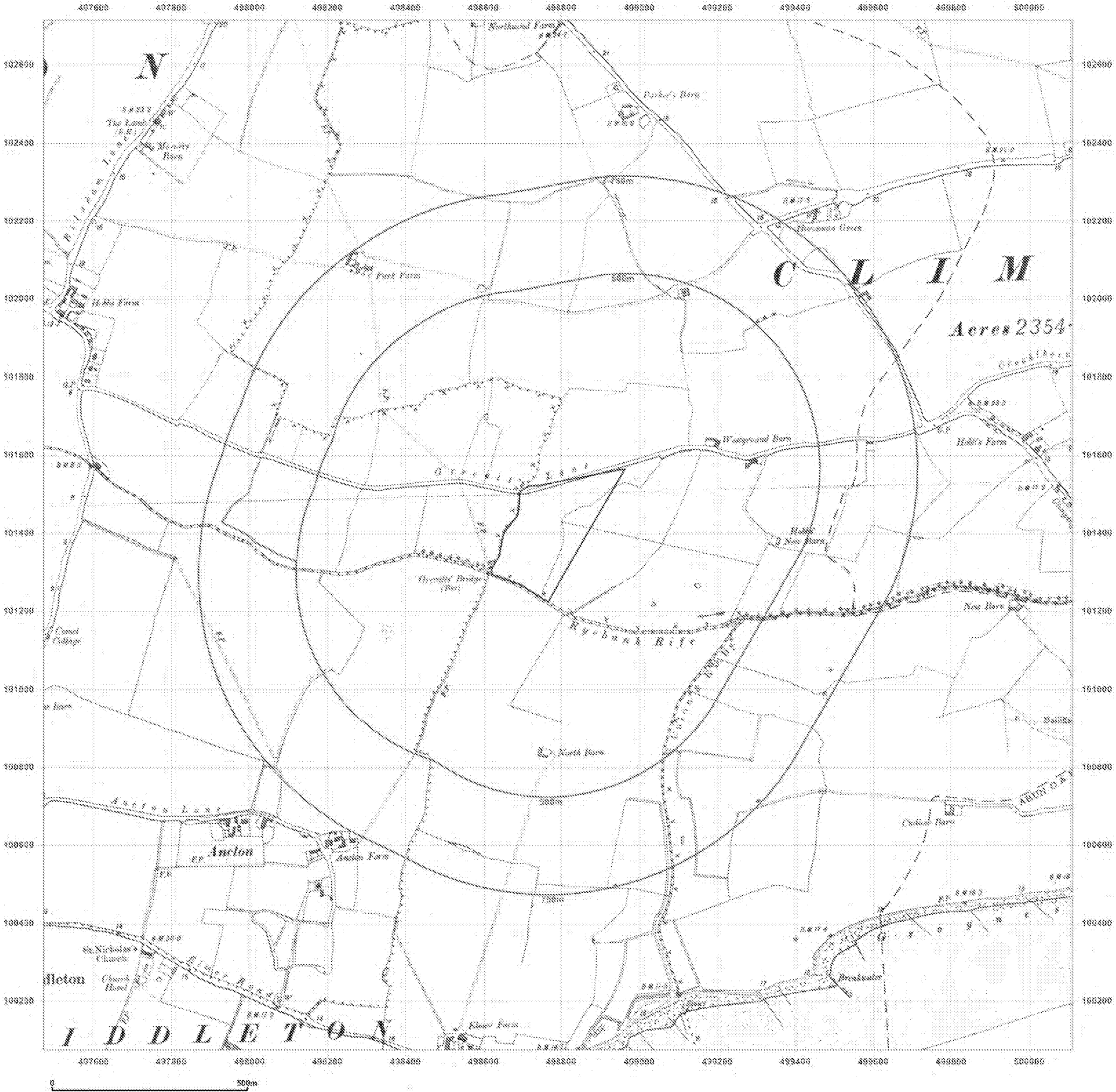


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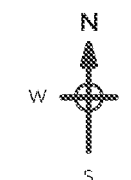
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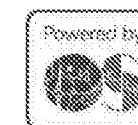
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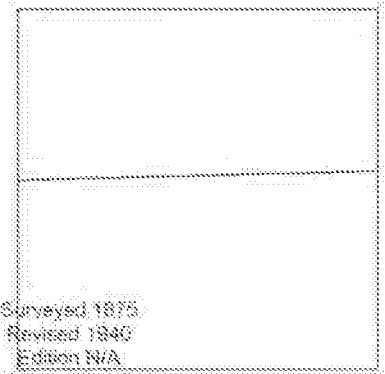
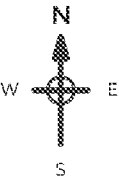
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Map date: 1940

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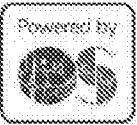
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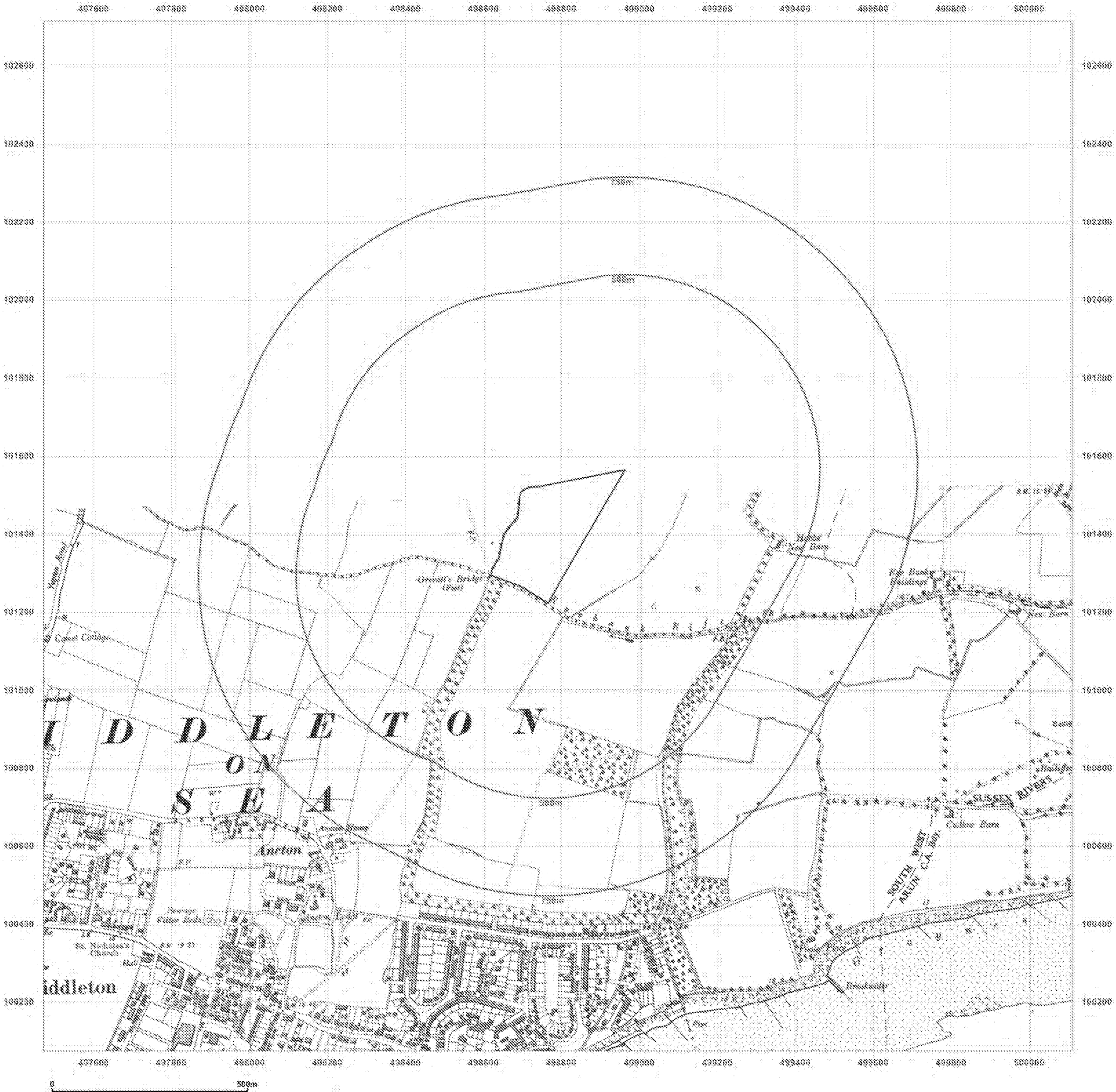


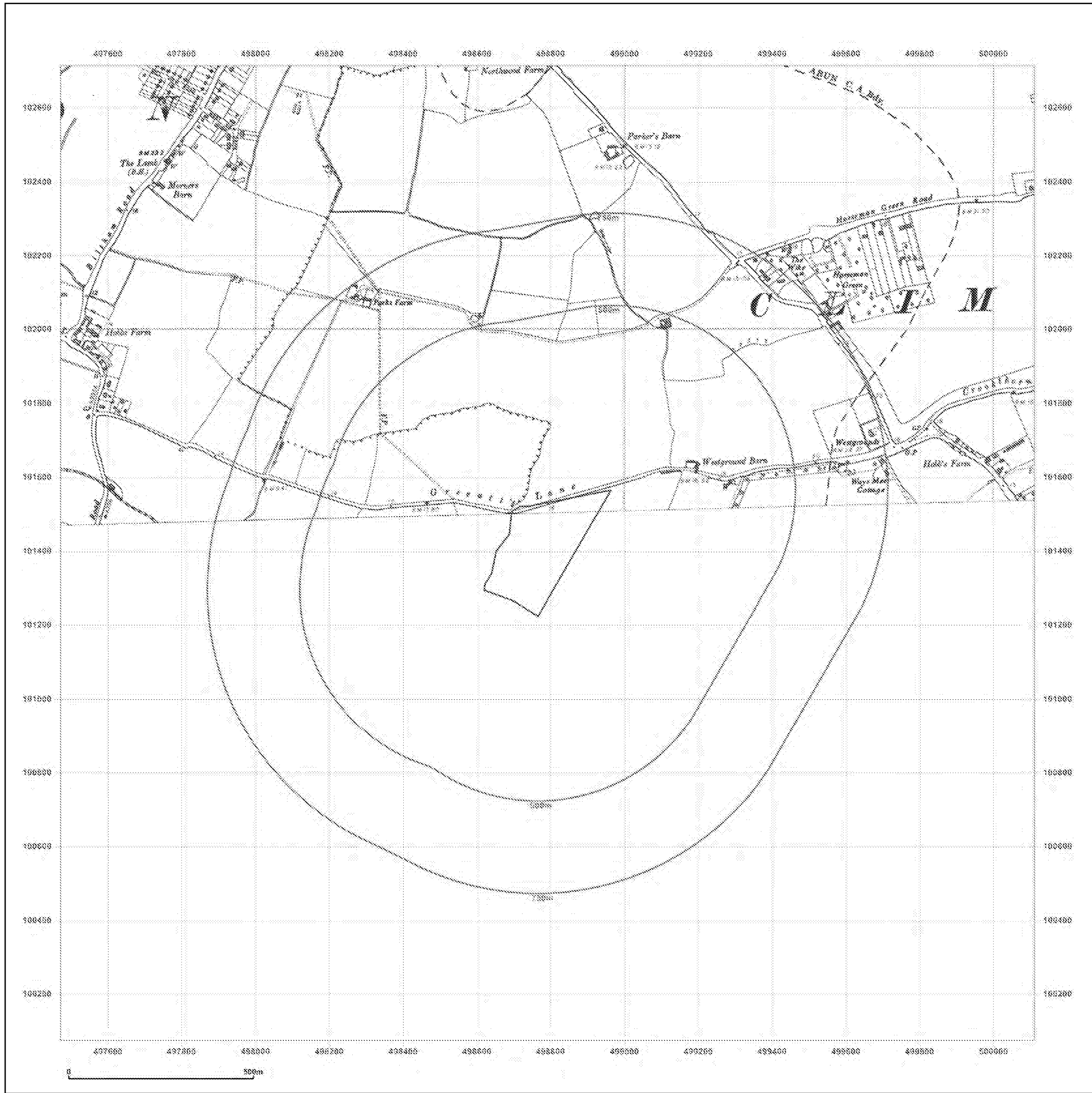
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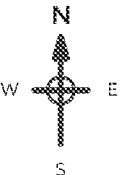
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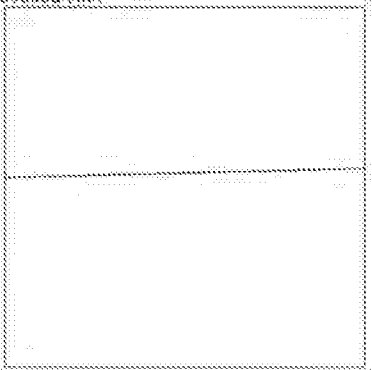
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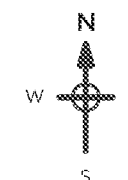
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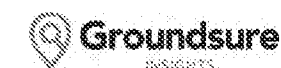
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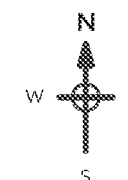
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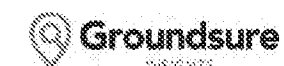
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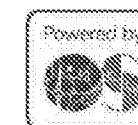
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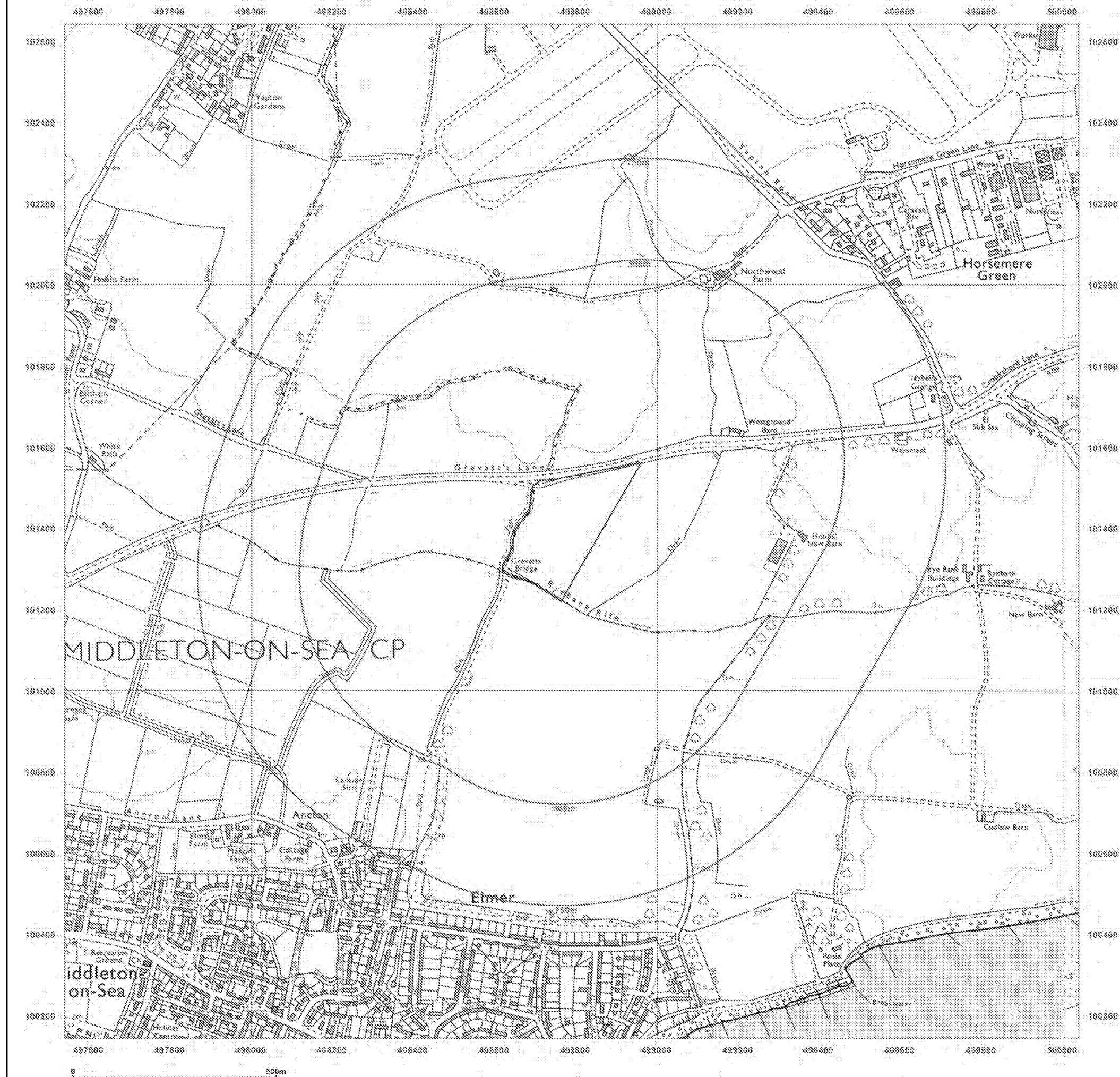


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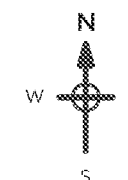
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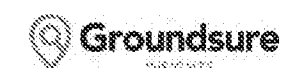
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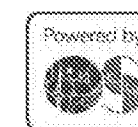


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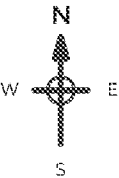
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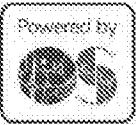


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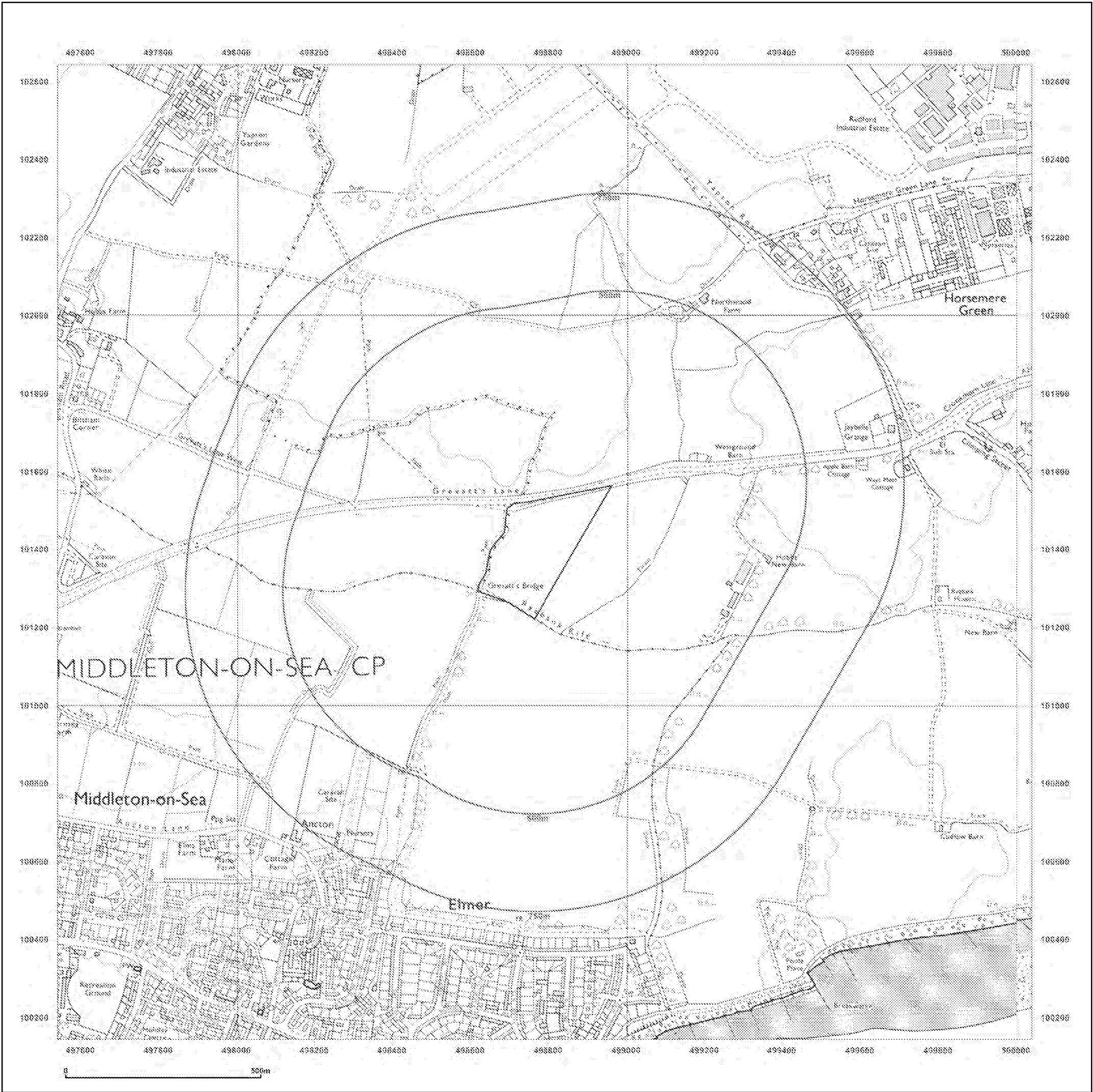


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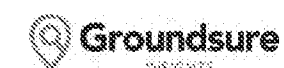
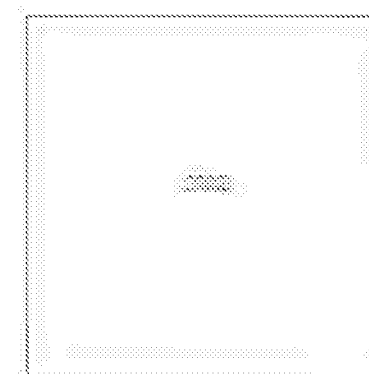
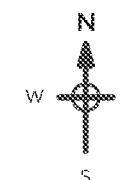
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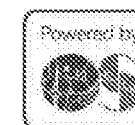
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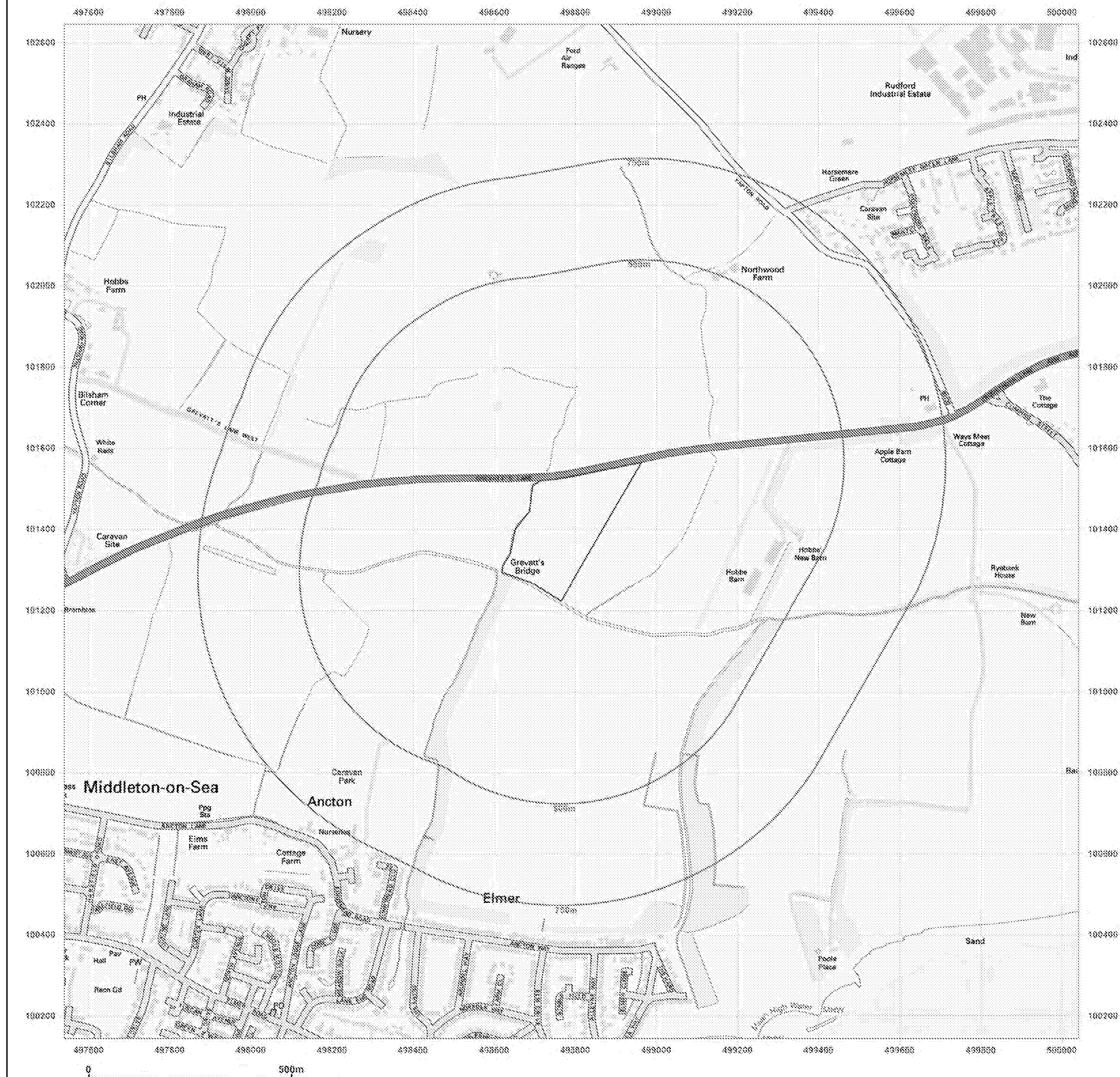


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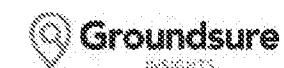
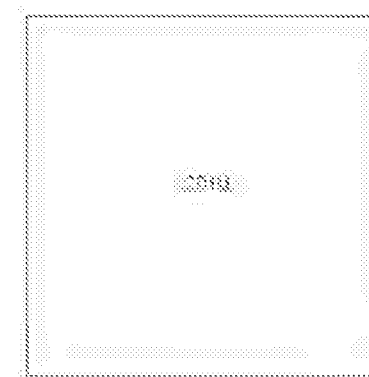
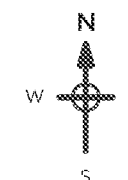
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Map Name: National Grid

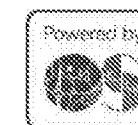
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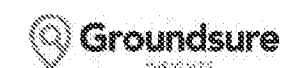
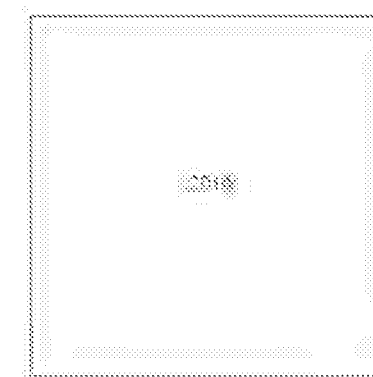
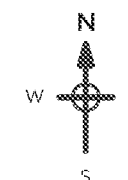
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Map Name: National Grid

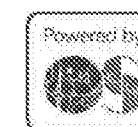
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Address: ,
Date: 17 Jul 2018
Reference: EMS-490113_658978
Client: EmapSite



Aerial Photograph Capture date: 07-Jun-2015
Grid Reference: 498773,101407
Site Size: 5.79ha

Report Reference: EMS-490113_658978
Client Reference: EMS_490113_658978

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Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	0	2
1.2 Additional Information – Historical Tank Database	0	0	0	0
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	0	0
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	0
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	3
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	1	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	3	0	8

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

Section 5: Geology	
5.1 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	0	1	0	4
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	2	0	0	1	3	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	6	8	16	40	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High					
7.4 Flood Defences within 250m of the study site	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	Potential below Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High					

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	0	1	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	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	Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

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

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

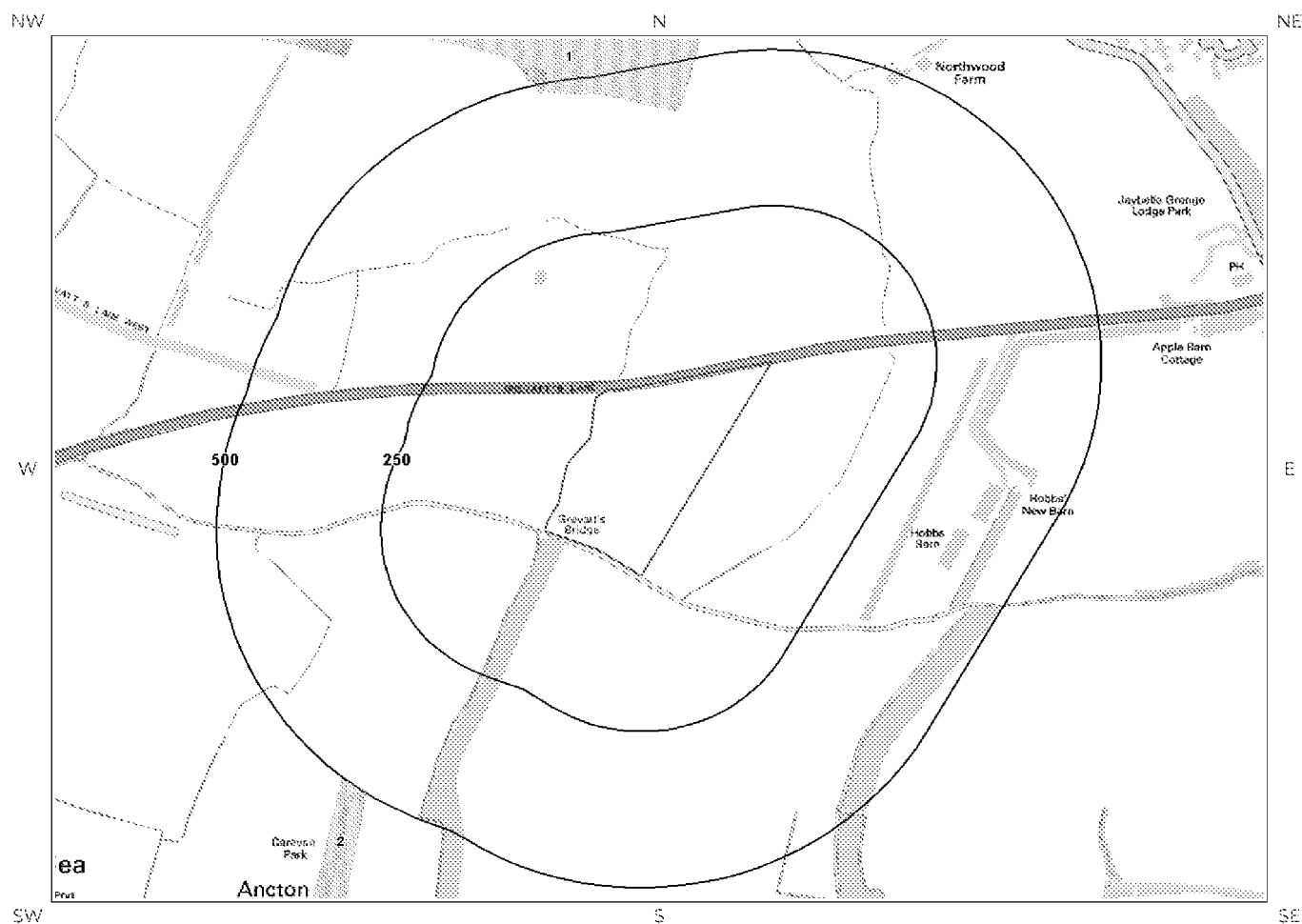
Note: Maps

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

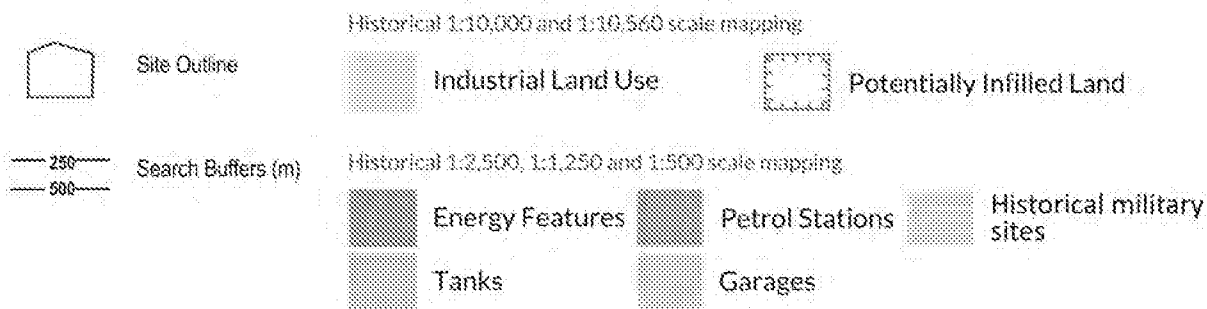
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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

1. Historical 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: 2

ID	Distance [m]	Direction	Use	Date
1	421	N	Aerodrome	1978
2	497	SW	Nursery	1991

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: 0

Database searched and no data found.

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: 0

Database searched and no data found.

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

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

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

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

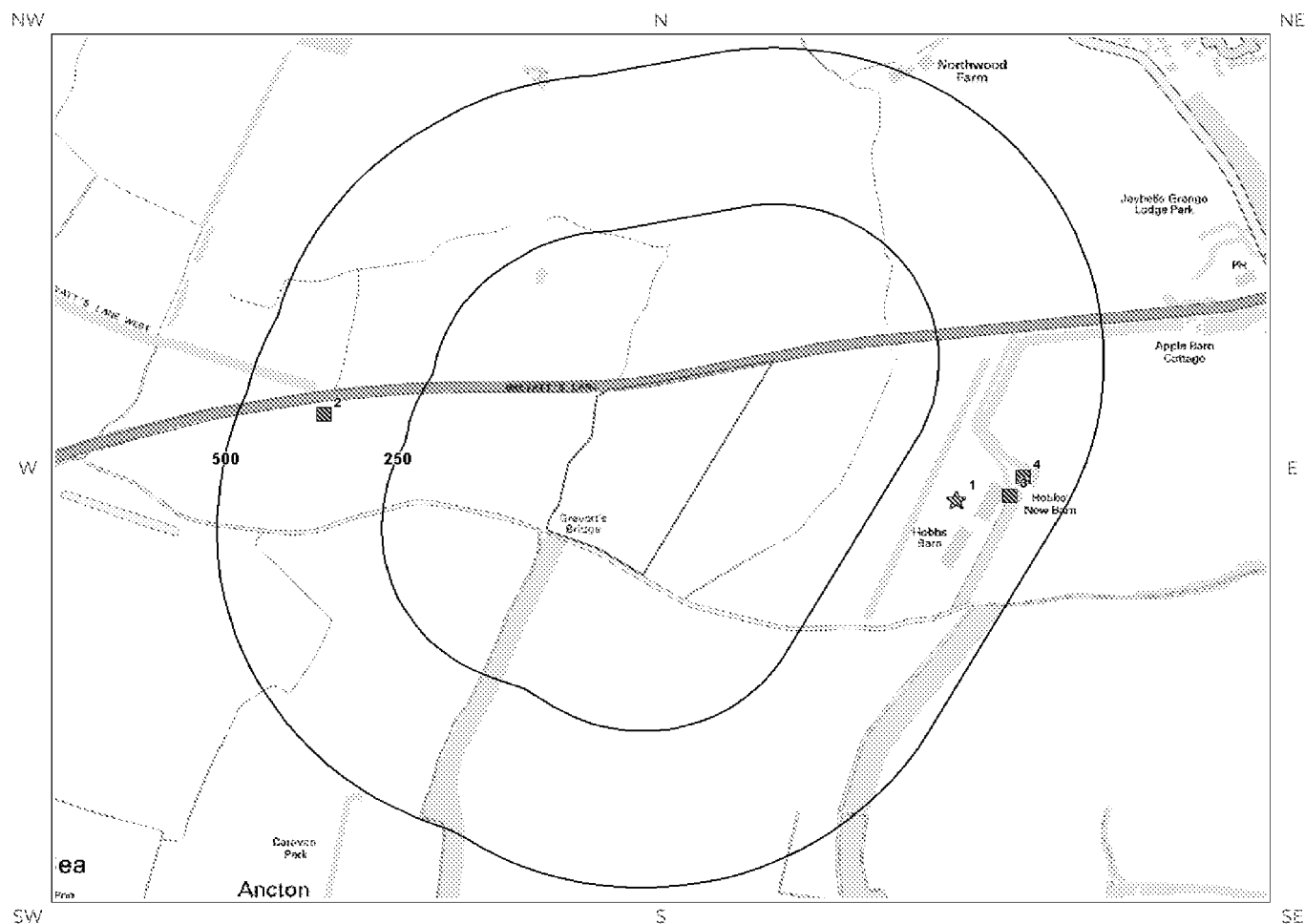
ID	Distance (m)	Direction	Site Name	Date of operation	Activities
----	--------------	-----------	-----------	-------------------	------------

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 0

Database searched and no data found.

2. Environmental Permits, Incidents and Registers Map



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

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

3

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

ID	Distance (m)	Direction	NGR	Details
2	380	W	498280 101480	Address: BOGNOR-LITTLEHAMPTON RD, REALIGNMENT GREVATTS LN, CLYMPING, WEST SUSSEX Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: S01140 Permit Version: 1 Receiving Water: CONTROLLED SEA Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 01/05/1962 Effective Date: 01-May-1962 Revocation Date: 31/03/1997
3	418	SE	499320 101350	Address: AGRICULTURAL STORAGE BARN, LAND @ HOBBS NEW BARN, OFF GREVATTS LANE CLIMPING, LITTLEHAMPTON WEST SUSSEX Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: S02228 Permit Version: 1 Receiving Water: FRESHWATER RIVER Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 08/11/1973 Effective Date: 08-Nov-1973 Revocation Date: 31/03/1997
4	421	SE	499340 101380	Address: NEW BUILDING, HOBBS NEW BARN, GREVATTS LANE, CLIMPING, LITTLEHAMPTON, WEST SUSSEX, BN17 5RE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P12305 Permit Version: 1 Receiving Water: DITCH LEADING TO RIVER Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 17/02/2005 Effective Date: 17-Feb-2005 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 & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

1

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

ID	Distance (m)	Direction	NGR	Details
1	350	SE	499238 101343	Incident Date: 27-Mar-2003 Incident Identification: 146409 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes 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.

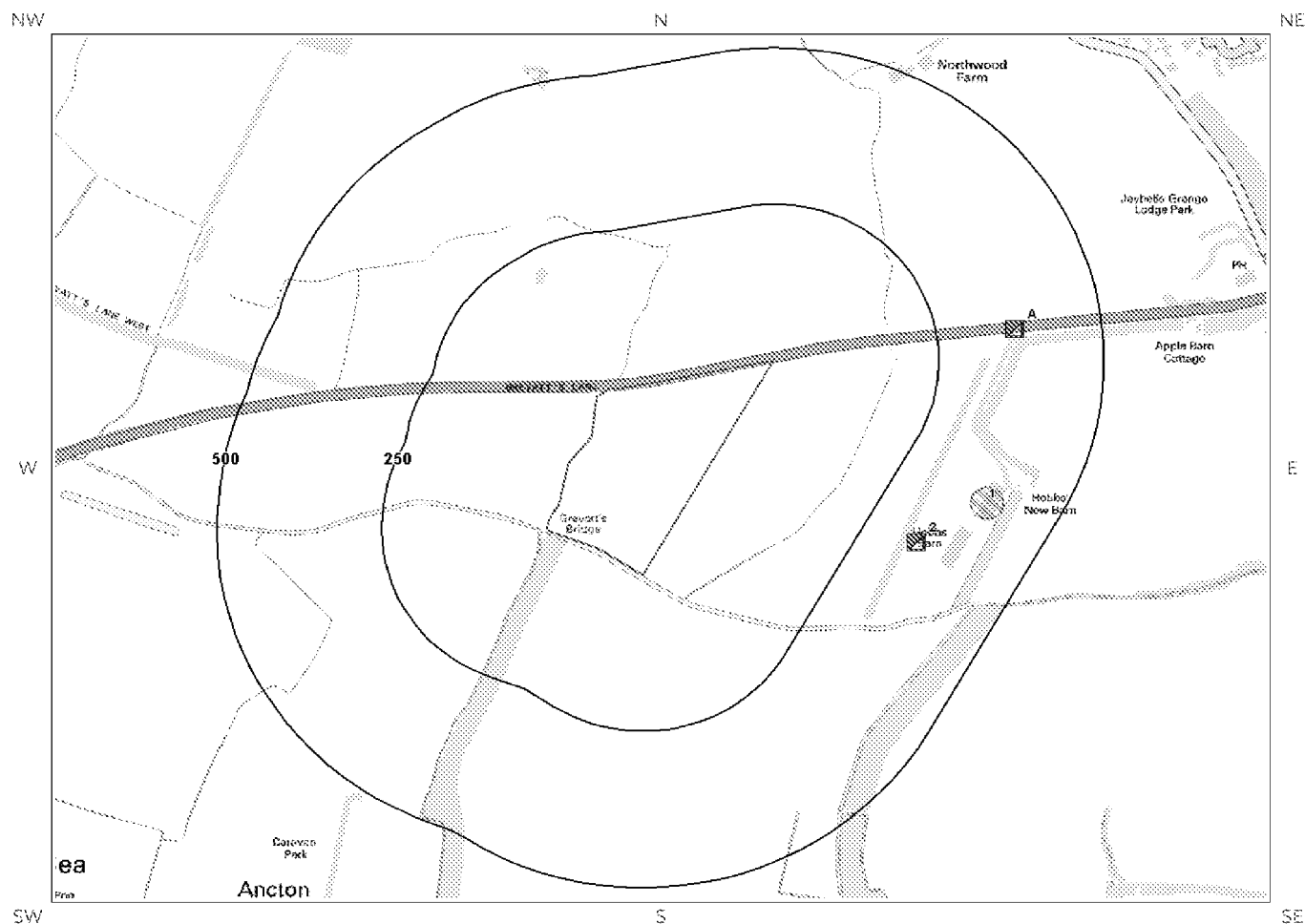
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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 | | EA/NRW Active Landfill | | Historic and Planned Waste Sites |
| | 250 Search Buffers (m) | | EA/NRW Historic Landfill | | EA/NRW Licensed Waste Site |
| | 500 Search Buffers (m) | | 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:

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

3.2 Other Waste Sites

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

1

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

ID	Distance (m)	Direction	NGR	Details	
1	368	SE	499285 101338	Type of Site: Waste Transfer Station Site Address: Hobbs Barn, Grevatts Lane, Climping, LITTLEHAMPTON, West Sussex, BN17 5RE Planning Application Reference: CM/2/11/ Date: 03/08/2011	Further Details: Scheme comprises change of use of factory unit 7 from B1/B8 to a waste transfer and recycling station, this application will be determined by West Sussex County Council. An application (ref: CM/2/11/) for detailed planning permission was granted by Arun D.C. A detailed planning application has been granted. 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:

11

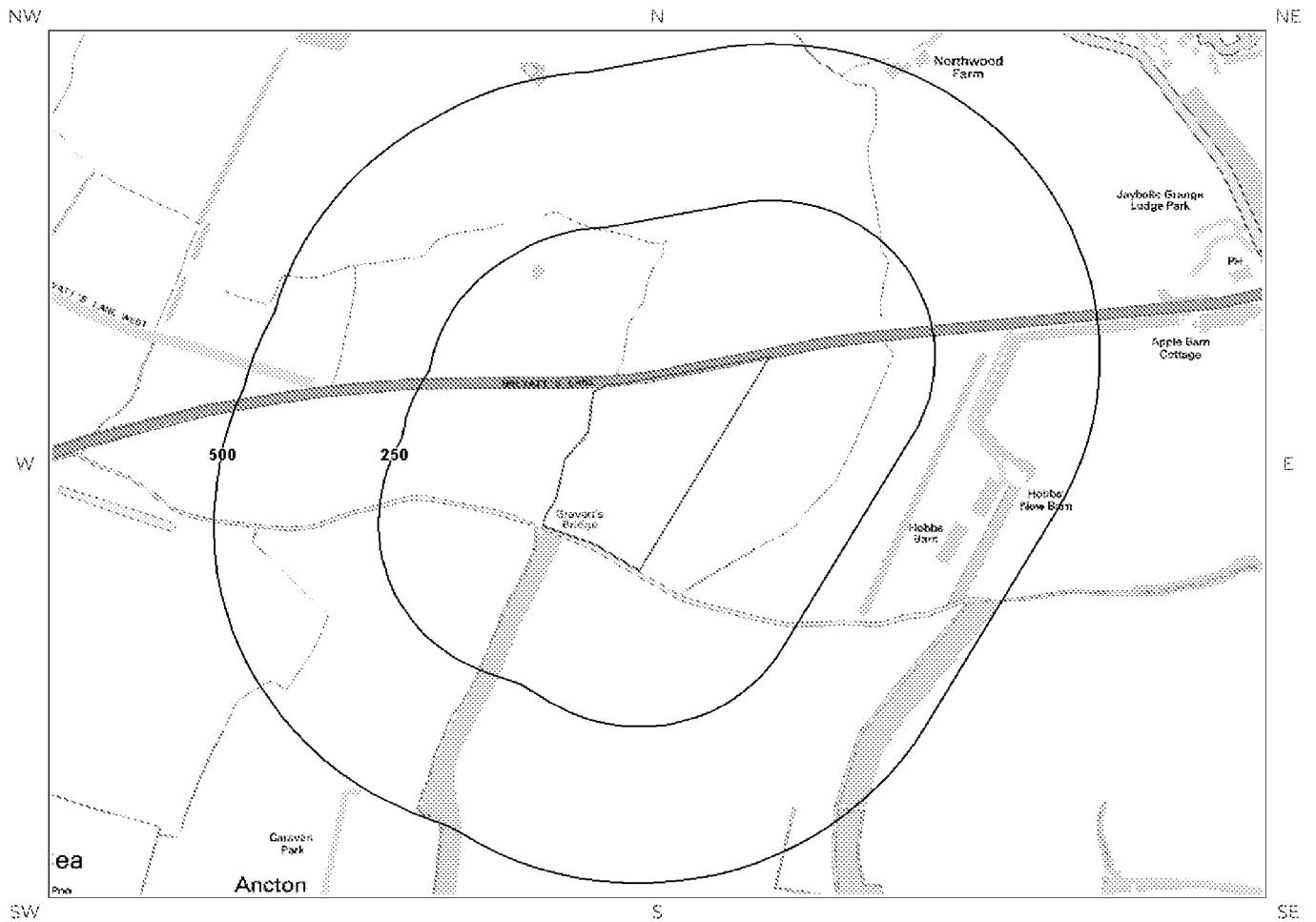
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	332	SE	499178 101276	Site Address: Hobbs Farm, Gravetts Lane, Climping, BN17 5RE Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GRA006 EPR reference: EA/EPR/FB3605CX/A001 Operator: Grab And Tip (Littlehampton) Limited Waste Management licence No: 404366 Annual Tonnage: 75000.0	Issue Date: 27/03/2018 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Grab And Tip (Littlehampton) Limited Correspondence Address: -
3A	367	E	499326 101617	Site Address: Unit 7, Hobbs Barn, Grevatts Lane, Climping, Littlehampton, West Sussex, BN17 5RE Type: 75kte HCl Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ARU007 EPR reference: EA/EPR/DB3630RC/A001 Operator: Arun Waste Services Ltd Waste Management licence No: 103634	Issue Date: 12/01/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Unit 7 Hobbs Barn Correspondence Address: -

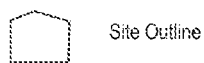
ID	Distance (m)	Direction	NGR	Details	
Annual Tonnage: 74999.0					
4A	367	E	499326 101617	Site Address: Unit 7, Hobbs Barn, Grevatts Lane, Climping, Littlehampton, West Sussex, BN17 5RE Type: 75kte HCI Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ARU007 EPR reference: EA/EPR/DB3630RC/V003 Operator: Arun Waste Services Limited Waste Management licence No: 103634 Annual Tonnage: 74999.0	Issue Date: 12/01/2012 Effective Date: - Modified: 14/09/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Unit 7, Hobbs Barn Correspondence Address: -
Not shown	1079	NE	499900 102100	Site Address: Units 9 & 10, Hanger 3, Rudford Ind. Estate, Ford, West Sussex Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT012 EPR reference: - Operator: S I T A Solent Limited Waste Management licence No: 19741 Annual Tonnage: 35000.0	Issue Date: 20/09/1996 Effective Date: 20/03/2000 Modified: 18/07/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Units 9 & 10 Correspondence Address: Vine Court, Chalkpit Lane, Dorking, Surrey, RH4 1AJ
Not shown	1079	NE	499900 102100	Site Address: Units 9 & 10, Hanger 3, Rudford Ind. Estate, Ford, West Sussex, BN18 0BS Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SOU371 EPR reference: EA/EPR/AP3494HZ/T003 Operator: South Coast Skips Waste Management licence No: 19741 Annual Tonnage: 35000.0	Issue Date: 20/09/1996 Effective Date: 18/03/2004 Modified: 18/07/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Units 9 & 10 Correspondence Address: -
Not shown	1080	NE	499902 102099	Site Address: Units 7 - 10, Hanger Three, Rudford Industrial Estate, Ford, Arundel, West Sussex, BN18 0BS Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SOU395 EPR reference: EA/EPR/WP3095HU/V002 Operator: South Coast Skips Ltd Waste Management licence No: 10146 Annual Tonnage: 149999.0	Issue Date: 11/01/2006 Effective Date: - Modified: 04/04/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Ford Waste Recycling Centre & Transfer Station Correspondence Address: -
Not shown	1296	N	498500 102800	Site Address: Jones And Co, Burndell Road, Yapton, West Sussex, BN18 0HP Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JON001 EPR reference: EA/EPR/RP3694HH/A001 Operator: Jones P H Waste Management licence No: 19754 Annual Tonnage: 2500.0	Issue Date: 31/03/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Jones And Co Correspondence Address: -
Not shown	1429	N	498471 102930	Site Address: Hanger No8, Northwood Farm, Burndell Road, Yapton, West Sussex, BN18 0HR Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENV120	Issue Date: 28/01/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Envirowaste (Southern) Ltd

ID	Distance (m)	Direction	NGR	Details
				EPR reference: EA/EPR/RP3995EE/A001 Operator: Envirowaste (Southern) Ltd Waste Management licence No: 100156 Annual Tonnage: 4999.0 Correspondence Address: -
Not shown	1429	N	498471 102930	Site Address: Hanger No8, Northwood Farm, Burndell Road, Yapton, West Sussex, BN18 0HR Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TJW008 EPR reference: EA/EPR/FB3330AE/T001 Operator: T J Waste & Recycling Ltd Waste Management licence No: 100156 Annual Tonnage: 4999.0 Issue Date: 28/01/2008 Effective Date: 19/05/2012 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Yapton Waste Recycling Facility Correspondence Address: -
Not shown	1429	N	498471 102930	Site Address: Northwood Farm (Hanger No8), Burndell Road, Yapton, West Sussex, BN18 0HR Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TJW008 EPR reference: EA/EPR/FB3330AE/V002 Operator: T J Waste & Recycling Limited Waste Management licence No: 100156 Annual Tonnage: 24999.0 Issue Date: 28/01/2008 Effective Date: 19/05/2012 Modified: 27/07/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Yapton Waste Recycling Facility Correspondence Address: -
Not shown	1499	N	499400 103000	Site Address: Sludge Dryer, Ford, Arundel, West Sussex, BN13 3NX Type: Landfill Gas Engine (<3 mW) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWS020 EPR reference: EA/EPR/KP3130KX/V002 Operator: Southern Water Services Limited Waste Management licence No: 400024 Annual Tonnage: 0.0 Issue Date: 02/04/2013 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Ford Waste Water Treatment Works Correspondence Address: -

4. Current Land Use Map



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Site Outline

★ Current Industrial Sites

----- Electricity Transmission Cables

250
500 Search Buffers (m)

● Petrol & Fuel Sites

----- Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 0

Database searched and no data found.

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

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.

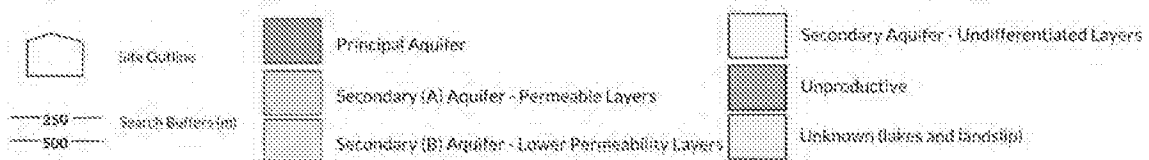
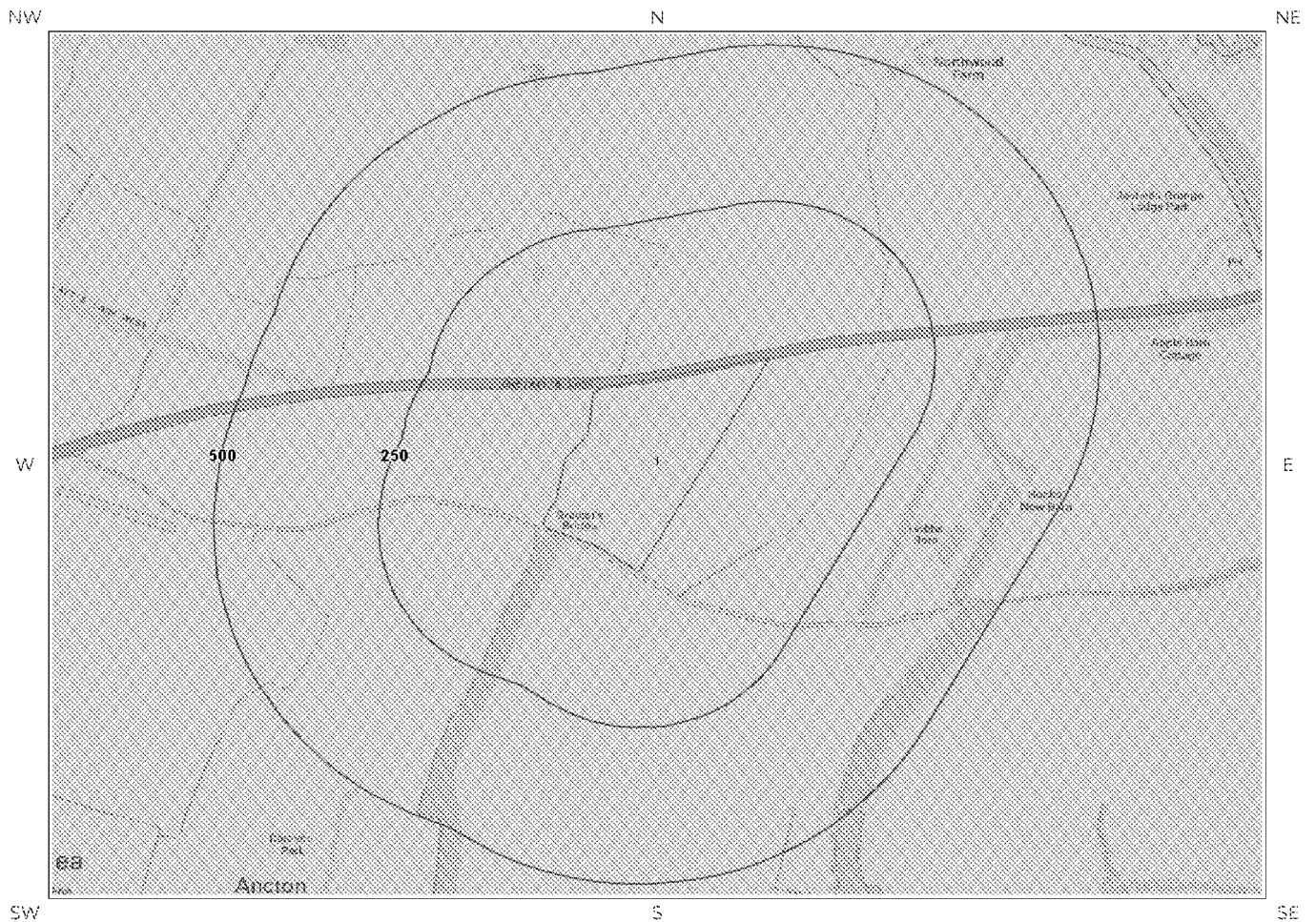
Lex Code	Description	Rock Type
RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY

5.3 Bedrock and Solid Geology

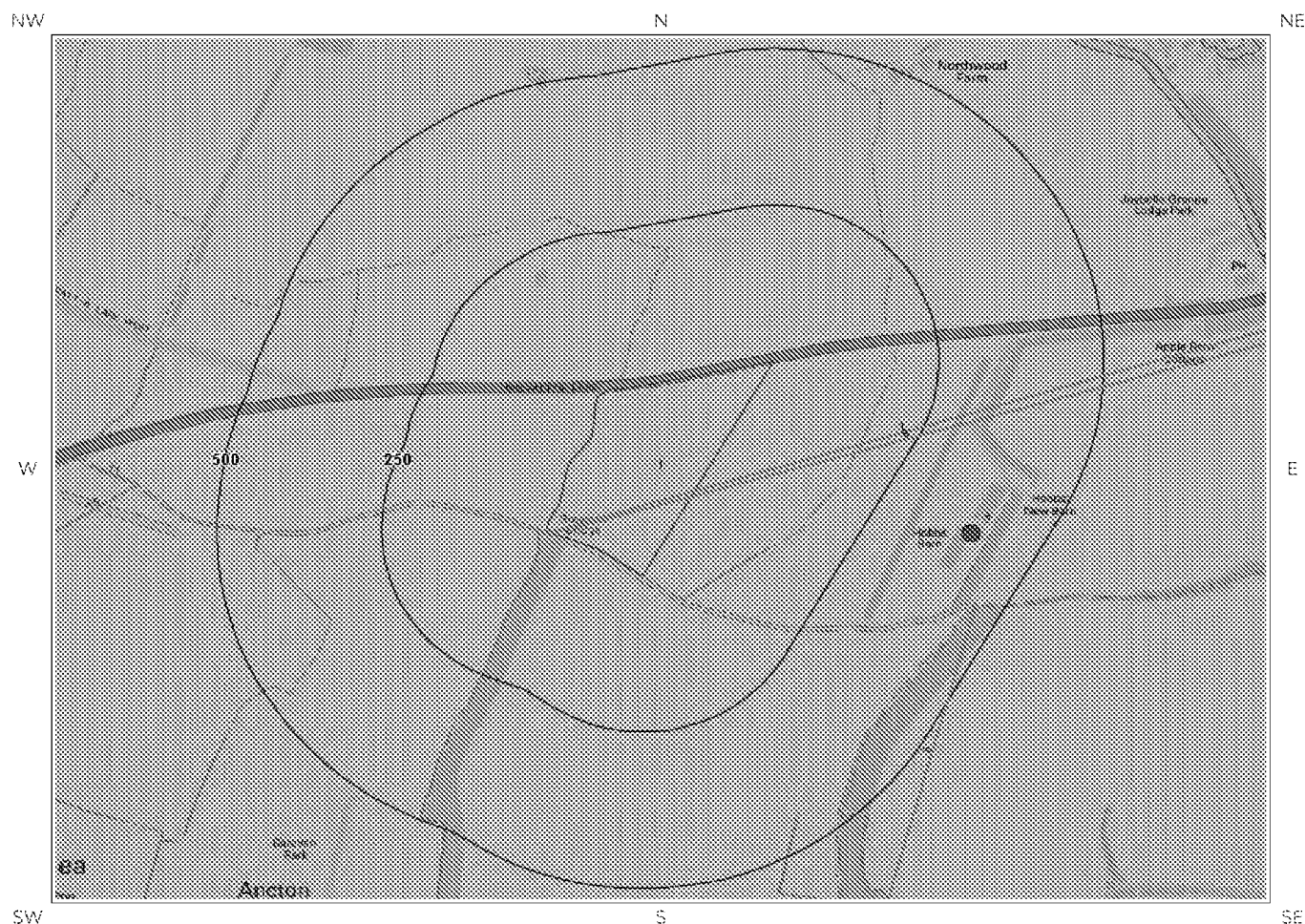
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LPCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK FORMATION AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED)	CHALK

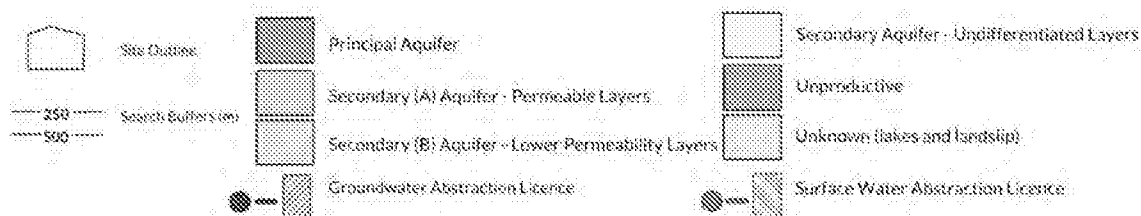
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)



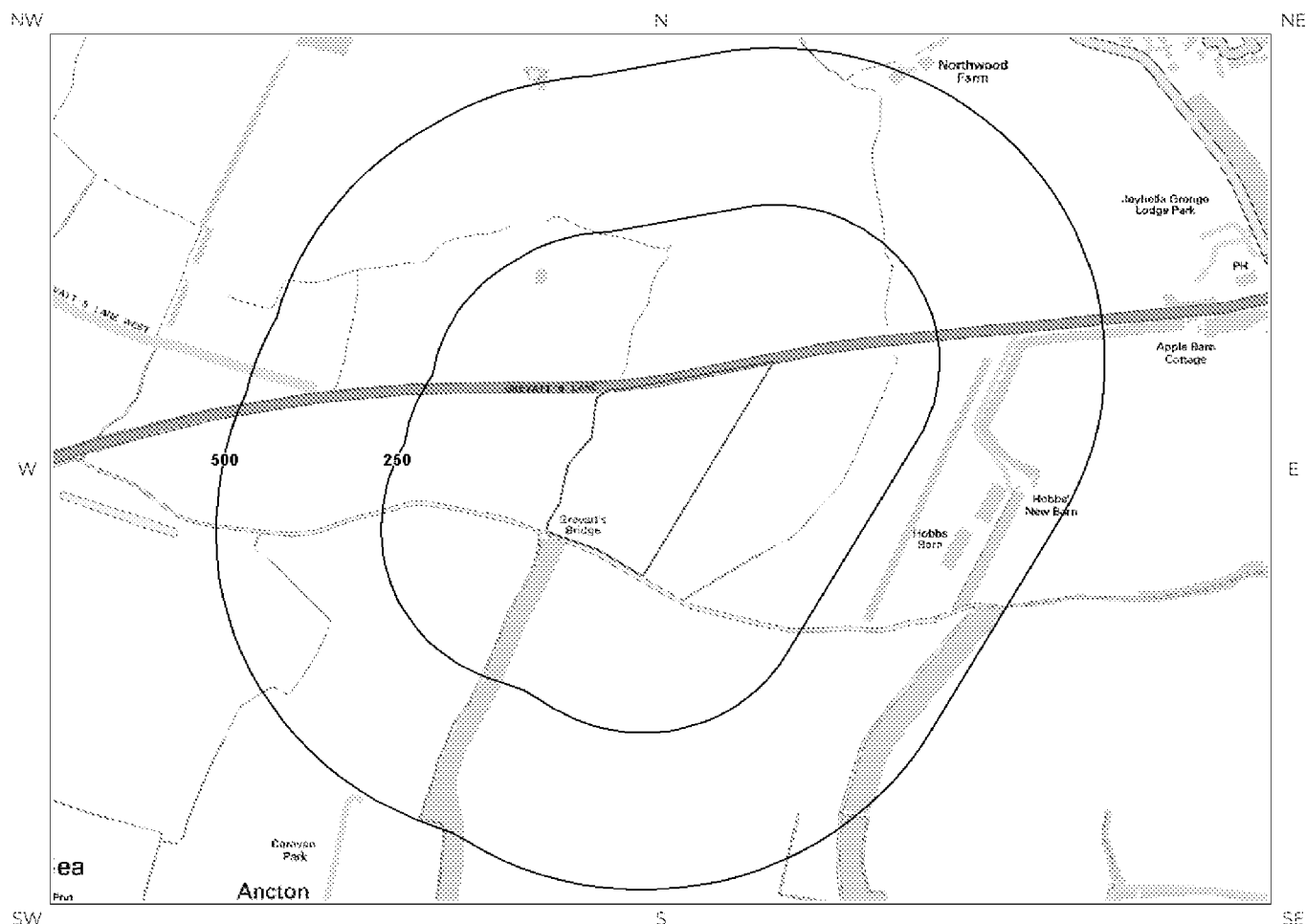
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



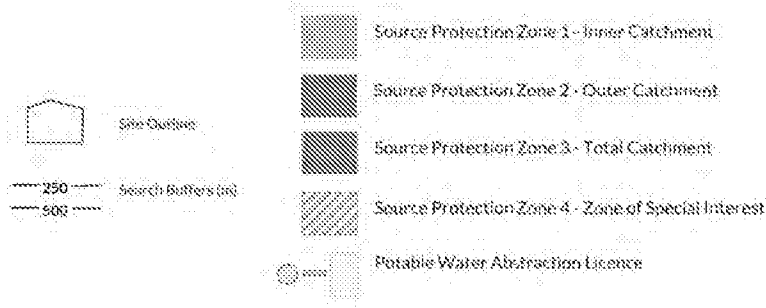
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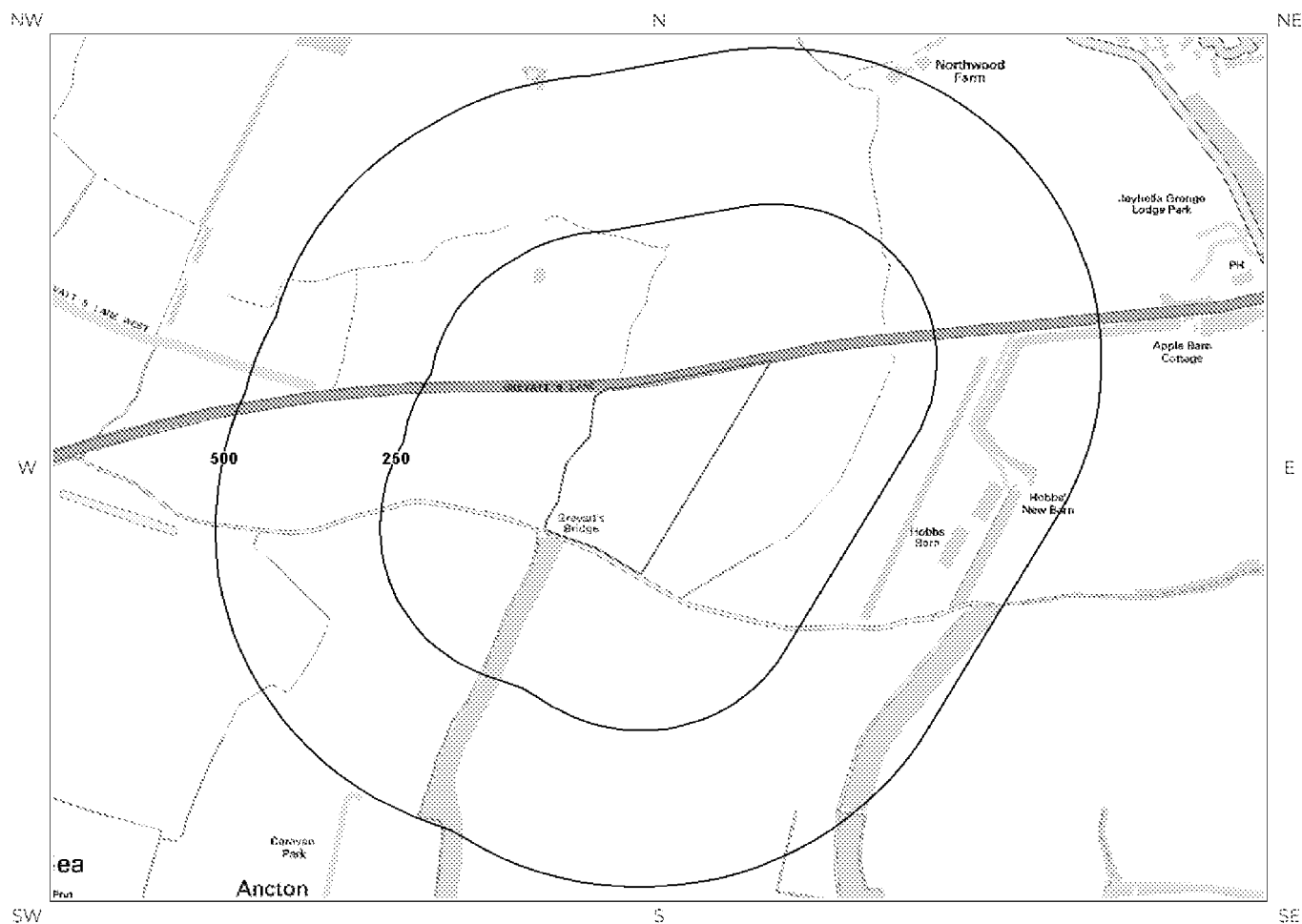
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



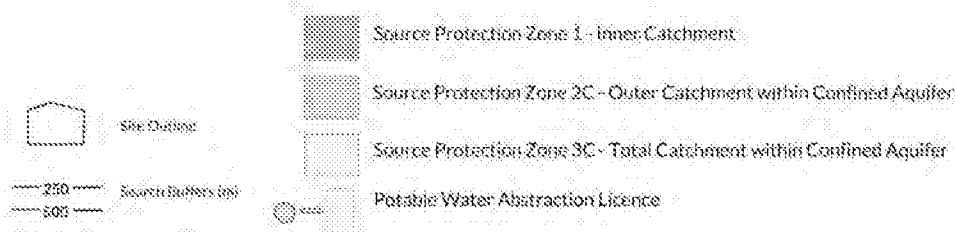
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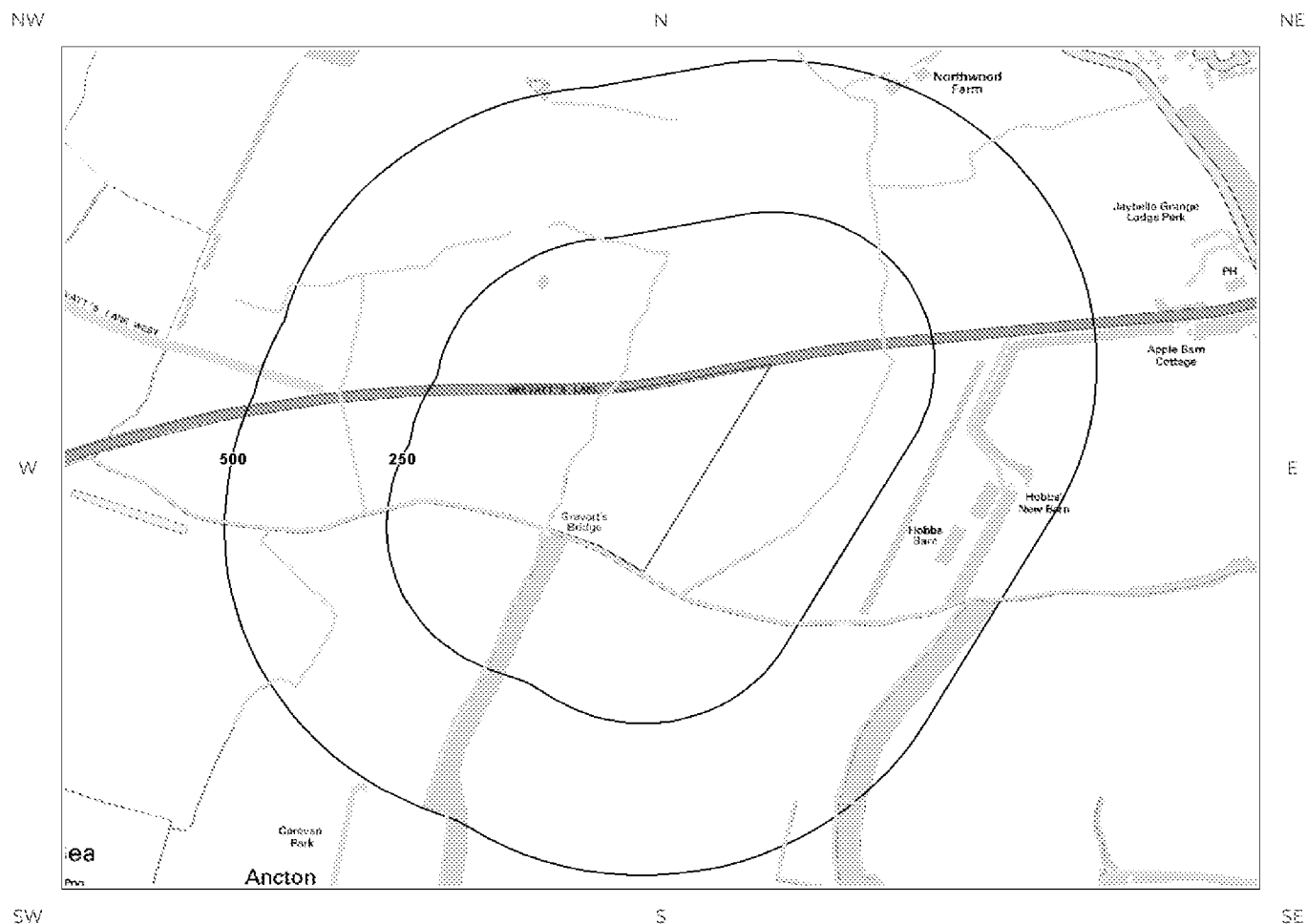
6d. Hydrogeology – Source Protection Zones within confined aquifer



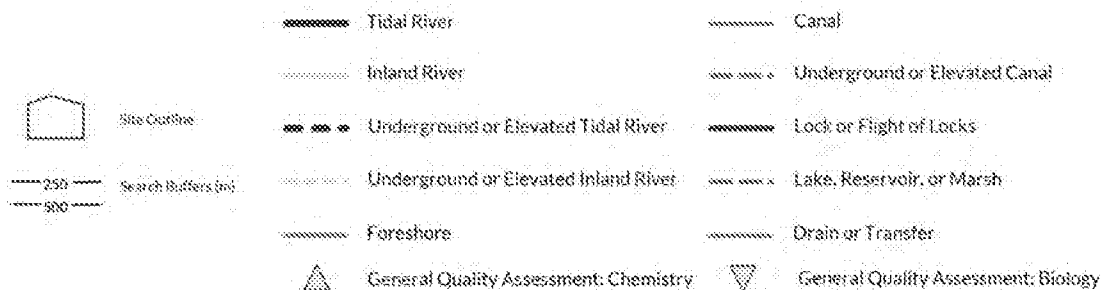
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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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
2	396	SE	499260 101290	Status: Active Licence No: 10/41/542009 Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: Point A At New Barn, Climping Data Type: Point Name: Baird Annual Volume (m³): 36368 Max Daily Volume (m³): 136.3 Original Application No: 169/0135 Original Start Date: 21/3/1977 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2016 Version End Date:
Not shown	1739	SE	500000 100000	Status: Historical Licence No: 28/39/28/0441C Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Boreholes Grouped At Hms Warrior Data Type: Point Name: MINISTRY OF DEFENCE Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 1 Version Start Date: 14/12/1976 Version End Date:
Not shown	1739	SE	500000 100000	Status: Historical Licence No: 28/39/39/0120C Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: 2 Boreholes At Thames House (crown Use) Data Type: Point Name: BUILDING SERVICES GROUP Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/1/1966 Expiry Date: - Issue No: 1 Version Start Date: 1/1/1966 Version End Date:
Not shown	1910	N	499530 103390	Status: Historical Licence No: 27/198 Details: Process Water Direct Source: Southern Region Groundwater Point: Ford Industrial Estate, Arundel Data Type: Point Name: Tarmac Ltd Annual Volume (m³): 105000 Max Daily Volume (m³): 351 Original Application No: 169/1738 Original Start Date: 4/1/2001 Expiry Date: - Issue No: 1 Version Start Date: 4/1/2001 Version End Date:
Not shown	1945	W	496680 101460	Status: Historical Licence No: 10/41/541002 Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: Point 3 At Shripney Farm & Flansham Farm Data Type: Point Name: The Donald Langmead Partnership Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WR.0009 Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 21/3/2001 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	
7	0	On Site	501710 102210	Status: Historical Licence No: 10/41/411016 Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: Ryebank Rife And Elmer Rife Data Type: Line Name: Baird	Annual Volume (m³): 27272 Max Daily Volume (m³): 1091 Application No: WR.0809 Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 8/12/2005 Version End Date:
8	0	On Site	501720 102160	Status: Active Licence No: 10/41/411016 Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: Ryebank Rife Data Type: Line Name: James D Baird (Home Farm) Ltd	Annual Volume (m³): 27272 Max Daily Volume (m³): 1091 Application No: - Original Start Date: 13/6/1967 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2016 Version End Date:
9	460	SE	499270 101180	Status: Active Licence No: 10/41/411016 Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: Elmer Rife Data Type: Line Name: James D Baird (Home Farm) Ltd	Annual Volume (m³): 27272 Max Daily Volume (m³): 1091 Application No: - Original Start Date: 13/6/1967 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2016 Version End Date:
10	623	W	497800 101250	Status: Active Licence No: 10/41/542011 Details: Spray Irrigation - Storage Direct Source: Southern Region Surface Waters Point: Points A&b At Ryebank Rife,middleton Data Type: Line Name: Gibbs	Annual Volume (m³): 4550 Max Daily Volume (m³): 45 Application No: 169/0800 Original Start Date: 19/8/1988 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2016 Version End Date:
11	623	W	498000 101370	Status: Active Licence No: 10/41/542011 Details: Spray Irrigation - Storage Direct Source: Southern Region Surface Waters Point: Points C&d At Ryebank Rife,middleton Data Type: Line Name: Gibbs	Annual Volume (m³): 4550 Max Daily Volume (m³): 45 Application No: 169/0800 Original Start Date: 19/8/1988 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2016 Version End Date:
Not shown	796	W	496190 101940	Status: Historical Licence No: 10/41/411016 Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: Ryebank Rife - New Reach Data Type: Line Name: James D Baird (Home Farm) Ltd	Annual Volume (m³): 27272 Max Daily Volume (m³): 2182 Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 8/6/2009 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

Identified

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1739	SE	500000 100000	Status: Historical Licence No: 28/39/28/0441C Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Boreholes Grouped At Hms Warrior Data Type: Point Name: MINISTRY OF DEFENCE Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 1 Version Start Date: - Version End Date: -
Not shown	1739	SE	500000 100000	Status: Historical Licence No: 28/39/39/0120C Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: 2 Boreholes At Thames House (crown Use) Data Type: Point Name: BUILDING SERVICES GROUP Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/1/1966 Expiry Date: - Issue No: 1 Version Start Date: - Version End Date: -

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site 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.
265	NE	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

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

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

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

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

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

ID	Distance/Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
2	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
3	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
182	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
183	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
184	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
4	2 S	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.3
5	2 SW	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.8
185	2 S	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.3
186	2 SW	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.8
6	11 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
7	11 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.4
187	11 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
188	11 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.4
8	73 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0
9	73 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
189	73 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0
190	73 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0
10	74 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.5
191	74 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.5
11	135 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
192	135 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
12	174 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
193	174 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
13	180 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
194	180 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
14	208 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
15	208 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
195	208 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
196	208 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
16	285 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.1

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
17	285 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
197	285 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 6.1
198	285 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
18	302 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
199	302 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
19	331 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
20	331 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	331 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	331 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
21	357 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
202	357 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
22	374 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
203	374 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
23	415 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
204	415 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	416 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
205	416 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
25	422 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
26	422 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.9
Not shown	422 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
207	422 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.9
27	434 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 5.6
28	434 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
29	434 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
208	434 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 5.6
Not shown	434 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
Not shown	434 W	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
30	443 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.5
Not shown	443 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.5
31	458 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
212	458 SE	Ryebank Rife Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6
32	462 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.1
33	462 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	462 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.1
Not shown	462 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
34	481 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
35	481 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9
Not shown	481 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
Not shown	481 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Rother and Arun Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9

6.11 Surface Water Features

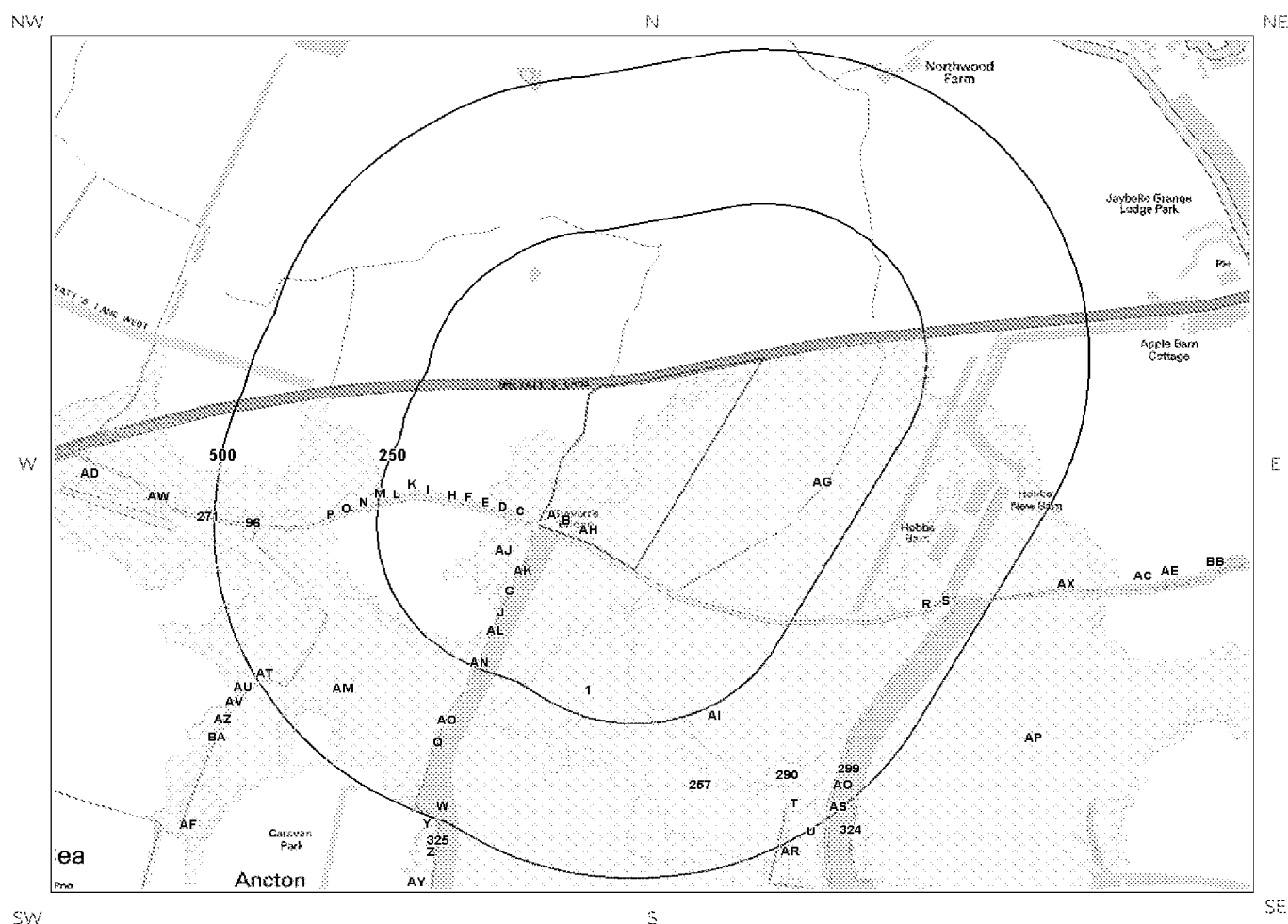
Surface water features within 250m of the study site

Identified

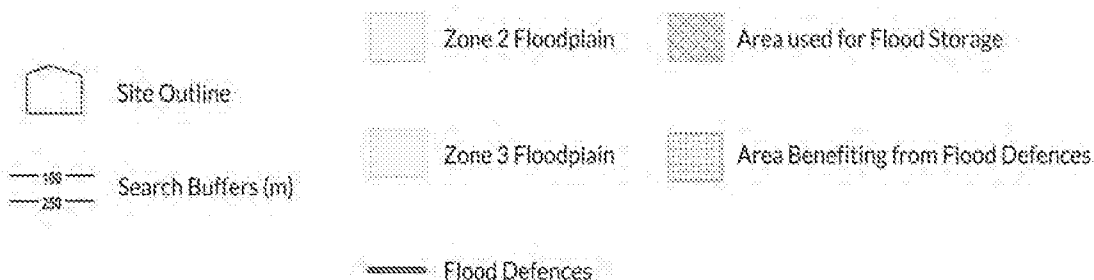
The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
0	S
7	W
18	N
135	SE
153	SE
169	SE
174	E
180	E
208	N
208	N

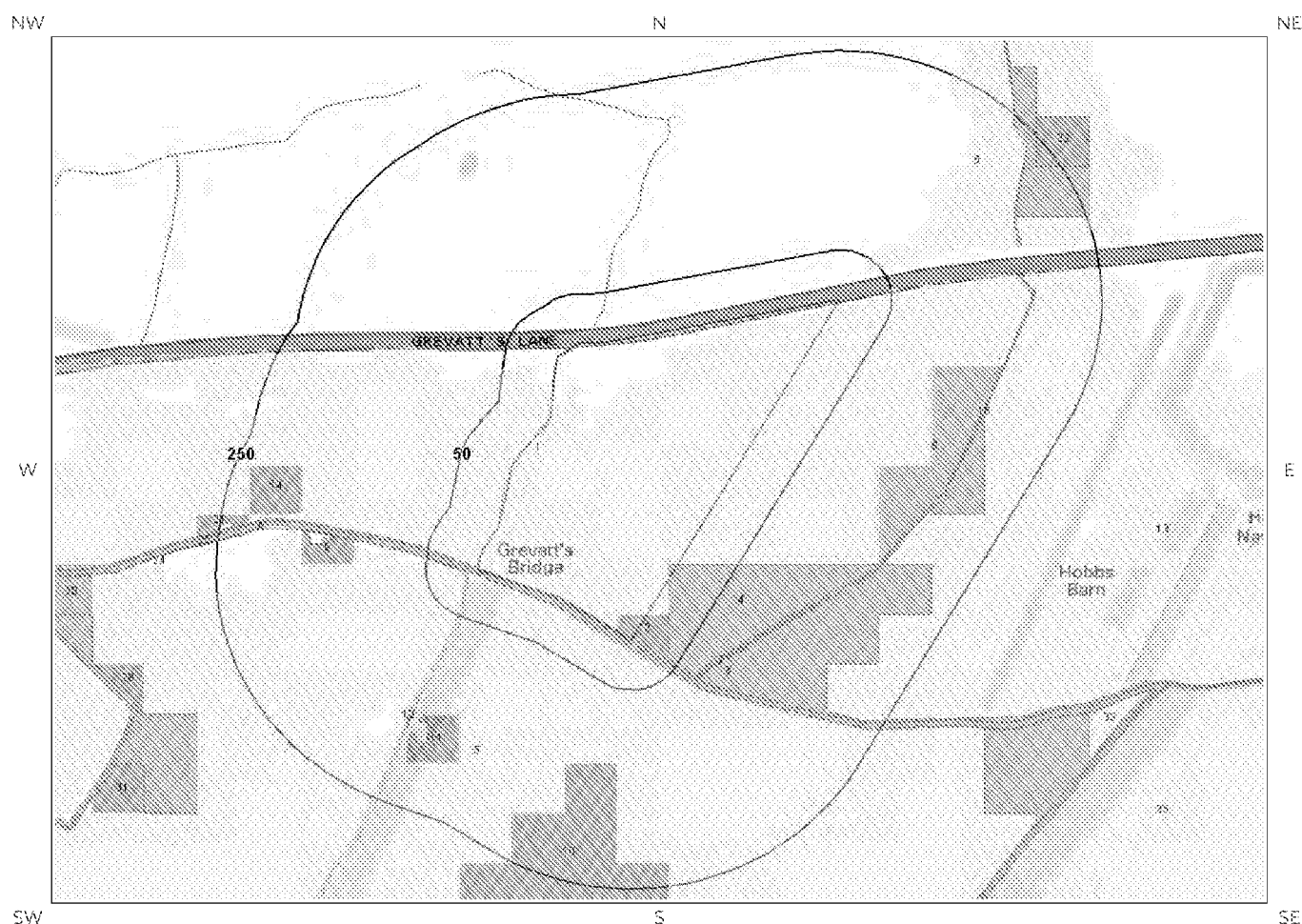
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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



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 Site Outline
 Search Buffers (m)

RoFRaS Rating
 Very Low
 Low
 Medium
 High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

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

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	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
2AG	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
3A	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
4A	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
5A	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
6A	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
7B	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
8B	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
9B	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
10AI	5	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
11AJ	13	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
12C	36	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
13C	47	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
14C	49	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
15C	50	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
16C	53	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
17C	55	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
18C	57	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
19C	59	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

20C	61	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
21D	65	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
22D	67	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
23D	69	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
24D	71	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
25D	79	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
26D	87	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
27E	88	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
28E	96	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
29E	98	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
30E	99	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
31E	107	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
32E	108	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
33F	110	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
34E	112	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
35F	116	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
36F	125	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
37G	129	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
38F	130	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
39G	136	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
40F	137	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
41F	139	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
42H	139	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
43F	141	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
44G	143	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
45G	146	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
46H	149	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
47H	151	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

48H	153	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
49J	155	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
50H	157	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
51H	159	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
52I	180	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
53AN	181	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
54I	182	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
55AM	182	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
56J	184	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
57I	186	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
58I	188	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
59J	189	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
60K	197	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
61AL	197	SW	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
62K	199	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
63L	219	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
64K	220	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
65K	232	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
66L	232	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
67L	239	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
68L	243	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
69L	246	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
70L	247	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
71AA	249	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

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

Identified

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

ID	Distance (m)	Direction	Update	Type
1	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
2AG	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
3A	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
4A	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
5A	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
6A	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
7B	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
8B	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
9B	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
10AI	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
11AJ	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
12C	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
13C	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
14C	0	W	30-May-2018	Zone 3 - (Fluvial Models)
15C	4	S	30-May-2018	Zone 3 - (Fluvial Models)
16C	4	S	30-May-2018	Zone 3 - (Fluvial Models)
17C	4	S	30-May-2018	Zone 3 - (Fluvial Models)
18C	4	S	30-May-2018	Zone 3 - (Fluvial Models)
19C	5	S	30-May-2018	Zone 3 - (Fluvial Models)
20C	5	SW	30-May-2018	Zone 3 - (Fluvial Models)
21D	7	S	30-May-2018	Zone 3 - (Fluvial Models)
22D	7	S	30-May-2018	Zone 3 - (Fluvial Models)
23D	7	S	30-May-2018	Zone 3 - (Fluvial Models)

24D	8	S	30-May-2018	Zone 3 - (Fluvial Models)
25D	8	S	30-May-2018	Zone 3 - (Fluvial Models)
26D	8	S	30-May-2018	Zone 3 - (Fluvial Models)
27E	9	S	30-May-2018	Zone 3 - (Fluvial Models)
28E	9	W	30-May-2018	Zone 3 - (Fluvial Models)
29E	13	W	30-May-2018	Zone 3 - (Fluvial Models)
30E	13	W	30-May-2018	Zone 3 - (Fluvial Models)
31E	16	W	30-May-2018	Zone 3 - (Fluvial Models)
32E	17	W	30-May-2018	Zone 3 - (Fluvial Models)
33F	20	W	30-May-2018	Zone 3 - (Fluvial Models)
34E	21	W	30-May-2018	Zone 3 - (Fluvial Models)
35F	24	W	30-May-2018	Zone 3 - (Fluvial Models)
36F	28	W	30-May-2018	Zone 3 - (Fluvial Models)
37G	32	W	30-May-2018	Zone 3 - (Fluvial Models)
38F	34	W	30-May-2018	Zone 3 - (Fluvial Models)
39G	37	W	30-May-2018	Zone 3 - (Fluvial Models)
40F	38	W	30-May-2018	Zone 3 - (Fluvial Models)
41F	46	W	30-May-2018	Zone 3 - (Fluvial Models)
42H	46	W	30-May-2018	Zone 3 - (Fluvial Models)
43F	49	W	30-May-2018	Zone 3 - (Fluvial Models)
44G	50	W	30-May-2018	Zone 3 - (Fluvial Models)
45G	53	W	30-May-2018	Zone 3 - (Fluvial Models)
46H	54	W	30-May-2018	Zone 3 - (Fluvial Models)
47H	57	W	30-May-2018	Zone 3 - (Fluvial Models)
48H	58	W	30-May-2018	Zone 3 - (Fluvial Models)
49J	61	W	30-May-2018	Zone 3 - (Fluvial Models)
50H	65	W	30-May-2018	Zone 3 - (Fluvial Models)
51H	67	W	30-May-2018	Zone 3 - (Fluvial Models)

52I	69	W	30-May-2018	Zone 3 - (Fluvial Models)
53AN	71	W	30-May-2018	Zone 3 - (Fluvial Models)
54I	79	W	30-May-2018	Zone 3 - (Fluvial Models)
55AM	87	W	30-May-2018	Zone 3 - (Fluvial Models)
56J	87	W	30-May-2018	Zone 3 - (Fluvial Models)
57I	93	S	30-May-2018	Zone 3 - (Fluvial Models)
58I	96	W	30-May-2018	Zone 3 - (Fluvial Models)
59J	96	S	30-May-2018	Zone 3 - (Fluvial Models)
60K	98	W	30-May-2018	Zone 3 - (Fluvial Models)
61AL	99	W	30-May-2018	Zone 3 - (Fluvial Models)
62K	102	S	30-May-2018	Zone 3 - (Fluvial Models)
63L	105	S	30-May-2018	Zone 3 - (Fluvial Models)
64K	105	W	30-May-2018	Zone 3 - (Fluvial Models)
65K	108	W	30-May-2018	Zone 3 - (Fluvial Models)
66L	110	W	30-May-2018	Zone 3 - (Fluvial Models)
67L	112	W	30-May-2018	Zone 3 - (Fluvial Models)
68L	116	SW	30-May-2018	Zone 3 - (Fluvial Models)
69L	116	W	30-May-2018	Zone 3 - (Fluvial Models)
70L	120	SW	30-May-2018	Zone 3 - (Fluvial Models)
71AA	125	W	30-May-2018	Zone 3 - (Fluvial Models)
	129	SW	30-May-2018	Zone 3 - (Fluvial Models)
	130	W	30-May-2018	Zone 3 - (Fluvial Models)
	137	W	30-May-2018	Zone 3 - (Fluvial Models)
	139	W	30-May-2018	Zone 3 - (Fluvial Models)
	141	W	30-May-2018	Zone 3 - (Fluvial Models)
	143	W	30-May-2018	Zone 3 - (Fluvial Models)
	149	W	30-May-2018	Zone 3 - (Fluvial Models)
	151	W	30-May-2018	Zone 3 - (Fluvial Models)

153	W	30-May-2018	Zone 3 - (Fluvial Models)
157	W	30-May-2018	Zone 3 - (Fluvial Models)
159	W	30-May-2018	Zone 3 - (Fluvial Models)
180	W	30-May-2018	Zone 3 - (Fluvial Models)
182	W	30-May-2018	Zone 3 - (Fluvial Models)
186	W	30-May-2018	Zone 3 - (Fluvial Models)
188	W	30-May-2018	Zone 3 - (Fluvial Models)
197	W	30-May-2018	Zone 3 - (Fluvial Models)
199	W	30-May-2018	Zone 3 - (Fluvial Models)
203	SW	30-May-2018	Zone 3 - (Fluvial Models)
203	SW	30-May-2018	Zone 3 - (Fluvial Models)
210	SW	30-May-2018	Zone 3 - (Fluvial Models)
215	SW	30-May-2018	Zone 3 - (Fluvial Models)
219	W	30-May-2018	Zone 3 - (Fluvial Models)
221	W	30-May-2018	Zone 3 - (Fluvial Models)
225	S	30-May-2018	Zone 3 - (Fluvial Models)
232	W	30-May-2018	Zone 3 - (Fluvial Models)
234	W	30-May-2018	Zone 3 - (Fluvial Models)
239	W	30-May-2018	Zone 3 - (Fluvial Models)
245	W	30-May-2018	Zone 3 - (Fluvial Models)
246	W	30-May-2018	Zone 3 - (Fluvial Models)
247	W	30-May-2018	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite

High

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

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

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

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Low
2	0.0	On Site	Medium
3	0.0	On Site	High
4	0.0	On Site	High
5	5.0	SW	Low
6	40.0	NE	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

Identified

Clearwater Flooding or Superficial Deposits Flooding

Clearwater Flooding

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

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

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

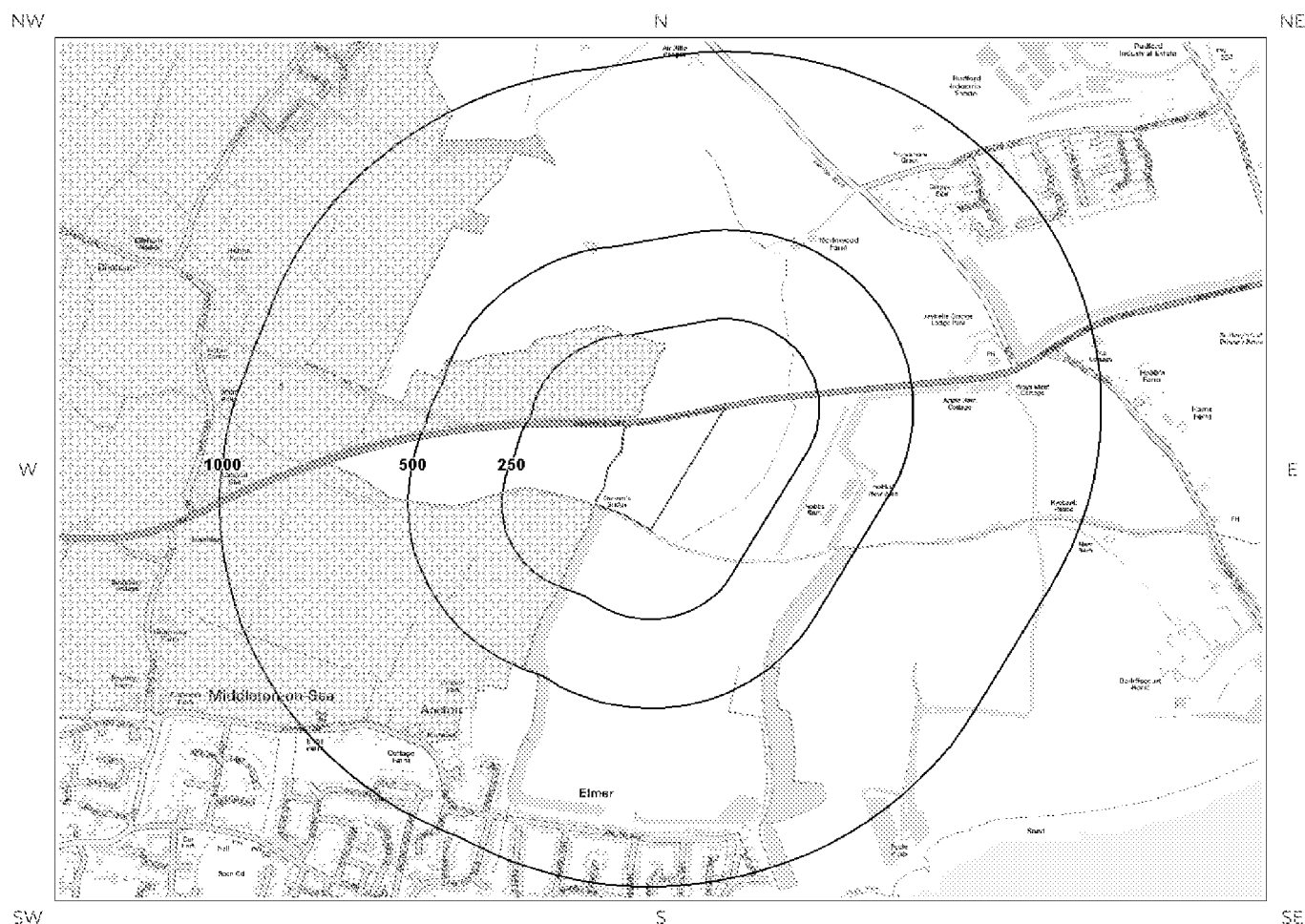
British Geological Survey confidence rating in this result

High

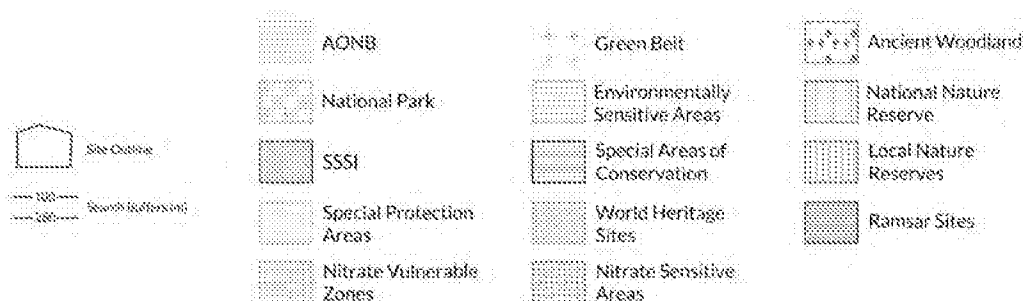
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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:

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NVZ Name	Data Source
1	4	S	Existing	DEFRA

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

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Very Low

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

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

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site 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

Low

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

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

9.1.6 Running Sand

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

Low

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

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

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

9.2 Radon

9.2.1 Radon Affected Areas

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

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

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

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

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

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Groundsure

LOCATION INTELLIGENCE

emapsite™

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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Address: ,
Date: 17 Jul 2018
Reference: EMS-490113_658977
Client: EmapSite



Aerial Photograph Capture date: 07-Jun-2015
Grid Reference: 498773,101407
Site Size: 5.79ha

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Overview of Findings

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

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

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

Section 1: Geology 1:10,000 Scale

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

Section 2: Geology 1:50,000 Scale

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

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

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

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

Yes

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

No

Section 3: Radon

3. Radon

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

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

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

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

Section 5: Mining, Extraction & Natural Cavities

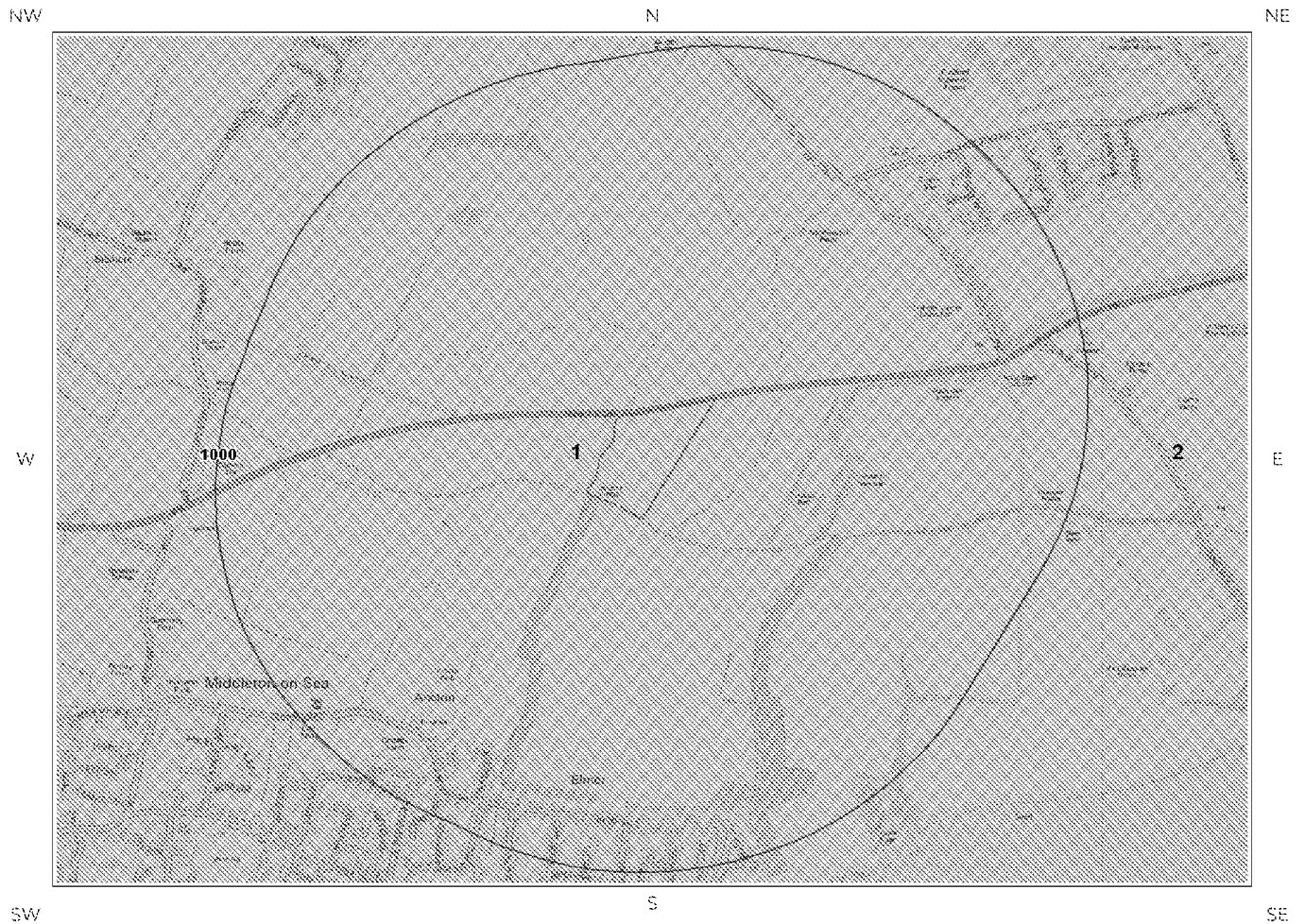
	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Report Reference: EMS-490113_658977

Client Reference: EMS_490113_658977

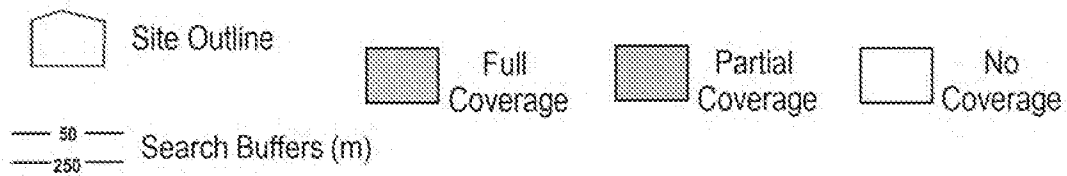
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Low				
6.2 Landslides	Very Low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

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	Full	Full	No coverage
2	1038.0	Some deposits are mapped	Full	Full	No coverage
N3	1224.0	No deposits are mapped	Full	Full	No coverage
N4	1739.0	No deposits are mapped	No coverage	No coverage	No coverage

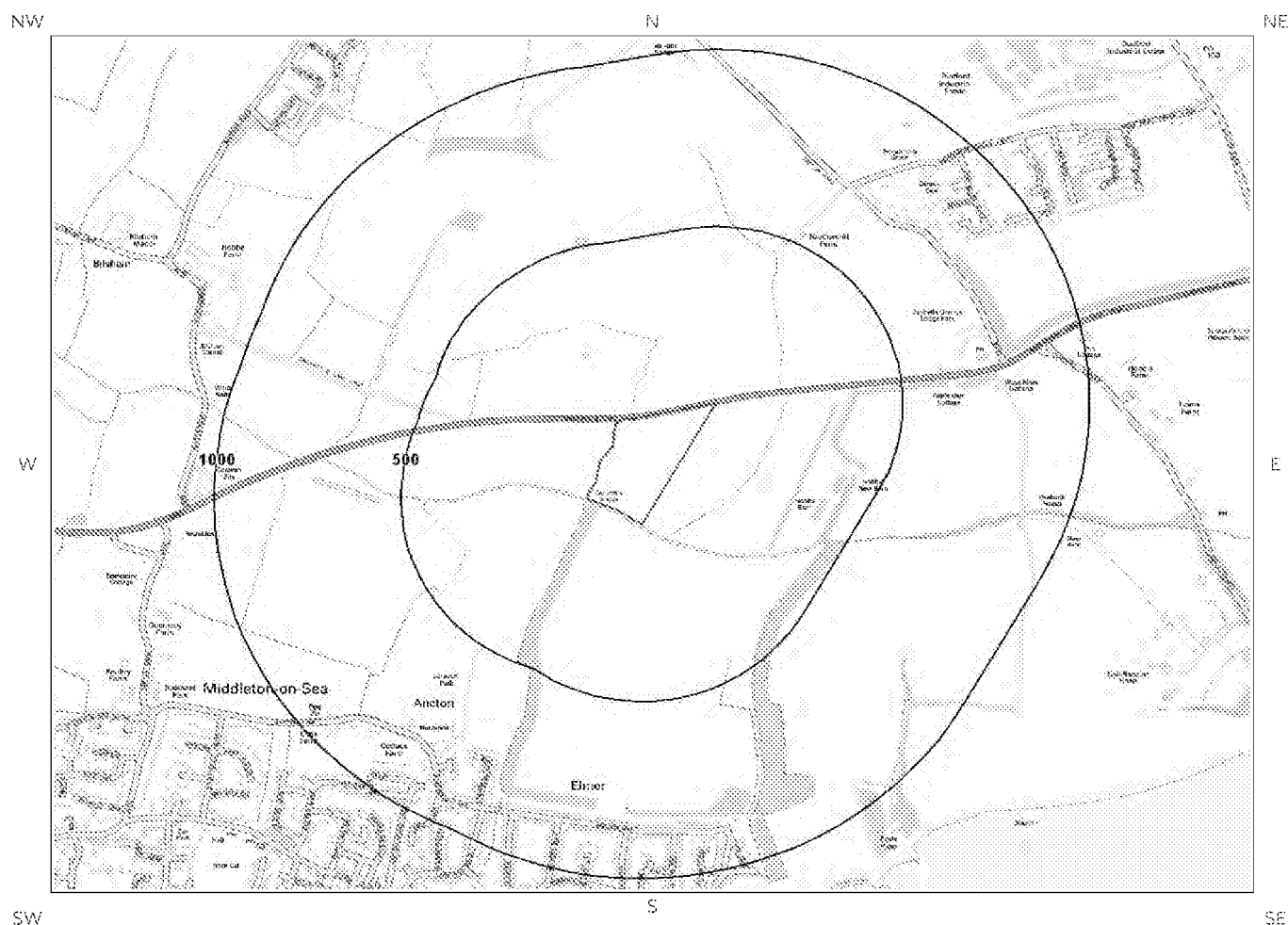
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

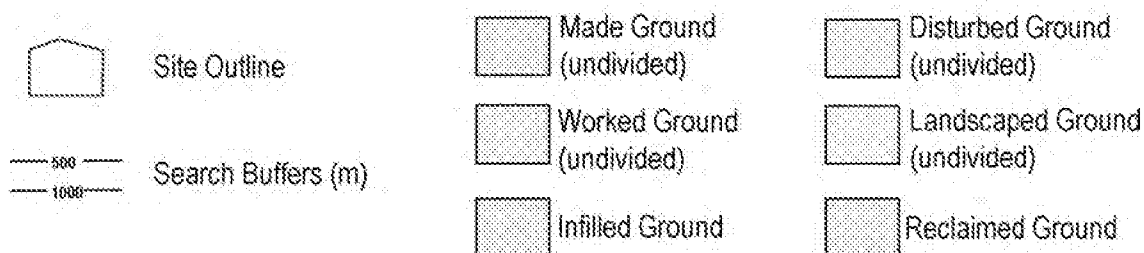
1 Geology (1:10,000 scale).

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



Artificial Ground Legend

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1. Geology 1:10,000 scale

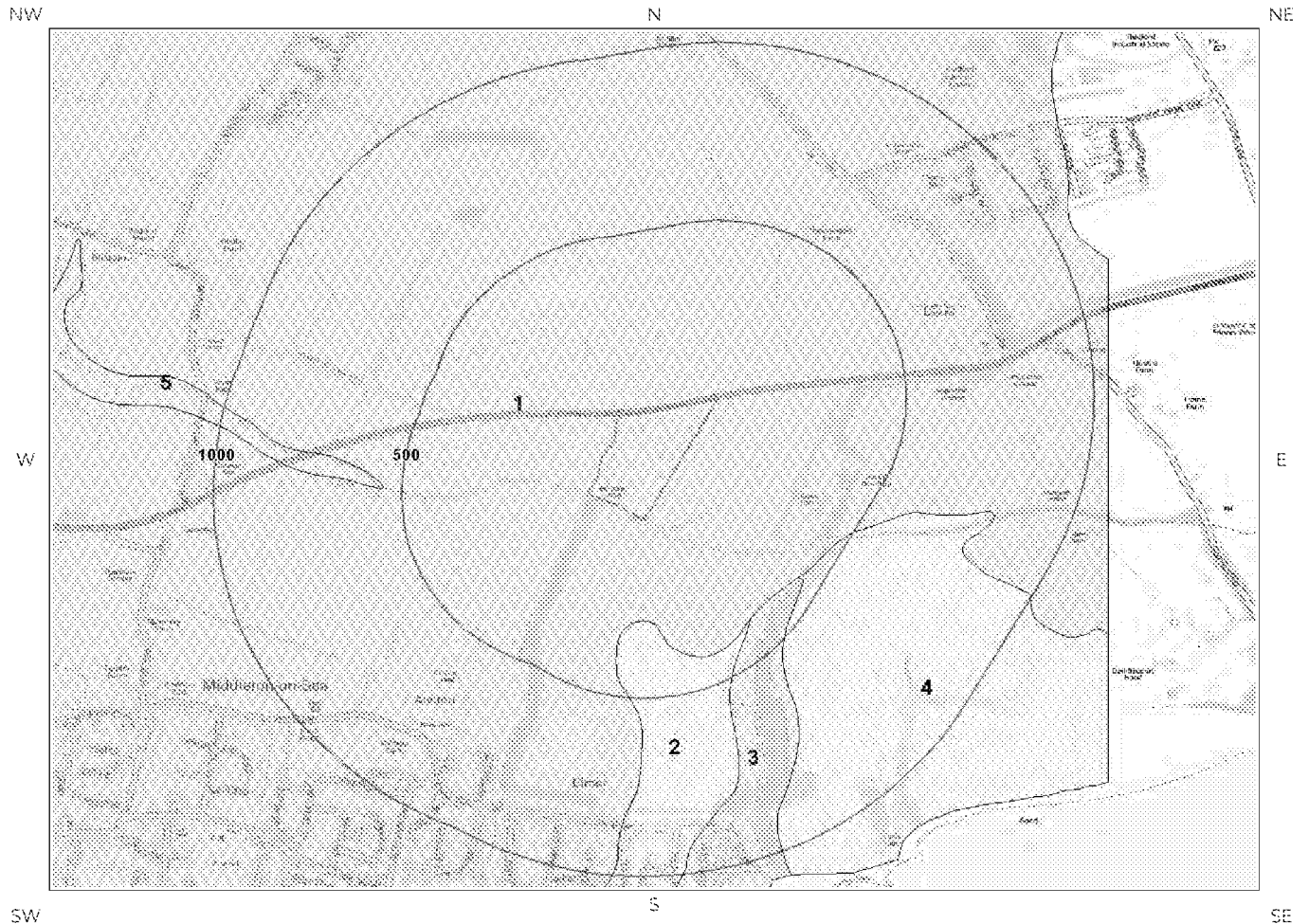
1.1 Artificial Ground

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? No

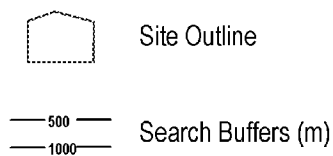
Database searched and no data found.

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	RTDU-Z	River Terrace Deposits (undifferentiated) - Silt (unlithified Deposits Coding Scheme)	Silt
2	283.0	S	RBD1-XSV	Raised Beach Deposits, 1 - Sand And Gravel	Sand And Gravel
3	394.0	SE	RMD-CZ	Raised Marine Deposits - Silty Clay	Clay, Silty
4	436.0	SE	RBD1-XSV	Raised Beach Deposits, 1 - 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

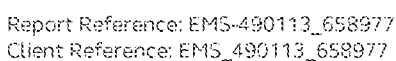
Database searched and no data found.

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.

This map shows the Elmer area with concentric circles at 1000 and 500 feet, and a central point labeled '1'. The map includes labels for 'Middleton-on-Sea', 'Elmer', and 'Elmer Farm'. The map is oriented with North at the top, indicated by 'N' and 'NW' labels.

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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	LPCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation And Portsdown 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

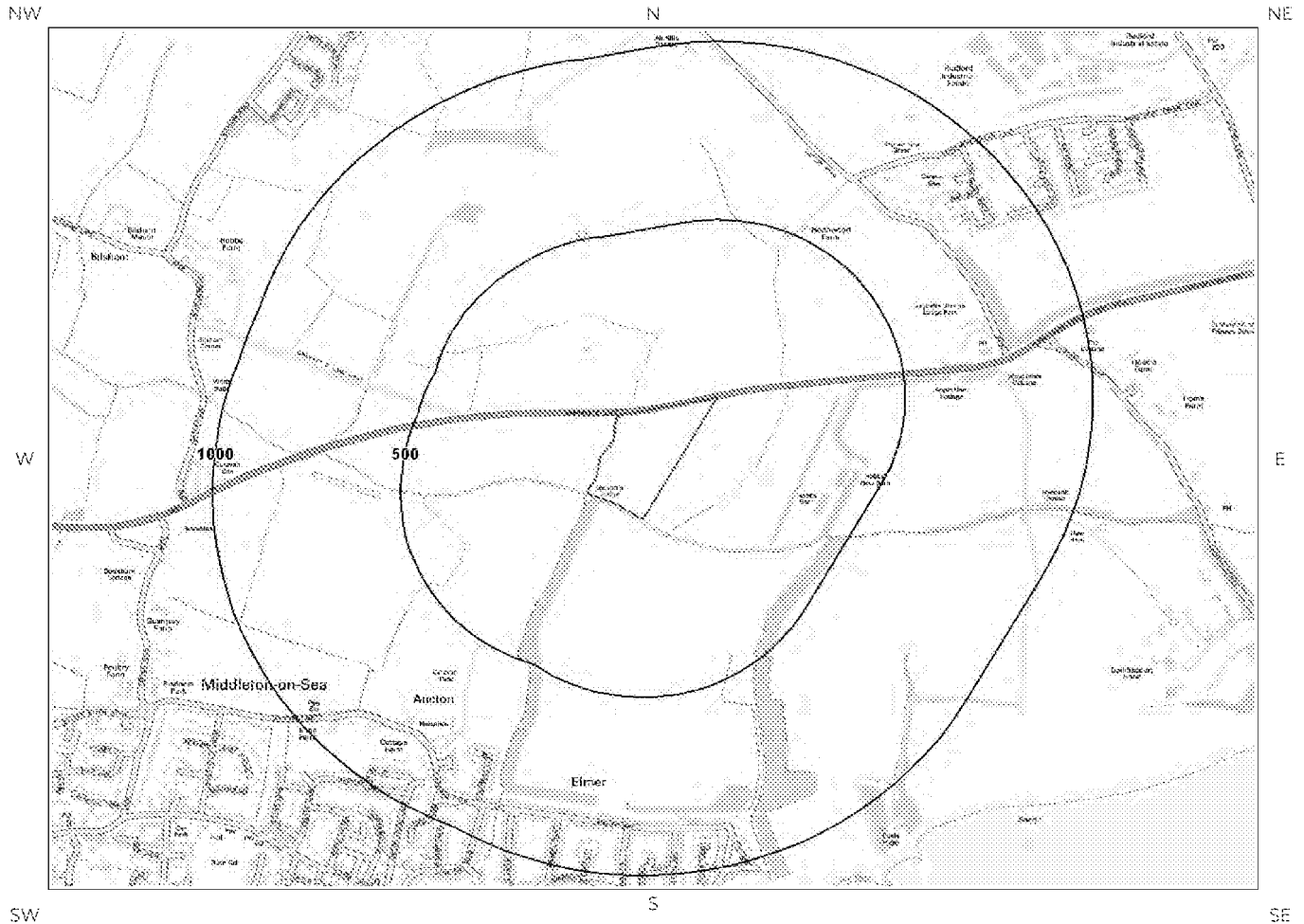
Database searched and no data found at this scale.

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.

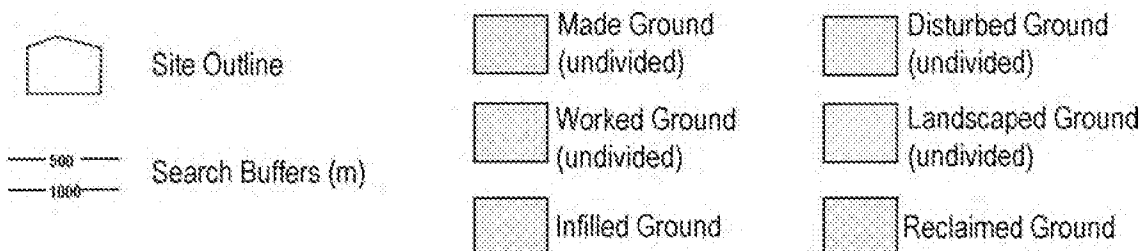
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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: 332

2.1.1 Artificial/ Made Ground

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

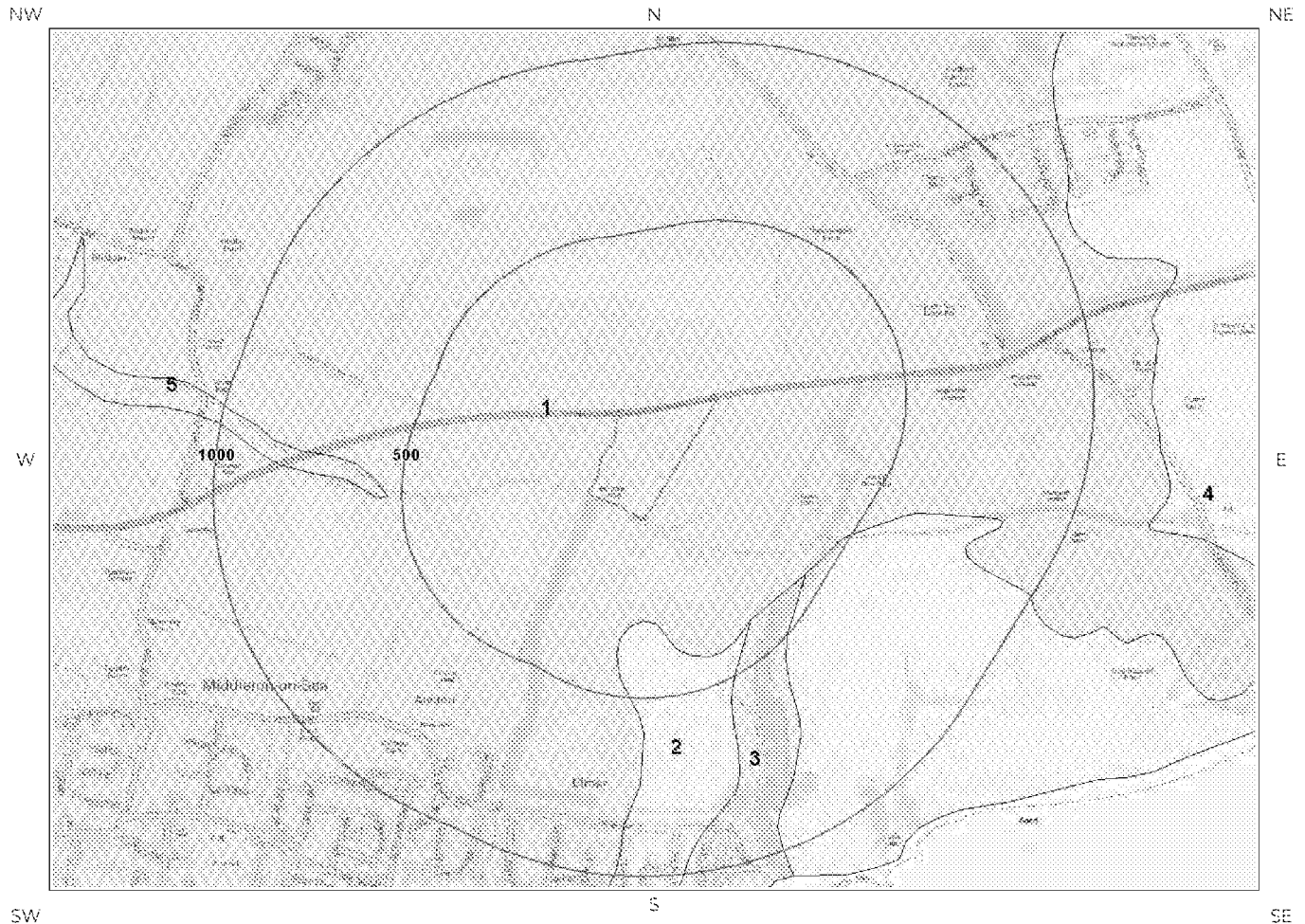
Database searched and no data found.

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.

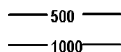
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY
2	282.0	S	RBD1-XSV	RAISED BEACH DEPOSITS, 1	SAND AND GRAVEL
3	399.0	SE	RMD-XCZSV	RAISED MARINE DEPOSITS	CLAY, SILT, SAND AND GRAVEL
4	448.0	SE	RBD1-XSV	RAISED BEACH DEPOSITS, 1	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

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

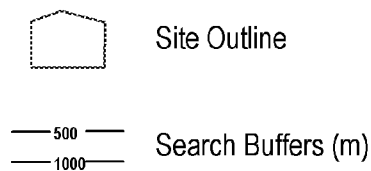
Are there any records relating to permeability of landslips within the study site boundary? No

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: 332

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	LPCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK FORMATION AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN

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

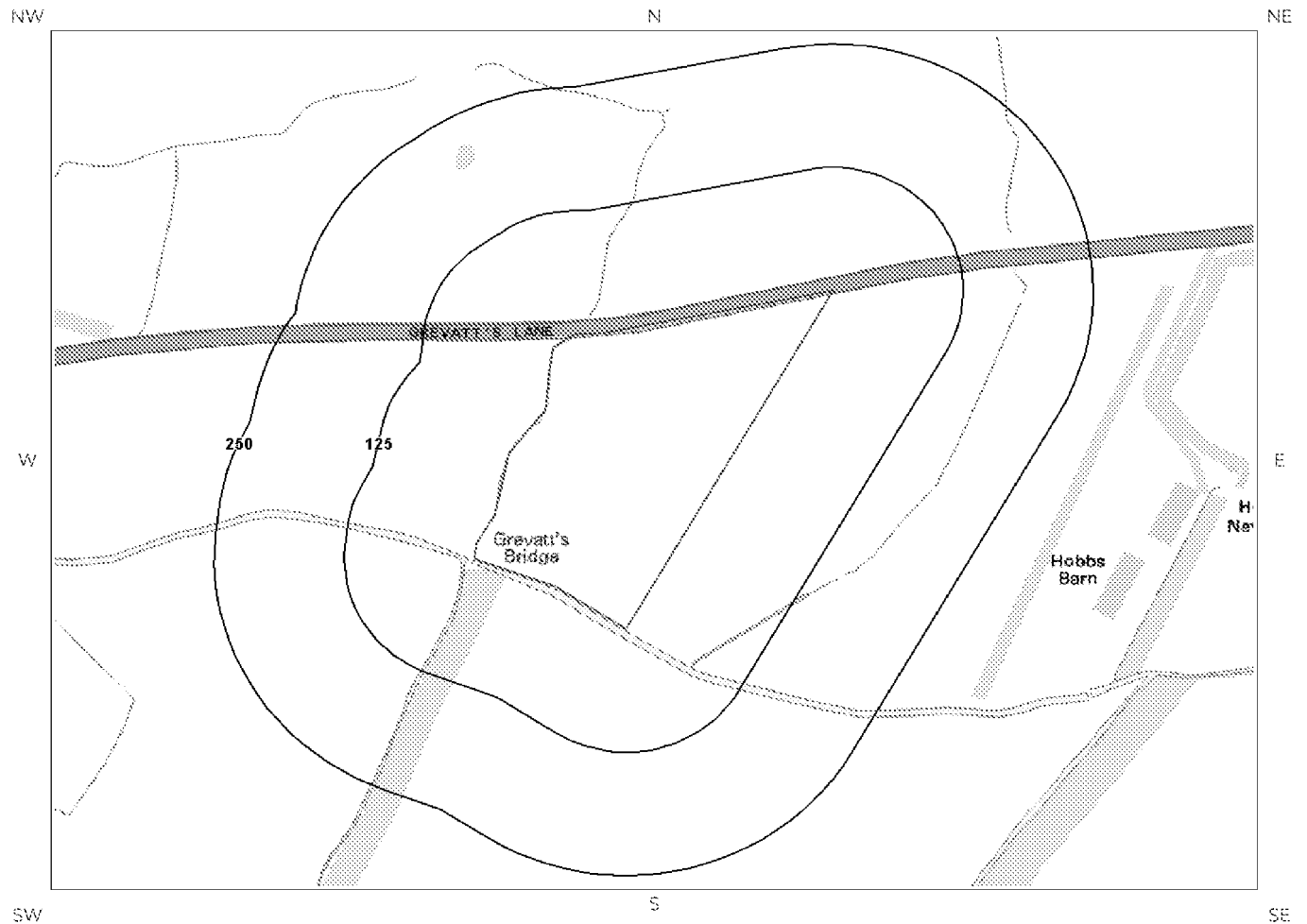
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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

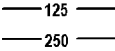
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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- | | | | |
|---|--------------------|---|----------------------------------|
|  | Site Outline |  | Historic Surface Ground Workings |
|  | Search Buffers (m) |  | Historic Underground Workings |
| | |  | Current Ground Workings |

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

4.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

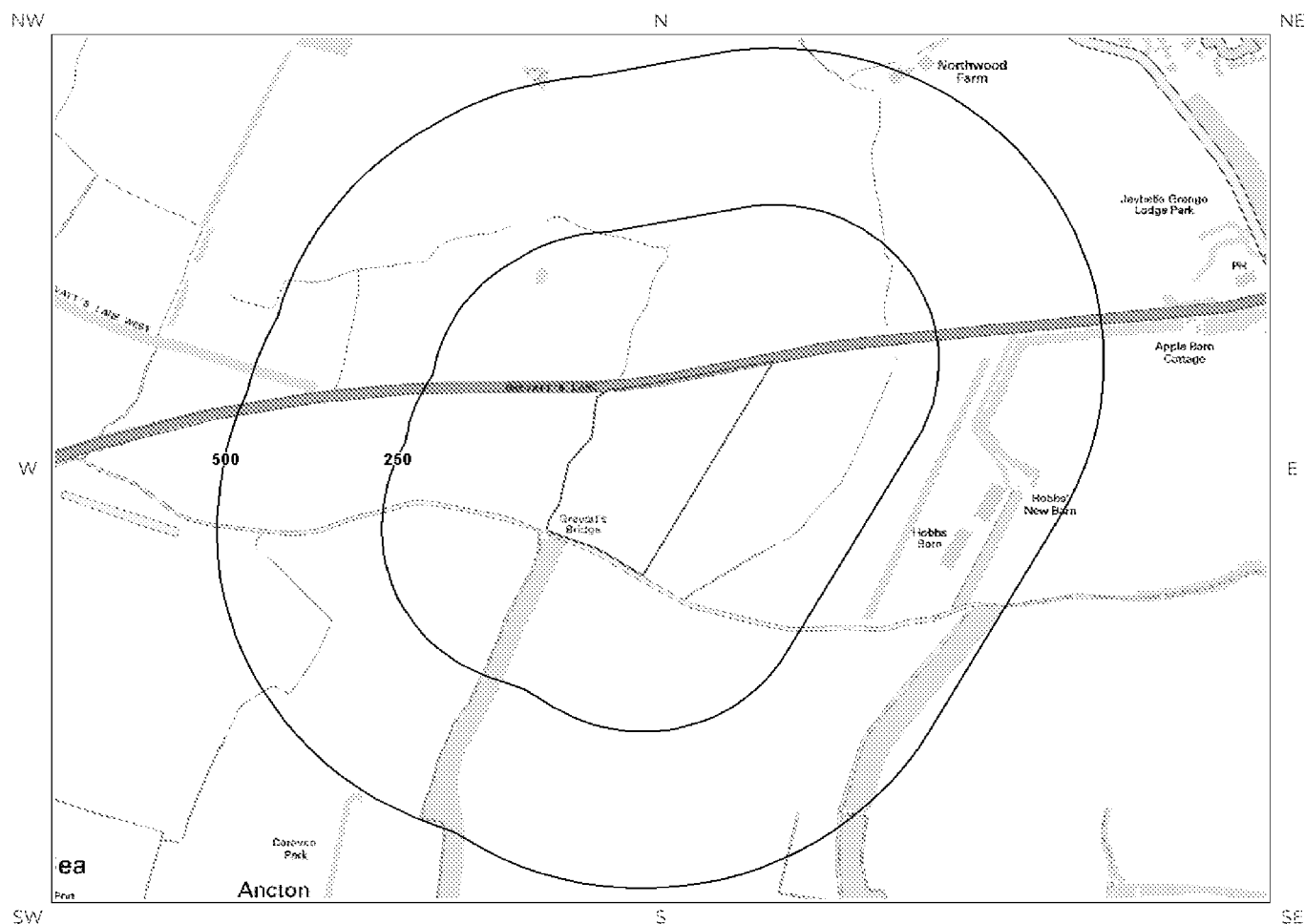
4.3 Current Ground Workings

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

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

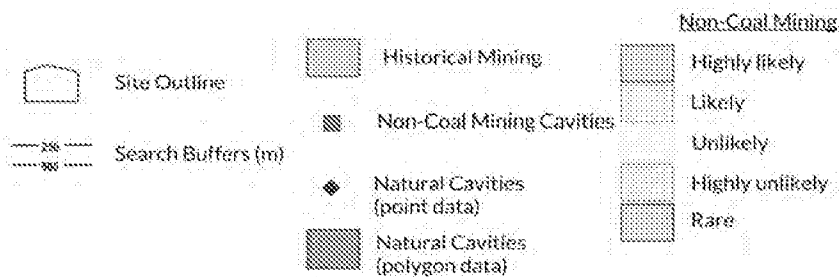
Database searched and no data found.

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and
Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

Database searched and no data found.

5.2 Coal Mining

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

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

Database searched and no data found.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

Database searched and no data found.

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

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

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

Database searched and no data found.

5.7 Brine Extraction

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

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Tin Mining

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

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

Database searched and no data found.

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

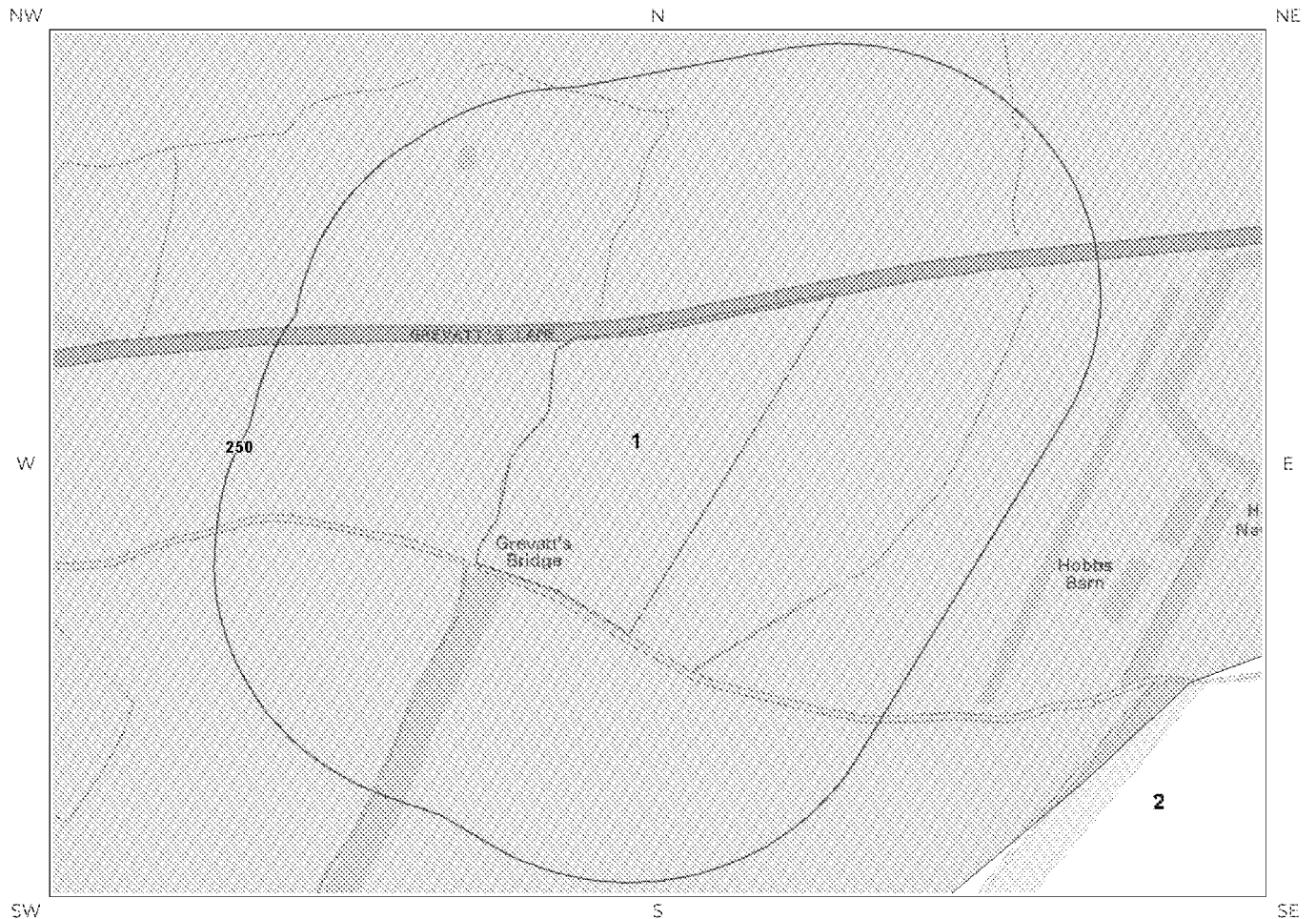
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

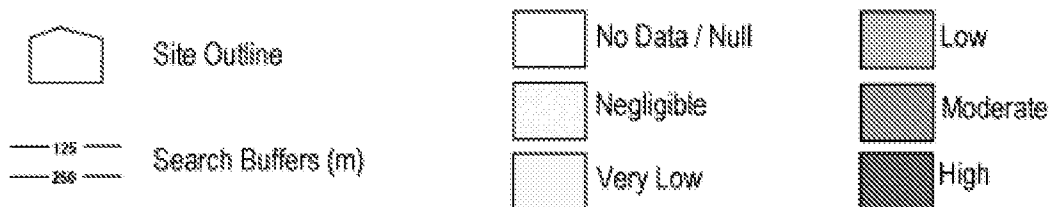
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

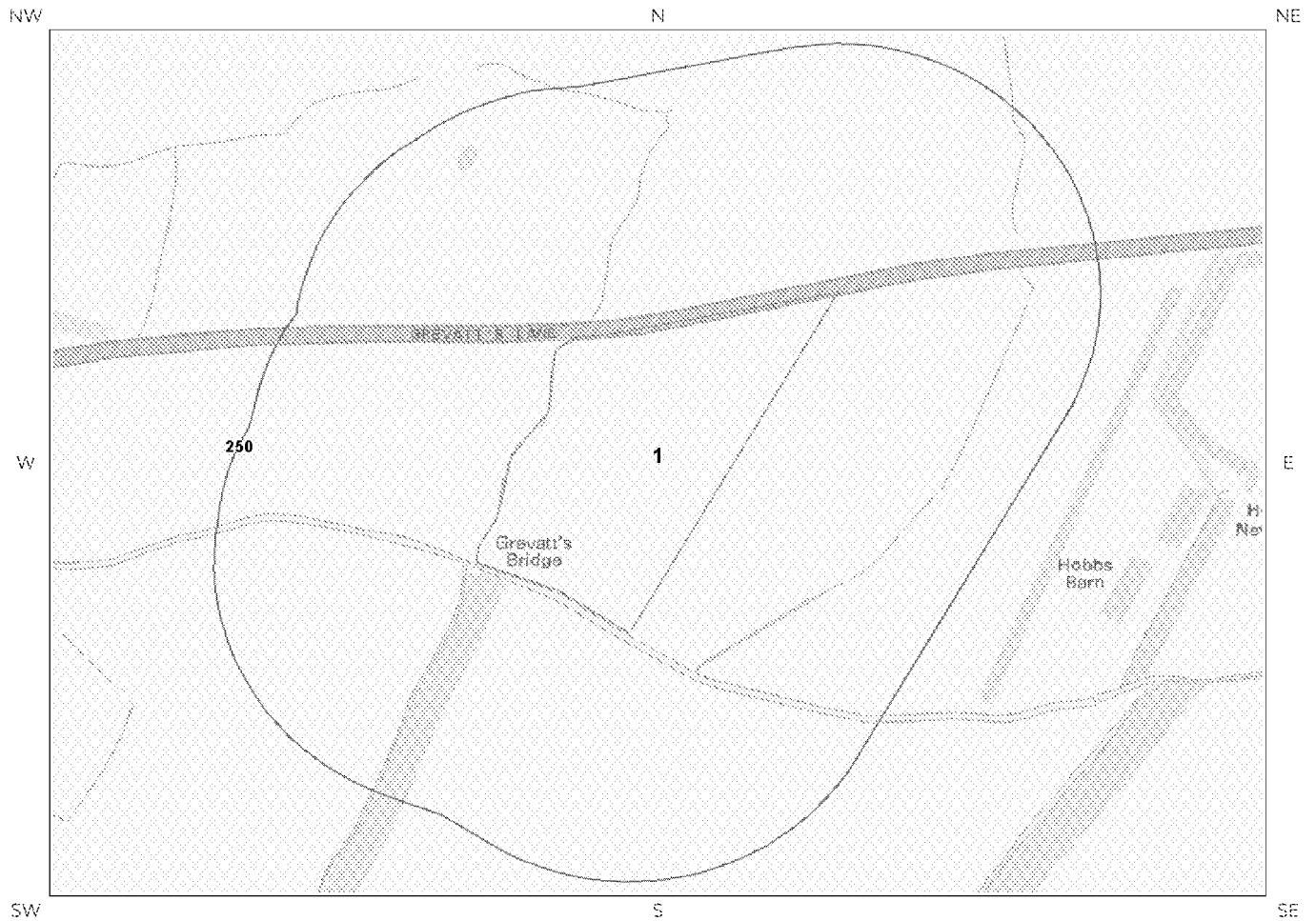


Shrink Swell Clay Legend

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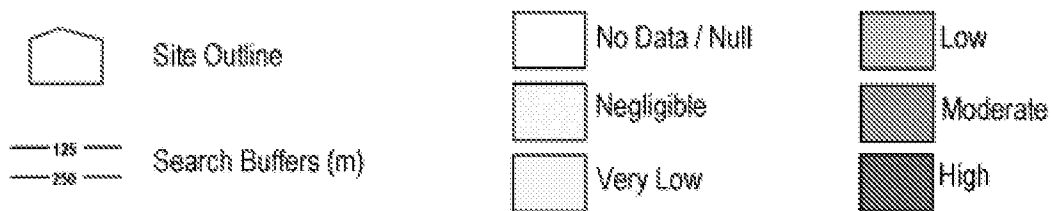


6.2 Landslides map

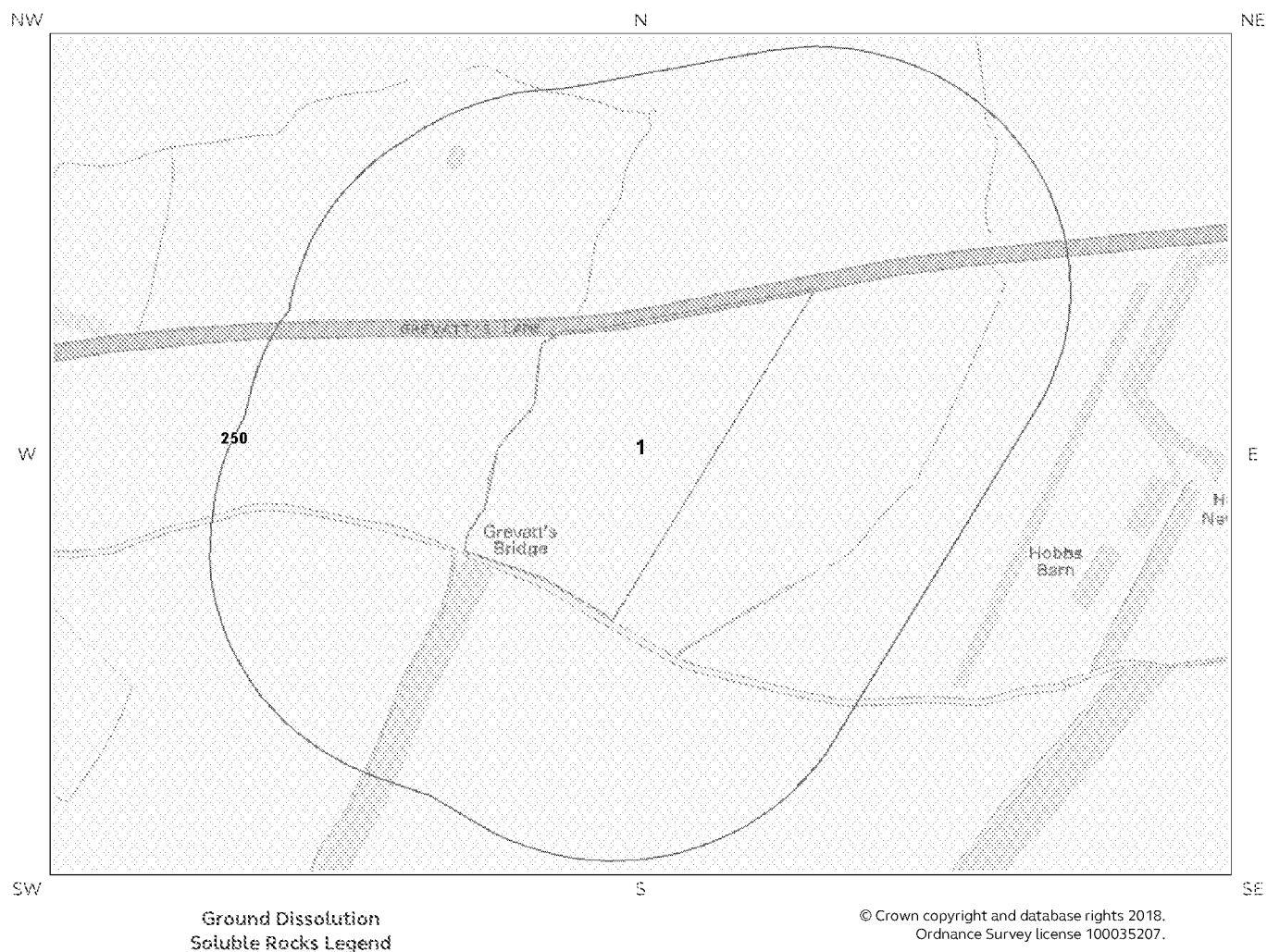


Landslides Legend

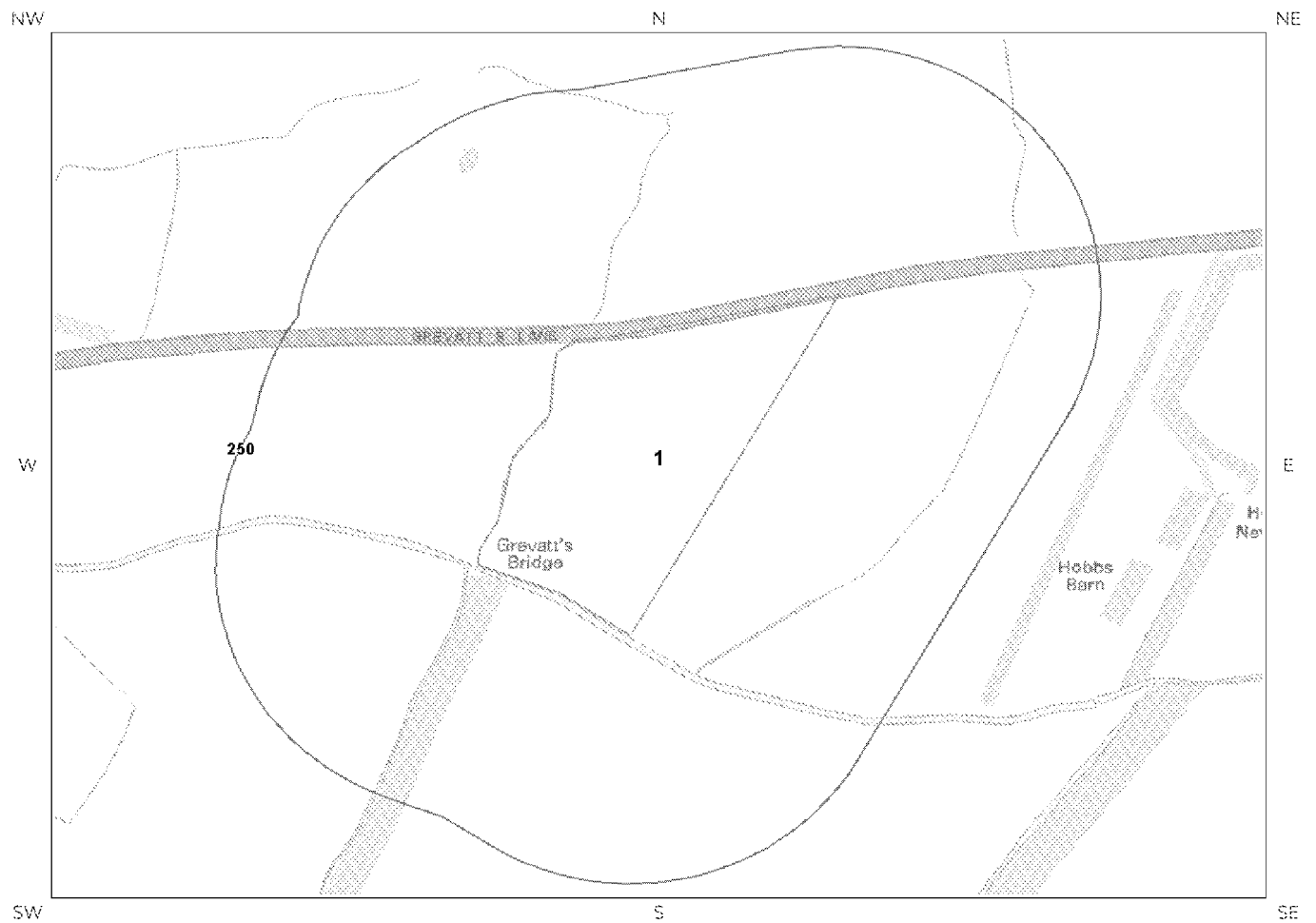
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6.3 Ground Dissolution of Soluble Rocks map

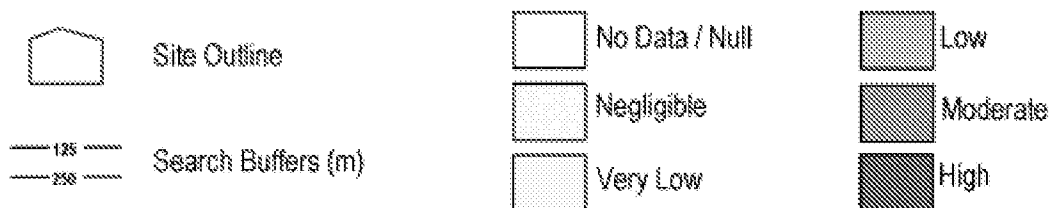


6.4 Compressible Deposits map

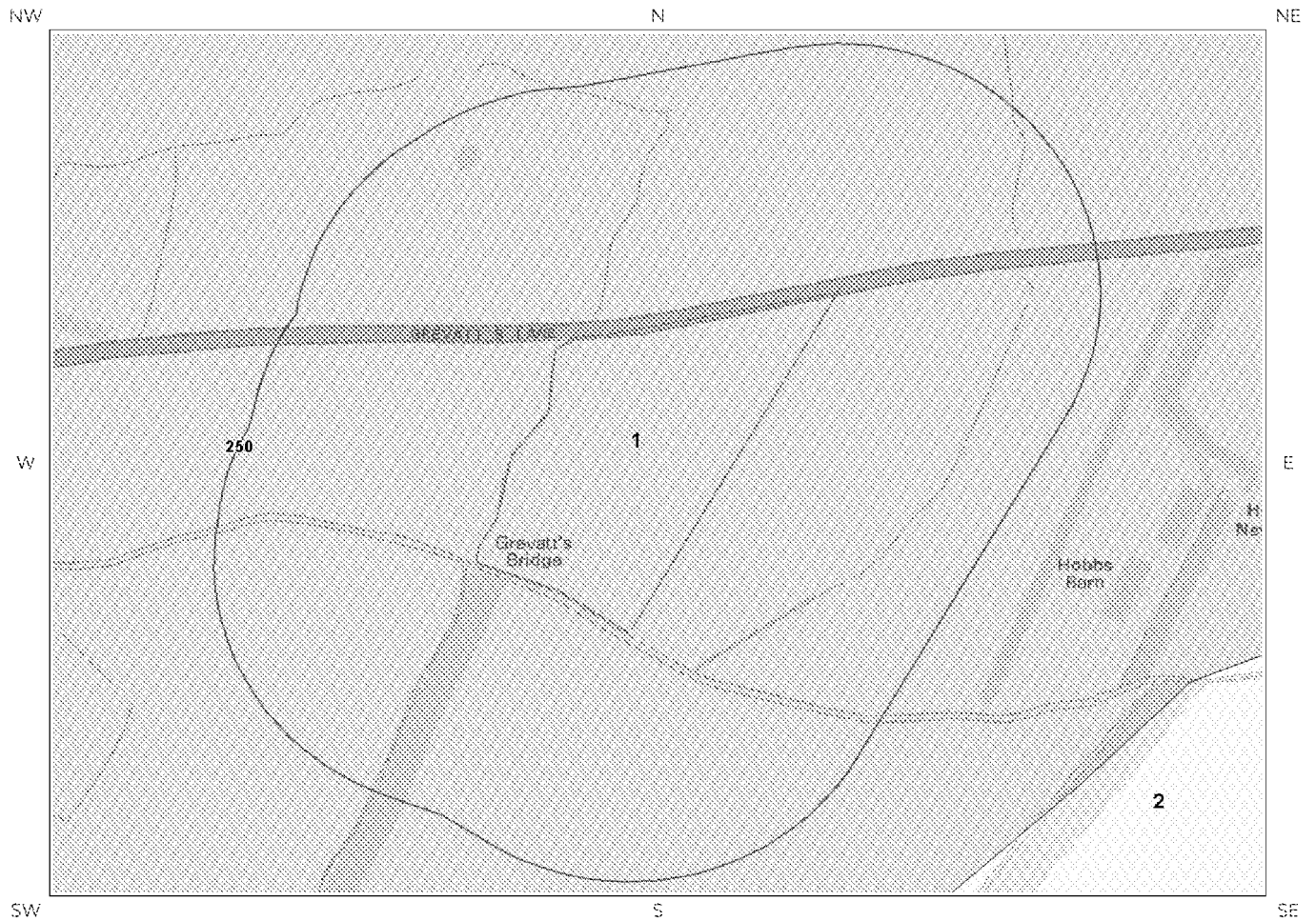


Compressible Deposits Legend

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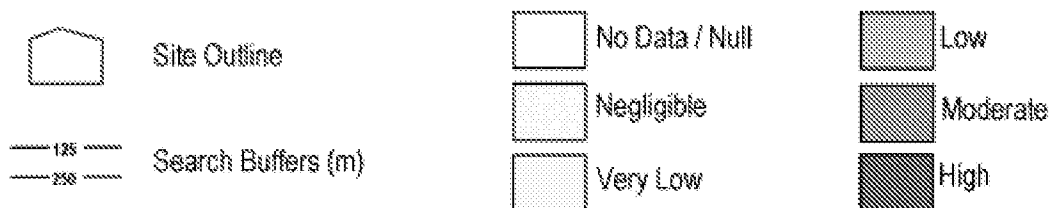


6.5 Collapsible Deposits map

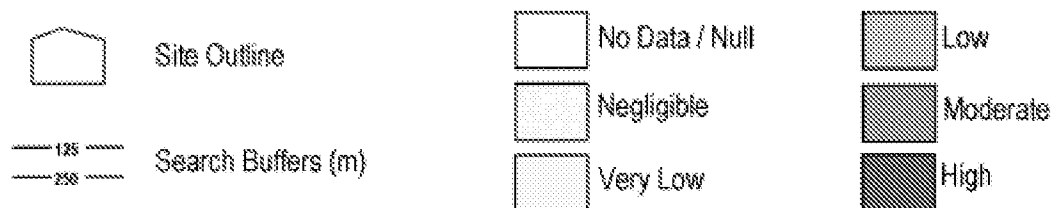


Collapsible Deposits Legend

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6.6 Running Sand map



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? 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	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

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

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

6.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	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.

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:

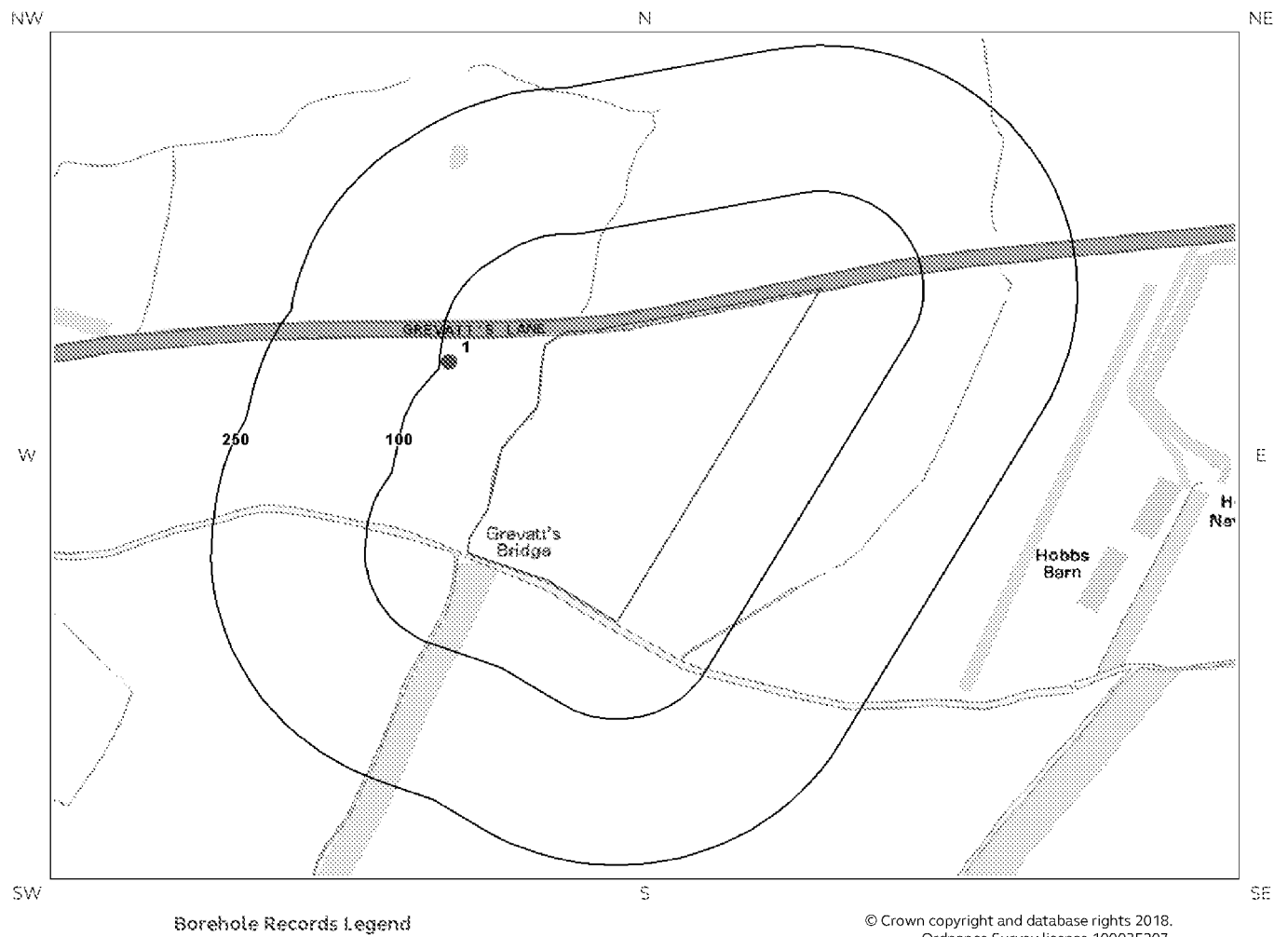
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Slight possibility for collapsible deposit problems after major changes in loading or groundwater conditions. Normal maintenance to avoid large amounts of water entering the ground through pipe leakage or soak-aways should reduce the likelihood of problems due to collapsible deposits. For new build, assess the possibility of collapsible (loessic) deposits in ground investigation. For existing property, no significant increase in insurance risk from collapsible deposits is likely.

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

7 Borehole Records map



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:

1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	91.0	W	498600 101490	SU90SE35	5.0	A259 NORTH OF GREVATTS BRIDGE

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/434413

8 Estimated Background Soil Chemistry

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

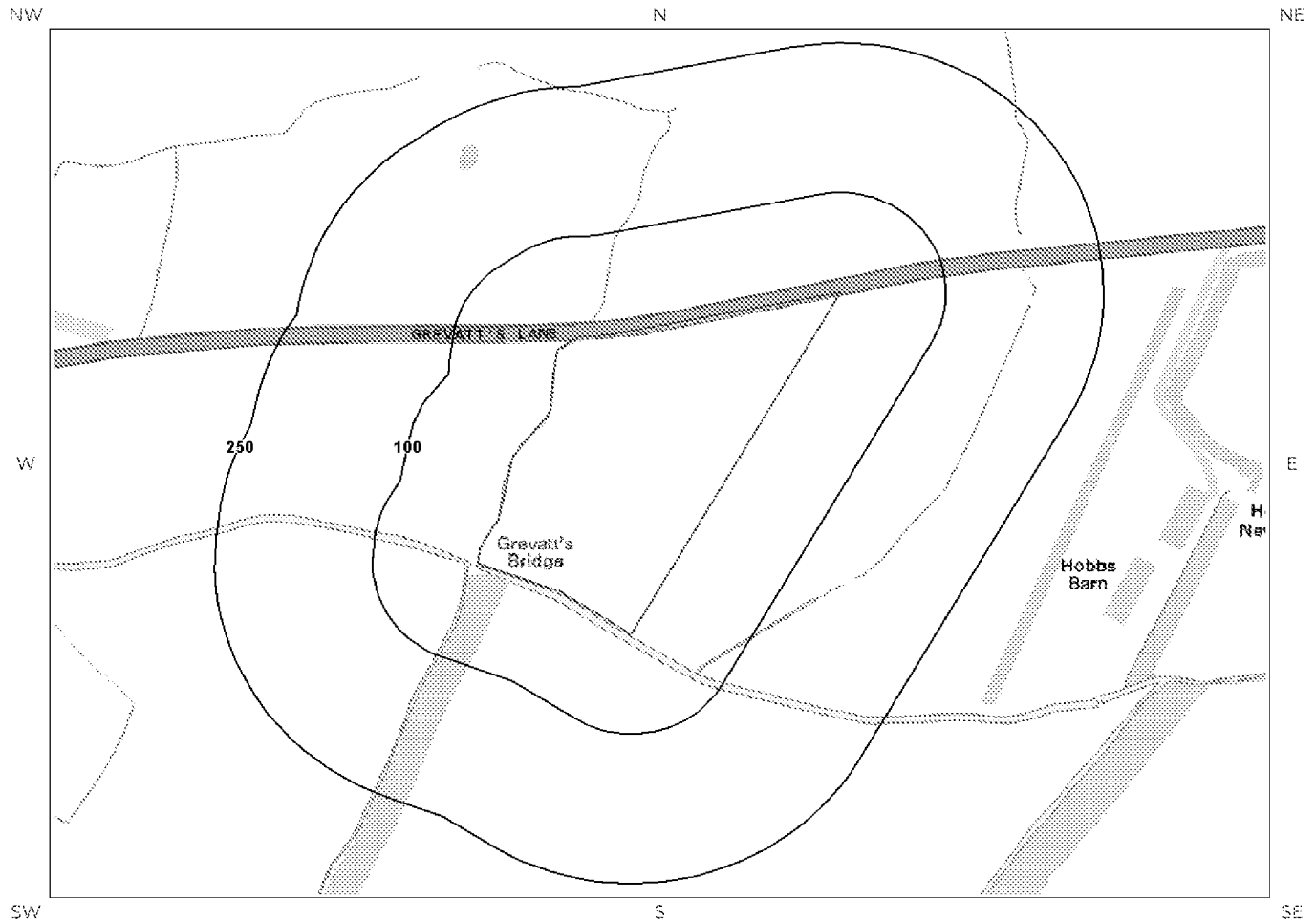
3

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 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
38.0	E	Sediment	<15 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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	Site Outline		Underground or Partially Underground Railway / Subway System		Railway Track (OpenStreetMap)
	Search Buffers (m)		Railway Tunnel (OS Mapping)		High Speed 2
	250		Abandoned or Discontinued Railway (OpenStreetMap)		High Speed 2 Revised Proposed Route
	500		Railway Track (OS Mapping)		Crossrail 1
			Railway and/or Tunnel Feature from Historical Mapping		

9 Railways and Tunnels

9.1 Tunnels

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

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

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

Database searched and no data found.

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

9.5 Railway Projects

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

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

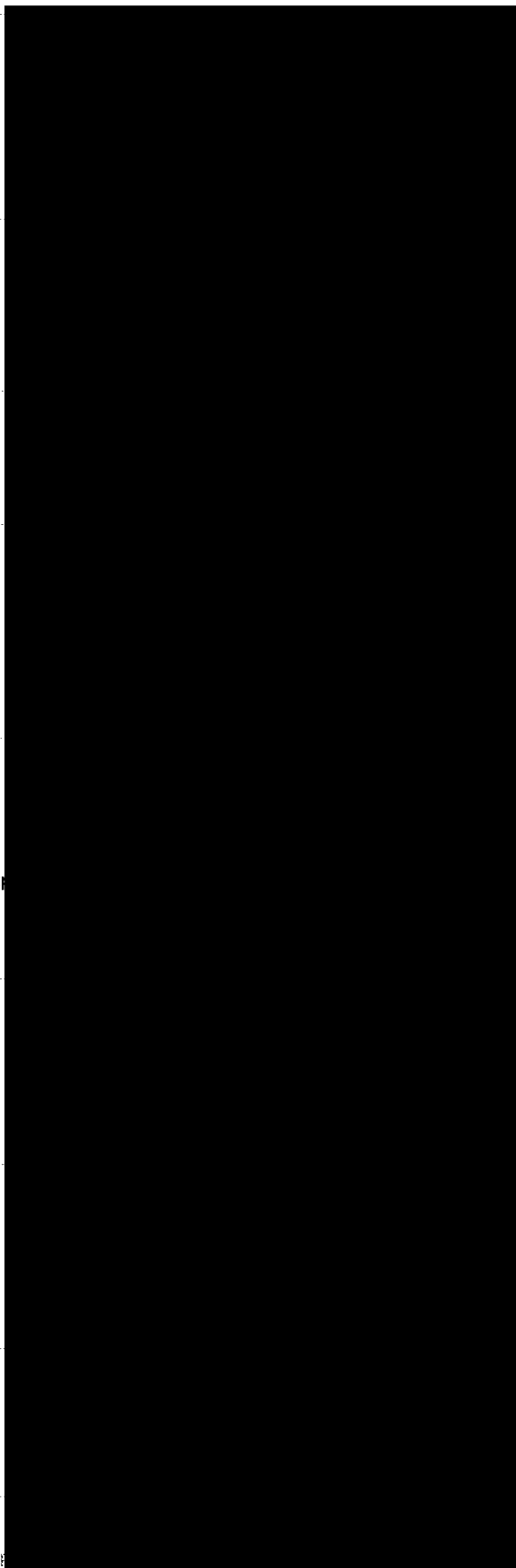
Is the study site within 500m of the route of the Crossrail 1 rail project? No

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

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

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

Contact Details



emapsite™



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This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

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

APPENDIX B

Borehole Logs

BOREHOLE LOG				BOREHOLE No BH 1	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 17/08/18	Ground Level: 4.05mATBM	Co-ordinates: E498735 N101409	
Project: CLIMPING CREMATORIUM, GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA			Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick- ness)	
0.20	E	HS	<1ppm			3.74		(0.31)	Topsoil: Friable slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.
0.60	E	HS	<1ppm					0.31	
1.20-1.65	SPT	SPT	N=6	6		2.63		(1.11)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.
1.50	E	HS	<1ppm					1.42	
2.00-2.45	SPT	SPT	N=4	4				(1.45)	Firm light brown occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
2.50	E	HS	<1ppm			1.18		2.87	...Becoming soft at 2.21m.
3.00-3.45	SPT	SPT	N=15	15				(2.13)	White/off white CHALK recovered as firm slightly gravelly clayey Silt. Gravel comprised fine to coarse subangular/subrounded chalk and occasional fine to coarse angular to subrounded flint.
3.50	E	HS	<1ppm						
4.00-4.45	SPT	SPT	N=19	19					
4.50	E	HS	<1ppm						
5.00-5.45	SPT	SPT	N=29	29		-0.95		5.00	
									Borehole complete at 5.00m

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	

All dimensions in metres Scale 1:37.5	Contractor : ESL Plant: Premier Contact 110	Method: Windowless Sampler Hole Size:	Logged By: TW	Approved By:
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BOREHOLE LOG				BOREHOLE No BH 2	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 17/08/18	Ground Level: 4.10mATBM	Co-ordinates: E498756 N101402	
Project: CLIMPING CREMATORIUM, GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA			Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
1	0.20	E	HS	<1ppm		3.79		(0.31) 0.31	Topsoil: Friable slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.
	0.60	E	HS	<1ppm				(1.21)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.
	1.20-1.65	SPT	SPT	N=5	5	2.58		1.52	
2	1.60	E	HS	<1ppm				(0.83)	Firm light brown occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
	2.00-2.45	SPT	SPT	N=7	7	1.75		2.35	
3	2.50	E	HS	<1ppm				(0.35) 2.70	Light brown slightly gravelly very clayey SAND. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
	3.00-3.45	SPT	SPT	N=19	19	0.90		(0.50) 3.20	Firm light brown occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
	3.60	E	HS	<1ppm		0.60		(0.30) 3.50	
4	4.00-4.45	SPT	SPT	N=19	19	0.05		(0.55) 4.05	Light brown slightly gravelly very clayey SAND. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
	4.50	E	HS	<1ppm				(0.95) 5.00	Firm light brown occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
5	5.00-5.45	SPT	SPT	N=25	25	-0.90		5.00	Grey slightly gravelly silty SAND. Gravel comprised fine to coarse subangular/subrounded chalk and fine to coarse angular to rounded flint. Sand is fine to coarse.
Borehole complete at 5.00m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Hand pit to 1.2m Monitoring well installed on completion of drilling

All dimensions in metres Scale 1:37.5		Contractor : ESL Plant: Premier Contact 110		Method: Windowless Sampler Hole Size:		Logged By: TW	Approved By:
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BOREHOLE LOG				BOREHOLE No BH 3	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 17/08/18	Ground Level: 4.07mATBM	Co-ordinates: E498742 N101389	
Project: CLIMPING CREMATORIUM, GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA			Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
0.20	E	HS	<1ppm			3.80		0.27	Topsoil: Friable slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.
0.60	E	HS	<1ppm					(1.28)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.
1.20-1.65	SPT	SPT	N=9	9		2.52		1.55	
1.60	E	HS	<1ppm					(1.45)	Firm light brown occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.
2.00-2.45	SPT	SPT	N=5	5					...Becoming soft at 2.0m.
2.50	E	HS	<1ppm						...Increased gravel content below 2.52m.
3.00-3.45	SPT	SPT	N=11	11		1.07		3.00	
3.30	E	HS	<1ppm			0.57		(0.50)	Soft light brown white slightly sandy slightly gravelly silty CLAY. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.
4.00-4.45	SPT	SPT	N=22	22				(1.50)	White/off white CHALK recovered as firm slightly gravelly clayey Silt. Gravel comprised fine to coarse subangular/subrounded chalk and occasional fine to coarse angular to subrounded flint.
4.50	E	HS	<1ppm						
5.00-5.45	SPT	SPT	N=28	28		-0.93		5.00	
									Borehole complete at 5.00m

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	

All dimensions in metres Scale 1:37.5		Contractor : ESL Plant: Premier Contact 110		Method: Windowless Sampler Hole Size:		Logged By: TW	Approved By:
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BOREHOLE LOG				BOREHOLE No TP 1	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 4.70mATBM	Co-ordinates: E498744 N101503	
Project: GREVATTS LANE					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	
0.20	E	HS	<1ppm				(0.30)	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.		
						4.40			0.30	
0.60	E	HS	<1ppm				(1.20)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.		
						3.20			1.50	
1.60	E	HS	<1ppm				(0.96)	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.		
						2.24			2.46	
2.60	B E	HS	<1ppm				(0.44)	Orange brown slightly silty slightly gravelly SAND. Gravel comprised fine to coarse angular to subrounded flint. Sand is fine to coarse.		
						1.80			2.90	
2.60							(0.29)	Firm light grey mottled light orange brown slightly sandy slightly gravelly silty CLAY. Gravel comprised occasional fine subangular/subrounded chalk and occasional patches of orange brown sand.		
						1.51			3.19	
								Borehole complete at 3.19m		

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable, some spalling within sand. No groundwater encountered.

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
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BOREHOLE LOG				BOREHOLE No TP 2A	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 4.24mATBM	Co-ordinates: E498804 N101472	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.20	E	HS	<1ppm			3.96		(0.28) 0.28	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	
0.70	E	HS	<1ppm					(0.93) 1.21	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.	
1.50	E	HS	<1ppm			3.03		(0.99) 2.20	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
2.30	E	HS	<1ppm			2.04		(0.38) 2.58	Firm light grey mottled light orange brown slightly sandy slightly gravelly silty CLAY. Gravel comprised occasional fine subangular/subrounded chalk and occasional patches of orange brown sand.	
2.80 2.80	B E	HS	<1ppm			1.66		(0.67) 3.25	Soft white mottled light brown very sandy gravelly SILT. Gravel comprised fine to coarse angular to rounded flint and fine to coarse subangular/subrounded chalk.	
						0.99			Borehole complete at 3.25m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable, some spalling within sandy gravelly silt. Slight seepage at base of trial pit.

All dimensions in metres Scale 1:25		Contractor : Lynch Plant Hire Plant: Kubota KX080-4		Method: Trial Pit/trench Hole Size:		Logged By: TW	Approved By: RL
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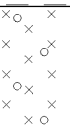
BOREHOLE LOG				BOREHOLE No TP 2B	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 16/08/18	Ground Level: 4.24mATBM	Co-ordinates: E498803 N101472	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	
1								(0.28)	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	
						3.96		0.28		
							(0.92)			
2								1.20	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.	
						3.04		(0.73)		
3								1.93	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
						2.31				
									Borehole complete at 1.93m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
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BOREHOLE LOG				BOREHOLE No TP 3A	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 4.23mATBM	Co-ordinates: E498700 N101448	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	
0.20	E	HS	<1ppm				(0.27)	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.		
0.60	E	HS	<1ppm				(1.23)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.		
1.70	E	HS	<1ppm				(1.45)	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.		
3.10	E	HS	<1ppm				(0.45)	Firm white mottled light brown gravelly clayey SILT. Gravel comprised fine to coarse angular to subrounded flint, occasional fine to medium subangular/subrounded chalk.		
								Borehole complete at 3.40m		

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant:Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
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BOREHOLE LOG				BOREHOLE No TP 3B	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 16/08/18	Ground Level: 4.23mATBM	Co-ordinates: E498701 N101449	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	
1						3.95	 	(0.28) 0.28	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	                                    
						2.75	                                  	1.48	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.	
						1.99	                       	(0.76) 2.24	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
3									Borehole complete at 2.24m	                              

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable. No groundwater encountered. Soakaway test carried out on completion of digging.

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW	Approved By: RL
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BOREHOLE LOG				BOREHOLE No TP 4	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 3.95mATBM	Co-ordinates: E498677 N101355	
Project: GREVATTS LANE					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.25	E	HS	<1ppm			3.63		(0.32) 0.32	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	
0.70	E	HS	<1ppm					(1.08) 1.40	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.	
1.60	E	HS	<1ppm			2.55		(1.54) 2.94	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY with a low cobble content. Gravel and cobbles comprised fine to coarse and occasional cobble of angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
3.00	E	HS	<1ppm			1.01		(0.55) 3.49	Firm light grey mottled light orange brown slightly gravelly silty CLAY. Gravel comprised occasional fine subangular/subrounded chalk.	
3.50	E	HS	<1ppm			0.46 0.42		3.53	Soft light brown very sandy gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint and fine to coarse subangular/subrounded chalk.	
Borehole complete at 3.53m										

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable. No groundwater encountered.

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
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BOREHOLE LOG				BOREHOLE No TP 5A	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 3.74mATBM	Co-ordinates: E498755 N101346	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.20	E	HS	<1ppm			3.47		(0.27) 0.27	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	
0.70	E	HS	<1ppm					(1.63)	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint. Sand is fine to coarse.	
2.00	E	HS	<1ppm			1.84		(0.90) 1.90	Firm light brown with occasionally mottled off white silty sandy slightly gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
3.00 3.00	B E	HS	<1ppm			0.94		(0.50) 2.80	Firm white mottled light brown gravelly clayey SILT. Gravel comprised fine to coarse angular to subrounded flint, occasional fine to medium subangular/subrounded chalk (Possible Dm Chalk).	
						0.44		3.30	Borehole complete at 3.30m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable. No groundwater encountered.

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
--	--	--	----------------------------------

SLR 

Form SLR AGS3 UK BH SPT File 180820_402_05324_00005_TP_LOGS.GPJ 04-09-18

Trial pit stable.
No groundwater
encountered.
Soakaway test carried out
on completion of digging.

Logged By: TW	Approved By: RL
------------------	--------------------

BOREHOLE LOG				BOREHOLE No TP 6	
Client: THE SOUTHERN CO-OPERATIVE					
Project No: 402.05324.00005		Date: 15/08/18	Ground Level: 3.53mATBM	Co-ordinates: E498722 N101290	
Project: GREVATTS LANE					
					Sheet: 1 of 1

SAMPLES & TESTS					Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.20	E	HS	<1ppm			3.28		(0.25) 0.25	Topsoil: Friable brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with roots and rootlets. Sand is fine to coarse.	
0.50	E	HS	<1ppm					(0.65)	Firm to stiff friable light brown slightly sandy slightly gravelly SILT. Gravel comprised occasional fine to coarse angular to subrounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
1.00	E	HS	<1ppm			2.63		(0.90) 0.90	Firm friable light brown slightly gravelly sandy SILT. Gravel comprised fine to coarse angular to rounded flint with occasional patches of yellow brown silty sand. Sand is fine to coarse.	
1.90	E	HS	<1ppm			1.73		(0.40) 0.40	Firm light brown with occasionally mottled off white silty sandy gravelly CLAY. Gravel comprised fine to coarse angular to rounded flint, occasional fine to medium subangular/subrounded chalk. Sand is fine to coarse.	
2.50	B	HS	<1ppm			1.33		(0.90) 0.90	Firm light grey slightly gravelly silty CLAY. Gravel comprised occasional fine subangular/subrounded chalk.	
3.10	E					0.43		3.10	Borehole complete at 3.10m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit stable. Slight seepage at base of pit

All dimensions in metres Scale 1:25	Contractor : Lynch Plant Hire Plant: Kubota KX080-4	Method: Trial Pit/trench Hole Size:	Logged By: TW Approved By: RL
--	--	--	----------------------------------

APPENDIX C

Monitoring Data

Soil Gas Monitoring Record Sheet 2.10.1: Soil Gas Sheet



Site Name : Grevatts Lane, Climping

Job Number: 402.05324.00005

Address: Grevatts Lane

Date: 29/08/2018

Littlehampton

Weather Conditions: Raining

BN17 5RX

Air Temperature (Deg C) 15

Wind Speed (mph) -

Ground Surface Conditions firm grass/crop

Operator: GA5000

Equipment: GA5000, IF

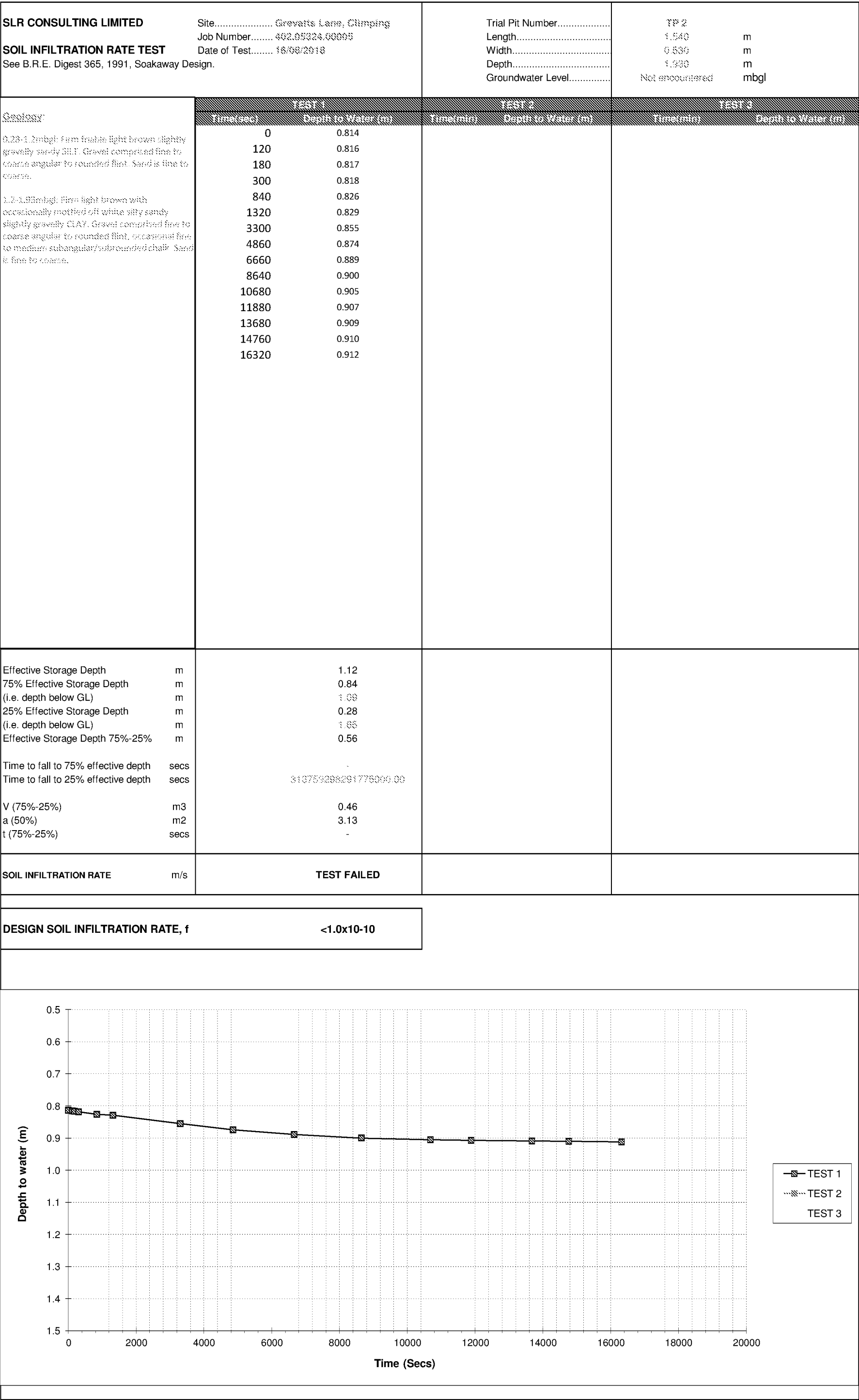
Next Calibration Due: Oct-18

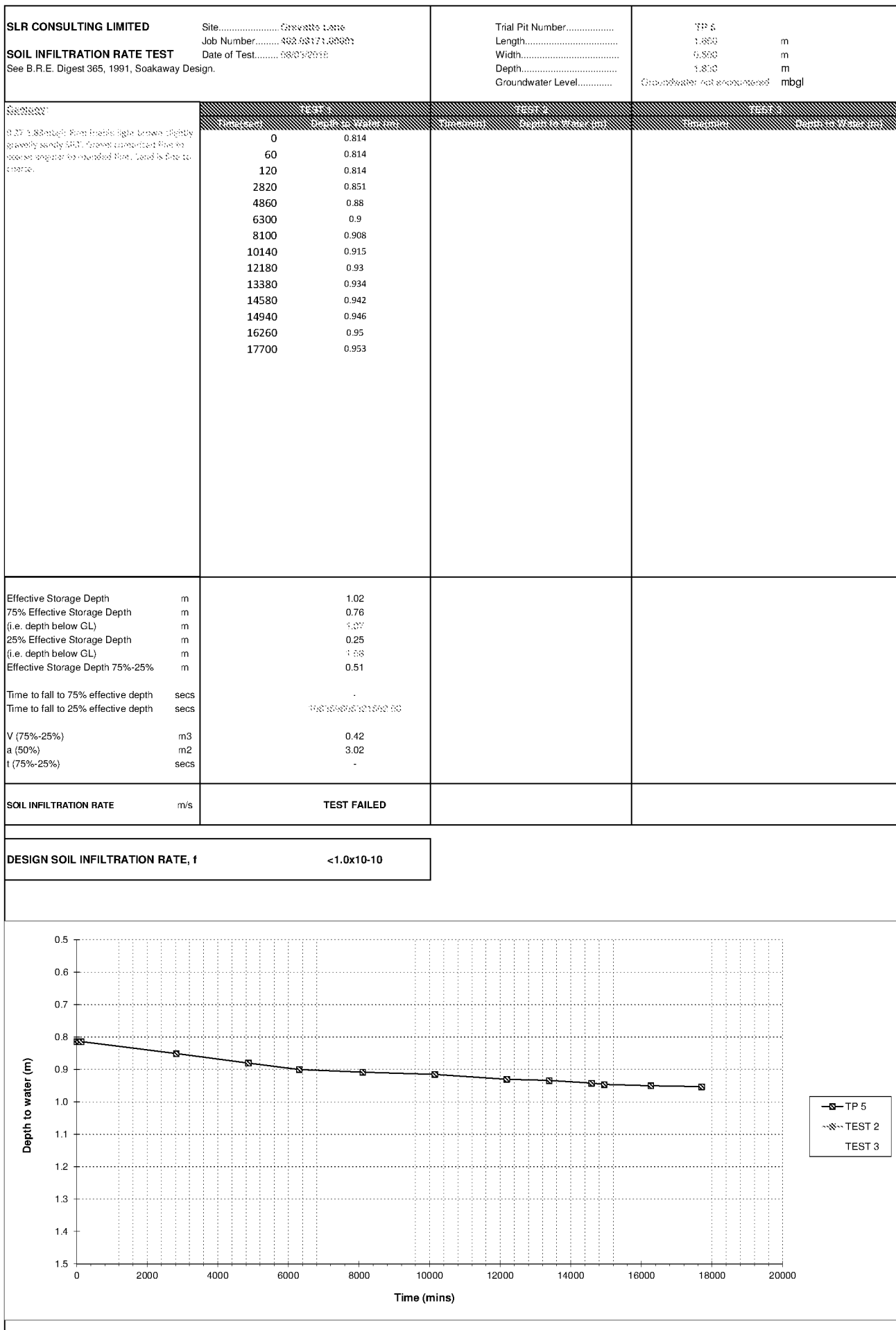
Sample Point Ref	Sample Point Type (e.g. spike, well etc)	Barometric Pressure (mbar)	Depth of Water (m)	Depth of well (m)	Methane (CH4)		Carbon Dioxide (CO2)		Oxygen (O2)		Carbon Monoxide (CO) (%v/v)	Hydrogen Sulphide (H2S) (%v/v)	Flow (l/hr)	Gas Pressure (mbar)	Sample Collected?	Sample Type
					Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)	Peak (%v/v)	Steady State (%v/v)						
BH1	Well	1015	2.331	4.9	0	0	1.3	1.3	19.1	19.1	0	0	0.1	-0.07	-	-
BH2	Well	1015	2.453	4.96	0	0	1.5	1.5	18.9	18.9	0	0	0	-0.15	-	-
BH3	Well	1014	2.52	4.93	0	0	2.3	2.3	19.1	19.1	0	0	0	-0.31	-	-

Comments:

APPENDIX D

Infiltration test data





APPENDIX E

Chemical Laboratory Analysis Certificates



Exova Jones Environmental

Registration No. 226666 Environmental Management Systems, ISO 9001:2015 Reg. No. 18427324

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

SLR Consulting Ltd
Treenwood House
Rowden Lane
Bradford on Avon
BA15 2UA



Attention : Rob Leonard
Date : 5th September, 2018
Your reference : 402.05324.00005
Our reference : Test Report 18/13127 Batch 1
Location : Grevatts Lane, Climping
Date samples received : 18th August, 2018
Status : Final report
Issue : 1

Forty five samples were received for analysis on 18th August, 2018 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:



Paul Boden BSc
Senior Project Manager

Client Name: SLR Consulting Ltd
 Reference: 402.05324.00005
 Location: Grevatts Lane, Climping
 Contact: Rob Leonard
 JE Job No.: 18/13127

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	11-12	19-20	29-30	39-40	47-48	55-56	69-70	79-80		Please see attached notes for all abbreviations and acronyms		
Sample ID	TP6	TP5	TP4	TP2	TP1	TP3	BH3	BH2	BH1				
Depth	0.20	0.20	0.25	0.20	0.20	0.20	0.20	0.60	0.20				
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J				
Sample Date	15/08/2018	15/08/2018	15/08/2018	15/08/2018	15/08/2018	15/08/2018	17/08/2018	17/08/2018	17/08/2018				
Sample Type	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clay	Clayey Loam				
Batch Number	1	1	1	1	1	1	1	1	1		LOD/LOR	Units	Method No.
Date of Receipt	18/08/2018	18/08/2018	18/08/2018	18/08/2018	18/08/2018	18/08/2018	18/08/2018	18/08/2018	18/08/2018				
Arsenic ^{#M}	9.3	11	9.1	8.7	9.3	8.2	9.6	13	8.4		<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	0.2	0.2	<0.1	0.2	0.2	0.2	0.3	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Chromium ^{#M}	32	36	59	61	42	49	49	54	60		<0.5	mg/kg	TM30/PM15
Copper ^{#M}	10	12	15	15	10	8	14	18	22		<1	mg/kg	TM30/PM15
Lead ^{#M}	16	17	19	15	16	15	17	17	20		<5	mg/kg	TM30/PM15
Mercury ^{#M}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	14	15	12	14	15	11	13	29	14		<0.7	mg/kg	TM30/PM15
Selenium ^{#M}	<1	<1	<1	<1	<1	<1	<1	1	<1		<1	mg/kg	TM30/PM15
Zinc ^{#M}	47	51	48	51	53	43	51	60	53		<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	<0.03	<0.03	<0.03	0.04	0.07	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	0.04	<0.03	<0.03	0.11	0.19	0.09	0.06	<0.03	0.07		<0.03	mg/kg	TM4/PM8
Pyrene [#]	<0.03	<0.03	<0.03	0.09	0.16	0.07	0.06	<0.03	0.06		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	<0.06	<0.06	<0.06	<0.06	0.12	<0.06	<0.06	<0.06	<0.06		<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	<0.02	<0.02	<0.02	0.06	0.08	0.04	<0.02	<0.02	<0.02		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene ^{#M}	<0.07	<0.07	<0.07	0.11	0.19	<0.07	<0.07	<0.07	<0.07		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	<0.04	<0.04	<0.04	0.06	0.10	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	1.1	<0.6	<0.6	<0.6	<0.6		<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.08	0.14	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.02		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	83	80	90	94	100	94	95	100		<0	%	TM4/PM8
Natural Moisture Content	23.4	27.5	27.9	23.4	36.0	21.1	21.7	13.0	19.9		<0.1	%	PM4/PM0
Hexavalent Chromium [#]	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) ^{#M}	0.013	0.002	<0.0015	<0.0015	0.012	0.024	<0.0015	0.023	<0.0015		<0.0015	g/l	TM38/PM20
Sample Type	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clay	Clayey Loam		None		PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None		PM13/PM0
Other Items	roots	roots	roots	roots, stones	wet, roots, stones	roots	stones, roots	roots, stone	roots		None		PM13/PM0
pH ^{#M}	6.3	6.6	6.8	7.0	7.3	6.5	6.9	7.0	6.4		<0.01	pH units	TM73/PM11

Please include all sections of this report if it is reproduced

Client Name: SLR Consulting Ltd
Reference: 402.05324.00005
Location: Grevatts Lane, Climping
Contact: Rob Leonard

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/13127	1	TP6	0.20	2	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD
18/13127	1	TP5	0.20	12	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD
18/13127	1	TP2	0.20	30	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD
18/13127	1	TP1	0.20	40	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD
18/13127	1	TP3	0.20	48	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD
18/13127	1	BH3	0.20	56	03/09/2018	General Description (Bulk Analysis)	Soil/Stones
					03/09/2018	Asbestos Fibres	NAD
					03/09/2018	Asbestos ACM	NAD
					03/09/2018	Asbestos Type	NAD
					03/09/2018	Asbestos Level Screen	NAD

Client Name: SLR Consulting Ltd
Reference: 402.05324.00005
Location: Grevatts Lane, Climping
Contact: Rob Leonard

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/13127

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/13127

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+), 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+), 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No

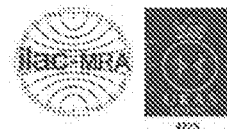


Exova Jones Environmental

Registered Office: Treewood House, Rowden Lane, Bradford on Avon, Wiltshire, BA15 2UA

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

SLR Consulting Ltd
Treewood House
Rowden Lane
Bradford on Avon
BA15 2UA



Attention : Rob Leonard
Date : 7th September, 2018
Your reference : 402.05324.00005
Our reference : Test Report 18/13727 Batch 1
Location : Climping
Date samples received : 30th August, 2018
Status : Final report
Issue : 1

Three samples were received for analysis on 30th August, 2018 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:



Simon Gomery BSc
Project Manager

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: SLR Consulting Ltd
Reference: 402.05324.00005
Location: Climping
Contact: Rob Leonard
JE Job No.: 18/13727

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

J E Sample No.	1-5	6-10	11-15										
Sample ID	BH1	BH2	BH3										
Depth	3.5	3.5	3.5										
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G										
Sample Date	29/08/2018	29/08/2018	29/08/2018										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	1	1	1										
Date of Receipt	30/08/2018	30/08/2018	30/08/2018										
											LOD/LOR	Units	Method No.
Dissolved Arsenic #	<0.0009	<0.0009	<0.0009								<0.0009	mg/l	TM30/PM14
Dissolved Cadmium #	<0.00003	<0.00003	<0.00003								<0.00003	mg/l	TM30/PM14
Total Dissolved Chromium #	0.016	0.021	0.016								<0.0002	mg/l	TM30/PM14
Dissolved Copper #	<0.003	<0.003	<0.003								<0.003	mg/l	TM30/PM14
Dissolved Lead #	<0.0004	<0.0004	<0.0004								<0.0004	mg/l	TM30/PM14
Dissolved Mercury #	<0.0005	<0.0005	<0.0005								<0.0005	mg/l	TM30/PM14
Dissolved Nickel #	0.003	0.0023	0.001								<0.0002	mg/l	TM30/PM14
Dissolved Selenium #	<0.0012	<0.0012	<0.0012								<0.0012	mg/l	TM30/PM14
Dissolved Zinc #	0.02	0.0056	0.0062								<0.0015	mg/l	TM30/PM14
Sulphate as SO ₄ #	120	140	73								<0.5	mg/l	TM38/PM0
Chloride #	120	96	77								<0.3	mg/l	TM38/PM0
pH #	7.9	7.8	7.6								<0.01	pH units	TM73/PM0
PAH MS													
Naphthalene #	<0.0001	<0.0001	<0.0001								<0.0001	mg/l	TM4/PM30
Acenaphthylene #	<0.000013	<0.000013	<0.000013								<0.000013	mg/l	TM4/PM30
Acenaphthene #	<0.000013	<0.000013	<0.000013								<0.000013	mg/l	TM4/PM30
Fluorene #	0.000017	<0.000014	<0.000014								<0.000014	mg/l	TM4/PM30
Phenanthrene #	0.000024	0.000017	0.000019								<0.000011	mg/l	TM4/PM30
Anthracene #	<0.000013	<0.000013	<0.000013								<0.000013	mg/l	TM4/PM30
Fluoranthene #	<0.000012	<0.000012	0.000013								<0.000012	mg/l	TM4/PM30
Pyrene #	<0.000013	<0.000013	<0.000013								<0.000013	mg/l	TM4/PM30
Benzo(a)anthracene #	<0.000015	<0.000015	<0.000015								<0.000015	mg/l	TM4/PM30
Chrysene #	<0.000011	<0.000011	<0.000011								<0.000011	mg/l	TM4/PM30
Benzo(b)fluoranthene #	<0.000018	<0.000018	<0.000018								<0.000018	mg/l	TM4/PM30
Benzo(a)pyrene #	<0.000016	<0.000016	<0.000016								<0.000016	mg/l	TM4/PM30
Indeno(123cd)pyrene #	<0.000011	<0.000011	<0.000011								<0.000011	mg/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.00001	<0.00001	<0.00001								<0.00001	mg/l	TM4/PM30
Benzo(ghi)perylene #	<0.000011	<0.000011	<0.000011								<0.000011	mg/l	TM4/PM30
PAH 16 Total #	<0.000195	<0.000195	<0.000195								<0.000195	mg/l	TM4/PM30
Benzo(b)fluoranthene	<0.00001	<0.00001	<0.00001								<0.00001	mg/l	TM4/PM30
Benzo(k)fluoranthene	<0.00001	<0.00001	<0.00001								<0.00001	mg/l	TM4/PM30
PAH Surrogate % Recovery	92	89	91								<0	%	TM4/PM30
Hexavalent Chromium	<0.002	<0.002	<0.002								<0.002	mg/l	TM38/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: SLR Consulting Ltd

Reference: 402.05324.00005

Location: Climbing

Contact: Rob Leonard

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/13727

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/13727

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+), 7196A (Hex Cr)	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+), 7196A (Hex Cr)	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

APPENDIX F

SLR GQRA Screening Sheets

Generic Risk Assessment - Soils
Lab Data Screening

SLR



Exceeds GAC
Exceeds LOD

Client Name	The Southern Co-operative
Site Name	Grevatts Lane, Climping
Job Number	402.05324.00005
Date	06/09/2018
Description of Data Assessment / Zoning	Zone X
Selected Screening Value and Land Use	S4UL - Residential with plant uptake

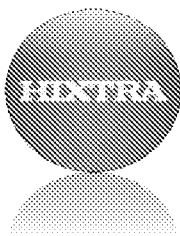
Sample ID	TP6	TP5	TP4	TP2	TP1	TP3	BH3	BH2	BH1
Depth	0.2	0.2	0.25	0.2	0.2	0.2	0.2	0.6	0.2
Sample Type	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clay	Clayey Loam
Sampled Date	18/08/15	18/08/15	18/08/15	18/08/15	18/08/15	18/08/15	18/08/17	18/08/17	18/08/17
Sample Received Date	18/08/18	18/08/18	18/08/18	18/08/18	18/08/18	18/08/18	18/08/18	18/08/18	18/08/18
J E Sample No	1-2	11-12	19-20	29-30	39-40	47-48	55-56	69-70	79-80
Batch Number	1	1	1	1	1	1	1	1	1
Strata / Zone	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X

Test	Units	LOD	Selected GAC	No. Above GAC									
Arsenic	mg/kg	<0.5	37	0	9.3	11	9.1	8.7	9.3	8.2	9.6	13	8.4
Cadmium	mg/kg	<0.1	11	0	0.2	0.2	<0.1	0.2	0.2	0.2	0.3	<0.1	<0.1
Chromium	mg/kg	<0.5	910	0	32	36	59	61	42	49	49	54	60
Copper	mg/kg	<1	2400	0	10	12	15	15	10	8	14	18	22
Lead	mg/kg	<5	200	0	16	17	19	15	16	15	17	17	20
Mercury	mg/kg	<0.1	40	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<0.7	180	0	14	15	12	14	15	11	13	29	14
Selenium	mg/kg	<1	250	0	<1	<1	<1	<1	<1	<1	<1	1	<1
Zinc	mg/kg	<5	3700	0	47	51	48	51	53	43	51	60	53
PAH MS					-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	<0.04	2.3	0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	mg/kg	<0.03	170	0	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Acenaphthene	mg/kg	<0.05	210	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	mg/kg	<0.04	170	0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Phenanthrene	mg/kg	<0.03	95	0	<0.03	<0.03	<0.03	0.04	0.07	<0.03	<0.03	<0.03	<0.03
Anthracene	mg/kg	<0.04	2400	0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoranthene	mg/kg	<0.03	280	0	0.04	<0.03	<0.03	0.11	0.19	0.09	0.06	<0.03	0.07
Pyrene	mg/kg	<0.03	620	0	<0.03	<0.03	<0.03	0.09	0.16	0.07	0.06	<0.03	0.06
Benzo(a)anthracene	mg/kg	<0.06	7.2	0	<0.06	<0.06	<0.06	<0.06	0.12	<0.06	<0.06	<0.06	<0.06
Chrysene	mg/kg	<0.02	15	0	<0.02	<0.02	<0.02	0.06	0.08	0.04	<0.02	<0.02	<0.02
Benzo(bk)fluoranthene	mg/kg	<0.07			<0.07	<0.07	<0.07	0.11	0.19	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	mg/kg	<0.04	2.2	0	<0.04	<0.04	<0.04	0.06	0.1	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	mg/kg	<0.04	27	0	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	mg/kg	<0.04	0.24	0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	mg/kg	<0.04	320	0	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04
PAH 16 Total	mg/kg	<0.6			<0.6	<0.6	<0.6	<0.6	1.1	<0.6	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	mg/kg	<0.05	2.6	0	<0.05	<0.05	<0.05	0.08	0.14	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	<0.02	77	0	<0.02	<0.02	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	%	<0			93	83	80	90	94	100	94	95	100
Natural Moisture Content	%	<0.1			23.4	27.5	27.9	23.4	36	21.1	21.7	13	19.9
Hexavalent Chromium	mg/kg	<0.3	6	0	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Sulphate as SO4 (2:1 Ext)	g/l	<0.0015			0.013	0.002	<0.0015	<0.0015	0.012	0.024	<0.0015	0.023	<0.0015
Sample Type	None				Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clayey Loam	Clay	Clayey Loam
Sample Colour	None				Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown
Other Items	None				roots	roots	roots	roots, stones	wet, roots, stones	roots	stones, roots	roots, stone	roots
pH	pH units	<0.01			6.3	6.6	6.8	7	7.3	6.5	6.9	7	6.4
					-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-
	None				Soil/Stones	Soil/Stones	-	Soil/Stones	Soil/Stones	Soil/Stones	Soil/Stones	-	-
	None				NAD	NAD	-	NAD	NAD	NAD	NAD	-	-
	None				NAD	NAD	-	NAD	NAD	NAD	NAD	-	-
	None				NAD	NAD	-	NAD	NAD	NAD	NAD	-	-
	None				NAD	NAD	-	NAD	NAD	NAD	NAD	-	-



APPENDIX G

CBR Test Certificates



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS 1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-1

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 01

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

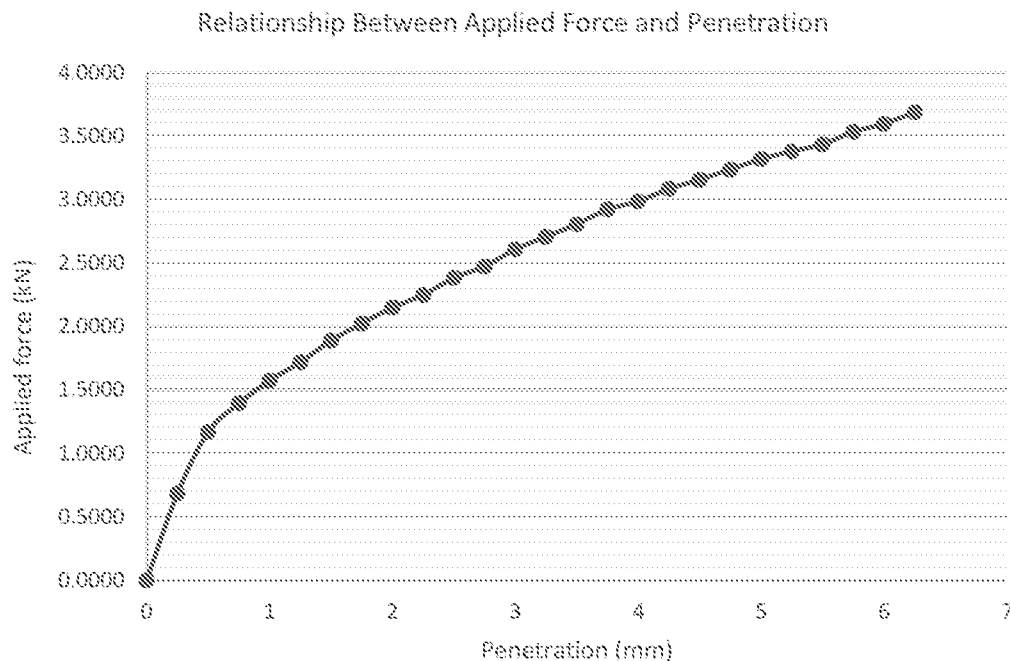
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

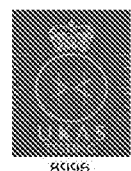
CBR Value (%)	18
Moisture Content (%)	16



For and on Behalf of Hixtra Ltd



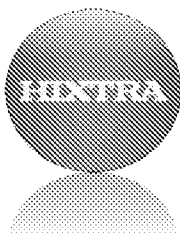
Terho Wilson
Director



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS
1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-2

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 02

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

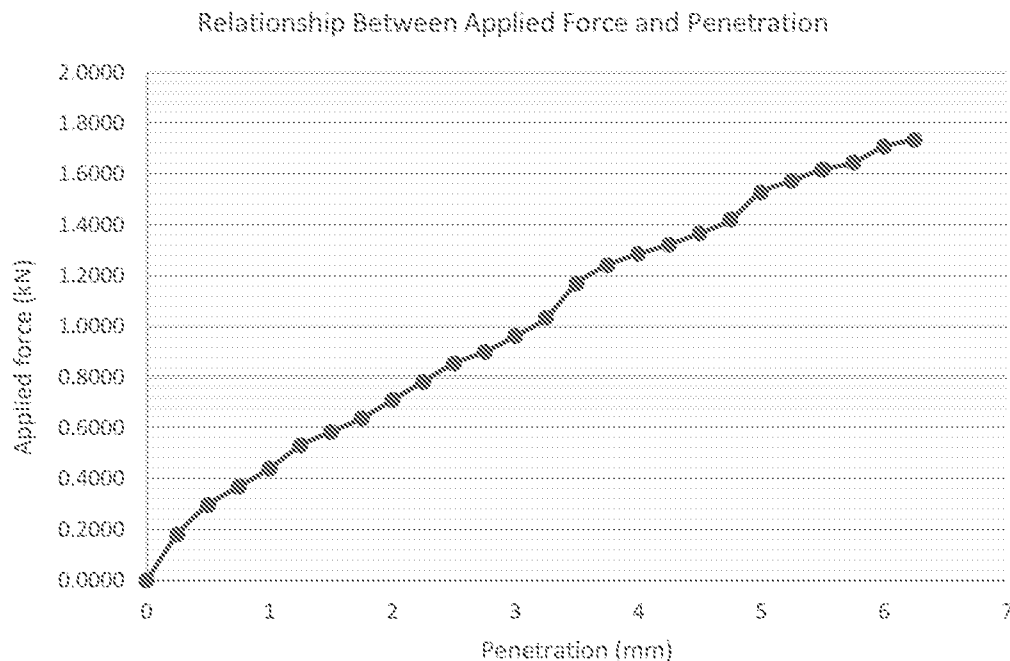
Particles >20mm below plunger: No

Moisture content determined: Yes

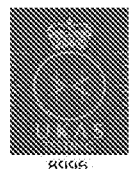
Description: Firm light brown sandy SILT and CLAY

Test Results

CBR Value (%)	7.6
Moisture Content (%)	13



For and on Behalf of Hixtra Ltd

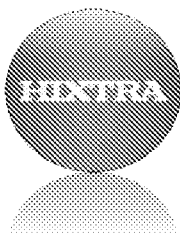


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Terno Wilson
Director

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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS 1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-3

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 03

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

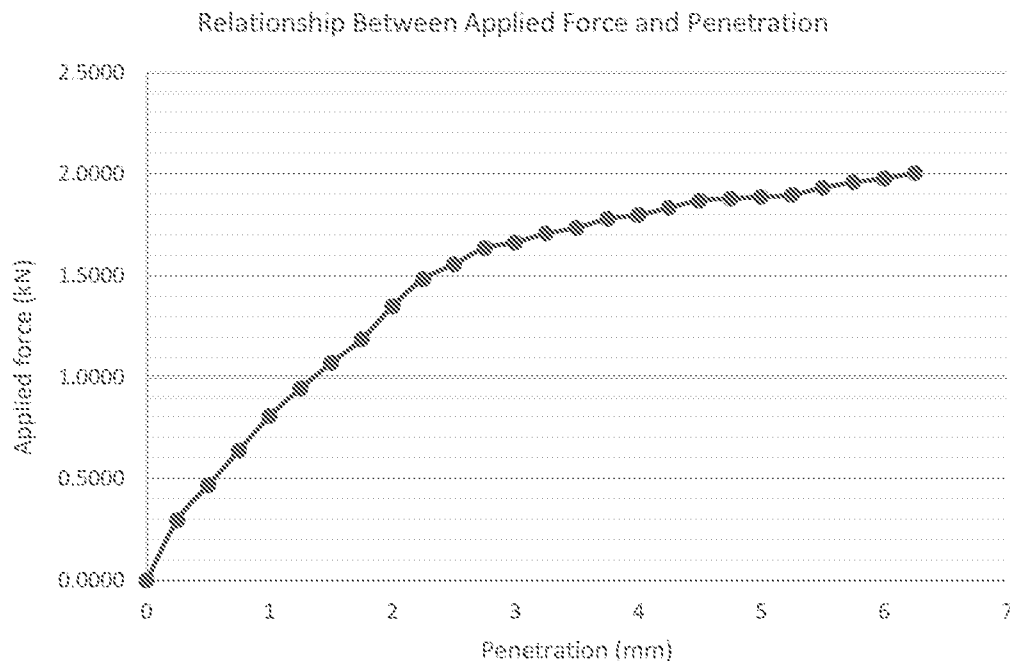
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

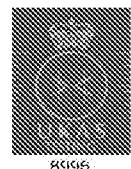
CBR Value (%)	12
Moisture Content (%)	14



For and on Behalf of Hixtra Ltd



Terho Wilson
Director



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS
1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-4

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 04

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

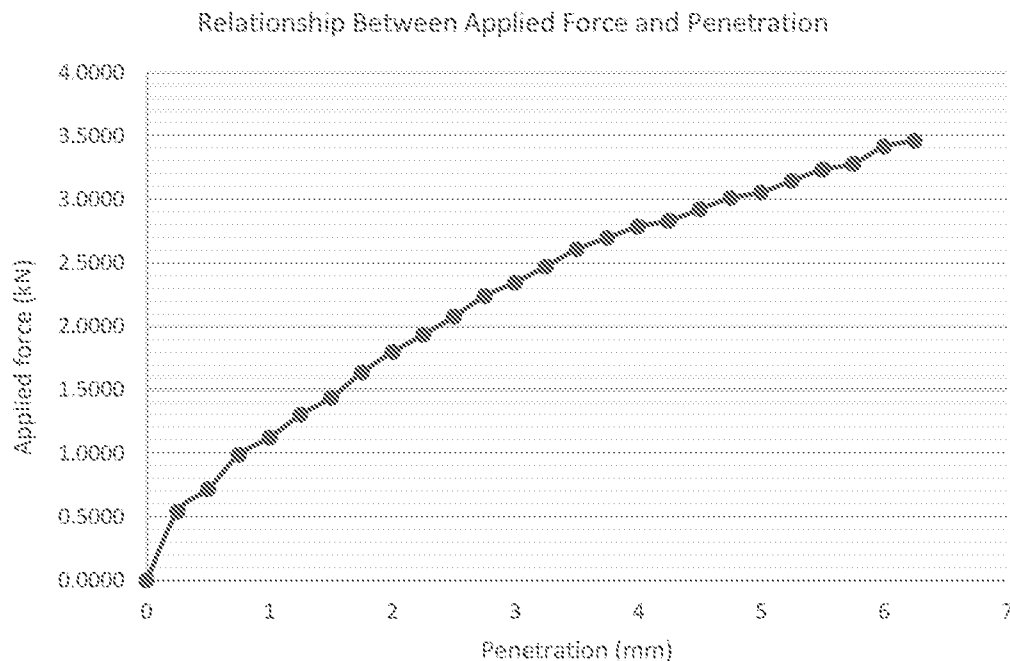
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

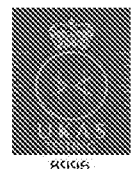
Test Results

CBR Value (%)	16
Moisture Content (%)	8.6



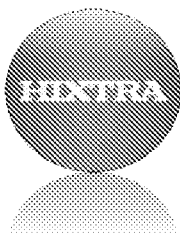
For and on Behalf of Hixtra Ltd

Terry Wilson
Director



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS
1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-5

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 05

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

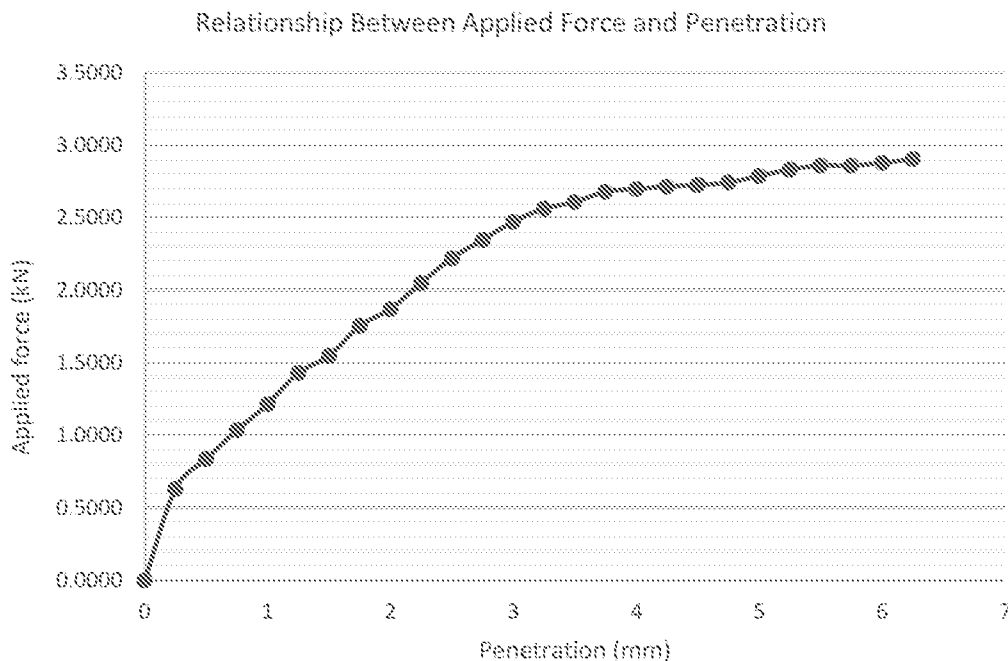
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

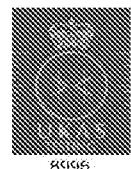
CBR Value (%)	17
Moisture Content (%)	11



For and on Behalf of Hixtra Ltd



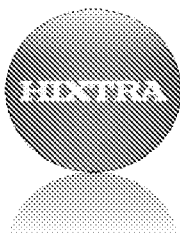
Terho Wilson
Director



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS 1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-6

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 06

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

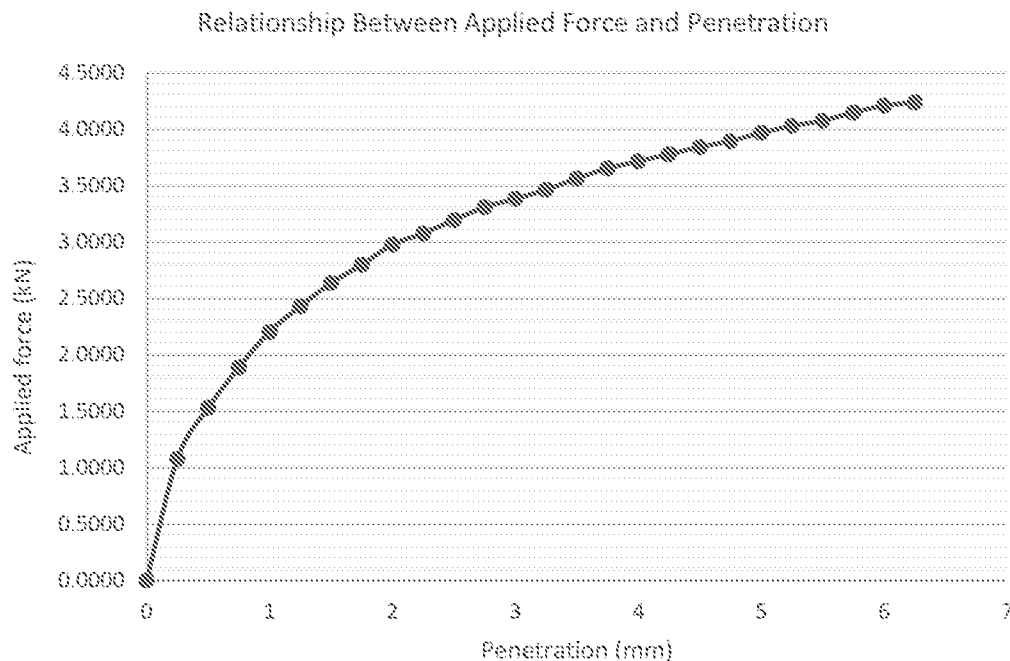
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

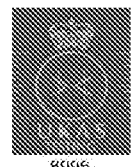
CBR Value (%)	24
Moisture Content (%)	8.2



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS
1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-7

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 07

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

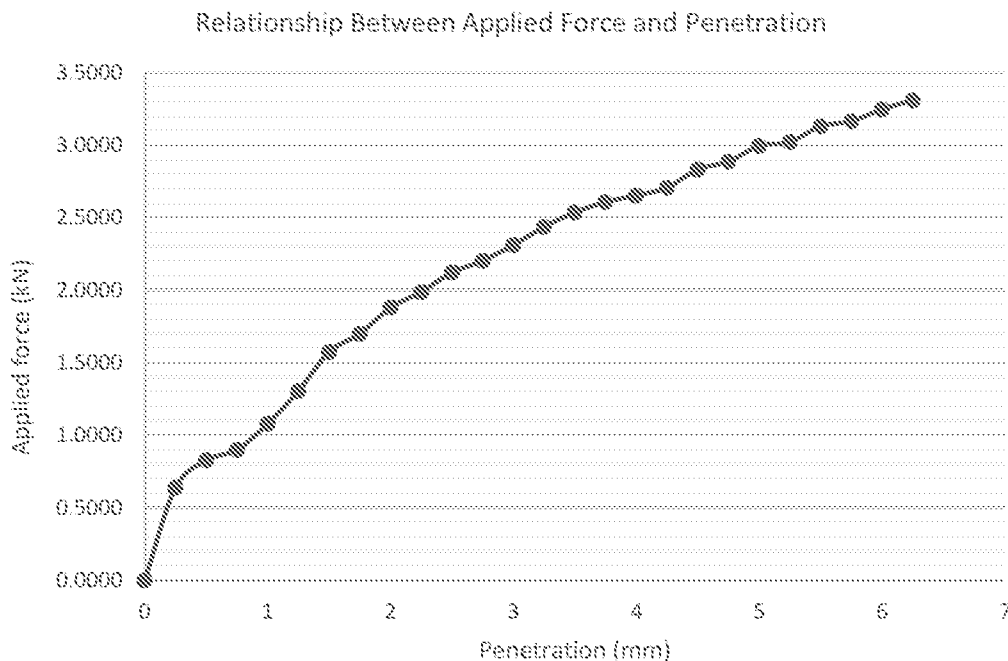
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

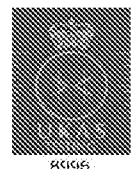
CBR Value (%)	16
Moisture Content (%)	12



For and on Behalf of Hixtra Ltd

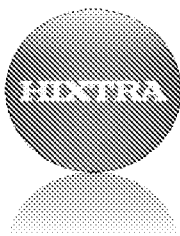


Terho Wilson
Director



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HU-SOI-05 Issue 2



Certificate for the Determination of the In-Situ California Bearing Ratio (CBR) of Soil to BS
1377 Part 9 : 1990 Clause 4.3

Report No: HS1953-8

Report Date: 16/08/2018

Client: SLR Consulting

Address: 3rd Floor, Brew House

Jacob Street

Bristol

BS2 0EQ

Site: Brett Aggregates Ltd, Queen Mary Quarry, Ashford Road, Laleham, Middlesex, TW18 1QF

Test Details

Test Location: CBR 08

Date of Test: 15/08/2018

Layer/Depth: -500mm

Surcharge mass (kg): 9

Material Class: Formation

Equivalent overburden pressure (Kpa): 1.9

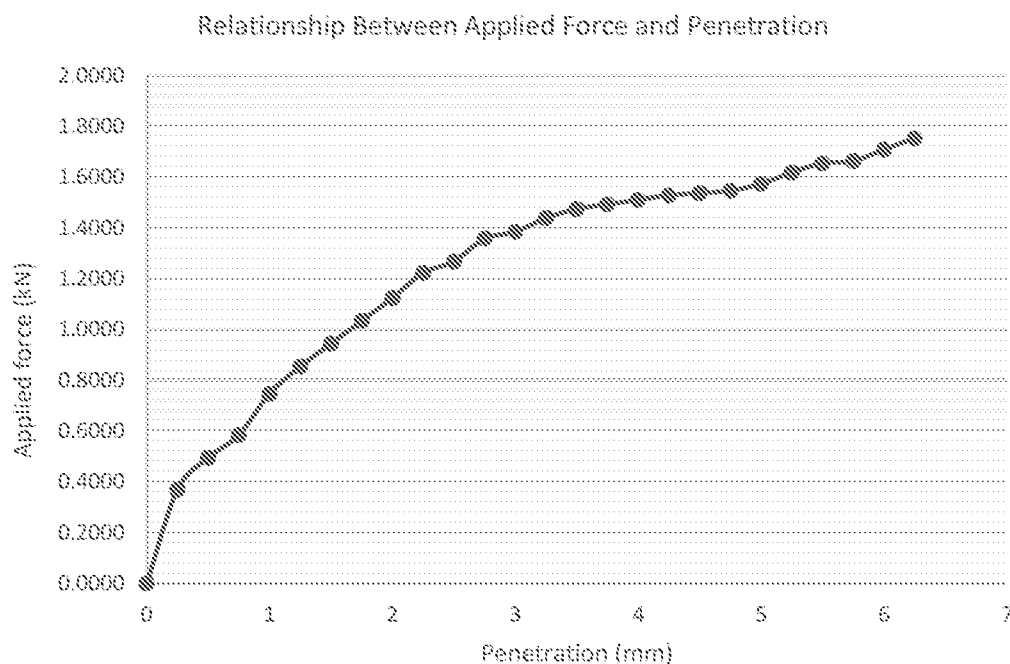
Particles >20mm below plunger: No

Moisture content determined: Yes

Description: Firm light brown sandy SILT and CLAY

Test Results

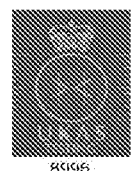
CBR Value (%)	10
Moisture Content (%)	11



For and on Behalf of Hixtra Ltd



Terho Wilson
Director



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HU-SOI-05 Issue 2

APPENDIX H

Geotechnical Laboratory Analysis Certificates

SLR Consulting LimitedTreenwood House
Rowden Lane
Bradford on Avon
Wiltshire
BA15 2AU

For the attention of Mr T Wallis

19 September 2018

Report No : GEO/28014/02

Page 1 of 1

Dear Sirs

Our ref **GEO / 28014**Your Ref **402.05324.00005**

Date samples received 07/09/2018

Date written instructions received 07/09/2018

Date testing commenced 08/09/2018

Date of sample disposal 17/10/2018Project **GREVATTS LANE, CLIMPING**

Further to your instructions we have pleasure in enclosing the results of the tests you requested in the attached figures.

LABORATORY TEST REPORT

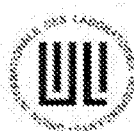
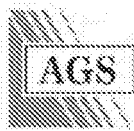
Item No	Test Quantity	Description
1	~	Geotechnical Test Summary
~	9	Water Content
~	1	Bulk Density
2	~	Geochemical Test Summary
~	3	pH Value & Water Soluble Sulphate Content as SO4
~	3	Water Soluble Chloride Content
3	2	Saturation Moisture Content
4	9	Liquid & Plastic Limits
5	3	Particle Size Distribution

Any opinions or interpretations expressed herein are outside the scope of UKAS accreditation. All results contained in this report are provisional unless signed by an approved signatory. The results contained in this report relate only to samples received in the laboratory. This report should not be reproduced except in full without the written permission of the laboratory.

All the necessary data required by the documented test procedures has been recorded and will be stored for a period of no less than 6 years. This data will be issued to yourselves at your request. All samples will be disposed of after the date shown above. Written confirmation will be required to retain the samples beyond this period and a storage charge may be applied.

We trust that the above meets your requirements and should you require any further information or assistance, please do not hesitate to contact us.

Yours faithfully

on behalf of **GEOLABS Limited**J A Reynolds
Laboratory Manager**eurolab****BGA**

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole / Trial Pit	Depth (m)	Sample Ref	Type	Description	WC (%)	LL (%)	PL (%)	PI (%)	<425 µm (%)	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH1	1.20	1	D													8.2	<0.010		
BH1	2.00	2	D	Firm yellowish brown slightly sandy CLAY with rare gravel. Gravel is fine	20.9	30	16	14	99										
BH2	1.60	1	D	Firm yellowish brown slightly sandy CLAY with rare gravel. Gravel is fine to medium.	17.5	38	16	22	98										
BH2	2.00	2	D													8.6	<0.010		
BH2	3.00	3	D	Firm yellowish brown sandy CLAY with some gravel. Gravel is fine to medium.	20.3	24	16	8.0	96										
BH3	1.20	1	D	Brown slightly sandy CLAY	16.3	30	13	17	100										
BH3	3.00	3	D	Light brown sandy CLAY with some gravel. Gravel is fine to medium.	17.2	21	13	8.0	83										
BH3	5.00	5	D													9.0	<0.010		
TP1	0.60	1	D	Brown sandy CLAY with some gravel. Gravel is fine.	13.9	42	19	23	97										
TP1	2.60	1	B	Orangish brown clayey SAND with some fine to coarse gravel.															Particle Size Distribution SMC of Chalk. Not suitable for intact dry density test

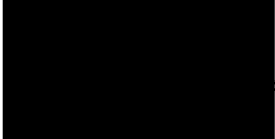
Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  19/09/2018	Project Number: GEO / 28014 Project Name: GREVATTS LANE, CLIMPING 402.05324.00005	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole / Trial Pit	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					(%)	(%)	(%)	(%)	(%)	Mg/m³	Mg/m³		kPa	kPa	kPa		(g/L)	(mg/L)	
TP2A	0.70		D	Brown slightly sandy CLAY with rare gravel. Gravel is fine to medium	11.0	36	14	22	98										
TP2A	2.80	1	B	Yellowish brown sandy CLAY with much flint gravel and few cobbles. Gravel is fine to coarse.	13.8	22	12	10	47										Particle Size Distribution SMC of Chalk. Not suitable for intact dry density test
TP5	3.00	1	B	Cream slighty sandy CLAY with some gravel. Gravel is fine to coarse.	20.9	25	18	7.0	64										Particle Size Distribution
TP6	1.90	1	B	Firm brown mottled light grey slightly sandy CLAY with some flint and chalk gravel. Gravel is fine to medium.	20.3					2.13	1.77								Not suitable for SMC. Intact lump used for density test

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

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	Project Name:		

Tested by Chemtest Ltd : UKAS No 2183

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Page 1 of 1
(Ref 1537370226)

Notes

GEOCLASS

(Ref 1537365033)

BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP BH1
 Sample Ref 2
 Depth (m) 2.00
 Sample Type D

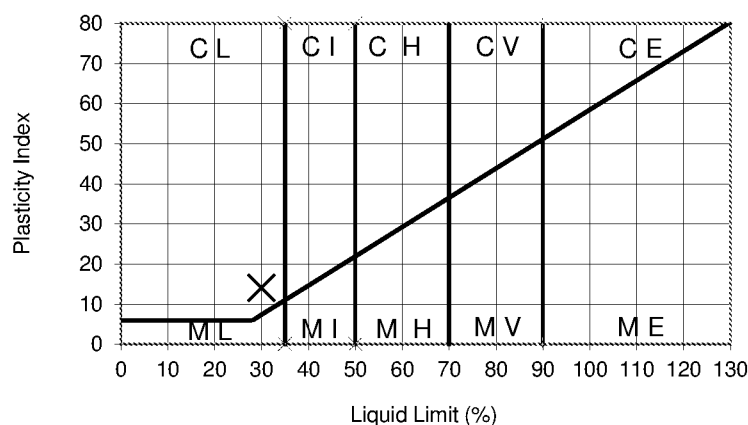
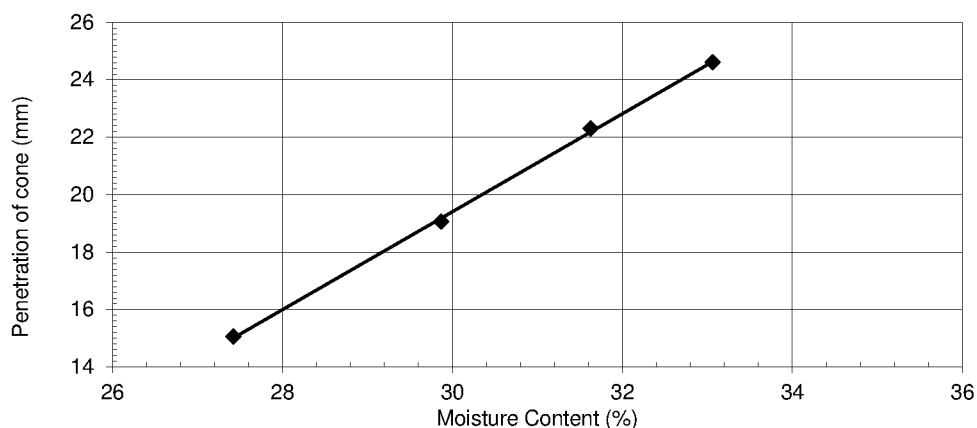
Description:

Firm yellowish brown slightly sandy CLAY with rare gravel.
 Gravel is fine.

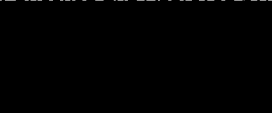
Preparation : Sample as received

Water Content : (BS EN ISO 17892-1:2014) 20.9 %
 Percentage passing 425µm sieve : 99 %
 Liquid Limit : 30 %
 Plastic Limit : 16 %
 Plasticity Index : 14

Equivalent Water Content of material passing 425µm sieve : 21 %
 Liquidity Index : 0.37



Checked and Approved by:


 J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

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Project Name:

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

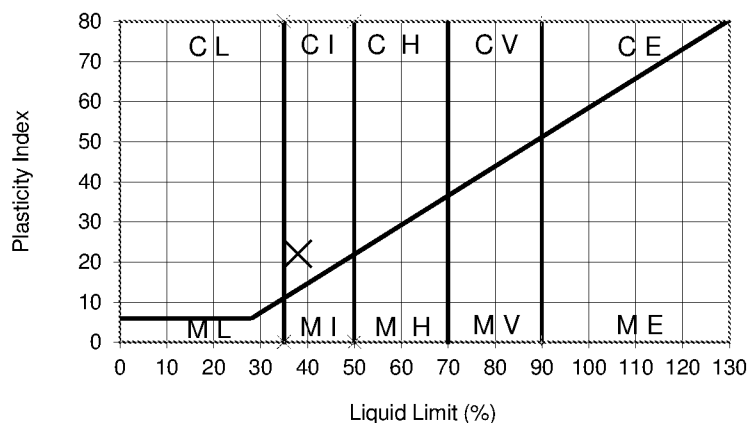
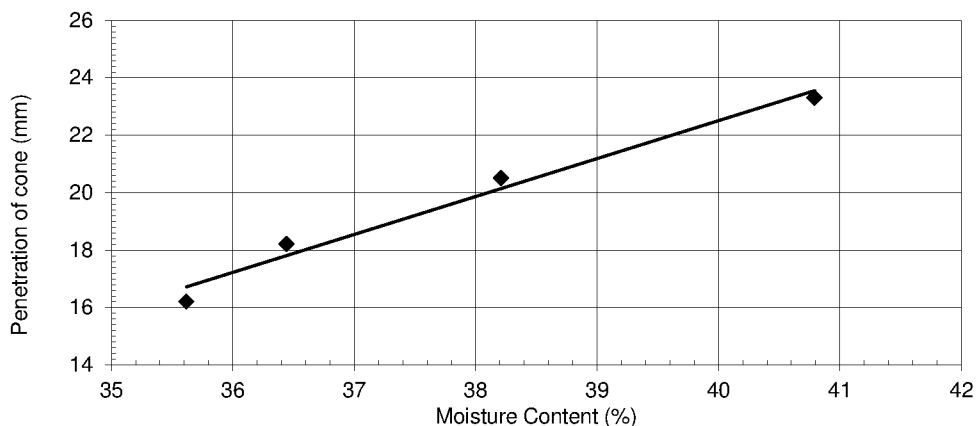
BH / TP BH2
 Sample Ref 1
 Depth (m) 1.60
 Sample Type D

Description:

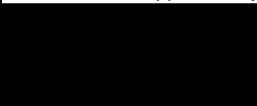
Firm yellowish brown slightly sandy CLAY with rare gravel.
 Gravel is fine to medium.

Preparation : Sample as received

Water Content : (BS EN ISO 17892-1:2014)	17.5 %
Percentage passing 425µm sieve :	98 %
Liquid Limit :	38 %
Plastic Limit :	16 %
Plasticity Index :	22
Equivalent Water Content of material passing 425µm sieve :	18 %
Liquidity Index :	0.09



Checked and Approved by:



J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

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402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP BH2
 Sample Ref 3
 Depth (m) 3.00
 Sample Type D

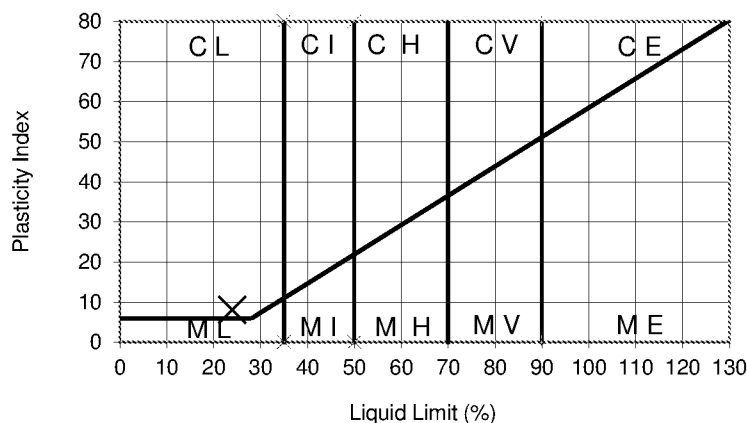
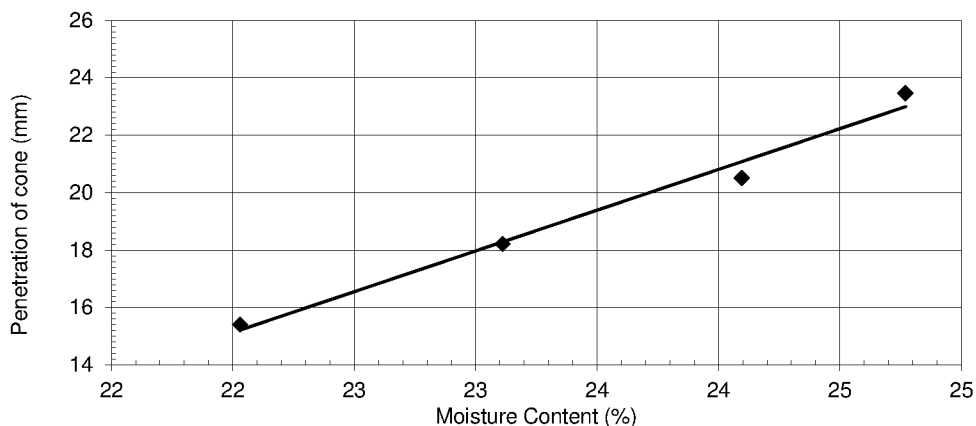
Description:

Firm yellowish brown sandy CLAY with some gravel. Gravel is fine to medium.

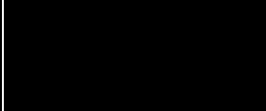
Preparation : Sample washed and air dried

Water Content : (BS EN ISO 17892-1:2014) 20.3 %
 Percentage passing 425µm sieve : 96 %
 Liquid Limit : 24 %
 Plastic Limit : 16 %
 Plasticity Index : 8.0

Equivalent Water Content of material passing 425µm sieve : 21 %
 Liquidity Index : 0.65



Checked and Approved by:



J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

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LIQUID AND PLASTIC LIMITS

BH / TP BH3
 Sample Ref 1
 Depth (m) 1.20
 Sample Type D

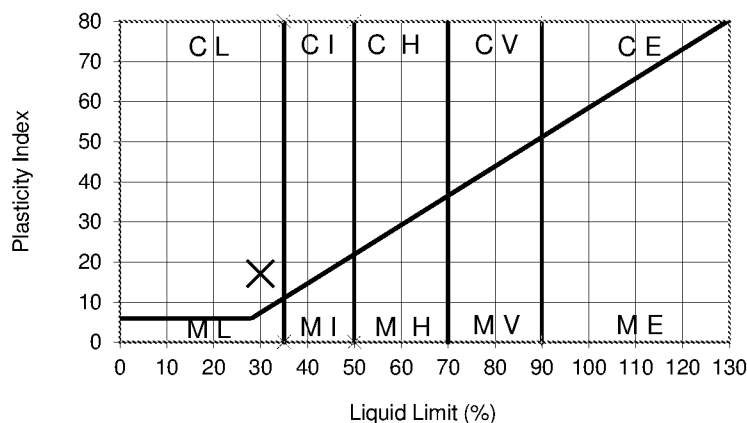
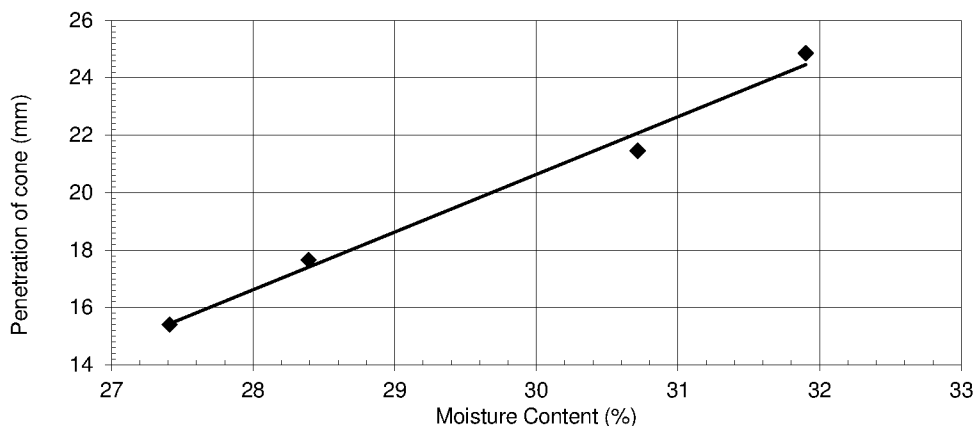
Description:

Brown slightly sandy CLAY.

Preparation : Sample as received

Water Content : (BS EN ISO 17892-1:2014) 16.3 %
 Percentage passing 425µm sieve : 100 %
 Liquid Limit : 30 %
 Plastic Limit : 13 %
 Plasticity Index : 17

Equivalent Water Content of material passing 425µm sieve : 16 %
 Liquidity Index : 0.19



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402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP BH3
 Sample Ref 3
 Depth (m) 3.00
 Sample Type D

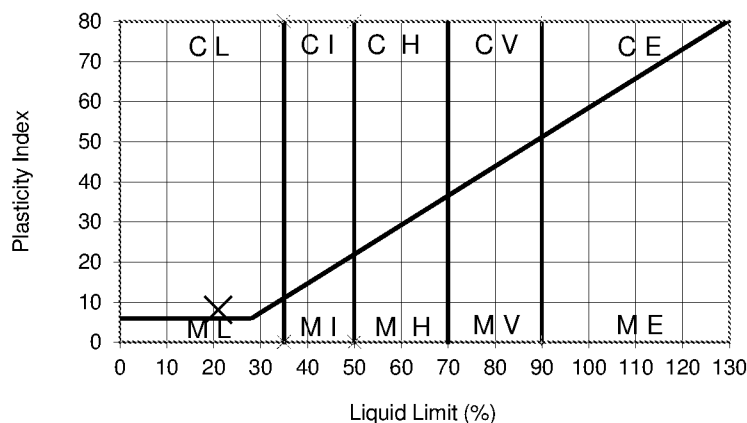
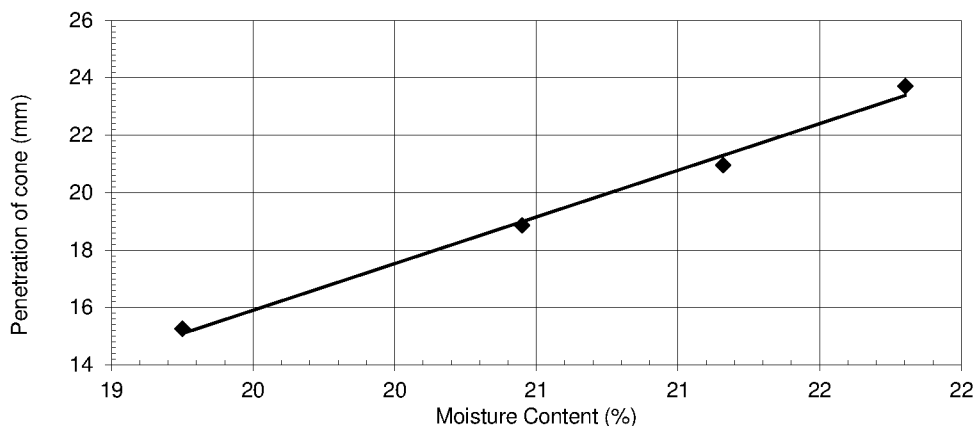
Description:

Light brown sandy CLAY with some gravel. Gravel is fine to medium.

Preparation : Sample washed and air dried

Water Content : (BS EN ISO 17892-1:2014) 17.2 %
 Percentage passing 425µm sieve : 83 %
 Liquid Limit : 21 %
 Plastic Limit : 13 %
 Plasticity Index : 8.0

Equivalent Water Content of material passing 425µm sieve : 21 %
 Liquidity Index : 0.96



Checked and Approved by:

[Signature]
 J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

GREVATTS LANE, CLIMPING
402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP TP1
 Sample Ref 1
 Depth (m) 0.60
 Sample Type D

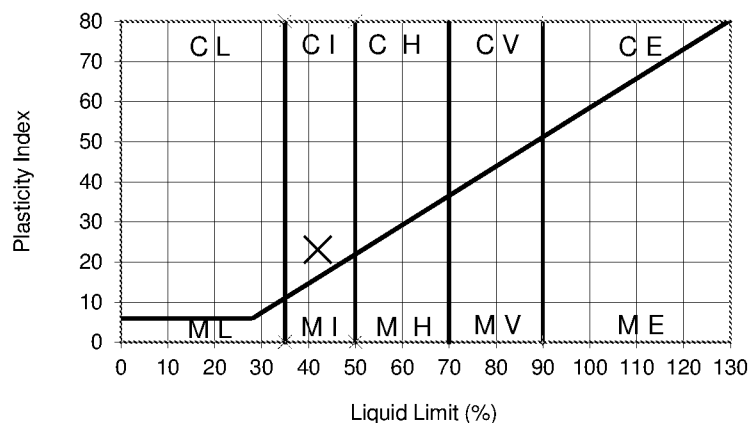
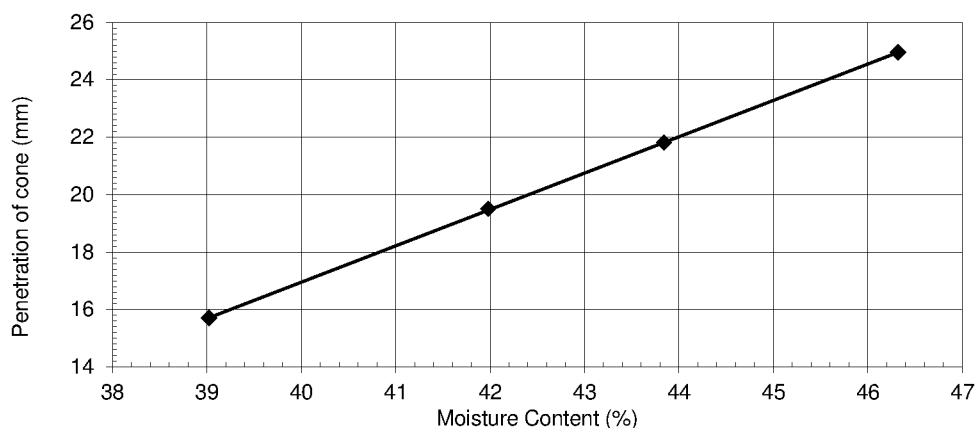
Description:

Brown sandy CLAY with some gravel. Gravel is fine.

Preparation : Sample as received

Water Content : (BS EN ISO 17892-1:2014) 13.9 %
 Percentage passing 425µm sieve : 97 %
 Liquid Limit : 42 %
 Plastic Limit : 19 %
 Plasticity Index : 23

Equivalent Water Content of material passing 425µm sieve : 14 %
 Liquidity Index : -0.20



Checked and Approved by:

[Signature]
 J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

GREVATTS LANE, CLIMPING
402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP TP2A
Depth (m) 0.70
Sample Type D

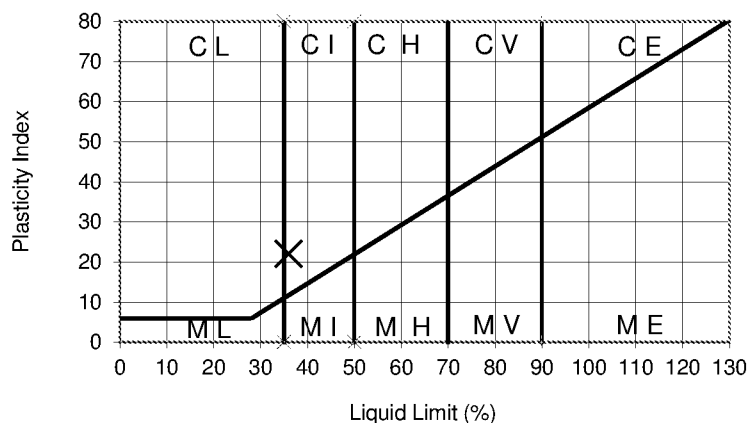
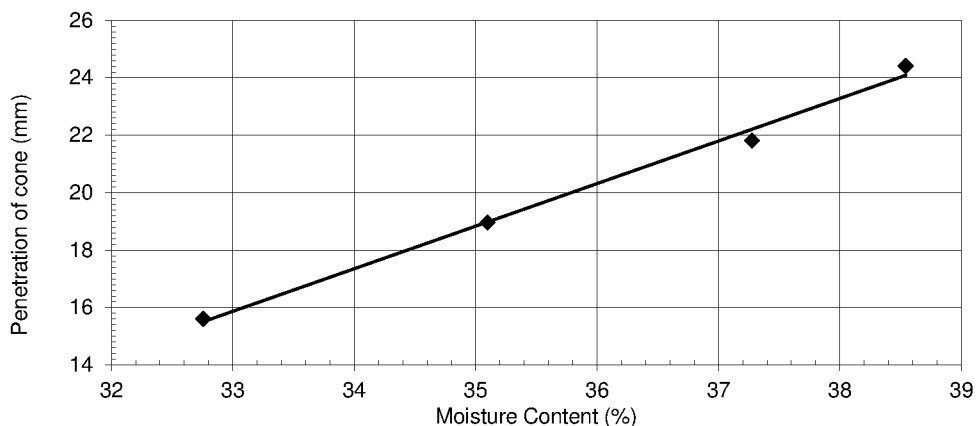
Description:

Brown slightly sandy CLAY with rare gravel. Gravel is fine to medium.

Preparation : Sample as received

Water Content : (BS EN ISO 17892-1:2014) 11.0 %
 Percentage passing 425µm sieve : 98 %
 Liquid Limit : 36 %
 Plastic Limit : 14 %
 Plasticity Index : 22

Equivalent Water Content of material passing 425µm sieve : 11 %
 Liquidity Index : -0.13



Checked and Approved by:

J A Reynolds - Laboratory Manager
19/09/2018

Project Number:

GEO / 28014

Project Name:

GREVATTS LANE, CLIMPING
402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP TP2A
 Sample Ref 1
 Depth (m) 2.80
 Sample Type B

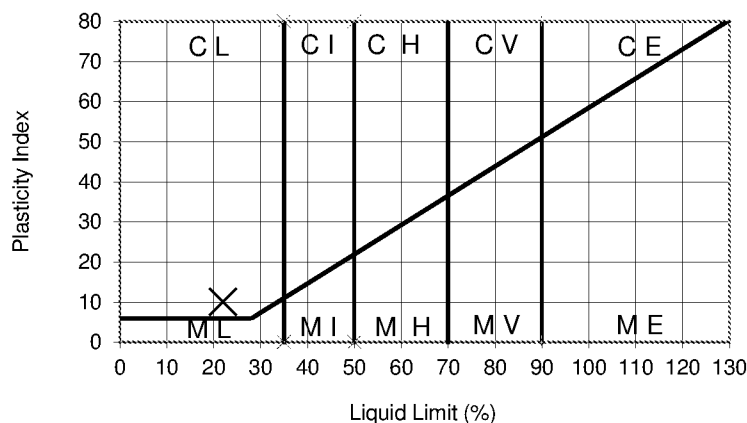
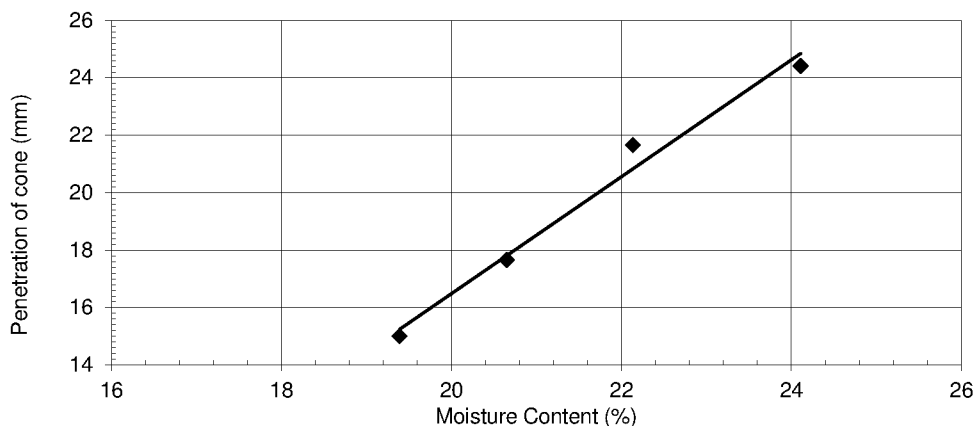
Description:

Yellowish brown sandy CLAY with much flint gravel and few cobbles. Gravel is fine to coarse.

Preparation : Sample washed and air dried

Water Content : (BS EN ISO 17892-1:2014) 13.8 %
 Percentage passing 425µm sieve : 47 %
 Liquid Limit : 22 %
 Plastic Limit : 12 %
 Plasticity Index : 10

Equivalent Water Content of material passing 425µm sieve : 30 %
 Liquidity Index : 1.76



Checked and Approved by:



J A Reynolds - Laboratory Manager
19/09/2018

Project Number:

GEO / 28014

Project Name:

GREVATTS LANE, CLIMPING
402.05324.00005

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BS1377 : Part 2 : 1990 Clauses 4.3 & 5

LIQUID AND PLASTIC LIMITS

BH / TP TP5
 Sample Ref 1
 Depth (m) 3.00
 Sample Type B

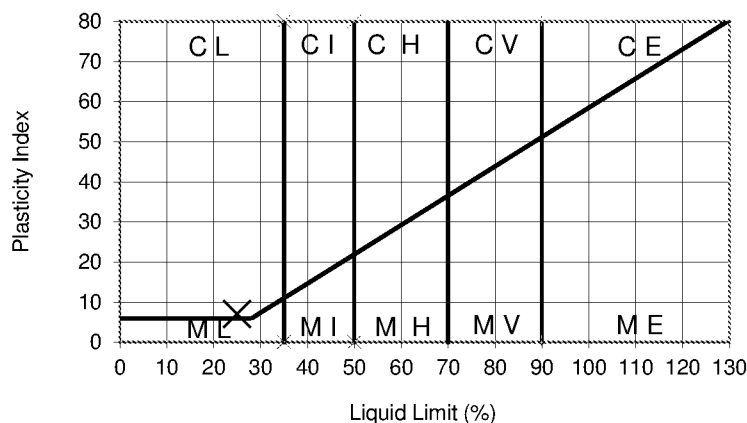
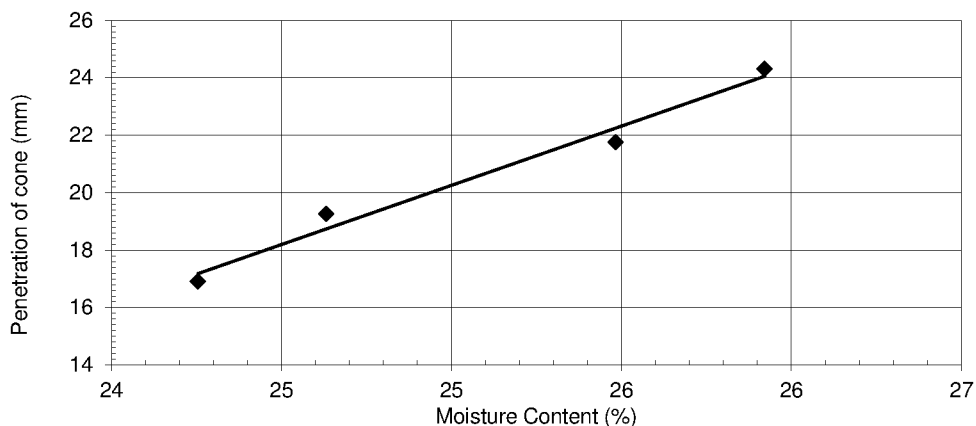
Description:

Cream slightly sandy CLAY with some gravel. Gravel is fine to coarse.

Preparation : Sample washed and air dried

Water Content : (BS EN ISO 17892-1:2014) 20.9 %
 Percentage passing 425µm sieve : 64 %
 Liquid Limit : 25 %
 Plastic Limit : 18 %
 Plasticity Index : 7.0

Equivalent Water Content of material passing 425µm sieve : 33 %
 Liquidity Index : 2.10



Checked and Approved by:

J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

GREVATTS LANE, CLIMPING
402.05324.00005

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PARTICLE SIZE DISTRIBUTION

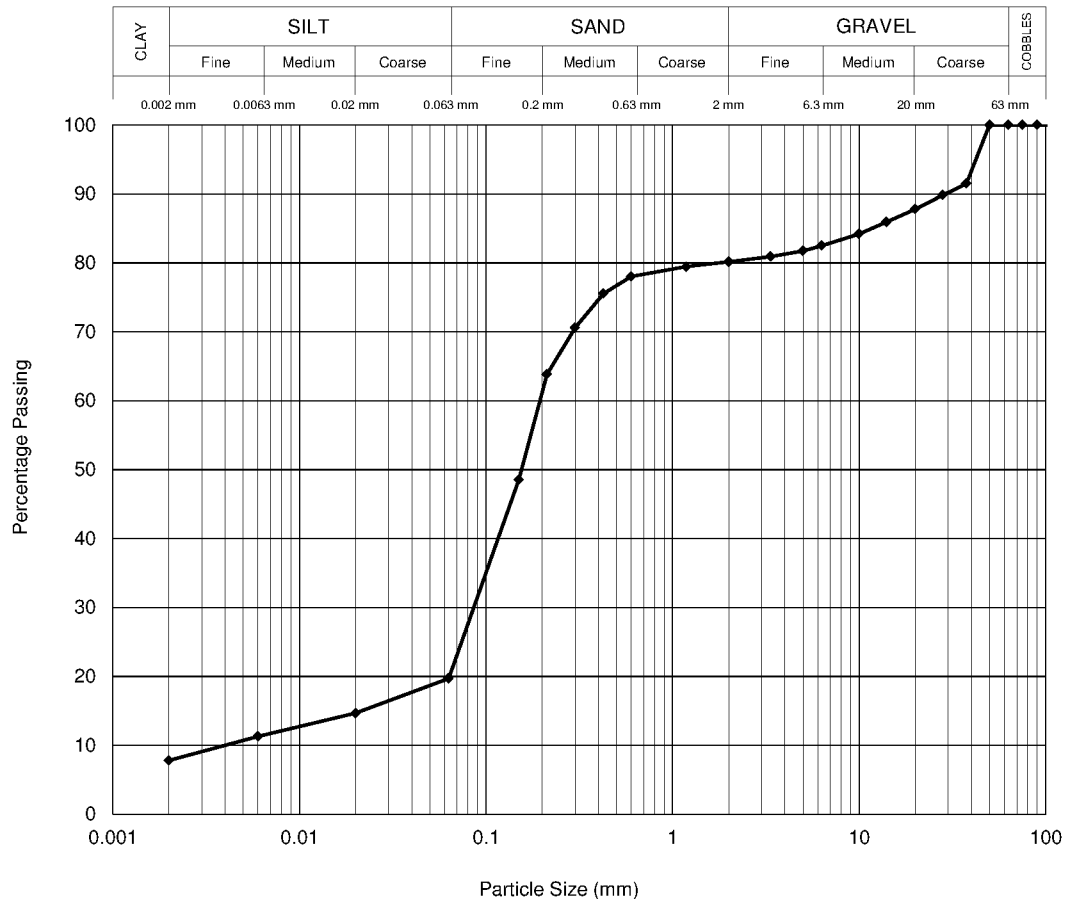
BH / TP No. TP1
 Sample Ref 1
 Depth (m) 2.60
 Sample Type B

Description

Orangish brown clayey SAND with some fine to coarse gravel.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	91
28.0 mm	90
20.0 mm	88
14.0 mm	86
10.0 mm	84
6.30 mm	82
5.00 mm	82
3.35 mm	81
2.00 mm	80
1.18 mm	79
600 µm	78
425 µm	76
300 µm	71
212 µm	64
150 µm	49
63 µm	20



Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	15
6 µm	11
2 µm	8

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0
Gravel	20
Sand	60
Silt	12
Clay	8

Checked and Approved by



J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

**GREVATTS LANE, CLIMPING
 402.05324.00005**

GEOLABS



Test Report By: GEOLABS Limited

Unit D3 HRS Business Park, Granby Avenue, Birmingham, B33 0SJ

Client : SLR Consulting Limited, Treenwood House, Rowden Lane, Bradford on Avon, Wiltshire, BA15 2AU

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 (Ref 1537365331)

PARTICLE SIZE DISTRIBUTION

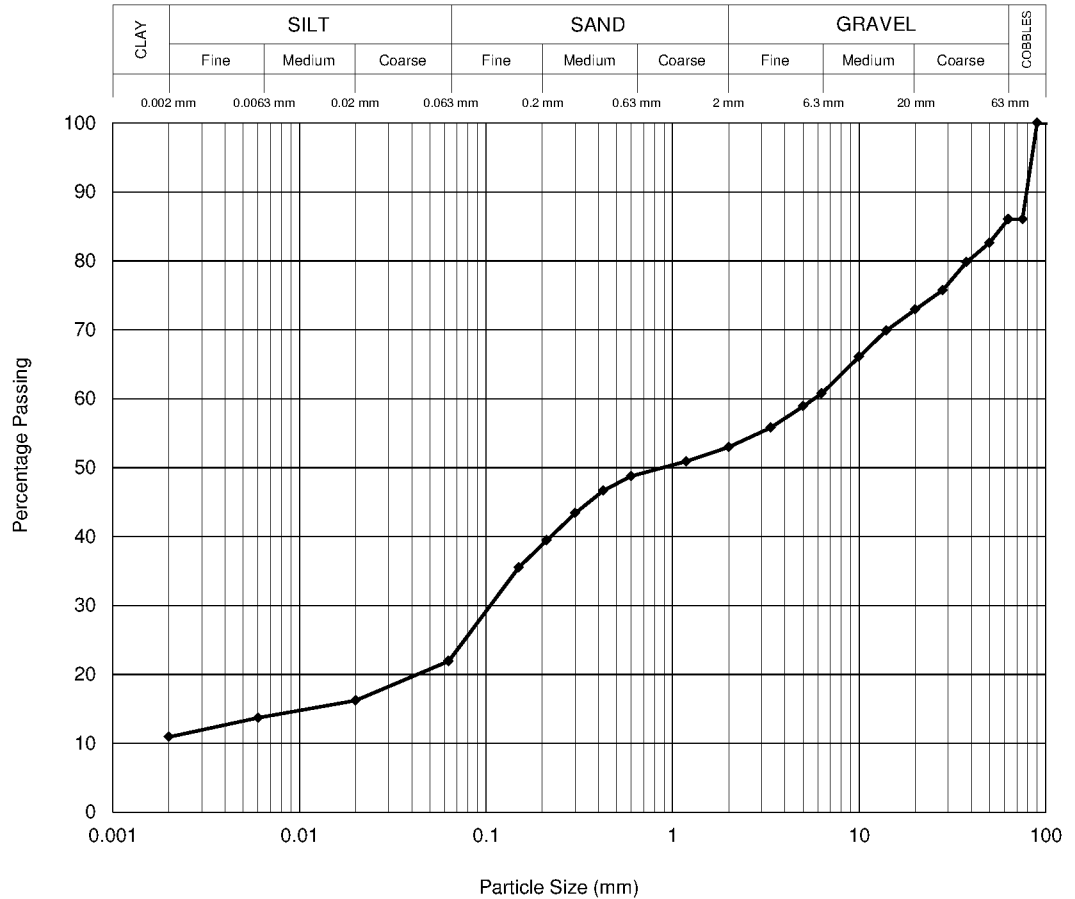
BH / TP No. TP2A
 Sample Ref 1
 Depth (m) 2.80
 Sample Type B

Description

Yellowish brown sandy CLAY with much flint gravel and few cobbles. Gravel is fine to coarse.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	86
63.0 mm	86
50.0 mm	83
37.5 mm	80
28.0 mm	76
20.0 mm	73
14.0 mm	70
10.0 mm	66
6.30 mm	61
5.00 mm	59
3.35 mm	56
2.00 mm	53
1.18 mm	51
600 µm	49
425 µm	47
300 µm	43
212 µm	39
150 µm	36
63 µm	22



Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	16
6 µm	14
2 µm	11

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	14
Gravel	33
Sand	31
Silt	11
Clay	11

Checked and Approved by



J A Reynolds - Laboratory Manager
 19/09/2018

Project Number:

GEO / 28014

Project Name:

**GREVATTS LANE, CLIMPING
 402.05324.00005**

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Page 1 of 1
 (Ref 1537365337)

PARTICLE SIZE DISTRIBUTION

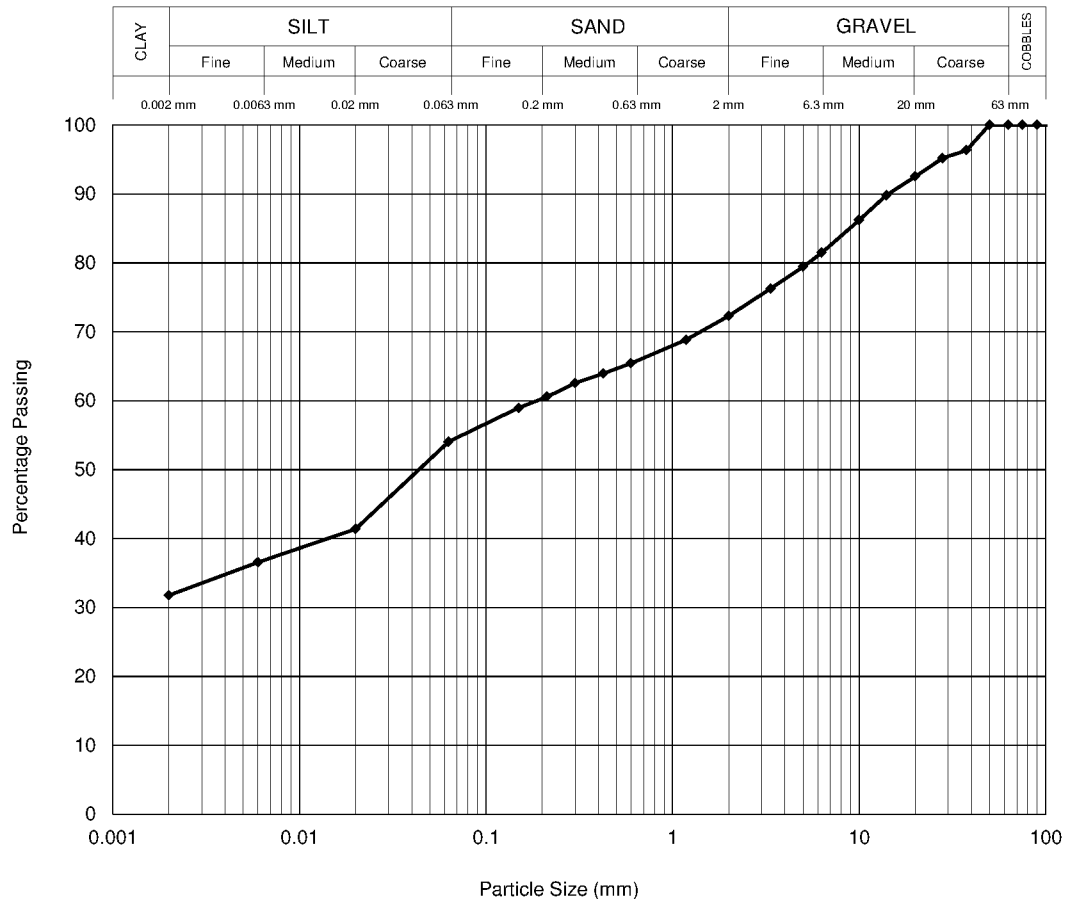
BH / TP No. TP5
 Sample Ref 1
 Depth (m) 3.00
 Sample Type B

Description

Cream slightly sandy CLAY with some gravel. Gravel is fine to coarse.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	96
28.0 mm	95
20.0 mm	93
14.0 mm	90
10.0 mm	86
6.30 mm	81
5.00 mm	79
3.35 mm	76
2.00 mm	72
1.18 mm	69
600 µm	65
425 µm	64
300 µm	63
212 µm	61
150 µm	59
63 µm	54



Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	41
6 µm	37
2 µm	32

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0
Gravel	28
Sand	18
Silt	22
Clay	32

Checked and Approved by



J A Reynolds - Laboratory Manager
 19/09/2018

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 402.05324.00005**



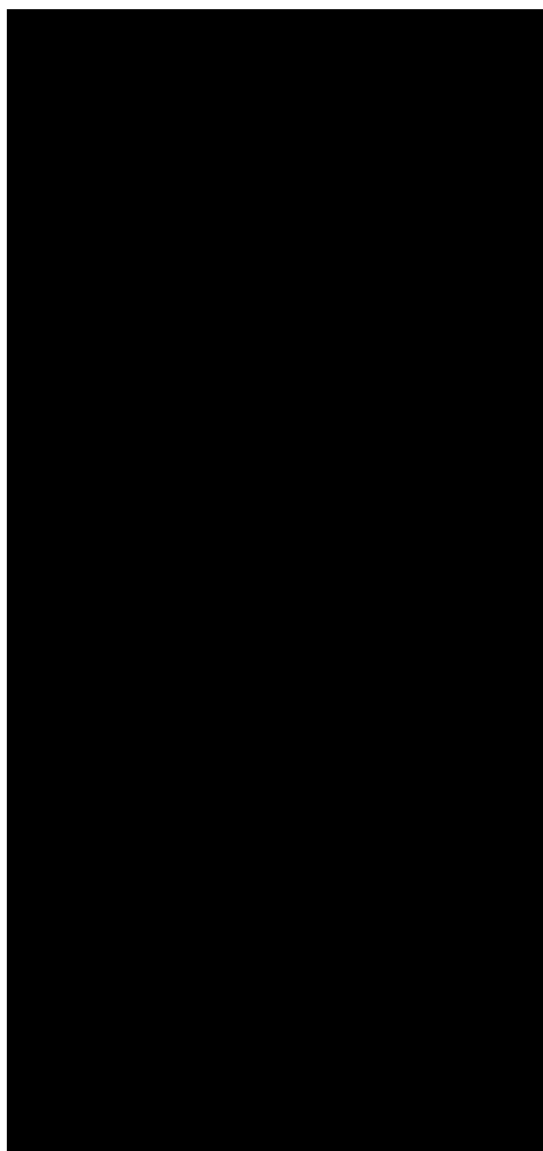
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