

MJH EXECUTIVE HOMES LIMITED

LANGFORD, HORSEMERE GREEN LANE, CLIMPING

SITE INVESTIGATION REPORT
(REVISION 1)

The Granary
White Hall Farm
Long Itchington
Warwickshire
CV47 9PU

March 2020
(R1-September 2020)
Report No. CCL03279.CL23-R1

www.crossfield-consulting.co.uk

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1. INTRODUCTION

It is proposed to redevelop land south of Horsemere Green Lane, Climping for residential purposes. The site is currently occupied by a residential property and associated grounds. The site has historically been associated with agricultural and horticultural usage. The proposed development comprises the construction of two-storey residential properties with associated garden areas, car parking facilities and access road.

Crossfield Consulting Limited has been commissioned to undertake an investigation of the site to identify potential constraints to redevelopment relating to the ground conditions and including a risk-based environmental assessment and recommendations for remediation works, foundations, road pavement design and general construction advice in the context of the above development proposals.

This report presents the information obtained from a desk study and ground investigation. Sections 2 to 4 of the report, together with the associated Figures and Appendices, provides a Ground Investigation Report (GIR), as defined in BS EN 1997-1:2004 and BS EN 1997-2:2007.

A risk-based assessment of potential contamination is included in Section 6 of the report. This assessment makes reference to the desk study, ground investigation information and a Conceptual Site Model. It is considered that the report complies with National Planning Policy Framework and is in general accordance with guidance published by the Environment Agency and the NHBC.

The report also includes information required to form a Geotechnical Design Report as defined in BS EN 1997-1:2004, and the salient information, assessments and recommendations are presented in Sections 8 to 12 of the report, together with the associated Figures and Appendices.

It is considered that the report is suitable for submission in support of a planning application and the report is appropriate to assist in an appraisal of development solutions and costs, together with the preparation of engineering designs for the development. The report also complies with the published guidance relating to the requirements of a Building Control authority.

2. THE SITE

2.1 Location

The site is located off Horsemere Green Lane, approximately 3 km west of Littlehampton town centre, as shown on Figure 1. The National Grid Reference for the site is SU 997 022. The site boundaries are formed by Horsemere Green Lane to the north, residential properties to the east and south and a private access lane to the west, as shown on Figure 2.

2.2 Site Description

The following site description is based on observations made at the time of both phases of ground investigation in December 2019 and March 2020.

The site is generally rectangular in shape and narrows slightly within the southern section, with a total approximate area of 0.5 ha. The site is generally level with some minor variations.

One residential property currently occupies the northern part of the site site. This property is a bungalow of traditional construction with an associated garage. The rest of the site predominantly consists of a private garden. Along the western boundary, a static caravan and also a small concrete surfaced track running north to

south are present. Recent site clearance works have removed all trees from the southern and western sections of the site, such that these areas are now open.

2.3 Site History

The site history has been researched with reference to old editions of the County Series and National Grid Ordnance Survey Plans obtained from Emapsite. Extracts from a selection of these plans are presented in Appendix I. The plans indicate that the following development has taken place on and around the site.

The earliest County Series Plans, dated 1876-1912, identifies that the site and adjoining land was undeveloped and within a field, immediately to the south of Horsemere Green Lane.

From online resources, it is understood that the land to the north of Horsemere Green Lane was developed as an aerodrome in the First World War and then closed in 1920. The aerodrome reopened in 1930 for civil flying and then was used from 1937 until 1958 for military aviation. Civil aircraft continued to use the airfield until all flying finally ceased in 1980.

By publication of the 1937 map edition, a detached property had been constructed on site. Residential properties are also shown to the east and west.

By the 1960s, a works had been constructed, approximately 25 m to the east of the site and by the 1970s a horticultural nursery had been developed to the east of the works.

Part of the former aerodrome, to the northeast of the site was redeveloped as the Rudford Industrial Estate in the 1980s

By 1989, the works to the east of the site had been redeveloped with housing.

No significant changes have occurred on site since the development of the detached property in the 1930s and in the surrounding area since the 1990s.

2.4 Desk Study Enquiries

Enquiries were made to the GroundSure Environmental Database, GroundSure Geological Database and the British Geological Survey regarding the site and surrounding area. Information obtained from these enquiries is presented in Appendix II and summarised below.

There are no active or historical landfills recorded within 500 m of the site. A former scrap yard is recorded approximately 50 m to the east.

Industrial features recorded within 100 m of the site are all located on the Rudford Industrial Estate to the northeast and include a vehicle repair business.

There is one pollution incident recorded that occurred in 2003 and was located 152 m to the northeast of the site. The pollutant is described as oils and fuels and wastes and is recorded to have had a minor impact on the land and water environment. There are no premises determined as Contaminated Land under Part 2A of the Environmental Protection Act (1990) within 500 m of the site.

Hydrogeological information indicates that the superficial deposits, beneath the site, are classified as a 'Secondary A' aquifer. The underlying chalk is classified as 'Principal' strata. The site is not located within a groundwater Source Protection Zone. There are no active groundwater abstraction licences recorded within 1 km of the site.

Hydrological information indicates that there are no surface water features located within 250 m of the site. The site is not located within a flood Zone 2 or Zone 3, as designated by the Environment Agency.

There are no environmentally sensitive land designations located within 500 m of the site.

The BRE Document BR211 – Radon: Guidance on Protective Measures for New Buildings (2015) and Groundsure geological database information indicates that the site is not within an area where radon precautions would be required in new buildings.

3. PUBLISHED GEOLOGY

Geological map data published by the British Geological Survey (BGS) online and in print, on 1:50,000 scale Sheet No. 317/332 Chichester and Bognor indicate that superficial River Terrace Deposits are present on site. The solid strata below the site are indicated to comprise undifferentiated Chalk of the Upper Cretaceous system.

4. GROUND CONDITIONS AND GEOLOGICAL MODEL

4.1 Ground Investigation

Details of the rationale and scope of the ground investigation and laboratory testing, together with exploratory hole logs, monitoring, in situ and laboratory test results, are given in Appendix I. The investigation has identified the presence of the following, below the site.

4.2 Buried Foundations and Services

Buried foundations and services were not encountered within the exploratory holes. Services and foundations will be present on site associated with the current residential property.

4.3 Strata Encountered

Topsoil/Made Ground

Topsoil is present across the site to depths of between 0.1 m and 0.45 m. The materials typically comprise sandy silts and silty clay/clayey silt with occasional fragments of brick, charcoal and concrete recorded.

River Terrace Deposits

Underlying the topsoil are strata considered to be River Terrace Deposits, comprising sandy gravelly clays and silty sands. The River Terrace Deposits have been recorded to depths of between 3.4 m and in excess of 5.0 m.

Upper Cretaceous Chalk strata

Underlying the River Terrace Deposits weathered chalk strata are present to the maximum depth investigated of 5.0 m and comprising Grade Dc structureless chalk (as defined in CIRIA C574).

4.4 Groundwater

Groundwater strikes were recorded within the windowless sample boreholes at depths of between 2.5 m and 3.2 m and as seepages within trial pits between 1.4 m and 2.0 m depth. Subsequent groundwater monitoring data collected from standpipes installed within the boreholes has recorded water depths of between 1.0 m and 1.9 m.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

5. PROPOSED DEVELOPMENT

The proposed development, which is shown on Figure 3, comprises the following:

- Two-storey residential properties with associated private gardens
- Car parking areas and areas of hardstanding
- New access road

6. ASSESSMENT OF POTENTIAL CONTAMINATION AND GROUND GASES

6.1 Assessment Criteria

Assessment of potential contamination and ground gases has been undertaken using a risk assessment based approach, as recommended within the Environmental Protection Act (1990), CLR11 (2004), CLEA Model (2004-2009), BS 10175:2011+A2:2017, CIRIA C552 (2001) and NHBC R&D Report 66 (2008). This approach considers the likely source of contamination, given the history and location of the site, and the possible migration pathways by which these potentially hazardous substances may reach likely receptors, such as end users of the site, controlled waters or the wider environment, in the context of the proposed development.

Part IIA of the Environmental Protection Act (1990) states that

“Contaminated Land is any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) significant pollution of controlled waters is being caused or there is significant possibility of such pollution being caused;”

All risk assessments carried out as part of this investigation have been carried out with respect to the definition of “contaminated land” within Part IIA of the Environmental Protection Act (1990) and have considered the site both before and on completion of the development. The basis of the risk assessment is the Conceptual Site Model, which is derived from the desk study and initial information and identifies potential pollutant linkages that could affect receptors relevant to the site and the wider environment. The Conceptual Site Model is presented in Table 1.

Based on the model, a ground investigation was designed to obtain relevant information to assess the validity of the model. The rationale for the sampling and testing is set out in Appendix I.

6.2 Potential Sources of Contamination

With reference to the site history, the site has previously only been used primarily for agricultural and residential purposes and has not been associated with industrial activities. With respect to potential sources of off-site contamination, no current industrial features or businesses associated with potentially mobile contaminants have been identified within the immediate vicinity of the site. There has been historical works to the east of the site but this was redeveloped as housing by the 1990s and hence no potential source of contamination should be present.

Shallow Made Ground was encountered at one location and there was no visual or olfactory evidence of potentially contaminating material within the Made Ground or the natural strata encountered. Therefore it is considered that there are no sources of on-site contamination that could constrain development at this site and no remediation works are required. It is also noted that there are no changes proposed to the site usage (i.e. the site is residential and will remain residential following development) such that the proposed development does not represent a more sensitive end use compared to the existing land use.

No putrescible material has been identified at the site and there are no recorded landfills within influencing distance. The site is not within an area where precautions against the ingress of radon gas are required in new dwellings. Therefore, it is considered that there are no sources of hazardous ground gases at the site and ground gas protection is not required for the proposed development.

6.3 Pollutant Linkages – Solids and Liquids

Based on the Conceptual Site Model, consideration is given below to identified pollutant linkages and a risk evaluation is undertaken of each possible source-pathway-receptor linkage that may occur at the site. The risk evaluation considers the potential consequences and probability of occurrence in accordance with CIRIA C552 (2001). Where risks are identified as “negligible”, then by implication such risks are within normally accepted levels for the proposed development, and the further reduction of such risks by remediation works is considered unnecessary. Where risks are identified that are “low” as defined in CIRIA C552 (2001), or worse, then consideration is given to the management of the identified risks, with appropriate recommended actions that may include engineering solutions / remediation works as described in the following sections.

6.3.1 Durability of Buried Structures and Services

In view of the low potential sulphate and low soluble sulphate content and near-neutral soil conditions, there are no special precautions required for the protection of good quality buried foundation concrete. Based on guidance within *BRE Special Digest 1* (2005), the specified DC Class of concrete for buried structures and foundations should be suitable for an ACEC site classification of AC-1.

The site has not been associated with past fuel and/or chemical storage and there are no such storage facilities in close proximity. Therefore, the site would not be considered to be ‘brownfield’ under the definition provided by UKWIR (2010) with respect to the assessment of ground for water supply pipes. Based on the guidance provided by UKWIR, conventional plastic materials can be used for potable water supply pipes without any requirements for specific testing.

It should be noted that individual water companies may have in-house requirements for the assessment of ground conditions for potable water supply pipes and these requirements may be in addition to, or may contradict, the guidance provided by UKWIR. Therefore, it is recommended that the relevant water supply company be consulted prior to finalising the potable water supply design.

6.4 Potential Liabilities

On the basis of the above assessment, it is considered that the site does not present a significant risk of harm to end users or the wider environment and retention of the materials currently at the site should not be associated with any liability following completion of the development.

7. ASSESSMENT OF MINING, QUARRYING AND OVERALL GROUND STABILITY

The site is not within an area of recorded underground mining. There are no quarries recorded at, or within the immediate vicinity of, the site. Therefore, the proposed development should not be constrained by ground stability issues associated with mining or quarrying activities.

8. GEOTECHNICAL ASSESSMENT

8.1 Assessment of Foundation Solutions

With reference to the recorded ground conditions and corresponding Geological Model presented in Section 4, characteristic values relating to the geotechnical properties of the strata within influencing distance of the proposed structures are presented in Appendix II. Salient elements of the geotechnical model are outlined below.

Ground conditions at the site generally comprise a limited thickness of topsoil overlying River Terrace Deposits comprising firm (medium strength) consistency clays (locally some sands). Chalk strata are indicated to be present at depth. In addition, shallow groundwater has been recorded at the site.

It is considered that it should be possible to support the proposed development on traditional strip or trench-fill footings placed within the medium strength clays of the River Terrace Deposits. It will be necessary to deepen foundations through any locally soft material and within influencing distance of trees.

8.2 Recommended Foundation Design Parameters

On the basis of the foregoing assessment it is considered that strip fill footings provide the foundation solution that should be compatible with the proposed structure. On the basis of the ground conditions and structures described in the report, the recommended parameters for the foundation design are as follows:

<i>Foundation Strata:</i>	Medium strength clays (River Terrace Deposits) (If encountered: Medium dense sands)
<i>Foundation Depth:</i>	Minimum 0.9 m, deepened through any low strength material and within influence of trees
<i>Foundation Width/Size:</i>	Up to 3.0 m max
<i>Nett Allowable Bearing Pressure:</i>	100 kN/m ²

It is considered that total settlement of foundations designed on the above basis should be less than the normal serviceability limit state for this development (i.e. total settlements of 25 mm) as outlined in the assessment presented in Appendix II.

Laboratory testing results indicate the clayey horizons at the site comprise 'low volume change' potential soils, as defined in NHBC Standards (2020). Within the influence zones of existing or proposed trees, suitable foundation precautions should be adopted, as outlined in NHBC Standards (2020).

Based on guidance published within BRE Special Digest 1 (2005), the specified DC Class of concrete for buried structures and foundations should be suitable for an ACEC site classification of AC-1

8.3 Floor Slab Recommendations

Due to the presence of “low volume change potential” soils beneath the site, it is recommended that allowance be made for the provision of suspended ground floor slabs with an underfloor void of at least 200 mm thickness in the zone of influence of trees, in accordance with NHBC Standards.

8.4 General Construction Advice

All formations should be cleaned, and subsequently inspected by a suitably qualified engineer prior to placing concrete. Should any soft, compressible or otherwise unsuitable materials be encountered they should be removed and replaced by blinding concrete.

Foundation concrete, or alternatively, a blinding layer of concrete, should be placed immediately after excavation and inspection in order to protect the formation against softening and disturbance.

Generally, all formations should be placed wholly within the same material type, unless specific geotechnical inspection and assessment have been undertaken.

Care should be taken to ensure that any field drains encountered are carefully and satisfactorily blocked to prevent water seeping through the drains and into any excavations.

The locations of any trial pits undertaken as part of this investigation should be accurately surveyed in order that their precise locations are known and that appropriate precautions can be taken when building over or near to these locations.

9. TEMPORARY WORKS

Conventional plant is considered appropriate for shallow excavation works at this site. Shallow excavations may remain stable in the short term. However, instability may occur if excavations are left open for extended periods of time, particularly if water is encountered. Support should be provided, or the sides battered back, in any excavations requiring man entry.

Groundwater is present at relatively shallow depth. It is recommended that excavations for substructures and services be kept above the indicated groundwater levels, where possible. If deeper excavations are required, it may be necessary to undertake dewatering. Conventional sump pumping techniques may be considered for shallow excavations within clay strata. However, if water bearing gravels are encountered then it may be necessary to use sheet piles in conjunction with sump pumping or, alternatively, more extensive dewatering systems.

10. ASSESSMENT OF SOAKAWAY DRAINAGE

The in-situ percolation testing, undertaken in accordance with BRE DG365 (2016), confirmed that the near-surface River Terrace Deposit strata, above indicated groundwater levels, generally have low permeability. The test results, as presented in Appendix I, indicate that these strata have an estimated soil infiltration rate of between approximately 1×10^{-5} m/s and less than 1×10^{-6} m/s.

The soakaway testing performed within trial pits indicates that, due to the variable nature of the shallow strata, areas of the site are underlain by strata with an estimated soil infiltration rate of less than 1×10^{-6} m/s. The maximum estimated infiltration values are indicated to be significantly above 1×10^{-6} m/s and a mean value of about 4×10^{-6} m/s is indicated. However, it is noted that, when the first trial pit was refilled with water for a second test, the soil infiltration rate calculated was lower. It is therefore recommended that any permeable paving design is based on soil infiltration rate of no greater than 2×10^{-6} m/s.

The base of any soakaways should be located above the shallowest recorded groundwater levels and soakaway discharges should be located at least 5 m from proposed or existing building foundations (including off-site structures). Significant storage of run-off is likely to be required.

11. ROAD PAVEMENTS

Based on the nature of the shallow soils beneath the site, the guidance published in TRRL LR1132 and with reference to IAN 73/06, it is considered that an Estimated Design Subgrade CBR of 3 % may be used to design road pavements. It is considered that the materials at shallow depth should be regarded as frost susceptible.

12. ASSESSMENT OF MATERIALS FOR WASTE DISPOSAL

There is no requirement to remove soils from site and, therefore, development levels should be set such that soils can be retained and reused on site where possible. Providing development levels are set to accommodate soil arisings (for example, from foundation excavations), such materials would not be classified as waste if retained and re-used on site. However, if materials are in excess to requirements, they should be taken to an appropriately permitted waste facility.

If material is identified for removal to a waste facility, it will be necessary to provide a description of the material to the receiving facility. This information is included in Appendix III. It should be noted that testing for classification purposes or for waste acceptance criteria (WAC) testing to confirm acceptability of the waste may also be required (as noted below).

- Topsoil/Made Ground is likely to be classified as “non-hazardous” waste if taken to a landfill due to the organic content of such materials. Alternatively, these materials could be taken to a recycling facility.
- Natural strata, providing they have not been impacted by potential contaminants, would be classified as “inert” waste without any requirement for laboratory testing.

Waste requires pre-treatment prior to disposal at landfill and this may take the form of physical or chemical treatment to reduce hazards and/or waste volumes. The segregation and screening of waste soils into separate, and appropriately classified, waste streams would satisfy the pre-treatment criteria by ensuring that volumes of each waste category are minimised. Segregation of waste streams is also important to prevent materials being classified within a worse-case category and, therefore, incurring higher disposal costs. Mixing of different waste streams to dilute hazardous properties is not permitted.

It should be noted that the above assessment is provided in accordance with current waste disposal and environmental permitting legislation and guidance documents. However, individual landfills and other waste disposal facilities may have variances in their permit that differs from standard guidance. Waste facilities may also make decisions with respect to accepting waste on a commercial basis. Therefore, landfills or other waste facilities should be approached to confirm that they will accept waste materials prior to finalising waste disposal proposals.

13. SUMMARY

It is proposed to redevelop land south of Horsemere Green Lane, Climping for residential purposes. The site is currently occupied by a residential property and associated grounds. The site has historically been associated with agricultural usage. The proposed development comprises the construction of two-storey residential properties with associated garden areas, car parking facilities and access road.

Ground conditions at the site comprise a layer of topsoil present across the whole site to depths of between 0.1 m and 0.5 m. Made Ground has been identified at one location comprising topsoil charcoal fragments and some man-made inclusions. Such materials were encountered at between 0 m to 0.5 m depth. Below the topsoil firm, medium strength sandy clays and medium dense sands considered to be River Terrace Deposit strata have been proven to depths of between 3.4 m and 5.0 m. Upper Cretaceous Chalk strata underlie the River Terrace Deposits and have been proven at two locations to 5.0 m depth. In addition, shallow groundwater has been recorded at the site.

Based on historical maps and information from regulatory authorities, a conceptual site model has been developed that has not identified valid potential pollutant linkages. The ground investigation has confirmed that there are no valid pollutant linkages relating to end users, construction workers or neighbours/the public. No unacceptable risks to controlled waters have been identified. It is evident that no viable source of ground gas emission is present and ground gas precautions should not be necessary for the proposed development.

It should be feasible to support the proposed residential development on conventional strip or trench fill foundations placed in medium strength River Terrace Deposits. These foundations will require to be deepened in the influencing distance of trees.

River Terrace Deposit strata are of relatively low permeability and, therefore, have a relatively low infiltration rate such that, whilst permeable paving could be considered as a drainage solution for the proposed development, significant storage capacity is likely to be required.

REFERENCES

BRE (2005) *Special Digest 1 – Concrete in aggressive ground*, CRC Ltd

BRE (2015) *BR211 – Radon: Guidance on protective measures for new buildings* BRE Press

BRE (2016) *DG365 – Soakaway Design* IHS

BSI (2015) *BS 5930:2015 Code of Practice for Site Investigations* British Standards Institution

BSI (2017) *BS 10175:2011+A2:2017 Code of Practice for Investigation of Potentially Contaminated Sites* British Standards Institution

BSI (2004) *BS EN1997-1:2004 Eurocode 7: Geotechnical Design – Part 1: General Rules* British Standards Institution

BSI (2007) *BS EN1997-2:2007 Eurocode 7: Geotechnical Design – Part 2: Ground Investigation and Testing* British Standards Institution

CIRIA (2001) *CIRIA C552 – Contaminated Land Risk Assessment: A Guide to Good Practice* Construction Industry Research Association

CIRIA (2016) *C753 SuDs Design Manual for England and Wales* Construction Industry Research Association

Environment Agency (2004) *Model Procedures for the Management of Land Contamination CLR11* EA

Environment Agency (2010) *Guiding Principles for Land Contamination – GPLC1 to 3* EA

Highways Agency (2009) *Interim Advice Note 73/06 Revision 1 – Design Guidance for Road Pavements (Draft HD25)* HA

Ministry of Housing, Communities and Local Government (2019) *National Planning Policy Framework*

NHBC (2020) *Standards* National House Building Council

TRRL (1989) *LR1132 – The Design of Bituminous Road Pavements* Transport and Road Research Laboratory

UKWIR (2010) *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites Report Ref. No. 10/WM/03/21* UK Water Industry Research

GENERAL NOTES

1. This report is provided in the context of the stated development proposals and should not be used in a different context.
2. The accuracy of map extracts cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
3. Any borehole data from the British Geological Survey sources are included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation.
4. Where any data supplied by the Client or by other external sources, including previous site investigation data, have been used it has been assumed that the information is correct unless otherwise stated. No responsibility can be accepted by Crossfield Consulting Limited for inaccuracies within the data supplied by others.
5. Exploratory hole locations provided in the report are generally established by tape measurement from existing features or boundaries. Hole locations are not accurately surveyed and ground levels at these locations are not obtained unless specifically requested.
6. Any assessments made in this report are based on the ground conditions indicated by the trial pits and/or boreholes, together with the results of any field or laboratory testing undertaken and, where appropriate, other relevant site data which may have been obtained for the site. Variations in ground conditions may occur between exploratory hole locations and there may be special conditions appertaining to the site which have not been revealed by the investigation and which have not been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available.
7. The report is provided for the sole use by the Client or its assignees and is confidential to the Client's professional advisers. No responsibility whatsoever for the contents of this report will be accepted to any person other than the Client or its assignees.
8. New information, improved practices and legislation may necessitate an alteration to the report in whole, or in part, after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Crossfield Consulting Limited for re-assessment and, if necessary, re-appraisal.

TABLES

TABLE 1

CONCEPTUAL SITE MODEL

Potential Contaminant Source	Potential Pathway	Receptors and Assessed Pollutant Linkage
Solids <i>On-site:</i> <i>Toxic metals:</i> No realistic source identified <i>Phototoxic metals:</i> No realistic source identified <i>Polyaromatic Hydrocarbons:</i> No realistic source identified <i>Asbestos:</i> No realistic source identified <i>Off-site:</i> No realistic source identified Liquids No realistic liquid source identified within desk study information. Gases <i>Landfill gases:</i> No realistic potential source identified <i>Putrescible Material/Thick Made Ground:</i> No evidence to suggest that such materials should be expected at significant depth beneath the site <i>Radon:</i> The site is not located within a radon affected area.	Movement of Solids Not applicable (No source). Release into Liquid Phase Not applicable (No source). Release into Vapour Phase Not applicable (No source) Movement of Liquids Not applicable (No source). Movement of Gases Not applicable (No source).	Human Health <i>End Users:</i> No pollutant linkage <i>Construction Workers:</i> No pollutant linkage <i>Adjacent Properties:</i> No pollutant linkage Buried Structures & Services No pollutant linkage Landscape & Garden Areas No pollutant linkage Controlled Waters <i>Groundwater:</i> Principal Aquifer in solid strata - No pollutant linkage <i>Surface Water:</i> No pollutant linkage Human Health No pollutant linkage

NOTES

1. The above conceptual model is based on CIRIA C552 (2001) and BS 10175:2011+A2:2017.
2. The Conceptual Site Model is prepared from available desk study information. Where a site walkover or ground investigation identifies information that was not known at the desk study stage, such information is used to modify the Model.

FIGURES

FIGURE 1



SITE LOCATION PLAN

Scale 1: 50,000

Reproduced from the 2012, 1:50,000 Ordnance Survey map with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright. Licence No.100014660

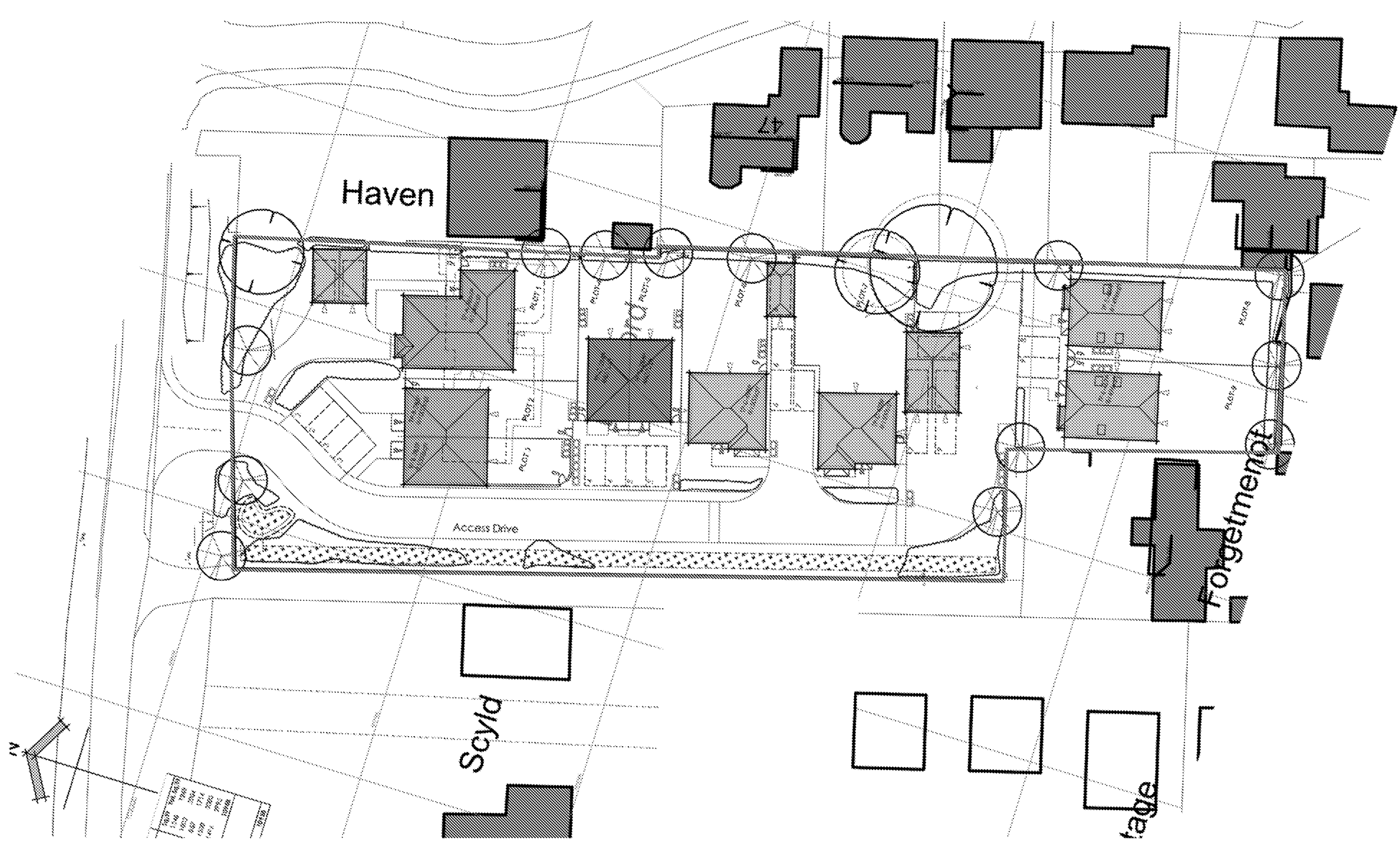
FIGURE 2



SITE PLAN
Not to Scale

Google Maps

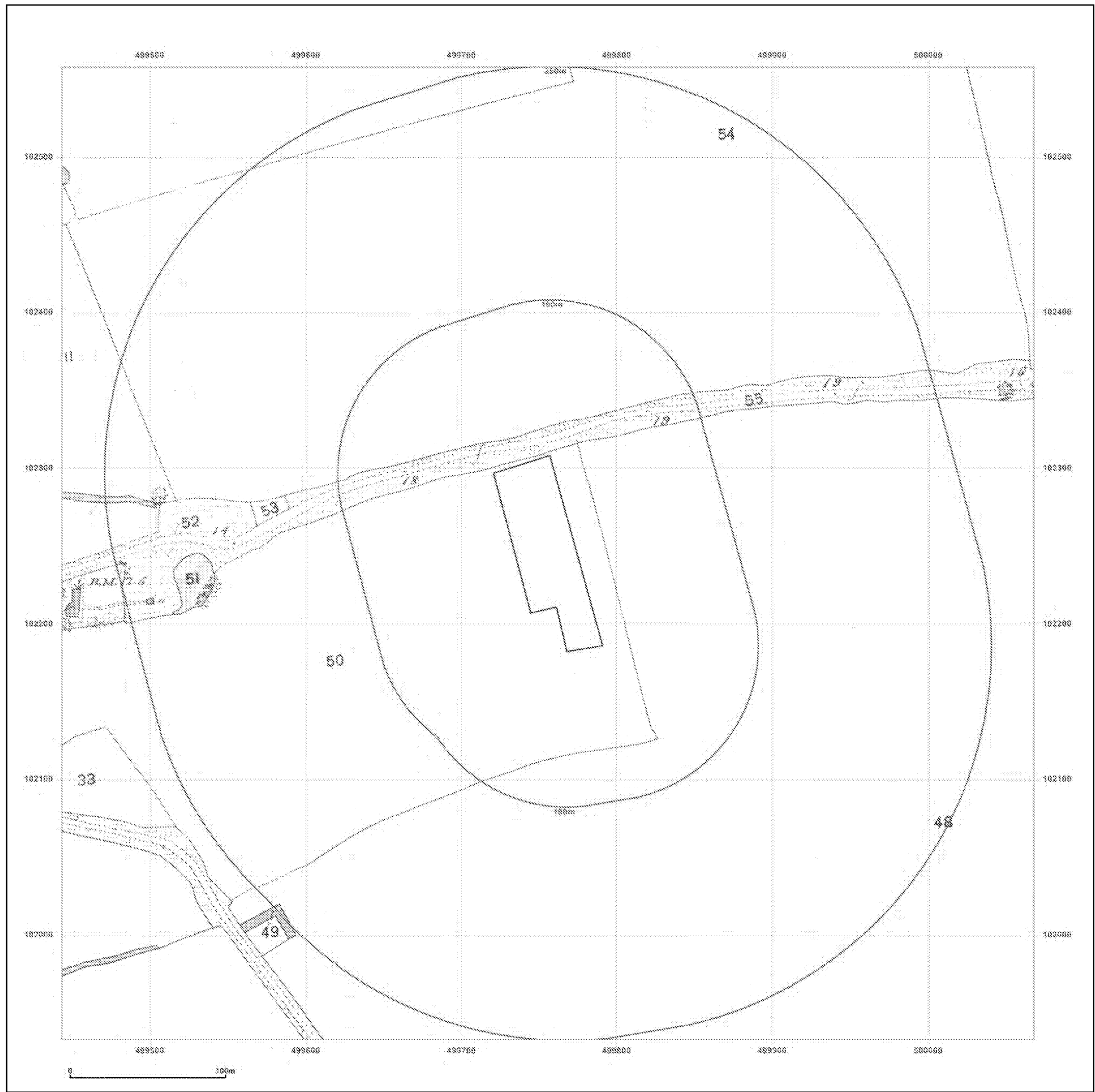
FIGURE 3



PROPOSED DEVELOPMENT PLAN
Scale 1:500

Reproduced from the 1:500 scale Site Layout by Carlton Design Partnership dated 03/12/2019. Drg No. 190725/SL-01

APPENDIX I



emapsite™

Site Details:

Langford, Horsemere Green
Lane, Climping, BN17 5QZ

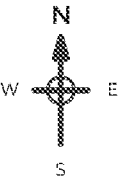
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Map Name: County Series

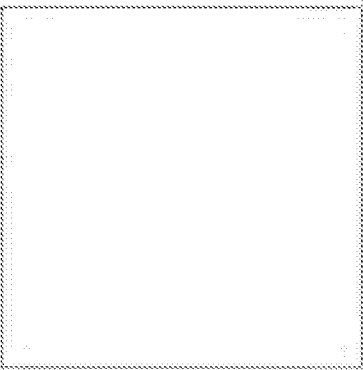
Map date: 1876

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1876
Revised 1878
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

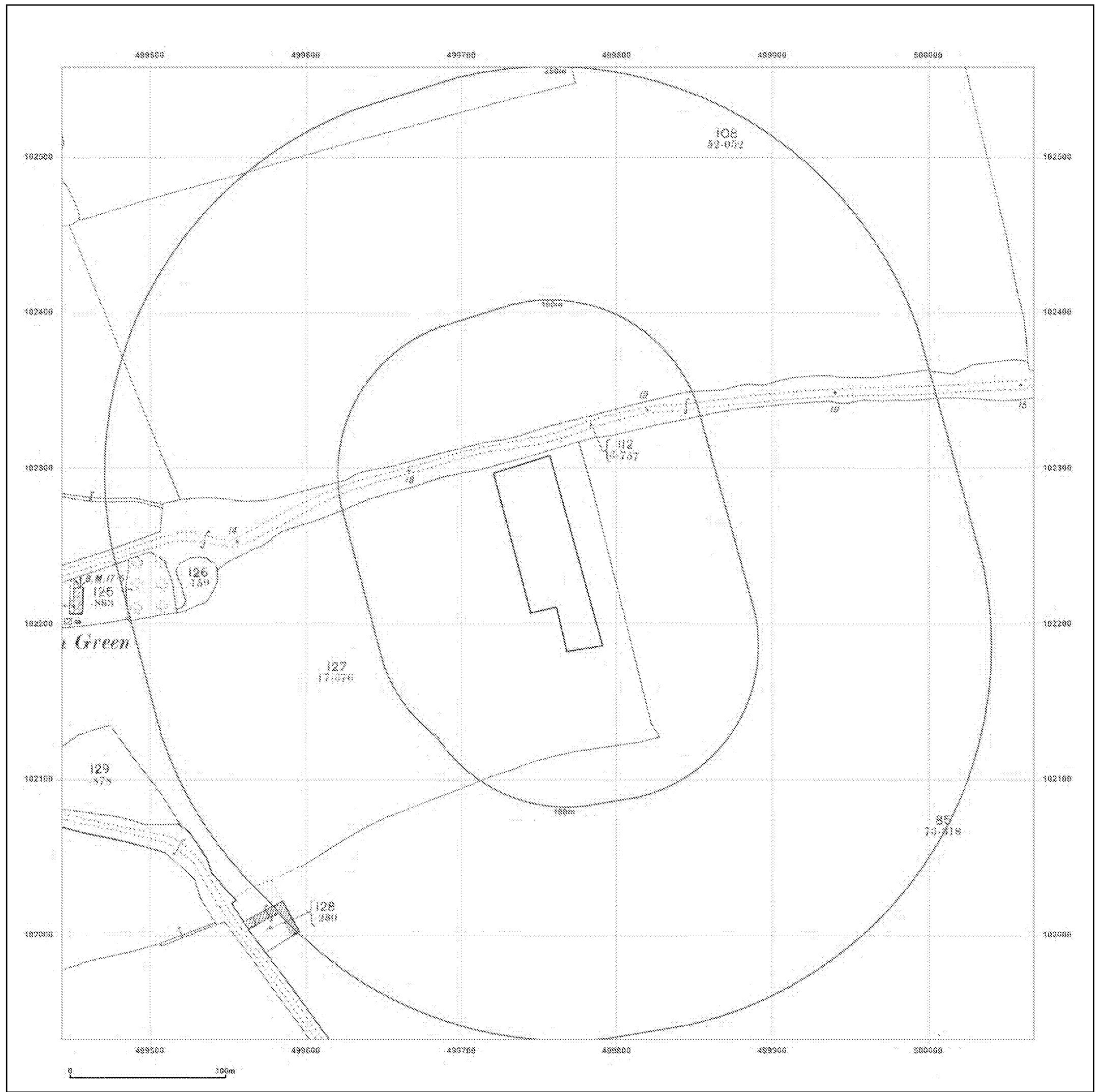


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Production date: 11 September 2020

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



emapsite™

Site Details:

Langford, Horsemere Green
Lane, Climping, BN17 5QZ

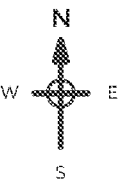
Client Ref: EMS_633242_842204
Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: County Series

Map date: 1898

Scale: 1:2,500

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Surveyed 1898
Revised 1898
Edition N/A
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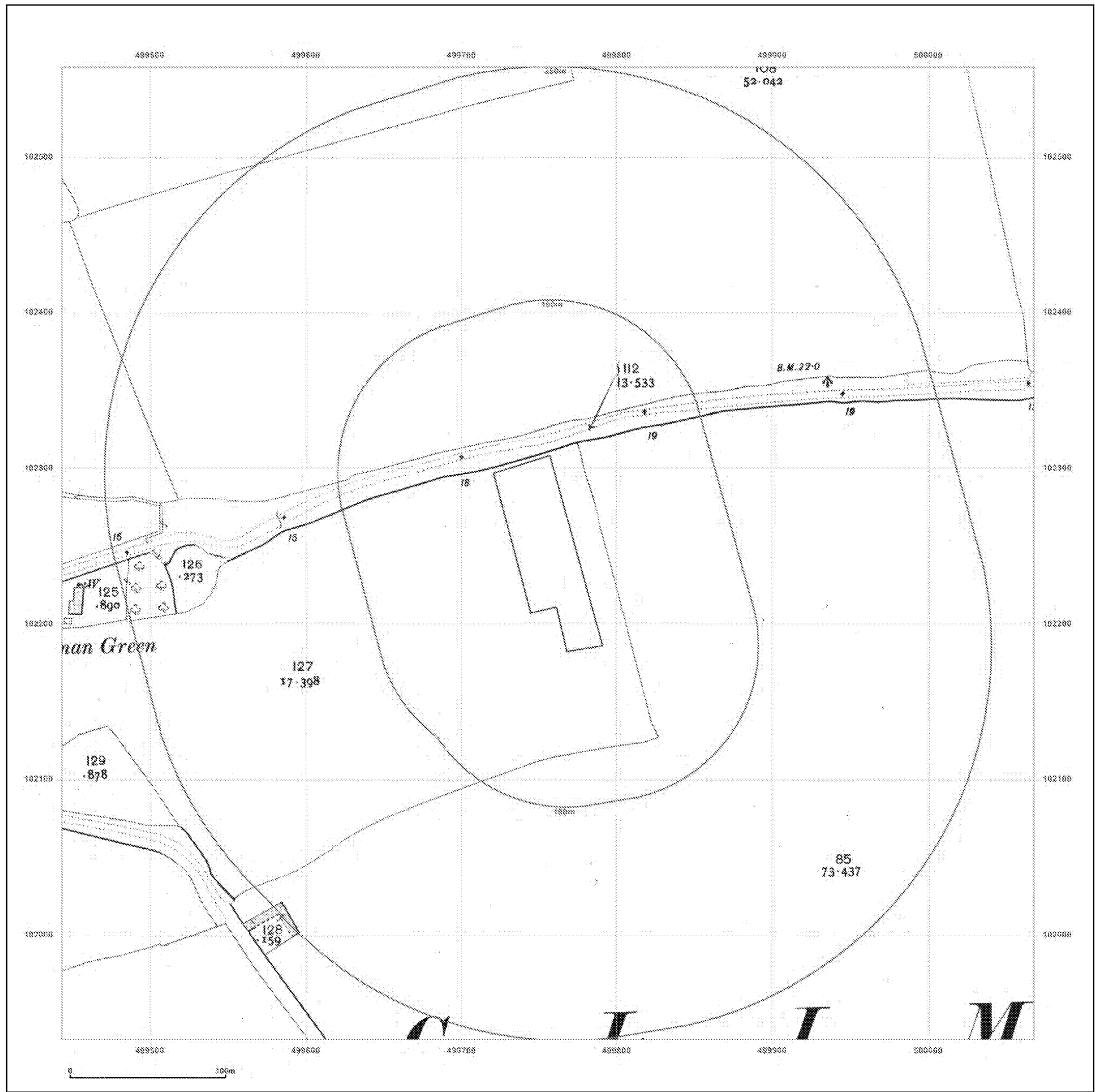


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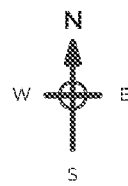
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Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: County Series

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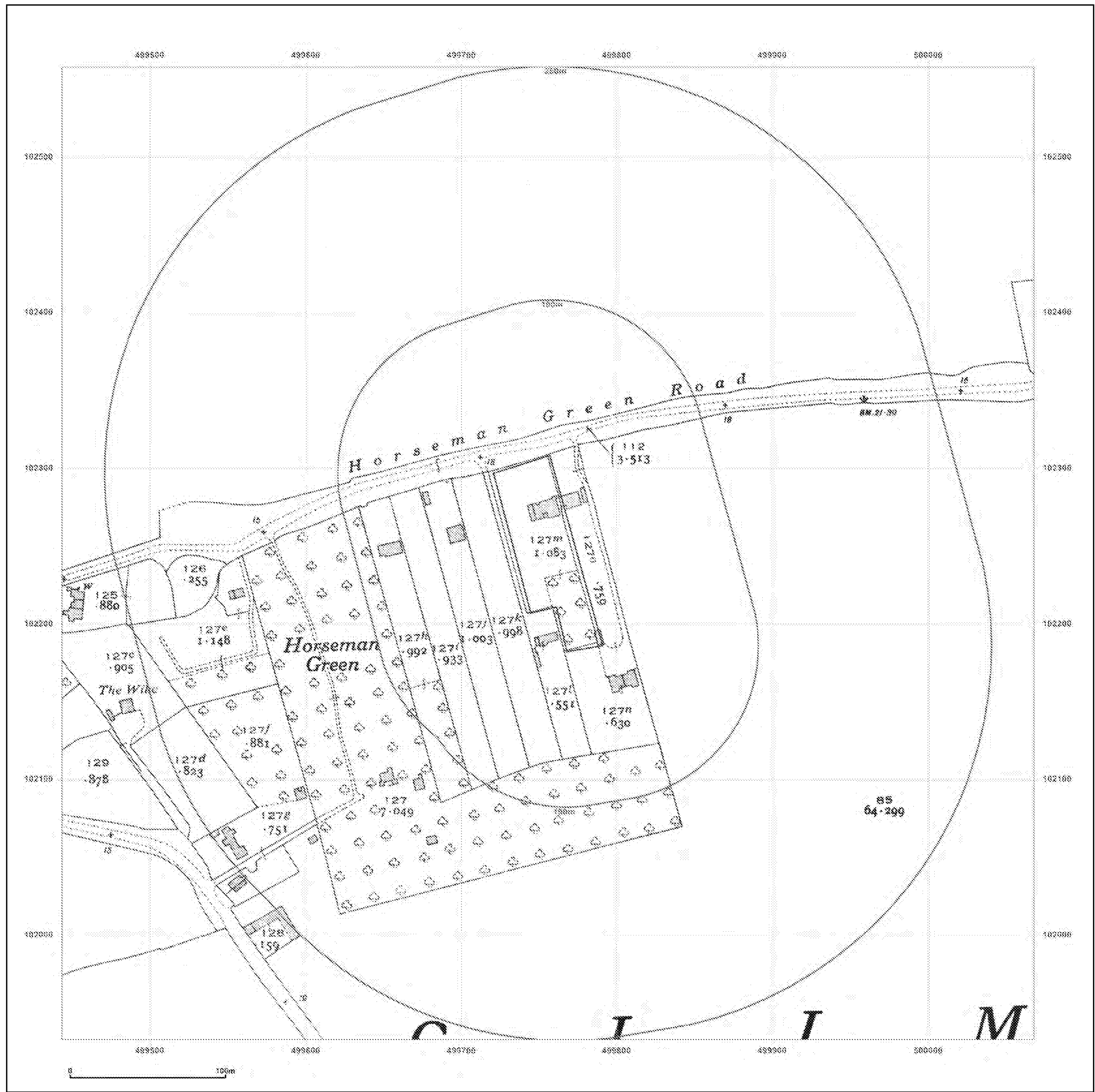


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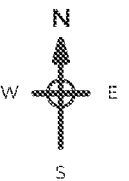
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Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1937
Edition N/A
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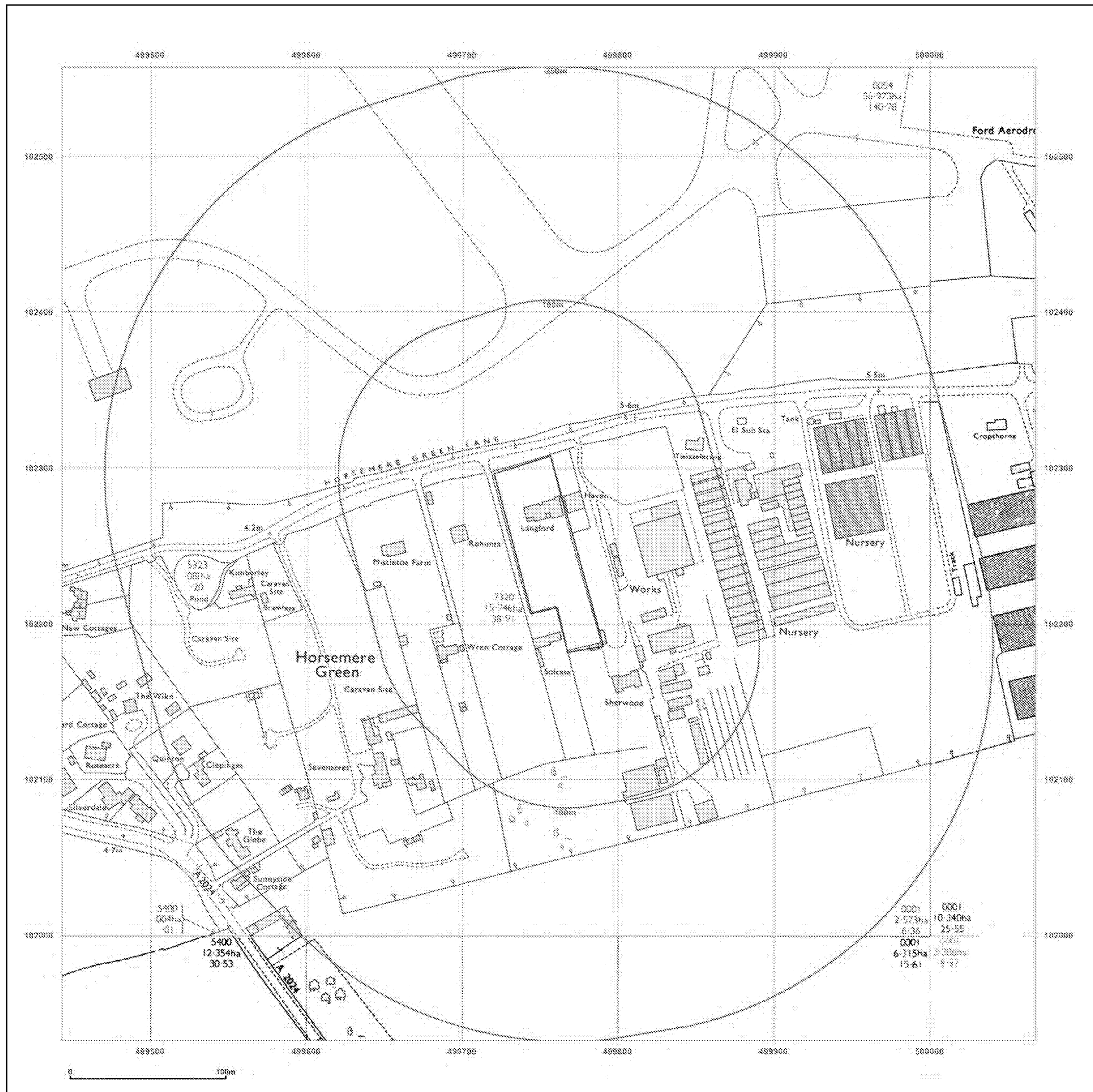


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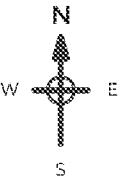
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Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid

Map date: 1972-1974

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
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Surveyed N/A
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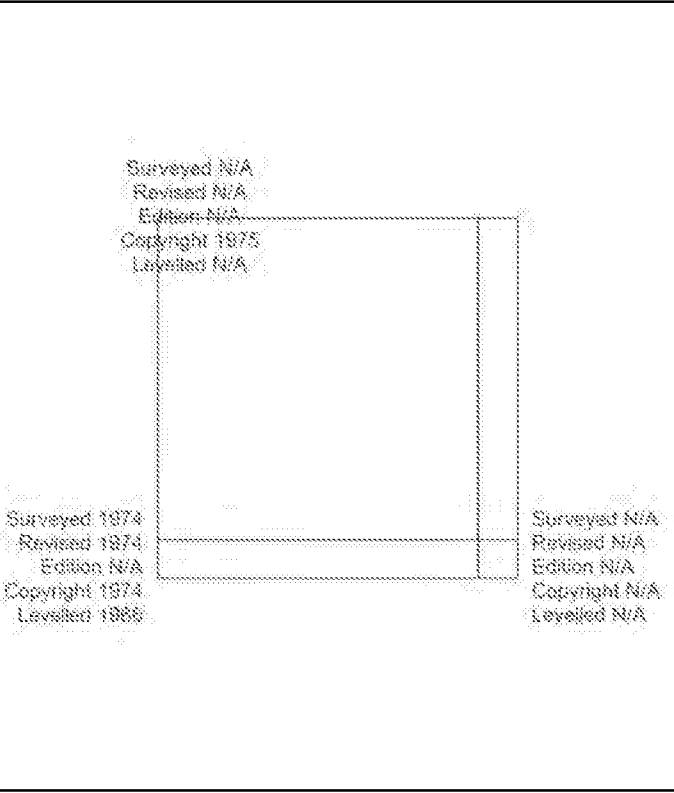


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Client Ref: EMS_633242_842204
Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid
Map date: 1973-1975
Scale: 1:2,500
Printed at: 1:2,500



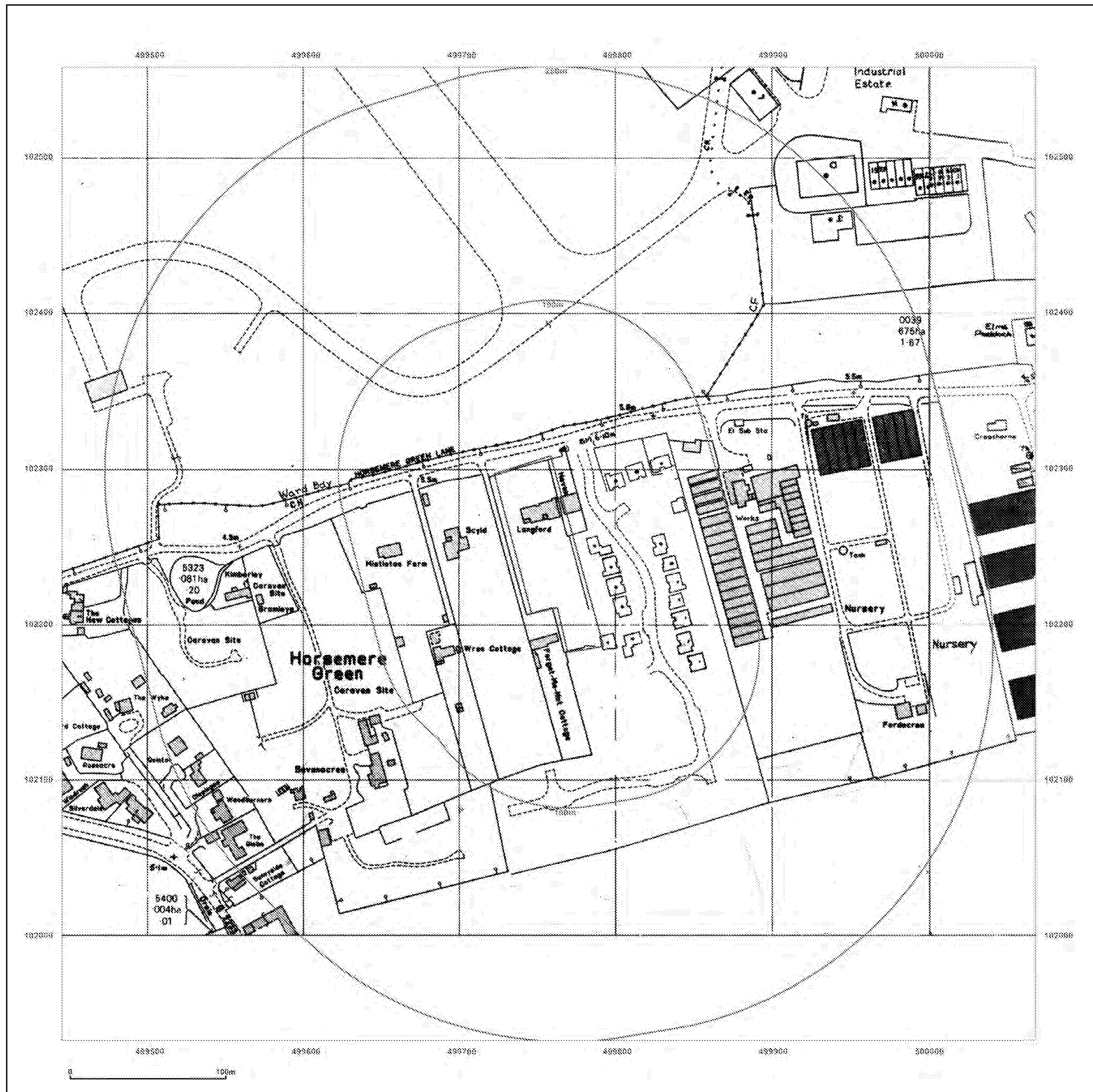
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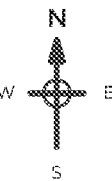
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Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid

Map date: 1988-1989

Scale: 1:2,500

Printed at: 1:2,500



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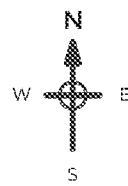
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Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



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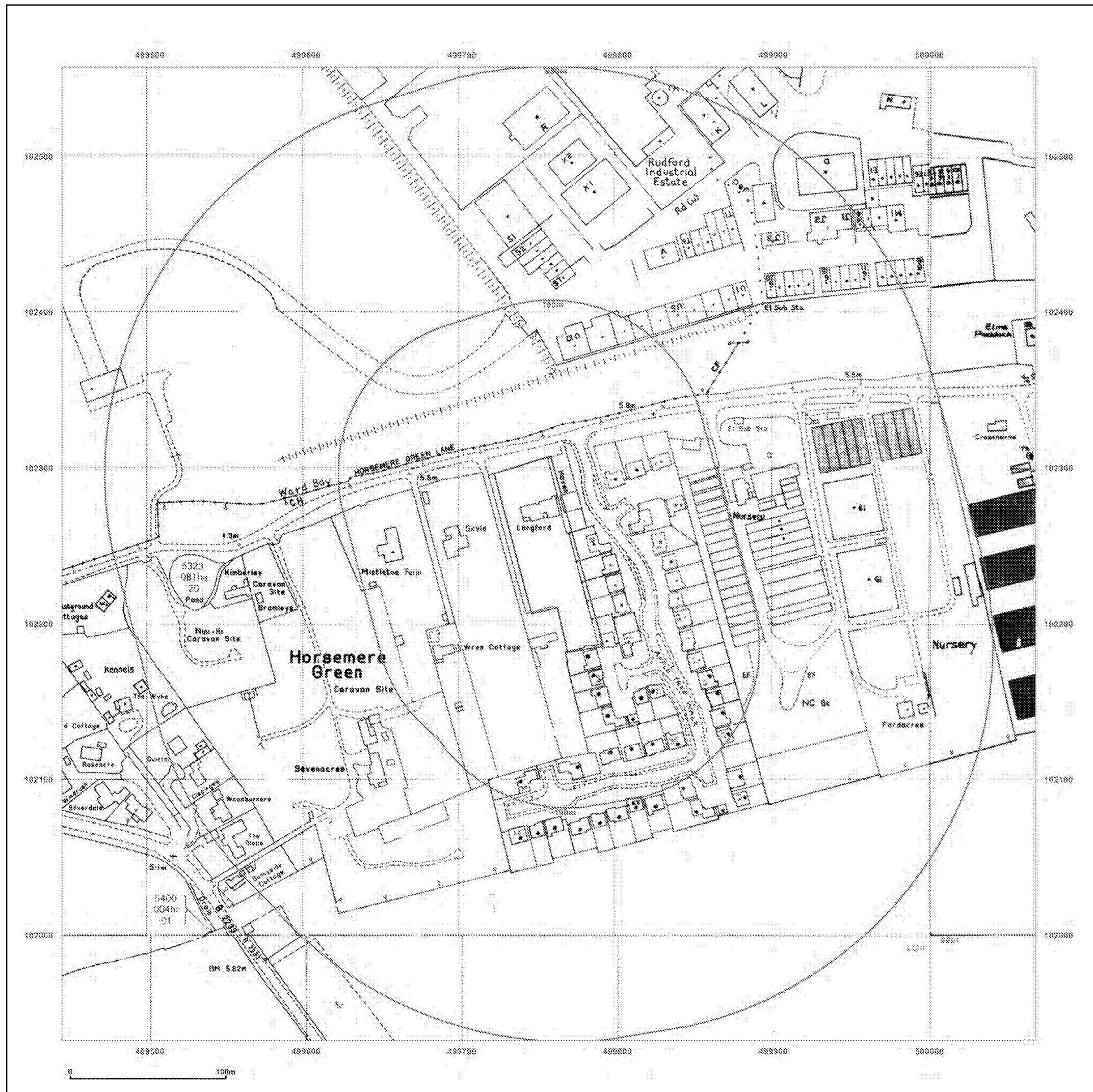


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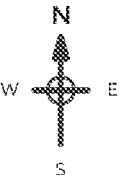
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Client Ref: EMS_633242_842204
Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid
Map date: 1989-1994
Scale: 1:2,500
Printed at: 1:2,500



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Revised 1983
Edition N/A
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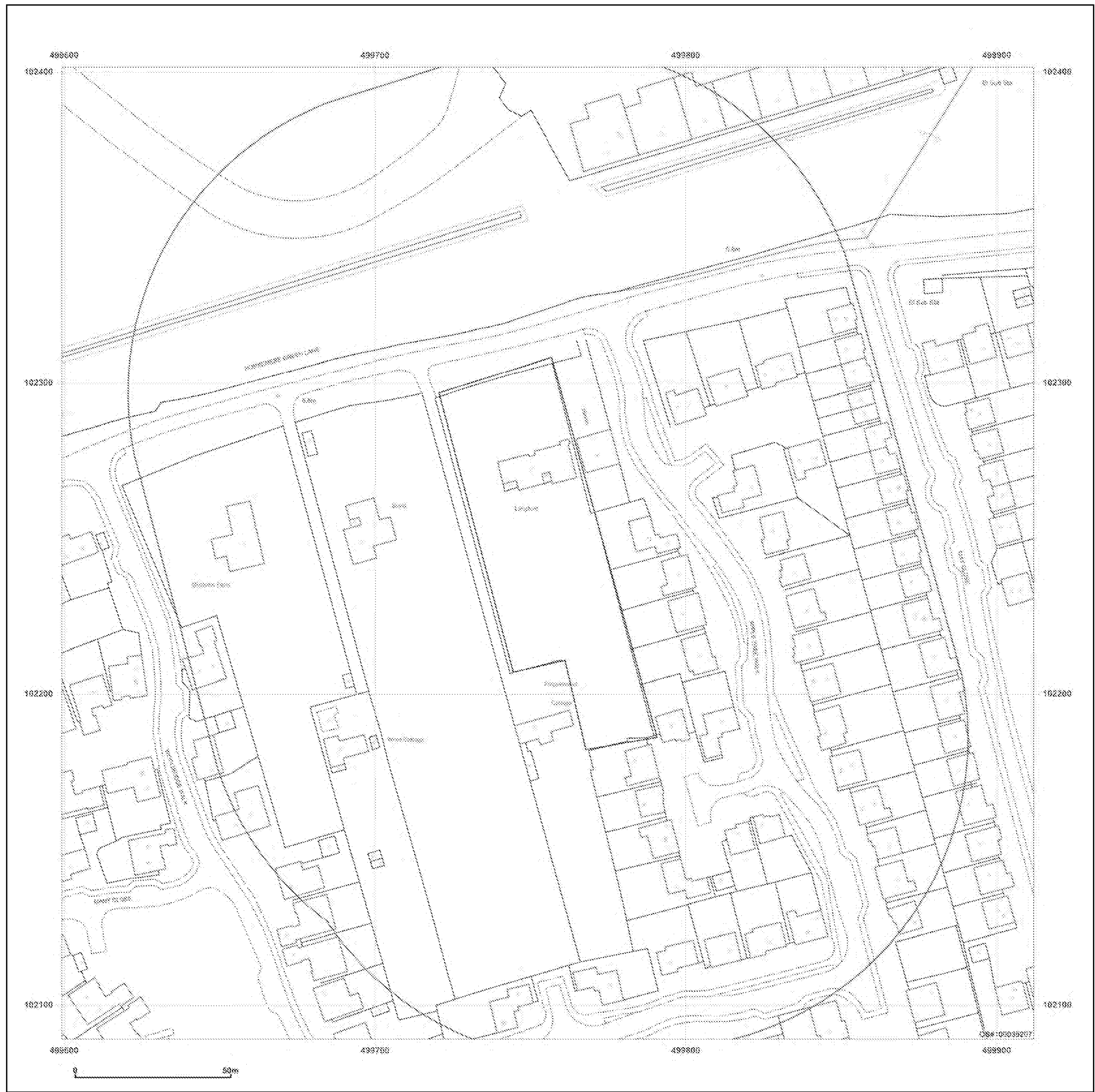


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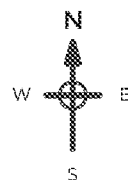
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Client Ref: EMS_633242_842204
Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

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



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APPENDIX II

APPENDIX II – DESK STUDY INFORMATION

GroundSure EnviroInsight and GeoInsight Databases

Enquiries were made to the GroundSure EnviroInsight Database regarding the site and surrounding area. This database includes collated and continuously updated information from a variety of sources and includes entries that cover Environment Agency permits, waste sites, hazardous substances, geological data, industrial landuse, groundwater vulnerability, source protection zones and floodplains.

Enquiries were made to the GroundSure GeoInsight Database regarding the site and surrounding area. This database includes collated and continuously updated information from a variety of sources and includes entries that cover geological data, including information regarding mining/mineral extraction, natural cavities and landslips.

A report is included in this Appendix for a search radius of 1 km around the site and this report includes a summary table of the search results. Detailed information contained in the report has been included only if it is relevant to the geotechnical and environmental assessment. All other pages have been omitted. A full copy of the GroundSure Report can be provided on request.

Langford, Horsemere Green Lane, Climping, BN17 5QZ,

Order Details

Date: 11/09/2020
Your ref: EMS_633242_842205
Our Ref: EMS-633242_842205
Client: emapsite

Site Details

Location: 499755 102247
Area: 0.43 ha
Authority: Arun District Council



Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.13

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Contact us with any questions at:

info@groundsure.com

08444 159 000

ARUN DISTRICT COUNCIL CM/36/20/DOC

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<u>14</u>	<u>1.1</u>	<u>Historical industrial land uses</u>	0	3	5	4	-
<u>15</u>	<u>1.2</u>	<u>Historical tanks</u>	0	0	5	2	-
<u>16</u>	<u>1.3</u>	<u>Historical energy features</u>	0	0	3	7	-
16	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
<u>18</u>	<u>2.1</u>	<u>Historical industrial land uses</u>	0	3	8	6	-
<u>19</u>	<u>2.2</u>	<u>Historical tanks</u>	0	0	11	8	-
<u>20</u>	<u>2.3</u>	<u>Historical energy features</u>	0	0	8	16	-
21	2.4	Historical petrol stations	0	0	0	0	-
22	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
23	3.1	Active or recent landfill	0	0	0	0	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
24	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
<u>24</u>	<u>3.5</u>	<u>Historical waste sites</u>	0	1	0	3	-
<u>26</u>	<u>3.6</u>	<u>Licensed waste sites</u>	0	0	3	0	-
<u>27</u>	<u>3.7</u>	<u>Waste exemptions</u>	0	0	15	26	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
<u>32</u>	<u>4.1</u>	<u>Recent industrial land uses</u>	0	0	29	-	-
34	4.2	Current or recent petrol stations	0	0	0	0	-
35	4.3	Electricity cables	0	0	0	0	-
35	4.4	Gas pipelines	0	0	0	0	-
35	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
36	4.8	Hazardous substance storage/usage	0	0	0	0	-
36	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	1	1	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
37	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	8	8	-
40	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
40	4.15	Pollutant release to public sewer	0	0	0	0	-
40	4.16	List 1 Dangerous Substances	0	0	0	0	-
40	4.17	List 2 Dangerous Substances	0	0	0	0	-
40	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	3	1	-
41	4.19	Pollution inventory substances	0	0	0	0	-
41	4.20	Pollution inventory waste transfers	0	0	0	0	-
42	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
43	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
45	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
47	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
48	5.4	<u>Groundwater vulnerability- soluble rock risk</u>	Identified (within 0m)				
48	5.5	Groundwater vulnerability- local information	None (within 0m)				
49	5.6	<u>Groundwater abstractions</u>	0	0	0	0	4
50	5.7	<u>Surface water abstractions</u>	0	0	0	0	6
52	5.8	Potable abstractions	0	0	0	0	0
52	5.9	Source Protection Zones	0	0	0	0	-
52	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
53	6.1	Water Network (OS MasterMap)	0	0	0	-	-

53	6.2	Surface water features	0	0	0	-	-
54	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
54	6.4	WFD Surface water bodies	0	0	0	-	-
54	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
56	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
56	7.2	Historical Flood Events	0	0	0	-	-
56	7.3	Flood Defences	0	0	0	-	-
56	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
57	7.5	Flood Storage Areas	0	0	0	-	-
58	7.6	Flood Zone 2	None (within 50m)				
58	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
59	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
61	9.1	<u>Groundwater flooding</u>	Moderate-High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
62	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	1
63	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
63	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
63	10.4	Special Protection Areas (SPA)	0	0	0	0	0
63	10.5	National Nature Reserves (NNR)	0	0	0	0	0
64	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
64	10.7	Designated Ancient Woodland	0	0	0	0	0
64	10.8	Biosphere Reserves	0	0	0	0	0
64	10.9	Forest Parks	0	0	0	0	0
65	10.10	Marine Conservation Zones	0	0	0	0	0
65	10.11	Green Belt	0	0	0	0	0
65	10.12	Proposed Ramsar sites	0	0	0	0	0

65	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
65	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
66	10.15	Nitrate Sensitive Areas	0	0	0	0	0
66	10.16	<u>Nitrate Vulnerable Zones</u>	0	0	0	0	2
67	10.17	<u>SSSI Impact Risk Zones</u>	2	-	-	-	-
68	10.18	<u>SSSI Units</u>	0	0	0	0	2
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
70	11.1	World Heritage Sites	0	0	0	-	-
70	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
70	11.3	National Parks	0	0	0	-	-
70	11.4	Listed Buildings	0	0	0	-	-
71	11.5	Conservation Areas	0	0	0	-	-
71	11.6	Scheduled Ancient Monuments	0	0	0	-	-
71	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
72	12.1	<u>Agricultural Land Classification</u>	Grade 2 (within 250m)				
73	12.2	<u>Open Access Land</u>	0	0	2	-	-
74	12.3	<u>Tree Felling Licences</u>	0	0	2	-	-
74	12.4	Environmental Stewardship Schemes	0	0	0	-	-
74	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
75	13.1	<u>Priority Habitat Inventory</u>	0	1	1	-	-
76	13.2	Habitat Networks	0	0	0	-	-
76	13.3	Open Mosaic Habitat	0	0	0	-	-
76	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
77	14.1	<u>10k Availability</u>	Identified (within 500m)				
78	14.2	Artificial and made ground (10k)	0	0	0	0	-
79	14.3	<u>Superficial geology (10k)</u>	1	0	2	1	-

80	14.4	Landslip (10k)	0	0	0	0	-
81	14.5	<u>Bedrock geology (10k)</u>	1	0	1	0	-
82	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
83	15.1	<u>50k Availability</u>	Identified (within 500m)				
84	15.2	Artificial and made ground (50k)	0	0	0	0	-
84	15.3	Artificial ground permeability (50k)	0	0	-	-	-
85	15.4	<u>Superficial geology (50k)</u>	1	0	1	0	-
86	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
86	15.6	Landslip (50k)	0	0	0	0	-
86	15.7	Landslip permeability (50k)	None (within 50m)				
87	15.8	<u>Bedrock geology (50k)</u>	1	0	0	0	-
88	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
88	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
89	16.1	<u>BGS Boreholes</u>	0	0	1	-	-
Page	Section	Natural ground subsidence					
90	17.1	<u>Shrink swell clays</u>	Low (within 50m)				
91	17.2	<u>Running sands</u>	Low (within 50m)				
92	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
93	17.4	<u>Collapsible deposits</u>	Low (within 50m)				
94	17.5	<u>Landslides</u>	Very low (within 50m)				
95	17.6	<u>Ground dissolution of soluble rocks</u>	Very low (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
97	18.1	Natural cavities	0	0	0	0	-
98	18.2	BritPits	0	0	0	0	-
98	18.3	<u>Surface ground workings</u>	0	0	6	-	-
98	18.4	Underground workings	0	0	0	0	0
99	18.5	Historical Mineral Planning Areas	0	0	0	0	-

99	18.6	Non-coal mining	0	0	0	0	0
99	18.7	Mining cavities	0	0	0	0	0
99	18.8	IPB mining areas	None (within 0m)				
99	18.9	Coal mining	None (within 0m)				
100	18.10	Brine areas	None (within 0m)				
100	18.11	Gypsum areas	None (within 0m)				
100	18.12	Tin mining	None (within 0m)				
100	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
101	19.1	Radon	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
102	20.1	BGS Estimated Background Soil Chemistry	1	0	-	-	-
102	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
102	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
103	21.1	Underground railways (London)	0	0	0	-	-
103	21.2	Underground railways (Non-London)	0	0	0	-	-
103	21.3	Railway tunnels	0	0	0	-	-
103	21.4	Historical railway and tunnel features	0	0	0	-	-
103	21.5	Royal Mail tunnels	0	0	0	-	-
104	21.6	Historical railways	0	0	0	-	-
104	21.7	Railways	0	0	0	-	-
104	21.8	Crossrail 1	0	0	0	0	-
104	21.9	Crossrail 2	0	0	0	0	-
104	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 28/06/2018

Site Area: 0.43ha

Recent site history - 2015 aerial photograph



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Capture Date: 20/05/2015

Site Area: 0.43ha

Recent site history - 2010 aerial photograph



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Capture Date: 24/04/2010

Site Area: 0.43ha

Recent site history - 2009 aerial photograph



Capture Date: 27/09/2009

Site Area: 0.43ha

Recent site history - 1999 aerial photograph

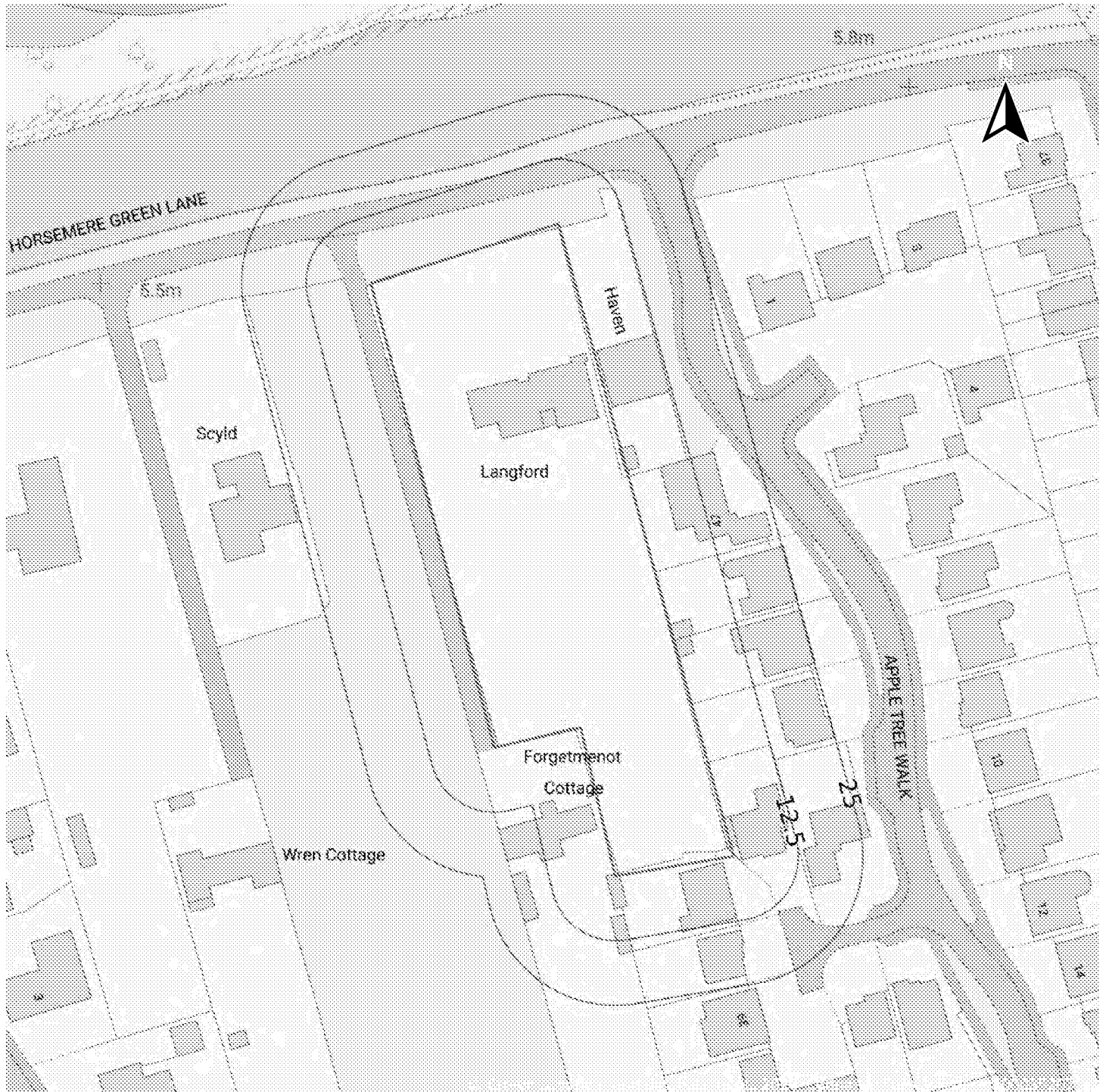


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Capture Date: 25/07/1999

Site Area: 0.43ha

OS MasterMap site plan



Site Area: 0.43ha

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0
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Landfill sites identified from Local Authority records and high detail historical mapping.

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0
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Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

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

3.5 Historical waste sites

Records within 500m	4
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Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 23**

ID	Location	Address	Further Details	Date
1	48m E	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1983



ID	Location	Address	Further Details	Date
E	341m NE	Site Address: Ford Industrial Estate, Units 7-10, Ford, ARUNDEL, West Sussex, BN18 0	Type of Site: Waste Management Facility Planning application reference: CM16/03 Description: Scheme comprises demolition of most existing buildings and construction of a new waste management centre totalling 162 sqm with new weighbridge, weighbridge office, site office, a 2 storey staff welfare building, new recyclable units, new impermeable hardstanding and improvements to internal structure of existing waste transfer building. Includes new roller shutter doors and sprinkler system, dust suppression and fire control works. Some buildings are modular units. Construction - roller shutter doors; fire alarm system fittings. An application (ref: CM16/03) for Detailed Planning permission was withdrawn from Arun D.C. on 9th March 2004. Planning decision obtained Data source: Historic Planning Application Data Type: Point	-
E	341m NE	Site Address: Ford Waste Management, Facility, 7-10 Rudford, Industrial Estate, Ford Road, ARUNDEL, West Sussex, BN18 0B	Type of Site: Waste Management Centre Planning application reference: CM/3/04 Description: Scheme comprises the redevelopment of the existing facility with new offices, welfare building, an additional weigh bridge office and 2 new weigh bridges, with repairs to existing building, additional doors, improved drainage and additional impermeable hardstanding areas, with storage bays and related works. Scheme comprises the redevelopment of the existing facility with new offices, welfare building, an additional weigh bridge office and 2 new weigh bridges, with repairs to existing building, additional doors, improved drainage and additional impermeable hardstanding areas, with storage bays and related works. Tender details remain to be finalised. An application (ref: CM/3/04) for Detailed Planning permission was refused by Arun D.C. Detailed plans refused. Data source: Historic Planning Application Data Type: Point	-

ID	Location	Address	Further Details	Date
G	453m N	Site Address: Unit 9/10, Rudford Industrial Estate, Hanger 10, ARUNDEL, West Sussex, BN18 0B	Type of Site: Waste Transfer Centre Planning application reference: CM/12/97 Description: Amended plans for waste transfer centre of 330 sqm with new portable office of 29 sqm. An application (ref: CM/12/97) for Detailed Planning permission was submitted to Arun D.C. on 15th July 1997. Data source: Historic Planning Application Data Type: Point	-

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

3.6 Licensed waste sites

Records within 500m	3
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Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 23**

ID	Location	Details		
A	139m SE	Site Name: Units 9 & 10 Site Address: Units 9 & 10, Hanger 3, Rudford Ind. Estate, Ford, West Sussex Correspondence Address: Vine Court, Chalkpit Lane, Oorking, Surrey, RH4 1AJ	Type of Site: 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	Issue Date: 20/09/1996 Effective Date: 20/03/2000 Modified: 18/07/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
A	139m SE	Site Name: Units 9 & 10 Site Address: Units 9 & 10, Hanger 3, Rudford Ind. Estate, Ford, West Sussex, BN18 0BS Correspondence Address: -	Type of Site: 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	Issue Date: 20/09/1996 Effective Date: 18/03/2004 Modified: 18/07/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred

ID	Location	Details		
A	141m SE	Site Name: Ford Waste Recycling Centre & Transfer Station Site Address: Units 7 - 10, Hanger Three, Rudford Industrial Estate, Ford, Arundel, West Sussex, BN18 0BS Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SQU395 EPA reference: EA/EPR/WP3095HU/V002 Operator: South Coast Skips Ltd Waste Management licence No: 10146 Annual Tonnage: 149999	Issue Date: 11/01/2006 Effective Date: - Modified: 04/04/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

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

3.7 Waste exemptions

Records within 500m	41
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Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 23**

ID	Location	Site	Reference	Category	Sub-Category	Description
B	197m W	Ni Ni Hi Pond Horsemere Green Lane Littlehampton West Sussex BN175QZ	EPR/ZF0539CV /A001	Using waste exemption	Non-Agricultural Waste Only	Spreading waste on non-agricultural land to confer benefit
B	202m W	Ni Ni Hi Pond Horsemere Green Lane Littlehampton West Sussex BN175QZ	EPR/ZF0839CJ /A001	Disposing of waste exemption	Non-Agricultural Waste Only	Deposit of waste from dredging of inland waters
Z	217m N	South Coast Fulfillment Ltd Unit R Ford Nr Arundel BN18 0BF	EPR/YE5385NJ /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
B	223m W	Jaybelle Grange Lodge Farm Yapton Road Climping West Sussex BN17 5RU	EPR/ZES153NC /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Treating waste exemption	Agricultural Waste Only	Cleaning, washing, spraying or coating relevant waste

ID	Location	Site	Reference	Category	Sub-Category	Description
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Disposing of waste exemption	Both agricultural and non- agricultural waste	Deposit of waste from dredging of inland waters
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Storing waste exemption	Both agricultural and non- agricultural waste	Storage of waste in a secure place
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Aerobic composting and associated prior treatment
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Preparatory treatments (baling, sorting, shredding etc)
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Recovery of scrap metal
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Using waste exemption	Both agricultural and non- agricultural waste	Use of waste in construction
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Using waste exemption	Both agricultural and non- agricultural waste	Spreading waste on agricultural land to confer benefit
B	233m W	Northwood Farm Clymping Horsemere Green Lane BN17 5QZ	EPR/VE5457D C/A001	Storing waste exemption	Non- Agricultural Waste Only	Storage of sludge

ID	Location	Site	Reference	Category	Sub-Category	Description
C	267m NE	Unit H21, Rudford Industrial Estate, Ford, BN18 0BD	WEX136489	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	267m NE	Unit 9 Rudford Industrial Estate Station Road Arundel West Sussex BN18 0BS	EPR/WH03100 A/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
D	281m N	UNIT A, RUDFORD INDUSTRIAL ESTATE, FORD ROAD, FORD, ARUNDEL, BN18 0BD	WEX152928	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
D	281m N	UNIT A, RUDFORD INDUSTRIAL ESTATE, FORD ROAD, FORD, ARUNDEL, BN18 0BD	WEX152928	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
3	321m NW	WICKS FARM, FORD LANE, FORD, ARUNDEL, BN18 0DQ	WEX087406	Storing waste exemption	On a farm	Storage of sludge
4	324m N	A Rudford Industrial Estate Ford Road Arundel West Sussex BN18 0BD	EPR/WF0632E L/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
E	325m NE	Rudford Industrial Estate Ford Road Arundel West Sussex BN18 0BD	EPR/RF0102V5 /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
D	326m N	Rudford Industrial Estate Ford Road Arundel West Sussex BN18 0BD	EPR/RF0408CB /A001	Treating waste exemption	Non-Agricultural Waste Only	Preparatory treatments (baling, sorting, shredding etc)
D	326m N	Rudford Industrial Estate Ford Road Arundel West Sussex BN18 0BD	EPR/RF0408CB /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste to manufacture finished goods
E	367m NE	UNIT H9-H10, RUDFORD INDUSTRIAL ESTATE, FORD ROAD, FORD, ARUNDEL, BN18 0BD	WEX157166	Storing waste exemption	Not on a Farm	Storage of waste in a secure place
F	432m NE	-	WEX171512	Storing waste exemption	Not on a farm	Storage of waste in secure containers
F	432m NE	-	WEX171512	Storing waste exemption	Not on a farm	Storage of waste in a secure place
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Storing waste exemption	On a farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Storing waste exemption	On a farm	Storage of waste in secure containers
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Disposing of waste exemption	On a farm	Burning waste in the open
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Treating waste exemption	On a farm	Sorting mixed waste
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Treating waste exemption	On a farm	Recovery of scrap metal
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX233729	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Disposing of waste exemption	On a farm	Burning waste in the open
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Storing waste exemption	On a farm	Storage of waste in secure containers
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Storing waste exemption	On a farm	Storage of waste in a secure place
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Treating waste exemption	On a farm	Sorting mixed waste
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	484m N	Ford airfield Market, Ford airfield, Ford road, Ford, Arundel, BN180FL	WEX087873	Treating waste exemption	On a farm	Recovery of scrap metal

4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- ★ Recent industrial land uses
- ◆ Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

29

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 32](#)

ID	Location	Company	Address	Activity	Category
A	68m N	J & P Vehicle Repairs	Unit U10 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	68m N	S V R Coachworks	Unit U10 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Vehicle Repair, Testing and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
A	80m NE	Advanced Ventilation Systems Ltd	Unit U9 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Construction Completion Services	Construction Services
A	91m NE	Cameron Irrigation Systems Ltd	Unit U8 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Horticultural Equipment	Industrial Products
1	102m SW	Electricity Sub Station	West Sussex, BN17	Electrical Features	Infrastructure and Facilities
A	110m NE	Bar Supplies Sussex	Unit U6 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Food and Beverage Industry Machinery	Industrial Products
A	124m N	Hyper Store	Unit S5 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Office and Shop Equipment	Industrial Products
A	124m N	Real Time Dc Ltd	Unit S5 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Office and Shop Equipment	Industrial Products
2	125m E	Electricity Sub Station	West Sussex, BN17	Electrical Features	Infrastructure and Facilities
A	131m NE	Diamond Golf International Ltd	Unit U4-U5 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Hobby, Sports and Pastime Products	Consumer Products
A	142m NE	A Wright Builders & Joinery Ltd	Unit U3 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	General Construction Supplies	Industrial Products
A	145m NE	I C S Electronics	Unit V Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Rader and Telecommunications Equipment	Industrial Products
A	158m NE	Genie Care	Unit T6 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Disability and Mobility Equipment	Consumer Products
A	161m N	Hammonds Commercial s Ltd	Unit S1 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	167m NE	Electricity Sub Station	West Sussex, BN18	Electrical Features	Infrastructure and Facilities
A	168m NE	N & L Seals Ltd	Unit T4 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Seals, Tapes, Tape and Valves	Industrial Products
A	171m N	European Office Products Plc	Unit X Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Office and Shop Equipment	Industrial Products

ID	Location	Company	Address	Activity	Category
A	173m NE	Industrial Engineering Supplies Ltd	Unit T3 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Industrial Repairs and Servicing	Repair and Servicing
A	178m NE	A T B	Unit G20 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	186m N	Jemic Ltd	Unit X1 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Construction Completion Services	Construction Services
A	187m N	Coastal Aerial Supplies	Unit X2 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Electronic Equipment	Industrial Products
A	188m NE	Active Pump Services Ltd	Unit G17-G18 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Industrial Repairs and Servicing	Repair and Servicing
4	210m W	Electricity Sub Station	West Sussex, BN18	Electrical Features	Infrastructure and Facilities
A	214m N	R T Page	Unit R2 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Container and Storage	Transport, Storage and Delivery
A	225m NE	The Brothers Anyhow Ltd	Unit G12 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Published Goods	Industrial Products
A	231m NE	White Composites Engineering Ltd	Unit G11 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Rubber, Silicones and Plastics	Industrial Products
A	238m NE	Farid Land Engineering UK Ltd	Unit K Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BF	Vehicles	Industrial Products
A	242m NE	Arun Forktrucks Ltd	Unit G10 Rudford Industrial Estate, Ford Road, Ford, Arundel, West Sussex, BN18 0BD	Lifting and Handling Equipment	Industrial Products
A	247m N	Tank	West Sussex, BN18	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0
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Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.8 Hazardous substance storage/usage

Records within 500m

0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

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

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

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

Records within 500m

2

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

Features are displayed on the Current industrial land use map on [page 32](#)

ID	Location	Address	Details	
A	220m NE	F & G Plant Hire Ltd, Rudford Ind Est, BN18 0BD	Process: Sand and Soil Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
10	407m NE	Dudman Group Companies, Unit 6 Hanger 3, Rudford Industrial Estate, BN18 0DB	Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m

16

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

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Address	Details	
A	126m N	UNIT V1, RUDFORD INDUSTRIAL ESTATE, FORD ROAD, FORD, NR ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05714 Permit Version: 1 Receiving Water: TRIBUTARY OF THE RIVER ARUN	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 22/08/1995 Effective Date: 22/08/1995 Revocation Date: -
A	161m NE	UNITS G11-G20, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05667 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: 31/03/1997
A	181m N	CARTE BLANCHE GREETINGS LTD, UNIT S.1, RUDFORD IND EST, FORD NR ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05661 Permit Version: 1 Receiving Water: UNKNOWN	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 10/08/1995 Effective Date: 10/08/1995 Revocation Date: -
A	203m N	UNIT R, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05663 Permit Version: 1 Receiving Water: CANAL	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: 31/03/1997

ID	Location	Address	Details	
3	203m W	NINI-HI CARAVAN SITE, HORSEMER GREEN LANE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: S01517 Permit Version: 1 Receiving Water: CONTROLLED SEA	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 14/09/1966 Effective Date: 14/09/1966 Revocation Date: 31/03/1997
A	208m NE	UNIT J3, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05665 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: 31/03/1997
A	239m NE	UNIT 18, HANGAR 3, FORD AIRFIELD, ARUNDEL WEST SUSSEX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P00217 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 16/12/1985 Effective Date: 16/12/1985 Revocation Date: 31/03/1995
A	239m NE	UNIT 18, HANGAR 3, FORD AIRFIELD, ARUNDEL WEST SUSSEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00217 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 16/12/1985 Effective Date: 16/12/1985 Revocation Date: 31/03/1995
A	250m NE	UNIT K, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05663 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: -
A	272m NE	UNIT L, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05669 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: 31/03/1997

ID	Location	Address	Details	
6	286m NE	UNIT D, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05664 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: -
7	295m E	UNITS G1-G10, RUDFORD INDUSTRIAL ESTATE, FORD ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05666 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 12/05/1995 Effective Date: 12/05/1995 Revocation Date: 31/03/1997
8	311m NE	UNIT M1, RUDFORD INDUSTRIAL ESTATE, FORD ROAD, FORD, ARUNDEL, WEST SUSSEX, BN18 0BS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05713 Permit Version: 1 Receiving Water: TRIBUTARY OF THE RIVER ARUN	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 22/08/1995 Effective Date: 22/08/1995 Revocation Date: -
9	343m N	STYROPAK UK LTD, UNIT A, RUDFORD INDUSTRIAL ESTATE, FORD, NEAR ARUNDEL, BN18 0BD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P05662 Permit Version: 1 Receiving Water: TRIBUTARY OF RIVER ARUN	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 113 & SCHED 12) Issue date: 10/08/1995 Effective Date: 10/08/1995 Revocation Date: -
8	344m E	THE LAURELS, HORSEMER GREEN LANE, CLIMPLING	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRG83395EC Permit Version: 1 Receiving Water: TRIB OF RIVER ARUN	Status: NEW ISSUED UNDER EPR 2010 Issue date: 07/09/2017 Effective Date: 07/09/2017 Revocation Date: -
8	393m E	SEWAGE TREATMENT PLANT, CHURCH FARM OLD BARN, HORSEMER GREEN LANE, CLIMPLING, LITTLEHAMPTON, W.SUSSEX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: N03482 Permit Version: 1 Receiving Water: INTO LAND	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 13/08/1984 Effective Date: 13/08/1984 Revocation Date: 31/03/1997

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

4.14 Pollutant release to surface waters (Red List)

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

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

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

4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

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

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

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

4.17 List 2 Dangerous Substances

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

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	4
---------------------	---

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

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Details	
A	152m NE	Incident Date: 25/06/2003 Incident Identification: 168762 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
A	222m NE	Incident Date: 27/02/2002 Incident Identification: 60841 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
S	248m SW	Incident Date: 10/06/2003 Incident Identification: 164710 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
B	366m E	Incident Date: 20/02/2002 Incident Identification: 59509 Pollutant: Sewage Materials Pollutant Description: Other Sewage Material	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

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

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

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

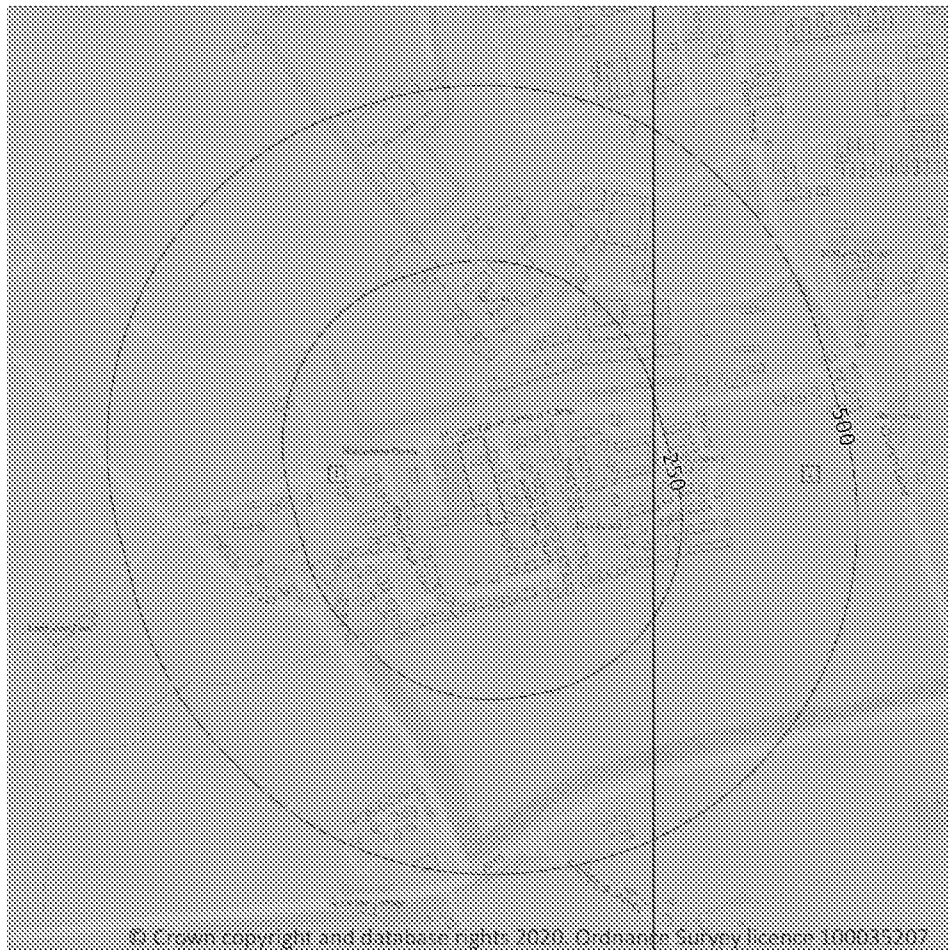
4.20 Pollution inventory waste transfers

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

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

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

5 Hydrogeology - Superficial aquifer



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

5.1 Superficial aquifer

Records within 500m

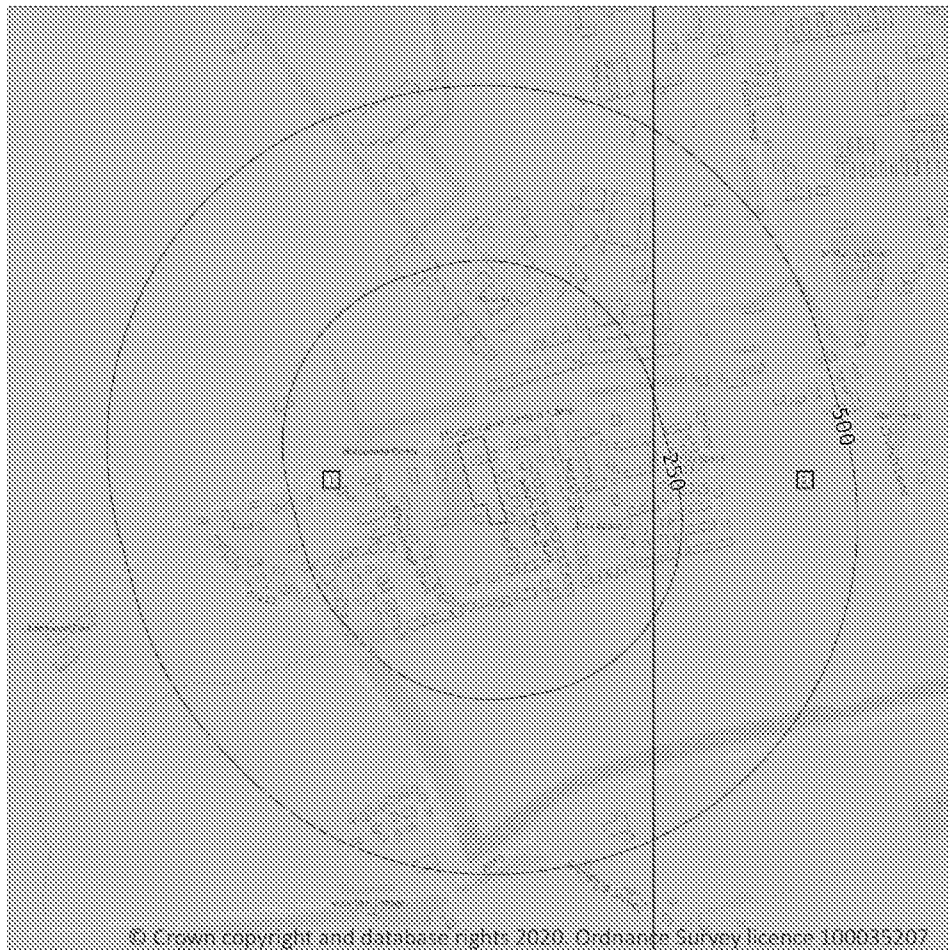
2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 43](#)

ID	Location	Designation	Description
1	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
2	209m E	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

Bedrock aquifer



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

5.2 Bedrock aquifer

Records within 500m

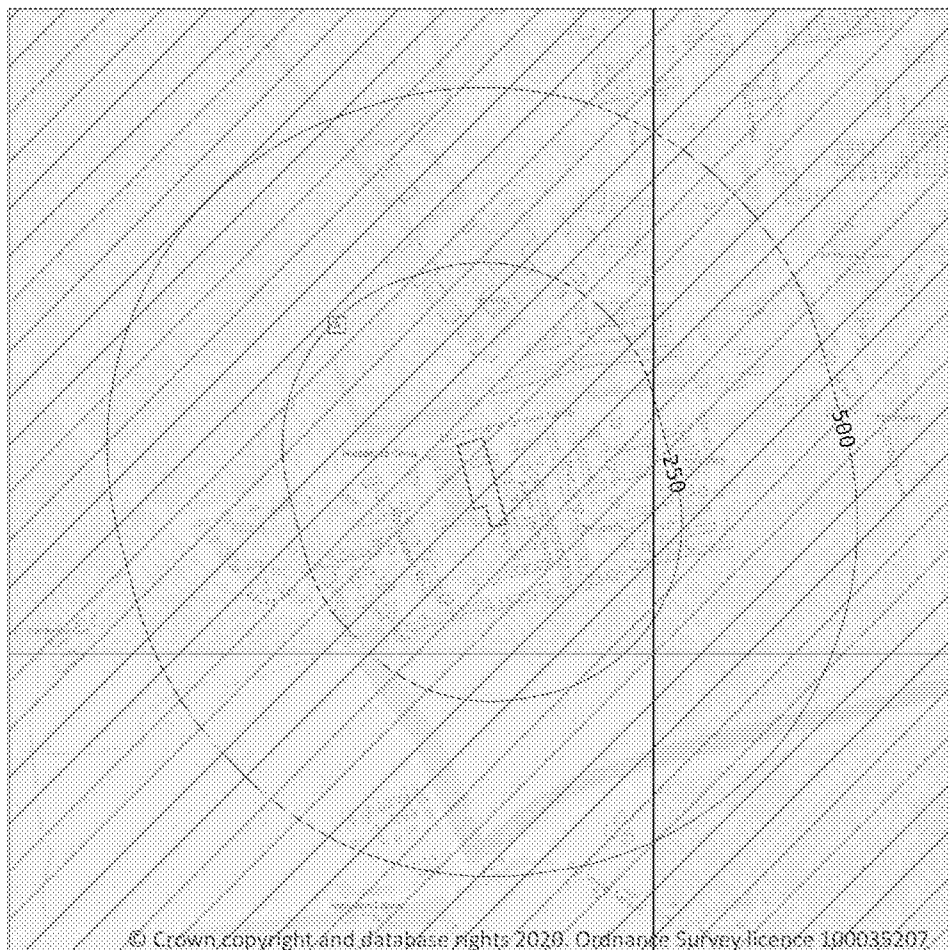
2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 45](#)

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	209m E	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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

1

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

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

Features are displayed on the Groundwater vulnerability map on **page 47**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
A	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

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

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.	100.0%

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

5.5 Groundwater vulnerability- local information

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

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

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

Abstractions and Source Protection Zones



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

5.6 Groundwater abstractions

Records within 2000m

4

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

Features are displayed on the Abstractions and Source Protection Zones map on [page 49](#)

ID	Location	Details	
-	1026m SW	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 Easting: 499260 Northing: 101290	Annual Volume (m³): 36,368 Max Daily Volume (m³): 136.30 Original Application No: - Original Start Date: 21/03/1977 Expiry Date: - Issue No: 100 Version Start Date: 16/04/2019 Version End Date: -
-	1105m N	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 Easting: 499530 Northing: 103390	Annual Volume (m³): 105000 Max Daily Volume (m³): 35.1 Original Application No: - Original Start Date: 04/01/2001 Expiry Date: - Issue No: 1 Version Start Date: 04/01/2001 Version End Date: -
-	1657m N	Status: Historical Licence No: 10/41/412004 Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: WICKS FARM, YAPTON Data Type: Point Name: Langmead Easting: 499330 Northing: 103910	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 02/04/1987 Version End Date: -
-	1879m NW	Status: Active Licence No: 10/41/412007 Details: Spray irrigation - Direct Direct Source: Southern Region Groundwater Point: WICKS FARM, FORD Data Type: Point Name: Keith Langmead Ltd Easting: 498790 Northing: 103930	Annual Volume (m³): 15,000 Max Daily Volume (m³): 120 Original Application No: - Original Start Date: 30/05/1989 Expiry Date: - Issue No: 101 Version Start Date: 31/03/2016 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

6

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 49**

ID	Location	Details	
A	523m S	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 Easting: 501710 Northing: 102210	Annual Volume (m³): 27272 Max Daily Volume (m³): 1091 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 08/12/2005 Version End Date: -
A	546m S	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 Easting: 501720 Northing: 102160	Annual Volume (m³): 27,272 Max Daily Volume (m³): 1,091 Original Application No: - Original Start Date: 13/06/1967 Expiry Date: - Issue No: 101 Version Start Date: 16/04/2019 Version End Date: -
-	1119m SW	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 Easting: 499270 Northing: 101180	Annual Volume (m³): 27,272 Max Daily Volume (m³): 1,091 Original Application No: - Original Start Date: 13/06/1967 Expiry Date: - Issue No: 101 Version Start Date: 16/04/2019 Version End Date: -
-	1924m N	Status: Active Licence No: 10/41/411020 Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: BINSTED RIFE NR PRIORY FARM Data Type: Line Name: Luckin & Son Easting: 499460 Northing: 105630	Annual Volume (m³): 2,500 Max Daily Volume (m³): 181.80 Original Application No: - Original Start Date: 06/09/1982 Expiry Date: - Issue No: 100 Version Start Date: 08/06/2009 Version End Date: -
-	1934m SW	Status: Historical 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 Easting: 498000 Northing: 101370	Annual Volume (m³): 4550 Max Daily Volume (m³): 45 Original Application No: - Original Start Date: 19/08/1988 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2016 Version End Date: -

ID	Location	Details	
-	1934m SW	Status: Historical 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 Easting: 497800 Northing: 101250	Annual Volume (m ³): 4550 Max Daily Volume (m ³): 45 Original Application No: - Original Start Date: 19/08/1988 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2016 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0
-----------------------------	----------

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

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

5.9 Source Protection Zones

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

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

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

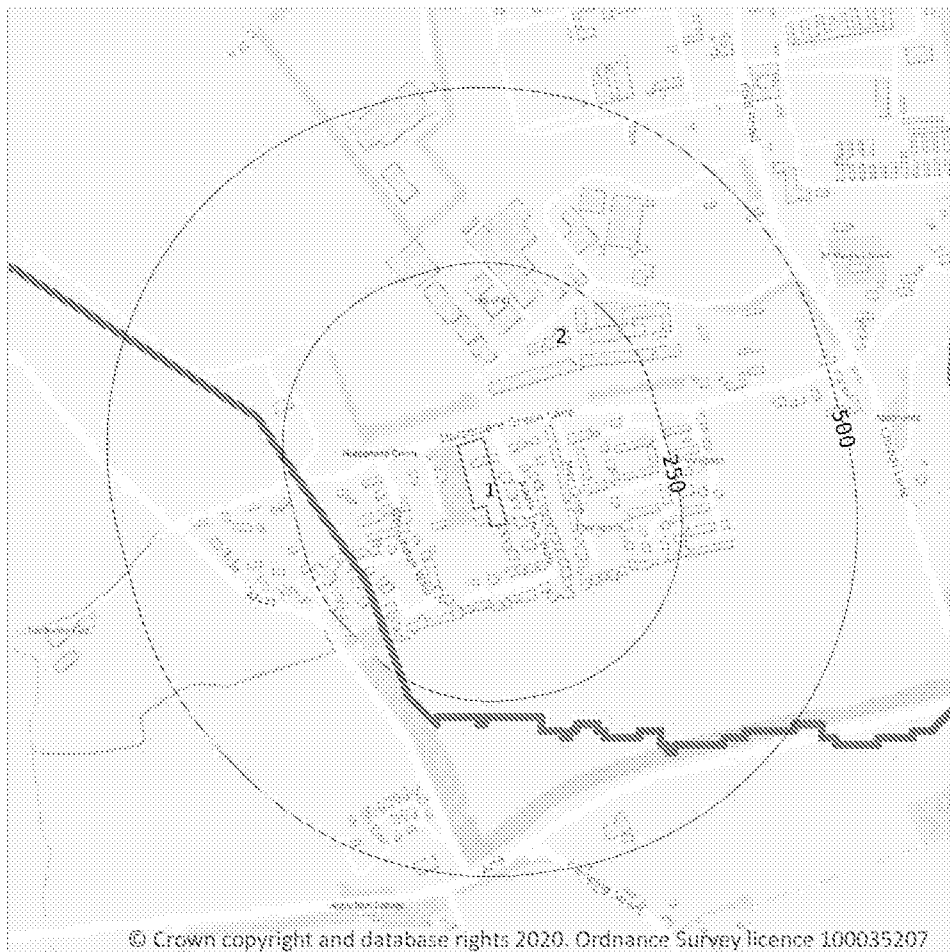
5.10 Source Protection Zones (confined aquifer)

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

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

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

6 Hydrology



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

6.1 Water Network (OS MasterMap)

Records within 250m

0

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

This data is sourced from the Ordnance Survey

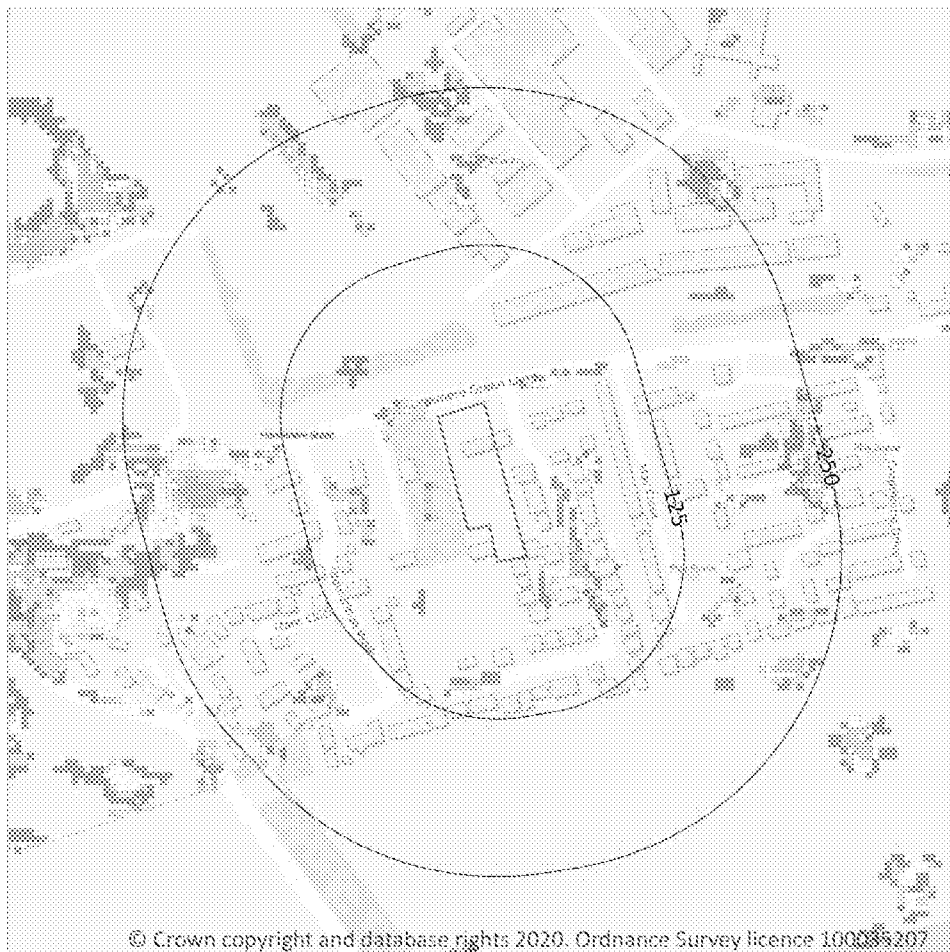
6.2 Surface water features

Records within 250m

0

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 30 year, 0.1m - 0.3m

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

Features are displayed on the Surface water flooding map on [page 59](#)

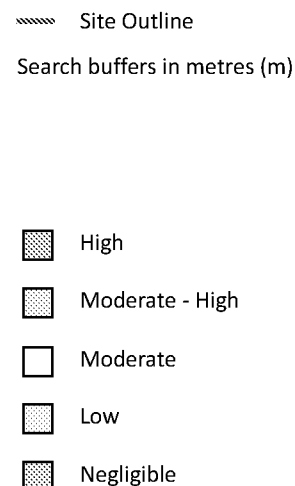
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

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

This data is sourced from Ambienta! Risk Analytics.

9 Groundwater flooding



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9.1 Groundwater flooding

Highest risk on site

Moderate-High

Highest risk within 50m

Moderate-High

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

Features are displayed on the Groundwater flooding map on [page 61](#)

This data is sourced from Ambient Risk Analytics.

10 Environmental designations



- ▬ Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

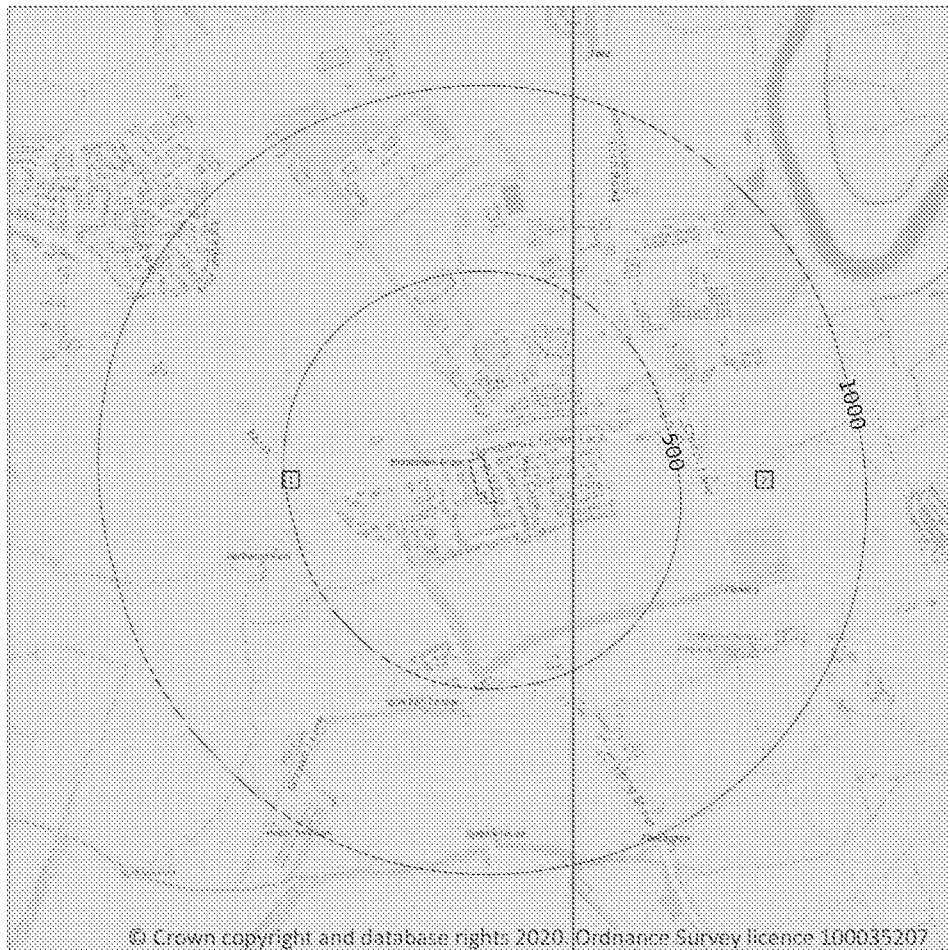
1

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

Features are displayed on the Environmental designations map on [page 62](#)

ID	Location	Name	Data source
-	1922m SE	Climping Beach	Natural England

14 Geology 1:10,000 scale - Availability



Site Outline
Search buffers in metres (m)

- ☒ Full coverage
- ☒ Partial coverage
- ☐ No coverage

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14.1 10k Availability

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Availability map on [page 77](#)

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	SU90SE
2	209m E	Full	Full	Full	No coverage	TQ00SW

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline
Search buffers in metres (m)
Landslip (10k)
Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

4

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 79](#)

ID	Location	LEX Code	Description	Rock description
1	On site	RTDU-Z	River Terrace Deposits (undifferentiated) - Silt (unlithified Deposits Coding Scheme)	Silt
2	102m E	RBD1-XSV	Raised Beach Deposits, 1 - Sand And Gravel	Sand And Gravel
3	209m E	RBD1-V	Raised Beach Deposits, 1 - Gravel	Gravel

ID	Location	LEX Code	Description	Rock description
4	307m SE	BRK-Z	Brickearth - Silt	Silt

This data is sourced from the British Geological Survey.

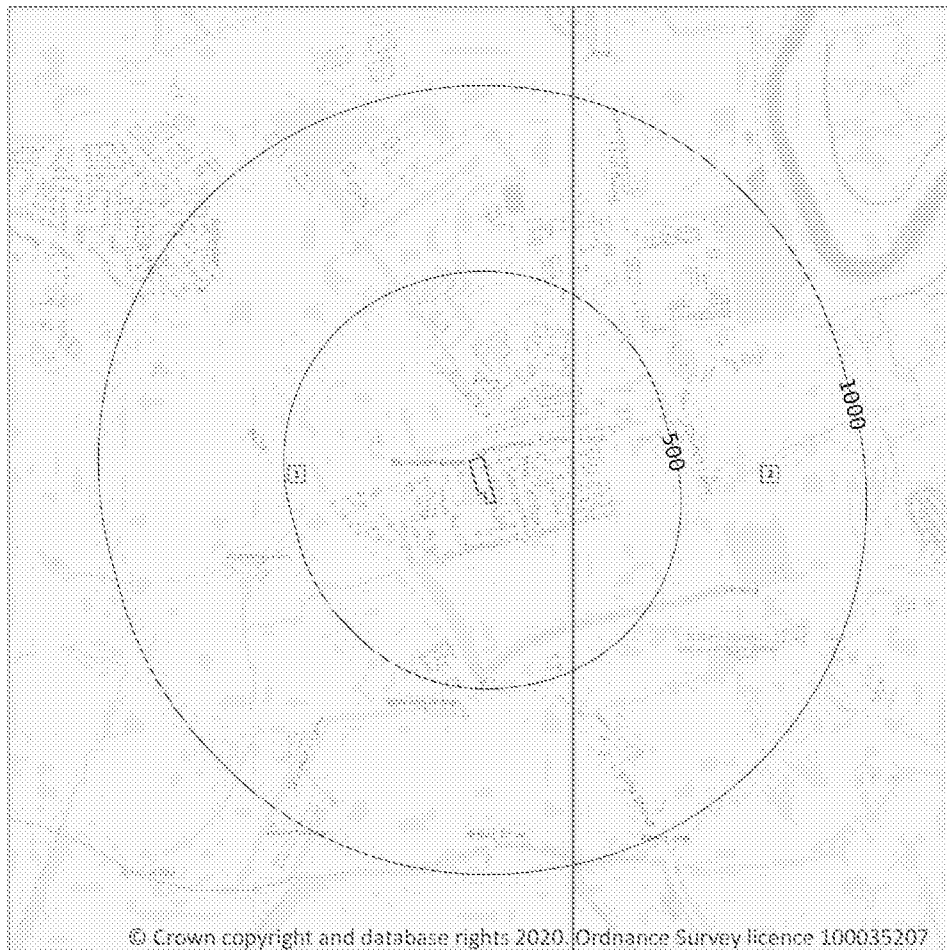
14.4 Landslip (10k)

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

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline
Search buffers in metres (m)
Bedrock faults and other linear features (10k)
Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 81](#)

ID	Location	LEX Code	Description	Rock age
1	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

ID	Location	LEX Code	Description	Rock age
2	209m E	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

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

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

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

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



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

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17.1 Shrink swell clays

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 90](#)

Location	Hazard rating	Details
On site	Low	Ground conditions predominantly medium plasticity.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



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

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17.2 Running sands

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Running sands map on [page 91](#)

Location	Hazard rating	Details
On site	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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

17.3 Compressible deposits

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 92](#)

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



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

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17.4 Collapsible deposits

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 93](#)

Location	Hazard rating	Details
On site	Low	Deposits with potential to collapse when loaded and saturated are possibly present in places.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



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

17.5 Landslides

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Landslides map on [page 94](#)

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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

17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on page 95

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

18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
 - Sporadic underground mining of restricted extent possible
 - Localised small scale underground mining possible
 - Small scale mining possible
 - Underground mining known or likely within or in close proximity
 - Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m

0

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

6

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 97**

ID	Location	Land Use	Year of mapping	Mapping scale
A	177m W	Pond	1991	1:10000
A	177m W	Pond	1978	1:10000
A	184m W	Pond	1950	1:10560
A	184m W	Pond	1910	1:10560
A	185m W	Pond	1896	1:10560
A	189m W	Pond	1876	1:10560

This is data is sourced from Ordnance Survey/Groundsure

18.4 Underground workings

Records within 1000m

0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site

0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site

0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site**0**

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site**0**

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site**0**

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

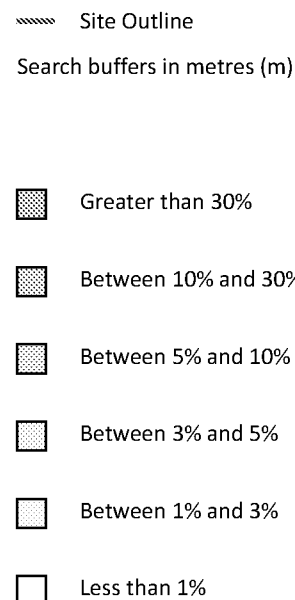
18.13 Clay mining

Records on site**0**

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



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19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on [page 101](#)

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

This data is sourced from the British Geological Survey and Public Health England.

APPENDIX III

APPENDIX III – GROUND INVESTIGATION

Introduction

The site operations were carried out between 23rd December 2019 and 12th March 2020 under the supervision of a geotechnical engineer from Crossfield Consulting Limited. The scope and rationale for the design of the investigation is presented in Table III-1.

The ground investigation was designed and supervised by qualified and experienced geotechnical specialists from Crossfield Consulting Limited. Where appropriate, and as outlined below, specialist drilling/sampling equipment was procured together with trained and experienced operators. Unless otherwise indicated, sampling and logging remained the responsibility of trained staff from Crossfield Consulting Limited and field records were prepared on site, during or immediately following drilling/sampling or in situ measurements/tests. The results of in situ tests are presented on the relevant record sheets in this Appendix.

An exploratory hole location plan is presented as Figure III-1.

Trial Pits

Nine trial pits, denoted as TP1 to TP4A and TPSSK1 to TPSSK3, were excavated by a Cat 307c excavator on 12th March 2020. The trial pit records from the investigation are presented in this Appendix and these records include the descriptions and depths of the strata encountered, together with sample depths, groundwater observations and other pertinent comments.

In situ hand vane tests were carried out on fine-grained soils, where appropriate, to provide undrained shear strength data representative of the tested horizon. The tests were carried out using Pilcon-Edeco hand vane tester, with extension rods in accordance with the site health and safety method statement. With reference to the guidance published in Serota & Jangle (1972), it is noted that this instrument is calibrated and scaled to provide a direct reading of undrained shear strength, such that application of additional correction factors on the recorded measurements is not necessary. Published correlations with undrained shear strength, as measured by immediate undrained triaxial tests, indicate this hand vane tester provides measurements with a significantly lower scatter in comparison to triaxial tests, with fewer anomalous results.

In Situ Soakaway Tests

In situ soakaway tests were performed in Trial Pits SSK1 to SSK3 generally in accordance with the requirements of BRE DG365 (2016) except that they were filled only once. Trial Pits were filled with clean water and the fall in water level measured with time. The results of the in situ testing are presented in this Appendix.

Windowless Sampling

Four windowless sampling boreholes, denoted as WS1 to WS4, were sunk by 360 Drilling Limited, on 23rd December 2019 to 5.0 m depth. Dynamic/driven open-tube soil sampling/boring was undertaken using a *Premier Compact* rig. Using a 1.0 m long thick-walled open-tube sampler (with plastic liner), Category A and B samples were recovered (sample disturbance being influenced by the specific soils encountered). Where appropriate, small disturbed sub-samples were recovered from the materials recovered in the open-tube sampler.

The records from the investigation are presented in this Appendix. These records include the descriptions and depths of the strata encountered, together with sample depths, in situ test results (uncorrected values), groundwater observations, details of installations/backfill within exploratory holes and other pertinent comments.

Groundwater Monitoring

Groundwater levels within the four boreholes were measured on four occasions between 30th December 2019 and 12th March 2020 by experienced staff from Crossfield Consulting Limited and Environmental Site Sampling Limited. Results of groundwater monitoring are presented in this Appendix.

Geotechnical Laboratory Testing

The rationale for the geotechnical laboratory testing is set out in the Table III-2.

Selected samples of the soils encountered were submitted for analysis for the following tests:

- pH value
- Water soluble sulphate
- Moisture content
- Atterberg Limits

The analyses were carried out by i2 Analytical, a UKAS accredited laboratory, and the results are presented in this Appendix.

TABLE III-1

RATIONALE FOR THE DESIGN OF THE GROUND INVESTIGATION

The scope of the supplementary ground investigation was designed with reference to the published geology and ground conditions indicated in the desk study information.

In compliance with the guidance published in BS EN 1997-2:2007, the ground investigation was designed to verify the preliminary ground model, established from the desk study information and to characterise the ground conditions within influencing distance of the proposed structures. In this regard, the exploratory holes were targeted within relevant areas of the site to provide information on the strata profile down to competent materials. With reference to the desk study information and the support requirements of the proposed development, it is evident that adequate support is provided by the strata that continue below the depths of the exploratory holes.

Exploratory Hole and Technique	Rationale for Hole Location	Depth (m)	Sampling/In Situ Testing and Monitoring
WS1-WS4	All exploratory hole locations were chosen to provide groundwater level across the site	5.0 m	Standpipes installed to enable groundwater monitoring
TP1-TP4A	Exploratory holes located within, or in close proximity to, the proposed building to provide information on shallow strata and groundwater.	Up to 2.1 m	Representative samples of potential founding strata recovered for geotechnical testing Hand vane shear strength tests undertaken where appropriate
TPSSK1-TPSSK3	Exploratory holes were located 5 m from proposed buildings to provide information on the water infiltration characteristics of the ground	Up to 1.1 m	In situ soakaway test Representative samples of potential founding strata recovered for geotechnical testing

Key

TP X	Machine dug trial pit
WS X	Windowless Sample Borehole

TABLE III-2

RATIONALE FOR THE GEOTECHNICAL TESTING SUITE

Exploratory Hole and Sample	Selection Criteria	Geotechnical Tests
TP2 1.0 m TP3 0.4 m TP3 1.6 m TP4 1.0 m	Representative samples of potential founding strata to undertake testing to aid concrete design	pH Water soluble sulphate
SSK1 0.7 m TP1 0.7 m TP2 1.4 m TP2 1.6 m TP3 0.9 m TP4 1.7 m	Representative samples of founding strata to undertake classification testing	Moisture content Atterberg Limits

TABLE III-3

GROUNDWATER MONITORING DATA

Borehole	Depth to Groundwater (m)				
	23.12.19	30.12.19	21.01.20	26.02.20	12.03.20
WS1	1.40	1.70*	1.90	1.63	1.55
WS2	0.72	1.14	1.40	1.07	1.00
WS3	0.99	1.39	1.60	1.32	1.29
WS4	0.99	1.35	1.50	1.33	1.30

Notes:

*Estimated groundwater depth

TRIAL PIT RECORDS

KEY

	J	Disturbed Jar Sample	}	Category B Samples
	G	Soil Sample in Glass Container		
	g	Soil Sample in Glass Vial		
	B	Disturbed Bulk Sample		
	C	"Undisturbed" CBR Mould Sample (denoted Category A: OS-TK/W in BS EN 22475-1:2006)		
	W	Water Sample		
FVT	{	c_{fv}	Undrained Shear Strength (from hand vane shear vane test)	
		c_{rv}	Undrained Remoulded Shear Strength (from hand vane shear vane test)	
		c_{fv}^*	Undrained Shear Strength from Hand Vane Shear Strength Test on block sample dug from pit by excavator	

Notes:

1. All measurement values on record sheets are uncorrected, unless otherwise indicated.
2. For corrected test values, refer to report.
3. Identification and classification of strata is based on the guidance published in the current edition of BS5930 together with BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004, BS EN ISO 14689-1:2003
4. Consistency (soft, firm, stiff etc.) relates to a manual test/inspection on site (in compliance with BS EN ISO 14688-1:2002 Section 5.14)
5. Undrained shear strength (low, medium, high etc.) relates to in situ or laboratory test data and the associated assessed strength of a stratum (in compliance with BS EN ISO 14688-2:2004 Section 5.3 and Table 5).
6. The density of coarse-grained soils is based on SPT N values (or equivalent Dynamic Probe test or CPT data) as outlined in BS5930 and BS EN ISO 14688-2:2004.
7. Rock strength (weak, strong etc.) is based on field identification (and/or strength test data), as outlined in BS EN ISO 14689-1:2003 Table 5.

Trial Pit Record Sheet

Hole Ref. **TP SSK1**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: North

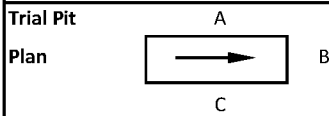
Shoring None used

Ground Level m OD

Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates



Water None encountered

Logged by GK Logged on site during excavation
Checked by [Redacted]

Depth	Face A	Face B	Face C	Depth
0.30		(1)		0.30
1.00		(2)		1.00
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.70	J		1	0.00-0.30	Woodchippings over brown silty clay with roots and rootlets (TOPSOIL)
			2	0.30-1.00	Firm consistency orangish brown sandy CLAY with rare rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP SSK2**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: East

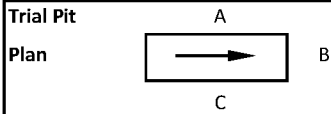
Shoring None used

Ground Level m OD

Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates



Water None encountered

Logged by GK Logged on site during excavation
Checked by [Redacted]

Depth	Face A	Face B	Face C	Depth
0.20		(1)		0.20
1.10		(2)		1.10
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.70	J		1	0.00-0.20	Brownish black silty clay with roots and rootlets (TOPSOIL)
			2	0.20-1.10	Firm consistency orangish brown sandy CLAY (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP SSK3**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: Northeast

Shoring None used

Ground Level m OD

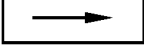
Plant CAT 307c

Stability Sides stable and vertical throughout excavation

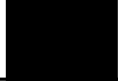
Co-ordinates

Trial Pit A

Logged by GK Logged on site during excavation

Plan  B

Water None encountered

Checked by 

Depth	Face A	Face B	Face C	Depth
0.45		(1)		0.45
1.00		(2)		1.00
		Base of Pit		

Sampling			Strata		
Sample/Test	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
S	JGg		1	0.00-0.45	Dark brown silty clay with roots and rootlets, occasional charcoal and brick fragments (TOPSOIL/MADE GROUND)
0.70	J		2	0.45-1.00	Firm consistency orangish brown sandy CLAY (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP1**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: Northeast

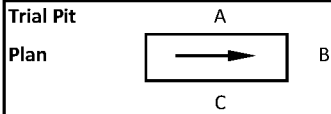
Shoring None used

Ground Level m OD

Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates



Water None encountered

Logged by GK Logged on site during excavation
Checked by

Depth	Face A	Face B	Face C	Depth
0.30		(1)		0.30
0.90		(2)		0.90
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.70	J		1	0.00-0.30	Dark black clayey silt with roots and rootlets and occasional concrete (TOPSOIL/MADE GROUND)
			2	0.30-0.90	Firm consistency dark orangish brown sandy CLAY with rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP2**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: South

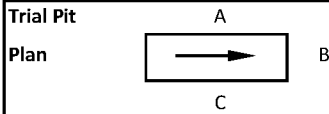
Shoring None used

Ground Level m OD

Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates



Water Strata damp with seepages below 1.6 m depth

Logged by GK Logged on site during excavation
Checked by [Redacted]

Depth	Face A	Face B	Face C	Depth
0.10		(1)		0.10
1.50		(2)		1.50
2.00		(3)		2.00
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
			1	0.00-0.10	Grass over brown silty clay with rootlets (TOPSOIL)
0.70	J		2	0.10-1.50	Firm consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to coarse angular predominately of flint.
0.70	c _{fv}	65,60,50			(RIVER TERRACE DEPOSITS)
1.00	J	58			
1.10	c _{fv}	40,52,48	3	1.50-2.00	Soft to firm consistency yellowish orangish brown slightly sandy gravelly SILT/CLAY with rare cobbles. Gravel is fine to coarse subangular mixed lithologies including flint.
1.40	J				(RIVER TERRACE DEPOSITS)
1.60	J				
1.90	J				

Remarks	Notes
Trial pit terminated at 2.0 m due to groundwater seepages and potential instability	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP3**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: West

Shoring None used

Ground Level m OD

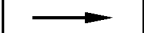
Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates

Trial Pit A

Logged by GK Logged on site during excavation

Plan  B

Water Strata damp below 1.7 m depth

Checked by 

Depth	Face A	Face B	Face C	Depth
0.20		(1)		0.20
2.10		(2)		2.10
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
			1	0.00-0.20	Dark brown clayey silt with roots and rootlets (TOPSOIL)
0.40	J		2	0.20-2.10	Soft to firm consistency dark orangish brown sandy CLAY with occasional rootlets and grey silty clay inclusions below 1.7 m (RIVER TERRACE DEPOSITS)
0.50	c _{fv}	38,44,46			
0.90	J	55			
1.00	c _{fv}	60,54,50			
1.50	c _{fv} *	50,50,55			
1.60	J				

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP4**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: North

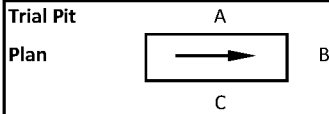
Shoring None used

Ground Level m OD

Plant CAT 307c

Stability Sides stable and vertical throughout excavation

Co-ordinates



Water Seepage at base of pit

Logged by GK Logged on site during excavation
Checked by

Depth	Face A	Face B	Face C	Depth
0.20		(1)		0.20
0.80		(2)		0.80
2.00		(3)		2.00
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.40	c _{fv} *	40,35		0.00-0.20	Woodchippings over black clayey silt with rootlets (TOPSOIL)
0.60	J			0.20-0.80	Firm consistency dark orangish brown sandy CLAY with roots and rootlets (RIVER TERRACE DEPOSITS)
1.00	J			0.80-2.00	Firm to stiff consistency yellowish orangish brown slightly sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded mixed lithologies including chalk (RIVER TERRACE DEPOSITS)
1.00	c _{fv} *	50,55,42			
1.70	J				

Remarks	Notes
Trial pit terminated at 2.0 m due to groundwater seepages	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP4A**

Project Horsemere Green Lane, Climping

Sheet 1 of 1

Date 12/03/2020

Job No. CCL03279

Bearing: North

Shoring None used

Ground Level m OD

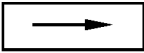
Plant CAT 307c

Stability Sides stable and vertical throughout excavation

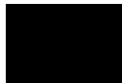
Co-ordinates

Trial Pit A

Logged by GK Logged on site during excavation

Plan  B

Water Minor seepage at 1.4 m depth

Checked by 

Depth	Face A	Face B	Face C	Depth
0.30		(1)		0.30
0.70		(2)		0.70
1.40		(3)		1.40
		Base of Pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
			1	0.00-0.30	Dark brown clayey silt with roots and rootlets (TOPSOIL)
0.60	c _{fv}	42,54,52 60	2	0.30-0.70	Firm consistency dark orangish brown sandy CLAY with roots and rootlets (RIVER TERRACE DEPOSITS)
1.10	c _{fv}	70,60,65 54	3	0.70-1.40	Firm consistency yellowish orangish brown slightly sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded mixed lithologies including chalk and rare flint (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

In Situ Percolation Test

Hole Ref. **TP SSK1**

Project: Horsemere Green Lane, Climping

Sheet 1 of 2

Job No. CCL03279

Date: 12/03/2020

Test by: GK

Checked by: 

Trial Pit SSK1

Test 1

Depth 0.90 m
Length 0.70 m
Width 0.40 m

Depth to water at start of test 0.55 m
Max Effective Depth 0.35 m
75% Effective Depth 0.26 m
25% Effective Depth 0.09 m

Water Level Measurements

Time at Start of Test	Time (Minutes)	Depth to Water (metres)	Effective Depth (m)
9:20	0	0.55	0.35
	1	0.55	0.35
	2	0.55	0.35
	3	0.55	0.35
	4	0.56	0.34
	5	0.56	0.34
	20	0.62	0.28
	40	0.66	0.24
	70	0.70	0.20
	105	0.75	0.15
	135	0.80	0.10

75% Effective Depth - 35 - 0.26
25% Effective Depth - 155 (estimated) 0.09

Outflow Volume

Volume outflowing between 75% & 25% effective depth:

$$V_{p75} = 0.05 \text{ m}^3$$

The mean surface area through which the outflow occurs, taken to be the pit sides to 50% effective depth and the base.

$$a_{p50} = 0.67 \text{ m}^2$$

Time for outflow

$$t_p = 120 \text{ mins}$$

Soil Infiltration Rate

as defined in

BRE DG365 (2016)

$$f = V_{p75} / a_{p50} * t_p$$

$$f = 1.0E-05 \text{ m/sec (estimated)}$$

In Situ Percolation Test

Hole Ref. **TP SSK1**

Project: Horsemere Green Lane, Climping

Sheet 2 of 2

Job No. CCL03279

Date: 12/03/2020

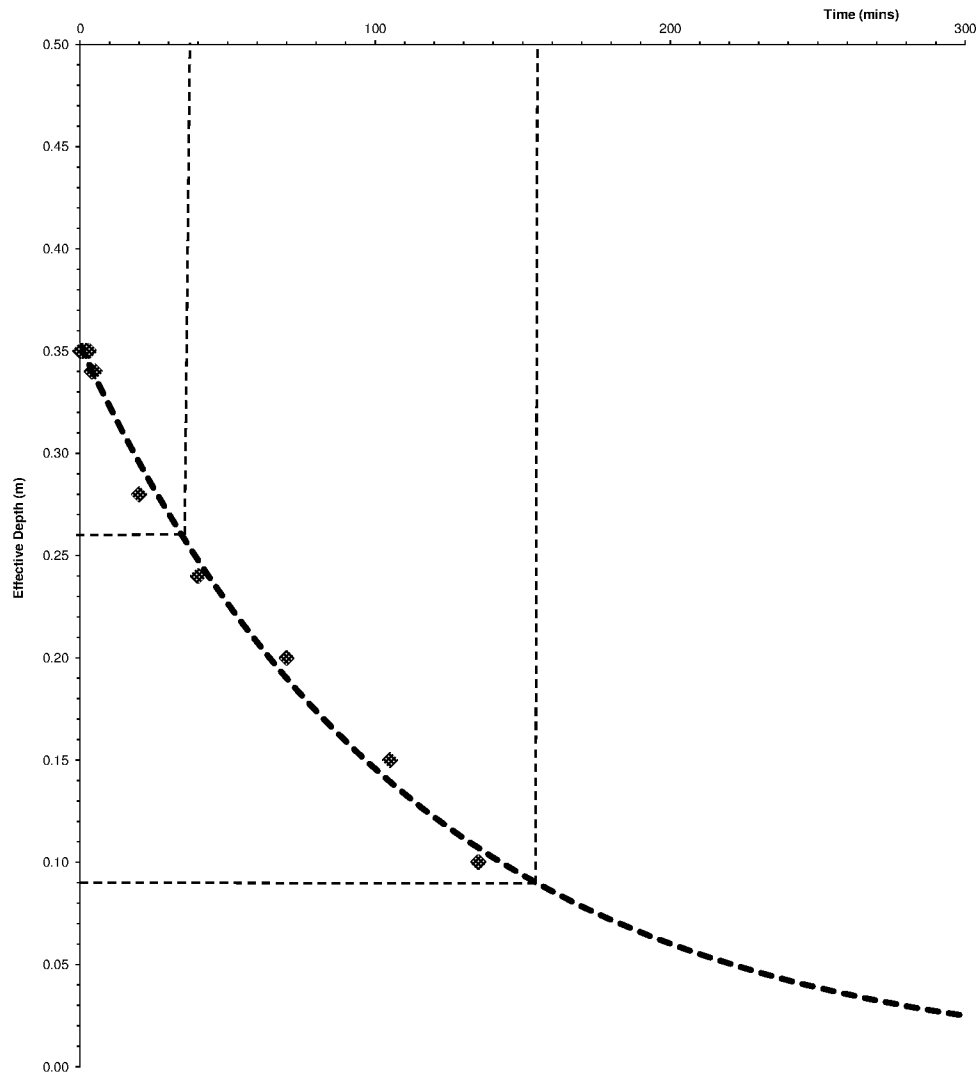
Test by: GK

Checked by:

Trial Pit SSK1

Test 1

Infiltration Rate



In Situ Percolation Test

Hole Ref. **TP SSK1**

Project: Horsemere Green Lane, Climping

Sheet 1 of 2

Job No. CCL03279

Date: 12/03/2020

Test by: GK

Checked by: 

Trial Pit SSK1

Test 2

Depth	0.80 m
Length	0.70 m
Width	0.40 m
Depth to water at start of test	0.40 m
Max Effective Depth	0.40 m
75% Effective Depth	0.30 m
25% Effective Depth	0.10 m

Water Level Measurements

Time at Start of Test	Time (Minutes)	Depth to Water (metres)	Effective Depth (m)
11:35	0	0.40	0.40
	1	0.40	0.40
	2	0.40	0.40
	3	0.41	0.39
	4	0.41	0.39
	5	0.42	0.38
	40	0.52	0.28
	80	0.57	0.23
	140	0.62	0.18
	160	0.63	0.17
	190	0.64	0.16
75% Effective Depth -	50	-	0.30
25% Effective Depth -	260	(estimated)	0.10

Outflow Volume

Volume outflowing between 75% & 25% effective depth:

$$V_{p75} = 0.06 \text{ m}^3$$

The mean surface area through which the outflow occurs, taken to be the pit sides to 50% effective depth and the base.

$$a_{p50} = 0.72 \text{ m}^2$$

Time for outflow

$$t_p = 210 \text{ mins}$$

Soil Infiltration Rate

as defined in

BRE DG365 (2016)

$$f = V_{p75} / a_{p50} * t_p$$

$$f = 6.2E-06 \text{ m/sec (estimated)}$$

In Situ Percolation Test

Hole Ref. **TP SSK1**

Project: Horsemere Green Lane, Climping

Sheet 2 of 2

Job No. CCL03279

Date: 12/03/2020

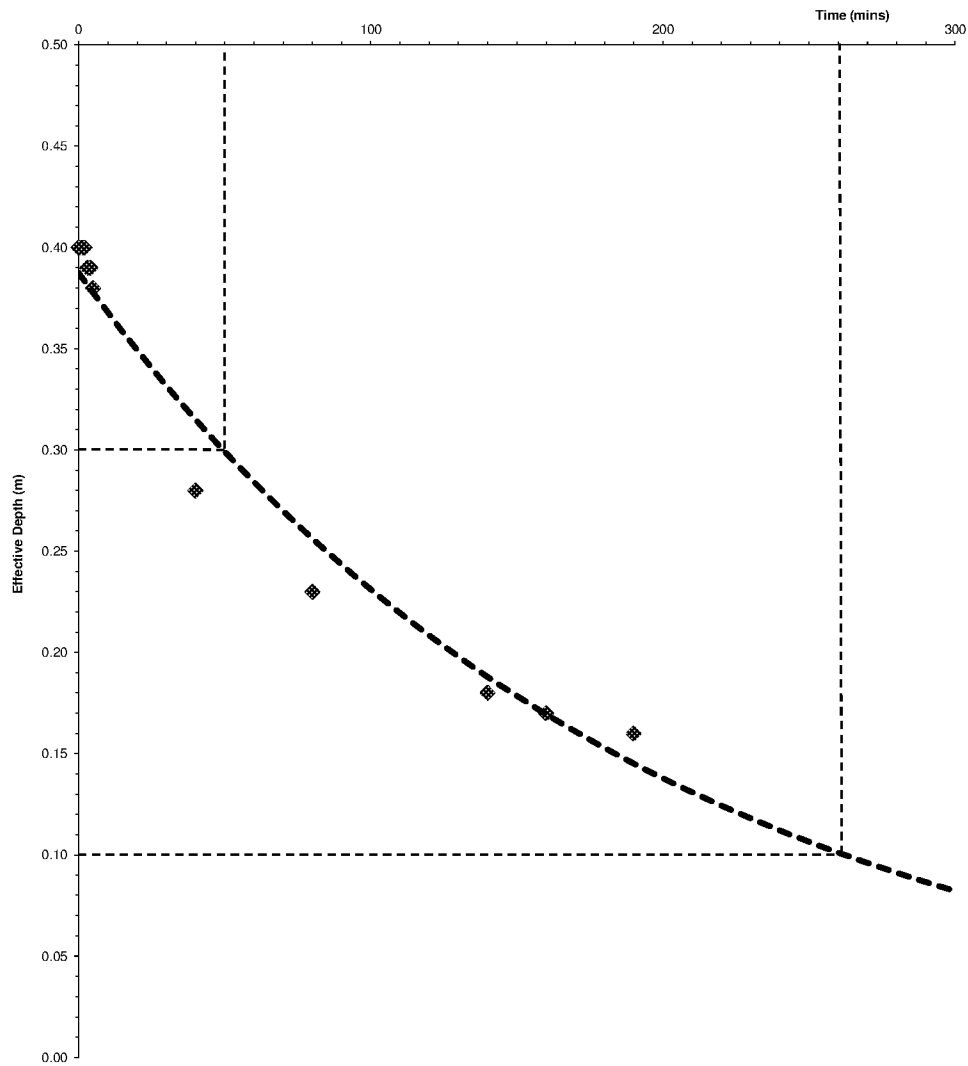
Test by: GK

Checked by:

Trial Pit SSK1

Test 2

Infiltration Rate



In Situ Percolation Test

Hole Ref. **TP SSK2**

Project: Horsemere Green Lane, Climping

Sheet 1 of 2

Job No. CCL03279

Date: 12/03/2020

Test by: GK

Checked by: 

Trial Pit SSK2

Test 1

Depth 1.10 m
Length 1.60 m
Width 0.35 m

Depth to water at start of test 0.50 m
Max Effective Depth 0.60 m
75% Effective Depth 0.45 m
25% Effective Depth 0.15 m

Water Level Measurements

Time at Start of Test	Time (Minutes)	Depth to Water (metres)	Effective Depth (m)
9:10	0	0.50	0.60
	2	0.50	0.60
	3	0.50	0.60
	4	0.50	0.60
	5	0.50	0.60
	20	0.52	0.58
	30	0.53	0.57
	50	0.54	0.56
	75	0.54	0.56
	115	0.55	0.55
	155	0.56	0.54
	190	0.57	0.53
	220	0.57	0.53
	280	0.59	0.51
	310	0.60	0.50

75% Effective Depth - 500 (estimated) 0.45
25% Effective Depth - 2300 (estimated) 0.15

Outflow Volume

Volume outflowing between 75% & 25% effective depth:

$$V_{p75} = 0.17 \text{ m}^3$$

The mean surface area through which the outflow occurs, taken to be the pit sides to 50% effective depth and the base.

$$a_{p50} = 1.73 \text{ m}^2$$

Time for outflow

$$t_p = 1800 \text{ mins}$$

Soil Infiltration Rate

$$f = V_{p75} / a_{p50} * t_p$$

as defined in

$$f = 9.0E-07 \text{ m/sec (estimated)}$$

In Situ Percolation Test

Hole Ref. **TP SSK2**

Project: Horsemere Green Lane, Climping

Sheet 2 of 2

Job No. CCL03279

Date: 12/03/2020

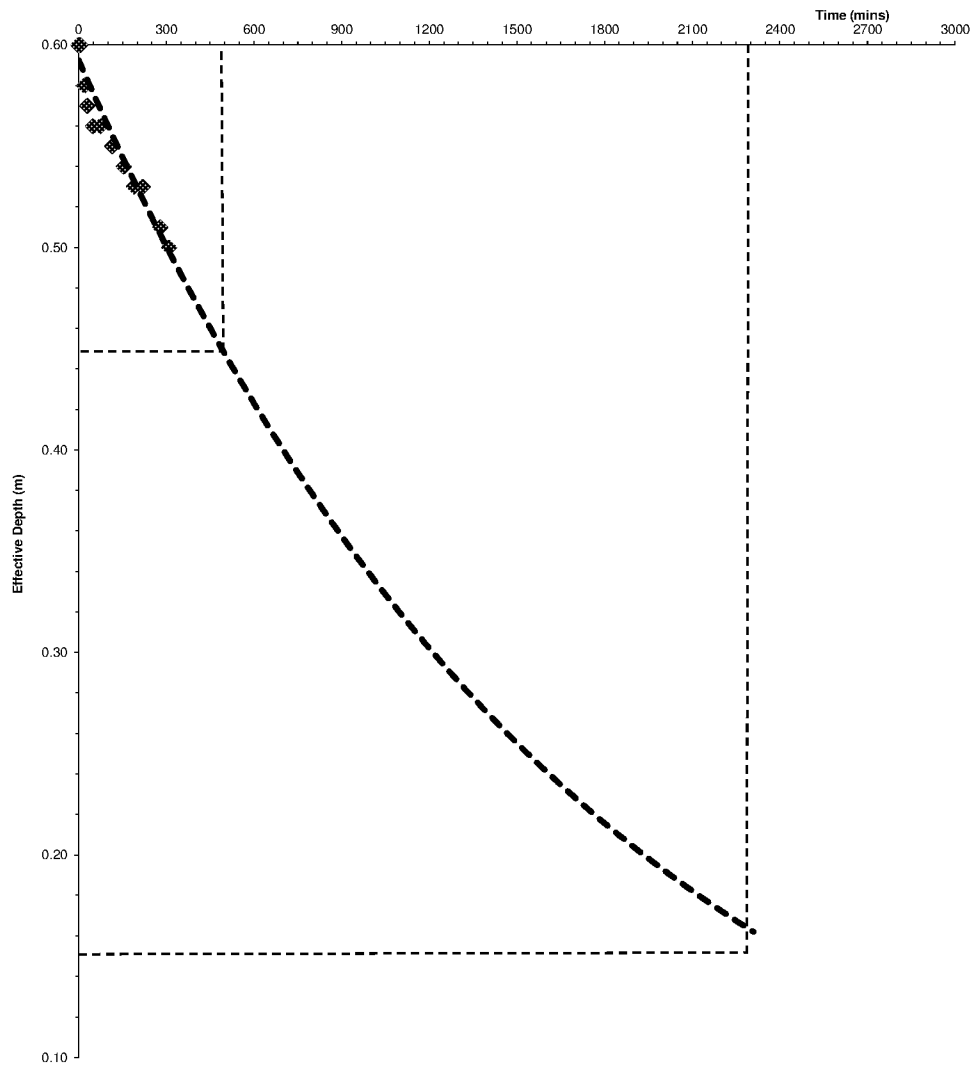
Test by: GK

Checked by: [REDACTED]

Trial Pit SSK2

Test 1

Infiltration Rate



In Situ Percolation Test

Hole Ref. **TP SSK2A**

Project: Horsemere Green Lane, Climping

Sheet 1 of 2

Job No. CCL03279

Date: 12/03/2020

Test by: GK

Checked by:

Trial Pit SSK2A

Test 1

Depth 0.80 m
Length 1.60 m
Width 0.35 m

Depth to water at start of test 0.25 m
Max Effective Depth 0.55 m
75% Effective Depth 0.41 m
25% Effective Depth 0.14 m

Water Level Measurements

Time at Start of Test	Time (Minutes)	Depth to Water (metres)	Effective Depth (m)
12:10	0	0.25	0.55
	1	0.25	0.55
	2	0.25	0.55
	3	0.25	0.55
	4	0.26	0.54
	5	0.27	0.53
	15	0.29	0.51
	45	0.32	0.48
	105	0.37	0.43
	130	0.38	0.42
	150	0.40	0.40

75% Effective Depth - 130 0.41
25% Effective Depth - 650 (estimated) 0.14

Outflow Volume

Volume outflowing between 75% & 25% effective depth:

$$V_{p75} = 0.15 \text{ m}^3$$

The mean surface area through which the outflow occurs, taken to be the pit sides to 50% effective depth and the base.

$$a_{p50} = 1.63 \text{ m}^2$$

Time for outflow

$$t_p = 520 \text{ mins}$$

Soil Infiltration Rate

as defined in

BRE DG365 (2016)

$$f = V_{p75} / a_{p50} * t_p$$

$$f = 3.0E-06 \text{ m/sec (estimated)}$$

In Situ Percolation Test

Hole Ref. **TP SSK2A**

Project: Horsemere Green Lane, Climping

Sheet 2 of 2

Job No. CCL03279

Date: 12/03/2020

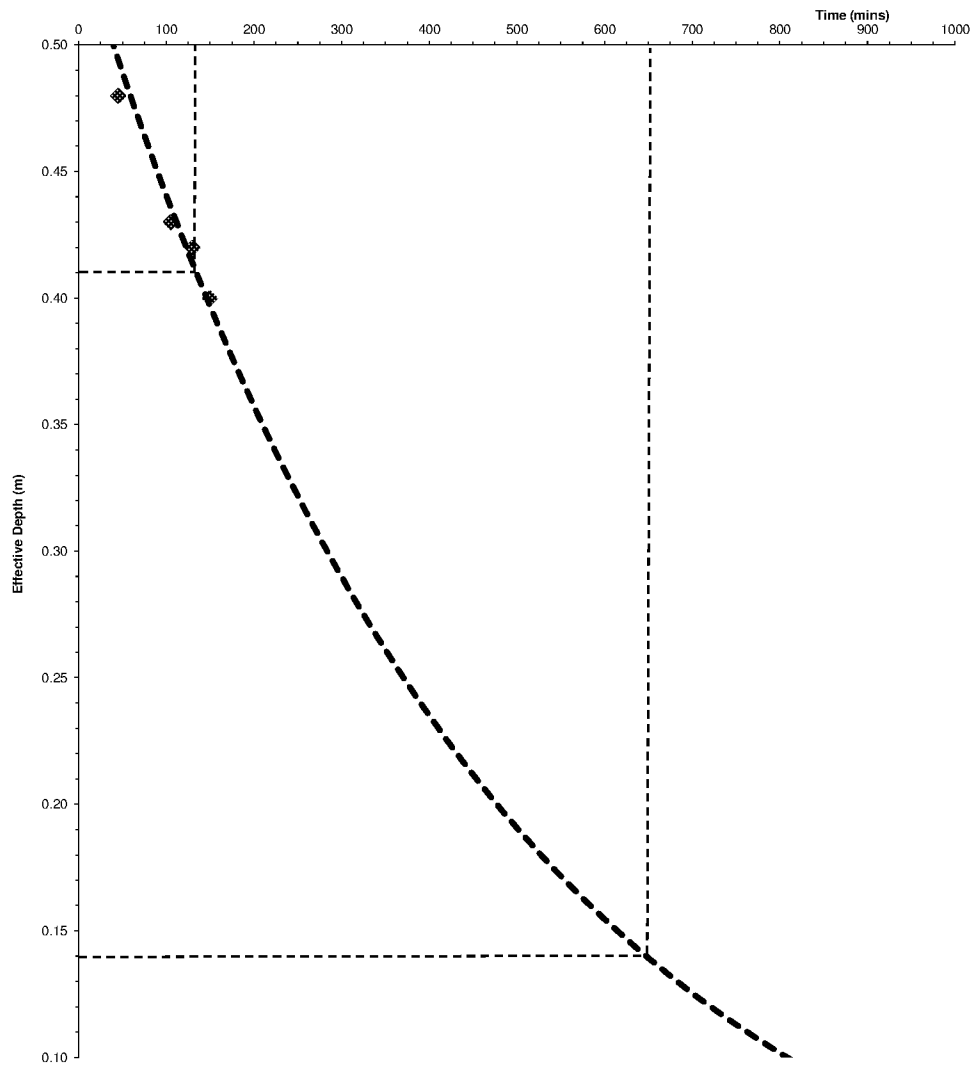
Test by: GK

Checked by: [REDACTED]

Trial Pit SSK2A

Test 1

Infiltration Rate



In Situ Percolation Test

Hole Ref. **TP SSK3**

Project: Horsemere Green Lane, Climping

Sheet 1 of 2

Job No. CCL03279

Date: 12/03/2020

Test by: GK

Checked by: [REDACTED]

Trial Pit SSK3

Test 1

Depth 1.00 m
Length 1.60 m
Width 0.35 m

Depth to water at start of test 0.55 m
Max Effective Depth 0.45 m
75% Effective Depth 0.34 m
25% Effective Depth 0.11 m

Water Level Measurements

Time at Start of Test	Time (Minutes)	Depth to Water (metres)	Effective Depth (m)
9:50	0	0.55	0.45
	1	0.55	0.45
	2	0.55	0.45
	3	0.55	0.45
	4	0.56	0.44
	5	0.56	0.44
	35	0.58	0.42
	70	0.61	0.39
	115	0.65	0.35
	150	0.67	0.33
	180	0.69	0.31
	235	0.71	0.29
	270	0.72	0.28
	295	0.74	0.26
75% Effective Depth -	150	-	0.34
25% Effective Depth -	750	(estimated)	0.11

Outflow Volume

Volume outflowing between 75% & 25% effective depth:

$$V_{p75} = 0.13 \text{ m}^3$$

The mean surface area through which the outflow occurs, taken to be the pit sides to 50% effective depth and the base.

$$a_{p50} = 1.44 \text{ m}^2$$

Time for outflow

$$t_p = 600 \text{ mins}$$

Soil Infiltration Rate

as defined in

BRE DG365 (2016)

$$f = V_{p75} / a_{p50} * t_p$$

$$f = 2.5E-06 \text{ m/sec (estimated)}$$

In Situ Percolation Test

Hole Ref. **TP SSK3**

Project: Horsemere Green Lane, Climping

Sheet 2 of 2

Job No. CCL03279

Date: 12/03/2020

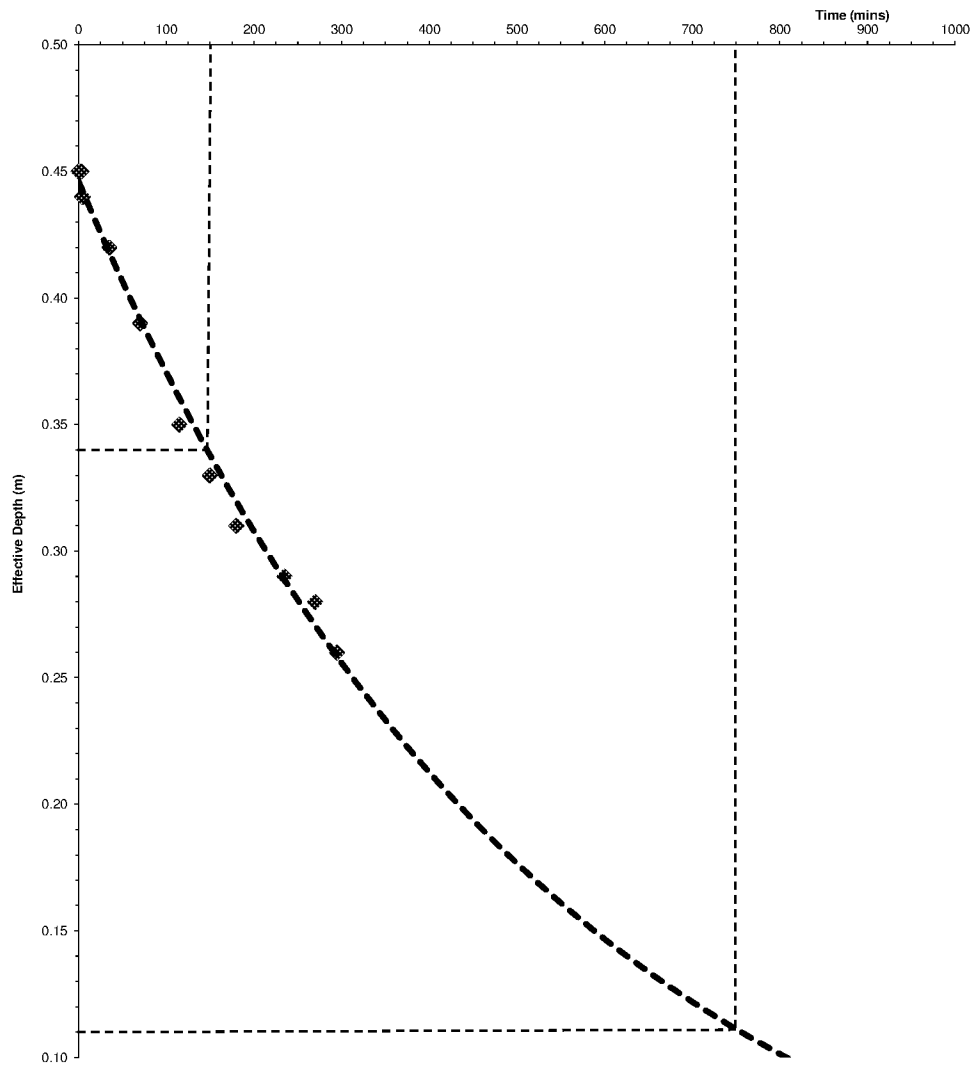
Test by: GK

Checked by

Trial Pit SSK3

Test 1

Infiltration Rate



WINDOWLESS SAMPLE RECORDS

KEY

Sampling

J	Disturbed Jar Sample
G	Jar Sample in Glass Container
g	Soil Sample in Glass Vial
W	Water Sample
IC	Nett sample recovery ratio (ratio of length of recovered sample to length of sample run)

In Situ Measurements

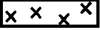
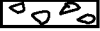
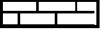
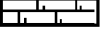
FVT	C_{fv}	Undrained Shear Strength (from hand vane shear vane test)
	C_{rv}	Undrained Remoulded Shear Strength (from hand vane shear vane test)
	C_{fv}^*	Hand Vane Shear Strength Test (on Category A: OS-TK/W soil sample recovered in window sampler)
	S	Standard Penetration Test (SPT: split spoon sampler)
	SPT(C)	SPT carried out with a 60° cone
	'N'	'N' Value from SPT test
	N_{10}	Dynamic Probe Test: Number of blows to drive 100 mm
DPH	N_{H10}	Dynamic Probe Test: Heavy (30 kg mass & 500 mm fall)
DPSH-A	N_{SHA10}	Dynamic Probe Test: Super-Heavy A (63.5 kg mass & 500 mm fall)
DPSH-B	N_{SHB10}	Dynamic Probe Test: Super-Heavy B (63.5 kg mass & 750 mm fall)
	$\frac{x}{y}$	x Blows per y Driving Distance (for non-standard SPT or DP driving distance)
	y mm	
	T	Torque (max) required to turn rods (unit: Nm, unless otherwise shown)

Notes:

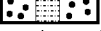
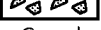
1. All measurement values on record sheets are uncorrected, unless otherwise indicated.
2. For corrected test values, refer to report.
3. Identification and classification of strata is based on the guidance published in the current edition of BS5930 together with BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003
4. Consistency (soft, firm, stiff etc) relates to a manual test/inspection on site (in compliance with BS EN ISO 14688-1:2002 Section 5.14).
5. Undrained shear strength (low, medium, high etc) relates to in situ or laboratory test data and the associated assessed strength of a stratum (in compliance with BS EN ISO 14688-2:2004 Section 5.3 and Table 5).
6. The density of coarse-grained soils is based on SPT N values (or equivalent Dynamic Probe test or CPT data) as outlined in BS5930 and BS EN ISO 14688-2:2004.
7. Rock strength (weak, strong etc) is based on field identification (and/or strength test data), as outlined in BS EN ISO 14689-1:2003 Table 5.

BOREHOLE & DRILLHOLE RECORDS - LEGENDS KEY SHEET

Legend - Strata Encountered in Exploratory Hole

Soil	Rock		
	Sedimentary	Igneous	Metamorphic
 Made Ground	 Mudstone	 Fine-grained	 Fine-grained
 Clay	 Shale	 Medium-grained	 Medium-grained
 Silt	 Siltstone	 Coarse-grained	 Coarse-grained
 Sand	 Sandstone		
 Gravel	 Limestone		
 Peat/Topsoil	 Chalk		
 Organic Sand	 Coal		
 Organic Clay	 Conglomerate		

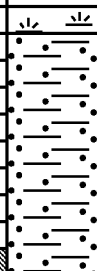
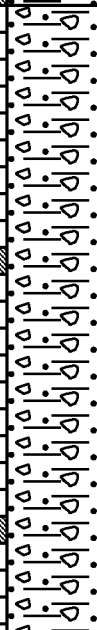
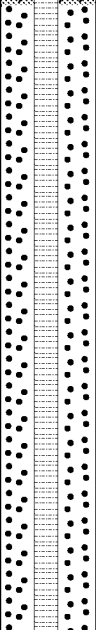
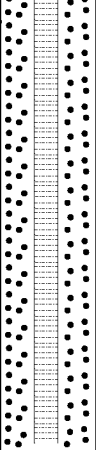
Legend - Backfill to Borehole and Standpipe Installations

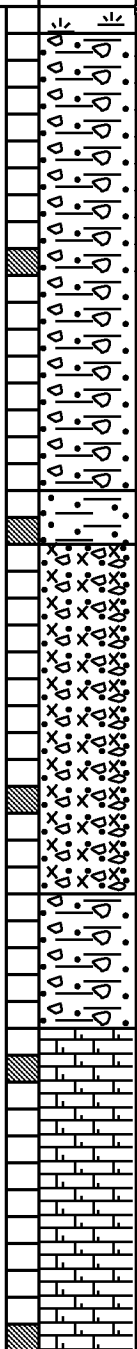
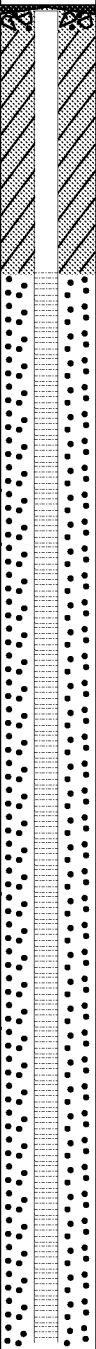
Backfill	Installations
 Soil arisings	 Concrete Cover Over Standpipe
 Bentonite	 Plain Standpipe - Bentonite Surround
 Cement-based Grout	 Perforated Standpipe - Geotextile and Granular Filter Surround
 Gravel	 Perforated Standpipe End Geotextile and Granular Filter Surround

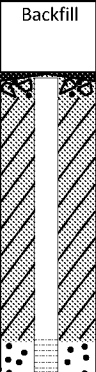
Notes:

1. A combination of the strata symbols are indicative of mixed soil types.
2. The response zone of a standpipe refers to the section of perforated pipe within a granular surround, where substances may freely enter the standpipe from the surrounding strata.

 Windowless Sample Record Sheet						Hole Ref. WS1			
Project: Horsemere Green Lane, Climping Date: 23/12/2019						Sheet 1 of 1			
Contractor 360 Drilling Equipment Premier Compact 110						Job No. CCL03279			
Method 0.0 m to 5.0 m windowless sampling Boring Diameter 100 mm						Ground Level. m OD			
						Co-ordinates			
						Logged by: GK Logged on site during drilling operations			
						Checked by:			
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.
					Grass over dark brown sandy clay with rootlets. (TOPSOIL)	0.10			
					Soft consistency dark orangish brown sandy CLAY. (RIVER TERRACE DEPOSITS)				
0.90	J				Firm to stiff consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to medium subrounded (RIVER TERRACE DEPOSITS)	0.70			
1.80	J				Firm consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to coarse subangular including flint (RIVER TERRACE DEPOSITS)	1.20			
3.20	J				Orangish brown slightly gravelly silty SAND. Gravel is fine to coarse subangular mixed lithologies including flint (RIVER TERRACE DEPOSITS)	2.10			
					(End of Hole)	5.00			
Core Recovery					Groundwater			Additional Tests	
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value	
0.00-1.00	90%	5.00	3.00	1.40	Water depth on completion of hole				
1.00-2.00	85%								
2.00-3.00	85%								
3.00-4.00	100%								
4.00-5.00	80%								
Remarks					Notes				
					1. All logging and sampling in accordance with BS 5930:2015 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²				

					Windowless Sample Record Sheet			Hole Ref. WS2	
Contractor 360 Drilling Method 0.0 m to 5.0 m windowless sampling Boring Diameter 100 mm					Project: Horsemere Green Lane, Climping Date: 23/12/2019			Sheet 1 of 1 Job No. CCL03279	
					Equipment Premier Compact 110			Ground Level. m OD Co-ordinates Logged by: GK Logged on site during drilling operations Checked by:	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.
0.80	J				Dark brown very clayey sand with rootlets (TOPSOIL)	0.10			
					Soft consistency dark orangish brown very sandy CLAY with rootlets and roots. (RIVER TERRACE DEPOSITS)	1.00			
3.80	J				Firm consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded mixed lithologies including chalk and flint (RIVER TERRACE DEPOSITS)	3.40			
					Structureless CHALK comprising whitish cream mottled orangish brown gravelly CLAY. Clasts are extremely weak low density (LEWES NODULAR CHALK FORMATION)	5.00			
(End of Hole)						5.00			
Core Recovery				Groundwater			Additional Tests		
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value	
0.00-1.00	100%	5.00	2.50	0.72	Water depth on completion of hole				
1.00-2.00	100%								
2.00-3.00	100%								
3.00-4.00	60%								
4.00-5.00	100%								
Remarks					Notes 1. All logging and sampling in accordance with BS 5930:2015 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²				

					Windowless Sample Record Sheet			Hole Ref. WS3	
					Project: Horsemere Green Lane, Climping			Sheet 1 of 1	
					Date: 23/12/2019			Job No. CCL03279	
Contractor 360 Drilling		Equipment Premier Compact 110			Ground Level. m OD				
Method 0.0 m to 5.0 m windowless sampling					Co-ordinates				
Boring Diameter 100 mm					Logged by: GK Logged on site during drilling operations				
					Checked by: [Redacted]				
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.
2.50	J				Dark brown clayey sand with rootlets (TOPSOIL)	0.10			
					Soft consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to coarse subrounded (RIVER TERRACE DEPOSITS)				
					... Becoming firm consistency below 1.5 m depth				
					Stiff consistency greyish orangish brown slightly sandy CLAY (RIVER TERRACE DEPOSITS)	1.80			
					Orangish brown slightly gravelly silty SAND with grey clay inclusions. Gravel is fine to coarse subrounded of chalk (RIVER TERRACE DEPOSITS)	2.00			
					Firm to stiff consistency greyish orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded mixed lithologies including chalk. (RIVER TERRACE DEPOSITS)	3.30			
Structureless CHALK comprising whitish cream mottled orangish brown gravelly CLAY. Clasts are weak low density (LEWES NODULAR CHALK FORMATION)	3.80								
					(End of Hole)	5.00			
Core Recovery		Groundwater				Additional Tests			
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value	
0.00-1.00	100%	5.00	-	0.99	Water depth on completion of hole				
1.00-2.00	100%								
2.00-3.00	80%								
3.00-4.00	100%								
4.00-5.00	70%								
Remarks					Notes				
					1. All logging and sampling in accordance with BS 5930:2015 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²				

						Windowless Sample Record Sheet		Hole Ref. WS4	
Contractor 360 Drilling Method 0.0 m to 5.0 m windowless sampling Boring Diameter 100 mm						Project: Horsemere Green Lane, Climping Date: 23/12/2019		Sheet 1 of 1 Job No. CCL03279	
						Equipment Premier Compact 110		Ground Level. m OD Co-ordinates	
								Logged by: GK Logged on site during drilling operations Checked by:	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.
1.20	J				Woodchippings (MADE GROUND)	0.10			
					Dark brown to black humic very clayey sand with rootlets (TOPSOIL)	0.20			
					Soft to firm consistency orangish brown slightly gravelly sandy CLAY. Gravel is fine to coarse subrounded (RIVER TERRACE DEPOSITS)	1.10			
					Greyish orangish brown slightly gravelly clayey SAND. Gravel is fine to coarse subrounded (RIVER TERRACE DEPOSITS)	3.00			
					Orangish brown silty SAND with rare grey clay inclusions (RIVER TERRACE DEPOSITS)	5.00			
(End of Hole)									
Core Recovery					Groundwater			Additional Tests	
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value	
0.00-1.00	100%	5.00	3.20	0.99	Water depth on completion of hole				
1.00-2.00	90%								
2.00-3.00	100%								
3.00-4.00	20%								
4.00-5.00	100%								
Remarks					Notes				
					1. All logging and sampling in accordance with BS 5930:2015 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²				



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

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

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Horsemere Green Lane, Climping

Client Reference: CCL03279
Job Number: 20-92552
Date Sampled: 12/03/2020
Date Received: 13/03/2020
Date Tested: 20/03/2020
Sampled By: GK

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

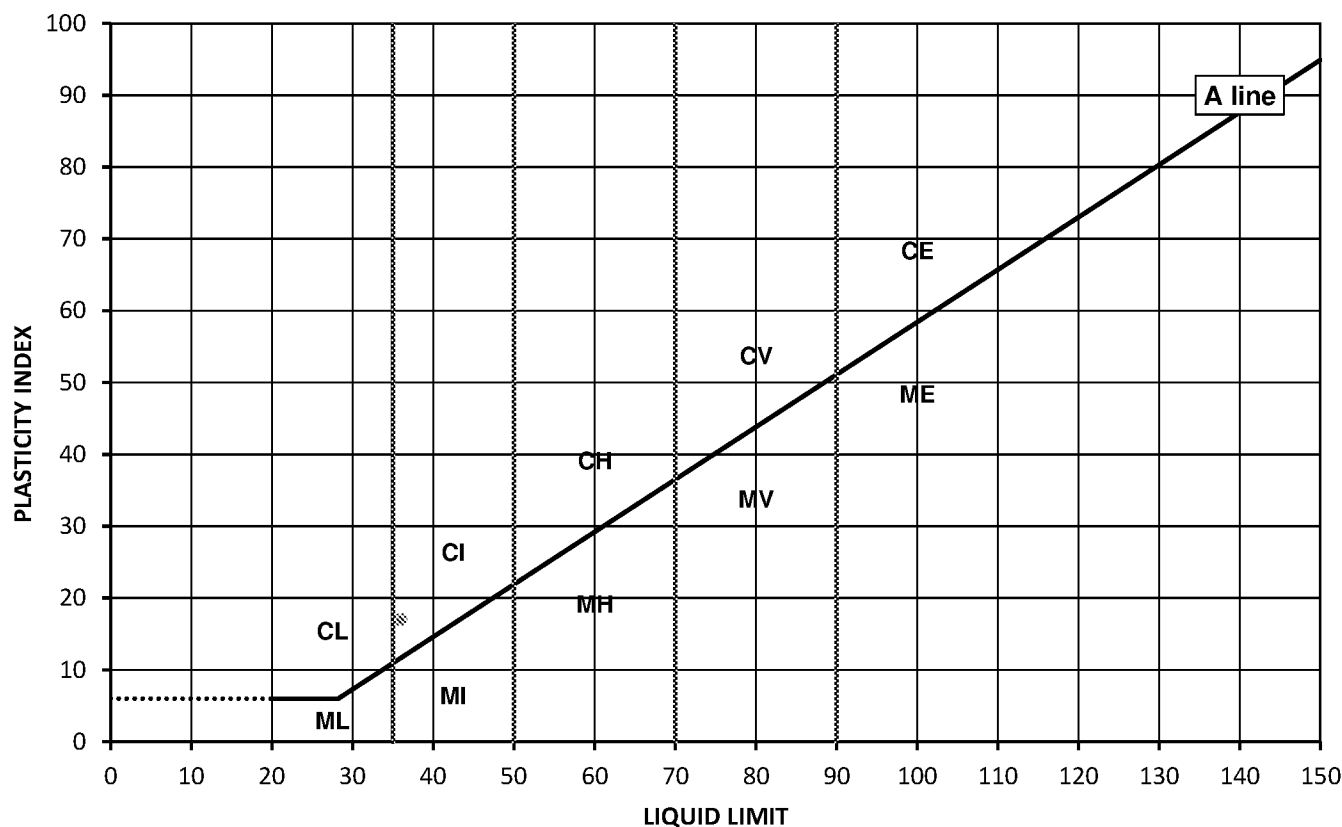
Test Results:

Laboratory Reference: 1472045
Hole No.: SSK1
Sample Reference: Not Given
Soil Description: Orangish brown sandy CLAY

Depth Top [m]: 0.70
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
21	36	19	17	100



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

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

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

Remarks:

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Signed:



Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd



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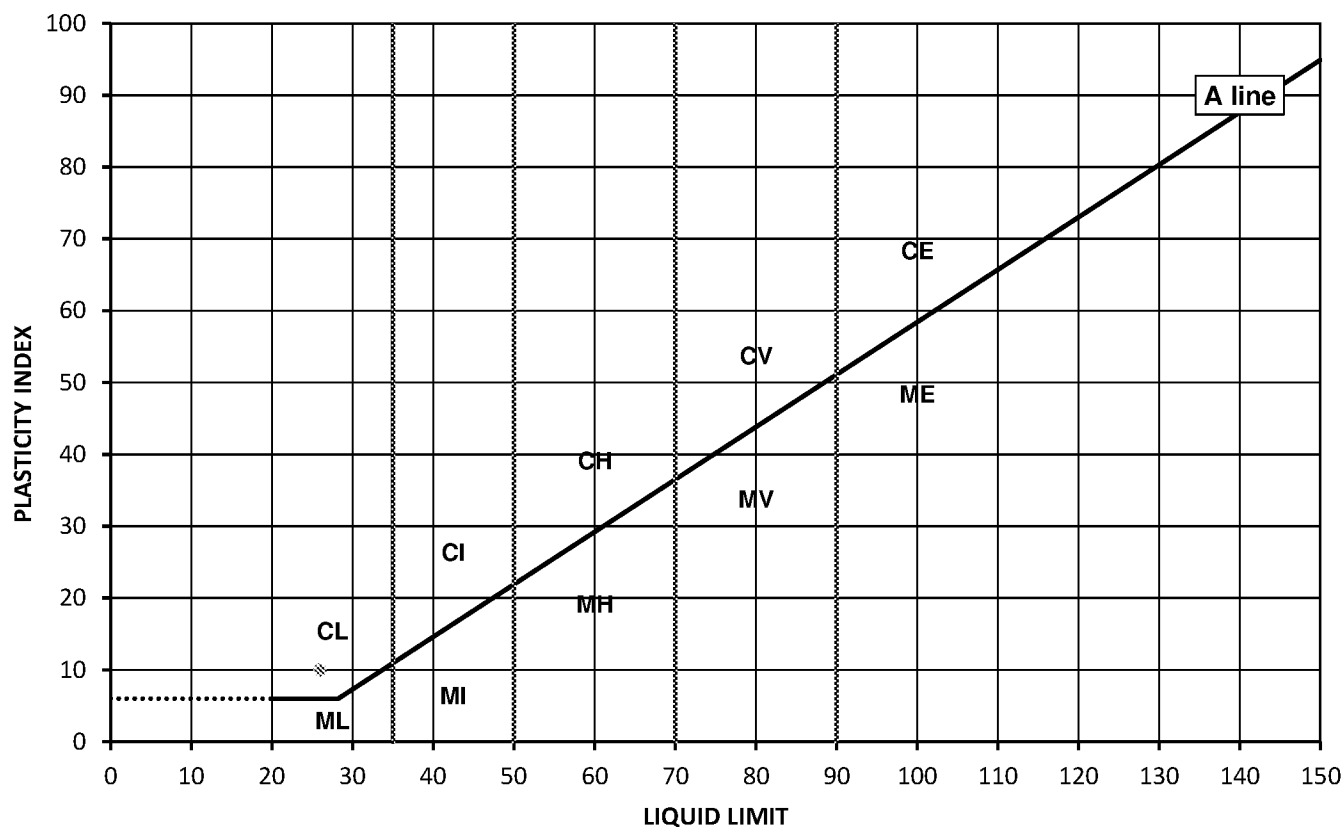
Test Results:

Laboratory Reference: 1472046
Hole No.: TP1
Sample Reference: Not Given
Soil Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 0.70
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
21	26	16	10	99



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

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

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

Remarks:

Signed:

Szczepan Bielatowicz
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Date Reported: 27/03/2020

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Client Reference: CCL03279
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Date Sampled: 12/03/2020
Date Received: 13/03/2020
Date Tested: 20/03/2020
Sampled By: GK

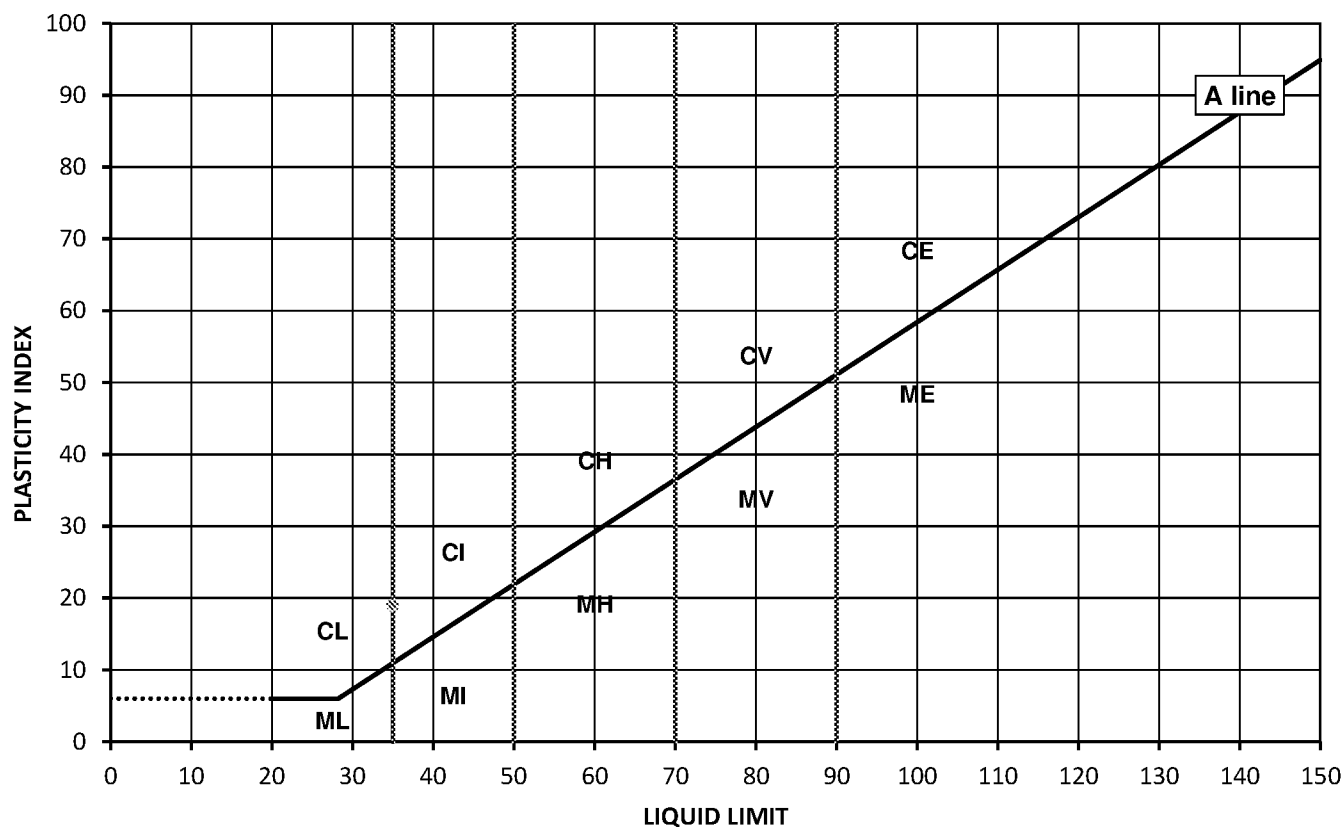
Test Results:

Laboratory Reference: 1472047
Hole No.: TP2
Sample Reference: Not Given
Soil Description: Orangish brown slightly gravelly sandy CLAY

Depth Top [m]: 1.40
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	35	16	19	90



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

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

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

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Sampled By: GK

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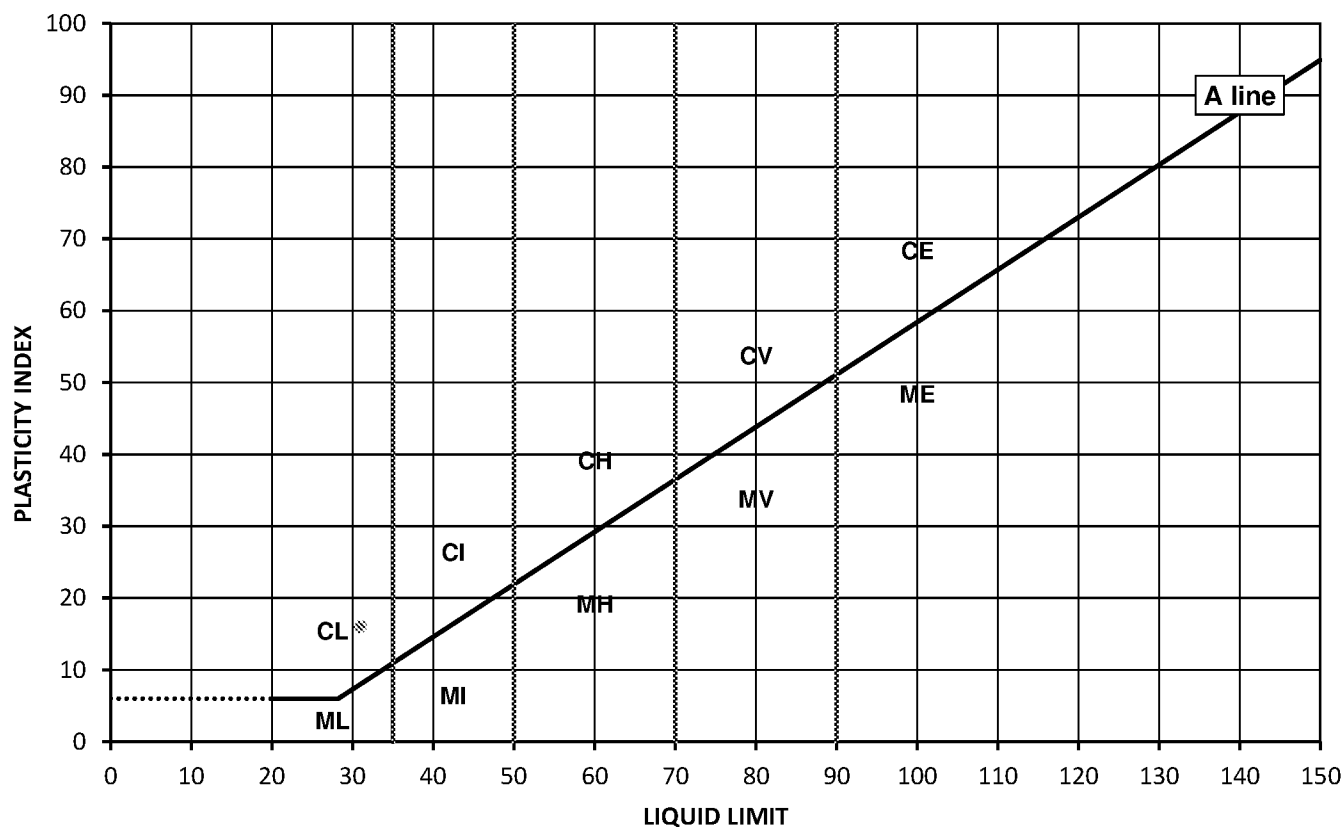
Test Results:

Laboratory Reference: 1472048
Hole No.: TP2
Sample Reference: Not Given
Soil Description: Yellowish brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.60
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	31	15	16	84



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

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

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

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Environmental Science

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Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Horsemere Green Lane, Climping

Client Reference: CCL03279
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Date Sampled: 12/03/2020
Date Received: 13/03/2020
Date Tested: 20/03/2020
Sampled By: GK

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

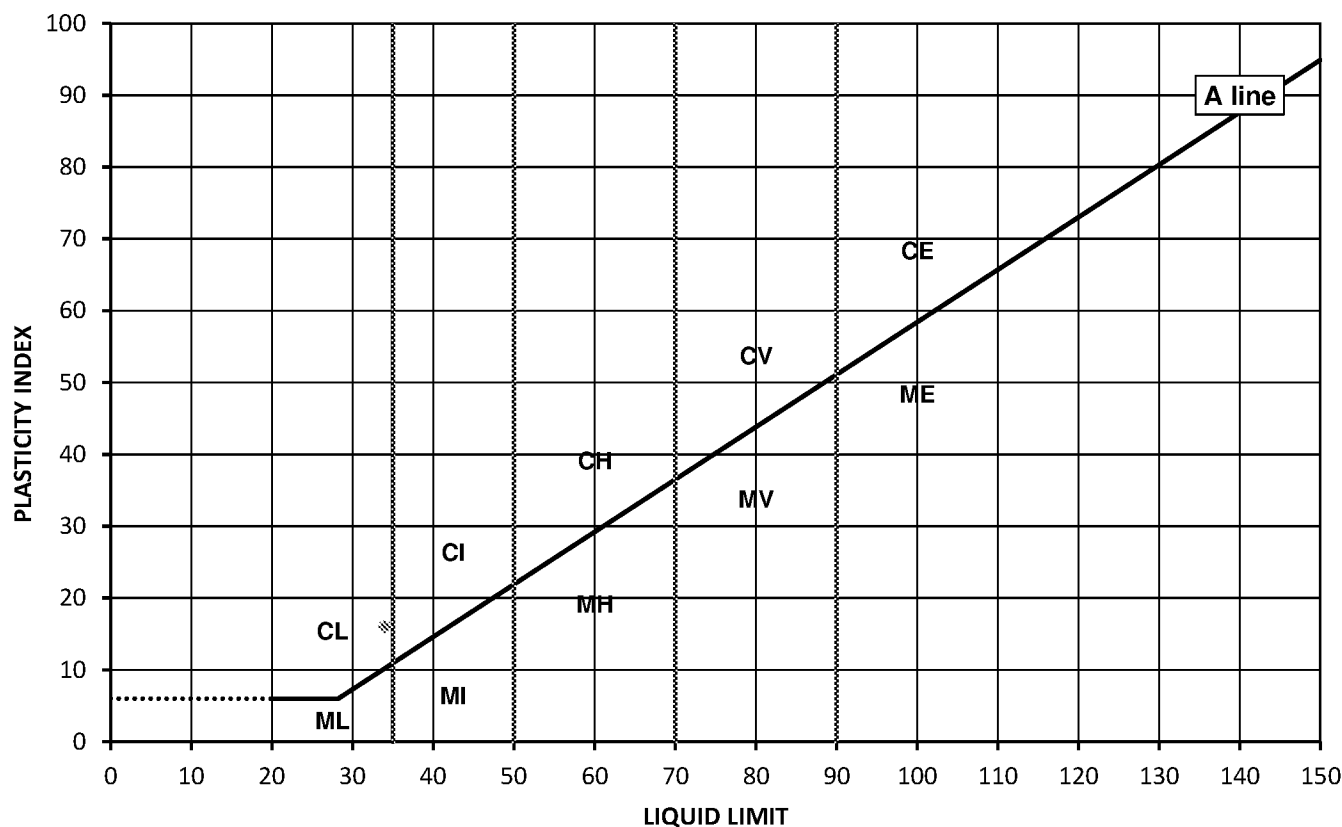
Test Results:

Laboratory Reference: 1472049
Hole No.: TP3
Sample Reference: Not Given
Soil Description: Orangish brown very sandy CLAY

Depth Top [m]: 0.90
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
23	34	18	16	100



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

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

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

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PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

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Environmental Science

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Warwickshire, CV47 9PU

Contact: George Kavanagh
Site Address: Horsemere Green Lane, Climping

Client Reference: CCL03279
Job Number: 20-92552
Date Sampled: 12/03/2020
Date Received: 13/03/2020
Date Tested: 20/03/2020
Sampled By: GK

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

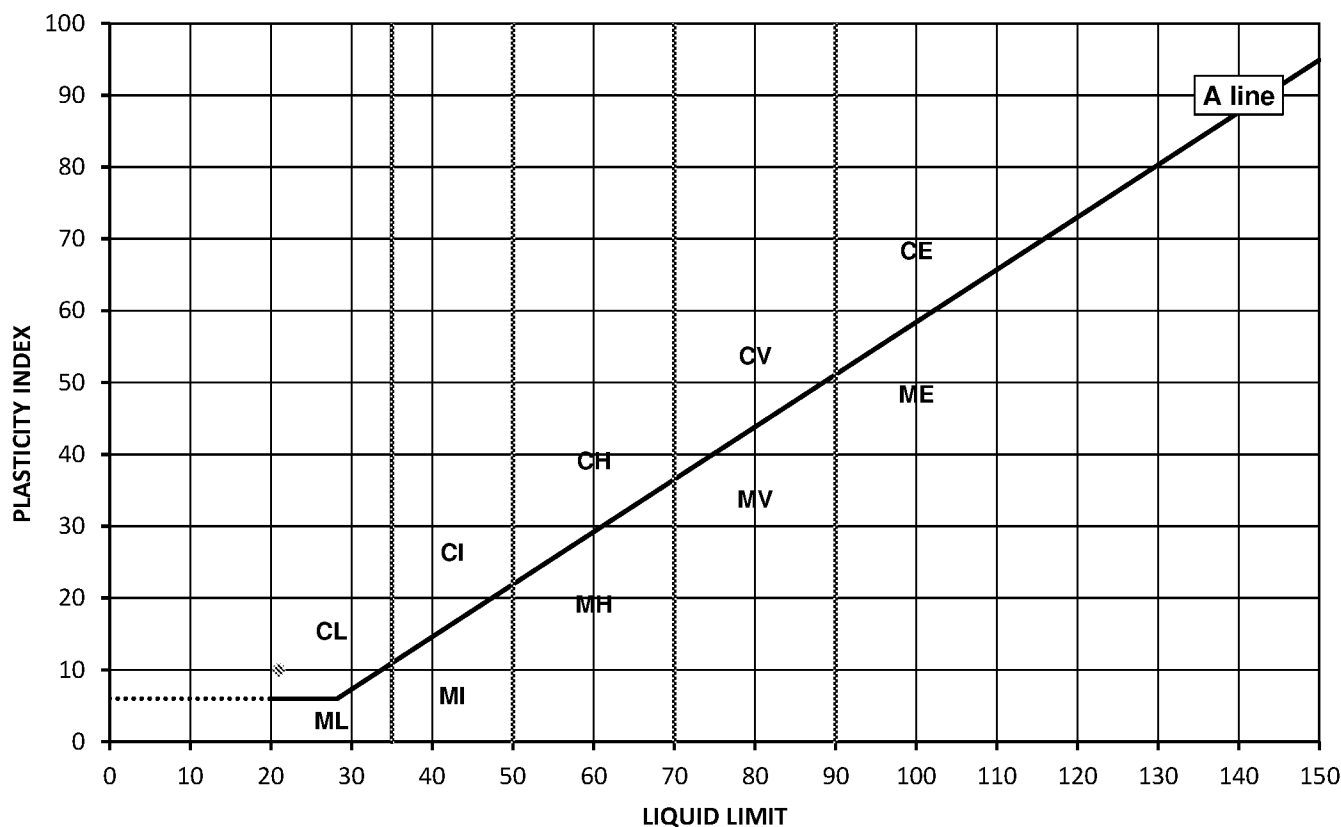
Test Results:

Laboratory Reference: 1472050
Hole No.: TP4
Sample Reference: Not Given
Soil Description: Orangish brown slightly clayey SAND with fragments of chalk

Depth Top [m]: 1.70
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
14	21	11	10	89



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

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

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

Remarks:

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PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 236.8



4041

Client: Crossfield Consulting Ltd
 Client Address: The Granary, White Hall Farm,
 Leamington Road, Long Itchington,
 Warwickshire, CV47 9PU
 Contact: George Kavanagh
 Site Address: Horsemere Green Lane, Climping

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

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

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Environmental Science

Client Reference: CCL03279
 Job Number: 20-92552
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 Date Received: 13/03/2020
 Date Tested: 20/03/2020
 Sampled By: GK

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um	LL	PL	PI	bulk Mg/m3	dry Mg/m3	PD Mg/m3			
1472045	SSK1	Not Given	0.70	Not Given	D	Orangish brown sandy CLAY	Atterberg 4 Point	21		100	36	19	17						
1472046	TP1	Not Given	0.70	Not Given	D	Brown slightly gravelly very sandy CLAY	Atterberg 4 Point	21		99	26	16	10						
1472047	TP2	Not Given	1.40	Not Given	D	Orangish brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		90	35	16	19						
1472048	TP2	Not Given	1.60	Not Given	D	Yellowish brown slightly gravelly very sandy CLAY	Atterberg 4 Point	19		84	31	15	16						
1472049	TP3	Not Given	0.90	Not Given	D	Orangish brown very sandy CLAY	Atterberg 4 Point	23		100	34	18	16						
1472050	TP4	Not Given	1.70	Not Given	D	Orangish brown slightly gravelly slightly clayey SAND with fragments of chalk	Atterberg 4 Point	14		89	21	11	10						

Note: # Non accredited; NP - Non plastic

Comments:

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Signed:

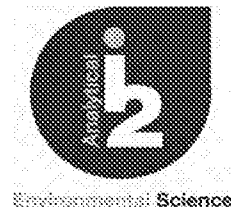


Szczepan Bielatowicz
 PL Deputy of Head of Geotechnical Section
 for and on behalf of i2 Analytical Ltd

Page

Date Reported: 27/03/2020

GF 234.10



George Kavanagh
Crossfield Consulting Ltd
The Granary
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Warwickshire
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i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number : 20-92669

Project / Site name:	Horsemere Green Lane, Climping	Samples received on:	13/03/2020
Your job number:	CCL03279	Samples instructed on:	13/03/2020
Your order number:	PO11436	Analysis completed by:	24/03/2020
Report Issue Number:	1	Report issued on:	24/03/2020
Samples Analysed:	4 soil samples		

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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



Analytical Report Number: 20-92669

Project / Site name: Horsemere Green Lane, Climping

Your Order No: PO11436

Lab Sample Number				1472689	1472690	1472691	1472692	
Sample Reference				TP2	TP3	TP3	TP4	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				1.00	0.40	1.60	1.00	
Date Sampled				07/03/2020	07/03/2020	07/03/2020	07/03/2020	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of Detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	15	15	17	12	
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.2	1.2	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	7.5	7.8	8.6	
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0079	0.0096	0.019	0.027	



Analytical Report Number : 20-92669

Project / Site name: Horsemere Green Lane, Climping

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1472689	TP2	None Supplied	1.00	Light brown clay and sand.
1472690	TP3	None Supplied	0.40	Light brown clay and sand.
1472691	TP3	None Supplied	1.60	Light brown clay.
1472692	TP4	None Supplied	1.00	Light brown clay and sand with chalk and gravel.



Analytical Report Number : 20-92669

Project / Site name: Horsemere Green Lane, Climping

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

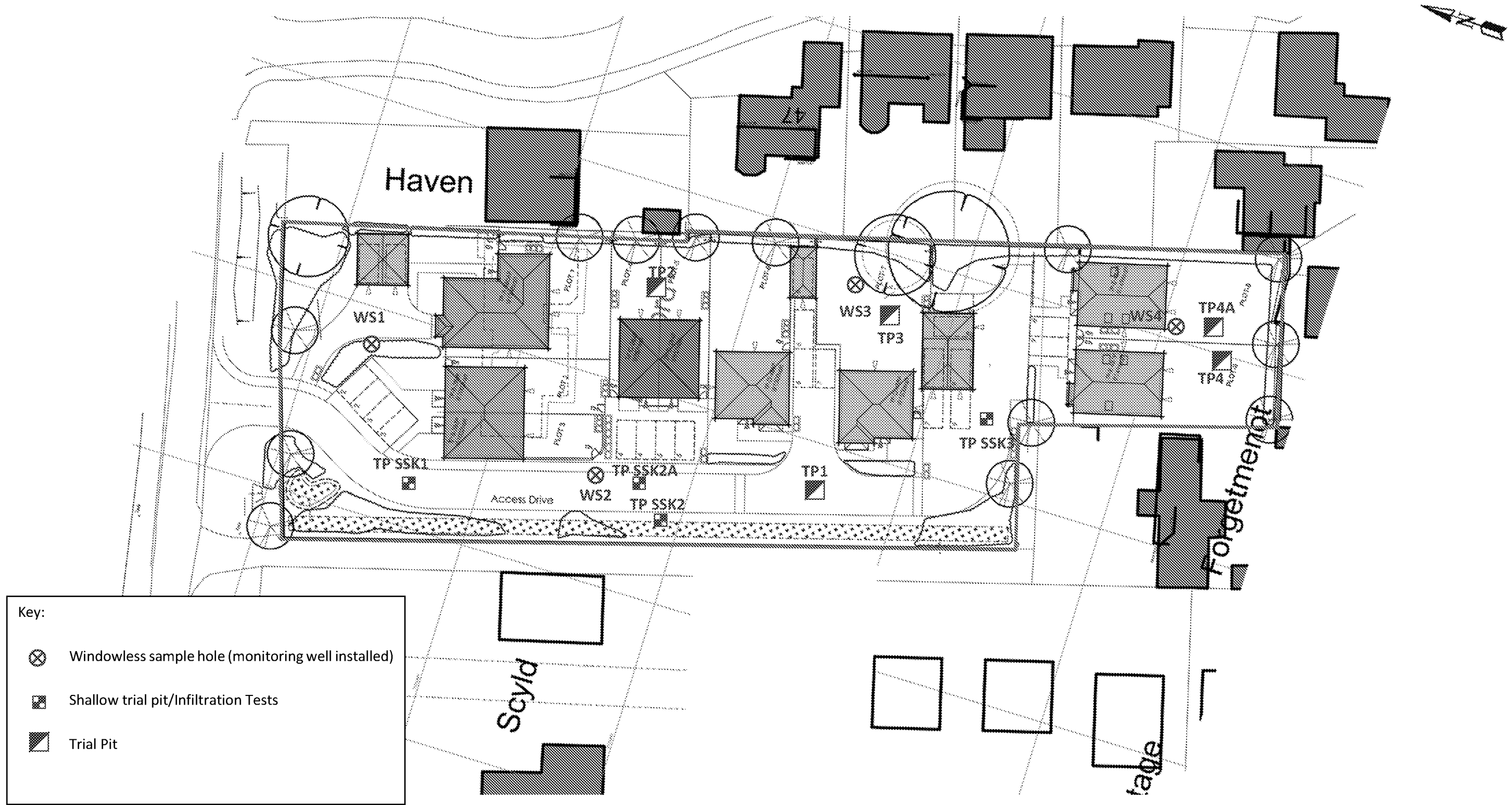
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

FIGURE III-1



EXPLORATORY HOLE LOCATION PLAN
Scale 1:500

Reproduced from the 1:500 scale Site Layout by Carlton Design Partnership dated 03/12/2019. Drg No. 190725/SL-01

APPENDIX IV

APPENDIX IV – BASIS OF GEOTECHNICAL ASSESSMENT FOR FOUNDATIONS

Geotechnical Design Category of Structure: 2

Design Working Life: Standard building structure (50 years)

Design Approach: 1

1. Geotechnical Model

On the basis of the ground investigation data, the following model of the ground conditions is considered appropriate for foundation design purposes:

Depth (m)	General Description of Strata (and classification)	Parameter	Characteristic Value & Units	Remarks
0.0 to 0.30	Topsoil/Made Ground			
0.30 to 3.40	Firm, medium strength, sandy clay (River Terrace Deposits)	γ c_u ϕ_u Modified PI	19 kN/m ³ 55 kN/m ² 0° 15 %	Estimated from site data Based on hand vane tests Low volume-change potential NHBC (2020)
3.40 to 5.00	Structureless chalk comprising gravelly clay (Undifferentiated Upper Cretaceous chalk)	γ	20 kN/m ³	Estimated from site data

Characteristic Depth to Groundwater (or groundwater level): 1.5 m

Reference should be made to Section 8 – 9 of the report for an assessment of overall ground stability, seismic risk, combined failure of the structure/ground, excessive settlements and potential soil-volume changes (including heave).

2. Imposed Actions from Proposed Structure

The following are generic values, based on the development proposed, as described in the report. In compliance with BS EN 1997-1:2004, final designs should include consideration of the calculated imposed loads.

Imposed Load on Foundations: 100 kN/m run (maximum anticipated load for two-storey building)

Serviceability Limit Values (associated with above action)

Maximum Total Settlement: 25 mm

Maximum Deflection (angular distortion value): 1/1000

3. Geometry of Proposed Foundations

Footing Width (assumed for assessment): Up to 3.0 m maximum

Footing Depth (assumed for assessment): Minimum 0.9 m

4. Shallow Foundations

In assessing the allowable bearing pressures below structural foundations, a number of methods are used, as outlined below.

4.1. Fine Grained Soils

Where the foundations are to be placed on these soils, the ultimate bearing capacity has been estimated using the method proposed by Terzaghi (1943) using total stress parameters. Partial factors have been considered in this assessment, in accordance with BS EN 1997-1:2004 and the relevant National Annex.

The recommended Net Allowable Bearing Pressure is based on a value less than 0.3 times the ultimate bearing capacity and, therefore, the serviceability limit state will be satisfied where imposed serviceability loading is not greater than this value.

4.2. Coarse Grained Soils

Where foundations are to be placed on these soils, the allowable bearing pressure is estimated using the method of Terzaghi and Peck, as modified by Meyerhof (1965). Using this method, total settlements are assumed to be not greater than 25 mm (and a detailed serviceability limit calculation is not necessary).