



Geo-Environmental

AGRICULTURAL LAND ASSESSMENT

for the land at

LIDSEY ROAD, WOODGATE

CHICHESTER, WEST SUSSEX

PO20 3SU

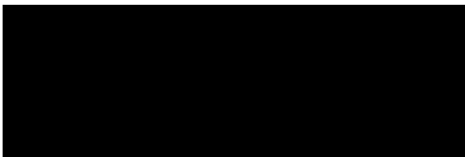
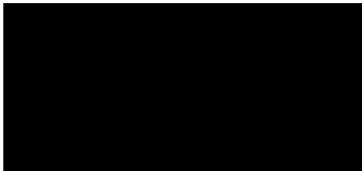
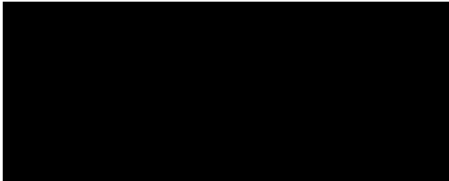
on behalf of

THAKEHAM CLIENT LIMITED





AGRICULTURAL LAND ASSESSMENT

Report:	AGRICULTURAL LAND ASSESSMENT
Site:	LIDSEY ROAD, WOODGATE, CHICHESTER, WEST SUSSEX, PO20 3SU
Client:	THAKEHAM CLIENT LIMITED
Date:	25/01/2021
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AMENDMENT RECORD

Revision ref.	Date	Reasons for amendment	Author	Reviewer	Authorised
1.0	27/08/20	First issue for Client review	LH	KB	MB
2.0	25/01/21	Client requested changes due to inclusion of "Wings" residential house. Data ordered does not reflect this request change.	KB	KB	MB



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¹Source: ALC map London and the South East 1:250 000 Series Agricultural Land Classification



APPENDICES

APPENDIX A	Exploratory hole logs, plans and soil classification test results
APPENDIX B	NSRI Soils Site Report (ref.106000804)



EXECUTIVE SUMMARY

The site has been assessed in line with the guidelines in the Agricultural Land Classification¹⁷ (ALC) system, from which the following has been identified:

- The proposed development of the application site would result in the loss of potential agricultural land, but as the site is only approximately 2.4 Ha, this would not significantly impact the yield or agriculture potential of the surrounding land.
- An analysis of available data revealed that the site area was not covered by any Agri-environment, Forestry and Woodland or Other Land Based Schemes.
- It was anticipated that the site would be classified as Grade 2. However, it should be noted that the application site extends to approximately 2.4Ha, this is far lower than the 80Ha limit applied under the pre-1988 ALC system. Whilst this system classifies the land as Grade 2, the granularity of the system is unable to take account of smaller scale local variables, which would change the land classification of individual parcels of land.
- Whilst the climatic factors on the site are not considered to limit land-quality to less than Grade 1, the wetness class would limit the quality of the soil to no less than Grade 2 or Sub-grade 3a. The chemical testing of the site would limit the quality of the soil to no less than Sub-grade 3b.
- Previous investigations discovered contaminated hotspots of hydrocarbon Benzo a Pyrene (BaP) and arsenic containing material on the site. If the site was to be used for agricultural purposes in the future, further extensive ground investigation to fully delineate the Benzo a Pyrene (BaP) contamination (and any other potential contaminants) would be required. Following this any contaminated soils will have to be removed and replaced with clean topsoil, which would be extremely costly. Partitioning the land is unlikely to be financially viable due to the small size of the site, thus without an extensive site investigation and subsequent remediation, the site can only be used for grazing. Therefore, the site in its current state would be Grade 5 as 'only extensive grazing is possible on the land' and would be regarded as 'non-agricultural'.
- It is considered that the loss of land at the site would not significantly harm national, regional or local agricultural interests and it would not *"result in the fragmentation of agricultural or horticultural holdings so as to seriously undermine the economic viability of the remaining holding."*
- It is considered that the proposed development of the land would be consistent with local strategy to favour development and is not an Area of Outstanding Natural Beauty (AONB) or Area of Great Landscape Value (AGLV).
- This report therefore concludes that based on the evidence collected, the site can be considered Grade 5 agricultural land. Using this land for housing could be considered as the best long term economic strategy for this site and for the surrounding area.

This Executive Summary is intended to provide a brief summary of the main findings and conclusions of the assessment. For detailed information, the reader is referred to the main report ref. GE19231-ALA-AUG20.



1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Thakeham Client Limited to undertake an Agricultural Land Assessment of land at Lidsey Road, Woodgate, Chichester, West Sussex PO20 3SU, herein referred to as 'the site'. The site's location is presented in Figure 1 and comprises, approximately a 2.4Ha irregular shaped field.

1.2 Form of Development

The proposed development is understood to comprise of 71 residential dwellings with parking, private gardens, access roads and associated infrastructure.

1.3 Objectives

The scope of the report comprised a desktop study to gather and review pertinent information to assess the quality of agricultural land at the site.

The report utilises published information on climate, geology, soils and published DEFRA Provisional (pre-1988) ALC information, together with information on rural land designations, such as agri-environmental schemes, forestry and woodland schemes, other land-based schemes and also draws on previous ground investigations undertaken by Geo-Environmental Services.

The information collected from the desk study has been used to provide an interpretation of the site's setting and is assumed to be factually correct. The recommendations and opinions expressed in this report are based on the data obtained and previous ground investigation data compiled by Geo-Environmental. Geo-Environmental takes no responsibility for conditions that have either not been revealed in the available records or that occur between or under points of any physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative, and liability cannot be accepted for its accuracy.

2.0 PLANNING POLICY AND GUIDELINES

2.1 Introduction

This chapter of the assessment considers the National, Regional and Local planning policies and guidelines with respect to identifying any opportunities or constraints that could impact development on the site, in the context of the agricultural land quality of the site.

2.2 Overview of Legislation

The key legislative drivers for dealing with development on agricultural land include:

- The Environment Act 1995²;
- The Contaminated Land (England) Regulations 2000³;

² HM Government, The Environment Act 1995 (Section 57)

³ HM Government, The Contaminated Land (England) Regulations 2000 revision (2000)



- The Town and Country Planning Act 1990⁴;
- The Localism Act 2011⁵
- Planning Act 2008⁶
- Countryside and Rights of Way Act 2000⁷
- Environmental Damage (Prevention and Remediation) (Amendment) Regulations 2019⁸
- Agricultural Land (Removal of Surface Soil) Act 1953⁹
- Local Democracy, Economic Development and Construction Act 2009¹⁰

The Environment Act establishes regulating bodies for contaminated land, abandoned mines, national parks, control of pollution, conservation of natural resources, conservation or enhancement of the environment and fisheries. The Contaminated Land Regulations lay out provisions relating to the identification and remediation of contaminated land and the circumstances in which contaminated land affects controlled waters.

The Town and Country Planning Act consolidates certain enactments relating to town and country planning. The Localism Act makes further provision for town and country planning, but also introduces the duty to co-operate, which requires local planning authorities to co-operate strategically on planning issues that cross administrative boundaries and which builds on measures in the Local Democracy, Economic Development and Construction Act. Additionally, strategic planning issues can be addressed through joint planning boards, using existing powers in the Town and Country Planning Act, whereby local planning authorities can agree to prepare joint Development Plan Documents. The Localism Act also introduces a new voluntary neighbourhood planning process which will input into the Local Plan.

The Countryside and Rights of Way Act sets out rules on countryside access, rights of way, driving vehicles off road, nature conservation and protecting wildlife and areas of outstanding natural beauty. It also enables traffic regulation orders to be made to conserve areas of natural beauty.

The Environmental Damage Regulations, forces polluters to prevent and repair damage to water systems, land quality, species and their habitats and protected sites. The polluter does not need to be prosecuted first, so remedying the damage can be prioritised.

Finally, except where planning permission has already been granted, the Agricultural Land (Removal of Surface Soil) Act makes it an offence to remove surface soil from agricultural land with the intention of selling it, if the amount is more than 5 cubic yards in three months.

2.3 National Planning Policy

Prior to March 2012, policy comprised a range of planning policy guidance documents (PPG) and planning policy statements (PPS) covering a range of environmental subjects. These were replaced by a more concise single document known as the National Planning Policy Framework (NPPF)¹¹.

⁴ HM Government, The Town and Country Planning Act (1990)

⁵ HM Government, The Localism Act (2011)

⁶ HM Government, Planning Act (2008)

⁷ HM Government, Countryside and Rights of Way Act (2000)

⁸ HM Government, Environmental Damage (2010)

⁹ HM Government, Agricultural Land Act (1953)

¹⁰ HM Government, Local Democracy, Economic Development and Construction Act 2009

¹¹ Communities and Local Government, National Planning Policy Framework (NPPF), February 2019



AGRICULTURAL LAND ASSESSMENT

In terms of development of agricultural land, the NPPF places a greater emphasis on sustainable development than previous policy documents, but at the expense of some detail. However, in its core planning principles it states the following, where planning policies and decisions should contribute to and enhance the natural and local environment by:

- “recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.” (NPPF, paragraph 170 b), p26)

In describing what it means by “best and most versatile agricultural land”:

- “Best and most versatile agricultural land: Land in grades 1, 2 and 3a of the Agricultural Land Classification.” (NPPF, Annex 2, p65)

In addition:

- “Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework (*Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality*); take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.” (NPPF, paragraph 171, p49)

Furthermore, the NPPF states that new development should be planned for in ways that:

- a. avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b. can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.” (NPPF, paragraph 150, p44)

In response to the Coronavirus Pandemic, on the 6th August 2020, the government proposed changes to national planning policy¹². Reforms to the planning system to improve efficiency of the current system by addressing the current method of assessing local housing needs, securing new first time homes at discount prices, lifting the threshold of developers who do not need to contribute to affordable housing to 40 or 50 units, to aid economy recovery and extending Permission in Principle to major developments to ensure a fast route for development without having to have a detailed plan first. These changes are currently in the consultation period which ends on the 1st October 2020. This document should be read in conjunction with the consultation paper “Planning for the Future”¹³ which discusses changes to Local Plans and categorises land as either; growth areas suitable for substantial development, renewal areas suitable for development and areas that are protected. The consultation for this paper ended on the 29th October 2020 and the Government are currently analysing the public feedback. No date for the outcome has been published as of 25/01/21.

¹² Changes to the Current Planning System, Ministry of Housing Communities and Local Government, August 2020

¹³ Planning for the Future, Ministry of Housing Communities and Local Government, August 2020



2.4 Regional and Local Planning Policy

The site falls under the jurisdiction of Arun District Council. Regional planning documentation has been superseded by the numerous changes to the planning system at the national level, which have included:

- a) Changes to the legislation (e.g. through the Localism Act and new regulations);
- b) Replacement of most of the National Planning Policy Guidance Notes with a National Planning Policy Framework;
- c) Revocation of the South East Plan in March 2013;
- d) Introducing the ability for neighbourhood forums to prepare neighbourhood plans;
- e) Removing the requirement of local planning authorities to submit the LDS to the Secretary of State.

Arun District Council's Adopted Local Plan 2018 comprises of written statement and supporting policy maps to set objectives and deliver sustainable growth of the district between 2011 and 2031. In particular and with relation to development outside the Built-Up Area Boundary (as identified on the Policies Map, Figure 1), the relevant policies include the following:

- **Policy C SP1 Countryside** - "Development will be permitted in the countryside where it is:
 - a. for the operational needs of agriculture, horticulture, forestry, the extraction of minerals or the management of waste as part of a waste site allocation within the West Sussex Waste Local Plan; or
 - b. for quiet, informal recreation; or
 - c. for green infrastructure; or
 - d. for the diversification of the rural economy; or
 - e. for road and/or cycle schemes; or
 - f. in accordance with other policies in the Plan which refer to a specific use or type of development.

Development outside this [Built up Area Boundaries] will be permitted where it is in accordance with the criteria specified in Policy C SP1 so that the countryside is recognised for its intrinsic character and beauty. This is supplemented though the policy provision for Green Infrastructure and Gaps Between Settlements, where the intention is to maintain and enhance the existing network of Green Infrastructure assets and prevent coalescence of settlements

To ensure better management of the rural-urban fringe in those areas where significant new development is proposed, early consideration will need to be given to landscape and biodiversity enhancement, woodland management, recreation provision and access routes."

In addition,

- **Policy SO DM1 - Soils** : "The use of Grades 1, 2 and 3a of the Agricultural Land Classification for any form of development not associated with agriculture , horticulture or forestry will not be permitted unless need for the development outweighs the need to protect such land in the long term. The requirements to protect the best and most versatile land can be outweighed if it is demonstrated through sustainability and options appraisals that:
 - Preservation of land lower agriculture quality has greater benefits in terms of ecosystems services(carbon storages, flood water retention, biodiversity)



- That any site preferred for development is demonstrated to be the best and most sustainable option, included to but not limited to terms of land quality, ecosystem services, infrastructure and proven need; and
- The proposed development meets the requirements of the countryside policy.”

In addition,

Where development is permitted it should, as far as possible, use the lowest grade of land suitable for that development. Development will not be permitted unless:

- The applicant has submitted sustainability and options appraisals, mitigation measures and a soil resources plan for the development site.
- Site appraisal document submitted by the applicant must demonstrate that consideration has been given to DEFRA’s Soil strategy for England
- The productivity of the land is demonstrated using a methodology for assessing gross margins as contained in the Arun Soils and Agricultural Land Assessment Report; and
- The applicant has submitted a comprehensive soil resources plan for the development which demonstrates that care will be taken to preserve the soil resources.



Figure 1 – Extract from Arun District Council Planning Maps¹⁴

¹⁴<https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n12919.pdf&ver=13059> Accessed 22/07/20



2.5 Best Practice Guidelines

Natural England published “Developing farmland: regulations on land use”¹⁵ in September 2012 and the Natural England Technical Information Note, TIN049, “Agricultural Land Classification: protecting the best and most versatile agricultural land”¹⁶, also in September 2012.

Within TIN049, it states that the MAFF document, “Agricultural Land Classification of England and Wales”¹⁷ published in October 1988 should be followed when deciding on the correct classification for a particular piece of agricultural land.

Finally, for identifying the classification of a piece of agricultural land, TIN049 also refers to the Natural England MAGIC website, which contains Pre-1988 and Post 1988 ALC data.¹⁸

3.0 SITE DETAILS AND BASELINE CONDITIONS

Based on previous site investigations, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site.

3.1 Site Description

The site is located approximately 6.44km north of Bognor Regis, 10.94km east of Chichester, 26.07km west of Worthing and 40km east of Portsmouth. The site is located at NGR 493720, 104130 and measures approximately 2.4 Ha.

At the time of the previous site investigation, the development site comprised a roughly rectangular grassed field, which was generally flat and level. On the eastern side of the site was a single residential property which for the purposes of the investigation was included within the site boundary. The property comprised a large two storey detached house with garage and indoor swimming pool with gardens on the eastern and western sides. The former greenhouse/nursery had recently been demolished and the site cleared. This portion of the site was generally flat and level at the time of the site investigation. An area of soft landscaping running parallel to Lidsey Road had been enclosed with Heras fencing and was generally overgrown with grass. The ground which was previously beneath the nursery buildings and hardstanding appeared to be mixed Made Ground with some scattered pieces of glass and tarmac noted. A stockpile of concrete rubble was observed on the north-east of this area.

The site was bounded by mature trees and hedges, with a ditch along Lidsey Road, which formed the eastern boundary. A large oak tree was noted centrally within the western portion of the site.

The surrounding area comprised a small field and a public house to the north, residential properties to the east and south and a large commercial nursery to the west.

A watercourse is present to the east of site which stretches from the south-eastern corner up to the northern boundary of the site. Sections of this watercourse are culverted, including across the frontage of the existing ‘Wings

¹⁵ Natural England (2012) Developing farmland: regulations on land use, Planning applications for new buildings on agricultural land or change of use for existing farmland or buildings.

¹⁶ Natural England (2012) Technical Information Note, TIN049, Agricultural Land Classification: protecting the best and most versatile agricultural land

¹⁷ MAFF (1988) Agricultural Land Classification of England and Wales

¹⁸ Natural England Website, accessed 24/07/2020 <http://www.natureonthemap.naturalengland.org.uk/>



Nursery' building(s). It is believed that this watercourse diverts under Lidsey Road, to the east via an existing culvert. In addition to this watercourse, a further open watercourse runs along the western boundary of the site. Both watercourses are unnamed. It is believed the watercourse to the east of the site flows in a northerly direction, whilst the watercourse at the western boundary flows in a southerly direction.

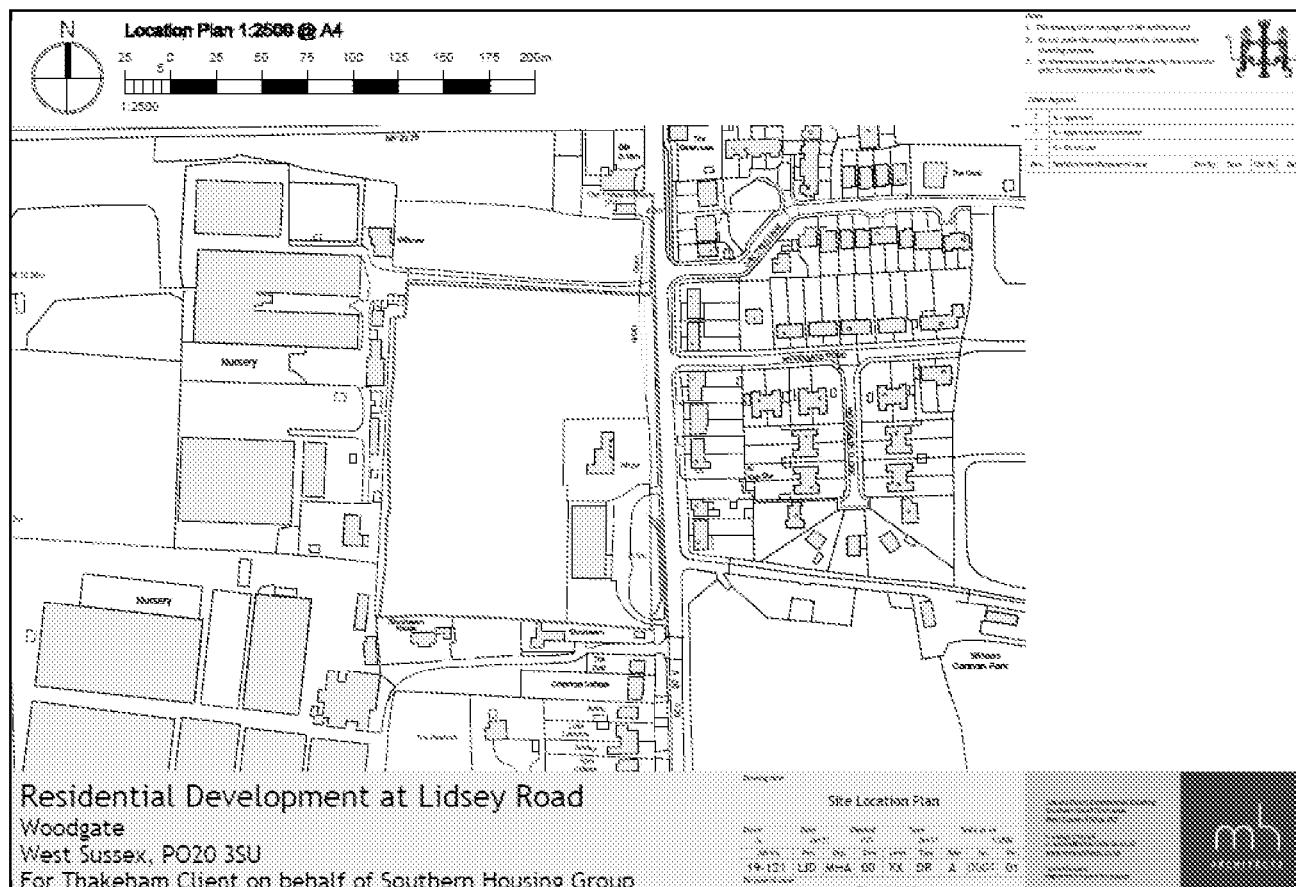


Figure 2 – Site location and Red Line Boundary

The Red Line Boundary for the application site is shown on MH Architect drawing 0001, January 2021 (presented as Figure 2 herein) and whilst other figures within this report might indicate an approximate site area or site boundary, the TOR plan should be referred to for the definitive boundary.

3.2 Site Topography

The topography of the site is demonstrated as lying at approximately 9.51m to 8.19m AOD, generally falling from west to east.



Figure 3 – View of the site facing southwest

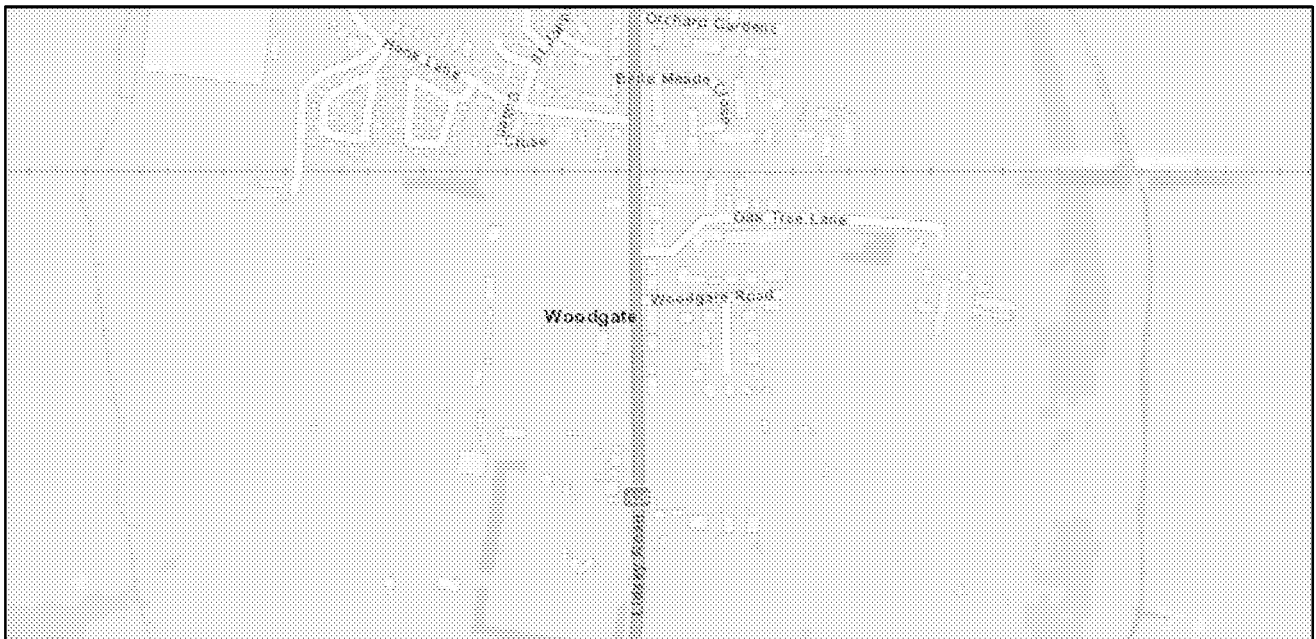


Figure 4 – Ordnance Survey Map of the Site¹⁹

¹⁹Source: BGS Website, accessed 22/07/20 <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>



3.3 Current Use

The site is currently made up of a grassed field with a vacant residential dwelling 'Wings House' and its associated curtilledge.

3.4 Findings of the Previous Investigations

Ground conditions encountered during the previous investigation identify Topsoil and Made Ground overlaying the River Terrace Deposits and London Clay. The River terrace deposits were noted to comprised heavily of light brown soft to very stiff silty sandy clay becoming silty sandy clay and clayey sandy silt with frequent rootlets and occasional roots (1- 5mm) and rare fine to medium sub-angular to sub-rounded flint gravel. For the full exploratory logs see Appendix A. It is considered likely that the presence of clay, or clay-rich soils could impede the rainwater infiltration and thus the classification of the soils.

The presence of contaminants was identified on site and additional investigation was recommended. A wooden electrical box with a concrete base was noted on site. Samples of this material were taken and confirmed that the base had been shuttered with asbestos containing materials. Furthermore, plastics, bricks and concrete were observed within the soil mass during the investigation.

Additionally, hotspots of Benzo(a)pyrene and Beryllium were identified on site in proposed plots No. Plots 1-9 and Plots 73 and 74. No further delineation was undertaken as the proposed housing development would remove this risk through mitigation and a capping layer. It is therefore likely that further unidentified hotspots and contamination are present across the field. This would severely impact agricultural production with the purpose of food for human consumption on the site due to high toxicity. The Agricultural Land Classification¹⁷ states *"The effect of soil toxicity on grading is assessed in relation to the effects on plant growth and any limitations placed on the management or use of the land, such as restrictions on cultivation (which may bring contaminated material to the surface), stocking levels or grazing periods, or on the use made of produce obtained from it. Land will not be graded higher than Subgrade 3b if it is considered to be unsuitable for growing crops for direct human consumption. Land which is limited to grass production and on which there are significant restrictions on grassland management will be no better than Grade 4. Where only extensive grazing is possible the land will be Grade 5 and, where it is unfit for all forms of agricultural production, can be regarded as non-agricultural."*

3.5 Geology

British Geological Survey mapping indicated the geology of the site to comprise River Terrace Deposits overlying the London Clay Formation.

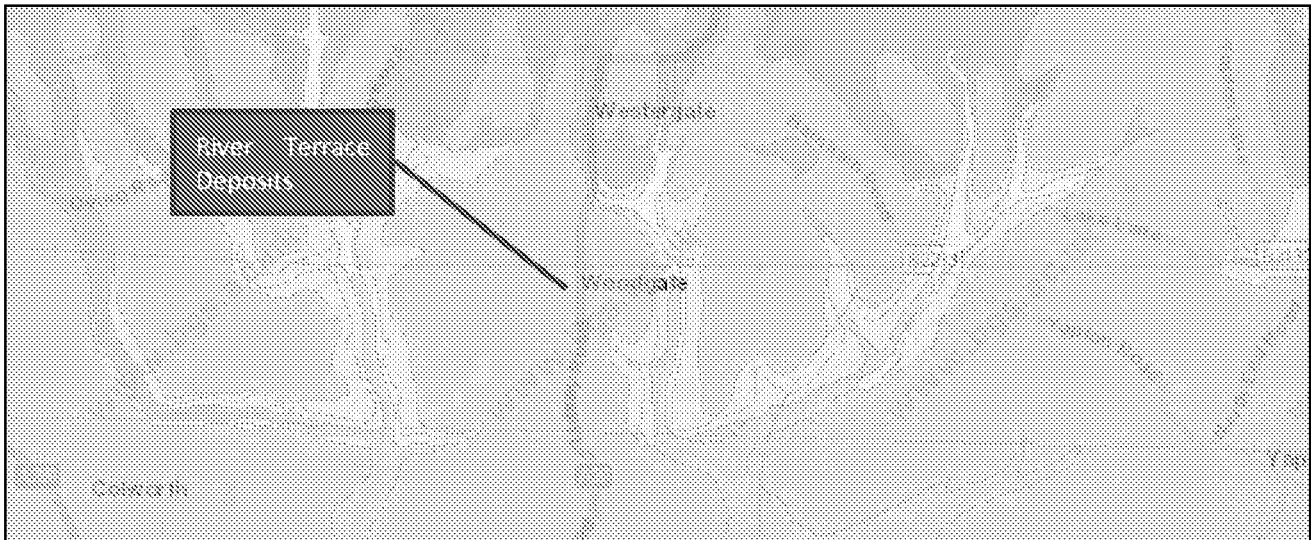


Figure 5a – Local Superficial Geology at the Site - source British Geological Survey¹⁶

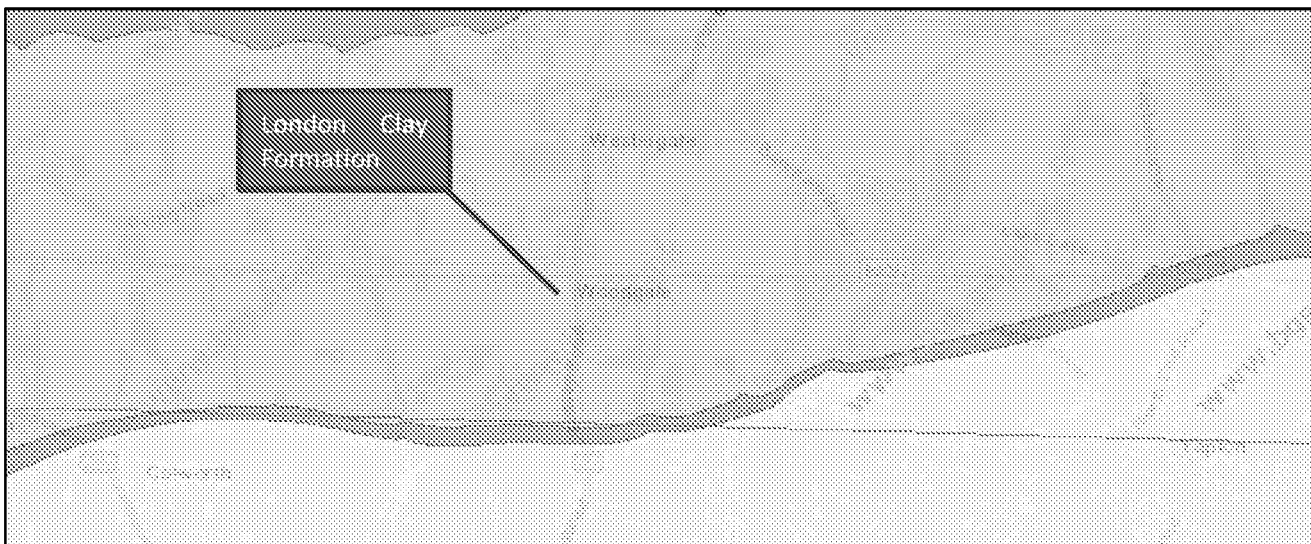


Figure 6b – Local Bedrock Geology at the Site - source British Geological Survey¹⁶

Superficial Deposits

The rivers of the south-east of England, including the River Thames and its tributaries, have been subject to at least three changes of level since Pleistocene times. One result has been the formation of a complex series of **River Terrace Deposits**. The deposits are generally found at an elevation close to or higher than that of the existing rivers, and generally comprise sands and gravels of roughly bedded flint or chert gravels varying degrees of coarseness.

In terms of the Agricultural Land Assessment, this has bearing as the stoniness of soil is a key limitation for the grading of the soil.

Bedrock

London Clay comprises a stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystone) occur throughout the formation. Crystals of gypsum (Selenite) are often



found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The lowest part of the formation is a sandy bed with black rounded gravel and occasional layers of sandstone and is known as the Basement Beds.

In terms of the Agricultural Land Assessment, the presence of clay, coupled with soil texture and structure are limiting factors on the grading of the soil.

Available data on the soil scape at the site would expect the topsoil in the majority of the site to be 'mostly drained', and loamy texture²⁰.

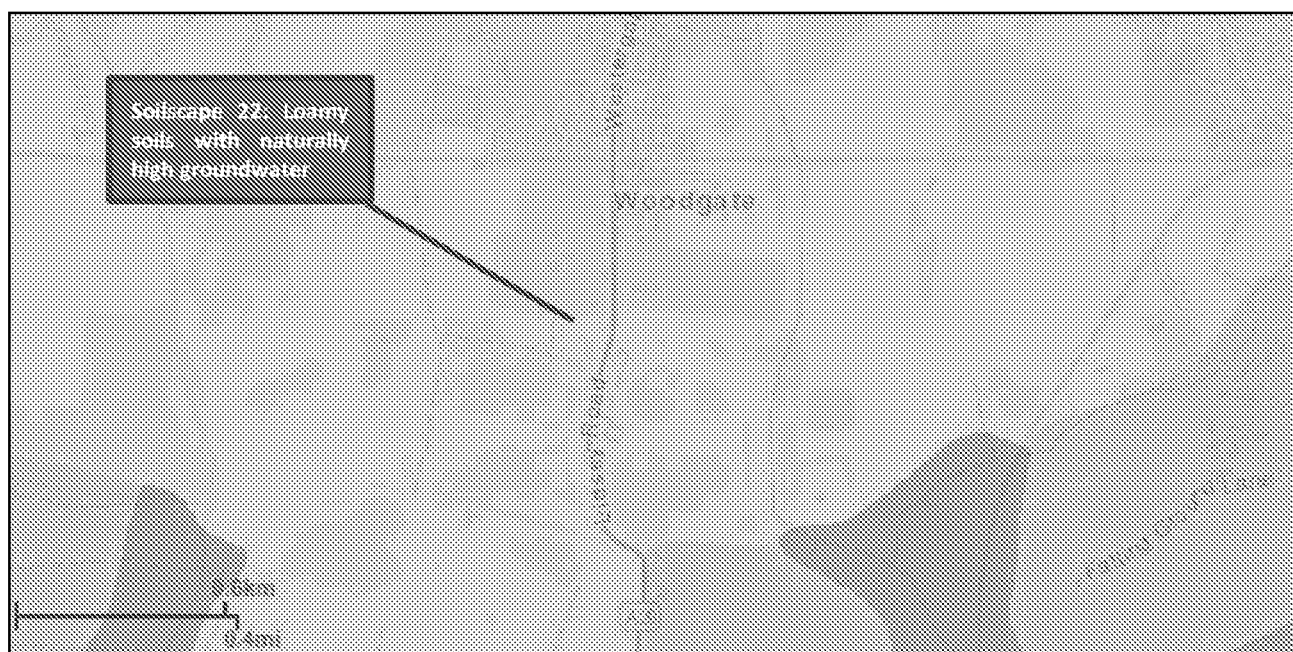


Figure 7 – Soilscares Map²¹

The site is covered in Soilscape 22 - the description of this soil type from this source is that it is: *"Loamy soils with naturally high groundwater. The major land use on this association is defined as arable and root cropping and grass where soils are excessively stony or too wet."*

The drainage on the site from this source is described as "naturally wet". In low-lying sites, permeable soils are often affected by high ground water that has drained from the surrounding landscape.

Multiple intrusive investigations have been completed on site (reference: GE18390-GAR-OCT-19, GE18679/AP02/200626) encountered the anticipated superficial geological conditions. The bedrock geology (London Clay) was proven in several locations. A general summary of the ground conditions encountered on site are presented in Table 1 below, with exploratory hole logs, location plan and soil classification test results presented in Appendix A.

²¹Source: Landis Website, accessed 22/07/2020

<http://www.landis.org.uk/soilscares/>



Top (m bgl)	Base (m bgl)	Description
0.00	0.25-0.30	TOPSOIL: Dark brown silty sand with roots and rootlets. Brown sandy gravelly silt with frequent rootlets and roots (1-3mm).
0.25-0.30	0.45	MADE GROUND: Brown gravelly sandy silt with frequent rootlets and occasional roots 1-5mm with tarmacadam, pink sandy gravel concrete, compacted tarmacadam, reworked chalk, concrete and stone gravel, brick cobbles. Gravels comprised fine to coarse, sub-angular to sub-rounded flint. Brown and light brown sandy silt with frequent rootlets and roots, rare concrete and brick, and occasional carbonaceous inclusions and rare tarmacadam. Grey brown slightly fine sandy silty clay with frequent coarse brick and flint gravel, fibrous wood fragments, plastic and glass.
0.15 ²² -0.45	2 -3.50	RIVER TERRACE DEPOSITS: Brown and yellow brown mottled sandy silt, clayey silt and clayey sandy silt with occasional fine to medium sub-angular to sub-rounded flint gravel and rootlets. Firm to stiff orange brown slightly fine sandy silty clay with rare sub-rounded flint gravel and occasional roots (10mm). Very stiff silty sandy clay becoming silty sandy clay with occasional fine to coarse sub-angular chert, overlying fine to medium sand.
3.50+	Not Proven	LONDON CLAY FORMATION: Stiff grey clay.

Table 1 - Summary of encountered ground conditions

The River Terrace Deposits encountered were of varying composition but was generally described as a soft to very stiff silty sandy clay, with occasional fine to coarse subangular chert. It is considered likely that the presence of clay, or clay-rich soils could impede rainwater infiltration and thus the classification of shallow soils as 'mostly draining' (as described above) could be an overestimate of the drainage potential of these soils.

The initial intrusive investigation also considered soil composition and likely Topsoil classification in the context of BS3882:2015. The results indicated that with the exception of a single sample which passed BS 3882 for Low Fertility Topsoil, the remaining samples did not meet the criteria on account of the textural classification in addition to soil pH, available plant nutrients and carbon nitrogen ratio. The soils' grading was assessed to be a 'silty loam' However, this was based on the grading ratios of sand, silt and clay fractions. Soils exposed at the ground surface were

²² On parts of the site where Made Ground was not identified

observed to have a noticeable stone content (flint gravel and cobble).

3.6 Flood Risk and Groundwater Protection

The site is not in a flood risk area, being outside both Flood Zone 2 and 3 across the entirety of the site, as shown in Figure 7 below.

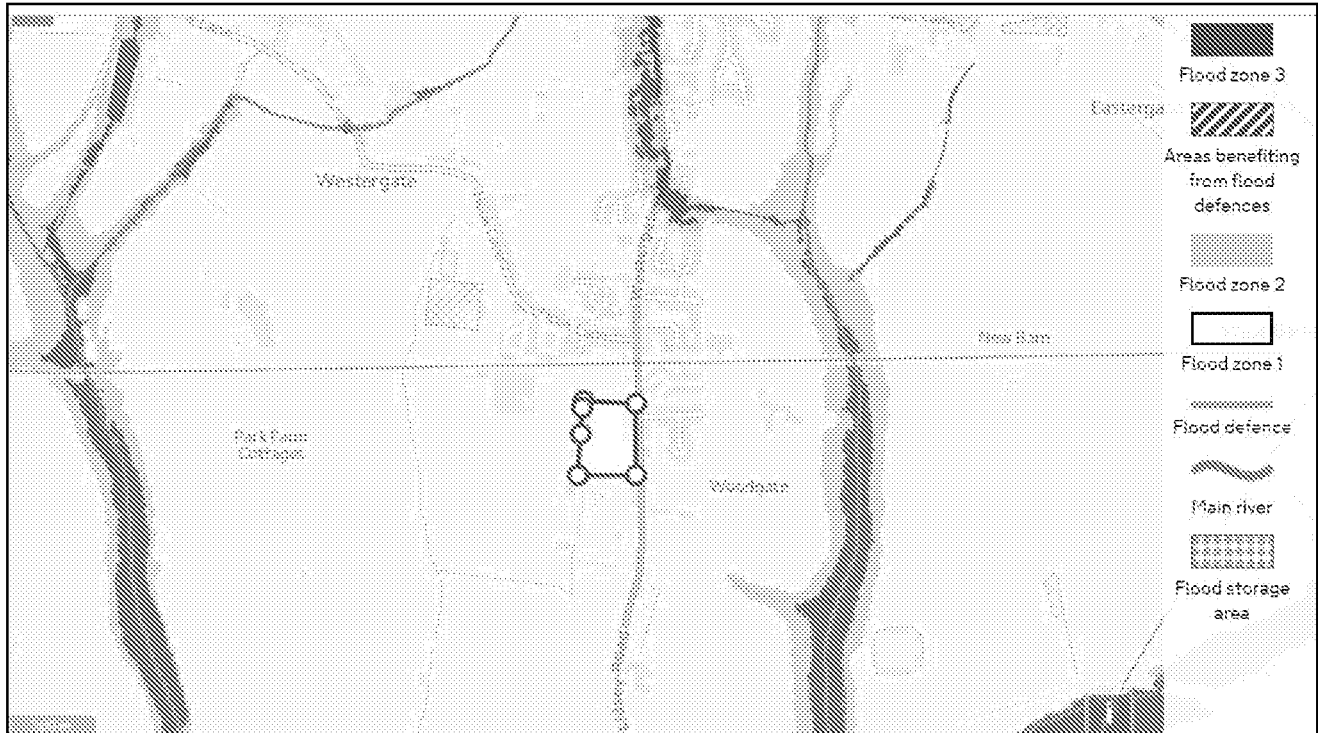


Figure 8 – Flooding from rivers and seas map for the area surrounding the site²³

Furthermore, the majority of the site is considered to be at very low risk of surface water flooding, with the exception of a small area in the north east, with a low risk, and area on the northern boundary identified as high risk, as shown in Figure 8 below.

²³ Source Gov.uk, Flood map for planning access 25/0/21 <https://flood-map-for-planning.service.gov.uk/>

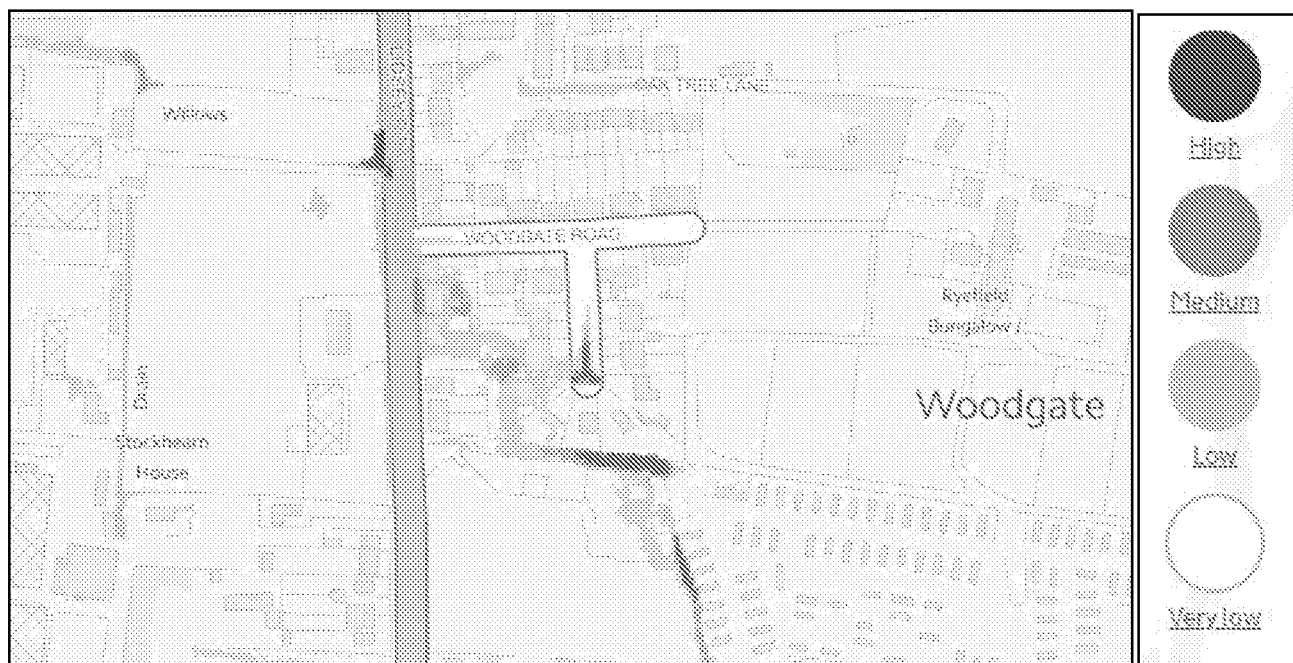
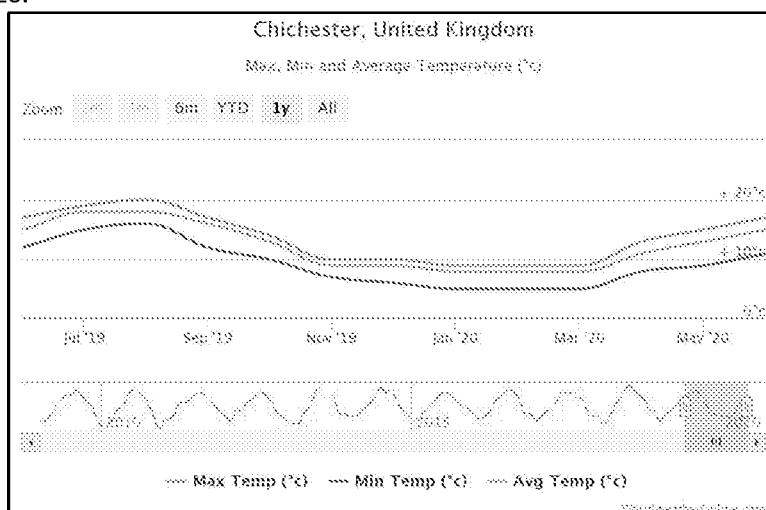


Figure 9– Flooding risk from surface water map for the area surrounding the site²⁴

3.7 Climate

The data available shows that the local climate within the Chichester area is temperate and would be of no issue relating to the land use specified. Figure 8 shows the annual averages for temperature and precipitation between the years 2019 and 2020.



²⁴ Source Gov.uk, Learn more about flood risk access 22/07/20 <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map>

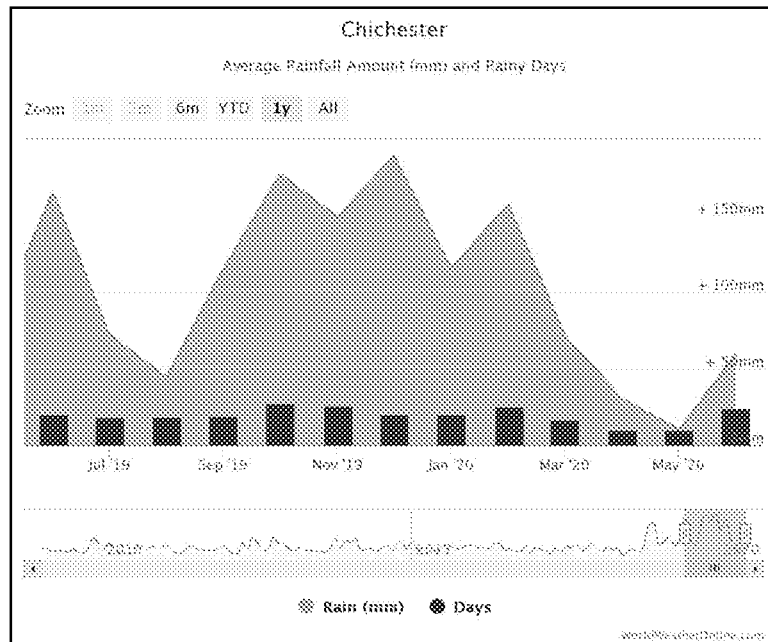


Figure 10 – Temperature and average precipitation profiles for the area between 2019 and 2020²⁵

3.8 Habitat Potential

A search of available data revealed that there was no protected habitats or areas considered a priority habitat on site.

3.9 Agricultural Land Classification (ALC)

The ALC system classifies land into five grades, with Grade 3 subdivided into Subgrades 3a and 3b. The best and most versatile land is defined as Grades 1, 2 and 3a by policy guidance (see Annex 2 of NPPF). This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grades 1 and 2 together form about 21% of all farmland in England; Subgrade 3a also covers about 21%.

The ALC system is used by Natural England and others to give advice to planning authorities, developers and the public if development is proposed on agricultural land or other greenfield sites that could potentially grow crops. The Town and Country Planning (Development Management Procedure) (England) Order 2010 (as amended) refers to the best and most versatile land policy in requiring statutory consultations with Natural England.

Pre-1988 Classification

During the 1960's and 1970's MAFF produced a series of maps to show the provisional ALC grade of agricultural land over the whole of England and Wales at a scale of 1:250,000. These provisional ALC maps are suitable for strategic land use planning only, i.e. they are appropriate for land areas greater than 80Ha [NOTE: The site extends to approximately 12.5Ha]. These maps were produced before the current land grading system was adopted and cannot be relied upon to provide a definitive ALC grading for the site, neither do they differentiate between the

²⁵World Weather Online Accessed 22/07/20

<https://www.worldweatheronline.com/hitchin-weather-averages/hertfordshire/gb.aspx>



different sub-grades 3a and 3b.

According to the data available from these maps the agricultural land on the site is classified as “Grade 2” – Very Good (see Figure 1). It should be noted that the majority of agricultural land surrounding the site is also classed as Grade 1 and 2. However it should be noted that this map is only indicative of ALC grade.

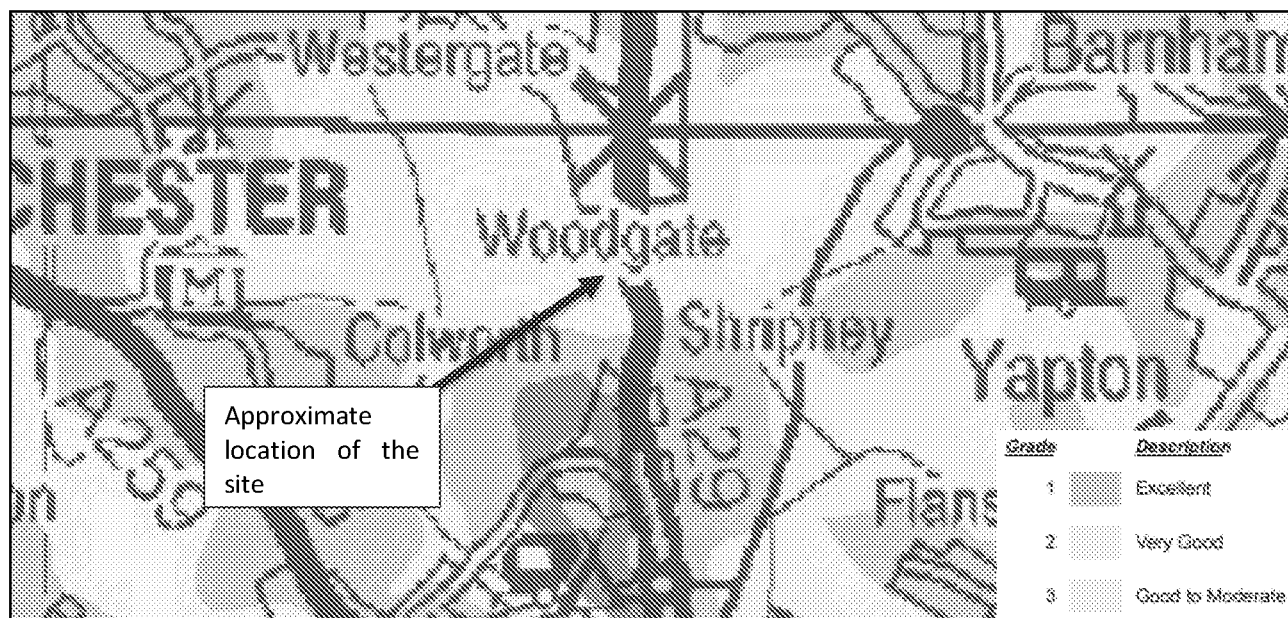


Figure 10 – Pre-1988 ALC information²⁶

Post 1988 Classification

The Post-1988 Classification is the latest, most up to date ALC data, utilising the new data from individual sites surveyed in more detail by MAFF (including subdivisions of Grade 3 Land) between 1989 and 1999. *Individual sites were mapped at varying scales and level of detail from 1:5,000 to 1:50,000 (typically 1:10,000). Unfortunately, the site has not been included in surveying.*

3.10 Agri-Environmental Scheme Data

A search was made of environmentally sensitive areas, including areas of green belt, scenic or natural beauty, parks, reserves, nitrate zones, protected conservation and scientific areas. An analysis of available data revealed that the site area was within an area prioritised for CS targeting – Lapwing and to the south of the site the area has been identified as a priority for CS targeting – Corn Bunting, see Figure 11a and 11b.

²⁶Source: ALC map London and the South East 1:250 000 Series Agricultural Land Classification

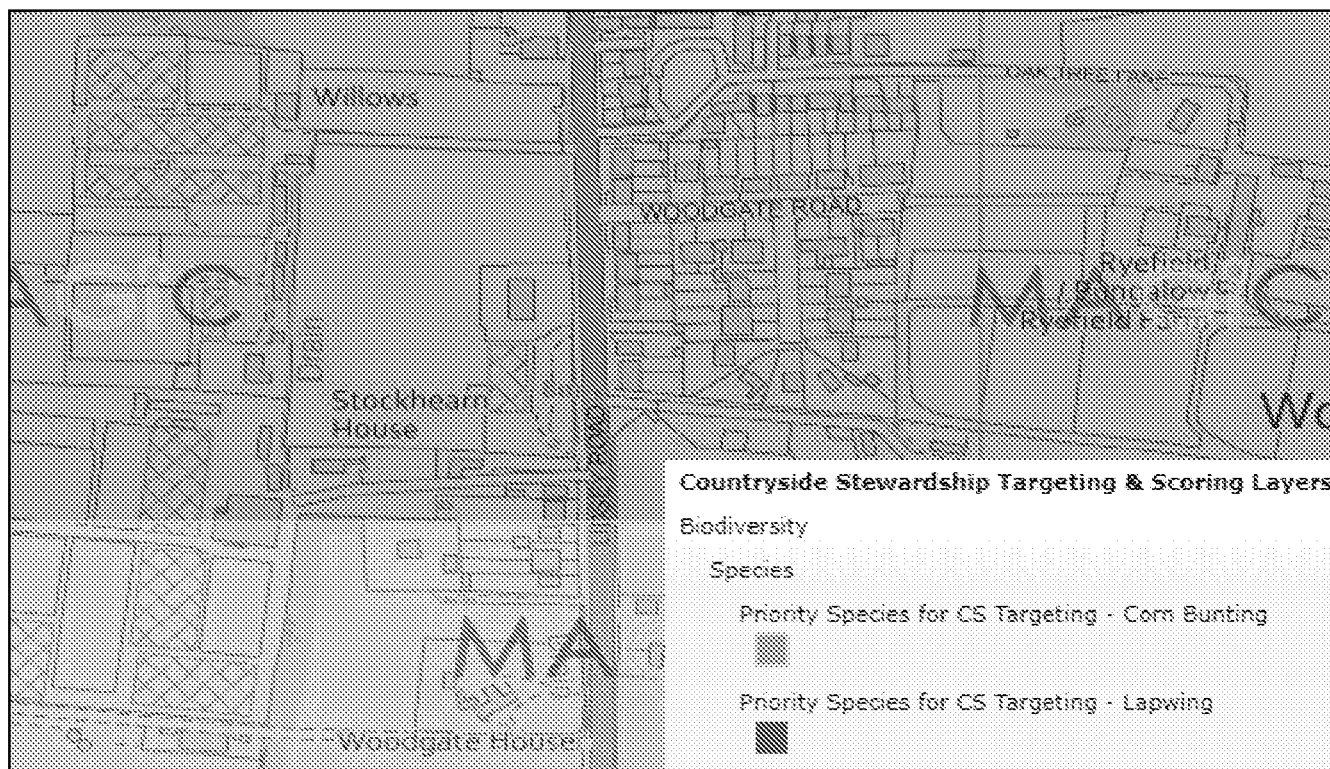


Figure 11a – Countryside Stewardship Schemes in the area²¹

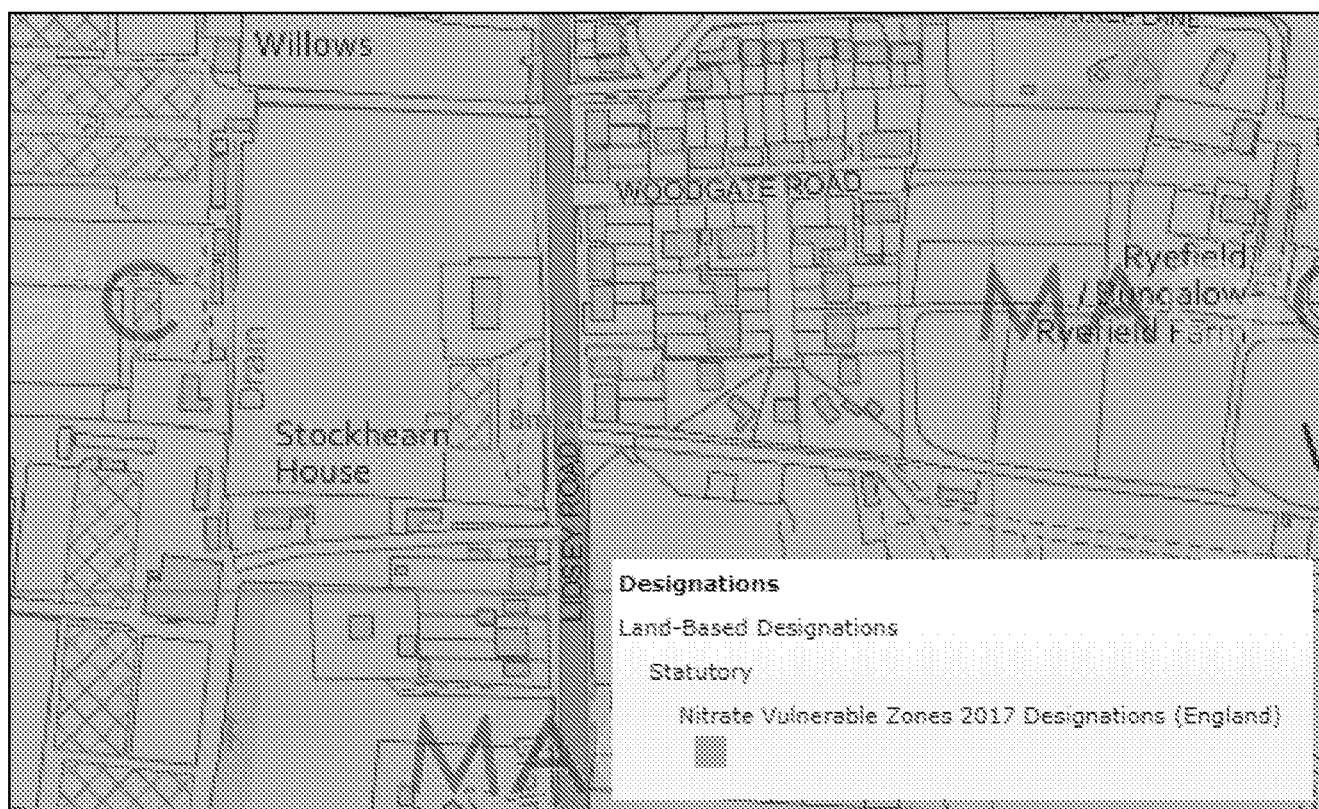


Figure 11b – Land Base Designations in the area²¹



3.11 NSRI Soils Site Report

A Soils Site Report was commissioned from NSRI as part of the assessment. A copy of the report is presented in Appendix B and a summary of key findings is presented in Table 2 below. The NSRI report covers the 1kmx1km grid square within which the site is located.

Assessment Element	Comment
Soil association	841e Park Gate – Deep stone-less silty soils variably affected by groundwater.
Hydrology of soil type	Soils are seasonally waterlogged by fluctuating groundwater and with relatively slow lateral saturated conductivity.
Ground movement potential	Low
Flood vulnerability	Minor risk (presumed run-off rather than groundwater)
Risk of corrosion of ferrous iron	Moderately aggressive
Pesticide leaching risk	High
Pesticide run-off risk	Moderate
Hydrogeological rock type	Coverloam
Groundwater protection policy	High leaching potential
Soil parent material	Aeolian Silty Drift
Expected crop and land use	Cereals, potatoes, field vegetables and glass house crops
Natural soil fertility	Low
Simple soil texture	Loamy
Typical habitat	Wet acid meadows and woodlands

Table 2- Summary of NSRI Soils Site Report findings

4.0 ANALYSIS OF CONDITIONS

4.1 Methodology

As previously discussed in Section 2.5, best practice dictates that the MAFF document, “Agricultural Land Classification of England and Wales”¹⁵ published in October 1988 should be followed when deciding on the correct classification for a particular piece of agricultural land.

As described in the Agricultural Land Classification¹⁵, the main physical factors influencing agricultural land quality are:



- Climate;
- Site; and
- Soil.

4.2 Climatic Factors

The ALC Climatic data²⁷ estimates the Annual Accumulated Rainfall (AAR) to be 800 mm/year and the Medium Accumulated Temperature (ATO) to be 1545 day degree Celsius, with a Field Capacity Days (FCD) of 164. However, this is based, and data collected in 1989 and climates have since changed. These have therefore been adjusted with the latest climatological data.

According to Figure 1 of the Agricultural Land Classification¹⁵ the Medium Accumulated Temperature (ATO) of c. 1545-day degree Celsius and Annual Accumulated Rainfall (AAR) 800 mm/year indicates that there is no climate limitation to agricultural land quality at the site. On this measure the overall climatic grade for the site equates to grade 1.

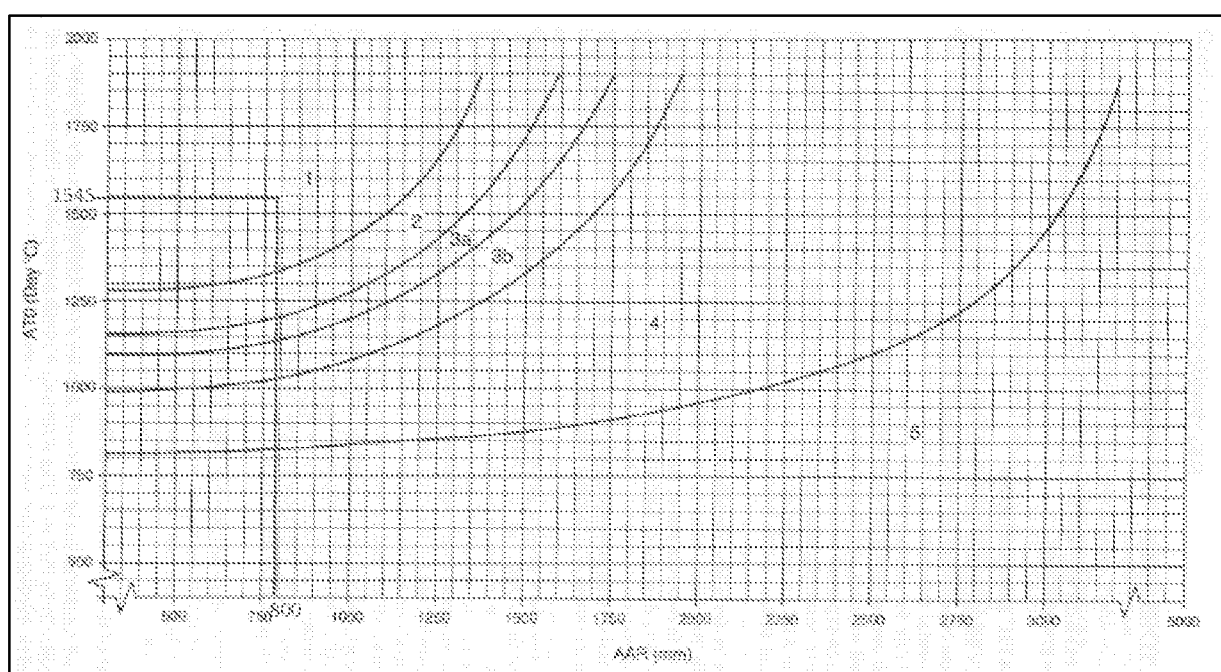


Figure 122 - Climatic data plotted on the Agricultural Land Classification Tables

4.3 Site Factors

The Agricultural Land Classification¹⁵ states that the site related limiting factors for land quality are:

- Gradient – the gradient should be less than 7°;
- Microrelief – complex change in slope angle over short distances;
- Flood Risk – the site is not susceptible to flooding;

²⁷ Climatological Data for Agricultural Land Classification, January 1989



The site slopes gently to the northwest and southeast. A fall in ground level of c. 1.3m to the east equate to a general gradient of less than 1°. The site shows no complex change over short distances. The site is not susceptible to flooding. As such these parameters would not limit the site.

4.4 Soil Factors

The Soilscape classification indicated that the site in its majority was 'mostly draining' soils. Testing of Topsoil recovered from the site indicated the soil to comprise a silty loam (ZL) of very low nutrient value. This could be corrected by adding fertilizer to the soil, thus should not be considered a limiting factor in the classification of the field. Intrusive investigations indicated the underlying natural subsoils and superficial deposits to include a significant clay fraction and could be described as clay (C). These stratas are considered likely to impeded draining.

The intrusive ground investigation identified silty clay soils. The Agricultural Land Classification²⁴ states that silty clay which was developed in marine alluvium are potentially unstable after the land has been drained. It continues to state that 'progressive leaching of salt from the soil profile causes deflocculation of the clay particles and may lead to structural collapse (slaking) and drain failure through siltation'²⁴. Therefore, the field could be subject to this outcome if the field was drained and thus, severely limiting the quality and potential of the soil.

The field capacity days (FCD) are 164, based on the ALC Climatic data²⁸ estimates. The wetness class was grade 3 at the top of the site. Based on Table 6 (see extract below presented as Figure 13) from the Agricultural Land Classification²⁴ this would limit the quality of the soil to no less than Grade 2 or Sub-grade 3b.

Wetness Class	Texture ¹ of the top 25 cm	Field Capacity Days				
		<126	126-150	151-175	176-225	>225
I	S ¹ LS ¹ SL SZL	1	1	1	1	2
	ZL MZCL MCL SCL	1	1	1	2	3a
	HZCL HCL	2	2	2	3a	3b
	SC ZC C	3a(2)	3a(2)	3a	3b	3b
II	S ¹ LS ¹ SL SZL	1	1	1	2	3a
	ZL MZCL MCL SCL	2	2	2	3a	3b
	HZCL HCL	3a(2)	3a(2)	3a	3a	3b
	SC ZC C	3a(2)	3b(3a)	3b	3b	3b
III	S ¹ LS SL SZL	2	2	2	3a	3b
	ZL MZCL MCL SCL	3a(2)	3a(2)	3a	3a	3b
	HZCL HCL	3b(3a)	3b(3a)	3b	3b	4
	SC ZC C	3b(3a)	3b(3a)	3b	4	4
IV	S ¹ LS SL SZL	3a	3a	3a	3b	3b
	ZL MZCL MCL SCL	3b	3b	3b	3b	3b
	HZCL HCL	3b	3b	3b	4	4
	SC ZC C	3b	3b	3b	4	5
V	S LS SL SZL	4	4	4	4	4
	ZL MZCL MCL SCL	4	4	4	4	4
	HZCL HCL	4	4	4	4	4
	SC ZC C	4	4	4	5	5
Soils in Wetness Class VI - Grade 5						

Figure 13 – Extract from Figure 6 ALC - Grade according to soil wetness – mineral soils²⁴

²⁸ Climatological Data for Agricultural Land Classification, January 1989



Another major limiting factor is the presence of hotspot contamination on site. If the site was to be used for agricultural purposes the field would need an extensive ground investigation to fully delineate the Benzo a Pyrene (BaP) contamination (and any other potential contaminants). Following this any contaminated soils will have to be removed and replaced with clean topsoil, which would be extremely costly. Where land is considered unsuitable for growing crops for direct human consumption the maximum grade it can achieve is a subgrade 3b.

Alternatively, the site could be partitioned to avoid growing on contaminated hotspots, but the given the small size of the field this would severally reduce the yield and would not be financially viable. Without either of these methods being employed the site the site can only be used for grazing. Therefore, the site in its current state would be Grade 5 as 'only extensive grazing is possible on the land' and would be regarded as 'non-agricultural'.

4.5 Conclusion

The proposed development of the application site would result in a loss of previously farmed land, but as this would consist of approximately a 2.4 Ha field which is considerably lower than the 80Ha limit applied under the pre-1988 ALC system. Whilst this system classifies the land as Grade 2, the granularity of the system is unable to take account of smaller scale local variables, which would change the land classification of individual parcels of land.

An analysis of available data revealed that the application site area was not covered by any Agri-environment, Forestry and Woodland or Other Land Based Schemes.

The climatic factors on the site are not considered to limit land-quality to less than Grade 1.

The general site factors do not limit land-quality to less than Sub-Grade 3a and 3b. Investigation in this area indicated the presence of silty rich Topsoil. These soils were tested and considered to have limited agricultural value, i.e. possibly reducing from the classified Grade 2 to Grade 3a /3b (very good to moderate) due to the lack of nutrients. Furthermore, the intrusive investigations indicated that the underlying natural subsoils and superficial deposits to include a significant clay fraction. In addition, a risk of surface flooding was identified on the site, thus possibly further reducing the classification due to limited drainage.

Whilst the ALC system classifies this land as Grade 2, results from previous site investigation indicate that this is likely to be very optimistic. Firstly, the limited nutrient availability of the topsoil and subsoil composition (i.e. clayey soils) are considered likely to result in a downgrading of specific areas of this field thereby potentially reducing the impact of the loss of this field. Moreover, the discovery of toxic polycyclic hydrocarbon Benzo a Pyrene (BaP) and arsenic containing material severally limits the potential agricultural output of the site.

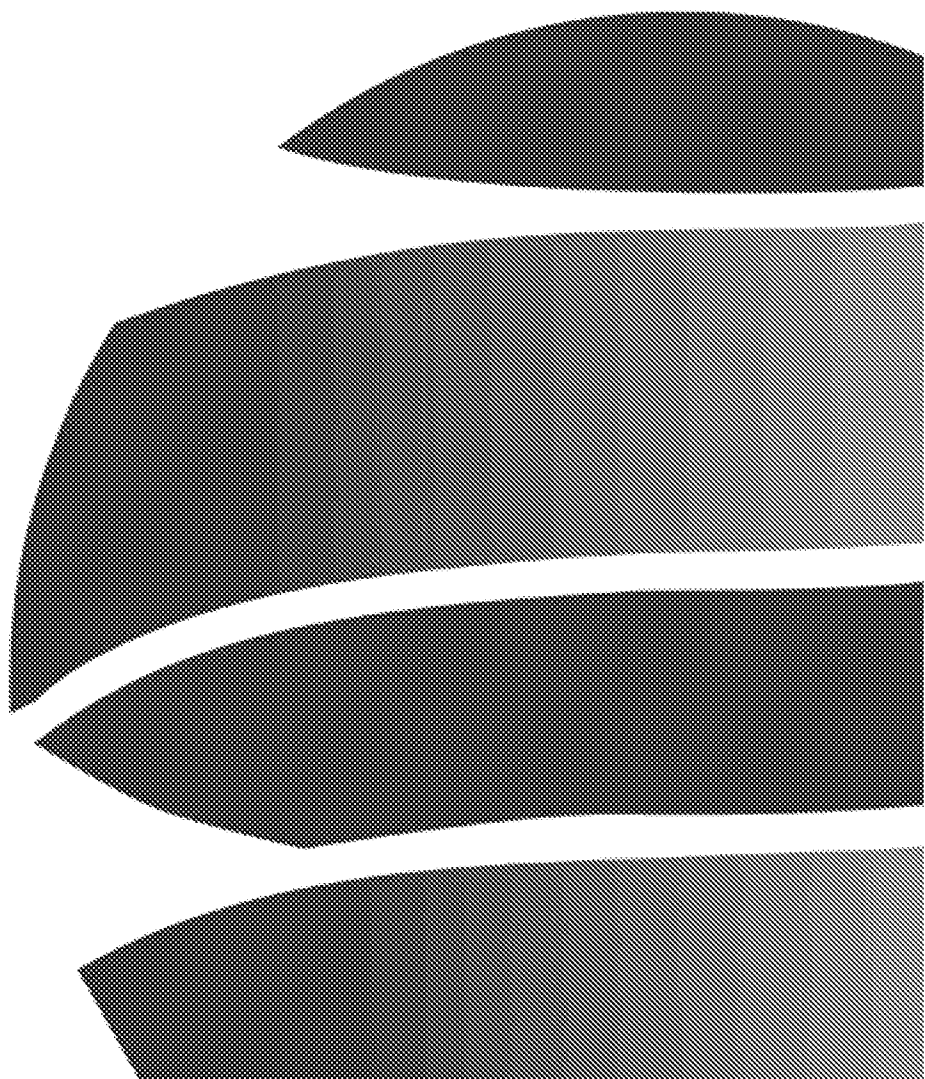
Without costly remediation, which the revenue accrued from the yields from this land would not support or financially unviable partitioning of the field, this site is not suitable for production of agricultural food for human consumption. Therefore, according to ALA definitions the site cannot be graded above a Grade 5, as the toxins contained in the soil would only make the land suitable for grazing.

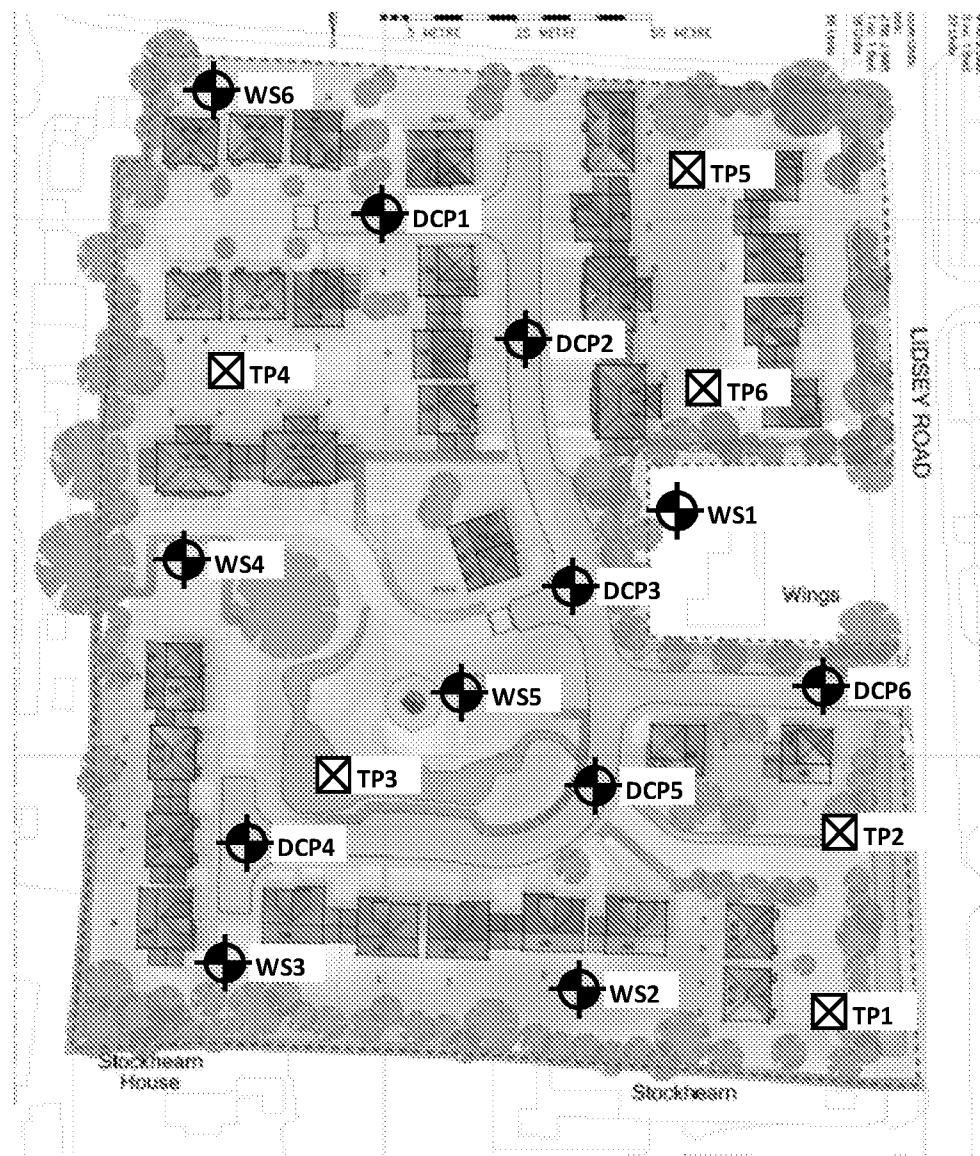
Given that the proposed development would introduce a capping system and clean up the land, using this land for housing could be considered as the best long term economic strategy for this site and for the surrounding area. Therefore the site should be considered Grade 5 agricultural land.



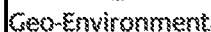
APPENDIX A

Previous SI Data





Project:	Land Off Lidsey Road, Woodgate			Title	Site Investigation Plan	
Client:	Thakeham Homes Limited			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE18390	Revision:	v1			
Drawn:	AP	Date:	09/08/2019			
Figure:	2	Scale:	Not To Scale			



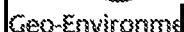
Geo-Environment: [REDACTED]

TrialPit No
TP1
Sheet 1 of 1

Date
19/08/2019

Scale
1:25

Logged
GE



TrialPit No
TP2
Sheet 1 of 1

Project No.	GE18390
-------------	---------

Co-ords: 493774.62 - 104078.16
Level: 8.99

Date
19/08/2019

Location: Woodgate, West Sussex

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
2.00

Logged
GE



Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental

Trial Pit Log

Trial Pit No

TP3

Sheet 1 of 1

Project Name: Land Off Lidsey Road, Woodgate

Project No.
GE18390

Co-ords: 493698.54 - 104096.26
Level: 9.23

Date
19/08/2019

Location: Woodgate, West Sussex

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
2.20

Logged
GE

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.15	9.08		Grass overlying dark brown silty sand with rootlets. TOPSOIL	
	0.50 0.50	D PP	PP=5kg/cm2				Very stiff possibly desiccated very sandy silty CLAY. RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=2.5kg/cm2	0.70	8.53		Firm to stiff orange brown and grey mottled sandy silty CLAY with occasional fine to coarse sub-angular chert gravel. RIVER TERRACE DEPOSITS	1
	1.50 1.50	D PP	PP=2.5kg/cm2					
	2.00	D		1.90	7.33		Orange brown silty fine to medium SAND. RIVER TERRACE DEPOSITS	2
				2.20	7.03		End of Pit at 2.20m	
								3
								4
								5
Water Strike		Remarks		Groundwater not encountered, backfilled with arisings.				
Depth Strike		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environment

Trial Pit Log

Trial Pit No

TP4

Sheet 1 of 1

Project Name: Land Off Lidsey Road, Woodgate

Project No.
GE18390

Co-ords: 493701.48 - 104146.65
Level: 9.21

Date
19/08/2019

Location: Woodgate, West Sussex

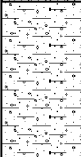
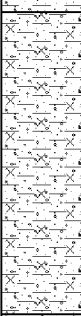
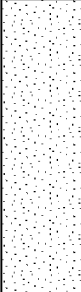
Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
2.70

Logged
GE

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.15	9.06		Grass overlying dark brown silty sand with rootlets. TOPSOIL	
	0.50	D					Firm to stiff orange brown very sandy CLAY with occasional fine to medium chert gravel. RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=2.5kg/cm2	0.70	8.51		Firm to stiff orange brown and grey mottled sandy silty CLAY with occasional fine to coarse sub-angular chert gravel. RIVER TERRACE DEPOSITS	1
	1.50 1.50	D PP	PP=2kg/cm2					
	2.00	D		1.70	7.50		Orange brown silty fine to medium SAND. RIVER TERRACE DEPOSITS	2
	2.50	D						
				2.70	6.50		End of Pit at 2.70m	3
								4
								5
Depth Strike		Remarks						
1.90	0.00	Groundwater encountered at 1.90m bgl, backfilled with arisings.						
		Stability						



		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Trial Pit Log			Trial Pit No TP5 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493660.94 - 104174.25 Level: 9.09		Date 19/08/2019		
Location: Woodgate, West Sussex				Dimensions (m):		Scale 1:25		
Client: Thakeham Client Limited				Depth 2.00		Logged GE		

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20	8.89		Grass overlying dark brown silty sand with rootlets. TOPSOIL	1 2 3 4 5
	0.50 0.50	D PP	PP=5kg/cm2	0.70	8.39		Stiff orange brown mottled sandy silty CLAY. RIVER TERRACE DEPOSITS	
	1.00 1.00	D PP	PP=2.5kg/cm2	1.40	7.69		Firm to stiff orange brown and grey mottled slightly sandy silty CLAY. RIVER TERRACE DEPOSITS	
	1.50 1.50	D PP	PP=2.5kg/cm2	1.60	7.49		Firm orange brown and grey mottled CLAY with fine to medium sub-angular chert gravel. RIVER TERRACE DEPOSITS	
							Orange brown very silty damp fine to medium SAND. RIVER TERRACE DEPOSITS	
	2.00	D		2.00	7.09		End of Pit at 2.00m	

		Remarks: Groundwater encountered at 1.90m bgl, standing at 1.95m bgl after sixty minutes. Backfilled with arisings.
1.90	1.95	Stability



Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental

Trial Pit Log

Trial Pit No

TP6

Sheet 1 of 1

Project Name: Land Off Lidsey Road, Woodgate

Project No.
GE18390

Co-ords: 493749.45 - 104169.18
Level: 8.65

Date
19/08/2019

Location: Woodgate, West Sussex

Dimensions
(m):

Scale
1:25

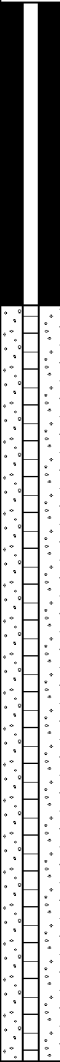
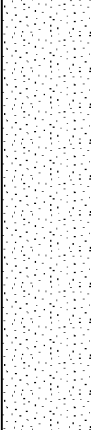
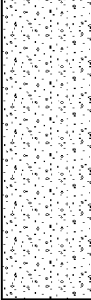
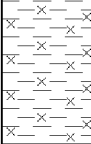
Client: Thakeham Client Limited

Depth
2.10

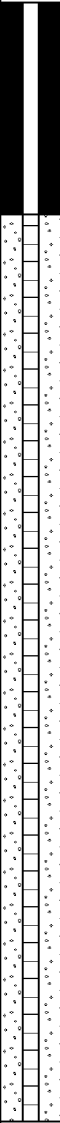
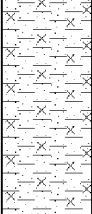
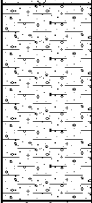
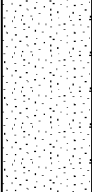
Logged
GE

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15			0.15	8.50		Grass overlying dark brown silty sand with rootlets and occasional chalk and shingle. TOPSOIL	
	0.50	PP	PP=3.6kg/cm2				Firm to stiff orange brown silty sandy CLAY with abundant fine chert gravel, becoming fine to medium between 1.3m and 1.4m. RIVER TERRACE DEPOSITS	1
	1.00	PP	PP=2.25kg/cm2					
				1.40	7.25		Orange brown silty fine to medium SAND. RIVER TERRACE DEPOSITS	2
				2.10	6.55		End of Pit at 2.10m	3
								4
								5
Water Strike								
Depth Strike	Water to (m)	Remarks						
2.00	0.00	Groundwater encountered at 2.0m bgl, backfilled with arisings.						
		Stability						



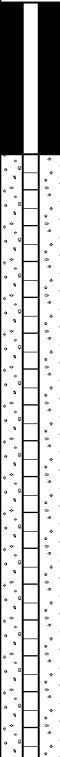
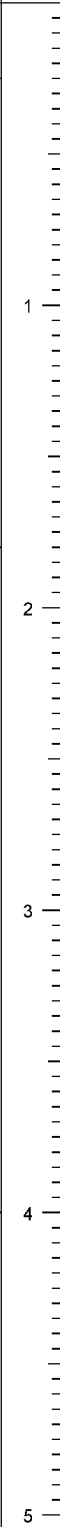
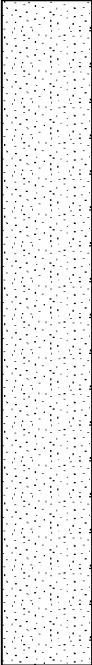
		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS1 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493760E - 104218N		Hole Type WLS			
Location: Woodgate, West Sussex		Level: 8.42		Scale 1:25					
Client: Thakeham Client Limited		Dates: 19/08/2019		Logged By AP					
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.20	8.22		Grass overlying dark brown silty sand with rootlets TOPSOIL	
		0.50 0.50	D ES					Brown and grey mottled slightly sandy very clayey SILT with occasional rootlets and rare fine to coarse sub angular chert gravel RIVER TERRACE DEPOSITS	
		1.00 1.00	D PP	0.8kg/cm2	1.00	7.57 7.42		Soft orange brown and grey mottled silty CLAY with occasional fine to coarse sub angular chert gravel RIVER TERRACE DEPOSITS	1
		1.50	D					Orange brown mottled medium SAND RIVER TERRACE DEPOSITS	
		2.00	D						2
		2.50	D		2.50	5.92			
		3.00	D					Brown medium to coarse SAND with occasional fine to medium sub angular chert gravel RIVER TERRACE DEPOSITS	3
		3.50 3.50	D PP	2.5kg/cm2	3.50	4.92			Stiff grey silty CLAY LONDON CLAY ...Collapsed to 3.5m on completion
		4.00 4.00	D PP	2.5kg/cm2	4.00	4.42		End of Borehole at 4.00m	4
									5
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks			
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	Groundwater encountered at 1.90m bgl, standing at 1.23m after twenty minutes. Standpipe installed to 3.50m bgl.			
		1.90	1.23						

		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS2 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493724E - 104053N		Hole Type WLS			
Location: Woodgate, West Sussex		Level: 9.25		Scale 1:25		Logged By AP			
Client: Thakeham Client Limited		Dates: 19/08/2019							

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30	8.95		Grass overlying brown silty sand with rootlets TOPSOIL	1
		0.50 0.50	D ES		0.55	8.70		Light brown sandy SILT RIVER TERRACE DEPOSITS	
		1.00 1.00	D PP	2.0kg/cm2				Stiff orange brown and grey mottled sandy silty CLAY RIVER TERRACE DEPOSITS	2
		1.50 1.50	D PP	1.0kg/cm2	1.30	7.95		Firm brown sandy CLAY with abundant fine to coarse sub angular chert gravel RIVER TERRACE DEPOSITS	
		2.00	D		1.95	7.30		Brown SAND RIVER TERRACE DEPOSITS	3
		2.50	D				...Collapsed to 2.5m on completion		
		3.00	D						
		3.50	D						
		4.00	D		4.00	5.25	End of Borehole at 4.00m		4
									5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		3.00	1.20				
						Groundwater encountered at 3.00m bgl, standing at 1.20m bgl after twenty minutes. Standpipe installed to 3.70m bgl.	

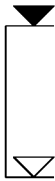
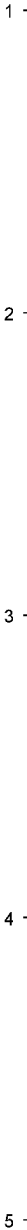
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS3 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493666E - 104053N		Hole Type WLS	
Location: Woodgate, West Sussex				Level: 9.29		Scale 1:25	
Client: Thakeham Client Limited				Dates: 19/08/2019		Logged By AP	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.25	9.04		Grass overlying brown sandy silt TOPSOIL	
		0.50	D					Stiff orange brown and grey mottled sandy CLAY with rootlets RIVER TERRACE DEPOSITS	
		0.50	ES						
		0.50	PP	3.0kg/cm2					
		1.00	D					Brown SAND RIVER TERRACE DEPOSITS	
		1.00	PP	1.5kg/cm2					
		1.50	D						
		1.50	PP	2.0kg/cm2					
		2.00	D		1.80	7.49			
		2.50	D					...Collapsed to 2.5m on completion	
	3.00	D							
	3.50	D							
	4.00	D		4.00	5.29			End of Borehole at 4.00m	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		3.00	2.50				

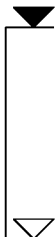
Groundwater encountered at 3.00m bgl, standing at 2.50m bgl after twenty minutes. Standpipe installed to 2.50m bgl.

		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS4 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493661E - 104149N		Hole Type WLS			
Location: Woodgate, West Sussex				Level: 9.37		Scale 1:25			
Client: Thakeham Client Limited				Dates: 19/08/2019		Logged By AP			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.25	9.12		Grass overlying brown sandy silt with rootlets TOPSOIL	
		0.50 0.50	D ES		0.70	8.67		Brown clayey sandy silt with rootlets RIVER TERRACE DEPOSITS	
		1.00 1.00	D PP	4.5kg/cm2				Very stiff becoming stiff orange brown and grey mottled slightly sandy silty CLAY RIVER TERRACE DEPOSITS	
		1.50 1.50	D PP	2.7kg/cm2					
		2.00	D		1.80	7.57		Orange brown mottled SAND RIVER TERRACE DEPOSITS	
		2.50	D					...collapsed to 2.50m on completion	
		3.00	D						
		3.50	D						
		4.00	D		3.90 4.00	5.47 5.37		Orange brown sand with occasional fine to coarse chert gravel RIVER TERRACE DEPOSITS End of Borehole at 4.00m	

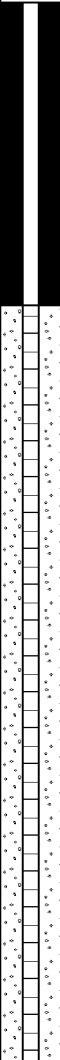
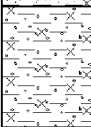
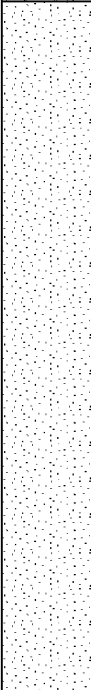
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks Groundwater encountered at 3.00m bgl, standing at 2.50m bgl after twenty minutes. Backfilled with arisings.	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		3.00	2.50				

		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS5 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493711E - 104105N		Hole Type WLS			
Location: Woodgate, West Sussex		Level: 9.17		Scale 1:25		Logged By AP			
Client: Thakeham Client Limited		Dates: 19/08/2019							

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.25	8.92		Brown sandy silt with rootlets TOPSOIL	1
		0.50	D		0.50	8.67		Brown slightly clayey sandy SILT RIVER TERRACE DEPOSITS	
		0.50	ES					Very stiff orange brown mottled slightly silty sandy CLAY RIVER TERRACE DEPOSITS	
		1.00	D		1.20	7.97		Stiff brown sandy silty CLAY with rare chert gravel RIVER TERRACE DEPOSITS	
		1.00	PP	3.0kg/cm2				Orange brown SAND RIVER TERRACE DEPOSITS	
		1.50	D		1.70	7.47		Orange brown SAND RIVER TERRACE DEPOSITS	2
		1.50	PP	2.5kg/cm2					
		2.00	D						
		2.50	D						
		3.00	D						
	3.50	D							3
	4.00	D		4.00	5.17				
								...Collapsed to 2.3m on completion	4
								End of Borehole at 4.00m	5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		3.00	2.30			Groundwater encountered at 3.00m bgl, standing at 2.30m bgl after twenty minutes. Backfilled with arisings.	

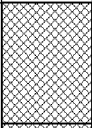
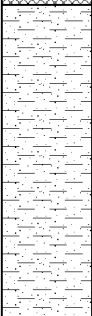
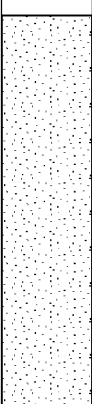
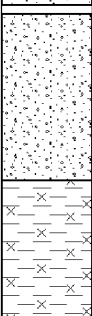
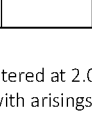
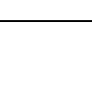
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GJ		Borehole Log				Borehole No. WS6	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493662E - 104219N		Sheet 1 of 1 Hole Type WLS	
Location: Woodgate, West Sussex				Level: 9.16		Scale 1:25	
Client: Thakeham Client Limited				Dates: 19/08/2019		Logged By AP	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES	2.5kg/cm2	0.25	8.91	 Grass overlying brown silty sand with rootlets and rare flint gravel TOPSOIL	
	0.50	D					 Stiff becoming firm orange brown mottled silty sandy CLAY with rare rootlets RIVER TERRACE DEPOSITS	
	0.50	ES						
	0.50	PP						
		1.00	D	1.0kg/cm2	1.10	8.06	 Firm brown silty CLAY with frequent to abundant fine to medium sub angular chert gravel RIVER TERRACE DEPOSITS	
	1.00	PP						
		1.50	D		1.50	7.66	 Brown medium SAND RIVER TERRACE DEPOSITS	
		2.00	D					
		2.50	D					
		3.00	D					
	3.50	D						
				3.80	5.36			
				4.00	5.16		 Brown SAND with frequent fine to coarse sub-angular chert gravel RIVER TERRACE DEPOSITS ...Collapsed to 3.5m on completion End of Borehole at 4.00m	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		2.00	1.70			Groundwater encountered at 2.00m bgl, standing at 1.70m bgl after twenty minutes. Standpipe installed to 3.50m bgl.



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS7 Sheet 1 of 1	
Project Name: Land Off Lidsey Road, Woodgate		Project No. GE18390		Co-ords: 493772E - 104149N		Hole Type WLS	
Location: Woodgate, West Sussex				Level: 8.86		Scale 1:25	
Client: Thakeham Client Limited				Dates: 19/08/2019		Logged By AP	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	ES		0.40	8.46		Dark brown reworked sandy silt MADE GROUND	1	
		0.50 0.50	D ES		0.45	8.41				Reworked chalk MADE GROUND Very stiff becoming stiff brown possibly desiccated sandy CLAY with fine roots and rootlets RIVER TERRACE DEPOSITS
		1.00 1.00	D PP	4.5kg/cm2					Brown SAND RIVER TERRACE DEPOSITS	
		1.50 1.50	D PP	2.5kg/cm2	1.50	7.36				... Collapsed to 2m on completion
		2.00	D							
		2.50	D		2.92	5.94		Stiff grey silty CLAY LONDON CLAY		
		3.00	D						End of Borehole at 4.00m	
		3.50 3.50	D PP	1.8kg/cm2	3.50	5.36				
		4.00 4.00	D PP	2.0kg/cm2	4.00	4.86				

TEST CERTIFICATE

Specification for Topsoil

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



Environmental Science

Tested in Accordance with: BS 3882: 2015

Client: Geo-Environmental Services Ltd
Client Address: Unit 7, Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex,
BN6 9GL
Contact: Anthony Potter
Site Name: Lidsey Road, Woodgate
Site Address: Not Given

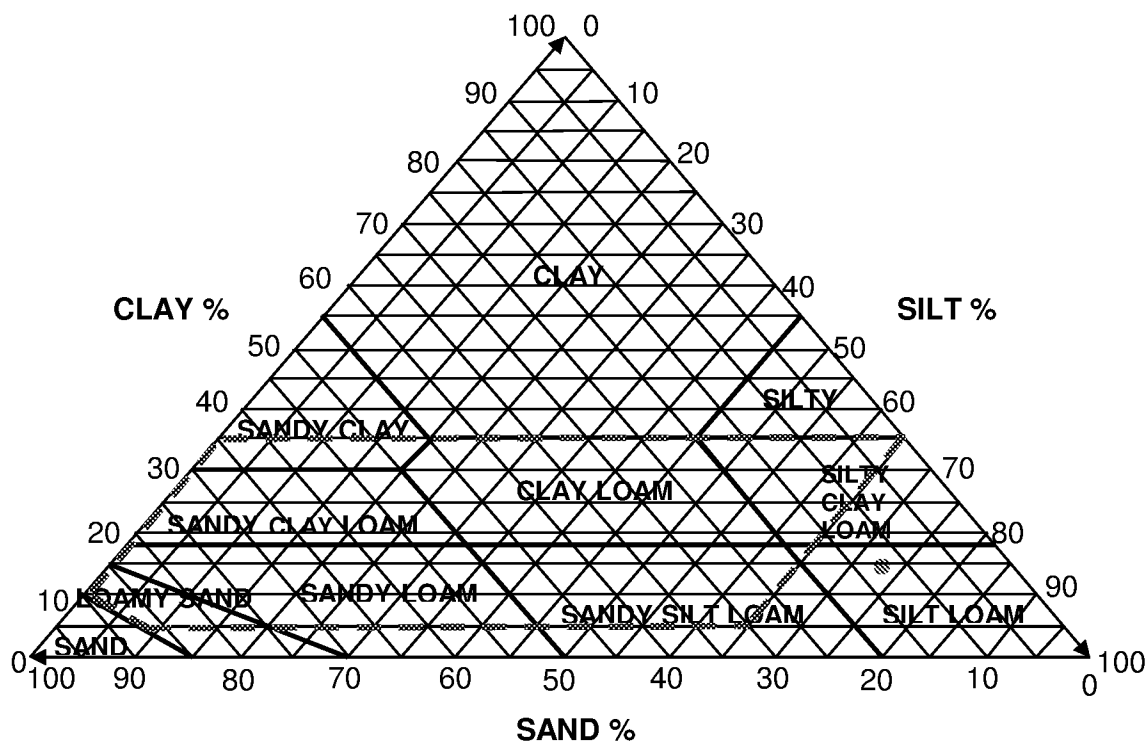
Client Reference: GE18390
Job Number: 19-55777
Date Sampled: Not Given
Date Received: 21/08/2019
Date Tested: 23/08/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1297286
Hole No.: TP3
Sample Reference: Not Given
Sample Description: SILT LOAM

Depth Top [m]: 0.10
Depth Base [m]: Not Given
Sample Type: D

Soil Texture Triangle



Sample Proportion	% dry mass
Sand	12.9
Silt	71.5
Clay	15.6

Remarks:

Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 02/09/2019

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd GF 286.3

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

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Croxley Green Business Park
Watford Herts WD18 8YS



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BN6 9GL
Contact: Anthony Potter
Site Name: Lidsey Road, Woodgate
Site Address: Not Given

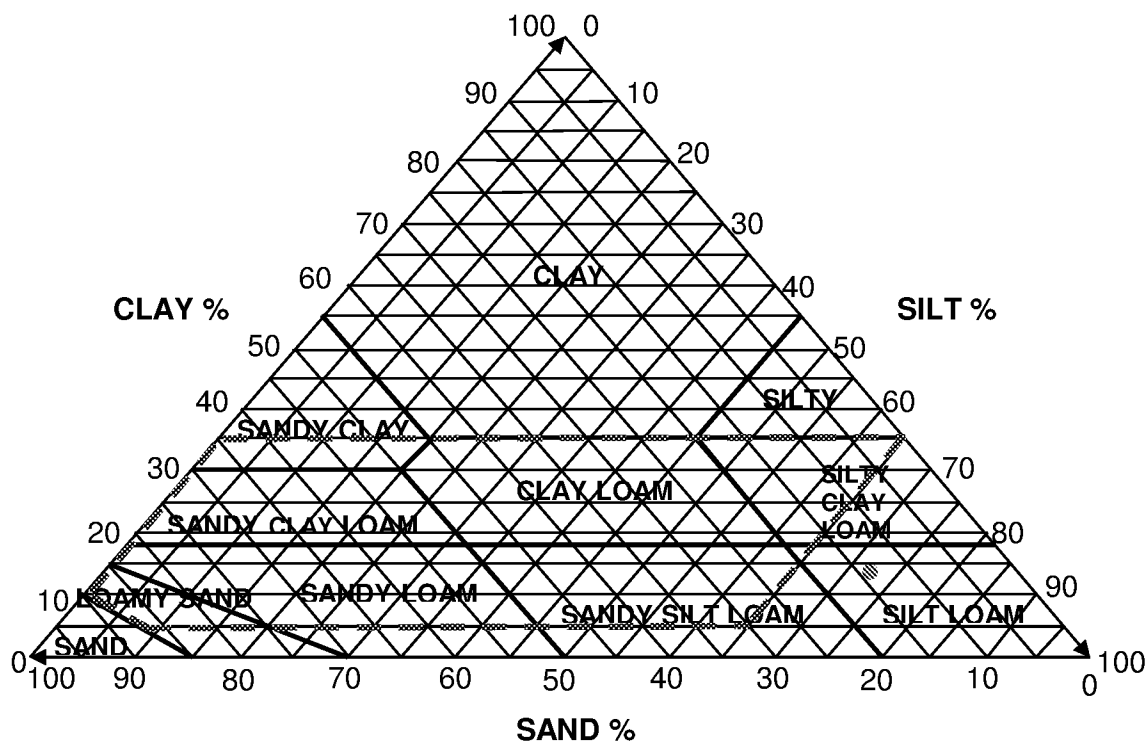
Client Reference: GE18390
Job Number: 19-55777
Date Sampled: Not Given
Date Received: 21/08/2019
Date Tested: 23/08/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1297287
Hole No.: TP4
Sample Reference: Not Given
Sample Description: SILT LOAM

Depth Top [m]: 0.10
Depth Base [m]: Not Given
Sample Type: D

Soil Texture Triangle



Sample Proportion	% dry mass
Sand	14.4
Silt	70.8
Clay	14.8

Remarks:

Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 02/09/2019

Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 286.3

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Specification for Topsoil

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



Environmental Science

Tested in Accordance with: BS 3882: 2015

Client: Geo-Environmental Services Ltd
Client Address: Unit 7, Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex,
BN6 9GL
Contact: Anthony Potter
Site Name: Lidsey Road, Woodgate
Site Address: Not Given

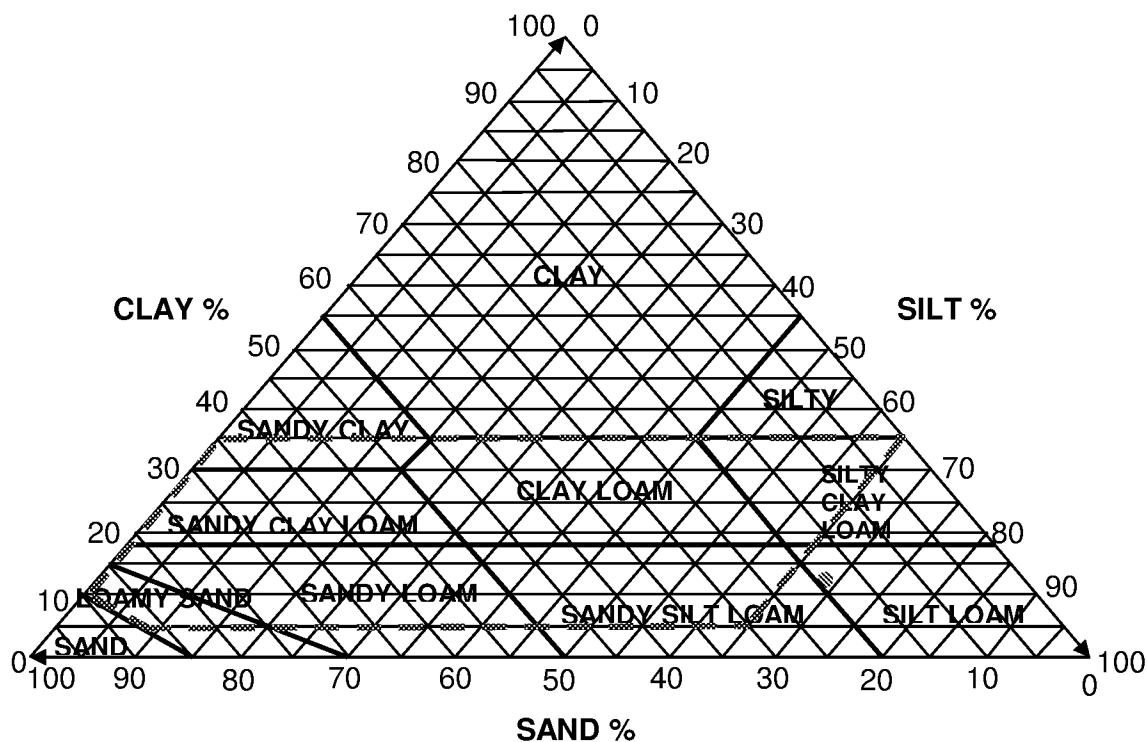
Client Reference: GE18390
Job Number: 19-55777
Date Sampled: Not Given
Date Received: 21/08/2019
Date Tested: 23/08/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1297288
Hole No.: TP5
Sample Reference: Not Given
Sample Description: SILT LOAM

Depth Top [m]: 0.10
Depth Base [m]: Not Given
Sample Type: D

Soil Texture Triangle



Sample Proportion	% dry mass
Sand	19.3
Silt	67.2
Clay	13.5

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 02/09/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 286.3

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Specification for Topsoil

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



Environmental Science

Tested in Accordance with: BS 3882: 2015

Client: Geo-Environmental Services Ltd
Client Address: Unit 7, Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex,
BN6 9GL
Contact: Anthony Potter
Site Name: Lidsey Road, Woodgate
Site Address: Not Given

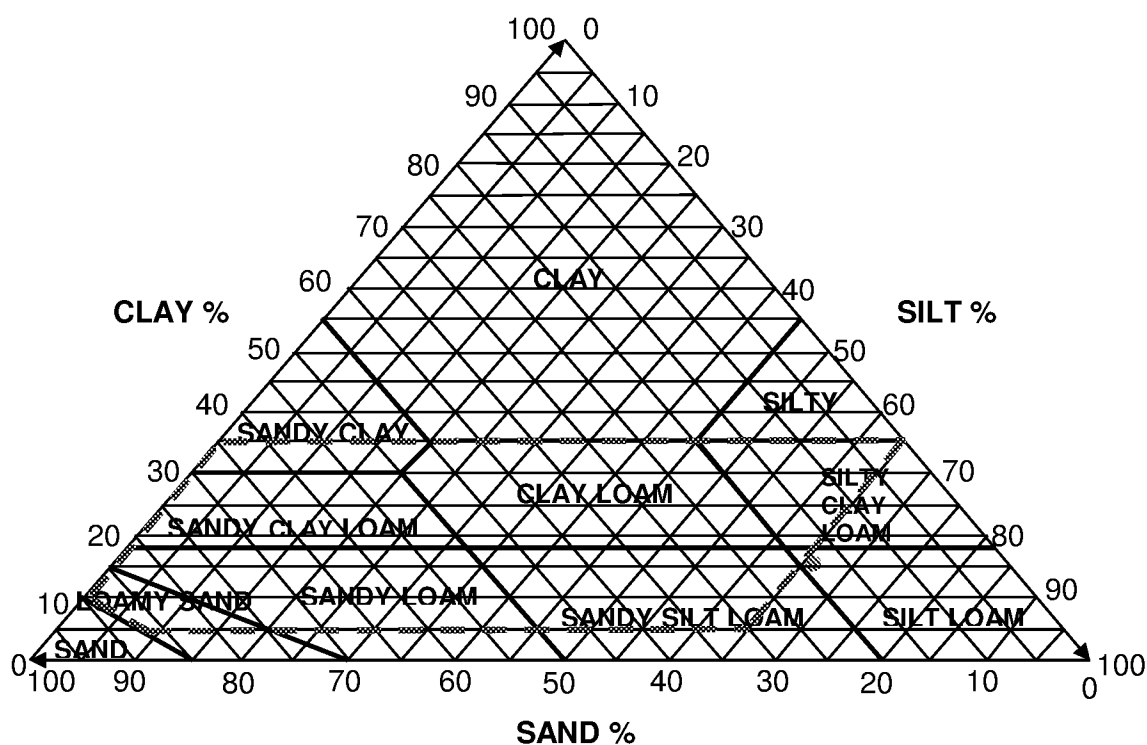
Client Reference: GE18390
Job Number: 19-55777
Date Sampled: Not Given
Date Received: 21/08/2019
Date Tested: 23/08/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1297289
Hole No.: TP6
Sample Reference: Not Given
Sample Description: SILT LOAM

Depth Top [m]: 0.15
Depth Base [m]: Not Given
Sample Type: D

Soil Texture Triangle



Sample Proportion	% dry mass
Sand	18.9
Silt	64.5
Clay	16.6

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 02/09/2019

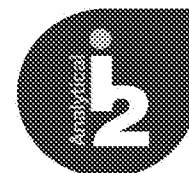
Signed:

Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd GF 286.3

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



Anthony Potter
Geo-Environmental Services Ltd
Unit 7, Danworth Farm
Cuckfield Road
Hurstpierpoint
West Sussex
BN6 9GL



Environmental Science

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

Analytical Report Number : 19-55777

Project / Site name:	Lidsey Road, Woodgate	Samples received on:	21/08/2019
Your job number:	GE18390	Samples instructed on:	21/08/2019
Your order number:		Analysis completed by:	02/09/2019
Report Issue Number:	1	Report issued on:	02/09/2019
Samples Analysed:	4 soil samples		

Signed

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

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

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

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

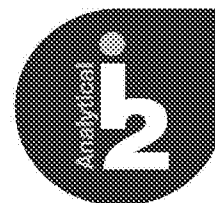
soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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



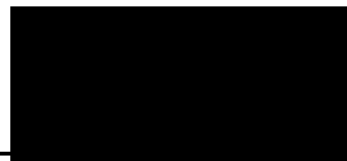
4041



Environmental Science

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS



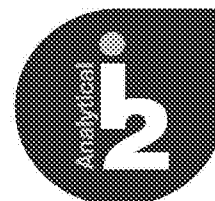
Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
	Fail BS 3882						client		
Report No:	19-55777						Geo-Environmental Services Ltd 01273 832972		
Location	Lidsey Road, Woodgate								
Lab Reference (Sample Number)	1297286								
Sampling Date	Deviating								
Sample ID	TP3								
Depth (m)	0.10			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%w/w	SILT LOAM	N	N	N	N	N	N
Maximum coarse fragment content:	>2mm	%w/w	2.60	Y	Y	Y	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	3.50						
	Clay 5-20%		Y	Y	Y	Y	Y	Y	Y
	Clay 20-35%		-	-	-	-	-	-	-
Soil pH:		pH	7.90	Y	N	Y	Y	N	Y
Carbonate:		%w/w	3.30	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%w/w	0.04	N	N	N	-	-	-
	Extractable Phosphate (as P)	mg/l	8.20	N	N	N	Y	Y	Y
	Extractable Potassium	mg/l	75.10	N	N	N	-	-	-
	Extractable Magnesium	mg/l	120.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	47.00	N	N	N	N	N	N
Conductivity		us/cm	1700.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	38.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	15.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	15.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Fail	Fail	Fail	Fail	Fail	Fail

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited



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Environmental Science

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS



Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
Pass BS 3882 for Low fertility;						client			
Report No:	19-55777				Geo-Environmental Services Ltd 01273 832972				
Location	Lidsey Road, Woodgate								
Lab Reference (Sample Number)	1297287								
Sampling Date	Deviating								
Sample ID	TP4								
Depth (m)	0.10			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%w/w	SILT LOAM	Y	Y	Y	Y	Y	Y
Maximum coarse fragment content:	>2mm	%w/w	7.70	Y	Y	Y	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	5.20						
	Clay 5-20%		Y	Y	Y	Y	Y	Y	Y
	Clay 20-35%		-	-	-	-	-	-	-
Soil pH:		pH	6.90	Y	Y	Y	Y	Y	Y
Carbonate:		%w/w	23.00	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%w/w	0.20	Y	Y	Y	-	-	-
	Extractable Phosphate (as P)	mg/l	6.70	Y	Y	Y	Y	Y	Y
	Extractable Potassium	mg/l	205.00	Y	Y	Y	-	-	-
	Extractable Magnesium	mg/l	200.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	15.00	Y	Y	Y	Y	Y	Y
Conductivity		us/cm	1600.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	40.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	15.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	12.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Fail	Fail	Fail	Pass	Fail	Fail

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
	Fail BS 3882							client	
Report No:	19-55777						Geo-Environmental Services Ltd 01273 832972		
Location	Lidsey Road, Woodgate								
Lab Reference (Sample Number)	1297288								
Sampling Date	Deviating								
Sample ID	TP5								
Depth (m)	0.10			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%w/w	SILT LOAM	N	N	N	N	N	N
Maximum coarse fragment content:	>2mm	%w/w	1.60	Y	Y	Y	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	5.50						
	Clay 5-20%		Y	Y	Y	Y	Y	Y	Y
	Clay 20-35%		-	-	-	-	-	-	-
Soil pH:		pH	6.10	Y	N	N	Y	N	N
Carbonate:		%w/w	3.90	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%w/w	0.14	N	N	N	-	-	-
	Extractable Phosphate (as P)	mg/l	5.20	N	N	N	Y	Y	Y
	Extractable Potassium	mg/l	119.00	N	N	N	-	-	-
	Extractable Magnesium	mg/l	180.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	23.00	N	N	N	Y	Y	N
Conductivity		us/cm	1600.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	39.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	14.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	16.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Fail	Fail	Fail	Fail	Fail	Fail
Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and T2 cannot be held responsible for any discrepancies with current legislation									

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS



Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
	Fail BS 3882							client	
Report No:	19-55777						Geo-Environmental Services Ltd 01273 832972		
Location	Lidsey Road, Woodgate								
Lab Reference (Sample Number)	1297289								
Sampling Date	Deviating								
Sample ID	TP6								
Depth (m)	0.15			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%w/w	SILT LOAM	N	N	N	N	N	N
Maximum coarse fragment content:	>2mm	%w/w	0.70	Y	Y	Y	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	4.00						
	Clay 5-20%		Y	Y	Y	Y	Y	Y	Y
	Clay 20-35%		-	-	-	-	-	-	-
Soil pH:		pH	6.50	Y	N	N	Y	N	N
Carbonate:		%w/w	3.90	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%w/w	0.09	N	N	N	-	-	-
	Extractable Phosphate (as P)	mg/l	5.70	N	N	N	Y	Y	Y
	Extractable Potassium	mg/l	76.40	N	N	N	-	-	-
	Extractable Magnesium	mg/l	150.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	27.00	N	N	N	Y	Y	N
Conductivity		us/cm	1700.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	33.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	14.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	15.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Fail	Fail	Fail	Fail	Fail	Fail
Results are expressed on a dry weight basis, after correction for moisture content where applicable. Rated limits apply for ordinary peaty and T2 cannot be held responsible for any discrepancies with current legislation									

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited



Analytical Report Number : 19-55777

Project / Site name: Lidsey Road, Woodgate

* 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 *
1297286	TP3	None Supplied	0.10	Brown sandy loam with vegetation.
1297287	TP4	None Supplied	0.10	Brown sandy loam with vegetation.
1297288	TP5	None Supplied	0.10	Brown sandy loam with vegetation.
1297289	TP6	None Supplied	0.15	Brown sandy loam with vegetation.

Analytical Report Number : 19-55777

Project / Site name: Lidsey Road, Woodgate

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
Carbon to Nitrogen Ratio (Topsoil - BS3882:2015)	Carbon to Nitrogen ratio (:1) calculated using Loss on Ignition.	BS3882:2015	L01TS2015	W	NONE
Carbonate (Topsoil - BS3882)	Determination of Carbonate as per BS 3882:2015.	BS3882:2015	L034-PL	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and colorimetric determination.	In house method based on BS 7755-3.7:1995 &	L087-PL	D	NONE
Mass loss on ignition (Topsoil - BS3882)	Determination of Loss on Ignition as per BS 3882:2015.	BS3882:2015	L047-PL	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrogen (TKN)	Determination of total nitrogen by Kjeldahl method.	BS3882:2007	L087-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Phosphorus as PO ₄ (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2015 & BS8601:2013	L082-PL	D	NONE
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L028-PL	D	NONE
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
Textural Classification (BS3882/BS8601)	Determination of the textural classification of soil following BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE
Textural Classification Diagram	Textural classification Diagram	BS3882:2015		D	NONE

Iss No 19-55777-1 Lidsey Road, Woodgate GE18390



Analytical Report Number : 19-55777

Project / Site name: Lidsey Road, Woodgate

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
Topsail	See attached report.	BS 3882: 2015	PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP3		S	19-55777	1297286	a			
TP4		S	19-55777	1297287	a			
TP5		S	19-55777	1297288	a			
TP6		S	19-55777	1297289	a			



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 19-24791

Issue: 1

Date of Issue: 13/09/2019

Contact: James Phaure

Customer Details: K4 Soils Laboratory Ltd
Unit 8
Watford
Hertfordshire WD18 9RU

Quotation No: Q16-00568

Order No: Not Supplied

Customer Reference: 27060

Date Received: 11/09/2019

Date Approved: 13/09/2019

Details: Land Off Lidsey Road, Woodgate

Approved by:

John Wilson, Quality Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 19-24791, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
183673	TP1 3 1.00	Not Provided	11/09/2019	Silty loam	a
183674	TP3 3 1.00	Not Provided	11/09/2019	Silty loam	a
183675	TP4 5 2.00	Not Provided	11/09/2019	Sand	a
183676	TP5 4 1.50	Not Provided	11/09/2019	Sandy loam	a
183677	TP6 1 1.00	Not Provided	11/09/2019	Silty loam	a
183678	WS1 5 1.50	Not Provided	11/09/2019	Loamy sand	a
183679	WS2 5 1.50	Not Provided	11/09/2019	Silty loam	a



Results Summary

2683

Report No.: 19-24791, issue number 1

ELAB Reference	183673	183674	183675	183676	183677
Customer Reference	3	3	5	4	1
Sample ID					
Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED
Sample Location	TP1	TP3	TP4	TP5	TP6
Sample Depth (m)	1.00	1.00	2.00	1.50	1.00
Sampling Date	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided

Determinand	Codes	Units	LOD					
Soil sample preparation parameters								
Moisture Content	N	%	0.1	18.0	19.3	21.6	18.1	21.0
Stones Content	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None	None
Anions								
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40
Water Soluble Nitrate	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Water Soluble Sulphate	M	mg/kg	40	< 40	< 40	< 40	< 40	< 40
Inorganics								
Ammonia as NH ₄	N	mg/kg	0.1	3.0	3.1	3.1	1.5	1.6
Total Sulphur	N	%	0.01	0.01	0.01	0.01	0.01	0.01
Acid Soluble Sulphate (SO ₄)	U	%	0.02	0.04	0.04	0.03	0.03	0.04
Miscellaneous								
pH	M	pH units	0.1	8.3	8.1	5.9	6.8	7.1



Results Summary

2683

Report No.: 19-24791, issue number 1

ELAB Reference	183678	183679
Customer Reference	5	5
Sample ID		
Sample Type	DISTURBED	DISTURBED
Sample Location	WS1	WS2
Sample Depth (m)	1.50	1.50
Sampling Date	Not Provided	Not Provided

Determinand	Codes	Units	LOD		
Soil sample preparation parameters					
Moisture Content	N	%	0.1	21.8	14.4
Stones Content	N	%	0.1	< 0.1	46.4
Material removed	N	%	0.1	< 0.1	46.4
Description of Inert material removed	N		0	None	Stones
Anions					
Water Soluble Chloride	M	mg/kg	40	< 40	< 40
Water Soluble Nitrate	M	mg/kg	40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02
Water Soluble Sulphate	M	mg/kg	40	< 40	< 40
Inorganics					
Ammonia as NH ₄	N	mg/kg	0.1	1.6	1.5
Total Sulphur	N	%	0.01	< 0.01	0.01
Acid Soluble Sulphate (SO ₄)	U	%	0.02	0.03	0.04
Miscellaneous					
pH	M	pH units	0.1	8.1	8.1



Method Summary

Report No.: 19-24791, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Ammonia in soil	N	As submitted sample	12/09/2019		
pH	M	Air dried sample	12/09/2019	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	13/09/2019	115	Ion Chromatography
Water soluble anions	M	Air dried sample	12/09/2019	172	Ion Chromatography
Total organic carbon/Total sulphur	N	Air dried sample	12/09/2019	216	IR

Tests marked N are not UKAS accredited



Report Information

Report No.: 19-24791, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

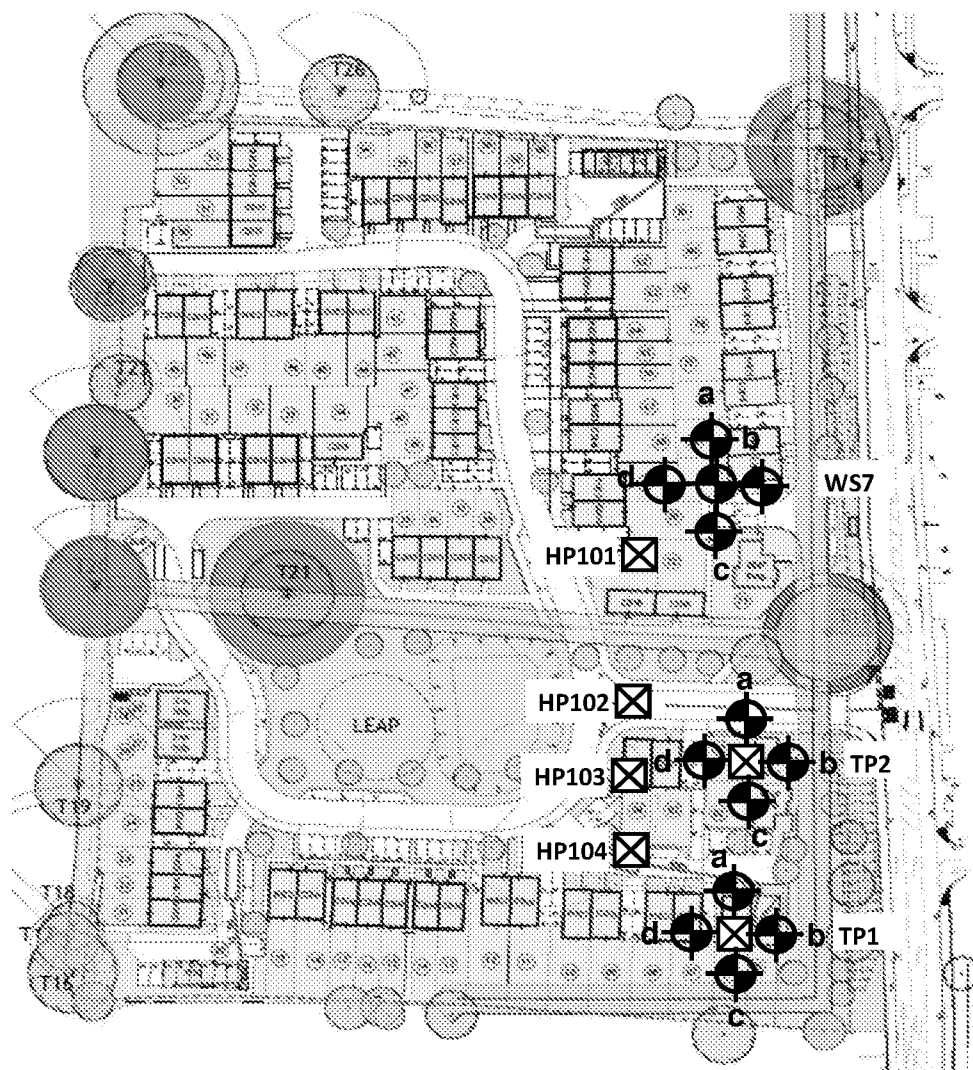
Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



Project:	Land Off Lidsey Road, Woodgate			Title	Site Investigation Plan	
Client:	Thakeham Client Limited			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE18679	Revision:	v1			
Drawn:	JK	Date:	30/04/2020			
Figure:	2	Scale:	Not To Scale			





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environment

Trial Pit Log

Trial Pit No

TP01a

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
0.43

Logged

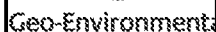
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.15	ES		0.23			Brown gravelly sandy silt with frequent rootlets, occasional roots (1-5mm), and tarmacadam. Gravel comprises fine to coarse sub-angular to sub-rounded flint.
				0.43			MADE GROUND
							Brown and light yellowish brown mottled sandy SILT with occasional rootlets. RIVER TERRACE DEPOSITS End of Pit at 0.43m

Water Strike	Notes to (relog)
Depth Strike	

Remarks

Stability





BN6 9GI

Trial Pit Log

TP01b

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
0.40

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.25			Brown sandy silt with abundant rootlets and roots (1-2mm) and frequent brick cobbles, occasional flint gravel rare chalk gravel. MADE GROUND
				0.40			Light brown and occasionally light yellowish brown mottled sandy clayey SILTwith occasional fine to medium sub-angular to sub-rounded flint gravel. RIVER TERRACE DEPOSITS End of Pit at 0.40m

[illegible]

Trial Pit Log

TrialPit No

TP01c

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions

Scale
1:25

Client: Thakeham Client Limited

Depth
0.42

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.08 0.15 0.23 0.42		       	Brown sandy gravelly silt with frequent rootlets and roots (1-3mm). TOPSOIL Compacted fine to coarse sub-angular tarmacadam, concrete and stone gravel. MADE GROUND Brown sandy gravelly silt with frequent rootlets and roots (1-3mm), occasional tarmacadam and concrete. Gravel comprises fine to medium sub-angular to sub-rounded flint. MADE GROUND Light brown clayey sandy SILT with rare fine to medium sub-angular to sub-rounded flint gravel. RIVER TERRACE DEPOSITS End of Pit at 0.42m

Water Strikes		Remarks
Depth Strike	Rose in (mbg)	
		Stability



Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Trial Pit Log

TrialPit No
TP01d
Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

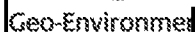
Scale
1:25

Client: Thakeham Client Limited

Depth
0.38

Logged

[illegible][illegible]



Geo-Environmen

Geo-Environmen

TP02a

Geo-Environmen

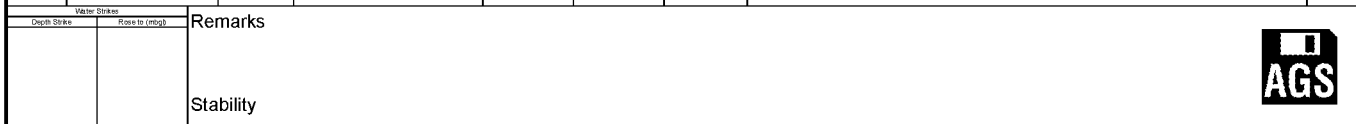
Date
05/05/2020

Scale
1:25

Logged

Water Sinks		Remarks
Depth Sink	Rate to Land	
		Stability







Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environment

Trial Pit Log

Trial Pit No

TP02b

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
0.45

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.15	ES		0.24			Dark grey sandy gravelly silt with abundant tarmacadam and occasional rootlets. Gravel comprises fine to medium sub-angular to sub-rounded flint and rare brick.
				0.45			MADE GROUND
							Brown and light brown mottled sandy clayey SILT. RIVER TERRACE DEPOSITS
							End of Pit at 0.45m

Water Strike	Remarks
Depth Strike	Stability



Trial Pit Log

TrialPit No
TP02c
Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
0.28

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.24 0.28		 Greyish brown sandy gravelly silt. Gravel comprises fine to coarse sub-angular to sub-rounded flint, concrete and tarmacadam. MADE GROUND Light brown and brown mottled sandy clayey SILT. RIVER TERRACE DEPOSITS End of Pit at 0.28m	1 2 3 4 5

Water Strikes		Remarks
Depth Strike	Rose to (mbg)	
		Stability





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environment

Trial Pit Log

Trial Pit No

TP02d

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

Depth
0.27

Logged

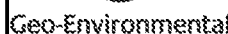
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.15	ES		0.04 0.10 0.20 0.27			Light brown gravelly silt with abundant rootlets. MADE GROUND Compacted pink sandy gravel (TYPE 1) MADE GROUND Dark greyish brown sandy gravelly silt. Gravel comprises fine to medium sub-angular to sub-rounded flint, concrete, rare tarmacadam and brick. MADE GROUND Brown sandy clayey SILT with rare fine sub-angular flint gravel. RIVER TERRACE DEPOSITS End of Pit at 0.27m

Depth Strike	Notes to (enough)

Remarks

Stability





Geo-Environmental

Geo-Environmental

Geo-Environmental

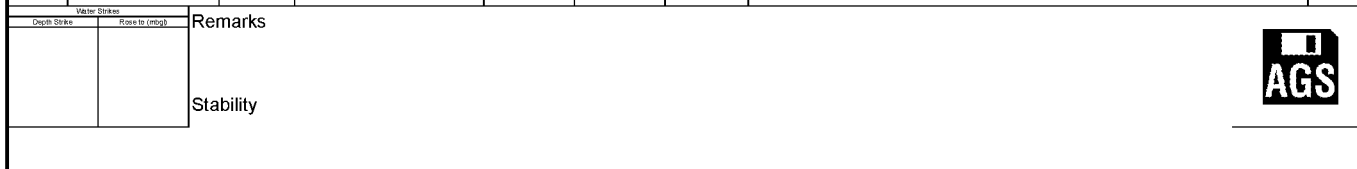
Date
05/05/2020

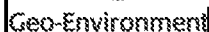
Scale
1:25

Logged

Water Strakes		Remarks
Depth Strake	Rise to center	
		Stability







Trial Pit Log

Sheet 1 of 1

Date
05/05/2020

Scale
1:25

Logged

[illegible][illegible]

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Trial Pit Log

TrialPit No
WS07c

Sheet 1 of 1

Project Name: Lidsey Road, Woodgate - Further SI

Project No.
GE18679

Co-ords: -
Level:

Date
05/05/2020

Location: Woodgate

Dimensions
(m):

Scale
1:25

Client: Thakeham Client Limited

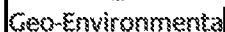
Depth
0.43

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES		0.18			Light brown silty sand with frequent rootlets and roots (1-4mm), rare concrete, brick and carbonaceous inclusions.
							MADE GROUND
							Light orangish brown silty fine to medium SAND with frequent rootlets and roots (1-10mm).
				0.43			RIVER TERRACE DEPOSITS End of Pit at 0.43m

Water Strikes		Remarks
Depth Strike	Rose in (mbg)	
		Stability





Geo-Environmental

Geo-Environmental

Geo-Environmental

Geo-Environmental

Date
05/05/2020

Scale
1:25

Logged

[illegible]

Remarks





2683



Unit A2
Windmill Road
Ponswood Industrial Estate
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East Sussex
TN38 9BY

info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 20-28383

Issue: 1

Date of Issue: 11/06/2020

Contact: Ed Newman

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex BN6 9GL

Quotation No: Q19-01488

Order No: PO-2656

Customer Reference: GE18679

Date Received: 08/06/2020

Date Approved: 11/06/2020

Details: Lidsey Road, Woodgate

Approved by:

Mike Varley, Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 20-28383, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
205511	HP101 0.20	02/06/2020	08/06/2020	Silty loam	
205512	HP102 0.50	02/06/2020	08/06/2020	Silty loam	
205513	HP103 0.40	02/06/2020	08/06/2020	Silty loam	
205514	HP104 0.20	02/06/2020	08/06/2020	Silty loam	
205515	Asbestos Sample 0.20	02/06/2020	08/06/2020		



Results Summary

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Report No.: 20-28383, issue number 1

ELAB Reference	205511	205512	205513	205514
Customer Reference				
Sample ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sample Location	HP101	HP102	HP103	HP104
Sample Depth (m)	0.20	0.50	0.40	0.20
Sampling Date	02/06/2020	02/06/2020	02/06/2020	02/06/2020

Determinand	Codes	Units	LOD				
Soil sample preparation parameters							
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	38.2
Description of Inert material removed	N		0	None	None	None	Stones
Metals							
Arsenic	M	mg/kg	1	7.8	6.2	6.2	10.1
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	21.5	19.0	21.6	22.2
Copper	M	mg/kg	5	13.8	12.6	11.2	18.2
Lead	M	mg/kg	5	32.6	17.3	16.0	46.5
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	12.0	11.3	12.5	13.9
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	M	mg/kg	5	30.6	26.0	29.3	33.3
Zinc	M	mg/kg	5	66.7	43.6	45.4	84.0
Anions							
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02	0.03
Inorganics							
Elemental Sulphur	M	mg/kg	20	< 20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	< 1.0	< 1.0	< 1.0	1.4
Acid Soluble Sulphate (SO4)	U	%	0.02	0.03	0.05	0.05	0.04
Water Soluble Boron	N	mg/kg	0.5	0.8	< 0.5	< 0.5	0.9
Miscellaneous							
pH	M	pH units	0.1	6.7	6.6	6.7	7.8
Total Organic Carbon	N	%	0.01	2.1	0.70	0.52	2.6
Phenols							
Total Phenols	N	mg/kg	6	< 6	< 6	< 6	< 6
Polyaromatic hydrocarbons							
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	0.9
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	0.3
Fluoranthene	M	mg/kg	0.1	0.1	< 0.1	< 0.1	2.8
Pyrene	M	mg/kg	0.1	0.1	< 0.1	< 0.1	2.8
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	1.7
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	1.7
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	2.4
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	1.9
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	2.2
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	2.3
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	0.6
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	2.1
Total PAH(16)	M	mg/kg	0.4	0.5	< 0.4	< 0.4	21.9



Results Summary

2683

Report No.: 20-28383, issue number 1

ELAB Reference	205511	205512	205513	205514
Customer Reference				
Sample ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sample Location	HP101	HP102	HP103	HP104
Sample Depth (m)	0.20	0.50	0.40	0.20
Sampling Date	02/06/2020	02/06/2020	02/06/2020	02/06/2020

Determinand	Codes	Units	LOD				
BTEX							
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0
MTBE	N	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0
TPH CWG							
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	4.6
>C35-C40 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	1.6
Total aliphatic hydrocarbons (>C5 - C40)	N	mg/kg	1	1.7	1.1	1.0	7.4
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	1.1
>C10-C12 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	1.1
>C16-C21 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	6.5
>C21-C35 Aromatic	M	mg/kg	1	3.9	1.2	1.2	59.1
>C35-C40 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	11.8
Total aromatic hydrocarbons (>C5 - C40)	N	mg/kg	1	5.5	2.2	2.2	79.9
Total petroleum hydrocarbons (>C5 - C40)	N	mg/kg	1	7.2	3.3	3.2	87.3
OrganoChlorine Pesticides							
alpha-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t
beta-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t
gamma-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t
delta-HCH	N	ug/kg	10	n/t	n/t	< 10	n/t
Heptachlor	N	ug/kg	10	n/t	n/t	< 10	n/t
Aldrin	M	ug/kg	10	n/t	n/t	< 10	n/t
Heptachlor expoxide	N	ug/kg	10	n/t	n/t	< 10	n/t
trans-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t
alpha cis-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t
p,p-DDE	M	ug/kg	10	n/t	n/t	< 10	n/t
Dieldrin	M	ug/kg	10	n/t	n/t	< 10	n/t
Endrin	N	ug/kg	10	n/t	n/t	< 10	n/t
p,p-DDD	M	ug/kg	10	n/t	n/t	< 10	n/t
Endosulfan II	N	ug/kg	10	n/t	n/t	< 10	n/t
Endrin aldehyde	N	ug/kg	10	n/t	n/t	< 10	n/t
p,p-DDT	M	ug/kg	10	n/t	n/t	< 10	n/t
Endosulphan sulphate	M	ug/kg	10	n/t	n/t	< 10	n/t
Methoxychlor	N	ug/kg	10	n/t	n/t	< 10	n/t
Endrin ketone	N	ug/kg	10	n/t	n/t	< 10	n/t

Tests marked N are not UKAS accredited.

The Environmental Laboratory Ltd. Reg. No. 3882193



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Results Summary

Report No.: 20-28383, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total	Gravimetric Analysis by ACM Type	Free Fibre Analysis	Total Asbestos
205511	0.20	HP101	Brown Soil, Stones, Clinker, Plant Material	No asbestos detected	n/t	n/t	n/t	n/t
205512	0.50	HP102	Brown Soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
205513	0.40	HP103	Brown Soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
205514	0.20	HP104	Brown Soil, Stones, Clinker, Concrete, Plant	No asbestos detected	n/t	n/t	n/t	n/t
205515	0.20	Asbestos Sample	Asbestos Cement Fragment	Chrysotile (Asbestos Cement Fragment	n/t	n/t	n/t	n/t

Method Summary

Report No.: 20-28383, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Sulphide	N	As submitted sample	09/06/2020	109	Colorimetry
Hexavalent chromium	N	As submitted sample	09/06/2020	110	Colorimetry
pH	M	Air dried sample	09/06/2020	113	Electrometric
Acid Soluble Sulphate	U	Air dried sample	10/06/2020	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	09/06/2020	118	ICPMS
Phenols in solids	N	As submitted sample	09/06/2020	121	HPLC
Elemental Sulphur	M	Air dried sample	09/06/2020	122	HPLC
PAH (GC-FID)	M	As submitted sample	09/06/2020	133	GC-FID
Water soluble anions	M	Air dried sample	09/06/2020	172	Ion Chromatography
Organochlorine Pesticides in solids	M	As submitted sample	10/06/2020	173	GC-MS
Low range Aliphatic hydrocarbons soil	N	As submitted sample	10/06/2020	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	10/06/2020	181	GC-MS
BTEX in solids	M	As submitted sample	10/06/2020	181A	GC-MS
Water soluble boron	N	Air dried sample	09/06/2020	202	Colorimetry
Total cyanide	M	As submitted sample	10/06/2020	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	10/06/2020	210	IR
TPH CWG soil by gc-gc	M	As submitted sample	08/06/2020	214	
Asbestos identification	U	Air dried sample	11/06/2020	PMAN	Microscopy

Tests marked N are not UKAS accredited



2683

Report Information

Report No.: 20-28383, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

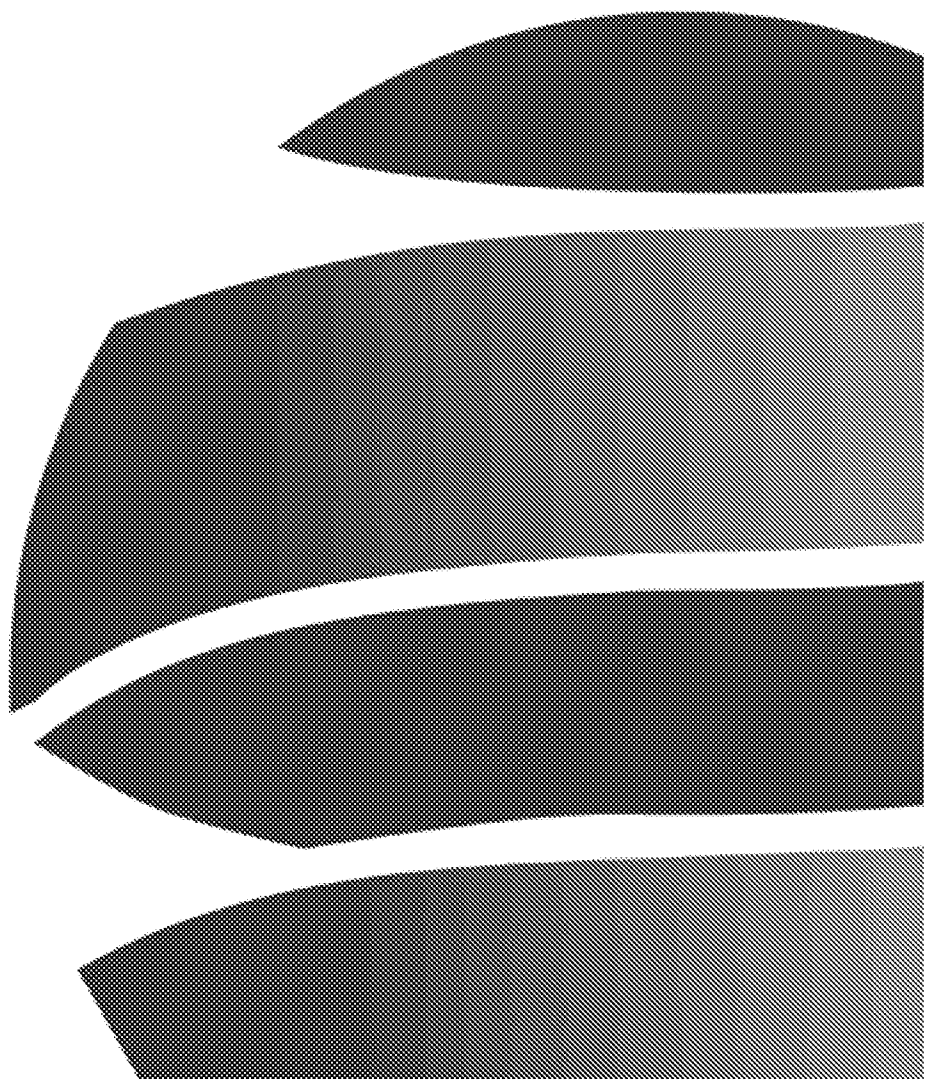
All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



APPENDIX B

NSRI Soil Site Report



Soil Site Report

Extended Soil Report



Lidsey Rd

Easting: 493784

Northing: 104105

Site Area: 1km x 1km

Prepared for: Lucy Holford, Geo-Environmental Services Limited

Date: 20 Jul 2020



Citation

Citations to this report should be made as follows:

National Soil Resources Institute (2020) Soils Site Report for location 493784E, 104105N, 1km x 1km, National Soil Resources Institute, Cranfield University. Accessed via:
<https://www.landis.org.uk/sitereporter>

Disclaimer

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or

(ii) the accuracy, sufficiency or completeness of the report modules or risk maps provided herewith. In particular, there are hereby expressly excluded all conditions, warranties and other terms which might otherwise be implied (whether by common law, by statute or otherwise) as to any of the matters set out in paragraphs (i) and (ii) above.

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About this report

This Soil Site Report identifies and describes the properties and capacities of the soil at your specified location as recorded in the National Soil Map for England and Wales. It has been produced by Cranfield University's [National Soil Resources Institute](#).

The National Soil Map represents the most accurate and comprehensive source of information about the soil at the national coverage in England and Wales. It maps the distribution of soil mapping units (termed soil associations) which are defined in terms of the main soil types (or soil series) that were recorded for each soil association during field soil survey. Each soil association is named after its principal soil series and these bear the location name from where they were first described (e.g. Windsor). Each of these soil associations have differing environmental characteristics (physical, chemical and biological) and it is by mapping these properties that the range of thematic maps in this report have been produced.

Soil types and properties vary locally, as well as at the landscape scale. It is not possible to identify precisely the soil conditions at a specific location without first making a site visit. We have therefore provided you with information about the range of soil types we have identified at and around your selected location. Schematic diagrams are also provided to aid accurate identification of the soil series at your site.

Whilst an eight-figure national grid reference should be accurate to within 100m, a single rural Postcode can cover a relatively large geographical area. Postcodes can therefore be a less precise basis for specifying a location. The maps indicate the bounded area the reports relate to.

Your Site Soil Report will enable you to:

- ... identify the soils most likely to be present at and immediately around your specified location;
- ... understand the patterns of soil variation around your location and how these correlate with changes in landscape;
- ... identify the nature and properties of each soil type present within the area;
- ... understand the relevant capacities and limitations of each of the soils and how these might impact on a range of factors such as surface water quality.

Provided that this Site Soil Report is not modified in any way, you may reproduce it for a third-party.

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1. Soil Thematic Maps

This section contains a series of maps of the area surrounding your selected location, presenting a number of themes relating to the characteristics of the soils. These provide an overview of the nature and condition of the local soil conditions. It is these conditions that may be used to infer the response of an area to certain events (with the soil as a receptor), such as pollution contamination from a chemical spill, or an inappropriate pesticide application and the likelihood of these materials passing through the soil to groundwater. Other assessments provide an insight into the way a location may impact, by corrosive attack or ground movement, upon structures or assets within the ground, for example building or engineering foundations or pipes and street furniture.

Soil is a dynamic environment with many intersecting processes, chemical, physical and biological at play. Even soils 'sealed' over by concrete and bitumen are not completely dormant. The way soils respond to events and actions can vary considerably according to the properties of the soil as well as other related factors such as land-use, vegetation, topography and climate. There are many threats facing our national soil resource today and importance should be given to identifying the best measures aimed towards soil protection, ensuring the usage of soils in the most sustainable way. This report is therefore a useful snapshot of the soil properties for your given area, providing a summary of a broad range of ground conditions



Figure 1: Location of study area