

CM/4/19/PL
LAND AT GREVATTS LANE
CLIMPING, BN17 5RE

SOIL RESOURCES SURVEY
AND PLAN

July 2019





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1 INTRODUCTION

- 1.1 This Soil Resources Survey and Plan examines the soil resources across a 4.5 ha site near Climping. This site is proposed for the development of a crematorium and remembrance garden, together with associated car parking and infrastructure.
- 1.2 This follows a detailed survey of the site carried out in January 2019, in association with a detailed Agricultural Land Classification (ALC) survey report in January.
- 1.3 This Soil Resources Survey and Plan seeks to meet the requirements of the Arun Local Plan (2018) policy SO DM 1 criteria d, e, f and g.

This Report

- 1.4 This report:
 - i) describes the policy requirements in section 2;
 - ii) describes the soil resources in section 3;
 - iii) sets out the proposals and the implications for soil resources in section 4;
 - iv) providing a soil resources plan for handling and reusing appropriate soils in section 5;
 - v) addresses Gross Margin considerations in section 6;
 - vi) and ends with conclusions in section 7.

Context

- 1.5 The site was identified as comprising land of subgrade 3a “good quality” agricultural land in the January 2019 ALC. In such circumstances the Local Plan requires information about how the soil resource will be preserved.

2 SOIL RESOUC PLAN REQUIREMENTS

2.1 Policy SO DM 1 sets out four criteria which must be met if development is to be permitted.

2.2 These criteria are:

- d) the applicant has submitted sustainability and options appraisals, mitigation measures and a soil resources plan for the development;
- e) site appraisal documents must demonstrate that consideration has been given to Defra's Soil Strategy for England;
- f) the productivity of the land is demonstrated using a method for assessment of gross margins in the Arun Soils and Agricultural Land Assessment Report;
- g) a comprehensive soil resources plan has been submitted which demonstrates that care has been taken to preserve the soil such that it can be incorporated into a Productive Green Environment following development.

2.3 The overall purpose of the policy, as set out in paragraph 11.1.6 of the Local Plan, is to show how the soil and soil qualities are to be conserved and, where development is proposed, mitigated for the loss of soils. The objective is to protect, conserve or re-use the resource.

3 THE SOIL RESOURCES

The Site

- 3.1 The site comprises 4.5 ha of agricultural land, as shown on the Google Earth image below.

Insert 1: The Site



- 3.2 This comprises part of an arable field, as can be seen.

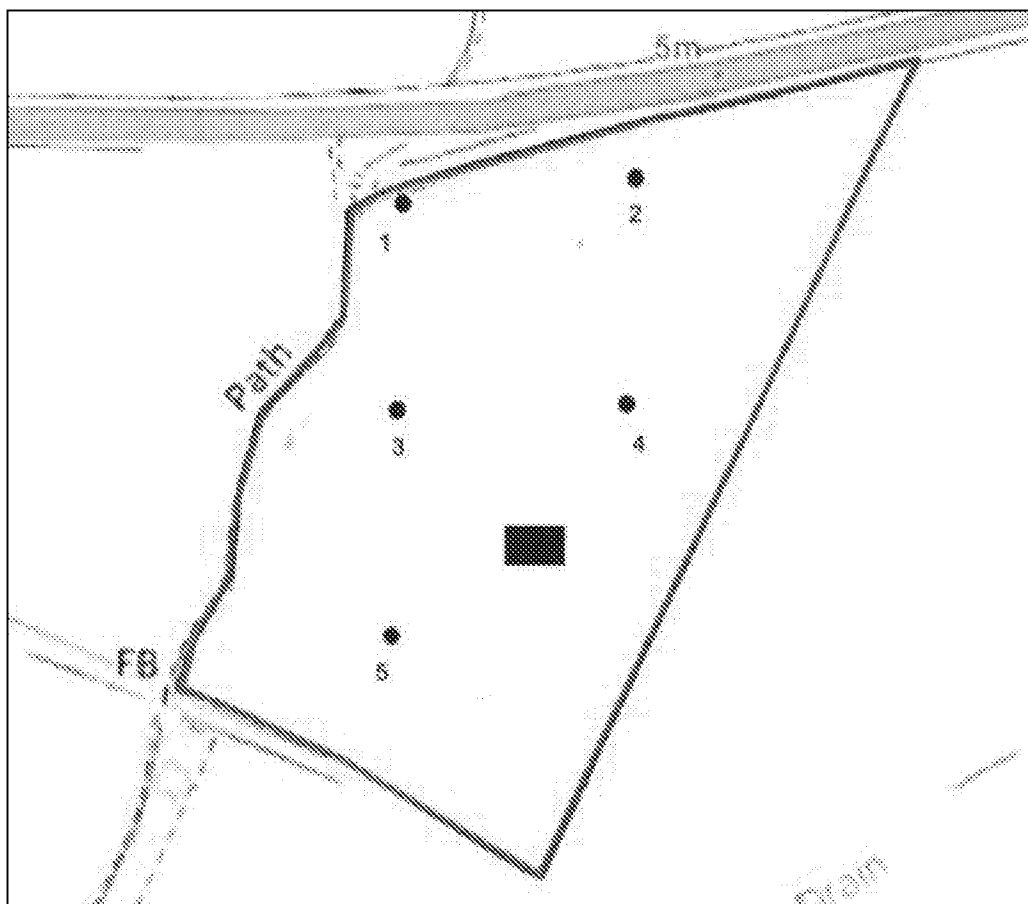
Historic Use

- 3.3 A review of Google Earth time images reveals that the site has been in arable production, for cereals or break crops, for many years.

Soil Resources

- 3.4 A detailed Agricultural Land Classification survey was carried out in December 2018. The soil properties were examined at five locations, using a soil auger. Samples were analysed down to a depth of 120cm.
- 3.5 The detailed ALC report is attached as **Appendix SR1**. This shows the location of the sampling points. Five auger locations were sampled and one pit was dug to better describe the soils. The locations were as follows.

Insert 2: The Location of Samples



3.6 The depth and texture of the soil at each location is described in the following table.

Table SR1: Site Data

N o	Depth (cm)	Colour matrix	Mottles	Stones (%)	Texture	Grade AP-MD Wht Pot		WC	Limit	ALC
1	0-28 28-51 51-80 80-120	10YR 3/3 10YR 4/4 10YR 4/4 10Y 4/5	PM PM PM	1	ZL ZL MZCL MZCL	1	1	III	WT	3a
2	0-28 28-48 48-120	10YR 3/3 10YR 4/4 10YR 4/5	PM PM	2	ZL ZL MZCL	1	1	III	WT	3a
3	0-27 27-46 46-70 70-120	10YR 3/3 10YR 4/3 10YR 4/5 10YR 4/5	PM PM Mn PM	1	ZL ZL MZCL MZCL	1	1	III	WT	3a
4	0-27 27-43 43-70 70-120	10YR 3/3 10YR 4/3 10YR 4/5 10YR 4/5	PM PM Mn PM Mn	1	ZL ZL MZCL MZCL	1	1	III	WT	3a
5	0-28 28-47 47-70 70-120	10YR 3/3 10YR 4/3 10YR 4/5 10YR 4/5	PM PM Mn PM	1	ZL ZL MZCL MZCL Ca	1	1	III	WT	3a
KEY Texture ZL – silt loam MZCL – medium siltyclay loam Limitation DR – soil droughtiness WT – soil wetness										

3.7 Survey has identified that the upper topsoil layer is 27-28cm deep, and comprises a silty loam soil of dark brown colour. Below that soils become more yellow, with evidence of mottling. The soil profile is described as follows, taken from the pit dug at the location shown above.

3.8 This description is characteristic of the site.

Insert 3: Profile Description

0-27cm	Dark brown (10YR 3/3) silt loam with a few small flint fragments (1%); weak medium and fine subangular blocky structure; low packing density, very porous; many fissures in recently prepared ground; some ploughed in straw; moist; sharp boundary;
27-43cm	Dark yellowish brown (10YR 4/4) silt loam with common, clear ochreous and greyish mottles; weak medium angular blocky structure; medium packing density, moderately porous; common fine fissures, occasional root channels; smooth boundary;
43-64cm	Dark yellowish brown (10YR 4/5) medium silty clay loam with many prominent and clear ochreous mottles; many soft manganiferrous concretions; weak to very weak medium angular blocky and prismatic structure; medium to high packing density, slightly porous; few fine fissures; moist smooth boundary;
64-80cms+	Similar to above but with large patches of manganiferrous stains and soft accumulations.

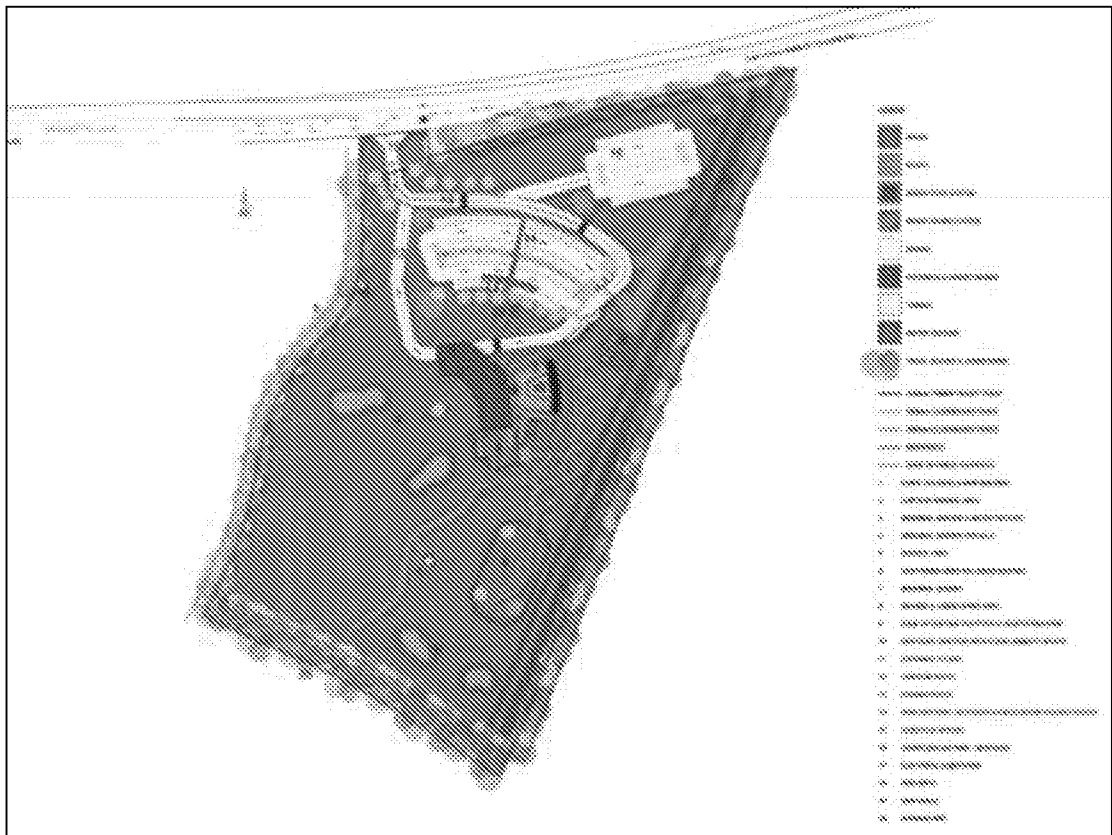
3.9 The entire site falls into MAFF ALC subgrade 3a, as set out in **Appendix SR1**.

4 DEVELOPMENT PROPOSALS AND IMPLICATIONS

The Development Proposed

- 4.1 The proposed development is a crematorium, with associated carparking. The building will be positioned in the centre of the site. Memorial gardens and areas for remembrance and scattering of ashes are laid out on the eastern side, with the western side primarily laid out to grass with potential for walking, for reflection.
- 4.2 Trees, bushes and landscaping will be planted around the site, as shown on the plan. This is reproduced in **Appendix SR2**, and the plan is shown at reduced size below.

Insert 3: The Proposals (See Appendix SR2)



- 4.3 It will be evident from the plan above that the majority of the site will be planted or managed with and for vegetation, from grassland to trees. Accordingly the retention and best use of soils within the site is of key importance to the success of the proposal.

5 SOIL RESOURCES HANDLING AND MANAGEMENT PLAN

5.1 This section of the report:

- i) describes the principles necessary for good practice handling of soil;
- ii) describes the soil resources needed for the different land uses within the site;
- iii) describes the proposed handling and management of soils for this particular development.

Principles

5.2 Soils are vulnerable to damage from being handled. As identified in the “Construction Code of Practice for the Sustainable Use of Soils on Construction Sites” (Defra, September 2009), soil can be adversely affected in a number of ways, including:

- by being covered with impermeable material;
- by contamination from accidental spillage or chemical use;
- by compaction during storage or by use of machinery;
- by reducing quality, e.g. by mixing topsoils and sub soils;
- and by being wasted by contamination during the construction process.

5.3 Therefore this Handling and Management Plan seeks to prevent losses or degradation.

5.4 As described earlier, the soil resource is consistent across the site. Accordingly there is no requirement for different handling and management regimes for different areas within the site.

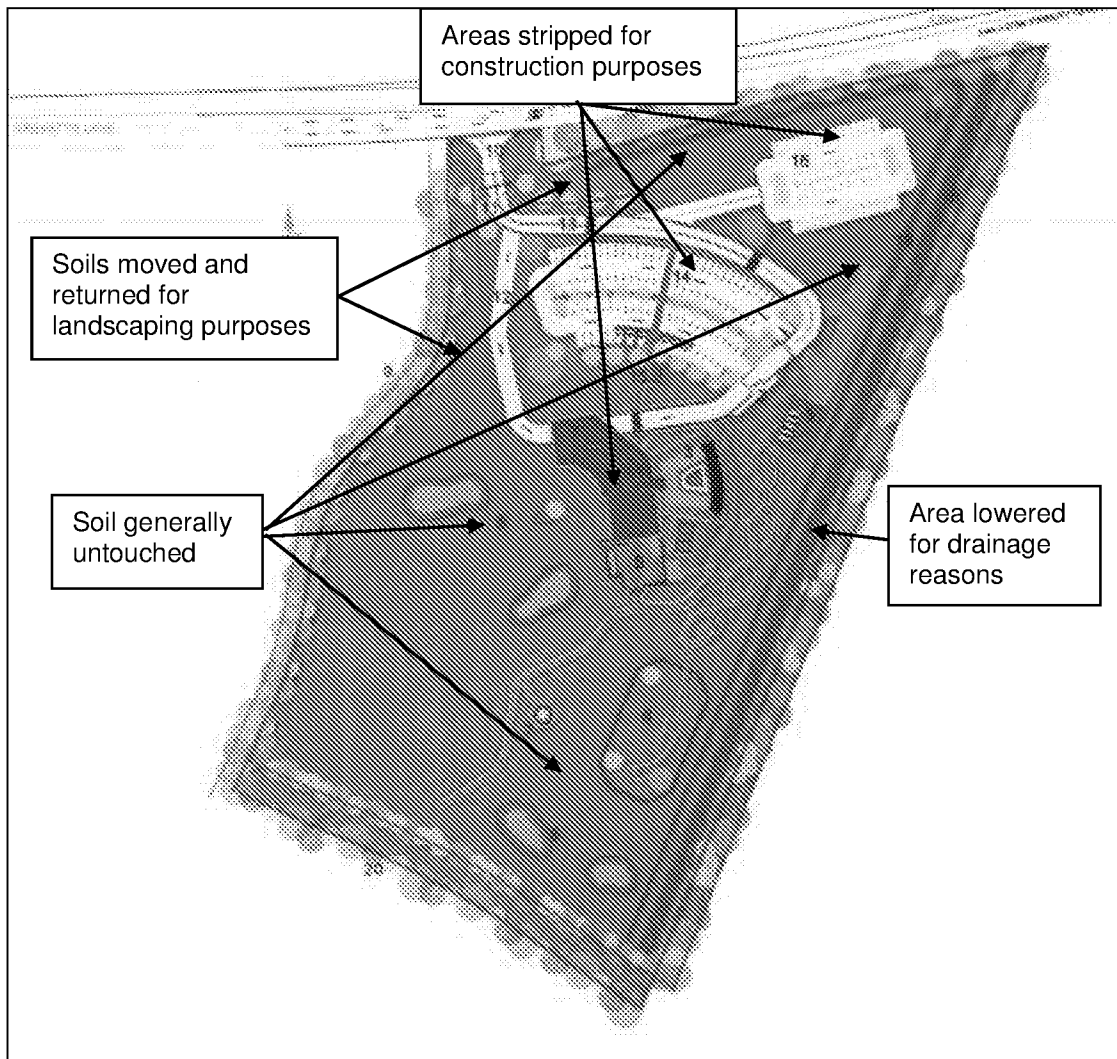
5.5 The key practices to follow are therefore:

- i) to only move soil, especially topsoil destined for use elsewhere within the site, when it is in a dry and friable condition. Wet soils which are plasticky (ie clumping together) are not suited for handling. Soils can turn plasticky after heavy rain, so even during summer months there can be periods when soils should not be moved;
- ii) for any soil being moved as much surface vegetation as possible should be removed before the soil is moved;
- iii) soil should be removed in layers, as identified below, and stored in separate piles. This minimises the risk of mixing upper and lower soils and degrading soil quality as a consequence;
- iv) stockpiling should take place, if necessary, according to good practice (described below), and only moved when conditions are suitable;
- v) post restoration handling is critical to the speed of recovery of any soils moved, and must be done only in suitable conditions.

Soil Resources Needed Within the Site

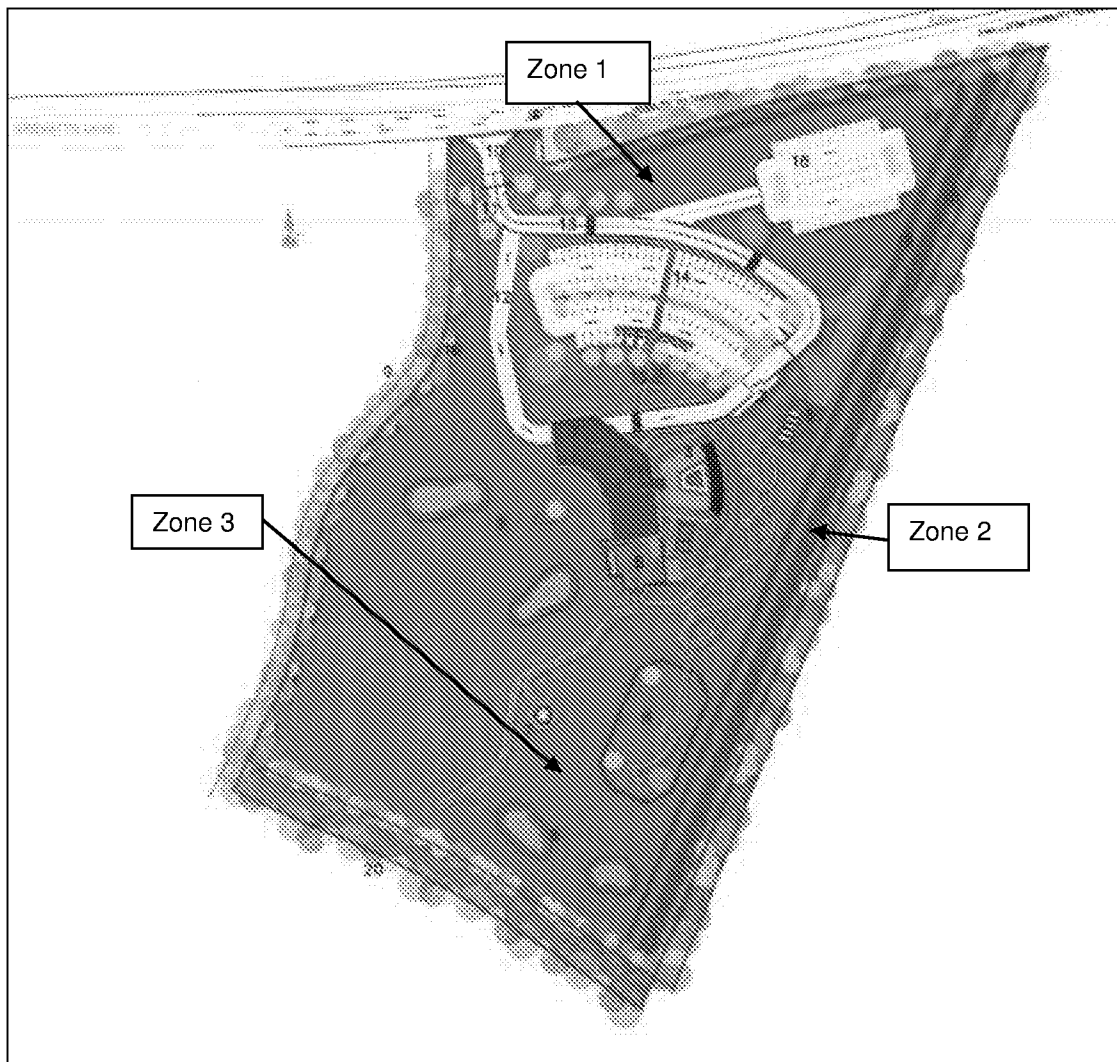
5.6 Across this site, the main soil resource needs are as follows:

Insert 4: Soil Resource Needs



5.7 Consistent with this layout, the site is therefore divided into three different areas for the purposes of this plan.

Insert 5: Division of Areas



Management of Zone 1

- 5.8 Zone 1 is the most affected part of site, where construction traffic activity and built development will be most concentrated. As can be seen on the layout plans, for this area there are parts of the site that will remain in vegetation uses after construction, and accordingly if it is practical to avoid soil movement in those areas, that should be achieved.
- 5.9 At the start of the development, the areas where soil needs to be stripped should be identified and marked out.
- 5.10 Stripping should take place in suitably dry conditions. Topsoil to a depth of no more than 30cm should be stripped mechanically in suitable conditions, as follows (taken from the Construction Code of Practice).

Insert 6: Construction Code of Practice Topsoil removal

Method

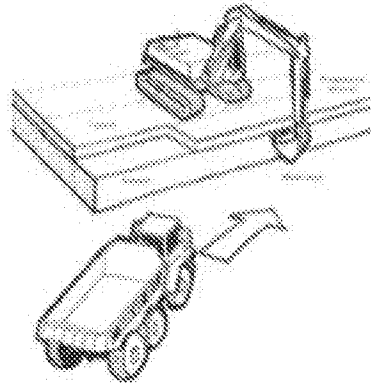
Remove surface vegetation by blading off, by scarification and raking, or kill off by application of a suitable non-residual herbicide applied not less than two weeks before stripping commences.

The method illustrated below is the preferred method for minimising damage to topsoil. It shows the transport vehicle running on the basal layer under subsoil as subsoil is also to be stripped. If only topsoil is to be stripped, the vehicle would run on the subsoil layer.

Stripping should be undertaken by the excavator standing on the surface of the topsoil, digging the topsoil to its maximum depth and loading into site or off-site transport vehicles.

Alternative stripping methods that can be shown to afford the same degree of soil protection are acceptable.

An archaeological watching brief might have to be accommodated during topsoil stripping.



- 5.11 This topsoil should then be stockpiled within part of the site identified as Zone 3, using the following methodology (also from the Construction Code of Practice).

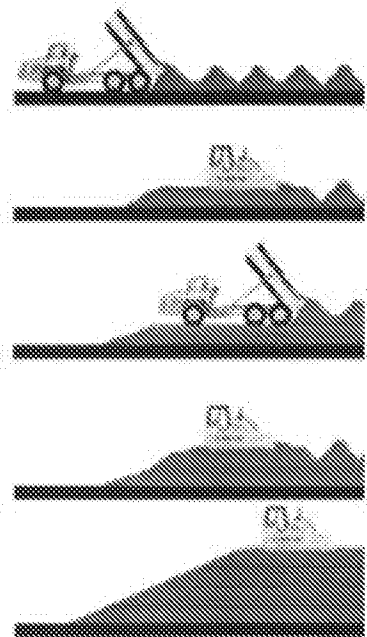
Insert 7: Methodology

Soil stockpiling

Soil should be stored in an area of the site where it can be left undisturbed and will not interfere with site operations. Ground to be used for storing the topsoil should be cleared vegetation and any waste arising from the development (e.g. building rubble and fill mat). Topsoil should first be stripped from any land to be used for storing subsoil.

Method 1 – Dry non-plastic soils

The soil is loose-tipped in heaps from a dump truck (a), starting at the furthest point in the storage area and working back toward the access point. When the entire storage area has been filled with heaps, a tracked machine (excavator or dozer) levels them (b) and firms the surface in order for a second layer of heaps to be tipped. This sequence is repeated (c & d) until the stockpile reaches its planned height. To help shed rainwater and prevent ponding and infiltration a tracked machine compacts and re-grades the sides and top of the stockpile (e) to form a smooth gradient.



- 5.12 The upper subsoil, to a depth of a further 30cm, should then be stripped in a similar way and stored in windrows to a maximum height of 2m. Once these soils have dried they can be stockpiled into higher piles if required, but it is expected that they can remain in windrows until required for reuse within Zone 1.
- 5.13 As suitable during the construction process, for example following the construction of the carparks, areas for vegetative use can be restored. Effectively the stripping operation is reversed, with subsoil returned and spread, and then any compaction removed by mechanical means. For this to be effective, soils must be dry and friable.
- 5.14 The topsoil is then added onto the surface. Spreading can be carried out by excavator and low-pressure dozer, provided that soils are friable (ie break up easily). The method is described fully on page 34 of the Construction Code of Practice.
- 5.15 There will be a surplus of topsoil, so topsoil can be added to a greater depth, circa 45cm, across these areas.
- 5.16 In respect of post-restoration aftercare within Zone 1, the following principles apply:
- i) for areas of amenity grassland, compaction should be relieved by use of slitting or spiking machinery, commonly used (e.g. on sports pitches);
 - ii) for areas of tree and shrub planting, where mechanical de-compacting cannot take place, manual methods such as forking, will be necessary.
- 5.17 Problems with compaction in areas designated for tree and bush planting can be minimised by slightly raising the planting areas. Ideally the ground restoration of the whole site should take place in the summer. That way any low or wet areas, or areas where drainage appears impeded by compaction, can be identified before the winter and rectified or modified (e.g. by addition of extra soil) whilst conditions for moving soil are good, and before the planting season for landscaping.
- 5.18 If necessary some compaction mitigation can be carried out in subsequent years.

Management of Zone 2

- 5.19 Zone 2 is to be managed for water removal. The topsoil will generally be removed from these areas prior to construction of the new ditch and swale, and can be stored in Zone 3 as described above for Zone 1 soil removal.

Management of Zone 3

- 5.20 Zone 3 will largely be untouched, and therefore the key to successful development and after use will be to avoid travelling on this area when the soils are wet, as much as possible.
- 5.21 Parts of this area will be used for storing the topsoil and subsoil excavated from Zone 1. Once these topsoil and subsoil piles have been removed, there will be a need for de-compaction. An assessment will be needed to determine the depth of compaction. It is probable that a mechanical subsoiler will be required, followed by slitting.
- 5.22 It is anticipated that the seeding of these areas will take place at a suitable time within the season towards the end of the construction process. Surplus topsoil could be spread thinly over the area prior to normal agricultural cultivation work (harrow, crumble, seed and, if appropriate, roll) involved in the planting of grassland.

Overall General Management

- 5.23 An individual within the construction team should be placed in a position of responsibility for soil handling and restoration. They should ensure familiarity with both this report and the Defra Construction Code of Practice prior to work starting, and reconsult those documents as necessary during the process.
- 5.24 They should keep a record of soil conditions, weather conditions, dates and descriptions of soil movement carried out.

Surplus Soil

- 5.25 It is currently expected that no soil will be removed from the site and that all material will be reused within the site.
- 5.26 If, however, there is surplus topsoil it could be sold to be used elsewhere, in accordance with the Local Plan's objectives to use soil in a Productive Green Environment.

6 VIABILITY ASSESSMENT

- 6.1 SO DM 1 criterion f) requires a gross margin analysis, in accordance with the Arun Soils and Agricultural Land Assessment Report (Reading Agricultural Consultants, 2013).
- 6.2 As set out in that report, it is to be assumed that land in Grades 1 and 2 produces high crop yields, and land in subgrades 3a and 3b produces average crop yields (see report 5.7).
- 6.3 Using the methodology set out by RAC, the Gross Margin Calculation is as follows. The crop used for the calculation is winter wheat which, by virtue of a higher gross margin than other arable crops and a greater frequency within the county, gives the highest possible figure for the mainstream arable crops rotated over this site.

Table 2: GM Calculation

Input	Data	Source
West Sussex TA (ha)	114,226	Defra
Wheat TCA (ha)	17,017	Defra
Crop %	14.9%	
GM (average yield winter wheat)	791	John Nix
GM Rep £ ha	118	
Site area	4.5	
GM Rep £ ha	118	
GROSS MARGIN	531	

- 6.4 Therefore the GM for this site is £531.

7 SUMMARY

- 7.1 Soil handling and restoration is a key consideration in the Local Plan. Policy SO DM 1 sets out the requirements where agricultural land is being considered for development.
- 7.2 The soils have been fully assessed by way of a survey. The soils are generally well-drained, but will nevertheless require to be handled and restored very carefully.
- 7.3 This report sets out the basis for handling each of the three main areas, and for subsequent restoration.
- 7.4 Those responsible should also read the Construction Code of Practice for the Sustainable use of Soils on Construction Sites (2009), which is part of the Soil Strategy for England.
- 7.5 The Gross Margin for the site using the Council's methodology is £531.

Appendix SR1
Detailed ALC Report



**LAND AT
CLIMPING, WEST SUSSEX**

**AGRICULTURAL LAND
CLASSIFICATION**

January 2019

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- 2 Factors Affecting Land Quality
- 3 Agricultural Land Classification
- 4 References

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- KCC1 Natural England Technical Information Note 049
- KCC2 Nature on the Map Showing ALC Locally
- KCC3 Soil Map Showing Area Around Yapton
- KCC4 Site Data
- KCC5 Profile Description

PLANS

- KCC2585/01 ALC Sample Locations
- KCC2585/02 Agricultural Land Classification

1 INTRODUCTION

Purpose

- 1.1 This report sets out the findings of an agricultural land classification of approximately 5 hectares of agricultural land lying between Gravett's Bridge and Gravett's Lane.

The Site

- 1.2 The site is part of a single field, which is cultivated and ready for sowing.

The Agricultural Land Classification System

- 1.3 The Agricultural Land Classification (ALC) system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades. Grade 1 of the ALC is described as being of excellent quality and Grade 5, at the other end of the scale, is described as being of very poor quality. The current guidelines and criteria for ALC were published by the Ministry of Agriculture, Fisheries and Food (MAFF) in 1988 ('Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land'¹).
- 1.4 Agricultural land within Grades 1, 2 and Subgrade 3a of the ALC is considered the "**best and most versatile agricultural land**" (BMV) as defined in the National Planning Policy Framework (2018). This is land which is most flexible, productive and efficient in response to inputs. Further details of the ALC system and policy implications are set out by Natural England in its Technical Information Note 049, given as **Appendix KCC1**.

¹ Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land', October, 1988. The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

2 FACTORS AFFECTING LAND QUALITY

- 2.1 The site was surveyed in December 2018 and has been graded according to the current Defra guidelines and criteria (MAFF 1988). Five points were examined with spade and auger over the site and a single profile was excavated and described to look in more detail at the soils covering this piece of land. The auger locations of the soil survey are shown on **Plan KCC2670/01**.

Climate

- 2.2 Climate affects the grading of land through the assessment of an overall climatic limitation and also through the interaction with soils.
- 2.3 The Met Office (1989) provides the key climatic variables for this site. The figures quoted in the table below are from a point roughly in the centre of the site.

Table 1: Climate and altitude data

Grid reference	SU 9870 0140
Altitude	4m AOD
Average annual rainfall	733mm
Accumulated temperature >0°C (Jan-June)	1544 degree days
Moisture deficit, wheat	122 mm
Moisture deficit, potatoes	120 mm
Field capacity period	150 days

- 2.4 The climate of this area is typical of a position on the Sussex Coastal Plain with moderate amounts of rainfall and high temperatures. There is a high plant-water demand reflecting the high summer temperatures and the field capacity period, that period when soils are potentially wet, at 150 days, accords with the moderate rainfall amounts of the area. The combination of rainfall and temperature imposes no direct **climatic limitation** upon land quality over this ground.
- 2.5 The field is about 4m AOD and there is very little relief. **Gradient** has no negative impact and is not a limitation to land quality.
- 2.6 The soils have a very high available water content and hold sufficient water to sustain plant growth in most season. **Soil drought** is, therefore, not a limitation to land quality.

- 2.7 The soils in this low lying area are often affected by a fluctuating groundwater table which will be within about 40cm depth in the wettest periods of winter, and **soil wetness** is likely to be limiting to land quality. The soils have a slowly permeable substrate, which also contributes to the general soil wetness of this land

Geology and Soils

- 2.8 The surface of this ground is covered with silty drift (brickearth) which supports deep water retentive soils. Detailed soil mapping (SSEW 1967) shows soils of the Park Gate series over this small area with both deep phases and shallow phases over calcareous materials present.

Relief and Drainage

- 2.9 The ground is very gently sloping towards the south with drainage to the Ryebank Rife, which forms the southern limits of the survey area. The principal movement of excess water is mainly by vertical flow to a relatively shallow water table, although high groundwater in winter will favour conditions for surface flow.

3 AGRICULTURAL LAND CLASSIFICATION

Published ALC Data

- 3.1 There is no published ALC survey data for this site.
- 3.2 Data available in the Government's Nature on the Map series for land quality shows where ALC survey data is available locally, and is set out in **Appendix KCC2**. Nearby surveys show a mix of quality, from Grade 2 to the south west, with land to the immediate south shown as being Subgrade 3b.

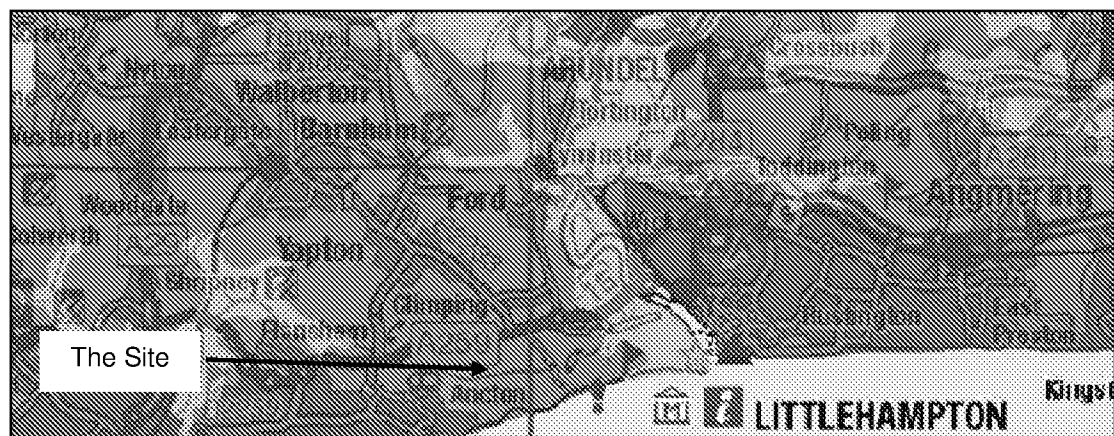
Results of ALC Survey

- 3.3 The location of the auger sample points is set out on **Plan KCC2670/01**. The site data for these points is set out in **Appendix KCC4**, and a soil profile description is given in **Appendix KCC5**.
- 3.4 **Subgrade 3a quality land** has been identified across the whole of this small site. The bulk of the soils examined are deep and virtually stoneless with weakly structured silt loam topsoils. In the recently cultivated example described below, there are few roots, but many fine fissures. The immediate silt loam subsoil is brown and strongly mottled, indicating periodic waterlogging. Structures are weakly formed and the horizon is relatively permeable, allowing excess surface water to drain vertically. The soils become heavier in texture between about 40 and 50cms depth and the subsoil is of weakly, but coarsely structured medium silty clay loam and presents a slowly permeable layer that restricts vertical drainage. The matrix is strongly mottled and there are many manganiferous conceptions and stains, which indicate a fluctuating water table.
- 3.5 The similarly textured deeper subsoil is of mottled silty clay loam with weak prismatic peds and is slowly permeable. In places the deep subsoil is of structureless chalky material derived from the underlying chalk or slip material from the higher land of the South Downs, which lie to the north.
- 3.6 The profiles described in the bulletin covering the detailed soil survey (Hodgson 1967) fit closely with the soils examined in the current survey.
- 3.7 The results are shown on **Plan KCC2670/02**.

Wider Pattern of Land Quality

- 3.8 Soils developed in Brickearth cover large areas of the low lying ground of the coastal plain (see **Appendix KCC3**). The areas dominated by freely drained profiles and those with only slight wetness (Hook (hK) and Hamble (hL) series) will be of Grade 1 and Grade 2 quality. The seasonally wet soils of the Park Gate series (Pz) have a wetness limitation and will be mainly of Subgrade 3a quality. The boundaries of the fields in which the wetter soils occur are generally marked by deep ditches and these areas will have been tile drained in the past. The wet alluvial soils, which cover broad floodplains adjacent to the streams, will have to poorest quality (Subgrade 3b and Grade 4) land and will generally be covered by permanent or long term grassland.
- 3.9 The Predictive Best and Most Versatile maps produced by Natural England show that the site lies in an area of high likelihood of bmv (>60% area bmv), in common with most of the land in the area, as shown below.

Insert 1: Predictive BMV Map



Predictive BMV Land Assessment © Defra

-  High likelihood of BMV land (>60% area bmv)
-  Moderate likelihood of BMV land (20 - 60% area bmv)
-  Low likelihood of BMV land (<= 20% area bmv)
-  Non-agricultural use
-  Urban / Industrial

- 3.10 Accordingly the general land quality of the area is expected to be mostly BMV.

4 REFERENCES

HODGSON, J.M. (1967) Soils of the West Sussex Coastal Plain) Bull. Soil Survey GT. Br.

MAFF (1988). Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.

METEOROLOGICAL OFFICE (1989). Climatological data for Agricultural Land Classification.

SSEW (1967) 1:25,000 scale soil map: sheet SU09 (Littlehampton)

APPENDIX KCC1
Natural England TIN 049

Agricultural Land

Classification: protecting the best and most versatile agricultural land

Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

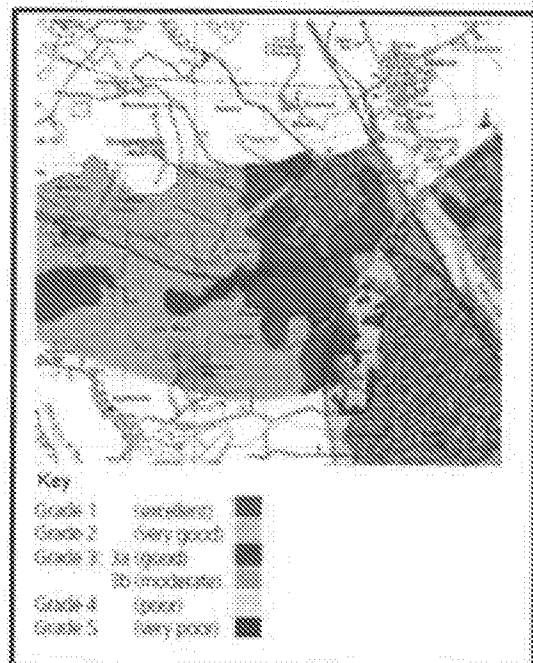
Policy to protect agricultural land

Government policy for England is set out in the National Planning Policy Framework (NPPF) published in March 2012 (paragraph 112). Decisions rest with the relevant planning authorities who should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality. The Government has also re-affirmed the importance of protecting our soils and the services they provide in the Natural Environment White Paper *The Natural Choice: securing the value of nature* (June 2011), including the protection of best and most versatile agricultural land (paragraph 2.35).

The ALC system: purpose & uses

Land quality varies from place to place. The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. It helps

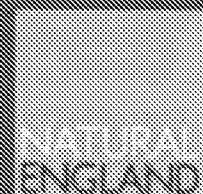
underpin the principles of sustainable development.



Agricultural Land Classification - map and key

Second edition 13 December 2012

www.naturalengland.org.uk



Agricultural Land Classification: protecting the best and most versatile agricultural land

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. Natural England is also responsible for Minerals and Waste Consultations where reclamation to agriculture is proposed under Schedule 5 of the Town and Country Planning Act 1990 (as amended). The ALC grading system is also used by commercial consultants to advise clients on land uses and planning issues.

Criteria and guidelines

The Classification is based on the long term physical limitations of land for agricultural use. Factors affecting the grade are climate, site and soil characteristics, and the important interactions between them. Detailed guidance for classifying land can be found in: *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988):

- **Climate:** temperature and rainfall, aspect, exposure and frost risk.
- **Site:** gradient, micro-relief and flood risk.
- **Soil:** texture, structure, depth and stoniness, chemical properties which cannot be corrected.

The combination of climate and soil factors determines soil wetness and droughtiness.

Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade.

Versatility and yield

The physical limitations of land have four main effects on the way land is farmed. These are:

- the range of crops which can be grown;
- the level of yield;
- the consistency of yield; and
- the cost of obtaining the crop.

The ALC gives a high grading to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which requires lower inputs, but also takes into account ability to produce consistently high yields of a narrower range of crops.

Availability of ALC information

After the introduction of the ALC system in 1966 the whole of England and Wales was mapped from reconnaissance field surveys, to provide general strategic guidance on land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile in the period 1967 to 1974. These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended and can be downloaded from the Natural England website. This data is also available on 'Magic', an interactive, geographical information website <http://magic.defra.gov.uk/>.

Since 1976, selected areas have been re-surveyed in greater detail and to revised

Agricultural Land Classification: protecting the best and most versatile agricultural land

guidelines and criteria. Information based on detailed ALC field surveys in accordance with current guidelines (MAFF, 1988) is the most definitive source. Data from the former Ministry of Agriculture, Fisheries and Food (MAFF) archive of more detailed ALC survey information (from 1988) is also available on <http://magic.defra.gov.uk/>. Revisions to the ALC guidelines and criteria have been limited and kept to the original principles, but some assessments made prior to the most recent revision in 1988 need to be checked against current criteria. More recently, strategic scale maps showing the likely occurrence of best and most versatile land have been prepared. Mapped information of all types is available from Natural England (see *Further information* below).

New field survey

Digital mapping and geographical information systems have been introduced to facilitate the provision of up-to-date information. ALC surveys are undertaken, according to the published Guidelines, by field surveyors using handheld augers to examine soils to a depth of 1.2 metres, at a frequency of one boring per hectare for a detailed assessment. This is usually supplemented by digging occasional small pits (usually by hand) to inspect the soil profile. Information obtained by these methods is combined with climatic and other data to produce an ALC map and report. ALC maps are normally produced on an Ordnance Survey base at varying scales from 1:10,000 for detailed work to 1:50,000 for reconnaissance survey.

There is no comprehensive programme to survey all areas in detail. Private consultants may survey land where it is under consideration for development, especially around the edge of towns, to allow comparisons between areas and to inform environmental assessments. ALC field surveys are usually time consuming and should be initiated well in advance of planning decisions. Planning authorities should ensure that sufficient detailed site specific ALC survey data is available to inform decision making.

Consultations

Natural England is consulted by planning authorities on the preparation of all development

plans as part of its remit for the natural environment. For planning applications, specific consultations with Natural England are required under the Development Management Procedure Order in relation to best and most versatile agricultural land. These are for non agricultural development proposals that are not consistent with an adopted local plan and involve the loss of twenty hectares or more of the best and most versatile land. The land protection policy is relevant to all planning applications, including those on smaller areas, but it is for the planning authority to decide how significant the agricultural land issues are, and the need for field information. The planning authority may contact Natural England if it needs technical information or advice.

Consultations with Natural England are required on all applications for mineral working or waste disposal if the proposed afteruse is for agriculture or where the loss of best and most versatile agricultural land agricultural land will be 20 ha or more. Non-agricultural afteruse, for example for nature conservation or amenity, can be acceptable even on better quality land if soil resources are conserved and the long term potential of best and most versatile land is safeguarded by careful land restoration and aftercare.

Other factors

The ALC is a basis for assessing how development proposals affect agricultural land within the planning system, but it is not the sole consideration. Planning authorities are guided by the National Planning Policy Framework to protect and enhance soils more widely. This could include, for example, conserving soil resources during mineral working or construction, not granting permission for peat extraction from new or extended mineral sites, or preventing soil from being adversely affected by pollution. For information on the application of ALC in Wales, please see below.

Agricultural Land Classification: protecting the best and most versatile agricultural land

Further information

Details of the system of grading can be found in: *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

Please note that planning authorities should send all planning related consultations and enquiries to Natural England by e-mail to consultations@naturalengland.org.uk. If it is not possible to consult us electronically then consultations should be sent to the following postal address:

Natural England
Consultation Service
Hornbeam House
Electra Way
Crewe Business Park
CREWE
Cheshire
CW1 6GJ

ALC information for Wales is held by Welsh Government. Detailed information and advice is available on request from Ian Rugg (ian.rugg@wales.gsi.gov.uk) or David Martyn (david.martyn@wales.gsi.gov.uk). If it is not possible to consult us electronically then consultations should be sent to the following postal address:

Welsh Government
Rhodfa Padarn
Llanbadarn Fawr
Aberystwyth
Ceredigion
SY23 3UR

Natural England publications are available to download from the Natural England website: www.naturalengland.org.uk.

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail enquiries@naturalengland.org.uk.

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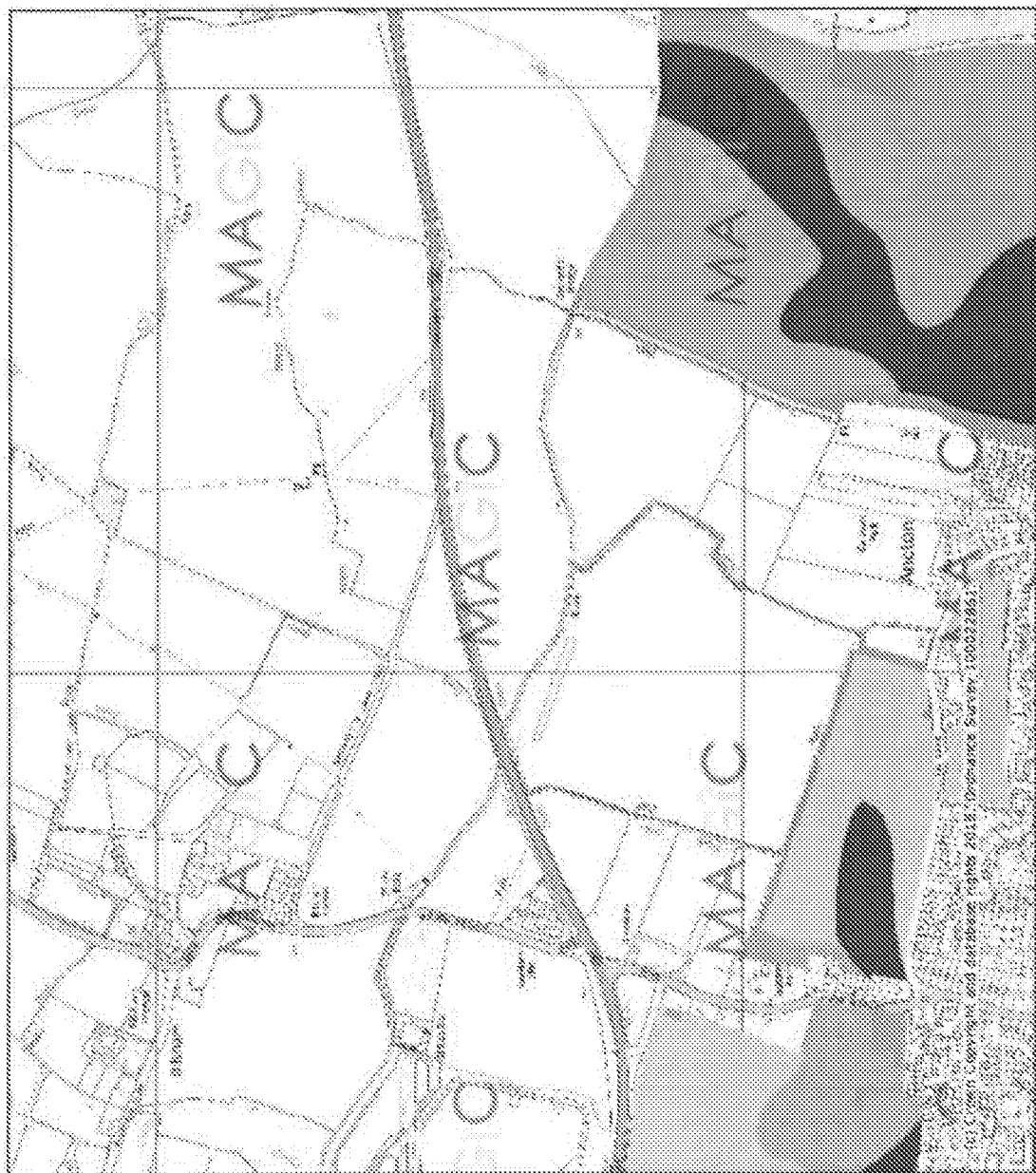
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APPENDIX KCC2
Extract from Nature on the Map
Showing ALC Locally

MAGiC

clipping



Legend

Post 1990 Agricultural
Land Classification
(England)

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

Projection = OSGB36
 xmin = 495533
 ymin = 109100
 xmax = 500700
 ymax = 102600



Map produced by MAGIC on 10 November 2016.
 Copyright resides with the data suppliers and the map
 must not be reproduced without their permission. Some
 information in MAGIC is a snapshot of the information
 that is being monitored or controlled by the
 originating organisation. Please refer to the metadata for
 details as information may be illustrative or representative
 rather than definitive at this stage.

APPENDIX KCC3

Soil Map Showing Area Around Yapton

Soil Map Showing Area Around Yapton



Appendix KCC4
Site Data

Site Data

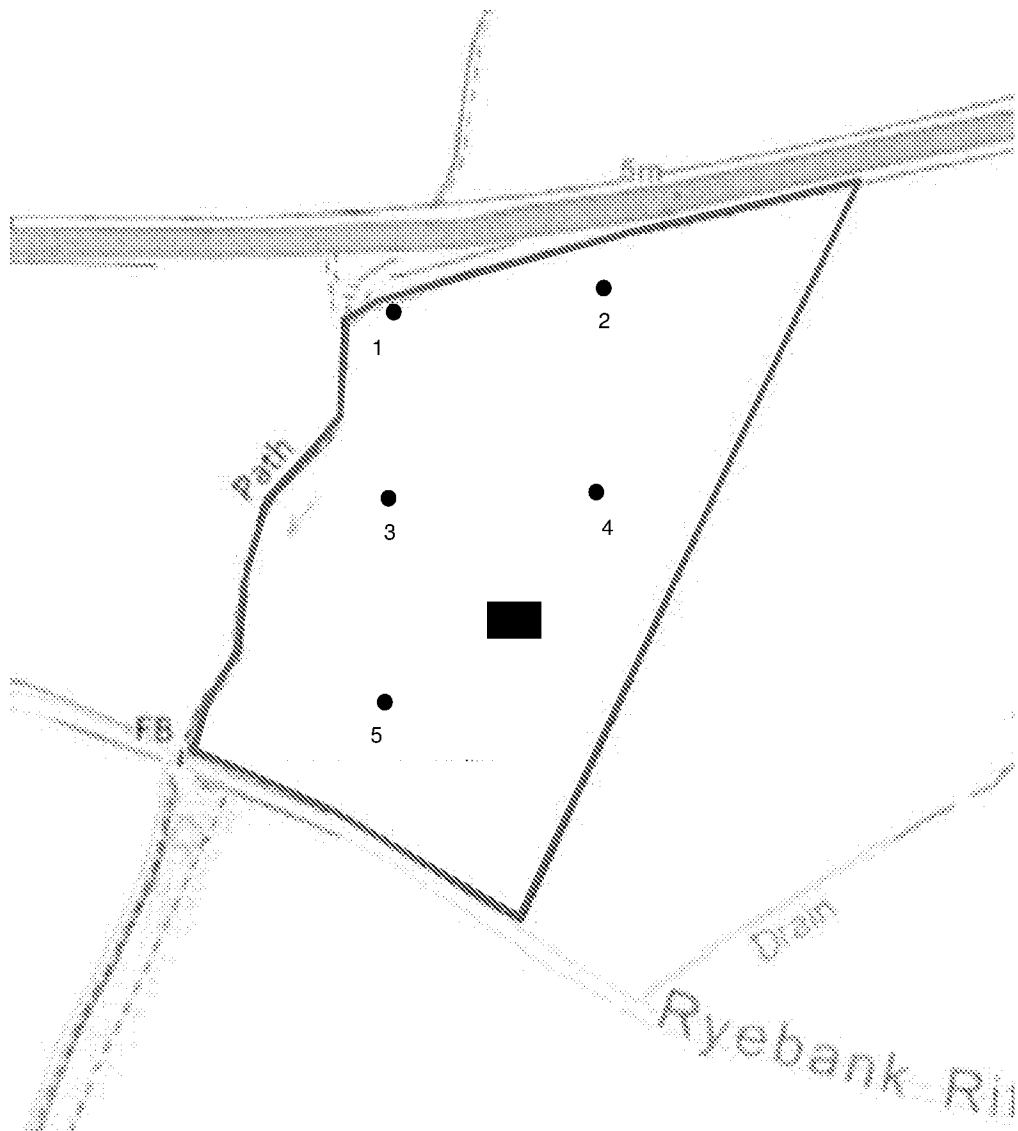
No	Depth (cm)	Colour matrix	Mottles	Stones (%)	Texture	Grade AP-MD		WC	Limit	ALC
						Wht	Pot			
1	0-28	10YR 3/3	PM PM PM	1	ZL	1	1	III	WT	3a
	28-51	10YR 4/4			ZL					
	51-80	10YR 4/4			MZCL					
	80-120	10Y 4/5			MZCL					
2	0-28	10YR 3/3	PM PM	2	ZL	1	1	III	WT	3a
	28-48	10YR 44			ZL					
	48-120	10YR 4/5			MZCL					
3	0-27	10YR 3/3	PM PM Mn PM	1	ZL	1	1	III	WT	3a
	27-46	10YR 4/3			ZL					
	46-70	10YR 4/5			MZCL					
	70-120	10YR 4/5			MZCL					
4	0-27	10YR 3/3	PM PM Mn PM Mn	1	ZL	1	1	III	WT	3a
	27-43	10YR 4/3			ZL					
	43-70	10YR 4/5			MZCL					
	70-120	10YR 4/5			MZCL					
5	0-28	10YR 3/3	PM PM Mn PM	1	ZL	1	1	III	WT	3a
	28-47	10YR 4/3			ZL					
	47-70	10YR 4/5			MZCL					
	70-120	10YR 4/5			MZCL Ca					
KEY										
Texture					Limitation					
ZL – silt loam					DR – soil droughtiness					
MZCL – medium siltyclay loam					WT – soil wetness					

Appendix KCC5
Profile Description

Profile Description

0-27cm	Dark brown (10YR 3/3) silt loam with a few small flint fragments (1%); weak medium and fine subangular blocky structure; low packing density, very porous; many fissures in recently prepared ground; some ploughed in straw; moist; sharp boundary
27-43cm	Dark yellowish brown (10YR 4/4) silt loam with common, clear ochreous and greyish mottles; weak medium angular blocky structure; medium packing density, moderately porous; common fine fissures, occasional root channels; smooth boundary
43-64cm	Dark yellowish brown (10YR 4/5) medium silty clay loam with many prominent and clear ochreous mottles; many soft manganiferrous concretions; weak to very weak medium angular blocky and prismatic structure; medium to high packing density, slightly porous; few fine fissures; moist smooth boundary
64-80cms+	Similar to above but with large patches of manganiferrous stains and soft accumulations.

Plan KCC2670/01
Auger Point Plan



KEY

● Auger sample location

■ Soil Pit

PLAN KCC2670/01

TITLE Auger Points Plan

SITE Climping, West Sussex

CLIENT Southern Co-operative Ltd

NUMBER KCC2670/01 12/18tk

DATE December 2018 **SCALE** NTS

KERNON COUNTRYSIDE CONSULTANTS LTD
GREENACRES BARN, PURTON STOKE, SWINDON,
WILTSHIRE SN5 4LL

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Plan KCC2670/02
Agricultural Land Classification



KEY		Ha	%	PLAN	KCC2670/02			
	Grade 1			TITLE	Agricultural Land Classification			
	Grade 2			SITE	Climping, West Sussex			
	Grade 3a	5.2	100	CLIENT	Southern Co-operative Ltd			
	Grade 3b			NUMBER	KCC2670/02 12/18 tk			
	Grade 4			DATE	December 2018	SCALE	NTS	
	Grade 5			KERNON COUNTRYSIDE CONSULTANTS LTD GREENACRES BARN, PURTON STOKE, SWINDON, WILTSHIRE, SN5 4LL This plan is reproduced from the Ordnance Survey under copyright license 100015226				
	Non-agricultural							
	Urban							
	Not surveyed							

Appendix SR2
Site Plan





Gormier's Farm, Stoke Newington Lane, Burton Stoke, Swindon, Wiltshire SN3 4LL