

**AGRICULTURAL LAND
CLASSIFICATION SURVEY OF
POTENTIAL DEVELOPMENT SITES
IN MAIDSTONE BOROUGH**

Report 1030/1

21st November, 2014

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POTENTIAL DEVELOPMENT SITES IN MAIDSTONE
BOROUGH**

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Report 1030/1

Land Research Associates Ltd
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21st November, 2014

1.0 Introduction

- 1.1 Maidstone Borough Council (MBC) appointed Land Research Associates (LRA) to undertake field studies to identify and assess the presence of best and most versatile land in specific sites within the borough. This is to assist the council with the allocation of land for housing and employment development and to meet the requirements of paragraph 112 of the National Planning Policy Framework (NPPF) which states that:

“Local planning authorities 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 a higher quality.”

BEST AND MOST VERSATILE AGRICULTURAL LAND

- 1.2 To assist in assessing land quality, the former Ministry of Agriculture, Fisheries and Food (MAFF) developed a method for classifying agricultural land by grade according to the extent to which physical or chemical characteristics impose long-term limitations on agricultural use for food production. The MAFF Agricultural Land Classification (ALC) system classifies land into five grades, grade 1 being the highest quality and grade 5 being the lowest, with grade 3 divided into two subgrades (3a and 3b). The system was devised and introduced in the 1960s and revised in 1988¹. Land in grades 1, 2 and 3a of the Agricultural Land Classification was subsequently termed ‘best and most versatile’.
- 1.3 It is important to understand that the ‘best and most versatile’ categorisation does not necessarily reflect the yield potential and profitability of growing individual crops. For example, heavy land that is not within the best and most versatile category is capable, with good management, of producing consistently good yields of grass, and a narrow range of crops such as wheat, oilseed rape and field beans. However it is not well suited to growing root crops (e.g. potatoes) or for intensive production of vegetables and fruit, so is not considered to be as ‘versatile’ as better land in adapting to changing cropping needs.

¹ *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*. MAFF, 1988.

2.0 Strategy and survey

2.1 Natural England, as the statutory consultee representing Defra on issues of agricultural land classification, published Technical Information Note TIN 049 on agricultural land classification. It recommends detailed survey at a density of one observation per hectare for development proposals, and this is the scale adopted for most surveys undertaken by LRA.

2.2 However for small sites it is essential that sufficient survey observations are made to ensure that observations are representative and are sufficient to reliably derive agricultural land grades. Consequently we aim for at least two observations per hectare on sites smaller than 2 ha and at least five observations on 2-5 ha sites. In contrast, it is usually possible to assess agricultural quality accurately on large sites (>50 ha) by making an observation every two hectares. The strategy described above was that adopted for this study.

Desk study and survey preparation

2.3 A desk study was undertaken reviewing existing information, including:

- Provisional (1970s) ALC mapping.
- Post 1988 (i.e. after the last revision of the ALC system) agricultural land quality information available on the MAGIC website.
- Published and unpublished soil surveys – primarily the 1:250,000 regional soil maps.
- 1:50,000 drift and solid BGS geological information digitally accessed within LRA's MapInfo Geographic Information System (GIS)
- Google Earth satellite imagery.

2.4 Ordnance Survey base mapping and shape files supplied by the Council for each of the 65 survey areas were read into MapInfo GIS. Maps to be used for the on-site surveys were prepared from this information with numbered observation points marked at pre-determined geo-referenced locations (normally at intersections of 50 m or 100 m grid lines).

2.5 The agricultural climate is an important factor in assessing the agricultural quality of land and an agroclimatic interpolation was undertaken for each

survey area using the Climatological Data for Agricultural Land Classification².

- 2.6 Landowners or their agents were contacted by email or telephone for permission to access the sites. No refusals were recorded.

Survey

- 2.7 The agricultural land classification survey was carried out on foot, locating the predetermined observation points using portable GPS units and hand augering the soils to at least 1 m depth where not stopped by impenetrable layers.

- 2.8 The following information was recorded at each observation:

- Observation identifier
- Gradient
- Depth limits of each distinct soil layer to 1 m
- Texture, stoniness, permeability of each soil layer
- Wetness class of soil profile
- Depth to rock or impenetrable material (where present)
- Other relevant factors (e.g. flood risk, gradient, etc).

- 2.9 The survey was used in conjunction with agroclimatic data to classify the site using the revised guidelines for agricultural land classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food. Boundaries between land of different grades were drawn, as far as possible, during fieldwork, finalised (e.g. after off-site calculation of drought-risk or with the help of satellite imagery) and passed for input into the GIS database.

Reporting

- 2.10 In addition to this report, the desk study information, agroclimatic interpolation and survey field notes were combined to produce a 1-2 page summary report and A3 map of agricultural quality for every parish containing one or more survey areas.

² *Climatological Data for Agricultural Land Classification*. Meteorological Office, 1989

3.0 Borough agricultural land quality overview

- 3.1 In an area where there is little climatic limitation to agricultural land quality, as is the case in Maidstone Borough, land grade is largely determined by standalone or interactive limitations (see Appendix for description of these). Gradient was only a limiting factor on one site, so the land quality of most of the sites investigated was determined by soil type.

Better land dominant

- 3.2 The land immediately around and to the east of the town is mapped on regional soil maps as within the Malling soil association which is dominated by freely draining loamy soils of varying depth over Folkstone Formation sandstone or Hythe Formation sandstone or limestone. These tend to give a range of land grades from grade 1 (where soils are deep and moisture retentive) to grade 2 (less deep or of lighter texture) and sub-grade 3a (shallower over rock or with a heavy subsoil layer impeding drainage).
- 3.3 In these areas dominated by best and most versatile agricultural land, small areas of sub-grade 3b land can occur.

Poorer land dominant

- 3.4 While most of the land on the Malling soil association is in the best and most versatile category, in Otham parish and either side of Sutton Road poorer sub-grade 3b land is dominant, but with significant patches of best and most versatile land within it.
- 3.5 To the south of a line running roughly east-west through the middle of Sutton Valence and to the north of Yalding, Ulcombe and Sutton Malherbe, there is a change to soils of the Wickham 1 soil association over Weald Clay. These soils have slowly permeable clay subsoil relatively close to the surface which results in wetness and soil workability constraints and land predominantly in the poorer subgrade 3b.
- 3.6 A strip of land up to 1 km wide running either side of the M20 by Maidstone and then north of the M20 through Harrietsham and Lenham has soils of the Denchworth soil association over Gault Clay. This land is also limited by wetness and workability to the poorer subgrade 3b.
- 3.7 Sub-grade 3b land is also mapped around Kingswood where loamy over clayey soils on plateau drift are extremely stony.

APPENDIX

**HISTORY OF THE ALC SYSTEM AND EXPLANATION
OF SOME OF THE TERMS USED IN IT**

THE AGRICULTURAL LAND CLASSIFICATION SYSTEM

The Agricultural Land Classification (ALC) is a national system dividing farmland into different quality categories based on long term physical limitations to agricultural use, assuming a good but not outstanding level of agricultural management. As well as being used in farm sale particulars, land valuations and rent reviews it is also used in making decisions about proposals for non-agricultural development of farmland.

Initial ALC classification

Provisional MAFF Agricultural Land Classification maps were produced between 1967 and 1974 at a scale of 1:63,360 (one inch to one mile) for the whole of England and Wales. These maps grade land according to the severity of environmental constraints on agricultural production, taking into account such factors as soil, gradient, rainfall and altitude. There are five grades, the best being Grade 1 - land with only very minor limitations, typified by Cambridgeshire and Lincolnshire fen and silt land used for intensive vegetable production. At the other extreme Grade 5 land, with very severe limitations, is typified by rough grazing at high altitudes in Wales and the north of England.

It is important to note that the maps were described by MAFF as 'provisional' as only patchy ground observations of soil and topography were made. They were solely intended as a planning tool to identify and protect the best agricultural land at a time of expanding towns and cities, new airports and motorway construction, and the accompanying need for mining of aggregates. MAFF stated at the time, in the accompanying booklets, that the grade of parcels of land of less than 80 hectares could not be reliably identified from the maps, which means that their use in farm sales particulars, land valuations and rent reviews has often been erroneous. Although paper copy maps still exist in some agent's and consultant's offices, the maps at the published scale were withdrawn when the system of Agricultural Land Classification was revised by MAFF in 1988 (available online)³. The original information can now only be referred to at a scale of 1:250,000 on the government's MAGIC website.

Current ALC classification

The 1988 Revised Guidelines for Agricultural Land Classification divided Grade 3 into

³ Ministry of Agriculture, Fisheries and Food (1988), Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land.
<http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf>

subgrades 3a and 3b, and came into force on 1 January 1989, superseding any previous ALC surveys or guidelines. Any survey prior to 1 January 1989 cannot therefore be considered definitive. Because the guidelines provide a more rigorous and quantitative system of classification it is not unusual for a detailed survey to show that land provisionally classified as grade 2 in the 1960s and 1970s might now be classified as subgrade 3a. Similarly, land provisionally considered to be grade 3 could include areas of grade 2 land when surveyed in detail.

The ALC system uses a combination of three main limitations to determine ALC grade: *maximum grade on climate* limitation, *standalone* limitations and *interactive* limitations.

- **Maximum grade on climate.** This can be the most limiting factor as colder & wetter climatic areas (such as parts of Wales and northern England) are graded lower than warmer & drier areas. Assessment is based on interpolation of rainfall- and temperature-related meteorological data specifically produced for agricultural land classification.
- **Standalone limitations.** These restrict land irrespective of any climatic or other factors. Gradient, topsoil stoniness and flood frequency and duration are good examples.
- **Interactive limitations.** These restrict land due to the interaction of soil properties and climatic factors, for example drought risk which allows for a sandy soil in a dry climatic area to be assessed differently to a sandy soil in a wetter area. The same principle applies soil wetness/workability constraints to land use. A wet soil in a wet climatic area is assessed differently to a wet soil in a dry climatic area.

If a combination of limiting factors exists, the most limiting one only is used to determine severity of limitation and hence ALC Grade.

Interactive limitations are the main factor affecting the grading of most lowland farmland and they can only be assessed by a detailed study of the soil profile by a suitably qualified expert. Accurate identification of the texture and permeability of each main soil horizon are essential in order to apply the models for assessing droughtiness and land workability.

TERMS COMMONLY USED IN INDIVIDUAL PARISH SUMMARIES

Best and most versatile (BMV) land.

Grades 1, 2 and subgrade 3a of the ALC system. BMV land is afforded protection through different BMV policies in England and Wales.

Agroclimatic terms

Average Annual Rainfall (AAR): A measure of the total amount of rainfall falling in a calendar year. This is different to the duration of wetness throughout a calendar year (see field capacity days).

Accumulated Temperature above 0°C (January to June). This measures the warmth of an area during a period critical for germination and plant growth. ATO is simply a sum of all temperatures above 0°C, summed on a daily basis from January to June. This is used in combination with field capacity days to assess maximum grade on climatic constraints.

Field Capacity Days (FCD). A measure of the average annual duration of climatic wetness, rather than total rainfall. Field capacity is when the soil holds the maximum water it can hold under gravity such that field drains begin to flow and many soils are considered too wet for cultivation. The number of FCD is the number of days per year a soil is at field capacity. It is a key criterion in assessment of soil wetness and workability constraints to ALC grade.

Moisture Deficit (MD). The MD value is the balance between water coming into the soil through rainfall and water being lost through plant transpiration during the growing period. It is a measure of climatic dryness or susceptibility to drought and a key ALC climatic reference to assess soil droughtiness.

Soil terms

Gleyed layer. A subsoil layer showing evidence of soil wetness through specific colour combinations, normally a greyish colour or mottles combined with rusty-coloured mottles identified accurately using Munsell Soil Colour Charts. It is a key criterion in ALC soil wetness assessment.

Slowly Permeable Layer. A distinct subsoil layer, normally characterised by higher density, poorer structure and less porosity than layers above such that it impedes downwards drainage of water, resulting in a shallow water table forming above it in winter months. It is a key criterion in ALC soil wetness assessment.

Soil droughtiness. The difference between profile available water capacity (the water exploitable by crop roots that a soil profile can retain against gravity) and the climatic moisture deficit for two key indicator crops is used to assess soil droughtiness constraints to ALC grade.

Maidstone: Local Plan ALC Sites

Parish: Boughton Monchelsea

Site H1(48) - The agent for this site stated that the site was not proceeding in the planning process and therefore it was not surveyed.

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971): All sites were mapped as Grade 2 quality with the exception of site HO3-220 which was mapped as 'other land primarily not in agricultural use'.

Soil Survey of England and Wales (1:250 000 Scale, 1983): All sites are mapped as soils of the Malling Association with the exception of site HO3-220 which was mapped as soils of the Marlow Association.

Site Specific Climate Data

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):

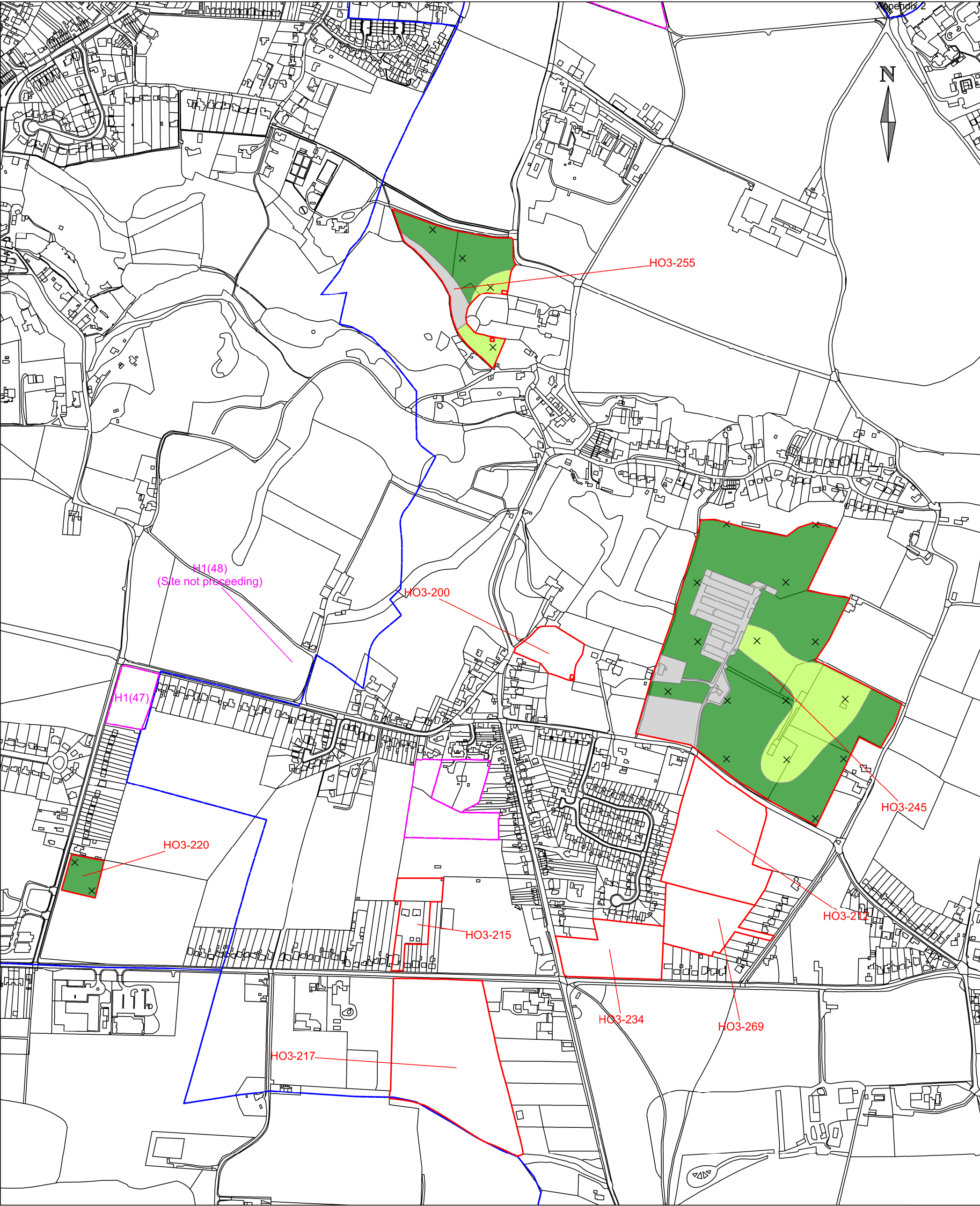
Site Reference No.	H1(48)	HO3-220	HO3-245	HO3-255
Grid reference	TQ 767 511	TQ 760 510	TQ 773 514	TQ 768 520
Altitude (mAOD)	102	107	91	89
Accumulated temperature (day °C Jan - June)	1392	1387	1405	1407
Average annual rainfall (mm)	703	704	700	702
Field capacity days (days)	142	142	143	143
Moisture deficit, wheat (mm)	112	111	112	113
Moisture deficit, potatoes (mm)	105	105	106	106
Overall climatic grade	1	1	1	1



























Survey Results: All of the soils within the sites were medium silty clay loam or occasionally heavy silty clay loam topsoil overlying permeable upper subsoil of similar texture which in turn is over slowly permeable clay subsoil. These profiles were generally assessed as Wetness Class II or occasionally Wetness Class III which together with the topsoil textures and the prevailing climatic conditions at the sites would restrict such land to Grade 2 or Subgrade 3a quality due to a slight or moderate wetness and workability limitation. However, the stone content of the topsoil was

sufficiently high at most sample points to restrict the quality of the land to Subgrade 3a and occasionally Subgrade 3b.

Land mapped as non-agricultural:

Within site HO3-245 a playing field, two houses with gardens and the sheds and infrastructure for chicken rearing were mapped as non-agricultural. Within site HO3-255 a small area of hard standing in the north east and a very steep (25°) slope with scrub in the west have been mapped as non-agricultural land.



<p>Client:</p>  <p>Project:</p> <p>Agricultural land classification study</p> <p>Map title:</p> <p>Boughton Monchelsea County Parish</p>	<p>KEY</p> <table><tr><td></td><td>Grade 1 agricultural land</td><td></td><td>Land of no agricultural potential</td></tr><tr><td></td><td>Grade 2 agricultural land</td><td></td><td>Proposed development sites (with MDC reference)</td></tr><tr><td></td><td>Sub-grade 3a agricultural land</td><td></td><td>Location of observations</td></tr><tr><td></td><td>Sub-grade 3b agricultural land</td><td></td><td></td></tr><tr><td></td><td>Grade 4 agricultural land</td><td></td><td></td></tr></table>		Grade 1 agricultural land		Land of no agricultural potential		Grade 2 agricultural land		Proposed development sites (with MDC reference)		Sub-grade 3a agricultural land		Location of observations		Sub-grade 3b agricultural land				Grade 4 agricultural land			<p>Scale: 1:60,000 at A3</p> <p>Date: 31/10/2014</p> <p> Lockington Hall Lockington Derby DE74 2RH Tel: 01509 670570</p>
	Grade 1 agricultural land		Land of no agricultural potential																			
	Grade 2 agricultural land		Proposed development sites (with MDC reference)																			
	Sub-grade 3a agricultural land		Location of observations																			
	Sub-grade 3b agricultural land																					
	Grade 4 agricultural land																					

Maidstone: Local Plan ALC Sites

Parish: Harrietsham

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971):

Sites H1(26) and HO3-282 are mapped as Grade 3 quality. Site H1(28) is mapped as urban land.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

Sites H1(26) and HO3-282 are mapped as Fyfield 2 soil association and site H1(28) is mapped as soils of the Denchworth Association.

Site Specific Climate Data:

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989)

Site Reference No.	H1(26)	H1(28)	HO3-282
Grid reference	TQ 868525	TQ 872525	TQ 869524
Altitude (mAOD)	85	91	85
Accumulated temperature (day °C Jan-June)	1409	1402	1409
Average annual rainfall (mm)	727	732	727
Field capacity days (days)	152	153	152
Moisture deficit, wheat (mm)	109	109	110
Moisture deficit, potatoes (mm)	102	101	102
Overall climatic grade	1	1	1

Survey Results: Most of site H1(26) and an area in the south of site HO3-282 was found to have been disturbed in the past and restored. This has resulted in a mixing of soil textures in the upper soil profile and an impenetrable compacted and stony lower subsoil horizon. This land is poorly draining and was assessed as Grade 4 quality.

The soils of site H1(28) were found to have a heavy clay loam, heavy silty clay loam or very occasionally a medium silty clay loam topsoil overlying clay subsoil horizons which become mottled and gleyed with depth. The lower subsoil was found to constitute a slowly permeable layer. These profiles were assessed as Wetness Class III or IV which, together with the topsoil textures and the prevailing climatic conditions at the sites, restricts such land to Subgrade 3b quality due to a significant wetness and workability limitation.

The majority of site HO3-282 that had not previously been disturbed had medium or heavy clay loam topsoil over heavy clay loam or clay upper subsoil, in turn over a gleyed and mottled slowly permeable clay lower subsoil. These profiles were assessed as Wetness Class III which, together with the topsoil textures and the prevailing climatic conditions at the site, restricts such land to Subgrade 3a or 3b quality due to a moderate or significant wetness and workability limitation.

Land mapped as non-agricultural: at site H1(26) a solid entrance way to the site and in site H1(28) farm buildings, associated infrastructure and hard standing have been mapped as non-agricultural land.

KEY

- Grade 1 agricultural land
- Grade 2 agricultural land
- Sub-grade 3a agricultural land
- Sub-grade 3b agricultural land
- Grade 4 agricultural land
- Land of no agricultural potential
- Proposed development sites (with MDC reference)
- × Location of observations

Client:



Project:

Agricultural land classification study

Map title:

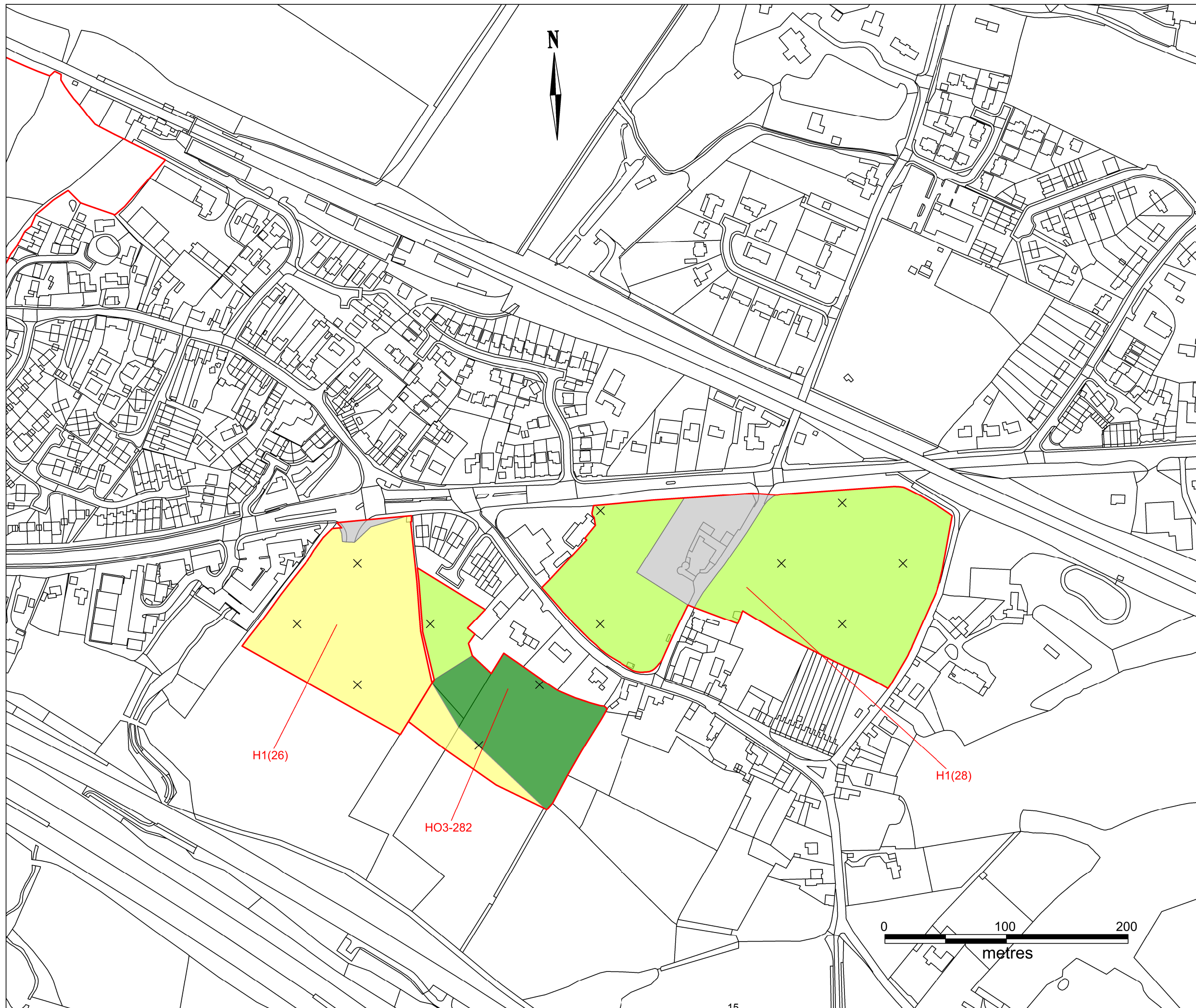
Harrietsham County Parish

Land
Research
ASSOCIATES

Land Research Associates
Lockington Hal
Lockington
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01509 670570

Scale: 1:30,000

Date: 17/11/2014



Maidstone: Local Plan ALC Sites

Parish: Headcorn

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971): All sites are mapped as Grade 3 quality.

Soil Survey of England and Wales (1:250 000 Scale, 1983): All sites mapped as Wickham 1 Association.

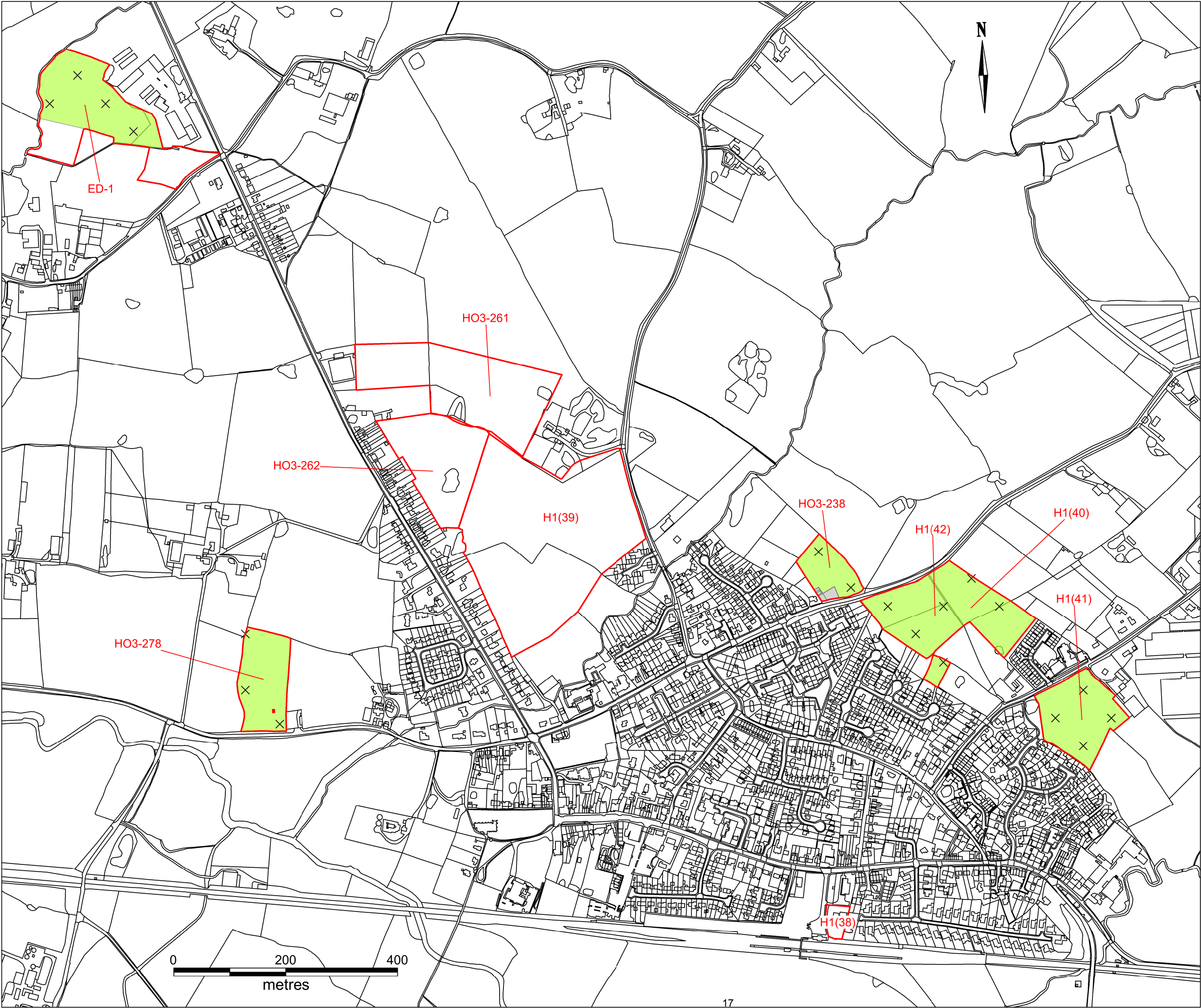
Site Specific Climate Data

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):

Site Reference No.	H1(40)	H1(41)	H1(42)	EMP1(4)	HO3-238	HO3-278
Grid reference	TQ 840446	TQ 842444	TQ 840445	TQ 825455	TQ 838446	TQ 828445
Altitude (mAOD)	22	21	22	24	22	27
Accumulated temperature (day °C Jan - June)	1485	1486	1485	1482	1485	1480
Average annual rainfall (mm)	630	628	630	641	631	643
Field capacity days (days)	130	130	131	133	131	133
Moisture deficit, wheat (mm)	124	124	124	124	124	123
Moisture deficit, potatoes (mm)	121	121	121	121	121	121
Overall climatic grade	1	1	1	1	1	1

Survey Results: All sites were found to have similar soils with heavy silty clay loam or clay topsoil overlying a mottled and gleyed, slowly permeable clay subsoil. These profiles were assessed as borderline Wetness Class III/IV or Wetness Class IV which, together with the topsoil textures and the prevailing climatic conditions at the sites, restrict such land to Subgrade 3b due to a significant wetness and workability limitation.

A small area of site HO3-238 has been mapped as non-agricultural which comprises stabling and associated hard standing.



- KEY**
- Grade 1 agricultural land
 - Grade 2 agricultural land
 - Sub-grade 3a agricultural land
 - Sub-grade 3b agricultural land
 - Grade 4 agricultural land
 - Land of no agricultural potential
 - Proposed development sites (with MDC reference)
 - × Location of observations



Project:

Agricultural land classification study

Map title:

Headcorn County Parish



Land Research Associates
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Lockington
Derby DE74 2RH
01509 670570

Scale: 1:65,000
Date: 17/11/2014

Maidstone: Local Plan ALC Sites

Parish: Hollingbourne

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971):

Site HO3-189 is mapped as Grade 2 quality with sites ED-12 and H1(49) shown as Grade 3 quality.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

Site ED-12 is mapped as soils of the Fyfield Association with sites H1(49) and HO3-189 shown as soils of the Denchworth Association.

Site Specific Climate Data:

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989)

Site Reference No.	ED-12	H1(49)	HO3-189
Grid reference	TQ 820551	TQ 837547	TQ 833545
Altitude (mAOD)	54	61	60
Accumulated temperature (day °C Jan - June)	1444	1436	1437
Average annual rainfall (mm)	714	724	720
Field capacity days (days)	148	152	151
Moisture deficit, wheat (mm)	114	111	112
Moisture deficit, potatoes (mm)	108	105	106
Overall climatic grade	1	1	1

Survey Results: Site ED-12 had three distinct soil types. The first comprises a sandy clay loam or medium clay loam topsoil which is over a similar or slightly heavier permeable upper subsoil which in turn overlays a slowly permeable heavy clay loam or clay lower subsoil. These profiles were assessed as Wetness Class II which, together with the topsoil texture and the prevailing climatic conditions at the site, results in a slight wetness and workability limitation restricting such profiles to Grade 2. At a number of sample locations, where a very gravelly layer was found below the lower subsoil horizon, the profiles had a moderate droughtiness limitation which restricts the agricultural quality to Subgrade 3a.

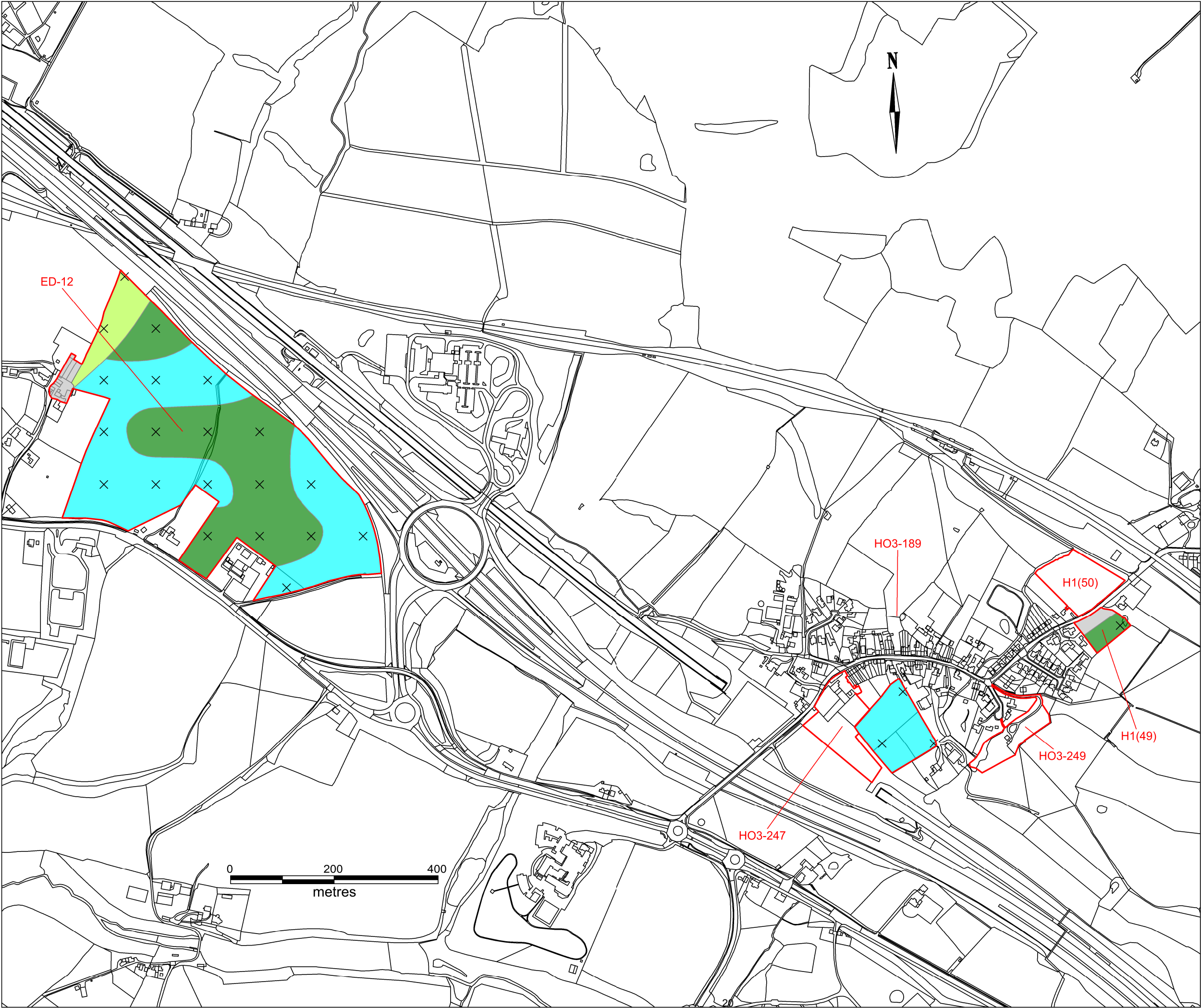
The second soil type comprises a sandy soil profile in which a medium sandy loam topsoil and upper subsoil overlay a loamy medium sand subsoil horizon which becomes medium sand at 50 to 70 cm depth. Such soil profiles had a moderate droughtiness limitation which restricts the land to Subgrade 3a quality. In a small area in the north west of ED-12 heavy clay loam topsoil immediately overlies a gleyed and mottled slowly permeable clay subsoil. These soil profiles were assessed as Wetness Class IV and, with the topsoil texture and climatic conditions, restricted to Subgrade 3b quality due to a significant wetness and workability limitation.

The soil profiles within Site H1(49) comprise a medium silty clay loam topsoil over a clay subsoil that is unmottled in the upper part but becomes increasingly gleyed, mottled and slowly permeable with increasing depth. Such soil profiles were assessed as Wetness Class III which, together with the

topsoil texture and site climatic conditions, restricts this land to Subgrade 3a quality due to a moderate wetness and workability limitation.

Site HO3-189 was used for the disposal of sandy material from a nearby tile works some time during the early to mid 1900's. The site therefore contained soils which comprise a stoneless medium sandy loam or sandy clay loam topsoil over stoneless sandy clay loam subsoil which in places becomes sandier with depth. On the edge of the western edge of the site the original soil profile comprising heavy clay loam and clay was encountered at depth. However, the soil profiles are freely draining (Wetness Class I) and are assessed as Grade 2 quality (due to a slight droughtiness limitation) across the whole site.

Land mapped as non-agricultural: Non-agricultural land has been mapped within sites ED-12 and H1(49) comprising farm buildings in the west of Site ED-12 and dense scrub alongside Eyhorne Street in the north west of site H1(49).



- KEY**
- Grade 1 agricultural land
 - Grade 2 agricultural land
 - Sub-grade 3a agricultural land
 - Sub-grade 3b agricultural land
 - Grade 4 agricultural land
 - Land of no agricultural potential
 - Proposed development sites (with MDC reference)
 - × Location of observations



Project:

Agricultural land classification study

Map title:

Hollingbourne County Parish



Land Research Associates
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Lockington
Derby DE74 2RH
01509 670570

Scale: 1:70,000
Date: 17/11/2014

Maidstone: Local Plan ALC Sites

Parish: Lenham

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971): Sites HO3-195, 202 and H1(31) are shown as Grade 2 quality with all other sites being mapped as Grade 3.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

Site Reference Number	Soil Association
HO3-195	Coombe 2
HO3-202	Coombe 2
HO3-222	Malling
HO3-263	Fyfield
HO3-264	Denchworth
HO3-297	Denchworth
H1(31)	Coombe 2

Site Specific Climate Data

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):

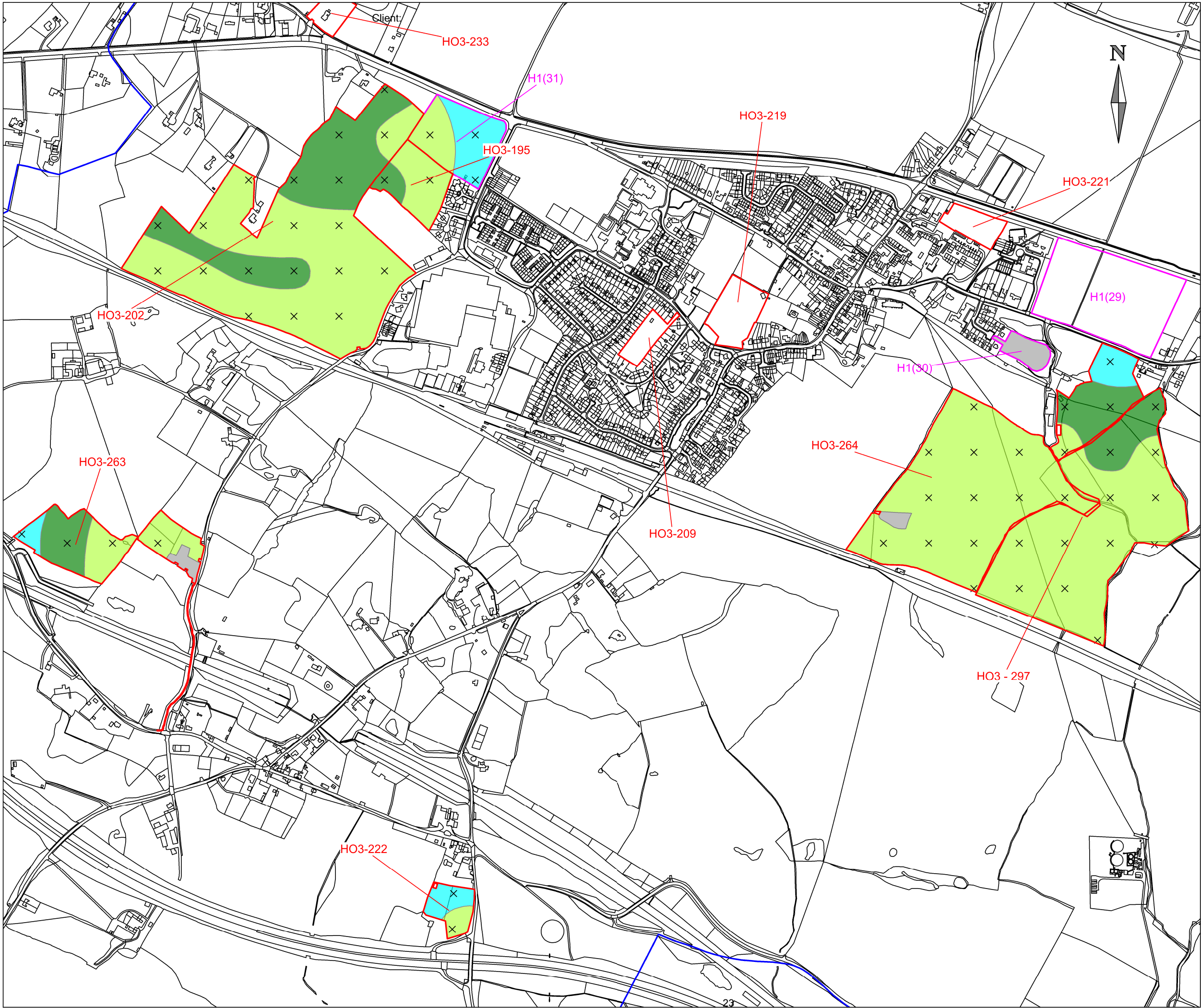
Site Reference No.	HO3-195	HO3-202	HO3-222	HO3-263	HO3-264	HO3-297	H1(31)
Grid reference	TQ 889 524	TQ 886 523	TQ 890 508	TQ 882 516	TQ 901 517	TQ 904 517	TQ 890 525
Altitude (mAOD)	124	120	111	109	106	102	129
Accumulated temperature (day °C Jan - June)	1364	1369	1380	1382	1385	1389	1358
Average annual rainfall (mm)	752	749	739	738	747	746	755
Field capacity days (days)	156	156	153	154	155	155	157
Moisture deficit, wheat (mm)	104	105	108	107	108	108	103
Moisture deficit, potatoes (mm)	95	96	100	99	100	100	94
Overall climatic grade	1	1	1	1	1	1	1

Survey Results: The majority of the soils within the sites have clay/heavy silty clay loam or occasionally medium silty clay loam textured topsoil over slowly permeable gleyed clay subsoil. Occasionally the clay subsoil contained significant quantities of well weathered chalk. These profiles were assessed as Wetness Class IV which together with the topsoil textures and the prevailing climatic conditions at the sites restricts such land to Subgrade 3b due to a significant wetness and workability limitation.

At a small number of sample points, brown upper subsoil was encountered above the slowly permeable clay. Depending on the thickness of this material these soil profiles were assessed as Wetness Class I or II. Depending on the texture of the topsoil such land was of Grade 2 or Subgrade 3a quality due to a minor or moderate wetness and workability limitation.

In a further small number of sample points (Sites HO3-222, 263) the soils are of lighter texture with sandy clay loam or medium sandy loam topsoils overlying subsoils of similar texture, occasionally becoming sandier with depth. These soil profiles were restricted by a slight droughtiness limitation to Grade 2 quality.

A small area in sites HO3-263 and 264 has been mapped as non-agricultural land, including a house, stabling, ménage, hard standing, trees and pond.



KEY

- Grade 1 agricultural land
- Grade 2 agricultural land
- Sub-grade 3a agricultural land
- Sub-grade 3b agricultural land
- Grade 4 agricultural land
- Land of no agricultural potential
- Proposed development sites (with MDC reference)
- × Location of observations

Client:



Project:

Agricultural land classification study

Map title:

Lenham County Parish

**Land
Research**
ASSOCIATES

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:80,000

Date: 31/10/2014

Maidstone: Local Plan ALC Sites

Parish: Marden

Site HO3-246 already has planning permission and as such was not surveyed.

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971):

Sites EMP1(2), EMP(3) and HO3-197 were mapped as Grade 3 and HO3-235 is mapped as Grade 2.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

The majority of site HO3-197 and all of sites EMP1(2), EMP1(3) and HO3-235 are mapped as Wickham 1 soil association. A small band of land along the western edge of site HO3-197 is mapped as soils of the Fladbury 3 Association.

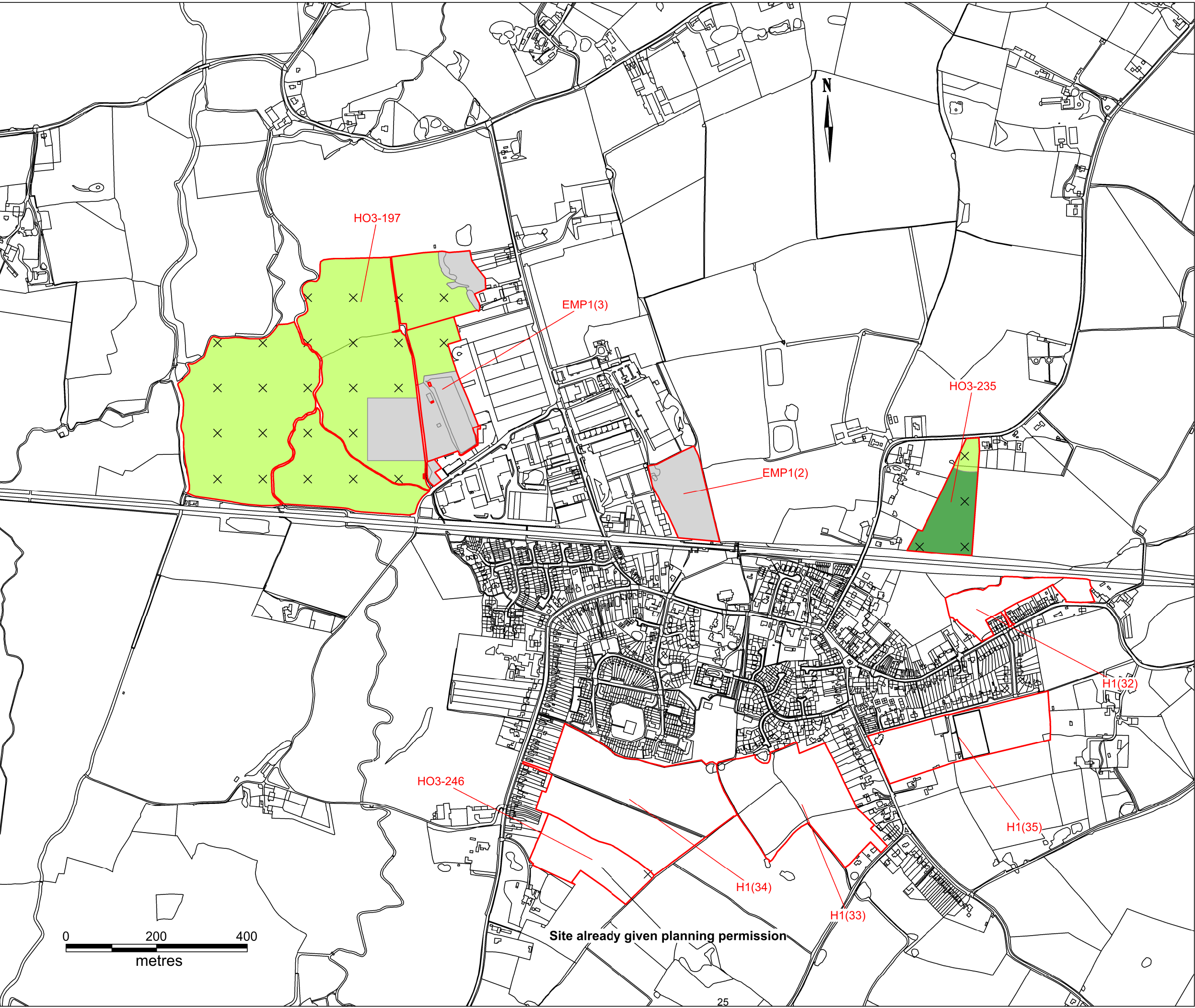
Site Specific Climate Data:

(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):

Site Reference No.	EMP1(2)	EMP1(3)	HO3-197	HO3-235
Grid reference	TQ 743 449	TQ 738 451	TQ 736 451	TQ 749 448
Altitude (mAOD)	19	16	15	28
Accumulated temperature (day °C Jan - June)	1490	1494	1495	1480
Average annual rainfall (mm)	658	657	658	661
Field capacity days (days)	136	136	136	136
Moisture deficit, wheat (mm)	126	126	126	125
Moisture deficit, potatoes (mm)	123	124	124	122
Overall climatic grade	1	1	1	1

Survey Results: Site HO3-197 and the north of site EMP1(3) were found to have a heavy silty clay loam, clay or, occasionally, medium silty clay loam topsoil overlying a mottled and gleyed, slowly permeable clay subsoil. These profiles were assessed as Wetness Class IV which, together with the topsoil textures and the prevailing climatic conditions at the sites, restricts such land to Subgrade 3b quality due to a significant wetness and workability limitation. The north of site HO3-235 also had similar soils to site HO3-197 and was assessed as Subgrade 3b. However, the majority of the site comprised of slightly better draining soil profiles which were assessed as Wetness Class II which, together with the topsoil textures and the prevailing climatic conditions at the site, restricts such land to Subgrade 3a quality due to a moderate wetness and workability limitation.

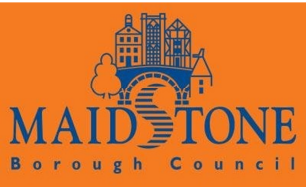
Land mapped as non-agricultural: this includes an area of trees and ponds in the north and playing fields in the south-east of site HO3-197, and a reservoir with farm buildings and associated infrastructure in site EMP1(3). The whole of site EMP1(2) has also been mapped as non-agricultural land as the north of the site has already been developed and the south comprises disturbed land that has no topsoil and a great deal of disturbance on the surface and within the upper soil profile, including significant amounts of building rubble.



KEY

- Grade 1 agricultural land
- Grade 2 agricultural land
- Sub-grade 3a agricultural land
- Sub-grade 3b agricultural land
- Grade 4 agricultural land
- Land of no agricultural potential
- Proposed development sites (with MDC reference)
- Location of observations

Client:



Project:

Agricultural land classification study

Map title:

Marden County Parish



Land Research Associates
Lockington Hal
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:80,000

Date: 17/11/2014

Maidstone: Local Plan ALC Sites

Parish: Staplehurst

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971): All sites are mapped as Grade 3 quality.

Soil Survey of England and Wales (1:250 000 Scale, 1983): All sites are mapped as soils of the Wickham 1 Association.

Site Specific Climate Data

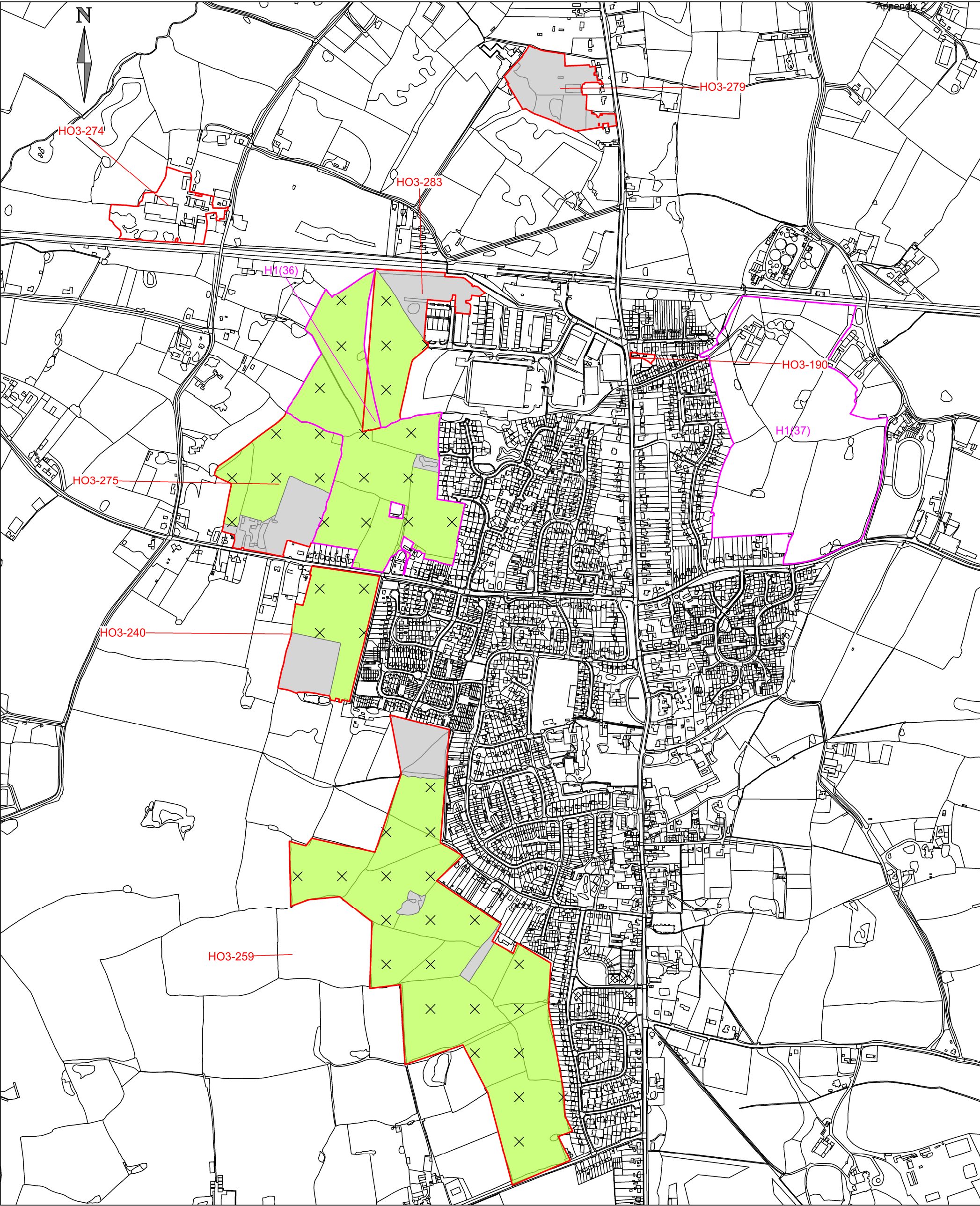
(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):



























Site Reference No.	HO3-240	HO3-259	HO3-275	HO3-279	HO3-283	H1(36)
Grid reference	TQ 779 436	TQ 781 429	TQ 778 440	TQ 783 449	TQ 780 443	TQ 780 441
Altitude (mAOD)	29	28	26	24	23	25
Accumulated temperature (day °C Jan - June)	1479	1480	1482	1484	1485	1483
Average annual rainfall (mm)	663	667	659	651	655	657
Field capacity days (days)	138	139	137	135	136	137
Moisture deficit, wheat (mm)	123	123	124	125	125	124
Moisture deficit, potatoes (mm)	120	120	121	122	122	121
Overall climatic grade	1	1	1	1	1	1

Survey Results: All of the soils within the sites are clay/heavy silty clay loam or occasionally medium silty clay loam topsoil overlying slowly permeable gleyed and mottled clay textured subsoil. These profiles were assessed as Wetness Class IV which, together with the topsoil textures and the prevailing climatic conditions at the sites, restricts such land to Subgrade 3b quality as a result of a significant wetness and workability limitation.

Land mapped as non-agricultural:

Site Reference No.	Non-Agricultural land
HO3-240	Trees and heavy scrub
HO3-259	The northern field was a construction site, additionally two areas of trees
HO3-275	House, garden and hard standing plus area of very heavy scrub
HO3-279	Whole site comprised domestic gardens or domestic curtilage
HO3-283	Disturbed land and scrub
H1(36)	Two ephemeral ponds with surrounding trees and the access track to an electricity sub-station



<p>Client:</p>  <p>Project:</p> <p>Agricultural land classification study</p> <p>Map title:</p> <p>Staplehurst County Parish</p>	<p>KEY</p> <table><tr><td></td><td>Grade 1 agricultural land</td><td></td><td>Land of no agricultural potential</td></tr><tr><td></td><td>Grade 2 agricultural land</td><td></td><td>Proposed development sites (with MDC reference)</td></tr><tr><td></td><td>Sub-grade 3a agricultural land</td><td></td><td>Location of observations</td></tr><tr><td></td><td>Sub-grade 3b agricultural land</td><td></td><td></td></tr><tr><td></td><td>Grade 4 agricultural land</td><td></td><td></td></tr></table>		Grade 1 agricultural land		Land of no agricultural potential		Grade 2 agricultural land		Proposed development sites (with MDC reference)		Sub-grade 3a agricultural land		Location of observations		Sub-grade 3b agricultural land				Grade 4 agricultural land			<p>Scale: 1:80,000 at A3</p> <p>Date: 31/10/2014</p>  <p>Lockington Hall Lockington Derby DE74 2RH Tel: 01509 670570</p>
	Grade 1 agricultural land		Land of no agricultural potential																			
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	Sub-grade 3b agricultural land																					
	Grade 4 agricultural land																					

Maidstone: Local Plan ALC Sites

Parish: Sutton Valence

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 172 (1971):

Sites HO3-216 and HO3-244 were mapped as Grade 3 quality with all other sites being mapped as Grade 2.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

Sites HO3-216 and HO3-244 are mapped as soils of the Wickham 1 Association with all other sites being mapped as soils of the Marlow Association.

Site Specific Climate Data:

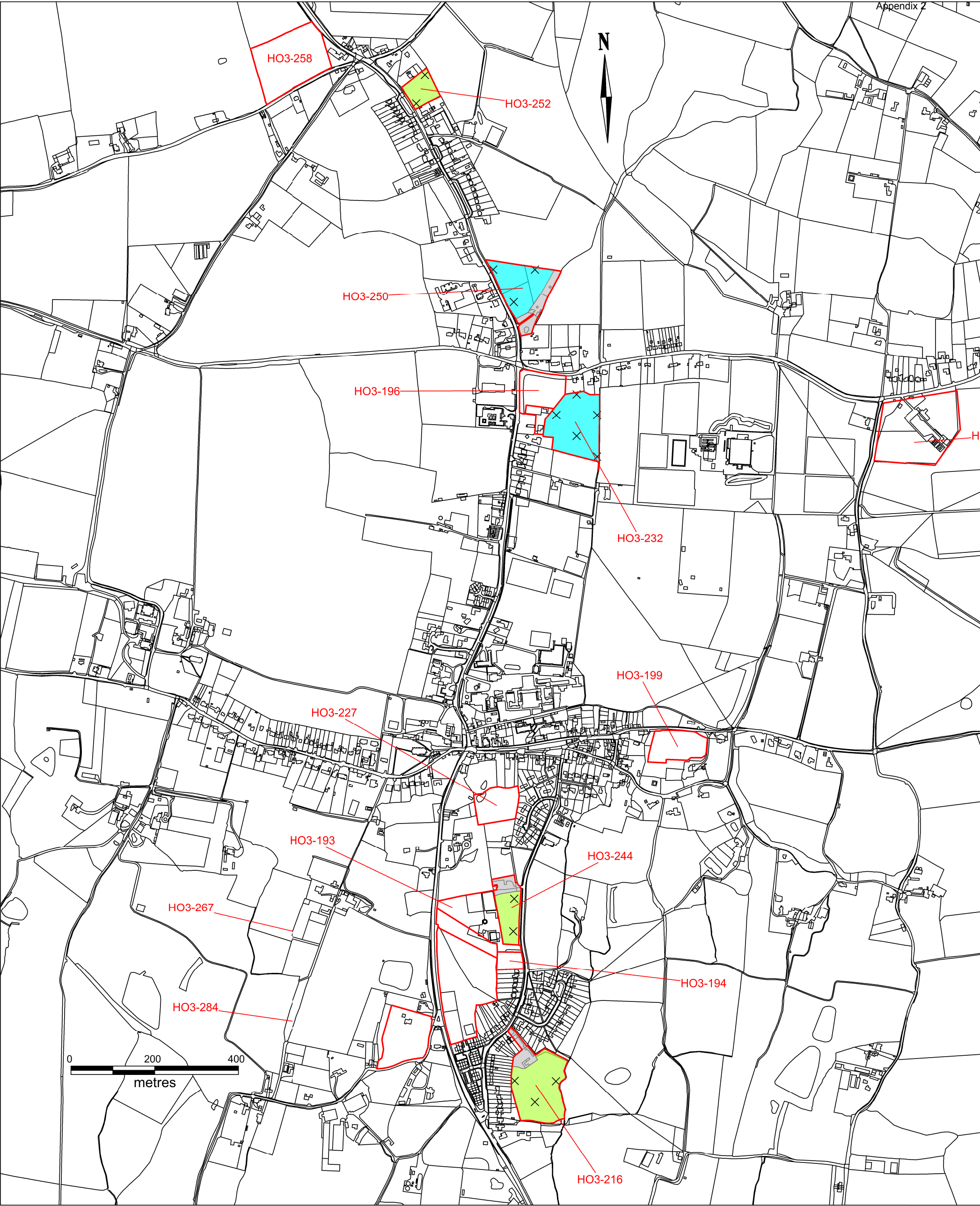
(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989)



























Site Reference No.	HO3-216	HO3-232	HO3-244	HO3-250	HO3-252
Grid reference	TQ 813484	TQ 813500	TQ 812488	TQ 812503	TQ 810508
Altitude (mAOD)	39	124	53	120	111
Accumulated temperature (day °C Jan - June)	1464	1367	1448	1371	1381
Average annual rainfall (mm)	660	698	668	701	699
Field capacity days (days)	138	144	139	145	145
Moisture deficit, wheat (mm)	120	108	118	108	109
Moisture deficit, potatoes (mm)	115	99	112	100	101
Overall climatic grade	1	1	1	1	1

Survey Results: The three northern sites (HO3-252, HO3-250 and HO3-232) all have similar soil types, comprising medium silty clay loam or medium clay loam topsoil over permeable heavy clay loam upper subsoil which, in turn, overlies slowly permeable, gleyed and mottled, clay lower subsoil. The majority of profiles were assessed as Wetness Class II and the land as Grade 2 quality due to wetness and workability limitations. However, at Site HO3-252 where the topsoil and upper subsoil are very thin, the profiles were assessed as Wetness Class IV and the land as Subgrade 3b.

The two southern sites (HO3-244 and HO3-216) have soils with heavy clay loam or heavy silty clay loam topsoil over slowly permeable, gleyed and mottled, clay subsoil. These soil profiles were assessed as Wetness Class III or IV which, together with the topsoil texture and the prevailing climatic site conditions, restricts such land to Subgrade 3b quality due to a significant wetness and workability limitation.

Land mapped as non-agricultural: this includes a house, garden and ménage at site HO3-250, an area under development in the north of site HO3-244, and the house, access and stables at site HO3-216.



<p>Client:</p> <p>Project:</p> <p>Map title:</p>	 <p>Agricultural land classification study</p> <p>Sutton Valence County Parish</p>	<p><u>KEY</u></p> <table><tr><td></td><td>Grade 1 agricultural land</td><td></td><td>Land of no agricultural potential</td></tr><tr><td></td><td>Grade 2 agricultural land</td><td></td><td>Proposed development sites (with MDC reference)</td></tr><tr><td></td><td>Sub-grade 3a agricultural land</td><td></td><td>Location of observations</td></tr><tr><td></td><td>Sub-grade 3b agricultural land</td><td></td><td></td></tr><tr><td></td><td>Grade 4 agricultural land</td><td></td><td></td></tr></table>		Grade 1 agricultural land		Land of no agricultural potential		Grade 2 agricultural land		Proposed development sites (with MDC reference)		Sub-grade 3a agricultural land		Location of observations		Sub-grade 3b agricultural land				Grade 4 agricultural land			<p>Scale: 1:85,000 at A3</p> <p>Date: 17/11/2014</p> <div><p>Lockington Hall Lockington Derby DE74 2RH Tel: 01509 670570</p></div>
	Grade 1 agricultural land		Land of no agricultural potential																				
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	Sub-grade 3a agricultural land		Location of observations																				
	Sub-grade 3b agricultural land																						
	Grade 4 agricultural land																						

Maidstone: Local Plan ALC Sites

Parish: Yalding

MAFF Provisional ALC mapping (1:63 360 Scale) - Sheet 171 (1972): Site HO3-277 and the majority of 276 are shown as Grade 2 quality with all other sites and a small area in the north of HO3-276 being mapped as Grade 3 quality.

Soil Survey of England and Wales (1:250 000 Scale, 1983):

Site Reference Number	Soil Association
HO3-191	Wickham 1
HO3-276	Shabbington
HO3-277	Shabbington
HO3-293	Wickham 1

Site Specific Climate Data

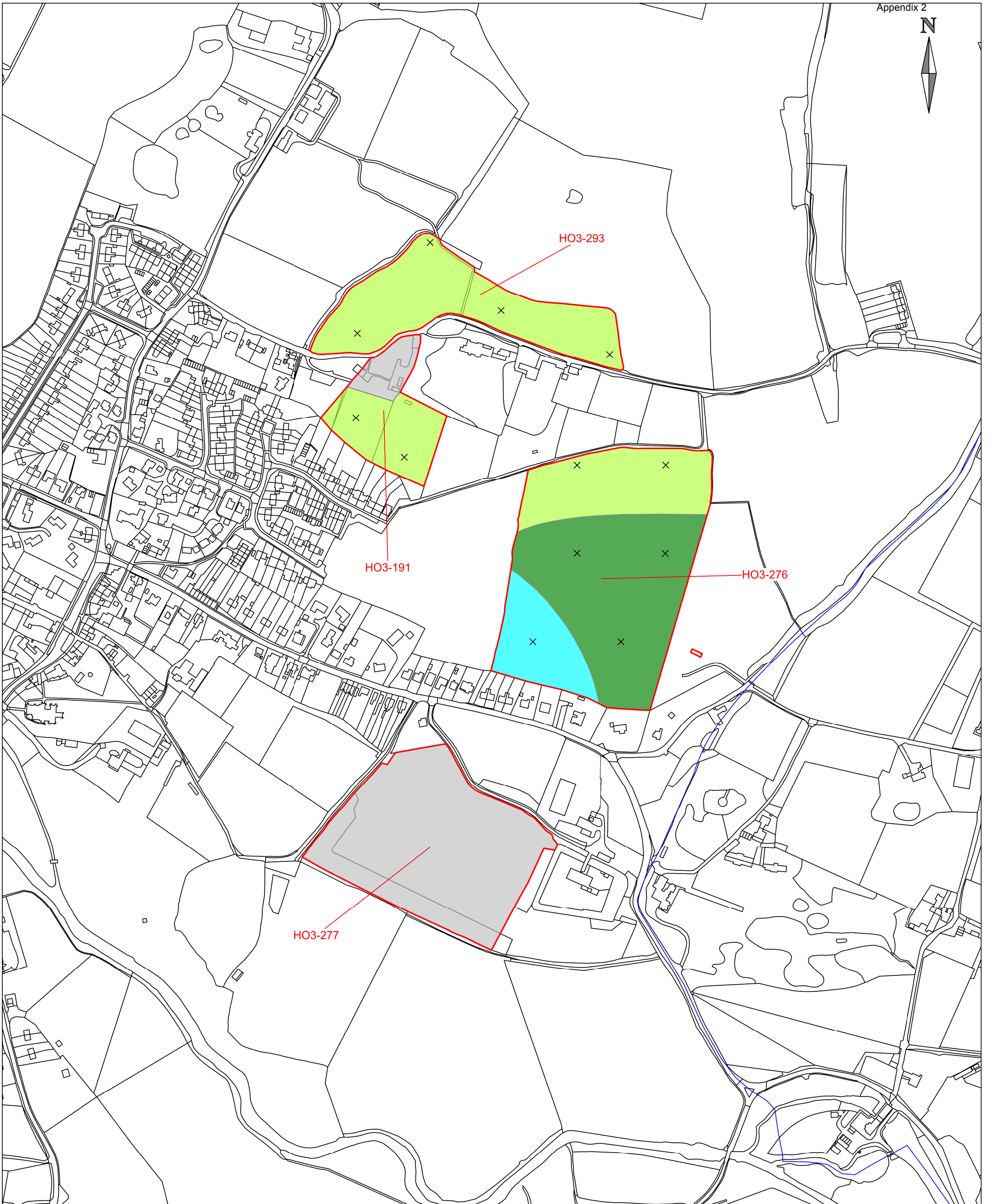
(extrapolated from Climatological Data for Agricultural Land Classification, Met Office, 1989):

Site Reference No.	HO3-191	HO3-276	HO3-277	HO3-293
Grid reference	TQ 702 504	TQ 705 502	TQ 703 499	TQ 703 505
Altitude (mAOD)	26	29	16	30
Accumulated temperature (day °C Jan - June)	1481	1477	1492	1476
Average annual rainfall (mm)	655	657	650	657
Field capacity days (days)	136	136	135	136
Moisture deficit, wheat (mm)	122	121	123	121
Moisture deficit, potatoes (mm)	119	119	121	118
Overall climatic grade	1	1	1	1

Survey Results: Sites HO3-191, 293 and the north of HO3-276 have clay/heavy silty clay loam topsoil overlying slowly permeable gleyed clay subsoil. These profiles were assessed as Wetness Class IV which, together with the topsoil textures and the prevailing climatic conditions at the sites, restricts the land to Subgrade 3b quality due to a significant wetness and workability limitation.

In the south of site HO3-276 sandy clay loam or medium silty clay loam topsoils are over subsoils of similar texture, becoming sandier and stonier with depth. These soil profiles are better draining than the north of the site and were assessed as Wetness Class I. However, a slight or moderate drought limitation restricts these soil profiles to Grade 2 or Subgrade 3a quality.

A house and garden in site HO3-191 has been mapped as non-agricultural land as has the whole of site HO3-277, which is woodland.



Client:



Project:

Agricultural land classification study

Map title:

Yalding County Parish

KEY

- Grade 1 agricultural land
- Grade 2 agricultural land
- Sub-grade 3a agricultural land
- Sub-grade 3b agricultural land
- Grade 4 agricultural land

- Land of no agricultural potential
- Proposed development sites (with MDC reference)
- Location of observations

Scale: 1:40,000 at A3

Date: 31/10/2014

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