Soil Site Report

Agricultural Report

Sample Agricultural Report 3km

Easting: 482644
Northing: 261327
Site Area: 3km x 3km

Prepared for: Caroline Keay, Cranfield University
Date: 05 Dec 2022

Citation

Citations to this report should be made as follows:

Cranfield University (2022) Soil site report, Agricultural Report for location 482644E, 261327N, 3km x 3km, Cranfield University.

Produced using Soil Site Reporter

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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.

This report has been designed to help farmers manage their land and provides background information that should help develop their applications for the Sustainable Farming Incentive (SFI) scheme introduced by the UK Government in 2022. It is intended to provide an overview of key soil characteristics to help you complete a soil assessment and management plan for the soil standards in the Sustainable Farming Incentive. It also contains additional information about the soils and other risk factors.

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.

Your Soil Site 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.

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.

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Table of Contents

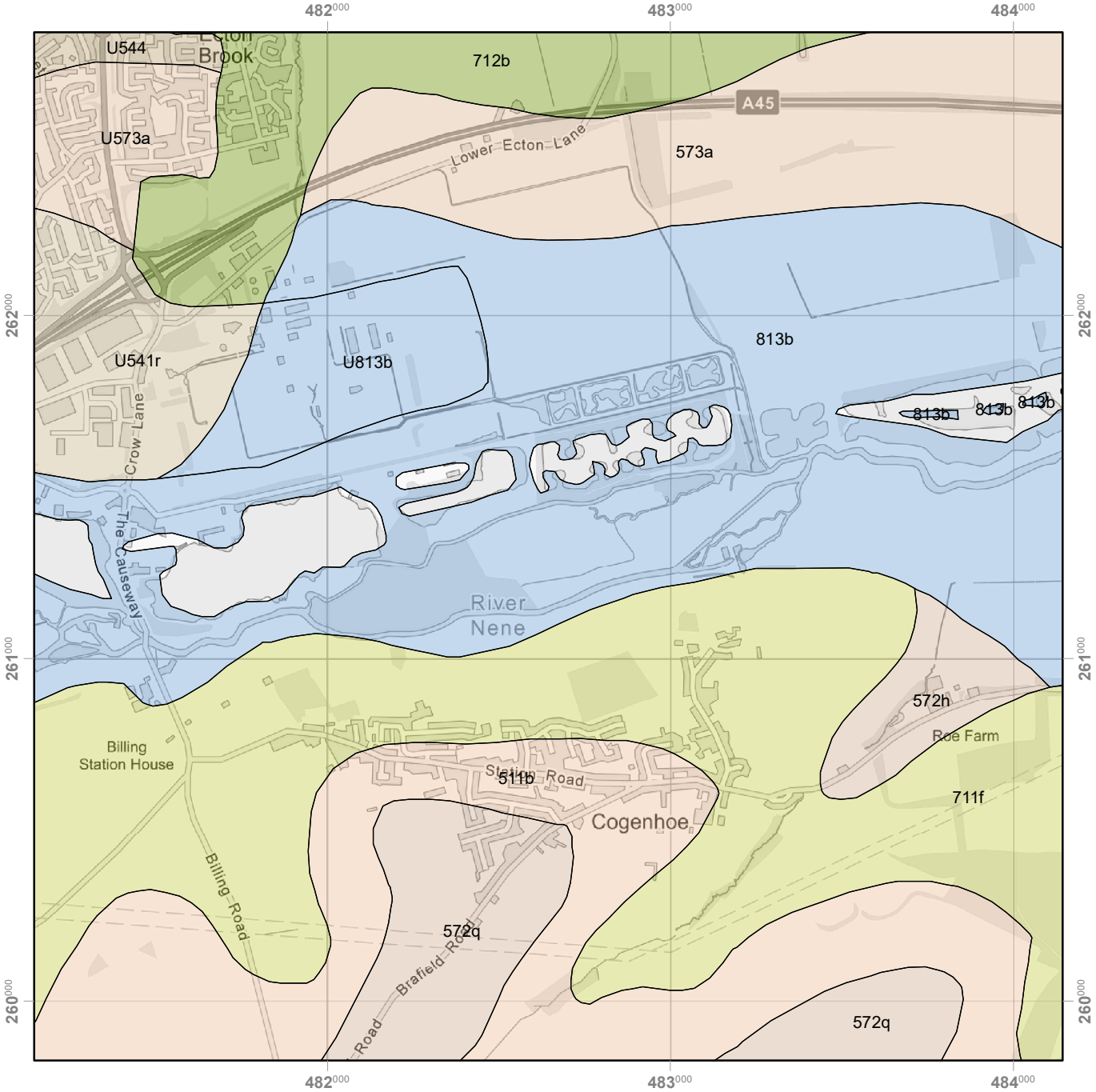
1. Soil Thematic Maps

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 though 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

1a Soils - Spatial Distribution



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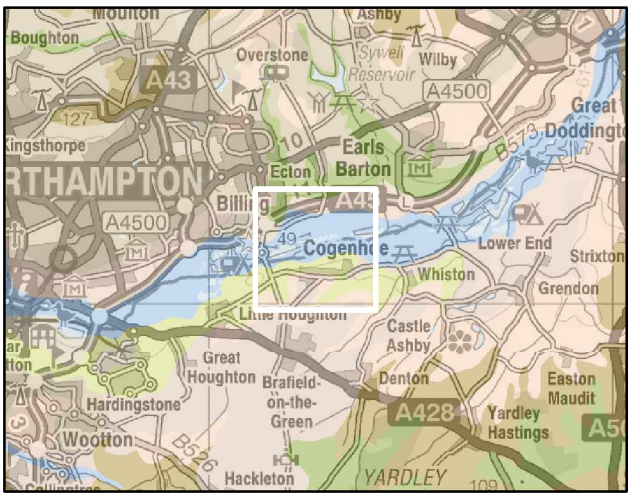


Soils - Spatial Distribution Key

511b Moreton
Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.

541r WICK 1
Deep well drained coarse loamy and sandy soils locally over gravel.

544 BANBURY
Well drained brashy fine and coarse loamy ferruginous soils over ironstone.

572h OXPASTURE
Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

572q ASHLEY
Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.

573a WATERSTOCK
Deep permeable mainly fine loamy soils variably affected by groundwater.

711f WICKHAM 2
Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.

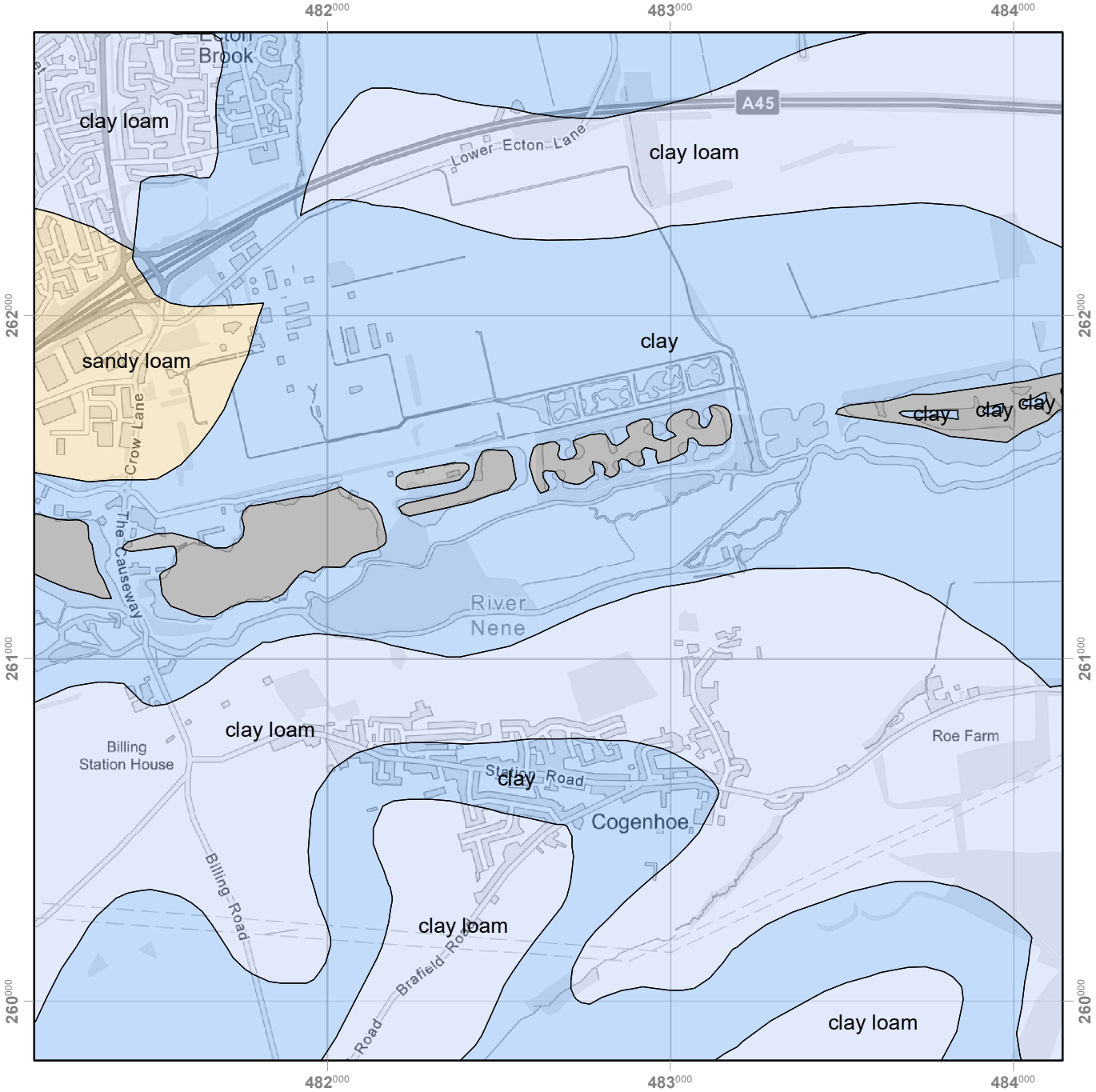
712b DENCHWORTH
Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.

813b FLADBURY 1
Stoneless clayey soils, in places calcareous variably affected by groundwater.

SOIL ASSOCIATION DESCRIPTION

Soil associations represent a group of soil series (soil types) which are typically found occurring together, associated in the landscape (Avery, 1973; 1980; Clayden and Hollis, 1984). Soil associations may occur in many geographical locations around the country where the environmental conditions are comparable. For each of these soil associations, a collection of soil types (or soil series) are recorded together with their approximate proportions within the association. Soil associations have codes as well as textual names, thus code '554a' refers to the 'Frilford' association. Where a code is prefixed with 'U', the area is predominantly urbanised (e.g. 'U571v'). The soil associations for your location, as mapped above, are described in more detail in Section 2: Soil Association Descriptions.

1b Topsoil Texture



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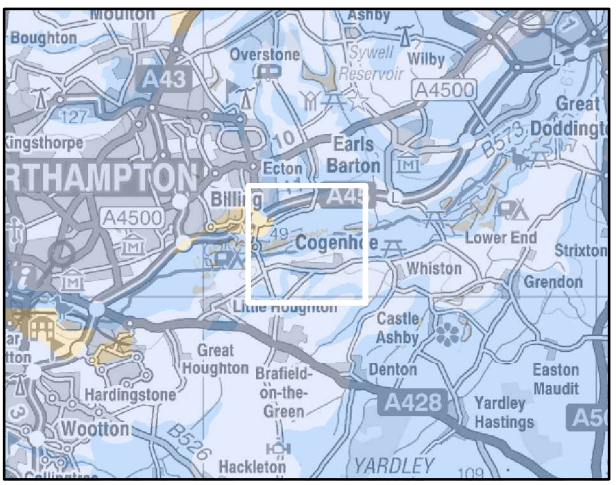
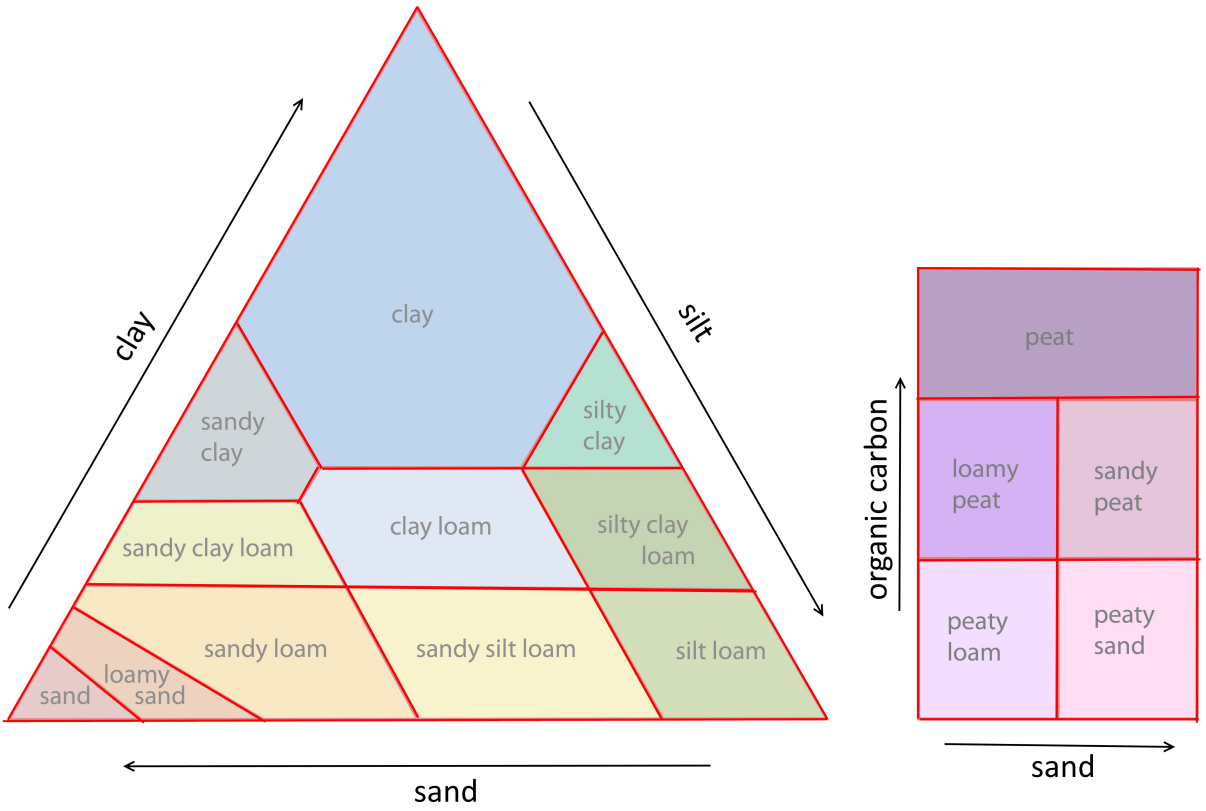


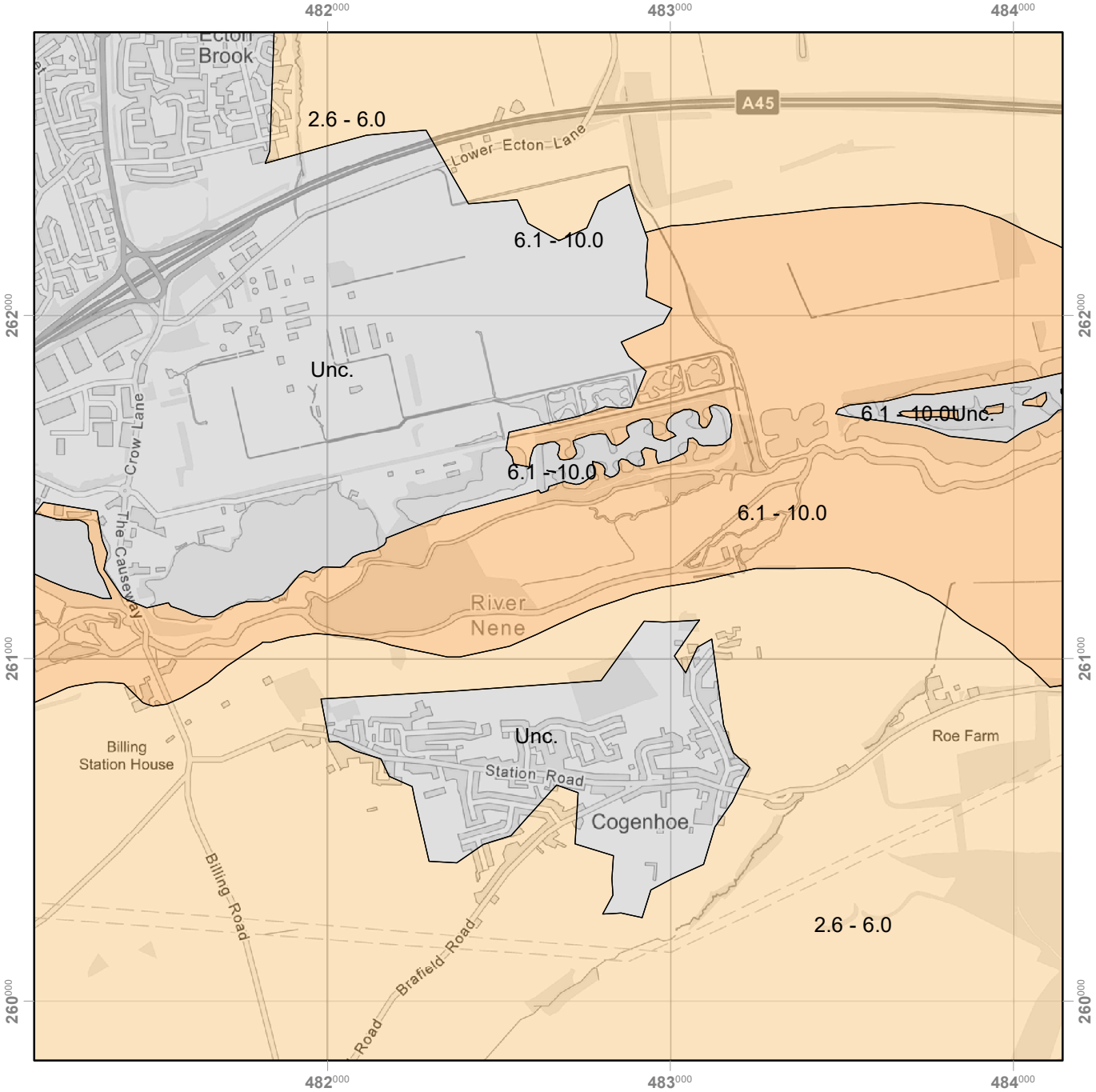
Topsoil Texture Key



SOIL TEXTURE

Soil texture is a term used in soil science to describe the physical composition of the soil in terms of the size of mineral particles in the soil. Specifically, we are concerned with the relative proportions of sand, silt and clay. Soil texture can vary between each soil layer or horizon as one moves down the profile. This map indicates the soil texture group of the upper 30 cm of the soil. Loamy soils have a mix of sand, silt and clay-sized particles and are intermediate in character. Soils with a surface layer that is dominantly organic are described as Peaty. A good understanding of soil texture can enable better land management. (Hodgson et al, 2022)

1c Organic Matter (%) in top 30cm



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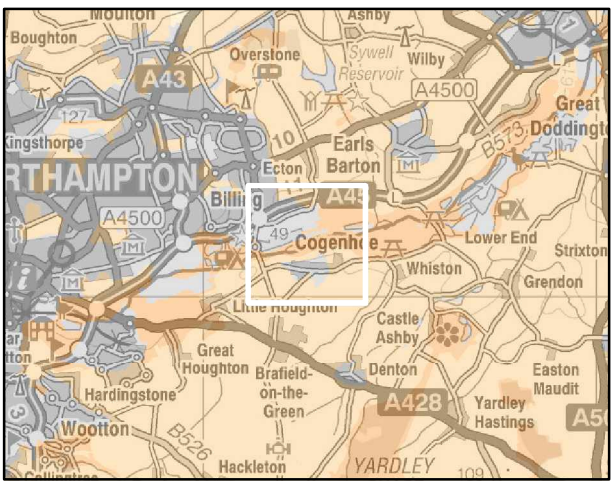


Organic Matter (%) in top 30cm Key


2.6 - 6.0

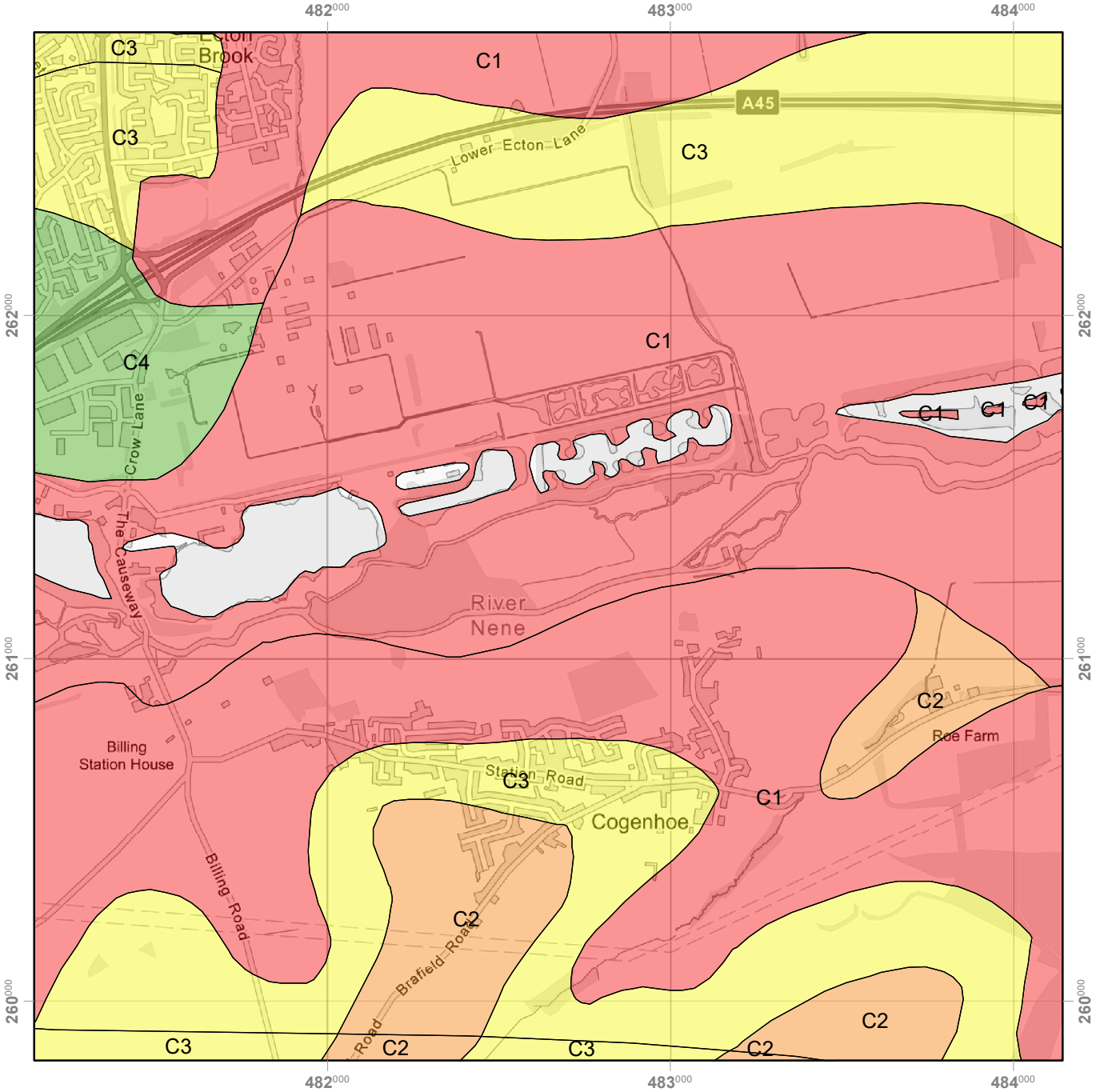

6.1 - 10.0


Unc.

ORGANIC MATTER CONTENT

Average organic matter content in the top 30 cm of the profile. Organic matter averages are based on inherent properties of the soil associations under the main land use types. (Gregory et al. 2014)

1d Susceptibility to Compaction



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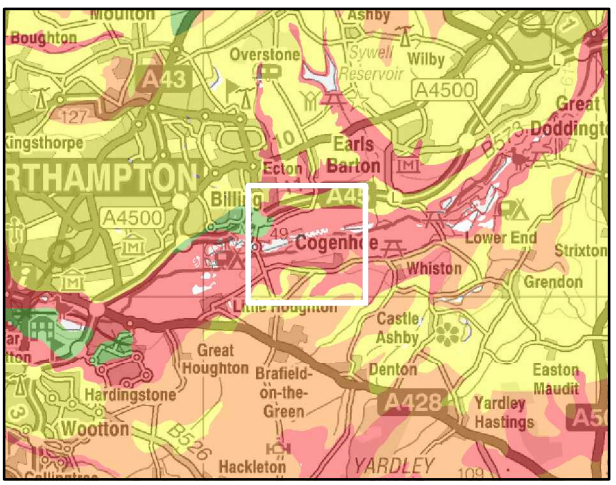


Susceptibility to Compaction Key

C1 Very Susceptible

C2 Moderately Susceptible

C3 Slightly Susceptible

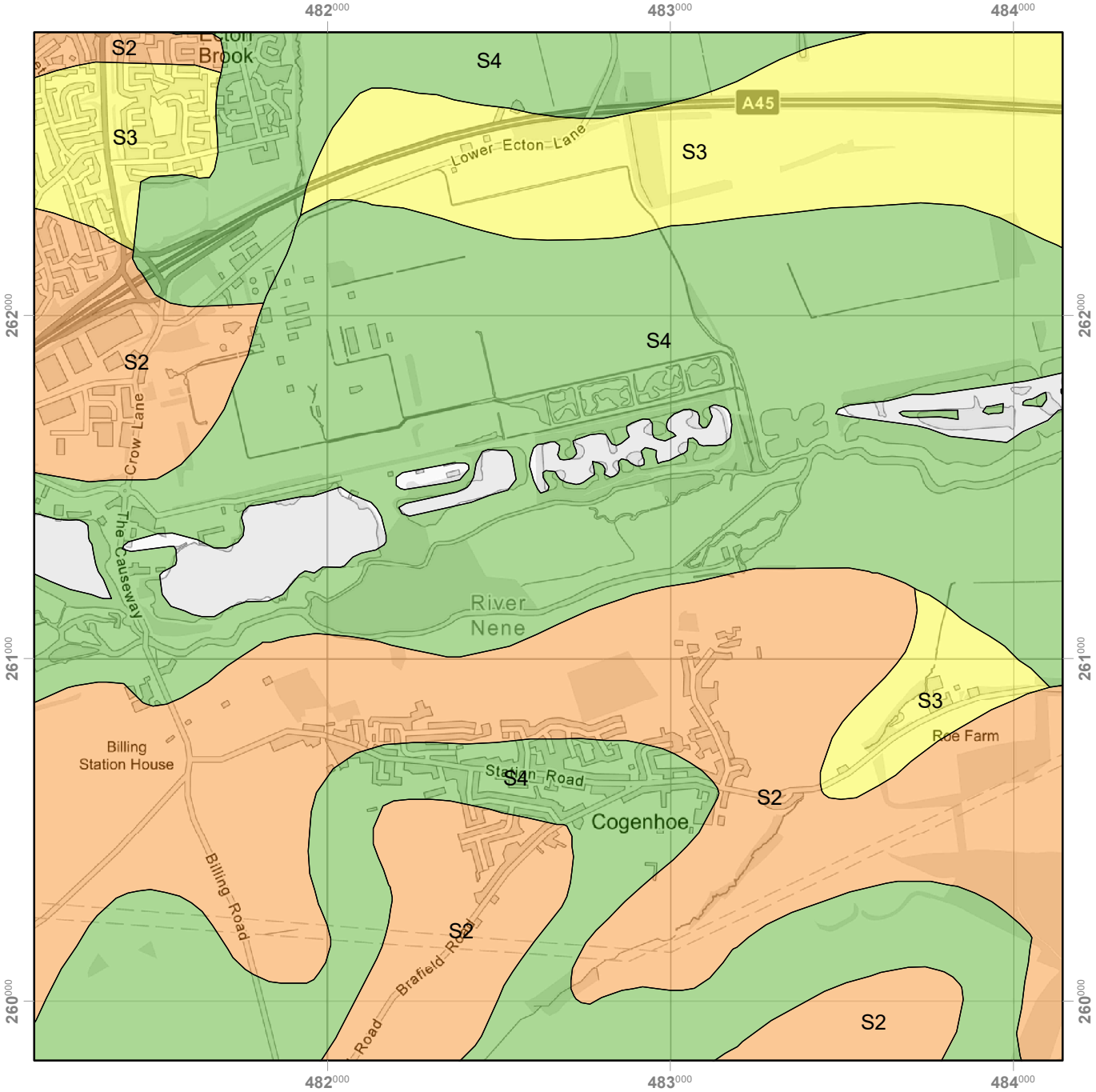
C4 Very Slightly Susceptible

SUSCEPTIBILITY TO COMPACTION

The use of heavy machinery such as tractors, trailers, and harvesters can initiate the production of large clods and compaction in topsoils, particularly when field operations are performed when the soil is too wet. Compaction can have many detrimental effects on crop performance and yield as well as environmental sustainability. The effects of compaction include: poor germination and seedling emergence, impeded drainage, waterlogging, and therefore anaerobic conditions all leading to increases in susceptibility of the crop and root to diseases and pests, and soil erosion (with impacts onsite in terms of soil loss as well as offsite sedimentation problems and transport of soil associated pollutants).

Susceptibility to compaction in the topsoil and layers immediately below it is principally determined by clay content and soil wetness, but modified by the presence of calcium carbonate, high organic matter content (organic-mineral or peaty textures) and slowly permeable subsoil layers. Soils most susceptible to compaction are non-calcareous with moderate to high clay contents, a slowly permeable subsoil and wet conditions within 70 cm of the surface for at least 180 days in most years (wetness class III and IV). (Cranfield University, 2001)

1e Susceptibility to Topsoil Slaking



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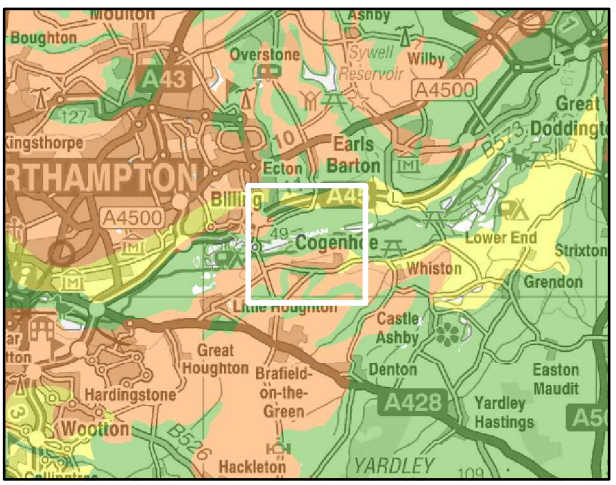


Susceptibility to Topsoil Slaking Key

S2 Unstable

S3 Moderately Stable

S4 Stable

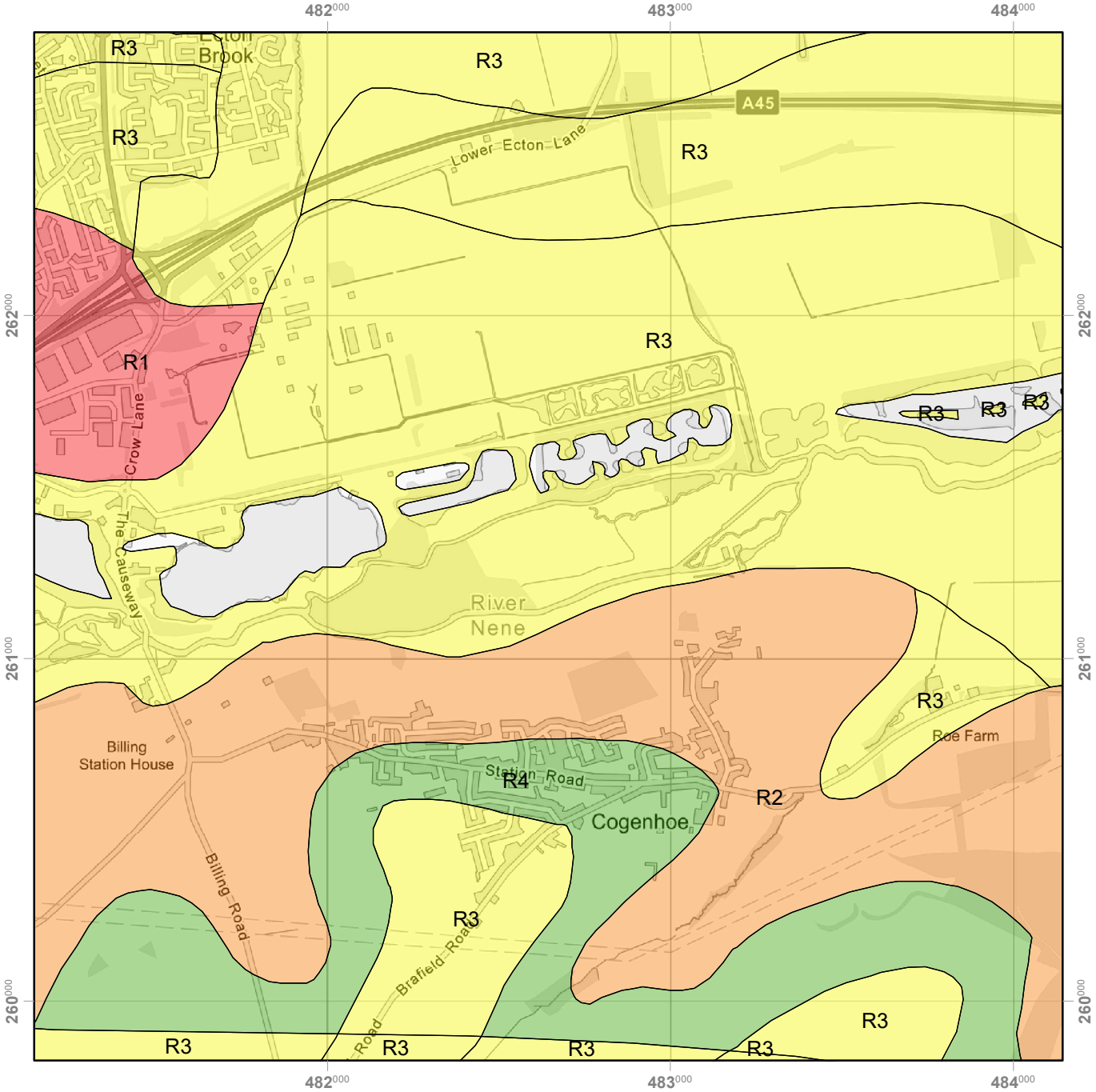
SUSCEPTIBILITY TO TOPSOIL SLAKING

Rain falling on a fine surface layer of an unstable soil can destroy aggregates leading to a dense cap forming on the soil surface. Surface capping can prevent or reduce seedling emergence, reduce infiltration and increase surface runoff.

Cultivation practices can alter the structure of the soil via a number of mechanisms. First, cultivation practices can physically loosen or consolidate both top and sub soils improving or degrading structure. In soils containing low organic matter, calcium carbonate and clay cultivation can lead to surface capping, slaking and panning under machinery.

Second, cultivation practices can determine the structural stability of the soil by changing the relative levels of the key factors associated with formation and stability of aggregates. For example, the cultivation of crops often reduces the plant residues that are returned to the soil, lowering the organic matter content and therefore aggregate formation and stability. In addition, the physical effects of cultivation in breaking apart aggregates can serve to expose temporary and transient organic matter to microbial attack, reducing aggregate stability and the likelihood of aggregate formation. (Cranfield University, 2001)

1f Natural recovery of structure after compaction



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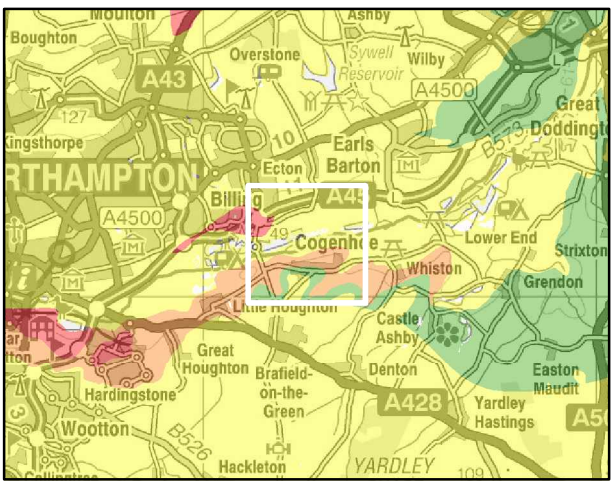


Natural recovery of structure after compaction Key


R1 Little Potential


R2 Slight Potential

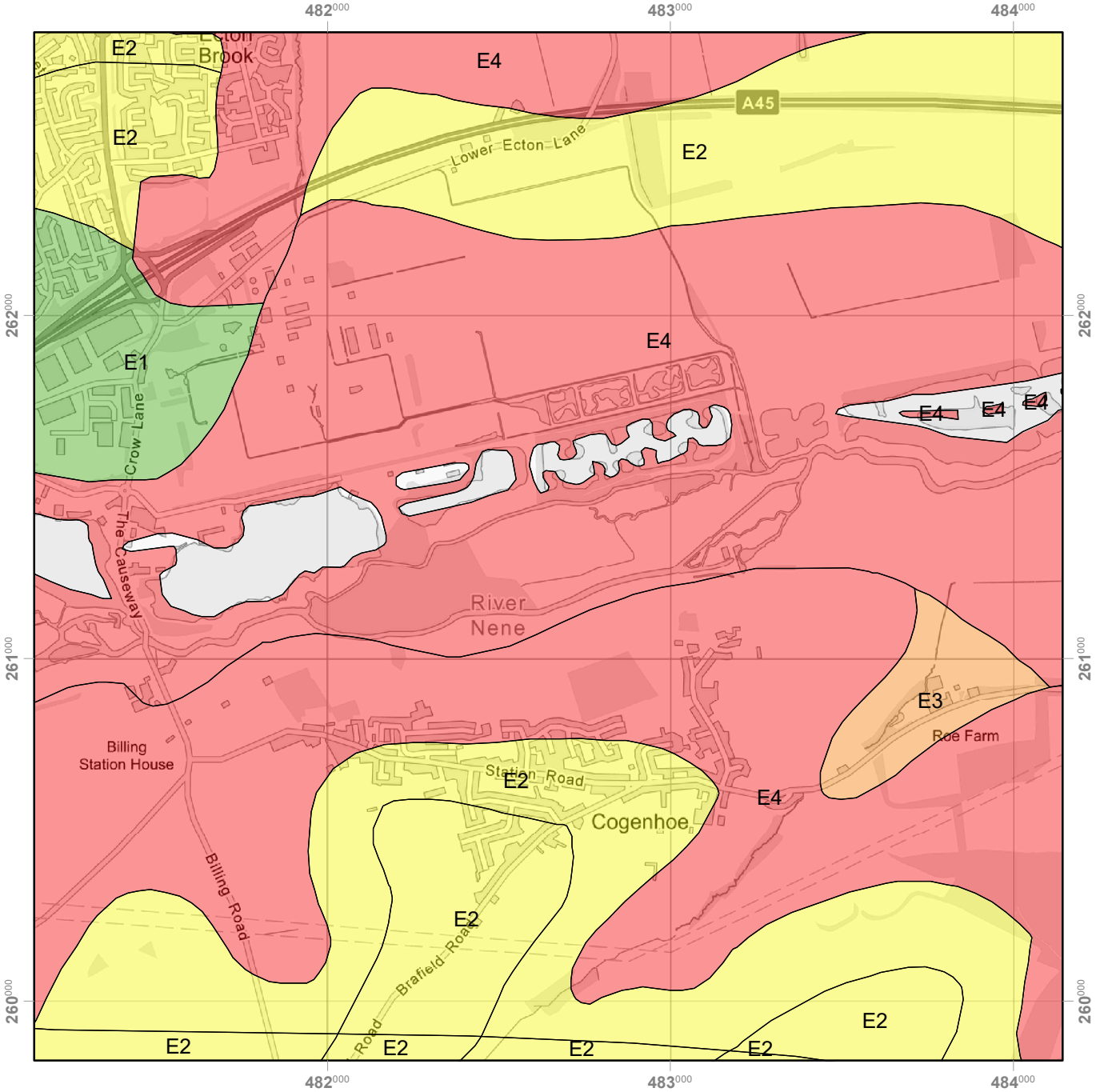

R3 Potential


R4 Large Potential

STRUCTURE: POTENTIAL FOR NATURAL RECOVERY FOLLOWING COMPACTION

Soil structure damage can slowly improve through the natural restructuring of soils. This natural recovery and regeneration of soil structure is governed by the same set of factors responsible for formation and stability (that is, organic matter, calcium carbonate, clay content and soil wetness) as well as the processes that drive aggregate formation and structural development (such as freezing and thawing, and biological activities). (Cranfield University, 2001)

1g Mechanical rectification of compaction



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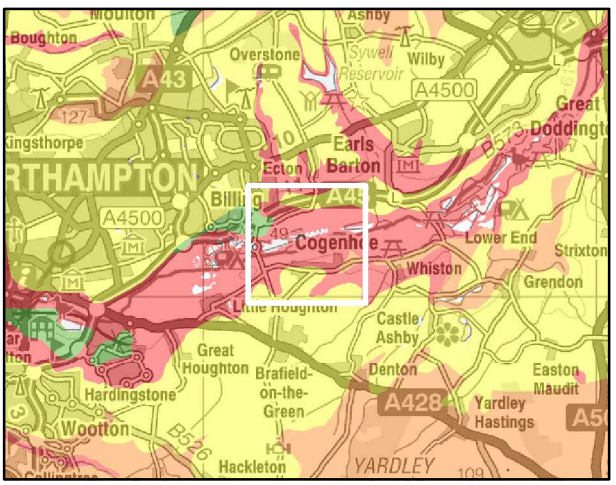


Mechanical rectification of compaction Key

E1 Easy

E2 Moderately Easy

E3 Moderately Difficult

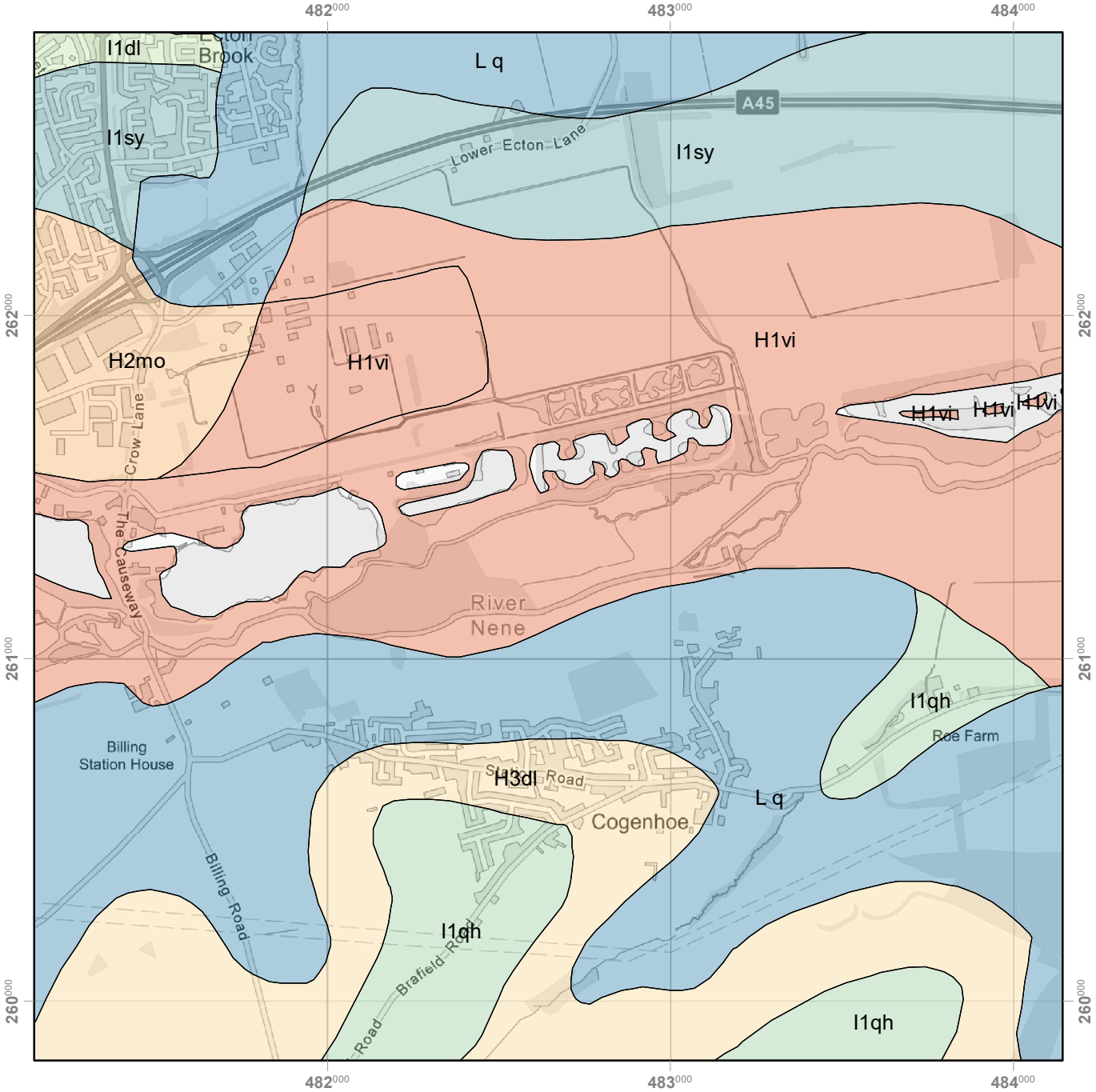
E4 Difficult

STRUCTURE: SUCCESS OF MECHANICAL RECTIFICATION OF COMPACTION

Soil structure can be improved through timely cultivations that loosen or consolidate the soil, and sort or reduce clods within the topsoil and/or subsoil levels.

Good soil management and best cultivation practices are paramount at preventing or limiting structural degradation and damage. Initially this would include understanding land capability and selecting the appropriate crops for the land and environmental conditions. A second requirement for good soil structure is to maintain adequate drainage, either natural or artificial. Thirdly, reduced and timely cultivations are of great importance in maintaining good soil structure and preventing damage. Where possible, operations should be limited when the soil is too wet and when most damage is likely to be caused. The considered choice of machinery and equipment such as the use of low ground pressure tyres, tracks or controlled traffic farming can also aid in protecting structure. (Cranfield University, 2001)

1h Pesticide Leaching Risk



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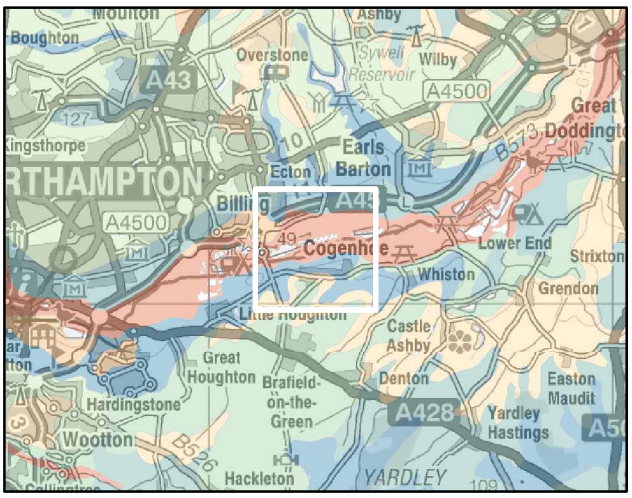


Pesticide Leaching Risk Key

H1vi Slowly permeable soil; groundwater at very shallow depth (60cm)

H2mo Sandy soil with low organic matter; groundwater at moderate depth

H3dl Moderately shallow soil over soft limestone with deep groundwater

I1dl Deep loamy soil over soft limestone with deep groundwater

I1qh Slowly permeable soils with relatively high storage capacity over soft substrates of low or negligible storage capacity that sometimes conceal groundwater bearing rocks at depth

I1sy Deep loamy soil; groundwater at shallow depth

L q Impermeable soils over soft substrates of low or negligible storage capacity that sometimes conceal groundwater bearing rocks at depth

PESTICIDE LEACHING CLASS DESCRIPTION

The natural permeability and water regime of soils are influential in determining the fate and behaviour of pesticides applied to the crop and soil surface (Hollis et al, 1995). A system of vulnerability assessment was devised as part of the national system for Policy and Practice for the Protection of Groundwater. This divided soils into three primary vulnerability classes.

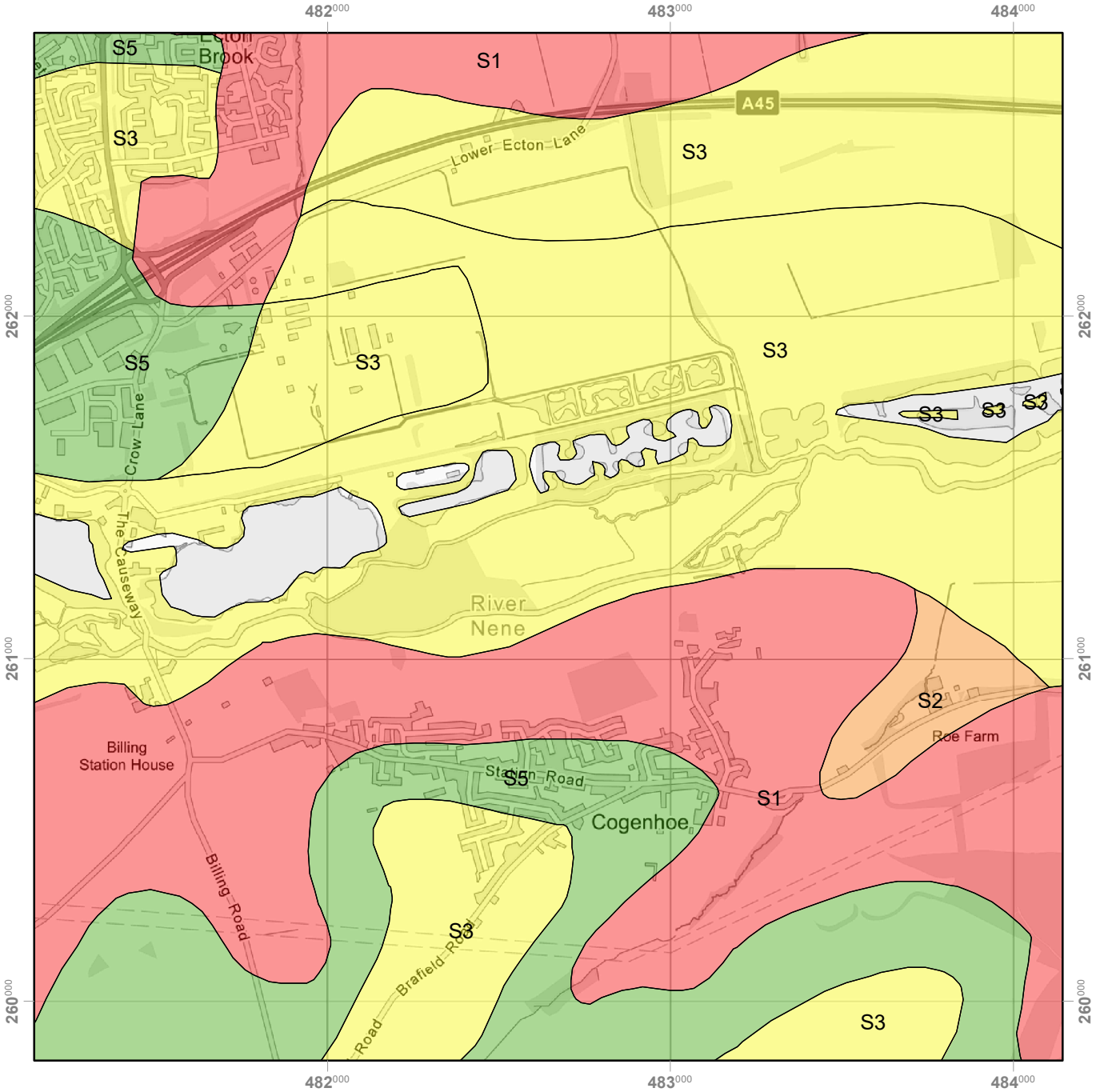
H - Soils of high leaching capacity with little ability to attenuate non-adsorbed pesticide leaching which leave underlying groundwater vulnerable to pesticide contamination.

I - Soils of intermediate leaching capacity with a moderate ability to attenuate pesticide leaching.

L - Soils of low leaching capacity through which pesticides are unlikely to leach.

The primary classes have been further subdivided into nearly forty subclasses. These subclasses, with their descriptions, are mapped above. These classes do not account for differences in land cultivation, which can also have a significant impact on pesticide behaviour.

1i Pesticide Runoff Risk



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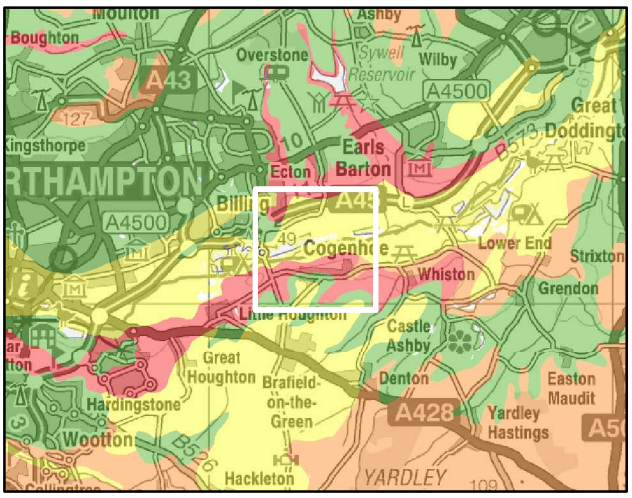


Pesticide Runoff Risk Key

S1 Very high run-off potential.

S2 High run-off potential.

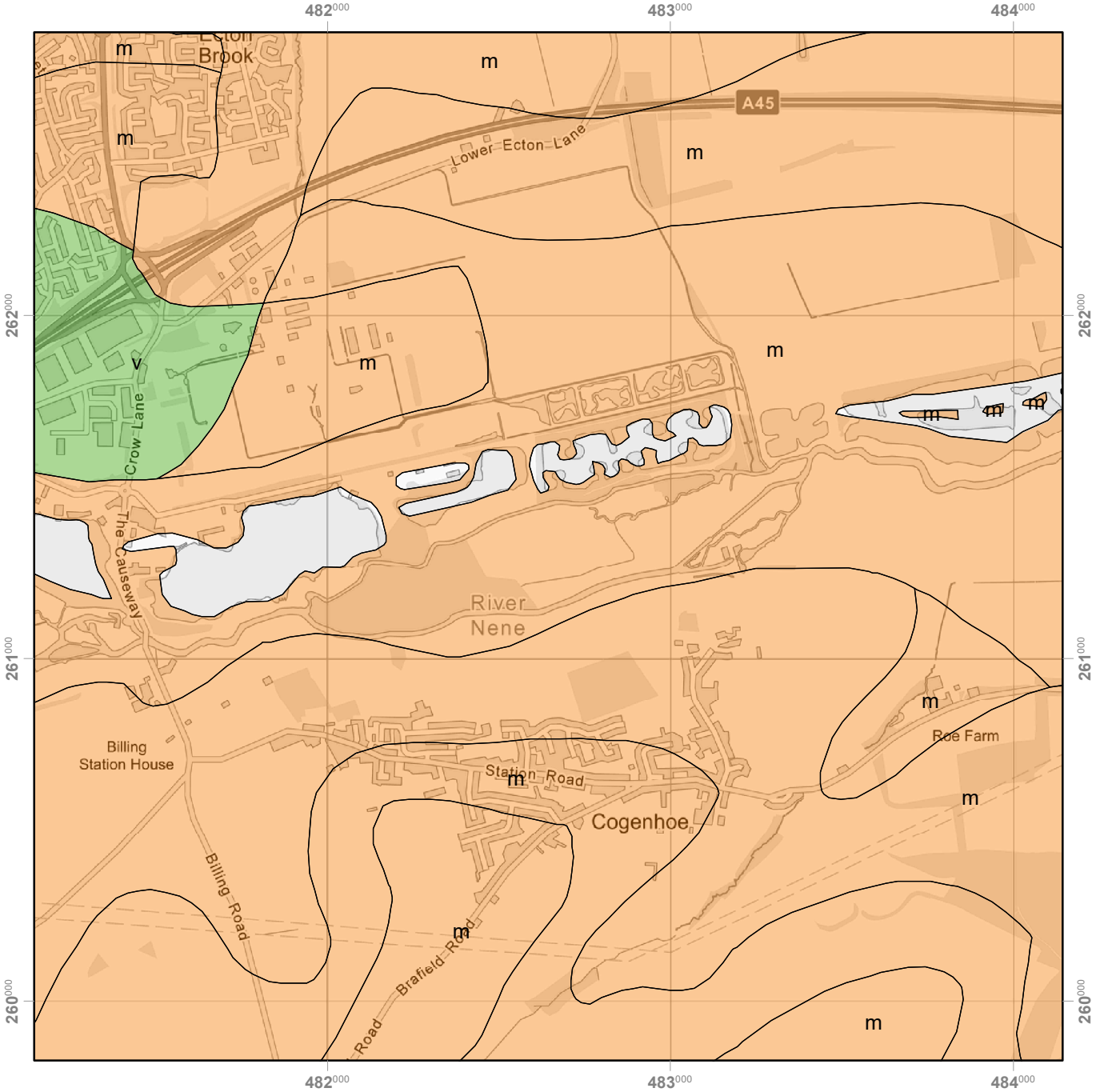
S3 Moderate run-off potential.

S5 Very low run-off potential.

PESTICIDE RUNOFF RISK DESCRIPTION

The physical properties and natural water regime of soils influence the speed and extent of lateral water movement over and through the soil at different depths (Hollis et al, 1995). At as result, soils can be classed according to the potential for pesticide run-off. Five runoff potential classes are identified for mineral soils and a further two for peat soils.

1j Potential for Pesticide Adsorption



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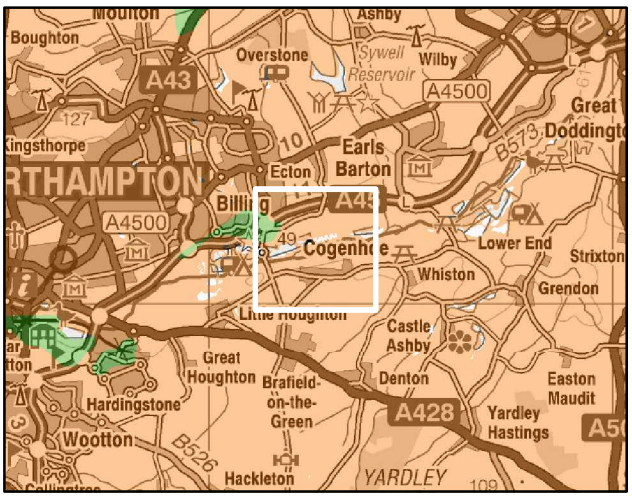


Potential for Pesticide Adsorption Key

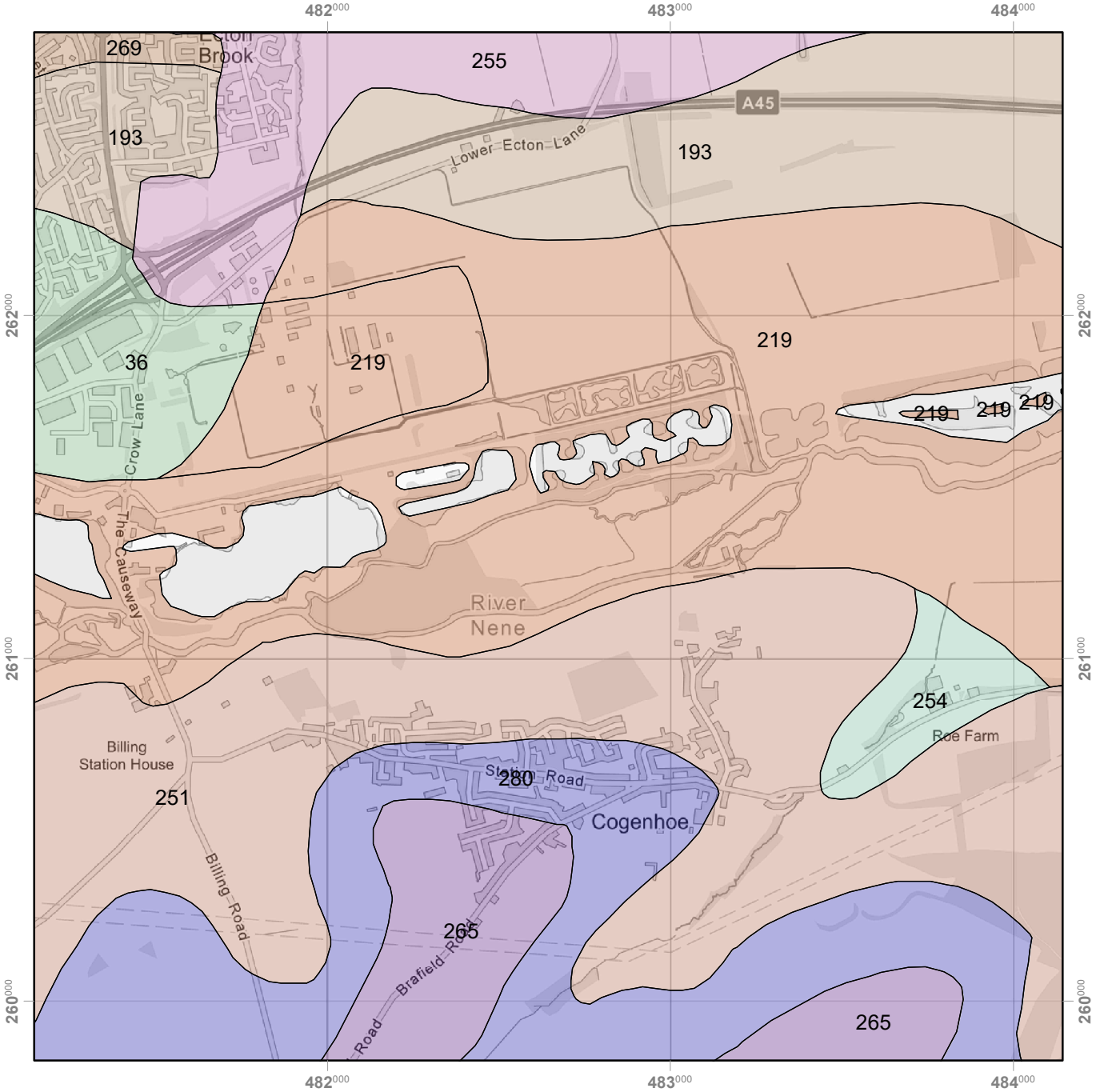
m Moderate adsorption potential.

v Very low adsorption potential.

POTENTIAL FOR PESTICIDE ADSORPTION DESCRIPTION

The physical properties and natural water regime of soils influence the speed and extent of lateral water movement over and through the soil at different depths (Hollis et al, 1995). The mineral soil classes are further subdivided according to their potential for pesticide adsorption.

1k Expected Crops and Land Use



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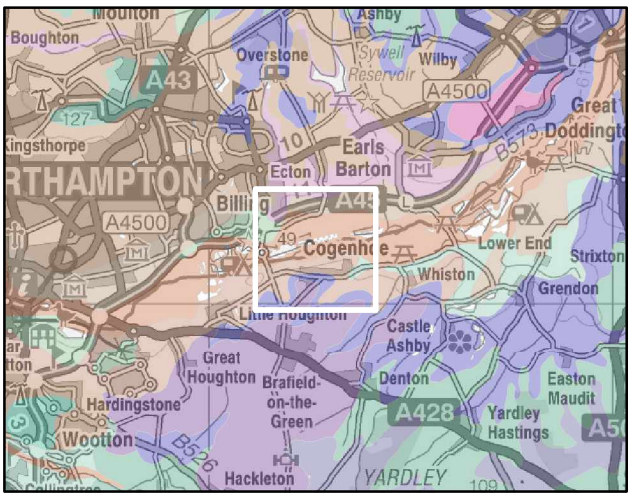


Expected Crops and Land Use Key

36 Cereals and some horticultural crops in drier lowlands; stock rearing and dairying in Cumbria.

193 Short term grassland and cereals; some field vegetables and fruit in drier districts; dairying in Dorset and Somerset.

219 Stock rearing on permanent grassland; cereals where flood risk low.

251 Winter cereals and grassland in the Midlands; cereals in the Eastern Region dairying in the South West.

254 Winter cereals and short term grassland dairying in moist lowlands of the South West.

255 Winter cereals and short term grassland in drier lowlands; dairying on permanent grassland in moist districts.

265 Winter cereals and some short term grassland; some sugar beet in the Eastern Region.

269 Winter cereals with short term grassland, some potatoes; permanent grassland on valley slopes; some sugar beet In Eastern Region.

280 Winter cereals; some short term grassland and potatoes.

EXPECTED CROPS AND LAND USE DESCRIPTION

Individual soils are commonly associated with particular forms of land cover and land use. Whilst the soil surveyors were mapping the whole of England and Wales, they took careful note of the range of use to which the land was being put. This map shows the most common forms of land use found on each soil unit.

2. Soil Association Descriptions

The following pages describe the following soil map units, (soil associations), in more detail.

Moreton 511b
Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.

WICK 1 541r
Deep well drained coarse loamy and sandy soils locally over gravel.

BANBURY 544
Well drained brashy fine and coarse loamy ferruginous soils over ironstone.

OXPASTURE 572h
Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

ASHLEY 572q
Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.

WATERSTOCK 573a
Deep permeable mainly fine loamy soils variably affected by groundwater.

WICKHAM 2 711f
Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.

DENCHWORTH 712b
Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.

FLADBURY 1 813b
Stoneless clayey soils, in places calcareous variably affected by groundwater.

The soil associations are described in terms of their texture and drainage properties and potential risks may be identified. The distribution of the soils across England and Wales are provided. Further to this, properties of each association's component soil series are described in relation to each other. Lastly, schematic diagrams of each component series are provided for greater understanding and in-field verification purposes. Further information on the soil associations and soil series can be found at the LandIS Soils Guide

Moreton (511b)

Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.

a. General Description

Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.Some deeper slowly permeable calcareous clayey soils. The major landuse on this association is defined as Winter cereals; some short term grassland and potatoes.

b. Distribution (England and Wales)

The Moreton association covers 276 km² of England and Wales which accounts for 0.18% of the landmass. The distribution of this association is shown in figure 2. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

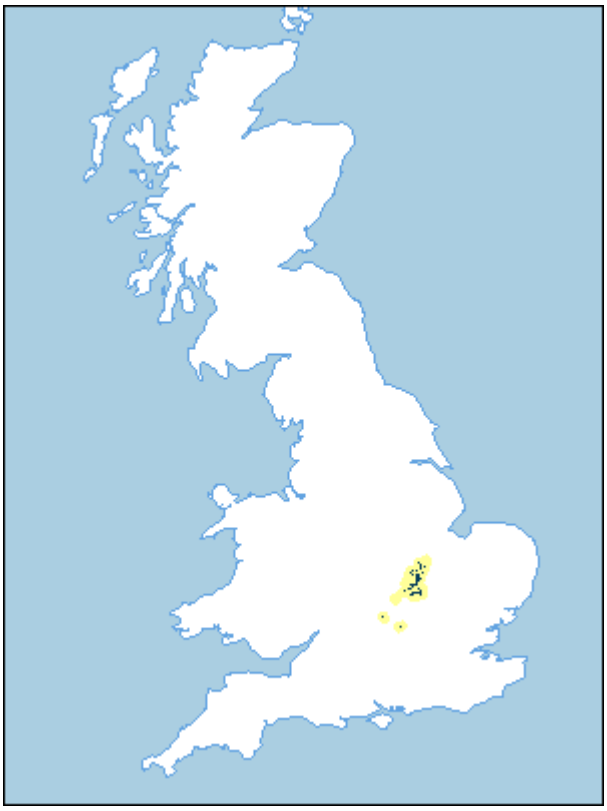


Figure 2: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the Moreton association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 1.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

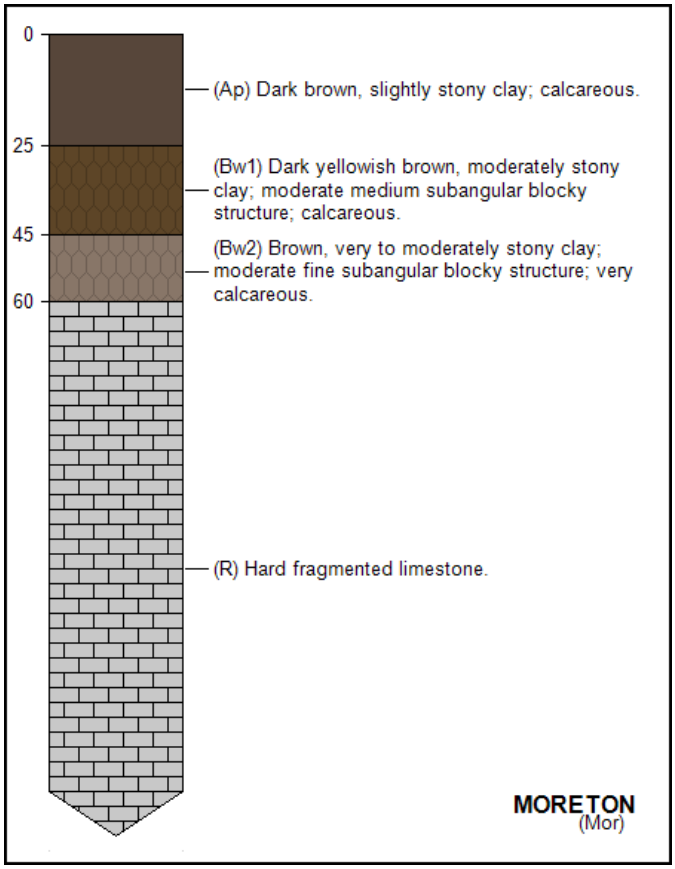
Table 1: The component soil series of the Moreton soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

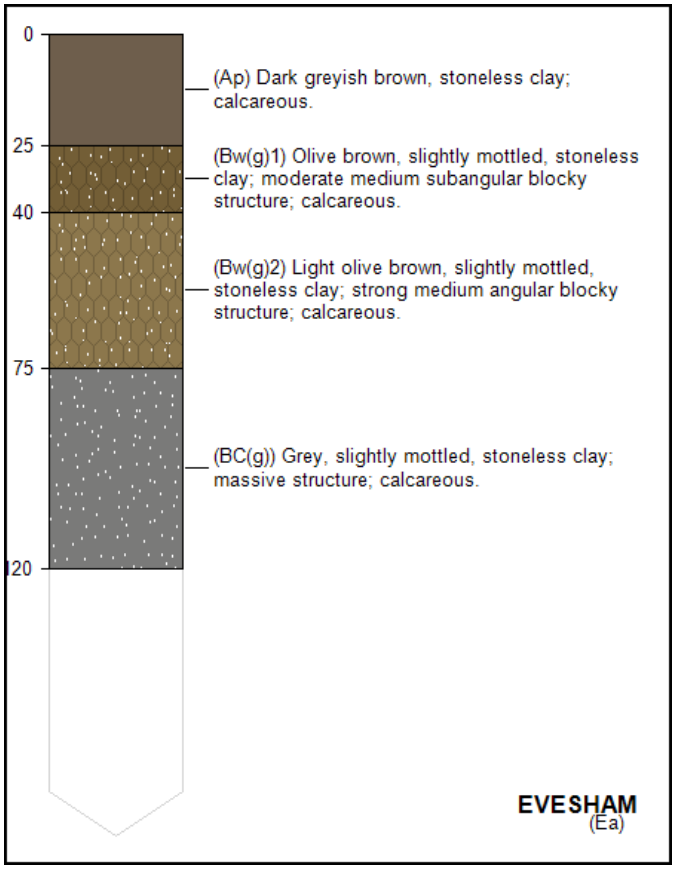
Soil Series	Description	Area %
MORETON (Mor)	clayey material over lithoskeletal limestone	32%
EVESHAM (Ea)	swelling clayey material passing to clay or soft mudstone	22%
ABERFORD (aF)	medium loamy material over lithoskeletal limestone	10%
ELMTON (eT)	medium loamy lithoskeletal limestone	10%
HASELOR (Hb)	swelling clayey material passing to clay with interbedded limestone	10%
SHERBORNE (Si)	clayey lithoskeletal limestone	10%
OTHER	other minor soils	6%

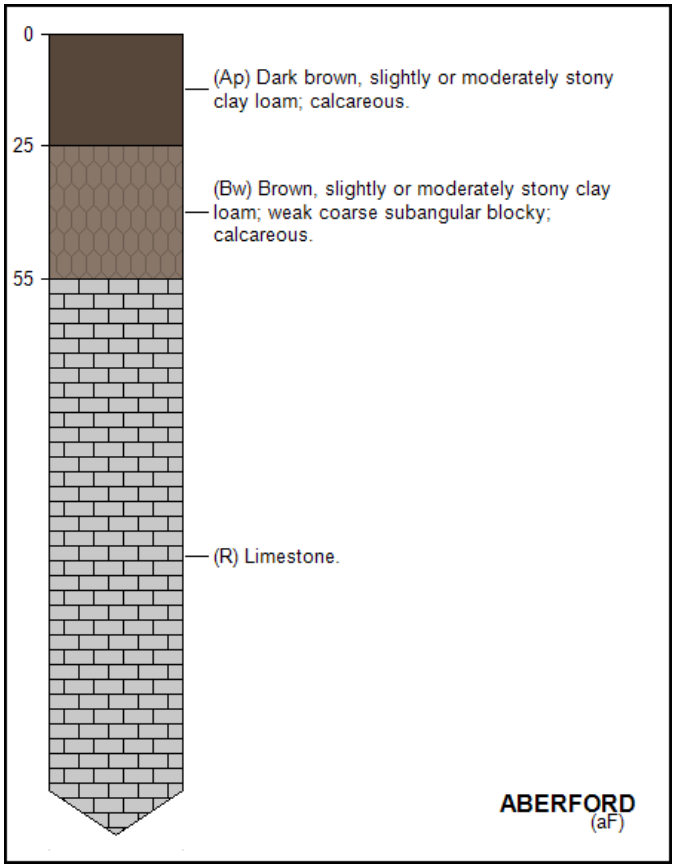
Moreton (511b)

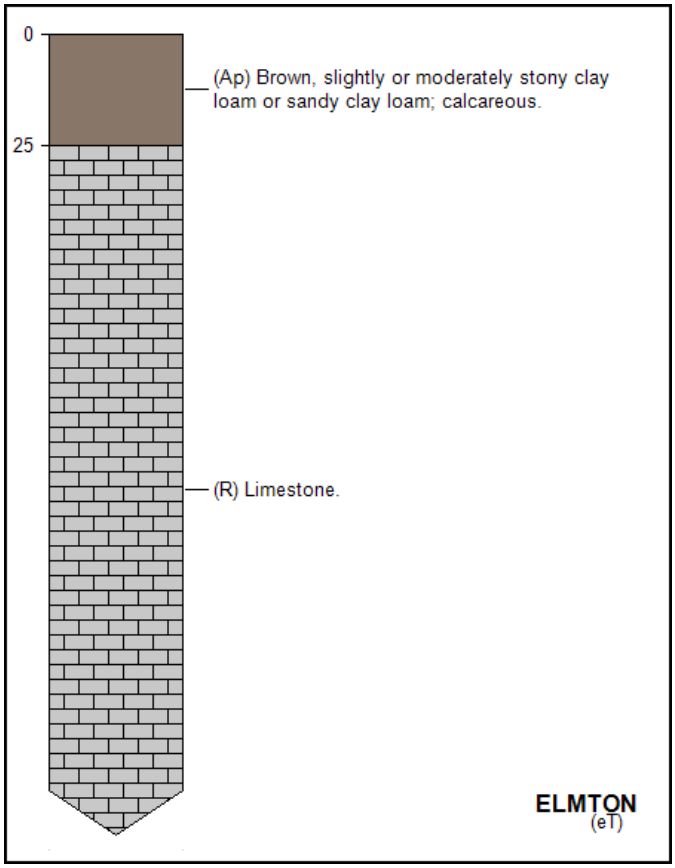
Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.

d. Moreton Component Series Profiles





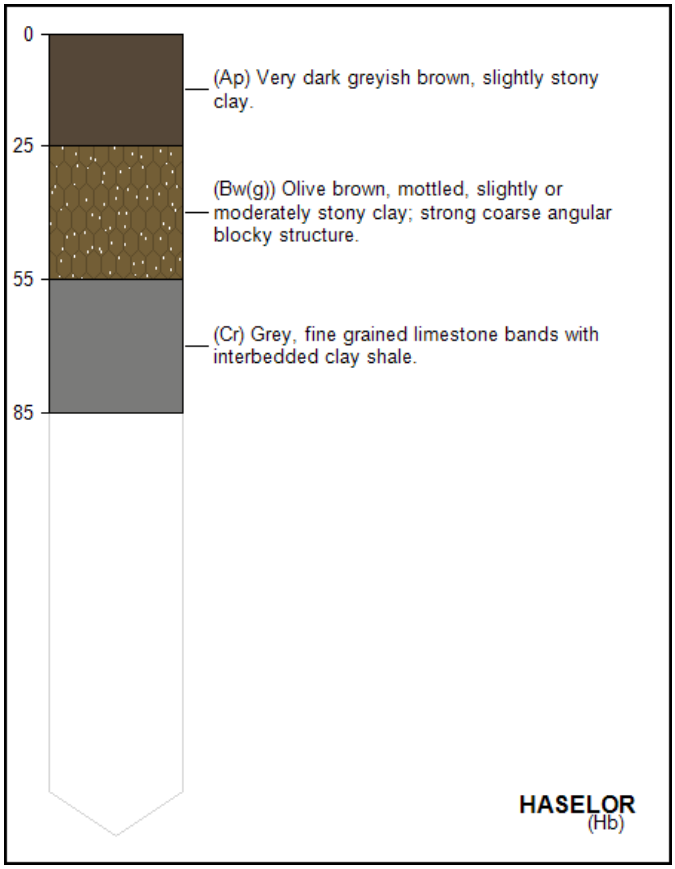


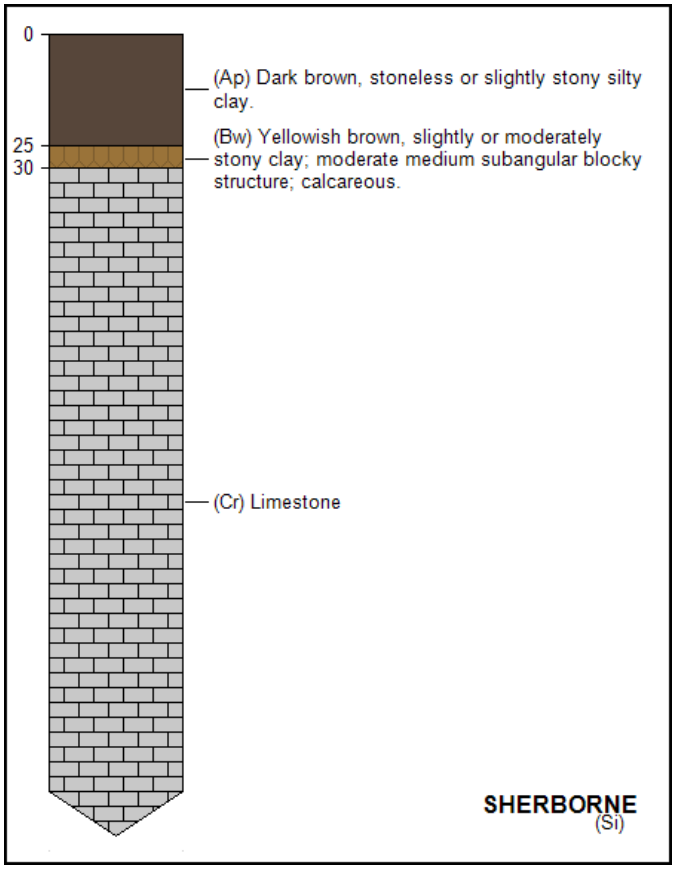


Moreton (511b)

Well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy.

d. Moreton Component Series Profiles continued





WICK 1 (541r)

Deep well drained coarse loamy and sandy soils locally over gravel.

a. General Description

Deep well drained coarse loamy and sandy soils locally over gravel.Some similar soils affected by groundwater.
The major landuse on this association is defined as Cereals and some horticultural crops in drier lowlands; stock rearing and dairying in Cumbria.

b. Distribution (England and Wales)

The WICK 1 association covers 2531 km² of England and Wales which accounts for 1.67% of the landmass. The distribution of this association is shown in figure 3. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

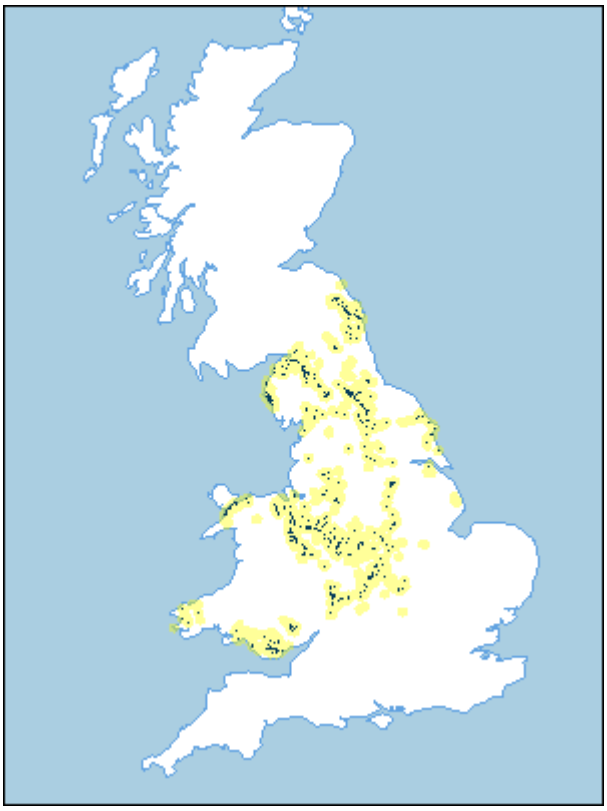


Figure 3: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the WICK 1 association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 2.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

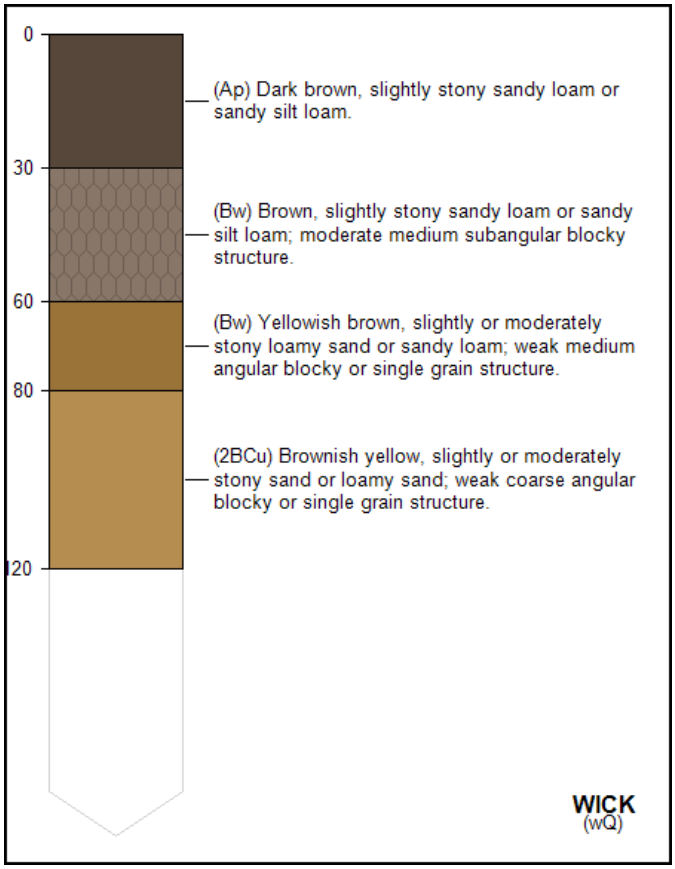
Table 2: The component soil series of the WICK 1 soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

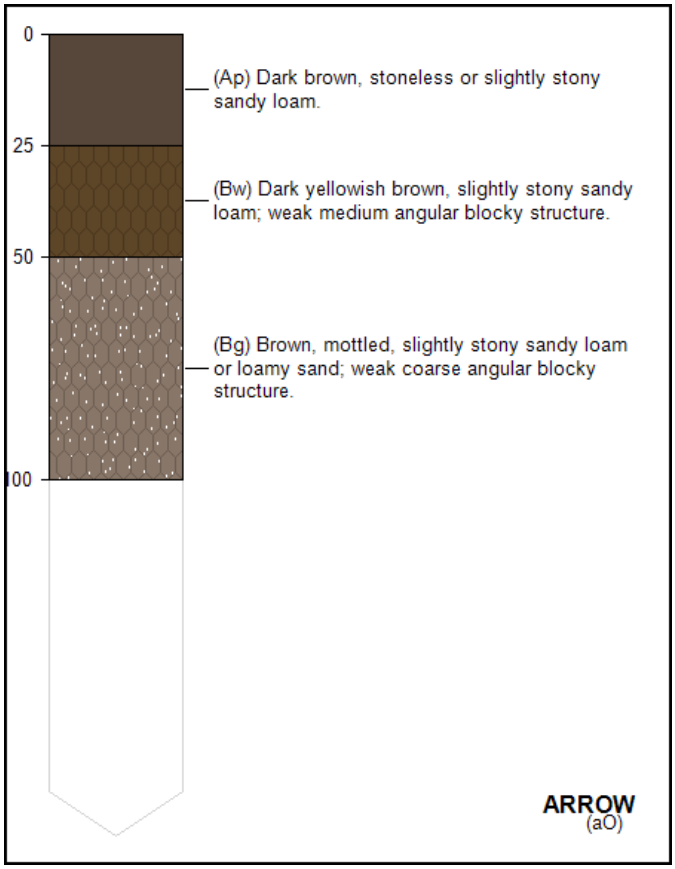
Soil Series	Description	Area %
WICK (wQ)	light loamy drift with siliceous stones	45%
ARROW (aO)	light loamy drift with siliceous stones	20%
NEWPORT (Na)	sandy drift with siliceous stones	15%
OTHER	other minor soils	20%

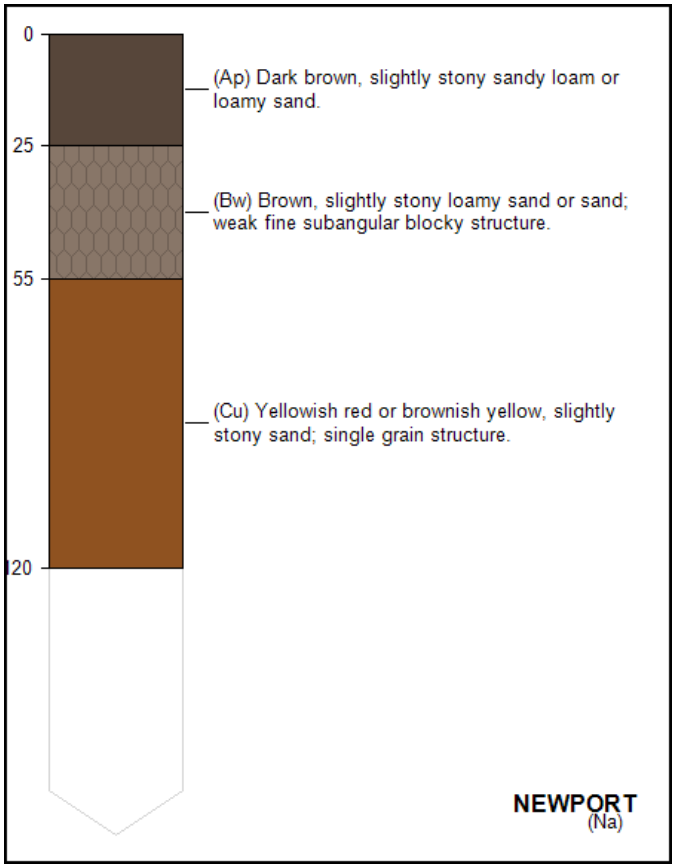
WICK 1 (541r)

Deep well drained coarse loamy and sandy soils locally over gravel.

d. WICK 1 Component Series Profiles







BANBURY (544)

Well drained brashy fine and coarse loamy ferruginous soils over ironstone.

a. General Description

Well drained brashy fine and coarse loamy ferruginous soils over ironstone.Some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.
The major landuse on this association is defined as Winter cereals with short term grassland, some potatoes; permanent grassland on valley slopes; some sugar beet In Eastern Region.

b. Distribution (England and Wales)

The BANBURY association covers 712 km² of England and Wales which accounts for 0.47% of the landmass. The distribution of this association is shown in figure 4. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

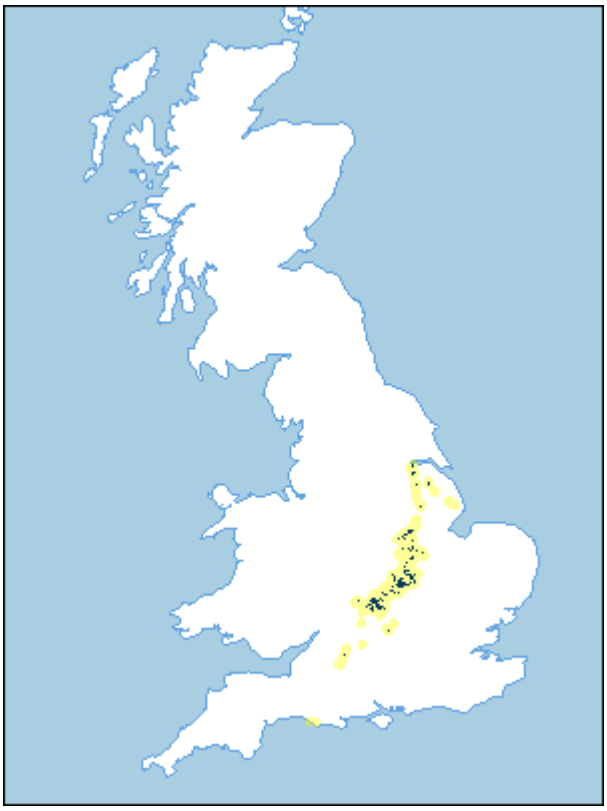


Figure 4: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the BANBURY association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 3.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

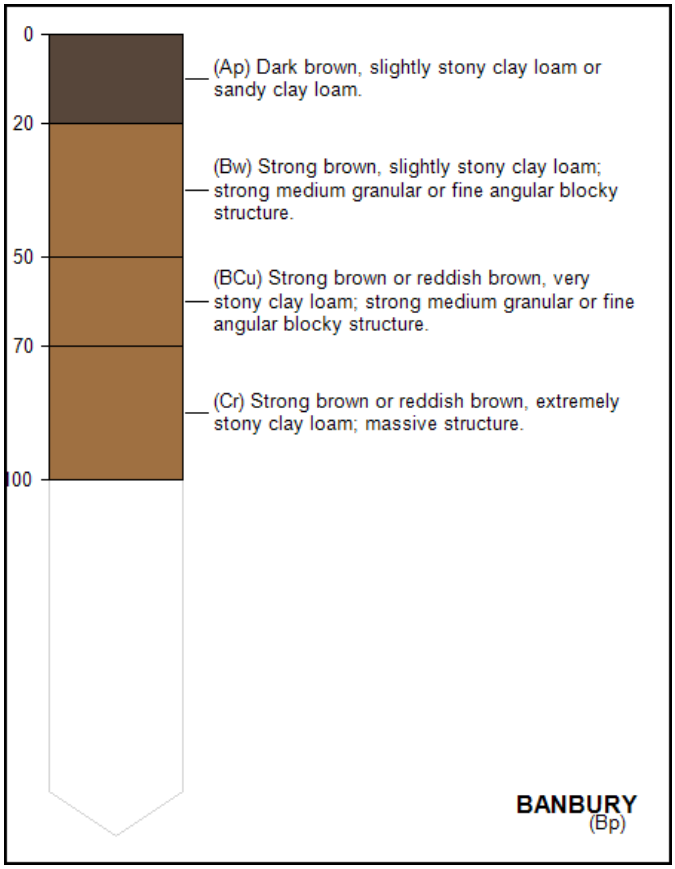
Table 3: The component soil series of the BANBURY soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

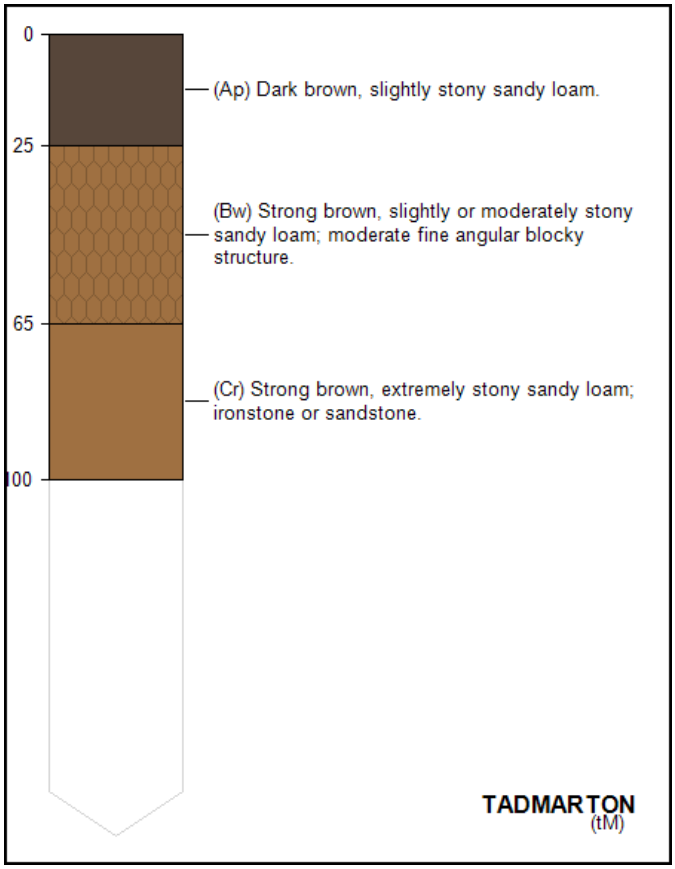
Soil Series	Description	Area %
BANBURY (Bp)	ferruginous medium loamy material over lithoskeletal ironstone	50%
TADMARTON (tM)	ferruginous light loamy material over lithoskeletal ironstone	25%
IRONDOWN (Ir)	ferruginous medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	15%
OTHER	other minor soils	10%

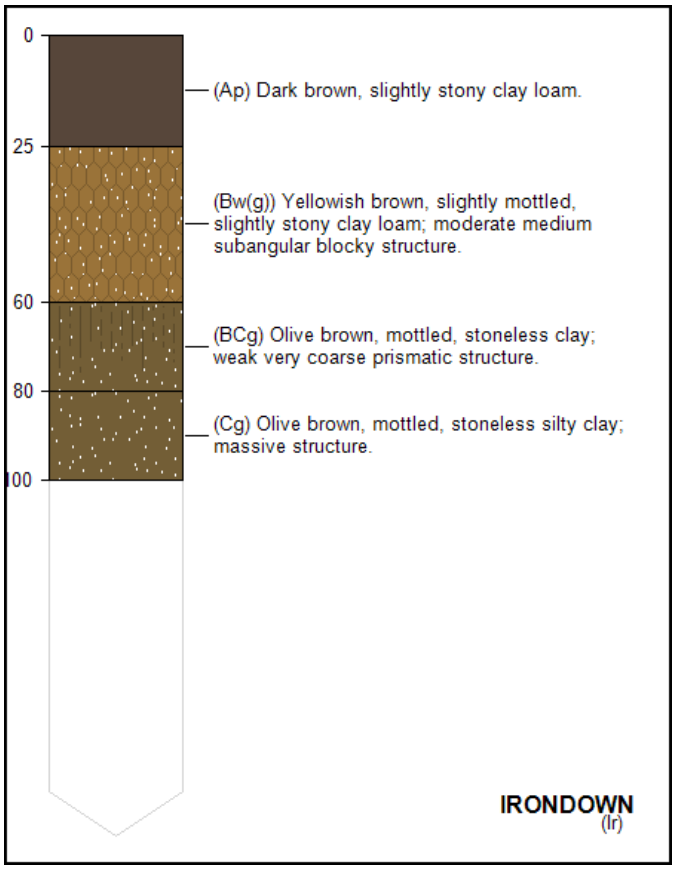
BANBURY (544)

Well drained brashy fine and coarse loamy ferruginous soils over ironstone.

d. BANBURY Component Series Profiles







OXPASTURE (572h)

Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

a. General Description

Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.Some slowly permeable seasonally waterlogged clayey soils.
The major landuse on this association is defined as Winter cereals and short term grassland dairying in moist lowlands of the South West.

b. Distribution (England and Wales)

The OXPASTURE association covers 491 km² of England and Wales which accounts for 0.32% of the landmass. The distribution of this association is shown in figure 5. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

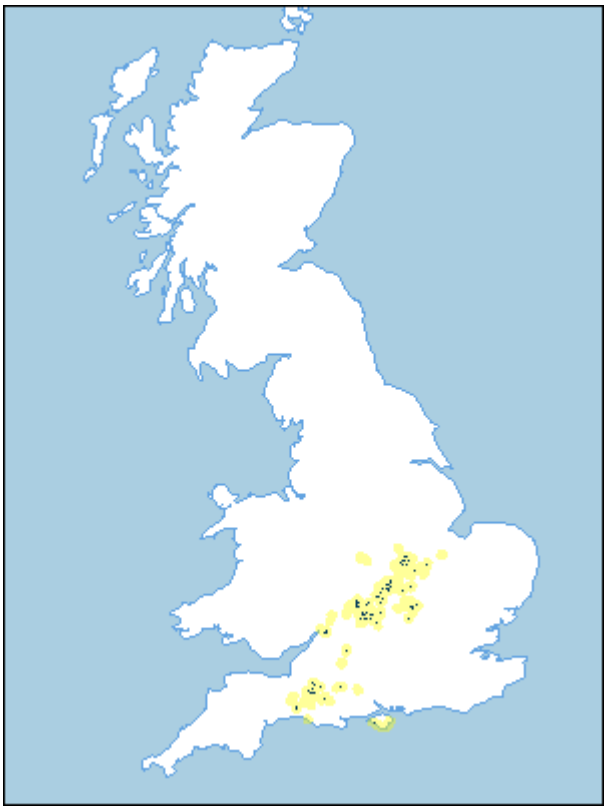


Figure 5: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the OXPASTURE association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 4.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

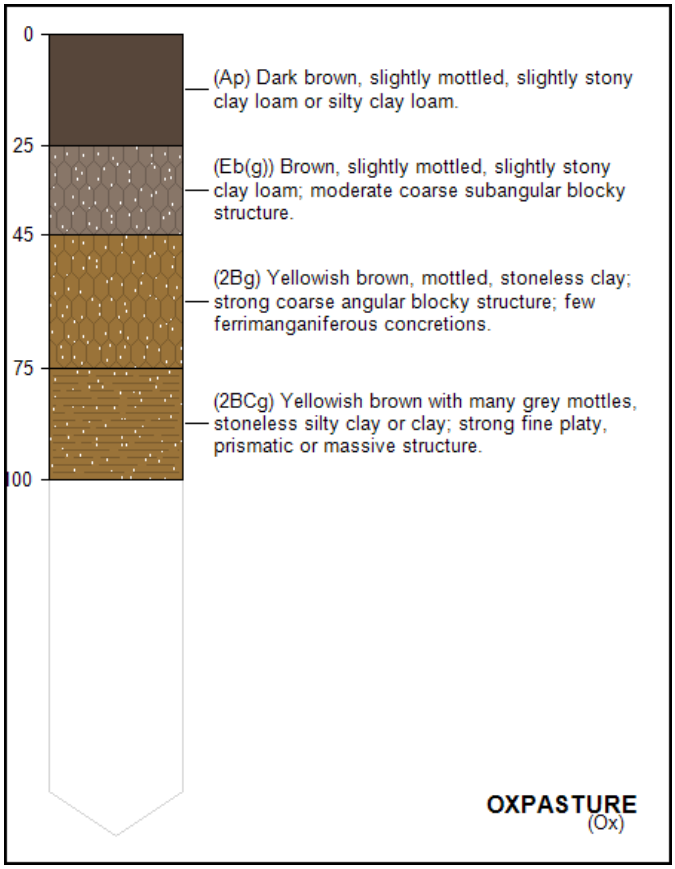
Table 4: The component soil series of the OXPASTURE soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

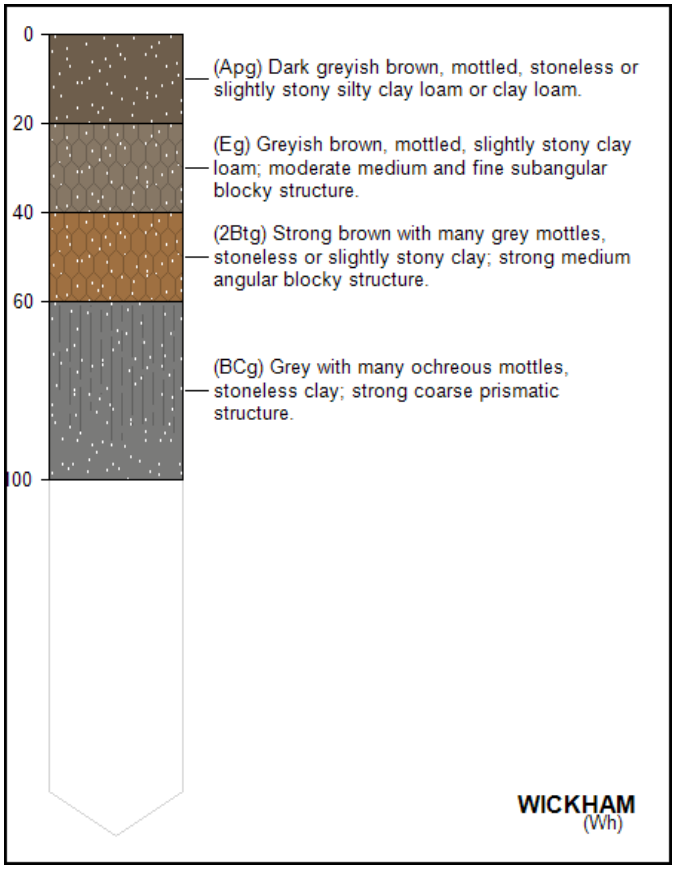
Soil Series	Description	Area %
OXPASTURE (Ox)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	42%
WICKHAM (Wh)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	18%
DENCHWORTH (Da)	swelling clayey material passing to clay or soft mudstone	10%
HOLDENBY (HM)	clayey drift material passing to clay or soft mudstone	10%
OTHER	other minor soils	20%

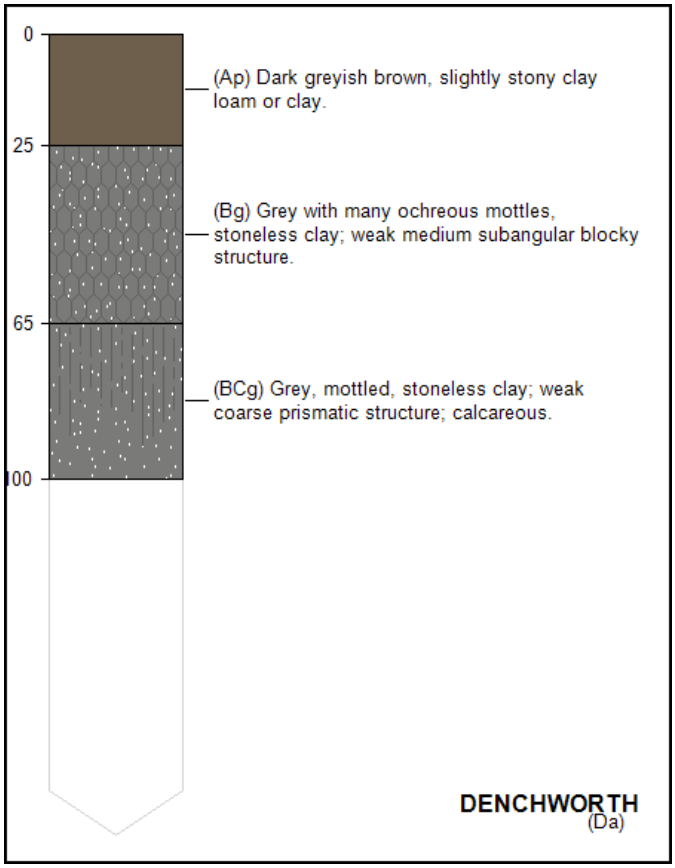
OXPASTURE (572h)

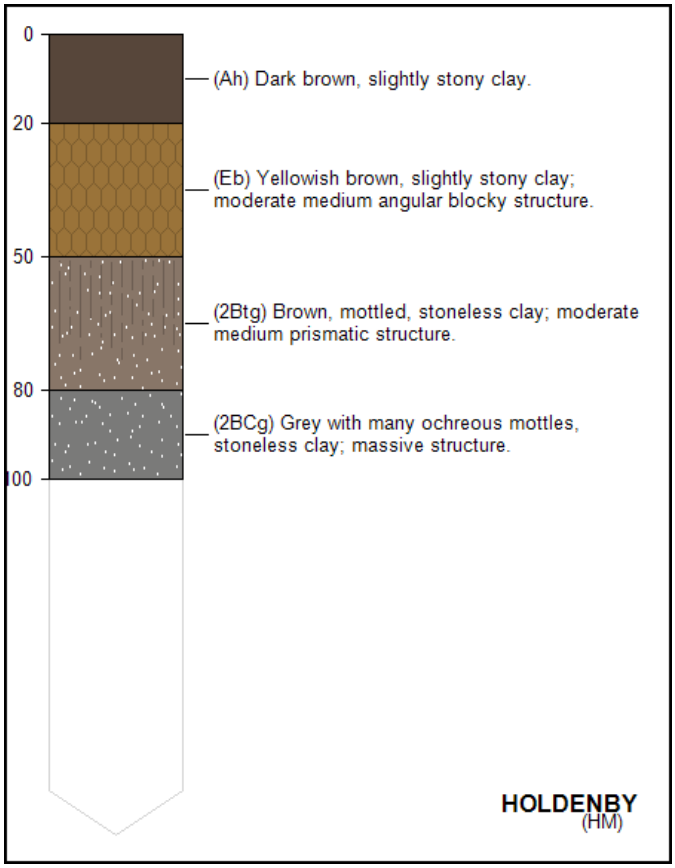
Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

d. OXPASTURE Component Series Profiles









ASHLEY (572q)

Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.

a. General Description

Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.Some calcareous and non-calcareous slowly permeable clayey soils.
The major landuse on this association is defined as Winter cereals and some short term grassland; some sugar beet in the Eastern Region.

b. Distribution (England and Wales)

The ASHLEY association covers 471 km² of England and Wales which accounts for 0.31% of the landmass. The distribution of this association is shown in figure 6. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

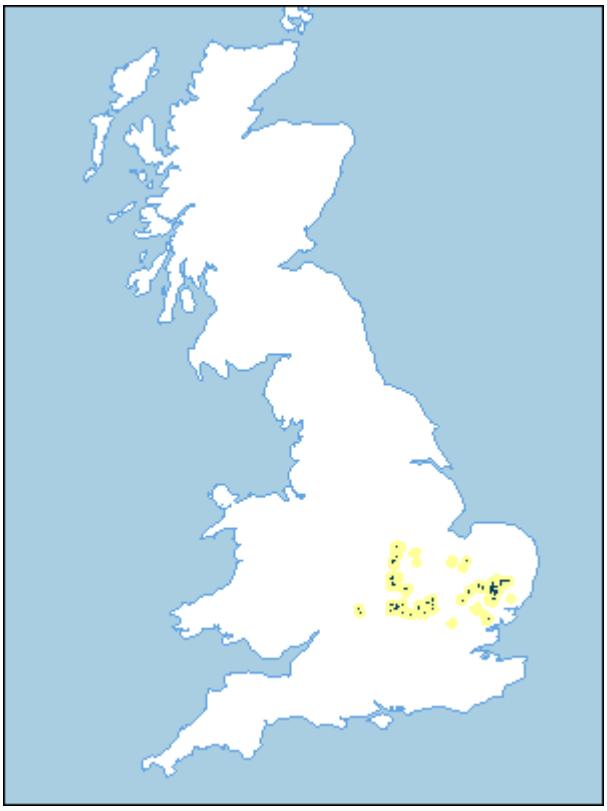


Figure 6: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the ASHLEY association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 5.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

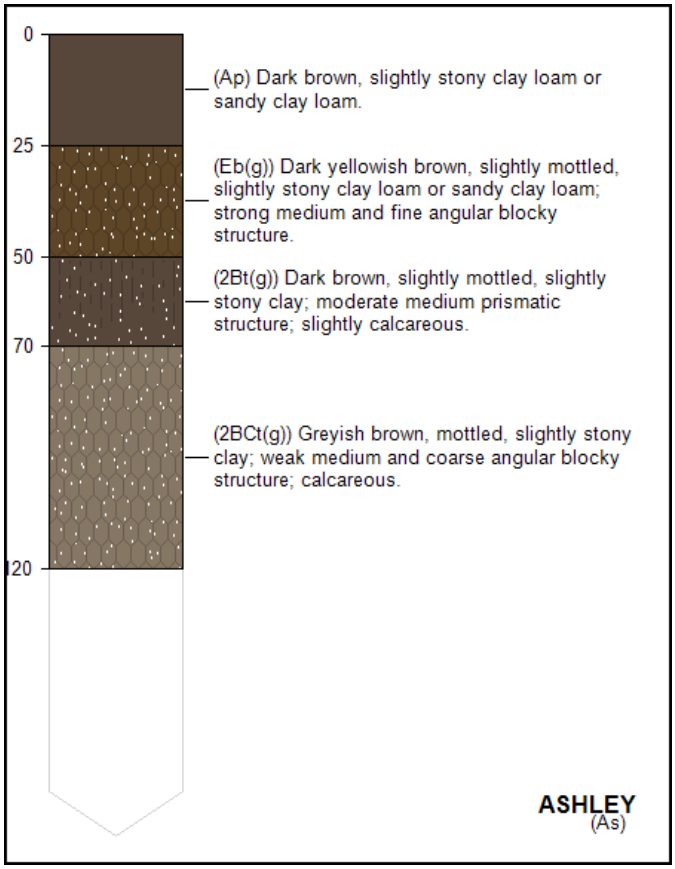
Table 5: The component soil series of the ASHLEY soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

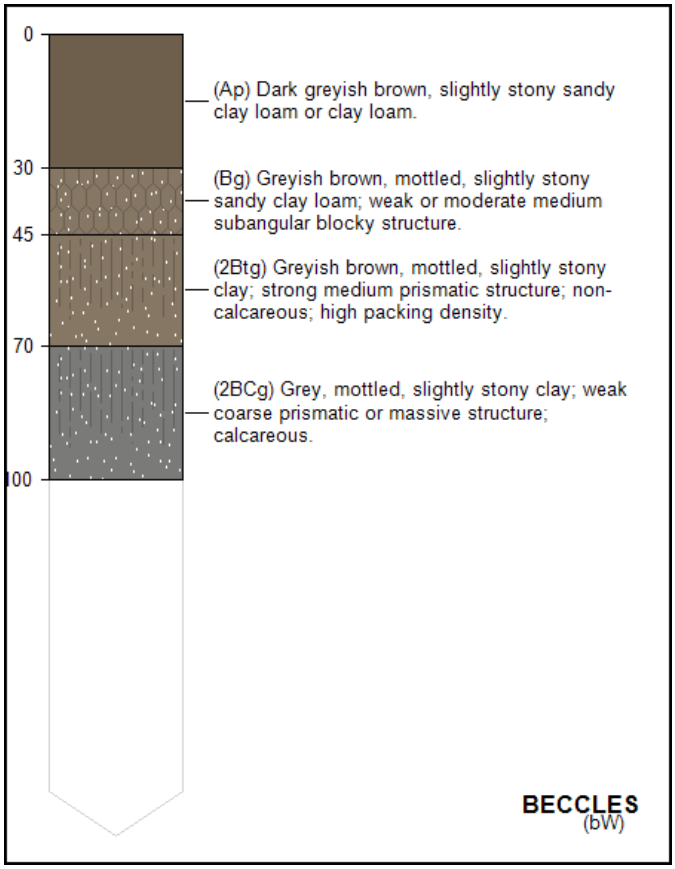
Soil Series	Description	Area %
ASHLEY (As)	medium loamy over clayey chalky drift	55%
BECCLES (bW)	medium loamy over clayey chalky drift	10%
FAULKBOURNE (fK)	clayey chalky drift	10%
HANSLOPE (Hn)	clayey chalky drift	10%
OTHER	other minor soils	15%

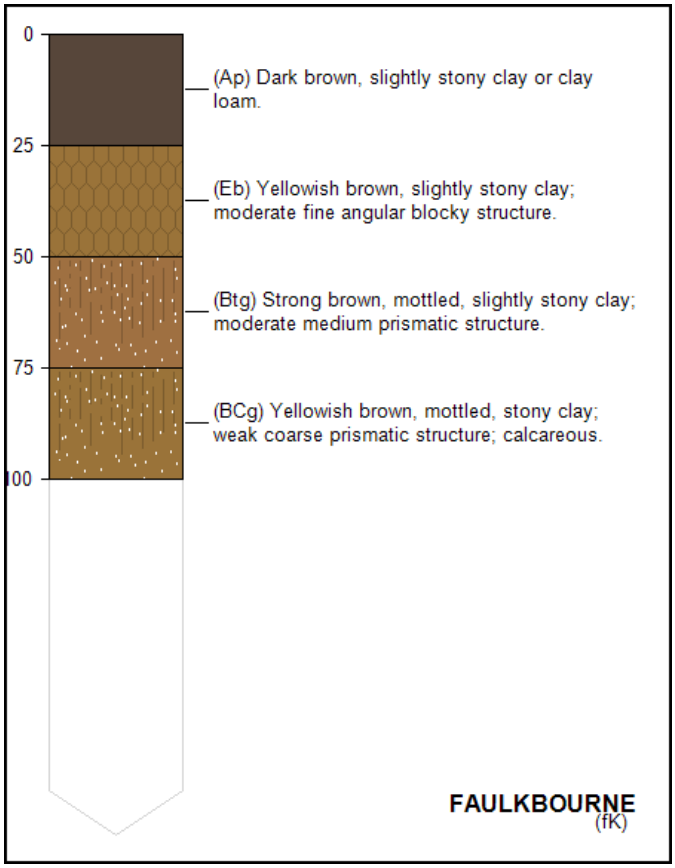
ASHLEY (572q)

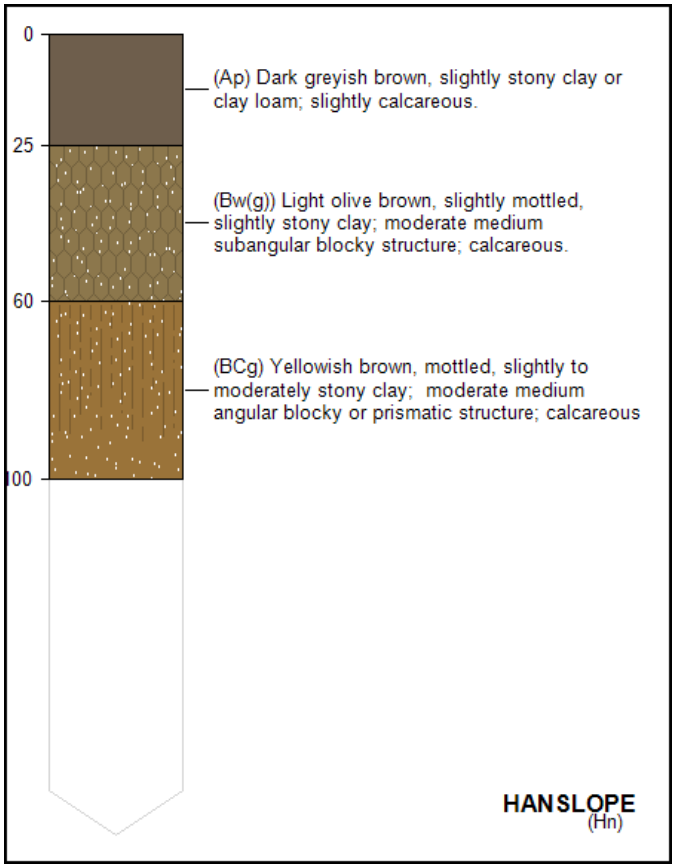
Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.

d. ASHLEY Component Series Profiles









WATERSTOCK (573a)

Deep permeable mainly fine loamy soils variably affected by groundwater.

a. General Description

Deep permeable mainly fine loamy soils variably affected by groundwater.Some deep well drained fine and coarse loamy soils.
The major landuse on this association is defined as Short term grassland and cereals; some field vegetables and fruit in drier districts; dairying in Dorset and Somerset.

b. Distribution (England and Wales)

The WATERSTOCK association covers 248 km² of England and Wales which accounts for 0.16% of the landmass. The distribution of this association is shown in figure 7. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

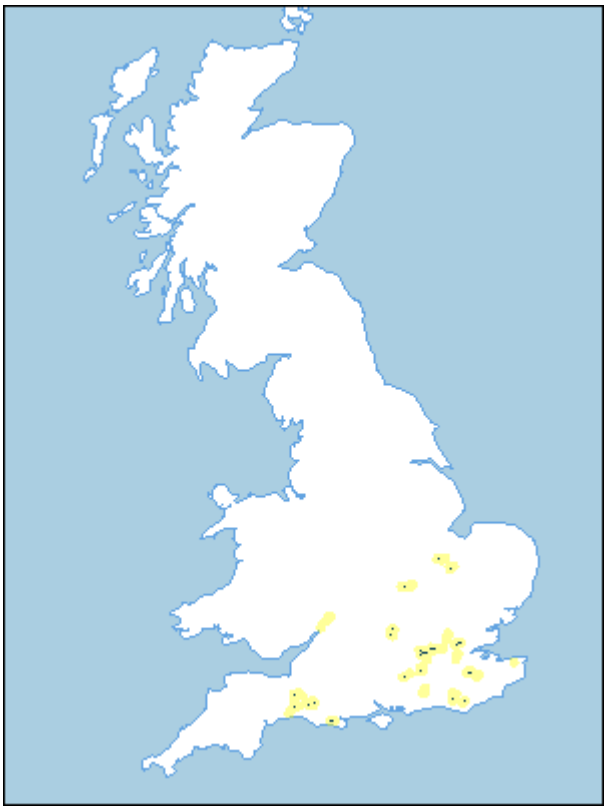


Figure 7: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the WATERSTOCK association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 6.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

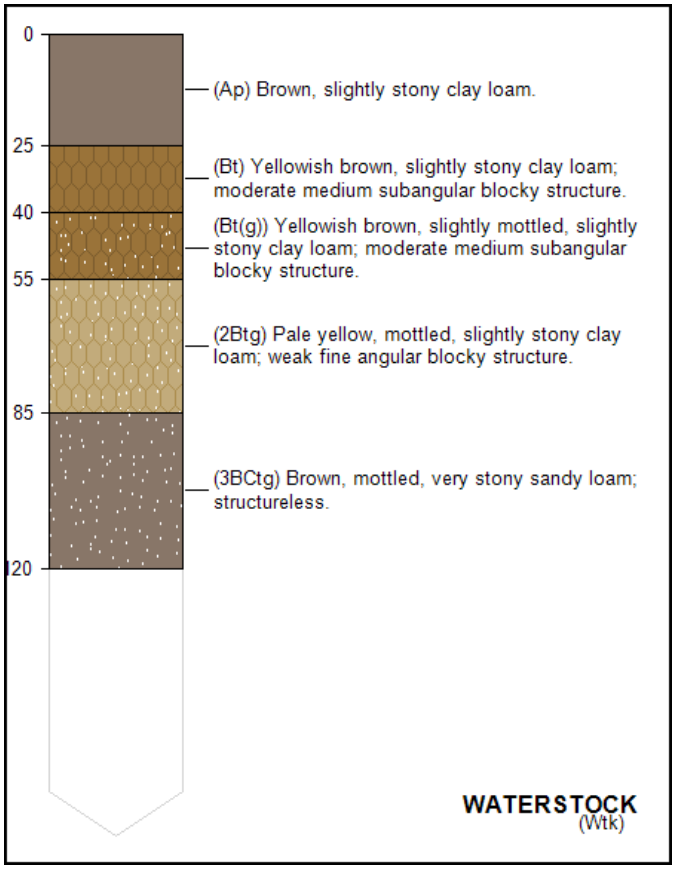
Table 6: The component soil series of the WATERSTOCK soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

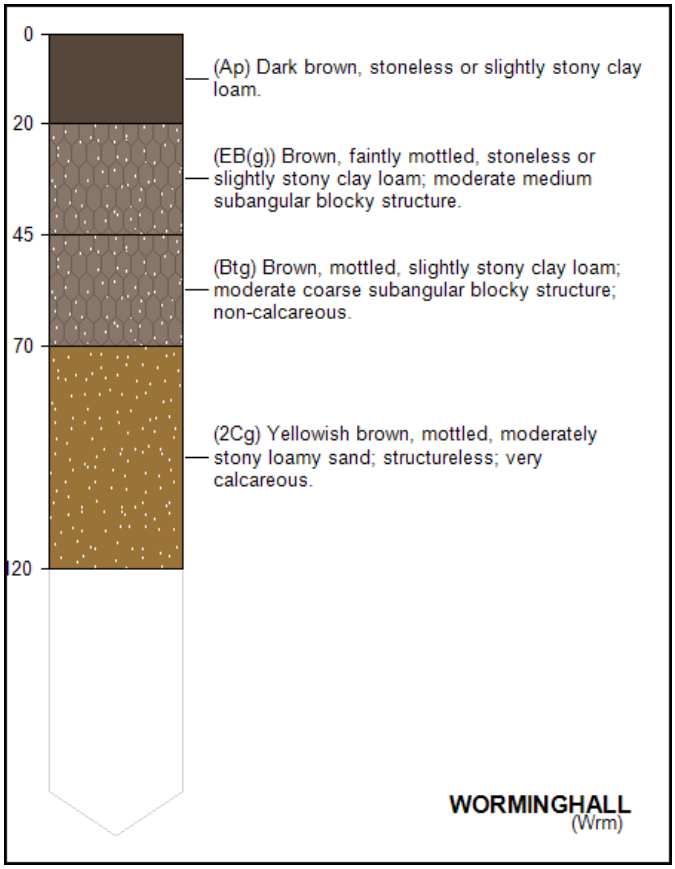
Soil Series	Description	Area %
WATERSTOCK (Wtk)	medium loamy drift with siliceous stones	30%
WORMINGHALL (Wrm)	medium loamy over sandy drift with siliceous stones	20%
LUDFORD (LF)	medium loamy drift with siliceous stones	15%
MAPLESTEAD (MM)	light loamy drift with siliceous stones	10%
SHABBINGTON (Shb)	medium loamy drift with siliceous stones	10%
OTHER	other minor soils	15%

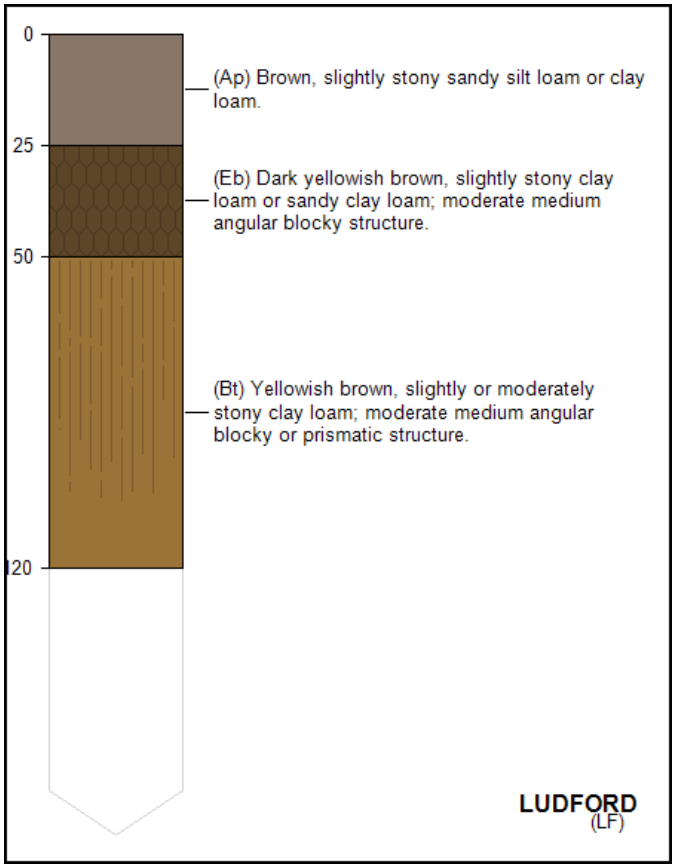
WATERSTOCK (573a)

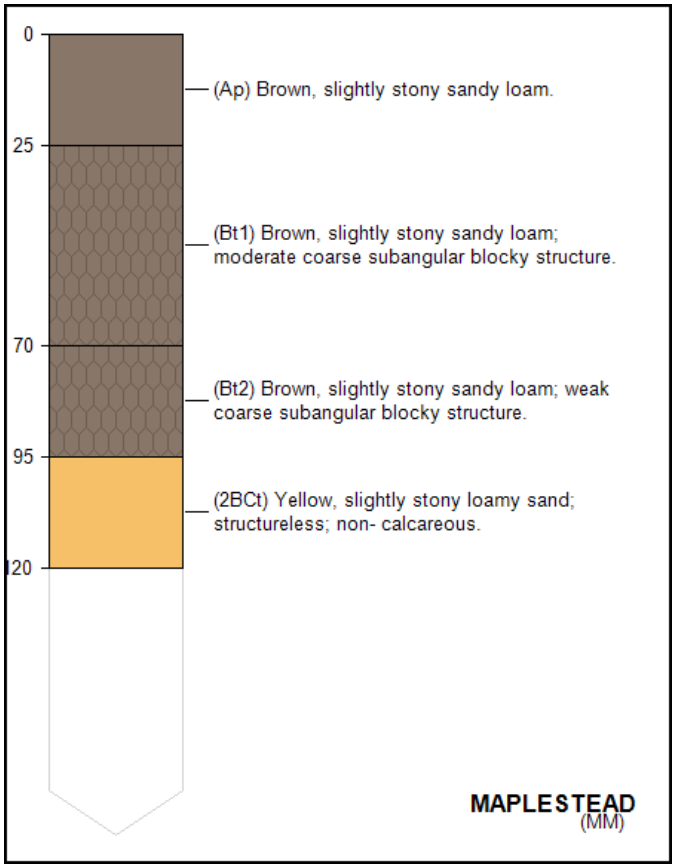
Deep permeable mainly fine loamy soils variably affected by groundwater.

d. WATERSTOCK Component Series Profiles





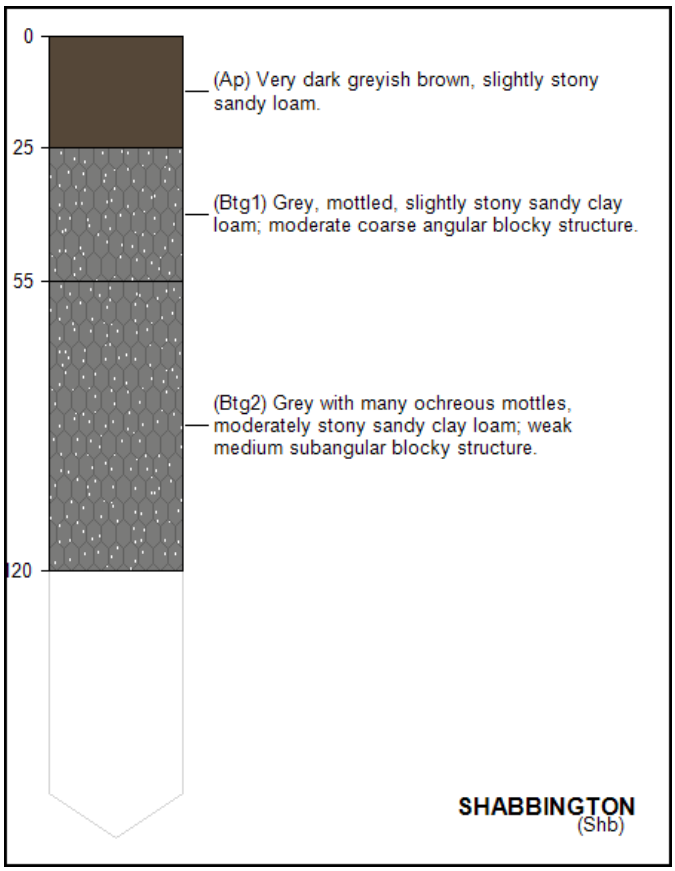




WATERSTOCK (573a)

Deep permeable mainly fine loamy soils variably affected by groundwater.

d. WATERSTOCK Component Series Profiles continued



WICKHAM 2 (711f)

Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.

a. General Description

Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.Small areas of slowly permeable calcareous soils on steeper slopes.
The major landuse on this association is defined as Winter cereals and grassland in the Midlands; cereals in the Eastern Region dairying in the South West.

b. Distribution (England and Wales)

The WICKHAM 2 association covers 1485 km² of England and Wales which accounts for 0.98% of the landmass. The distribution of this association is shown in figure 8. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

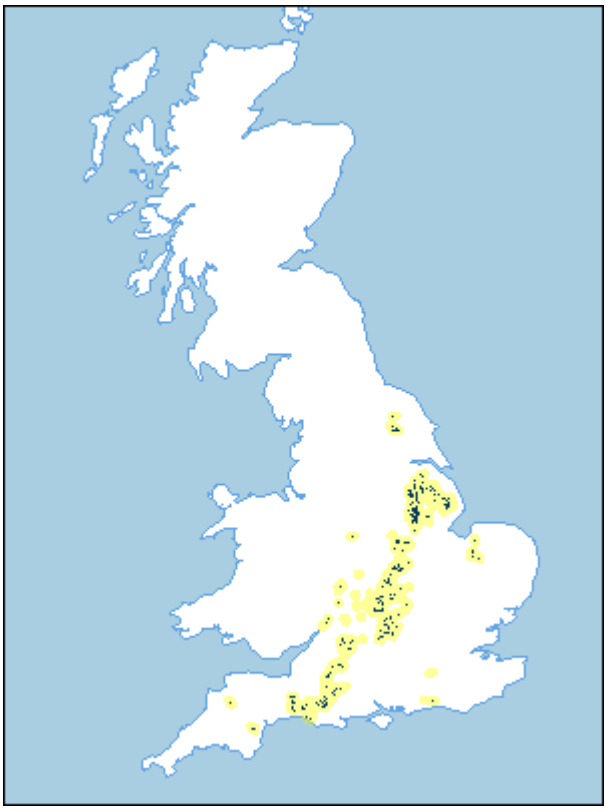


Figure 8: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the WICKHAM 2 association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 7.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

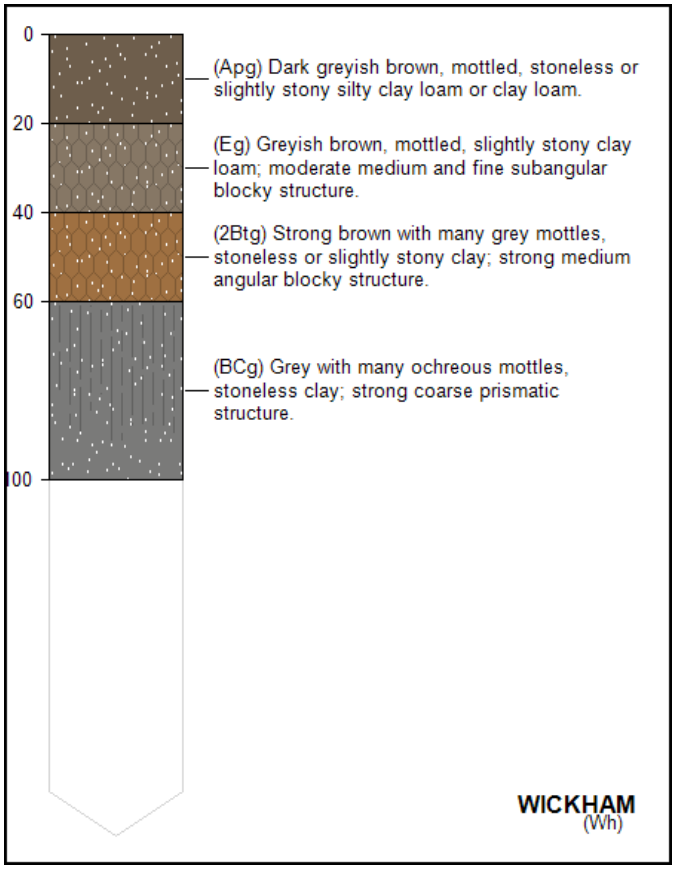
Table 7: The component soil series of the WICKHAM 2 soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

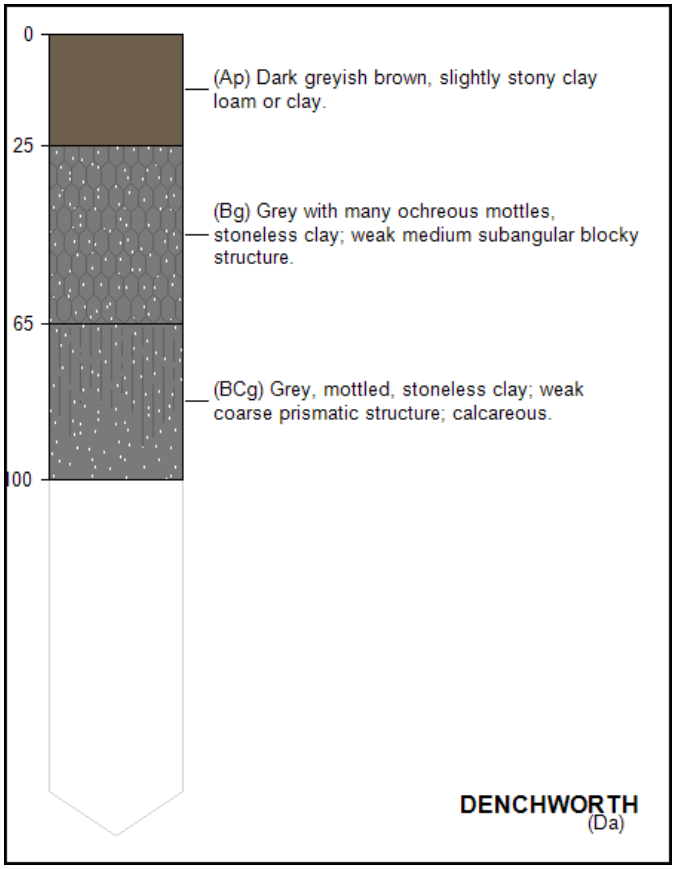
Soil Series	Description	Area %
WICKHAM (Wh)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	50%
DENCHWORTH (Da)	swelling clayey material passing to clay or soft mudstone	15%
OXPASTURE (Ox)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	15%
EVESHAM (Ea)	swelling clayey material passing to clay or soft mudstone	10%
OTHER	other minor soils	10%

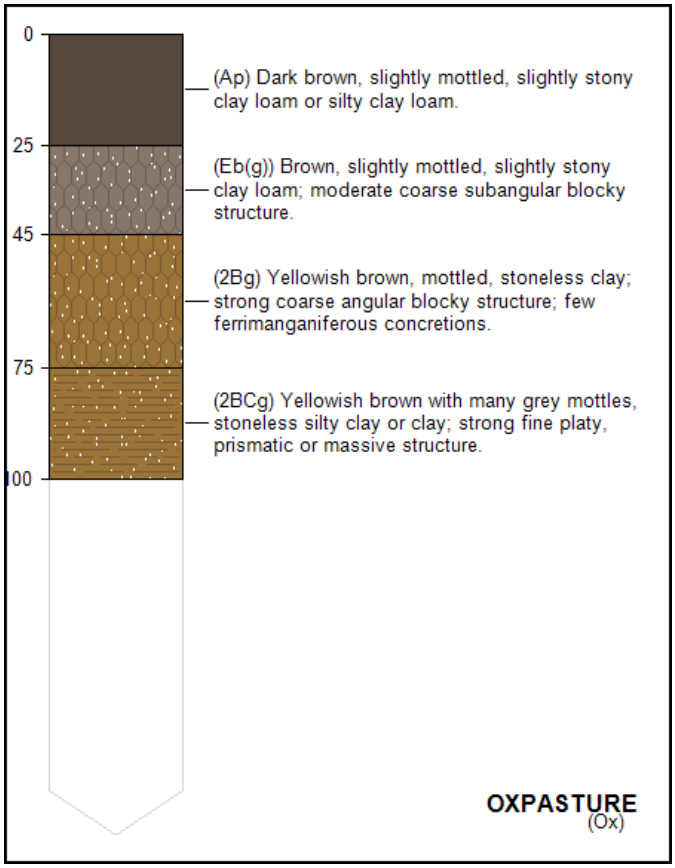
WICKHAM 2 (711f)

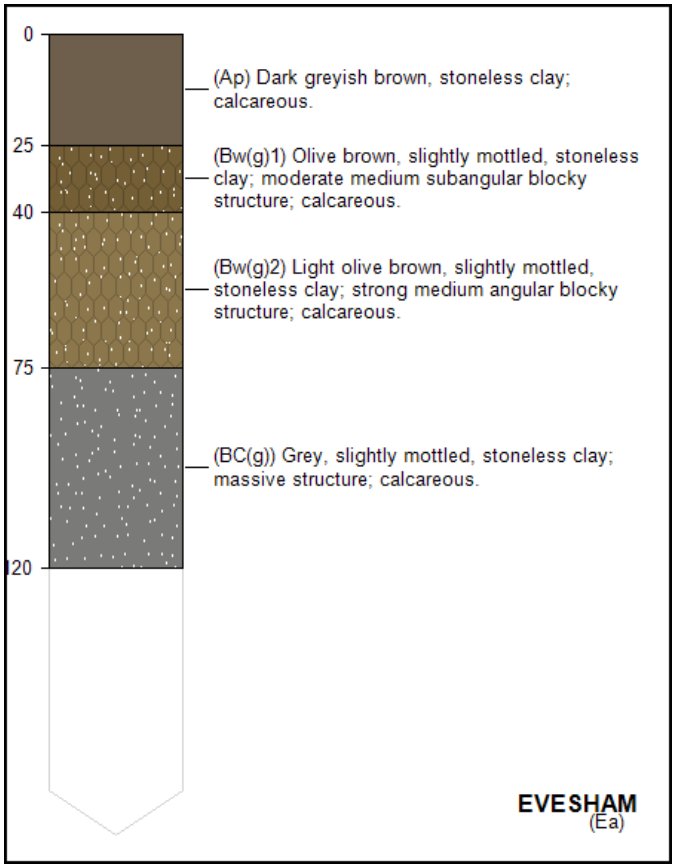
Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.

d. WICKHAM 2 Component Series Profiles









DENCHWORTH (712b)

Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.

a. General Description

Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils.
The major landuse on this association is defined as Winter cereals and short term grassland in drier lowlands; dairying on permanent grassland in moist districts.

b. Distribution (England and Wales)

The DENCHWORTH association covers 3469 km² of England and Wales which accounts for 2.29% of the landmass. The distribution of this association is shown in figure 9. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

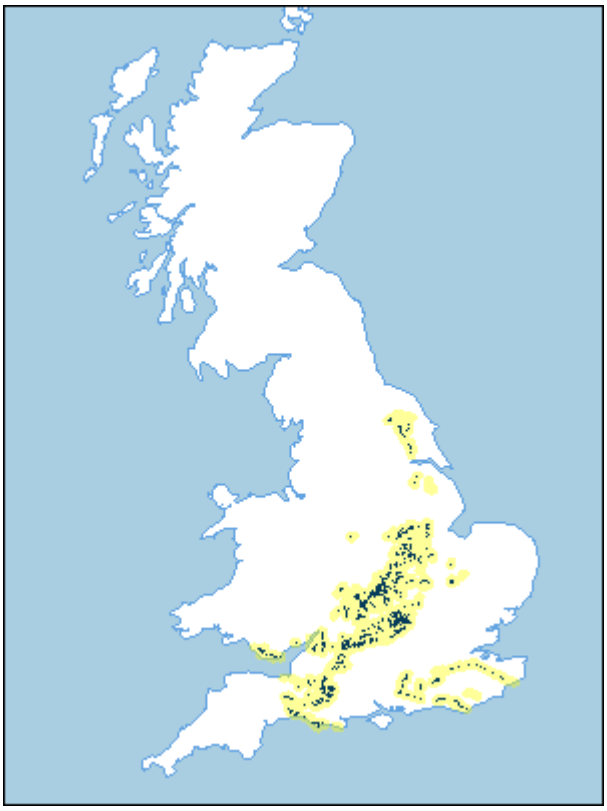


Figure 9: Association Distribution

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the DENCHWORTH association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 8.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

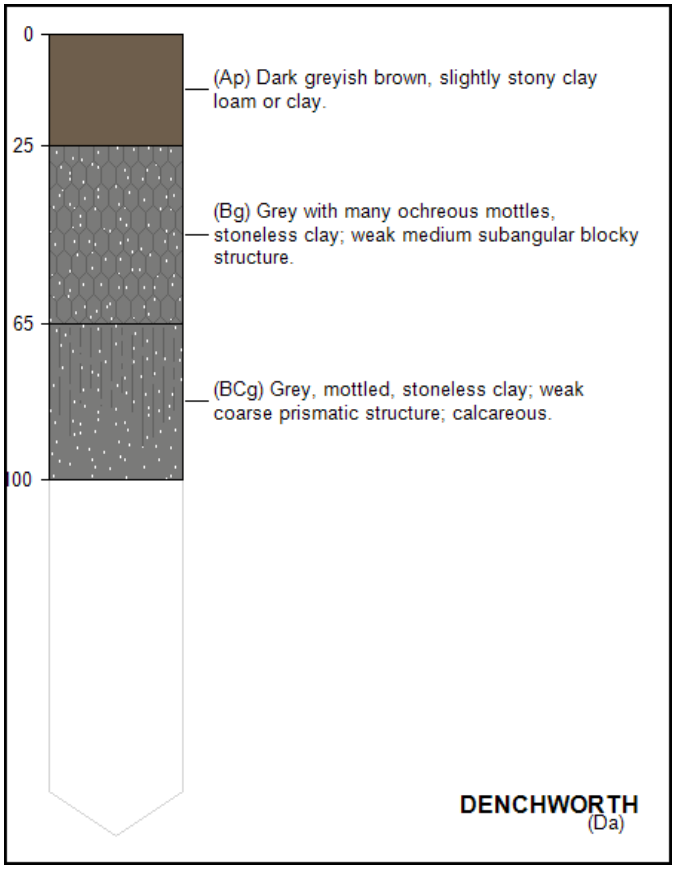
Table 8: The component soil series of the DENCHWORTH soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

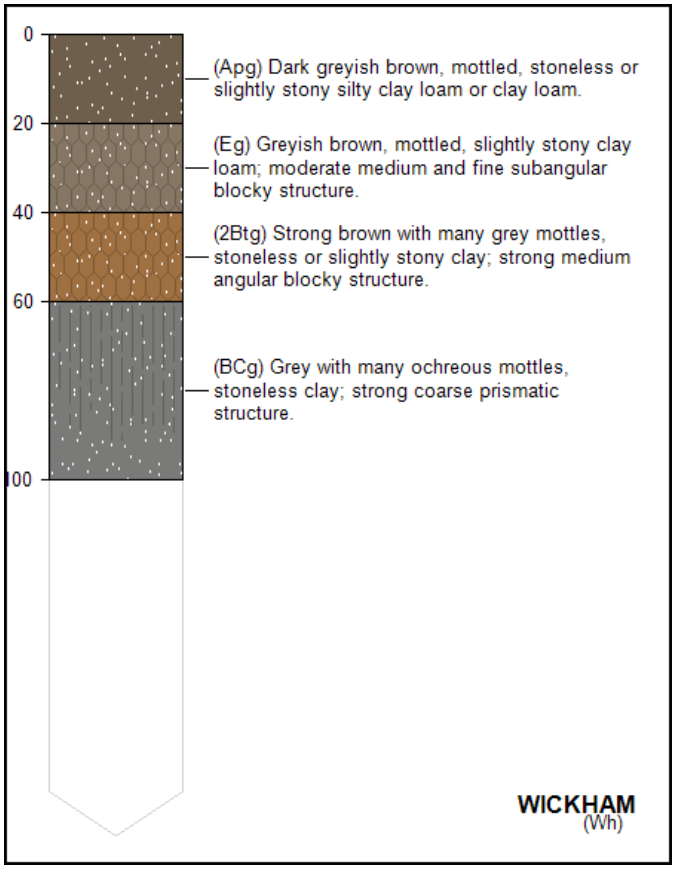
Soil Series	Description	Area %
DENCHWORTH (Da)	swelling clayey material passing to clay or soft mudstone	38%
WICKHAM (Wh)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	19%
LAWFORD (LD)	swelling clayey drift material passing to clay or soft mudstone	15%
EVESHAM (Ea)	swelling clayey material passing to clay or soft mudstone	14%
OXPASTURE (Ox)	medium loamy or medium silty drift over clayey material passing to clay or soft mudstone	14%

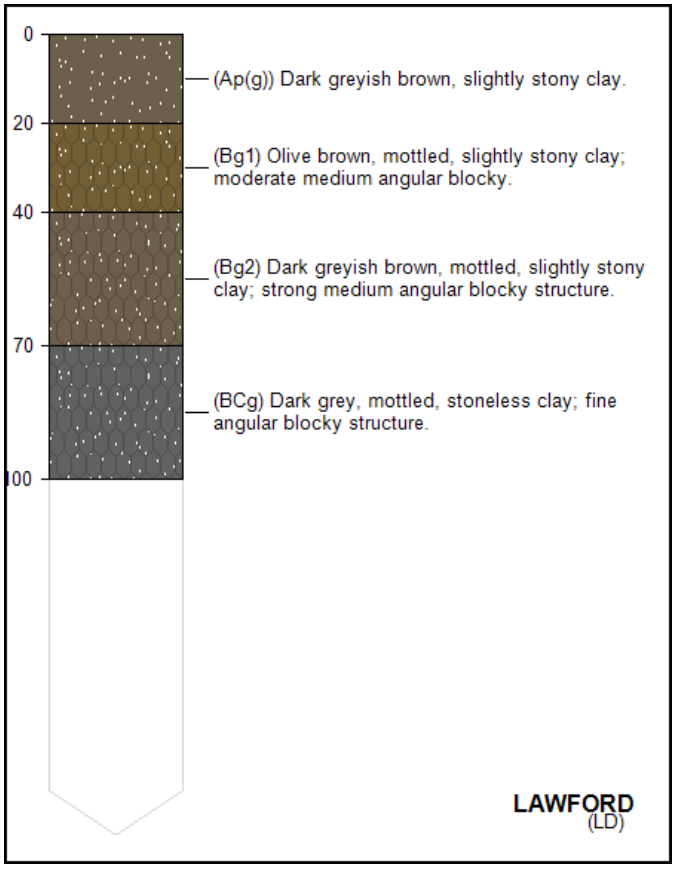
DENCHWORTH (712b)

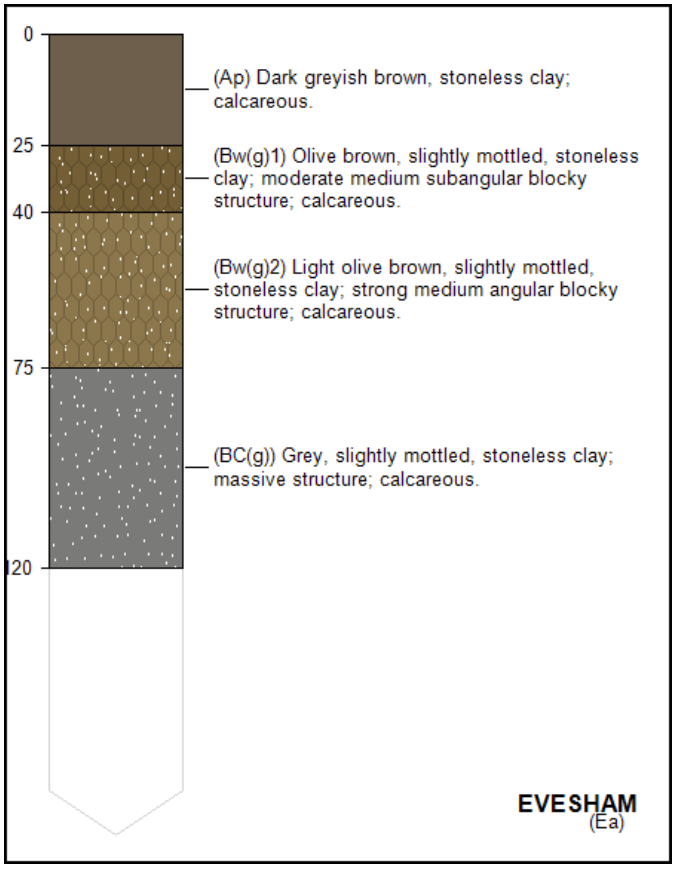
Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.

d. DENCHWORTH Component Series Profiles





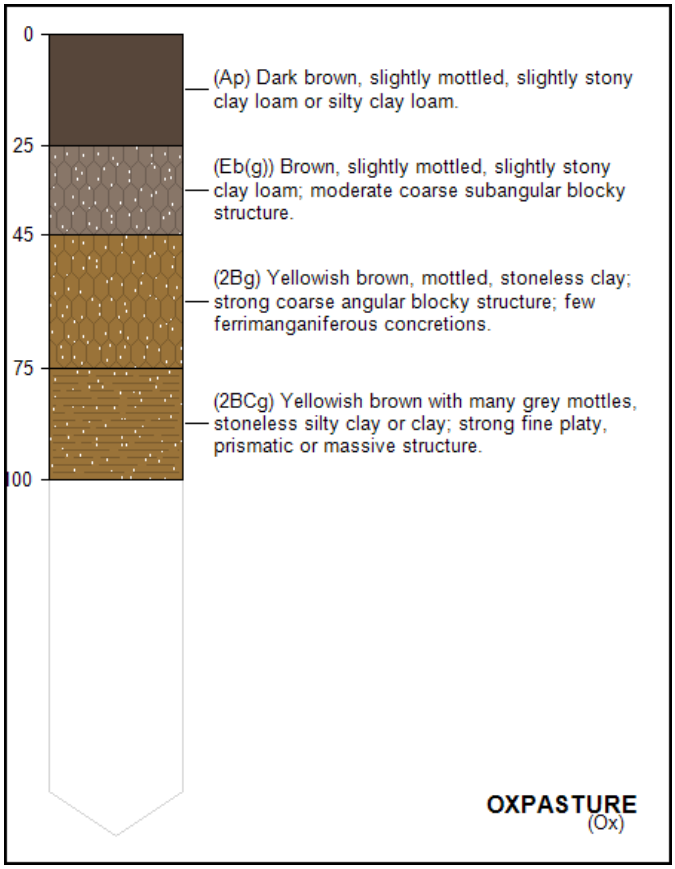




DENCHWORTH (712b)

Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.

d. DENCHWORTH Component Series Profiles continued



FLADBURY 1 (813b)

Stoneless clayey soils, in places calcareous variably affected by groundwater.

a. General Description

Stoneless clayey soils, in places calcareous variably affected by groundwater.
The major landuse on this association is defined as Stock rearing on permanent grassland; cereals where flood risk low.

b. Distribution (England and Wales)

The FLADBURY 1 association covers 821 km² of England and Wales which accounts for 0.54% of the landmass. The distribution of this association is shown in figure 10. Note that the yellow shading represents a buffer to highlight the location of very small areas of the association.

c. Comprising Soil Series

Multiple soil series comprise a soil association. The soil series of the FLADBURY 1 association are outlined in Table 1 below. In some cases other minor soil series are present at a particular site, and these have been grouped together under the heading 'OTHER'. We have endeavoured to present the likelihood of a minor, unnamed soil series occuring in your site in Table 9.

Schematic diagrams of the vertical soil profile of the major constituent soil series are provided in Section D to allow easier identification of the particular soil series at your site.

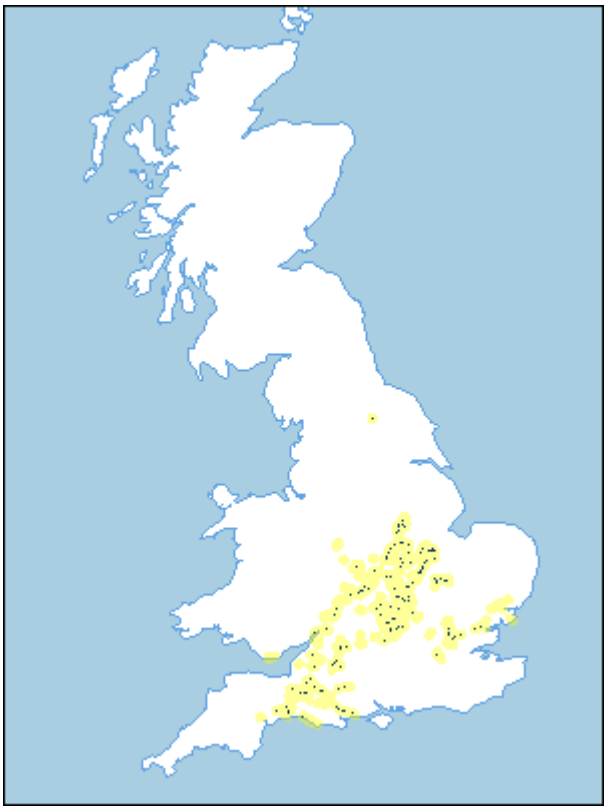


Figure 10: Association Distribution

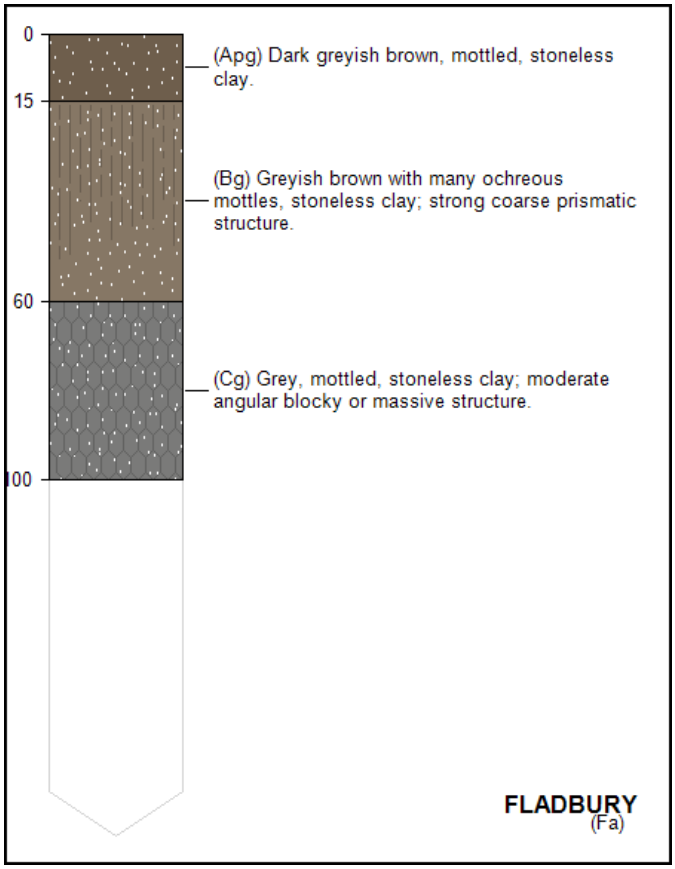
Table 9: The component soil series of the FLADBURY 1 soil association. Because absolute proportions of the comprising series in this association vary from location to location, the national proportions are provided.

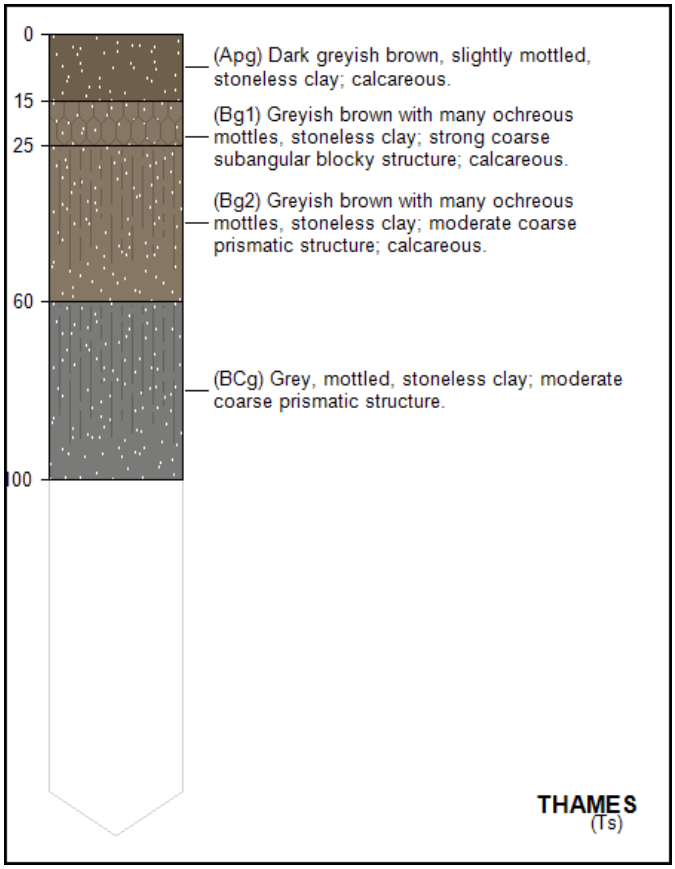
Soil Series	Description	Area %
FLADBURY (Fa)	clayey river alluvium	70%
THAMES (Ts)	clayey river alluvium	15%
WYRE (wH)	clayey river alluvium	15%

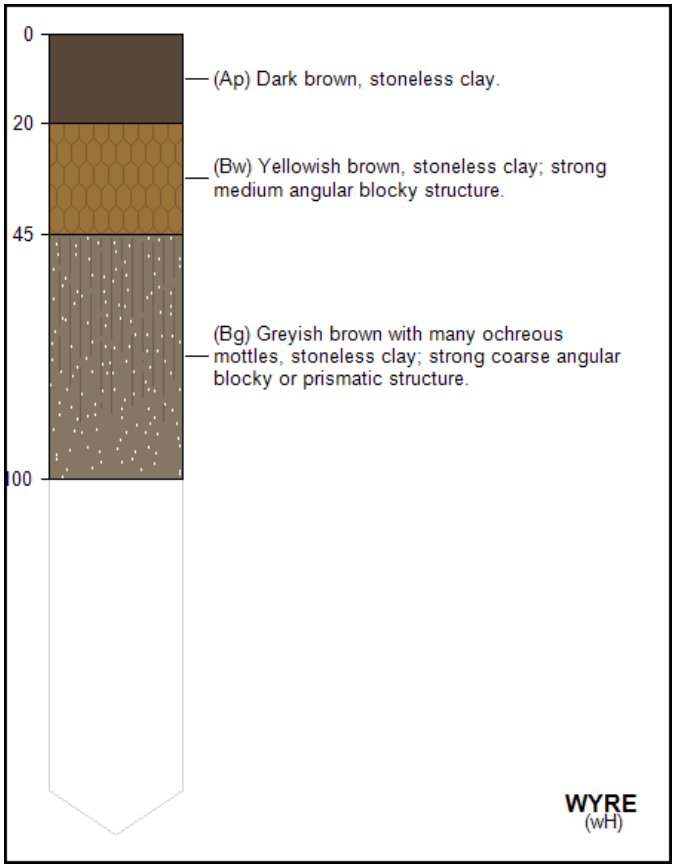
FLADBURY 1 (813b)

Stoneless clayey soils, in places calcareous variably affected by groundwater.

d. FLADBURY 1 Component Series Profiles







REFERENCES

AVERY, B.W. (1973). Soil classification in the Soil Survey of England and Wales. Journal of Soil Science, 24, 324-338.

AVERY, B.W., (1980). Soil classification for England and Wales. Soil Survey Technical Monograph No.14, Harpenden, UK.

BOORMAN, D.B, HOLLIS, J.M. and LILLEY, A. (1995). Hydrology of Soil Types: a hydrologically-based classification of the soils of the UK. Institute of Hydrology Report No.126, Wallingford, UK.

CLAYDEN, B and HOLLIS, J.M. (1984). Critieria for Differentiating Soil Series. Soil Survey Technical Monograph No.17, pp159. Harpenden, UK.

CRANFIELD UNIVERSITY (2001) A Guide to Better Soil Structure, National Soil Resources Institute, Cranfield University UK Available at: https://www.landis.org.uk/downloads/downloads/structure_brochure.pdf

GREGORY, A.S., KIRK, G.J.D., KEAY, C.A., RAWLINS, B.G., WALLACE, P. and WHITMORE, A.P. (2014) An assessment of subsoil organic carbon stocks in England and Wales, Soil Use and Management, 30 (1) 1022.

HALLETT, S.H., KEAY, C.A., JARVIS, M.G. and JONES, R.J.A. (1994). INSURE: Subsidence risk assessment from soil and climate data. Proceedings of the Association for Geographic Information (AGI). National Conference Markets for Geographic Information. Birmingham. 16.2.1 - 16.2.7.

HODGSON, J.M (ed.) (2022). Soil Survey Field Handbook. Soil Survey Technical Monograph No. 5, version 4. Cranfield.

HOLLIS, J.M. (1991). Mapping the vulnerability of aquifers and surface waters to pesticide contamination at the national and regional scale. In: Pesticides in Soils and Water, BCPC Monograph No.47, 165-174.

HOLLIS, J.M., KEAY, C.A., HALLETT, S. H., GIBBONS, J.W. and COURT, A.C. (1995). Using CatchIS to assess the risk to water resources from diffusely applied pesticides. In: British Crop Protection Council monograph No. 62: Pesticide movement to water, 345-350

JARVIS, M.G and HEDGES, M.R. (1994). Use of soil maps to predict the incidence of corrosion and the need for iron mains renewal. Journal of the Institution of Water and Environmental Management 8, (1) 68-75.

PALMER, R.C., HOLMAN, I.P., ROBINS, N.S. and LEWIS, M.A. (1995). Guide to groundwater vulnerability mapping in England and Wales. National Rivers Authority R and D Note 578/1/ST.

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