

## 13 Agriculture and soil resources

### Introduction

- 13.1 This chapter has been prepared by WSP Environmental and assesses the effect of the proposed development on agricultural land and associated soil resources. In particular, it considers the potential effects of the loss of best and most versatile agricultural land and the loss of / damage to soil resources. The latter focuses on the total quantum of soil resources lost / damaged, as the risk of contamination of soil resources in appropriately assessed within chapter 10: geology, hydrogeology and contamination.
- 13.2 This chapter (and its associated figures and technical appendix) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (chapters 1 to 3), as well as chapter 14: cumulative effects.

### Legislation and policy

#### *Legislative framework*

- 13.3 In 2006, the European Commission (EC) adopted a comprehensive *Thematic Strategy*<sup>1</sup> specifically dedicated to soil protection, which included a proposal for a *Soil Framework Directive*<sup>2</sup> to promote the sustainable use of soil and protect soil as a natural resource. However, thus far, Environment Ministers have been unable to reach agreement on EC proposals for an EU soil framework directive<sup>3</sup>.
- 13.4 Although there remains no specific legislation for the protection of soil and agricultural land, the Department for Environment, Food and Rural Affairs (DEFRA) issued the *Soil Strategy for England – Safeguarding our Soils* in 2009<sup>4</sup>. The strategy sets out DEFRA's vision that by 2030 all England's soils will be managed sustainably, and degradation threats tackled successfully, in order to improve the quality of England's soils and safeguard their ability to provide essential services for future generations.
- 13.5 The strategy sets out priorities for action in respect of:
- Better protection of agricultural soils
  - Protecting and enhancing stores of soil carbon
  - Building the resilience of soils to a changing climate
  - Preventing soil pollution
  - Effective soil protection during construction and development

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<sup>1</sup> European Commission, *Soil Thematic Strategy (COM (2006) 231)*, 2006

<sup>2</sup> European Commission, *Proposal for a Soil Framework Directive (COM (2006) 232)*, 2006

<sup>3</sup> As of November 2011

<sup>4</sup> DEFRA, *Safeguarding our Soils: A Strategy for England*, 2009

- Dealing with the legacy of contaminated land

13.6 DEFRA also published a *Code of Practice for the Sustainable Use of Soils on Construction Sites* in 2009<sup>5</sup>. The code of practice is a practical guide to assist the construction industry to protect the soil resources with which it works and achieve good soil management at all stages of the construction process. It advises that the protection, use and movement of soil should be considered from the outset of a development project's planning, through its design and construction phases and on into future maintenance. The code provides practical guidance on the following aspects of the sustainable use of soils on construction sites:

- Identifying existing soil resources on site
- On site soil management
- Topsoil and subsoil stripping
- Soil stockpiling and placement
- Sourcing, importing and manufacturing topsoil
- Soil aftercare
- Uses for surplus topsoil

### ***Policy***

- 13.7 National planning policy guidance regarding development related to agricultural land and soil is set out in *Planning Policy Statement 7: Sustainable Development in Rural Areas*<sup>6</sup> (PPS7). Paragraph 28 of PPS7 advises that, when determining planning applications, the presence of the best and most versatile agricultural land (i.e. that classified as grades 1, 2 and 3a in the Agricultural Land Classification [ALC]) should be taken into account alongside other sustainability considerations. It states: "where significant development of agricultural land is unavoidable, local planning authorities should seek to use areas of poorer quality land (grades 3b, 4 and 5) in preference to that of higher quality". The exception to this is where this would be inconsistent with other sustainability considerations.
- 13.8 The guidance goes on to suggest that little weight in agricultural terms should be given to the loss of agricultural land in grades 3b, 4 and 5, except in areas such as uplands where particular agricultural practices contribute in some special way to the environment or economy.
- 13.9 There is no guidance within PPS7 with regard to the effects of development on farm holdings, although it remains DEFRA's policy to secure an environment in which a competitive and sustainable agricultural industry with a strong market focus can flourish. Guidance in Natural England's Technical Information Note (TIN) 049<sup>7</sup> indicates that land quality is not the sole consideration in how development proposals affect agriculture within the

<sup>5</sup> DEFRA, *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*, 2009

<sup>6</sup> Office of the Deputy Prime Minister, *Planning Policy Statement 7 (PPS7), Sustainable Development in Rural Areas*, 2004

<sup>7</sup> Natural England, *Technical Information Note 04 - Agricultural Land Classification: protecting the best and most versatile agricultural land*, 2009

planning system, with other factors, such as the impact on farm size and structure, the use of buildings and other fixed equipment, or any stimulus a development might give to rural economic activity, also relevant.

- 13.10 Paragraph 167 of the draft National Planning Policy Framework (2011) sets out emerging policy on the development of agricultural land and 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, except where this would be inconsistent with other sustainability considerations or the Local Plan’s growth strategy and where poorer quality land is unavailable or unsuitable”.
- 13.11 The Localism Bill was enacted in November 2011, thereafter becoming the Localism Act. Different parts of the Act will, however, come into effect at different times over the coming months. The Act enables Regional Spatial Strategies, including the East of England Plan, to be abolished, but this will be undertaken by statutory order by the government in due course (it is currently understood that this will be around March / April 2012), subject to consultation. Whilst the East of England Plan remains part of the development plan until it is formally abolished, the government has advised that the proposed abolition of Regional Spatial Strategies should be regarded as a material consideration by local planning authorities when deciding planning applications. It should therefore be afforded limited weight in the determination of this planning application.
- 13.12 South Cambridgeshire District Council’s *Core Strategy and Development Control Policies DPD* outlines a number of objectives relating to the maximum use of previously developed land and the minimisation of the loss of best and most versatile agricultural land (objectives STk, DP/3.3 and NE/j).
- 13.13 Policy NE 17 outlines the following:
- “1. The District Council will not grant planning permission for development which would lead to the irreversible loss of Grades 1, 2 or 3a agricultural land unless: a. Land is allocated for development in the Local Development Framework; b. Sustainability considerations and the need for the development are sufficient to override the need to protect the agricultural value of the land. 2. Uses not involving substantial built development but which take agricultural land, such as golf courses and camping and caravan sites, will be regarded as permanent unless restricted specifically by condition”.

### ***Guidance***

- 13.14 Guidance on classifying agricultural land is contained in *Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land*, prepared by the then Ministry of

Agriculture, Fisheries and Food (MAFF) in 1988<sup>8</sup> and summarised in Natural England's TIN 049.

- 13.15 Best practice guidance on soil handling and management during the construction phase, to minimise potential adverse effects on the soil resource, is found in MAFF's *Good Practice Guide for Handling Soils*<sup>9</sup> (2000) and DEFRA's *Code of Practice for the Sustainable Use of Soils on Construction Sites*, which is discussed above.

## **Methodology**

### ***Scope of the assessment***

- 13.16 The following potentially significant effects are examined in this chapter:
- Loss of best and most versatile agricultural land
  - Loss of / damage to soil resources
- 13.17 For the purpose of the assessment, both of the effects identified above are anticipated to occur during the construction phase. Therefore, there are no additional potentially significant effects post-construction.
- 13.18 In terms of the loss of / damage to soil resources, this chapter focuses on the total quantum of soil resources lost / damaged, as the risk of contamination of soil resources is appropriately assessed within chapter 10: geology, hydrogeology and contamination.
- 13.19 The potential loss and / or fragmentation of agricultural holdings and effects on the viability of agricultural businesses are limited to two parcels of land within the primary development site. The first parcel of land is to the north of Rampton Road (track) and to the east of Brookfield Farm; however, this parcel of land will not be subject to severance as the entire parcel is required for the proposed development. The second parcel is to the north of the site and has been considered largely redundant due to the construction of Longstanton Park and Ride.
- 13.20 Within the Hatton's Road attenuation ponds area, significant earthworks will occur to provide the necessary fill for the primary development site. Attenuation facilities will be created within this area and this may fragment agricultural holdings.
- 13.21 However, for both the primary development site and Hatton's Road attenuation ponds area, which are included in Land Option Agreements, it has been assumed that the tenants and / or land owners will have been involved in private negotiations with the promoters and that any issues concerning the

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<sup>8</sup> Ministry of Agriculture, Fisheries and Food (MAFF), *Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land*, 1988

<sup>9</sup> MAFF, *Good Practice Guide for Handling Soils*, 2000

viability of agricultural businesses will have been resolved. No significant effect is anticipated and therefore this is not considered further in this chapter.

- 13.22 The potentially significant effects associated with the loss of Cambridge Golf Course and the change in land use associated with the proposed development and improvements in accessibility are appropriately assessed within chapter 12: community, economic and social effects. Therefore, this is not considered further in this chapter.
- 13.23 The potentially significant effect associated with changes to existing public rights of way (including consideration of historic highways) and the provision of new cycle / pedestrian routes is appropriately assessed within chapter 7: traffic and transport. The changes to the amenity value of existing public rights of way are appropriately assessed within chapter 12. Therefore, this is not considered further in this chapter.
- 13.24 The potentially significant effects associated with the loss of historical resource, including military features and their historical land value is appropriately assessed within chapter 5: cultural heritage. Therefore, these are not considered further in this chapter.
- 13.25 The potentially significant effects associated with the introduction of a new waste use (a household recycling centre) are considered in the Waste Management Strategy submitted in support of the application. Therefore, this is not considered further in this chapter.

#### ***Extent of the study area***

- 13.26 The extent of the study area is limited to the site boundary, as illustrated in figure 13.1. However, survey information in the surrounding area has been included in technical appendix I for completeness and to provide further context to the value of agricultural land in the surrounding area. This is further discussed below.

#### ***Method of baseline data collection***

- 13.27 During the preparation of the 2007 planning application for Northstowe, a review of available information from MAFF and DEFRA was undertaken. Supplementary ALC Surveys were undertaken by Dr S G McRae and Edafos in 2004 and 2005, respectively.
- 13.28 A summary of this data is presented and discussed below:
- N.A Duncan & Associates, *Agricultural Land Classification (ALC) at Oakington Barracks*, November 2001
  - **Dr S G McRae, *Land at Longstanton, Cambridgeshire, Soils and Agricultural Land Classification, October 2004***
  - MAFF, *Agricultural Land Classification, Noon Folley Farm, Bar Hill, Cambridgeshire*, 1991

- MAFF, *Agricultural Land Classification, Grange Farm, Bar Hill, Cambridgeshire, 1991*
- MAFF, *Agricultural Land Classification, Slate Hall Farm. Bar Hill, Cambridgeshire, 1991*
- DEFRA, *Agricultural Land Classification, 03391, Land to the North of the A14, Longstanton / Oakington, 2004*
- **Edafos, *Agricultural Land Classification – Northstowe, Cambridgeshire, 2005***
- **WSP, *Composite Agricultural Land Classification, December 2007***

13.29 A review of the above data was undertaken in October 2011 and those sources highlighted in bold above provide the necessary ALC data (at least in part) for the site illustrated in figure 13.1. The remainder of the above reports provide ALC data for areas adjacent to the site and surrounding area. All of the above sources are contained within technical appendix I. During the preparation of the 2007 planning application for Northstowe, a composite agricultural classification map was prepared that validated all data sources and presented the ALC data on one plan. This is also included in technical appendix I and is based on a copy of figure 13.2 associated with the ES prepared by WSP to support the Northstowe planning application in December 2007.

13.30 The data used within the 2007 ES still remains valid, as it is highly unlikely that the soils that inform the ALC grades have changed. Therefore it is considered suitable to use these data to inform this assessment. During the 2007 ES, the Cambridge Golf Course was not surveyed due to access restrictions; however, it should be noted that this area of land has been considered previously developed land and therefore does not constitute agricultural land. There are some areas that remain unsurveyed, but these are relatively small (3.92 ha) when compared to the overall site and therefore further surveys are unlikely to change the outcome of this assessment.

13.31 As part of the preparation of this assessment, the composite data have been overlain on the site boundary illustrated in figure 13.1 and revised calculations using internal IGIS systems have been undertaken to provide quantitative data for this assessment.

13.32 The data within technical appendix I also informed the composite soil resources data for the 2007 ES. Again, as part of the preparation of this assessment, the composite data have been overlain on the site boundary illustrated in figure 13.2 and revised calculations using internal IGIS systems have been undertaken to provide quantitative data for this assessment.

### ***Significance criteria***

13.33 The significance of the effect is based on the magnitude of change as a result of the proposed development and the importance of the affected receptor / receiving environment. Magnitude / scale of change is assessed on a scale of large, medium, small or negligible and the importance of the affected receptor / receiving environment is assessed on a scale of high, medium, low and negligible. Best and most versatile agricultural land is generally regarded as

being of high importance because of its contribution to a nationally important resource. The importance of the soil resource varies with its quality, with the highest importance attaching to the highest quality soil.

- 13.34 To determine the magnitude of the loss of the best and most versatile agricultural land, the assessment will adhere to Annex B15 of PPG7<sup>10</sup>. This stipulated that MAFF had a statutory right to be consulted where a significant amount of higher quality land was proposed for non-agricultural development. Whilst the statutory powers of MAFF became defunct with the advent of DEFRA in June 1997, and Annex B is not continued in PPS7 published in August 2004, the thresholds within Annex B15 to determine magnitude for the loss of such land are considered appropriate for this assessment. The criterion for determining magnitude is presented in table 13.1.

**Table 13.1: Magnitude / scale of change for assessing the loss of agricultural land to the national agricultural land resource**

Magnitude	Criterion
Large	20 ha or more of best and most versatile agricultural land (i.e. grades 1, 2 and sub-grade 3a) is affected by the proposed development.
Medium	Between 5-19 ha of best and most versatile agricultural land (i.e. grades 1, 2 and sub-grade 3a) and / or 20 ha or more of lower quality agricultural land (i.e. grade 3b, 4 and 5) are affected by the proposed non-agricultural development. The latter specifically relates to the impact of the loss of land in grades 3b, 4 and 5 to national agricultural land resource.
Small	Between 1-4 ha of best and most versatile agricultural land (i.e. grades 1, 2 and sub-grade 3a) affected and / or 5-19 ha of lower quality agricultural land (i.e. grades 3b, 4 and 5) affected by the proposed non-agricultural development. The latter specifically relates to the impact of the loss of land in grades 3b, 4 and 5 to national agricultural land resource.
Negligible	Less than 1 ha of best and most versatile agricultural land (i.e. grades 1, 2 and sub-grade 3a), and / or 4 ha or less of lower quality agricultural land (i.e. grades 3b, 4 and 5) affected. The latter specifically relates to the impact of the loss of land in grades 3b, 4 and 5 to national agricultural land resource.

- 13.35 The magnitude of the loss of and / or damage to soil resources will be determined by calculating the volumes of topsoil and subsoil subjected to loss / damage. For the purposes of this assessment, this quantum will be determined against the following criterion:

- Where 60,000 m<sup>3</sup> of soil is lost / damaged the magnitude is considered to be **large**
- Where 3,000-59,999 m<sup>3</sup> of soil is lost / damaged the magnitude is considered to be **medium**
- Where less than 3,000 m<sup>3</sup> of soil is lost damaged the magnitude is considered to be **small**
- Where there is no volume or the loss or damage is barely perceptible, the magnitude is considered **negligible**

<sup>10</sup> Department of the Environment, Transport and the Regions, Policy Planning Guidance 7 - *The Countryside – Environmental Quality and Economic Social Development*, February 1997, as amended March 2001

- 13.36 The degree of the effect is assessed using the matrix outlined in table 13.2. Effects that are moderate or above are considered to be significant.

**Table 13.2: Determination of degree of effect**

Magnitude / scale of change	Importance of receptor			
	High	Medium	Low	Negligible
Large	Very substantial	Substantial	Slight to moderate	Negligible
Medium	Substantial to moderate	Moderate	Slight	Negligible
Small	Moderate to slight	Slight	Slight to negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

- 13.37 The degrees of effect are outlined below:

- **Very substantial:** a large change to a source of agricultural land / soil resource of at least national importance as a direct result of the proposed development
- **Substantial:** a medium to large change to a source of agricultural land / soil resource of at least regional importance as a result of the proposed development
- **Moderate:** a large change to a locally significant agricultural land / soil resource as a result of the proposed development. Alternatively, there will be a small change in a nationally important source of agricultural land / soil resource
- **Slight:** small changes will occur in a source of agricultural land / soil resource of no more than local significance
- **Negligible:** the change will be negligible and agricultural land / soil resource will not be affected by the proposed development

### Baseline

- 13.38 This section includes a summary of the existing baseline conditions and identification of sensitive receptors. This summary is supported by technical appendix I, which is discussed above.

### *Agricultural land*

- 13.39 Much of the land within England and Wales is in agricultural use, and this land area is an important natural resource providing vital contributions to sustainable development goals. The legislative framework in the UK for the protection of soils requires the safeguarding of good quality soils and the promotion of the sustainable uses of this soil resource. The land area quality across England and Wales varies from place to place; therefore a classification system known as ALC was devised and mapped by MAFF.
- 13.40 The ALC was devised to assess agricultural land and provide a method for assessing the quality of farmland. This enables better informed decisions to be made regarding development, and steer development to lower quality agricultural land where possible. The ALC system classifies land into five

grades, with grade 3 subdivided into sub-grades 3a and 3b. All land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long term limitations on agricultural use.

- 13.41 The “best and most versatile agricultural land” is defined as grades 1, 2 and 3a by policy guidance set out in PPS7. This is the land that is determined to be most flexible, productive and efficient in response to inputs and that can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Grades 3b, 4, and 5 are used to classify land that is determined to be of moderate quality to very poor quality.
- 13.42 The ALC is based on the long term physical limitations of land for agricultural use. There are a number of factors that affect the grade, and the main ones are climate, site and soil characteristics, and the interactions between them. The ALC is fundamentally concerned with the inherent potential of land under a range of farming systems.
- 13.43 Cambridgeshire has a greater proportion of high-grade agricultural land than any other county in England and Wales. The proportions of high-grade agricultural land for Cambridgeshire, East Anglia and England and Wales are provided in *Technical Note No. TN/RP/01 TFS 846*<sup>11</sup>. The information from this Technical Note, which is based on provisional ALC data, is presented in table 13.3 to provide context to the availability of high-grade agricultural land in which the site is set.

MAFF ALC Grade	Proportion of agricultural land (%)		
	Cambridgeshire	East Anglia	England
1	21.6	10.3	2.8
2	48.8	29.3	14.6
3a	8.9	17.2	16.3
<b>Total best and most versatile agricultural land</b>	<b>79.3</b>	<b>56.8</b>	<b>33.7</b>
3b	17.8	34.3	32.6
4	2.9	8.8	19.8
5	0	0.1	19.9

Source: MAFF Technical Note No. TN/RP/01 TFS 846 (February 1993)

- 13.44 The proportion of agricultural land presented in table 13.3 indicates that 70.4% of agricultural land within Cambridgeshire falls within grades 1 and 2, which is approximately four times the average in England. With the additional percentage of land that falls within grade 3a, the percentage of best and most versatile agricultural land in Cambridgeshire is 79.3%. With such a high percentage of land falling into the best and most versatile category, it is highly likely that there will be a higher proportion of agricultural land within the site that is considered to be best and most versatile.

<sup>11</sup> MAFF, *Technical Note No. TN/RP/01 TFS 846*, February 1993

- 13.45 To determine the proportion of best and most versatile agricultural land within the site, the 2007 composite data have been overlain on the site boundary illustrated in figure 13.1 and calculations have been undertaken using internal IGIS systems. The sources of these composite data are outlined above under ‘method of baseline collection’. The ALC grades for the site are detailed in table 13.4.

<b>ALC grade</b>	<b>Area (ha)</b>	<b>Total area (%)</b>
1	0	0
2	0.68	0.55
3a	15.01	12.19
<b>Total best and most versatile agricultural land</b>	<b>15.69</b>	<b>12.74</b>
3b	20.35	16.52
4	0.00	0.00
Non-agricultural	83.22	67.56
Not surveyed	3.92	3.18
<b>Total</b>	<b>123.18</b>	<b>100.00</b>

Source: Various (please refer to ‘method of baseline data collection’ above and technical appendix I)

### *Soil resources*

- 13.46 Soil types are an important part of the ALC mapping and classification system. The soils in the UK are diverse and their characteristics can vary dramatically. Soil composition is fundamentally reliant on underlying geology and drainage and soil types can vary over short distances, resulting from complex interactions between the underlying rock, landform, past and present land use and climatic conditions.
- 13.47 Soil throughout the UK has approximately 700 different soil types, with approximately 300 associations. These have been classified into 27 classifications called “soilscapes” that attempt to classify soils by similar basic properties. The importance of soil composition in agricultural practices is paramount.
- 13.48 Soil profile (i.e. topsoil and subsoil) information is provided as part of the various ALC surveys, as detailed in technical appendix I.
- 13.49 The primary development site’s geology is shown to comprise superficial drift geology, second and third River Terrace Deposits (sands and gravels). The Upper Jurassic Ampthill Clay Formation outcrops in the eastern portion of the site and underlies the site as a whole to depth.
- 13.50 The Hatton’s Road attenuation ponds area is shown to be underlain by the Upper Jurassic Kimmeridge Clay Formation and the Ampthill Clay Formation. Further information is provided in within chapter 10: geology, hydrogeology and contamination.

- 13.51 The on site soils include those developed more or less directly over Jurassic clays (Denchworth and Wicken series), in assorted kinds of loamy superficial drift over clay (St Lawrence, and Aldreth series), and in loamy drift over sand and gravel (Milton and Landbeach series).
- 13.52 The clayey Denchworth and Wicken series have impeded drainage due to slowly permeably sub-soils (mainly Wetness Class VI or III), while the others are better drained (Wetness Class II or I).
- 13.53 Three distinct units of soil can be distinguished according to soil texture and soil wetness. The three types of soil have different qualities as follows:
- Soil unit 1: highest quality soil for the most demanding end-uses, such as allotments. This soil type includes deep loamy Milton soils (Wetness Class I) and broadly correlates with agricultural land classified as grade 2 on figure 13.1
  - Soil unit 2: good quality soil for a range of uses, such as residential gardens. This soil type comprises the loamy St Lawrence, Aldreth, Milton and Landbeach (Wetness Class II or I) and broadly correlates with agricultural land classified as sub-grade 3a on figure 13.1
  - Soil unit 3: lower quality soil for less demanding end-uses, such as amenity grassland and general landscaping. This soil type comprises heavy (clayey) Denchworth and Wicken soil series (Wetness Class IV or III) and broadly equates to the land classified as sub-grade 3b on figure 13.1
- 13.54 In summary, for the areas for which ALC data are available, the majority of the soils within the primary development site have been classified as soil unit 3. The exceptions are 0.68 ha of soil unit 1 and 0.34 ha of soil unit 2. In terms of the Hatton's Road attenuation ponds area, the southern half has also been classified as soil unit 3 and the northern half as soil unit 2.
- 13.55 From the data derived from the ALC surveys, it is possible to determine the average depth of topsoil and the amount of top soil available for re-use within the soil units. Table 13.5 presents the estimated available topsoil within the site.

**Table 13.5: Topsoil resource available for reuse at the site**

Site / soil unit	Area ha (m <sup>2</sup> )	Average thickness of topsoil layer (m)	Volume estimate (m <sup>3</sup> )
1	0.68 (6,800)	0.29	1,972
2	10.61 (106,100)	0.30	31,830
3	24.75 (247,500)	0.30	74,250
Not surveyed	87.14 <sup>12</sup> (871,400)	--	--
<b>Total</b>	<b>123.18 (1,231,800)</b>	--	--

Source: Various (please refer to 'method of baseline data collection' above and technical appendix I)

<sup>12</sup> 83.22 ha of this area is occupied by Cambridge Golf Course.

### ***Future baseline***

- 13.56 The baseline conditions outlined above are likely to remain the same without development, assuming current management regimes are maintained.

### **Effects during construction**

#### ***Loss of best and most versatile agricultural land***

- 13.57 The majority of the primary development site is occupied by Cambridge Golf Course. Cambridge Golf Course occupies approximately 83.22 ha of the 99.51 ha within the primary development site (83.63%). This area has already been taken out of agricultural production and has been considered as non-agricultural land.
- 13.58 In the north of the site, there is an approximately 1.02 ha parcel of land, of which two thirds is classified as ALC grade 2 and the remaining third sub-grade 3a, both of which are considered to be best and most versatile land. To the north of Rampton Road (track) and to the east of Brookfield Farm, there is an approximately 11.33 ha parcel of land, of which one third of this parcel is classified as sub-grade 3a (best and most versatile land), with the remaining two thirds as sub-grade 3b, which is classified as moderate quality but not as best and most versatile land.
- 13.59 The northern half of the Hatton's Road attenuation ponds area (approximately 10.90 ha) is classified as sub-grade 3a, which is considered to be best and most versatile land. The majority of the southern half of this area (approximately 13.60 ha) is classified as sub-grade 3b, which again is classified as moderate quality but not as best and most versatile land.
- 13.60 For the purpose of this assessment, it has been assumed that the remaining areas within the site will be taken out of agricultural use in advance of any site preparation and earthworks activities. This will result in the loss of approximately 15.69 ha of best and most versatile agricultural land. The areas of ALC detailed above are illustrated on figure 13.1.
- 13.61 The importance of best and most versatile land (in terms of its contributions to a nationally important resource), may be considered as high; however, due to the commonality of best and most versatile land within Cambridgeshire (as illustrated in table 13.3), the importance is considered less and has been considered to be of medium importance.
- 13.62 Based on table 13.1, the magnitude / scale of change is predicted to be medium. Therefore, based on the degree of effect matrix (table 13.2), there is likely to be a moderate, significant, direct, permanent, long term adverse effect on best and most versatile land.
- 13.63 It is also worth noting that the proposed development will result in the development of non-agricultural land and poorer quality land, which is in

accordance with PPS7, particularly when considered in the context of the high levels of best and most versatile land within Cambridgeshire.

***Loss of / damage to soil resources***

- 13.64 A range of soils resources are available within the site, including a small proportion of high quality soil for the most demanding end-uses, such as allotments; good quality soil suitable for uses such as residential gardens and lower quality soil for less demanding end-uses such as amenity grassland and general landscaping.
- 13.65 As outlined above, the majority of the primary development site is occupied by Cambridge Golf Course and has already been taken out of agricultural production. Therefore ALC and associated soil resources data are not available for this area.
- 13.66 In the north of the site, there is an approximately 1.02 ha parcel of land, of which two thirds of this parcel is classified as soil unit 1 (high quality) and the remaining third soil unit 2 (good quality). To the north of Rampton Road (track) and to the east of Brookfield Farm, there is an approximately 11.33 ha parcel of land, which is classified as soil unit 3 (lower quality).
- 13.67 The northern half of the Hatton's Road attenuation ponds area (approximately 10.30 ha) is classified as soil unit 2 (good quality). The majority of the southern half of this area (approximately 14.27 ha) is classified as soil unit 3 (lower quality).
- 13.68 As outlined in chapter 2, the principal aim of the earthworks strategy is to lift ground levels above the 1 in 100 year flood level (including an allowance for climate change), to provide flood protection where necessary and to enable the development plots to be drained to the surface water attenuation lakes to be located on the eastern side of the site. This has been achieved by a proposed strategy that gives a cut and fill balance within the site boundary, i.e. materials will be sourced from within the Hatton's Road attenuation ponds area to the primary development site.
- 13.69 Based on the above, all soil resources will be maintained within the site and therefore there will be no significant effects as a result of loss of soil resources.
- 13.70 The greatest cause of damage to soil resources will be associated with the earthworks strategy and the distribution of soil resources from the Hatton's Road attenuation ponds area to the primary development site. The extraction, storage, movement and distribution of soil resources may result in soil compaction, change in soil properties and change in moisture content.
- 13.71 For the purposes of this assessment, it has been assumed that soil resources across the site to the depths outlined in table 13.5 may be subject to compaction, change in soil properties and change in moisture content. This will result in potential damage to 1,972 m<sup>3</sup> of soil unit 1; 31,830 m<sup>3</sup> of soil unit

2 and 74,250m<sup>3</sup> of soil unit 3. This totals 108,052 m<sup>3</sup> of soil resources. The areas of the three different soil units detailed above are illustrated on figure 13.1.

- 13.72 The importance of soil resources is considered to be medium overall, based on a small percentage of high quality soils within the soils assessed (1.83%). The magnitude / scale of change is predicted to be large. Therefore, based on the degree of effect matrix (table 13.2), there are likely to be substantial, significant, direct, temporary and permanent, short and long term adverse effects on soil resources. However, as set out above, this only relates to potential damage as there will be no loss of soil resources.

### **Mitigation**

#### ***Loss of best and most versatile agricultural land***

- 13.73 There are no effective measures available to mitigate the direct loss of best and most versatile agricultural land, although the associated soil resources should be appropriately managed (see below). However, as outlined above and in accordance with PPS7, the loss should be taken into account alongside other sustainability considerations.

#### ***Loss of / damage to soil resources***

- 13.74 There are a number of commitments made within the Construction Management Strategy submitted in support of the application. These include the stripping and storage of soil for later reuse within the site.
- 13.75 It is recommended that the soil resources and their reuse take into consideration the soil units outlined above. The limited soil unit 1 resource should be used within allotments / community gardens identified in the land use, open space and landscape parameter plan (figure 2.2a). Soil unit 2 resources should be used within residential gardens and the remainder of the soil resources should be used for less demanding end-uses, such as amenity grassland and general landscaping. All management practices will be in accordance with DEFRA's *Code of Practice for the Sustainable use of Soil on Construction Sites*, which is discussed above.
- 13.76 Maintaining the quality and quantity of soil resources within the site should be further detailed within a Soil Management Plan, which should be produced during the detailed application stages. The aim of the plan is to provide appropriate data and a strategy that will ensure that the soil resources of greatest quality will be transferred to areas where the end value would be of most value.

## Residual effects

### *Loss of best and most versatile agricultural land*

- 13.77 The sensitivity of best and most versatile land is considered to be medium and the magnitude / scale of change is predicted to be medium. Therefore, there is likely to be a moderate, significant, direct, permanent, long term residual adverse effect on best and most versatile land.
- 13.78 It should be noted that the proposed development will largely result in the development of non-agricultural land and poorer quality land, which is in accordance with PPS7, particularly when considered in the context of the high levels of best and most versatile land within Cambridgeshire.

### *Loss of / damage to soil resources*

- 13.79 The sensitivity of soil resources is considered to be medium and, based on the criterion identified above, the magnitude / scale of change is predicted to reduce to small, assuming the adoption of the above mitigation will mean that less than 3,000 m<sup>3</sup> of soil resources will be damaged. Therefore, there are likely to be slight, direct, temporary and permanent, short and long term residual adverse effects on soil resources that will not be significant. This only relates to potential damage as there will be no loss of soil resources.
- 13.80 Table 13.6 provides a summary of the residual significant effects remaining after mitigation.

**Table 13.6: Significant residual effects**

Significant residual effect	Sensitivity of receptor	Magnitude of change	Duration	Nature	Degree of effect	Level of certainty
Loss of best and most versatile agricultural land	Medium	Medium	Long term	Adverse	Moderate	Reasonable