Statutory Consultation 2022

Preliminary Environmental Information Report

Volume 2: Main Report

Chapter 6: Agricultural Land Quality and Farm Holdings

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6.1 Introduction

6.1.1 This chapter presents the preliminary assessment of likely significant effects of the Proposed Development on agricultural land quality and farm holdings.

6.1.2 This chapter also includes an assessment in relation to topsoil management and other aspects of soils specifically related to agriculture.

6.1.3 Impacts associated with contaminated soils on human health, the environment, buildings/buried infrastructure and those arising from disturbance from the construction of the Proposed Development and its operation are covered in **Chapter 17** Soils and Geology.

6.1.4 The EIA Scoping Report set out the proposed scope for the assessment of agricultural land quality and farm holdings. In summary, the following have been assessed in this chapter of the Preliminary Environmental Information Report (PEIR):

a. Best and Most Versatile (BMV) agricultural land, i.e. Agricultural Land Classification (ALC) Grade 1, Grade 2 and Subgrade 3a;

b. Soil resources directly affected by the Proposed Development; and

c. Local agricultural holdings directly affected by the Proposed Development.

6.1.5 Most of the land within the Proposed Development boundary is previously developed land within the existing boundary of Luton Airport and non-agricultural land at New Century Park. The Proposed Development boundary does however include approximately 120ha agricultural land in the east.

6.1.6 The Planning Inspectorate's Scoping Opinion (May 2019), provided in **Appendix 1.3** in Volume 3 of this PEIR, comment identification (ID) 14.11.2, confirmed that operational effects of the Proposed Development on rural land designations, including Nitrate Vulnerable Zones, are scoped out of this assessment.

6.1.7 The remainder of this chapter consists of:

a. **Section 6.2** Legislation, policy and guidance relevant to the scope and methodology of the agricultural land quality and farm holdings preliminary assessment;

b. **Section 6.3** Scope of the assessment;

c. **Section 6.4** Stakeholder engagement undertaken to inform the preliminary assessment;

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6.2 Legislation, policy and guidance

6.2.1 This section identifies the key legislation, policy and guidance relevant to the scope and methodology for the agricultural land quality and farm holdings assessment which may influence the type of mitigation measures that could be incorporated into the Proposed Development during construction or operation.

6.2.2 **Table 6.1** to **Table 6.4** provides a description of the relevant legislation, policy and guidance, and where each of these have been addressed in the PEIR.

Legislation

Table 6.1: Agricultural land quality and farm holdings legislation

Legislation	How and where addressed in PEIR
Schedule 3.1.c of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the Proposed Development on the following factors: land, soil, water, air and climate.	The quality of agricultural land, including any BMV land, and soils is covered in this chapter of the PEIR mainly at 6.7 Baseline Conditions, 6.9 Preliminary Assessment and 6.11 Residual Effects. Also see **Appendices 6.1** and **6.2** in Volume 3 of this PEIR which provide Agricultural Land Classification of land within the Proposed Development boundary. Effects on air are considered in **Chapter 7**. Effects on climate are considered in **Chapter 9** and **Chapter 12**. Effects on water are considered in **Chapter 20**.
Schedule 4(y) of The Town and Country Planning (Development Management (England) Order) (DMPO) 2015 sets out a requirement for local planning authorities to consult Natural England if more than 20 ha of BMV agricultural land is proposed for non-agricultural development.	This legislation does not apply but for completeness the Proposed Development involves more than 20ha of BMV agricultural land to be used for non-agricultural development. The impacts of this are assessed in **Section 6.9**.

Policy

Table 6.2: Agricultural land quality and farm holdings policy

Policy	How and where addressed in PEIR
The National Planning Policy Framework (Ref. 6.1) (NPPF) sets out national planning policy on development involving agricultural land. Paragraphs 84 and 174 are of relevance to the assessment of agricultural land quality and farm holdings. Paragraph 84 sets out that planning policy and decisions should enable *"the development and diversification of agricultural and other land-based rural businesses"*. Paragraph 174 sets out that planning policy and decisions should contribute and enhance the natural and local environment by *"recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land.."*	The quality of agricultural land, including any BMV land, is covered in this chapter of the PEIR, mainly at 6.7 Baseline Conditions, 6.9 Preliminary Assessment and 6.11 Residual Effects. Also see **Appendices 6.1** and **6.2** in Volume 3 of this PEIR which provide Agricultural Land Classification of land within the Proposed Development boundary.
National Policy Statement for National Networks – December 2014 (NPSNN) (Ref. 2) The NPSNN sets out the need for, and Government's policies to deliver, development of nationally significant infrastructure projects on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects (NSIP) on the road and rail networks. The provisions of the NPSNN relevant to environmental assessment broadly mirror those as outlined in the ANPS.	There are no elements of the Proposed Development that would be classified as a NSIP on the national road or rail network. However, the NPSNN remains a relevant consideration as works are proposed on the SRN at Junction 10 as part of the Proposed Development. As provisions relevant to environmental assessment broadly mirror those as outlined in the ANPS they have been appropriately considered in this preliminary assessment. Further consideration of the proposals against relevant NPSNN policies will take place following this consultation and in preparation of the DCO application.
Safeguarding our soils: A strategy for England (Ref. 6.3) states that: '…*soil is a fundamental and essentially non-renewable natural resource, providing the essential link between the components that make up our environment. Soils vary hugely from region to region and even from*	The principles and objectives set out in this document have been taken into account in the mitigation measures for soil resources as set out in **Section 6.8** of this PEIR.

Policy	How and where addressed in PEIR
field to field. They all perform a number of valuable functions or ecosystem services for society including: *a. nutrient cycling;* *b. water regulation;* *c. carbon storage;* *d. support for biodiversity and wildlife;* *e. providing a platform for food and fibre production and infrastructure'*	
A Green Future: Our 25 Year Plan to Improve the Environment (Ref. 6.4) recognises soil as an important national resource, and the Plan states that: "*We will ensure that resources from nature, such as food, fish and timber, are used more sustainably and efficiently. We will do this* (in part) by: *… improving our approach to soil management: by 2030 we want all of England's soils to be managed sustainably, and we will use natural capital thinking to develop appropriate soil metrics and management approaches…"* The maintenance, and improvement, of soil health is therefore a material consideration when deciding if a development is appropriate on agricultural land. Soil health can be defined as a soil's ability to function and sustain plants, animals and humans as part of the ecosystem.	The principles and objectives set out in this plan have been taken into account in the mitigation measures for soil resources as set out in **Section 6.8** of this PEIR.
The Luton Local Plan (Ref. 6.5) does not expressly provide for the protection of BMV within Luton. Appendix 9 of the Plan sets out a number of policies from the Bedfordshire and Luton Minerals and Waste Local Plan (Ref. 6.6) which are not being replaced by the Luton Local Plan on the basis that they are not relevant to the borough. Policy GE6 (Protection of best and most versatile agricultural land) is included in these	No response required.

Policy	How and where addressed in PEIR
policies which are not being replaced on the basis that there *"....are no plans to protect agricultural land within the borough (other than where covered by environmental designations or other policy concerns)"*	

6.2.3 The Airports National Policy Statement (ANPS) does not have effect in relation to an application for development consent for an airport development not comprised of an application relating to the Heathrow Northwest Runway. Nevertheless, as set out within paragraph 1.41 of the ANPS, the Secretary of State considers that the contents of the ANPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the south east of England.

6.2.4 Accordingly, whilst the ANPS does not have effect in relation to the Proposed Development, it will be an important and relevant consideration in the determination of LLAL's application for development consent. A summary of the relevant provisions for Agricultural land quality and farm holdings and how these have been addressed in this PEIR is provided within **Table 6.3**

Table 6.3: How relevant Agricultural land quality and farm holdings requirements of ANPS are addressed in the PEIR

ANPS Section	How and where addressed in PEIR
Paragraphs 5.108, 5.115 and 5.126 of the ANPS set out policy regarding development on the best and most versatile (BMV) agricultural land. Paragraph 5.108 sets out that BMV is land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses. Paragraph 5.115 states: "*The applicant should take into account the economic and other benefits of best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, the applicant should seek to use areas of poorer quality land in preference to that of a higher quality. The applicant should also identify any effects, and seek to minimise impacts, on soil quality, taking into account any mitigation measures proposed*."	The quality of agricultural land, including any BMV land, is covered in this chapter of the PEIR mainly at 6.7 Baseline Conditions, 6.9 Preliminary Assessment and 6.11 Residual Effects. Also see **Appendices 6.1** and **6.2** in Volume 3 of this PEIR for Agricultural Land Classification surveys within the Proposed Development boundary. Detailed Agricultural Land Classification (ALC) surveys (Post 1988) of agricultural land within the Main Application Site are described in **Section 6.7**. The Proposed Development has sought to avoid impacting on high quality BMV as far as possible i.e. avoiding permanent irreversible impacts on BMV. A preliminary assessment of the likely significant effects of the Proposed Development on agricultural land is made at **Section 6.9**. Also see **Appendices 6.1** and **6.2** in

ANPS Section	How and where addressed in PEIR
Paragraph 5.126 notes that the Secretary of State will take into account the economic and other benefits of BMV and ensure the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources.	Volume 3 of this PEIR for full details of the ALC surveys within the Proposed Development boundary. Soil Resource Surveys (SRS) to determine soil resources within the Main Application Site available for reuse as part of the Proposed Development have been carried out and are provided in **Appendices 6.3** to **6.5** in Volume 3 of this PEIR. The findings of the SRS are summarised at **Section 6.7** of this chapter. **Section 6.8** describes the mitigation measures outlined to minimise impacts on soils. A preliminary assessment of the likely significant effects of the Proposed Development on soil resources is made at **Section 6.9** of this chapter
Paragraphs 5.109, 5.118, 5.122 and 5.126 of the ANPS set out policy on soil resources. Paragraph 5.109 sets out that the development of land will *"affect soil resources, including physical loss of and damage to soil resources, through land contamination and structural damage. Indirect impacts may also arise from changes in the local water regime, organic matter content, soil biodiversity and soil process."* Paragraphs 5.118 and 5.122 refer to examples of mitigation measures to minimise impacts on soils and land use. Paragraph 5.126 sets out that the Secretary of State will take into account the economic and other benefits of BMV agricultural land, and ensure the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources.	The sustainable use of soil as part of the Proposed Development is considered in this chapter, mainly in **Sections 6.7, 6.8**, **6.9** and **6.11** . Also see **Appendices 6.1** to **6.6** in Volume 3 of this PEIR.

Guidance

Table 6.4: Agricultural land quality and farm holdings guidance

Guidance	How and where addressed in PEIR
National Planning Practice Guidance (NPPG) sets out, under the Natural Environment section, guidance on Agriculture and Soil, as follows: Paragraph 001: *"Planning policies and decisions should take account of the economic and other benefits of the best and most versatile agricultural land."* Paragraph 002: *"Soil is an essential natural capital asset that provides important ecosystem services – for instance, as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution.* *Defra has published a Code of practice for the sustainable use of soils on construction sites which may be helpful when setting planning conditions for development sites. It provides advice on the use and protection of soil in construction projects, including the movement and management of soil resources"*	SRS to determine soil resources within the Main Application Site available for reuse as part of the Proposed Development have been carried out and are provided in **Appendices 6.3** to **6.5** in Volume 3 of this PEIR. The findings of the SRS are summarised at **Section 6.7**. A preliminary assessment of the likely significant effects of the Proposed Development on soil resources is made at Section 6.9 of this chapter. Detailed Agricultural Land Classification (ALC) surveys (Post 1988) of agricultural land within the Main Application Site are described in **Section 6.7**. Sustainable use of soils on construction sites is considered in the embedded and good practice mitigation measures set out in **Section 6.8**. A preliminary assessment of the likely significant effects of the Proposed Development on agricultural land is made at **Section 6.9**. Also see **Appendices 6.1** and **6.2** in Volume 3 of this PEIR for full details of the ALC surveys within the Proposed Development boundary.
Safeguarding our soils: A strategy for England sets out objectives for improving soil health and an ambitious vision to protect and improve soil to meet an increased global demand for food and to help combat the adverse effects of climate change.	Soil resources are identified and described in **Sections 6.7, 6.8, 6.9** and **6.11**. Details of the SRS carried out on site are given at **Appendices 6.3** to **6.5** in Volume 3 of this PEIR. An outline Soil Management Plan is given at **Appendix 6.6** in Volume 3 of this PEIR.
The Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref. 6.7) prepared by Defra sets out best practice for identifying, safeguarding, storing and handling soil resources for reuse on site in a sustainable manner.	Soil resources are identified and described in **Sections 6.7, 6.8, 6.9** and **6.11**. Details of the SRS carried out on site are given at **Appendices 6.3** to **6.5** in Volume 3 of this PEIR. An outline Soil Management Plan is given at **Appendix 6.6** in Volume 3 of this PEIR.

Guidance	How and where addressed in PEIR
A Green Future: Our 25 Year Plan to Improve the Environment sets out objectives for improving soil health.	Soil resources are identified and described in **Sections 6.7, 6.8, 6.9** and **6.11**. Details of the SRS carried out on site are given at **Appendices 6.3** to **6.5** in Volume 3 of this PEIR. An outline Soil Management Plan is given at **Appendix 6.6** in Volume 3 of this PEIR.

6.3 Scope of the assessment

6.3.1 This section describes the scope of the agricultural land quality and farm holdings assessment, including how the assessment has responded to the Scoping Opinion. The temporal and spatial scope, the relevant receptors, and matters scoped in and out are identified. A description of engagement undertaken with relevant technical stakeholders to develop and agree this scope is provided in **Section 6.4**.

Scoping Opinion

6.3.2 The EIA Scoping Report sets out the proposed scope and assessment methodologies to be employed in the EIA and is provided in **Appendix 1.2** of Volume 3 to this PEIR.

6.3.3 In response to that Scoping Report, a Scoping Opinion was received from the Planning Inspectorate on 9 May 2019 and is provided in **Appendix 1.3** in Volume 3 of this PEIR.

6.3.4 **Table 6.5** describes the main matters highlighted by the Planning Inspectorate in the Scoping Opinion relevant to this chapter and how these have been addressed in this PEIR. Final responses to all comments received during Scoping will be provided in an appropriate format in the ES.

Table 6.5: Agricultural land quality and farm holdings Scoping Opinion comments

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
4.6.9	Soil Management Plan (SMP): **Chapter 10** Soils and Geology does not refer to the production of a SMP; however, it is noted to have been referenced in **Chapter 6** Agricultural Land Quality and Farming Circumstances. The Inspectorate considers that a SMP is equally applicable to this aspect chapter and would therefore expect measures within a SMP to be referenced in the ES. It is recommended that an outline SMP be included with the ES, with the final SMP appropriately secured through the Applicant's DCO or other suitably robust method.	An outline SMP is provided in **Appendix 6.6** in Volume 3 of this PEIR. The SMP will be secured through the CoCP to be included as part of the DCO.
4.11.1	The Scoping Report states that no further impacts will occur from loss of agricultural land, once the Proposed Development is constructed. The Inspectorate accepts that given this information significant effects on	**Section 6.9** of this PEIR provides a preliminary assessment of the likely significant effects of the Proposed Development on agricultural holdings. This preliminary assessment includes cross

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	agricultural land quality and soil resources are unlikely to occur during operation and is content to scope these matters out. The Inspectorate considers that the potential exists for significant effects on the continued operation of agricultural holdings from traffic/road changes and noise impacts. It is appreciated that these effects are likely to be assessed within separate relevant chapters of the ES, and cross reference to these assessments would be appropriate within the assessment of effects on agricultural interests.	reference to other relevant PEIR chapters, which assess effects on receptors arising from traffic/road changes and noise impacts.
4.11.2	The Scoping Report states that as the Proposed Development will not contain any agricultural land, designations such as Nitrate Vulnerable Zones are unlikely to be affected. Given the nature of the Proposed Development the potential for significant release of organic and inorganic fertilizer into the environment is considered low and significant effects are considered unlikely to occur. In light of this the Inspectorate agrees to scope this matter out.	Agricultural land designations, such as Nitrate Vulnerable Zones are scoped out of this PEIR and the ES.
4.11.3	Permanent construction impacts on soil resources: The Scoping Report states that this matter is scoped in due the potential for significant effects, but then states that effects can be reduced to minor adverse (and therefore not significant) following best practice techniques. For clarity, the inspectorate advises that this matter is fully assessed in the ES.	A preliminary assessment of the likely significant effects of the Proposed Development on soil resources is given in Section 6.9 of this PEIR.
4.11.4	Study area: The Inspectorate advises that the ‘study area’ should include the extent of the anticipated impacts, including any land-holdings outside of	The study area for the agricultural land quality and farm holdings

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	the 'Main Application Site' as described in Paragraph 16.4.1 which could be affected by the Proposed Development, where applicable.	assessment is defined at **Section 6.3.5** of this PEIR. The study area includes all land holdings outside the Main Application Site that are considered potentially susceptible to significant effects.
4.11.5	Data gathering and survey: It is noted from the Paragraph 16.4.7 of the Scoping Report that Agricultural Land Classification (ALC) surveys were carried out in 2018 to cover land not covered by existing data sources. It is not clear if these surveys are the 'soil survey data collected on site as part of previous investigations' referred to in Paragraph 16.4.2. The ES should clearly set out details of all survey work carried out to inform the assessment.	Details of ALC surveys covering all the agricultural land within the Main Application Site are provided in **Section 6.7** of this PEIR and at **Appendices 6.3** to **6.5** in Volume 3 of this PEIR, and will be provided in the ES.
4.11.6	Assessment methodology: From the information in 16.3 it is not clear if all the defined criteria (land-take, severance, infrastructure, nuisance) would have to be engaged or if one criterion falling into the description provided would lead to the corresponding assessment of magnitude. This should be clarified in the ES.	The assessment of magnitude is based on the highest magnitude of impact regarding the four criteria set out in **Table 6.9** (i.e. land-take, severance, infrastructure, nuisance). Only one of these criterion needs be engaged to lead to the corresponding assessment of magnitude. A preliminary assessment of the likely significant effects of the Proposed Development on agricultural holdings (as per the defined criteria: land-take, severance, infrastructure, nuisance) is given in Section 6.9 of this PEIR.

Spatial scope

6.3.5 The spatial scope of the agricultural land quality and farm holdings assessment is set out below.

Study area

The Study Area for this assessment of agricultural land quality and farm holdings is:

a. agricultural land required for constructing the Main Application Site, and
b. agricultural field margins required for green infrastructure/landscape screen planting, as shown on **Figure 6.1** in Volume 4 of this PEIR.

6.3.6 Receptors within this study area are described in **Section 6.7** of this chapter. These extents are considered to comprise all agricultural land which has the potential of experiencing significant effects from the Proposed Development.

Zone of influence

6.3.7 As described in **Chapter 21** In-combination and cumulative effects, the zone of influence for the assessment of agricultural land quality and farm holdings is the same as the agricultural Study Area, i.e. agricultural land required for constructing the Main Application Site, and agricultural field margins required for green infrastructure/landscape screen planting, as shown on **Figure 6.1** in Volume 4 of this PEIR.

Temporal Scope

6.3.8 The Proposed Development will be delivered over two construction phases, within which construction and operation may take place simultaneously. Three assessment phase are considered in this assessment as described in **Chapter 5** Approach to the Assessment.

6.3.9 The assessment of agricultural land quality and farm holdings determined that agricultural land required for the Proposed Development was farmed under a Full Business Tenancy (FBT) i.e. prior to Phase 1 as described in **Section 6.9**. Regarding soil resources, it is proposed there will be green infrastructure/ landscape mitigation and ecological habitat creation works in Phases 1, 2a and 2b. There will also be earthworks to construct a platform for the new terminal building in Phases 2a and 2b.

Receptors

6.3.10 The following receptors will be assessed:

a. Best and Most Versatile (BMV) agricultural land, i.e. Agricultural Land Classification (ALC) Grade 1, Grade 2 and Subgrade 3a;
b. Soil resources directly affected by the Proposed Development; and
c. Local agricultural holdings directly affected by the Proposed Development.

Matters scoped out

6.3.11 In accordance with the Planning Inspectorate's Scoping Opinion (May 2019), operational effects of the Proposed Development on rural land designations, including Nitrate Vulnerable Zones and the operational effects of the Proposed

Development on agricultural land quality and soil are scoped out of this assessment as summarised in **Table 6.5**.

6.4 Stakeholder engagement and consultation

6.4.1 The **2019 Statutory Consultation Feedback Report** and 2019 PEIR contains a full account of the previous statutory consultation process and issues raised in feedback.

6.4.2 Natural England (NE) is the statutory consultee with regard to agricultural land quality, namely in connection with development proposals which involve more than 20ha of the Best and Most Versatile (BMV) agricultural land. No concerns have been expressed by NE on the assessment presented in the PEIR for the previous statutory consultation.

Table 6.6: Stakeholder engagement relating to agricultural land and farm holdings

Meeting name and date	Attendees (organisation)	Summary of discussion
Responses to Farm Impact Assessment questions were provided by the CEO of Pilkington Farm Partnership (PFP) during a telephone conversation on 17th May 2019.	PFP (Agricultural Tenant of agricultural land required for the Proposed Development).	Information provided by PFP has been used as part of the baseline at Section 6.7 of this chapter. The agricultural tenancy was terminated in 2020. It is therefore determined that there will be no PFP agricultural holdings affected by the Proposed Development.
Landowner engagement during January and February 2020	Legal and General (L&G).	The Proposed Development includes the provision of a Fire Training Ground (FTG) on land just north of L&G's landholding. The L&G land is in agricultural use, being part of Copt Hall and Someries Farm tenancy. L&G is concerned that the fire training activities at the FTG could be a source of noise, visual disturbance and fumes that could adversely affect the operation of the agricultural holding. L&G sought assurances that significant adverse effects on their farm holding would not occur and queried how any mitigation, if required, would be achieved.
AT Oliver Holdings. Engagement in January and February 2020.	AT Oliver Holdings, LLAL and legal representatives	The Proposed Development includes landscape mitigation measures which involve hedgerow/screen planting along field boundaries on land owned by AT Oliver Holdings.

Meeting name and date	Attendees (organisation)	Summary of discussion
		AT Oliver Holdings object to the inclusion of some of their land being included within the DCO. The land in question is allocated for housing in the Local Plan and the Proposed Development will directly impact upon the deliverability of providing housing efficiently on this site. The Proposed Development will directly impact upon the ability to use the land efficiently and will prevent the optimum level of housing being provided.

6.5 Methodology

Overview

6.5.1 This section outlines the methodology employed for assessing the likely significant effects on agricultural land quality and farm holdings from the construction and operation of the Proposed Development.

6.5.2 The approach to defining future baseline is described in **Section 5.4** of **Chapter 5** Approach to the Assessment. The future baseline considered for agricultural land quality and farm holdings is described in **Section 6.7** of this chapter.

Construction assessment methodology

6.5.3 The likely significant effects on agricultural land quality and agricultural holdings will occur during the construction phase, i.e. when agricultural land will be taken out of agricultural production and soil resources (topsoil and subsoil) may be stripped, stored and possibly replaced as part of a landscaping scheme. Where soil resources are to be left in *situ*, they may need to be cordoned off to prevent being tracked by machinery/plant, or be protected by geotextile materials and/or other provision, e.g. stone layer, to protect the soil beneath a haul road.

6.5.4 Significant effects of the Proposed Development on an agricultural holding(s) may take place with the commencement of construction, when agricultural land is taken out of production and movement through the construction site is prohibited for non-construction activities; as this may lead to severance of farmland. During construction, agricultural water supply pipes and/or field drains may be disrupted. Where agricultural buildings or other fixed equipment are to be demolished, this would occur during the construction phase.

6.5.5 Establishing the baseline conditions has involved a desktop study of relevant published information, ALC surveys, SRS, as described in more detail below.

Data gathering

6.5.6 The assessment has included a desktop study of relevant published information, in conjunction with a detailed ALC survey to fill in any data gaps, i.e. where detailed (post-1988) ALC information held by NE, and available on MAGIC.gov.uk, does not cover all the agricultural land within the study area. Relevant published sources of information include:

a. Soil Survey of England and Wales (Ref. 6.8);
b. 'Soils and their use in Eastern England', Soil Survey of England and Wales Bulletin No.13 (Ref. 6.9);
c. Soil Auger Bore Records (where available) (Ref. 6.10);
d. Provisional (Pre 1988) Agricultural Land Classification of the Eastern Region (1:250,000) (Ref. 6.11);
e. Post 1988 Agricultural Land Classification (Ref. 6.12);
f. Likelihood of Best and Most Versatile Agricultural Land (1:250,000) (Ref. 6.13)
g. Gridpoint Meteorological data for Agricultural Land Classification of England and Wales and other Climatological Investigations (Ref. 6.14)
h. British Geological Survey. Solid and superficial deposits from the Geology of Britain viewer
i. Soil survey data collected on Site as part of previous investigations carried out on behalf of LLAL.

6.5.7 Where the former Ministry of Agriculture, Fisheries and Food (MAFF) has carried out detailed ALC surveys in accordance with current ALC Guidelines (October 1988), the ALC grading can be obtained online via the MAGIC website (www.magic.gov.uk). A large proportion of the agricultural land required for the eastern part of the Proposed Development is covered by a MAFF Post 1988 ALC survey. The details of the MAFF ALC survey are set out in **Table 6.1** and **Appendix 6.1** of this PEIR. This information has been utilised as part of the baseline in **Section 6.7** of this PEIR.

6.5.8 MAFF has carried out detailed (Post 1988) surveys which cover most of the agricultural land within the study area which are provided in **Appendix 6.1** in Volume 3 of this PEIR). Not all the agricultural land within the study area has been surveyed by MAFF. To complete the detailed ALC information, an ALC survey was carried by a Chartered Soil Scientist in accordance with current MAFF ALC Guidelines (October 1988) the results of which are provided in **Appendix 6.2** in Volume 3 of this PEIR. The ALC survey involved examining soils with a hand-held soils auger and a spade at a density of 1 profile per hectare (ha). The soil profiles were described using the Soil Survey Field Handbook. Each soil profile has been ascribed an ALC grade following the ALC Guidelines. A number of samples of topsoil were collected on site and were sent to an accredited laboratory for analysis of Particle Size Distribution (Texture). Current best practice for ALC set out by Natural England has been followed. (Ref. 6.15)

6.5.9 A preliminary assessment of soil resources within the study area which are available for reuse as part of the Proposed Development has been carried out by experienced soil scientists, following best practice set out by Defra. Soil profiles were examined in hand-dug trial pits at 34 locations and Soil Resource Survey reports are provided as **Appendices 6.3** to **6.5** in Volume 3 of this PEIR.

6.5.10 A Farm Impact Assessment (FIA) of the farm holding physically affected by the Proposed Development (immediately to the east of the airport) was carried out by interviewing the tenant farmer by telephone ahead of the tenancy ending. This was to determine the nature and size of the affected farm business, assess the likely significant effects of the Proposed Development on the farm holding, and to devise appropriate mitigation where practicable.

6.5.11 The criteria for determining the significance of the effect of the Proposed Development on agricultural land quality and soil are set out below, as described in the Scoping Report (2019).

Magnitude of Impact

Agricultural land quality

6.5.12 For the purpose of this assessment, the magnitude of impact of the loss of agricultural land to the national resource is described as either 'High', 'Medium', 'Low' or 'Very Low' as shown in **Table 6.7** below:

Table 6.7: Magnitude of Impact – Agricultural Land Quality

Magnitude of Impact	Definition
High	**20ha or more** of BMV agricultural land (*i.e.* agricultural land classified as Grades 1, 2 and 3a) under the MAFF ALC system is affected by the proposed development, and/or change is likely to cause a direct adverse or permanent or long term (more than 10 years) impact on the integrity/value of the receptor (see **Note 1**).
Medium	**Between 10.0ha to 19.9ha** of BMV agricultural land (*i.e.* MAFF ALC grades 1, 2 and 3a), **and/or 50.0ha** or more of lower quality agricultural land (*i.e.* agricultural land classified as ALC grade 3b, 4 and 5 under the MAFF ALC system) is affected permanently or over the long term (more than 10 years), by the proposed development. The latter specifically relates to the effect of the loss of land in grades 3b, 4 and 5 to national agricultural land resource, and does not take account of landscape character, or ecological qualities that low quality agricultural land may have, and/or change is likely to impact

	adversely the integrity/value of the receptor but recovery is predicted in the medium term (>5 to 10 years) and there is predicted to be no permanent impact on its integrity. Temporary or potentially reversible development of more than 10 ha agricultural land
Low	**Between 5.0ha to 9.9ha** of BMV agricultural land (*i.e.* MAFF ALC grades 1, 2 and 3a), and/or **10.0ha to 49.9ha** of lower quality agricultural land (*i.e.* MAFF ALC grades 3b, 4 and 5) is affected permanently, or over the long term (more than 10 years), by the proposed development. The latter specifically relates to the effect of the loss of land in grades 3b, 4 and 5 to national agricultural land resource, and does not take account of landscape character, or ecological qualities that low quality agricultural land may have, and/or change is likely to adversely impact the integrity/value of the receptor but recovery is expected in the short term (0 to ≤5 years = 'aftercare period'). See **Note 2**. Temporary or potentially reversible development of less than 10 ha of agricultural land.
Very Low	**4.9ha or less** of best and most versatile agricultural land (*i.e.* MAFF ALC grades 1, 2 and 3a), or **less than 10.0ha** of lower quality agricultural land (*i.e.* MAFF ALC grades 3b, 4 and 5), or non-agricultural/other land, is affected by the proposed development. The effect of the loss of land in grades 3b, 4 and 5 is in terms of the national agricultural land resource, and does not take account of landscape character, or ecological qualities that low quality agricultural land may have.
Note 1: A 20ha threshold follows the approach of the Town and Country Planning (Development Management Procedure) (England) Order 2015). As described under the 'Consultations' section in Natural England TIN049 (Second Edition, December 2012), for planning applications, specific consultations are required under Development Management Procedure Order where non-agricultural development proposals that are not consistent with an adopted local plan and involve the loss of twenty hectares or more of the BMV. *The '20ha threshold' represents a measure of significance for the loss of such land which has been tried and tested in land use planning, and at public inquiries, over the last three decades, or more.*	
Note 2: A threshold of 5.0ha follows the applicable thresholds and criteria of the Environmental Impact Assessment Handbook, 2020 (Ref. 6.16)	

Soil Resources

6.5.13 The magnitude of the predicted impact on soils in terms of the functions/ecosystem services they perform, is described as either 'High', 'Medium', 'Low', or 'Very Low' as shown in **Table 6.8**.

Table 6.8: Magnitude of Impact – Soil Resources

Magnitude of Impact	Definition
High	**50,000m^3 of soil or more** Based on soil resources within 20.0ha (200,000m^2) of land area or more, affected by the development with an average 0.25m (25cm) layer of soil (topsoil or subsoil)
Medium	**25,000m^3 to 49,999m^3 of soil** Based on soil resources within 10.0ha to 19.9ha (100,000m^2 to 199,999m^2) of land area, with an average 0.25m (25cm) layer of soil (topsoil or subsoil).
Low	**12,500m^3 to 24,999m^3 of soil** Based on soil resources within 5.0ha to 9.9ha (50,000m^2 to 99,999m^2) of land area affected by the development, with an average 0.25m (25cm) layer of soil (topsoil or subsoil) (see **Table 6.7, Note 2**)
Very Low	**12,499m^3 or less** Based on soil resources within 4.9ha or less (49,999m^2 or less) of land area affected by the development, with an average 0.25m (25cm) layer of soil (topsoil or subsoil).

Agricultural Holdings

6.5.14 The magnitude of impact on agricultural holdings that has been defined for the assessment is the highest level identified out of one or more of the four main criteria in **Table 6.9**, e.g. reaching the definition accompanying "high" for of any one of land-requirement, severance, infrastructure or nuisance would register the magnitude as "high".

Table 6.9: Magnitude of Impact – Agricultural Holdings

Magnitude of Impact	Definitions			
	Land-requirement	Severance	Infrastructure	Nuisance (e.g. noise/dust)

High	>20% of all land farmed	No access available to severed land	Direct loss of farm dwelling, building or structure	Nuisance discontinues land use or enterprise
Medium	>10% - 20% of all land farmed	Access available to severed land via the public highway	Loss of or damage to infrastructure affecting land use	Nuisance necessitates change to scale or nature of land use or enterprise
Low	> 5% - 10% of all land farmed	Access available to severed land via private way	Infrastructure loss/damage does not affect land use	Nuisance does not affect land use or enterprise
Very Low	5% or less of all land farmed	No new severance	No impact on farm infrastructure	No nuisance on land use or enterprise

Sensitivity of Receptor

Agricultural land quality

6.5.15 The sensitivity of agricultural land in the different ALC grades can be assessed as 'High', 'Medium', 'Low' or 'Very Low', as set out in **Table 6.10.**

Table 6.10: Sensitivity of Receptor – Agricultural Land Quality

Value	Receptors
High	Best and Most Versatile (BMV) agricultural land (i.e. ALC Grade 1, Grade 2 and Subgrade 3a agricultural land), i.e. together form approximately 42% of farmland in England. See **Note 1**.
Medium	ALC Subgrade 3b agricultural land, See **Note 1**.
Low	Grade 4 or 5 agricultural land, i.e. approximately 27.5% of farmland in England and not in definition of BMV agricultural land. See **Note 1**.
Very Low	Non-agricultural land, including woodland, access tracks and hard-standing.
Note 1: As described in NE's Technical Information Note 049, the BMV agricultural land is defined as ALC Grades 1, 2 and 3a in Annex 2 of the NPPF. Current estimates are that Grades 1 and 2 together form about 21% of all farmland in England, and Subgrade 3a also covers 21%.	

Soil Resources

6.5.16 The sensitivity of soil receptors, in this case soil resources available on the Main Application Site which are available for reuse (e.g. for restoring agricultural land, reuse in residential gardens, etc) is described as 'High', 'Medium', 'Low' or 'Very Low' are shown in **Table 6.11**.

Table 6.11: Sensitivity of Receptor – Soil Resources

Value	Receptors
High	Soil types with low resilience to structural damage when being handled. Heavy soils with >27% clay content: heavy silty clay loam (HZCL), heavy clay loam (HCL), sandy clay (SC), silty clay (ZC), clay (C).
Medium	Soil types with moderate resilience to structural damage when being handled. Medium textured soils with <27% clay content: silt loam (ZL), medium silty clay loam (MZCL), medium clay loam (MCL), sandy clay loam (SCL).
Low	Soil types with high resilience to structural damage when being handled. Light textured soils – sand (S), loamy sand (LS), sandy loam (SL), sandy silt loam (SZL).
Very Low	Soil types unsuitable for reuse in restoring agricultural land, reuse in residential gardens, reuse in landscaping schemes, or reuse in ecological schemes, etc. For example, Made Ground/contaminated land.

Agricultural holdings

6.5.17 The sensitivity of agricultural holdings can be described as 'High', 'Medium', or 'Low' as shown in **Table 6.12**.

Table 6.12: Sensitivity of Receptor – Agricultural Holdings

Value	Agricultural Holdings
High	Farm types in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence of the infrastructure itself, for example: a. Dairying, in which milking cows must travel between fields and the parlour at least twice a day;

	b. Irrigated arable cropping and field-scale horticulture, which are dependent on irrigation water supplies. c. Intensive livestock or horticultural production which is undertaken primarily within buildings, often in controlled environments. d. Marginal agricultural holdings e. Horses f. Fruit crops g. Land in agri-environmental schemes (Higher Level Stewardship) h. Land in agri-environmental schemes (Organic Entry Level Stewardship) i. Land with organic/organic conversion status j. Land with Notifiable Weeds k. Land with Notifiable Scheduled Diseases l. Land in woodland/forestry grant schemes m. Statutory rural land designations, e.g. Nitrate Vulnerable Zones (re EU Nitrate Directive (91/676/EC)).
Medium	Farm types in which there is a degree of flexibility in the normal course of operations, for example: a. Combinable arable farms; and grazing livestock farms (other than dairying) b. Unimproved pasture c. Crops d. Land in agri-environmental schemes (Entry Level Stewardship)
Low	Large agricultural holdings Tenancy or other short-term arrangements, e.g. annual grass keep Farm types and land uses undertaken on a non-commercial basis.

Determination of Significance

6.5.18 The predicted effect may be beneficial (positive) or adverse (negative) on agricultural land quality, soil and agricultural holdings. The significance of the effect is assessed as either ‘Major’, ‘Moderate’, ‘Minor’ or ‘Negligible’ according to the magnitude of the impact and sensitivity of the receptor, as set out in **Table 6.13**.

Table 6.13: Impact Assessment Matrix (IAM) – Agricultural Land Quality and Farm Holdings

Magnitude of Impact	Sensitivity of Receptor			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Very Low	Minor	Minor	Negligible	Negligible

6.5.19 Major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. However, the professional judgement of technical experts may also be applied where necessary.

Operational assessment methodology

6.5.20 Where the potential exists for significant effects of the Proposed Development on an agricultural holding(s) during the operational stage a preliminary assessment has been undertaken.

6.5.21 The magnitude of impact on agricultural holdings that has been defined for the assessment is the highest level identified out of the four main criteria in **Table 6.9**, i.e. land-requirement, severance, infrastructure or nuisance.

6.5.22 The sensitivity of agricultural holdings can be described as ‘High’, ‘Medium’, or ‘Low’ as shown in **Table 6.12**.

6.5.23 The predicted effect may be beneficial (positive) or adverse (negative) on agricultural holdings. The significance of the effect is assessed as either ‘Major’, ‘Moderate’, ‘Minor’ or ‘Negligible’ according to the magnitude of the impact and sensitivity of the receptor, as set out in **Table 6.13**.

6.6 Assumptions and limitations

6.6.1 No notable assumptions have been made, nor technical limitations encountered, during the preparation of this assessment of effects on agricultural land quality, soil resources, and agricultural holdings.

6.6.2 **Chapter 5** Approach to the Assessment describes the general approach adopted to ensure that a reasonable worst case is assumed in this assessment including the use of parameters, accounting for uncertainty, and incorporating flexibility in design and demand forecasts.

6.7 Baseline conditions

6.7.1 This section describes the quality of agricultural land, soil resources and agricultural holdings within the Study Area.

Existing conditions

Agricultural land quality

6.7.2 The quality of approximately 120ha of agricultural land within the Main Application Site has been determined by detailed ALC surveys as follows:

a. Ministry of Agriculture, Fisheries and Food (MAFF) detailed (Post 1988) Agricultural Land Classification at Winchhill Farm, Off Darley Road, Darley Hall, Hertfordshire (MAFF Refs: 020/94 and 045/95), a copy of which is given at **Appendix 6.1** in Volume 3 of this PEIR; and

b. A detailed (Post 1988) ALC of approximately 18.9ha of land at Wandon End, Hertfordshire, carried out on 21st June 2018, given at **Appendix 6.2** in Volume 3 of this PEIR.

6.7.3 British Geological Survey (BGS) (Ref. 6.17) information available online has been utilised to show the superficial deposits (Drift) and bedrock underlying the study area. This provides information on the geological materials from which the soil has formed.

6.7.4 The study area is underlain by Chalk in the Lewes Nodular Chalk Formation and Seaford Chalk Formation (undifferentiated). The bedrock is covered by Clay-with-flints Formation (Clay, Silt, Sand and Gravel) over the whole Site.

6.7.5 The Soil Survey of England and Wales (SSEW) soil map of South East England (Sheet 6) and accompanying Bulletin No. 15 ‘Soils and their Use in South East England’ (Ref. 6.18) reports that agricultural land within the study area is covered by soils grouped in the Batcombe Association.

6.7.6 The SSEW describes how soils the Batcombe Association are developed in Plateau Drift and Clay-with-flints which cap chalk plateaux at 90 to 250m Above Ordnance Datum (AOD), variably flinty fine silty and fine loamy over clayey Batcombe and Hornbeam soils, stagnogleyic paleo-argillic brown earths, with grey mottled subsoils dominate the association. Batcombe and Hornbeam soils have moderately permeable clayey subsoils and, where underlain at shallow by chalk, are only occasionally waterlogged (Wetness Class II).

6.7.7 From the results of the detailed ALC surveys provided in **Appendices 6.1** and **6.2** in Volume 3 of this PEIR, it has been determined that the quality of agricultural land directly impacted by the Proposed Development is classified as a mixture of Subgrade 3a or Subgrade 3b due mainly to soil wetness, i.e. where the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock.

6.7.8 Some of the profiles have moderately stony (flinty) topsoil and this is sufficient to limit the quality of agricultural land to subgrade 3a, and in some cases Subgrade 3b.

6.7.9 Some agricultural land to the south of Wandon End is limited by gradient to Subgrade 3b, i.e. angle of slope greater than 7° and up to 11°.

6.7.10 Subgrade 3a falls in the best and most versatile (BMV) category, i.e. ALC Grade 1, Grade 2 and Subgrade 3a, as defined by paragraph 174 and Annex 2

of the NPPF (2021). **Table 6.10** defines Grade 1, Grade 2 and Subgrade 3a agricultural land as a receptor of high sensitivity, whilst agricultural land in Subgrade 3b is a receptor of medium sensitivity.

6.7.11 The area and proportion of agricultural land in each ALC grade has been measured from the ALC map provided as **Figure 6.1** in Volume 4 of this PEIR, and are reported in **Table 6.14**.

Table 6.14: Agricultural Land Classification

ALC Grade	TOHA ALC Survey at Wandon End (Ha)	MAFF Post 1988 ALC Survey (045/95) (Ha)	Total Area of Agricultural Land within Main Application Site (Ha)	% of Main Application Site
Grade 1 (Excellent) - High Sensitivity	0	0	0	0
Grade 2 (Very Good) - High Sensitivity	0	0	0	0
Subgrade 3a (Good) - High Sensitivity	15.5	42.1	57.6	12.0
Total BMV, i.e. ALC Grade 1, 2 and Subgrade 3a - High Sensitivity	**15.5**	**42.1**	**57.6**	**12.0**
Subgrade 3b (Moderate) – Medium Sensitivity	3.4	59.0	62.4	13.0
Grade 4 (Poor) – Low Sensitivity	0	0	0	0
Grade 5 (Very Poor) – Low Sensitivity	0	0	0	0
Total Agricultural Land	**18.9**	**101.1**	**120.0**	**25.0**
Non-agricultural/Other Land (i.e. previously developed land, buildings, road, woodland) – Very Low Sensitivity			360	75.0
Total Area (and %) of Main Application Site			**480.0**	**100.0**

Soil Resources

6.7.12 Three SRS of Wigmore Valley Park and the northern extent of agricultural land within the Main Application Site were carried out between 2016 and 2018. The SRS reports are given as **Appendices 6.3** to **6.5** in Volume 3 of this PEIR.

6.7.13 Wigmore Valley Park is currently under amenity grassland, with some established trees and wooded areas. The eastern boundary of Wigmore Valley Park is formed by an earth mound planted with trees. There is a closed landfill site in the western end of Wigmore Valley Park, but this area was excluded from the SRS due to the potential risk for contamination. Further information on the historic landfill is provided in **Chapter 17** Geology and Soils of Volume 2 of this PEIR.

6.7.14 Soil profiles were examined in hand-dug trial pits at 34 locations, as shown in **Appendix 6.3** in Volume 3 to this PEIR. Four main types of soil were determined:

a. Type 1: Agricultural soil;
b. Type 2: Agricultural soil (calcareous);
c. Type 3: Parkland soil; and
d. Type 4: Woodland soil.

Type 1

6.7.15 Type 1 soil comprises slightly to moderately flinty, heavy clay loam and clay topsoil over well drained to slightly slowly permeable and seasonally waterlogged clay subsoil (Wetness Classes I and II). These soils are consistent with those described by the SSEW in the Batcombe Association. This type of soil was recorded at the following trial holes: (TH) 6, 10, 16, 18-22.

Type 2

6.7.16 Type 2 comprises greyish brown, calcareous clay over strong brown, calcareous clay subsoil to a depth of between 210mm to 310mm, where very pale chalk is encountered. Soil profiles in Type 2 are well drained (Wetness Class I). This type of soil was recorded at the following trial holes: (TH) 3, 5, 7, 9, 11 and 12.

Type 3

6.7.17 Type 3 comprises dark greyish brown, medium clay loam topsoil over well drained to slightly slowly permeable and seasonally waterlogged clay subsoil (Wetness Classes I and II). This type of soil was recorded at the following trial holes: (TH) 23-28 and 33.

Type 4

6.7.18 Type 4 has a litter layer consisting of dark greyish brown peaty sand over very dark greyish brown heavy clay loam topsoil. The subsoil is well drained to slightly slowly permeable and seasonally waterlogged clay (Wetness Classes I

and II). This type of soil was recorded at the following trial holes (TH) 23-28 and 33.

6.7.19 Following **Table 6.11**, Soil Type 1, 2 and 4 above, which comprise mainly heavy clay loam to clay soils are considered to be of high sensitivity, as they have low resilience to structural damage when being handled.

6.7.20 Soil Type 3 which includes medium clay loam soils are considered to be of medium sensitivity, as they have medium resilience to structural damage when being handled.

Agricultural holdings

Main Application Site

6.7.21 Agricultural land which is required for the construction in the eastern part of the Proposed Development is owned by the Applicant. The land was farmed by a tenant, on a Farm Business Tenancy (FBT) at Winch Hill, which expired in 2020 and was not renewed. Following **Table 6.12**, an agricultural tenant is assessed as being a receptor of low sensitivity.

6.7.22 There are no agricultural buildings or other fixed infrastructure within the Main Application Site.

6.7.23 No agricultural land within the Main Application Site is entered in an agri-environment scheme.

6.7.24 Following the termination of the FBT at Winch Hill in 2020, approximately 42.4ha of the agricultural land in the Winch Hill area under the ownership of the Applicant will continue to be used for arable production in Phase 1. This land is taken out of arable production in Phase 2a, as shown in **Figure 14.12** provided in Volume 4 of this PEIR. The arable land would be managed under a new tenancy agreement with an agricultural business in the area

Off-site Planting

6.7.25 As shown on **Figure 6.1** in Volume 4 of this PEIR, a number of field boundaries/margins on agricultural land to the north, east and south of the Main Application Site are required as part of the Proposed Development for landscape mitigation/screen planting. This will involve planting native trees in order to strengthen/thicken existing hedgerows, and to create new hedgerows along field boundaries in places. This Off-site planting occurs on land as follows:

a. land near Tea Green (north of Main Application Site): Off-site Planting affects some field margins owned by A.T. Owen and Sons (medium sensitivity);

b. land near Wandon End (north of Main Application Site) and Breachwood Green (east of Main Application Site): Off-site Planting affects some field margins owned by PFP as part of the King's Walden Estate. In this regard, PFP/King's Walden Estate is the land-owner, and is a receptor of medium sensitivity (see **Table 6.12**); and

c. land at Copt Hall and Someries Farm (south of Main Application Site): Off-site Planting affects some field margins owned by L&G (medium sensitivity).

Future baseline

6.7.26 In the absence of the Proposed Development, there is likely to be a change to the future baseline conditions as a result of other factors and developments in proximity to the airport. These are the conditions that will prevail 'Without Development' in place. The 'Without Development' scenario is used, where appropriate, as a comparator for the assessed case, to show the effect of the Proposed Development against an appropriate reference point. The approach to defining future baseline and the developments identified for consideration are described in **Section 5.4** of **Chapter 5** Approach to the Assessment of Volume 2 of this PEIR.

Agricultural land quality

6.7.27 When considering the 'Without Development' scenario, it is assumed that the quality of agricultural land (i.e. current ALC grading) will remain broadly the same in the short to medium term. However, research has been undertaken to predict the impact of climate change on the capability of land for agriculture as defined by the Agricultural Land Classification (Ref. 6.19). Twelve UKCP09 climate change scenarios are investigated namely the medium, high and low emissions scenarios for 2020 (2010-2039), 2030 (2020-2049), 2050 (2040-2069) and 2080 (2070-2099) time periods. The report concludes, *inter alia*, that:

"Climate change is likely to have an impact on arable production in the UK in the coming decades. While warmer temperatures and increased CO_2 concentrations may result in improvements in wheat and potato yields; it is likely crops will suffer from adverse effects of climate change, especially related to water stress and crop heat stress. It is likely that the agricultural sector will have to adapt to the changing conditions, in order to stay profitable. It is currently unclear what the combined effect of environmental change, as well as any adaptations, will have on crop production."

6.7.28 Amongst the 'Potential Further Work' (Section 10), the report recommends, *inter alia*, that:

"The ALC system should be reviewed using contemporary weather and crop yield statistics to determine the significance of the droughtiness factor in the grading of agricultural land in England and Wales. The analyses presented in this report do suggest that some arable areas in lowland England are likely to suffer from increased droughtiness which would significantly reduce the yields of cereal crops. Under current conditions this deficiency could not be alleviated by management techniques (e.g. the areas are in regions where water supply is limited for irrigation). This is an important issue which needs to be addressed in the near future."

6.7.29 Most of the significant effects of climate change occur in the longer term, i.e. 2050 and 2080 time periods, when areas of the UK are likely to experience similar climatic conditions to those in present-day Mainland Europe. Therefore,

for the purposes of this assessment, it is assumed that the baseline ALC grades determined on-site in 2017 are unlikely to change significantly over the mid-term (i.e. to 2040) under natural conditions, where the land is undeveloped.

Soils

6.7.30 Soil develops at the rate of approximately 1cm per 500 years and for practical purposes is regarded as a finite resource. Under a 'Without Development' scenario, it is predicted that the quality and quantity of soil would not change significantly from current baseline conditions for the mid to long term, i.e. to 2050.

Agricultural holdings

6.7.31 Agricultural land which is required for the construction in the eastern part of the Proposed Development is owned by the Applicant. The land is subject to a temporary agricultural tenancy which will expire prior to construction of the Proposed Development. This tenancy is therefore not considered to be in place in the future baseline.

6.8 Embedded and good practice mitigation measures

6.8.1 This section describes the embedded and good practice mitigation for agricultural land quality and farm holdings that has been incorporated into the Proposed Development design or assumed to be in place before undertaking the assessment. A definition of these classifications of mitigation and how they are considered in the EIA is provided in **Chapter 5** Approach to the Assessment of this PEIR.

Embedded

6.8.2 Most of the agricultural land within the Main Application Site, which is owned by the Applicant, was formerly used for intensive arable production. All agricultural land within the Main Application Site has been taken back in hand by the Applicant.

6.8.3 As shown on **Figures 14.11 to 14.13** the Landscape Mitigation Plans for Phases 1, 2a, and 2b provided in Volume 4 of this PEIR, approximately 42.4ha of agricultural land within the Main Application Site will be retained in arable production in Phase 1. It is proposed the arable land would be managed under a new tenancy agreement. All land is taken out of arable production in Phase 2a.

6.8.4 The neutral grassland provided as biodiversity mitigation is potentially reversible, i.e. the grassland could be returned to its former intensive agricultural productivity by future generations, if required. Most of the agricultural land within the Main Application Site was formerly used for producing arable crops. In many respects, the change in land-management from arable to grassland can benefit soil health, as follows.

6.8.5 A healthy soil has a well-developed soil structure, where soil particles are aggregated into soil peds (structural units) separated by pores or voids. This allows the free movement of water (precipitation) through the soil and facilitates

gaseous exchange between the plant roots and the air. These soils are well aerated (oxygenated), which encourages healthy plant (crop) growth and an abundance of soil fauna and aerobic microbes. These soils often have high amounts of soil organic matter (SOM), associated with an accumulation of plant and animal matter, and thus are a good store of soil organic carbon (SOC).

6.8.6 The greatest benefits in terms of increase in SOM, and hence SOC, can be realised through land use change from intensive arable to grasslands. Likewise, SOM and SOC are increased when cultivation of the land for crops (tillage) is stopped and the land is uncultivated (zero tillage). Global evidence suggests that zero tillage results in more total soil carbon storage when applied for 12 years or more. Therefore, there is evidence that conversion of land from arable to grassland which is uncultivated over the long-term (>12 years) increases SOC and SOM.

6.8.7 Soils are habitats for millions of species, ranging from bacteria, fungi, protozoa, and microscopic invertebrates to mites, springtails, ants, worms and plants. Soil biota are strongly influenced by land management. Modern farming has led to the loss of soil biodiversity. Changes in land management practice and land use can have large effects on soil biodiversity over relatively short-time scales. Reducing the intensity of management, introducing no-tillage management, and converting arable land to pasture, such as grassland, has substantial beneficial effects.

6.8.8 In a well-structured soil, water and air can move freely through cracks and pores. However, a poor soil structure prevents water and air movement, and increases the risk of runoff. Soil structure is improved when the land is uncultivated over time (no tillage), and when soil organic matter content (SOM) is increased through the accumulation of plant material, such as roots, in the soil. The aerobic (oxygenated) decomposition of SOM helps to bind soil particles together into aggregates (peds). Therefore, the conversion of land which is tilled for arable to long-term grassland (no tillage) improves soil structure over time.

Good Practice

6.8.9 Aims and objectives for safeguarding and, where possible, improving soil health are set out in the Government's Safeguarding our soils: A strategy for England. The Soil Strategy for England sets out an ambitious vision to protect and improve soil to meet an increased global demand for food and to help combat the adverse effects of climate change.

6.8.10 The quality and quantity of soil within the Main Application Site impacted by the Proposed Development will be maintained by implementing appropriate techniques for stripping, storing and re-use. These measures are consistent with good practice set out in Defra's 'Code of Practice for the Sustainable Management and Use of Soil on Construction Sites. This approach has been adopted in an outline SMP given at **Appendix 6.6** in Volume 3 of this PEIR, which will be secured and developed as a requirement of the CoCP.

6.9 Preliminary assessment

6.9.1 This section presents the results of the preliminary assessment of likely significant effects with the embedded and good practice mitigation measures, described in the previous section, in place.

6.9.2 A summary of the assessment of effects is provided in **Table 6.9** in **Section 6.14**. Significant effects are discussed in further detail in this section.

Phase 1

Construction effects

Agricultural land quality

6.9.3 Agricultural land within the Main Application Site, which has been used in the past mainly for producing arable crops will either be retained in arable production, converted to neutral grassland/neutral meadow grassland, or scrub or woodland, for landscape and biodiversity mitigation purposes in Phase 1,as shown on **Figure 14.11** in Volume 4 of this PEIR.

6.9.4 Approximately 2.4ha of land in Subgrade 3a (high sensitivity) and 0.4ha of land in Subgrade 3b (medium sensitivity) is proposed to be developed in Phase 1. This is considered a permanent change from agricultural to non-agricultural use.

6.9.5 Approximately 5.1ha of land in Subgrade 3a (high sensitivity) and 2.2ha of land in Subgrade 3b (medium sensitivity) is proposed to be converted from arable production to woodland or scrub in Phase 1. This is considered a permanent change from agricultural to non-agricultural use.

6.9.6 Approximately 42.2ha of agricultural land is proposed to be converted from intensive arable production to less-intensive neutral grassland/neutral meadow grassland in Phase 1, of which approximately 27.0ha is in Subgrade 3a and approximately 15.2ha is in Subgrade 3b.

6.9.7 The soil profiles to be converted from arable production to neutral grassland/neutral meadow grassland will remain intact and their physical properties will be unchanged. The ALC system only considers the physical properties of the soil (texture, structure, stones, drainage, etc) and not changes in land-use, which is controlled by land management. Therefore, by simply taking the land out of arable production and changing the land-use from arable to grassland does not change the ALC grade, i.e., the original, physical soil profiles remain in-situ. Accordingly, based on professional judgement, the impact of this potentially reversible change is not considered material to this assessment.

6.9.8 The Proposed Development is determined to result in an impact of Low magnitude on BMV agricultural land in Subgrade 3a (high sensitivity) in Phase 1. This is assessed as being a **moderate adverse** effect, which is **significant**.

6.9.9 The Proposed Development is determined to result in an impact of Low magnitude on agricultural land in Subgrade 3b (medium sensitivity) in Phase 1. This is assessed as being a **minor adverse** effect, which is **not significant**.

Soil resources

6.9.10 The Proposed Development would result in the clearance and soil stripping of approximately 36.2ha of land in Phase 1; of this, 4.9ha falls within Wigmore Valley Park or in land formerly used for agriculture (Soil Types 1, 2 or 4). The remaining areas to be cleared include either locations within the existing airport development or overlying the landfill.

6.9.11 The Proposed Development would retain for landscape purposes the highest quality soils, from land within Wigmore Valley Park or that has been formerly used for agriculture; comprising 12,250m³ of topsoil (4.9ha of land affected to a depth of 0.25m) and12,250 m³ of subsoil (4.9ha of land affected to a further depth of 0.25m).

6.9.12 It is assumed that soils from urban areas outside the landfill would not be reused within the proposed landscape scheme, as they are likely to be of poorer quality. These areas comprise approximately 24,750m³ of topsoil (9.9ha of land affected to a depth of 0.25m) and 24,750m³ of subsoil (9.9ha of land affected to a further depth of 0.25m). Soils from within the area of landfill would not be available for re-use within the proposed landscape scheme due to their potential for contamination. Further information on the impact on soils is provided in **Chapter 11** Soils and Geology of this PEIR.

6.9.13 Approximately 80% of the soil to be retained for landscape purposes is comprised of clay and heavy clay loam texture, which is considered to have high sensitivity. This is because these types of soil have a low resilience to structural damage during soil handling when they are too wet. This makes them susceptible to structural damage during earthworks in wetter months of the year, particularly over the late autumn and winter.

6.9.14 Approximately 20% of the soil to be retained for landscape purposes is of medium clay loam texture which is considered to have medium sensitivity.

6.9.15 These works will be implemented in accordance with a SMP, to be included as part of the CoCP. The SMP will follow current best practice for stripping, storing and re-using soil resources (topsoil and subsoil). An outline SMP is provided as **Appendix 6.6** in Volume 3.

6.9.16 By implementing the SMP, it is considered that the Proposed Development will have a Low magnitude of impact on soil resources in Phase 1. This is assessed as being a **minor adverse** effect, which is **not significant.**

Agricultural holdings

6.9.17 All agricultural land which is required for development in Phase 1 is owned by the Applicant. No other agricultural holdings are directly adversely affected by the Proposed Development.

6.9.18 Some agricultural land will be retained in agricultural use (i.e. arable land and neutral grassland/neutral grassland meadows) in Phase 1, as shown on **Figure 14.11** in Volume 4 of this PEIR. It is proposed that this agricultural land will be managed under a new agricultural tenancy to be arranged.

6.9.19 Some agricultural land along field boundaries to the north, south and east of the Main Application Site will be required for delivery and management of 'additional landscape mitigation' in Phase 1. Three agricultural holdings of medium sensitivity would be affected. It is however considered that there will be no adverse construction impact from these works on agricultural land quality or soil resources because:

a. there will be no significant reduction in the size/area (ha) of the affected agricultural holdings,
b. there will be no severance of fragmentation of the holdings,
c. no buildings or agricultural infrastructure would be adversely affected, and
d. there will be no issues arising from dust or noise.

6.9.20 The Proposed Development is assessed as having **no adverse impact** on agricultural holdings in Phase 1.

Operation effects

Agricultural holdings

6.9.21 Agricultural land holdings to the north, south and east of the Main Application Site would not experience any material direct or indirect operational impacts in Phase 1. This is determined to result in an impact of very low magnitude on agricultural holdings (medium sensitivity). This is assessed as being a **minor adverse** effect, which is **not significant**.

Phase 2a

Construction effects

Main application site

Agricultural land quality

6.9.22 Agricultural land within the Main Application Site, which has been used in the past mainly for producing arable crops, will either be retained in other landscape treatments for landscape mitigation purposes (i.e. neutral grassland/neutral meadow grassland, scrub or woodland), or stripped for development in Phase 2a.

6.9.23 Approximately 17.6ha of land in Subgrade 3a (high sensitivity) and 26.4ha of land in Subgrade 3b (medium sensitivity) is proposed to be developed in Phase 2a. This is considered a permanent change from agricultural to non-agricultural use.

6.9.24 A further approximately 12.0ha of agricultural land is proposed to be converted from arable production to neutral grassland/neutral meadow grassland in Phase 2a, of which approximately 1.5ha is in Subgrade 3a (28.5ha in total) and approximately 10.5ha is in Subgrade 3b (26.2ha in total).

6.9.25 The soil profiles to be converted from arable production to neutral grassland/neutral meadow grassland will remain intact and their physical properties will be unchanged. The ALC system only considers the physical properties of the soil (texture, structure, stones, drainage, etc) and not changes in land-use, which is controlled by land management. Therefore, by simply taking the land out of arable production and changing the land-use from arable to grassland does not change the ALC grade, i.e., the original, physical soil profiles remain in-*situ*. Accordingly, based on professional judgement, the impact of this potentially reversible change is not considered material to this assessment.

6.9.26 The Proposed Development is determined to result in an impact of medium magnitude on BMV agricultural land in Subgrade 3a (high sensitivity) in Phase 2a. This is assessed as being a **major adverse** effect, which is **significant**.

6.9.27 The Proposed Development is determined to result in an impact of low magnitude on agricultural land in Subgrade 3b (medium sensitivity) in Phase 2a. This is assessed as being a **minor adverse** effect, which is **not significant**.

Soil resources

6.9.28 The Proposed Development would result in the clearance and soil stripping of approximately 58.5ha of land in Phase 2a; of this, 54.7ha falls within Wigmore Valley Park or in land formerly used for agriculture (Soil Types 1, 2, 3 or 4). The remaining areas to be cleared include either locations within the existing airport development or overlying the landfill.

6.9.29 The Proposed Development would retain for landscape purposes approximately 12.4ha of topsoil and 23.3ha of subsoil in Phase 2a, from land that has been formerly used for agriculture; comprising 31,000m³ of topsoil (12.4ha of land affected to a depth of 0.25m) and 58,3000m³ of subsoil (23.3ha of land affected to a further depth of 0.25m).

6.9.30 Approximately 79,000m³ of topsoil (31.6ha of land affected to a depth of 0.25m) and 51,700m³ of subsoil (20.7ha of land affected to a further depth of 0.25m) from land that has been formerly used for agriculture would not be retained for landscape purposes in Phase 2a, as it is surplus to future requirements.

6.9.31 Soils from urban areas outside the landfill would similarly not be reused within the proposed landscape scheme. These areas comprise approximately 26,750m^3 of topsoil (10.7ha of land affected to a depth of 0.25m) and 26,750m^3 of subsoil (10.7ha of land affected to a further depth of 0.25m). Soils from within the area of landfill would not be available for re-use within the proposed landscape scheme due to their potential for contamination. Further information on the impact on soils is provided in **Chapter 11** Soils and Geology of this PEIR.

6.9.32 Approximately 80% of the soil to be retained for landscape purposes comprises of clay and heavy clay loam texture, which is considered to have high sensitivity. Approximately 20% of the soil to be retained for landscape purposes is of medium clay loam texture which is considered to

have medium sensitivity. These works will be implemented in accordance with a SMP, to be included as part of the CoCP.

6.9.33 Due to the high clay content of the soils present within the site, these soils are unsuitable for reuse within proposed public realm areas. It is assumed accordingly that soils would be imported for soft landscape areas in proposed public realm locations in this phase.

6.9.34 Soils to be retained for landscape purposes would be managed in accordance with the SMP. Due to the volume of topsoil and subsoil that has been formerly used for agriculture or from urban areas outside the landfill that would not be reused within the proposed landscape scheme, it is considered that the Proposed Development will have a high magnitude of impact on soil resources in Phase 2a. This is assessed as being a **major adverse** effect, which is **significant**.

Agricultural Holdings

6.9.35 All agricultural land which is required for development in Phase 2a is owned by LLAL. No other agricultural holdings are directly adversely affected by construction of the Proposed Development.

6.9.36 Some agricultural land will be retained in agricultural use (i.e. arable land and neutral grassland/neutral grassland meadows) in Phase 2a. It is proposed that this agricultural land will be managed under a new agricultural tenancy to be arranged.

6.9.37 The Proposed Development is assessed as having **no adverse impact** on agricultural holdings in Phase 2a.

Operation effects

Agricultural holdings

6.9.38 Agricultural land holdings to the north, south and east of the Main Application Site would not experience any material direct or indirect operational impacts in Phase 2a. This is determined to result in an impact of very low magnitude on agricultural holdings (medium sensitivity). This is assessed as being a **minor adverse** effect, which is **not significant**.

Phase 2b

Construction effects

Main application site

Agricultural land quality

6.9.39 Agricultural land within the Main Application Site, which has been used in the past mainly for producing arable crops will either be retained in other landscape treatments or will previously have been stripped for development.

6.9.40 No further agricultural land would be lost to development or converted to other uses in Phase 2b. The residual impact of activities on agricultural land in Subgrade 3a and 3b from Phase 2a will however remain in Phase 2b.

6.9.41 The Proposed Development is accordingly assessed to result in a **major adverse** effect on BMV agricultural land in Subgrade 3a (high sensitivity), which is **significant**; and a **minor adverse** effect on agricultural land in Subgrade 3b in Phase 2b, which is **not significant**.

Soil resources

6.9.42 The Proposed Development would result in the further clearance and soil stripping of approximately 6.4ha of land in Phase 2b. This equates to approximately 16,000m³ of topsoil (6.4ha of land affected to a depth of 0.25m) and 16,000m³ of subsoil (6.4ha of land affected to a further depth of 0.25m). These soils would not be retained for landscape purposes, as they are surplus to future requirements.

6.9.43 Due to the high clay content of the soils present within the site, these soils are unsuitable for reuse within proposed public realm areas. It is assumed again that soils would be imported for soft landscape areas in proposed public realm locations in this phase.

6.9.44 Due to the residual loss to soil resources from Phase 2a, alongside the further losses identified in Phase 2b, it is determined that the Proposed Development will have a High magnitude of impact and **major adverse effect** on soil resources in Phase 2b, which is **significant.**

Agricultural holdings

6.9.45 Agricultural land which is required for development in Phase 2b is owned by LLAL. No other agricultural holdings are directly adversely affected by construction of the Proposed Development.

6.9.46 Some agricultural land will be retained in agricultural use (i.e. arable land and neutral grassland/neutral grassland meadows) in Phase 2b. It is proposed that this agricultural land will be managed under a new agricultural tenancy to be arranged.

6.9.47 The Proposed Development is assessed as having **no adverse impact** on agricultural holdings in Phase 2b.

Operation effects

Agricultural holdings

6.9.48 Agricultural land holdings to the north and east of the Main Application Site would not experience any material direct or indirect operational impacts in Phase 2b.

6.9.49 The L&G agricultural land holding to the south of the Main Application Site will however experience some indirect operational impacts from Phase 2b as a result of operational practices following the relocation of the Fire Training Ground (Work No. 2d) and an increase in noise. These nuisances would not

however affect the existing land use or enterprise. This is determined to be an impact of low magnitude on agricultural holdings (medium sensitivity). This is assessed as being a **minor adverse** effect, which is **not significant**.

Sensitivity Analysis

6.9.50 There are certain known scenarios or risks that may occur that could influence the conclusions of the core assessment. These scenarios and the general approach to considering them in this assessment are described in **Section 5.4** of **Chapter 5** Approach to the Assessment.

6.9.51 **Table 6.15** provides a qualitative assessment of any likely changes to the conclusions of the assessment reported in this chapter, in the event that that scenario or risk is realised.

Table 6.15: Qualitative Sensitivity Analysis

Sensitivity scenario	Potential impact and change	Likely effect
1, 19mppa Application	An increase in the assumed baseline capacity from 18 to 19 mppa is considered not to change the assessed impacts on agricultural land, soil resources or agricultural holdings.	No change
2, Faster growth	A rise in passenger demand and higher passenger throughput quicker than predicted is considered not to change the assessed impacts on agricultural land, soil resources or agricultural holdings.	No change
3, Slower growth	A lower rate of forecast passenger demand and passenger throughput being achieved later than predicted is considered not to change the assessed impacts on agricultural land, soil resources or agricultural holdings.	No change

6.10 Additional mitigation

6.10.1 No additional mitigation has been identified. Therefore, the residual effects remain as assessed and reported in Section 6.9 of this PEIR.

6.11 Residual effects

6.11.1 No additional mitigation has been identified. Therefore, the residual effects remain as assessed and reported in Section 6.9 of this PEIR.

6.12 In-combination climate change effects

6.12.1 This section provides a preliminary assessment of potential changes to the findings of the agricultural land quality and farm holding assessment, taking into account the predicted future conditions as a result of climate change, known as In-combination Climate Change Impacts (ICCI).

6.12.2 This assessment has been undertaken using the methodology and climate change predictions described in **Chapter 9** Climate Change of this PEIR. The results are provided in **Table 6.8**.

Table 6.16: Agricultural land quality and farm holdings in-combination climate change impacts

Climate hazard	Likely ICCI	Consequence of ICCIs considering embedded environmental measures/good practice	Significance of ICCI effects
Increase in winter precipitation rate	Soil resources of high sensitivity (low resilience) are at risk of structural damage if handled when too wet, particularly during the late autumn and winter.	The sustainable use of soil resources on site will be maintained by implementing a SMP, as part of the Draft CoCP. An outline SMP is given at **Appendix 6.6** in Volume 3 of this volume.	Minor - Not significant

6.13 Monitoring

Construction monitoring

6.13.1 As described in Section 6 ‘Site Inspections’ of the outline SMP given as **Appendix 6.6** in Volume 3 of this PEIR, an appropriately qualified soil scientist will be appointed to implement the SMP. A soil scientist will carry out inspections and liaise with the landscape architect / site engineer / contractor during the earthworks and landscape phases.

6.13.2 A soil scientist will inspect the site during the following operations:

a. Pre-treatment of existing vegetation;
b. Soil stripping and storage;
c. Topsoil placement and preparation;
d. Soil profile decompaction;
e. Soil cultivation (and amelioration);
f. Limited soil testing to confirm fertility status and horticultural properties;
g. Tree pit construction.

6.13.3 A short report will be produced after each site inspection to ensure the work is satisfactory and compliant with the SMP and specification. At the end of the contract, a completion report will be issued to confirm that a suitable soil quality has been achieve and that the soils are compliant with the specification and fit for the landscape scheme.

Operational monitoring

6.13.4 There is no monitoring required for agricultural land or farm holdings once the Proposed Development is completed.

6.14 Preliminary assessment summary

6.14.1 **Table 6.17** provides a summary of the identified impacts, mitigation and likely effects of the Proposed Development on agricultural land quality and farm holdings.

Table 6.17: Agricultural land quality and farm holdings preliminary assessment summary

Impact	Embedded/Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Construction						
Subgrade 3a agricultural land	Neutral grassland provided as biodiversity mitigation potentially reversible.	Low (7.5ha in Phase 1) Medium (17.6ha in Phases 2a and 2b)	High	Moderate Adverse – Significant (Phase 1), Major Adverse – Significant (Phases 2a and 2b)	None	Moderate Adverse – Significant (Phase 1). Major Adverse – Significant (Phases 2a and 2b).
Subgrade 3b agricultural land	None	Very Low (2.6ha in Phase 1) Low (26.4ha in Phase 2a)	Medium	Minor Adverse – Not Significant (Phases 1, 2a and 2b)	None	Minor Adverse – Not Significant (Phases 1, 2a and 2b)
Soil resources (topsoil and subsoil)	Outline SMP/CoCP appropriately secured through the DCO.	Low (24,750m³ topsoil / 24,750m³ subsoil Phase 1) High (130,500m³ topsoil / 103,200m³ subsoil Phase 2a and 146,500m³ topsoil / 119,200m³ subsoil Phases 2b)	Medium	Minor Adverse – Not Significant (Phase 1) Major Adverse – Significant (Phases 2a and 2b)	None	Minor Adverse –Not Significant (Phase 1) Major Adverse – Significant (Phases 2a and 2b)

Impact	Embedded/Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Agricultural holding	None	No Impact (Phases 1, 2a and 2b)	Medium	Negligible– Not Significant (Phases 1, 2a and 2b)	None	Negligible– Not Significant (Phases 1, 2a and 2b)
Operation						
Agricultural holding	None	Very Low (Phases 1 and 2a) rising to Low (Phase 2b)	Medium	Minor Adverse – Not Significant (Phases 1, 2a and 2b)	None	Minor Adverse – Not Significant (Phases 1, 2a and 2b)

6.15 Completing the assessment

6.15.0 The assessment of effects on agricultural land quality and farm holdings will be updated to reflect any changes in the design of the Proposed Development and mitigation measures that may be incorporated that impact agricultural land or operations.

6.15.1 Where margins of agricultural fields are required for green infrastructure/tree planning outside of the Main Application Site affects other agricultural holdings, the likely effects of the tree/hedgerow planning on the holding will be assessed in the ES.

COMPETENT EXPERTS

Topic	Role	Company	Qualifications/competencies/experience of author
Agricultural land quality and farm holdings	Author	Askew Land + Soil	The Author is a Chartered Scientist (CSci), a Fellow (FI Soil Sci) of the British Society of Soil Science (BSSS), and a Registered Environmental Impact Assessment (EIA) Practitioner with the Institute of Environmental Management and Assessment (IEMA). He has over thirty years of experience in environmental research and consultancy. He is Past President of the Institute of Professional Soil Scientists (IPSS) - which is now the Professional Practice Committee of the BSSS. As an Expert Witness in agriculture and land use, and has given evidence at numerous public inquires; including Town and Country Planning Act (1990) local plan inquiries, and appeals. He has acted as Agriculture assessment lead on many major infrastructure projects including HS2. He routinely prepares soil management strategies, and advise upon the sustainable use of soil resources on construction and mineral sites. He specializes in mineral and waste applications and restoration and aftercare schemes. He also carries out agriculture impact assessments, including farm business appraisals and evaluation, and rural policy analysis.

GLOSSARY AND ABBREVIATIONS

Term	Definition
AOD	Above Ordnance Datum
ALC	Agricultural Land Classification
ANPS	Airports National Policy Statement
AOD	Above Ordnance Datum
The Applicant	London Luton Airport Limited
BGS	British Geological Society
BMV	Best and Most Versatile
CEA	Cumulative Effects Assessment
CoCP	Code of Construction Practice
Competent experts	Specialists that have demonstrable expertise in their fields, either in number of years of experience in the field, or professional qualification.
DCO	Development Consent Order
DEFRA	Department for Environment Food & Rural Affairs
EIA	Environmental Impact Assessment
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
ES	Environmental Statement
EU	European Union
FIA	Farm Impact Assessment
ha	Hectare
ICCI	In-combination Climate Change Impacts
IEMA	Institute of Environmental Management and Assessment
km	Kilometre
LBC	Luton Borough Council
LLAL	London Luton Airport Limited, the owners of London Luton Airport
LPA	Local Planning Authority
The airport	London Luton Airport
m	metre
MAFF	Ministry of Agriculture, Fisheries and Food
Main Application Site	The area to the east of Luton Airport where the main works for the Proposed Development will take place (as shown on **Figure 2.1** in Volume 2 of this report). Excludes the Off-site Car Park and Highway Interventions.

NE	Natural England
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPS	National Policy Statement
NSRI	National Soil Resources Institute
Scoped in	Elements identified to be included in the Environmental Impact Assessment
Scoped out	Elements identified to be excluded from the Environmental Impact Assessment
SMP	Soil Management Plan
SRS	Soil Resource Survey
SSEW	Soil Survey of England and Wales
UK	United Kingdom

REFERENCES

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Ref 6.2 Department for Transport (2014) National Policy Statement for National Networks. HMSO, UK
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Ref 6.4 Department for Food and Rural Affairs (2018) A Green Future: Our 25 Year Plan to Improve the Environment
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Ref 6.6 Bedfordshire County Council (2005) Bedfordshire and Luton Minerals and Waste Local Plan
Ref 6.7 Department for Food and Rural Affairs (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
Ref 6.8 Soil Survey of England and Wales (1983) Soil Map for Eastern England (1:250,000)
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Ref 6.14 Meteorological Office (1989) Gridpoint Meteorological data for Agricultural Land Classification of England and Wales and other Climatological Investigations
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Ref 6.17 British Geological Survey. BGS Maps Portal
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Ref 6.19 C.A. Keay, R.J.A. Jones, C. Procter, V. Chapman, I. Barrie, I. Nias, S. Smith, S. Astbury (2013) The Impact of climate change on the capability of land for agriculture as defined by the Agricultural Land Classification, Department for Environment, Food and Rural Affairs