# 14 Agricultural Land and Soil Resources

## 14.1 Introduction

14.1.1 This chapter of the ES was prepared by Askew Land & Soil Limited and presents an assessment of the likely significant effects of the Proposed Development on agricultural land quality and soil resources. Embedded mitigation measures are identified, where appropriate, to avoid, reduce or offset any significant adverse effects identified and/or enhance likely beneficial effects. The nature and significance of the likely residual effects are reported.

14.1.2 The chapter is supported by the following appendices:

- Appendix 14.1: Agricultural Land Classification (ALC): Begbroke Innovation District, Oxfordshire;
- Appendix 14.2: Framework Soil Management Plan (FSMP).

### Competence

14.1.3 This chapter has been prepared by Robert Askew who is a Chartered Scientist (CSci) and a Fellow (F.I. Soil Sci) of the British Society of Soil Science (BSSS). As an Expert Witness in agriculture and land use, Robert has given evidence at numerous public inquiries; including Town and Country Planning Act (1990) local plan inquiries, 1925 Allotment Act inquiries and Section 78 appeals. Robert is currently Topic Lead for Agriculture, Forestry and Soil for HS2 Phase 2B (Crewe to Manchester) and has recently managed Agricultural Land Classification (ALC) and Soil Resource Surveys as part of Highways England's Lower Thames Crossing (LTC) highway scheme. Robert has given evidence on ALC and soil at the All Party Parliamentary Group (APPG) on Agroecology at the Palace of Westminster.

14.1.4 Robert is a Registered Environmental Impact Assessment (EIA) Practitioner with the Institute of Environmental Management and Assessment (IEMA). Robert has over thirty years of experience in environmental research and consultancy and he is Past President of the Institute of Professional Soil Scientists (IPSS). He holds a Master of Science (Msc) degree in Landscape, Ecology, Design and Management from Wye College (University of London). Robert holds a Construction Skills Certification Scheme (CSCS) Card as a Professional Qualified Person, and a range of health, safety, and environment training qualifications appropriate for ALC and soil work on infrastructure and construction projects under the Construction, Design and Management (CDM) Regulations 2015. Robert meets the requirements of the BSSS Professional Competency Standard (PCS) scheme for ALC (see BSSS PCS Document 2 '*Agricultural Land Classification of England and Wales*'. The BSSS PCS scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and IEMA.

## 14.2 Legislation, Planning Policy and Guidance

### Legislation Context

14.2.1 The following legislation is relevant to the Proposed Development:

- Schedule 4.2(c) of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] 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.
- Schedule 4(y) of The Town and Country Planning (Development Management Procedure (England) Order) (DMPO) 2015[2]. Sets out a requirement to consult Natural England if more than 20 ha of Best and Most Versatile (BMV) agricultural land is proposed for non-agricultural development.

### Planning Policy Context

14.2.2 The following national, regional and local planning policy is relevant to the Proposed Development.

#### National Planning Policy Framework (NPPF), 2021

- National planning policy guidance on development involving agricultural land is set out in the NPPF)[3]. The NPPF includes policy guidance on *'Conserving and Enhancing the Natural Environment'* (Section 15). Paragraph 174 (a and b) (page 50) are of relevance to this assessment of agricultural land quality and soil and states that:

  *'174…Planning policies and decisions should contribute to and enhance the natural and local environment by:*

  *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*

  *b) 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, and of trees and woodland;…'*

- Annex 2 of the NPPF defines the '*Best and Most Versatile*' (BMV) agricultural land as *'…land in grades 1, 2 and 3a of the Agricultural Land Classification'*.

- Paragraph 175 of the NPPF (2021) goes on to describe that: *'175.Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[58] …' Footnote number 58 states that: 'Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.'*

### Levelling Up and Regeneration Bill: Reforms to the National Planning Policy Framework[4]

14.2.3 The following policies of the consultation draft of the Levelling Up and Regeneration Bill are of relevance to this assessment:

*'177…Planning policies and decisions should contribute to and enhance the natural and local environment by:*

> *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
>
> *b) 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, and of trees and woodland, and of trees and woodland;…'*

*'178. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[67] …' Footnote number 67 states that: 'Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality. The availability of agricultural land used for food production should be considered, alongside other polices in this Framework, when deciding what sites are most appropriate for development.'*

### Local

- Cherwell District Council (CDC) Adopted Cherwell Local Plan 2011 – 2031 (Part 1)[5]: Policy Kidlington 1: Accommodating High Value Employment Needs including;

  *'An assessment of whether the site contains best and most versatile agricultural land, including a detailed survey where necessary'*; and

  *'A soil management plan may be required to be submitted with planning applications to ensure that soils will be retained onsite and used where possible.'*

- Adopted Cherwell Local Plan 2011-2031 (Part 1) Partial Review – Oxford's Unmet Housing Need. Key Delivery Requirements of proposed development policies PR6a, PR6b, PR6c, PR7a, PR7b, PR8, and PR9 state the *'….application should include a management plan for the appropriate re-use and improvement of soils…'*

### Soil Health and Soil Functions

14.2.4 The 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*'[6] which 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.

*The Soil Strategy for England 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 field to field. They all perform a number of valuable functions or ecosystem services for society including:*

- *nutrient cycling;*

- *water regulation;*
- *carbon storage;*
- *support for biodiversity and wildlife;*
- *providing a platform for food and fibre production and infrastructure'*

### Guidance

14.2.5 This assessment of agricultural land and soil has drawn on best practice guidance set out in the key documents below.

- The Government has produced a '*Guide to Assessing Development Proposals on Agricultural Land*'[7]. This guide sets out the relevant planning policy, statutory requirements for consulting Natural England, sources of published ALC information, and the methodology for undertaking an ALC survey.
- The Institute of Civil Engineering (ICE) provides guidance on assessing agricultural land quality and soil in the '*Environmental Impact Assessment Handbook: A practical guide for planners, developers and communities*'[8].
- The Institute of Environmental Assessment and Management (IEMA) has produced a '*New Perspective on Land and Soil in Environmental Assessment*'[9], which encourages a new approach a new approach to assessing soil functions, ecosystem services and natural capital provided by land and soils.
- The Department for Environment, Food and Rural Affairs (Defra) has published '*Safeguarding our Soils – A Strategy for England*' (24th September 2009). The Soil Strategy was published in tandem with a '*Code of Practice for the Sustainable Use of Soils on Construction Sites*'[10]. The Soil Strategy for England, which builds on Defra's 'Soil Action Plan for England (2004-2006), 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.
- This assessment also considers recent guidance produced by the Soils in Planning Construction Task Force (Lancaster University *et al*) regarding '*Building on soil sustainability: Principles for soils in planning and construction*' (September 2022)[11]. This report contains guidance for local authorities, contractors, clients, developers and design teams on managing soil in construction and planning. This guidance for conserving soil resources on site follows the principles of sustainable development and the circular economy (defined as *'The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value'*[12].
- Best practice for the handling of soil is set out in the Institute of Quarrying (2021) '*Good Practice for Handling Soils in Mineral Workings*' (Sheets A to E are of main relevance to this assessment)[13].
- British Society of Soil Science (2022). 'Working with Soil Guidance Note Document 3: Benefitting from Soil Management in Development and Construction'[14].

## 14.3 Assessment Methodology

### Consultation

14.3.1 As set out in the Government's '*Guide to Assessing Development Proposals on Agricultural Land*'[7], it should be noted that local planning authorities (LPAs) must consult Natural England on all non-agricultural applications that result in the loss of more than 20 hectares (ha) of BMV land if the land is not included in a development plan. For example, this includes the likely cumulative loss of BMV land from the proposed development if its part of a phased development. This is required by schedule 4(y) of the Order.

14.3.2 Natural England maintains the national ALC database, and ALC information which is publicly available ALC online[15] has been utilised as baseline information in this assessment.

#### EIA Scoping Opinion

14.3.3 A request for a Scoping Opinion was submitted by the Applicant to CDC on 9th December 2022. An EIA Scoping Report (the 'Scoping Report') accompanied the request (Appendix 3.2). A Scoping Opinion was issued by CDC on 27th January 2023 (Appendix 3.3) which included comments from statutory consultees. Table 14.1 summarises key comments raised by consultees of relevance to this assessment by the EIA Scoping Opinion and how the assessment has responded to them.

Table 14.1: EIA Scoping Opinion Response

| Consultee and Comment | Response |
|---|---|
| *Cherwell District Council North Oxfordshire: Planning and Development (27th January 2023)* | |
| **Agricultural Land and Soils**: The agricultural land being retained should be understood in terms of its existing farming and agricultural holding and how this would be affected. The retained land would need to be outlined in terms of its long-term viability including the need for a farmstead, equipment storage and/or other storage. The potential need for agricultural workers dwelling should also be explored. | Relevant information on baseline conditions and how farm holdings / tenancies would be affected by the Proposed Development is provided in Chapter 7: Socio Economics. |
| *Natural England (13th January 2023)* | |
| Soils and Agricultural Land Quality: Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon store, reservoir of biodiversity and buffer against pollution. It is therefore important that the soil resources are protected and sustainably managed. Impacts from the development on soils and best and most versatile (BMV) agricultural land should be considered in line with the NPPF.<br>The following issues should be considered and, where appropriate, included as part of the Environmental Statement (ES):<br>▪ The degree to which soils would be disturbed or damaged as part of the development; | A detailed ALC and soil survey has been undertaken at the Site in line with NE guidance (see Section 14.4: Baseline Conditions and Appendix 14.1)<br><br>Section 14.5: Embedded Mitigation sets out how impacts on BMV agricultural land |

| Consultee and Comment | Response |
|---|---|
| ▪ The extent to which agricultural land would be disturbed or lost as part of this development, including whether any best and most versatile (BMV) agricultural land would be impacted;<br>Where an ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare. The survey data can inform suitable soil handling methods and appropriate reuse of the soil resource where required (e.g. agricultural reinstatement, habitat creation, landscaping, allotments and public open space);<br>The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan;<br>The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain.<br>The aim will be to minimise soil handling and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts. | and soil as a resource will be minimised.<br><br>An assessment of the effects of the Proposed Development on BMV agricultural land and soil resources is provided in Section 14.6.<br>An Outline Soil Management Plan has also been prepared (Appendix 14.2) which sets out measures to minimise effects associated with soil handling and maximise sustainable soil management. |

### Summary of Assessment Scope

14.3.4 As outlined within the EIA Scoping Report (Appendix 3.2), and as agreed with CDC via the EIA Scoping Opinion (Appendix 3.3), the scope of the assessment of agricultural land and soil within this chapter is limited to the following assessment of effects:

#### Construction

14.3.5 The scope of this assessment covers the likely significant effects of the Proposed Development on:

- Agricultural land quality, particularly the likely significant effects on the best and most versatile (BMV) agricultural land, i.e., Agricultural Land Classification (ALC) Grade 1, Grade 2 and Subgrade 3a, as set out in paragraphs 174 of the National Planning Policy Framework (NPPF) revised in July 2021; and

- Soil resources available for restoration of the Site, as per paragraph 175 of the NPPF (July 2021).

14.3.6 Consideration has been given to the Sensitivity of Receptor and Magnitude of Effect in relation to agricultural land quality and soil following the criteria in the Institute of Environmental Management and Assessment's (IEMA) '*A New Perspective on and Soil in Environmental Impact Assessment*' (2022)[9].

#### Completed Development

14.3.7 It is predicted there will be no significant effects of the Proposed Development on agricultural land quality and soil receptors following construction. Relevant information on

baseline conditions and how farm holdings / tenancies would be affected by the Proposed Development is provided in Chapter 7: Socio Economics.

### Non-Significant Effects

14.3.8 All other potential effects on agricultural land and soil were scoped out of further assessment within this ES. See Section 15 of the EIA Scoping Report (Appendix 3.2) for further details and justification.

## Study Area

14.3.9 The spatial/geographical scope used in this assessment of agricultural land and soil is the planning application boundary, as shown on Figure 1 in Appendix 14.1.

## Establishing Baseline Conditions

### Agricultural Land Classification

14.3.10 The assessment is based upon the findings of a desk-based study of published information on climate, geology and soil in July 2023, and substantiated by a detailed ALC/soil survey of the Site. The assessment follows the approach of the national '*Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*', October 1988 (henceforth referred to as 'the ALC Guidelines')[16].

14.3.11 The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 'Excellent' to Grade 5 'Very Poor'), with Grade 3 subdivided into Subgrade 3a 'Good' and Subgrade 3b 'Moderate'. As described in 14.2.2, the Annex 2 of the NPPF 2021 describes ALC Grade 1, Subgrade 2 and Subgrade 3a as the 'Best and Most Versatile' (BMV) agricultural land.

### Desk-Based Study – Data Sources

14.3.12 A desk-based assessment of agricultural land quality and soils has been undertaken which has utilised the following sources of information:

- Soil Survey of England and Wales soil map for South Eastern England (1:250,000)[17];
- Soils and their use in South Eastern England, Soil Survey of England and Wales Bulletin No.13[18];
- Post 1988 Agricultural Land Classification[19];
- Likelihood of Best and Most Versatile Agricultural Land (1:250,000)[20];
- Meteorological data for Agricultural Land Classification[21];
- British Geological Survey information[22];
- Hydrock (2023) 'Begbroke, Oxfordshire Desk Study Review and Ground Investigation' given as Appendix 15.1; and
- Natural England (2012) 'Agricultural Land Classification: protecting the best and most versatile agricultural land'[23].

### Detailed Agricultural Land Classification (ALC) / Soil Resource Survey (SRS)

14.3.13 The current baseline for the assessment of agricultural land quality and soil was determined by carrying out a detailed ALC and Soil Resource Survey (SRS) at the Site. The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 '*Excellent*' to Grade 5 '*Very Poor*'), with Grade 3 subdivided into Subgrade 3a '*Good*' and Subgrade 3b '*Moderate*'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraph 174 and 175 of the NPPF. The ALC/SRS involved the examination of the soil's physical properties at approximately 180 auger-bore locations on an approximate 100m grid pattern, at a sampling density of approximately one auger bore per ha. The soil profiles were examined at each sample location to a maximum depth of approximately 1.2 m by hand with the use of a 5cm diameter Dutch (Edleman) soil auger. A number of representative soil pits per soil type/association encountered on Site were excavated by hand with a spade in order to examine certain soil physical properties, such as stone content and the structural condition of the subsoil in detail.

14.3.14 Eleven samples of topsoil were collected to represent the range of soil types across the Site. The samples were sent to an accredited laboratory for particle size analysis, i.e., the proportions of sand, silt and clay. This is to determine the definitive texture class of the topsoil, especially with regard to distinguishing between medium clay loams (i.e., <27% clay) and heavy clay loams (27% to 35% clay).

14.3.15 The soil profile at each sample location were described using the '*Soil Survey Field Handbook: Describing and Sampling Soil Profiles*' (Ed. J.M. Hodgson, Cranfield University, 1997)[24]. Each soil profile was ascribed an ALC grade following the MAFF ALC Guidelines.

### Future Baseline

14.3.16 The future baseline scenario is considered in the absence of the Proposed Development in this chapter. As set out in Chapter 3: EIA Methodology, it is reasonably expected that the two existing planning consents on the Begbroke Science Park would be implemented and completed. However, as these consents relate to areas of the Site that already comprise built development, there would be no implications on agriculture and soils from these developments. The other two schemes proposed for consideration in the future baseline scenario are off-site and it is predicted that the quality and quantity of soil would not change significantly from current baseline conditions for the mid to long term in these locations.

## Assessing Likely Significant Effects

### Construction

14.3.17 Consideration has been given to the Sensitivity of Receptor and Magnitude of Effect in relation to agricultural land quality and soil following the criteria in the Institute of Environmental Management and Assessment's (IEMA) '*A New Perspective on and Soil in Environmental Impact Assessment*' (2022)[9], as described below.

14.3.18 It is predicted the key likely significant effects of the Proposed Development on agricultural land and soil will occur during a series of construction phases over a period of approximately eight years.

### Completed Development

14.3.19 A change of land use and soil function from agricultural production of food and fibre to mixed uses (including, residential, amenity and nature conservation) occurs during the construction phase. The significant impacts on soil resources are predicted to occur during the construction phase as part of earthworks which involve soil stripping, storing and relocating on Site. Once construction is completed in 2033, it is predicted there will no further significant effects of the Proposed Development on agricultural land and soil and as such this stage is not considered further.

### Cumulative Effects

14.3.20 As listed in Table 14.8, 27 cumulative schemes were identified for the purposes of the cumulative assessment and these have reviewed in terms of their area and ALC grade of agricultural land involved to identify likely significant cumulative effects. The assessment of significant cumulative effects is provided in Section 14.7.

14.3.21 Where available, the assessment in Section 14.7 is based on detailed (Post 1988) ALC information available on the Government's MAGIC website[15], or within planning application documents available online in the respective LPA's planning website. Where detailed (Post 1988) ALC information is not available, then MAFF provisional (Pre 1988) information available online on the Government's MAGIC website has been utilised.

## Determining Effect Significance

### Sensitivity of Receptor

14.3.22 The sensitivity of agricultural land receptors and soil, in terms of soil functions, is set out in Table 14.2.

Table 14.2: Receptor Sensitivity – Agricultural Land and Soil Functions

| Value (Sensitivity) | Descriptor |
|---|---|
| Very High | ▪ **Biomass production**: ALC Grades 1 & 2 or LCA Classes 1 & 2<br>▪ **Ecological habitat, soil biodiversity and platform for landscape**: Soils supporting protected features within a European site (e.g., SAC, SPA, Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland<br>▪ **Soil carbon**: Peat soils<br>▪ **Soils with potential for ecological/landscape restoration**;<br>▪ **Soil hydrology**: Very important catchment pathway* for water flows and flood risk management;<br>▪ **Archaeology, Cultural heritage, Community benefits and Geodiversity**: SAMs and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest;<br>▪ **Soils supporting community/recreational/educational access to land covered by National Park designation**;<br>▪ **Source of materials**: Important surface mineral reserves that would be sterilised (i.e., without future access) |
| High | ▪ **Biomass production**: ALC Grade 3a |

| Value (Sensitivity) | Descriptor |
|---|---|
| | ▪ **Ecological habitat, soil biodiversity and platform for landscape**: Soils supporting protected features within a UK designated site (e.g., UNESCO Geoparks, SSSI or AONB, Special Landscape Area, and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting semi-natural vegetation (including UKBAP Priority habitats)<br>▪ **Soil carbon**: Organo-mineral soils (e.g., peaty soils)<br>▪ **Soil hydrology**: Important catchment pathway* for water flows and flood risk management<br>▪ **Archaeology, Cultural heritage, Community benefits and Geodiversity**: Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; Historic parks and gardens; RIGS; Soils supporting community/recreational/educational access to RIGS and AONBs<br>▪ **Source of materials**: Surface mineral reserves that would be sterilised (i.e., without future access) |
| Medium | ▪ **Biomass production**: ALC Grade 3b or LCA Grade 3.2<br>▪ **Ecological habitat, soil biodiversity and platform for landscape**: Soils supporting protected or valued features within non-statutory designated sites (e.g., Local Nature Reserves (LNR), Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), Special Landscape Areas; Non-Native Forest and woodland soils<br>▪ **Soil carbon**: Mineral soils<br>▪ **Soil hydrology**: Important minor catchment pathway* for water flows and flood risk management<br>▪ **Archaeology, Cultural heritage, Community benefits and Geodiversity**: Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils supporting community/recreational/educational access to land<br>▪ **Source of materials**: surface mineral reserves that would remain accessible for extraction |
| Low | ▪ **Biomass production**: ALC Grades 4 & 5 or LCA Grades 4.1 to 7 or Urban soils<br>▪ **Ecological habitat, soil biodiversity and platform for landscape**: Soils supporting valued features within non-designated notable or priority habitats/landscapes. Agricultural soils<br>▪ **Soil carbon**: Mineral soils<br>▪ **Soil hydrology**: Pathway* for local water flows and flood risk management<br>▪ **Archaeology, Cultural heritage, Community benefits and Geodiversity**: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community/recreational/educational access to land |

| Value (Sensitivity) | Descriptor |
|---|---|
| | ▪ **Source of materials**: Surface mineral reserves that would remain accessible for extraction |
| Very low/negligible | ▪ As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions |

**As defined by the site and catchment characteristics according to the professional judgement of a catchment hydrologist*

14.3.23 The sensitivity of soil receptors for soil handling (Soil Management Plan) purposes are set out in Table 14.3. These are taken from Section 7.4 'Soil' and Section 7.11 'Agricultural Land; in Institute of Civil Engineers (ICE) (2021) 'Environmental Impact Assessment Handbook: A practical guide for planners, developers and communities, Third edition'[8].

Table 14.3: Sensitivity of Receptors

| Value (Sensitivity) | Descriptor |
|---|---|
| High* | Soil types with low resilience to structural damage when being handled:<br>Heavy soils with >27% clay content: heavy silty clay loam (HZCL), heavy clay loam (HCL), sandy clay (SC), silty clay (ZC), clay (C); where average annual rainfall is 700mm or greater. |
| Medium | Soil types with moderate resilience to structural damage when being handled:<br>Light textured soils: sand (S), loamy sand (LS), sandy loam (SL), sandy silt loam (SZL); where average annual rainfall is more than 1000mm;<br>Medium textured soils with <27% clay content: silt loam, medium silty clay loam (MZCL), medium clay loam (MCL), sandy clay loam (SCL); where average annual rainfall is 1000mm or greater;<br>Heavy soils with >27% clay content: heavy silty clay loam (HZCL), heavy clay loam (HCL), sandy clay (SC), silty clay (ZC), clay (C); where average annual rainfall is less than 700mm. |
| Low | Soil types with high resilience to structural damage when being handled:<br>Light textured soils: sand (S), loamy sand (LS), sandy loam (SL), sandy silt loam (SZL); where average annual rainfall is less than 1000mm. |
| 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.<br>For example, Made Ground/contaminated land. |

*'Very high' category is not defined in the EIA Handbook

### Magnitude of Impact

14.3.24 The magnitude of the predicted impact on agricultural land and soil resource/function is assessed as 'Major', 'Moderate', 'Minor', 'Negligible' or 'No Change in Table 14.4, following the guidance in IEMA's Guide: '*A New Perspective on Land and Soil in EIA*'[9].

Table 14.4: Magnitude of Impact Descriptors

| Impact Magnitude | Beneficial/Adverse | Descriptor |
|---|---|---|
| Major | Adverse | Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss of soil-related features set out in Table 14.2 above (including effects from 'temporary developments'*). |
| | Beneficial | Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20ha, or gain in soil-related features set out in Table 14.2 (including effects from 'temporary developments'*). |
| Moderate | Adverse | Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha or loss of soil-related features set out in Table 14.2 above (including effects from 'Temporary Developments'*). |
| | Beneficial | Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20ha, or gain in soil-related features set out in Table 14.2. |
| Minor | Adverse | Permanent, irreversible loss over less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes, or temporary, reversible loss of soil-related features set out in Table 14.2. |
| | Beneficial | Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5ha or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features set out in Table 14.2. |
| Negligible | Adverse | No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use. |
| | Beneficial | No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use. |
| No Change | No change | No loss or alteration of characteristics, features or elements; no observable impact in either direction. |

*Temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soil

### Assessing Significance

14.3.25 The significance of the predicted impacts, which may be Beneficial (positive) or Adverse (negative), agricultural land quality and soils can be assessed as either 'Very large', 'Large', 'Moderate', 'Slight' or 'Neutral' according to the sensitivity of the receptor magnitude of the impact, as set out in the impact assessment matrix given as Table 14.5. This is based on IEMA's Guide: '*A New Perspective on Land and Soil in EIA*'[9].

Table 14.5: Significance of Effects Matrix

| | | Magnitude of impact (degree of change) | | | | |
|---|---|---|---|---|---|---|
| | | No Change | Negligible | Minor | Moderate | Major |
| Environmental value (sensitivity) | Very High | Neutral | Slight | Moderate or Large | Large or Very Large | Very Large |
| | High | Neutral | Slight | Slight or Moderate | Moderate or Large | Large or Very Large |
| | Medium | Neutral | Neutral or Slight | Slight | Moderate | Moderate or Large |
| | Low | Neutral | Neutral or Slight | Neutral or Slight | Slight | Slight or Moderate |
| | Negligible | Neutral | Neutral | Neutral or Slight | Neutral or Slight | Slight |

### Assumptions and Limitations

14.3.26 From the Green Infrastructure Parameter Plan (see Appendix 5.1), it has been assumed that agricultural land proposed for use as green infrastructure (e.g., public open space, nature conservation, allotments) is a reversible change of use, and could be restored for use in agricultural production using standard agricultural cultivation techniques by future generations, if required. For the purpose of this assessment, only agricultural land proposed for built development in the Development Zones (as shown on the Development Areas & Land Use Parameter Plan) is considered to be a permanent change of use, i.e., sealing of agricultural land. The assessment has applied a reasonable worst-case scenario to the extent of development in these zones.

14.3.27 A Framework Soil Management Plan (FSMP) is provided in Appendix 14.2 and a summary of the key measures is provided in Section 14.5. This is reasonably assessed as embedded mitigation to safeguard soil resources for use on site in a sustainable manner as the measures follow standard best practice guidance set out under 'Guidance' in Section 14.2 above.

14.3.28 The principles set out in the FSMP would be developed into a more detailed Soil Management Plan (SMP) as a condition of planning consent. The SMP would form part of detailed CEMPs. This approach follows guidance in Defra's '*Code of Practice for the Sustainable Use of Soil on Construction Sites*' (2009), British Society of Soil Science (2022). '*Working with Soil Guidance Note Document 3: Benefitting from Soil Management in Development and Construction*', and CDC's local plan policy Local Plan Part 1 Re-adopted 19th December 2016: *Policy Kidlington 1: Accommodating High Value Employment Needs* (see 14.2.2 above).

## 14.4 Baseline Conditions

14.4.1 The baseline assessment of agricultural land and soil is based upon the findings of a study of published information on climate, geology and soil in combination with a soil investigation carried out in accordance with the Ministry of Agriculture, Fisheries and Food (MAFF) '*Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*', October, 1988 (henceforth referred to as the 'the ALC Guidelines').

14.4.2 The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 '*Excellent*' to Grade 5 '*Very Poor*'), with Grade 3 subdivided into Subgrade 3a '*Good*' and Subgrade 3b '*Moderate*'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraph 174 and 175 of NPPF.

14.4.3 A detailed soil survey and ALC of the Site was carried out in February 2023. The ALC survey involved examination of the soil's physical properties at 180 auger-bore locations. The location of the auger bores and the soil pits is shown on Figure 1, Appendix 14.1.

14.4.4 The detailed findings of the ALC/soil survey are set out in Appendix 14.1. A summary of the key findings is given below.

### Climate

14.4.5 With reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines, there is no overall climatic limitation to the quality of agricultural land at the Site. Of relevance to soil management, it is clear the Site receives relatively high levels of rainfall over the year, i.e., Average Annual Rainfall (AAR) of between 658mm and 661mm. The AAR is comparable with values for central, lowland England, which range between 625-700mm.

14.4.6 The soil is predicted to be at field capacity (i.e., the amount of soil moisture or water content held in the soil after excess water has drained away) for between 142 and 143 Field Capacity Days (FCD) per year. These values are also comparable with central, lowland England (i.e., 125-175 FCD).

### Geology and Soils

14.4.7 Chapter 15: Ground Conditions and Appendix 15.1 provides detailed information on geology. British Geological Survey (BGS) information has been utilised to identify the Bedrock underlying the Site and any Superficial (Drift) Deposits over the Bedrock. This information helps to determine the parent material from which the soil has formed. BGS

information (1:50,000) indicates the Site is underlain by bedrock predominantly by mudstone in the Oxford Clay Formation and West Walton Formation, with some limestone in the Cornbrash Formation, and sandstone/siltstone in the Kellaways Clay Member Mudstone and Kellaways Sand Member in the north.

14.4.8 The bedrock at the Site is covered by superficial deposits of Alluvium (clay, silt, sand and gravel) in the south and east. The bedrock in the central and northern parts of the Site is covered by sand and gravel in the Summertown-Radley Sand and Gravel Member.

14.4.9 The Soil Survey of England and Wales (SSEW) soil map of South East England (Sheet 6) at a scale of 1:250,000 and accompanying Bulletin No. 12 '*Soils and their Use in South Eastern England*' (Harpenden, 1984) reports that agricultural land at the Site is covered by soils predominantly in the Kelmscot Association and the Sutton 1 Association. The detailed ALC/soil survey confirmed the presence of these types of soil (see Appendix 14.1).

### Type 1 - Kelmscott Association

14.4.10 The Kelmscot Association consists of calcareous, fine (medium clay loam) loamy soils over gravel variably affected by groundwater. Type 1 soil is assessed as being a receptor of medium sensitivity (medium resilience to structural damage during soil handling).

### Type 2 – Sutton 1 Association

14.4.11 The central and northern parts of the Site have soils predominantly in the Sutton 1 Association developed in sand and gravel. The Sutton 1 Association consists of well drained fine and coarse (sandy) loam soils which are calcareous locally. The sandy Type 2 soil is assessed as being a receptor of low sensitivity (high resilience to structural damage during soil handling).

## Agricultural Land Classification (ALC)

14.4.12 The detailed ALC survey, as shown on Figure 2, Appendix 14.1, has determined that agricultural land at the Site is a mixture of Grade 2 and Subgrade 3a, with some Subgrade 3b.

14.4.13 The Grade 2 (very high sensitivity) is mainly limited by slight soil droughtiness during the growing season, and slight soil wetness during the autumn/winter/early spring. The Grade 2 soils are well drained to slightly seasonally waterlogged (the latter mainly in the east) sandy loam, sandy silt loam and clay loams.

14.4.14 The Subgrade 3a agricultural land (high sensitivity) is limited by soil droughtiness, due to well drained sandy loam soils over gravelly subsoil.

14.4.15 The Subgrade 3b agricultural land (medium sensitivity) is limited by soil wetness (i.e., Type 1) adjacent to the Oxford Canal in the east, and by soil droughtiness in the west with shallow, well drained sandy loams over gravel (Type 2).

14.4.16 The area of land in each ALC grade across the Site as a whole has been measured and the area (ha) and proportion (% of Site) is given in Table 14.6.

Table 14.6: Agricultural Land Classification (ALC) at the Site

| ALC Grade | Built Development Zones (ha) | Green Infrastructure (ha) | Total Area (ha) | Total Area (%) |
|---|---|---|---|---|
| *Grade 1 (Excellent)* | 0.0 | 0.0 | 0.0 | 0.0 |
| *Grade 2 (Very Good)* | 19.5 | 14.5 | 34.0 | 19.8 |
| *Subgrade 3a (Good)* | 55.2 | 38.7 | 93.9 | 54.6 |
| *Subgrade 3b (Moderate)* | 0 | 24.1 | 24.1 | 14.0 |
| *Grade 4 (Poor)* | 0.0 | 0.0 | 0.0 | 0.0 |
| *Grade 5 (Very Poor)* | 0.0 | 0.0 | 0.0 | 0.0 |
| *Other Land / Non-agricultural* | 17.2 | 2.8 | 20.0 | 11.6 |
| ***Total*** | **91.9** | **80.1** | **172.0** | **100.0** |

## Future Baseline

### Agricultural Land Quality

14.4.17 It is predicted 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[25]. 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.

14.4.18 Most of the significant effects of climate change are predicted to 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 2019 are unlikely to change significantly over the mid-term (i.e., to 2040) under natural conditions, where the land is undeveloped.

### Soil

14.4.19 Soil develops at the rate of approximately 1cm per 500 years and for practical purposes is regarded as a finite resource. 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.

## Summary of Receptors and Sensitivity

14.4.20 A summary of the sensitivity of the receptors assessed in this chapter on agricultural land and soil is provided in Table 14.7.

Table 14.7: Summary of Receptor Sensitivity: Agricultural Land and Soil

| Receptor | Current Sensitivity (Value) | Future Sensitivity (Value) to 2050 |
|---|---|---|
| Agricultural Land Quality | | |
| *Grade 1* | N/A – not present | |
| *Grade 2* | Very High | Very High |
| *Subgrade 3a* | High | High |
| *Subgrade 3b* | Medium | Medium |
| *Grades 4 and 5* | N/A – not present | |
| Soil Type | | |
| *Type 1* | Medium | Medium |
| *Type 2* | Low | Low |

## 14.5 Embedded Mitigation (Scheme Design and Management)

### Construction

14.5.1 The Proposed Development includes embedded mitigation to safeguard soil resources. This is in the form of a FSMP given as Appendix 14.2. It is intended the FSMP would be developed into a more detailed Soil Management Plan (SMP) as a condition of planning consent.

14.5.2 The aim of the FSMP is to maintain, and where possible improve, the quality and quantity of soil resources (i.e., topsoil and subsoil) at the Site in its current physical condition (e.g., soil depth, soil texture, soil structure, soil drainage status), chemical condition (e.g., pH level, nutrient status of available phosphorus, available potassium, available magnesium, total nitrogen, and potentially toxic elements (PTE)), and soil organic matter (SOM) content, in order to maintain soil functions during the construction phase.

14.5.3 There is no available mitigation for built development on agricultural land (i.e., sealing), as this is a permanent change of land use. However, agricultural land proposed for use as green infrastructure (e.g., public open space, nature conservation, allotments), including BMV agricultural land, is a reversible change of use, and could be restored for use in agricultural production using standard agricultural cultivation techniques by future generations. In this way, the permanent loss of BMV agricultural land has been minimised.

### Completed Development

14.5.4 As described earlier under the '*Assessing Significant Effects/Completed Development*' section, the significant impacts on soil resources are predicted to occur during the construction phase as part of earthworks which involve soil stripping, storing and relocating on Site. It is predicted there will be no significant effects on soils once the Proposed Development has been constructed.

## 14.6 Assessment of Effects - Construction Phase

### Built (Permanent, Irreversible) Development in Built Development Zones

#### Agricultural Land

14.6.1 There is no mitigation for the change of land-use from agriculture to built development, but measures to reduce the adverse effect on soils are set out under 'Soil' below.

*Grade 2*

14.6.2 From Table 14.6 above, the Proposed Development could adversely affect approximately 19.5 ha (moderate magnitude, i.e., permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha) of agricultural land in ALC Grade 2 (very high sensitivity) during the construction phase. The significance of the residual, permanent, adverse effect of the Proposed Development on approximately 19.5ha of Grade 2 agricultural land is assessed as being large (significant). For the purpose of this assessment, the significance of the effect is large, rather than very large, as the quantum of Grade 2 affected is less than 20ha, i.e., following the threshold set out in Schedule 4(y) of The Town and Country Planning (Development Management Procedure (England) Order) (DMPO) 2015 (see Section 14.2 above).

*Subgrade 3a*

14.6.3 From Table 14.6 above, the Proposed Development could adversely affect approximately 55.2ha (major magnitude, i.e., permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss of soil-related features) of agricultural land in ALC Subgrade 3a (high sensitivity) during the construction phase. The significance of the residual, permanent, adverse effect of the Proposed Development on approximately 55.2ha of Subgrade 3a agricultural land is assessed as being large (significant). For the purpose of this assessment, the significance of the effect is large, rather than very large, as Subgrade 3a is a receptor of 'high' sensitivity, rather than 'very high' used for assessing Grade 1 and Grade 2 land.

*Soil*

14.6.4 The quality and quantity of soil resources (topsoil and subsoil – low to medium sensitivity) available for reuse at the Site (minor magnitude – as impact is reversible) would be identified and safeguarded on Site as part of a Soil Management Plan set out in Section 14.5. This follows best practice set out in Section 15.5. By protecting soil resources in this way, the significance of the residual effect of the Proposed Development on soil resources would be slight (not significant).

### Green Infrastructure (Potentially reversible)

#### Agricultural Land

*Grade 2*

14.6.5 From Table 14.6 above, in the worst case the Proposed Development could adversely affect approximately 14.5 ha (minor magnitude, i.e., reversible change of land-use / soil function) of agricultural land in ALC Grade 2 (very high sensitivity) during the construction phase. The significance of the residual, adverse, reversible effect of the Proposed Development on

approximately 14.5ha of Grade 2 agricultural land is assessed as being moderate (significant).

*Subgrade 3a*

14.6.6 From Table 14.6 above, in the worst case the Proposed Development could adversely affect approximately 38.7ha (minor magnitude, i.e., reversible change of land-use / soil function) of agricultural land in ALC Subgrade 3a (high sensitivity) during the construction phase. The significance of the residual, adverse, reversible effect of the Proposed Development on approximately 38.7ha of Subgrade 3a agricultural land is assessed as being moderate (significant).

*Subgrade 3b*

14.6.7 From Table 14.6 above, in the worst case the Proposed Development could adversely affect approximately 24.1ha (minor magnitude, i.e., reversible change of land-use / soil function) of agricultural land in ALC Subgrade 3b (medium sensitivity) during the construction phase. The significance of the residual, adverse, reversible effect of the Proposed Development on approximately 24.1ha of Subgrade 3b agricultural land is assessed as being slight (not significant).

*Soil*

14.6.8 The quality and quantity of soil resources (topsoil and subsoil – low to medium sensitivity) available for reuse at the Site (minor magnitude – as impact is reversible) should be identified and safeguarded on site as part of a Soil Management Plan set out in 'Embedded Mitigation' in Section 14.5. This follows the approach of DEFRA's '*Construction Code of Practice for the Sustainable Management of Soil* (2009), the Institute of Quarrying (2021) '*Good Practice for Handling Soils in Mineral Workings*' (Sheets A to E are of main relevance to this assessment), and British Society of Soil Science (2022). '*Working with Soil Guidance Note Document 3: Benefitting from Soil Management in Development and Construction*'. By protecting soil resources in this way, the significance of the residual effect of the Proposed Development on soil resources would be slight (not significant).

## 14.7 Assessment of Effects - Completed Development

14.7.1 There are no predicted significant residual effects on agricultural land or soil once the Proposed Development is constructed.

## 14.8 Cumulative Effects

### Construction

#### Assessment

14.8.1 As described earlier, this section provides and assessment of likely significant effects of the Proposed Development in combination with cumulative schemes set out in Table 14.8. Where available, the assessment is based on detailed (Post 1988) ALC information available on the Government's MAGIC website, or within planning application documents available online in the respective LPA website. Where detailed (Post 1988) ALC information is not available, then MAFF provisional (Pre 1988) information available online on the Government's MAGIC website has been utilised.

Table 14.8: Cumulative Assessment of Agricultural Land and Soil

| Ref. | LPA Ref. | Name | ALC |
|---|---|---|---|
| 1 | Oxford City Council 21/01449/FUL | Land South West of St Frideswide Farm, Banbury Road, Oxford, OX2 8EH | Grade 3 on MAFF Provisional ALC Map |
| 2 | Oxford City Council 20/03034/FUL | Hill View Farm, Mill Lane, Marston, Oxford, OX3 0QG | Grade 3 on MAFF Provisional ALC Map |
| 3 | Oxford City Council 21/01217/FUL | Land to the West of Mill Lane, Marston, Oxford, OX3 0QA | Grade 3 on MAFF Provisional ALC Map |
| 4 | Oxford City Council 21/02580/FUL | Marston Paddock, Butts Lane, Oxford, OX3 0QN | Grade 3 on MAFF Provisional ALC Map |
| 5 | Oxford City Council 18/02065/FUL | Land Adjacent to A44, A40, A34 and Wolvercote Roundabout Northern By-Pass Road, Wolvercote, Oxford, OX2 8JR | 28 ha of Subgrade 3a and Subgrade 3b |
| 6 | Cherwell District Council 14/02067/OUT | Buildings 8-11 Oxford Technology Park, Technology Drive, Kidlington, OX5 1GN | Development under construction in July 2023. Previously Provisional Grade 3. |
| 7 | Cherwell District Council 20/03585/CLUP | Oxford Airport, Langford Lane, Kidlington, OX5 1RA | Non-agricultural Land |
| 8 | Cherwell District Council 22/00747/OUT | Land at Bicester Road, Kidlington | Provisional ALC: Predominantly Grade 4, some Grade 3. |
| 9 | Cherwell District Council 21/00758/SCOP | Former Piggery and Land North of Woodstock Road, Yarnton | 11.9 ha of Provisional Grade 3; ALC survey scoped into EIA |
| 10 | Cherwell District Council 21/03522/OUT | OS Parcel 3673, Adjoining and West Of 161 Rutten Lane, Yarnton | Agricultural Land Classification: Grade 2 (2.1ha); Subgrade 3a (23.3ha); Subgrade 3b (33.6ha); Non-agricultural land (03.ha) |
| 11 | West Oxfordshire 22/02404/CC3REG | The A40 carriageway from the existing Hill Farm junction at Witney to the Eynsham | Non agricultural land |

| Ref. | LPA Ref. | Name | ALC |
|---|---|---|---|
| 12 | Cherwell District Council 22/01715/OUT | Land South of Perdiswell Farm, Shipton Road, Shipton on Cherwell | Grade 3 on MAFF Provisional ALC Map |
| 13 | West Oxfordshire 21/00189/FUL | Land East of Hill Rise, Woodstock | Subgrade 3b |
| 14 | West Oxfordshire District Council 21/00217/OUT | Land North of Banbury Road, Woodstock | MAFF Post 1988 (ALCR/3305/053/98) Subgrade 3b |
| 15 | Cherwell District Council 22/01611/OUT | Stratfield Farm, 374 Oxford Road, Kidlington, OX5 1DL | Provisional Grade 3 |
| 16 | Cherwell District Council 23/01233/OUT | East of Pipal Cottage, Oxford Road, Kidlington | Grade 3 and Grade 4 agricultural land on MAFF Provisional ALC Map |
| 17 | Cherwell District Council 22/03054/SO | Yarnton Lane Level Crossing and Sandy Lane Level | Non agricultural land |
| 18 | South Oxfordshire P22/S3420/SCO | Land North of Bayswater Brook, Oxford | 125ha of Grade 2, Subgrade 3a and Subgrade 3b |
| 19 | West Oxfordshire 20/01734/OUT | Land North of A40, Section from Barnard Gate to Eynsham | Mainly Subgrade 3b and some Subgrade 3a |
| 20 | West Oxfordshire 20/03379/OUT | Land West of Derrymerrye Farm, Old Witney Road, Eynsham | Mixture of mainly Subgrade 3a and Subgrade 3b around Eynsham |
| 21 | Cherwell District Council CDC Policy PR6c | Land at Frieze Farm | Proposed golf course |
| 22 | Cherwell District Council CDC Policy PR6b | Oxford University Press Sports Ground | Non agricultural land |
| 23 | Cherwell District Council Policy SP52 | Oxford University Press Sports Ground | Non agricultural land |
| 24 | Cherwell District Council | Land North of 66 and Adjacent Water Eaton Lane Gosford | Provisional Grade 4 |

| Ref. | LPA Ref. | Name | ALC |
|---|---|---|---|
| | 22/03883/F | | |
| 25 | West Oxfordshire District Council 22/01330/OUT | Land North of Witney Road, Long Hanborough | ADAS Agricultural Land Classification: Grade 2 (8.28ha); Subgrade 3b (1.14ha); Non-agricultural/woodland (0.77ha) |
| 26 | Cherwell District Council 22/01682/F | Land North of Manor Farm, Noke | Land Research Associates: Agricultural Land Classification: Subgrade 3a (3.5ha); Subgrade 3b (59.6ha); Non-agricultural (0.1ha). |
| 27 | Cherwell District Council 23/00517/F | New Science Park, Land West of the Junction with The Boulevard, Oxford Airport, Langford Lane, Kidlington | Provisional Grade 3 and some non-agricultural/urban in south |

### Mitigation, Monitoring and Residual Effects

14.8.2 The magnitude of the impact of the Proposed Development on agricultural land in combination with committed developments listed in Table 14.8 would be major, i.e., permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss of soil-related features) of agricultural land in ALC Grade 2 (very high sensitivity), and/or Subgrade 3a (high sensitivity) in the Best and Most Versatile (BMV) category (see Section 14.2). As there is no mitigation for the change of use from agriculture to built development, the residual, permanent, adverse effect of the Proposed Development on BMV agricultural land in combination with cumulative schemes is assessed as being very large (significant), i.e., more than 20ha of BMV agricultural land.

### Completed Development

### Assessment, Mitigation, Monitoring and Residual Effects

14.8.3 There are no predicted significant residual effects on agricultural land or soil once the Proposed Development and cumulative schemes are completed and operational.

## 14.9 Summary

14.9.1 The likely residual significant effects of the Proposed Development on agricultural land and soil are summarised in Table 14.9.

Table 14.5: Summary of Residual Effects

| Effect | Receptor (Sensitivity) | Geographic & Temporal Scale | Magnitude of Impact | Significance of Effect | Additional Mitigation and Monitoring | Significance of Residual Effect |
|---|---|---|---|---|---|---|
| **Construction** | | | | | | |
| Built, irreversible development on agricultural land (sealing) | Grade 2 agricultural land (Very High) | National, permanent | Moderate | Large adverse | None | Large adverse |
| Built, irreversible development on agricultural land (sealing) | Subgrade 3a agricultural land (High) | National, permanent | Major | Large adverse | None | Large adverse |
| Change of land-use from agriculture to Green infrastructure (potentially reversible) | Grade 2 agricultural land (Very High) | National, reversible | Minor | Moderate adverse | Standard agricultural cultivation to restore land to agriculture by future generations, if required. | Moderate adverse |
| Change of land-use from agriculture to Green infrastructure (potentially reversible) | Subgrade 3a agricultural land (High) | National, reversible | Minor | Moderate adverse | | Moderate adverse |
| Change of land-use from agriculture to Green | Subgrade 3b agricultural land (Medium) | National, reversible | Minor | Slight adverse | | Slight adverse |

| Effect | Receptor (Sensitivity) | Geographic & Temporal Scale | Magnitude of Impact | Significance of Effect | Additional Mitigation and Monitoring | Significance of Residual Effect |
|---|---|---|---|---|---|---|
| infrastructure (potentially reversible) | | | | | | |
| Structural damage, e.g., compaction, to soil during soil handling operations | Soil Type 1 (Medium sensitivity/Medium Resilience to damage during soil handling) | Local, temporary/ reversible | Minor (as reversible) | Slight adverse | Soil Management Plan as a Condition of Planning Consent | Slight adverse |
| Structural damage, e.g., compaction, to soil during soil handling operations | Soil Type 2 (Low sensitivity/High Resilience to damage during soil handling) | Local, temporary/ reversible | Minor (as reversible) | Slight adverse | | Slight adverse |
| **Completed Development** | | | | | | |
| None identified | | | | | | |
| **Cumulative Effects** | | | | | | |
| Loss of BMV land from change of use from agricultural to other land uses | Best and Most Versatile (BMV) agricultural land in ALC Grades 1, 3 and 3a | National | Major | Very large, adverse | None. | Very large adverse |

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