



# The Sizewell C Project

## 6.7 Volume 6 Sizewell Link Road Chapter 10 Soils and Agriculture

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None provided.

## Appendices

Appendix 10A: Sizewell link road Agricultural Land Classification Report



## 10 Soils and Agriculture

### 10.1 Introduction

10.1.1 This chapter of **Volume 6** of the **Environmental Statement (ES)** presents an assessment of the potential effects on soils and agriculture arising from the construction and operation of the Sizewell link road (referred to throughout this volume as the ‘proposed development’). This includes an assessment of potential impacts, the significance of effects, the requirements for mitigation and the residual effects.

10.1.2 A detailed description of the Sizewell link road (referred to throughout this volume as the ‘site’), the proposed development and the different phases of development are provided in **Chapters 1** and **2** of this volume. A glossary of terms and list of abbreviations used in this chapter is provided in **Volume 1, Appendix 1A** of the **ES**.

10.1.3 This assessment has been informed by data from other assessments as follows:

- **Chapter 4** of this volume: Noise and vibration;
- **Chapter 5** of this volume: Air quality;
- **Chapter 7** of this volume: Terrestrial ecology and ornithology;
- **Chapter 11** of this volume: Geology and land quality; and
- **Chapter 12** of this volume: Groundwater and surface water.

10.1.4 This assessment has been informed by data presented in the following technical appendix:

- **Appendix 10A** of this volume: Sizewell link road agricultural land classification (ALC) report.

10.1.5 This assessment relates to the following key factors:

- the soil types and related ALC<sup>1</sup> grades likely to be affected by the proposed development;

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<sup>1</sup> Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor quality land, with severe limitations due to adverse soil characteristics, relief, climate or a combination of these. Grade 3 land is subdivided into Sub-grade 3a (good quality land) and Sub-grade 3b (moderate quality land). Grades 1, 2 and 3a are defined as best and most versatile (BMV) land.

- the type of farm enterprises and farming or land management practices present, including any agri-environment schemes<sup>2</sup>; and
- the possible presence of crop, soil or animal diseases or noxious weeds, and the risk of spreading such disease or weeds.

#### 10.1.6 The objectives of the assessment are to:

- characterise the baseline environmental conditions for soils, land use and agriculture within the study area;
- identify all soils, land use and agricultural receptors within and adjacent to the site that may be affected by the construction and operation of the site;
- assess the effects of the proposed development on soil, land use and agriculture, taking account of temporary and permanent land use requirements and reinstatement of land required temporarily for construction;
- specify measures, if appropriate, to mitigate potential significant adverse residual effects on soil, land use and agriculture; and
- determine residual effects, remaining after additional mitigation.

## 10.2 Legislation, policy and guidance

10.2.1 **Volume 1, Appendix 6M** of the **ES**, identifies and describes legislation, policy and guidance of relevance to the assessment of the potential agriculture and soil impacts associated with the Sizewell C Project.

10.2.2 This section provides an overview of the specific legislation, policy and guidance of relevance to the soils and agricultural assessment of the proposed development.

### a) International

10.2.3 No international legislation or policy is deemed relevant to the assessment for this site.

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<sup>2</sup> Agri-environment schemes are land management practices which protect and enhance the environment, for example planting field margins with food sources for insects and reduced management of hedgerows to provide more habitat for farmland birds.

## b) National

10.2.4 As stated in **Volume 1, Chapter 3** of the **ES**, the Overarching National Policy Statement (NPS) for Energy (NPS EN-1) (Ref. 10.1) when combined with the NPS for Nuclear Power Generation (NPS EN-6) (Ref. 10.2), provides the primary basis for decisions on applications for nuclear power generation developments. A summary of the relevant NPS EN-1 and NPS EN-6 requirements, together with consideration of how these requirements have been taken into account in soils and agricultural assessment is provided in **Volume 1, Appendix 6M** of the **ES**.

10.2.5 In summary, these policies require the impacts on soils and best and most versatile (BMV) land to be considered in the assessment, including seeking to minimise impacts on BMV land and use areas of poorer quality land in preference.

10.2.6 Other national policies of relevance to the assessment include:

- The National Planning Policy Framework (NPPF) – this requires planning policies, and decisions to recognise the economic, and other benefits of the BMV agricultural land, and of trees and woodland (Ref. 10.3);
- Planning Practice Guidance – this refers to agricultural land, and the requirement for consultation with Natural England where there is an impact on BMV land (Ref. 10.4);
- Government’s 25 Year Environment Plan – this includes plans to tackle problems of soil degradation, and to enhance our natural capital (which includes soils), with an ambition that by 2030 all of England’s soils should be managed sustainably (Ref. 10.5); and
- A Strategy for England; Safeguarding Our Soils – this sets out the Government’s aim to protect agricultural soils, particularly where BMV land is present (Ref. 10.6).

10.2.7 The requirements of these, as relevant to the soils and agricultural assessment are described in **Volume 1, Appendix 6M** of the **ES**.

## c) Regional

10.2.8 There is no regional legislation or policy that is relevant to the soils and agriculture assessment for the proposed development.

## d) Local

10.2.9 Local policies relating to the soils and agriculture assessment include:

- Suffolk Coastal District Council (SCDC) Local Plan Core Strategy and Development Management Policies, published by East Suffolk Council, (Ref. 10.7) – this makes reference to, where possible, preserving prime agricultural land for food production; and
- SCDC Final Draft Local Plan, published by East Suffolk Council – this highlights the presence of BMV land as a key issue (Ref. 10.8).

10.2.10 The requirements of these, as relevant to the soils and agriculture assessment, are set out in **Volume 1, Appendix 6M** of the **ES**.

#### e) Guidance

10.2.11 This assessment has been undertaken in accordance with the following guidance documents:

- Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, section 3, part 11, LA109 Geology and Soils (Ref. 10.9);
- Natural England Technical Information Note 049 (2012) (Ref. 10.10);
- Defra Construction Code of Practice for the sustainable re-use of soils on construction sites (Ref 10.11);
- Good Practice Guide for Handling Soils (Ref. 10.12); and
- British Standard Specification for Topsoil and Requirements for Use (BS 3882:2015) (Ref. 10.13).

10.2.12 This guidance as relevant to the soils and agriculture assessment are set out in **Volume 1, Appendix 6M** of the **ES**.

## 10.3 Methodology

### a) Scope of the assessment

10.3.1 The generic Environmental Impact Assessment (EIA) methodology is detailed in **Volume 1, Chapter 6** of the **ES**.

10.3.2 The full method of assessment for soils and agriculture that has been applied for the Sizewell C Project is included in **Volume 1, Appendix 6M** of the **ES**.

10.3.3 This section provides specific details of the soils and agriculture methodology applied to the assessment of the proposed development. The

scope of assessment considers the impacts of the construction and operation of the proposed development.

10.3.4 The scope of this assessment has been established through a formal EIA scoping process undertaken with the Planning Inspectorate (PINS). A request for an EIA scoping opinion was initially issued to the PINS in 2014, with an updated request issued in 2019, see **Volume 1, Appendix 6A** of the **ES**.

10.3.5 Comments raised in the EIA scoping opinion received in 2014 and 2019 have been taken into account in the development of the assessment methodology. These are detailed in **Volume 1, Appendices 6A to 6C** of the **ES**.

b) Consultation

10.3.6 The scope of the assessment has been informed by specific consultation and engagement with statutory consultees throughout the design and assessment process. This has been undertaken on a project-wide basis and details are included in **Volume 1, Appendix 6M** of the **ES**. No consultation with statutory consultees in relation to the scope of the soils and agriculture assessment has been undertaken with specific regards to the site.

c) Study area

10.3.7 The study area for the soils and agriculture assessment includes the land required for construction and operation phases of the proposed development. The location and extent of the site is detailed further in **Chapter 1** of this volume and **Figure 1.1** of this volume.

10.3.8 The site covers approximately 101 hectares (ha), and is located south of Yoxford, and Middleton Moor, bypassing Theberton. Approximately 93ha of the site is agricultural land.

10.3.9 The Sizewell link road has been split into six main sections as follows for the purposes of describing the baseline where this provides greater clarity:

- Area 1 – from the A12 to Footpath E-344/013/0 and E584/016/A (land west of the East Suffolk line).
- Area 2 – from land west of the East Suffolk line to Littlemoor Road.
- Area 3 – from Littlemore Road to east of Garden House Farm (including link to B1122 west of Middleton Moor).



- Area 4 – from east of Garden House Farm to land to the west of Theberton.
- Area 5 – from land to the west of Theberton to the south of Theberton.
- Area 6 – from south of Theberton to the B1122 adjacent to Brown’s Plantation.

10.3.10 In addition, the assessment of impacts on farm viability takes account of the extent of each affected land holding so the impact can be considered in the context of the holding.

d) [Assessment scenarios](#)

10.3.11 The assessment of effects on soils and agriculture includes the assessment of both the construction (including the reinstatement of land required temporarily) and operation phases of the proposed development, rather than specific assessment years.

10.3.12 For the purposes of this assessment, effects on BMV land and land holdings are considered to occur during the construction phase.

e) [Assessment criteria](#)

10.3.13 As described in **Volume 1, Chapter 6** of the **ES**, the EIA methodology considers whether impacts of the proposed development would have an effect on any resources or receptors. Assessments broadly consider the value or sensitivity of resources, and receptors that could be affected and the magnitude of impacts in order to classify effects.

10.3.14 A detailed description of the assessment methodology used to assess the potential effects on soils and agriculture for the proposed development is provided in **Volume 1, Appendix 6M** of the **ES**. A summary of the assessment criteria used in this assessment is presented in the following sub-sections.

i. [Sensitivity](#)

10.3.15 There are no established or published methods for assessing the sensitivity of agricultural receptors. The approach to assigning levels of sensitivity to receptors is summarised in **Table 10.1**.

**Table 10.1: Assessment of the value or sensitivity of receptors for soils and agriculture**

| Value and/or Sensitivity | Description   |
|--------------------------|---|
| High                     | Grade 1, 2 and 3a land (i.e. BMV land);<br>irrigated agriculture;<br>stock animals;<br>higher level agri-environment schemes;<br>soils with low or no wetness limitation affecting workability (Wetness Class I or II), where drought is not also a limitation; and<br>soils with a high susceptibility to structural damage and soil erosion throughout the year, including heavily textured, poorly structured soils. |
| Medium                   | Grade 3b land;<br>non irrigated agriculture;<br>entry level agri-environment schemes and Woodland grant schemes;<br>soils with low wetness limitation affecting workability (Wetness Class II), where drought is not also a limitation; and<br>soils with some seasonal susceptibility to structural damage and soil erosion.   |
| Low                      | Grade 4 land;<br>arable or grassland areas;<br>soils with moderate wetness limitation affecting workability (Wetness Class III or IV); and<br>soils with medium to coarse textures and some resistance to structural damage for most of the year.   |
| Very Low.                | Grade 5 land;<br>soils with high wetness limitation affecting workability (Wetness Class V or VI);<br>soils in which susceptibility to drought is a limitation to crop growth; and<br>coarse textured and stony soils with little potential for structural damage.  |

ii. Magnitude

10.3.16 The magnitude of impact is based on the consequences the proposed development would have upon soils and agricultural receptors. There is no published guidance on thresholds for assessing what scale of loss should be regarded as significant, but the presence of BMV land is a key factor in the consideration of the sustainability of development proposals as set out in the NPPF (Ref. 10.3). The criteria for the assessment of magnitude are shown in **Table 10.2**.

**Table 10.2: Assessment of magnitude of impact on soils and agriculture.**

| Magnitude | Criteria  |
|-----------|---|
| High      | <p>Permanent or long-term loss or degradation of over 50ha of BMV land, or entire regional resource of BMV land (ALC Grades 1, 2, 3a).</p> <p>Loss of &gt;20% of farmed land.</p> <p>Permanent loss of entire area of land under agri-environment or Woodland Grant scheme.</p> <p>No access possible to severed land.</p> <p>Existing land use across land holding would not be able to continue.</p>  |
| Medium    | <p>Permanent or long-term loss or degradation of 20-50ha of BMV land, or large proportion of regional resource of BMV land.</p> <p>Loss of &gt;10- 20% of farmed land.</p> <p>Long-term, reversible, loss of entire area or majority of land under agri-environment or Woodland Grant scheme.</p> <p>Access possible to severed land via the public highway.</p> <p>Existing land use across land holding would be able to continue, but with major changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.</p>               |
| Low       | <p>Permanent or long-term loss or degradation of 10-20ha of BMV land, or small proportion of regional resource of BMV land.</p> <p>Loss of &gt;5-10% of farmed land.</p> <p>Short- to medium-term reversible loss, or permanent loss of small areas, of land area under agri-environment or Woodland Grant scheme.</p> <p>Access possible to severed land via private ways.</p> <p>Existing land use across land holding would be able to continue, but with some changes such as loss of yield, additional land management or increased use of fertilisers and herbicides.</p> |
| Very Low. | <p>Permanent or long-term loss or degradation of &lt;10ha of BMV land.</p> <p>Loss of &lt;5% of farmed land.</p> <p>No severance.</p> <p>Short-term impacts to receptors with no impact on integrity. No material changes to existing land use.</p>   |

10.3.17 For the purposes of this assessment short-term is considered to include the timeframe of the construction phase (up to 24 months) of the proposed development.

iii. Effect definitions

10.3.18 The definitions of effect for agriculture and soils are shown in **Table 10.3**.

**Table 10.3: Classification of effects**

|           |          | Value/sensitivity of receptor |            |          |          |
|-----------|----------|-------------------------------|------------|----------|----------|
|           |          | Very Low                      | Low        | Medium   | High     |
| Magnitude | Very Low | Negligible                    | Negligible | Minor    | Minor    |
|           | Low      | Negligible                    | Minor      | Minor    | Moderate |
|           | Medium   | Minor                         | Minor      | Moderate | Major    |
|           | High     | Minor                         | Moderate   | Major    | Major    |

10.3.19 Following the classification of an effect as presented in **Table 10.3**, a clear statement is made as to whether the effect is 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant, and minor and negligible effects are considered to be not significant. However, professional judgement is also applied where appropriate.

f) **Assessment methodology**

10.3.20 **Volume 1, Appendix 6M** of the **ES**, sets out the detailed methodology followed. A summary of the assessment criteria used in this assessment is presented in the following sub-sections.

i. **Establishing the baseline**

10.3.21 The principal agricultural and related resources are characterised by the quality of the agricultural land (i.e. the land grade according to the ALC system) and type of land use (e.g. arable land, presence of livestock etc.) including any diversified activities on farms (e.g. farm shops).

10.3.22 Soil and ALC surveys were undertaken in accordance with published guidelines (Ref. 10.14). Detailed ALC surveys were undertaken in July and October 2019, examining soil properties to a depth of up to 1.2 metres (m) below ground level (mbgl) at 93 locations, see **Appendix 10A** of this volume for further details.

10.3.23 Soil physical characteristics were recorded so that factors such as soil texture, structure, depth and stoniness could be assessed in terms of any limitation they pose to agricultural productivity. Site characteristics, such as micro-relief (topographical changes over short distances), flood risk and climate were also assessed in terms of potential limitations to agricultural productivity they may pose.

10.3.24 In addition, information has been gathered from landowners affected by the proposed development. A total of 13 agricultural holdings are affected.



Interviews have been conducted during 2019 with 11 of these using the interview pro-forma presented in **Volume 1, Appendix 6M** of the **ES**.

## ii. Assessment

**10.3.25** The assessment of effects on soils and agriculture includes the assessment of both the construction and operation phases of the proposed development, rather than specific assessment years.

### g) Assumptions and limitations

**10.3.26** The assessment is based on the permanent and temporary land requirements illustrated on **Figures 2.1 to 2.7** of this volume and shown on the Land Plans (Doc Ref. 2.1).

**10.3.27** Access was not granted to a number of land parcels. It is estimated that within the site, approximately 14.5ha of the agricultural land has not been surveyed, equating to 14.36% of the site area. However, given the proportion of land surveyed to a detailed level for the whole proposed development, and given the extent of BMV land confirmed through these surveys, it is considered that the available information is sufficient to inform the assessment. The land not surveyed is provisionally mapped in published ALC maps (see **Figure 10.2**) as a mix of Grades 2, 3 and 4. Given that BMV land (Grades 2 and 3a) mapped from detailed surveys lies immediately adjacent to the un-surveyed land, it is considered that at least some of the un-surveyed land could also be BMV land. All un-surveyed land is therefore treated as BMV land for the purposes of this assessment in order to assess a worst-case scenario.

**10.3.28** Information on land use is based on information publicly available, and as provided by landowners. Where land is contract farmed or tenanted it is assumed these will cease prior to the land being taken for the construction phase.

**10.3.29** In relation to the un-surveyed land, from aerial photographs, this land appears to be predominantly under arable production, with some areas of woodland. As information on woodland grant schemes is publicly available it is considered that sufficient information is available to inform the assessment relating to this land.

## 10.4 Baseline environment

**10.4.1** This section presents a description of the baseline environment within the site and the surrounding area.

10.4.2 Further detail of the agricultural land quality is presented in **Appendix 10A** of this volume.

a) Current baseline

i. Geology

10.4.3 The site is underlain by the quaternary sand of the Crag Group (Ref. 10.15). The bedrock geology is almost completely covered by drift deposits. Locations of drift deposits are detailed in **Table 10.4**.

**Table 10.4: Locations of drift deposits**

| Area    | Location  | Description of drift deposits  |
|---------|---|--|
| Area 1. | From the A12 to Footpath E-344/013/0 and E584/016/A (land west of the East Suffolk line).           | Lowestoft Formation diamicton deposits.  |
| Area 2. | From land west of the East Suffolk line to Littlemoor Road.   | Lowestoft Formation diamicton deposits.  |
| Area 3. | From Littlemore Road to east of Garden House Farm (including link to B1122 west of Middleton Moor). | Lowestoft Formation sands and gravels present on both sides of Fordley Road. Head deposits (clay, silt, sand and gravel) are present along the line of Fordley Road. Lowestoft Formation diamicton deposits present elsewhere.       |
| Area 4. | From east of Garden House Farm to land west of Theberton.   | Lowestoft Formation sands and gravels and Head deposits (clay, silt, sand and gravel) are present along the line of Hawthorn Road and to the east of Plumtreehills Covert. Lowestoft Formation diamicton deposits present elsewhere. |
| Area 5. | From land to the west of Theberton to the south of Theberton.                                       | Lowestoft Formation sands and gravels and Head deposits (clay, silt, sand and gravel) are present along the line of Hawthorn Road and to the east of Plumtreehills Covert. Lowestoft Formation diamicton deposits present elsewhere. |
| Area 6. | From south of Theberton to the B1122 adjacent to Brown’s Plantation.                                | Lowestoft Formation sands and gravels and Head deposits (clay, silt, sand and gravel) are present along the line of Hawthorn Road and to the east of Plumtreehills Covert. Lowestoft Formation diamicton deposits present elsewhere. |

10.4.4 A full description of the geological characteristics of the site is provided in **Chapter 11** and **12** of this volume.

ii. Topography and drainage

10.4.5 The topography across the site varies between approximately 10m Above Ordnance Datum (AOD), and 40m AOD. The topography is gently rolling.

10.4.6 Gradient and microtopography do not limit ALC grade within the site, based on the ALC criteria (Ref. 10.14).

10.4.7 In the section from Fordley Road to Theberton (Area 4 of the site) the site intersects a small tributary of the Minsmere Old River. This flows to the north-east through Middleton and is classed as a Main River. The site is not at risk from fluvial flooding with the exception of land along the line of the Fordley Road link. Further information on flood risk associated with the site is provided in **Chapter 12** of this volume.

10.4.8 In Area 5 to the north-west of Theberton and south of Theberton the site crosses other small tributaries of the Minsmere Old River (with the watercourse to the north-west of Theberton being classed as a Main River). None of this land is shown to be at risk from fluvial flooding.

10.4.9 Overall, it is not considered that flood risk limits land grade within the site based on the ALC criteria (Ref. 10.14).

iii. Climate

10.4.10 The main parameters used in the assessment of an overall climatic limitation are presented in **Appendix 10A** of this volume. These specifically refer to annual average rainfall, as a measure of overall wetness, and accumulated temperature over the growing season as a measure of the warmth in the growing season. The site is considered to have both relatively low rainfall, and a long growing season, and thus climate does not impose an overall limitation on ALC grade at this site.

10.4.11 Climate has an important influence on the interactive limitations of soil wetness and soil droughtiness. The relatively low rainfall, and long growing season will act to decrease the severity of any potential soil wetness limitation (i.e. reducing the potential for waterlogging to occur which may restrict plant rooting and the ability of the land to be managed). However, these attributes increase the severity of any potential soil droughtiness limitation (i.e. reduced availability of water for plant uptake).

iv. Soil types

- 10.4.12 The distribution of soil types across the site is shown on **Figure 10.1**.
- 10.4.13 The main soil type present within the site is shown as being predominantly slowly permeable seasonally waterlogged clayey and fine loamy over clayey soil (Ref. 10.15). These belong to the Ragdale Soil Association<sup>3</sup>. Typical profiles for these soils comprise dark greyish and mottled clay, or clay loam topsoil overlying greyish brown to grey mottled subsoil (which can be calcareous). The presence of mottling (small patches of red/red-brown colour) are evidence of periodic waterlogging of these soils.
- 10.4.14 The main land use on these soils where they occur in eastern England is described as being Winter cereals.
- 10.4.15 In the eastern part of the site the soils are described as freely draining slightly acid, but base-rich soils. These belong to the Melford Soil Association. Typical profiles for these soils comprise dark brown clay loam overlying yellowish brown to pale brown clay loam or clay which can be very calcareous at depth.
- 10.4.16 These soils are mapped as occurring in a strip to the east of the A12 (Area 1), along the line of Fordley Road (between Areas 3 and 4), south-west of Anneson’s Corner (Area 4), and west of Brown’s Plantation (Area 6).
- 10.4.17 From the detailed surveys the soils in each area of the site are described as set out in **Table 10.5**.

**Table 10.5: Location soil texture**

| Area    | Location  | Description of Soil Texture   |
|---------|---|---|
| Area 1. | From the A12 to Footpath E-344/013/0 and E584/016/A (land west of the East Suffolk line).           | Medium to heavy textured clay loams overlying heavy textured clays.   |
| Area 2. | From land west of the East Suffolk line to Littlemoor Road.   | Heavy textured clay loams and light textured sandy loams overlying heavy textured clays.  |
| Area 3. | From Littlemore Road to east of Garden House Farm (including link to B1122 west of Middleton Moor). | Predominantly heavy textured clay loams, and light textured sandy loams overlying heavy textured clays with some medium textured clay loams overlying medium textured clay loams (sandy). |
| Area 4. | From east of Garden House Farm to land west of  | Heavy textured clay loams, and light textured sandy loams overlying heavy textured clays as well as lightly   |

<sup>3</sup> A Soil Association represents a group of soil types which are typically found occurring together in the landscape.



| Area    | Location   | Description of Soil Texture   |
|---------|--|---|
|         | Theberton.   | textured loams overlying lightly textured sands.  |
| Area 5. | From land to the west of Theberton to the south of Theberton.        | Medium to heavy textured clay loams and light textured sandy loams overlying heavy textured clays.  |
| Area 6. | From south of Theberton to the B1122 adjacent to Brown’s Plantation. | Medium textured clay loams overlying heavy textured clays or lightly textured sands as well as lightly textured loams overlying lightly textured sands. |

10.4.18 The heavy textured soils have a Wetness Class<sup>4</sup> of II or III, in part due to the relatively low rainfall. The medium textured soils have a Wetness Class of I, where the sandy nature allows free drainage through the soil profile.

v. Agricultural land quality and classification

10.4.19 Published ALC maps (Ref. 10.16) show the site to comprise a mix of Grades 2 and 3 (**Figure 10.2**). These maps are published at a scale of 1:250,000, and are generally considered to be of value for strategic land use planning purposes, and not site-specific assessments, although they do provide a guide as to the land grades which could be present. It should be noted also that these maps do not distinguish between the Sub-grades 3a and 3b.

10.4.20 Since the publication of the Provisional ALC, certain areas of the country have been surveyed in greater detail. However, there are no detailed ALC maps available for this site. Therefore, ALC surveys were undertaken on the agricultural land within the site. These surveys were undertaken in July and October 2019 with the results of the agricultural land quality at the site summarised in this chapter and further details presented in **Appendix 10A** of this volume.

10.4.21 **Figures 10.3.1, 10.3.2 and 10.3.3** illustrate the distribution of ALC grades across the site, determined by the ALC surveys.

10.4.22 Approximately 50ha (50%) of the site comprises land which falls into a BMV land category (Grades 2 and 3a). The remaining areas of the site comprise Grade 3b land (27.7ha), non-agricultural land (8.2ha), and 14.5ha of land which has not been surveyed. The ALC grade distribution and the corresponding percentages, are shown in **Table 10.6**.

<sup>4</sup> Wetness Class defines the average duration of waterlogging at specified depths in the soil profile.

**Table 10.6: ALC grade distribution**

| ALC Grade         | Area (ha)    | Area (%)   |
|-------------------|--------------|------------|
| 1                 | 0            | 0          |
| 2                 | 10.1         | 10.00      |
| 3a                | 40.5         | 40.10      |
| 3b                | 27.7         | 27.43      |
| 4                 | 0            | 0          |
| 5                 | 0            | 0          |
| Non-agricultural. | 8.2          | 8.12       |
| Not surveyed.     | 14.5         | 14.35      |
| <b>Total</b>      | <b>101.0</b> | <b>100</b> |

- 10.4.23 Grade 2 land covers an area of 10.1ha (10.00%), and is found across the site in areas 1, 3, 4 and 5. This grade is characterised by soil profiles comprising slightly calcareous, medium textured clay loam topsoil overlying heavy textured clayey subsoil. The grade is limited by droughtiness, with the soils very rarely or rarely waterlogged (Wetness Classes I and II).
- 10.4.24 Grade 3a land covers an area of 40.5ha (40.10% of the site) and is present across the site in all areas. This land is characterised by soils comprising either slightly calcareous, medium textured clay loam topsoil overlying heavy textured clayey subsoil which are limited by either droughtiness or droughtiness and wetness (Wetness Class II), or profiles comprising light to medium textured sandy loams overlying heavy textured subsoil which are limited by rare or seasonal waterlogging (Wetness Classes II or III), and limited by droughtiness. In area 6 there are some soils comprising loamy sands over sand which are limited by droughtiness.
- 10.4.25 Grade 3b land comprises 27.7ha in total (27.43% of the site) and is present in all areas of the site except for area 5. The soil profiles comprise slightly calcareous medium textured clay loam, or sandy loam topsoil overlying heavy textured clayey subsoil with the grade limited by droughtiness, and/or wetness (Wetness Class III). There are also some profiles comprising loamy sand topsoil overlying sand which are limited by droughtiness.
- 10.4.26 The land not surveyed is provisionally mapped in published ALC maps as a mix of Grades 2, 3 and 4. Given that BMV land (Grades 2 and 3a) mapped from detailed surveys lies immediately adjacent it is considered that at least some of the un-surveyed land could also be BMV land. All un-surveyed land is therefore treated as BMV land for the purposes of this assessment in order to assess a worst-case scenario.

10.4.27 The land classed as non-agricultural land made up of sections of roads including the A12, B1122, Fordley Road, Littlemoor Road, Moat Road and areas of woodland.

vi. Land use and holding information

10.4.28 The agricultural land (92.8ha) on the site is owned by 13 separate agricultural holdings.

10.4.29 When surveyed in July 2019 the site was mostly in use for arable production with smaller areas under pasture.

10.4.30 Details of the land uses present are shown in **Table 10.6**.

**Table 10.7: Details of land holdings within the site**

| Holding name   | Description  | Landholding area within the site boundary <sup>5</sup> | Total landholding area (approx.) | Percentage of landholding within the site boundary | Sensitivity to change |
|----------------|--|--|----------------------------------|--|-----------------------|
| Kelsale Manor. | Arable land (cereal crops).<br>Land accessed from the lanes along the southern boundaries either side of the A12.<br>Land not under agri-environment schemes.          | 11.96ha  | 223.91ha                         | 5.34%  | Low                   |
| Rookery Farm.  | Arable land (cereal crops). Small woodland block south of Bobbett's Wood.<br>Land accessed along farm tracks from the A12.<br>Land not under agri-environment schemes. | 9.10ha   | 66.9ha                           | 13.60%   | Low                   |

<sup>5</sup> Land holding areas include agricultural land) mapped by grade) and farm infrastructure (tracks, farm buildings, farm yards etc.)

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| Holding name                       | Description  | Landholding area within the site boundary <sup>5</sup> | Total landholding area (approx.) | Percentage of landholding within the site boundary | Sensitivity to change |
|------------------------------------|--|--|----------------------------------|--|-----------------------|
| Fordley Hall Farm.                 | Arable land under mix of crops as well as cover crops (to support a shoot).<br>Land accessed along farm tracks from Fordley Hall Farm, from Littlemoor Road, and from the B1122.<br>Land not under agri-environment schemes. | 16.01ha  | 125.66ha                         | 12.74%   | Low                   |
| Beveriche Manor Farm. <sup>6</sup> | Land appears to be under arable production.<br>Land accessed from farm track to Beveriche Manor Farm.  | 0.82ha   | 81.50ha                          | 1.01%  | Low                   |
| Old Abbey Farm.                    | Mix of potatoes, onions, root crops and barley on irrigated land, with cereals on un-irrigated land.<br>Land accessed from Littlemoor Road.<br>Land not under agri-environment schemes.                                      | 14.33ha  | 97.11ha                          | 14.76%   | High                  |

<sup>6</sup> No meeting has been possible with this landowner (correct at 25.11.2019)



**NOT PROTECTIVELY MARKED**

| Holding name     | Description   | Landholding area within the site boundary <sup>5</sup> | Total landholding area (approx.) | Percentage of landholding within the site boundary | Sensitivity to change |
|------------------|---|--|----------------------------------|--|-----------------------|
| Trust Farm.      | Arable land – combinable crops and grass on rotation (no permanent pasture).<br>Land accessed along farm tracks from Trust Farm and from the B1122.<br>Land not under agri-environment schemes. | 8.16ha   | 92.44ha                          | 8.83%  | Low                   |
| Hawthorn Farm.   | Arable land.<br>Land accessed from Trust Farm access lane and farm tracks from Hawthorn Farm.<br>Land not under agri-environment schemes.   | 5.47ha   | 63.28ha                          | 8.64%  | Low                   |
| Dove House Farm. | Arable and pasture (horse grazing).<br>Land accessed along farm tracks from Dove House Farm and from the B1122.<br>Land not under agri-environment schemes.                                     | 5.42ha   | 56.18ha                          | 9.65%  | Medium                |

**NOT PROTECTIVELY MARKED**

| Holding name                      | Description  | Landholding area within the site boundary <sup>5</sup> | Total landholding area (approx.) | Percentage of landholding within the site boundary | Sensitivity to change |
|-----------------------------------|--|--|----------------------------------|--|-----------------------|
| Theberton Hall Farm. <sup>7</sup> | <p>Predominantly arable land, irrigated and growing a selection of root and combinable crops. Land accessed from the B1122 and from Pretty Road.</p> <p>Some land under Entry Level plus Higher Level stewardship.</p> <p>Plumtreehills Covert is under a Woodland Grant Scheme.</p> <p>Believed to be diversification associated with this holding.</p> | 14.11ha  | 212.75ha                         | 6.63%  | High                  |
| Yew Tree Farm. <sup>8</sup>       | <p>All pasture.</p> <p>Land accessed from Yew Tree Farm.</p> <p>Land under Entry Level plus Higher Level stewardship.</p>  | 0.22ha   | 16.16ha                          | 1.36%  | High                  |
| Church Farm.                      | <p>Pasture for cattle grazing or haylage. Southernmost field is used to produce feed crops.</p> <p>Land accessed from Church Farm along farm tracks</p> <p>Land not under agri-environment schemes.</p>  | 4.97ha   | 26.05ha                          | 19.08%   | High                  |

<sup>7</sup> It has not been possible to complete the questionnaire with this landowner at the time of writing

<sup>8</sup> It has not been possible to complete the questionnaire with this landowner at the time of writing

| Holding name                         | Description   | Landholding area within the site boundary <sup>5</sup> | Total landholding area (approx.) | Percentage of landholding within the site boundary | Sensitivity to change |
|--------------------------------------|---|--|----------------------------------|--|-----------------------|
| Leiston House Farm/Wood Farm.        | Arable.<br>Land accessed from Moat Road, and the farm along farm tracks.<br>Land not under agri-environment schemes.  | 4.95ha   | 31.35ha                          | 15.78%   | Low                   |
| Theberton House Estate. <sup>9</sup> | Mix of arable and woodland across the landholding. Land affected is predominantly woodland.<br>Shoot rights exercised on the landholding.<br>Land accessed from the estate and Potter's Street.<br>Land not under agri-environment schemes. | 0.74ha   | 168.48ha                         | 0.44%  | Low                   |

**b) Future baseline**

**10.4.31** It is considered unlikely that the land quality baseline conditions would change. This is because the grade of agricultural land is determined predominantly by the soil’s physical characteristics (in particular texture and related structure) which would be unlikely to change during the timeframes of the Sizewell C Project in the absence of the proposed development

**10.4.32** Whilst climate change predictions indicate increased temperatures which could result in increased drought, these soils are relatively heavy (in terms of texture), and so have a good capacity to hold water for crops to access. Drier climatic conditions may reduce periods of waterlogging which could extend the season when access to the land for agricultural operations is possible. However, this could be countered by more intense rainfall events limiting access at unpredictable times. Overall it is considered there would be no material change in the baseline conditions.

<sup>9</sup> It has not been possible to complete the questionnaire with this landowner at the time of writing

10.4.33 There are no applications or allocations within the site boundary which would affect the baseline conditions. There are two housing-related applications outside the site boundary in Middleton Moor; it is not considered that these would materially affect the baseline conditions in relation to soils and agriculture. One (DC/15/4334/FUL) relates to the demolition and rebuild of two existing properties (semi-detached cottages), and the other (DC/16/3947/OUT) relates to the construction of sheltered/extra care dwellings on non-agricultural land.

## 10.5 Environmental design and mitigation

10.5.1 As detailed in **Volume 1, Chapter 6**, a number of primary mitigation measures have been identified through the iterative EIA process, and have been incorporated into the design and construction planning of the proposed development. Tertiary mitigation measures are legal requirements or are standard practices that will be implemented as part of the proposed development.

10.5.2 The assessment of likely significant effects of the proposed development assumes that primary and tertiary mitigation measures are in place. These measures are summarised in this section so that it is clear where, and why, these measures have been included, and the way in which they have contributed to the management and reduction of environmental effects.

### a) Primary mitigation

10.5.3 Primary mitigation is often referred to as ‘embedded mitigation’ and includes modifications to the location or design to mitigate impacts; these measures become an inherent part of the proposed development.

10.5.4 As part of the design process, the site layout has been optimised to reduce the overall land take through careful routing and site selection. The extent of land take required has been reduced by 22.53ha following Stage 4 consultation, which includes a reduction of the extent of BMV land included. A further 16.3ha of agricultural land will only be required temporarily during the construction phase after which it will be returned to agricultural use, further details of the design evolution of this site is presented in **Chapter 3** of this volume.

10.5.5 The design includes elements to reduce the potential fragmentation and restrictions in terms of access to land and properties. This includes the following:



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- a new agricultural access from the A12 on the south side of the proposed Sizewell link road to maintain access to land associated with Rookery Farm (Yoxford);
- a ghost island junction, and a new link road (the 'Middleton Moor link'), from the proposed route of the Sizewell link road, to the B1122, to the north-west of Yankee Lodge, ensuring access remains to land associated with Fordley Hall Farm;
- on the north side of the proposed route of the Sizewell link road, Fordley Road would be retained for use as a private means of access for Old Abbey Farm, and shared pedestrian access;
- provision of a staggered crossroads ghost island junction to give access to Trust Farm located to the south, and to the existing B1122 to the north, with a temporary access provided during construction;
- provision of an access road from the south side of the route of the proposed Sizewell link road to Hawthorn Cottages;
- a new overbridge to carry non-motorised users only (pedestrians, cyclists, equestrians) over Pretty Road. This will also be used to move livestock associated with Church Farm;
- a new junction to Moat Road to maintain access to the existing properties, including Theberton Grange and Moat House, and land associated with Moat Farm and Old Abbey farm; and
- access to fields will be retained from realigned roads and accommodation tracks.

b) **Tertiary mitigation**

10.5.6 Tertiary mitigation will be required regardless of any EIA assessment, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

10.5.7 The sustainable re-use of the soil resource would be undertaken in line with the Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (Ref. 10.11) and the MAFF Good Practice Guide for Soil Handling (Ref. 10.12).

10.5.8 An **outline Soil Management Plan (SMP)** has been developed and provided in **Volume 2, Appendix 17C**. This would contain information on handling methods and measures which would be implemented including (but not limited to):

- development of a Soil Resources Plan by the contractor, which would include detail on existing soil information, proposed storage locations and management measures;
- ensuring soils are stripped and handled in the driest condition possible;
- ensuring topsoil and subsoil resources are stripped and stockpiled separately;
- protection of stockpiles from erosion through establishment of a grass cover and from tracking over through appropriate signage and/or fencing;
- confining vehicle movements to defined haul routes until all the soil resource has been stripped; and
- ensuring the physical condition of all restored soil profiles to at least 1.2m bgl is sufficient for the post-reinstatement agricultural use.

10.5.9 The requirements of the Outline Soil Management Plan are included within the **Code of Construction Practice (CoCP)** (Doc Ref. 8.11).

10.5.10 All soils would be stored a minimum of 10m away from watercourses (or potential pathways to watercourses), and any potentially contaminated soil would be stored on an impermeable surface and covered to reduce leachate generation and potential migration to surface waters.

10.5.11 Industry standard measures would be put in place to control pollution, including from fuel or chemical stores, silt-laden run-off or dust as detailed in the air quality (**Chapter 5**), geology and land quality (**Chapter 11**), and groundwater and surface water (**Chapter 12**) assessments of this volume.

10.5.12 Toolbox talks would be used to inform all those working on the site of the requirements for soil handling, and minimisation of disturbance to agricultural activities to minimise potential impacts on the remainder of the landholding, and on neighbouring landholdings during the construction phase.

10.5.13 All fencing around the proposed development would be sufficient to resist damage by livestock from adjacent land (where appropriate) and will be regularly checked and maintained in a suitable condition. Any damage to boundary fencing would be repaired.

10.5.14 Measures contained in relevant Defra and Environment Agency best practice guidance on the control and removal of invasive weed species (Ref. 10.17) would be implemented where appropriate, such as through the

appropriate use of herbicides or removal/burial of plant materials. These are detailed in the **CoCP** (Doc Ref. 8.11). This maintenance would be continued by SZC Co. for a year post-construction, following which the highway would be offered for adoption by the relevant highways authority who would be responsible for undertaking maintenance.

10.5.15 During construction, should animal bones be discovered which may indicate a potential burial site, works would cease, and advice would be sought from the Animal Health Regional Office on how to proceed, relevant to the origin and age of the materials found.

10.5.16 All movement of personnel, plant and vehicles between fields would cease in the event of a disease outbreak. Advice and guidance from Defra would be followed to minimise the biosecurity risk associated with the continuation of works.

## 10.6 Assessment

### a) Introduction

10.6.1 This section presents the findings of the soils and agriculture assessment for the construction and operation of the proposed development.

10.6.2 This section identifies any likely significant effects that are predicted to occur and **section 10.7** of this chapter highlights any secondary mitigation and monitoring measures that are proposed to minimise any adverse significant effects.

### b) Construction

#### i. Agricultural land

10.6.3 During construction, the proposed development would affect a total of 92.8ha of primary agricultural land. Of this, 50.6ha is confirmed to be Grade 2 and Grade 3a, comprising approximately 50% of the site, which is considered to be BMV land. 14.5ha of the primary agricultural land has not been surveyed (comprising approximately 14.36% of the site). Provisional mapping shows this land to comprise a mix of Grades 2 and 3 however, as described in **section 10.4** of this chapter, for the purposes of this assessment and to consider a worst-case scenario, it has been assumed this is BMV land.

10.6.4 The remaining primary agricultural land affected is Grade 3b land (27.7ha). There is also 8.2ha of land not in agricultural use.

- 10.6.5 The Sizewell link road (including verges and Sustainable urban Drainage System) would be permanent and covers approximately 84.40ha. The remaining land would not be required permanently.
- 10.6.6 The areas of land at each grade required temporarily and permanently are presented in **Table 10.8**.

**Table 10.8: ALC grade distribution**

| ALC Grade         | Total area (ha) | Area required permanently (ha) | Area required temporarily (ha) |
|-------------------|-----------------|--------------------------------|--------------------------------|
| 1                 | 0               | 0                              | 0                              |
| 2                 | 10.1            | 9.6                            | 0.5                            |
| 3a                | 40.5            | 32.4                           | 8.1                            |
| 3b                | 27.7            | 21.3                           | 6.4                            |
| 4                 | 0               | 0                              | 0                              |
| 5                 | 0               | 0                              | 0                              |
| Non-agricultural. | 8.2             | 7.9                            | 0.3                            |
| Not surveyed.     | 14.5            | 13.2                           | 1.3                            |
| <b>Total</b>      | <b>101.0</b>    | <b>84.4</b>                    | <b>16.6</b>                    |

- 10.6.7 A total of at least 65.1ha of BMV land would be required from the start of the construction phase, which includes the un-surveyed land which is assumed to be BMV land.
- 10.6.8 The BMV land permanently affected is a receptor of **high** value. The magnitude of this impact would be assessed as **high**. Therefore, this is considered to be a **major adverse** effect which would be **significant**.
- 10.6.9 The reinstatement of the agricultural land required temporarily (16.3ha; required for a period of approximately 24 months) would result in the reinstatement of up to 9.9ha of BMV land. Once complete, the magnitude of the impact would be the same with the permanent loss of up to 55.2ha of BMV land (**major adverse** effect which would be **significant**).

ii. Land holdings

- 10.6.10 Thirteen agricultural holdings are associated with this site. Land may be required temporarily during the construction period or permanently. The temporary and permanent land requirement would occur simultaneously at the start of the construction period, and it is the combined impact of both that would have the most impact on the holding. By the end of the construction period some land would be returned to agricultural use, in

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accordance with the SMP, and thus the impact on individual holdings would reduce.

10.6.11 The effects on each holding during construction are set out in **Table 10.9**. This shows the proportion of each holding required during construction. The effects of severance are based on the ease to which land remains accessible with the implementation of the measures outlined previously.

**Table 10.9: Summary of effects on holdings**

| Holding name          | Sensitivity to change | Area of holding required | Percentage of holding required during construction | Impact due to severance   | Magnitude of impact | Classification of effect during construction |
|-----------------------|-----------------------|--------------------------|--|---|---------------------|--|
| Kelsale Manor.        | Low                   | 11.96ha                  | 5.34%  | Area to north of the proposed site (approximately 3.8ha) which would have restricted access | Medium              | Minor adverse (not significant).             |
| Rookery Farm.         | Low                   | 9.10ha                   | 13.60%   | No severance impact due to additional access route provided from the A12.                   | Medium              | Minor adverse (not significant).             |
| Fordley Hall Farm.    | Low                   | 16.01ha                  | 12.74%   | Some additional use of public highway required.   | Medium              | Minor adverse (not significant).             |
| Beveriche Manor Farm. | Low                   | 0.82ha                   | 1.01%  | No severance impacts.   | Very Low.           | Negligible (not significant).                |
| Old Abbey Farm.       | High                  | 14.33ha                  | 14.76%   | Some additional use of public highway required.   | Medium              | Major adverse (significant).                 |
| Trust Farm.           | Low                   | 8.16ha                   | 8.83%  | Some additional use of public highway required.   | Medium              | Minor adverse (not significant).             |

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| Holding name            | Sensitivity to change | Area of holding required | Percentage of holding required during construction | Impact due to severance                               | Magnitude of impact | Classification of effect during construction |
|-------------------------|-----------------------|--------------------------|--|---|---------------------|--|
| Hawthorn Farm.          | Low                   | 5.47ha                   | 8.64ha   | Some additional use of public highway required.       | Medium              | Minor adverse (not significant).             |
| Dove House Farm.        | Medium                | 5.42ha                   | 9.65%  | Some additional use of public highway required.       | Medium              | Moderate adverse (significant).              |
| Theberton Hall Farm.    | High                  | 14.11ha                  | 6.63%  | Some minor additional use of public highway required. | Low                 | Moderate adverse (significant).              |
| Yew Tree Farm.          | High                  | 0.22ha                   | 1.36%  | No severance impacts.                                 | Low.                | Moderate adverse (significant).              |
| Church Farm.            | High                  | 4.97ha                   | 26.05%   | No severance impacts due to provision of overbridge.  | High                | Major adverse (significant).                 |
| Moat Farm.              | Low                   | 4.95ha                   | 15.78%   | No severance impacts.                                 | Medium              | Minor adverse (not significant).             |
| Theberton House Estate. | Low                   | 0.74ha                   | 0.44%  | No severance impacts.                                 | Very Low.           | Negligible (not significant).                |

**10.6.12** Approximately 16.84ha of the land holdings required for construction would be returned to agricultural use at the end of the construction phase. The effect on each landholding at the end of the construction phase as a result of land being returned to agricultural use is summarised in **Table 10.10** below (there would be no change to severance impacts as a result of land being returned to agricultural use).



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**Table 10.10: Summary of effects on holdings once land required temporarily has been returned**

| Holding name          | Sensitivity to change | Area of holding to be returned to agricultural use | Area of holding required permanently | Percentage of holding required permanently | Magnitude of impact | Classification of effect once land required temporarily has been returned |
|-----------------------|-----------------------|--|--------------------------------------|--|---------------------|---|
| Kelsale Manor.        | Low                   | 4.06ha   | 7.90ha                               | 3.53%                                      | Very low            | Negligible (not significant).   |
| Rookery Farm.         | Low                   | 3.77ha   | 5.33ha                               | 7.96%                                      | Low                 | Minor adverse (not significant).  |
| Fordley Hall Farm.    | Low                   | 3.44ha   | 12.57ha                              | 10.00%                                     | Low                 | Minor adverse (not significant).  |
| Beveriche Manor Farm. | Low                   | 0.38ha   | 0.44ha                               | 0.54%                                      | Very low            | Negligible (not significant).   |
| Old Abbey Farm.       | High                  | 1.28ha   | 13.05ha                              | 13.44%                                     | Medium              | Major adverse (significant).  |
| Trust Farm.           | Low                   | 0.35ha   | 7.81ha                               | 8.45%                                      | Low                 | Minor adverse (not significant).  |
| Hawthorn Farm.        | Low                   | 0.43ha   | 5.04ha                               | 7.96%                                      | Low                 | Minor adverse (not significant).  |
| Dove House Farm.      | Medium                | 0.68ha   | 4.74ha                               | 8.43%                                      | Low                 | Minor adverse (not significant).  |
| Theberton Hall Farm.  | High                  | 1.28ha   | 12.83ha                              | 6.03%                                      | Low                 | Moderate adverse (significant).   |
| Yew Tree Farm.        | High                  | 0ha  | 0.22ha                               | 1.36%                                      | low                 | Moderate adverse (significant).   |
| Church Farm.          | High                  | 0.60ha   | 4.37ha                               | 16.77%                                     | Medium              | Major adverse (significant).  |
| Moat Farm.            | Low                   | 0.17ha   | 4.78ha                               | 15.24%                                     | Medium              | Minor adverse (not significant).  |

| Holding name            | Sensitivity to change | Area of holding to be returned to agricultural use | Area of holding required permanently | Percentage of holding required permanently | Magnitude of impact | Classification of effect once land required temporarily has been returned |
|-------------------------|-----------------------|--|--------------------------------------|--|---------------------|---|
| Theberton House Estate. | Low                   | 0.07ha   | 0.67ha                               | 0.40%                                      | Very low            | Negligible (not significant).   |

10.6.13 Following the reinstatement of land at the end of the construction phase the effects remain the same for all land holdings with the exception of Kelsale where the effect is reduced from **minor adverse** to **negligible** and Dove Farm where the effect is reduced from **moderate adverse** to **minor adverse**.

10.6.14 Overall, 13 holdings would be affected, of which four would experience **major** or **moderate adverse** effects, which would be considered significant. This is principally as a result of the proportion of land to be taken out of production during the construction phase

iii. [Inter-relationship effects](#)

10.6.15 There are anticipated to be inter-relationship effects between geology and land quality; landscape; noise; air quality and groundwater and surface water in relation to potential receptors which could be impacted by ground contamination, poor ground conditions resulting from soil handling, and noise or dust affecting adjacent land holdings.

10.6.16 There is the potential for effects on agricultural land to increase due to effects arising on land quality as construction activities could result in ground contamination, soil erosion and silt-laden runoff affecting land outside the site boundary or soils required for reinstatement of land required temporarily. The **CoCP** (Doc Ref. 8.11) outlines measures which will be used to control runoff, erosion and pollution. The assessment presented in **Chapter 11** of this volume determined that the impact would be low and as such it is considered there is limited potential for effects arising from geology and land quality to increase the effects reported on agricultural land.

10.6.17 In relation to landscape, the ability to create and maintain elements of landscape planting will require soils with appropriate characteristics. The SMP, provided in **Volume 2, Appendix 17C** of the **ES**, sets out how soils will be stripped, stockpiled and re-used to ensure they are suitable for the required end use. These are established methods, based on published guidance, and as such it is considered there is limited potential for inter-relationship effects with landscape.

- 10.6.18 During the construction phase there is the potential for effects on agricultural land to increase as result of noise generated by construction activities. The assessment presented in **Chapter 4** of this volume states that whilst the exact construction working methods would not be decided until after approval of the development consent application there is the potential for impacts from noise and vibration as a result of construction activities, although these are generally considered to be of short duration and not in a single location for the full duration of the construction phase. The **CoCP** (Doc Ref. 8.11) includes a range of measures which could be used to reduce impacts from noise on adjacent receptors, which would limit potential impacts on any livestock present, and as such it is considered there is limited potential for inter-relationship effects with noise and vibration.
- 10.6.19 There is the potential for the effects on agricultural land to increase due to effects arising on air quality as construction activities would result in the emission of dust which could be deposited on adjacent agricultural land surrounding the site. This has the potential to result in smothering of vegetation and soil contamination, impacting agricultural productivity. A dust impact assessment was undertaken for the site, provided in **Appendix 5A** of this volume, which identified dust generating activities during the earthworks, construction and trackout phase. The risk of dust impacts was determined to be high. The **CoCP** (Doc Ref. 8.11) outlines the control measures that will be applied on site to reduce the risk of dust impacts such that the effect on air quality is considered to be negligible. On this basis, it is considered there is limited potential for effects arising from air quality to increase the effects reported on agricultural land quality.
- 10.6.20 Changes to surface and groundwater flows as a result of construction activities has the potential to increase effects on agricultural land and soils required for reinstatement of land and landscape planting areas (for example altered groundwater regime or flood risk). The **CoCP** (Doc Ref. 8.11) outlines measures to be implemented to reduce the risk of hydrological or hydrogeological changes which could affect agricultural land such that the effects are considered to be minor adverse or negligible. The assessment presented in **Chapter 12** of this volume determined that the effects would be minor adverse to minor beneficial and as such it is considered that there is limited potential for effects arising from groundwater and surface water to increase the effects reported on agricultural quality.

c) Operation

10.6.21 During operation of the proposed development no additional land would be required beyond that reported for the construction phase, and no further effects on BMV, or agricultural land holdings are anticipated.

10.6.22 Other potential impacts include potential for invasive weed species to grow within the site. However, this would be controlled using an appropriate management regime, as summarised in **section 10.5** of this chapter, that would remove weed growth that might threaten adjoining agricultural land. The impact during operation is therefore assessed as being of low magnitude which would be a minor adverse effect and not significant.

i. Inter-relationship effects

10.6.23 There are anticipated to be inter-relationship effects between noise; air quality and groundwater and surface water in relation to potential receptors which could be impacted by noise, dust or pollution incidents affecting adjacent land holdings. Potential impacts would include the contamination of soils, disturbance (noise) and dust. However, given the mitigation measures proposed in relation to these disciplines it is expected that there would be only minor inter-relationship effects (**not significant**).

10.7 Mitigation and monitoring

a) Introduction

10.7.1 Where possible, mitigation measures have been proposed where a significant effect is predicted to occur. Primary and tertiary mitigation measures which have been accounted for as part of the assessment are summarised in **section 10.5** of this chapter. Where other mitigation is required to reduce or avoid an adverse effect, this is referred to as secondary mitigation. There are no secondary mitigation measures available over and above those already identified as primary and tertiary mitigation measures (which have sought to reduce these impacts as far as practicable) for the permanent loss of BMV land which is assessed as a major adverse effect. Therefore, no additional mitigation or monitoring measures have been proposed.

10.7.2 The effects on four land holdings are considered to be significant at the end of the construction phase (i.e. when land required temporarily has been reinstated) with the effects on the remaining nine holdings are not considered to be significant.

10.7.3 Further consultation with the land owners will be undertaken to reduce the impacts on the farm businesses, as far as practicable, especially during the

construction phase. This will include agreement of assurances and obligations that SZC Co. will accept upon entering the land and compensation, where applicable.

10.7.4 It is considered that this would reduce the magnitude of impact on those four land holdings to **low**, which would be a **minor adverse** effect and **not significant**, and further reduce the effect on the remaining land holdings to **negligible**.

## 10.8 Residual effects

10.8.1 The following tables (**Table 10.11** and **Table 10.12**) present a summary of the residual effects identified through the soils and agriculture assessment. They identify the receptor/s likely to be impacted, the level of effect and, where the effect is deemed to be significant, the tables include the mitigation proposed and the resulting residual effect.

**Table 10.11: Summary of effects for the construction phase**

| Receptor               | Impact  | Primary or Tertiary Mitigation   | Assessment of effects   | Additional Mitigation  | Residual Effects   |
|------------------------|---|--|---|--|--|
| BMV land.              | Loss of up to 65.1ha of BMV land, of which up to 55.2ha is lost permanently.          | None available.  | Major adverse <b>(Significant)</b> .  | None proposed.   | Major adverse <b>(Significant)</b> .   |
| Agricultural holdings. | Temporary loss of land from agricultural production associated with 13 land holdings. | Minimisation of land take, inclusion of accommodation works/access points. | Five holdings would experience moderate or major adverse effects <b>(Significant)</b> . | Impacts on the farm business resulting from the loss of agricultural land from production will be addressed, as far as practicable, directly with the landowner. | Minor adverse <b>(not significant)</b> where previously significant; negligible for remaining land holdings. |
| Agricultural holdings. | Permanent loss of land from agricultural production associated with 13 land holdings. | Minimisation of land take, inclusion of accommodation works/access points. | Four holdings would experience moderate or major adverse effects <b>(Significant)</b> . | Impacts on the farm business resulting from the loss of agricultural land from production will be addressed, as far as   | Minor adverse <b>(not significant)</b> where previously significant; negligible for remaining land holdings. |

| Receptor | Impact | Primary Tertiary Mitigation | or | Assessment of effects | Additional Mitigation                     | Residual Effects |
|----------|--------|-----------------------------|----|-----------------------|---|------------------|
|          |        |                             |    |                       | practicable, directly with the landowner. |                  |

**Table 10.12: Summary of effects for the operational phase**

| Receptor             | Impact                                     | Primary Tertiary Mitigation   | or | Assessment of effects | Additional Mitigation | Residual Effects                |
|----------------------|--|---|----|-----------------------|-----------------------|---------------------------------|
| Agricultural holding | Constraints to land use due to weed growth | General good maintenance of the site, and appropriate weed management as required |    | Minor adverse         | None                  | Minor adverse (not Significant) |



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