



# The Sizewell C Project

## 6.8 Volume 7 Yoxford Roundabout and Other Highways Improvements Chapter 10 Soils and Agriculture

---

Revision: 1.0  
Applicable Regulation: Regulation 5(2)(a)  
PINS Reference Number: EN010012

---

May 2020

Planning Act 2008  
Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009



## Contents

10	Soils and Agriculture.....	1
10.1	Introduction.....	1
10.2	Legislation, policy and guidance.....	3
10.3	Methodology.....	5
10.4	Yoxford roundabout.....	11
10.5	Other highway improvements.....	20
10.6	Residual effects.....	20
	References.....	22

## Tables

Table 10.1:	Summary of environmental screening exercise.....	6
Table 10.2:	Assessment of the value or sensitivity of receptors for soils and agriculture.....	8
Table 10.3:	Assessment of magnitude of impact on soils and agriculture.....	9
Table 10.4:	Classification of effects.....	10
Table 10.5:	ALC grade distribution.....	13
Table 10.6:	Summary of effects for the construction phase.....	20
Table 10.7:	Summary of effects for the operational phase.....	21

## Plates

**None Provided.**

## Figures

- Figure 10.1 Yoxford roundabout site Soilscape mapping
- Figure 10.2 Yoxford roundabout site provisional ALC mapping
- Figure 10.3 Yoxford roundabout site detail ALC mapping
- Figure 10.4 Yoxford roundabout site agri-environment schemes
- Figure 10.5 Yoxford roundabout site forestry and woodland schemes

## Appendices

Appendix 10A: Yoxford Roundabout Agricultural Land Classification Report

## 10 Soils and Agriculture

### 10.1 Introduction

10.1.1 This chapter of **Volume 7** of the **Environmental Statement (ES)** presents an assessment of the soils and agriculture effects arising from the construction and operation of the Yoxford roundabout and other highway improvements (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 The proposed improvement works are as follows:

- A roundabout at the junction between the A12 and B1122 in Yoxford (referred to throughout as ‘Yoxford roundabout’).
- Improvements at the A1094 and B1069 junction south of Knodishall.
- Improvements at the A12 and A144 junction south of Bramfield.
- Improvements at the A12 and B1119 junction at Saxmundham.

10.1.3 Road safety analysis has also identified potential highway safety issues at two sites (the B1078 and B1079 junction east of Easton and Otley College and the A140 and B1078 junction west of Coddendam). Highway safety measures at these sites will be secured by an obligation in the Section 106 Agreement (see the **Draft Heads of Terms, Appendix J** to the **Planning Statement** (Doc. Ref. 8.4).

10.1.4 Detailed descriptions of the proposed development sites (referred to throughout this volume as the ‘site’ as relevant to the location of the works), the proposed development, safety measures and the different construction and operation phases are provided in **Chapters 1** to **2** of this volume of the **ES**. A glossary of terms and list of abbreviations used in this chapter is provided in **Volume 1** of the **ES**.

10.1.5 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.
- **Chapter 12** of this volume: Groundwater and surface water.

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

- **Appendix 10A** of this volume: Yoxford roundabout Agricultural Land Classification (ALC) Report.

10.1.7 This assessment relates to the following key factors:

- the soil types and related ALC grades<sup>1</sup> likely to be affected by the proposed development;
- the type of farm enterprises and farming/land management practices present, including any agri-environment schemes<sup>2</sup>; and
- the possible presence of crop/soil/animal diseases or noxious weeds, and the risk of spreading such disease/weeds.

10.1.8 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, operation and the post-operational use of the site;
- assess the likely significant effects of the proposed development on soil, land-use and agriculture, taking account of temporary and permanent land-use requirements and site restoration;

---

<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 Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grades 1, 2 and 3a are defined as best and most versatile (BMV) land.

<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.

- specify measures, if appropriate, to mitigate potential significant adverse effects on soil, land-use and agriculture; and
- determination of 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 across all **ES** volumes.

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

### a) International

10.2.3 There is no international legislation or policies that are deemed relevant to the assessment of effects on soils and agriculture for this site.

### 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 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 – this requires planning policies and decisions to recognise the economic and other benefits of BMV 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).

**NOT PROTECTIVELY MARKED**

- 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).
- 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).

**c) Regional**

**10.2.7** No regional policies are deemed relevant to the assessment of effects on soils and agriculture for this site.

**d) Local**

**10.2.8** Local policies of relevance to the soils and agricultural assessment include:

- Suffolk Coastal District Council 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.
- Suffolk Coastal District Council Final Draft Local Plan, published by East Suffolk Council – this highlights the presence of BMV land as a key issue (Ref. 10.8).

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

**e) Guidance**

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

- Natural England Technical Information Note 049 (2012) (Ref. 10.9).
- Defra Construction Code of Practice for the sustainable re-use of soils on construction sites (Ref. 10.10).
- Good Practice Guide for Handling Soils (Ministry of Agriculture, Fisheries and Food, 2000) (Ref. 10.11).
- British Standard Specification for Topsoil and Requirements for Use (BS3882:2015) (Ref. 10.12).

### 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 and the highway safety measures.

10.3.4 The scope of this assessment has been established through a formal EIA scoping process undertaken with the Planning Inspectorate. A request for an EIA Scoping Opinion was initially issued to the Planning Inspectorate 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. For the soils and agriculture assessment, this has been undertaken on the whole Sizewell C Project and details are included in **Volume 1, Appendix 6M** of the **ES** where it was confirmed the approach would follow the published guidelines. No consultation with statutory consultees has been undertaken with specific regards to the highway improvement sites.

#### c) Environmental Screening

10.3.7 An environmental screening exercise was undertaken to identify which of the four highways improvements works proposed and two highway safety measures may give rise to environmental effects that have the potential to be significant, shown in **Table 10.1**. The outcome of this environmental screening exercise concludes that the A12 and B1122 Yoxford roundabout highway improvement works should be taken forward to the assessment of likely effects on soils and agriculture.

**NOT PROTECTIVELY MARKED**

10.3.8 The remaining three highway improvement works and two safety measures have been screened out of the soils and agriculture assessment as they are not likely to give rise to significant environmental effects.

**Table 10.1: Summary of environmental screening exercise.**

Proposed scheme / safety measures.	Summary of potential effects.	Screened in or out of the assessment.
A12 and B1122 east of Yoxford.	The proposed works comprise the provision of a new roundabout at the junction (referred to as the 'Yoxford roundabout'). The works would result in the permanent loss of approximately 1.56 hectares (ha) of agricultural land and a temporary impact on 0.34ha of agricultural land.	Screened in.
A1094 and B1069 junction south of Knodishall.	The proposed works comprise improvements of visibility splays and provision of signage and road markings. No impact on agricultural land or practices.	Screened out.
A12 and A144 junction south of Bramfield.	The proposed works comprise the provision of central reservation island and waiting area. There is the potential for limited impact on agricultural land (provisionally mapped as Grade 3) along field edges and field corners. This is likely to be not significant due to the limited area affected (a maximum permanent land take of 0.3ha agricultural land) and the fact that this comprises field edges and hedgerows.	Screened out.
A12 and B1119 junction at Saxmundham.	The proposed works comprise of widening to the junction at the approach to the A12, as well as improvements of visibility splays and provision of signage and road markings. This would all be achieved within the existing highway boundary and thus there would be no impact on agricultural land or practices.	Screened out.
B1078 and B1079 junction east of Easton and Otley College.	The proposed works comprise improvements of visibility splays and provision of signage and road markings. No impact on agricultural land or practices.	Screened out.
A140 and B1078 junction west of Coddendam.	The proposed works comprise improvements of visibility splays and provision of signage and road markings.	Screened out.

Proposed scheme / safety measures.	Summary of potential effects.	Screened in or out of the assessment.
	No impact on agricultural land or practices.	

d) Study area

- 10.3.9 The study area for the soils and agriculture assessment covers the land required for construction and operation of the proposed Yoxford roundabout. The location and extent of the site is shown in **Chapter 1, Figure 1.2** of this volume.
- 10.3.10 The site is approximately 2.9ha and is located to the east of Yoxford. Approximately 1.9ha of the site is agricultural land. The remainder comprises sections of the A12 and the B1122.
- 10.3.11 In addition, the assessment of impacts on farm viability will take into account the full extent of each affected business so the impact can be considered in the context of the holding.

e) Assessment scenarios

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

f) 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 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 The approach to assigning levels of sensitivity to receptors is summarised in **Table 10.2**.

**Table 10.2: 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); Irrigated agriculture; Stock animals; Higher level agri-environment schemes; Soils with low or no wetness limitation affecting workability (wetness class I or II), where drought is not also a limitation; and Soils with a high susceptibility to structural damage and soil erosion throughout the year, including heavily textured, poorly structured soils.
Medium	Grade 3b land; Non irrigated agriculture; Entry level agri-environment schemes; Soils with low wetness limitation affecting workability (wetness class II), where drought is not also a limitation; and Soils with some seasonal susceptibility to structural damage and soil erosion.
Low	Grade 4 land; Arable or grassland areas; Soils with moderate wetness limitation affecting workability (wetness class III or IV); and Soils with medium to coarse textures and some resistance to structural damage for most of the year.
Very Low.	Grade 5 land; Soils with high wetness limitation affecting workability (wetness class V or VI); Soils in which susceptibility to drought is a limitation to crop growth; and Course 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 National Planning Policy Framework (Ref. 10.3). The criteria for the assessment of magnitude are shown in **Table 10.3**.

**Table 10.3: 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 of the proposed development.

iii. Effect definitions

10.3.18 The definitions of effect for agriculture and soils are shown in **Table 10.4**.

**Table 10.4: 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 10.4**, 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.

g) [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, in relation to the Yoxford roundabout. A detailed ALC survey was undertaken in June 2019, examining soil properties to a depth of up to 1.2m below ground level, as seen in **Appendix 10A** of this volume.

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) and flood risk, and climate were also assessed in terms of potential limitations to agricultural productivity they may pose.

10.3.24 In addition, the landowner’s agent associated with the land holding (The Piggeries) was interviewed in November 2019. The question pro-forma used in the interviews is presented in **Volume 1, Appendix 6M** of the **ES**.

## ii. Assessment

- 10.3.25 As set out above, the assessment of effects on soils and agriculture includes the assessment of both construction and operation phases of the proposed Yoxford roundabout, rather than specific assessment years.

### h) Assumptions and limitations

- 10.3.26 The assessment for the Yoxford roundabout site is based on the permanent and temporary land requirements illustrated on **Figure 2.1** of this volume and shown on the Land Plans (Doc Ref. 2.1).
- 10.3.27 No assumptions or limitations have been identified above and beyond those embedded in the published ALC methodology (Ref. 10.13).

Information on land use is based on information publicly available and as provided by the landowner at the time of the survey.

## 10.4 Yoxford roundabout

### a) 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 at the site is presented in **Appendix 10A** of this volume.

### i. Current baseline

#### Geology

- 10.4.3 The site is underlain by an area within the Crag Group (shallow-water marine and estuarine sands, gravels, silts and clays), with an overlying deposit of sedimentary superficial quaternary deposit (clay, silt and gravel) (Ref. 10.14) in the northern part of the site. Made Ground has also been identified within the site associated with the construction of existing roads.
- 10.4.4 Further details of the geological characteristics of the site are provided in geology and land quality, provided in **Chapter 11** of this volume.

#### Topography and drainage

- 10.4.5 Land within the site is gently sloping down from the south-west corner to the north and east, falling from approximately 15m above ordnance datum (AoD) to approximately 10m AoD. Gradient and micro topography do not limit ALC grade within the site.

- 10.4.6 No natural watercourses lie within the site. The River Yox lies immediately to the north of the site. The topography suggests the site drains to a small pond immediately to the north east of the proposed development.
- 10.4.7 There is no evidence that flood risk limits ALC grade at any part of the site. The majority of the site lies within Flood Zone 1, and so has a low risk of flooding from tidal or fluvial sources. However, the northern-most section of the site lies within Flood Zones 2 and so has a high risk of surface water flooding.
- 10.4.8 The site is quite low lying and so achieving an adequate fall for field drainage may be difficult. Further details are provided in the groundwater and surface water chapter, provided in **Chapter 12** of this volume.

#### Climate

- 10.4.9 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.
- 10.4.10 Climate has an important influence on the interactive limitations of soil wetness and soil droughtiness. The site has both relatively low rainfall and a long growing season, acting to decrease the severity of any potential soil wetness limitation, but increasing the severity of any potential soil droughtiness limitation.

#### Soil types

- 10.4.11 The soils are described as freely draining slightly acid but base-rich soils, as seen in **Figure 10.1**. These belong to the Melford Soil Association<sup>3</sup> (Ref. 10.15).

#### Agricultural land quality and classification

- 10.4.12 Published Agricultural Land Classification (ALC) maps (Ref 10.16) show the site predominately comprises Grade 3 land, shown in **Figure 10.2**. Under the ALC system land is graded between Grade 1 and 5, with Grade 3 subdivided into 3a and 3b. 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 likely land grades. It should be noted also that these maps do not distinguish between the sub-grades 3a and 3b.

---

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

- 10.4.13 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, a detailed ALC survey was undertaken on the agricultural land in September 2019. Further details of the agricultural land quality at the site are presented in **Appendix 10A** of this volume. At the time of the survey the land was under grassland.
- 10.4.14 **Figure 10.3** illustrates the distribution of ALC grades across the site, determined by the ALC surveys. The majority of the agricultural land comprised Grade 3b (1.6ha), as well as areas of Grade 4 (0.3ha) and non-agricultural land (1.0ha). No areas of the site comprise land which falls into a BMV land category (i.e. Grades 1, 2 and 3a).
- 10.4.15 The extent of each grade within the site boundary are presented in **Table 10.5** below.

**Table 10.5: ALC grade distribution.**

ALC Grade.	Area (ha)	Area (%)
1	0	0
2	0	0
3a	0	0
3b	1.6	55.17
4	0.3	10.35
5	0	0
Non-agricultural.	1.0	34.48
<b>Total</b>	<b>2.9</b>	<b>100</b>

- 10.4.16 Grade 3b land covers 55.17% of the site and comprises predominantly a medium textured topsoil over a medium textured upper and lower subsoil. The area is rarely waterlogged (Wetness Class I) and the soil is limited to Grade 3b by its droughtiness.
- 10.4.17 Grade 4 land comprises 10.35% of the site, characterised by a medium textured topsoil over a medium textured upper and lower subsoil which is impenetrable beyond 0.46m due to gravel. The area is rarely waterlogged (Wetness Class I) and the soil is limited to Grade 4 by droughtiness.
- 10.4.18 There is an area of non-agricultural land to the south and west which is predominantly highway or hard standing, including the A12 and Middleton Road. This accounts for 34.48% of the site.

### Land use and holding information

- 10.4.19 The agricultural land (1.9ha of the site) on the site is under a single ownership associated with The Piggeries, which occupies a total of 5.21ha of land across its holding.
- 10.4.20 The land within the site is under pasture management and appeared to have been cut for forage at the time of the survey. The land is directly accessed from the farm.
- 10.4.21 The land is not under an agri-environment or woodland scheme, provided in **Figures 10.4** and **10.5**.

### ii. Future baseline

- 10.4.22 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 Yoxford roundabout.
- 10.4.23 Climate change is considered likely to have an effect on soil characteristics (resulting from increased temperatures and increased intensity of rainfall events), potentially reducing soil carbon levels and affecting yields. However, the main soil types are sandy, well drained soils already affected by droughtiness. It is considered that this would not materially change the baseline over the course of the construction period of the proposed Yoxford roundabout.
- 10.4.24 There are no committed development(s) or forecasted changes associated with the site which could materially alter the baseline conditions during the construction and operation of the proposed Yoxford roundabout development.

### b) Environmental design and mitigation

- 10.4.25 As detailed in **Volume 1, Chapter 6** of the **ES**, 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.
- 10.4.26 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.

i. Primary mitigation

10.4.27 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.

10.4.28 The site layout in relation to permanent land requirements has been optimised to reduce the overall land take. Land required temporarily during the construction phase will be returned to agricultural use upon completion of construction works.

ii. Tertiary mitigation

10.4.29 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.

10.4.30 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. 10.10) and the Ministry of Agriculture, Food and Fisheries Good Practice Guide for Soil Handling (Ref. 10.11).

10.4.31 An outline **Soil Management Plan (SMP)** has been developed, and provided in **Volume 2, Appendix 17C** of the **ES**. This would include information on handling methods and measures which would be implemented including (but are 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 different soil resources (in particular topsoil and subsoil) are stripped and stored 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 the replaced soil profile to at least 1.2m below ground level is sufficient for the post-construction use where relevant.
- 10.4.32 The requirements of the Outline Soil Management Plan are included within the **Code of Construction Practice (CoCP)** (Doc Ref. 8.11).
- 10.4.33 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.
- 10.4.34 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.
- 10.4.35 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.
- 10.4.36 Where proposed, fencing would be sufficient to resist damage by livestock from adjacent land and will be regularly checked and maintained in a suitable condition. Any damage to boundary fencing would be repaired immediately.
- 10.4.37 Measures contained in relevant Defra and Environment Agency best practice guidance on the control and removal of invasive weed species (Ref. 10.16) 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). During the construction phase, SZC Co. would maintain the scheme, including weed management and for a year post-construction. Following this period, responsibility would pass to the highway authority for any necessary checks and subsequent actions.
- 10.4.38 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.
- 10.4.39 All movement of 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.

## c) Assessment

## i. Introduction

10.4.40 This section presents the findings of the soils and agriculture assessment for the construction, operation and post-operational use of the proposed development.

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

## ii. Construction

## Agricultural land

10.4.42 The construction of the proposed Yoxford roundabout would result in impacts on 1.9ha of agricultural land. Of this land, 1.56ha would be required permanently.

10.4.43 The agricultural land within the site comprises Grade 3b and Grade 4 and is not BMV land. The agricultural land is therefore considered to be of medium to low value. The remaining land required is not in agricultural use.

10.4.44 Following completion of construction, the temporary contractor compound and working areas would be removed, and approximately 0.34ha would be reinstated for agricultural use in accordance with the SMP.

10.4.45 Overall, the magnitude of impact on agricultural land would be very low. This is considered to be a minor adverse effect, which would be **not significant**.

## Land holding

10.4.46 The Piggeries is the only agricultural landholding that occupies the agricultural land within the site.

10.4.47 The 1.9ha of land to be affected is currently pasture, which would be considered to be of low value. This loss represents approximately 36% of the holding. There are no impacts on severance. The impact on this holding would be considered to be high, which would be a moderate adverse effect and **significant**. Following the completion of construction 0.34ha of agricultural land will be returned to agricultural use. The proportion of land lost permanently would be approximately 30% of the holding; this would result in no overall reduction in the magnitude of the impact, or level of effect.

### Inter-relationship effects

- 10.4.48 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.
- 10.4.49 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.
- 10.4.50 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. 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.
- 10.4.51 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.
- 10.4.52 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 identifies 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, including construction working methods, which would be implemented 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..

- 10.4.53 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 range from medium to low risk. 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 risk 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.

### iii. Operation

- 10.4.54 During operation of the proposed development no additional land would be required beyond that reported for the construction phase, and no further effects on agricultural land or land holdings are anticipated.
- 10.4.55 Potential impacts also include potential for invasive weed species to grow within the site. However, this would be controlled using an appropriate management regime that would remove weed growth that might threaten adjoining agricultural land. The impact during operation is therefore assessed as being of very low magnitude which would be a minor adverse effect and **not significant**.

### Inter-relationship effects

- 10.4.56 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**).

### d) Mitigation and monitoring

- 10.4.57 Where possible, mitigation measures have been proposed where a significant effect is predicted to occur. Primary and tertiary mitigation measures which have already been incorporated within the design of the proposed development are detailed in **Section 10.5** of this chapter. Where

**NOT PROTECTIVELY MARKED**

other mitigation is required to reduce or avoid an adverse significant effect, this is referred to as secondary mitigation.

10.4.58 No secondary mitigation measures are required for the permanent loss of agricultural land, which is assessed as a minor adverse effect.

10.4.59 The assessment identified a moderate adverse effect on the land holding, which would be considered as **significant**. Further consultation with the land owner will be undertaken to reduce the impacts on the farm business, 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.

10.4.60 It is considered that this would reduce the magnitude of impact to low, which would be a minor adverse effect and **not significant**.

**10.5 Other highway improvements**

10.5.1 As identified in **Section 10.3 c)** of this chapter, the other highway improvements and safety measures are not considered to have the potential to result in significant environmental effects on soils and agriculture and therefore none require further assessment.

**10.6 Residual effects**

10.6.1 The following tables (**Table 10.6** and **Table 10.7**) 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 10.6: Summary of effects for the construction phase.**

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
BMV land.	Permanent loss of 1.53ha agricultural land.	None available.	Minor adverse ( <b>not significant</b> ).	None	Minor adverse ( <b>not significant</b> ).
BMV land.	Temporary loss of 0.34ha agricultural land.	Land will be returned to agricultural use. Soil handling, storage and re-use will be detailed in a	Minor adverse ( <b>not significant</b> ).	None	Minor adverse ( <b>not significant</b> ).

**NOT PROTECTIVELY MARKED**

Receptor	Impact	Primary or Tertiary Mitigation.	Assessment of effects.	Additional Mitigation.	Residual Effects.
		Soil Management Plan to ensure the soils are fit for purpose on reinstatement of the land.			
Agricultural holding.	Reduction in productivity associated with the temporary and permanent loss of agricultural land.	Layout has been optimised to limit land take with land required temporarily returned to agricultural use at the end of the construction phase.	Moderate adverse ( <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> ).

**Table 10.7: Summary of effects for the operational phase.**

Receptor	Impact	Primary or Tertiary Mitigation.	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 ( <b>not significant</b> ).	None	Minor adverse ( <b>not significant</b> ).

## References

- 10.1 Department of Energy and Climate Change. Overarching National Policy Statement (NPS) for Energy (NPS EN-1), 2011. (Online) Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47854/1938-overarching-nps-for-energy-en1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf) (Accessed July 2019).
- 10.2 Department of Energy and Climate Change. National Policy Statement for Nuclear Power Generation (NPS EN-6), 2011. (Online) Available from: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure> (Accessed July 2019).
- 10.3 Ministry of Housing, Communities & Local Government. National Planning Policy Framework, 2019. (Online) Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed July 2019).
- 10.4 Ministry of Housing, Communities & Local Government. Planning Practice Guidance, 2019. (Online) Available from: <https://www.gov.uk/government/collections/planning-practice-guidance> (Accessed July 2019).
- 10.5 Department for Environment, Food and Rural Affairs. Government's 25 Year Environment Plan, 2018. (Online) Available from: <https://www.gov.uk/government/publications/25-year-environment-plan> (Accessed July 2019).
- 10.6 Department for Environment, Food and Rural Affairs, Safeguarding our Soils: A Strategy for England, 2009. (Online) Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69261/pb13297-soil-strategy-090910.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69261/pb13297-soil-strategy-090910.pdf) (Accessed July 2019).
- 10.7 East Suffolk Council. Suffolk Coastal District Council Core Strategy and Development Management Policies, 2013. (Online) Available from: <https://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-local-plan/existing-local-plan/core-strategy-and-development-management-policies/> (Accessed July 2019).
- 10.8 East Suffolk Council. Suffolk Coastal District Council Final Draft Local Plan, 2019. (Online) Available from: <https://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-local-plan/local-plan-review/final-draft-local-plan/> (Accessed July 2019).
- 10.9 Natural England. Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land, 2012. (Online) Available from: <https://www.naturalengland.org.uk/Information-and-Data/Technical-Information-Notes/049-Agricultural-Land-Classification> (Accessed July 2019).

- <http://publications.naturalengland.org.uk/publication/35012> (Accessed July 2019).
- 10.10 Department for Environment, Food and Rural Affairs. Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, 2009. (Online) Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/716510/pb13298-code-of-practice-090910.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf) (Accessed July 2019).
- 10.11 Ministry of Agriculture, Fisheries and Food. Good Practice Guide for Handling Soils, 2000. (Online) Available from: <https://webarchive.nationalarchives.gov.uk/20090317221756/http://www.defra.gov.uk/farm/environment/land-use/soilguid/index.htm> (Accessed July 2019).
- 10.12 British Standards Institution. BS3882:2015. Specification for Topsoil and Requirements for Use. London: BSI, 2015.
- 10.13 Ministry of Agriculture, Fisheries and Food. Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land, 1988. (Online) Available from: <http://publications.naturalengland.org.uk/publication/6257050620264448> (Accessed July 2019).
- 10.14 British Geological Society. Geology of Britain viewer, 2019. (Online) Available from: <http://www.bgs.ac.uk/data/mapviewers/home.html?src=topnav> (Accessed May 2019).
- 10.15 Department for Environment, Food and Rural Affairs. MAGIC Map, 2019. (Online) Available from: <https://magic.defra.gov.uk/> (Accessed August 2019).
- 10.16 Department for Environment, Food and Rural Affairs and Environment Agency. Stop invasive non-native plants from spreading, 2014. (Online) Available from: <https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants> (Accessed September 2019).