



**AQUIND Limited**

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# **AQUIND INTERCONNECTOR**

## **Environmental Statement – Volume 1 - Chapter 17 Soils and Agricultural Land Use**

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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Environmental Statement – Volume 1 –  
Chapter 17 Soils and Agricultural Land Use

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## CONTENTS

<b>17.</b>	<b>SOILS AND AGRICULTURAL LAND USE</b>	<b>17-1</b>
<hr/>		
17.1.	SCOPE OF THE ASSESSMENT	17-1
17.2.	LEGISLATION, POLICY AND GUIDANCE	17-3
17.3.	SCOPING OPINION AND CONSULTATION	17-6
17.4.	ASSESSMENT METHODOLOGY	17-8
17.5.	BASELINE ENVIRONMENT	17-14
17.6.	PREDICTED IMPACTS	17-19
17.7.	CUMULATIVE EFFECTS	17-26
17.8.	PROPOSED MITIGATION AND ENHANCEMENT	17-26
17.9.	RESIDUAL EFFECTS	17-27
<b>REFERENCES</b>		<b>17-31</b>
<hr/>		

## ***TABLES***

Table 17.1 - Definitions of magnitude of impact on soil resources and agricultural land	17-11
Table 17.2 - Definitions of magnitude of impact on farm holdings	17-12
Table 17.3 - Sensitivity criteria for soil resources and agricultural land	17-12
Table 17.4 - Sensitivity criteria for farm holdings	17-13
Table 17.5 - Matrix for classifying the significance of effects	17-14
Table 17.6 - Summary of effects table for soil and agricultural land	17-29
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## ***APPENDICES***

**Appendix 17.1 – Consultation Responses**

**Appendix 17.2 – Agricultural Land Classification and Soil Resources**

**Appendix 17.3 – Soils and Agricultural Land Use Cumulative Effect Assessment Matrix  
(Stage 1 & 2)**

**Appendix 17.4 – Soils and Agricultural Land Use Cumulative Effect Assessment Matrix  
(Stage 3 & 4)**

## ***FIGURES***

**Figure 17.1 – Location of Soil Auger Observations**

**Figure 17.2 – Agricultural Land Classification**

**Figure 17.3 – Farm Holdings**

# 17. SOILS AND AGRICULTURAL LAND USE

## 17.1. SCOPE OF THE ASSESSMENT

### 17.1.1. INTRODUCTION

- 17.1.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon soils and agricultural land use.
- 17.1.1.2. The soils and agricultural land use assessment considers the potential impacts associated with the following activities:
- Disturbance of the soil resource during the Construction Stage, associated with the Converter Station Area and parts of the Onshore Cable Route;
  - Use of agricultural land, including that classed as best and most versatile ('BMV'), defined as land classified as Grades 1, 2, and 3a of the Agricultural Land Classification ('ALC') system), associated with the Converter Station Area and parts of the Onshore Cable Route; and
  - Loss of farmable area and effects on farming businesses, associated with the Converter Station Area and parts of the Onshore Cable Route.
- 17.1.1.3. Chapter 18 (Ground Conditions) of the Environmental Statement ('ES') Volume 1 (document reference 6.1.18) considers the impact of the Proposed Development on soil and geology receptors in terms of pollution and contamination.
- 17.1.1.4. Chapter 25 (Socio-economics) of the ES Volume 1 (document reference 6.1.25) considers the impact of the Proposed Development on other, non-agricultural land uses within the Onshore Cable Corridor.
- 17.1.1.5. This chapter assesses the impacts arising from the Proposed Development within the Onshore Components of the Order Limits and the Site only (above Mean Low Water Springs ('MLWS')). References to the Order Limits and the Site in this chapter, any appendices to it and plans enclosed to it, is only in relation to the Order Limits and the Site as applicable to the Onshore Components as illustrated in Figure 3.9 of the ES Volume 2 (document reference 6.2.3.9) Figure 3.9.

### 17.1.2. STUDY AREA

- 17.1.2.1. The study area is split into ten sections as outlined below and illustrated in Figure 3.9.

### **Section 1 – Lovedean (Converter Station Area)**

- 17.1.2.2. The study area of Section 1 extends to approximately 54 ha of land to the north, west and south of the existing Lovedean Substation. The proposed Converter Station is anticipated to have a footprint of approximately 4 ha and associated infrastructure (including the Access Road and temporary facilities) will require up to approximately 6 ha. Approximately 2 km of agricultural land in the study area of Section 1 will be required for the Onshore Cable Corridor.

### **Section 2 – Anmore**

- 17.1.2.3. The study area in Section 2 comprises the agricultural land affected and extends to approximately 18 ha.

### **Section 3 – Denmead/Kings Pond Meadow**

- 17.1.2.4. The study area in Section 3 extends to approximately 12 ha, and comprises the agricultural land affected, mainly in the north of the Section, and a small area south of Hambledon Road. The Proposed Development relies on the use of Horizontal Directional Drilling ('HDD') for the cabling through most of Section 3.

### **Section 4 – Hambledon Road to Farlington Avenue**

- 17.1.2.5. The study area in Section 4 extends to approximately 1 ha of agricultural land, of which most comprises grassland to the west of the B2150 with a small area of arable land west of the A3.

### **Section 5 – Farlington**

- 17.1.2.6. The study area in Section 5 is entirely within an urban area along Farlington Avenue and Eastern Road. No agricultural land would be affected in Section 5 and a negligible amount of soil would be disturbed. This Section is not considered further in this assessment.

### **Section 6 – Zetland Field and Sainsbury's Car Park**

- 17.1.2.7. The study area of Section 6 comprises approximately 1.2 ha of open space north of the supermarket. Although non-agricultural, the soil resource is a receptor.

### **Section 7 – Farlington Junction to Airport Service Road**

- 17.1.2.8. The use of HDD is proposed throughout most of Section 7. The study area of Section 7 therefore extends to approximately 5.8 ha of playing field and open space. The majority (5.5 ha) is in the north of the section, with the remainder in the south. Although non-agricultural, the soil resource is a receptor.

### **Section 8 – Eastern Road (adjacent to Great Salterns Golf Course) to Moorings Way**

- 17.1.2.9. Land affected in Section 8 is predominantly at Milton Common. As a former landfill site, the area is composed of made ground and is not in agricultural use. This Section is not considered further in this assessment.

### **Section 9 – Moorings Way to Bransbury Road**

- 17.1.2.10. The Proposed Development includes a combination of HDD and trenching within Section 9. The study area extends to around 3.9 ha of recreational land and open space at the University of Portsmouth Student Village (Langstone Campus), Kingsley Road Open Space and Bransbury Park where trenching may be utilised. Although non-agricultural, the soil resource is a receptor.

### **Section 10 – Eastney (Landfall)**

- 17.1.2.11. There is no land included in the soils and agricultural land use study area in Section 10. This section is not considered further in this assessment.

## **17.2. LEGISLATION, POLICY AND GUIDANCE**

- 17.2.1.1. This assessment has taken into account the current legislation, policy and guidance relevant to soils and agricultural land use. These are listed below.

### **17.2.2. LEGISLATION**

#### **European Union Thematic Strategy for Soil Protection**

- 17.2.2.1. There is no adopted legislation at European Union ('EU') or national level relating to soil protection. The EU Thematic Strategy for Soil Protection (European Commission, 2006) underlines the importance of the sustainable use of soil and the need to address the unsustainable increase of settlement areas over time ('land take'). The overarching aims are to prevent further soil degradation, preserve soil functions, and restore degraded soils to a standard appropriate to their intended use.
- 17.2.2.2. Directive 2014/52/EU (European Parliament, 2014), which amended Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, provides at paragraph (9) of the introductory text to the directive that public and private projects should consider and limit their impact on the land, particularly in respect of land-take, and on soil, particularly in respect of organic matter, erosion, compaction and sealing (i.e. covering undisturbed natural soils with urban development and infrastructure construction).



### 17.2.3. PLANNING POLICY

#### National Policy

##### National Policy Statement

- 17.2.3.1. In the s35 Direction letter, the Secretary of State ('SoS') directed that the Proposed Development was, by itself nationally significant and that the Overarching National Policy for Energy (EN-1) (Department of Energy and Climate Change, 2011) should apply to the application as it would to a generating station of a similar generating capacity as the capacity of the interconnector.
- 17.2.3.2. Paragraph 5.10.8 of EN-1 states that applicants should seek to minimise impacts on BMV agricultural land, using poorer quality land in preference, except where this would be inconsistent with other sustainability considerations. It goes on to say that applicants should identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed.
- 17.2.3.3. Paragraph 5.10.15 states that the [Secretary of State] should ensure that schemes are not sited on BMV agricultural land without justification, and that little weight should be given to the loss of poorer quality agricultural land (in Grades 3b, 4 and 5).

##### National Planning Policy Framework

- 17.2.3.4. Paragraph 170 of the NPPF (Ministry of Housing, Communities and Local Government, 2019) identifies that planning policies and decisions should contribute to and enhance the natural and local environment by, amongst other matters, protecting and enhancing soils (in a manner commensurate with their statutory status or identified quality in the development plan). It goes on to advise that the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services should be recognised, including the economic and other benefits of BMV agricultural land.

#### Local Policy

##### Portsmouth City Council

- 17.2.3.5. There are no policies relating to soils or agricultural land use in The Portsmouth Plan (2012).

##### Havant Borough Council

- 17.2.3.6. Policies CS11 and DM8 of the Havant Borough Core Strategy (Havant Borough Council, 2011) seek to protect and enhance natural soil resources; and Policy CS11 also seeks to protect BMV agricultural land that has the greatest potential for local food security.
- 17.2.3.7. Policy E16 of the Pre-Submission Havant Borough Local Plan 2036 (Havant Borough Council, 2019) seeks the protection of BMV agricultural land.

### **Winchester City Council**

- 17.2.3.8. There are no policies relating to soils or agricultural land use in the Winchester City Council Local Plan (2013).

### **East Hampshire District Council**

- 17.2.3.9. Policy CP20 of the East Hampshire District Local Plan: Joint Core Strategy (East Hampshire District Council and South Downs National Park Authority , 2014) indicates the special characteristics of the natural environment will be conserved and enhanced requiring new developments to protect and enhance a number of natural and historic features, including soils.

## **17.2.4. GUIDANCE**

### **Planning Practice Guidance**

- 17.2.4.1. Planning Practice Guidance (Ministry of Housing, Communities and Local Government, 2019) with regard to the natural environment reinforces that planning policies and decisions should take account of the economic and other benefits of BMV agricultural land, and identifies that a local planning authority must consult Natural England before granting planning permission for large-scale non-agricultural development on BMV land that is not in accord with the development plan.
- 17.2.4.2. The guidance on the natural environment also recognises that soil is an essential natural capital asset that provides important ecosystem services, such as a growing medium for food, timber and other crops, a store for carbon and water, a reservoir of biodiversity and a buffer against pollution.

### **Soil Strategy for England**

- 17.2.4.3. Defra's Soil Strategy for England (Department of Environment, Food and Rural Affairs, 2011) seeks to encourage the sustainable management of soil resources. The Strategy sets out Defra's vision that by 2030 all of England's soils will be managed sustainably and degradation threats will be tackled successfully in order to improve soil quality and safeguard the ability to provide essential services for future generations. The Strategy sets out priorities for the better protection of agricultural soils; enhancing stores of soil carbon; building the resilience of soils to a changing climate; preventing soil pollution; protecting soils during construction and development; and dealing with the legacy of contaminated land.

### **Code of Practice for the Sustainable Use of Soils**

- 17.2.4.4. Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Department of Environment, Food and Rural Affairs, 2009) is a practical guide to assist the construction industry to protect the soil resources with which it works and achieve good soil management at all stages of the construction process. It advises that the protection, use and movement of soil should be considered from the outset of a development project's planning, through its design and construction stages and on into future maintenance and operation. The sustainable use and management of soil resources during construction can help with the re-establishment of soil functions following their storage or movement, including food production, habitat provision and support, and natural cycling of elements such as carbon and nitrogen.

## **17.3. SCOPING OPINION AND CONSULTATION**

### **17.3.1. SCOPING OPINION**

- 17.3.1.1. The Scoping Opinion was received by the Applicant from PINS (on behalf of the SoS) on 7 December 2018.
- 17.3.1.2. The comments raised in the Scoping Opinion regarding soils and agricultural land use relate primarily to the development of a Soil Resource Plan, and to the implementation of appropriate cross-referencing with Chapters 18 (Ground Conditions), 19 (Groundwater) and 20 (Surface Water Resources and Flood Risk) of the ES Volume 1 (document references 6.1.18, 6.1.19 and 6.1.20). A summary of the key comments is provided below.
- Comments in 4.15.2 of the Scoping Opinion indicate that a Soil Resource Plan should be secured and that an Outline Plan be provided with the DCO Application. An Outline Soil Resource Plan ('SRP') is provided as part of the Onshore Outline Construction Environmental Management Plan ('CEMP') (document reference 6.9);
  - Comments at 4.15.3 of the Scoping Opinion notes potential overlap with Chapter 18 (Ground Conditions) and suggests appropriate cross-references be included to avoid duplication. Appropriate cross referencing is added where relevant; and
  - Comments in 4.15.4 of the Scoping Opinion consider field drainage and state the ES should address the impacts on field drainage regimes and consequently soils, with appropriate cross-referencing. The farm surveys undertaken have established that there are no field drainage regimes in place in the study area.
- 17.3.1.3. Appendix 17.1 (Consultation Responses) of the ES Volume 3 (document reference 6.3.17.1) includes a full schedule of responses to the PINS EIA Scoping Opinion.

### **17.3.2. CONSULTATION PRIOR TO PEIR**

17.3.2.1. No consultation relating to soils and agricultural land use was undertaken prior to the PEIR.

### **17.3.3. STATUTORY CONSULTATION**

17.3.3.1. Consultation on the PEIR was undertaken between February and April 2019. The key points raised during the consultation related to the siting of soil stores away from watercourses, and consideration of alternative routes that would have impacts on soils and agricultural land.

17.3.3.2. Provisions for the appropriate siting of soil stores is addressed as additional mitigation. The main impacts on soils and agricultural land will occur in the Converter Station Area rather than along the Onshore Cable Route. In line with the EIA Regulations, alternative locations for the Proposed Development were considered in Chapter 2 (Consideration of Alternatives) of the ES Volume 1 (document reference 6.1.2) together with a comparison and appraisal to balance and minimise the environmental effects of it.

17.3.3.3. Appendix 17.1 (Consultation Responses) includes the responses to the PEIR consultation in relation to this topic and how these have been addressed.

### **17.3.4. POST PEIR CONSULTATION**

17.3.4.1. Consultation has been undertaken with the owners and occupiers of the agricultural land affected by the Proposed Development to determine the impacts on their agricultural operations and to identify potential measures to mitigate any significant adverse effects. The key issues raised are as follows:

- The duration and timing of construction works;
- Agricultural access to land temporarily severed by construction works; and
- The location of joint bays within arable fields.

17.3.4.2. These issues have been taken into account whilst developing the proposals for the Proposed Development and the assessment of its effects on farm holdings. Full details of consultation undertaken to date is presented within the Consultation Report (document reference 5.1).

### **17.3.5. ELEMENTS SCOPED OUT OF THE ASSESSMENT**

#### **Decommissioning Stage**

17.3.5.1. The approach to decommissioning will be determined in the future at the time of decommissioning. It is assumed likely that the cables will be removed from the ducts via the Joint Bays but that the ducts would remain in situ. As such, there will be limited requirement to disturb soil or agricultural land to remove the cables.

## 17.3.6. IMPACTS SCOPED INTO THE ASSESSMENT

### Construction Stage

17.3.6.1. The following impacts are considered to have the potential to give rise to likely significant effects during construction of the Proposed Development and have therefore been considered within the ES:

- Loss of or damage to the soil resource;
- Loss of agricultural land, in particular that of BMV quality; and
- Loss of farmable area and possible effects on the viability of affected farming businesses.

### Operational Stage

17.3.6.2. The following impacts are considered to have the potential to give rise to likely significant effects during operation of the Proposed Development and have therefore been considered within the ES:

- Effects on agricultural land use following reinstatement of soils over cable trenches.

## 17.4. ASSESSMENT METHODOLOGY

17.4.1.1. The effects on soil and agricultural land resources are concerned with the permanent loss of agricultural land to the Proposed Development and the temporary and permanent impacts of the Proposed Development on the soil resources within the Order Limits.

17.4.1.2. There is a well-established methodology for classifying the quality of agricultural land, contained in the 'Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land' issued by the Ministry of Agriculture, Fisheries and Food ('MAFF') in 1988 (Ministry of Agriculture, Fisheries and Food, 1988) and summarised in Natural England's Technical Information Note ('TIN') 049 (Natural England, 2012).

17.4.1.3. 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. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

17.4.1.4. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing. Land which is classified as Grades 1, 2 and 3a is defined as BMV land.

## 17.4.2. CONSTRUCTION STAGE

17.4.2.1. Agricultural and other undeveloped open space was surveyed in accordance with the ALC guidelines and criteria between October 2018 and April 2019 by Reading Agricultural Consultants. In total, 49 soil profiles were examined within the Order Limits using an Edelman (Dutch) auger and spade at a density of approximately one per hectare. In addition, four soil pits were dug. An additional 23 soil profiles were examined outside the Order Limits, and 12 soil profiles were examined on behalf of MAFF in 1995. Soils data from the GI boreholes have been used where access to land was not achieved for the soil survey.

17.4.2.2. At each soil auger observation point shown on Figure 17.1 of the ES Volume 2 (document reference 6.2.17.1), the following characteristics were assessed for each soil horizon up to a maximum of 120 cm or to the depth of any impenetrable layer:

- Soil texture;
- Significant stoniness;
- Colour (including local gley and mottle colours);
- Consistency;
- Structural condition;
- Free carbonate; and
- Depth.

17.4.2.3. Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. There are six soil wetness classes, ranging from well drained Wetness Class ('WC') I to permanently wet WC VI. Soil WC is inferred from an interpretation of soil profile characteristics, site and climatic factors, particularly:

- The soil matrix colour;
- Presence or absence of and depth to greyish and ochreous gley mottling;
- Presence or absence of and depth to slowly permeable subsoil layers at least 15 cm thick; and
- The number of Field Capacity Days at the site.

17.4.2.4. The report of the soil and ALC survey is provided at Appendix 17.2 (Agricultural Land Classification and Soil Resources) of the ES Volume 3 (document reference 6.3.17.2), and the ALC plans as Figure 17.2 of the ES Volume 2 (document reference 6.2.17.2). Appendix 17.2 (Agricultural Land Classification and Soil Resources) provides a detailed methodology for establishing the baseline conditions.

17.4.2.5. The effects on farming businesses during the Construction Stage of the Proposed Development have been established through interviews with the relevant farmers and landowners. As discussions are ongoing with landowners, no account has been taken of any potential mitigation measures for land holdings so this assessment presents a worst case for the effects on farm holdings.

### **17.4.3. OPERATIONAL STAGE**

17.4.3.1. Much of the agricultural land affected, primarily in Section 1, Lovedean (Converter Station Area), would be permanently removed from agricultural production during the Construction Stage of the Proposed Development and as such there is no separate assessment required for operational effects.

17.4.3.2. Soils affected along the Onshore Cable Route will be reinstated to cover the cable, and the land returned to its original use, in many cases as agricultural land.

### **17.4.4. SIGNIFICANCE CRITERIA**

17.4.4.1. In determining the significance of a potential effect, the magnitude of impact arising from the Proposed Development is correlated with the sensitivity of the particular environmental attribute or process under consideration.

### Magnitude

17.4.4.2. The magnitude relates to the level at which the receptor will be impacted, using the duration of the impact, timing, scale, size and frequency to determine the magnitude of the impact to each receptor. Magnitude of impact is evaluated in accordance with the definitions set out in Table 17.1. The magnitude of impact on the soil resources takes into account the continued ability of a soil to fulfil its primary ecosystem functions. The magnitude of impact on agricultural land has had regard to existing statutory consultation procedures with Natural England for the development involving the loss of agricultural land.

**Table 17.1 - Definitions of magnitude of impact on soil resources and agricultural land**

<b>Magnitude of Impact</b>	<b>Soil Resources</b>	<b>Agricultural Land</b>
<b>High</b>	The soil displaced from the development is unable to fulfil one or more of the primary soil functions	The development of land would directly lead to the loss of over 50 ha of agricultural land
<b>Medium</b>	The soil displaced from the development mostly fulfils the primary soil functions off-site or has a reduced capacity to fulfil the primary functions on site	The development would directly lead to the loss of between 20 ha and 50 ha of agricultural land
<b>Low</b>	The soil displaced from the development mostly fulfils the primary soil functions on site	The development would directly lead to the loss of between 5 ha and 20 ha of agricultural land
<b>Negligible</b>	The soil retains its existing functions on-site	The development would directly lead to the loss of less than 5 ha of agricultural land

17.4.4.3. The magnitude of impact on farm businesses considers both the direct loss of farmable area and other key farm infrastructure to the holdings, as well as the severity of disturbance to the day-to-day management of the farming operation arising from the Proposed Development, as set out in Table 17.2.



**Table 17.2 - Definitions of magnitude of impact on farm holdings**

<b>Magnitude of Impact</b>	<b>Loss of Land</b>	<b>Loss of Farm Infrastructure</b>
<b>High</b>	Loss of 20% or more of all land farmed	Direct loss of farm dwelling, building or structure
<b>Medium</b>	10% or more and less than 20% of all land farmed	Loss of or damage to infrastructure affecting land use
<b>Low</b>	5% or more and less than 10% of all land farmed	Infrastructure loss/damage does not affect land use
<b>Negligible</b>	Less than 5% of all land farmed	No impact on farm infrastructure

**Value/Sensitivity**

- 17.4.4.4. As described within Chapter 4 (EIA Methodology) of the ES Volume 1 (document reference 6.1.4), sensitivity is a means to measure how sensitive affected receptors and/or the receiving environment is to change. The sensitivity is assigned at the receptor level. This may be defined in terms of quality, value, rarity or importance, and be classed as negligible, low, medium or high.
- 17.4.4.5. The sensitivity of the soil resource reflects its textural characteristics and its susceptibility to the effects of handling during construction and the reinstatement of land, as shown in Table 17.3. The sensitivity of agricultural land is assessed according to its grade within the ALC, and is also set out in Table 17.3.

**Table 17.3 - Sensitivity criteria for soil resources and agricultural land**

<b>Sensitivity</b>	<b>Soil Resources</b>	<b>Agricultural Land</b>
<b>High</b>	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams)	Grade 1, excellent quality agricultural land
<b>Medium</b>	Silty loams, medium silty clay loams, medium clay loams and sandy clay loams	Grade 2 and Subgrade 3a, very good and good quality agricultural land
<b>Low</b>	Soils with a high sand fraction (loamy sands, sandy loams and sandy silt loams)	Subgrade 3b and Grade 4, moderate and poor quality agricultural land
<b>Negligible</b>	Sand	Grade 5, very poor quality agricultural land

17.4.4.6. The sensitivity of farm holdings is determined by the extent to which they have the capacity to absorb or adapt to impacts, which has been determined primarily by their nature and scale, as set out in Table 17.4.

**Table 17.4 - Sensitivity criteria for farm holdings**

<b>Sensitivity</b>	<b>Definition</b>
<b>High</b>	Farms in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence of the infrastructure itself, e.g. dairying, irrigated arable cropping and field-scale horticulture, and intensive livestock or horticultural production
<b>Medium</b>	Farms in which there is a degree of flexibility in the normal course of operations, e.g. combinable arable farms and grazing livestock farms (other than dairying)
<b>Low</b>	Off-lying areas of land that are not contiguous with the main farm holding
<b>Negligible</b>	Off-lying areas of agricultural land used for non-commercial purposes

**Significance**

17.4.4.7. The overall significance has been assessed using the matrix shown in Table 17.5. Effects deemed to be significant for the purpose of assessment are those which are described as 'major' and 'major to moderate'. In addition, 'moderate' effects can also be deemed as significant. Whether they are has been determined by a qualitative analysis of the specific impact to the environment and will be based on professional judgement. If/where this is the case, the basis for any judgement has been outlined.

**Table 17.5 - Matrix for classifying the significance of effects**

		Sensitivity of receptor/receiving environment to change			
		High	Medium	Low	Negligible
Magnitude of Change	High	Major	Major to Moderate	Moderate	Negligible
	Medium	Major to Moderate	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

#### 17.4.5. ASSUMPTIONS AND LIMITATIONS

17.4.5.1. Where a detailed soil survey has not been undertaken, the baseline data has relied on interpretation of geotechnical borehole logs (Appendix 18.1 (Preliminary Risk Assessment and Generic Quantitative Risk Assessment) of the ES Volume 3 (document reference 6.3.18.1)). Whilst the method of recording soil properties differs between topics, particularly with reference to definitions of soil texture, the available logs give a good indication of the soils present in a location.

### 17.5. BASELINE ENVIRONMENT

#### 17.5.1. ONSHORE CABLE CORRIDOR SECTIONS

##### Section 1 – Lovedean (Converter Station Area)

##### Soil Resources

- 17.5.1.1. The area surveyed within the Converter Station Area extends to approximately 54 ha of land, of which approximately 35 ha are agricultural land. Topography in Section 1 is largely level in the east of the study area, and gently sloping in the west, with altitudes between 70 m and 90 m Above Ordnance Datum ('AOD').
- 17.5.1.2. Section 1 is underlain by soft white chalk with flints of the Tarrant Chalk Member. Superficial deposits of glacial Head are present and include gravel, sand and clay.
- 17.5.1.3. Soil surveys undertaken in Section 1 have identified one main soil type. The main soils predominantly include medium clay loam topsoil with an average depth of approximately 29 cm. The topsoil is variably stony, with content ranging from 15% to 25% by volume, generally higher where the land use is grassland.

- 17.5.1.4. Upper subsoil is of clay or heavy clay loam which is mottled and gleyed (features indicative of prolonged intermittent waterlogging). Stone content continues to be variable and up to 35% by volume. Where observed, lower subsoil has been identified as clay.
- 17.5.1.5. Profiles in the east are of WC II and are limited by wetness to Subgrade 3a. Profiles across most of the Section 1 area are of WC III or IV which limits to predominantly to Subgrade 3b, but for those profiles of WC III with medium clay loam topsoil, which are of Subgrade 3a.
- 17.5.1.6. In line with Table 17.3, the soil resource as defined as medium to high sensitivity, and the agricultural land as medium to low sensitivity.

#### **Agricultural Land Use**

- 17.5.1.7. There are five farm holdings within Section 1, as shown in Figure 17.3 of the ES Volume 2 (document reference 6.2.17.3). Denmead Farm occupies the arable land within Section 1 and extends to approximately 220 ha of tenanted land in this immediate locality, which is farmed as part of a larger 800 ha holding. The farm is in an Entry Level plus Higher Level Environmental Stewardship agreement, principally related to the management of field corners. There are no agricultural drainage systems installed in the arable land within Section 1. The sensitivity of the farm holding is medium.
- 17.5.1.8. Little Denmead Farm extends to approximately 21.5 ha of owner-occupied grassland to the west and south-west of the Lovedean Converter Station which is used to graze a small number of horses. The sensitivity of the farm holding is assessed as low. Land to the north of Little Denmead Farm extends to approximately 7 ha of owner-occupied grassland, and is assessed as being of low sensitivity.
- 17.5.1.9. Mill View Farm extends to approximately 3 ha to the east of Old Mill Lane, is rented out for grazing horses, and is assessed as being of low sensitivity. Mill Farm extends to approximately 5 ha of grassland which is not in active agricultural or equestrian use, and is assessed as being of negligible sensitivity. There are no agricultural land drainage systems installed in Section 1.

### **Section 2 – Anmore**

#### **Soil Resources**

- 17.5.1.10. Seven soil profiles were examined in the Order Limits in Section 2 in 2019 in addition to 12 observations made previously in surveys undertaken on behalf of MAFF in 1995. The topography is characterised by a shallow south-facing valley. Altitude falls from around 60 m AOD in the north to 45 m AOD in the south.
- 17.5.1.11. Section 2 is underlain by soft white chalk with flints of the Tarrant Chalk Member. Superficial deposits of glacial Head are present and include gravel, sand and clay.

17.5.1.12. Soil surveys undertaken in Section 2 have identified one soil type. The topsoil is of medium clay loam or medium silty clay loam with an average depth of approximately 30 cm. The topsoil is moderately stony. In many places the stone content was sufficient to restrict any further downward observation of the soil profiles.

17.5.1.13. Where an upper subsoil horizon is present, this comprises heavy silty clay loam. Lower subsoils comprise moderately to very stony brown clay, which is mottled and slowly permeable. The profiles are assessed as being of WC III or IV, depending on the depth to the clay, resulting in a wetness limitation to Subgrade 3a or 3b respectively. Some profiles in the south of Section 2 which include a very stony clay lower subsoil are also limited by susceptibility to drought due to a limited capacity for water storage. The soil resources in Section 2 are of medium sensitivity.

#### **Agricultural Land Use**

17.5.1.14. There is one farm holding in Section 2, which is the arable holding at Denmead Farm as described in Section 1 and shown on Figure 17.3. Similar to Section 1, none of the arable land has agricultural underdrainage installed.

17.5.1.15. There are two small grassland fields to the immediate north of Anmore Road but these are not agricultural and not included within the scope of this assessment.

### **Section 3 – Denmead/Kings Pond Meadow**

#### **Soil Resources**

17.5.1.16. Eleven soil profiles were examined in Section 3 in 2019. The topography of this section is gently sloping in the north, to relatively level in the south. The altitude falls from around 45 m AOD to 35 m AOD. Drainage is via a number of peripheral field ditches but there are no agricultural underdrainage systems installed in Section 3.

17.5.1.17. Across the gently sloping land of the north of the section, the underlying geology is of the Lambeth Group, comprising variable sequences of clay mostly with sand and gravel. In the south of the section the underlying geology includes silty to very silty clay of the London Clay Formation.

17.5.1.18. Superficial deposits overlie the bedrock throughout the section and comprise glacial Head.

17.5.1.19. Soil surveys have identified one main soil type in Section 3, with a minor variant within, and a second subordinate soil type, identified only to a very limited extent north of Hambledon Road.

17.5.1.20. The main soils mostly include dark grey medium clay loam or medium silty clay loam topsoil. In the north of the section, there is also some heavy clay loam. The topsoil is slightly stony at between 5% and 15% by volume and contains abundant mottles, which indicate prolonged wetness. The average topsoil thickness is 30 cm.

- 17.5.1.21. In many profiles the topsoil directly overlies clay subsoil which is grey and also extensively mottled. Stone content generally increases with depth, reaching around 30% by volume. The clay is poorly structured and slowly permeable. The profiles are of WC IV and limited mostly to Subgrade 3b. Where the topsoil is heavy clay loam or where clay is encountered within around 20 cm depth, the workability of the soil is worsened and the profiles are assessed as Grade 4.
- 17.5.1.22. In the south of the section, the stone content throughout the profiles is slight. There is also a distinct upper subsoil horizon present, comprising heavy silty clay loam, which is mottled but permeable. Lower subsoil is of slowly permeable grey clay or silty clay. These profiles are slightly better draining, of WC III and are limited mostly to Subgrade 3a.
- 17.5.1.23. The second soil type identified north of Hambledon Road includes slightly stony sandy loam topsoil of 35 cm thickness. This overlies slightly stony to stoneless grey sandy clay loam to depth. The profile is prominently mottled throughout but is permeable. The profile is assessed as WC II which results in a slight wetness limitation to Grade 2.
- 17.5.1.24. The soil resources in Section 3 are predominantly of medium sensitivity, with heavy clay loam topsoils and clay subsoils being of high sensitivity.

#### **Agricultural Land Use**

- 17.5.1.25. There are two farm holdings to the north of Hambledon Road, as shown in Figure 17.3. Land at Kings Pond extends to approximately 5 ha of permanent pasture which is rented out and used for grazing rescue horses. Soake Farm extends to approximately 15.5 ha of owner-occupied unimproved permanent pasture, which is used for making hay. Both holdings are assessed as being of low sensitivity. There are two small grassland holdings to the south of Hambledon Road that are each approximately 4 ha and assessed as being of low sensitivity. There are no agricultural land drainage systems installed in Section 3.

### **Section 4 – Hambledon Road to Farlington Avenue**

#### **Soil Resources**

- 17.5.1.26. Land affected in Section 4 extends to around 1 ha in total. There is no available survey data for land in the north of Section 4, however it is considered likely to be of Subgrade 3a in line with observations made in the south of Section 3.
- 17.5.1.27. Borehole records from ground investigations describe the soil profile in the south of Section 4. The topsoil is noted as 30 cm of “soft brown slightly sandy slightly gravelly clay”. The description is suggestive of a medium clay loam topsoil. Upper subsoil is noted as made ground, comprising “structureless chalk, composed of creamy white mottled orangish brown sandy silty gravel”. From around 50 cm and extending to depth is “firm orangish brown mottled greyish brown slightly sandy slightly gravelly clay”.

17.5.1.28. The lower subsoil is likely to be slowly permeable, which would place the profile in WC III (albeit on the boundary of WC IV). With medium clay loam topsoil, the limitation is to Subgrade 3a, which is of medium sensitivity.

17.5.1.29. The soil resources in Section 3 are predominantly of medium sensitivity, with clay subsoils of high sensitivity.

#### **Agricultural Land Use**

17.5.1.30. The land in Section 4 forms part of a 2 ha grassland holding, assessed as being of low sensitivity.

### **Section 6 – Zetland Field and Sainsbury’s Car Park**

#### **Soil Resources**

17.5.1.31. Borehole records from the ground investigations identify made ground in Section 6. The land is non-agricultural. Soil profiles include topsoil of “dark brown slightly gravelly clay” of 20 cm thickness. Within the terms of ALC, this is likely to comprise heavy clay loam or clay. Upper subsoils are “light brown, slightly sandy, slightly gravelly clay” to between 40 cm and 60 cm, over “orange brown slightly gravelly clay” or “light brown slightly gravelly sandy clay” lower subsoil. These soils are predominantly of high sensitivity.

17.5.1.32. The consistency is described as soft which suggests the soils may be permeable. Under the climatic conditions of the locality, soils of WC I or II with clay or heavy clay loam topsoils would be limited to Subgrade 3a or 3b respectively if the land were in agricultural use.

### **Section 7 – Farlington Junction to Airport Service Road**

17.5.1.33. No soil profiles have been examined in Section 7. No agricultural land is affected, however the recreational areas are shown to have Wallasea 1 association soils which are deep stoneless clayey soils over marine alluvium. These soils are of high sensitivity.

### **Section 9 – Moorings Way to Bransbury Road**

#### **Soil Resources**

17.5.1.34. Borehole records from the ground investigations identify soils in Section 9 as comprising 20 cm to 30 cm of firm, slightly sandy clay with gravel. In an ALC context, this is likely to be classified as a clay loam. Two out of three boreholes indicate the topsoil to be made ground, having been previously disturbed. The undisturbed profile is non-agricultural.

17.5.1.35. Upper subsoil is described as “firm brown very gravelly very silty fine to coarse sand”, “slightly sandy very silty gravel” or “brown clayey very sandy gravel”. In an ALC context, these are likely to be stony sandy silt loam to medium clay loam subsoil, with at least 20% stone. These soils are of medium sensitivity.

17.5.1.36. The profile in agricultural land is in an area of permanent grass. Based on aerial photography, proximity to the sea/exposure and the borehole record, it is considered most likely that the land will be of Subgrade 3b, which is of low sensitivity.

## 17.5.2. FUTURE BASELINE

17.5.2.1. The long-term potential effects of climate change on soils and agricultural land quality are uncertain and difficult to quantify at a site-specific level, although they could involve:

- Soils becoming more susceptible to erosion in longer drier summer months, but also more susceptible to waterlogging and anaerobism with more intense or frequent rainfall events;
- A reduction in the carbon sequestration potential and organic matter content as a result of increased rainfall, periods of drought and higher temperatures; and
- As detailed in Chapter 28 (Carbon and Climate Change) of the ES Volume 1 (document reference 6.1.28), increased mobilisation of pollutants in wetter soils, or accumulation of chemicals and pollutants in drier soils, which may affect salinity and acidification.

## 17.6. PREDICTED IMPACTS

17.6.1.1. The majority of the effects of the Proposed Development on agricultural land, soil resources and farm holdings will be of a temporary nature. Permanent effects will be experienced in Section 1 in association with the Converter Station Area and Access Road. Sections 2 to 9 are considered to have only temporary effects. Although joint bays within these sections will be permanent features, the footprint of each is not considered sufficiently large to result in any discernible impacts to agricultural or soil resources.

17.6.1.2. As described in 17.1.2, the study areas of Sections 5, 8 and 10 contain no natural soil resources and no agricultural land. These sections are therefore not considered further as part of this assessment.

## 17.6.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

### Construction Stage

#### Embedded Mitigation

17.6.2.1. Within the current design for the Onshore Cable Route, trenches within agricultural land will be excavated to a typical depth of 1300 mm (though actual burial depth will depend on the existing utilities and will be confirmed following the grant of the DCO and detailed design work).



- 17.6.2.2. Embedded mitigation to reduce the potentially significant effects relating to loss of and degradation of the soil resource includes ensuring that topsoil and subsoil resources are kept separate and placed either side of the exposed trenches. The cable ducts will be laid within approximately 400 mm of cement-bound sand and the remainder of the void will be backfilled with the excavated soil. Priority will be given to full use of the topsoil resource in the reinstatement of soils above the cable: the surplus material will be subsoil.
- 17.6.2.3. Provisions have been made within Chapter 27 (Waste and Material Resources) of the ES Volume 1 (document reference 6.1.27) for use of surplus soils arising in the construction stage of the Proposed Development. The current design of the Converter Station seeks to balance cut and fill, and excess material will be available for use in reprofiling the landform, pond fill and screening. Outstanding surplus will be suitable for off-site general or landscaping fill.
- Impacts**
- 17.6.2.4. A total of approximately 35 ha of agricultural land in Section 1 will be required temporarily for the construction of the Converter Station and Access Road, as well as a short section of HVAC and HVDC Cable Routes and temporary laydown areas (estimated to require 4 to 5 ha). The land required temporarily is predominantly Subgrade 3b, with approximately 4.4 ha of BMV land in Subgrade 3a required in three separate parts of the Converter Station Area, and an area of Grade 4 land in the centre of Section 1.
- 17.6.2.5. The agricultural land required permanently extends to approximately 24.9 ha, comprising the Converter Station footprint (4 ha), land required for the Access Road, Telecommunications Building(s), proposed landscape planting and permanent access rights. The Converter Station will be sited on land classified as Subgrade 3b and Grade 4, and there is no difference in the impacts on agricultural land quality, soils or farm holdings from Converter Station Options B(i) and B(ii). Approximately 5 ha of BMV land in Subgrade 3a will be required for the Access Road and landscape planting to the south of the Converter Station.
- 17.6.2.6. The magnitude of impact on agricultural land within Section 1 will be temporarily and permanently medium. The receptor is predominantly of low sensitivity, resulting in a **minor to moderate temporary and permanent** adverse effect on agricultural land. Neither the temporary nor the permanent effect on agricultural land is considered significant.
- 17.6.2.7. Specifically, with regard to BMV land in Subgrade 3a, which is a receptor of medium sensitivity, the magnitude of impact will be temporarily and permanently low. The temporary and permanent effect on BMV land is assessed as **minor to moderate** adverse, which is not considered significant.

- 17.6.2.8. The soil resource identified is of medium to high sensitivity in Table 17.3. The magnitude of impact on soil resources in Section 1 is medium, resulting in a **moderate** temporary adverse effect. This is considered to be a significant effect.
- 17.6.2.9. Approximately 13.4 ha (6%) will be required temporarily from Denmead Farm in Section 1, which would be a low impact on a medium sensitivity farm, and give rise to a **minor to moderate** temporary adverse effect. The permanent land requirement will amount to approximately 2.5 ha (1%), which will be a negligible magnitude of change and give rise to a **negligible** permanent effect on the holding in Section 1. The temporary and permanent effects on Denmead Farm in Section 1 are not considered significant.
- 17.6.2.10. Approximately 12.8 ha (60%) will be required temporarily and permanently from Little Denmead Farm, which would be a high magnitude of impact on a low sensitivity holding, and give rise to **moderate** adverse temporary and permanent effects. These are considered to be significant effects on the farm.
- 17.6.2.11. Approximately 4.6 ha (66%) will be required temporarily and permanently from land to the north of Little Denmead Farm, which would be a high magnitude of impact on a low sensitivity holding, and give rise to a **moderate** adverse temporary and permanent effects. These are considered to be significant effects on the farm.
- 17.6.2.12. Approximately 1 ha (33%) will be required temporarily and permanently from Mill View Farm, which would be a high magnitude of impact on a low sensitivity holding, and give rise to a **moderate** adverse temporary and permanent effect, which is considered significant for the farm. Approximately 1 ha (20%) will be required temporarily and permanently from Mill Farm, which would be a medium magnitude of impact on a holding of negligible sensitivity, and give rise to a **negligible** effect, which is not considered significant.

### Operational Stage

- 17.6.2.13. All of the permanent effects in Section 1 would occur within the Construction Stage of the Proposed Development.
- 17.6.2.14. Removal of the temporary Laydown Areas would occur in the operational stage and would result in a **negligible** beneficial effect on agricultural land. As detailed in Chapter 3 (Description of the Proposed Development) of the ES Volume 1 (document reference 6.1.3), the 4 to 5 ha temporary Laydown Area will be in use during construction, and restored thereafter (anticipated to occur in 2024).
- 17.6.2.15. Operational effects would also occur following the installation of the cables within the Onshore Cable Corridor, and the reinstatement of the soils above. It is acknowledged that some minor deterioration of agricultural land quality is likely to occur following disturbance of the in-situ soil, although the land is of low sensitivity (Subgrade 3b) and the magnitude of change is anticipated to be low, resulting in a **minor** adverse effect. This is therefore not considered a significant effect.

### 17.6.3. SECTION 2 - ANMORE

#### Construction Stage

##### Embedded Mitigation

17.6.3.1. As with Section 1, embedded mitigation to reduce the potentially significant effects relating to the loss and degradation of the soil resources along the Onshore Cable Corridor relate to prioritising the use of the full topsoil resource in reinstatement of the soils over the cables. Any surplus soil material arising from the reinstatement process will be subsoil.

##### Impacts

17.6.3.2. A total of approximately 18 ha of agricultural land in Section 2 will be required temporarily for the Onshore Cable Corridor. The land required temporarily is predominantly Subgrade 3b, with approximately 8.7 ha of BMV land in Subgrade 3a in the southern part of the Section. There are no permanent requirements for agricultural land in Section 2, other than for Joint Bays, the location of which will be determined at the detailed design stage.

17.6.3.3. The magnitude of impact on agricultural land within Section 2 will be temporary and low. The receptor is predominantly of low sensitivity, resulting in a **minor temporary** adverse effect on agricultural land. This is not considered significant.

17.6.3.4. Specifically, with regard to BMV land in Subgrade 3a, which is a receptor of medium sensitivity, the magnitude of impact will be temporarily low. The temporary effect on BMV land is assessed as **minor to moderate** adverse, which is not considered significant.

17.6.3.5. The soil resource identified is mostly of medium sensitivity, with some of the subsoils being high sensitivity. The magnitude of impact on soil resources in Section 2 is low as the soils will be reinstated along the Onshore Cable Corridor, resulting in a **minor to moderate** temporary adverse effect. This is not considered to be a significant effect.

17.6.3.6. Approximately 17.5 ha (8%) will be required temporarily from Denmead Farm in Section 2, which would be a low impact on a medium sensitivity farm, and give rise to a **minor to moderate** temporary adverse effect. This is not considered to be a significant effect.

### Operational Stage

- 17.6.3.7. Following the installation of the cables within the Onshore Cable Corridor, the excavated soils will be reinstated to cover the cable. The assumption is that the normal burial depth of cables across agricultural land will be 900 mm. This is a reasonable assumption at this stage of design to undertake the robust assessment. This would result in a reduction of 300 mm in the total depth of the soil profile compared with the baseline profile (which was assessed to a depth of 1200 mm). Reducing the total restored soil depth to 900 mm is not anticipated to affect the quality of the restored agricultural land.
- 17.6.3.8. It is acknowledged that some minor deterioration of agricultural land quality is likely to occur following disturbance of the in-situ soil, although the overall magnitude of change is anticipated to be low, resulting in a **minor to moderate** adverse effect. This is therefore, not considered a significant effect.

## 17.6.4. SECTION 3 - DENMEAD/KINGS POND MEADOW

### Construction Stage

#### Embedded Mitigation

- 17.6.4.1. As with Sections 1 and 2, embedded mitigation to reduce the potentially significant effects relating to the loss and degradation of the soil resources along the Onshore Cable Corridor relate to prioritising the use of the full topsoil resource in reinstatement of the soils over the cables. Any surplus soil material arising from the reinstatement process will be subsoil.

#### Impacts

- 17.6.4.2. A total of approximately 11.5 ha of agricultural land in Section 3 will be required temporarily for the Onshore Cable Corridor, although most of the cable in Section 3 will be installed using HDD, with trenching to the north and extreme south of the section. The land required temporarily is predominantly Subgrade 3b, with approximately 2.8 ha of BMV land in Grade 2 and Subgrade 3a in the southern part of the Section and 2.8 ha of Grade 4 in the north. There are no permanent requirements for agricultural land in Section 3, other than for Joint Bays, the location of which will be determined in the detailed design stage.
- 17.6.4.3. The magnitude of impact on agricultural land within Section 3 will be temporarily low. The receptor is predominantly of low sensitivity, resulting in a **minor temporary** adverse effect on agricultural land. This is not considered significant.
- 17.6.4.4. Specifically, with regard to BMV land in Grade 2 and Subgrade 3a, which is a receptor of medium sensitivity, the magnitude of impact will be temporarily negligible. The temporary effect on BMV land is assessed as **negligible**, which is not considered significant.

- 17.6.4.5. The soil resource identified is mostly of medium to high sensitivity in Table 17.3. The magnitude of impact on soil resources in Section 3 is negligible as the soils will remain mostly intact, resulting in a **negligible** temporary effect, which is not considered significant.
- 17.6.4.6. Approximately 2.7 ha (54%) will be required temporarily from Land at Kings Pond in Section 3, which would be a high impact on a low sensitivity farm holding, and give rise to a **moderate** temporary adverse effect. This is considered to be a significant effect.
- 17.6.4.7. Approximately 7.7 ha (50%) will be required temporarily from Soake Farm, although the cable will be installed using HDD under most of this land which will remain undisturbed at the surface. Consequently, there would be a low impact on a low sensitivity holding, which would give rise to a **minor** temporary adverse effect, which is not considered to be significant.
- 17.6.4.8. The temporary requirement for land from the two small grassland holdings to the south of Hambledon Road is assessed as low to medium impacts on low sensitivity holdings, which would give rise to **minor** temporary adverse effects that are not considered significant.

#### Operational Stage

- 17.6.4.9. Following the installation of the cables within the Onshore Cable Corridor, the excavated soils will be reinstated to cover the cable. The indicative design is that the normal burial depth of cables across agricultural land will be 900 mm, which will result in a reduction of 300 mm in the total depth of the soil profile compared with the baseline profile (which was assessed to a depth of 1200 mm). Reducing the total restored soil depth to 900 mm is not anticipated to affect the quality of the restored agricultural land.
- 17.6.4.10. It is acknowledged that some minor deterioration of agricultural land quality is likely to occur following disturbance of the in-situ soil, although the overall magnitude of change is anticipated to be low, resulting in a **minor** adverse effect. This is not considered to be a significant effect.

### **17.6.5. SECTIONS 4 – 10 HAMBLEDON ROAD TO EASTNEY (LANDFALL)**

#### Construction Stage

#### **Embedded Mitigation**

- 17.6.5.1. As with Sections 1 to 3, embedded mitigation to reduce the potentially significant effects relating to the loss and degradation of the soil resources along the Onshore Cable Corridor relate to prioritising the use of the full topsoil resource in reinstatement of the soils over the cables. Any surplus soil material arising from the reinstatement process will be subsoil.

### Impacts

- 17.6.5.2. A total of approximately 1 ha of agricultural land in Sections 4 to 10 will be required temporarily for the Onshore Cable Corridor. The land required temporarily is BMV land in Subgrade 3a. There are no permanent requirements for agricultural land in Sections 4-10.
- 17.6.5.3. The magnitude of impact on agricultural land within Sections 4 – 10 will be temporarily negligible. The receptor is of medium sensitivity, resulting in a **negligible temporary** adverse effect on BMV agricultural land. This is not considered significant.
- 17.6.5.4. The soil resource identified is mostly of medium sensitivity, with smaller areas of high sensitivity. The magnitude of impact on soil resources in Sections 4 - 10 is low as the soils will be reinstated along the Onshore Cable Corridor, resulting in a **minor to moderate** temporary adverse effect. This is not considered to be a significant effect.
- 17.6.5.5. The temporary requirement for land from the small grassland holding to the south of Hambledon Road is assessed as a low impact on a low sensitivity holding, which would give rise to a **minor** temporary adverse effect that is not considered significant.

### Operational Stage

- 17.6.5.6. Following the installation of the cables within the Onshore Cable Corridor, the excavated soils will be reinstated to cover the cable. The indicative design is that the normal burial depth of cables across agricultural land will be 900 mm, which will result in a reduction of 300 mm in the total depth of the soil profile compared with the baseline profile (which was assessed to a depth of 1200 mm). Reducing the total restored soil depth to 900 mm is not anticipated to affect the quality of the restored agricultural land.
- 17.6.5.7. It is acknowledged that some minor deterioration of agricultural land quality is likely to occur following disturbance of the in-situ soil, although the overall magnitude of change is anticipated to be low, resulting in a **minor** adverse effect. This is not considered a significant effect.

### 17.6.6. OVERALL IMPACTS, SECTIONS 1 – 10

- 17.6.6.1. A total of approximately 65.5 ha of agricultural land will be required temporarily for the Proposed Development. A total of 24.9 ha of agricultural land will be required permanently for the Proposed Scheme, all within Section 1.
- 17.6.6.2. Of the total agricultural land required temporarily, approximately 16.9 ha is BMV land. Approximately 5 ha of BMV land will be required permanently.
- 17.6.6.3. The overall magnitude of impact on agricultural land will be temporarily high and permanently medium. The receptor is predominantly of low sensitivity, resulting in a **moderate temporary** adverse effect and a **minor to moderate permanent** adverse effect on agricultural land. The temporary effect on agricultural land is considered significant.

17.6.6.4. Specifically with regard to BMV land, which is a receptor of medium sensitivity, the overall magnitude of impact will be temporarily and permanently low. The temporary and permanent effect on BMV land is assessed as **minor to moderate** adverse, which is not considered significant.

17.6.6.5. The overall impacts on farm holdings are as reported in the relevant Sections, except for Denmead Farm which occupies land in Sections 1 and 2. The temporary requirement for land from Denmead Farm will amount to 30.9 ha (14%), which is a medium impact on a medium sensitivity farm, and will give rise to an overall **moderate temporary** adverse effect on the farm, which is considered to be significant. The permanent effects on the farm are as reported in Section 1, and are assessed as **negligible** and not significant.

## 17.7. CUMULATIVE EFFECTS

### 17.7.1. CONSTRUCTION STAGE

#### Cumulative Effects

17.7.1.1. No significant residual cumulative effects have been identified in the construction stage of the Proposed Development (Appendix 17.3 (Cumulative Assessment Matrix Stage 1 & 2) and 17.4 (Cumulative Assessment Matrix Stage 3 & 4)) of the ES Volume 3 (document references 6.3.17.3 and 6.3.17.4)).

### 17.7.2. OPERATIONAL STAGE

#### Cumulative Effects

17.7.2.1. No significant residual cumulative effects have been identified in the operational stage of the Proposed Development (Appendix 17.3 (Cumulative Assessment Matrix Stage 1 & 2) and 17.4 (Cumulative Assessment Matrix Stage 3 & 4)).

### 17.7.3. INTRA PROJECT CUMULATIVE EFFECTS

17.7.3.1. No Intra Project Effects have been identified between Soils and Agricultural Land Use and other assessments undertaken within the ES.

## 17.8. PROPOSED MITIGATION AND ENHANCEMENT

17.8.1.1. There are no methods available to mitigate the direct loss of agricultural land.

17.8.1.2. Additional mitigation to reduce the potentially significant effects relating to the loss and degradation of the soil resources relate to the development of a SRP, which will form part of the CEMP.

- 17.8.1.3. A SRP will be prepared prior to the commencement of construction and confirms the different soil types and depths (based on the soil surveys already undertaken); the most appropriate re-use for the different types of soils within the detailed design; and the proposed methods for handling, storing and replacing soils on site. An Outline SRP has already been prepared and is provided as Appendix 5 of the Onshore Outline CEMP (document reference 6.9).
- 17.8.1.4. The quality of soils retained on-site will be maintained by following good practice guidance on soil handling and storage, particularly to avoid compaction and biodegradation of soils that are to be retained on-site in storage. In this respect, topsoil must be stockpiled separately to subsoil.
- 17.8.1.5. With the adoption of appropriate mitigation for the handling and restoration of soils, most soils will be able to continue their various ecosystem functions on the site. This is principally as a medium for producing biomass; for storing and cycling water and carbon; and for supporting habitats, biodiversity and landscape planting. Agricultural activity can resume on soils reinstated in the Onshore Cable Corridor. In addition, measures in relation to soil horizon preservation are outlined in Chapter 16 (Onshore Ecology) of the ES Volume 1 (document reference 6.1.16). This covers only ecologically important areas at Denmead Meadows and semi improved grassland in proximity to the Converter Station Area.
- 17.8.1.6. Mitigation relating to the permanent loss of farmable area to the affected farm holdings are matters of private negotiation and therefore cannot be incorporated into this assessment. Mitigation to ensure that the temporary requirement for land for the Proposed Development will not affect the ability to farm other land within the holding that is not affected by construction works will form part of the CEMP, and will include the continuation of farm access to temporarily severed land, as required for normal agricultural activities, the replacement of temporarily severed water supplies, and the installation of temporary stockproof fencing, as required.

## **17.9. RESIDUAL EFFECTS**

- 17.9.1.1. The overall residual effect on agricultural land is assessed as **moderate temporary** adverse and **minor to moderate permanent** adverse. The temporary effect on agricultural land is considered significant.
- 17.9.1.2. The overall residual effect on BMV land is assessed as temporarily and permanently **minor to moderate** adverse, which is not considered significant.
- 17.9.1.3. There will be ten farm holdings affected temporarily by the Proposed Development, of which five will also be affected permanently. There will be **temporary moderate** adverse effects on five farm holdings, which is considered significant for each farm, and **permanent moderate** adverse effects on three farms, also significant for each farm.



- 17.9.1.4. Implementing and adhering to the SRP will minimise the effects on soil resources, such that the magnitude of impact would be low, resulting in an overall **minor to moderate adverse** effect.
- 17.9.1.5. Table 17.6 provides a summary of the findings of the assessment.

**Table 17.6 - Summary of effects table for soil and agricultural land**

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
<b>Construction Stage</b>				
<b>Temporary loss of agricultural land: Sections 1 to 4</b>	65.5 ha of agricultural land.	Moderate - / T / D / ST	N/A.	Moderate - / T / D / ST
<b>Temporary loss of BMV land: Sections 1 to 4</b>	16.9 ha of BMV land.	Minor to moderate - / T / D / ST	N/A.	Minor to moderate - / T / D / ST
<b>Permanent loss of agricultural land: Section 1 only</b>	24.9 ha of agricultural land.	Minor to moderate - / P / D / LT	N/A.	Minor to moderate - / P / D / LT
<b>Permanent loss of BMV land: Section 1 only</b>	5 ha of BMV land.	Minor to moderate - / P / D / LT	N/A.	Minor to moderate - / P / D / LT
<b>Loss of or damage to soils</b>	Soil resources.	Moderate - / T / D / MT	Handling and storage of soil in accordance with SRP	Minor to moderate - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
<b>Permanent impacts on farm holdings</b>	5 land holdings in Section 1	3 moderate; 2 negligible - / P / D / LT	Negotiations with landowners	3 moderate; 2 negligible - / P / D / LT
<b>Temporary impacts on farm holdings</b>	10 land holdings in Sections 1 to 4	5 moderate; 4 minor; 1 negligible - / T / D / ST	Negotiations with landowners; replacement temporary access, water supplies and fencing as required	5 moderate; 4 minor; 1 negligible - / T / D / ST
<b>Operational Stage</b>				
<b>Reinstatement of agricultural land from temporary Laydown Areas</b>	BMV land.	Minor to moderate - / T / D / MT	Handling and storage of soil in accordance with SRP	Negligible + / P / D / LT
<b>Reinstatement of soil profiles over Cable Route</b>	Soil resources	Minor to moderate - / T / D / MT	Handling and storage of soil in accordance with SRP	Minor - / P / D / LT

Key to table: + / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

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