



Rampion Offshore Wind Farm



ES Section 20 – Agriculture and Soils

RSK Environmental Ltd

Document 6.1.20

December 2012

APFP Regulation 5(2)(a)

Revision A

E.ON Climate & Renewables UK Rampion Offshore Wind Limited

CONTENTS

20	AGRICULTURE AND SOILS.....	20-1
20.1	Introduction	20-1
20.2	Legislation and Policy Context	20-1
20.3	Assessment Methodology.....	20-5
20.4	Baseline Environment	20-9
20.5	Predicted Impacts	20-12
20.6	Mitigation Measures.....	20-16
20.7	Residual Effects	20-19
20.8	Cumulative Impacts	20-22
20.9	References	20-22

Tables

Table 20.1: Key Legislation.....	20-2
Table 20.2: Agricultural Land Classifications	20-3
Table 20.3: Scoping Response Summary	20-6
Table 20.4: Summary of Residual Effects.....	20-21

Figures

Figure 20.1: Agricultural Land Classification (maps 1 - 2)
Figure 20.2: Environmental Stewardship Schemes (maps 1 - 2)

20 AGRICULTURE AND SOILS

20.1 Introduction

- 20.1.1 This section of the Environmental Statement (ES) considers the potential impacts of the onshore elements of the proposed Rampion Offshore Wind Farm development (the Project) comprising the landfall, the cable route and the onshore substation, upon existing agricultural and soils interests.
- 20.1.2 It describes the impacts of temporary and permanent land take associated with implementation and operation of the onshore components of the Project.

20.2 Legislation and Policy Context

Key Legislation

- 20.2.1 The National Planning Policy Framework (NPPF) provides the framework for the protection and conservation of agricultural land, soils and farming interests at the national level.
- 20.2.2 The NPPF refers to the development of agricultural land, stating that areas of poorer quality land should be developed in preference to higher quality areas. Reference is also made to safeguarding the long-term potential of best and most versatile (BMV) agricultural land, and conserving soil resources (DCLG, 2012).
- 20.2.3 In respect of land use interests, Overarching National Policy Statement for Energy (EN-1) echoes the aims of the NPPF, stating that applicants should seek to minimise impacts on BMV agricultural land, and preferably use land in areas of poorer quality except where this would be inconsistent with other sustainability considerations.
- 20.2.4 EN-1 also states that applicants should identify any effects and seek to minimise impacts on soil quality, taking into account any mitigation measures proposed. Paragraph 5.10.8 states:
- ‘Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed. For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination.’*
- 20.2.5 The following additional legislation (Table 20.1) has been considered in the assessment.

Table 20.1: Key Legislation

Topic	Act/Regulation	Key Relevant Provisions
Organic Farming	Organic Farming Regulations 1999 (and amendments)	Details the aid available for organic farming and conditions for taking part in the Organic Farming Scheme
	Organic Farming (England Rural Development Programme) Regulations 2003	Details the aid available for organic farming and conditions for taking part in the Organic Farming Scheme
Agricultural Weeds	Weeds Act 1959	Requires action to remove and control the spread of “injurious weeds”, primarily on agricultural land
	Ragwort Control Act 2003	Gives added protection to horses and other animals from ragwort poisoning. The Act allows for the ‘Code of Practice on How to Prevent the Spread of Ragwort’ to be prepared.
Plant Health	Plant Health (Great Britain) Order 1993 (as amended) Plant Health (England) Order 2005 (as amended)	Prohibits the importation of certain plant pests; makes provision against the spread of pests; prohibits the keeping, sale, planting, movement or other disposal of certain plants; and requires the notification of certain plant pests
Invasive Weeds	Wildlife and Countryside Act 1981	Section 14(2) makes it a criminal offence to plant or otherwise cause Japanese knotweed, Himalayan balsam, giant hogweed, giant kelp or Japanese seaweed to grow in the wild
Notifiable Disease Control	Animal Health Act 1981	A notifiable disease is a disease named in Section 88 of the Act.

20.2.6 Although there is no specific legislation which provides for the protection of soil and agricultural land, the Department for Environment, Food and Rural Affairs (DEFRA) has set out a vision that by the year 2030, all of England’s soils will be sustainably managed to improve their quality and safeguard their ability to provide essential services for future generations.

20.2.7 At the local level, planning authorities have powers to safeguard areas of land under agricultural use from inappropriate development (e.g. through the definition and application of green belt areas).

Agricultural Land Classification

20.2.8 Soil has been identified as a fundamental and finite resource within Europe and the United Kingdom. Within England, the Agricultural Land Classification (ALC) system (MAFF 1988), provides the method for assessing farmland quality.

- 20.2.9 The ALC system is the basis for assessing the impacts on agricultural land from development proposals within the planning system. It provides the method for assessing the quality of farmland to enable informed choices to be made about its future use.
- 20.2.10 The ALC underpins the principles of sustainable development, and is used by DEFRA, and others, to provide advice to local planning authorities, developers and the public if a development is proposed on agricultural land or other 'greenfield' sites that could grow crops.
- 20.2.11 The system classifies land into five grades, with grade 3 subdivided into sub-grades 3a and 3b as outlined in Table 20.2.

Table 20.2: Agricultural Land Classifications

Grade	Description
Grade 1: excellent quality agricultural land	Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter-harvested vegetables. Yields are high and less variable than on land of lower quality.
Grade 2: very good quality agricultural land	Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility owing to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than grade 1.
Grade 3: good to moderate quality agricultural land	Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.
Subgrade 3a: good quality agricultural land	Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
Subgrade 3b: moderate quality agricultural land	Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
Grade 4: poor quality agricultural land	Land with severe limitations, which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops), the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.
Grade 5: very poor quality agricultural land	Land with very severe limitations, which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.
Non-agricultural	'Soft' uses where most of the land could be returned relatively easily to agriculture, including golf courses, private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where

Grade	Description
	restoration conditions to 'soft' after-uses may apply.
Urban	Built-up or 'hard' uses with relatively little potential for a return to agriculture including housing, industry, commerce, education, transport, religious buildings and cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

20.2.12 The BMV is defined as grades 1, 2 and 3a; this comprises land that is most flexible, productive and efficient in response to inputs and can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. It is estimated that grades 1 and 2 combined form around 21% of all farmland in England, with subgrade 3a forming a similar amount.

20.2.13 Land in grades 3b, 4 and 5 is considered less productive, although land designated as such may hold value in relation to nature conservation and landscape interests.

Stewardship Schemes

20.2.14 Environmental Stewardship is an agri-environment scheme that provides funding to farmers and other land managers in England who deliver effective environmental management on their land. The scheme comprises the following elements: Entry Level Stewardship, Organic Entry Level Stewardship, Higher Level Stewardship and Uplands Entry Level Stewardship.

20.2.15 The scheme's primary objectives are to conserve wildlife (biodiversity); maintain and enhance landscape quality and character; protect the historic environment and natural resources; promote public access and understanding of the countryside; and promote natural resource protection.

Notifiable Scheduled Diseases

20.2.16 A notifiable disease is a disease named in Section 88 of the Animal Health Act 1981. DEFRA has issued guidance in the form of a publication titled 'Practical Guide to Preventing the Spread of Plant and Animal Diseases' (1991).

Injurious Weeds and Invasive Plants

20.2.17 Guidance on preventing the spread of the five weeds identified in the Weeds Act 1959 (spear thistle, *Cirsium vulgare*; creeping or field thistle, *Cirsium arvense*; curled dock, *Rumex crispus*; broad-leaved dock, *Rumex obtusifolius*; and common ragwort, *Senecio jacobaea*) is given in the Ministry of Agriculture, Fisheries and Food (MAFF, now DEFRA) leaflet 'Identification of Injurious Weeds' (MAFF, 1999).

20.2.18 The Ragwort Control Act 2003 amends the Weeds Act 1959 and specifically provides for more effective management of ragwort.

20.2.19 Invasive plant species include Japanese knotweed (*Fallopia japonica*), Indian balsam (*Impatiens glandiflora*) and giant hogweed (*Heracleum mantegazzenium*). The Environment Agency (EA) has issued 'The Knotweed Code of Practice: Managing Japanese knotweed on development sites'. *Impatiens glandulifera* (Himalayan Balsam) was not identified along the proposed cable route.

20.3 Assessment Methodology

Scope of the Assessment

20.3.1 Preliminary scoping of the assessment was undertaken as part of a wider EIA scoping exercise, the findings of which were recorded in a Scoping Report (E.ON/RSK, 2010).

20.3.2 The report outlined the proposed approach to the assessment, the form of methodologies to be followed and the nature of potential impacts that could occur. Key issues associated with development progression identified during the scoping were as follows:

- Soil disturbance, compaction through use of heavy machinery, and the overall loss of productive arable land;
- Potential for transmission of agricultural pests and diseases;
- Temporary disruption to agricultural operations during the construction phase (e.g. through severance of fields and boundary features); and
- Temporary disruption and alteration of land-drainage systems during construction.

20.3.3 The process of scoping identified that the majority of potential impacts of the onshore project components would be temporary in nature which would principally result from the construction of the landfall and installation of the onshore cable. The process also recorded that permanent impacts upon agricultural interests would be restricted to land take associated with construction of the onshore substation.

20.3.4 Given that impacts would principally derive from the physical introduction of the proposed onshore cable route and substation, it was considered at scoping that no significant effects on agriculture and soils interests would likely occur post construction (i.e. during the operational phase of the Project).

20.3.5 The scoping report was submitted to the Infrastructure Planning Commission (IPC) in September 2010. A scoping opinion (IPC, 2010) was received from the IPC in October 2010 incorporating comments from a wide range of consultees. A copy of the Scoping Report and Scoping Opinion including consultee comments are included in Appendix 5.1 and 5.2.

20.3.6 The information and advice received during the scoping process with regard to agriculture and soils is summarised in Table 20.3.

Table 20.3: Scoping Response Summary

Date	Consultee	Summary Scoping Response	Where Addressed
12/10/2010	West Sussex County Council (WSCC)	A requirement to establish the planting restrictions in proximity to the cable route and its impact on restoration	Section 20.5
12/10/2010	Infrastructure Planning Commission	The IPC stated that only operational impacts on soil resources could be scoped out of the assessment The IPC considered that impacts on agriculture and farm businesses during the construction phase should be assessed The IPC also considered there to be potential for sterilisation of land for the easement along the route during the operational phase, which required assessment	Section 20.5

20.3.7 The scope of the assessment was modified accordingly to take account of the above consultee responses and the opinions of the IPC. The findings of the assessment were reported in draft form in the Draft ES which have been subject to stakeholder consultation.

20.3.8 Following a review of consultee and landowner feedback on the Draft ES, the following modifications were made to the Project and overall assessment scope:

- Review of Natural England ALC data – where available – covering detailed studies undertaken post 1988 that provide differentiation of grade 3 land (i.e. subdivision into grade 3a and 3b types) for areas associated with the onshore project components;
- Where ALC grade 3a and 3b data was unavailable, adoption of a worst-case assumption that all areas of ALC grade 3 soil could potentially be considered BMV (i.e. ALC subgrade 3a); and
- A commitment to prepare a Soils Management Plan.

20.3.9 Full details of the consultation process and associated outcomes can be referenced in Document 5.1 (Consultation Report).

Approach to the Assessment

20.3.10 Key desk-based activities undertaken as part of the assessment comprised the following:

- Analysis of available Ordnance Survey (OS) mapping and available land ownership data to determine existing land use and agricultural patterns within a 2km-wide study area around the onshore elements of the Project;
- Review of relevant agricultural planning policy documentation and Phase 1 habitat mapping of any injurious or invasive weed species and existing drainage regimes within the study area;
- Review of current 1:10,000 (where available) and 1:250,000 scale ALC mapping, soil distribution and profiles, relevant designations, planning applications, agri-environmental schemes and stewardship agreements associated with the study area;
- Consultation with the Animal Health and Veterinary Laboratories Agency and the Food and Environment Research Agency for information on any notifiable diseases;
- A review of scoping responses and consultee feedback;
- Review of the temporary land take associated with construction of the onshore cable route through existing agricultural and soil resources, and review of the permanent land take associated with implementation of the onshore substation; and
- Prediction of the likely impacts and effects during construction and operation of the Project, allowing for the effectiveness of identified mitigation measures.

Assessment Criteria

20.3.11 The prime criteria used to aid analysis and evaluation of the significance of the impacts and effects has been the extent to which existing soils (specifically pattern, distribution, quantity and quality), and current agricultural operational viability and efficiency would be potentially compromised by the Project.

20.3.12 The criteria comprise a mix of directly quantifiable measures, such as total area of land take and soil percentage breakdowns, and qualitative measures based on professional judgement and experience of similar development form.

20.3.13 The value of existing resources has been informed by a number of parameters including the presence, distribution, grading and quality of ALC soils, and presence of any agri-environmental schemes and / or stewardship arrangements.

- 20.3.14 The magnitude of impact has been informed by the extent to which soil areas of a particular ALC grading would be lost to or compromised by the Project. There is limited guidance relating to quantifying the impact of areas of agricultural land lost to development; however, DEFRA retains a statutory right under the Town and Country Planning (General Development Procedure) Order 1995 to be consulted by local planning authorities on developments that would result in the loss of 20ha or more of BMV land. This has been adopted as a threshold indicator of potential significance of impacts on agricultural soils.
- 20.3.15 The assessment of impact magnitude has also considered the extent to which existing land holdings and husbandry would be potentially affected by development progression. In the absence of any policy guidance on the subject, the assessment has considered aspects such as the severance or land take of an economically viable land parcel or requirements for changes to current farming regimes.
- 20.3.16 In the absence of established guidance or criteria, effects are based on professional judgement and derive from a consideration of the nature and value of the existing agricultural and soils interests, and the magnitude of impact (or change) predicted to occur. These effects are represented using a descriptive scale ranging from large, moderate, slight and adverse through to neutral.
- 20.3.17 By way of example, a neutral effect could be one where land take associated with the proposed development would not impinge on the operational viability and efficiency of existing agricultural uses or result in the loss of valued soil resources. Conversely, a large adverse effect could be attributed to land take, disturbance or severance that would substantially influence operational viability and efficiency, or result in the permanent irrecoverable loss of a large quantity of high-grade, valuable soils resources.
- 20.3.18 Account has been taken of the effect mitigation measures would have in addressing potential impacts in determining residual impacts and their significance.

Uncertainty and Technical Difficulties Encountered

- 20.3.19 ALC mapping data is published digitally at 1:250,000 scale to provide national coverage of soil grades; however it does not make a distinction between ALC subgrades 3a and 3b. Additional ALC data mapped during the period of 1988 to 1999 is available for individual sites at varying scales (typically 1:10,000) which separates subgrades 3a and 3b land; however mapped coverage for individual sites is sparse across England.

- 20.3.20 In respect of the onshore project components, 1:10,000 scale ALC data is only available for a small section of the cable route at Sompting. Furthermore, a review of available ALC information indicates that data mapped at 1:10,000 scale does not accurately reflect the grades or align with the boundaries presented in the 1:250,000 scale data.
- 20.3.21 Given the above, the assessment has accordingly relied on the more comprehensive coverage presented in the 1:250,000 scale ALC mapping to assist with the establishment of the baseline conditions.

20.4 Baseline Environment

Land Use Context

- 20.4.1 The land use context of the 2km study area, as depicted in Figure 20.1, is one of marked contrasts and differing topography.
- 20.4.2 The southern extents of the study area are characterised by the urban settlements of Worthing and Sompting. Key features include semi-urban habitats, a man-made lake, recreational land in the form of a golf course (Brooklands Golf Centre), and parkland (Brooklands Pleasure Park).
- 20.4.3 A sharp transition in land use occurs north of the A27 road corridor up to and including Tottington Mount. Central sections of the study area become more dominated by agricultural uses set on rolling chalk hills within the framework of the South Downs National Park. A combination of A-roads and back lanes form the local transport network through the area.
- 20.4.4 Continuing north, agriculture remains the dominant use of the land; however, the arable and pastoral pattern is characterised by a series of scattered settlements, individual properties and strong boundary features.
- 20.4.5 Towards Woodmancote and beyond, agriculture continues to form a key component of the landscape. Dominant pockets of mature woodland, water bodies and industrialised development in the form of the existing Bolney substation and overhead electricity transmission infrastructure intersperse the overall agricultural land use pattern.

Agricultural Land Classification

- 20.4.6 Published ALC mapping covering the study area is depicted in Figure 20.1. A review of this data indicates that the proposed cable route will cross a combination of agricultural and non-agricultural land in various locations within the study area.
- 20.4.7 Emerging from predominantly urban land, the proposed cable route will traverse a series of fields classified as ALC grade 1 land immediately north of the Worthing to Sompting railway line.

- 20.4.8 Continuing northwards, the route will then transition into a small tract of ALC grade 2 land around the A27 road corridor, before progressing through open agricultural fields of ALC grade 3 and 4 quality land towards Tottington Mount.
- 20.4.9 A small section of the proposed cable route will traverse the fringes of a narrow band of ALC grade 5 land, before continuing northwards through a composite of wide tracts of ALC grade 3 land, interspersed with several ribbons of ALC grade 4 land (mainly associated with river corridors south and east of Wineham) and two pockets of ALC grade 2 land east of Henfield.
- 20.4.10 A review of ALC distribution in relation to the proposed substation site confirmed that this would be positioned in open agricultural land of ALC grade 3 quality.

Soil Types and Distribution

- 20.4.11 A review of soil types and distribution along the onshore cable route and at the onshore substation site has been undertaken as part of the assessment of ground conditions, the detailed findings of which are reported in Section 22 (Ground Conditions) of this ES.
- 20.4.12 In summary, the proposed cable route traverses a series of six contrasting soil profiles (Cranfield University: NSRI, 2012):
- Loamy and clayey soils of coastal flats with naturally high groundwater level;
 - Slightly acidic but base rich loamy soils;
 - Lime rich loamy soils;
 - Slightly acidic loamy soils;
 - Lime rich loamy soils over chalk or limestone; and
 - Basic loams and clays.
- 20.4.13 The proposed substation site is located within slowly permeable, seasonally wet, slightly acidic but base rich loamy and clayey soils.

Land Ownership and Farming Regimes

- 20.4.14 A significant quantity of land associated with the onshore cable route and substation site is currently under private ownership, and subject to both arable and pastoral management.

Stewardship Schemes

- 20.4.15 The Countryside Stewardship Scheme (CSS) was developed by the UK Government with an aim to: improve the natural beauty and diversity of the countryside; enhance, restore and recreate targeted landscape, their wildlife habitats and historical features; and improve opportunities for public access. The CSS is now closed to new agreements and has been replaced by Environmental Stewardship; however, some existing agreements will continue until 2014.
- 20.4.16 Environmental Stewardship is delivered by Natural England on behalf of DEFRA, and offers financial rewards to farmers and land managers for good stewardship and management of the land to improve the quality of the environment. The scheme has a number of elements, as follows:
- Entry Level Stewardship (ELS) requires a basic level of environmental management, with participants choosing from a wide range of management options such as hedgerow management and stone wall maintenance;
 - Organic Entry Level Stewardship (OELS) provides funding to organic farmers registered with an approved organic control body who adopt appropriate land management practices;
 - Uplands Entry Level Stewardship (Uplands ELS) provides funding to hill farmers in Severely Disadvantaged Areas who adopt appropriate environmental management;
 - Higher Level Stewardship (HLS) is normally combined with other stewardship options, with entry being competitive and subject to careful assessment.
- 20.4.17 The relationship between the onshore elements of the Project and land holdings currently entered into Environmental Stewardship schemes is depicted on Figure 20.2.
- 20.4.18 The proposed cable route traverses several areas of land currently entered under ELS plus HLS; these are broadly located between the proposed landfall location and Tottington Mount. A small area immediately north of Truleigh Sands is also entered into these agreements.
- 20.4.19 Areas of land managed under ELS are traversed by the proposed cable route between Tottington Mount and Truleigh Sands, and further north in the vicinity of Wineham.
- 20.4.20 The eastern section of the substation site (shown on Figure 20.2) is currently managed under an ELS agreement.

- 20.4.21 Farm holdings currently under stewardship schemes are considered more sensitive to development related changes due to being recipients of financial subsidies and managing parts of the holdings in a particular way.

Notifiable Scheduled Diseases

- 20.4.22 Cable installation is a linear operation, and accordingly has the potential for transmitting agricultural crop and animal diseases between adjacent land holdings and fields.
- 20.4.23 Consultation with the Animal Health and Veterinary Laboratories Agency and the Food and Environment Research Agency concluded that there are no records of animal burials within the study area, and there have been no outbreaks or occurrences of notifiable or quarantine plant or pest diseases.

Injurious Weeds and Invasive Plant Species

- 20.4.24 The Phase 1 habitat survey (undertaken during 2010/2011) recorded no injurious weeds as being present within land associated with the Project.
- 20.4.25 The survey has identified invasive weeds (Japanese knotweed and giant hogweed) within the onshore cable route, the locations of which are shown in Figure 24.2. Three areas (two stands and one plant) of Japanese knotweed have been recorded north of East Worthing, and two Japanese knotweed plants were identified west of the River Adur and east of the A283. Three areas of giant hogweed were identified east of the works in Broadwater.

20.5 Predicted Impacts

- 20.5.1 The majority of temporary and permanent impacts on agricultural interests and soil resources are predicted to occur as a result of works undertaken during construction, with limited impacts predicted to occur during the operational phase.
- 20.5.2 A suite of mitigation techniques will be implemented during the works to ensure protection of valuable soils resources and continued operational viability of affected land holdings; these are described in Section 20.6.

Rochdale Envelope Principles

- 20.5.3 In line with the use of the “Rochdale Envelope” (see Section 5 – EIA Methodology), the assessment in this section has been based on a development scenario, which is considered to be the worst case in terms of impacts to agriculture and soils.
- 20.5.4 Rochdale Envelope principles primarily relate to the area of temporary and permanent land take associated with the onshore project components.

- 20.5.5 For the onshore cable route, the working width will generally be no wider than 40m and will run for a total length of 26.4km. Although the actual working width will generally be no wider than 30m, a general working width of 40m has been defined for the Development Area (ie signed with landowners) to allow a 10m for micro-siting tolerance. As such, 40m working width has been taken to represent the worst case scenario for the assessment below.
- 20.5.6 The Development Boundary for the substation site covers an area of approximately 23.3 hectares. This includes the temporary construction access from Wineham Road and linkage to the existing Bolney substation via underground cable. Of this, up to 7.01 hectares will be required to accommodate the permanent footprint of the substation, with the remainder required for site establishment, a temporary construction access track and lay down areas during construction, and landscaping.
- 20.5.7 Accordingly, permanent land take of 7.01 hectares has been adopted as the worst case scenario in the assessment below. In the absence of ALC subgrade 3a and 3b data, the assessment has assumed that all affected ALC grade 3 land is potentially BMV.

Soil Resources

- 20.5.8 Major soil removal and reinstatement associated with the installation of the onshore cable will involve a significant upheaval in the natural structure and drainage of soil profiles.
- 20.5.9 The assessment has identified that direct impacts on soil resources would be dependent on factors such as climatic conditions and the intensity and duration of activities undertaken. The following impacts are predicted to occur at various locations along the cable route:
- Physical disturbance of soil: this is likely to arise from changes in ground conditions, temporary and permanent land take, compaction by heavy plant and machinery, and removal of existing vegetation (where required);
 - Soil erosion: this is likely to occur on newly exposed areas of soil as a consequence of wind and water;
 - Damage to soil structure: this is likely to occur as a result of heavy machinery movements during periods of inclement wet weather; and
 - Increased soil run-off: this is likely to occur in wet weather as a knock-down effect of soil compaction and decreased soil infiltration.
- 20.5.10 It is not possible to precisely identify the frequency, location and order of such impacts during construction; however, as a worst-case scenario the predicted impacts on soil profiles are considered to be of medium magnitude.

20.5.11 The magnitude of such impacts will be markedly reduced subject to appropriate soil handling and best-practice construction management techniques being effectively and efficiently employed during the works.

ALC Land

20.5.12 Although higher grade soils are considered to be easier to reinstate, it is generally accepted that construction works have a marked effect on existing ALC grades, resulting in soils being at least one ALC grade lower after reinstatement than prior to the works.

20.5.13 Based on the Development Area for the cable route, a worst case total area of 112 hectares will be disturbed along the cable route.

20.5.14 Based on the Development Area, the following quantities of high-value ALC land along the cable route will be subject to temporary disturbance during the construction phase:

- ALC grade 1 Land = approx 4.3 hectares based on a worst case of 40m working width (the actual area will be approximately 3.2 hectares);
- ALC grade 2 Land = approx. 10 hectares based on a worst case of 40m working width (the actual area will be approximately 6.9 hectares); and
- ALC grade 3 (a and b) Land = approx. 56 hectares based on a worst case of 40m working width (the actual area will be approximately 41.9 hectares);

20.5.15 All remaining land (approximately 41.7 hectares) that will be subject to disturbance within the working width comprises lower value ALC grades 4 and 5, and areas of non-agricultural/urban land.

20.5.16 Given the relatively low quantities affected, and subject to the implementation of appropriate mitigation, it is predicted that adverse temporary impacts on higher value land (i.e. ALC grade 1, 2 and 3) along the proposed cable route will be of a magnitude no greater than medium.

20.5.17 In relation to the proposed substation, construction will affect, either temporarily or permanently, approximately 23.3 hectares of ALC grade 3 land including areas required for site establishment, a temporary construction access track and lay down areas during construction, and landscaping.

20.5.18 Of this, up to 7.01 hectares will be required to accommodate the permanent footprint of the substation, with the remainder required for site establishment, a temporary construction access track and lay down areas during construction, and landscaping.

20.5.19 Adverse impacts associated with the loss of quantities of ALC grade 3 land associated with the proposed substation would be of low to medium magnitude, attributed to the permanent nature of impact and its ascribed agricultural value.

Agricultural Operations

20.5.20 Installation of the onshore cable will temporarily affect land currently under arable and pastoral management, influencing how current agricultural practices within affected holdings are undertaken and invoking a need for appropriate mitigation, restoration and/or compensatory measures.

20.5.21 Localised disturbance and/or severance will potentially occur at the interface points between the cable corridor working width and the following features:

- Agricultural field drains and ditches;
- Vegetation;
- Private means of access; and
- Fields and field boundaries (e.g. hedgerows and fencing).

20.5.22 There will be a requirement to initially demarcate and fence off the working width; this will require current farming operations along and potentially around the cable corridor to be temporarily suspended or modified during the construction phase.

20.5.23 Construction will involve the temporary stripping and storage of topsoil and subsoil to excavate a trench to the required width and depth to install cable circuits. Following completion of the works, the working width will be fully reinstated as near as practically possible to its former condition.

20.5.24 Immediately after reinstatement, a temporary period suspending farming activities will allow reseeded or replanted semi-natural vegetation to fully establish. In the case of pasture, any reinstated land will need to have achieved a condition robust enough to sufficiently withstand grazing pressure. Conversely, reinstated arable areas will be able to be brought back into full agricultural use at the next sowing season following completion of construction.

20.5.25 Subject to the implementation and establishment of mitigation, the predicted impact on agricultural land holdings as a result of temporary disruption to current farming regimes would be at worst adverse and of medium magnitude during the construction phase.

- 20.5.26 There will be no permanent land take associated with the installation of the cable; however, a number of permanent restrictions will be imposed on landowners of holdings through which the cable is routed after construction. Restrictions will preclude certain future activities and development along the permanent cable easement, which will be 15m in width, such as the excavation of mineral resources, erection of buildings and the planting of deep-rooted tree species.
- 20.5.27 The permanent easement on land holdings will marginally compromise any opportunities to develop agricultural holdings in the future. However, the restrictions are not considered to be of an order that would preclude future use or economic/operational viability. Accordingly, impacts associated with the operational proposed cable route would be of low magnitude.
- 20.5.28 Impacts on existing agricultural operations associated with implementation of the proposed substation are principally associated with permanent taking of land within agriculturally viable units, and to a lesser extent the temporary loss of land during the construction phase.
- 20.5.29 Discussions and negotiations have been happening with affected landowners to ensure that the permanent and temporary land take associated with the substation minimises impacts on agricultural variability.

Transmission of Pest and Diseases

- 20.5.30 The presence of invasive species along the proposed cable route corridor presents a potential constraint during construction; such species may set seed or otherwise become established in bare soil exposed during the construction works.
- 20.5.31 Without appropriate control measures in place, disruption and disturbance along the working width has the potential to result in the accidental spreading of invasive species into unaffected neighbouring areas and land holdings.
- 20.5.32 Mitigation has been accordingly developed to address this specific issue.

20.6 Mitigation Measures

Agricultural Liaison Officers

- 20.6.1 Before construction begins, a qualified Agricultural Liaison Officer (ALO) will be employed to ensure that information on existing agricultural and land conditions is obtained, recorded and verified during a record of condition survey.

- 20.6.2 The ALO will record details including existing crop regimes, the position and condition of field boundaries, existing drainage and access arrangements, and private water supplies.
- 20.6.3 Liaison with affected landowners will be undertaken with regard to identifying potential constraints and barriers to construction; ensuring continuity of water supplies during the construction works; providing temporary means of access to severed fields for animals and machinery; appropriate planning and timing of works to reduce conflicts; and provision of temporary drainage requirements and diversions.
- 20.6.4 Such aspects would then be recorded and entered into a pre-entry agreement with the affected landowner. The ALO would also retain a function with regards to agreeing reinstatement measures following completion of the works.

ALC Soils and Soil Management

- 20.6.5 In the case of the proposed cable route and substation, a requirement for mitigation has been identified in respect of temporary and permanent impacts on BMV ALC grade 1, 2 and 3 land owing to the value of these soil resources.
- 20.6.6 A Soils Management Plan (SMP) will be prepared in advance of construction to ensure the protection, conservation and reinstatement of soil material, its physical and chemical properties, and functional capacity for agricultural use. This will form a secondary management plan within the wider Construction Environmental Management Plan (CEMP) for the proposed development.
- 20.6.7 The SMP will detail the nature and type of the soils associated with the cable route and substation site, temporary construction compounds, and areas demarcated for stockpiling of soil (e.g. topsoil) after stripping/excavation.
- 20.6.8 All soil handling, placing, compaction and management shall be undertaken in accordance with best practice (DEFRA, 2009). Mitigation measures to be captured in the framework of the SMP comprise the following:
- Topsoil from areas currently in agricultural use to be stripped before the start of general construction works, with priority focused on those areas of highest grade BMV land;
 - Soils shall be categorised on the basis of their condition and origin, and stockpiled/stored in line with best practice (i.e. under the driest conditions possible and gathered by tracked/wide-tyre vehicles to reduce compaction);
 - Movement and transportation of soils to be kept to the absolute minimum to reduce the risk of contamination between fields;
 - Soils suitable for reuse as part of wider mitigation (e.g. planting areas) to be reused in a broadly similar location to their origin, and stored for the shortest amount of time permissible; and

- Any surplus soils should be disposed of in an appropriate manner off-site.

Construction Mitigation

- 20.6.9 General disruption impacts will be mitigated early in the construction planning process by allowing a sufficient time period between the serving of notice for entry and the commencement of on-site activities; this will allow farmers and landowners time to adapt their working practices in anticipation of the works.
- 20.6.10 The commencement of construction will reflect ALO agreements made with affected parties to minimise disruption to existing farming regimes and timings of activities (e.g. cropping).
- 20.6.11 Existing land drains, where encountered during construction, will be appropriately marked. Temporary drainage will be installed within the working width to intercept existing field drains and ditches in order to maintain the integrity of the existing field-drainage system. Such measures will also assist in reducing the potential for wet areas to form during the works, with a consequential impact on soil structure and fertility. Where necessary, existing land drains will be replaced to ensure continued agricultural use.
- 20.6.12 Plant and traffic movements will be confined to designated routes (e.g. haul routes and vehicle access routes) to minimise the potential for soil disturbance, compaction and indirect contamination.
- 20.6.13 Appropriate soil excavation, handling and storage will be undertaken when forming sections of the cable trench at the start of construction. Sections of existing fences and hedgerows crossed by the line of the working width will be temporarily removed, and the cable laid to a depth below field land drainage systems. As detailed in Section 2 – Project Description, the working width will be reduced to 20m at sensitive hedgerow crossings.
- 20.6.14 Following the completion of all cable construction works, the land within the working width will be fully reinstated as near as practically possible to its former condition. Any hedgerow sections removed during the works will be replanted, with all field boundary and stock fences reinstated. All compacted areas of land will be cultivated to promote aeration drainage and root growth and to ensure modified soil profiles are in good condition.
- 20.6.15 Comparable measures will be implemented as part of the construction of the proposed substation site to protect soil resources from development-related impacts and ensure their properties are suitably retained for future re-use as part of landscaping. Any operations resulting in the disturbance or temporary removal of fencing and/or field boundaries will be mitigated by way of prompt reinstatement to ensure farming practices can continue with least disruption.

Transmission of Pests and Diseases

- 20.6.16 Should any animal remains be discovered during the construction phase that indicate a potential burial site, the main works contractor would cease all work and immediately advise the Animal Health Regional Office accordingly.
- 20.6.17 Measures contained in relevant DEFRA and Environment Agency best practice guidance on the control and removal of invasive weed species will be implemented during the pre-construction and construction phases.

Operational Mitigation

Stewardship Schemes

- 20.6.18 In relation to mitigating for financial impacts on landowners currently entered into stewardship schemes, should it be determined that temporary reductions in payments under the scheme will be imposed, any such reduction will be allowed for during commercial negotiations with the agreement holder and their advisors.

20.7 Residual Effects

- 20.7.1 Although no agricultural land will be permanently taken through the construction of the proposed cable route, the potential downgrading of approximately 70ha of BMV land (i.e. grades 1, 2 and 3) as a consequence of stripping and reinstatement actions will, on balance, result in an effect of slight to moderate adverse significance after mitigation.
- 20.7.2 This effect however, is not considered to be of prime concern to affected landowners given the relatively narrow corridor within which disruption and reinstatement that will occur.
- 20.7.3 Permanent agricultural land take of ALC grade 3 soils within the footprint of the onshore substation constitutes an effect of slight adverse significance post mitigation, principally as the current value of this resource is not considered to be at the higher end of the BMV scale and as the quantity of permanent loss at the substation site is less than the DEFRA 20 hectares consultation threshold.
- 20.7.4 Disruption to current agricultural practices from the temporary suspension of farming activities during the construction of the onshore cable, and from the longer-term impact of easement restrictions on affected holdings, will generate an effect of slight to moderate adverse significance on landowners after mitigation.
- 20.7.5 In relation to the onshore substation site, mitigation will be provided in the form of commercial arrangements with affected landowners.

- 20.7.6 Subject to the employment of mitigation techniques outlined above, no residual effects are predicted in relation to the transmission of pests and diseases during construction of the onshore elements of the Project.
- 20.7.7 Table 20.4 provides a summary of the assessment findings where residual effects are predicted to remain after mitigation.

Table 20.4: Summary of Residual Effects

Aspect or Resource	Description and Nature of Predicted Impact	Mitigation Measures	Residual Effect
Agricultural Land Classification (BMV soils)	Potential downgrading of disturbed BMV ALC grade 1, 2 and 3 soils associated with construction of the onshore cable corridor	Reinstate disturbed soils and employ best practice soil management techniques to retain soil properties. A SMP will be prepared in advance of construction.	Slight to moderate adverse
	Permanent loss of BMV ALC grade 3 land through construction of the onshore substation	Re-use stripped and disturbed soils elsewhere on the site (e.g. as part of the landscaping strategy) or distribute on adjacent agricultural holdings (subject to agreement with landowners) A SMP will be prepared in advance of construction.	Slight adverse
Agricultural Operations	Temporary interruption of agricultural operations through construction of the onshore cable (severance, disturbance and accessibility) and the imposition of a permanent easement along the cable corridor	Liaison with the affected landowner or tenant farmer as part of commercial negotiations, and employment of a dedicated Project ALO	Slight to moderate adverse
	Permanent land take of agricultural land arising from implementation of the onshore substation, and attendant implications on stewardship payments and operational viability		Slight to moderate adverse

20.8 Cumulative Impacts

20.8.1 The following planned developments are noted in the vicinity of the proposed substation:

- Modifications to the existing National Grid Bolney substation (associated with Rampion connection); and
- Modifications to the existing National Grid Bolney substation (not associated with Rampion).

20.8.2 Recent discussions between National Grid and E.ON have indicated that the works associated with the Rampion connection would fall outside National Grid's permitted development rights and therefore planning consent would be required. E.ON intends to apply for planning permission from Mid Sussex District Council for these works.

20.8.3 It is understood that National Grid will undertake the works not associated with Rampion as Permitted Development with pre-application consultation with the LPA expected in 2013.

20.8.4 The National Grid Bolney substation modifications will be located at the existing National Grid site.

20.8.5 In terms of agriculture and soils, the Bolney modification work is expected to result in a small increase in the permanent loss of agricultural land. However, the cumulative impact of the two projects on is expected to be negligible.

20.9 References

Cranfield University: National Soil Resources Institute (2012), available from:
<http://www.landis.org.uk/soilscapes/>

Department for Communities and Local Government (DCLG) (2012) *National Planning Policy Framework*, available from:
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf>

Department for Environment, Food and Rural Affairs (DEFRA) (2009) *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*, available from:
<http://www.defra.gov.uk/publications/files/pb13298-code-of-practice-090910.pdf>

Ministry of Agriculture, Fisheries and Food (MAFF) (1988) *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land*, available from
<http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf>