VikingLink

nationalgrid

UK Onshore Scheme

Environmental Statement

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Chapter 28

Cumulative Effects

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Environmental Statement Volume 2			
ES Reference	**Chapter**	**Chapter Title**	
ES-2-A.01	Ch01	Introduction	
ES-2-A.02	Ch02	Development of the UK Onshore Scheme	
ES-2-A.03	Ch03	The UK Onshore Scheme	
ES-2-A.04	Ch04	Environmental Impact Assessment Methods	
ES-2-B.01	Ch05	The Proposed Underground DC Cable	
ES-2-B.02	Ch06	Intertidal Zone	
ES-2-B.03	Ch07	Geology & Hydrogeology	
ES-2-B.04	Ch08	Water Resources & Hydrology	
ES-2-B.05	Ch09	Agriculture & Soils	
ES-2-B.06	Ch10	Ecology	
ES-2-B.07	Ch11	Landscape & Visual Amenity	
ES-2-B.08	Ch12	Archaeology & Cultural Heritage	
ES-2-B.09	Ch13	Socio-economics & Tourism	
ES-2-B.10	Ch14	Traffic & Transport	
ES-2-B.11	Ch15	Noise & Vibration	
ES-2-B.12	Ch16	Register of Mitigation	
ES-2-C.01	Ch17	The Proposed Converter Station	
ES-2-C.02	Ch18	Geology & Hydrogeology	
ES-2-C.03	Ch19	Water Resources & Hydrology	
ES-2-C.04	Ch20	Agriculture & Soils	
ES-2-C.05	Ch21	Ecology	
ES-2-C.06	Ch22	Landscape & Visual Amenity	
ES-2-C.07	Ch23	Archaeology & Cultural Heritage	
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Glossary & Abbreviations

Glossary of Terms	
Term	**Meaning**
AC electricity transmission	Electric power transmission in which the voltage varies in a sinusoidal fashion. This is the most common form of electricity transmission and distribution.
base scheme design	The design of the UK Onshore Scheme for the purposes of the planning application.
connection point	The existing Bicker Fen 400 kV Substation; the point on the National Electricity Transmission System (NETS) where Viking Link connects.
the Contractor	Party or parties responsible for the detailed design and construction UK Onshore Scheme.
converter station	Facility containing specialist equipment (some indoors and some potentially outdoors) for the purposes of converting electricity from AC to DC or DC to AC.
DC electricity transmission	Electric power transmission in which the voltage is continuous. This is most commonly used for long distance point to point transmission.
detailed scheme design	The design of the Scheme developed by the Contractor within the Limits of Deviation (AC and DC cables) and Rochdale Envelope (converter station).
landfall	The area between Mean Low Water Springs and Mean High Water Springs where the Onshore and Offshore Schemes meet.
Limits of Deviation	These define the maximum extents of the corridor for which planning permission is sought and within which proposed DC and AC cable routes may be installed.
the Project	Viking Link, from the connection point at Revsing Substation in Denmark to the connection Bicker Fen Substation in Great Britain).
Rochdale Envelope	This defines the parameters of the proposed converter station for which planning permission is sought including its location, layout and dimensions.
the Scheme	UK Onshore Scheme from MLWS to the connection point comprising underground AC and DC cables, converter station and access road.
Transition Joint Pit	Buried concrete pit where onshore and submarine cables are physically jointed together.

List of Abbreviations	
Abbreviation	**Meaning**
AC	Alternating Current
DC	Direct Current
EIA	Environmental Impact Assessment

List of Abbreviations	
Abbreviation	**Meaning**
ES	Environmental Statement
ha	hectares
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
km	kilometre
kV	kilovolt
kW	kilowatt
kWp	Kilowatt peak
LPA	Local Planning Authority
m	Metre
MW	megawatt
NETS	National Electricity Transmission System
PRoW	Public Right of Way
PV	Photovoltaic
TCA	Temporary Construction Areas
TCC	Temporary Construction Compound
TCF	Temporary Construction Facilities
UK	United Kingdom
VP	Viewpoint
ZoI	Zone of Influence

1 Introduction

1.1 Introduction

1.1.1 This chapter considers the potential for cumulative effects, including intra-project and inter-project effects, to occur as a result of the UK Onshore Scheme ("the Scheme"). It draws on the results of the assessment of the proposed underground Direct Current (DC) cable route (reported in chapters 6 to 15 of the Environmental Statement (ES)) and the assessment of impacts of the proposed converter station including the proposed underground Alternating Current (AC) cable route and proposed permanent access road (reported in chapters 18 to 26 of the ES).

1.2 Cumulative Effect Assessment

Overview

1.2.1 The cumulative effects assessment follows guidance set out in the Institute of Environmental Management and Assessment (IEMA) 'State of Environmental Impact Assessment Practice in the UK' Report.

1.2.2 IEMA's Report recognises two major sources of cumulative effects:

- Intra-project effects: These effects occur where a single receptor is affected by more than one source of effect arising from different aspects of a project. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a project, with the results being a greater nuisance than each individual effect alone; and
- Inter-project effects: These effects occur as a result of a number of developments, which individually might not be significant, but when considered together could result in a significant cumulative effect on a common receptor, and will include developments separate from and related to the project.

Intra-Project Effects

1.2.3 Section 2 of this chapter reports the assessment of intra-project effects; this includes:

- Where potential impacts of the proposed DC cable route and proposed converter station may combine to affect the same receptor; and
- Where a common receptor is being affected by two or more effects reported in different specialist assessments.

1.2.4 The UK Onshore Scheme and UK Offshore Scheme are not considered to result in intra-project effects. Whilst there is overlap in the intertidal zone the potential effects which occur on common or shared receptors are as a result of the same activity, landfall installation. Effects occurring as a result of the same activity are not considered to be intra-project effects.

Inter-project Effects

1.2.5 Section 3 of this chapter reports the assessment of inter-project effects. The effects have been considered in the specialist assessments but are also reported here on a project by project basis.

2 Assessment of Intra-Project Effects

2.1 Identification of Potential Intra-Project Effects

Between the Proposed DC Cable Route and Proposed Converter Station

Overview

2.1.1 Intra-project effects may occur as a result of impacts on common receptors as result of installation of the proposed DC cable and construction of the proposed converter station. The potential for such effects to occur is discussed in each of the specialist chapters (18 to 26) and summarised here.

Geology & Hydrogeology

2.1.2 Intra-project effects occurring as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station have been as assessed as negligible and therefore are not significant. Whilst common receptors such as groundwater resources could be affected it is considered that effects can be mitigated such that they are significant.

Water Resources & Hydrology

2.1.3 Intra-project effects occurring as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station, for example on the drain which forms the western boundary of the proposed converter station site have been as assessed as negligible and therefore are not significant. Through a combination of the base scheme design and application of good construction practice effects can be mitigated such that they are not significant.

Agriculture & Soils

2.1.4 Intra-project effects are not considered to occur as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station. The assessment of disturbance to, and loss of, soil resources is considered to be site specific. As no area of soil resource would be subject to works or disturbance as a result of more than one element of the UK Onshore Scheme, intra-project effects would not occur.

Ecology

2.1.5 Intra-project effects occurring as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station have been assessed not

significant. There is the potential for a cumulative increase in temporary disturbance effects on some species such a badger or breeding birds, however, it is considered that this will not lead to significant adverse effects given the abundant similar habitats in the locality that individuals can move into.

Landscape & Visual Amenity

2.1.6 Construction of the proposed DC cable and proposed converter station could combine to affect landscape character, however, the combined effect is no greater than the individual effects and is considered to be minor adverse and not significant. Similarly, effects on visual amenity occurring as a result of both the proposed DC cable route and proposed converter station would be no greater than the individual effects and is therefore moderate adverse and significant.

Archaeology & Cultural Heritage

2.1.7 The proposed DC cable route approaches the proposed converter station site from the west and would have direct physical impacts on two receptors(referred to as 20 and 21 in chapters 12 and 23) which also experience direct physical effects as a result of construction of the proposed converter station. In isolation the effects of proposed DC cable are minor adverse, and of the proposed converter station are moderate adverse. The intra-project effects on the two receptors are considered to be moderate adverse and significant.

Socio-economics & Tourism

2.1.8 Intra-project effects occurring as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station are not considered to increase the significance of effects reported in isolation. Intra-project effects are therefore considered to be no worse than minor adverse and therefore are not significant.

Traffic & Transport

2.1.9 For the purposes of the intra-project cumulative assessment for the potential impact of the simultaneous construction of the proposed DC cable route and the proposed converter station, have been combined. Only traffic generated by the proposed DC cable route Temporary Construction Facilities (TCFs) closest to the proposed converter station (e.g. Temporary Construction Compound (TCC) P3; and Temporary Construction Areas (TCAs) T13, S6, T14, T15 and T16) have been considered as part of the assessment.

2.1.10 As with the other traffic and transport assessments, the 2019 assessment year includes an assumed 20% construction traffic uplift for traffic associated with the construction of the proposed converter station. Traffic relating to the proposed DC cable route construction has then been added to indicate the intra-project traffic impacts. When combined, the impacts on receptors are considered to remain not significant on weekdays. On Saturdays some effects will be significant,

although as noted for the assessment of the proposed converter station, permanent access road and proposed AC cable route in isolation, it is proposed that the majority of Heavy Goods Vehicles (HGVs) movements will take place on weekdays, with Saturdays reserved for traffic movements only if required.

Noise & Vibration

2.1.11 Intra-project effects occurring as a result of the construction of the proposed underground DC cable route in combination with the proposed converter station are not considered to increase the significance of effects reported in isolation. Construction of the proposed DC cable route could result in some moderate adverse effects on receptors in closer proximity to the works whilst construction of the proposed converter station is predicted to result in minor adverse effects. Intra-project effects are therefore considered to be no worse than moderate adverse and therefore are significant.

Between Specialist Assessments

Identification of Potential Effects

2.1.12 Intra-project effects may also occur in the vicinity of the UK Onshore Scheme where a common receptor is being affected by two or more effects reported in different specialist assessments e.g. the two separate impacts may interact or combine to result in an intra-project effect. The first step in the assessment has been to consider where there is the potential for an intra-project effect to occur. An overview of where potential intra-project effects may interact or combine between specialist assessment topics may occur is provided in Table 28.1. It should be noted that an 'X' in the table denotes that a potential intra-project effect could occur, however, this does not mean that an intra-project effect will definitely arise.

Table 28.1 Potential for Intra-Project Cumulative Effects

	INTZ Ch6	GEO Ch7/18	WAT Ch8/19	AGRI Ch9/20	ECO Ch10/21	LV Ch11/21	ARCH Ch12/23	SOCIO Ch13/24	TRANS Ch14/25	NOIS Ch15/26
INTZ Ch6			X		X			X		
GEO Ch7/18			X							
WAT Ch8/19		X			X					
AGRI Ch9/20								X		
ECO Ch10/21			X							X
LV Ch11/22							X	X		X

Table 28.1 Potential for Intra-Project Cumulative Effects

	INTZ Ch6	GEO Ch7/18	WAT Ch8/19	AGRI Ch9/20	ECO Ch10/21	LV Ch11/21	ARCH Ch12/23	SOCIO Ch13/24	TRANS Ch14/25	NOIS Ch15/26
ARCH Ch12/23						X		X	X	X
SOCIO Ch13/24				X		X				X
TRANS Ch14/25							X			X
NOIS Ch15/26					X	X	X	X	X	

2.1.13 The second step, taking account of the above, has been to review the results of specialist assessments to identify potential common receptors and the residual effects which they are predicted to experience. The specialist assessments reported in the ES have identified a number of effects which would occur as result of the construction and operation of the Scheme ranging from negligible or minor significance (such effects are classed as not significant) to moderate or major significance (such effects are classed as significant). Several effects on one or more receptors could theoretically interact or combine to result in an intra-project effect which is significant. When considering intra-project effects, the mitigation measures as set out in chapters 6 to 15 and 18 to 26, including those embedded in how the Scheme will be designed and constructed, have been taken into account i.e. only residual effects (after mitigation) are considered.

2.1.14 It should be noted that where only one effect has been identified for a particular receptor or only one topic has identified effects on that receptor there is no common receptor and therefore no potential for an intra-project effect to occur. Intra-project effects have therefore only been identified where more than one specialist assessment chapter has identified a residual effect of minor significance or greater on an individual or group of common receptors. Typically receptors which are likely to experience an intra-project effect are those which are more sensitive to change, for example people, whilst those receptors which are more tolerant to change, for example aspects of the physical environment such as geology, are less likely to experience an intra-project effect.

2.1.15 Potential common receptors have been following a review of the specialist chapters. Table 28.2 provides a summary of the common receptors which have been identified and the potential interaction with other topics. Table 28.2

Table 28.2 Potential Common Receptors		
Topic	**Potential Common Receptor(s)**	**Potential Interaction**
Intertidal Zone (chapter 6)	No, no potential common receptors have been identified.	Residual effects on coastal processes, intertidal ecology and intertidal archaeology have been assessed as negligible or minor adverse. No other specialist assessments consider the potential impacts on these receptors therefore there is no interaction with other specialist assessments which would result in an intra-project effect.
Geology & Hydrogeology (chapters 7 and 18)	Yes, drainage and groundwater.	Residual effects on geology and hydrogeology have been assessed as negligible or minor adverse. No other specialist assessments consider the potential impacts on geology therefore there is no interaction with other specialist assessments which would result in an intra-project effect. Residual effects on hydrogeology have been identified as a result of impacts on land drainage and could interact with surface water effects on land drainage to result in intra-project effects.
Water Resources & Hydrology (chapters 8 and 19)	Yes, drainage and surface water.	Residual effects on water resources and hydrology have been assessed as ranging from negligible to minor adverse. Residual effects on hydrogeology have been identified as a result of impacts on land drainage and could interact with surface water effects on land drainage to result in intra-project effects.
Agriculture & Soils (chapters 9 and 20)	No, no potential common receptors have been identified.	Residual effects on agriculture and soils relate to the temporary disturbance or permanent loss of agricultural land and loss or disturbance of soil resources and range from negligible adverse to major adverse, the latter occurring as a result of the permanent loss of agricultural land at the proposed converter station. No other specialist assessments consider the potential impacts on these receptors. There is no interaction with other specialist assessments which would result in an intra-project effect on agriculture or soils.

Table 28.2 Potential Common Receptors		
Topic	**Potential Common Receptor(s)**	**Potential Interaction**
Ecology (chapters 10 and 21)	No, no potential common receptors have been identified.	Residual effects on ecology relate to the disturbance of protected species and disturbance or loss of habitat. No other specialist assessments consider the potential impact on these receptors. Where other specialist assessments have identified an impact which results in a secondary or indirect effect on ecology (for example pollution of a watercourse or noise) this has been assessed in the ecology chapters only and is therefore not considered as an intra-project effect. There is no interaction with other specialist assessments which would result in an intra-project effect on protected species or habitat.
Landscape & Visual (chapters 11 and 22)	Yes, amenity of people such as residents, visitors and recreational users of Public Rights of Way (PRoWs).	Residual effects on visual amenity relate to those experienced by residents and visitors and range from negligible to moderate adverse. These effects could interact and combine with noise effects during construction of the Scheme as well as operation of the proposed converter station to result in intra-project effects.
Archaeology & Cultural Heritage (chapters 12 and 23)	No, no potential common receptors have been identified.	Residual effects on archaeology and cultural heritage relate to impacts on heritage receptors which are in the immediate vicinity of the Scheme as well as temporary and permanent impacts on the setting of heritage receptors. These range from negligible to moderate adverse. No other specialist assessments consider the potential impact on these receptors. The impact of noise and landscape on the setting of heritage receptors is considered as part of heritage assessment and is therefore not an intra-project effect. There is no interaction with other specialist assessments which would result in an intra-project effect on heritage receptors.
Tourism & Socio-economics (chapters 13 and 24)	Yes, amenity of people such as residents, visitors and recreational users of PRoWs.	Residual effects on tourism and socio-economics relate to those experienced by residents and visitors and range from negligible to minor adverse. These effects could interact and combine with noise and visual effects during construction of the Scheme as well as operation of the proposed converter station to result in intra-project effects.

Table 28.2 Potential Common Receptors		
Topic	**Potential Common Receptor(s)**	**Potential Interaction**
Traffic & Transport (chapters 14 and 25)	No, no potential common receptors have been identified.	Residual effects on traffic and transport relate to those experienced by road users and pedestrians and range from negligible to major adverse during construction of the Scheme. No other specialist assessments consider the potential impact on these receptors. There is no interaction with other specialist assessments which would result in an intra-project effect on road users.
Noise & Vibration (chapters 15 and 26)	Yes, amenity of people such as residents, visitors and recreational users of PRoWs.	Residual effects on residents and visitors occurring as a result of noise range from negligible to moderate adverse. These effects could interact and combine with visual effects during construction of the Scheme as well as operation of the proposed converter station to result in intra-project effects.

Assessment of Potential Effects

2.1.16 Intra-project effects are assessed as negligible, minor, moderate or major. Moderate or major effects are considered to be significant, whilst minor or negligible effects are not significant. Based on Table 28.2 two potential intra-project effects have been identified as a result of the Scheme; on land drainage and on the amenity of residents, visitors and recreational users of PRoWs.

Impact on Land Drainage

2.1.17 An intra-project effect on land drainage could result from construction of the Scheme due to a combination of surface and groundwater impacts. Given the large number of watercourses and drains within the vicinity of the Scheme impacts could affect a number of receptors, particularly along the length of the proposed DC route. Individually impacts are predicted to be negligible and minor adverse as they can be mitigated through the adoption of good construction practices and reinstatement of affected drains. Similarly through the application of good construction practices and reinstatement potential intra-project effects are considered to be mitigable and are no greater than minor adverse and are therefore not significant.

Impact on Amenity during Construction

2.1.18 An intra-project effect on residents, visitors and or recreational users of PRoWs could result from construction of the Scheme due to a combination of noise and visual effects leading to a reduction in amenity. Potential receptors are predominantly residential properties or PRoWs in the vicinity of construction works along the full length of the Scheme.

2.1.19 Visual effects have been assessed from a number of different viewpoints which are representative of the views which would be experienced from residential properties or PRoWs in the vicinity of the Scheme. Individually these effects range from negligible to minor adverse on the proposed DC cable route and minor to moderate adverse in the vicinity of the proposed converter station. Noise effects have been assessed based on the construction works which will be undertaken and potential receptors including residents and recreational users have been identified based on their proximity to the Scheme. The extent of the effect experienced by receptors will depend on the nature of construction works and the proximity of receptors to them. Individually these effects range from negligible to moderate adverse on the proposed DC cable route and negligible in the vicinity of the proposed converter station.

2.1.20 Construction effects from noise are temporary and intermittent, both through the day and the construction period. Visual effects will be constant throughout the construction period albeit the magnitude of the effect will change as construction progresses due to the differing equipment in use, and extent of temporary change to land cover. Whilst receptors may experience a cumulative reduction in amenity, such effects will be short term, temporary and intermittent and therefore when considered in-combination the significance of effects will not increase. As a result it is predicted that a small number of receptors in close proximity to the Scheme (typically within less than 0.5 km) will experience intra-project effects moderate adverse intra-project effects adverse which are therefore significant.

Impact on Amenity during Operation

2.1.21 An intra-project effect on residents, visitors and or recreational users of PRoWs could result from operation of the proposed converter station due to a combination of noise and visual effects leading to a reduction in amenity. This intra-project effect is limited to within approximately 2 km of the proposed converter station.

2.1.22 Visual effects have been assessed from a number of different viewpoints which are representative of the views which would be experienced from residential properties or PRoWs in the vicinity of the proposed converter station. Individually these effects are localised and range from negligible to moderate adverse. Noise effects during operation have been assessed as being negligible or minor adverse for properties within 2 km of the proposed converter station.

2.1.23 Intra-project effects are considered to be no greater than moderate adverse for users of the PRoW on North Ing Drove and are therefore significant. All other receptors within 2 km of the proposed including residential properties will experience minor adverse intra-project effects on amenity and are therefore not significant.

3 Assessment of Inter-Project Effects

3.1 Identification of Inter-Project Effects

Overview

3.1.1 The assessment of inter-project cumulative effects has followed a four stage approach:

- Stage 1: Identify the Zone of Influence (ZoI) and identify a long list of other developments;
- Stage 2: Identify a short list of other developments for cumulative assessment;
- Stage 3: Information gathering about other developments; and
- Stage 4: Assessment of inter-project effects.

3.1.2 A long list of developments was identified by undertaking a review of reasonably foreseeable developments based on those for which information is in the public domain. This includes developments which are in the planning system including those at application stage or that have been granted approval as well as potential developments for which a local plan allocation may exist.

3.1.3 In order to assess the potential for inter-project effects to occur in combination with the identified developments the following was undertaken:

- For developments where a planning application has been submitted information presented within the ES or application material has been reviewed.
- For developments that are known to be proposed (either via screening or scoping opinion requests submitted to the Local Planning Authority (LPA), or following presentation of information in the public domain) but where an ES (or other environmental reports) has not yet been prepared or submitted, any readily available information has been utilised.
- For developments which may occur in the vicinity of the UK Onshore Scheme the relevant local plans have been reviewed to identify any planning allocations.

3.1.4 Following information gathering from available sources, the effects of the UK Onshore Scheme have been considered in combination with the potential effects from other developments that are both reasonably foreseeable and are geographically located in a position where environmental impacts could act together to result in an inter-project effect.

3.1.5 In assessing inter-project effects, it should be acknowledged that the relative contributions that different projects make to a cumulative effect, and carefully consider whether a cumulative effect occurs at all. For example, effects associated with a large scale project may be significant, and whilst a smaller project may contribute to this effect, the cumulative effect of the smaller project and the larger project is only considered to be significant if it is of greater significance than the effect of either project in isolation.

3.1.6 Inter-project effects are generally unlikely to arise unless the other developments are in close proximity to a component of the UK Onshore Scheme (i.e. the proposed DC cable route and/or

the proposed converter station site, proposed AC route and proposed permanent access road), recognising that actual distance varies with the nature of the potential effect and nature of the receptor.

3.1.7 The study area for the consideration of inter-project effects has been developed taking account of the predicted extent of impacts associated with the different elements of the UK Onshore Scheme (i.e. effects from installation of the proposed DC cable route, and effects from the construction of the proposed converter station, the proposed permanent access road, and installation of the proposed AC cable route). The study area extends to the point at which the associated effects become insufficient to contribute in any meaningful way to those of another development.

3.1.8 The study area for each environmental assessment topic is defined in the relevant technical chapter (Chapters 6 to 15 and 18 to 26). Information on the likely extent of impacts associated with other developments in the area has also been considered.

Initial Screening

3.1.9 An initial screening exercise (Stage 1 of the cumulative effects assessment) was undertaken to identify potential major developments within the vicinity of the Scheme. This process identified major developments within a 1 km radius to create an initial long list for consideration. The long list was subsequently screened based on the potential for inter-project effects (e.g. cumulative landscape and visual impacts have potential to occur over a greater distance then, for example, cumulative noise or archaeology impacts) and a refined short list was developed for further, more detailed consideration (Stage 2 of the cumulative effects assessment).

3.1.10 Table 28.3 provides a long list of other proposed developments considered for their potential for inter-project effects.

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
65	Proposed erection of 24 flats at first and second floor level with commercial space below and a swimming pool	Validated March 2017 (undecided)	TBC	0.9 km to the north of the proposed T1 TCA and proposed landfall site
64	Proposed erection of 17 dwellings (with means of access and layout to be considered).	Validated March 2017 (undecided)	TBC	0.8 km to the north of the proposed DC cable route
63	Proposed change of land use to site 2 static caravans, 5 bell tents, 24 touring caravans – all for holiday use. Part of area also to be used for winter caravan storage for 24 touring caravans. Proposed change of use to existing beach hut to form a holiday unit, change of use of existing garage to form a shop	Validated February 2017 (undecided)	TBC	0 km to the proposed S1 TCC (0 km to the proposed DC cable route)
62	Proposed erection of an 11 kilovolt (kV) overhead line	No Objection October 2014	TBC	0 km to the proposed DC cable route
61	Proposed erection of an 11 kV overhead line	No Objection January 2015	TBC	0 km to the proposed DC cable route
60	Proposed erection of 9 dwellings (with access, layout and scale to be considered).	Approved February 2016	TBC	2 km to the south of the proposed DC cable route
59	Proposed erection of a free range poultry unit, provision of 2 feed silos and construction of a hard standing and access road.	Approved January 2016	TBC	0.1 km to the south of the proposed DC cable route
58	Proposed erection of an 11 kV overhead line	No Objection September 2013	TBC	0.7 km to the north of the proposed DC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
57	Proposed erection of 4 poultry sheds, refurbish an existing poultry shed, erection of a building to house canteen, office and welfare facilities, erection of an egg store, siting of 5 silos, a generator store, bunded oil tank and 4 gas tanks, construction of roadway on the site of an existing poultry shed which is to be demolished	Approved February 2014	TBC	2 km to the south of the proposed DC cable route
56	Proposed siting of 3 micro scale 5 kilowatt (kW) wind turbines (hub height of 14.97 m, and max. height to blade tip of 17.77 m)	Approved August 2013	TBC	2.7 km to the south of the proposed DC cable route
55	Proposed installation of 204 49.98 kW peak (kWp) ground mounted solar PV panels.	Approved April 2013	TBC	2.6 km to the south of the proposed DC cable route
54	Proposed erection of 1 organic free range poultry unit, provision of a feed silo and construction of hardstanding.	Validated March 2017	TBC	0.8 km to the south of proposed TWA (T3) (0.9 km to the proposed DC cable route)
53	Proposed installation of 120 solar panels on the roof of an existing agricultural building.	Approved February 2015	TBC	0.8 km to the south of the proposed DC cable route
52	Proposed siting, and means of construction of a proposed road.	Approved August 2014	TBC	1.5 km to the northwest of the proposed DC cable route
51	Proposed installation of a solar farm comprising a 1.5 megawatt (MW) ground mounted solar array (6000 panels) (max. height of 2.3 m) together with support structures. Installation of 250 kW roof mounted solar array on 4 existing buildings	Approved March 2015	TBC	0.8 km to the northwest of the proposed DC cable route
50	Proposed installation of 192 50 kW ground mounted solar panels to a max. height of 2.4 m	Approved August 2015	TBC	0.2 km to the east of the proposed DC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
49	Proposed installation of ground mounted 122 kWp solar arrays consisting of 460 panels within 3 rows (max. height of 2.4 m) and associated works.	Approved November 2015	TBC	0.8 km to the west of the proposed DC cable route
48	Screening opinion sought in respect to the development of a 2 megawatt (MW) solar park.	Not required August 2013	TBC	0.9 km to the west of the proposed DC cable route
47	Proposed installation of 20 6 kW solar panels on south elevation of existing dwelling and provision of a biomass boiler.	Approved March 2015	TBC	0.2 km to the east of the proposed DC cable route
46	Screening opinion sought for the creation of 9 hectares (ha) of woodland.	Not Required September 2016	TBC	0.4 km to the east of the proposed DC cable route
45	Proposed erection of a poultry unit, 2 feed silos and construction of a vehicular and a pedestrian access.	Approved October 2016	TBC	0.2 km to the south of the proposed DC cable route
44	Siting of 3 containers with flues to provide housing for 9 biomass boilers and to include 9 buffer tanks	Approved November 2014	TBC	0.1 km to the west of the proposed DC cable route
43	Siting of 6 containers and flues to provide housing for 11 biomass boilers to include 5 fuel storage containers.	Approved November 2014	TBC	1.5 km to the north of the proposed DC cable route
42	Proposed extension of silage clamp area	No Objection May 2014	TBC	1 km to the northwest of the proposed DC cable route
41	Proposed erection of 6 containers with flues to provide housing for 6 biomass boilers to include 6 fuel silos.	Approved November 2014	TBC	1.1 km to the northwest of the proposed DC cable route
40	Proposed erection of a food waste storage tank to form part of the existing anaerobic digestion plant	No Objection May 2016	TBC	1.1 km to the northwest of the proposed DC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
39	Proposed installation of 19,230 5 MW solar panels (max. height of 2.7 m) plus associated works and construction of a vehicular access.	Approved September 2015	TBC	0 km to the proposed DC cable route
38	Proposed erection of an anaerobic digestion facility including, electricity generation equipment, auxiliary equipment, silage clamps, digestate lagoons and access.	Approved July 2014	TBC	1.4 km to the north of the proposed TWA (T10) (1.4 km to the proposed DC cable route)
37	Proposed erection of 1 building consisting of 10 grain store compartments, 5 plant rooms, and a fenced secure area for the storage of farm machinery and 1 building consisting of workshop, offices, welfare facilities and storage areas. Proposed erection of a transformer building, a wash area and a lagoon, a sprayer wash out area with a bio bed, 2 water storage tanks, a weighbridge, earth banking (max. height of 900 mm). Plus internal access roads, vehicular accesses and parking area.	Approved April 2016	TBC	1.4 km to the west of the proposed DC cable route
36	Proposed erection of 680 ground-mounted solar panels	Approved September 2014	TBC	0.7 km to the south of the proposed DC cable route
35	Installation of ground mounted 50 kW solar arrays consisting of 200 panels within 5 rows (max. height of 2.63 m).	Approved December 2014	TBC	0.4 km to the east of the proposed TCC (S5) (0.5 km from the proposed DC cable route)
34	Installation of a 5 MW ground mounted solar farm with associated works	Approved March 2015 (2 non-material amendments July 2015)	TBC	4.3 km to the south of the proposed DC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
33	Screening opinion for the installation of a new water main between Frithville and the A52 Wainfleet Road	Not required May 2012	TBC	1.9 km to the south of the proposed DC cable route
32	Change of land use to form an extension to existing yard area at recycling centre and construction of a bund (max. height of 2 m)	Approved September 2016	TBC	0.5 km to the north of the proposed DC cable route
31	Proposed erection of 3 containers to provide a biomass plant room, fuel store and housing 199 kW boiler and associated equipment to heat/cool existing poultry sheds.	Approved April 2014	TBC	2.7 km to the northwest of the proposed DC cable route
30	Proposed erection of a 33 kV overhead line	No Objection April 2013	TBC	1.7 km to the southeast of the proposed DC cable route
29	Proposed erection of an 11 kV overhead line	No Objection July 2013	TBC	1.8 km to the southeast of the proposed DC cable route
28	Proposed installation of 820 ground-mounted photovoltaic (PV) solar panels	Approved June 2014	TBC	0.3 km to the southeast of the proposed DC cable route
27	Proposed installation of 200 ground-mounted PV solar panels	Approved June 2014	TBC	0.8 km to the north of the proposed DC cable route
26	Proposed erection of 16 biomass boilers with associated fuel silos to heat existing poultry units	Approved September 2014	TBC	1.5 km to the north of the proposed DC cable route
25	Proposed erection of a grain storage building	No Objection September 2016	TBC	0.2 km to the north of the proposed DC cable route
24	Installation of underground electricity cables connecting the consented anaerobic digestion (ID 23) plant to the National Grid	No Objection March 2014	TBC	0.3 km to the southeast of the proposed DC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
23	Proposed development of a 499 kW anaerobic digestion plant	Validated April 2014	TBC	0.3 km to the southeast of the proposed DC cable route
22	Proposed installation of underground electricity cables and associated low voltage board/kiosk	No Objection September 2014	TBC	0.3 km to the southeast of the proposed DC cable route
21	Proposed installation of an agricultural dryer and associated feed hopper, storage bay and access track	No Objection November 2015	TBC	0.3 km to the southeast of the proposed DC cable route
20	Scoping opinion sought for the prospective erection of 6 – 8 poultry sheds	ESCO Applications decision March 2016	TBC	0.3 km to the southeast of the proposed DC cable route
19	Proposed erection of 2 poultry units and 3 feed silos.	Approved April 2017	TBC	0.3 km to the southeast of the proposed DC cable route
18	Proposed erection of a 11 kV overhead line	No Objection February 2017	TBC	1 km to the south of the proposed DC cable route
17	Proposed erection of 14 new dwellings (2 No. Bungalows, 8 No. 2 Storey Houses and 4 No. 3 Storey Houses) plus associated garages and estate road	Favourable with Conditions April 2012	TBC	3 km to the southeast of the proposed DC cable route
16	Proposed erection of up to 63 residential dwellings (with associated infrastructure)	Favourable with Conditions January 2017	TBC	2.9 km to the southeast of the proposed DC cable route
15	Proposed new farm access to serve Bridge Farm	Favourable with Conditions September 2016	TBC	0.5 km to the east of the proposed TCC (S6)
14	Proposed residential development of up to 40 dwellings (outline application, all matters reserved)	Received November 2016 (undecided)	TBC	2.17 km east of the proposed AC cable route

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
13	Installation of ground-mounted solar PV array	Favourable with Conditions April 2014	TBC	2.6 km northwest of the proposed DC cable route
12	Application to dismantle and rebuild 1.29 km of 11 kV overhead lines	Favourable Planning Decision October 2013	TBC	0 km to the proposed DC cable route
11	Application to dismantle and rebuild 1.1 km overhead power lines	Favourable Planning Decision September 2013	TBC	1.6 km to the east of the proposed DC cable route
10	Application to rebuild 11 kV overhead lines on wooden poles	Favourable Planning Decision September 2013	TBC	0.4 km to the south of the proposed DC cable route
9	Construction of 7 biomass heating packaged plant rooms	Favourable with Conditions August 2013	TBC	2 km to the east of the proposed DC cable route
8	Application under Section 37 for the dismantling of overhead power lines and the erection of 830 m overhead power lines to connect the existing network	Favourable Planning Decision July 2013	TBC	1.3 km to the northwest of the proposed DC cable route
7	Notification under Circular 14/90 to dismantle and rebuild 1.2 mile overhead powerline	No Objections October 2012	TBC	2.5 km to the east of the proposed DC cable route
6	Application to vary S. 36 consent and deemed permission for the Heckington Fen Wind Park,	No objections June 2015	2017-2023	0 km to the proposed DC cable route
5	Erection of one new grain store	Approved	TBC	0.6 km to the west of the proposed DC cable route
4	Erection of 39 houses and 12 apartments, with associated vehicular access, parking and public open space (outline)	Approved February 2015	TBC	0.5 km to the south of the permanent access road

Table 28.3 Register of Nearby Developments (Stage 1 of cumulative effects assessment)				
ID	**Project**	**Status**	**Expected Construction**	**Relationship with the UK Onshore Scheme**
3	Outline planning application for a residential development of approximately 73 dwellings	Validated March 2016 (undecided)	TBC	0.4 km to the south of the permanent access road
2	Proposed residential development (31 dwellings) and demolition of Tap Bar	Approved December 2016	TBC	0.61 km to the south east of the permanent access road
66	Proposed erection of mixed use development for 91 Phase One and 56 Phase Two one and two bed apartments and two, three, four and five bed houses. 62 would be affordable homes	Favourable with Conditions April 2017	TBC	10 km to the south of the proposed DC cable route
67	Triton Knoll Electrical System DCO	Approved	Commission-ed 2020	0 km to the proposed AC cable route

3.1.11 The short list of other developments identified at Stage 2 of the cumulative effects assessment are presented in Table 28.4 below, with details of their current status and comments regarding their temporal scope in relation to the temporal scope of the proposed DC cable route, converter station, AC cable route and permanent access road.

3.1.12 Where information is not available in regards to the construction period of the project, a worst-case scenario has been assumed, for example that the peak construction period will occur at the same time as that of the UK Onshore Scheme.

3.1.13 The following categories have been used for identifying projects to be included within the scope of the inter-project cumulative assessment.

- Category 1: Developments for which consent applications have been approved and construction has started.
- Category 2: Developments for which consent applications have been approved but construction has not yet started but which may coincide with the UK Onshore Scheme.
- Category 3: Developments for which consent applications have been submitted but have yet to be determined but which may coincide with the UK Onshore Scheme.
- Category 4: Developments which are identified in relevant local plans or other relevant plans and programmes and which could come forward in a similar timescale to the UK Onshore Scheme.

Table 28.4 Register of Nearby Developments (Stage 2 of cumulative effects assessment)						
Project ID	Distance from closest part of the Site	Category	Status (at the time of assessment)	Description of development	Overlap in temporal scope	Environmental information available to inform assessment
61	0 km to the proposed DC cable route	2	No Objection January 2015	Proposed erection of an 11 kV overhead line	Information not available	None available
59	0.1 km to the south of the proposed DC cable route	2	Approved January 2016	Proposed erection of a free range poultry unit, provision of 2 feed silos and construction of a hard standing and access road.	Construction before 2019	Environmental Report, Flood Risk
58	0.7 km to the north of the proposed DC cable route	2	No Objection September 2013	Proposed erection of an 11 kV overhead line	Information not available	Habitat Survey
51	0.8 km to the northwest of the proposed DC cable route	2	Approved March 2015	Proposed installation of a solar farm comprising a 1.5 MW ground mounted solar array (6000 panels) (max. height of 2.3 m) together with support structures. Installation of 250 kW roof mounted solar array on 4 existing buildings	Construction before March 2018	Geophysical, Cultural Heritage, Ecology, Landscape, Flood Risk
50	0.2 km to the east of the proposed DC cable route	2	Approved August 2015	Proposed installation of 192 50 kW ground mounted solar panels to a max. height of 2.4 m	Construction before August 2018	Design & Access Statement

Table 28.4 Register of Nearby Developments (Stage 2 of cumulative effects assessment)						
Project ID	Distance from closest part of the Site	Category	Status (at the time of assessment)	Description of development	Overlap in temporal scope	Environmental information available to inform assessment
49	0.8 km to the west of the proposed DC cable route	2	Approved November 2015	Proposed installation of ground mounted 122 kWp solar arrays consisting of 460 panels within 3 rows (max. height of 2.4 m) and associated works.	Construction before November 2018	Design & Access Statement
48	0.9 km to the west of the proposed DC cable route	4	Not required August 2013	Screening opinion sought in respect to the development of a 2 MW solar park.	Information not available	Screening Opinion document
45	0.2 km to the south of the proposed DC cable route	2	Approved October 2016	Proposed erection of a poultry unit, 2 feed silos and construction of a vehicular and a pedestrian access.	Construction before October 2019	Environmental Report
44	0.1 km to the west of the proposed DC cable route	2	Approved November 2014	Siting of 3 containers with flues to provide housing for 9 biomass boilers and to include 9 buffer tanks	Construction before November 2017	Design & Access Statement
39	0 km to the proposed DC cable route	2	Approved September 2015	Proposed installation of 19,230 5 MW solar panels (max. height of 2.7 m) plus associated works and construction of a vehicular access.	Construction before September 2018	Environmental Report

Table 28.4 Register of Nearby Developments (Stage 2 of cumulative effects assessment)

Project ID	Distance from closest part of the Site	Category	Status (at the time of assessment)	Description of development	Overlap in temporal scope	Environmental information available to inform assessment
26	1.5 km to the north of the proposed DC cable route	2	Approved September 2014	Proposed erection of 16 biomass boilers with associated fuel silos to heat existing poultry units	Construction before September 2017	Planning and Design and Access Statement
23	0.3 km to the southeast of the proposed DC cable route	2	Validated April 2014	Proposed development of a 499 kW anaerobic digestion plant	Information not available	None available
20	0.3 km to the southeast of the proposed DC cable route	4	ESCO Applications decision March 2016	Scoping opinion sought for the erection of 6 – 8 poultry sheds	Information not available	Request for Scoping Opinion
12	0 km to the proposed DC cable route	3	Favourable Planning Decision October 2013	Application to dismantle and rebuild 1.29 km of 11 kV overhead lines	Information not available	None available
6	0 km to the proposed DC cable route	3	No objections June 2015	Application to vary S. 36 consent and deemed permission for the Heckington Fen Wind Park. The construction of 22 wind turbines with a maximum overall height of up to 125 m. Creation of access tracks and a substation.	Information not available	Noise, Traffic and Transport, Landscape and Visual, cultural heritage and ecology

Table 28.4 Register of Nearby Developments (Stage 2 of cumulative effects assessment)						
Project ID	Distance from closest part of the Site	Category	Status (at the time of assessment)	Description of development	Overlap in temporal scope	Environmental information available to inform assessment
5	0.6 km to the west of the proposed DC cable route	3	Approved	A new grain store to replace existing bin storage sited within the operational farm yard. The construction of the building will use pre-cast concrete panels to a height of 3.6 m. Above this to the roofline will be plastisol coated juniper green box profile cladding. The roof covering will be corrugated fibre cement in a natural grey colour	Construction before April 2020	Design & Access Statement

Table 28.4 Register of Nearby Developments (Stage 2 of cumulative effects assessment)						
Project ID	Distance from closest part of the Site	Category	Status (at the time of assessment)	Description of development	Overlap in temporal scope	Environmental information available to inform assessment
67	0 km	2	Consented	Triton Knoll Electrical System. Electrical connection to the Triton Knoll offshore windfarm. Up to six onshore export cable circuits to transmit the HVAC electricity from the transition joint bays at the landfall to the proposed Triton Knoll Substation via the Intermediate Electrical compound. An Intermediate Electrical Compound near to Orby Marsh to provide compensation for reactive power to allow more efficient transmission to minimise losses. A substation near to the existing Bicker Fen 400 kV substation, to step up the voltage to the voltage used by the National Grid and provide additional compensation for reactive power built up over the export transmission. Up to four onshore export cable circuits (400 kV) to transmit the HVAC electricity from the proposed Triton Knoll substation to the existing National Grid substation at Bicker Fen, Boston. Off – shore windfarm, with a series of AC cables which enter Bicker Fen sub-station.	Construction start in 2017	Environmental Statement

3.1.14 All the developments identified in Table 28.4 are considered to be of such a nature and proximity to the proposed DC cable route, proposed converter station site, proposed AC cable route and permanent access road to have the potential to result significant cumulative effects when considered in combination the Scheme. These have therefore been subject to assessment for each environmental topic in Section 3.2 below.

3.1.15 Where environmental information has not been available within the short listed projects' planning submission it has been assumed that all projects would be constructed and operated to good practice standards and approval of the appropriate regulatory bodies and stakeholders.

3.1.16 The location of the other developments in relation to the Scheme is shown in Figure 28.1.

3.2 Assessment of Inter-Project Effects

Overview

3.2.1 The following sub-sections identify whether or not the specialist assessments undertaken as part of the Environmental Impact Assessment (EIA) have identified significant cumulative effects from the Scheme in combination with those projects identified in Table 28.4. It should be noted that where projects are located close to the proposed DC cable route consideration of potential cumulative effects has focused mainly on the construction period. Given it is underground the majority of effects resulting from the proposed DC cable route are short term relating to construction only. Closer to the proposed converter station the assessment of potential cumulative effects has included consideration of impacts occurring from operation.

Project ID 61 – 11 kV Overhead Line

3.2.2 This project comprises approximately 1 km of overhead power line on wood poles. The project is located immediately to the east of the A52 and crosses the proposed DC cable route in a north-south axis to the eastern side of the proposed TCC (S1).

3.2.3 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 59 – Poultry Unit

3.2.4 This project proposes the development of a free range poultry unit as well as two silos for the storage of feed. An access road is also proposed to be developed. This project is located approximately 100 m from the south of the proposed DC cable route, to the west of the access point from Crawcroft Lane (in Route Section 1). There is no spatial overlap between this project and the UK Onshore Scheme, however the construction periods between the two projects may coincide.

3.2.5 Whilst construction of this project would potentially overlap with construction of the Scheme, the scale and nature of this project means that none of the specialist assessments has identified

significant cumulative effects when considering it in combination with construction of the UK Onshore Scheme.

Project ID 58 – 11 kV Overhead Line

3.2.6 This project comprises the erection of an 11 kV overhead power line approximately 700 m to the north of the proposed DC cable route at its closest point. The project is approximately 3.1 km in length located north of Markby on the A1111. The proposed construction period of this project is not known and therefore there remains the potential that there may be some temporal overlap between the construction of this project and the UK Onshore Scheme.

3.2.7 The scale of this project and relative distance from the Scheme mean that none of the specialist assessments has identified significant cumulative effects when considering it in combination with the UK Onshore Scheme.

Project ID 51 – 1.5 MW PV Solar Farm

3.2.8 This project proposes the development of 6,000 PV solar panels with the capability of producing 1.5 MW of electricity. There would also be provision of further panels to be mounted to the roof of four existing buildings within the site. The project is located to the northeast of Driby Top and is approximately 800 to 900 m from the proposed DC cable route. The construction period for this project is unknown that therefore there remains the potential for the construction periods of this project and the UK Onshore Scheme to coincide.

3.2.9 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 50 – 192 50 kW Solar Panels

3.2.10 This project proposes the development of 192 ground mounted solar panels located within close proximity (approximately 200 m) to the proposed DC cable route to the southwest of Ulceby Cross (in Route Section 2).

3.2.11 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 49 – 460 PV Panels (122 kWp)

3.2.12 This project includes for the installation of a solar array consisting of 460 122 kWp panels. The project is located approximately 800 m to the west of the proposed DC cable route, south of Sutterby (in Route Section 2).

3.2.13 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 48 – 2 MW Solar Park

3.2.14 This project has submitted a Screening Opinion request for the development of a 2 MW solar park to be located southwest of Mavis Enderby. It is located approximately 900 m from the proposed DC cable route. Whilst the project is still in pre-planning phase, it is possible that this project and the UK Onshore Scheme are constructed at the same time.

3.2.15 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 45 – Poultry Unit

3.2.16 This project comprises the development of a poultry feed unit, as well as two silos (for feed) and an access road to the facility. This project is located adjacent to the proposed DC cable route at Keal Cotes (Route Section 3).

3.2.17 Whilst construction of this project would potentially overlap with construction of the Scheme, the scale and nature of this project means that none of the specialist assessments has identified significant cumulative effects when considering it in combination with construction of the UK Onshore Scheme.

Project ID 44 – 9 Biomass Boilers Housed in 3 Containers

3.2.18 This project includes for the development of three containers with flues, within which nine biomass boilers would be located along with associated buffer tanks (one per biomass boiler). This project is located to the immediate west of the proposed DC cable route at Keal Cotes.

3.2.19 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 39 – 19,230 Solar Panels

3.2.20 This project proposes the installation of a solar farm consisting of up to 19,230 solar panels and an access track to the site from Folly Lane. This project overlaps the proposed DC cable route north of the proposed TCC (S4) (in Route Section 3). Only the proposed access track overlaps with the UK Onshore Scheme.

3.2.21 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 26 – 16 Biomass Boilers

3.2.22 This project proposes the erection of 16 biomass boilers and associated fuel silos for the heating of existing adjacent poultry units. This project is located to the north of the proposed DC cable

route, immediately adjacent to the B1192 (a proposed access route to the proposed DC cable route).

3.2.23 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 23 – 499 kW Anaerobic Digestion Plant

3.2.24 This project proposes the development of a 499 kW anaerobic digestion plant to be located adjacent to the B1192, approximately 300 m south of the proposed DC cable route. No information is known of the construction program of this project and therefore it is assumed that, as a worst case scenario, the project would coincide with the construction of the Scheme.

3.2.25 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 20 – 6 to 8 Poultry Sheds

3.2.26 This project is still in the pre-planning phase. It proposes the erection of up to eight poultry sheds. This project is located adjacent to project ID 23 (as described above), on the B1192 south of the proposed DC cable route.

3.2.27 There is uncertainty over the construction period for this project, in the worst case it would overlap with construction of the Scheme. Nevertheless the scale and nature of this project means that none of the specialist assessments has identified significant cumulative effects when considering it in combination with construction of the UK Onshore Scheme.

Project ID 12 – Rebuild of existing 11 kV Overhead Line

3.2.28 This project proposes to replace approximately 1.3 km of existing overhead power lines on wood poles to match existing circuits. This project would extend across the working width of the proposed DC cable route (in Route Section 4) at Sutterton Drove, Amber Hill.

3.2.29 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 6 – Heckington Fen Wind Farm (22 Wind Turbines)

3.2.30 This project comprises 22 wind turbines of a maximum height (to blade tip) of 125 m. This project is located to the immediate west of the proposed DC cable route north of the A17. The construction program of the project is unknown following the submission of an amendment to their original consent.

3.2.31 Heckington Fen Wind Farm has been assessed particularly in regard to traffic and transport and landscape and visual cumulative effects. The outcomes of the traffic assessment concluded that

the limited number of additional traffic movement required to construct the wind farm (as stated within the ES) would not result in a significant cumulative impact.

3.2.32 The landscape and visual cumulative assessment has assessed the Heckington Fen Wind Farm along with the Triton Knoll Electricity System along with the UK Onshore Scheme. These are assessed in the Triton Knoll assessment in the sub-section below.

3.2.33 No other specialist assessments have identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 5 – Grain Store

3.2.34 This project proposes the erection of a new grain store to be located immediately adjacent to the west of the proposed DC cable route, at Six Hundreds Drove, within the boundary of the Heckington Fen Wind Farm.

3.2.35 None of the specialist assessments has identified significant cumulative effects when considering this project in combination with the UK Onshore Scheme.

Project ID 67 – Triton Knoll Electrical System

3.2.36 The Triton Knoll Electrical System is the onshore component of the Triton Knoll Offshore Wind Farm, which consists of 288 wind turbines located approximately 32 km from Lincolnshire coast. The onshore component of the project consists of an underground cable connecting the offshore array to the National Electricity Transmission System (NETS) at the existing Bicker Fen 400 kV Substation.

3.2.37 The project makes landfall approximately 1.5 km to the south of the proposed landfall site at Boygrift, with the Triton Knoll Electrical System continuing to the southeast, to south of the UK Onshore Scheme, to Bicker Fen Substation. From the point of landfall of both projects the separation distance between them increases to as far as 14 km, before coming closer together as the proposed DC cable route extends further south through Route Sections 3 and 4. Both the Triton Knoll Electrical System and the UK Onshore Scheme connect in to the same substation at Bicker Fen.

3.2.38 At the closest point the alignment of the Triton Knoll Electrical System and the UK Onshore Scheme are immediately adjacent as they extend south of the A17, parallel to the South Forty Foot Drain.

3.2.39 Potentially significant cumulative effects may occur as a result of the simultaneous construction of the UK Onshore Scheme and the Triton Knoll Electrical System, as well as the Heckington Fen Wind Farm on the visual amenity of two viewpoints at the southern end of the UK Onshore Scheme, adjacent to the proposed converter station site. These viewpoints are:

- North Ing Drove (Viewpoint (VP) 03), and
- South Forty Foot Drain, Bank End Farm (VP07)

North Ing Drove – VP03

3.2.40 From North Ing Drove, the removal of existing vegetation around Bicker Fen 400 kV Substation to accommodate construction of the UK Onshore Scheme and Triton Knoll Electrical System will likely result in the construction activity of the UK Onshore Scheme (particularly the proposed converter station and proposed AC cable route) and Triton Knoll Electrical System becoming prominent in the fore and middle ground from this viewpoint. This would also likely extend the influence of other electrical infrastructure, such as the Bicker Fen 400 kV Substation and the Bicker Fen Wind Farm to have a greater influence across the view and also bringing them in relatively close proximity to this viewpoint, therefore appearing at a larger scale. The cumulative magnitude of change is anticipated to be High, resulting in a moderate adverse (significant) cumulative impact.

3.2.41 During operation from the North Ing Viewpoint, the cumulative developments would be partially screened by intervening vegetation from this location, although the tops of taller structures, such as the proposed converter station and Heckington Fen Wind Farm, may be visible. The proposed converter station would extend the influence of large scale electrical infrastructure further south, occupying a new part of the view in closer proximity than the cumulative developments. The cumulative magnitude of change is anticipated to be Medium, resulting in a moderate adverse (significant) cumulative impact.

South Forty Foot Drain - VP07

3.2.42 The construction activities of the cumulative developments would be visible to the north and north east in views along the South Forty Foot Drain. Similar construction activities associated with the proposed converter station, permanent access road and the AC route to those required for the Triton Knoll Electrical System would be prominent in the fore to middle ground of the view occupying a similar but wider extent of the view as that of the cumulative developments, therefore extending the influence of construction to a wider extent of the view. Due to the closer proximity and the increased extent of the view affected, the magnitude of cumulative visual change is anticipated to be High, resulting in a moderate adverse (significant) cumulative impact.

4 Summary of Cumulative Assessment

4.1 Summary

4.1.1 A cumulative assessment has been undertaken to take in to account both inter-project and intra-project effects.

4.1.2 Intra-project effects has considered the impact of multiple environmental topics on the same receptor (i.e. the combined impact of increased disturbance (such as noise) and reduced visual amenity on walkers and visitors, as well as in-combination effects from different components the Scheme (i.e. the proposed DC cable route and the proposed converter station) on the same receptor.

4.1.3 Inter-project effects have considered the potential cumulative impacts from the simultaneous development of the UK Onshore Scheme with other projects within the near vicinity of the Scheme. A systematic review of projects either already within or known to soon enter the planning system were reviewed by each of the specialists to determine potential cumulative impacts.

Intra-Project Effects

4.1.4 The assessment potential cumulative effects on an individual receptor from different components of the Scheme, and from multiple sources has determined that whilst there have been some impacts identified these are not likely to be of greater significance than when considering the potential effects individually. The majority of intra-project effects are not considered to be significant, however, some significant intra-project effects may occur where construction activities combine to affect residents, visitors and or recreational users of PRoWs.

Inter-Project Effects

4.1.5 Of the 17 short-listed projects identified that had the potential to result in cumulative impacts when taken in to consideration with the Scheme, only Triton Knoll Electrical System was determined to result in potentially significant impacts during construction. These impacts would be restricted to the southern end of the Scheme where the cable routes of both projects are closer together where they connect to the NETS at Bicker Fen 400 kV Substation.

4.1.6 Cumulative effects may occur for visual receptors at North Ing Drove and South Forty Foot Drain, where the view of both of these projects during construction would be evident. During operation the view of the proposed converter station in combination with the proposed Heckington Fen Wind Farm from North Ing Drove may result in large electrical infrastructure dominating the views from this location. However this is immediately adjacent to proposed projects and no other operational cumulative impacts have been identified.

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